Robinson+Cole

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Also admitted in Massachusetts

August 12, 2015

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

Re: **Notice of Exempt Modification – Facility Modification**
82 North Eagleville Road, Mansfield, Connecticut

Dear Ms. Bachman:

Cellco Partnership d/b/a Verizon Wireless ("Cellco") currently maintains twelve (12) antennas at the 84-foot level of the existing 327-foot guyed-lattice tower at 82 North Eagleville Road in Mansfield, Connecticut (the "Property"). The tower and underlying property are owned by the University of Connecticut. The Council approved Cellco's use of this tower in 1997 (Docket No. 179). Cellco now intends to modify its facility by replacing nine (9) of its existing antennas with three (3) model X7C-FRO-440, 700 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 84-foot level. Cellco also intends to replace three (3) existing remote radio heads ("RRHs") with three (3) newer model RRHs, one (1) each behind its 2100 MHz antennas and install six (6) new remote radio heads ("RRHs"), one (1) each behind its 700 MHz and 1900 MHz antennas and one (1) HYBRIFLEX™ antenna cable. Included in Attachment 1 are specifications for Cellco's replacement antennas, RRHs and HYBRIFLEX™ cable.

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 Matthew Hart, Town Manager of the Town of Mansfield. A copy of this letter is also being sent to Robert Sitkowski at the University of Connecticut.

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

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 84-foot level on the 327-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. Far Field Approximation tables for each of Cellco's operating frequencies are included behind Attachment 2. The Far Field calculations demonstrate that Cellco's modified facility will operate well within the RF emissions limits established by the FCC.

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 Reinforcement 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:
Matthew Hart, Mansfield Town Manager
Robert Sitkowski, Counsel, University of Connecticut
Tim Parks

ATTACHMENT 1

X7C-FRO-440

X-Pol Antenna, 698-896 MHz, (50.5", 40° H-Beam)

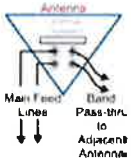
- Fast Roll Off (FRO)
- Designed to improve SNR
- Greatly increases LTE data rates
- Macro Cell High Gain Antenna
- Highly Reliable Fixed Tilt Design
- Suitable for LTE/CDMA/UMTS/GSM
- Mechanical Tilt Bracket Included

Available with Integrated Diplexers

Reduces mainline cables

Eliminates External Tower Devices

Supports high band TMAs



ELECTRICAL SPECIFICATIONS

Frequency Band, MHz	698-824	824-896
Horizontal Beam Width, 3dB points	40°	
Gain, dBi	16.7	17.4
Vertical Beam Width, 3dB points	14.5°	
Front-to-Back at 180°, dB	>30	
Upper Side Lobe Suppression, Typical, dB	<-18	
Polarization	+/-45°	
Electrical Down Tilt, Fixed	0, 2, 4, 6, 8, 10°	
VSWR/Return Loss, dB, Maximum	1.5:1/-14.0	
Return Loss, dB Maximum, Pass Thru	-17.7	
Isolation Between Ports, dB, Minimum	28	
Intermodulation (2x20w), IM3, dBc, Maximum	-150	
Impedance, ohms	50	
Maximum Power Per Connector, CW	500 @ 800 MHz	

MECHANICAL SPECIFICATIONS

Dimensions, Length/Width/Depth	50.5/18.8/6.2 in. (1282/478/157mm)
Connector (Quantity)	(2 or 4) 7-16 DIN Female
Connector Torque	220-265 lbf-in (23-30 N-m)
Connector Location	Back
Antenna Weight	29.8 lbs (13.5 kg) *Note: Weight varies slightly based on ordering options*
Bracket Weight	13.2 lb. (6.0 kg)
Standard Bracket Kit	CSS P/N 919011 (Included)
Mechanical Down Tilt Range	0-12°
Radome Material	High Strength Luran, UV Stabilized, ASTM D1925
Wind Survival	150 mph (241 km/h)
Front Wind Load	163.8 lbf (728.8 N) @100mph
Equivalent Flat Plate	3.26 sq-ft (c=2) @ 100mph

ORDER INFORMATION

MODEL	DESCRIPTION
X7C-FRO-440-*x*	X-Pol antenna with two back DIN connectors
X7C-FRO-440-*x*-IP	X-Pol antenna with four back DIN connectors with integrated pass thru diplexers
919036	Optional Bracket Kit, 2-Point, 12deg D-tilt, For 4.5" OD Pole

***x* defines the electrical tilt**

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	241.0 km/h | 149.8 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®

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.

* Footnotes

Performance Note	Severe environmental conditions may degrade optimum performance

Alcatel-Lucent RRH2x40-07-U

REMOTE RADIO HEAD

The Alcatel-Lucent RRH2x40-07-U is a high-power, small form-factor Remote Radio Head (RRH) operating in the North American Digital Dividend / 700MHz frequency band (3GPP Band 13). The Alcatel-Lucent RRH2x40-07-U is designed with an eco-efficient approach, providing operators with the means to achieve high quality and capacity coverage with minimum site requirements.

A distributed eNodeB expands 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 an eNodeB to be installed separately, within the same site or several kilometres apart.

The Alcatel-Lucent RRH2x40-07-U 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. The Alcatel-Lucent RRH2x40-07-U has two transmit RF paths, 40 W RF output power per transmit path, and is designed to manage up to two-way receive diversity. The device is ideally suited to support macro coverage, with multiple-input multiple-output (MIMO) 2x2 operation in up to 10 MHz of bandwidth.

The Alcatel-Lucent RRH2x40-07-U is designed to make available all the benefits of a distributed eNodeB, with excellent RF characteristics, with low capital expenditures (CAPEX) and low operating expenditures (OPEX). The limited space available in some sites may prevent the installation of traditional single-cabinet BTS equipment or require costly cranes to be employed, leaving coverage holes. However, many of these sites can host an Alcatel-Lucent RRH2x40-07-U installation, providing more flexible site selection and improved network quality along with greatly reduced installation time and costs.

Fast, low-cost installation and deployment

The Alcatel-Lucent RRH2x40-07-U is a zero-footprint solution and operates noise-free, simplifying negotiations with site property owners and minimizing environmental impacts. Installation can easily be done by a single person because the Alcatel-Lucent RRH2x40-07-U is compact and weights less than 23 kg (50 lb), 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 — a fraction of the time required for a traditional BTS.

Excellent RF performance

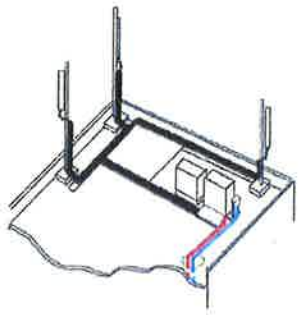
Because of its small size and weight, the Alcatel-Lucent RRH2x40-07-U can be installed close to the antenna. Operators can therefore locate the Alcatel-Lucent RRH2x40-07-U where RF engineering is deemed ideal, minimizing trade-offs between available sites and RF optimum sites. The RF feeder cost and installation costs are reduced or eliminated, and there is no need for a Tower Mounted Amplifier (TMA) because losses introduced by the RF feeder are greatly reduced. The Alcatel-Lucent RRH2x40-07-U provides more RF power while at the same time consuming less electricity.

Features

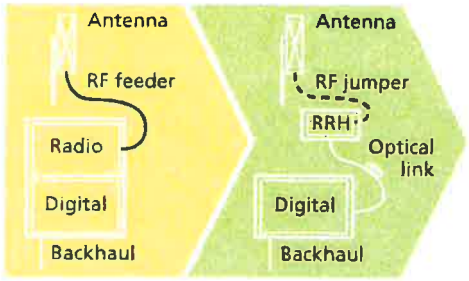
- Zero-footprint deployment
- Easy installation, with a lightweight unit can be carried and set up by one person
- Optimized RF power, with flexible site selection and elimination of a TMA
- Convection-cooled (fanless), noise-free, and heaterless unit
- Best-in-class power efficiency, with significantly reduced energy consumption

Benefits

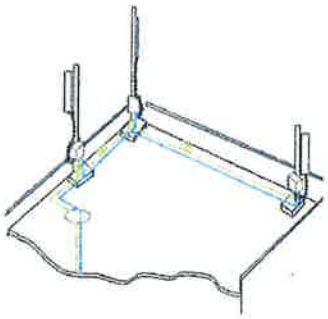
- Leverages existing real estate with lower site costs
- Reduces installation costs, with fewer installation materials and simplified logistics
- Decreases power costs and minimizes environmental impacts, with the potential for eco-sustainable power options
- Improves RF performance and adds flexibility to network planning



Macro



RRH for space-constrained cell sites



Distributed

Technical specifications

Physical dimensions

- Height: 390 mm (15.4 in.)
- Width: 380 mm (15 in.)
- Depth: 210 mm (8.2 in.)
- Weight (without mounting kit): less than 23 kg (50 lb)

Power

- Power supply: -48V

Operating environment

- Outdoor temperature range:
  - ¬ With solar load: -40°C to +50°C (-40°F to +122°F)
  - ¬ Without solar load: -40°C to +55°C (-40°F to +131°F)
- Passive convection cooling (no fans)
- Enclosure protection
  - ¬ IP65 (International Protection rating)

RF characteristics

- Frequency band: 700 MHz; 3GPP Band 13
- Bandwidth: up to 10 MHz
- RF output power at antenna port:
  - ¬ 40 W nominal RF power for each Tx port
- Rx diversity: 2-way or 4-way
- Noise figure: below 2.5 dB typical
- ALD features
  - ¬ TMA
  - ¬ Remote electrical tilt (RET) support (AISG v2.0)

Optical characteristics

Type/number of fibers

- Up to 3.12 Gb/s line bit rate
- Single-mode variant
  - ¬ One SM fiber (9/125 µm) per RRH2x, carrying UL and DL using CWDM (at 1550/1310 nm)
- Multi-mode variant
  - ¬ Two MM fibers (50/125 µm) per RRH2x: one carrying UL, the other carrying DL (at 850 nm)

Optical fiber length

- Up to 500 m (0.31 mi), using MM fiber
- Up to 20 km (12.43 mi), using SM fiber

Alarms and ports

- Six external alarms
- Two optical ports to support daisy-chaining

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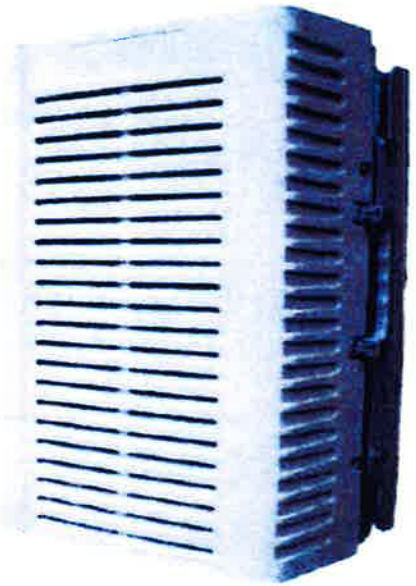
PCS RF MODULES

RRH1900 2X60 - HW CHARACTERISTICS

LA6.0.1/13.3

	RRH2x60
RF Output Power	2x60W
Instantaneous Bandwidth	20MHz
Transmitter	2 TX
Receiver 1900 HW version 1900A HW version	2 Branch RX – LA6.0.1 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)

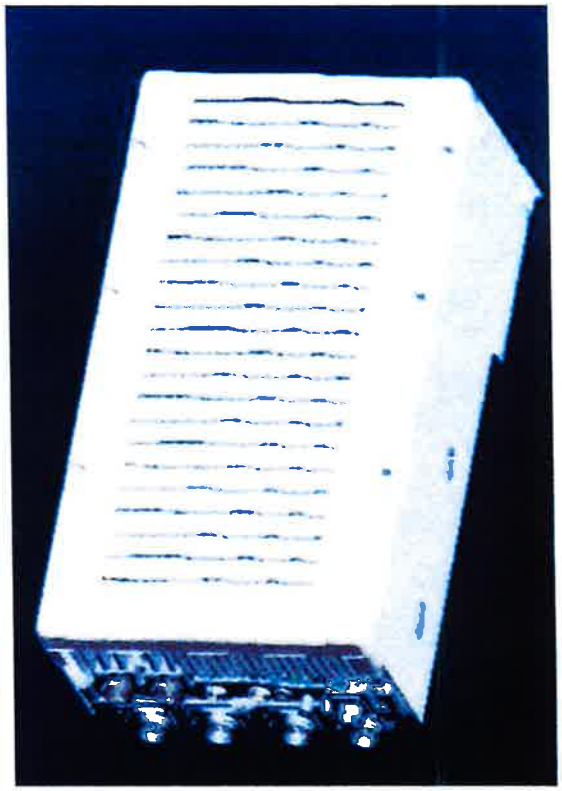


** Not a Verizon Wireless deployed product

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.)

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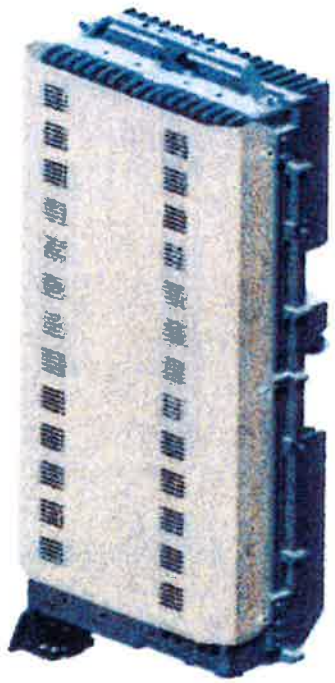
ALCATEL-LUCENT WIRELESS PRODUCT DATASHEET

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.

[illegible]

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.

[illegible]

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.

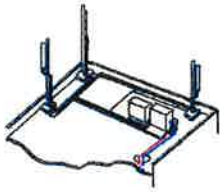
[illegible]

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.



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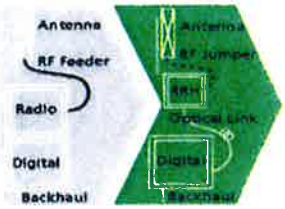
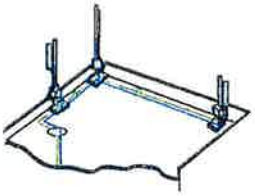


RRH for space-constrained cell sites



Distributed

- 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
- 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.

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)

* This data is provisional and subject to change

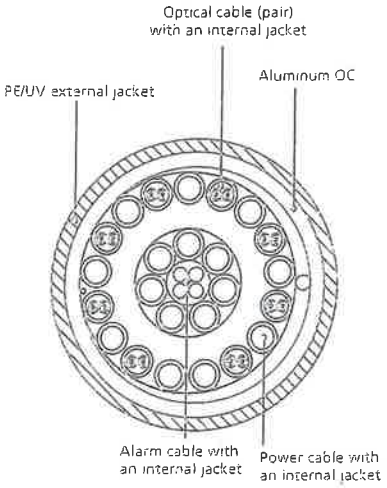


Figure 2: Construction Detail

ATTACHMENT 2

Far Field Approximation
with downtilt variation

Estimated Radiated Emission

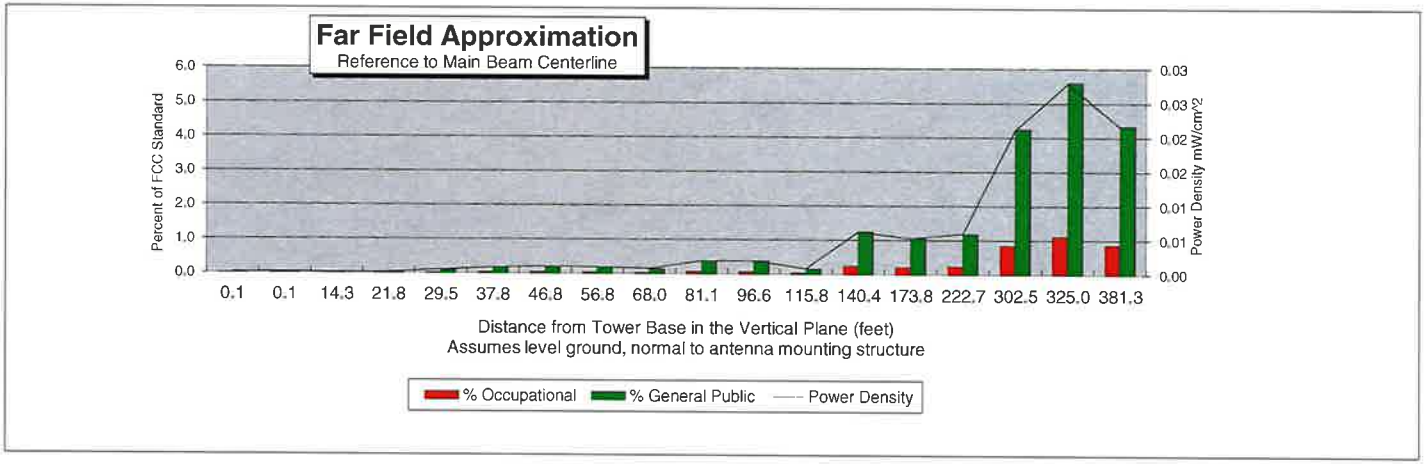
Single Emitter Far Field Model

Dipole / Wire/ Yagi Antenna Types

verizonwireless

Location:	Storrs, CT
Site #:	
Date:	08/10/15
Name:	Ray Paradis
File Name:	Storrs, CT - FF Power

Operating Freq. (MHz)	**745.0**
Antenna Height (ft):	**84.0**
Antenna Gain (dBi):	**14.3**
Antenna Size (in.):	**50.4**
Downtilt (degrees):	**10.0**
Feedline Loss (dB):	**2.0**
Power @ J4 (w):	**879.0**
Number of channels:	**1**



Calc Angle	90.0	90.0	80.0	75.0	70.0	65.0	60.0	55.0	50.0	45.0	40.0	35.0	30.0	25.0	20.0	15.0	14.0	12.0
Solve for r, dx to antenna	81.0	81.0	82.3	83.9	86.2	89.4	93.6	98.9	105.8	114.6	126.1	141.3	162.1	191.8	236.9	313.1	335.0	389.8
Distance from Antenna Structure Base in Horizontal plane	0.1	0.1	14.3	21.8	29.5	37.8	46.8	56.8	68.0	81.1	96.6	115.8	140.4	173.8	222.7	302.5	325.0	381.3
Angle from Main Beam (reference to horizontal plane)	90	80	70	65	60	55	50	45	40	35	30	25	20	15	10	5	4	2
dB down from centerline (referenced to centerline)	36.76	34.35	38.52	35.34	29.54	26.8	25.59	25.63	25.99	21.21	20.29	23.24	13.03	12.3	9.92	2	0.2	0
Reflection Coefficient (1 to 4, 2.56 typical)	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56
Power Density (mW/cm^2)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.02	0.03	0.02
Percent of Occupational Standard	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.2	0.2	0.2	0.8	1.1	0.9
Percent of General Population Standard	0.0	0.0	0.0	0.0	0.1	0.2	0.2	0.2	0.1	0.4	0.4	0.2	1.2	1.1	1.2	4.2	5.6	4.3

Antenna Type X7C-FRO-440-6
Max% 5.61%

Instructions:

1) Fill in Site Location, Site number, Date, Name of Person Responsible for Date, and enter File Name to ba saved as.
2) References to J4 refer to a point where the transmission line exits the equipment shelter and proceeds to the antenna(s). There is typically a connector located here where power measurements are made.
3) Enter Antenna Height (in feet to bottom of antenna), Antenna Gain (expressed as dBi, add 2.17 to dBd to obtain dBi), Antenna Size (vertical size in inches), Downtilt (in Degrees, enter zero if none), Feedline loss from J4 to Antenna, and J4 P
4) From manufacturer's plots, or data sheet, input Angle from mainbeam and dB below mainbeam centerline.
5) Enter Reflection coefficient (2.56 would be typical, 1 for free space)
6) Spreadsheet calculates actual power density, then relates as Occupational or General Population percentage of FCC Standard.
7) An odd distance may be entered in the rightmost column of the lower table.

Far Field Approximation
with downtilt variation

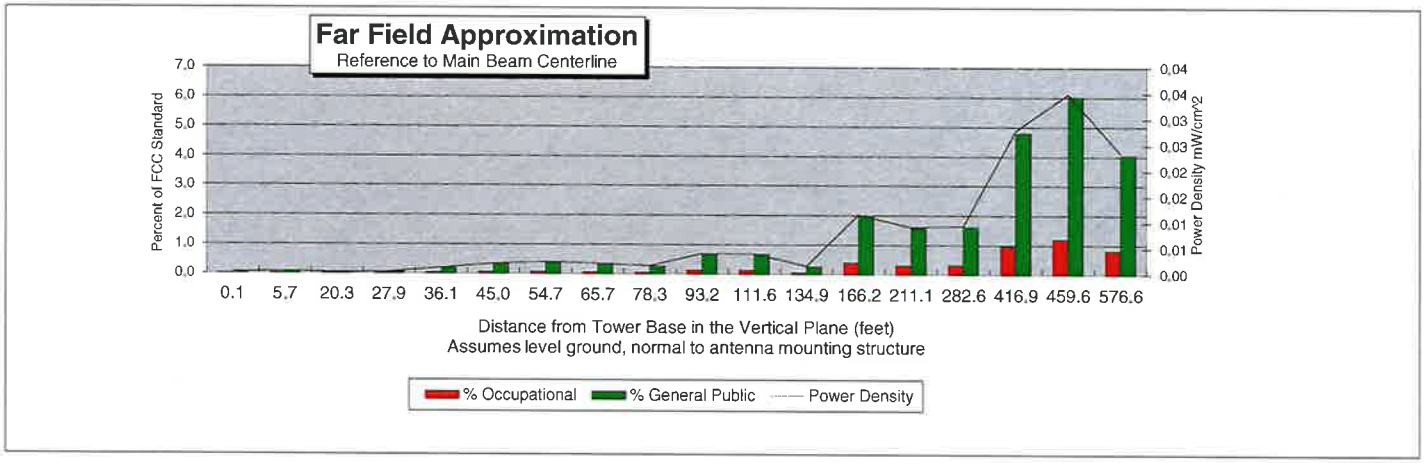
Estimated Radiated Emission

Single Emitter Far Field Model

Dipole / Wire/ Yagi Antenna Types

Location:	Storrs, CT
Site #:	
Date:	08/10/15
Name:	Ray Paradis
File Name:	Storrs, CT - FF Power

Operating Freq. (MHz)	**869.0**
Antenna Height (ft):	**84.0**
Antenna Gain (dBi):	**13.0**
Antenna Size (in.):	**50.2**
Downtilt (degrees):	**6.0**
Feedline Loss (dB):	**2.0**
Power @ J4 (w):	**2880.0**
Number of channels:	**9**



Calc Angle	90.0	86.0	76.0	71.0	66.0	61.0	56.0	51.0	46.0	41.0	36.0	31.0	26.0	21.0	16.0	11.0	10.0	8.0	
Solve for r, dx to antenna	81.0	81.2	83.5	85.7	88.7	92.6	97.7	104.3	112.6	123.5	137.9	157.3	184.9	226.1	294.0	424.7	466.7	582.3	
Distance from Antenna Structure Base in Horizontal plane	0.1	5.7	20.3	27.9	36.1	45.0	54.7	65.7	78.3	93.2	111.6	134.9	166.2	211.1	282.6	416.9	459.6	576.6	
Angle from Main Beam (reference to horizontal plane)	90	80	70	65	60	55	50	45	40	35	30	25	20	15	10	5	4	2	
dB down from centerline (referenced to centerline)	36.76	34.35	38.52	35.34	29.54	26.8	25.59	25.63	25.99	21.21	20.29	23.24	13.03	12.3	9.92	2	0.2	0	
Reflection Coefficient (1 to 4, 2.56 typical)	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	
Power Density (mW/cm^2)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.03	0.03	0.02	
Percent of Occupational Standard	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.4	0.3	0.3	1.0	1.2	0.8	
Percent of General Population Standard	0.0	0.1	0.0	0.1	0.2	0.3	0.4	0.3	0.3	0.7	0.7	0.3	2.0	1.6	1.6	4.8	6.0	4.0	

Antenna Type BXA-80063/4
Max% 6.02%

Instructions:

1) Fill in Site Location, Site number, Date, Name of Person Responsible for Date, and enter File Name to ba saved as.
2) References to J4 refer to a point where the transmission line exits the equipment shelter and proceeds to the antenna(s). There is typically a connector located here where power measurements are made.
3) Enter Antenna Height (in feet to bottom of antenna), Antenna Gain (expressed as dBi, add 2.17 to dBd to obtain dBi), Antenna Size (vertical size in inches), Downtilt (in Degrees, enter zero if none), Feedline loss from J4 to Antenna, and J4 Pc
4) From manufacturer's plots, or data sheet, input Angle from mainbeam and dB below mainbeam centerline.
5) Enter Reflection coefficient (2.56 would be typical, 1 for free space)
6) Spreadsheet calculates actual power density, then relates as Occupational or General Population percentage of FCC Standard.
7) An odd distance may be entered in the rightmost column of the lower table.

Far Field Approximation
with downtilt variation

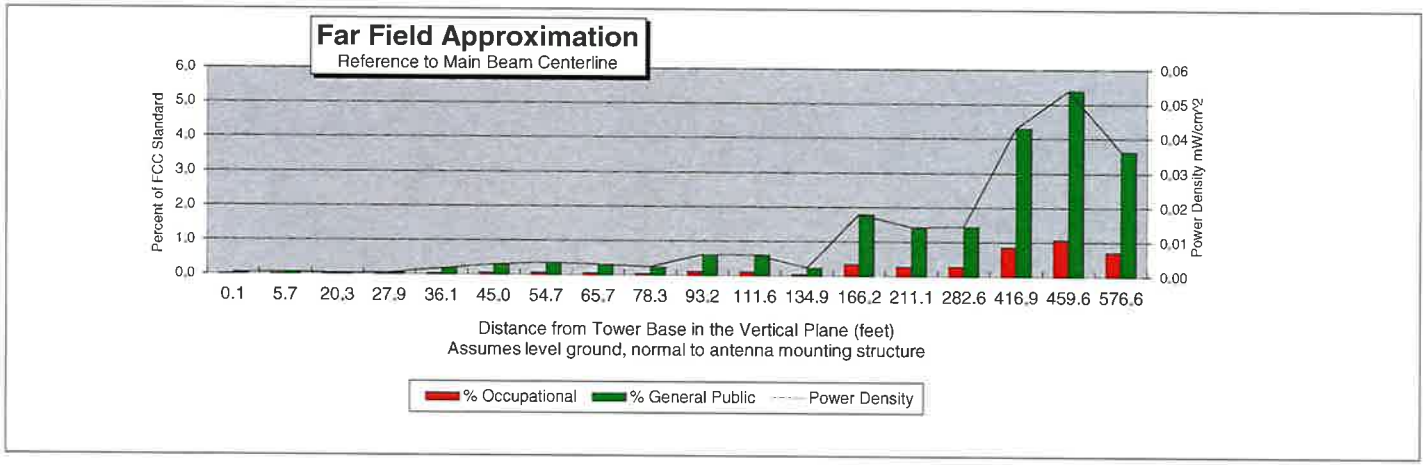
Estimated Radiated Emission

Single Emitter Far Field Model

Dipole / Wire/ Yagi Antenna Types

Location:	Storrs, CT
Site #:	
Date:	08/10/15
Name:	Ray Paradis
File Name:	Storrs, CT - FF Power

Operating Freq. (MHz)	**1945.0**
Antenna Height (ft):	**84.0**
Antenna Gain (dBi):	**16.6**
Antenna Size (in.):	**74.9**
Downtilt (degrees):	**6.0**
Feedline Loss (dB):	**2.0**
Power @ J4 (w):	**1965.0**
Number of channels:	**1**



Calc Angle	90.0	86.0	76.0	71.0	66.0	61.0	56.0	51.0	46.0	41.0	36.0	31.0	26.0	21.0	16.0	11.0	10.0	8.0
Solve for r, dx to antenna	81.0	81.2	83.5	85.7	88.7	92.6	97.7	104.3	112.6	123.5	137.9	157.3	184.9	226.1	294.0	424.7	466.7	582.3
Distance from Antenna Structure Base in Horizontal plane	0.1	5.7	20.3	27.9	36.1	45.0	54.7	65.7	78.3	93.2	111.6	134.9	166.2	211.1	282.6	416.9	459.6	576.6
Angle from Main Beam (reference to horizontal plane)	90	80	70	65	60	55	50	45	40	35	30	25	20	15	10	5	4	2
dB down from centerline (referenced to centerline)	36.76	34.35	38.52	35.34	29.54	26.8	25.59	25.63	25.99	21.21	20.29	23.24	13.03	12.3	9.92	2	0.2	0
Reflection Coefficient (1 to 4, 2.56 typical)	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56
Power Density (mW/cm^2)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.00	0.02	0.01	0.01	0.04	0.05	0.04
Percent of Occupational Standard	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.0	0.1	0.1	0.0	0.4	0.3	0.3	0.9	1.1	0.7
Percent of General Population Standard	0.0	0.1	0.0	0.0	0.2	0.3	0.4	0.3	0.2	0.6	0.6	0.2	1.8	1.4	1.4	4.3	5.4	3.6

Antenna Type HBXX-6517DS-A2M
Max% 5.39%

Instructions:

1) Fill in Site Location, Site number, Date, Name of Person Responsible for Date, and enter File Name to ba saved as.
2) References to J4 refer to a point where the transmission line exits the equipment shelter and proceeds to the antenna(s). There is typically a connector located here where power measurements are made.
3) Enter Antenna Height (in feet to bottom of antenna), Antenna Gain (expressed as dBi, add 2.17 to dBd to obtain dBi), Antenna Size (vertical size in inches), Downtilt (in Degrees, enter zero if none), Feedline loss from J4 to Antenna, and J4 Pc
4) From manufacturer's plots, or data sheet, input Angle from mainbeam and dB below mainbeam centerline.
5) Enter Reflection coefficient (2.56 would be typical, 1 for free space)
6) Spreadsheet calculates actual power density, then relates as Occupational or General Population percentage of FCC Standard.
7) An odd distance may be entered in the rightmost column of the lower table.

Far Field Approximation
with downtilt variation

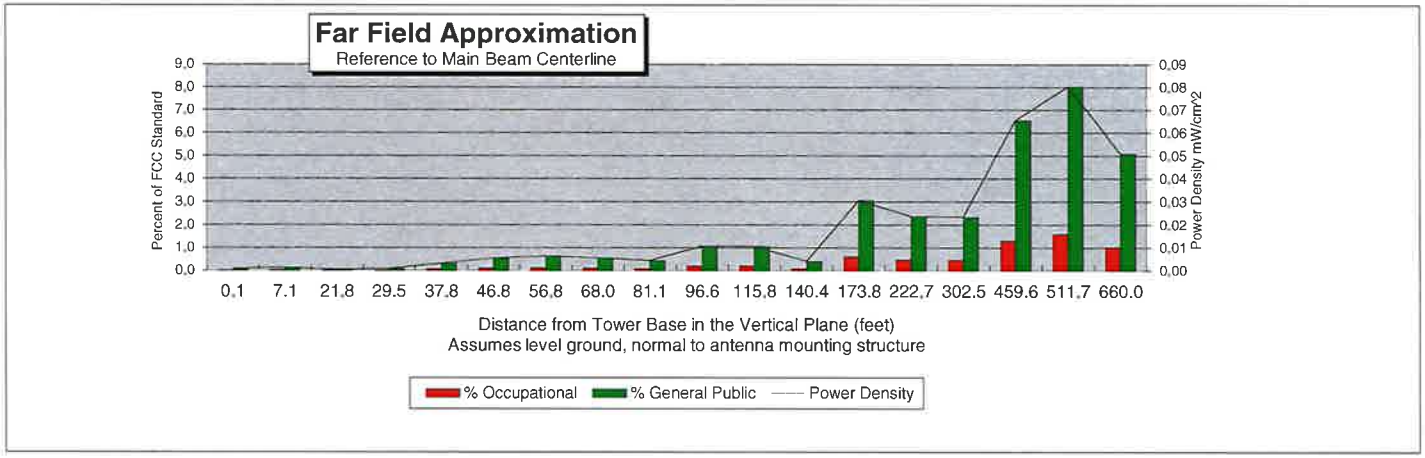
Estimated Radiated Emission

Single Emitter Far Field Model

Dipole / Wire/ Yagi Antenna Types

Location:	Storrs, CT
Site #:	
Date:	08/10/15
Name:	Ray Paradis
File Name:	Storrs, CT - FF Power

Operating Freq. (MHz)	2145.0
Antenna Height (ft):	84.0
Antenna Gain (dBi):	18.2
Antenna Size (in.):	74.9
Downtilt (degrees):	5.0
Feedline Loss (dB):	2.0
Power @ J4 (w):	2466.0
Number of channels:	1



Calc Angle	90.0	85.0	75.0	70.0	65.0	60.0	55.0	50.0	45.0	40.0	35.0	30.0	25.0	20.0	15.0	10.0	9.0	7.0	
Solve for r, dx to antenna	81.0	81.3	83.9	86.2	89.4	93.6	98.9	105.8	114.6	126.1	141.3	162.1	191.8	236.9	313.1	466.7	518.0	665.0	
Distance from Antenna Structure Base in Horizontal plane	0.1	7.1	21.8	29.5	37.8	46.8	56.8	68.0	81.1	96.6	115.8	140.4	173.8	222.7	302.5	459.6	511.7	660.0	
Angle from Main Beam (reference to horizontal plane)	90	80	70	65	60	55	50	45	40	35	30	25	20	15	10	5	4	2	
dB down from centerline (referenced to centerline)	36.76	34.35	38.52	35.34	29.54	26.8	25.59	25.63	25.99	21.21	20.29	23.24	13.03	12.3	9.92	2	0.2	0	
Reflection Coefficient (1 to 4, 2.56 typical)	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	
Power Density (mW/cm^2)	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.00	0.01	0.01	0.00	0.03	0.02	0.02	0.07	0.08	0.05	
Percent of Occupational Standard	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.1	0.6	0.5	0.5	1.3	1.6	1.0	
Percent of General Population Standard	0.1	0.1	0.0	0.1	0.3	0.5	0.6	0.6	0.4	1.1	1.1	0.4	3.1	2.4	2.3	6.5	8.0	5.1	

Antenna Type HBXX-6517DS-A2M
Max% 8.03%

Instructions:

1) Fill in Site Location, Site number, Date, Name of Person Responsible for Date, and enter File Name to ba saved as.
2) References to J4 refer to a point where the transmission line exits the equipment shelter and proceeds to the antenna(s). There is typically a connector located here where power measurements are made.
3) Enter Antenna Height (in feet to bottom of antenna), Antenna Gain (expressed as dBi, add 2.17 to dBd to obtain dBi), Antenna Size (vertical size in inches), Downtilt (in Degrees, enter zero if none), Feedline loss from J4 to Antenna, and J4 Pc
4) From manufacturer's plots, or data sheet, input Angle from mainbeam and dB below mainbeam centerline.
5) Enter Reflection coefficient (2.56 would be typical, 1 for free space)
6) Spreadsheet calculates actual power density, then relates as Occupational or General Population percentage of FCC Standard.
7) An odd distance may be entered in the rightmost column of the lower table.

ATTACHMENT 3

AECOM

Submitted to
Verizon Wireless
99 East River Drive
East Hartford,
Connecticut 061082

Submitted by
AECOM
500 Enterprise Drive,
Suite 3B
Rocky Hill, CT 06067
March 16, 2015

DETAILED STRUCTURAL ANALYSIS AND REINFORCEMENT OF AN EXISTING 327' GUYED LATTICE TOWER AND FOUNDATION FOR NEW ANTENNA ARRANGEMENT

verizonwireless

Site Name: WHUS Tower
Site Address: North Eagleville Road
Storrs, CT
CSP Tower # 66

36928707
VZ5-188 – Rev. 2

TABLE OF CONTENTS

1. EXECUTIVE SUMMARY

This report summarizes the structural analysis and proposed reinforcement of the existing 327' guyed lattice tower located on North Eagleville Road in Storrs, Connecticut. The analysis was conducted in accordance with the 2005 Connecticut State Building Code, the TIA/EIA-222-F standard, and the Connecticut State Police requirements for a wind velocity of 90 mph (fastest mile) and 90 mph (fastest mile) concurrent with ½" ice. The antenna loading considered in the analysis consists of all existing and proposed antennas, transmission lines, and ancillary items as outlined in the Introduction Section of this report.

The proposed Verizon Wireless modification is as follows:

Proposed Antenna and Mount	Carrier	Antenna Center Elevation
Remove: **(3) LNX-6514DS-A1M Panel Antennas** **(3) BXA-171063-12CF Panel Antennas** **(3) BXA-171063-12BF Panel Antennas** **(3) ALU RRH_2x40 (AWS) RRH Units** **(6) 1-5/8" Coaxial Cables**	**Verizon (existing)**	**@ 84'**
Install: **(3) X7C-FRO-444 Panel Antennas** **(3) ALU RRH_2x40_700 (700MHz) RRH Units** **(6) HBXX-6517DS-A2M Panel Antennas** **(3) ALU RRH_2x60-PCS (1900MHz) RRH Units** **(3) ALU RRH_2x60-AWS RRH Units**	**Verizon (proposed)**	**@ 84'**

The results of an initial analysis indicated that the existing tower was not below twist and sway requirements of the Connecticut State Police for the proposed loading conditions stated above. **The tower structure and foundation components require modifications shown on SK-1 & SK-2. Once the modifications indicated on sheets SK-1 & 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.**

The tower deflection (sway) is 0.2392 degrees and the tower rotation (twist) is 0.4649 degrees. **These combined figures are below the Connecticut State Police specification of 0.75 degrees for deflection (sway) and (rotation) twist.**

1. **EXECUTIVE SUMMARY** *(continued)*

This analysis is based on:

1) The tower structure's theoretical capacity, not including any assessment of the condition of the tower.
2) Tower geometry and structural member sizes taken from original construction drawings (Sabre Job #: 98-0659) prepared by Sabre Communications Corporation, signed and sealed November 6, 1998.
3) Inventory tower mapping and inventory by Northeast Towers, INC., dated June 12, 2013.
4) Proposed Antenna RFDS from Verizon Wireless dated October 31, 2014. (Proposed antenna inventory revised – See #8)
5) Antenna and coaxial cable inventory obtained via e-mail from Connecticut State police, dated November 12, 2014.
6) Location site visit, performed by URS, dated November 18, 2014.
7) Structural analysis performed by URS, job number 36928707 / VZ5-188 on behalf of Verizon Wireless, signed and sealed December 12, 2014.
8) Revised antenna RFDS from Verizon Wireless dated February 24, 2015.
9) Antenna and mount configuration as specified on the following page of this report.

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

If you should have any questions, please call.

Sincerely,

URS Corporation AES,
a subsidiary of AECOM

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

RAS/mcd

cc: IA, CF/Book – URS

2. INTRODUCTION

The subject tower is located on North Eagleville Road in Storrs, Connecticut. The structure is a 327' guyed lattice tower designed and manufactured by Sabre Communications Corporation.

The tower geometry and structural member sizes taken from original construction drawings (Sabre Job #: 98-0659) prepared by Sabre Communications Corporation, signed and sealed November 6, 1998.

The inventory is summarized in the table below:

Antenna Type	*Carrier*	*Mount*	*Antenna Centerline Elevation*	*Cable*
Lightning Rod	Tower (existing)	Direct Mount	325'	---
Flash Beacon	Tower (existing)	Direct Mount	323'	Rigid Conduit
(1) 2-Bay 6813 w/Radome	Unknown (existing)	Flush Mount	305'	(1) 7/8" coax cable
(3) 6' Dish with Radome	CSP (Future)	Direct Mount	290'	(3) WE65
(1) PD1110 Omni Antenna	WHUS-40 (existing)	(1) 3' Standoff	277'	(1) 1/2" coax cables
(1) PD1110 Omni Antenna	WHUS-39 (existing)	(1) 3' Standoff	277'	(1) 1/2" coax cables
(1) OGT9-806 Omni Antenna	CSP-9 (existing)	(1) 3' Standoff	267'	(1) 1 5/8" coax cable
(1) DB810K Omni Antenna	CSP-5 (existing)	(1) 3' Standoff	267'	(1) 1 5/8" coax cable
(2) AP14-850 Panel Antennas	CSP-4&6 (existing)	(1) 3' Standoff w/ 8' Pipe Mount	255'	(2) 1 5/8" coax cables
(5) Sinclair SC479-HF1LDF Omni Antennas (3 inverted antennas) (2) 432-83H-01T TTA Units (1) Sinclair SE419-SF3P4LDF Panel	CSP-12 thru19 (Future)	Direct Mount	250'	(6) 1 5/8" coax cables (2) 1/2" coax cables
(1) Kathrein OGT9-806 Inverted Whip	CSP-11 (existing)	*Shared with CSP-5 Mount*	250'	(1) 1 5/8" coax cable
(1) DB-809T3 Omni (Inverted)	CSP-7 (existing)	*Shared with CSP-9 Mount*	250'	(1) 1 5/8" coax cable
(5) Sinclair SC479-HF1LDF Omni Antennas (3 inverted antennas) (2) 432-83H-01T TTA Units	CSP-20 thru 26 (future)	Direct Mount	240'	(5) 1 5/8" coax cables (2) 1/2" coax cables
(1) 1-Bay 6813 w/o Radome	Unknown (existing)	(1) Sidearm	211'	(1) 7/8" coax cable
(1) 1-Bay 6813 w/Radome	WHUS-36 (existing)	Direct Mount	198'	(1) 7/8" coax cable
(1) 6812 2-Bay Dipole Array	CPR-32 (future)	(1) 3' Sidearm	198'	(1) 1/2" coax cable
(1) 5 Element Yagi	CPR-33 (future)	Direct Mount	190'	(1) 1/2" coax cable

Antenna Type	Carrier	Mount	Antenna Centerline Elevation	Cable
(3) 7770 Panel Antennas (6) CCI HPA-65R-BUU-H8 Panel Antennas (3) CCI HPA-65R-BUU-H6 Panel Antennas (6) RRUS-12 RRH Units (9) RRUS-11 RRH Units (3) RRUS-32 RRH Units (3) RRUS-E2 RRH Units (3) Ericsson A2 Modules (3) Raycap DC6-48-60-18-8F Distribution Boxes	AT&T (existing)	(3) Commscope MTC3615/SF-QV-4-96 Antenna Frames	187'-5"	(12) 1 5/8" coax cables*
(1) 2'x1'x5" Panel	Unknown (existing)	Direct Mount	172'-2"	(1) 7/8" coax cable
(1) 8'x3" Dia. Omni	UCONN-42 (existing)	Direct Mount	172'	(1) 7/8" coax cable
(1) 5' Grid Dish	CSP-8 (existing)	Direct Mount	171'-6"	(1) 1/2" coax cable
(1) DB872 Panel	Unknown (existing)	Direct Mount	158'-10"	(1) 1/2" coax cable
(2) L-810 LED Beacons	Tower (existing)	Direct Mount	157'	(1) DC Power Cable
(1) 6'x4' Ice Shield (1) 9'x10' Ice Shield	Unknown (existing)	Direct Mount	124'	---
(2) 6FT Dish	CSP-1&2 (existing)	(2) Dish Mount	116'	(2) EW63 coax cables
(1) PD1108	Unknown (existing)	(1) Sidearm	112'	(1) 7/8" coax cable
(1) 6FT Dish	CSP-3 (existing)	(1) Dish Mount	104'	(1) EW63 coax cable
(1) ASP-962	UCONN-44 (existing)	Direct Mount	94'	(1) 1/2" coax cable
(1) PR-850	WHUS-35 (existing)	Direct Mount	94'	(1) 1/2" coax cable
(3) X7C-FRO-440 (3) RRH 2x40_700 (3) HBXX-6517DS-A2M (3) RRH 2x60-PCS (3) HBXX-6517DS-A2M (3) RRH_2x60-AWS	Verizon (Proposed)	*See Below Mount*	84'	*See Below Cables*
(3) BXA-80063_4 (1) DB-T1-6Z-8AB-0Z	Verizon (existing)	(1) Platform Mount	84'	(12) 1-5/8" coax cables
(1) DB-212 Dipole	CSP-10 (existing)	Direct Mount	70'	(1) 7/8" coax cable
(1) CL-24 6' Yagi	Unknown (existing)	(1) 2' Standoff	18'	(1) 1/2" coax cable
(1) 1.2M Lightweight Satellite Dish	Unknown (existing)	(1) 2' Standoff	13'	(2) 1/2" coax cable

* NOTE: The AT&T cables quantity and size were recently verified from a recent site visit and are different than the supplied cable information obtained from the Connecticut State Police, therefore the cable quantity and sizes shown are used in the analysis located in Section 6 of this document.

2. INTRODUCTION (continued)

This structural analysis of the communications tower was performed by URS Corporation (URS), a subsidiary of AECOM, for Verizon Wireless. The purpose of this analysis was to investigate the structural integrity of the modified tower with its existing, proposed and future antenna loads. This analysis was conducted to evaluate stress on the tower and the effect of forces to the foundation of the tower resulting from existing and proposed antenna arrangements.

3. ANALYSIS METHODOLOGY AND LOADING CONDITIONS

The structural analysis was done in accordance with the 2005 Connecticut State Building Code, TIA/EIA-222-F—Structural Standard for Steel Antenna Towers and Antenna Supporting Structures, Connecticut State Police requirements, 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 = 90 mph (fastest mile) Wind Load (without ice) + Tower Dead Load
Load Condition 2 = 90 mph (fastest mile) Wind Load (with ice) + Ice Load + Tower Dead Load

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

4. FINDINGS AND EVALUATION

Stresses on the tower structure were evaluated to compare with allowable stresses in accordance with AISC. The results of an initial analysis indicated that the existing tower was not below twist and sway requirements of the Connecticut State Police specification of 0.75 degrees for combined deflection (twist) and (rotation) sway. The tower 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 with the existing, proposed and future antenna loading noted herein.** See below for summary.

Tower Reactions

Component	Value (kips)
Base Shear	5.188
Base Compression	366.113
Anchor Uplift	152.956
Anchor Shear	185.393

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

Height	Dish Model	Sway	Twist	Total Deflection
290'	6 ft. Dish	0.2689	0.3006	0.5695
172'	5 ft. Grid Dish	0.2615	0.4156	0.6771
116'	6 ft. Dish	0.2392	0.4649	0.7041
104'	6 ft. Dish	0.1718	0.4598	0.6316

Guy and torque arm usage:

Elevation (A.G.L.)	Guy Force (kips)	Guy Cable Size (in)	Guy Usage (%)	Torque Arm Usage (%)
286'	20.529	3/4" EHS	70.4	76.5
257'	21.820	3/4" EHS	74.9	77.9
217'	24.203	3/4" EHS	83.0	81.8
167'	25.521	3/4" EHS	87.5	78.1
107'	24.773	3/4" EHS	85.0	60.8
57'	8.959	7/16" EHS	86.1	15.3

For detailed reactions, see Section 6 of this report

Tower Component Stress vs. Capacity Summary:

Component/ (Section No.)	Existing Component Size	Controlling Component/Elevation	Stress (% capacity)	Pass/Fail
Pole (L1)	P10.75x0.843	Compression / 292' – 327'	15.0 %	Pass
Tower Leg (T6)	2 1/2" SR	Compression / 180' – 200'	85.2 %	Pass
Diagonal (T6)	1 1/4" SR	Compression / 180' – 200'	69.4 %	Pass
Horizontal (T14)	SR 1"	Compression / 20' – 40'	26.4 %	Pass
Top Grit (T16)	PL 12x3/8"	Compression / 0'-6.5'	20.0 %	Pass
Top Guy Pull-off (T10)	MC 12x35	Tension / 100' – 120'	47.9 %	Pass
Tower Bolt Check	(5) 5/8" A325N Torque Arm Bolts	Bolt Shear (167')	52.4 %	Pass

Foundation:

Component / Controlling Element	Usage (%)
Base Foundation / Compression (%)	87.2
Guy Anchor / Uplift (%)	87.1
Guy Anchor / Shear (%)	88.9

5. CONCLUSIONS

The results of an initial analysis indicated that the existing tower was not below twist and sway requirements of the Connecticut State Police for the proposed loading conditions stated above. **The tower structure and foundation components require modifications shown on SK-1 & SK-2. Once the modifications indicated on sheets SK-1 & 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.**

The tower deflection (sway) is 0.2392 degrees and the tower rotation (twist) is 0.4649 degrees. **These combined figures are below the Connecticut State Police specification of 0.75 degrees for deflection (sway) and (rotation) twist.**

Limitations/Assumptions:

This report is based on the following:

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

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

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

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

Ongoing and Periodic Inspection and Maintenance:

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

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

6. DRAWINGS AND DATA

TOWER REINFORCEMENT DRAWINGS SK-1 & SK-2

GENERAL CONSTRUCTION NOTES

1. ALL WORK SHALL COMPLY WITH THE CONNECTICUT STATE BUILDING AND LIFE SAFETY CODES, SUPPLEMENTS AND AMENDMENTS.
2. CONTRACTOR IS TO REVIEW ALL DRAWINGS AND SPECIFICATIONS IN THE CONTRACT DOCUMENT SET. CONTRACTOR SHALL COORDINATE ALL WORK SHOWN IN THE SET OF DRAWINGS. THE CONTRACTOR SHALL PROVIDE A COMPLETE SET OF DRAWINGS TO ALL SUB-CONTRACTORS AND ALL RELATED PARTIES. THE SUB-CONTRACTORS SHALL EXAMINE ALL THE DRAWINGS AND SPECIFICATIONS FOR THE INFORMATION THAT AFFECTS THEIR WORK.
3. CONTRACTOR SHALL PROVIDE A COMPLETE BUILD-OUT WITH ALL FINISHES, STRUCTURAL, MECHANICAL, AND ELECTRICAL COMPONENTS AND PROVIDE ALL ITEMS AS SHOWN OR INDICATED ON DRAWINGS OR WRITTEN IN SPECIFICATIONS.
4. CONTRACTOR SHALL FURNISH ALL MATERIAL, LABOR AND EQUIPMENT TO COMPLETE THE WORK AND FURNISH A COMPLETED JOB ALL IN ACCORDANCE WITH LOCAL AND STATE GOVERNING AUTHORITIES AND OTHER AUTHORITIES HAVING LAWFUL JURISDICTION OVER THE WORK.
5. CONTRACTOR SHALL SECURE AND PAY FOR ALL PERMITS AND ALL INSPECTIONS REQUIRED AND SHALL ALSO PAY FEES REQUIRED FOR THE GENERAL CONSTRUCTION AND ELECTRICAL SUB-CONTRACTORS SHALL PAY FOR THEIR PERMITS.
6. CONTRACTOR SHALL MAINTAIN A CURRENT SET OF DRAWINGS AND SPECIFICATIONS ON SITE AT ALL TIMES AND ENSURE THE DISTRIBUTION OF NEW DRAWINGS TO SUB-CONTRACTORS AND OTHER RELEVANT PARTIES AS SOON AS THEY ARE MADE AVAILABLE. ALL OLD DRAWINGS SHALL BE MARKED VOID AND REMOVED FROM THE CONTRACT AREA. CONTRACTOR SHALL FURNISH 'AS-BUILT' SET OF DRAWINGS TO OWNER UPON COMPLETION OF PROJECT.
7. INSTALLATION OF THIS WIRELESS COMMUNICATIONS EQUIPMENT SITE REQUIRES WORK IN THE IMMEDIATE VICINITY OF EXISTING 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 TO THE ARCHITECT ANY DISCREPANCIES FROM THE DRAWINGS.
12. THE CONTRACTOR IS SOLELY RESPONSIBLE TO DETERMINE CONSTRUCTION PROCEDURE AND SEQUENCE, AND TO ENSURE THE SAFETY OF THE EXISTING STRUCTURE AND ITS COMPONENT PARTS DURING CONSTRUCTION. THIS INCLUDES THE ADDITION OF WHATEVER SHORING, BRACING, UNDERPINNING, ETC. THAT MAY BE NECESSARY.
13. 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. CONTRACTOR SHALL COMPLY WITH OWNER ENVIRONMENTAL ENGINEER ON ALL METHODS AND PROVISIONS FOR ALL EXCAVATION ACTIVITIES INCLUDING SOIL DISPOSAL. ALL BACKFILL MATERIALS TO BE PROVIDED BY THE CONTRACTOR.
15. EXISTING DIMENSIONS OF STRUCTURE SHOWN ON THESE DOCUMENTS ARE BASED ON ORIGINAL CONSTRUCTION DRAWINGS PREPARED BY SABRE COMMUNICATIONS CORPORATION, DATED NOVEMBER 1998, 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.
16. TOWER INVENTORY IS BASED ON INFORMATION OBTAINED FROM VERIZON WIRELESS DATED OCTOBER 2014 AND INFORMATION OBTAINED FROM CONNECTICUT STATE POLICE DATED NOVEMBER 2014.
17. CONTRACTOR TO VERIFY REQUIRED CLEARANCES INCLUDING BUT NOT LIMITED TO EXISTING BUILDINGS, EQUIPMENT PADS AND SHELTERS PRIOR TO COMMENCING WORK.

STRUCTURAL NOTES

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.

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

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.

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

THE CONTRACTOR IS RESPONSIBLE FOR THE STABILITY OF THE STRUCTURE DURING CONSTRUCTION. NO MEMBER OF THE TOWER SHALL BE LEFT DISCONNECTED FOR THE NEXT WORKING DAY. THE CONTRACTOR SHALL BE AWARE OF WEATHER AND WIND CONDITIONS AND NOT PERFORM GUY CABLE 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.	36928707
Designed by:	MCD
Drawn by:	KAP
Checked by:	KAB
Approved by:	RAS

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

verizon wireless

SITE ADDRESS: NORTH EAGLESVILLE ROAD
STORRS, CONNECTICUT 06268

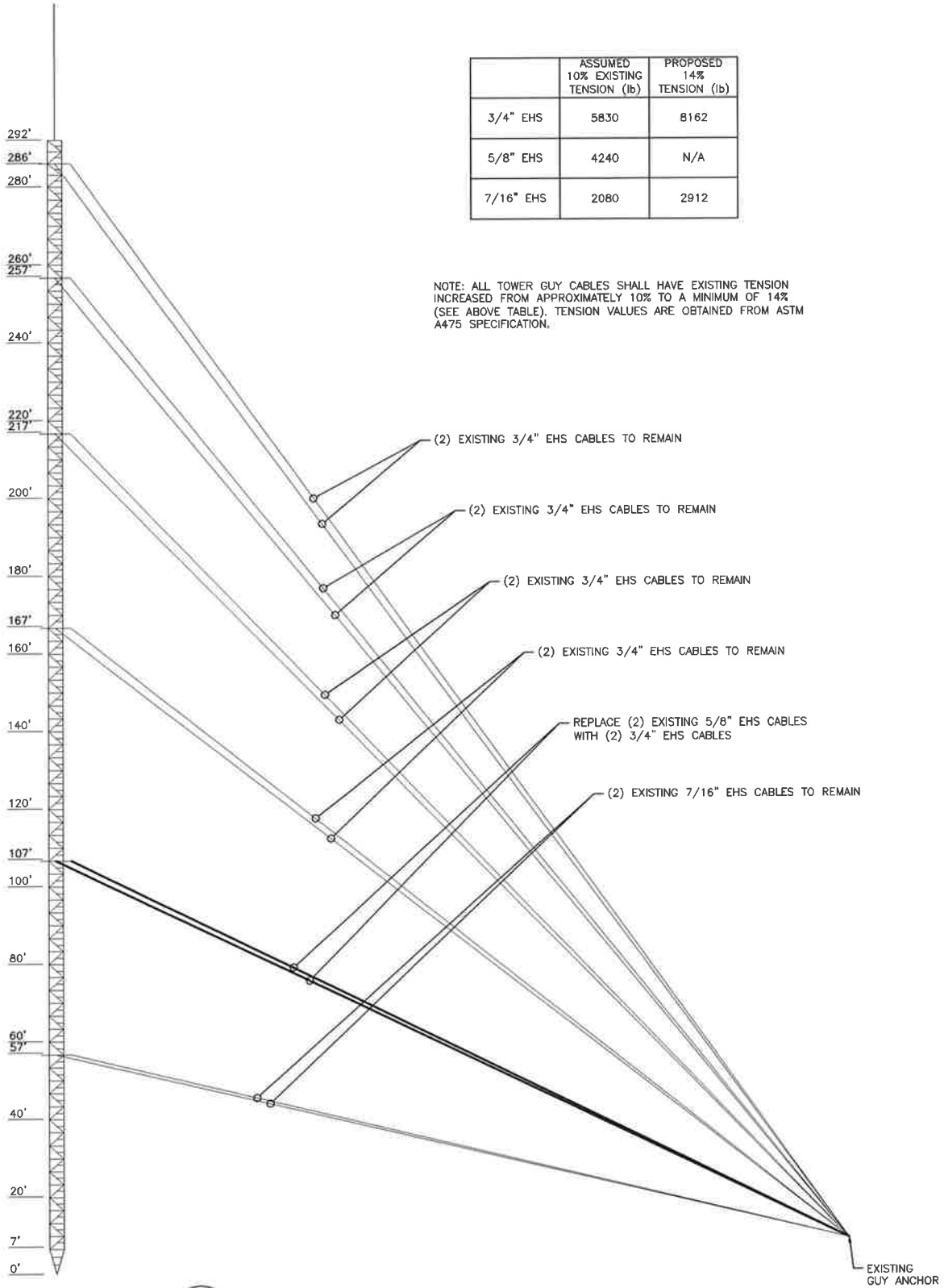
REV.	DATE:	DESCRIPTION
1	03/16/15	NO CHANGES FOR REV.

Scale: AS NOTED | Date: 03/16/15
Job No. VZ5-188 | File No.

Dwg. No. SK-1

	ASSUMED 10% EXISTING TENSION (lb)	PROPOSED 14% TENSION (lb)
3/4" EHS	5830	8162
5/8" EHS	4240	N/A
7/16" EHS	2080	2912

NOTE: ALL TOWER GUY CABLES SHALL HAVE EXISTING TENSION INCREASED FROM APPROXIMATELY 10% TO A MINIMUM OF 14% (SEE ABOVE TABLE). TENSION VALUES ARE OBTAINED FROM ASTM A475 SPECIFICATION.



1 / SK-2 TOWER GUY CABLE REQUIREMENTS

SCALE: 1" = 40'-0"

NOTE: TYPICAL FOR THREE LOCATIONS

PROJECT NO. 36928707
Designed by: MCD
Drawn by: KAP
Checked by: KAB
Approved by: RAS

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

verizon wireless

SITE ADDRESS: NORTH EAGLESVILLE ROAD
STORRS, CONNECTICUT 06268

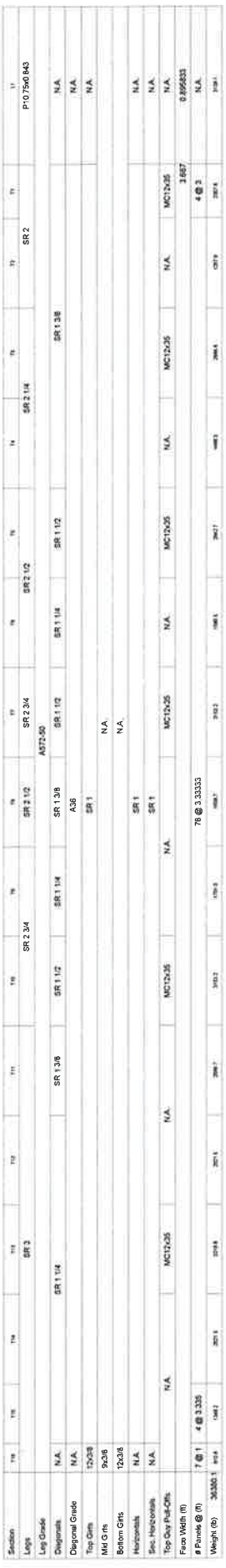
REV.	DATE:	DESCRIPTION
1	03/18/15	NO CHANGES FOR REV.

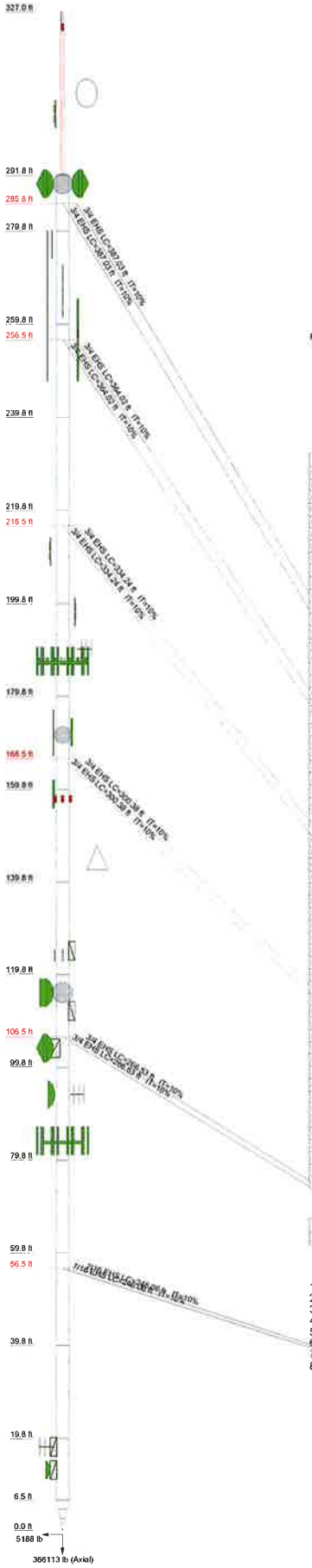
Scale: AS NOTED | Date: 03/16/15
Job No. VZ5-188 | File No.

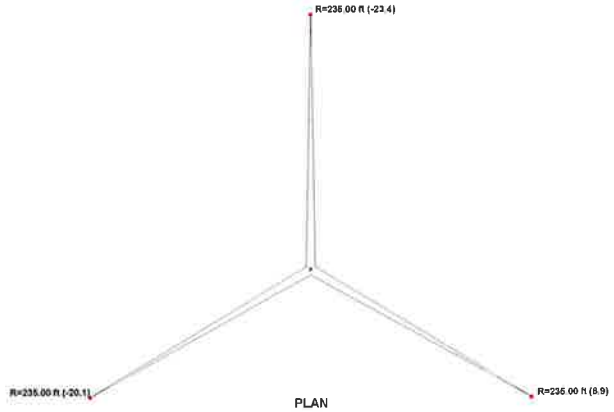
Dwg. No. SK-2

Dwg. 2 of 2

TNX TOWER INPUT/OUTPUT SUMMARY







DESIGNED APPURTENANCE LOADING

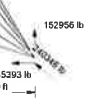
TYPE	ELEVATION	TYPE	ELEVATION
Lightning Rod 5/8x4' (Tower)	325	(3) RRUS-11 (ATT)	187.417
Flash Beacon Lighting (Tower)	323	(3) RRUS-11 (ATT)	187.417
6813 1-Bay w/radome (WHUS-34)	306	RRUS-32 (ATT)	187.417
6 FT DISH (CSP - Future)	290	RRUS-32 (ATT)	187.417
6 FT DISH (CSP - Future)	290	RRUS-32 (ATT)	187.417
6 FT DISH (CSP - Future)	290	RRUS-E2 (ATT)	187.417
PD1110 (WHUS-40)	277	RRUS-E2 (ATT)	187.417
PD1110 (WHUS-39)	277	RRUS-E2 (ATT)	187.417
4' Standoff (WHUS-39,40)	277	24"x12"x5" Panel	172.167
SC479-HF1LDF (CSP-12 (Future))	271 - 256.5	3' x 8' Omni	172
SC479-HF1LDF (CSP-13 (Future))	271 - 256.5	5' Grid Dish	171.5
SC479-HF1LDF (CSP-20 (Future))	271 - 256.5	16"x12"x3" TTA	166
SC479-HF1LDF (CSP-13 (Future))	271 - 256.5	2'x1'x5" Panel	158.833
OGT9-840 (CSP-9)	267	L-810 Flashing Beacon	157
DB810K (CSP-5)	267	L-810 Flashing Beacon	157
AP14-850/105 (CSP-4)	261	L-810 Flashing Beacon	157
SC479-HF1LDF (CSP-17 (Future - Inverted))	256.5 - 242	2' Sidearm	126
SC479-HF1LDF (CSP-18 (Future - Inverted))	256.5 - 242	6'x 10' Ice Shield	124
OGT9-840 (CSP-11 (Inverted))	256.5 - 250	2'6"x4" Pipe Mount	124
OGT9-840 (CSP-7 (Inverted))	256.5 - 250	2'6"x4" Pipe Mount	124
TTA 432-83H-01T (CSP-15 (Future))	256.5	6'x 4' Ice Shield	124
TTA 432-83H-01T (CSP-19 (Future))	256.5	6 FT DISH	116
SC479-HF1LDF (CSP-14 (Future - Inverted))	256.5 - 242	6 FT DISH	116
SC479-HF1LDF (CSP-17 (Future - Inverted))	256.5 - 242	2' Sidearm	112
SC479-HF1LDF (CSP-18 (Future - Inverted))	256.5 - 242	PD1110	112
SE419-SF3P4LDF (CSP-16 (Future))	256.5	6 FT DISH	104
SC479-HF1LDF (CSP-14 (Future - Inverted))	256.5 - 242	6'x 4" Pipe Mount	104
AP14-850/105 (CSP-6)	252	PR-850	94
TTA 432-83H-01T (CSP-26 (Future))	240	ASP-982	94
TTA 432-83H-01T (CSP-23 (Future))	240	HBXX-6517DS-VTM (Verizon - AWS)	84
6813 1-Bay w/radome (WHUS-36)	211	BXA-60063/4CF w/Mount Pipe (Verizon - 850MHz)	84
6813 1-Bay w/radome (WHUS-34)	198	HBXX-6517DS-VTM (Verizon - AWS)	84
6812 (CPR-32 (Future))	198	12' Platform (Verizon)	84
6' Yagi (CPR-33 (Future))	190	RRH_2x60-AWS (Verizon - AWS)	84
Pirod 12' T-Frame Sector Mount (1) (ATT)	187.417	RRH_2x60-AWS (Verizon - AWS)	84
Pirod 12' T-Frame Sector Mount (1) (ATT)	187.417	RRH_2x60-AWS (Verizon - AWS)	84
Pirod 12' T-Frame Sector Mount (1) (ATT)	187.417	X7C-FRO-440 w/ Pipe Mount (Verizon - 700MHz)	84
Powerwave 7770.00 (ATT)	187.417	X7C-FRO-440 w/ Pipe Mount (Verizon - 700MHz)	84
HPA-65R-BUU-H8 (ATT)	187.417	X7C-FRO-440 w/ Pipe Mount (Verizon - 700MHz)	84
HPA-65R-BUU-H8 (ATT)	187.417	RRH2x40-07-U (Verizon - 700MHz)	84
HPA-65R-BUU-H6 (ATT)	187.417	RRH2x40-07-U (Verizon - 700MHz)	84
Powerwave 7770.00 (ATT)	187.417	RRH2x40-07-U (Verizon - 700MHz)	84
HPA-65R-BUU-H8 (ATT)	187.417	HBXX-6517DS-VTM (Verizon - 1900MHz)	84
HPA-65R-BUU-H8 (ATT)	187.417	HBXX-6517DS-VTM (Verizon - 1900MHz)	84
HPA-65R-BUU-H6 (ATT)	187.417	HBXX-6517DS-VTM (Verizon - 1900MHz)	84
Powerwave 7770.00 (ATT)	187.417	PCS 1900 MHz 4x45W-65MHz (Verizon - 1900MHz)	84
HPA-65R-BUU-H8 (ATT)	187.417	PCS 1900 MHz 4x45W-65MHz (Verizon - 1900MHz)	84
HPA-65R-BUU-H6 (ATT)	187.417	PCS 1900 MHz 4x45W-65MHz (Verizon - 1900MHz)	84
(2) RRUS A2 Module (ATT)	187.417	HBXX-6517DS-VTM (Verizon - AWS)	84
(2) RRUS A2 Module (ATT)	187.417	BXA-60063/4CF w/Mount Pipe (Verizon - 850MHz)	84
(2) RRUS A2 Module (ATT)	187.417	BXA-60063/4CF w/Mount Pipe (Verizon - 850MHz)	84
DC6-48-60-18-8F (ATT)	187.417	DB212-1 (CSP-10)	70
DC6-48-60-18-8F (ATT)	187.417	6' Yagi	18
DC6-48-60-18-8F (ATT)	187.417	2' Side-arm	18
(2) RRUS-12 (ATT)	187.417	2' Side-arm	13
(2) RRUS-12 (ATT)	187.417	1.2M	13
(2) RRUS-12 (ATT)	187.417		
(3) RRUS-11 (ATT)	187.417		

MATERIAL STRENGTH

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

TOWER DESIGN NOTES

1. Tower designed for a 90 mph basic wind in accordance with the TIA/EIA-222-F Standard.
2. Tower is also designed for a 90 mph basic wind with 0.50 in ice.
3. Deflections are based upon a 90 mph wind.
4. Weld together tower sections have flange connections.
5. Connections use galvanized A325 bolts, nuts and locking devices. Installation per TIA/EIA-222 and AISC Specifications.
6. Tower members are "hot dipped" galvanized in accordance with ASTM A123 and ASTM A153 Standards.
7. Welds are fabricated with ER-70S-6 electrodes.
8. TOWER RATING: 87.5%



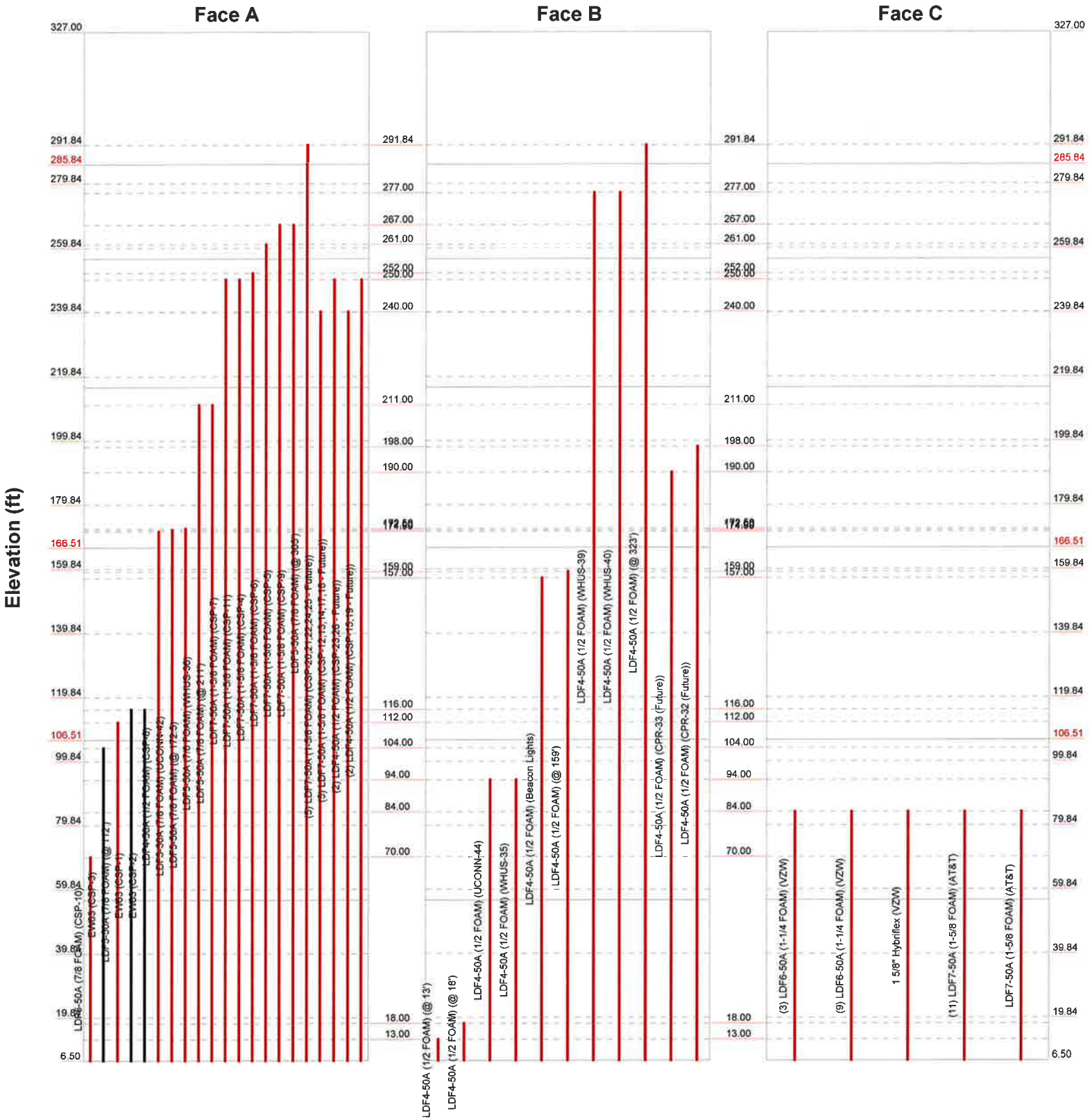
AECOM
500 Enterprise Drive, Suite 3B
Rocky Hill, CT
Phone: 860-529-8882
FAX: 860-529-3991

Job:	327' Guyed Lattice Tower
Project:	North Eagleville Road Storrs, CT
Client:	Verizon Wireless / VZ5-188R1
Drawn by:	MCD
App'd:	
Code:	TIA/EIA-222-F
Date:	03/16/15
Scale:	NTS
Path:	
Dwg No.	E-1

TNX TOWER FEEDLINE DISTRIBUTION

6'6" - 327'

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

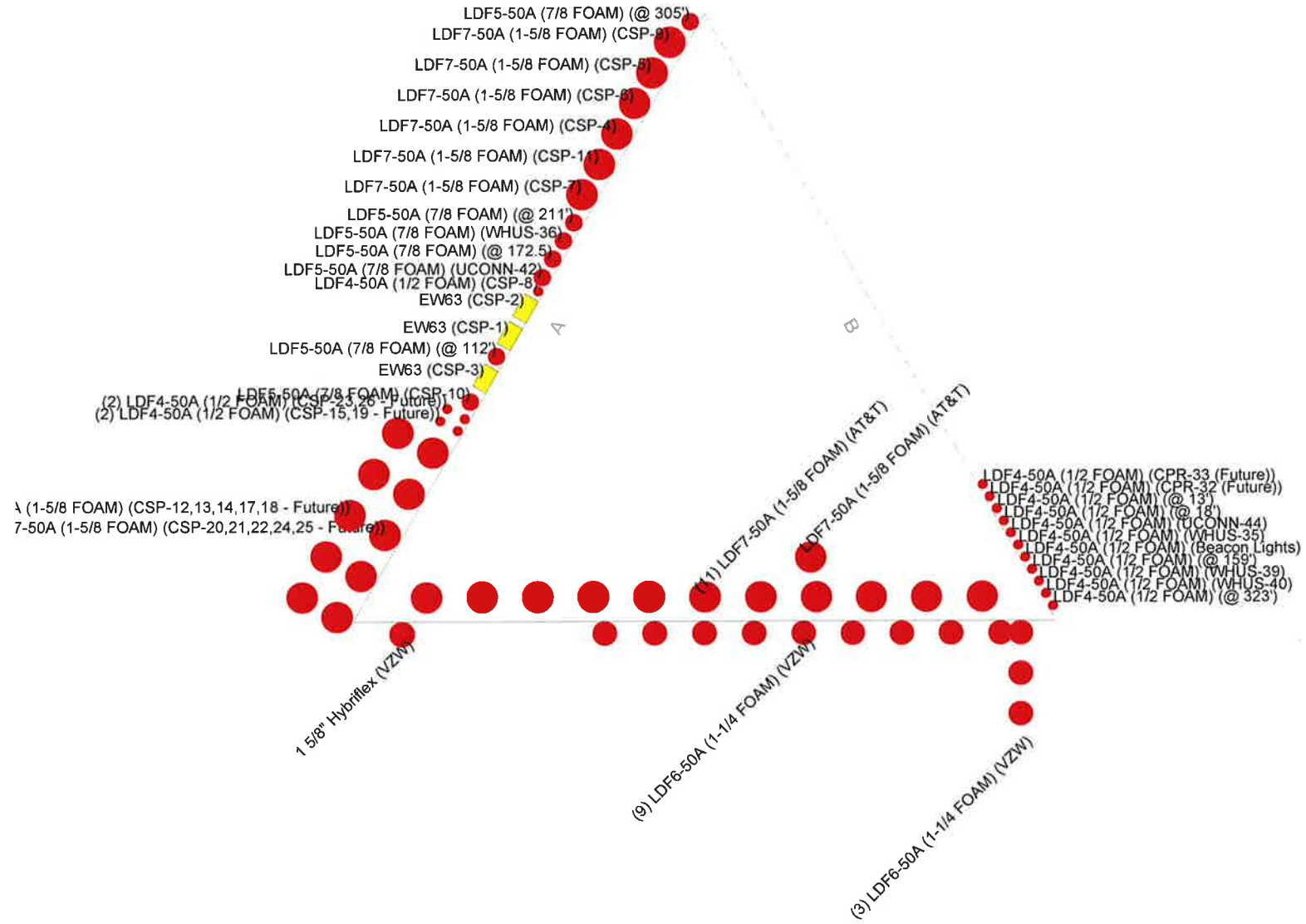


AECOM
500 Enterprise Drive, Suite 3B
Rocky Hill, CT
Phone: 860-529-8882
FAX: 860-529-3991

Job:	***327' Guyed Lattice Tower***		
Project:	***North Eagleville Road Storrs, CT***		
Client:	Verizon Wireless / VZ5-188R1	Drawn by: MCD	App'd:
Code:	TIA/EIA-222-F	Date: 03/16/15	Scale: N
Path:			Dwg No.

TNX TOWER FEEDLINE PLAN

Round Flat App In Face App Out Face



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Path:			Dwg No.

GUY TENSIONS AND TOWER REACTIONS

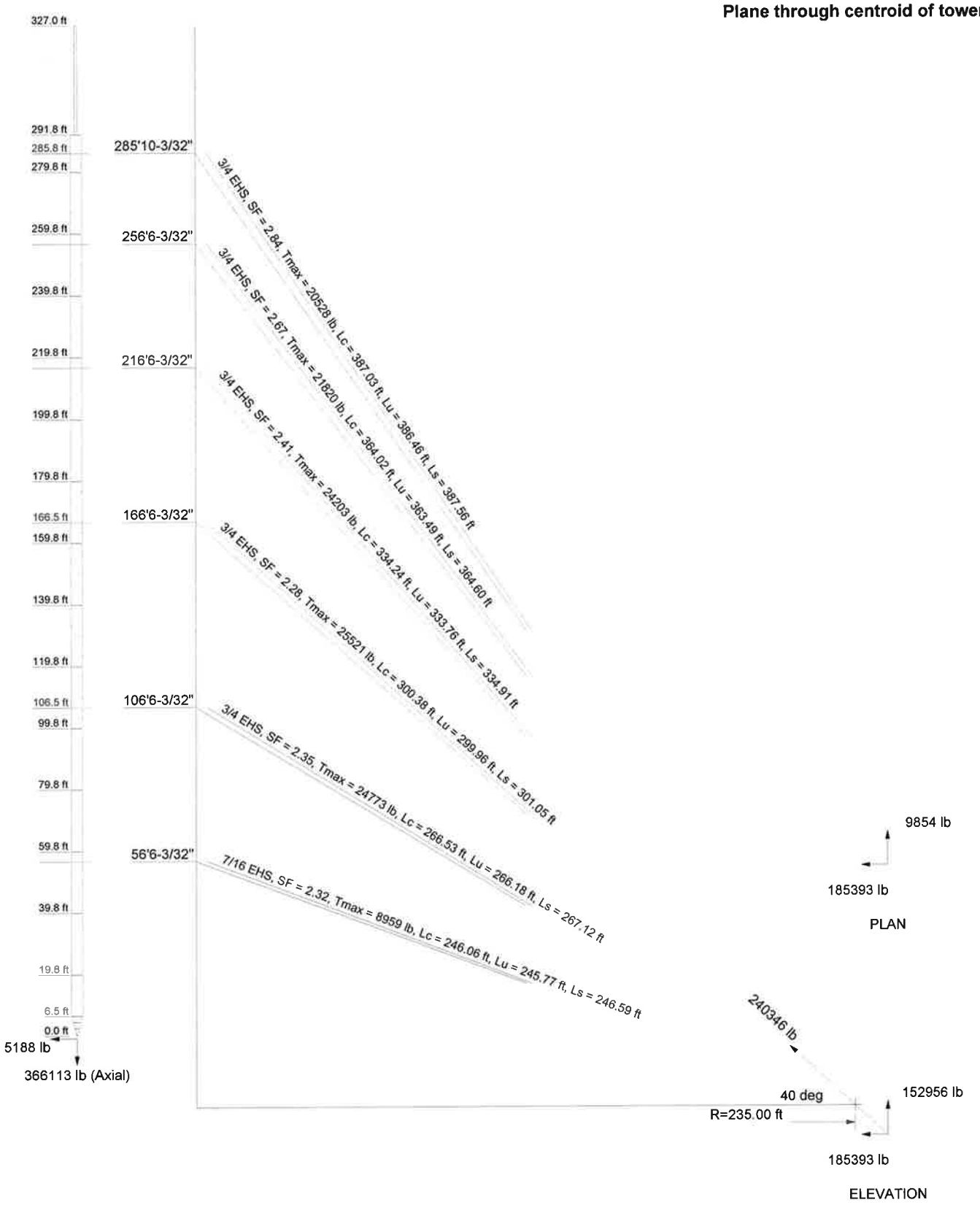
Guy Tensions and Tower Reactions

TIA/EIA-222-F - 90 mph/90 mph 0.5000 in Ice

Maximum Values

Anchor 'A'@235 ft Azimuth 0 deg Elev -23.4 ft

Plane through centroid of tower



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Project:	***North Eagleville Road Storrs, CT***		
Client:	Verizon Wireless / VZ5-188R1	Drawn by: MCD	App'd:
Code:	TIA/EIA-222-F	Date: 03/16/15	Scale: N
Path:			Dwg No.

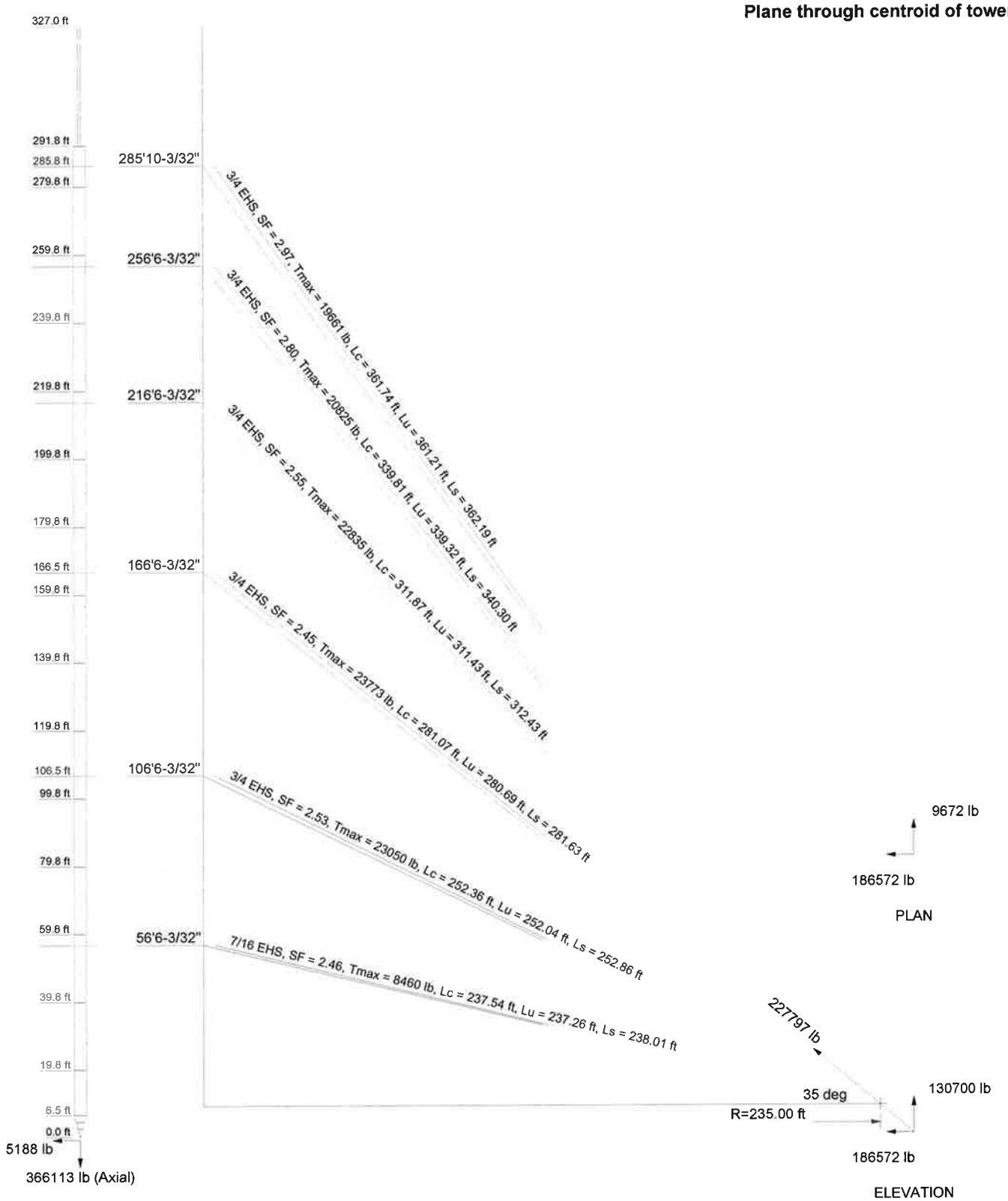
Guy Tensions and Tower Reactions

TIA/EIA-222-F - 90 mph/90 mph 0.5000 in Ice

Maximum Values

Anchor 'B'@235 ft Azimuth 120 deg Elev 8.9 ft

Plane through centroid of tower



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Job:	***327' Guyed Lattice Tower***		
Project:	***North Eagleville Road Storrs, CT***		
Client:	Verizon Wireless / VZ5-188R1	Drawn by: MCD	App'd:
Code:	TIA/EIA-222-F	Date: 03/16/15	Scale: N
Path:			Dwg No.

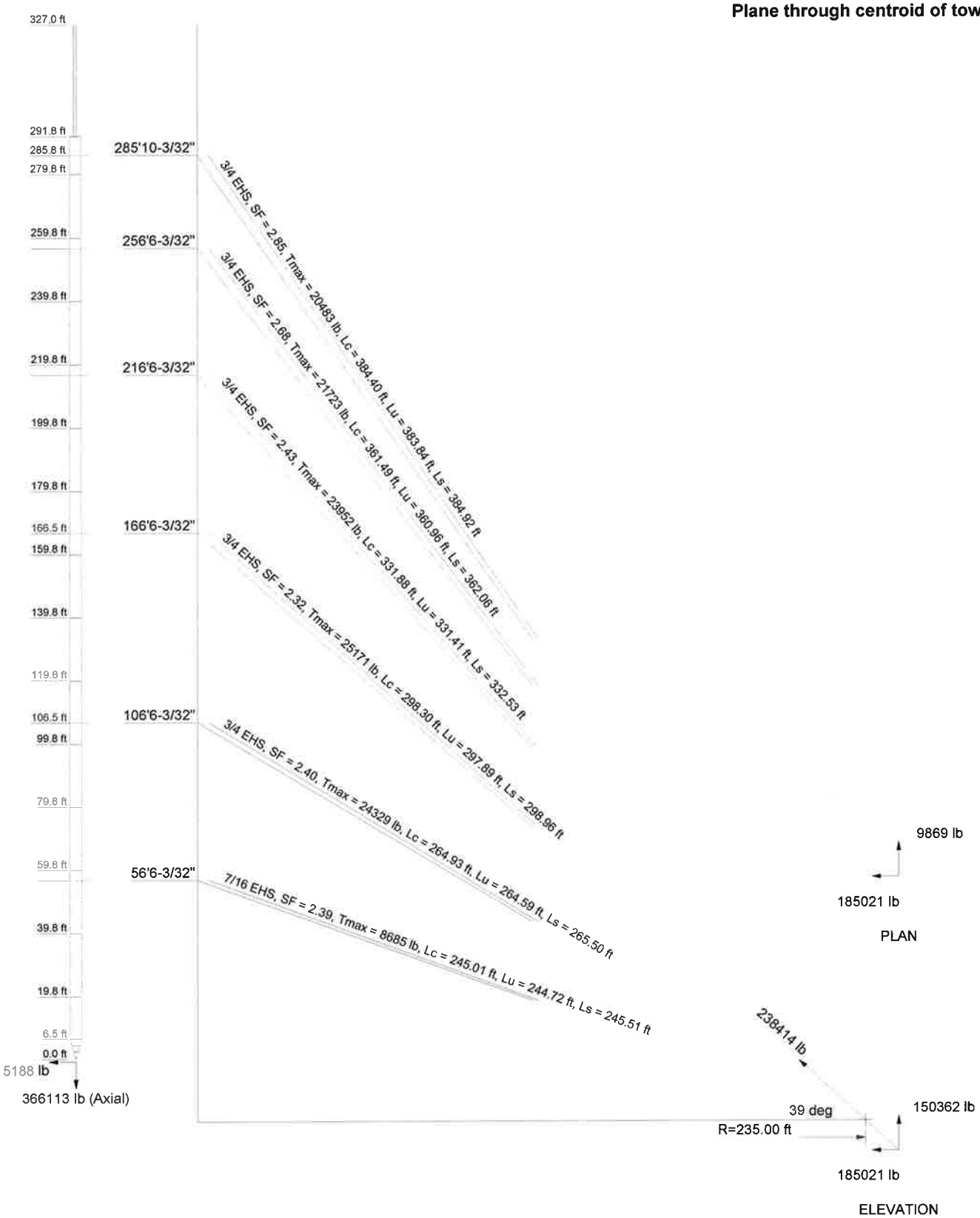
Guy Tensions and Tower Reactions

TIA/EIA-222-F - 90 mph/90 mph 0.5000 in Ice

Maximum Values

Anchor 'C'@235 ft Azimuth 240 deg Elev -20.1 ft

Plane through centroid of tower



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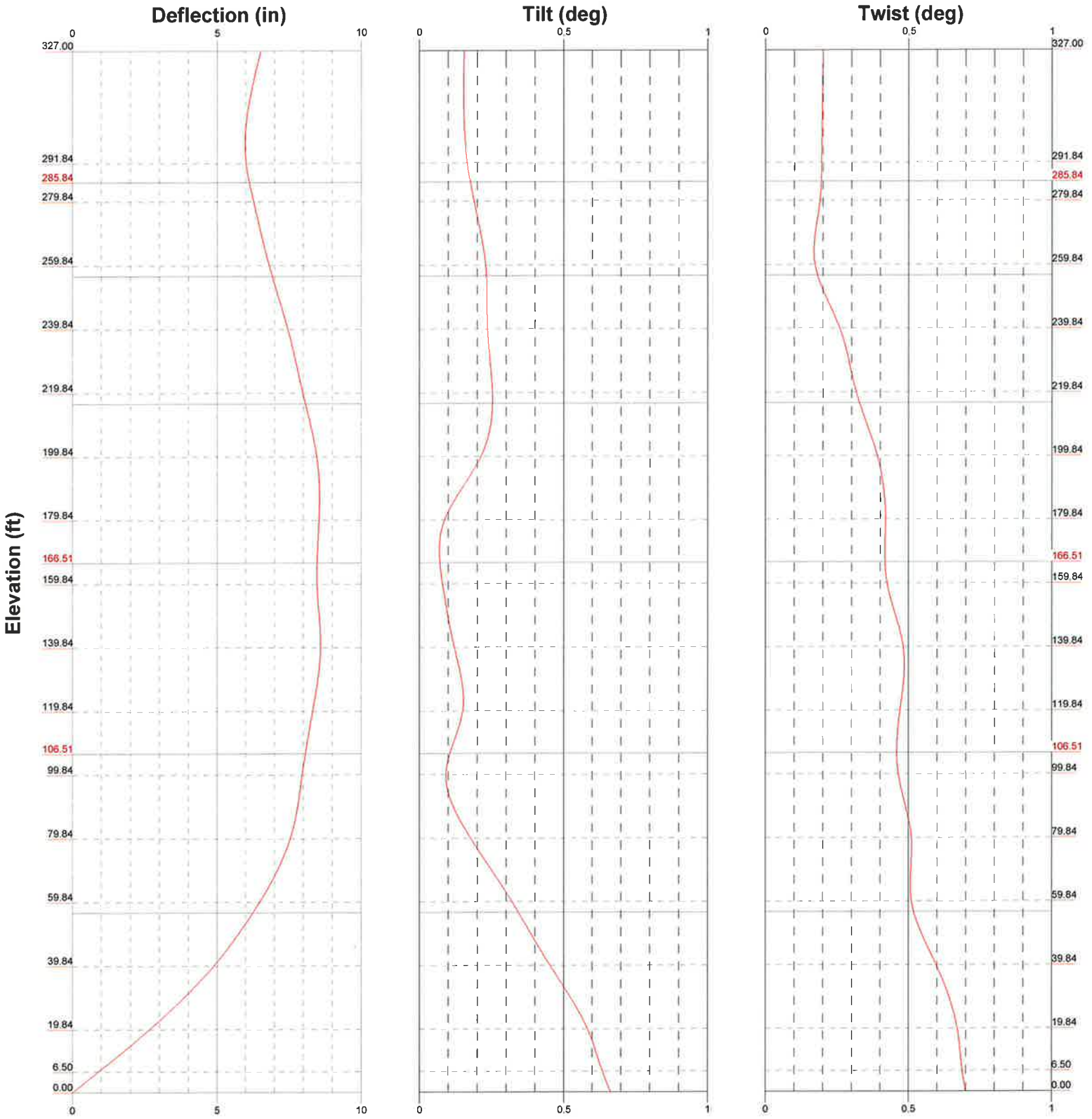
Project:	***North Eagleville Road Storrs, CT***		
Client:	Verizon Wireless / VZ5-188R1	Drawn by: MCD	App'd:
Code:	TIA/EIA-222-F	Date: 03/16/15	Scale: N
Path:			Dwg No.

TOWER DEFLECTION

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

Maximum Values



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Project:	***North Eagleville Road Storrs, CT***		
Client:	Verizon Wireless / VZ5-188R1	Drawn by: MCD	App'd:
Code:	TIA/EIA-222-F	Date: 03/16/15	Scale: N
Path:			Dwg No.

TNX TOWER DETAILED OUTPUT

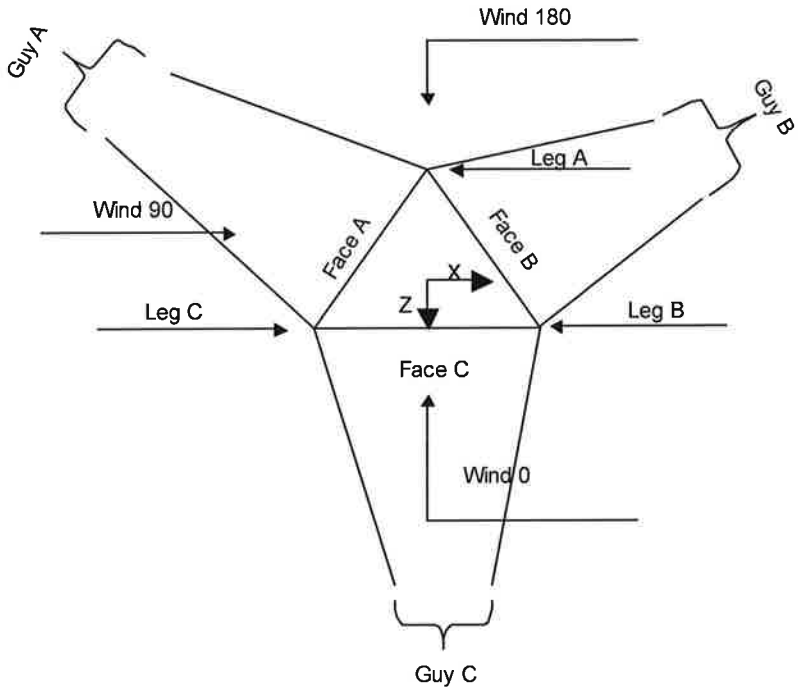
Tower Input Data

The main tower is a 3x guyed tower with an overall height of 327.00 ft above the ground line.
The base of the tower is set at an elevation of 0.00 ft above the ground line.
The face width of the tower is 3.67 ft at the top and tapered at the base.
An index plate is provided at the 3x guyed -tower connection.
There is a pole section.
This tower is designed using the TIA/EIA-222-F standard.
The following design criteria apply:

Basic wind speed of 90 mph.
Nominal ice thickness of 0.5000 in.
Ice density of 56 pcf.
A wind speed of 90 mph is used in combination with ice.
Temperature drop of 50 °F.
Deflections calculated using a wind speed of 90 mph.
Weld together tower sections have flange connections..
Connections use galvanized A325 bolts, nuts and locking devices. Installation per TIA/EIA-222 and AISC Specifications..
Tower members are "hot dipped" galvanized in accordance with ASTM A123 and ASTM A153 Standards..
Welds are fabricated with ER-70S-6 electrodes..
Pressures are calculated at each section.
Stress ratio used in pole design is 1.0664.
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	



Face Guyed

Pole Section Geometry

Section	Elevation ft	Section Length ft	Pole Size	Pole Grade	Socket Length ft
L1	327.00-291.84	35.16	P10.75x0.843	A572-50 (50 ksi)	

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
L1 327.00-291.84				1	1	1		

Tower Section Geometry

Tower Section	Tower Elevation ft	Assembly Database	Description	Section Width ft	Number of Sections	Section Length ft
T1	291.84-279.84			3.67	1	12.00
T2	279.84-259.84			3.67	1	20.00
T3	259.84-239.84			3.67	1	20.00
T4	239.84-219.84			3.67	1	20.00
T5	219.84-199.84			3.67	1	20.00
T6	199.84-179.84			3.67	1	20.00
T7	179.84-159.84			3.67	1	20.00
T8	159.84-139.84			3.67	1	20.00
T9	139.84-119.84			3.67	1	20.00
T10	119.84-99.84			3.67	1	20.00
T11	99.84-79.84			3.67	1	20.00
T12	79.84-59.84			3.67	1	20.00
T13	59.84-39.84			3.67	1	20.00
T14	39.84-19.84			3.67	1	20.00
T15	19.84-6.50			3.67	1	13.34
T16	6.50-0.00			3.67	1	6.50

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	291.84-279.84	3.00	K Brace Left	No	Yes+Steps	0.0000	0.0000
T2	279.84-259.84	3.33	K Brace Left	No	Yes+Steps	0.0000	0.0000
T3	259.84-239.84	3.33	K Brace Left	No	Yes+Steps	0.0000	0.0000
T4	239.84-219.84	3.33	K Brace Left	No	Yes+Steps	0.0000	0.0000
T5	219.84-199.84	3.33	K Brace Left	No	Yes+Steps	0.0000	0.0000
T6	199.84-179.84	3.33	K Brace Left	No	Yes+Steps	0.0000	0.0000
T7	179.84-159.84	3.33	K Brace Left	No	Yes+Steps	0.0000	0.0000
T8	159.84-139.84	3.33	K Brace Left	No	Yes+Steps	0.0000	0.0000
T9	139.84-119.84	3.33	K Brace Left	No	Yes+Steps	0.0000	0.0000
T10	119.84-99.84	3.33	K Brace Left	No	Yes+Steps	0.0000	0.0000
T11	99.84-79.84	3.33	K Brace Left	No	Yes+Steps	0.0000	0.0000
T12	79.84-59.84	3.33	K Brace Left	No	Yes+Steps	0.0000	0.0000
T13	59.84-39.84	3.33	K Brace Left	No	Yes+Steps	0.0000	0.0000
T14	39.84-19.84	3.33	K Brace Left	No	Yes+Steps	0.0000	0.0000
T15	19.84-6.50	3.34	K Brace Left	No	Yes+Steps	0.0000	0.0000
T16	6.50-0.00	1.00	K Brace Left	No	Yes	0.0000	6.0000

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Leg Type	Leg Size	Leg Grade	Diagonal Type	Diagonal Size	Diagonal Grade
T1 291.84-279.84	Solid Round	2	A572-50 (50 ksi)	Solid Round	1 3/8	A36 (36 ksi)
T2 279.84-259.84	Solid Round	2	A572-50 (50 ksi)	Solid Round	1 3/8	A36 (36 ksi)

Tower Elevation ft	Leg Type	Leg Size	Leg Grade	Diagonal Type	Diagonal Size	Diagonal Grade
T3 259.84-239.84	Solid Round	2 1/4	A572-50 (50 ksi)	Solid Round	1 3/8	A36 (36 ksi)
T4 239.84-219.84	Solid Round	2 1/4	A572-50 (50 ksi)	Solid Round	1 3/8	A36 (36 ksi)
T5 219.84-199.84	Solid Round	2 1/2	A572-50 (50 ksi)	Solid Round	1 1/2	A36 (36 ksi)
T6 199.84-179.84	Solid Round	2 1/2	A572-50 (50 ksi)	Solid Round	1 1/4	A36 (36 ksi)
T7 179.84-159.84	Solid Round	2 3/4	A572-50 (50 ksi)	Solid Round	1 1/2	A36 (36 ksi)
T8 159.84-139.84	Solid Round	2 1/2	A572-50 (50 ksi)	Solid Round	1 3/8	A36 (36 ksi)
T9 139.84-119.84	Solid Round	2 3/4	A572-50 (50 ksi)	Solid Round	1 1/4	A36 (36 ksi)
T10 119.84-99.84	Solid Round	2 3/4	A572-50 (50 ksi)	Solid Round	1 1/2	A36 (36 ksi)
T11 99.84-79.84	Solid Round	3	A572-50 (50 ksi)	Solid Round	1 3/8	A36 (36 ksi)
T12 79.84-59.84	Solid Round	3	A572-50 (50 ksi)	Solid Round	1 1/4	A36 (36 ksi)
T13 59.84-39.84	Solid Round	3	A572-50 (50 ksi)	Solid Round	1 1/4	A36 (36 ksi)
T14 39.84-19.84	Solid Round	3	A572-50 (50 ksi)	Solid Round	1 1/4	A36 (36 ksi)
T15 19.84-6.50	Solid Round	3	A572-50 (50 ksi)	Solid Round	1 1/4	A36 (36 ksi)
T16 6.50-0.00	Solid Round	3	A572-50 (50 ksi)	Solid Round		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 291.84-279.84	Solid Round	1	A36 (36 ksi)	Solid Round	1	A36 (36 ksi)
T2 279.84-259.84	Solid Round	1	A36 (36 ksi)	Solid Round	1	A36 (36 ksi)
T3 259.84-239.84	Solid Round	1	A36 (36 ksi)	Solid Round	1	A36 (36 ksi)
T4 239.84-219.84	Solid Round	1	A36 (36 ksi)	Solid Round	1	A36 (36 ksi)
T5 219.84-199.84	Solid Round	1	A36 (36 ksi)	Solid Round	1	A36 (36 ksi)
T6 199.84-179.84	Solid Round	1	A36 (36 ksi)	Solid Round	1	A36 (36 ksi)
T7 179.84-159.84	Solid Round	1	A36 (36 ksi)	Solid Round	1	A36 (36 ksi)
T8 159.84-139.84	Solid Round	1	A36 (36 ksi)	Solid Round	1	A36 (36 ksi)
T9 139.84-119.84	Solid Round	1	A36 (36 ksi)	Solid Round	1	A36 (36 ksi)
T10 119.84-99.84	Solid Round	1	A36 (36 ksi)	Solid Round	1	A36 (36 ksi)
T11 99.84-79.84	Solid Round	1	A36 (36 ksi)	Solid Round	1	A36 (36 ksi)

Tower Elevation ft	Top Girt Type	Top Girt Size	Top Girt Grade	Bottom Girt Type	Bottom Girt Size	Bottom Girt Grade
T12 79.84-59.84	Solid Round	1	A36 (36 ksi)	Solid Round	1	A36 (36 ksi)
T13 59.84-39.84	Solid Round	1	A36 (36 ksi)	Solid Round	1	A36 (36 ksi)
T14 39.84-19.84	Solid Round	1	A36 (36 ksi)	Solid Round	1	A36 (36 ksi)
T15 19.84-6.50	Solid Round	1	A36 (36 ksi)	Solid Round	1	A36 (36 ksi)
T16 6.50-0.00	Flat Bar	12x3/8	A36 (36 ksi)	Flat Bar	12x3/8	A36 (36 ksi)

Tower Section Geometry *(cont'd)*

Tower Elevation ft	No. of Mid Girts	Mid Girt Type	Mid Girt Size	Mid Girt Grade	Horizontal Type	Horizontal Size	Horizontal Grade
T1 291.84-279.84	None	Flat Bar		A36 (36 ksi)	Solid Round	1	A36 (36 ksi)
T2 279.84-259.84	None	Flat Bar		A36 (36 ksi)	Solid Round	1	A36 (36 ksi)
T3 259.84-239.84	None	Flat Bar		A36 (36 ksi)	Solid Round	1	A36 (36 ksi)
T4 239.84-219.84	None	Flat Bar		A36 (36 ksi)	Solid Round	1	A36 (36 ksi)
T5 219.84-199.84	None	Flat Bar		A36 (36 ksi)	Solid Round	1	A36 (36 ksi)
T6 199.84-179.84	None	Flat Bar		A36 (36 ksi)	Solid Round	1	A36 (36 ksi)
T7 179.84-159.84	None	Flat Bar		A36 (36 ksi)	Solid Round	1	A36 (36 ksi)
T8 159.84-139.84	None	Flat Bar		A36 (36 ksi)	Solid Round	1	A36 (36 ksi)
T9 139.84-119.84	None	Flat Bar		A36 (36 ksi)	Solid Round	1	A36 (36 ksi)
T10 119.84-99.84	None	Flat Bar		A36 (36 ksi)	Solid Round	1	A36 (36 ksi)
T11 99.84-79.84	None	Flat Bar		A36 (36 ksi)	Solid Round	1	A36 (36 ksi)
T12 79.84-59.84	None	Flat Bar		A36 (36 ksi)	Solid Round	1	A36 (36 ksi)
T13 59.84-39.84	None	Flat Bar		A36 (36 ksi)	Solid Round	1	A36 (36 ksi)
T14 39.84-19.84	None	Flat Bar		A36 (36 ksi)	Solid Round	1	A36 (36 ksi)
T15 19.84-6.50	None	Flat Bar		A36 (36 ksi)	Solid Round	1	A36 (36 ksi)
T16 6.50-0.00	2	Flat Bar	9x3/8	A36 (36 ksi)	Solid Round		A36 (36 ksi)

Tower Section Geometry *(cont'd)*

Tower Elevation	Secondary Horizontal Type	Secondary Horizontal Size	Secondary Horizontal Grade	Inner Bracing Type	Inner Bracing Size	Inner Bracing Grade
ft						
T1 291.84-279.84	Solid Round	1	A36 (36 ksi)	Solid Round		A572-50 (50 ksi)
T2 279.84-259.84	Solid Round	1	A36 (36 ksi)	Solid Round		A572-50 (50 ksi)
T3 259.84-239.84	Solid Round	1	A36 (36 ksi)	Solid Round		A572-50 (50 ksi)
T4 239.84-219.84	Solid Round	1	A36 (36 ksi)	Solid Round		A572-50 (50 ksi)
T5 219.84-199.84	Solid Round	1	A36 (36 ksi)	Solid Round		A572-50 (50 ksi)
T6 199.84-179.84	Solid Round	1	A36 (36 ksi)	Solid Round		A572-50 (50 ksi)
T7 179.84-159.84	Solid Round	1	A36 (36 ksi)	Solid Round		A572-50 (50 ksi)
T8 159.84-139.84	Solid Round	1	A36 (36 ksi)	Solid Round		A572-50 (50 ksi)
T9 139.84-119.84	Solid Round	1	A36 (36 ksi)	Solid Round		A572-50 (50 ksi)
T10 119.84-99.84	Solid Round	1	A36 (36 ksi)	Solid Round		A572-50 (50 ksi)
T11 99.84-79.84	Solid Round	1	A36 (36 ksi)	Solid Round		A572-50 (50 ksi)
T12 79.84-59.84	Solid Round	1	A36 (36 ksi)	Solid Round		A572-50 (50 ksi)
T13 59.84-39.84	Solid Round	1	A36 (36 ksi)	Solid Round		A572-50 (50 ksi)
T14 39.84-19.84	Solid Round	1	A36 (36 ksi)	Solid Round		A572-50 (50 ksi)
T15 19.84-6.50	Solid Round	1	A36 (36 ksi)	Solid Round		A572-50 (50 ksi)

Tower Section Geometry *(cont'd)*

Tower Elevation	Gusset Area (per face)	Gusset Thickness	Gusset Grade	Adjust. Factor A_f	Adjust. Factor A_r	Weight Mult.	Double Angle Stitch Bolt Spacing Diagonals	Double Angle Stitch Bolt Spacing Horizontals
ft	ft^2	in					in	in
T1 291.84-279.84	0.00	0.0000	A36 (36 ksi)	1	1	1	36.0000	36.0000
T2 279.84-259.84	0.00	0.0000	A36 (36 ksi)	1	1	1	36.0000	36.0000
T3 259.84-239.84	0.00	0.0000	A36 (36 ksi)	1	1	1	36.0000	36.0000
T4 239.84-219.84	0.00	0.0000	A36 (36 ksi)	1	1	1	36.0000	36.0000
T5 219.84-199.84	0.00	0.0000	A36 (36 ksi)	1	1	1	36.0000	36.0000
T6 199.84-179.84	0.00	0.0000	A36 (36 ksi)	1	1	1	36.0000	36.0000
T7 179.84-159.84	0.00	0.0000	A36 (36 ksi)	1	1	1	36.0000	36.0000
T8 159.84-139.84	0.00	0.0000	A36 (36 ksi)	1	1	1	36.0000	36.0000
T9	0.00	0.0000	A36	1	1	1	36.0000	36.0000

Tower Elevation ft	Gusset Area (per face) ft^2	Gusset Thickness in	Gusset Grade	Adjust. Factor A_f	Adjust. Factor A_r	Weight Mult.	Double Angle Stitch Bolt Spacing Diagonals in	Double Angle Stitch Bolt Spacing Horizontals in
139.84-119.84			(36 ksi)					
T10	0.00	0.0000	A36	1	1	1	36.0000	36.0000
119.84-99.84			(36 ksi)					
T11	0.00	0.0000	A36	1	1	1	36.0000	36.0000
99.84-79.84			(36 ksi)					
T12	0.00	0.0000	A36	1	1	1	36.0000	36.0000
79.84-59.84			(36 ksi)					
T13	0.00	0.0000	A36	1	1	1	36.0000	36.0000
59.84-39.84			(36 ksi)					
T14	0.00	0.0000	A36	1	1	1	36.0000	36.0000
39.84-19.84			(36 ksi)					
T15 19.84-6.50	0.00	0.0000	A36	1	1	1	36.0000	36.0000
			(36 ksi)					
T16 6.50-0.00	0.00	0.0000	A36	1	1	1	36.0000	36.0000
			(36 ksi)					

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Calc K Single Angles	Calc K Solid Rounds	K Factors[1] Legs	X Brace Diags X	X Brace Diags Y	K Brace Diags X	K Brace Diags Y	Single Diags X	Single Diags Y	Girts X	Girts Y	Horiz. X	Horiz. Y	Sec. Horiz. X	Sec. Horiz. Y	Inner Brace X	Inner Brace Y
T1	No	Yes	1	1		1		1		1		1		1		1	
291.84-279.84				1		1		1		1		1		1		1	
T2	No	Yes	1	1		1		1		1		1		1		1	
279.84-259.84				1		1		1		1		1		1		1	
T3	No	Yes	1	1		1		1		1		1		1		1	
259.84-239.84				1		1		1		1		1		1		1	
T4	No	Yes	1	1		1		1		1		1		1		1	
239.84-219.84				1		1		1		1		1		1		1	
T5	No	Yes	1	1		1		1		1		1		1		1	
219.84-199.84				1		1		1		1		1		1		1	
T6	No	Yes	1	1		1		1		1		1		1		1	
199.84-179.84				1		1		1		1		1		1		1	
T7	No	Yes	1	1		1		1		1		1		1		1	
179.84-159.84				1		1		1		1		1		1		1	
T8	No	Yes	1	1		1		1		1		1		1		1	
159.84-139.84				1		1		1		1		1		1		1	
T9	No	Yes	1	1		1		1		1		1		1		1	
139.84-119.84				1		1		1		1		1		1		1	
T10	No	Yes	1	1		1		1		1		1		1		1	
119.84-99.84				1		1		1		1		1		1		1	
T11	No	Yes	1	1		1		1		1		1		1		1	
99.84-79.84				1		1		1		1		1		1		1	
T12	No	Yes	1	1		1		1		1		1		1		1	
79.84-59.84				1		1		1		1		1		1		1	
T13	No	Yes	1	1		1		1		1		1		1		1	
59.84-39.84				1		1		1		1		1		1		1	
T14	No	Yes	1	1		1		1		1		1		1		1	
39.84-19.84				1		1		1		1		1		1		1	
T15	No	Yes	1	1		1		1		1		1		1		1	
19.84-6.50				1		1		1		1		1		1		1	
T16 6.50-0.00	No	Yes	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
				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	U	Diagonal Net Width Deduct in	U	Top Girt Net Width Deduct in	U	Bottom Girt Net Width Deduct in	U	Mid Girt Net Width Deduct in	U	Long Horizontal Net Width Deduct in	U	Short Horizontal Net Width Deduct in	U
T1 291.84-279.84	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T2 279.84-259.84	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T3 259.84-239.84	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T4 239.84-219.84	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T5 219.84-199.84	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T6 199.84-179.84	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T7 179.84-159.84	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T8 159.84-139.84	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 139.84-119.84	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T10 119.84-99.84	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
T11 99.84-79.84	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
T12 79.84-59.84	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
T13 59.84-39.84	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
T14 39.84-19.84	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
T15 19.84-6.50	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
T16 6.50-0.00	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	1.0000	4	0.6250	0	0.6250	0	0.6250	0	0.6250	0	0.6250	0	0.6250	0
291.84-279.84		A325N		A325N		A325N		A325N		A325N		A325N		A325N	
T2	Flange	1.0000	4	0.6250	0	0.6250	0	0.6250	0	0.6250	0	0.6250	0	0.6250	0
279.84-259.84		A325N		A325N		A325N		A325N		A325N		A325N		A325N	
T3	Flange	1.0000	4	0.6250	0	0.6250	0	0.6250	0	0.6250	0	0.6250	0	0.6250	0
259.84-239.84		A325N		A325N		A325N		A325N		A325N		A325N		A325N	
T4	Flange	1.0000	4	0.6250	0	0.6250	0	0.6250	0	0.6250	0	0.6250	0	0.6250	0
239.84-219.84		A325N		A325N		A325N		A325N		A325N		A325N		A325N	
T5	Flange	1.0000	4	0.6250	0	0.6250	0	0.6250	0	0.6250	0	0.6250	0	0.6250	0
219.84-199.84		A325N		A325N		A325N		A325N		A325N		A325N		A325N	
T6	Flange	1.0000	4	0.6250	0	0.6250	0	0.6250	0	0.6250	0	0.6250	0	0.6250	0
199.84-179.84		A325N		A325N		A325N		A325N		A325N		A325N		A325N	
T7	Flange	1.0000	4	0.6250	0	0.6250	0	0.6250	0	0.6250	0	0.6250	0	0.6250	0
179.84-159.84		A325N		A325N		A325N		A325N		A325N		A325N		A325N	
T8	Flange	1.0000	4	0.6250	0	0.6250	0	0.6250	0	0.6250	0	0.6250	0	0.6250	0
159.84-139.84		A325N		A325N		A325N		A325N		A325N		A325N		A325N	
T9	Flange	1.0000	4	0.6250	0	0.6250	0	0.6250	0	0.6250	0	0.6250	0	0.6250	0
139.84-119.84		A325N		A325N		A325N		A325N		A325N		A325N		A325N	
T10	Flange	1.0000	4	0.6250	0	0.6250	0	0.6250	0	0.6250	0	0.6250	0	0.6250	0
119.84-99.84		A325N		A325N		A325N		A325N		A325N		A325N		A325N	
T11	Flange	1.0000	4	0.6250	0	0.6250	0	0.6250	0	0.6250	0	0.6250	0	0.6250	0
99.84-79.84		A325N		A325N		A325N		A325N		A325N		A325N		A325N	
T12	Flange	1.3750	4	0.6250	0	0.6250	0	0.6250	0	0.6250	0	0.6250	0	0.6250	0
79.84-59.84		A325N		A325N		A325N		A325N		A325N		A325N		A325N	
T13	Flange	1.3750	4	0.6250	0	0.6250	0	0.6250	0	0.6250	0	0.6250	0	0.6250	0
59.84-39.84		A325N		A325N		A325N		A325N		A325N		A325N		A325N	
T14	Flange	1.3750	4	0.6250	0	0.6250	0	0.6250	0	0.6250	0	0.6250	0	0.6250	0
39.84-19.84		A325N		A325N		A325N		A325N		A325N		A325N		A325N	
T15 19.84-6.50	Flange	1.3750	4	0.6250	0	0.6250	0	0.6250	0	0.6250	0	0.6250	0	0.6250	0
		A325N		A325N		A325N		A325N		A325N		A325N		A325N	
T16 6.50-0.00	Flange	1.3750	4	0.6250	0	0.6250	0	0.6250	0	0.6250	0	0.6250	0	0.6250	0
		A325N		A325N		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 %
285.84	EHS	A	3/4	5830	10%	19000	1.155	386.70	235.00	0.0000	-23.40	100%
		B	3/4	5830	10%	19000	1.155	361.43	235.00	0.0000	8.90	100%
		C	3/4	5830	10%	19000	1.155	384.07	235.00	0.0000	-20.10	100%
256.507	EHS	A	3/4	5830	10%	19000	1.155	363.71	235.00	0.0000	-23.40	100%
		B	3/4	5830	10%	19000	1.155	339.52	235.00	0.0000	8.90	100%
		C	3/4	5830	10%	19000	1.155	361.18	235.00	0.0000	-20.10	100%
216.507	EHS	A	3/4	5830	10%	19000	1.155	333.96	235.00	0.0000	-23.40	100%
		B	3/4	5830	10%	19000	1.155	311.60	235.00	0.0000	8.90	100%
		C	3/4	5830	10%	19000	1.155	331.60	235.00	0.0000	-20.10	100%
166.507	EHS	A	3/4	5830	10%	19000	1.155	300.12	235.00	0.0000	-23.40	100%
		B	3/4	5830	10%	19000	1.155	280.83	235.00	0.0000	8.90	100%
		C	3/4	5830	10%	19000	1.155	298.05	235.00	0.0000	-20.10	100%
106.507	EHS	A	3/4	5830	10%	19000	1.155	266.30	235.00	0.0000	-23.40	100%
		B	3/4	5830	10%	19000	1.155	252.15	235.00	0.0000	8.90	100%
		C	3/4	5830	10%	19000	1.155	264.71	235.00	0.0000	-20.10	100%

56.5067	EHS	A	7/16	2080	10%	21000	0.399	245.87	235.00	0.0000	-23.40	100%
		B	7/16	2080	10%	21000	0.399	237.36	235.00	0.0000	8.90	100%
		C	7/16	2080	10%	21000	0.399	244.82	235.00	0.0000	-20.10	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*
285.84	Torque Arm	8.00	0.0000	Channel	A36 (36 ksi)	Channel	MC12x35
256.507	Torque Arm	8.00	0.0000	Channel	A36 (36 ksi)	Channel	MC12x35
216.507	Torque Arm	8.00	0.0000	Channel	A36 (36 ksi)	Channel	MC12x35
166.507	Torque Arm	8.00	0.0000	Channel	A36 (36 ksi)	Channel	MC12x35
106.507	Torque Arm	8.00	0.0000	Channel	A36 (36 ksi)	Channel	MC12x35
56.5067	Torque Arm	8.00	0.0000	Channel	A36 (36 ksi)	Channel	MC12x35

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*
285.84	A572-50 (50 ksi)	Solid Round			No	A36 (36 ksi)	Channel	MC12x35
256.51	A572-50 (50 ksi)	Solid Round			No	A36 (36 ksi)	Channel	MC12x35
216.51	A572-50 (50 ksi)	Solid Round			No	A36 (36 ksi)	Channel	MC12x35
166.51	A572-50 (50 ksi)	Solid Round			No	A36 (36 ksi)	Channel	MC12x35
106.51	A572-50 (50 ksi)	Solid Round			No	A36 (36 ksi)	Channel	MC12x35
56.51	A572-50 (50 ksi)	Solid Round			No	A36 (36 ksi)	Channel	MC12x35

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*
285.84	447	417	444		14.39 6.5 sec/pulse	12.61 6.1 sec/pulse	14.20 6.5 sec/pulse	
256.507	420	392	417		12.76	11.16	12.59	

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
					6.2 sec/pulse	5.8 sec/pulse	6.1 sec/pulse	
216.507	386	360	383		10.80	9.43	10.65	
					5.7 sec/pulse	5.3 sec/pulse	5.6 sec/pulse	
166.507	347	324	344		8.77	7.70	8.65	
					5.1 sec/pulse	4.8 sec/pulse	5.1 sec/pulse	
106.507	308	291	306		6.94	6.24	6.86	
					4.5 sec/pulse	4.3 sec/pulse	4.5 sec/pulse	
56.5067	98	95	98		5.76	5.38	5.71	
					4.1 sec/pulse	4.0 sec/pulse	4.1 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
285.84	No	No	1	1	1	1	1	1
256.507	No	No	1	1	1	1	1	1
216.507	No	No	1	1	1	1	1	1
166.507	No	No	1	1	1	1	1	1
106.507	No	No	1	1	1	1	1	1
56.5067	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
285.84	0.6250 A325N	5	0.0000	1	0.6250 A325N	5	0.0000	0.75	0.6250 A325N	2	0.0000	0.75
256.507	0.6250 A325N	5	0.0000	1	0.6250 A325N	5	0.0000	0.75	0.6250 A325N	2	0.0000	0.75
216.507	0.6250 A325N	5	0.0000	1	0.6250 A325N	5	0.0000	0.75	0.6250 A325N	2	0.0000	0.75
166.507	0.6250 A325N	5	0.0000	1	0.6250 A325N	5	0.0000	0.75	0.6250 A325N	2	0.0000	0.75
106.507	0.6250 A325N	5	0.0000	1	0.6250 A325N	5	0.0000	0.75	0.6250 A325N	2	0.0000	0.75
56.5067	0.6250 A325N	5	0.0000	1	0.6250 A325N	5	0.0000	0.75	0.6250 A325N	2	0.0000	0.75

Guy Pressures

Guy Elevation ft	Guy Location	z ft	q_z psf	q_z Ice psf	Ice Thickness in
285.84	A	131.22	31	31	0.5000

Guy Elevation ft	Guy Location	z ft	q_z psf	q_z Ice psf	Ice Thickness in
	B	147.37	32	32	0.5000
	C	132.87	31	31	0.5000
256.507	A	116.55	30	30	0.5000
	B	132.70	31	31	0.5000
	C	118.20	30	30	0.5000
216.507	A	96.55	28	28	0.5000
	B	112.70	29	29	0.5000
	C	98.20	28	28	0.5000
166.507	A	71.55	26	26	0.5000
	B	87.70	27	27	0.5000
	C	73.20	26	26	0.5000
106.507	A	41.55	22	22	0.5000
	B	57.70	24	24	0.5000
	C	43.20	22	22	0.5000
56.5067	A	16.55	21	21	0.5000
	B	32.70	21	21	0.5000
	C	18.20	21	21	0.5000

Guy-Tensioning Information

Guy Elevation ft		H ft	V ft	Temperature At Time Of Tensioning: 0 F Initial Tension lb	0 F Intercept ft	20 F Initial Tension lb	20 F Intercept ft	40 F Initial Tension lb	40 F Intercept ft	60 F Initial Tension lb	60 F Intercept ft	80 F Initial Tension lb	80 F Intercept ft	100 F Initial Tension lb	100 F Intercept ft	120 F Initial Tension lb	120 F Intercept ft
285.84	A	232.72	309.24	6615	12.72	6349	13.24	6087	13.80	5830	14.39	5578	15.02	5331	15.70	5090	16.42
	B	232.72	276.94	6731	10.96	6425	11.47	6125	12.02	5830	12.61	5542	13.25	5261	13.94	4989	14.68
	C	232.72	305.94	6626	12.53	6357	13.05	6091	13.60	5830	14.20	5574	14.83	5324	15.51	5080	16.23
256.507	A	232.72	279.91	6719	11.11	6418	11.62	6121	12.17	5830	12.76	5545	13.40	5268	14.09	4999	14.83
	B	232.72	247.61	6853	9.52	6506	10.02	6164	10.57	5830	11.16	5504	11.80	5188	12.50	4884	13.27
	C	232.72	276.61	6732	10.94	6426	11.45	6125	12.00	5830	12.59	5541	13.23	5260	13.92	4988	14.66
216.507	A	232.72	239.91	6889	9.17	6529	9.67	6175	10.21	5830	10.80	5494	11.45	5168	12.16	4854	12.92
	B	232.72	207.61	7051	7.83	6635	8.31	6227	8.84	5830	9.43	5445	10.09	5074	10.81	4720	11.61
	C	232.72	236.61	6904	9.02	6539	9.52	6180	10.06	5830	10.65	5489	11.30	5159	12.01	4841	12.78
166.507	A	232.72	189.91	7149	7.17	6699	7.65	6259	8.18	5830	8.77	5415	9.43	5018	10.16	4640	10.97
	B	232.72	157.61	7338	6.13	6823	6.59	6319	7.11	5830	7.70	5360	8.37	4912	9.12	4491	9.96
	C	232.72	186.61	7165	7.06	6709	7.53	6264	8.06	5830	8.65	5403	9.32	5000	10.06	4619	10.87
106.507	A	232.72	129.91	7512	5.40	6936	5.85	6374	6.36	5830	6.94	5309	7.62	4816	8.39	4358	9.25
	B	232.72	97.61	7713	4.73	7067	5.16	6437	5.66	5830	6.24	5252	6.93	4710	7.72	4213	8.62
	C	232.72	126.61	7533	5.32	6950	5.77	6381	6.28	5830	6.86	5303	7.54	4805	8.31	4343	9.18
56.5067	A	232.72	79.91	2837	4.23	2577	4.66	2323	5.16	2080	5.76	1850	6.47	1636	7.31	1444	8.28
	B	232.72	47.61	2894	3.87	2614	4.29	2341	4.79	2080	5.38	1834	6.11	1608	6.96	1406	7.95
	C	232.72	76.61	2843	4.19	2581	4.61	2326	5.11	2080	5.71	1848	6.43	1633	7.27	1439	8.24

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
LDF6-50A (1-1/4 FOAM) (VZW)	C	Yes	Ar (CfAe)	84.00 - 5.00	0.0000	-0.45	3	1	1.5500 1.0000	1.5500		0.66
LDF6-50A (1-1/4 FOAM) (VZW)	C	Yes	Ar (CfAe)	84.00 - 5.00	0.0000	-0.14	9	9	1.5500	1.5500		0.66
1 5/8" Hybriflex (VZW)	C	Yes	Ar (CfAe)	84.00 - 5.00	0.0000	0.43	1	1	1.5000	1.6250		0.21

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
LDF7-50A (1-5/8 FOAM) (AT&T)	C	Yes	Ar (CfAe)	84.00 - 5.00	-0.5000	0	11	11	1.5000	1.9800		0.82
LDF7-50A (1-5/8 FOAM) (AT&T)	C	Yes	Ar (CfAe)	84.00 - 5.00	-3.0000	-0.15	1	1	1.9800	1.9800		0.82
LDF5-50A (7/8 FOAM) (CSP-10)	A	Yes	Ar (CfAe)	70.00 - 5.00	0.0000	-0.145	1	1	1.0900	1.0900		0.33
EW63 (CSP-3)	A	Yes	Af (CfAe)	104.00 - 5.00	0.0000	-0.105	1	1	1.5742	1.5742	5.0668	0.51
LDF5-50A (7/8 FOAM) (@ 112')	A	Yes	Ar (CfAe)	112.00 - 5.00	0.0000	-0.07	1	1	1.0900	1.0900		0.33
EW63 (CSP-1)	A	Yes	Af (CfAe)	116.00 - 5.00	0.0000	-0.035	1	1	1.5742	1.5742	5.0668	0.51
EW63 (CSP-2)	A	Yes	Af (CfAe)	116.00 - 5.00	0.0000	0.01	1	1	1.5742	1.5742	5.0668	0.51
LDF4-50A (1/2 FOAM) (CSP-8)	A	Yes	Ar (CfAe)	171.50 - 5.00	0.0000	0.04	1	1	0.6300	0.6300		0.15
LDF5-50A (7/8 FOAM) (UCONN-42)	A	Yes	Ar (CfAe)	172.00 - 5.00	0.0000	0.06	1	1	1.0900	1.0900		0.33
LDF5-50A (7/8 FOAM) (@ 172.5)	A	Yes	Ar (CfAe)	172.50 - 5.00	0.0000	0.09	1	1	1.0900	1.0900		0.33
LDF5-50A (7/8 FOAM) (WHUS-36)	A	Yes	Ar (CfAe)	211.00 - 5.00	0.0000	0.12	1	1	1.0900	1.0900		0.33
LDF5-50A (7/8 FOAM) (@ 211')	A	Yes	Ar (CfAe)	211.00 - 5.00	0.0000	0.15	1	1	1.0900	1.0900		0.33
LDF7-50A (1-5/8 FOAM) (CSP-7)	A	Yes	Ar (CfAe)	250.00 - 5.00	0.0000	0.19	1	1	1.9800	1.9800		0.82
LDF7-50A (1-5/8 FOAM) (CSP-11)	A	Yes	Ar (CfAe)	250.00 - 5.00	0.0000	0.24	1	1	1.9800	1.9800		0.82
LDF7-50A (1-5/8 FOAM) (CSP-4)	A	Yes	Ar (CfAe)	252.00 - 5.00	0.0000	0.29	1	1	1.9800	1.9800		0.82
LDF7-50A (1-5/8 FOAM) (CSP-6)	A	Yes	Ar (CfAe)	261.00 - 5.00	0.0000	0.34	1	1	1.9800	1.9800		0.82
LDF7-50A (1-5/8 FOAM) (CSP-5)	A	Yes	Ar (CfAe)	267.00 - 5.00	0.0000	0.39	1	1	1.9800	1.9800		0.82
LDF7-50A (1-5/8 FOAM) (CSP-9)	A	Yes	Ar (CfAe)	267.00 - 5.00	0.0000	0.44	1	1	1.9800	1.9800		0.82
LDF5-50A (7/8 FOAM) (@ 305')	A	Yes	Ar (CfAe)	291.84 - 5.00	0.0000	0.48	1	1	1.0900	1.0900		0.33
LDF7-50A (1-5/8 FOAM) (CSP-20,21,22 ,24,25 - Future))	A	Yes	Ar (CfAe)	240.00 - 5.00	0.0000	-0.37	5	5	1.0000	1.9800		0.82
LDF7-50A (1-5/8 FOAM)	A	Yes	Ar (CfAe)	250.00 - 5.00	2.5000	-0.37	5	5	1.0000	1.9800		0.82

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
(CSP-12,13,14 ,17,18 - Future)) LDF4-50A (1/2 FOAM)	A	Yes	Ar (CfAe)	240.00 - 5.00	0.0000	-0.17	2	1	0.6300	0.6300		0.15
(CSP-23,26 - Future)) LDF4-50A (1/2 FOAM)	A	Yes	Ar (CfAe)	250.00 - 5.00	0.0000	-0.19	2	1	0.6300	0.6300		0.15
(CSP-15,19 - Future)) LDF4-50A (1/2 FOAM)	B	Yes	Ar (CfAe)	13.00 - 5.00	0.0000	0.32	1	1	0.6300	0.6300		0.15
(@ 13') LDF4-50A (1/2 FOAM)	B	Yes	Ar (CfAe)	18.00 - 5.00	0.0000	0.34	1	1	0.6300	0.6300		0.15
(@ 18') LDF4-50A (1/2 FOAM)	B	Yes	Ar (CfAe)	94.00 - 5.00	0.0000	0.36	1	1	0.6300	0.6300		0.15
(UCONN-44) LDF4-50A (1/2 FOAM)	B	Yes	Ar (CfAe)	94.00 - 5.00	0.0000	0.38	1	1	0.6300	0.6300		0.15
(WHUS-35) LDF4-50A (1/2 FOAM)	B	Yes	Ar (CfAe)	157.00 - 5.00	0.0000	0.4	1	1	0.6300	0.6300		0.15
(Beacon Lights) LDF4-50A (1/2 FOAM)	B	Yes	Ar (CfAe)	159.00 - 5.00	0.0000	0.42	1	1	0.6300	0.6300		0.15
(@ 159') LDF4-50A (1/2 FOAM)	B	Yes	Ar (CfAe)	277.00 - 5.00	0.0000	0.44	1	1	0.6300	0.6300		0.15
(WHUS-39) LDF4-50A (1/2 FOAM)	B	Yes	Ar (CfAe)	277.00 - 5.00	0.0000	0.46	1	1	0.6300	0.6300		0.15
(WHUS-40) LDF4-50A (1/2 FOAM)	B	Yes	Ar (CfAe)	291.84 - 5.00	0.0000	0.48	1	1	0.6300	0.6300		0.15
(@ 323') LDF4-50A (1/2 FOAM)	B	Yes	Ar (CfAe)	190.00 - 5.00	0.0000	0.28	1	1	0.6300	0.6300		0.15
(CPR-33 (Future)) LDF4-50A (1/2 FOAM)	B	Yes	Ar (CfAe)	198.00 - 5.00	0.0000	0.3	1	1	0.6300	0.6300		0.15
(CPR-32 (Future))												

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
L1	327.00-291.84	A	0.000	0.000	0.000	0.000	0
		B	0.000	0.000	0.000	0.000	0
		C	0.000	0.000	0.000	0.000	0
T1	291.84-279.84	A	1.090	0.000	0.000	0.000	4

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
		B	0.630	0.000	0.000	0.000	2
		C	0.000	0.000	0.000	0.000	0
T2	279.84-259.84	A	4.371	0.000	0.000	0.000	19
		B	2.852	0.000	0.000	0.000	8
		C	0.000	0.000	0.000	0.000	0
T3	259.84-239.84	A	26.132	0.000	0.000	0.000	128
		B	3.150	0.000	0.000	0.000	9
		C	0.000	0.000	0.000	0.000	0
T4	239.84-219.84	A	56.717	0.000	0.000	0.000	281
		B	3.150	0.000	0.000	0.000	9
		C	0.000	0.000	0.000	0.000	0
T5	219.84-199.84	A	58.744	0.000	0.000	0.000	288
		B	3.150	0.000	0.000	0.000	9
		C	0.000	0.000	0.000	0.000	0
T6	199.84-179.84	A	60.350	0.000	0.000	0.000	294
		B	4.637	0.000	0.000	0.000	13
		C	0.000	0.000	0.000	0.000	0
T7	179.84-159.84	A	63.217	0.000	0.000	0.000	304
		B	5.250	0.000	0.000	0.000	15
		C	0.000	0.000	0.000	0.000	0
T8	159.84-139.84	A	65.033	0.000	0.000	0.000	310
		B	7.157	0.000	0.000	0.000	20
		C	0.000	0.000	0.000	0.000	0
T9	139.84-119.84	A	65.033	0.000	0.000	0.000	310
		B	7.350	0.000	0.000	0.000	21
		C	0.000	0.000	0.000	0.000	0
T10	119.84-99.84	A	66.138	4.786	0.000	0.000	333
		B	7.350	0.000	0.000	0.000	21
		C	0.000	0.000	0.000	0.000	0
T11	99.84-79.84	A	66.850	7.871	0.000	0.000	348
		B	8.837	0.000	0.000	0.000	25
		C	14.173	0.000	0.000	0.000	75
T12	79.84-59.84	A	67.773	7.871	0.000	0.000	351
		B	9.450	0.000	0.000	0.000	27
		C	68.142	0.000	0.000	0.000	359
T13	59.84-39.84	A	68.667	7.871	0.000	0.000	354
		B	9.450	0.000	0.000	0.000	27
		C	68.142	0.000	0.000	0.000	359
T14	39.84-19.84	A	68.667	7.871	0.000	0.000	354
		B	9.450	0.000	0.000	0.000	27
		C	68.142	0.000	0.000	0.000	359
T15	19.84-6.50	A	45.801	5.250	0.000	0.000	236
		B	7.248	0.000	0.000	0.000	21
		C	45.450	0.000	0.000	0.000	240
T16	6.50-0.00	A	5.150	0.590	0.000	0.000	27
		B	0.866	0.000	0.000	0.000	2
		C	5.111	0.000	0.000	0.000	27

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
L1	327.00-291.84	A	0.500	0.000	0.000	0.000	0.000	0
		B		0.000	0.000	0.000	0.000	0
		C		0.000	0.000	0.000	0.000	0
T1	291.84-279.84	A	0.500	2.090	0.000	0.000	0.000	16
		B		1.630	0.000	0.000	0.000	10

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight lb
		C		0.000	0.000	0.000	0.000	0
T2	279.84-259.84	A	0.500	7.328	0.000	0.000	0.000	62
		B		7.378	0.000	0.000	0.000	46
		C		0.000	0.000	0.000	0.000	0
T3	259.84-239.84	A	0.500	30.414	10.251	0.000	0.000	410
		B		8.150	0.000	0.000	0.000	50
		C		0.000	0.000	0.000	0.000	0
T4	239.84-219.84	A	0.500	48.650	39.733	0.000	0.000	959
		B		8.150	0.000	0.000	0.000	50
		C		0.000	0.000	0.000	0.000	0
T5	219.84-199.84	A	0.500	52.537	39.733	0.000	0.000	988
		B		8.150	0.000	0.000	0.000	50
		C		0.000	0.000	0.000	0.000	0
T6	199.84-179.84	A	0.500	55.617	39.733	0.000	0.000	1011
		B		11.997	0.000	0.000	0.000	74
		C		0.000	0.000	0.000	0.000	0
T7	179.84-159.84	A	0.500	61.523	39.733	0.000	0.000	1053
		B		13.583	0.000	0.000	0.000	84
		C		0.000	0.000	0.000	0.000	0
T8	159.84-139.84	A	0.500	65.300	39.733	0.000	0.000	1080
		B		18.517	0.000	0.000	0.000	115
		C		0.000	0.000	0.000	0.000	0
T9	139.84-119.84	A	0.500	65.300	39.733	0.000	0.000	1080
		B		19.017	0.000	0.000	0.000	118
		C		0.000	0.000	0.000	0.000	0
T10	119.84-99.84	A	0.500	67.418	46.546	0.000	0.000	1164
		B		19.017	0.000	0.000	0.000	118
		C		0.000	0.000	0.000	0.000	0
T11	99.84-79.84	A	0.500	68.783	50.938	0.000	0.000	1218
		B		22.863	0.000	0.000	0.000	141
		C		22.147	0.000	0.000	0.000	218
T12	79.84-59.84	A	0.500	70.553	50.938	0.000	0.000	1231
		B		24.450	0.000	0.000	0.000	151
		C		106.475	0.000	0.000	0.000	1050
T13	59.84-39.84	A	0.500	72.267	50.938	0.000	0.000	1244
		B		24.450	0.000	0.000	0.000	151
		C		106.475	0.000	0.000	0.000	1050
T14	39.84-19.84	A	0.500	72.267	50.938	0.000	0.000	1244
		B		24.450	0.000	0.000	0.000	151
		C		106.475	0.000	0.000	0.000	1050
T15	19.84-6.50	A	0.500	48.202	33.975	0.000	0.000	830
		B		18.753	0.000	0.000	0.000	116
		C		71.019	0.000	0.000	0.000	700
T16	6.50-0.00	A	0.500	5.420	3.820	0.000	0.000	93
		B		2.241	0.000	0.000	0.000	14
		C		7.986	0.000	0.000	0.000	79

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
LI	327.00-291.84		0.000	0.000	0.000	0.000
			0.000	0.000	0.000	0.000
			0.000	0.000	0.000	0.000
T1	291.84-279.84	A	0.076	0.280	0.091	0.174
		B	0.044	0.218	0.053	0.136

Section	Elevation	Face	A_R	A_R Ice	A_F	A_F Ice
	ft		ft^2	ft^2	ft^2	ft^2
		C	0.000	0.000	0.000	0.000
T2	279.84-259.84	A	0.312	0.954	0.000	0.000
		B	0.204	0.961	0.000	0.000
		C	0.000	0.000	0.000	0.000
T3	259.84-239.84	A	1.758	5.127	1.307	2.033
		B	0.212	1.027	0.158	0.407
		C	0.000	0.000	0.000	0.000
T4	239.84-219.84	A	4.053	11.511	0.000	0.000
		B	0.225	1.061	0.000	0.000
		C	0.000	0.000	0.000	0.000
T5	219.84-199.84	A	4.201	12.023	2.937	4.614
		B	0.225	1.062	0.158	0.407
		C	0.000	0.000	0.000	0.000
T6	199.84-179.84	A	4.057	12.016	0.000	0.000
		B	0.312	1.512	0.000	0.000
		C	0.000	0.000	0.000	0.000
T7	179.84-159.84	A	4.521	13.193	3.161	5.063
		B	0.375	1.770	0.263	0.679
		C	0.000	0.000	0.000	0.000
T8	159.84-139.84	A	4.647	13.680	0.000	0.000
		B	0.511	2.412	0.000	0.000
		C	0.000	0.000	0.000	0.000
T9	139.84-119.84	A	4.372	13.236	0.000	0.000
		B	0.494	2.396	0.000	0.000
		C	0.000	0.000	0.000	0.000
T10	119.84-99.84	A	5.072	14.981	3.546	5.749
		B	0.526	2.478	0.367	0.951
		C	0.000	0.000	0.000	0.000
T11	99.84-79.84	A	5.339	15.809	0.000	0.000
		B	0.631	2.978	0.000	0.000
		C	1.190	3.438	0.000	0.000
T12	79.84-59.84	A	5.086	15.520	0.000	0.000
		B	0.635	3.081	0.000	0.000
		C	5.433	16.079	0.000	0.000
T13	59.84-39.84	A	4.827	15.216	3.827	6.244
		B	0.596	2.979	0.473	1.222
		C	5.149	15.636	3.407	5.324
T14	39.84-19.84	A	5.146	15.736	0.000	0.000
		B	0.635	3.081	0.000	0.000
		C	5.433	16.079	0.000	0.000
T15	19.84-6.50	A	3.431	10.492	0.000	0.000
		B	0.487	2.362	0.000	0.000
		C	3.622	10.721	0.000	0.000
T16	6.50-0.00	A	0.000	0.394	2.216	3.648
		B	0.000	0.094	0.334	0.873
		C	0.000	0.336	1.973	3.111

Feed Line Center of Pressure

Section	Elevation	CP_X	CP_Z	CP_X Ice	CP_Z Ice
	ft	in	in	in	in
L1	327.00-291.84	0.0000	0.0000	0.0000	0.0000
T1	291.84-279.84	0.3236	-0.5004	0.5333	-0.5204
T2	279.84-259.84	1.1368	-1.5492	1.7408	-1.1066
T3	259.84-239.84	-2.3792	-3.1171	-1.2393	-2.8987
T4	239.84-219.84	-7.5238	-1.6317	-5.1906	-1.8246

Section	Elevation	CP_X	CP_Z	CP_X Ice	CP_Z Ice
	ft	in	in	in	in
T5	219.84-199.84	-6.4797	-1.5729	-4.6414	-1.8616
T6	199.84-179.84	-7.1068	-1.8650	-4.7962	-2.0566
T7	179.84-159.84	-6.0559	-1.7364	-4.2060	-2.0218
T8	159.84-139.84	-6.5719	-1.9280	-4.2040	-2.0582
T9	139.84-119.84	-6.4460	-1.8861	-4.1198	-2.0147
T10	119.84-99.84	-5.9668	-1.8236	-4.0218	-1.9972
T11	99.84-79.84	-5.5730	-0.5935	-3.5834	-0.7298
T12	79.84-59.84	-3.4445	2.8125	-2.0155	2.5506
T13	59.84-39.84	-3.2824	2.6224	-1.9344	2.3858
T14	39.84-19.84	-3.4944	2.7951	-2.0816	2.5316
T15	19.84-6.50	-3.3399	2.8188	-1.8532	2.5720
T16	6.50-0.00	-0.7712	0.6572	-0.3780	0.7197

Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft	Offsets: Vert ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight lb
Lightning Rod 5/8x4' (Tower)	A	From Face	0.00	0.00	0.0000	325.00	No Ice	0.25	0.25	31
							1/2" Ice	0.66	0.66	34
Flash Beacon Lighting (Tower)	B	None		0.00	0.0000	323.00	No Ice	2.70	2.70	50
							1/2" Ice	3.10	3.10	70
6813 1-Bay w/radome (WHUS-34)	C	From Leg	2.00	0.00	0.0000	305.00	No Ice	4.90	4.90	97
							1/2" Ice	6.00	6.00	195
PD1110 (WHUS-40)	C	From Leg	3.00	0.00	0.0000	277.00	No Ice	3.06	3.06	25
							1/2" Ice	5.10	5.10	60
PD1110 (WHUS-39)	C	From Leg	1.50	0.00	0.0000	277.00	No Ice	3.06	3.06	25
							1/2" Ice	5.10	5.10	60
4' Standoff (WHUS-39,40)	C	None		0.00	0.0000	277.00	No Ice	3.42	3.42	111
							1/2" Ice	3.67	3.67	147
OGT9-840 (CSP-9)	A	From Leg	3.00	0.00	0.0000	267.00	No Ice	2.27	2.27	19
							1/2" Ice	3.44	3.44	36
DB810K (CSP-5)	C	From Leg	3.00	0.00	0.0000	267.00	No Ice	4.08	4.08	35
							1/2" Ice	5.73	5.73	65
AP14-850/105 (CSP-4)	B	From Leg	3.00	0.00	0.0000	261.00	No Ice	10.61	5.64	27
							1/2" Ice	11.25	6.28	78
AP14-850/105 (CSP-6)	B	From Leg	3.00	0.00	0.0000	252.00	No Ice	10.61	5.64	27
							1/2" Ice	11.25	6.28	78
SE419-SF3P4LDF (CSP-16 (Future))	A	From Leg	3.00	0.00	0.0000	256.50	No Ice	4.12	9.55	24
							1/2" Ice	5.11	10.19	67
TTA 432-83H-01T (CSP-15 (Future))	B	From Leg	3.00	0.00	0.0000	256.50	No Ice	1.63	0.95	25
							1/2" Ice	1.81	1.09	37

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
TTA 432-83H-01T (CSP-19 (Future))	C	From Leg	3.00 0.00 0.00	0.0000	256.50	No Ice 1/2" Ice	1.63 1.81	0.95 1.09	25 37
SC479-HF1LDF (CSP-12 (Future))	A	From Leg	3.00 0.00 0.00	0.0000	271.00 - 256.50	No Ice 1/2" Ice	5.06 6.54	5.06 6.54	34 70
SC479-HF1LDF (CSP-13 (Future))	B	From Leg	3.00 0.00 0.00	0.0000	271.00 - 256.50	No Ice 1/2" Ice	5.06 6.54	5.06 6.54	34 70
SC479-HF1LDF (CSP-14 (Future - Inverted))	C	From Leg	3.00 0.00 0.00	0.0000	242.00 - 256.50	No Ice 1/2" Ice	5.06 6.54	5.06 6.54	34 70
SC479-HF1LDF (CSP-17 (Future - Inverted))	A	From Leg	3.00 0.00 0.00	0.0000	242.00 - 256.50	No Ice 1/2" Ice	5.06 6.54	5.06 6.54	34 70
SC479-HF1LDF (CSP-18 (Future - Inverted))	B	From Leg	3.00 0.00 0.00	0.0000	242.00 - 256.50	No Ice 1/2" Ice	5.06 6.54	5.06 6.54	34 70
OGT9-840 (CSP-11 (Inverted))	C	From Leg	3.00 0.00 0.00	0.0000	250.00 - 256.50	No Ice 1/2" Ice	2.27 3.44	2.27 3.44	19 36
OGT9-840 (CSP-7 (Inverted))	B	From Leg	3.00 0.00 0.00	0.0000	250.00 - 256.50	No Ice 1/2" Ice	2.27 3.44	2.27 3.44	19 36
TTA 432-83H-01T (CSP-23 (Future))	B	From Leg	3.00 0.00 0.00	0.0000	240.00	No Ice 1/2" Ice	1.63 1.81	0.95 1.09	25 37
TTA 432-83H-01T (CSP-26 (Future))	C	From Leg	3.00 0.00 0.00	0.0000	240.00	No Ice 1/2" Ice	1.63 1.81	0.95 1.09	25 37
SC479-HF1LDF (CSP-20 (Future))	A	From Leg	3.00 0.00 0.00	0.0000	271.00 - 256.50	No Ice 1/2" Ice	5.06 6.54	5.06 6.54	34 70
SC479-HF1LDF (CSP-13 (Future))	B	From Leg	3.00 0.00 0.00	0.0000	271.00 - 256.50	No Ice 1/2" Ice	5.06 6.54	5.06 6.54	34 70
SC479-HF1LDF (CSP-14 (Future - Inverted))	C	From Leg	3.00 0.00 0.00	0.0000	242.00 - 256.50	No Ice 1/2" Ice	5.06 6.54	5.06 6.54	34 70
SC479-HF1LDF (CSP-17 (Future - Inverted))	A	From Leg	3.00 0.00 0.00	0.0000	242.00 - 256.50	No Ice 1/2" Ice	5.06 6.54	5.06 6.54	34 70
SC479-HF1LDF (CSP-18 (Future - Inverted))	B	From Leg	3.00 0.00 0.00	0.0000	242.00 - 256.50	No Ice 1/2" Ice	5.06 6.54	5.06 6.54	34 70
6813 1-Bay w/radome (WHUS-36)	C	From Leg	2.00 0.00 0.00	0.0000	211.00	No Ice 1/2" Ice	4.90 6.00	4.90 6.00	97 195
6813 1-Bay w/radome (WHUS-34)	B	From Leg	2.00 0.00 0.00	0.0000	198.00	No Ice 1/2" Ice	4.90 6.00	4.90 6.00	97 195
6812 (CPR-32 (Future))	A	From Leg	3.00 0.00 0.00	0.0000	198.00	No Ice 1/2" Ice	0.20 0.36	0.20 0.36	3 4
6' Yagi (CPR-33 (Future))	B	From Leg	3.00 0.00 0.00	0.0000	190.00	No Ice 1/2" Ice	0.00 0.00	0.00 0.00	0 0

Description	Face or Leg	Offset Type	Offsets: Horz Lateral / Vert ft / ft / ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight lb
24"x12"x5" Panel	B	From Leg	1.00 0.00 0.00	0.0000	172.17	No Ice 1/2" Ice	2.80 3.04	1.17 1.36	31 48
3" x 8' Omni	C	From Leg	1.00 0.00 0.00	0.0000	172.00	No Ice 1/2" Ice	2.40 3.19	2.40 3.19	8 25
16"x12"x3" TTA	A	From Leg	1.00 0.00 0.00	0.0000	166.00	No Ice 1/2" Ice	1.87 2.05	0.47 0.59	12 22
2'x1'x5" Panel	C	From Leg	1.00 0.00 0.00	0.0000	158.83	No Ice 1/2" Ice	2.80 3.04	1.17 1.36	10 27
L-810 Flashing Beacon	A	From Leg	0.50 0.00 0.00	0.0000	157.00	No Ice 1/2" Ice	0.20 0.28	0.20 0.28	3 6
L-810 Flashing Beacon	B	From Leg	0.50 0.00 0.00	0.0000	157.00	No Ice 1/2" Ice	0.20 0.28	0.20 0.28	3 6
L-810 Flashing Beacon	C	From Leg	0.50 0.00 0.00	0.0000	157.00	No Ice 1/2" Ice	0.20 0.28	0.20 0.28	3 6
2' Sidearm	B	From Leg	1.00 0.00 0.00	0.0000	125.00	No Ice 1/2" Ice	3.50 4.20	3.50 4.20	91 120
6'x4' Ice Shield	C	From Leg	1.00 0.00 0.00	0.0000	124.00	No Ice 1/2" Ice	0.23 0.30	0.02 0.06	285 286
9'x10' Ice Shield	A	From Leg	1.00 0.00 0.00	0.0000	124.00	No Ice 1/2" Ice	0.88 1.00	0.03 0.09	1069 1073
2'6"x4" Pipe Mount	C	From Leg	0.50 0.00 0.00	0.0000	124.00	No Ice 1/2" Ice	0.75 0.95	0.75 0.95	27 35
2'6"x4" Pipe Mount	A	From Leg	0.50 0.00 0.00	0.0000	124.00	No Ice 1/2" Ice	0.75 0.95	0.75 0.95	27 35
PD1110	B	From Leg	2.00 0.00 0.00	0.0000	112.00	No Ice 1/2" Ice	3.06 5.10	3.06 5.10	25 60
2' Sidearm	B	From Leg	1.00 0.00 0.00	0.0000	112.00	No Ice 1/2" Ice	3.90 4.40	3.90 4.40	87 97
6'x4" Pipe Mount	C	From Leg	0.50 0.00 0.00	0.0000	104.00	No Ice 1/2" Ice	2.09 2.46	2.09 2.46	55 72
PR-850	C	From Leg	0.50 0.00 0.00	0.0000	94.00	No Ice 1/2" Ice	6.35 11.43	6.35 11.43	38 49
ASP-962	B	From Leg	0.50 0.00 0.00	0.0000	94.00	No Ice 1/2" Ice	0.16 0.29	0.16 0.29	1 1
DB212-1 (CSP-10)	C	From Leg	0.00 0.00 0.00	0.0000	70.00	No Ice 1/2" Ice	4.40 8.42	4.40 8.42	31 70
6' Yagi	C	From Leg	1.00 0.00 0.00	0.0000	18.00	No Ice 1/2" Ice	0.00 0.00	0.00 0.00	0 0

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
2' Side-arm	C	From Leg	1.00 0.00 0.00	0.0000	18.00	No Ice 1/2" Ice	3.89 4.15	3.89 4.15	0 41
2' Side-arm	C	From Leg	1.00 0.00 0.00	0.0000	13.00	No Ice 1/2" Ice	3.89 4.15	3.89 4.15	0 41
Pirod 12' T-Frame Sector Mount (1) (AT&T)	A	None		0.0000	187.42	No Ice 1/2" Ice	13.60 18.40	13.60 18.40	465 600
Pirod 12' T-Frame Sector Mount (1) (AT&T)	B	None		0.0000	187.42	No Ice 1/2" Ice	13.60 18.40	13.60 18.40	465 600
Pirod 12' T-Frame Sector Mount (1) (AT&T)	C	None		0.0000	187.42	No Ice 1/2" Ice	13.60 18.40	13.60 18.40	465 600
Powerwave 7770.00 (AT&T)	A	From Leg	3.00 -6.00 0.00	0.0000	187.42	No Ice 1/2" Ice	5.88 6.31	2.93 3.27	39 72
HPA-65R-BUU-H8 (AT&T)	A	From Leg	3.00 -3.00 0.00	0.0000	187.42	No Ice 1/2" Ice	13.30 13.99	7.52 8.09	73 147
HPA-65R-BUU-H8 (AT&T)	A	From Leg	3.00 3.00 0.00	0.0000	187.42	No Ice 1/2" Ice	13.30 13.99	7.52 8.09	73 147
HPA-65R-BUU-H6 (AT&T)	A	From Leg	3.00 6.00 0.00	0.0000	187.42	No Ice 1/2" Ice	10.36 10.93	6.45 6.91	56 119
Powerwave 7770.00 (AT&T)	B	From Leg	3.00 -6.00 0.00	0.0000	187.42	No Ice 1/2" Ice	5.88 6.31	2.93 3.27	39 72
HPA-65R-BUU-H8 (AT&T)	B	From Leg	3.00 -3.00 0.00	0.0000	187.42	No Ice 1/2" Ice	13.30 13.99	7.52 8.09	73 147
HPA-65R-BUU-H8 (AT&T)	B	From Leg	3.00 3.00 0.00	0.0000	187.42	No Ice 1/2" Ice	13.30 13.99	7.52 8.09	73 147
HPA-65R-BUU-H6 (AT&T)	B	From Leg	3.00 6.00 0.00	0.0000	187.42	No Ice 1/2" Ice	10.36 10.93	6.45 6.91	56 119
Powerwave 7770.00 (AT&T)	C	From Leg	3.00 -6.00 0.00	0.0000	187.42	No Ice 1/2" Ice	5.88 6.31	2.93 3.27	39 72
HPA-65R-BUU-H8 (AT&T)	C	From Leg	3.00 -3.00 0.00	0.0000	187.42	No Ice 1/2" Ice	13.30 13.99	7.52 8.09	73 147
HPA-65R-BUU-H8 (AT&T)	C	From Leg	3.00 3.00 0.00	0.0000	187.42	No Ice 1/2" Ice	13.30 13.99	7.52 8.09	73 147
HPA-65R-BUU-H6 (AT&T)	C	From Leg	3.00 6.00 0.00	0.0000	187.42	No Ice 1/2" Ice	10.36 10.93	6.45 6.91	56 119
(2) RRUS A2 Module (AT&T)	A	From Leg	3.00 0.00 0.00	0.0000	187.42	No Ice 1/2" Ice	2.41 2.62	0.54 0.67	22 35
(2) RRUS A2 Module (AT&T)	B	From Leg	3.00 0.00 0.00	0.0000	187.42	No Ice 1/2" Ice	2.41 2.62	0.54 0.67	22 35

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft / ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight lb
(2) RRUS A2 Module (AT&T)	C	From Leg	3.00 0.00 0.00	0.0000	187.42	No Ice 1/2" Ice	2.41 2.62	0.54 0.67	22 35
DC6-48-60-18-8F (AT&T)	A	From Leg	3.00 0.00 0.00	0.0000	187.42	No Ice 1/2" Ice	1.27 1.46	1.27 1.46	20 35
DC6-48-60-18-8F (AT&T)	B	From Leg	3.00 0.00 0.00	0.0000	187.42	No Ice 1/2" Ice	1.27 1.46	1.27 1.46	20 35
DC6-48-60-18-8F (AT&T)	C	From Leg	3.00 0.00 0.00	0.0000	187.42	No Ice 1/2" Ice	1.27 1.46	1.27 1.46	20 35
(2) RRUS-12 (AT&T)	A	From Leg	3.00 0.00 0.00	0.0000	187.42	No Ice 1/2" Ice	3.67 3.93	1.49 1.67	50 73
(2) RRUS-12 (AT&T)	B	From Leg	3.00 0.00 0.00	0.0000	187.42	No Ice 1/2" Ice	3.67 3.93	1.49 1.67	50 73
(2) RRUS-12 (AT&T)	C	From Leg	3.00 0.00 0.00	0.0000	187.42	No Ice 1/2" Ice	3.67 3.93	1.49 1.67	50 73
(3) RRUS-11 (AT&T)	A	From Leg	3.00 0.00 0.00	0.0000	187.42	No Ice 1/2" Ice	3.00 3.23	1.53 1.82	59 83
(3) RRUS-11 (AT&T)	B	From Leg	3.00 0.00 0.00	0.0000	187.42	No Ice 1/2" Ice	3.00 3.23	1.53 1.82	59 83
(3) RRUS-11 (AT&T)	C	From Leg	3.00 0.00 0.00	0.0000	187.42	No Ice 1/2" Ice	3.00 3.23	1.53 1.82	59 83
RRUS-32 (AT&T)	A	From Leg	3.00 0.00 0.00	0.0000	187.42	No Ice 1/2" Ice	3.87 4.15	2.76 3.02	77 105
RRUS-32 (AT&T)	B	From Leg	3.00 0.00 0.00	0.0000	187.42	No Ice 1/2" Ice	3.87 4.15	2.76 3.02	77 105
RRUS-32 (AT&T)	C	From Leg	3.00 0.00 0.00	0.0000	187.42	No Ice 1/2" Ice	3.87 4.15	2.76 3.02	77 105
RRUS-E2 (AT&T)	A	From Leg	3.00 0.00 0.00	0.0000	187.42	No Ice 1/2" Ice	3.67 3.93	1.49 1.67	58 81
RRUS-E2 (AT&T)	B	From Leg	3.00 0.00 0.00	0.0000	187.42	No Ice 1/2" Ice	3.67 3.93	1.49 1.67	58 81
RRUS-E2 (AT&T)	C	From Leg	3.00 0.00 0.00	0.0000	187.42	No Ice 1/2" Ice	3.67 3.93	1.49 1.67	58 81
BXA-80063/4CF w/Mount Pipe (Verizon - 850MHZ)	A	From Leg	3.00 -3.00 0.00	0.0000	84.00	No Ice 1/2" Ice	5.89 6.59	3.91 4.94	35 82
HBXX-6517DS-VTM (Verizon - AWS)	A	From Leg	3.00 -6.00 0.00	0.0000	84.00	No Ice 1/2" Ice	8.74 9.31	6.97 7.80	78 147
BXA-80063/4CF w/Mount Pipe (Verizon - 850MHZ)	B	From Leg	3.00 -3.00 0.00	0.0000	84.00	No Ice 1/2" Ice	5.89 6.59	3.91 4.94	35 82

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight lb
HBXX-6517DS-VTM	B	From Leg	3.00	0.0000	84.00	No Ice	8.74	6.97	78
(Verizon - AWS)			-6.00			1/2" Ice	9.31	7.80	147
			0.00						
BXA-80063/4CF w/Mount Pipe	C	From Leg	3.00	0.0000	84.00	No Ice	5.89	3.91	35
(Verizon - 850MHZ)			-3.00			1/2" Ice	6.59	4.94	82
			0.00						
HBXX-6517DS-VTM	C	From Leg	3.00	0.0000	84.00	No Ice	8.74	6.97	78
(Verizon - AWS)			-6.00			1/2" Ice	9.31	7.80	147
			0.00						
12' Platform	A	None		0.0000	84.00	No Ice	40.00	40.00	2000
(Verizon)						1/2" Ice	50.00	50.00	2800
RRH_2x60-AWS	A	From Leg	3.00	0.0000	84.00	No Ice	3.66	3.31	79
(Verizon - AWS)			-6.00			1/2" Ice	4.13	3.88	115
			0.00						
RRH_2x60-AWS	B	From Leg	3.00	0.0000	84.00	No Ice	3.66	3.31	79
(Verizon - AWS)			-6.00			1/2" Ice	4.13	3.88	115
			0.00						
RRH_2x60-AWS	C	From Leg	3.00	0.0000	84.00	No Ice	3.66	3.31	79
(Verizon - AWS)			-6.00			1/2" Ice	4.13	3.88	115
			0.00						
X7C-FRO-440 w/ Pipe Mount	A	From Leg	3.00	0.0000	84.00	No Ice	9.42	4.31	61
(Verizon - 700MHz)			3.00			1/2" Ice	9.92	4.95	122
			0.00						
X7C-FRO-440 w/ Pipe Mount	B	From Leg	3.00	0.0000	84.00	No Ice	9.42	4.31	61
(Verizon - 700MHz)			3.00			1/2" Ice	9.92	4.95	122
			0.00						
X7C-FRO-440 w/ Pipe Mount	C	From Leg	3.00	0.0000	84.00	No Ice	9.42	4.31	61
(Verizon - 700MHz)			3.00			1/2" Ice	9.92	4.95	122
			0.00						
RRH2x40-07-U	A	From Leg	3.00	0.0000	84.00	No Ice	2.25	1.23	50
(Verizon - 700MHz)			3.00			1/2" Ice	2.45	1.39	67
			0.00						
RRH2x40-07-U	B	From Leg	3.00	0.0000	84.00	No Ice	2.25	1.23	50
(Verizon - 700MHz)			3.00			1/2" Ice	2.45	1.39	67
			0.00						
RRH2x40-07-U	C	From Leg	3.00	0.0000	84.00	No Ice	2.25	1.23	50
(Verizon - 700MHz)			3.00			1/2" Ice	2.45	1.39	67
			0.00						
HBXX-6517DS-VTM	A	From Leg	3.00	0.0000	84.00	No Ice	8.74	6.97	78
(Verizon - 1900MHz)			6.00			1/2" Ice	9.31	7.80	147
			0.00						
HBXX-6517DS-VTM	B	From Leg	3.00	0.0000	84.00	No Ice	8.74	6.97	78
(Verizon - 1900MHz)			6.00			1/2" Ice	9.31	7.80	147
			0.00						
HBXX-6517DS-VTM	C	From Leg	3.00	0.0000	84.00	No Ice	8.74	6.97	78
(Verizon - 1900MHz)			6.00			1/2" Ice	9.31	7.80	147
			0.00						
PCS 1900 MHz 4x45W-65MHz	A	From Leg	3.00	0.0000	84.00	No Ice	2.73	2.61	60
(Verizon - 1900MHz)			6.00			1/2" Ice	2.95	2.83	88
			0.00						
PCS 1900 MHz 4x45W-65MHz	B	From Leg	3.00	0.0000	84.00	No Ice	2.73	2.61	60
(Verizon - 1900MHz)			6.00			1/2" Ice	2.95	2.83	88
			0.00						
PCS 1900 MHz 4x45W-65MHz	C	From Leg	3.00	0.0000	84.00	No Ice	2.73	2.61	60
(Verizon - 1900MHz)			6.00			1/2" Ice	2.95	2.83	88
			0.00						

Dishes

Description	Face or Leg	Dish Type	Offset Type	Offsets: Horz Lateral Vert ft	Azimuth Adjustment °	3 dB Beam Width °	Elevation ft	Outside Diameter ft		Aperture Area ft²	Weight lb
1.2M	C	Paraboloid w/o Radome	From Leg	2.00 0.00 0.00	0.0000		13.00	4.00	No Ice 1/2" Ice	12.17 13.09	165 232
6 FT DISH	C	Paraboloid w/Radome	From Leg	1.00 0.00 0.00	-30.0000		104.00	6.00	No Ice 1/2" Ice	28.27 29.05	143 292
6 FT DISH	C	Paraboloid w/Shroud (HP)	From Leg	1.00 0.00 0.00	0.0000		116.00	6.00	No Ice 1/2" Ice	28.27 29.05	143 292
6 FT DISH	A	Paraboloid w/o Radome	From Leg	1.00 0.00 0.00	0.0000		116.00	6.00	No Ice 1/2" Ice	28.27 29.05	143 292
5' Grid Dish	A	Grid	From Leg	1.00 0.00 0.00	0.0000		171.50	5.00	No Ice 1/2" Ice	19.63 20.29	95 199
**********											
6 FT DISH (CSP - Future)	A	Paraboloid w/Radome	From Leg	1.00 0.00 0.00	0.0000		290.00	6.00	No Ice 1/2" Ice	28.27 29.05	143 292
6 FT DISH (CSP - Future)	B	Paraboloid w/Radome	From Leg	1.00 0.00 0.00	0.0000		290.00	6.00	No Ice 1/2" Ice	28.27 29.05	143 292
6 FT DISH (CSP - Future)	C	Paraboloid w/Radome	From Leg	1.00 0.00 0.00	0.0000		290.00	6.00	No Ice 1/2" Ice	28.27 29.05	143 292

Tower Pressures - No Ice

G_H = 1.089 (base tower), 1.089 (upper structure)

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
L1	309.49	1.896	39	31.497	A	0.000	31.497	31.497	100.00	0.000	0.000
327.00-291.84					B	0.000	31.497		100.00	0.000	0.000
					C	0.000	31.497		100.00	0.000	0.000
T1	285.84	1.853	38	46.004	A	3.410	7.961	4.000	35.18	0.000	0.000
291.84-279.84					B	3.448	7.534		36.42	0.000	0.000
					C	3.500	7.531		36.26	0.000	0.000
T2	269.84	1.823	38	76.673	A	0.000	15.728	6.667	42.39	0.000	0.000
279.84-259.84					B	0.000	14.317		46.56	0.000	0.000
					C	0.000	12.544		53.15	0.000	0.000
T3	249.84	1.783	37	77.090	A	2.173	36.559	7.500	19.36	0.000	0.000
259.84-239.84					B	3.322	15.124		40.66	0.000	0.000
					C	3.479	13.056		45.36	0.000	0.000
T4	229.84	1.741	36	77.090	A	0.000	65.137	7.500	11.51	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
239.84-219.84					B	0.000	15.397		48.71	0.000	0.000
					C	0.000	13.342		56.21	0.000	0.000
T5	209.84	1.696	35	77.507	A	0.521	67.827	8.333	12.19	0.000	0.000
219.84-199.84					B	3.301	16.208		42.71	0.000	0.000
					C	3.459	14.148		47.33	0.000	0.000
T6	189.84	1.649	34	77.507	A	0.000	69.277	8.333	12.03	0.000	0.000
199.84-179.84					B	0.000	17.309		48.14	0.000	0.000
					C	0.000	13.849		60.17	0.000	0.000
T7	169.84	1.597	33	77.923	A	0.277	72.783	9.167	12.55	0.000	0.000
179.84-159.84					B	3.175	18.962		41.41	0.000	0.000
					C	3.438	14.947		49.86	0.000	0.000
T8	149.84	1.541	32	77.507	A	0.000	73.659	8.333	11.31	0.000	0.000
159.84-139.84					B	0.000	19.918		41.84	0.000	0.000
					C	0.000	14.137		58.94	0.000	0.000
T9	129.84	1.479	31	77.923	A	0.000	74.454	9.167	12.31	0.000	0.000
139.84-119.84					B	0.000	20.648		44.39	0.000	0.000
					C	0.000	14.652		62.56	0.000	0.000
T10	109.84	1.41	29	77.923	A	4.677	75.150	9.167	11.48	0.000	0.000
119.84-99.84					B	3.070	20.908		38.23	0.000	0.000
					C	3.438	14.943		49.87	0.000	0.000
T11	89.84	1.331	28	78.340	A	7.871	76.397	10.000	11.87	0.000	0.000
99.84-79.84					B	0.000	23.092		43.31	0.000	0.000
					C	0.000	28.724		34.81	0.000	0.000
T12	69.84	1.239	26	78.340	A	7.871	77.282	10.000	11.74	0.000	0.000
79.84-59.84					B	0.000	23.409		42.72	0.000	0.000
					C	0.000	78.158		12.79	0.000	0.000
T13	49.84	1.125	23	78.340	A	7.461	78.150	10.000	11.68	0.000	0.000
59.84-39.84					B	2.945	23.164		38.30	0.000	0.000
					C	0.010	78.157		12.79	0.000	0.000
T14	29.84	1	21	78.340	A	7.871	78.116	10.000	11.63	0.000	0.000
39.84-19.84					B	0.000	23.409		42.72	0.000	0.000
					C	0.000	78.158		12.79	0.000	0.000
T15 19.84-6.50	13.17	1	21	52.253	A	5.250	52.103	6.670	11.63	0.000	0.000
					B	0.000	16.495		40.44	0.000	0.000
					C	0.000	52.131		12.79	0.000	0.000
T16 6.50-0.00	3.25	1	21	13.606	A	4.411	8.568	3.418	26.34	0.000	0.000
					B	5.702	4.284		34.23	0.000	0.000
					C	4.063	8.529		27.14	0.000	0.000

Tower Pressure - With Ice

G_H = 1.089 (base tower), 1.089 (upper structure)

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
L1	309.49	1.896	39	0.5000	34.428	A	0.000	34.428	34.428	100.00	0.000	0.000
327.00-291.84						B	0.000	34.428		100.00	0.000	0.000
						C	0.000	34.428		100.00	0.000	0.000
T1	285.84	1.853	38	0.5000	47.004	A	3.326	13.432	6.000	35.80	0.000	0.000
291.84-279.84						B	3.365	13.034		36.59	0.000	0.000
						C	3.500	12.789		36.83	0.000	0.000
T2	269.84	1.823	38	0.5000	78.340	A	0.000	25.491	10.000	39.23	0.000	0.000
279.84-259.84						B	0.000	25.535		39.16	0.000	0.000
						C	0.000	20.868		47.92	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
T3	249.84	1.783	37	0.5000	78.757	A	11.697	44.900	10.833	19.14	0.000	0.000
259.84-239.84						B	3.072	26.736		36.34	0.000	0.000
						C	3.479	21.353		43.63	0.000	0.000
T4	229.84	1.741	36	0.5000	78.757	A	39.733	57.036	10.833	11.20	0.000	0.000
239.84-219.84						B	0.000	26.985		40.15	0.000	0.000
						C	0.000	21.637		50.07	0.000	0.000
T5	209.84	1.696	35	0.5000	79.173	A	38.578	61.201	11.667	11.69	0.000	0.000
219.84-199.84						B	3.051	27.774		37.85	0.000	0.000
						C	3.459	22.416		45.09	0.000	0.000
T6	189.84	1.649	34	0.5000	79.173	A	39.733	63.985	11.667	11.25	0.000	0.000
199.84-179.84						B	0.000	30.869		37.79	0.000	0.000
						C	0.000	22.113		52.76	0.000	0.000
T7	169.84	1.597	33	0.5000	79.590	A	38.108	69.795	12.500	11.58	0.000	0.000
179.84-159.84						B	2.759	33.279		34.69	0.000	0.000
						C	3.438	23.184		46.95	0.000	0.000
T8	149.84	1.541	32	0.5000	79.173	A	39.733	72.290	11.667	10.41	0.000	0.000
159.84-139.84						B	0.000	36.775		31.72	0.000	0.000
						C	0.000	22.399		52.09	0.000	0.000
T9	129.84	1.479	31	0.5000	79.590	A	39.733	73.235	12.500	11.07	0.000	0.000
139.84-119.84						B	0.000	37.791		33.08	0.000	0.000
						C	0.000	22.890		54.61	0.000	0.000
T10	109.84	1.41	29	0.5000	79.590	A	44.235	73.896	12.500	10.58	0.000	0.000
119.84-99.84						B	2.487	37.998		30.88	0.000	0.000
						C	3.438	23.178		46.96	0.000	0.000
T11 99.84-79.84	89.84	1.331	28	0.5000	80.007	A	50.938	75.214	13.333	10.57	0.000	0.000
						B	0.000	42.126		31.65	0.000	0.000
						C	0.000	42.658		31.26	0.000	0.000
T12 79.84-59.84	69.84	1.239	26	0.5000	80.007	A	50.938	76.978	13.333	10.42	0.000	0.000
						B	0.000	43.314		30.78	0.000	0.000
						C	0.000	114.049		11.69	0.000	0.000
T13 59.84-39.84	49.84	1.125	23	0.5000	80.007	A	48.111	78.712	13.333	10.51	0.000	0.000
						B	2.195	43.131		29.42	0.000	0.000
						C	0.000	114.208		11.67	0.000	0.000
T14 39.84-19.84	29.84	1	21	0.5000	80.007	A	50.938	78.476	13.333	10.30	0.000	0.000
						B	0.000	43.314		30.78	0.000	0.000
						C	0.000	114.049		11.69	0.000	0.000
T15 19.84-6.50	13.17	1	21	0.5000	53.364	A	33.975	52.345	8.893	10.30	0.000	0.000
						B	0.000	31.026		28.66	0.000	0.000
						C	0.000	76.072		11.69	0.000	0.000
T16 6.50-0.00	3.25	1	21	0.5000	14.169	A	6.208	10.159	4.557	27.85	0.000	0.000
						B	5.163	7.279		36.63	0.000	0.000
						C	2.925	12.782		29.01	0.000	0.000

Tower Pressure - Service

G_H = 1.089 (base tower), 1.089 (upper structure)

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
L1	309.49	1.896	39	31.497	A	0.000	31.497	31.497	100.00	0.000	0.000
327.00-291.84					B	0.000	31.497		100.00	0.000	0.000
					C	0.000	31.497		100.00	0.000	0.000
T1	285.84	1.853	38	46.004	A	3.410	7.961	4.000	35.18	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
291.84-279.84					B	3.448	7.534		36.42	0.000	0.000
					C	3.500	7.531		36.26	0.000	0.000
T2	269.84	1.823	38	76.673	A	0.000	15.728	6.667	42.39	0.000	0.000
279.84-259.84					B	0.000	14.317		46.56	0.000	0.000
					C	0.000	12.544		53.15	0.000	0.000
T3	249.84	1.783	37	77.090	A	2.173	36.559	7.500	19.36	0.000	0.000
259.84-239.84					B	3.322	15.124		40.66	0.000	0.000
					C	3.479	13.056		45.36	0.000	0.000
T4	229.84	1.741	36	77.090	A	0.000	65.137	7.500	11.51	0.000	0.000
239.84-219.84					B	0.000	15.397		48.71	0.000	0.000
					C	0.000	13.342		56.21	0.000	0.000
T5	209.84	1.696	35	77.507	A	0.521	67.827	8.333	12.19	0.000	0.000
219.84-199.84					B	3.301	16.208		42.71	0.000	0.000
					C	3.459	14.148		47.33	0.000	0.000
T6	189.84	1.649	34	77.507	A	0.000	69.277	8.333	12.03	0.000	0.000
199.84-179.84					B	0.000	17.309		48.14	0.000	0.000
					C	0.000	13.849		60.17	0.000	0.000
T7	169.84	1.597	33	77.923	A	0.277	72.783	9.167	12.55	0.000	0.000
179.84-159.84					B	3.175	18.962		41.41	0.000	0.000
					C	3.438	14.947		49.86	0.000	0.000
T8	149.84	1.541	32	77.507	A	0.000	73.659	8.333	11.31	0.000	0.000
159.84-139.84					B	0.000	19.918		41.84	0.000	0.000
					C	0.000	14.137		58.94	0.000	0.000
T9	129.84	1.479	31	77.923	A	0.000	74.454	9.167	12.31	0.000	0.000
139.84-119.84					B	0.000	20.648		44.39	0.000	0.000
					C	0.000	14.652		62.56	0.000	0.000
T10	109.84	1.41	29	77.923	A	4.677	75.150	9.167	11.48	0.000	0.000
119.84-99.84					B	3.070	20.908		38.23	0.000	0.000
					C	3.438	14.943		49.87	0.000	0.000
T11	89.84	1.331	28	78.340	A	7.871	76.397	10.000	11.87	0.000	0.000
99.84-79.84					B	0.000	23.092		43.31	0.000	0.000
					C	0.000	28.724		34.81	0.000	0.000
T12	69.84	1.239	26	78.340	A	7.871	77.282	10.000	11.74	0.000	0.000
79.84-59.84					B	0.000	23.409		42.72	0.000	0.000
					C	0.000	78.158		12.79	0.000	0.000
T13	49.84	1.125	23	78.340	A	7.461	78.150	10.000	11.68	0.000	0.000
59.84-39.84					B	2.945	23.164		38.30	0.000	0.000
					C	0.010	78.157		12.79	0.000	0.000
T14	29.84	1	21	78.340	A	7.871	78.116	10.000	11.63	0.000	0.000
39.84-19.84					B	0.000	23.409		42.72	0.000	0.000
					C	0.000	78.158		12.79	0.000	0.000
T15 19.84-6.50	13.17	1	21	52.253	A	5.250	52.103	6.670	11.63	0.000	0.000
					B	0.000	16.495		40.44	0.000	0.000
					C	0.000	52.131		12.79	0.000	0.000
T16 6.50-0.00	3.25	1	21	13.606	A	4.411	8.568	3.418	26.34	0.000	0.000
					B	5.702	4.284		34.23	0.000	0.000
					C	4.063	8.529		27.14	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
L1	0	3139	A	1	0.59	1	1	1	31.497	796	22.63	C
327.00-291.84			B	1	0.59	1	1	1	31.497			
			C	1	0.59	1	1	1	31.497			

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	6	1165	A	0.247	2.446	0.601	1	1	8.196	839	69.93	A
291.84-279.84		TA 842	B	0.239	2.472	0.599	1	1	7.961			
			C	0.24	2.468	0.599	1	1	8.014			
T2	27	1298	A	0.205	2.579	0.591	1	1	9.302	988	49.39	A
279.84-259.84			B	0.187	2.641	0.588	1	1	8.415			
			C	0.164	2.722	0.584	1	1	7.321			
T3	137	1824	A	0.502	1.897	0.699	1	1	27.718	2118	105.90	A
259.84-239.84		TA 842	B	0.239	2.47	0.599	1	1	12.384			
			C	0.214	2.548	0.593	1	1	11.228			
T4	290	1468	A	0.845	1.856	0.934	1	1	60.844	4442	222.11	A
239.84-219.84			B	0.2	2.597	0.59	1	1	9.090			
			C	0.173	2.688	0.585	1	1	7.809			
T5	297	2101	A	0.882	1.899	0.967	1	1	66.082	4810	240.51	A
219.84-199.84		TA 842	B	0.252	2.432	0.602	1	1	13.064			
			C	0.227	2.508	0.596	1	1	11.896			
T6	307	1580	A	0.894	1.915	0.977	1	1	67.714	4830	241.51	A
199.84-179.84			B	0.223	2.52	0.595	1	1	10.306			
			C	0.179	2.669	0.586	1	1	8.119			
T7	319	2311	A	0.938	1.982	1	1	1	73.060	5225	261.23	A
179.84-159.84		TA 842	B	0.284	2.339	0.611	1	1	14.764			
			C	0.236	2.48	0.598	1	1	12.382			
T8	331	1659	A	0.95	2.004	1	1	1	73.659	5138	256.92	A
159.84-139.84			B	0.257	2.417	0.604	1	1	12.024			
			C	0.182	2.656	0.587	1	1	8.298			
T9	331	1791	A	0.955	2.013	1	1	1	74.454	5008	250.41	A
139.84-119.84			B	0.265	2.393	0.606	1	1	12.509			
			C	0.188	2.636	0.588	1	1	8.616			
T10	354	2311	A	1	2.1	1	1	1	79.827	4964*	248.21	A
119.84-99.84		TA 842	B	0.308	2.276	0.618	1	1	15.998			
			C	0.236	2.481	0.598	1	1	12.379			
T11	448	2100	A	1	2.1	1	1	1	84.268	4712*	235.61	A
99.84-79.84			B	0.295	2.31	0.614	1	1	14.186			
			C	0.367	2.134	0.639	1	1	18.342			
T12	737	2021	A	1	2.1	1	1	1	85.153	4385*	219.25	C
79.84-59.84			B	0.299	2.299	0.616	1	1	14.409			
			C	0.998	2.095	1	1	1	78.158			
T13	741	2378	A	1	2.1	1	1	1	85.611	3982*	199.10	C
59.84-39.84		TA 842	B	0.333	2.211	0.627	1	1	17.460			
			C	0.998	2.095	1	1	1	78.167			
T14	741	2021	A	1	2.1	1	1	1	85.987	3540*	176.98	C
39.84-19.84			B	0.299	2.299	0.616	1	1	14.409			
			C	0.998	2.095	1	1	1	78.158			
T15	497	1348	A	1	2.1	1	1	1	57.353	2361*	176.98	C
19.84-6.50			B	0.316	2.255	0.621	1	1	10.240			
			C	0.998	2.095	1	1	1	52.131			
T16 6.50-0.00	56	811	A	0.954	2.01	1	1	1	12.979	589	90.68	A
			B	0.734	1.782	0.845	1	1	9.320			
			C	0.925	1.962	1	1	1	12.592			
Sum Weight:	5619	36380			*$2A_g$ limit					58728		

Tower Forces - No Ice - Wind 45 To Face

tnxTower	Job: 327' Guyed Lattice Tower	Page: 29 of 85
AECOM 500 Enterprise Drive, Suite 3B Rocky Hill, CT Phone: 860-529-8882 FAX: 860-529-3991	Project: North Eagleville Road Storrs, CT	Date: 09:04:13 03/16/15
	Client: Verizon Wireless / VZ5-188R2	Designed by: MCD

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
L1	0	3139	A	1	0.59	1	1	1	31.497	796	22.63	C
327.00-291.84			B	1	0.59	1	1	1	31.497			
			C	1	0.59	1	1	1	31.497			
T1	6	1165	A	0.247	2.446	0.601	0.825	1	7.599	778	64.84	A
291.84-279.84		TA 842	B	0.239	2.472	0.599	0.825	1	7.358			
			C	0.24	2.468	0.599	0.825	1	7.402			
T2	27	1298	A	0.205	2.579	0.591	0.825	1	9.302	988	49.39	A
279.84-259.84			B	0.187	2.641	0.588	0.825	1	8.415			
			C	0.164	2.722	0.584	0.825	1	7.321			
T3	137	1824	A	0.502	1.897	0.699	0.825	1	27.338	2089	104.45	A
259.84-239.84		TA 842	B	0.239	2.47	0.599	0.825	1	11.803			
			C	0.214	2.548	0.593	0.825	1	10.619			
T4	290	1468	A	0.845	1.856	0.934	0.825	1	60.844	4442	222.11	A
239.84-219.84			B	0.2	2.597	0.59	0.825	1	9.090			
			C	0.173	2.688	0.585	0.825	1	7.809			
T5	297	2101	A	0.882	1.899	0.967	0.825	1	65.991	4803	240.17	A
219.84-199.84		TA 842	B	0.252	2.432	0.602	0.825	1	12.486			
			C	0.227	2.508	0.596	0.825	1	11.290			
T6	307	1580	A	0.894	1.915	0.977	0.825	1	67.714	4830	241.51	A
199.84-179.84			B	0.223	2.52	0.595	0.825	1	10.306			
			C	0.179	2.669	0.586	0.825	1	8.119			
T7	319	2311	A	0.938	1.982	1	0.825	1	73.011	5221	261.06	A
179.84-159.84		TA 842	B	0.284	2.339	0.611	0.825	1	14.208			
			C	0.236	2.48	0.598	0.825	1	11.780			
T8	331	1659	A	0.95	2.004	1	0.825	1	73.659	5138	256.92	A
159.84-139.84			B	0.257	2.417	0.604	0.825	1	12.024			
			C	0.182	2.656	0.587	0.825	1	8.298			
T9	331	1791	A	0.955	2.013	1	0.825	1	74.454	5008	250.41	A
139.84-119.84			B	0.265	2.393	0.606	0.825	1	12.509			
			C	0.188	2.636	0.588	0.825	1	8.616			
T10	354	2311	A	1	2.1	1	0.825	1	79.008	4964*	248.21	A
119.84-99.84		TA 842	B	0.308	2.276	0.618	0.825	1	15.460			
			C	0.236	2.481	0.598	0.825	1	11.778			
T11	448	2100	A	1	2.1	1	0.825	1	82.891	4712*	235.61	A
99.84-79.84			B	0.295	2.31	0.614	0.825	1	14.186			
			C	0.367	2.134	0.639	0.825	1	18.342			
T12	737	2021	A	1	2.1	1	0.825	1	83.775	4385*	219.25	C
79.84-59.84			B	0.299	2.299	0.616	0.825	1	14.409			
			C	0.998	2.095	1	0.825	1	78.158			
T13	741	2378	A	1	2.1	1	0.825	1	84.305	3982*	199.10	C
59.84-39.84		TA 842	B	0.333	2.211	0.627	0.825	1	16.945			
			C	0.998	2.095	1	0.825	1	78.165			
T14	741	2021	A	1	2.1	1	0.825	1	84.609	3540*	176.98	C
39.84-19.84			B	0.299	2.299	0.616	0.825	1	14.409			
			C	0.998	2.095	1	0.825	1	78.158			
T15	497	1348	A	1	2.1	1	0.825	1	56.434	2361*	176.98	C
19.84-6.50			B	0.316	2.255	0.621	0.825	1	10.240			
			C	0.998	2.095	1	0.825	1	52.131			
T16 6.50-0.00	56	811	A	0.954	2.01	1	0.825	1	12.207	554	85.29	A
			B	0.734	1.782	0.845	0.825	1	8.323			
			C	0.925	1.962	1	0.825	1	11.881			
Sum Weight:	5619	36380			*$2A_g$ limit					58593		

Tower Forces - No Ice - Wind 60 To Face

tnxTower	Job	Page
AECOM 500 Enterprise Drive, Suite 3B Rocky Hill, CT Phone: 860-529-8882 FAX: 860-529-3991	327' Guyed Lattice Tower	30 of 85
	Project North Eagleville Road Storrs, CT	Date 09:04:13 03/16/15
	Client Verizon Wireless / VZ5-188R2	Designed by MCD

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
L1	0	3139	A	1	0.59	1	1	1	31.497	796	22.63	C
327.00-291.84			B	1	0.59	1	1	1	31.497			
			C	1	0.59	1	1	1	31.497			
T1	6	1165	A	0.247	2.446	0.601	0.8	1	7.514	769	64.11	A
291.84-279.84		TA 842	B	0.239	2.472	0.599	0.8	1	7.271			
			C	0.24	2.468	0.599	0.8	1	7.314			
T2	27	1298	A	0.205	2.579	0.591	0.8	1	9.302	988	49.39	A
279.84-259.84			B	0.187	2.641	0.588	0.8	1	8.415			
			C	0.164	2.722	0.584	0.8	1	7.321			
T3	137	1824	A	0.502	1.897	0.699	0.8	1	27.284	2085	104.24	A
259.84-239.84		TA 842	B	0.239	2.47	0.599	0.8	1	11.720			
			C	0.214	2.548	0.593	0.8	1	10.532			
T4	290	1468	A	0.845	1.856	0.934	0.8	1	60.844	4442	222.11	A
239.84-219.84			B	0.2	2.597	0.59	0.8	1	9.090			
			C	0.173	2.688	0.585	0.8	1	7.809			
T5	297	2101	A	0.882	1.899	0.967	0.8	1	65.978	4803	240.13	A
219.84-199.84		TA 842	B	0.252	2.432	0.602	0.8	1	12.403			
			C	0.227	2.508	0.596	0.8	1	11.204			
T6	307	1580	A	0.894	1.915	0.977	0.8	1	67.714	4830	241.51	A
199.84-179.84			B	0.223	2.52	0.595	0.8	1	10.306			
			C	0.179	2.669	0.586	0.8	1	8.119			
T7	319	2311	A	0.938	1.982	1	0.8	1	73.005	5221	261.03	A
179.84-159.84		TA 842	B	0.284	2.339	0.611	0.8	1	14.129			
			C	0.236	2.48	0.598	0.8	1	11.694			
T8	331	1659	A	0.95	2.004	1	0.8	1	73.659	5138	256.92	A
159.84-139.84			B	0.257	2.417	0.604	0.8	1	12.024			
			C	0.182	2.656	0.587	0.8	1	8.298			
T9	331	1791	A	0.955	2.013	1	0.8	1	74.454	5008	250.41	A
139.84-119.84			B	0.265	2.393	0.606	0.8	1	12.509			
			C	0.188	2.636	0.588	0.8	1	8.616			
T10	354	2311	A	1	2.1	1	0.8	1	78.891	4964*	248.21	A
119.84-99.84		TA 842	B	0.308	2.276	0.618	0.8	1	15.383			
			C	0.236	2.481	0.598	0.8	1	11.692			
T11	448	2100	A	1	2.1	1	0.8	1	82.694	4712*	235.61	A
99.84-79.84			B	0.295	2.31	0.614	0.8	1	14.186			
			C	0.367	2.134	0.639	0.8	1	18.342			
T12	737	2021	A	1	2.1	1	0.8	1	83.579	4385*	219.25	C
79.84-59.84			B	0.299	2.299	0.616	0.8	1	14.409			
			C	0.998	2.095	1	0.8	1	78.158			
T13	741	2378	A	1	2.1	1	0.8	1	84.119	3982*	199.10	C
59.84-39.84		TA 842	B	0.333	2.211	0.627	0.8	1	16.871			
			C	0.998	2.095	1	0.8	1	78.165			
T14	741	2021	A	1	2.1	1	0.8	1	84.412	3540*	176.98	C
39.84-19.84			B	0.299	2.299	0.616	0.8	1	14.409			
			C	0.998	2.095	1	0.8	1	78.158			
T15	497	1348	A	1	2.1	1	0.8	1	56.303	2361*	176.98	C
19.84-6.50			B	0.316	2.255	0.621	0.8	1	10.240			
			C	0.998	2.095	1	0.8	1	52.131			
T16 6.50-0.00	56	811	A	0.954	2.01	1	0.8	1	12.096	549	84.52	A
			B	0.734	1.782	0.845	0.8	1	8.180			
			C	0.925	1.962	1	0.8	1	11.779			
Sum Weight:	5619	36380			*$2A_g$ limit					58573		

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
L1	0	3139	A	1	0.59	1	1	1	31.497	796	22.63	C
327.00-291.84			B	1	0.59	1	1	1	31.497			
			C	1	0.59	1	1	1	31.497			
T1	6	1165	A	0.247	2.446	0.601	0.85	1	7.684	787	65.57	A
291.84-279.84		TA 842	B	0.239	2.472	0.599	0.85	1	7.444			
			C	0.24	2.468	0.599	0.85	1	7.489			
T2	27	1298	A	0.205	2.579	0.591	0.85	1	9.302	988	49.39	A
279.84-259.84			B	0.187	2.641	0.588	0.85	1	8.415			
			C	0.164	2.722	0.584	0.85	1	7.321			
T3	137	1824	A	0.502	1.897	0.699	0.85	1	27.392	2093	104.65	A
259.84-239.84		TA 842	B	0.239	2.47	0.599	0.85	1	11.886			
			C	0.214	2.548	0.593	0.85	1	10.706			
T4	290	1468	A	0.845	1.856	0.934	0.85	1	60.844	4442	222.11	A
239.84-219.84			B	0.2	2.597	0.59	0.85	1	9.090			
			C	0.173	2.688	0.585	0.85	1	7.809			
T5	297	2101	A	0.882	1.899	0.967	0.85	1	66.004	4804	240.22	A
219.84-199.84		TA 842	B	0.252	2.432	0.602	0.85	1	12.568			
			C	0.227	2.508	0.596	0.85	1	11.377			
T6	307	1580	A	0.894	1.915	0.977	0.85	1	67.714	4830	241.51	A
199.84-179.84			B	0.223	2.52	0.595	0.85	1	10.306			
			C	0.179	2.669	0.586	0.85	1	8.119			
T7	319	2311	A	0.938	1.982	1	0.85	1	73.018	5222	261.08	A
179.84-159.84		TA 842	B	0.284	2.339	0.611	0.85	1	14.288			
			C	0.236	2.48	0.598	0.85	1	11.866			
T8	331	1659	A	0.95	2.004	1	0.85	1	73.659	5138	256.92	A
159.84-139.84			B	0.257	2.417	0.604	0.85	1	12.024			
			C	0.182	2.656	0.587	0.85	1	8.298			
T9	331	1791	A	0.955	2.013	1	0.85	1	74.454	5008	250.41	A
139.84-119.84			B	0.265	2.393	0.606	0.85	1	12.509			
			C	0.188	2.636	0.588	0.85	1	8.616			
T10	354	2311	A	1	2.1	1	0.85	1	79.125	4964*	248.21	A
119.84-99.84		TA 842	B	0.308	2.276	0.618	0.85	1	15.537			
			C	0.236	2.481	0.598	0.85	1	11.864			
T11	448	2100	A	1	2.1	1	0.85	1	83.088	4712*	235.61	A
99.84-79.84			B	0.295	2.31	0.614	0.85	1	14.186			
			C	0.367	2.134	0.639	0.85	1	18.342			
T12	737	2021	A	1	2.1	1	0.85	1	83.972	4385*	219.25	C
79.84-59.84			B	0.299	2.299	0.616	0.85	1	14.409			
			C	0.998	2.095	1	0.85	1	78.158			
T13	741	2378	A	1	2.1	1	0.85	1	84.492	3982*	199.10	C
59.84-39.84		TA 842	B	0.333	2.211	0.627	0.85	1	17.018			
			C	0.998	2.095	1	0.85	1	78.165			
T14	741	2021	A	1	2.1	1	0.85	1	84.806	3540*	176.98	C
39.84-19.84			B	0.299	2.299	0.616	0.85	1	14.409			
			C	0.998	2.095	1	0.85	1	78.158			
T15	497	1348	A	1	2.1	1	0.85	1	56.566	2361*	176.98	C
19.84-6.50			B	0.316	2.255	0.621	0.85	1	10.240			
			C	0.998	2.095	1	0.85	1	52.131			
T16 6.50-0.00	56	811	A	0.954	2.01	1	0.85	1	12.317	559	86.06	A
			B	0.734	1.782	0.845	0.85	1	8.465			
			C	0.925	1.962	1	0.85	1	11.982			
Sum Weight:	5619	36380			*$2A_g$ limit					58612		

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
L1	0	3381	A	1	0.59	1	1	1	34.428	870	24.74	C
327.00-291.84			B	1	0.59	1	1	1	34.428			
			C	1	0.59	1	1	1	34.428			
T1	26	1411	A	0.357	2.156	0.635	1	1	11.853	1070	89.17	A
291.84-279.84		TA 1036	B	0.349	2.174	0.632	1	1	11.603			
			C	0.347	2.18	0.631	1	1	11.573			
T2	108	1562	A	0.325	2.231	0.624	1	1	15.906	1463	73.16	B
279.84-259.84			B	0.326	2.229	0.624	1	1	15.939			
			C	0.266	2.389	0.606	1	1	12.650			
T3	461	2177	A	0.719	1.778	0.833	1	1	49.116	3518	175.92	A
259.84-239.84		TA 1036	B	0.378	2.108	0.643	1	1	20.264			
			C	0.315	2.256	0.621	1	1	16.733			
T4	1009	1742	A	1	2.1	1	1	1	96.769	6196*	309.78	A
239.84-219.84			B	0.343	2.189	0.63	1	1	16.997			
			C	0.275	2.365	0.608	1	1	13.166			
T5	1038	2469	A	1	2.1	1	1	1	99.779	6068*	303.42	A
219.84-199.84		TA 1036	B	0.389	2.085	0.647	1	1	21.030			
			C	0.327	2.227	0.624	1	1	17.457			
T6	1085	1856	A	1	2.1	1	1	1	103.718	5897*	294.86	A
199.84-179.84			B	0.39	2.084	0.648	1	1	19.988			
			C	0.279	2.353	0.61	1	1	13.484			
T7	1137	2688	A	1	2.1	1	1	1	107.903	5743*	287.14	A
179.84-159.84		TA 1036	B	0.453	1.969	0.675	1	1	25.207			
			C	0.334	2.208	0.627	1	1	17.976			
T8	1194	1941	A	1	2.1	1	1	1	112.023	5512*	275.59	A
159.84-139.84			B	0.464	1.95	0.68	1	1	25.008			
			C	0.283	2.342	0.611	1	1	13.682			
T9	1198	2076	A	1	2.1	1	1	1	112.968	5319*	265.93	A
139.84-119.84			B	0.475	1.935	0.685	1	1	25.886			
			C	0.288	2.33	0.612	1	1	14.013			
T10	1281	2688	A	1	2.1	1	1	1	118.130	5070*	253.52	A
119.84-99.84		TA 1036	B	0.509	1.889	0.702	1	1	29.160			
			C	0.334	2.208	0.627	1	1	17.971			
T11	1577	2401	A	1	2.1	1	1	1	126.152	4812*	240.62	A
99.84-79.84			B	0.527	1.868	0.711	1	1	29.968			
			C	0.533	1.861	0.715	1	1	30.499			
T12	2432	2316	A	1	2.1	1	1	1	127.916	4478*	223.92	C
79.84-59.84			B	0.541	1.852	0.719	1	1	31.164			
			C	1	2.1	1	1	1	114.049			
T13	2445	2750	A	1	2.1	1	1	1	126.823	4067*	203.34	C
59.84-39.84		TA 1036	B	0.567	1.829	0.734	1	1	33.839			
			C	1	2.1	1	1	1	114.208			
T14	2445	2316	A	1	2.1	1	1	1	129.414	3615*	180.74	C
39.84-19.84			B	0.541	1.852	0.719	1	1	31.164			
			C	1	2.1	1	1	1	114.049			
T15	1646	1544	A	1	2.1	1	1	1	86.321	2411*	180.74	C
19.84-6.50			B	0.581	1.817	0.742	1	1	23.034			
			C	1	2.1	1	1	1	76.072			
T16 6.50-0.00	186	962	A	1	2.1	1	1	1	16.367	640*	98.49	C
			B	0.878	1.895	0.963	1	1	12.175			
			C	1	2.1	1	1	1	15.707			
Sum Weight:	19268	42494			*$2A_g$ limit					66750		

Tower Forces - With Ice - Wind 45 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
L1	0	3381	A	1	0.59	1	1	1	34.428	870	24.74	C
327.00-291.84			B	1	0.59	1	1	1	34.428			
			C	1	0.59	1	1	1	34.428			
T1	26	1411	A	0.357	2.156	0.635	0.825	1	11.271	1018	84.79	A
291.84-279.84		TA 1036	B	0.349	2.174	0.632	0.825	1	11.014			
			C	0.347	2.18	0.631	0.825	1	10.961			
T2	108	1562	A	0.325	2.231	0.624	0.825	1	15.906	1463	73.16	B
279.84-259.84			B	0.326	2.229	0.624	0.825	1	15.939			
			C	0.266	2.389	0.606	0.825	1	12.650			
T3	461	2177	A	0.719	1.778	0.833	0.825	1	47.069	3372	168.59	A
259.84-239.84		TA 1036	B	0.378	2.108	0.643	0.825	1	19.727			
			C	0.315	2.256	0.621	0.825	1	16.124			
T4	1009	1742	A	1	2.1	1	0.825	1	89.816	6196*	309.78	A
239.84-219.84			B	0.343	2.189	0.63	0.825	1	16.997			
			C	0.275	2.365	0.608	0.825	1	13.166			
T5	1038	2469	A	1	2.1	1	0.825	1	93.028	6068*	303.42	A
219.84-199.84		TA 1036	B	0.389	2.085	0.647	0.825	1	20.496			
			C	0.327	2.227	0.624	0.825	1	16.851			
T6	1085	1856	A	1	2.1	1	0.825	1	96.765	5897*	294.86	A
199.84-179.84			B	0.39	2.084	0.648	0.825	1	19.988			
			C	0.279	2.353	0.61	0.825	1	13.484			
T7	1137	2688	A	1	2.1	1	0.825	1	101.234	5743*	287.14	A
179.84-159.84		TA 1036	B	0.453	1.969	0.675	0.825	1	24.724			
			C	0.334	2.208	0.627	0.825	1	17.374			
T8	1194	1941	A	1	2.1	1	0.825	1	105.070	5512*	275.59	A
159.84-139.84			B	0.464	1.95	0.68	0.825	1	25.008			
			C	0.283	2.342	0.611	0.825	1	13.682			
T9	1198	2076	A	1	2.1	1	0.825	1	106.015	5319*	265.93	A
139.84-119.84			B	0.475	1.935	0.685	0.825	1	25.886			
			C	0.288	2.33	0.612	0.825	1	14.013			
T10	1281	2688	A	1	2.1	1	0.825	1	110.389	5070*	253.52	A
119.84-99.84		TA 1036	B	0.509	1.889	0.702	0.825	1	28.724			
			C	0.334	2.208	0.627	0.825	1	17.369			
T11	1577	2401	A	1	2.1	1	0.825	1	117.238	4812*	240.62	A
99.84-79.84			B	0.527	1.868	0.711	0.825	1	29.968			
			C	0.533	1.861	0.715	0.825	1	30.499			
T12	2432	2316	A	1	2.1	1	0.825	1	119.002	4478*	223.92	C
79.84-59.84			B	0.541	1.852	0.719	0.825	1	31.164			
			C	1	2.1	1	0.825	1	114.049			
T13	2445	2750	A	1	2.1	1	0.825	1	118.403	4067*	203.34	C
59.84-39.84		TA 1036	B	0.567	1.829	0.734	0.825	1	33.455			
			C	1	2.1	1	0.825	1	114.208			
T14	2445	2316	A	1	2.1	1	0.825	1	120.500	3615*	180.74	C
39.84-19.84			B	0.541	1.852	0.719	0.825	1	31.164			
			C	1	2.1	1	0.825	1	114.049			
T15	1646	1544	A	1	2.1	1	0.825	1	80.375	2411*	180.74	C
19.84-6.50			B	0.581	1.817	0.742	0.825	1	23.034			
			C	1	2.1	1	0.825	1	76.072			
T16 6.50-0.00	186	962	A	1	2.1	1	0.825	1	15.280	640*	98.49	C
			B	0.878	1.895	0.963	0.825	1	11.271			
			C	1	2.1	1	0.825	1	15.195			
Sum Weight:	19268	42494			*$2A_g$ limit					66551		

Tower Forces - With Ice - Wind 60 To Face

Section Elevation ft	Add Weight lb	Self Weight lb	Face	e	C_F	R_R	D_F	D_R	A_E ft²	F lb	w plf	Ctrl. Face
L1	0	3381	A	1	0.59	1	1	1	34.428	870	24.74	C
327.00-291.84			B	1	0.59	1	1	1	34.428			
			C	1	0.59	1	1	1	34.428			
T1	26	1411	A	0.357	2.156	0.635	0.8	1	11.188	1010	84.17	A
291.84-279.84		TA 1036	B	0.349	2.174	0.632	0.8	1	10.930			
			C	0.347	2.18	0.631	0.8	1	10.873			
T2	108	1562	A	0.325	2.231	0.624	0.8	1	15.906	1463	73.16	B
279.84-259.84			B	0.326	2.229	0.624	0.8	1	15.939			
			C	0.266	2.389	0.606	0.8	1	12.650			
T3	461	2177	A	0.719	1.778	0.833	0.8	1	46.777	3351	167.54	A
259.84-239.84		TA 1036	B	0.378	2.108	0.643	0.8	1	19.650			
			C	0.315	2.256	0.621	0.8	1	16.037			
T4	1009	1742	A	1	2.1	1	0.8	1	88.822	6196*	309.78	A
239.84-219.84			B	0.343	2.189	0.63	0.8	1	16.997			
			C	0.275	2.365	0.608	0.8	1	13.166			
T5	1038	2469	A	1	2.1	1	0.8	1	92.064	6068*	303.42	A
219.84-199.84		TA 1036	B	0.389	2.085	0.647	0.8	1	20.419			
			C	0.327	2.227	0.624	0.8	1	16.765			
T6	1085	1856	A	1	2.1	1	0.8	1	95.771	5897*	294.86	A
199.84-179.84			B	0.39	2.084	0.648	0.8	1	19.988			
			C	0.279	2.353	0.61	0.8	1	13.484			
T7	1137	2688	A	1	2.1	1	0.8	1	100.282	5743*	287.14	A
179.84-159.84		TA 1036	B	0.453	1.969	0.675	0.8	1	24.655			
			C	0.334	2.208	0.627	0.8	1	17.288			
T8	1194	1941	A	1	2.1	1	0.8	1	104.077	5512*	275.59	A
159.84-139.84			B	0.464	1.95	0.68	0.8	1	25.008			
			C	0.283	2.342	0.611	0.8	1	13.682			
T9	1198	2076	A	1	2.1	1	0.8	1	105.021	5319*	265.93	A
139.84-119.84			B	0.475	1.935	0.685	0.8	1	25.886			
			C	0.288	2.33	0.612	0.8	1	14.013			
T10	1281	2688	A	1	2.1	1	0.8	1	109.283	5070*	253.52	A
119.84-99.84		TA 1036	B	0.509	1.889	0.702	0.8	1	28.662			
			C	0.334	2.208	0.627	0.8	1	17.284			
T11	1577	2401	A	1	2.1	1	0.8	1	115.964	4812*	240.62	A
99.84-79.84			B	0.527	1.868	0.711	0.8	1	29.968			
			C	0.533	1.861	0.715	0.8	1	30.499			
T12	2432	2316	A	1	2.1	1	0.8	1	117.728	4478*	223.92	C
79.84-59.84			B	0.541	1.852	0.719	0.8	1	31.164			
			C	1	2.1	1	0.8	1	114.049			
T13	2445	2750	A	1	2.1	1	0.8	1	117.201	4067*	203.34	C
59.84-39.84		TA 1036	B	0.567	1.829	0.734	0.8	1	33.400			
			C	1	2.1	1	0.8	1	114.208			
T14	2445	2316	A	1	2.1	1	0.8	1	119.226	3615*	180.74	C
39.84-19.84			B	0.541	1.852	0.719	0.8	1	31.164			
			C	1	2.1	1	0.8	1	114.049			
T15	1646	1544	A	1	2.1	1	0.8	1	79.526	2411*	180.74	C
19.84-6.50			B	0.581	1.817	0.742	0.8	1	23.034			
			C	1	2.1	1	0.8	1	76.072			
T16 6.50-0.00	186	962	A	1	2.1	1	0.8	1	15.125	640*	98.49	C
			B	0.878	1.895	0.963	0.8	1	11.142			
			C	1	2.1	1	0.8	1	15.122			
Sum Weight:	19268	42494			*2A_g limit					66522		

Tower Forces - With Ice - Wind 90 To Face

tnxTower	Job: 327' Guyed Lattice Tower	Page: 35 of 85
AECOM 500 Enterprise Drive, Suite 3B Rocky Hill, CT Phone: 860-529-8882 FAX: 860-529-3991	Project: North Eagleville Road Storrs, CT	Date: 09:04:13 03/16/15
	Client: Verizon Wireless / VZ5-188R2	Designed by: MCD

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
L1	0	3381	A	1	0.59	1	1	1	34.428	870	24.74	C
327.00-291.84			B	1	0.59	1	1	1	34.428			
			C	1	0.59	1	1	1	34.428			
T1	26	1411	A	0.357	2.156	0.635	0.85	1	11.355	1025	85.42	A
291.84-279.84		TA 1036	B	0.349	2.174	0.632	0.85	1	11.098			
			C	0.347	2.18	0.631	0.85	1	11.048			
T2	108	1562	A	0.325	2.231	0.624	0.85	1	15.906	1463	73.16	B
279.84-259.84			B	0.326	2.229	0.624	0.85	1	15.939			
			C	0.266	2.389	0.606	0.85	1	12.650			
T3	461	2177	A	0.719	1.778	0.833	0.85	1	47.362	3393	169.64	A
259.84-239.84		TA 1036	B	0.378	2.108	0.643	0.85	1	19.804			
			C	0.315	2.256	0.621	0.85	1	16.211			
T4	1009	1742	A	1	2.1	1	0.85	1	90.809	6196*	309.78	A
239.84-219.84			B	0.343	2.189	0.63	0.85	1	16.997			
			C	0.275	2.365	0.608	0.85	1	13.166			
T5	1038	2469	A	1	2.1	1	0.85	1	93.993	6068*	303.42	A
219.84-199.84		TA 1036	B	0.389	2.085	0.647	0.85	1	20.572			
			C	0.327	2.227	0.624	0.85	1	16.938			
T6	1085	1856	A	1	2.1	1	0.85	1	97.758	5897*	294.86	A
199.84-179.84			B	0.39	2.084	0.648	0.85	1	19.988			
			C	0.279	2.353	0.61	0.85	1	13.484			
T7	1137	2688	A	1	2.1	1	0.85	1	102.187	5743*	287.14	A
179.84-159.84		TA 1036	B	0.453	1.969	0.675	0.85	1	24.793			
			C	0.334	2.208	0.627	0.85	1	17.460			
T8	1194	1941	A	1	2.1	1	0.85	1	106.063	5512*	275.59	A
159.84-139.84			B	0.464	1.95	0.68	0.85	1	25.008			
			C	0.283	2.342	0.611	0.85	1	13.682			
T9	1198	2076	A	1	2.1	1	0.85	1	107.008	5319*	265.93	A
139.84-119.84			B	0.475	1.935	0.685	0.85	1	25.886			
			C	0.288	2.33	0.612	0.85	1	14.013			
T10	1281	2688	A	1	2.1	1	0.85	1	111.495	5070*	253.52	A
119.84-99.84		TA 1036	B	0.509	1.889	0.702	0.85	1	28.787			
			C	0.334	2.208	0.627	0.85	1	17.455			
T11	1577	2401	A	1	2.1	1	0.85	1	118.511	4812*	240.62	A
99.84-79.84			B	0.527	1.868	0.711	0.85	1	29.968			
			C	0.533	1.861	0.715	0.85	1	30.499			
T12	2432	2316	A	1	2.1	1	0.85	1	120.275	4478*	223.92	C
79.84-59.84			B	0.541	1.852	0.719	0.85	1	31.164			
			C	1	2.1	1	0.85	1	114.049			
T13	2445	2750	A	1	2.1	1	0.85	1	119.606	4067*	203.34	C
59.84-39.84		TA 1036	B	0.567	1.829	0.734	0.85	1	33.510			
			C	1	2.1	1	0.85	1	114.208			
T14	2445	2316	A	1	2.1	1	0.85	1	121.773	3615*	180.74	C
39.84-19.84			B	0.541	1.852	0.719	0.85	1	31.164			
			C	1	2.1	1	0.85	1	114.049			
T15	1646	1544	A	1	2.1	1	0.85	1	81.224	2411*	180.74	C
19.84-6.50			B	0.581	1.817	0.742	0.85	1	23.034			
			C	1	2.1	1	0.85	1	76.072			
T16 6.50-0.00	186	962	A	1	2.1	1	0.85	1	15.435	640*	98.49	C
			B	0.878	1.895	0.963	0.85	1	11.400			
			C	1	2.1	1	0.85	1	15.269			
Sum Weight:	19268	42494			*2A_g limit					66579		

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
L1	0	3139	A	1	0.59	1	1	1	31.497	796	22.63	C
327.00-291.84			B	1	0.59	1	1	1	31.497			
			C	1	0.59	1	1	1	31.497			
T1	6	1165	A	0.247	2.446	0.601	1	1	8.196	839	69.93	A
291.84-279.84		TA 842	B	0.239	2.472	0.599	1	1	7.961			
			C	0.24	2.468	0.599	1	1	8.014			
T2	27	1298	A	0.205	2.579	0.591	1	1	9.302	988	49.39	A
279.84-259.84			B	0.187	2.641	0.588	1	1	8.415			
			C	0.164	2.722	0.584	1	1	7.321			
T3	137	1824	A	0.502	1.897	0.699	1	1	27.718	2118	105.90	A
259.84-239.84		TA 842	B	0.239	2.47	0.599	1	1	12.384			
			C	0.214	2.548	0.593	1	1	11.228			
T4	290	1468	A	0.845	1.856	0.934	1	1	60.844	4442	222.11	A
239.84-219.84			B	0.2	2.597	0.59	1	1	9.090			
			C	0.173	2.688	0.585	1	1	7.809			
T5	297	2101	A	0.882	1.899	0.967	1	1	66.082	4810	240.51	A
219.84-199.84		TA 842	B	0.252	2.432	0.602	1	1	13.064			
			C	0.227	2.508	0.596	1	1	11.896			
T6	307	1580	A	0.894	1.915	0.977	1	1	67.714	4830	241.51	A
199.84-179.84			B	0.223	2.52	0.595	1	1	10.306			
			C	0.179	2.669	0.586	1	1	8.119			
T7	319	2311	A	0.938	1.982	1	1	1	73.060	5225	261.23	A
179.84-159.84		TA 842	B	0.284	2.339	0.611	1	1	14.764			
			C	0.236	2.48	0.598	1	1	12.382			
T8	331	1659	A	0.95	2.004	1	1	1	73.659	5138	256.92	A
159.84-139.84			B	0.257	2.417	0.604	1	1	12.024			
			C	0.182	2.656	0.587	1	1	8.298			
T9	331	1791	A	0.955	2.013	1	1	1	74.454	5008	250.41	A
139.84-119.84			B	0.265	2.393	0.606	1	1	12.509			
			C	0.188	2.636	0.588	1	1	8.616			
T10	354	2311	A	1	2.1	1	1	1	79.827	4964*	248.21	A
119.84-99.84		TA 842	B	0.308	2.276	0.618	1	1	15.998			
			C	0.236	2.481	0.598	1	1	12.379			
T11	448	2100	A	1	2.1	1	1	1	84.268	4712*	235.61	A
99.84-79.84			B	0.295	2.31	0.614	1	1	14.186			
			C	0.367	2.134	0.639	1	1	18.342			
T12	737	2021	A	1	2.1	1	1	1	85.153	4385*	219.25	C
79.84-59.84			B	0.299	2.299	0.616	1	1	14.409			
			C	0.998	2.095	1	1	1	78.158			
T13	741	2378	A	1	2.1	1	1	1	85.611	3982*	199.10	C
59.84-39.84		TA 842	B	0.333	2.211	0.627	1	1	17.460			
			C	0.998	2.095	1	1	1	78.167			
T14	741	2021	A	1	2.1	1	1	1	85.987	3540*	176.98	C
39.84-19.84			B	0.299	2.299	0.616	1	1	14.409			
			C	0.998	2.095	1	1	1	78.158			
T15	497	1348	A	1	2.1	1	1	1	57.353	2361*	176.98	C
19.84-6.50			B	0.316	2.255	0.621	1	1	10.240			
			C	0.998	2.095	1	1	1	52.131			
T16 6.50-0.00	56	811	A	0.954	2.01	1	1	1	12.979	589	90.68	A
			B	0.734	1.782	0.845	1	1	9.320			
			C	0.925	1.962	1	1	1	12.592			
Sum Weight:	5619	36380			*$2A_g$ limit					58728		

Tower Forces - Service - Wind 45 To Face

tnxTower	Job: 327' Guyed Lattice Tower	Page: 37 of 85
AECOM 500 Enterprise Drive, Suite 3B Rocky Hill, CT Phone: 860-529-8882 FAX: 860-529-3991	Project: North Eagleville Road Storrs, CT	Date: 09:04:13 03/16/15
	Client: Verizon Wireless / VZ5-188R2	Designed by: MCD

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
L1	0	3139	A	1	0.59	1	1	1	31.497	796	22.63	C
327.00-291.84			B	1	0.59	1	1	1	31.497			
			C	1	0.59	1	1	1	31.497			
T1	6	1165	A	0.247	2.446	0.601	0.825	1	7.599	778	64.84	A
291.84-279.84		TA 842	B	0.239	2.472	0.599	0.825	1	7.358			
			C	0.24	2.468	0.599	0.825	1	7.402			
T2	27	1298	A	0.205	2.579	0.591	0.825	1	9.302	988	49.39	A
279.84-259.84			B	0.187	2.641	0.588	0.825	1	8.415			
			C	0.164	2.722	0.584	0.825	1	7.321			
T3	137	1824	A	0.502	1.897	0.699	0.825	1	27.338	2089	104.45	A
259.84-239.84		TA 842	B	0.239	2.47	0.599	0.825	1	11.803			
			C	0.214	2.548	0.593	0.825	1	10.619			
T4	290	1468	A	0.845	1.856	0.934	0.825	1	60.844	4442	222.11	A
239.84-219.84			B	0.2	2.597	0.59	0.825	1	9.090			
			C	0.173	2.688	0.585	0.825	1	7.809			
T5	297	2101	A	0.882	1.899	0.967	0.825	1	65.991	4803	240.17	A
219.84-199.84		TA 842	B	0.252	2.432	0.602	0.825	1	12.486			
			C	0.227	2.508	0.596	0.825	1	11.290			
T6	307	1580	A	0.894	1.915	0.977	0.825	1	67.714	4830	241.51	A
199.84-179.84			B	0.223	2.52	0.595	0.825	1	10.306			
			C	0.179	2.669	0.586	0.825	1	8.119			
T7	319	2311	A	0.938	1.982	1	0.825	1	73.011	5221	261.06	A
179.84-159.84		TA 842	B	0.284	2.339	0.611	0.825	1	14.208			
			C	0.236	2.48	0.598	0.825	1	11.780			
T8	331	1659	A	0.95	2.004	1	0.825	1	73.659	5138	256.92	A
159.84-139.84			B	0.257	2.417	0.604	0.825	1	12.024			
			C	0.182	2.656	0.587	0.825	1	8.298			
T9	331	1791	A	0.955	2.013	1	0.825	1	74.454	5008	250.41	A
139.84-119.84			B	0.265	2.393	0.606	0.825	1	12.509			
			C	0.188	2.636	0.588	0.825	1	8.616			
T10	354	2311	A	1	2.1	1	0.825	1	79.008	4964*	248.21	A
119.84-99.84		TA 842	B	0.308	2.276	0.618	0.825	1	15.460			
			C	0.236	2.481	0.598	0.825	1	11.778			
T11	448	2100	A	1	2.1	1	0.825	1	82.891	4712*	235.61	A
99.84-79.84			B	0.295	2.31	0.614	0.825	1	14.186			
			C	0.367	2.134	0.639	0.825	1	18.342			
T12	737	2021	A	1	2.1	1	0.825	1	83.775	4385*	219.25	C
79.84-59.84			B	0.299	2.299	0.616	0.825	1	14.409			
			C	0.998	2.095	1	0.825	1	78.158			
T13	741	2378	A	1	2.1	1	0.825	1	84.305	3982*	199.10	C
59.84-39.84		TA 842	B	0.333	2.211	0.627	0.825	1	16.945			
			C	0.998	2.095	1	0.825	1	78.165			
T14	741	2021	A	1	2.1	1	0.825	1	84.609	3540*	176.98	C
39.84-19.84			B	0.299	2.299	0.616	0.825	1	14.409			
			C	0.998	2.095	1	0.825	1	78.158			
T15	497	1348	A	1	2.1	1	0.825	1	56.434	2361*	176.98	C
19.84-6.50			B	0.316	2.255	0.621	0.825	1	10.240			
			C	0.998	2.095	1	0.825	1	52.131			
T16 6.50-0.00	56	811	A	0.954	2.01	1	0.825	1	12.207	554	85.29	A
			B	0.734	1.782	0.845	0.825	1	8.323			
			C	0.925	1.962	1	0.825	1	11.881			
Sum Weight:	5619	36380			*$2A_g$ limit					58593		

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
L1	0	3139	A	1	0.59	1	1	1	31.497	796	22.63	C
327.00-291.84			B	1	0.59	1	1	1	31.497			
			C	1	0.59	1	1	1	31.497			
T1	6	1165	A	0.247	2.446	0.601	0.8	1	7.514	769	64.11	A
291.84-279.84		TA 842	B	0.239	2.472	0.599	0.8	1	7.271			
			C	0.24	2.468	0.599	0.8	1	7.314			
T2	27	1298	A	0.205	2.579	0.591	0.8	1	9.302	988	49.39	A
279.84-259.84			B	0.187	2.641	0.588	0.8	1	8.415			
			C	0.164	2.722	0.584	0.8	1	7.321			
T3	137	1824	A	0.502	1.897	0.699	0.8	1	27.284	2085	104.24	A
259.84-239.84		TA 842	B	0.239	2.47	0.599	0.8	1	11.720			
			C	0.214	2.548	0.593	0.8	1	10.532			
T4	290	1468	A	0.845	1.856	0.934	0.8	1	60.844	4442	222.11	A
239.84-219.84			B	0.2	2.597	0.59	0.8	1	9.090			
			C	0.173	2.688	0.585	0.8	1	7.809			
T5	297	2101	A	0.882	1.899	0.967	0.8	1	65.978	4803	240.13	A
219.84-199.84		TA 842	B	0.252	2.432	0.602	0.8	1	12.403			
			C	0.227	2.508	0.596	0.8	1	11.204			
T6	307	1580	A	0.894	1.915	0.977	0.8	1	67.714	4830	241.51	A
199.84-179.84			B	0.223	2.52	0.595	0.8	1	10.306			
			C	0.179	2.669	0.586	0.8	1	8.119			
T7	319	2311	A	0.938	1.982	1	0.8	1	73.005	5221	261.03	A
179.84-159.84		TA 842	B	0.284	2.339	0.611	0.8	1	14.129			
			C	0.236	2.48	0.598	0.8	1	11.694			
T8	331	1659	A	0.95	2.004	1	0.8	1	73.659	5138	256.92	A
159.84-139.84			B	0.257	2.417	0.604	0.8	1	12.024			
			C	0.182	2.656	0.587	0.8	1	8.298			
T9	331	1791	A	0.955	2.013	1	0.8	1	74.454	5008	250.41	A
139.84-119.84			B	0.265	2.393	0.606	0.8	1	12.509			
			C	0.188	2.636	0.588	0.8	1	8.616			
T10	354	2311	A	1	2.1	1	0.8	1	78.891	4964*	248.21	A
119.84-99.84		TA 842	B	0.308	2.276	0.618	0.8	1	15.383			
			C	0.236	2.481	0.598	0.8	1	11.692			
T11	448	2100	A	1	2.1	1	0.8	1	82.694	4712*	235.61	A
99.84-79.84			B	0.295	2.31	0.614	0.8	1	14.186			
			C	0.367	2.134	0.639	0.8	1	18.342			
T12	737	2021	A	1	2.1	1	0.8	1	83.579	4385*	219.25	C
79.84-59.84			B	0.299	2.299	0.616	0.8	1	14.409			
			C	0.998	2.095	1	0.8	1	78.158			
T13	741	2378	A	1	2.1	1	0.8	1	84.119	3982*	199.10	C
59.84-39.84		TA 842	B	0.333	2.211	0.627	0.8	1	16.871			
			C	0.998	2.095	1	0.8	1	78.165			
T14	741	2021	A	1	2.1	1	0.8	1	84.412	3540*	176.98	C
39.84-19.84			B	0.299	2.299	0.616	0.8	1	14.409			
			C	0.998	2.095	1	0.8	1	78.158			
T15	497	1348	A	1	2.1	1	0.8	1	56.303	2361*	176.98	C
19.84-6.50			B	0.316	2.255	0.621	0.8	1	10.240			
			C	0.998	2.095	1	0.8	1	52.131			
T16 6.50-0.00	56	811	A	0.954	2.01	1	0.8	1	12.096	549	84.52	A
			B	0.734	1.782	0.845	0.8	1	8.180			
			C	0.925	1.962	1	0.8	1	11.779			
Sum Weight:	5619	36380			*2A_g limit					58573		

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 ft^2	F lb	w plf	Ctrl. Face
L1	0	3139	A	1	0.59	1	1	1	31.497	796	22.63	C
327.00-291.84			B	1	0.59	1	1	1	31.497			
			C	1	0.59	1	1	1	31.497			
T1	6	1165	A	0.247	2.446	0.601	0.85	1	7.684	787	65.57	A
291.84-279.84		TA 842	B	0.239	2.472	0.599	0.85	1	7.444			
			C	0.24	2.468	0.599	0.85	1	7.489			
T2	27	1298	A	0.205	2.579	0.591	0.85	1	9.302	988	49.39	A
279.84-259.84			B	0.187	2.641	0.588	0.85	1	8.415			
			C	0.164	2.722	0.584	0.85	1	7.321			
T3	137	1824	A	0.502	1.897	0.699	0.85	1	27.392	2093	104.65	A
259.84-239.84		TA 842	B	0.239	2.47	0.599	0.85	1	11.886			
			C	0.214	2.548	0.593	0.85	1	10.706			
T4	290	1468	A	0.845	1.856	0.934	0.85	1	60.844	4442	222.11	A
239.84-219.84			B	0.2	2.597	0.59	0.85	1	9.090			
			C	0.173	2.688	0.585	0.85	1	7.809			
T5	297	2101	A	0.882	1.899	0.967	0.85	1	66.004	4804	240.22	A
219.84-199.84		TA 842	B	0.252	2.432	0.602	0.85	1	12.568			
			C	0.227	2.508	0.596	0.85	1	11.377			
T6	307	1580	A	0.894	1.915	0.977	0.85	1	67.714	4830	241.51	A
199.84-179.84			B	0.223	2.52	0.595	0.85	1	10.306			
			C	0.179	2.669	0.586	0.85	1	8.119			
T7	319	2311	A	0.938	1.982	1	0.85	1	73.018	5222	261.08	A
179.84-159.84		TA 842	B	0.284	2.339	0.611	0.85	1	14.288			
			C	0.236	2.48	0.598	0.85	1	11.866			
T8	331	1659	A	0.95	2.004	1	0.85	1	73.659	5138	256.92	A
159.84-139.84			B	0.257	2.417	0.604	0.85	1	12.024			
			C	0.182	2.656	0.587	0.85	1	8.298			
T9	331	1791	A	0.955	2.013	1	0.85	1	74.454	5008	250.41	A
139.84-119.84			B	0.265	2.393	0.606	0.85	1	12.509			
			C	0.188	2.636	0.588	0.85	1	8.616			
T10	354	2311	A	1	2.1	1	0.85	1	79.125	4964*	248.21	A
119.84-99.84		TA 842	B	0.308	2.276	0.618	0.85	1	15.537			
			C	0.236	2.481	0.598	0.85	1	11.864			
T11	448	2100	A	1	2.1	1	0.85	1	83.088	4712*	235.61	A
99.84-79.84			B	0.295	2.31	0.614	0.85	1	14.186			
			C	0.367	2.134	0.639	0.85	1	18.342			
T12	737	2021	A	1	2.1	1	0.85	1	83.972	4385*	219.25	C
79.84-59.84			B	0.299	2.299	0.616	0.85	1	14.409			
			C	0.998	2.095	1	0.85	1	78.158			
T13	741	2378	A	1	2.1	1	0.85	1	84.492	3982*	199.10	C
59.84-39.84		TA 842	B	0.333	2.211	0.627	0.85	1	17.018			
			C	0.998	2.095	1	0.85	1	78.165			
T14	741	2021	A	1	2.1	1	0.85	1	84.806	3540*	176.98	C
39.84-19.84			B	0.299	2.299	0.616	0.85	1	14.409			
			C	0.998	2.095	1	0.85	1	78.158			
T15	497	1348	A	1	2.1	1	0.85	1	56.566	2361*	176.98	C
19.84-6.50			B	0.316	2.255	0.621	0.85	1	10.240			
			C	0.998	2.095	1	0.85	1	52.131			
T16 6.50-0.00	56	811	A	0.954	2.01	1	0.85	1	12.317	559	86.06	A
			B	0.734	1.782	0.845	0.85	1	8.465			
			C	0.925	1.962	1	0.85	1	11.982			
Sum Weight:	5619	36380			*$2A_g$ limit					58612		

Force Totals (Does not include forces on guys)

Load Case	Vertical Forces lb	Sum of Forces X lb	Sum of Forces Z lb	Sum of Torques lb-ft
Leg Weight	19662			
Bracing Weight	16718			
Total Member Self-Weight	36380			
Guy Weight	11752			
Total Weight	64690			
Wind 0 deg - No Ice		791	-86910	-26920.65
Wind 30 deg - No Ice		43805	-74953	-24720.80
Wind 45 deg - No Ice		61460	-61040	-21229.44
Wind 60 deg - No Ice		74989	-43243	-16314.59
Wind 90 deg - No Ice		86443	-409	-2689.62
Wind 120 deg - No Ice		75149	43466	13237.88
Wind 135 deg - No Ice		61045	61269	20141.19
Wind 150 deg - No Ice		42833	74975	25534.33
Wind 180 deg - No Ice		-257	86346	28409.32
Wind 210 deg - No Ice		-43212	75201	23617.88
Wind 225 deg - No Ice		-60921	61811	19483.54
Wind 240 deg - No Ice		-74760	44287	13612.52
Wind 270 deg - No Ice		-85857	219	759.68
Wind 300 deg - No Ice		-74328	-42697	-13060.76
Wind 315 deg - No Ice		-60846	-60543	-19025.47
Wind 330 deg - No Ice		-43115	-74585	-23440.61
Member Ice	6114			
Guy Ice	8219			
Total Weight Ice	98655			
Wind 0 deg - Ice		835	-99116	-21050.92
Wind 30 deg - Ice		49862	-85396	-20820.33
Wind 45 deg - Ice		69955	-69491	-18597.89
Wind 60 deg - Ice		85315	-49284	-14998.33
Wind 90 deg - Ice		98296	-407	-4249.05
Wind 120 deg - Ice		85377	50418	10079.57
Wind 135 deg - Ice		69204	70518	16284.93
Wind 150 deg - Ice		48509	85991	20959.05
Wind 180 deg - Ice		-272	98869	22603.58
Wind 210 deg - Ice		-48911	86235	18132.70
Wind 225 deg - Ice		-69078	71093	15108.95
Wind 240 deg - Ice		-84973	51286	10899.15
Wind 270 deg - Ice		-97688	260	2234.98
Wind 300 deg - Ice		-84621	-48707	-8597.94
Wind 315 deg - Ice		-69306	-68965	-13427.33
Wind 330 deg - Ice		-49129	-85006	-17222.40
Total Weight	64690			
Wind 0 deg - Service		791	-86910	-26920.65
Wind 30 deg - Service		43805	-74953	-24720.80
Wind 45 deg - Service		61460	-61040	-21229.44
Wind 60 deg - Service		74989	-43243	-16314.59
Wind 90 deg - Service		86443	-409	-2689.62
Wind 120 deg - Service		75149	43466	13237.88
Wind 135 deg - Service		61045	61269	20141.19
Wind 150 deg - Service		42833	74975	25534.33
Wind 180 deg - Service		-257	86346	28409.32
Wind 210 deg - Service		-43212	75201	23617.88
Wind 225 deg - Service		-60921	61811	19483.54
Wind 240 deg - Service		-74760	44287	13612.52
Wind 270 deg - Service		-85857	219	759.68
Wind 300 deg - Service		-74328	-42697	-13060.76
Wind 315 deg - Service		-60846	-60543	-19025.47
Wind 330 deg - Service		-43115	-74585	-23440.61

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

Maximum Member Forces

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Force lb	Major Axis Moment lb-ft	Minor Axis Moment lb-ft
L1	327 - 291.84	Pole	Max Tension	32	0	-1.46	3.37
			Max. Compression	24	-3685	-20143.72	-12090.68
			Max. Mx	31	-3682	24288.69	-19.76
			Max. My	27	-3681	505.02	-24144.65
			Max. Vy	31	-1281	24288.69	-19.76
			Max. Vx	27	1286	505.02	-24144.65
			Max. Torque	26			-632.82
T1	291.84 - 279.84	Leg	Max Tension	32	9730	-595.69	-414.98
			Max. Compression	33	-27705	-100.69	-418.61
			Max. Mx	22	9296	-2771.61	1554.28
			Max. My	27	9324	-4.33	-3192.72
			Max. Vy	32	-1203	763.64	283.65
			Max. Vx	27	1343	-155.91	-835.43
		Diagonal	Max Tension	12	2911	0.00	0.00
			Max. Compression	31	-2964	0.00	0.00
			Max. Mx	25	1036	13.51	0.00
			Max. My	26	398	0.00	-0.08
			Max. Vy	25	-11	0.00	0.00
			Max. Vx	26	0	0.00	0.00
		Horizontal	Max Tension	34	1309	0.00	0.00
			Max. Compression	23	-885	0.00	0.00
			Max. Mx	26	979	6.03	0.00
			Max. My	26	427	0.00	0.00
			Max. Vy	26	7	0.00	0.00
			Max. Vx	26	0	0.00	0.00
		Secondary Horizontal	Max Tension	29	0	-1.43	-0.00
			Max. Compression	25	0	-1.38	-0.00
			Max. Mx	23	0	-1.77	-0.00
			Max. My	19	0	-1.14	0.00
			Max. Vy	23	4	-1.77	-0.00
			Max. Vx	19	0	-1.14	0.00
		Top Girt	Max Tension	25	0	0.00	0.00
			Max. Compression	25	0	0.00	0.00
			Max. Mx	22	0	6.03	0.00
			Max. My	23	0	0.00	-0.00
			Max. Vy	22	7	0.00	0.00
			Max. Vx	23	0	0.00	0.00
		Guy A	Bottom Tension	27	19941		
			Top Tension	27	20528		
			Top Cable Vert	27	16929		
			Top Cable Norm	27	11612		
			Top Cable Tan	27	15		
			Bot Cable Vert	27	-15317		
			Bot Cable Norm	27	12768		
			Bot Cable Tan	27	16		
		Guy B	Bottom Tension	32	19135		
			Top Tension	32	19661		
			Top Cable Vert	32	15571		
			Top Cable Norm	32	12005		
			Top Cable Tan	32	14		
			Bot Cable Vert	32	-14052		
			Bot Cable Norm	32	12988		
			Bot Cable Tan	32	15		
		Guy C	Bottom Tension	22	19901		
			Top Tension	22	20483		
			Top Cable Vert	22	16828		
			Top Cable Norm	22	11677		
			Top Cable Tan	22	15		
			Bot Cable Vert	22	-15225		

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Force lb	Major Axis Moment lb-ft	Minor Axis Moment lb-ft
			Bot Cable Norm	22	12816		
			Bot Cable Tan	22	16		
		Top Guy Pull-Off	Max Tension	34	4887	0.00	0.00
			Max. Compression	31	-4128	0.00	0.00
			Max. Mx	18	316	72.45	0.00
			Max. My	26	2120	0.00	0.00
			Max. Vy	18	-79	0.00	0.00
			Max. Vx	26	0	0.00	0.00
		Torque Arm Top	Max Tension	31	9519	-29447.06	0.00
			Max. Compression	23	-244	-61622.54	0.00
			Max. Mx	27	617	-66070.59	0.00
			Max. My	26	6782	-45487.68	0.00
			Max. Vy	27	16585	-66070.59	0.00
			Max. Vx	26	0	-45487.68	0.00
T2	279.84 - 259.84	Leg	Max Tension	1	0	0.00	0.00
			Max. Compression	7	-29523	-238.91	-25.75
			Max. Mx	32	-21190	-556.63	-131.10
			Max. My	27	-21385	56.55	592.64
			Max. Vy	32	-393	180.58	-96.63
			Max. Vx	34	-477	73.29	214.11
		Diagonal	Max Tension	23	2091	0.00	0.00
			Max. Compression	8	-2268	0.00	0.00
			Max. Mx	25	192	14.14	0.00
			Max. My	26	-202	0.00	-0.09
			Max. Vy	25	-11	0.00	0.00
			Max. Vx	26	0	0.00	0.00
		Horizontal	Max Tension	33	654	0.00	0.00
			Max. Compression	7	-511	0.00	0.00
			Max. Mx	25	450	6.03	0.00
			Max. My	26	466	0.00	0.00
			Max. Vy	25	7	0.00	0.00
			Max. Vx	26	0	0.00	0.00
		Secondary Horizontal	Max Tension	29	0	-1.35	-0.00
			Max. Compression	25	0	-1.40	-0.00
			Max. Mx	23	0	-1.72	-0.00
			Max. My	19	0	-0.92	0.00
			Max. Vy	23	4	-1.72	-0.00
			Max. Vx	19	0	0.00	0.00
		Top Girt	Max Tension	26	441	0.00	0.00
			Max. Compression	1	0	0.00	0.00
			Max. Mx	18	227	6.03	0.00
			Max. My	26	330	0.00	0.00
			Max. Vy	18	7	0.00	0.00
			Max. Vx	26	0	0.00	0.00
T3	259.84 - 239.84	Leg	Max Tension	1	0	0.00	0.00
			Max. Compression	22	-67454	-166.07	-302.97
			Max. Mx	22	-55100	2957.40	-1214.58
			Max. My	27	-19442	-181.16	-3242.44
			Max. Vy	22	1285	-1009.57	89.35
			Max. Vx	27	1336	287.05	-922.52
		Diagonal	Max Tension	20	6176	0.00	0.00
			Max. Compression	28	-7117	0.00	0.00
			Max. Mx	25	4014	14.14	0.00
			Max. My	23	1604	0.00	0.08
			Max. Vy	25	-11	0.00	0.00
			Max. Vx	23	0	0.00	0.00
		Horizontal	Max Tension	22	1168	0.00	0.00
			Max. Compression	30	-1194	0.00	0.00

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Force lb	Major Axis Moment lb-ft	Minor Axis Moment lb-ft
			Max. Mx	18	604	6.03	0.00
			Max. My	23	1093	0.00	0.00
			Max. Vy	18	7	0.00	0.00
			Max. Vx	23	0	0.00	0.00
		Secondary Horizontal	Max Tension	29	0	-1.32	-0.00
			Max. Compression	25	0	-1.35	-0.00
			Max. Mx	23	0	-1.72	-0.00
			Max. My	19	0	-0.69	0.00
			Max. Vy	23	4	-1.72	-0.00
			Max. Vx	19	0	0.00	0.00
		Top Girt	Max Tension	19	970	0.00	0.00
			Max. Compression	1	0	0.00	0.00
			Max. Mx	18	469	6.03	0.00
			Max. My	23	648	0.00	0.00
			Max. Vy	18	7	0.00	0.00
			Max. Vx	23	0	0.00	0.00
		Guy A	Bottom Tension	27	21288		
			Top Tension	27	21820		
			Top Cable Vert	27	17265		
			Top Cable Norm	27	13343		
			Top Cable Tan	27	13		
			Bot Cable Vert	27	-15789		
			Bot Cable Norm	27	14279		
			Bot Cable Tan	27	14		
		Guy B	Bottom Tension	32	20354		
			Top Tension	32	20825		
			Top Cable Vert	32	15651		
			Top Cable Norm	32	13738		
			Top Cable Tan	32	11		
			Bot Cable Vert	32	-14274		
			Bot Cable Norm	32	14510		
			Bot Cable Tan	32	14		
		Guy C	Bottom Tension	22	21197		
			Top Tension	22	21723		
			Top Cable Vert	22	17109		
			Top Cable Norm	22	13386		
			Top Cable Tan	22	12		
			Bot Cable Vert	22	-15641		
			Bot Cable Norm	22	14306		
			Bot Cable Tan	22	15		
		Top Guy Pull-Off	Max Tension	26	7772	0.00	0.00
			Max. Compression	34	-6545	0.00	0.00
			Max. Mx	18	449	72.45	0.00
			Max. My	26	-1888	0.00	0.00
			Max. Vy	18	-79	0.00	0.00
			Max. Vx	26	0	0.00	0.00
		Torque Arm Top	Max Tension	34	11893	-24747.38	-0.00
			Max. Compression	25	-2490	-56862.12	-0.00
			Max. Mx	27	-720	-66934.79	0.00
			Max. My	26	8481	-42860.12	0.00
			Max. Vy	27	16801	-66934.79	0.00
			Max. Vx	26	0	-42860.12	0.00
T4	239.84 - 219.84	Leg	Max Tension	1	0	0.00	0.00
			Max. Compression	27	-68181	-336.68	13.12
			Max. Mx	32	-50588	-737.08	-28.61
			Max. My	27	-51914	371.74	688.83
			Max. Vy	32	389	342.52	-197.95
			Max. Vx	20	358	42.74	389.55
		Diagonal	Max Tension	34	4618	0.00	0.00

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Force lb	Major Axis Moment lb-ft	Minor Axis Moment lb-ft
			Max. Compression	26	-6046	0.00	0.00
			Max. Mx	25	701	14.13	0.00
			Max. My	26	607	0.00	-0.08
			Max. Vy	25	-11	0.00	0.00
			Max. Vx	26	0	0.00	0.00
		Horizontal	Max Tension	27	1181	0.00	0.00
			Max. Compression	27	-1181	0.00	0.00
			Max. Mx	32	1117	6.03	0.00
			Max. My	26	930	0.00	-0.00
			Max. Vy	32	7	0.00	0.00
			Max. Vx	26	0	0.00	0.00
		Secondary Horizontal	Max Tension	29	0	-1.39	-0.00
			Max. Compression	25	0	-1.42	-0.00
			Max. Mx	23	0	-1.65	0.00
			Max. My	19	0	-0.88	0.00
			Max. Vy	23	4	-1.65	0.00
			Max. Vx	19	0	0.00	0.00
		Top Girt	Max Tension	27	714	0.00	0.00
			Max. Compression	19	-118	0.00	0.00
			Max. Mx	18	234	6.03	0.00
			Max. My	23	-26	0.00	-0.00
			Max. Vy	18	7	0.00	0.00
			Max. Vx	23	0	0.00	0.00
T5	219.84 - 199.84	Leg	Max Tension	1	0	0.00	0.00
			Max. Compression	27	-112023	641.92	27.20
			Max. Mx	22	-83283	3126.56	-958.45
			Max. My	27	-47022	-413.31	-3355.79
			Max. Vy	22	1253	-1035.86	-133.38
			Max. Vx	27	1241	636.92	-840.46
		Diagonal	Max Tension	20	9947	0.00	0.00
			Max. Compression	28	-11653	0.00	0.00
			Max. Mx	24	6344	16.48	0.00
			Max. My	26	4001	0.00	-0.09
			Max. Vy	24	-13	0.00	0.00
			Max. Vx	26	0	0.00	0.00
		Horizontal	Max Tension	27	1940	0.00	0.00
			Max. Compression	27	-1940	0.00	0.00
			Max. Mx	34	1747	6.03	0.00
			Max. My	2	1122	0.00	-0.00
			Max. Vy	34	7	0.00	0.00
			Max. Vx	2	0	0.00	0.00
		Secondary Horizontal	Max Tension	13	0	-0.92	-0.00
			Max. Compression	7	0	-1.02	-0.00
			Max. Mx	33	0	-1.69	0.00
			Max. My	2	0	-0.33	0.00
			Max. Vy	33	4	-1.69	0.00
			Max. Vx	2	0	0.00	0.00
		Top Girt	Max Tension	27	1112	0.00	0.00
			Max. Compression	1	0	0.00	0.00
			Max. Mx	32	817	6.03	0.00
			Max. My	2	527	0.00	-0.00
			Max. Vy	32	7	0.00	0.00
			Max. Vx	2	0	0.00	0.00
		Guy A	Bottom Tension	27	23747		
			Top Tension	27	24203		
			Top Cable Vert	27	17798		
			Top Cable Norm	27	16401		
			Top Cable Tan	27	11		

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Force lb	Major Axis Moment lb-ft	Minor Axis Moment lb-ft
			Bot Cable Vert	27	-16514		
			Bot Cable Norm	27	17064		
			Bot Cable Tan	27	12		
		Guy B	Bottom Tension	32	22440		
			Top Tension	32	22835		
			Top Cable Vert	32	15613		
			Top Cable Norm	32	16663		
			Top Cable Tan	32	9		
			Bot Cable Vert	32	-14438		
			Bot Cable Norm	32	17179		
			Bot Cable Tan	32	11		
		Guy C	Bottom Tension	22	23503		
			Top Tension	22	23952		
			Top Cable Vert	22	17502		
			Top Cable Norm	22	16352		
			Top Cable Tan	22	10		
			Bot Cable Vert	22	-16228		
			Bot Cable Norm	22	17000		
			Bot Cable Tan	22	12		
		Top Guy Pull-Off	Max Tension	26	12945	0.00	0.00
			Max. Compression	34	-11150	0.00	0.00
			Max. Mx	18	619	72.45	0.00
			Max. My	9	-3030	0.00	0.00
			Max. Vy	18	-79	0.00	0.00
			Max. Vx	9	0	0.00	0.00
		Torque Arm Top	Max Tension	28	16023	-17295.07	0.00
			Max. Compression	25	-5756	-56273.44	-0.00
			Max. Mx	27	-3144	-68479.40	0.00
			Max. My	26	218	-62832.40	0.00
			Max. Vy	27	17186	-68479.40	0.00
			Max. Vx	26	0	-62832.40	0.00
T6	199.84 - 179.84	Leg	Max Tension	1	0	0.00	0.00
			Max. Compression	27	-122399	712.53	-625.96
			Max. Mx	23	-74106	1658.85	69.10
			Max. My	19	-94149	355.76	-1635.62
			Max. Vy	31	-2541	1148.05	43.07
			Max. Vx	19	-2636	-303.32	1145.56
		Diagonal	Max Tension	26	9337	0.00	0.00
			Max. Compression	26	-10740	0.00	0.00
			Max. Mx	22	7808	11.96	0.00
			Max. My	27	-443	0.00	-0.09
			Max. Vy	22	10	0.00	0.00
			Max. Vx	27	0	0.00	0.00
		Horizontal	Max Tension	27	3846	0.00	0.00
			Max. Compression	19	-2854	0.00	0.00
			Max. Mx	32	1053	6.03	0.00
			Max. My	26	1999	0.00	-0.00
			Max. Vy	32	7	0.00	0.00
			Max. Vx	26	0	0.00	0.00
		Secondary Horizontal	Max Tension	22	0	-1.63	-0.00
			Max. Compression	31	0	-1.52	-0.00
			Max. Mx	34	0	-2.33	0.00
			Max. My	27	0	-1.80	0.00
			Max. Vy	34	5	-2.33	0.00
			Max. Vx	27	0	-1.80	0.00
		Top Girt	Max Tension	21	1024	0.00	0.00
			Max. Compression	2	-7	0.00	0.00
			Max. Mx	18	408	6.03	0.00
			Max. My	2	-7	0.00	-0.00

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Force lb	Major Axis Moment lb-ft	Minor Axis Moment lb-ft
			Max. Vy	18	7	0.00	0.00
			Max. Vx	2	0	0.00	0.00
T7	179.84 - 159.84	Leg	Max Tension	1	0	0.00	0.00
			Max. Compression	32	-101359	-711.37	-259.24
			Max. Mx	23	-50899	-3132.41	418.41
			Max. My	27	-49159	605.26	-3292.53
			Max. Vy	23	1243	-3132.41	418.41
			Max. Vx	27	1214	605.26	-3292.53
		Diagonal	Max Tension	20	13495	0.00	0.00
			Max. Compression	20	-15167	0.00	0.00
			Max. Mx	21	13084	16.51	0.00
			Max. My	27	-1378	0.00	-0.12
			Max. Vy	21	-13	0.00	0.00
			Max. Vx	27	0	0.00	0.00
		Horizontal	Max Tension	32	1756	0.00	0.00
			Max. Compression	32	-1756	0.00	0.00
			Max. Mx	32	1756	6.03	0.00
			Max. My	26	1609	0.00	-0.00
			Max. Vy	32	7	0.00	0.00
			Max. Vx	26	0	0.00	0.00
		Secondary Horizontal	Max Tension	22	0	-1.63	-0.00
			Max. Compression	31	0	-1.51	-0.00
			Max. Mx	34	0	-2.43	0.00
			Max. My	27	0	-1.84	0.00
			Max. Vy	34	5	-2.43	0.00
			Max. Vx	27	0	-1.84	0.00
		Top Girt	Max Tension	27	1172	0.00	0.00
			Max. Compression	2	-76	0.00	0.00
			Max. Mx	32	315	6.03	0.00
			Max. My	26	191	0.00	-0.00
			Max. Vy	32	7	0.00	0.00
			Max. Vx	26	0	0.00	0.00
		Guy A	Bottom Tension	27	25159		
			Top Tension	27	25521		
			Top Cable Vert	27	16487		
			Top Cable Norm	27	19480		
			Top Cable Tan	27	8		
			Bot Cable Vert	27	-15454		
			Bot Cable Norm	27	19854		
			Bot Cable Tan	27	8		
		Guy B	Bottom Tension	32	23472		
			Top Tension	32	23773		
			Top Cable Vert	32	13666		
			Top Cable Norm	32	19452		
			Top Cable Tan	32	6		
			Bot Cable Vert	32	-12746		
			Bot Cable Norm	32	19710		
			Bot Cable Tan	32	8		
		Guy C	Bottom Tension	22	24816		
			Top Tension	22	25171		
			Top Cable Vert	22	16098		
			Top Cable Norm	22	19350		
			Top Cable Tan	22	8		
			Bot Cable Vert	22	-15075		
			Bot Cable Norm	22	19712		
			Bot Cable Tan	22	8		
		Top Guy Pull-Off	Max Tension	34	17779	0.00	0.00
			Max. Compression	26	-15897	0.00	0.00
			Max. Mx	18	876	72.45	0.00

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Force lb	Major Axis Moment lb-ft	Minor Axis Moment lb-ft
			Max. My	26	7110	0.00	-0.00
			Max. Vy	18	-79	0.00	0.00
			Max. Vx	26	0	0.00	0.00
		Torque Arm Top	Max Tension	21	20159	0.00	0.00
			Max. Compression	29	-8976	0.00	0.00
			Max. Mx	27	-6281	-63486.83	0.00
			Max. My	26	-2993	-32459.57	0.00
			Max. Vy	27	15940	-63486.83	0.00
			Max. Vx	26	0	-32459.57	0.00
T8	159.84 - 139.84	Leg	Max Tension	1	0	0.00	0.00
			Max. Compression	27	-98967	-736.72	0.31
			Max. Mx	27	-89044	794.10	125.72
			Max. My	26	-96298	-303.54	-706.28
			Max. Vy	28	505	775.10	118.49
			Max. Vx	27	-458	-334.90	-704.96
		Diagonal	Max Tension	11	4610	0.00	0.00
			Max. Compression	3	-6159	0.00	0.00
			Max. Mx	28	-284	14.14	0.00
			Max. My	26	-1366	0.00	-0.11
			Max. Vy	28	-11	0.00	0.00
			Max. Vx	26	0	0.00	0.00
		Horizontal	Max Tension	27	1714	0.00	0.00
			Max. Compression	27	-1714	0.00	0.00
			Max. Mx	32	1655	6.03	0.00
			Max. My	26	1697	0.00	-0.00
			Max. Vy	32	7	0.00	0.00
			Max. Vx	26	0	0.00	0.00
		Secondary Horizontal	Max Tension	23	0	-1.54	-0.00
			Max. Compression	31	0	-1.47	-0.00
			Max. Mx	34	0	-2.43	0.00
			Max. My	27	0	-1.86	0.00
			Max. Vy	34	5	-2.43	0.00
			Max. Vx	27	0	-1.86	0.00
		Top Girt	Max Tension	27	1219	0.00	0.00
			Max. Compression	1	0	0.00	0.00
			Max. Mx	18	662	6.03	0.00
			Max. My	26	682	0.00	-0.00
			Max. Vy	18	7	0.00	0.00
			Max. Vx	26	0	0.00	0.00
T9	139.84 - 119.84	Leg	Max Tension	1	0	0.00	0.00
			Max. Compression	33	-104451	860.25	-32.87
			Max. Mx	32	-104140	877.06	-49.97
			Max. My	21	-99942	-373.18	762.28
			Max. Vy	22	540	-833.31	-23.10
			Max. Vx	20	477	-386.92	714.83
		Diagonal	Max Tension	28	5414	0.00	0.00
			Max. Compression	20	-7595	0.00	0.00
			Max. Mx	28	3477	11.97	0.00
			Max. My	26	1509	0.00	-0.10
			Max. Vy	28	-10	0.00	0.00
			Max. Vx	26	0	0.00	0.00
		Horizontal	Max Tension	33	1809	0.00	0.00
			Max. Compression	33	-1809	0.00	0.00
			Max. Mx	18	1216	6.03	0.00
			Max. My	26	1720	0.00	-0.00
			Max. Vy	18	7	0.00	0.00
			Max. Vx	26	0	0.00	0.00
		Secondary	Max Tension	23	0	-1.52	-0.00

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Force lb	Major Axis Moment lb-ft	Minor Axis Moment lb-ft
		Horizontal					
			Max. Compression	31	0	-1.44	-0.00
			Max. Mx	34	0	-2.44	0.00
			Max. My	27	0	-1.90	0.00
			Max. Vy	34	5	-2.44	0.00
			Max. Vx	27	0	-1.90	0.00
		Top Girt	Max Tension	27	1137	0.00	0.00
			Max. Compression	1	0	0.00	0.00
			Max. Mx	18	570	6.03	0.00
			Max. My	26	448	0.00	-0.00
			Max. Vy	18	7	0.00	0.00
			Max. Vx	26	0	0.00	0.00
T10	119.84 - 99.84	Leg	Max Tension	1	0	0.00	0.00
			Max. Compression	28	-140122	401.03	803.03
			Max. Mx	23	-49234	-2641.04	174.38
			Max. My	27	-43830	786.45	-2648.98
			Max. Vy	21	-1246	-984.28	17.33
			Max. Vx	19	-1190	65.27	1148.34
		Diagonal	Max Tension	23	13225	0.00	0.00
			Max. Compression	31	-16180	0.00	0.00
			Max. Mx	20	6209	16.51	0.00
			Max. My	26	-4627	0.00	-0.13
			Max. Vy	20	-13	0.00	0.00
			Max. Vx	26	0	0.00	0.00
		Horizontal	Max Tension	28	2427	0.00	0.00
			Max. Compression	28	-2427	0.00	0.00
			Max. Mx	18	1428	6.03	0.00
			Max. My	26	2325	0.00	-0.00
			Max. Vy	18	7	0.00	0.00
			Max. Vx	26	0	0.00	0.00
		Secondary Horizontal	Max Tension	23	0	-1.52	-0.00
			Max. Compression	31	0	-1.43	-0.00
			Max. Mx	34	0	-2.40	0.00
			Max. My	27	0	-1.89	0.00
			Max. Vy	34	5	-2.40	0.00
			Max. Vx	27	0	-1.89	0.00
		Top Girt	Max Tension	27	1110	0.00	0.00
			Max. Compression	1	0	0.00	0.00
			Max. Mx	18	638	6.03	0.00
			Max. My	26	577	0.00	-0.00
			Max. Vy	18	7	0.00	0.00
			Max. Vx	26	0	0.00	0.00
		Guy A	Bottom Tension	27	24526		
			Top Tension	27	24773		
			Top Cable Vert	27	12350		
			Top Cable Norm	27	21475		
			Top Cable Tan	27	5		
			Bot Cable Vert	27	-11606		
			Bot Cable Norm	27	21606		
			Bot Cable Tan	27	5		
		Guy B	Bottom Tension	32	22864		
			Top Tension	32	23050		
			Top Cable Vert	32	9175		
			Top Cable Norm	32	21145		
			Top Cable Tan	32	4		
			Bot Cable Vert	32	-8530		
			Bot Cable Norm	32	21213		
			Bot Cable Tan	32	4		
		Guy C	Bottom Tension	22	24088		
			Top Tension	22	24329		

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Force lb	Major Axis Moment lb-ft	Minor Axis Moment lb-ft
			Top Cable Vert	22	11902		
			Top Cable Norm	22	21219		
			Top Cable Tan	22	4		
			Bot Cable Vert	22	-11167		
			Bot Cable Norm	22	21343		
			Bot Cable Tan	22	5		
		Top Guy Pull-Off	Max Tension	34	20756	0.00	0.00
			Max. Compression	26	-18666	0.00	0.00
			Max. Mx	18	995	72.45	0.00
			Max. My	26	7552	0.00	-0.00
			Max. Vy	18	-79	0.00	0.00
			Max. Vx	26	0	0.00	0.00
		Torque Arm Top	Max Tension	21	22678	0.00	0.00
			Max. Compression	20	-10414	0.00	0.00
			Max. Mx	27	-7796	-47504.61	0.00
			Max. My	26	-3733	-23962.80	0.00
			Max. Vy	27	11949	-47504.61	0.00
			Max. Vx	26	0	-23962.80	0.00
T11	99.84 - 79.84	Leg	Max Tension	1	0	0.00	0.00
			Max. Compression	27	-155596	1223.28	148.70
			Max. Mx	31	-102148	-1323.83	2.98
			Max. My	19	-119973	-529.04	-1300.60
			Max. Vy	23	1878	-1232.10	32.47
			Max. Vx	19	-1827	553.91	1143.46
		Diagonal	Max Tension	23	10713	0.00	0.00
			Max. Compression	31	-14076	0.00	0.00
			Max. Mx	28	-3091	14.13	0.00
			Max. My	26	-3737	0.00	-0.11
			Max. Vy	28	-11	0.00	0.00
			Max. Vx	26	0	0.00	0.00
		Horizontal	Max Tension	22	3047	0.00	0.00
			Max. Compression	27	-2695	0.00	0.00
			Max. Mx	18	1478	6.03	0.00
			Max. My	26	2667	0.00	-0.00
			Max. Vy	18	7	0.00	0.00
			Max. Vx	26	0	0.00	0.00
		Secondary Horizontal	Max Tension	23	0	-1.51	-0.00
			Max. Compression	29	0	-1.49	0.00
			Max. Mx	34	0	-2.20	0.00
			Max. My	19	0	-2.10	0.00
			Max. Vy	34	4	-2.20	0.00
			Max. Vx	19	0	-2.10	0.00
		Top Girt	Max Tension	27	1366	0.00	0.00
			Max. Compression	1	0	0.00	0.00
			Max. Mx	32	963	6.03	0.00
			Max. My	26	947	0.00	-0.00
			Max. Vy	32	7	0.00	0.00
			Max. Vx	26	0	0.00	0.00
T12	79.84 - 59.84	Leg	Max Tension	1	0	0.00	0.00
			Max. Compression	22	-164084	690.51	993.85
			Max. Mx	25	-137905	1240.36	133.66
			Max. My	21	-157654	-431.13	-1187.62
			Max. Vy	27	739	1209.86	99.09
			Max. Vx	20	-698	653.30	916.66
		Diagonal	Max Tension	12	2801	0.00	0.00
			Max. Compression	32	-5009	0.00	0.00
			Max. Mx	28	1839	11.98	0.00
			Max. My	26	-556	0.00	-0.11
			Max. Vy	28	-10	0.00	0.00
			Max. Vx	26	0	0.00	0.00

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Force lb	Major Axis Moment lb-ft	Minor Axis Moment lb-ft
		Horizontal	Max Tension	22	2842	0.00	0.00
			Max. Compression	22	-2842	0.00	0.00
			Max. Mx	22	1521	6.03	0.00
			Max. My	26	2629	0.00	-0.00
			Max. Vy	22	7	0.00	0.00
			Max. Vx	26	0	0.00	0.00
		Secondary Horizontal	Max Tension	23	0	-1.52	-0.00
			Max. Compression	31	0	-1.40	-0.00
			Max. Mx	34	0	-2.53	0.00
			Max. My	27	0	-2.04	0.00
			Max. Vy	34	5	-2.53	0.00
			Max. Vx	27	0	-2.04	0.00
		Top Girt	Max Tension	26	1322	0.00	0.00
			Max. Compression	1	0	0.00	0.00
			Max. Mx	18	855	6.03	0.00
			Max. My	26	1016	0.00	-0.00
			Max. Vy	18	7	0.00	0.00
			Max. Vx	26	0	0.00	0.00
T13	59.84 - 39.84	Leg	Max Tension	1	0	0.00	0.00
			Max. Compression	22	-176332	-549.23	-1164.57
			Max. Mx	24	-126375	-1383.04	-390.84
			Max. My	20	-147907	258.64	1486.74
			Max. Vy	23	-833	-919.08	489.39
			Max. Vx	27	-831	140.48	-940.62
		Diagonal	Max Tension	15	3422	0.00	0.00
			Max. Compression	23	-6147	0.00	0.00
			Max. Mx	28	-2959	12.00	0.00
			Max. My	26	1012	0.00	-0.12
			Max. Vy	28	-10	0.00	0.00
			Max. Vx	26	0	0.00	0.00
		Horizontal	Max Tension	22	3054	0.00	0.00
			Max. Compression	22	-3054	0.00	0.00
			Max. Mx	18	1578	6.03	0.00
			Max. My	26	2814	0.00	-0.00
			Max. Vy	18	7	0.00	0.00
			Max. Vx	26	0	0.00	0.00
		Secondary Horizontal	Max Tension	23	0	-1.53	-0.01
			Max. Compression	31	0	-1.44	-0.00
			Max. Mx	34	0	-2.84	0.00
			Max. My	27	0	-2.32	0.01
			Max. Vy	34	5	-2.84	0.00
			Max. Vx	27	0	-2.32	0.01
		Top Girt	Max Tension	22	1373	0.00	0.00
			Max. Compression	1	0	0.00	0.00
			Max. Mx	22	1064	6.03	0.00
			Max. My	26	1162	0.00	-0.00
			Max. Vy	22	7	0.00	0.00
			Max. Vx	26	0	0.00	0.00
		Guy A	Bottom Tension	27	8882		
			Top Tension	27	8959		
			Top Cable Vert	27	3048		
			Top Cable Norm	27	8424		
			Top Cable Tan	27	2		
			Bot Cable Vert	27	-2730		
			Bot Cable Norm	27	8452		
			Bot Cable Tan	27	2		
		Guy B	Bottom Tension	32	8414		
			Top Tension	32	8460		
			Top Cable Vert	32	1816		

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Force lb	Major Axis Moment lb-ft	Minor Axis Moment lb-ft
			Top Cable Norm	32	8263		
			Top Cable Tan	32	1		
			Bot Cable Vert	32	-1555		
			Bot Cable Norm	32	8269		
			Bot Cable Tan	32	1		
		Guy C	Bottom Tension	22	8611		
			Top Tension	22	8685		
			Top Cable Vert	22	2853		
			Top Cable Norm	22	8203		
			Top Cable Tan	22	2		
			Bot Cable Vert	22	-2541		
			Bot Cable Norm	22	8228		
			Bot Cable Tan	22	3		
		Top Guy Pull-Off	Max Tension	26	7722	0.00	0.00
			Max. Compression	17	-5349	0.00	0.00
			Max. Mx	22	5906	72.45	0.00
			Max. My	26	73	0.00	-0.00
			Max. Vy	22	-79	0.00	0.00
			Max. Vx	26	0	0.00	0.00
		Torque Arm Top	Max Tension	28	8259	0.00	0.00
			Max. Compression	11	-3575	0.00	0.00
			Max. Mx	27	-1601	-11919.28	0.00
			Max. My	26	-1306	-7824.82	0.01
			Max. Vy	27	3063	-11919.28	0.00
			Max. Vx	26	0	-7824.82	0.00
T14	39.84 - 19.84	Leg	Max Tension	1	0	0.00	0.00
			Max. Compression	22	-176906	742.79	1052.35
			Max. Mx	27	-176747	1286.05	113.55
			Max. My	22	-176755	-549.24	-1164.57
			Max. Vy	27	778	1286.05	113.55
			Max. Vx	22	-667	742.79	1052.35
		Diagonal	Max Tension	17	2847	0.00	0.00
			Max. Compression	27	-5731	0.00	0.00
			Max. Mx	28	1180	12.02	0.00
			Max. My	26	-1400	0.00	-0.15
			Max. Vy	28	-10	0.00	0.00
			Max. Vx	26	0	0.00	0.00
		Horizontal	Max Tension	22	3064	0.00	0.00
			Max. Compression	22	-3064	0.00	0.00
			Max. Mx	18	1601	6.03	0.00
			Max. My	26	2843	0.00	-0.00
			Max. Vy	18	7	0.00	0.00
			Max. Vx	26	0	0.00	0.00
		Secondary Horizontal	Max Tension	23	0	-1.53	-0.01
			Max. Compression	31	0	-1.46	-0.01
			Max. Mx	34	0	-3.24	0.01
			Max. My	27	0	-2.68	0.01
			Max. Vy	34	5	-3.24	0.01
			Max. Vx	27	0	-2.68	0.01
		Top Girt	Max Tension	27	1486	0.00	0.00
			Max. Compression	1	0	0.00	0.00
			Max. Mx	18	900	6.03	0.00
			Max. My	26	928	0.00	-0.00
			Max. Vy	18	7	0.00	0.00
			Max. Vx	26	0	0.00	0.00
T15	19.84 - 6.5	Leg	Max Tension	1	0	0.00	0.00
			Max. Compression	22	-161017	689.90	1031.11
			Max. Mx	27	-160733	1262.62	75.29
			Max. My	22	-160813	-568.29	-1121.28
			Max. Vy	27	826	1183.61	21.66

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Force lb	Major Axis Moment lb-ft	Minor Axis Moment lb-ft
			Max. Vx	27	-757	-473.37	-859.77
		Diagonal	Max Tension	23	5361	0.00	0.00
			Max. Compression	23	-7183	0.00	0.00
			Max. Mx	28	5016	12.04	0.00
			Max. My	26	-3404	0.00	-0.16
			Max. Vy	28	10	0.00	0.00
			Max. Vx	26	0	0.00	0.00
		Horizontal	Max Tension	22	2789	0.00	0.00
			Max. Compression	22	-2789	0.00	0.00
			Max. Mx	18	1626	6.03	0.00
			Max. My	26	2635	0.00	-0.00
			Max. Vy	18	7	0.00	0.00
			Max. Vx	26	0	0.00	0.00
		Secondary Horizontal	Max Tension	23	0	-1.54	-0.01
			Max. Compression	31	0	-1.47	-0.01
			Max. Mx	34	0	-3.41	0.01
			Max. My	27	0	-2.88	0.02
			Max. Vy	34	5	-3.41	0.01
			Max. Vx	27	0	-2.88	0.02
		Top Girt	Max Tension	27	1500	0.00	0.00
			Max. Compression	1	0	0.00	0.00
			Max. Mx	18	911	6.03	0.00
			Max. My	26	959	0.00	-0.00
			Max. Vy	18	7	0.00	0.00
			Max. Vx	26	0	0.00	0.00
T16	6.5 - 0	Leg	Max Tension	1	0	0.00	0.00
			Max. Compression	22	-146364	20.25	167.31
			Max. Mx	19	-109972	2273.04	-237.62
			Max. My	32	-116175	1729.88	-804.26
			Max. Vy	19	7501	-1669.21	101.44
			Max. Vx	32	-1913	-1672.77	200.72
		Top Girt	Max Tension	22	26040	-713.37	-38.38
			Max. Compression	1	0	0.00	0.00
			Max. Mx	22	21643	-975.60	-47.12
			Max. My	22	21643	-975.60	-47.12
			Max. Vy	27	-445	-970.79	-46.84
			Max. Vx	27	-29	-970.79	-46.84
		Bottom Girt	Max Tension	1	0	0.00	0.00
			Max. Compression	33	-4707	-2208.75	-27.17
			Max. Mx	33	-4707	-2208.75	-27.17
			Max. My	26	-4066	-2035.61	-32.84
			Max. Vy	27	-6057	-2105.95	-32.19
			Max. Vx	27	-222	-2105.95	-32.19
		Mid Girt	Max Tension	27	407	0.00	0.00
			Max. Compression	27	-269	0.00	0.00
			Max. Mx	19	363	12.27	0.00
			Max. My	33	395	0.00	2.00
			Max. Vy	19	-19	0.00	0.00
			Max. Vx	33	3	0.00	0.00

Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical lb	Horizontal, X lb	Horizontal, Z lb
Mast	Max. Vert	27	366113	-59	-4165

Location	Condition	Gov. Load Comb.	Vertical lb	Horizontal, X lb	Horizontal, Z lb
	Max. H_x	47	252698	5022	117
	Max. H_z	2	250373	-213	5184
	Max. M_x	1	0.00	-16	21
	Max. M_z	1	0.00	-16	21
	Max. Torsion	1	0.00	-16	21
	Min. Vert	1	227689	-16	21
	Min. H_x	6	257731	-5030	203
	Min. H_z	10	258452	-23	-4777
	Min. M_x	1	0.00	-16	21
	Min. M_z	1	0.00	-16	21
	Min. Torsion	1	0.00	-16	21
Guy C @ 235 ft Elev -20.1 ft Azimuth 240 deg	Max. Vert	13	-19492	-14716	8482
	Max. H_x	46	-19492	-14716	8482
	Max. H_z	21	-148265	-157074	92860
	Min. Vert	22	-150362	-160216	92539
	Min. H_x	22	-150362	-160216	92539
	Min. H_z	13	-19492	-14716	8482
Guy B @ 235 ft Elev 8.9 ft Azimuth 120 deg	Max. Vert	7	-15401	13578	7842
	Max. H_x	32	-130700	161587	93267
	Max. H_z	32	-130700	161587	93267
	Min. Vert	32	-130700	161587	93267
	Min. H_x	7	-15401	13578	7842
	Min. H_z	7	-15401	13578	7842
Guy A @ 235 ft Elev -23.4 ft Azimuth 0 deg	Max. Vert	2	-20097	-14	-17234
	Max. H_x	31	-92715	9822	-106634
	Max. H_z	2	-20097	-14	-17234
	Min. Vert	27	-152956	54	-185393
	Min. H_x	23	-88940	-9854	-102421
	Min. H_z	27	-152956	54	-185393

Tower Mast Reaction Summary

Load Combination	Vertical lb	$Shear_x$ lb	$Shear_z$ lb	Overturning Moment, M_x lb-ft	Overturning Moment, M_z lb-ft	Torque lb-ft
Dead Only	227689	16	-21	0.00	0.00	0.00
Dead+Wind 0 deg - No Ice+Guy	250373	213	-5184	0.00	0.00	0.00
Dead+Wind 30 deg - No Ice+Guy	255712	2653	-4184	0.00	0.00	0.00
Dead+Wind 45 deg - No Ice+Guy	257271	3655	-3429	0.00	0.00	0.00
Dead+Wind 60 deg - No Ice+Guy	258017	4400	-2503	0.00	0.00	0.00
Dead+Wind 90 deg - No Ice+Guy	257731	5030	-203	0.00	0.00	0.00
Dead+Wind 120 deg - No Ice+Guy	256173	4598	2248	0.00	0.00	0.00
Dead+Wind 135 deg - No Ice+Guy	257379	3653	3263	0.00	0.00	0.00
Dead+Wind 150 deg - No	258187	2397	4081	0.00	0.00	0.00

Load Combination	Vertical	$Shear_x$	$Shear_z$	Overturning Moment, M_x	Overturning Moment, M_z	Torque
	lb	lb	lb	lb-ft	lb-ft	lb-ft
Ice+Guy						
Dead+Wind 180 deg - No Ice+Guy	258452	23	4777	0.00	0.00	0.00
Dead+Wind 210 deg - No Ice+Guy	256212	-2391	4140	0.00	0.00	0.00
Dead+Wind 225 deg - No Ice+Guy	253675	-3537	3392	0.00	0.00	0.00
Dead+Wind 240 deg - No Ice+Guy	250854	-4528	2454	0.00	0.00	0.00
Dead+Wind 270 deg - No Ice+Guy	252698	-5022	-117	0.00	0.00	0.00
Dead+Wind 300 deg - No Ice+Guy	254220	-4357	-2499	0.00	0.00	0.00
Dead+Wind 315 deg - No Ice+Guy	253775	-3603	-3434	0.00	0.00	0.00
Dead+Wind 330 deg - No Ice+Guy	252746	-2521	-4196	0.00	0.00	0.00
Dead+Ice+Temp+Guy	283729	55	-52	0.00	0.00	0.00
Dead+Wind 0 deg+Ice+Temp+Guy	344346	191	-4201	0.00	0.00	0.00
Dead+Wind 30 deg+Ice+Temp+Guy	356723	2618	-3352	0.00	0.00	0.00
Dead+Wind 45 deg+Ice+Temp+Guy	362745	3459	-2878	0.00	0.00	0.00
Dead+Wind 60 deg+Ice+Temp+Guy	365205	4008	-2287	0.00	0.00	0.00
Dead+Wind 90 deg+Ice+Temp+Guy	358285	4334	-628	0.00	0.00	0.00
Dead+Wind 120 deg+Ice+Temp+Guy	348854	3911	1699	0.00	0.00	0.00
Dead+Wind 135 deg+Ice+Temp+Guy	352941	2902	2710	0.00	0.00	0.00
Dead+Wind 150 deg+Ice+Temp+Guy	359087	1747	3520	0.00	0.00	0.00
Dead+Wind 180 deg+Ice+Temp+Guy	366113	59	4165	0.00	0.00	0.00
Dead+Wind 210 deg+Ice+Temp+Guy	357488	-1666	3542	0.00	0.00	0.00
Dead+Wind 225 deg+Ice+Temp+Guy	349752	-2684	2783	0.00	0.00	0.00
Dead+Wind 240 deg+Ice+Temp+Guy	344964	-3674	1788	0.00	0.00	0.00
Dead+Wind 270 deg+Ice+Temp+Guy	352307	-4384	-599	0.00	0.00	0.00
Dead+Wind 300 deg+Ice+Temp+Guy	359098	-4064	-2376	0.00	0.00	0.00
Dead+Wind 315 deg+Ice+Temp+Guy	357251	-3499	-2979	0.00	0.00	0.00
Dead+Wind 330 deg+Ice+Temp+Guy	352404	-2561	-3456	0.00	0.00	0.00
Dead+Wind 0 deg - Service+Guy	250373	213	-5184	0.00	0.00	0.00
Dead+Wind 30 deg - Service+Guy	255712	2653	-4184	0.00	0.00	0.00
Dead+Wind 45 deg - Service+Guy	257271	3655	-3429	0.00	0.00	0.00
Dead+Wind 60 deg - Service+Guy	258017	4400	-2503	0.00	0.00	0.00
Dead+Wind 90 deg - Service+Guy	257731	5030	-203	0.00	0.00	0.00
Dead+Wind 120 deg -	256173	4598	2248	0.00	0.00	0.00

Load Combination	Vertical lb	$Shear_x$ lb	$Shear_z$ lb	Overturning Moment, M_x lb-ft	Overturning Moment, M_z lb-ft	Torque lb-ft
Service+Guy						
Dead+Wind 135 deg - Service+Guy	257379	3653	3263	0.00	0.00	0.00
Dead+Wind 150 deg - Service+Guy	258187	2397	4081	0.00	0.00	0.00
Dead+Wind 180 deg - Service+Guy	258452	23	4777	0.00	0.00	0.00
Dead+Wind 210 deg - Service+Guy	256212	-2391	4140	0.00	0.00	0.00
Dead+Wind 225 deg - Service+Guy	253675	-3537	3392	0.00	0.00	0.00
Dead+Wind 240 deg - Service+Guy	250854	-4528	2454	0.00	0.00	0.00
Dead+Wind 270 deg - Service+Guy	252698	-5022	-117	0.00	0.00	0.00
Dead+Wind 300 deg - Service+Guy	254220	-4357	-2499	0.00	0.00	0.00
Dead+Wind 315 deg - Service+Guy	253775	-3603	-3434	0.00	0.00	0.00
Dead+Wind 330 deg - Service+Guy	252746	-2521	-4196	0.00	0.00	0.00

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	-64684	0	1	64684	1	0.002%
2	945	-65471	-102342	-943	65470	102341	0.002%
3	51565	-64665	-88414	-51563	64665	88410	0.004%
4	72365	-64078	-72060	-72363	64078	72055	0.005%
5	88241	-63863	-51094	-88238	63863	51096	0.003%
6	101588	-64884	-482	-101586	64884	483	0.002%
7	88272	-65871	51063	-88267	65871	-51063	0.004%
8	71770	-65584	71987	-71765	65584	-71987	0.004%
9	50355	-64903	88168	-50352	64903	-88169	0.002%
10	-412	-63897	101778	416	63897	-101776	0.004%
11	-50972	-64703	88661	50969	64703	-88657	0.004%
12	-71826	-65290	72831	71824	65290	-72830	0.002%
13	-88012	-65505	52138	88010	65505	-52137	0.002%
14	-101002	-64484	292	101000	64484	-292	0.002%
15	-87451	-63497	-50295	87448	63497	50292	0.003%
16	-71571	-63784	-71260	71574	63784	71257	0.004%
17	-50637	-64465	-87778	50640	64465	87776	0.003%
18	0	-98644	0	2	98644	2	0.003%
19	1200	-100532	-135750	-1198	100532	135746	0.002%
20	68279	-98597	-117339	-68279	98597	117329	0.006%
21	95846	-97186	-95639	-95846	97186	95635	0.003%
22	116779	-96670	-67920	-116774	96670	67923	0.003%
23	134248	-99139	-574	-134245	99139	577	0.003%
24	116546	-101519	68463	-116543	101519	-68462	0.002%
25	94684	-100827	95953	-94676	100827	-95952	0.005%
26	66371	-99186	117305	-66366	99186	-117305	0.003%
27	-636	-96757	135503	640	96757	-135500	0.003%
28	-67329	-98692	118177	67319	98691	-118173	0.006%
29	-94969	-100103	97241	94966	100102	-97239	0.002%
30	-116436	-100619	69921	116433	100619	-69919	0.003%
31	-133641	-98150	426	133634	98150	-421	0.005%

Load Comb.	Sum of Applied Forces PX lb	PY lb	PZ lb	Sum of Reactions PX lb	PY lb	PZ lb	% Error
32	-115791	-95770	-66751	115788	95770	66750	0.002%
33	-94786	-96462	-94400	94788	96462	94396	0.003%
34	-66990	-98103	-116320	66994	98103	116312	0.005%
35	945	-65471	-102342	-943	65470	102341	0.002%
36	51565	-64665	-88414	-51563	64665	88410	0.004%
37	72365	-64078	-72060	-72363	64078	72055	0.005%
38	88241	-63863	-51094	-88238	63863	51096	0.003%
39	101588	-64884	-482	-101586	64884	483	0.002%
40	88272	-65871	51063	-88267	65871	-51063	0.004%
41	71770	-65584	71987	-71765	65584	-71987	0.004%
42	50355	-64903	88168	-50352	64903	-88169	0.002%
43	-412	-63897	101778	416	63897	-101776	0.004%
44	-50972	-64703	88661	50969	64703	-88657	0.004%
45	-71826	-65290	72831	71824	65290	-72830	0.002%
46	-88012	-65505	52138	88010	65505	-52137	0.002%
47	-101002	-64484	292	101000	64484	-292	0.002%
48	-87451	-63497	-50295	87448	63497	50292	0.003%
49	-71571	-63784	-71260	71574	63784	71257	0.004%
50	-50637	-64465	-87778	50640	64465	87776	0.003%

Non-Linear Convergence Results

Load Combination	Converged?	Number of Cycles	Displacement Tolerance	Force Tolerance
1	Yes	9	0.00000001	0.00005314
2	Yes	13	0.00000001	0.00005777
3	Yes	12	0.00008222	0.00010249
4	Yes	11	0.00010913	0.00013285
5	Yes	10	0.00000001	0.00008164
6	Yes	13	0.00000001	0.00006139
7	Yes	13	0.00010369	0.00013033
8	Yes	13	0.00008902	0.00011508
9	Yes	13	0.00000001	0.00006613
10	Yes	10	0.00000001	0.00007585
11	Yes	12	0.00009225	0.00011597
12	Yes	13	0.00000001	0.00005982
13	Yes	13	0.00000001	0.00006409
14	Yes	12	0.00000001	0.00007460
15	Yes	9	0.00000001	0.00012539
16	Yes	11	0.00000001	0.00007716
17	Yes	12	0.00000001	0.00007032
18	Yes	8	0.00000001	0.00003979
19	Yes	13	0.00000001	0.00004199
20	Yes	12	0.00011548	0.00010567
21	Yes	12	0.00005930	0.00007067
22	Yes	11	0.00008676	0.00008243
23	Yes	13	0.00006403	0.00006925
24	Yes	14	0.00006662	0.00006822
25	Yes	13	0.00012983	0.00012995
26	Yes	13	0.00006848	0.00007798
27	Yes	11	0.00007421	0.00007315
28	Yes	12	0.00012768	0.00011701
29	Yes	13	0.00005419	0.00004843
30	Yes	13	0.00006388	0.00005176
31	Yes	12	0.00012657	0.00007557
32	Yes	10	0.00006957	0.00008382

33	Yes	12	0.00006083	0.00003926
34	Yes	12	0.00011498	0.00007439
35	Yes	13	0.00000001	0.00005777
36	Yes	12	0.00008222	0.00010249
37	Yes	11	0.00010913	0.00013285
38	Yes	10	0.00000001	0.00008164
39	Yes	13	0.00000001	0.00006139
40	Yes	13	0.00010369	0.00013033
41	Yes	13	0.00008902	0.00011508
42	Yes	13	0.00000001	0.00006613
43	Yes	10	0.00000001	0.00007585
44	Yes	12	0.00009225	0.00011597
45	Yes	13	0.00000001	0.00005982
46	Yes	13	0.00000001	0.00006409
47	Yes	12	0.00000001	0.00007460
48	Yes	9	0.00000001	0.00012539
49	Yes	11	0.00000001	0.00007716
50	Yes	12	0.00000001	0.00007032

Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	327 - 291.84	6.524	43	0.1549	0.2003
T1	291.84 - 279.84	6.015	43	0.1635	0.1924
T2	279.84 - 259.84	6.277	43	0.1868	0.1872
T3	259.84 - 239.84	6.810	43	0.2279	0.1714
T4	239.84 - 219.84	7.466	43	0.2369	0.2553
T5	219.84 - 199.84	7.985	43	0.2508	0.3174
T6	199.84 - 179.84	8.464	43	0.2131	0.3879
T7	179.84 - 159.84	8.538	44	0.0869	0.4161
T8	159.84 - 139.84	8.473	41	0.0823	0.4243
T9	139.84 - 119.84	8.592	40	0.1230	0.4802
T10	119.84 - 99.84	8.321	40	0.1476	0.4713
T11	99.84 - 79.84	7.961	40	0.0931	0.4635
T12	79.84 - 59.84	7.551	40	0.1772	0.5099
T13	59.84 - 39.84	6.481	40	0.3214	0.5113
T14	39.84 - 19.84	4.877	40	0.4549	0.5938
T15	19.84 - 6.5	2.657	40	0.5863	0.6677
T16	6.5 - 0	0.889	40	0.6378	0.6891

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
325.00	Lightning Rod 5/8x4'	43	6.468	0.1462	0.1998	35817
323.00	Flash Beacon Lighting	43	6.412	0.1376	0.1993	35817
305.00	6813 1-Bay w/radome	43	6.022	0.1323	0.1952	8140
290.00	6 FT DISH	43	6.042	0.1672	0.1921	6221
285.84	Guy	43	6.126	0.1751	0.1909	10457
277.00	PD1110	43	6.349	0.1930	0.1841	125477
271.00	SC479-HF1LDF	43	6.501	0.2067	0.1764	33528
267.00	OGT9-840	43	6.605	0.2154	0.1722	21646
263.75	SC479-HF1LDF	43	6.695	0.2217	0.1704	16832

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
261.00	AP14-850/105	43	6.775	0.2263	0.1707	14800
256.51	Guy	43	6.916	0.2317	0.1755	17889
256.50	SE419-SF3P4LDF	43	6.917	0.2317	0.1756	17901
253.25	OGT9-840	43	7.025	0.2341	0.1822	27549
252.00	AP14-850/105	43	7.067	0.2347	0.1853	34904
250.00	OGT9-840	43	7.136	0.2355	0.1958	60926
249.25	SC479-HF1LDF	43	7.161	0.2358	0.2004	84571
242.00	SC479-HF1LDF	43	7.400	0.2368	0.2441	18210
240.00	TTA 432-83H-01T	43	7.461	0.2369	0.2546	16605
216.51	Guy	43	8.077	0.2516	0.3283	23112
211.00	6813 1-Bay w/radome	43	8.230	0.2489	0.3486	20704
198.00	6813 1-Bay w/radome	43	8.483	0.2016	0.3929	6356
190.00	6' Yagi	44	8.537	0.1398	0.4086	7879
187.42	Pirod 12' T-Frame Sector Mount (1)	44	8.550	0.1193	0.4117	8598
172.17	24"x12"x5" Panel	44	8.470	0.0879	0.4159	24319
172.00	3" x 8' Omni	44	8.468	0.0878	0.4159	24927
171.50	5' Grid Dish	41	8.467	0.0875	0.4159	26879
166.51	Guy	41	8.470	0.0841	0.4166	51342
166.00	16"x12"x3" TTA	41	8.470	0.0838	0.4168	43383
158.83	2'x1'x5" Panel	41	8.475	0.0828	0.4266	19045
157.00	L-810 Flashing Beacon	40	8.489	0.0842	0.4313	22886
125.00	2' Sidearm	40	8.417	0.1517	0.4790	27565
124.00	6'x4' Ice Shield	40	8.399	0.1518	0.4777	33574
116.00	6 FT DISH	40	8.247	0.1372	0.4649	17674
112.00	PD1110	40	8.172	0.1222	0.4619	15555
106.51	Guy	40	8.072	0.1041	0.4595	13368
104.00	6 FT DISH	40	8.028	0.0980	0.4598	12571
94.00	PR-850	40	7.873	0.1005	0.4761	30388
84.00	BXA-80063/4CF w/Mount Pipe	40	7.677	0.1478	0.5031	6824
70.00	DB212-I	40	7.108	0.2490	0.5090	7184
56.51	Guy	40	6.249	0.3440	0.5190	10747
18.00	6' Yagi	40	2.423	0.5949	0.6716	9980
13.00	1.2M	40	1.768	0.6148	0.6799	15695

Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	327 - 291.84	12.380	27	0.1937	0.2710
T1	291.84 - 279.84	11.661	27	0.2634	0.3066
T2	279.84 - 259.84	11.927	27	0.2902	0.2921
T3	259.84 - 239.84	12.399	27	0.2910	0.2860
T4	239.84 - 219.84	12.864	27	0.2369	0.3103
T5	219.84 - 199.84	12.976	27	0.2508	0.3345
T6	199.84 - 179.84	12.939	27	0.2131	0.3879
T7	179.84 - 159.84	12.183	27	0.2550	0.4161
T8	159.84 - 139.84	11.058	27	0.2362	0.4243
T9	139.84 - 119.84	10.077	27	0.2528	0.4802
T10	119.84 - 99.84	8.985	27	0.2565	0.4713
T11	99.84 - 79.84	8.186	27	0.1571	0.4635
T12	79.84 - 59.84	7.671	27	0.2044	0.5099
T13	59.84 - 39.84	6.609	27	0.3214	0.5113
T14	39.84 - 19.84	5.002	27	0.4614	0.5938
T15	19.84 - 6.5	2.735	27	0.6020	0.6677
T16	6.5 - 0	0.915	27	0.6568	0.6891

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

Critical Deflections and Radius of Curvature - Design Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
325.00	Lightning Rod 5/8x4'	27	12.307	0.1824	0.3191	30368
323.00	Flash Beacon Lighting	27	12.234	0.1738	0.3214	30368
305.00	6813 1-Bay w/radome	27	11.712	0.2090	0.3303	6902
290.00	6 FT DISH	27	11.688	0.2689	0.3006	5417
285.84	Guy	27	11.774	0.2793	0.2858	10117
277.00	PD1110	27	11.998	0.2938	0.2920	29964
271.00	SC479-HF1LDF	27	12.138	0.2981	0.2816	33528
267.00	OGT9-840	27	12.229	0.2980	0.2713	21646
263.75	SC479-HF1LDF	27	12.304	0.2960	0.2776	16832
261.00	AP14-850/105	27	12.370	0.2928	0.2835	14800
256.51	Guy	27	12.485	0.2845	0.2928	17889
256.50	SE419-SF3P4LDF	27	12.485	0.2845	0.2928	17901
253.25	OGT9-840	27	12.570	0.2765	0.2988	27549
252.00	AP14-850/105	27	12.603	0.2730	0.3009	32823
250.00	OGT9-840	27	12.654	0.2673	0.3039	20819
249.25	SC479-HF1LDF	27	12.673	0.2650	0.3049	18308
242.00	SC479-HF1LDF	27	12.829	0.2424	0.3104	8562
240.00	TTA 432-83H-01T	27	12.862	0.2369	0.3104	8032
216.51	Guy	27	12.990	0.2516	0.3389	23112
211.00	6813 1-Bay w/radome	27	13.009	0.2489	0.3486	11248
198.00	6813 1-Bay w/radome	27	12.903	0.2016	0.3929	4674
190.00	6' Yagi	27	12.656	0.1833	0.4086	5951
187.42	Pirod 12' T-Frame Sector Mount (1)	27	12.550	0.2065	0.4117	6582
172.17	24"x12"x5" Panel	27	11.754	0.2623	0.4159	24068
172.00	3" x 8' Omni	27	11.745	0.2621	0.4159	24889
171.50	5' Grid Dish	27	11.716	0.2615	0.4159	26879
166.51	Guy	27	11.427	0.2514	0.4166	22574
166.00	16"x12"x3" TTA	27	11.398	0.2501	0.4168	20471
158.83	2'x1'x5" Panel	27	11.005	0.2348	0.4266	11312
157.00	L-810 Flashing Beacon	27	10.912	0.2331	0.4313	12617
125.00	2' Sidearm	27	9.259	0.2685	0.4790	20699
124.00	6'x4' Ice Shield	27	9.205	0.2671	0.4777	17922
116.00	6 FT DISH	27	8.796	0.2392	0.4649	10763
112.00	PD1110	27	8.616	0.2165	0.4619	10088
106.51	Guy	27	8.399	0.1844	0.4595	9295
104.00	6 FT DISH	27	8.312	0.1718	0.4598	8969
94.00	PR-850	27	8.042	0.1539	0.4761	27494
84.00	BXA-80063/4CF w/Mount Pipe	27	7.802	0.1842	0.5031	6824
70.00	DB212-1	27	7.228	0.2577	0.5090	7184
56.51	Guy	27	6.379	0.3440	0.5190	9776
18.00	6' Yagi	27	2.494	0.6111	0.6716	9113
13.00	1.2M	27	1.820	0.6323	0.6799	14295

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	291.84	Leg	A325N	1.0000	4	1861	34555	0.054 ✔	1.333	Bolt Tension
		Top Guy Pull-Off@285.84	A325N	0.6250	5	977	6443	0.152 ✔	1.333	Bolt Shear
		Torque Arm Top@285.84	A325N	0.6250	5	1904	6443	0.296 ✔	1.333	Bolt Shear
T2	279.84	Leg	A325N	1.0000	4	0	34556	0.000 ✔	1.333	Bolt Tension
T3	259.84	Leg	A325N	1.0000	4	0	34555	0.000 ✔	1.333	Bolt Tension
		Top Guy Pull-Off@256.507	A325N	0.6250	5	1554	6443	0.241 ✔	1.333	Bolt Shear
		Torque Arm Top@256.507	A325N	0.6250	5	2379	6443	0.369 ✔	1.333	Bolt Shear
T4	239.84	Leg	A325N	1.0000	4	0	34557	0.000 ✔	1.333	Bolt Tension
T5	219.84	Leg	A325N	1.0000	4	0	34555	0.000 ✔	1.333	Bolt Tension
		Top Guy Pull-Off@216.507	A325N	0.6250	5	2589	6443	0.402 ✔	1.333	Bolt Shear
		Torque Arm Top@216.507	A325N	0.6250	5	3205	6443	0.497 ✔	1.333	Bolt Shear
T6	199.84	Leg	A325N	1.0000	4	0	34557	0.000 ✔	1.333	Bolt Tension
T7	179.84	Leg	A325N	1.0000	4	0	34557	0.000 ✔	1.333	Bolt Tension
		Top Guy Pull-Off@166.507	A325N	0.6250	5	3556	6443	0.552 ✔	1.333	Bolt Shear
		Torque Arm Top@166.507	A325N	0.6250	5	4032	6443	0.626 ✔	1.333	Bolt Shear
T8	159.84	Leg	A325N	1.0000	4	0	34557	0.000 ✔	1.333	Bolt Tension
T9	139.84	Leg	A325N	1.0000	4	0	34557	0.000 ✔	1.333	Bolt Tension
T10	119.84	Leg	A325N	1.0000	4	0	34556	0.000 ✔	1.333	Bolt Tension
		Top Guy Pull-Off@106.507	A325N	0.6250	5	4151	6443	0.644 ✔	1.333	Bolt Shear
		Torque Arm Top@106.507	A325N	0.6250	5	4536	6443	0.704 ✔	1.333	Bolt Shear
T11	99.84	Leg	A325N	1.0000	4	0	34556	0.000 ✔	1.333	Bolt Tension
T12	79.84	Leg	A325N	1.3750	4	0	65335	0.000 ✔	1.333	Bolt Tension
T13	59.84	Leg	A325N	1.3750	4	0	65334	0.000 ✔	1.333	Bolt Tension
		Top Guy Pull-Off@56.5067	A325N	0.6250	5	1544	6443	0.240 ✔	1.333	Bolt Shear
		Torque Arm Top@56.5067	A325N	0.6250	5	1652	6443	0.256 ✔	1.333	Bolt Shear
T14	39.84	Leg	A325N	1.3750	4	0	65334	0.000 ✔	1.333	Bolt Tension
T15	19.84	Leg	A325N	1.3750	4	0	65334	0.000 ✔	1.333	Bolt Tension
T16	6.5	Leg	A325N	1.3750	4	0	65335	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.
T1	285.84 (A) (672)	3/4 EHS	8162	58300	20349	29150	2.000	2.865 ✔
	285.84 (A) (673)	3/4 EHS	8162	58300	20529	29150	2.000	2.840 ✔
	285.84 (B) (668)	3/4 EHS	8162	58300	19661	29150	2.000	2.965 ✔
	285.84 (B) (669)	3/4 EHS	8162	58300	19637	29150	2.000	2.969 ✔
	285.84 (C) (664)	3/4 EHS	8162	58300	20483	29150	2.000	2.846 ✔
	285.84 (C) (665)	3/4 EHS	8162	58300	20306	29150	2.000	2.871 ✔
T3	256.51 (A) (684)	3/4 EHS	8162	58300	21554	29150	2.000	2.705 ✔
	256.51 (A) (685)	3/4 EHS	8162	58300	21820	29150	2.000	2.672 ✔
	256.51 (B) (680)	3/4 EHS	8162	58300	20745	29150	2.000	2.810 ✔
	256.51 (B) (681)	3/4 EHS	8162	58300	20825	29150	2.000	2.800 ✔
	256.51 (C) (676)	3/4 EHS	8162	58300	21723	29150	2.000	2.684 ✔
	256.51 (C) (677)	3/4 EHS	8162	58300	21498	29150	2.000	2.712 ✔
T5	216.51 (A) (696)	3/4 EHS	8162	58300	23632	29150	2.000	2.467 ✔
	216.51 (A) (697)	3/4 EHS	8162	58300	24203	29150	2.000	2.409 ✔
	216.51 (B) (692)	3/4 EHS	8162	58300	22835	29150	2.000	2.553 ✔
	216.51 (B) (693)	3/4 EHS	8162	58300	22816	29150	2.000	2.555 ✔
	216.51 (C) (688)	3/4 EHS	8162	58300	23952	29150	2.000	2.434 ✔
	216.51 (C) (689)	3/4 EHS	8162	58300	23522	29150	2.000	2.479 ✔
T7	166.51 (A) (708)	3/4 EHS	8162	58300	24791	29150	2.000	2.352 ✔
	166.51 (A) (709)	3/4 EHS	8162	58300	25521	29150	2.000	2.284 ✔
	166.51 (B) (704)	3/4 EHS	8162	58300	23773	29150	2.000	2.452 ✔
	166.51 (B) (705)	3/4 EHS	8162	58300	23590	29150	2.000	2.471 ✔
	166.51 (C) (700)	3/4 EHS	8162	58300	25171	29150	2.000	2.316 ✔
	166.51 (C) (701)	3/4 EHS	8162	58300	24444	29150	2.000	2.385 ✔
T10	106.51 (A) (720)	3/4 EHS	8162	58300	23786	29150	2.000	2.451 ✔
	106.51 (A) (721)	3/4 EHS	8162	58300	24773	29150	2.000	2.353 ✔
	106.51 (B) (716)	3/4 EHS	8162	58300	23050	29150	2.000	2.529 ✔
	106.51 (B) (717)	3/4 EHS	8162	58300	22463	29150	2.000	2.595 ✔
	106.51 (C) (712)	3/4 EHS	8162	58300	24329	29150	2.000	2.396 ✔
	106.51 (C) (713)	3/4 EHS	8162	58300	23688	29150	2.000	2.461 ✔

Section No.	Elevation ft	Size	Initial Tension lb	Breaking Load lb	Actual T lb	Allowable T_a lb	Required S.F.	Actual S.F.
T13	56.51 (A) (732)	7/16 EHS	2912	20800	8416	10400	2.000	2.471 ✔
	56.51 (A) (733)	7/16 EHS	2912	20800	8959	10400	2.000	2.322 ✔
	56.51 (B) (728)	7/16 EHS	2912	20800	8460	10400	2.000	2.459 ✔
	56.51 (B) (729)	7/16 EHS	2912	20800	8093	10400	2.000	2.570 ✔
	56.51 (C) (724)	7/16 EHS	2912	20800	8685	10400	2.000	2.395 ✔
	56.51 (C) (725)	7/16 EHS	2912	20800	8610	10400	2.000	2.416 ✔

Compression Checks

Pole 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 $\frac{P}{P_a}$
L1	327 - 291.84 (1)	P10.75x0.843	35.16	35.16	120.0	10.366	26.2373	-3682	271981	0.014

Pole Bending Design Data

Section No.	Elevation ft	Size	Actual M_x lb-ft	Actual f_{bx} ksi	Allow. F_{bx} ksi	Ratio $\frac{f_{bx}}{F_{bx}}$	Actual M_y lb-ft	Actual f_{by} ksi	Allow. F_{by} ksi	Ratio $\frac{f_{by}}{F_{by}}$
L1	327 - 291.84 (1)	P10.75x0.843	24288.67	-4.832	33.000	0.146	0.00	0.000	33.000	0.000

Pole 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
L1	327 - 291.84 (1)	P10.75x0.843	0.014	0.146	0.000	0.160 ✔	1.066	H1-3 ✔

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	291.84 - 279.84	2	12.00	3.00	72.0 K=1.00	1.00	20.564	3.1416	-27705	64605	0.429
T2	279.84 - 259.84	2	20.00	3.33	80.0 K=1.00	1.00	19.012	3.1416	-29523	59729	0.494
T3	259.84 - 239.84	2 1/4	20.00	3.33	71.1 K=1.00	1.00	20.731	3.9761	-67454	82428	0.818
T4	239.84 - 219.84	2 1/4	20.00	3.33	71.1 K=1.00	1.00	20.731	3.9761	-68181	82428	0.827
T5	219.84 - 199.84	2 1/2	20.00	3.33	64.0 K=1.00	1.00	22.023	4.9087	-112023	108105	1.036
T6	199.84 - 179.84	2 1/2	20.00	3.33	64.0 K=1.00	1.00	22.023	4.9087	-122399	108105	1.132
T7	179.84 - 159.84	2 3/4	20.00	3.33	58.2 K=1.00	1.00	23.025	5.9396	-101359	136761	0.741
T8	159.84 - 139.84	2 1/2	20.00	3.33	64.0 K=1.00	1.00	22.023	4.9087	-98967	108105	0.915
T9	139.84 - 119.84	2 3/4	20.00	3.33	58.2 K=1.00	1.00	23.025	5.9396	-104451	136761	0.764
T10	119.84 - 99.84	2 3/4	20.00	3.33	58.2 K=1.00	1.00	23.025	5.9396	-140122	136761	1.025
T11	99.84 - 79.84	3	20.00	3.33	53.3 K=1.00	1.00	23.823	7.0686	-155596	168393	0.924
T12	79.84 - 59.84	3	20.00	3.33	53.3 K=1.00	1.00	23.823	7.0686	-164084	168393	0.974
T13	59.84 - 39.84	3	20.00	3.33	53.3 K=1.00	1.00	23.823	7.0686	-176332	168393	1.047
T14	39.84 - 19.84	3	20.00	3.33	53.3 K=1.00	1.00	23.823	7.0686	-176906	168393	1.051
T15	19.84 - 6.5	3	13.34	3.34	53.4 K=1.00	1.00	23.819	7.0686	-161017	168363	0.956
T16	6.5 - 0	3	6.84	2.10	67.3 K=2.00	1.00	21.431	7.0686	-146364	151486	0.966

Leg Bending Design Data (Compression)

Section No.	Elevation ft	Size	Actual M_x lb-ft	Actual f_{bx} ksi	Allow. F_{bx} ksi	Ratio $\frac{f_{bx}}{F_{bx}}$	Actual M_y lb-ft	Actual f_{by} ksi	Allow. F_{by} ksi	Ratio $\frac{f_{by}}{F_{by}}$
T1	291.84 - 279.84	2	0.00	0.000	37.500	0.000	0.00	0.000	37.500	0.000
T2	279.84 - 259.84	2	0.00	0.000	37.500	0.000	0.00	0.000	37.500	0.000
T3	259.84 - 239.84	2 1/4	0.00	0.000	37.500	0.000	0.00	0.000	37.500	0.000
T4	239.84 - 219.84	2 1/4	0.00	0.000	37.500	0.000	0.00	0.000	37.500	0.000
T5	219.84 - 199.84	2 1/2	0.00	0.000	37.500	0.000	0.00	0.000	37.500	0.000
T6	199.84 - 179.84	2 1/2	0.00	0.000	37.500	0.000	0.00	0.000	37.500	0.000
T7	179.84 - 159.84	2 3/4	0.00	0.000	37.500	0.000	0.00	0.000	37.500	0.000
T8	159.84 - 139.84	2 1/2	0.00	0.000	37.500	0.000	0.00	0.000	37.500	0.000

Section No.	Elevation ft	Size	Actual M_x lb-ft	Actual f_{bx} ksi	Allow. F_{bx} ksi	Ratio $\frac{f_{bx}}{F_{bx}}$	Actual M_y lb-ft	Actual f_{by} ksi	Allow. F_{by} ksi	Ratio $\frac{f_{by}}{F_{by}}$
T9	139.84 - 119.84	2 3/4	0.00	0.000	37.500	0.000	0.00	0.000	37.500	0.000
T10	119.84 - 99.84	2 3/4	0.00	0.000	37.500	0.000	0.00	0.000	37.500	0.000
T11	99.84 - 79.84	3	0.00	0.000	37.500	0.000	0.00	0.000	37.500	0.000
T12	79.84 - 59.84	3	0.00	0.000	37.500	0.000	0.00	0.000	37.500	0.000
T13	59.84 - 39.84	3	0.00	0.000	37.500	0.000	0.00	0.000	37.500	0.000
T14	39.84 - 19.84	3	0.00	0.000	37.500	0.000	0.00	0.000	37.500	0.000
T15	19.84 - 6.5	3	0.00	0.000	37.500	0.000	0.00	0.000	37.500	0.000
T16	6.5 - 0	3	0.00	0.000	37.500	0.000	0.00	0.000	37.500	0.000

Leg Interaction Design Data (Compression)

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	291.84 - 279.84	2	0.429	0.000	0.000	0.429 ✔	1.333	H1-3 ✔
T2	279.84 - 259.84	2	0.494	0.000	0.000	0.494 ✔	1.333	H1-3 ✔
T3	259.84 - 239.84	2 1/4	0.818	0.000	0.000	0.818 ✔	1.333	H1-3 ✔
T4	239.84 - 219.84	2 1/4	0.827	0.000	0.000	0.827 ✔	1.333	H1-3 ✔
T5	219.84 - 199.84	2 1/2	1.036	0.000	0.000	1.036 ✔	1.333	H1-3 ✔
T6	199.84 - 179.84	2 1/2	1.132	0.000	0.000	1.132 ✔	1.333	H1-3 ✔
T7	179.84 - 159.84	2 3/4	0.741	0.000	0.000	0.741 ✔	1.333	H1-3 ✔
T8	159.84 - 139.84	2 1/2	0.915	0.000	0.000	0.915 ✔	1.333	H1-3 ✔
T9	139.84 - 119.84	2 3/4	0.764	0.000	0.000	0.764 ✔	1.333	H1-3 ✔
T10	119.84 - 99.84	2 3/4	1.025	0.000	0.000	1.025 ✔	1.333	H1-3 ✔
T11	99.84 - 79.84	3	0.924	0.000	0.000	0.924 ✔	1.333	H1-3 ✔
T12	79.84 - 59.84	3	0.974	0.000	0.000	0.974 ✔	1.333	H1-3 ✔
T13	59.84 - 39.84	3	1.047	0.000	0.000	1.047 ✔	1.333	H1-3 ✔
T14	39.84 - 19.84	3	1.051	0.000	0.000	1.051 ✔	1.333	H1-3 ✔
T15	19.84 - 6.5	3	0.956	0.000	0.000	0.956 ✔	1.333	H1-3 ✔
T16	6.5 - 0	3	0.966	0.000	0.000	0.966 ✔	1.333	H1-3 ✔

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	291.84 - 279.84	1 3/8	4.74	4.52	110.5 K=0.70	11.603	1.4849	-2964	17229	0.172 ✓
T2	279.84 - 259.84	1 3/8	4.96	4.73	115.6 K=0.70	10.905	1.4849	-2268	16193	0.140 ✓
T3	259.84 - 239.84	1 3/8	4.96	4.70	114.9 K=0.70	11.001	1.4849	-7117	16336	0.436 ✓
T4	239.84 - 219.84	1 3/8	4.96	4.70	114.9 K=0.70	11.001	1.4849	-6046	16336	0.370 ✓
T5	219.84 - 199.84	1 1/2	4.96	4.67	104.7 K=0.70	12.374	1.7672	-11653	21867	0.533 ✓
T6	199.84 - 179.84	1 1/4	4.96	4.67	125.6 K=0.70	9.460	1.2272	-10740	11609	0.925 ✓
T7	179.84 - 159.84	1 1/2	4.96	4.65	104.1 K=0.70	12.456	1.7672	-15167	22012	0.689 ✓
T8	159.84 - 139.84	1 3/8	4.96	4.67	114.2 K=0.70	11.097	1.4849	-6159	16477	0.374 ✓
T9	139.84 - 119.84	1 1/4	4.96	4.65	124.9 K=0.70	9.572	1.2272	-7595	11747	0.647 ✓
T10	119.84 - 99.84	1 1/2	4.96	4.65	104.1 K=0.70	12.456	1.7672	-16180	22012	0.735 ✓
T11	99.84 - 79.84	1 3/8	4.96	4.62	112.8 K=0.70	11.286	1.4849	-14076	16758	0.840 ✓
T12	79.84 - 59.84	1 1/4	4.96	4.62	124.1 K=0.70	9.684	1.2272	-5009	11884	0.422 ✓
T13	59.84 - 39.84	1 1/4	4.96	4.62	124.1 K=0.70	9.684	1.2272	-6147	11884	0.517 ✓
T14	39.84 - 19.84	1 1/4	4.96	4.62	124.1 K=0.70	9.684	1.2272	-5731	11884	0.482 ✓
T15	19.84 - 6.5	1 1/4	4.96	4.62	124.2 K=0.70	9.679	1.2272	-7183	11878	0.605 ✓

Horizontal Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P lb	Allow. P_a lb	Ratio $\frac{P}{P_a}$
T1	291.84 - 279.84	1	3.67	3.50	117.6 K=0.70	10.622	0.7854	-885	8343	0.106 ✓
T2	279.84 - 259.84	1	3.67	3.50	117.6 K=0.70	10.622	0.7854	-511	8343	0.061 ✓
T3	259.84 - 239.84	1	3.67	3.48	116.9 K=0.70	10.721	0.7854	-1194	8420	0.142 ✓
T4	239.84 - 219.84	1	3.67	3.48	116.9 K=0.70	10.721	0.7854	-1181	8420	0.140 ✓
T5	219.84 - 199.84	1	3.67	3.46	116.2 K=0.70	10.819	0.7854	-1940	8497	0.228 ✓
T6	199.84 - 179.84	1	3.67	3.46	116.2	10.819	0.7854	-2854	8497	0.336

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=0.70					✓
T7	179.84 - 159.84	1	3.67	3.44	115.5 K=0.70	10.917	0.7854	-1756	8574	0.205 ✓
T8	159.84 - 139.84	1	3.67	3.46	116.2 K=0.70	10.819	0.7854	-1714	8497	0.202 ✓
T9	139.84 - 119.84	1	3.67	3.44	115.5 K=0.70	10.917	0.7854	-1809	8574	0.211 ✓
T10	119.84 - 99.84	1	3.67	3.44	115.5 K=0.70	10.917	0.7854	-2427	8574	0.283 ✓
T11	99.84 - 79.84	1	3.67	3.42	114.8 K=0.70	11.014	0.7854	-2695	8651	0.312 ✓
T12	79.84 - 59.84	1	3.67	3.42	114.8 K=0.70	11.014	0.7854	-2842	8651	0.329 ✓
T13	59.84 - 39.84	1	3.67	3.42	114.8 K=0.70	11.014	0.7854	-3054	8651	0.353 ✓
T14	39.84 - 19.84	1	3.67	3.42	114.8 K=0.70	11.014	0.7854	-3064	8651	0.354 ✓
T15	19.84 - 6.5	1	3.67	3.42	114.8 K=0.70	11.014	0.7854	-2789	8651	0.322 ✓

Secondary Horizontal Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P lb	Allow. P_a lb	Ratio $\frac{P}{P_a}$
T1	291.84 - 279.84	1	1.83	1.75	81.5 K=0.97	15.189	0.7854	0	11930	0.000 ✓
T2	279.84 - 259.84	1	1.83	1.75	81.5 K=0.97	15.189	0.7854	0	11930	0.000 ✓
T3	259.84 - 239.84	1	1.83	1.74	81.3 K=0.97	15.208	0.7854	0	11945	0.000 ✓
T4	239.84 - 219.84	1	1.83	1.74	81.3 K=0.97	15.208	0.7854	0	11945	0.000 ✓
T5	219.84 - 199.84	1	1.83	1.73	81.1 K=0.98	15.228	0.7854	0	11960	0.000 ✓
T6	199.84 - 179.84	1	1.83	1.73	81.1 K=0.98	15.228	0.7854	0	11960	0.000 ✓
T7	179.84 - 159.84	1	1.83	1.72	81.0 K=0.98	15.248	0.7854	0	11976	0.000 ✓
T8	159.84 - 139.84	1	1.83	1.73	81.1 K=0.98	15.228	0.7854	0	11960	0.000 ✓
T9	139.84 - 119.84	1	1.83	1.72	81.0 K=0.98	15.248	0.7854	0	11976	0.000 ✓
T10	119.84 - 99.84	1	1.83	1.72	81.0 K=0.98	15.248	0.7854	0	11976	0.000 ✓
T11	99.84 - 79.84	1	1.83	1.71	80.8 K=0.98	15.269	0.7854	0	11992	0.000 ✓
T12	79.84 - 59.84	1	1.83	1.71	80.8 K=0.98	15.269	0.7854	0	11992	0.000 ✓
T13	59.84 - 39.84	1	1.83	1.71	80.8	15.269	0.7854	0	11992	0.000

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P lb	Allow. P_a lb	Ratio P / P_a
T14	39.84 - 19.84	1	1.83	1.71	80.8 K=0.98	15.269	0.7854	0	11992	0.000 ✔
T15	19.84 - 6.5	1	1.83	1.71	80.8 K=0.98	15.269	0.7854	0	11992	0.000 ✔

Top Girt Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P lb	Allow. P_a lb	Ratio P / P_a
T1	291.84 - 279.84	1	3.67	3.50	117.6 K=0.70	10.622	0.7854	0	8343	0.000 ✔
T4	239.84 - 219.84	1	3.67	3.48	116.9 K=0.70	10.721	0.7854	-118	8420	0.014 ✔
T6	199.84 - 179.84	1	3.67	3.46	116.2 K=0.70	10.819	0.7854	-7	8497	0.001 ✔
T7	179.84 - 159.84	1	3.67	3.46	116.2 K=0.70	10.819	0.7854	-76	8497	0.009 ✔

Bottom Girt Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P lb	Allow. P_a lb	Ratio P / P_a
T16	6.5 - 0	12x3/8	0.28	0.03	3.6 K=1.00	21.455	4.5000	-4707	96549	0.049 ✔

Mid Girt Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P lb	Allow. P_a lb	Ratio P / P_a
T16	6.5 - 0	9x3/8	1.41	1.16	128.6 K=1.00	9.025	3.3750	-269	30461	0.009 ✔

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 P / P_a

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	291.84 - 279.84	MC12x35	3.67	3.50	115.1 K=1.00	10.968	10.3000	-4128	112971	0.037
T3	259.84 - 239.84	MC12x35	3.67	3.48	114.6 K=1.00	11.042	10.3000	-6545	113735	0.058
T5	219.84 - 199.84	MC12x35	3.67	3.46	114.1 K=1.00	11.116	10.3000	-11150	114498	0.097
T7	179.84 - 159.84	MC12x35	3.67	3.44	113.5 K=1.00	11.191	10.3000	-15897	115263	0.138
T10	119.84 - 99.84	MC12x35	3.67	3.44	113.5 K=1.00	11.191	10.3000	-18666	115263	0.162
T13	59.84 - 39.84	MC12x35	3.67	3.42	113.0 K=1.00	11.265	10.3000	-5349	116028	0.046

Top Guy Pull-Off Bending Design Data

Section No.	Elevation ft	Size	Actual M_x lb-ft	Actual f_{bx} ksi	Allow. F_{bx} ksi	Ratio $\frac{f_{bx}}{F_{bx}}$	Actual M_y lb-ft	Actual f_{by} ksi	Allow. F_{by} ksi	Ratio $\frac{f_{by}}{F_{by}}$
T1	291.84 - 279.84	MC12x35	72.45	-0.024	21.600	0.001	0.00	-0.000	21.600	0.000
T3	259.84 - 239.84	MC12x35	72.45	-0.024	21.600	0.001	0.00	-0.000	21.600	0.000
T5	219.84 - 199.84	MC12x35	72.45	-0.024	21.600	0.001	0.00	-0.000	21.600	0.000
T7	179.84 - 159.84	MC12x35	72.45	-0.024	21.600	0.001	0.00	-0.000	21.600	0.000
T10	119.84 - 99.84	MC12x35	72.45	-0.024	21.600	0.001	0.00	-0.000	21.600	0.000
T13	59.84 - 39.84	MC12x35	58.91	-0.020	21.600	0.001	0.00	-0.000	21.600	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
T1	291.84 - 279.84	MC12x35	0.037	0.001	0.000	0.038 ✔	1.333	H1-3 ✔
T3	259.84 - 239.84	MC12x35	0.058	0.001	0.000	0.059 ✔	1.333	H1-3 ✔
T5	219.84 - 199.84	MC12x35	0.097	0.001	0.000	0.098 ✔	1.333	H1-3 ✔
T7	179.84 - 159.84	MC12x35	0.138	0.001	0.000	0.139 ✔	1.333	H1-3 ✔
T10	119.84 - 99.84	MC12x35	0.162	0.001	0.000	0.163 ✔	1.333	H1-3 ✔
T13	59.84 - 39.84	MC12x35	0.046	0.001	0.000	0.047 ✔	1.333	H1-3 ✔

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	291.84 - 279.84 (666)	MC12x35	4.00	3.92	42.4 K=1.00	21.600	10.3000	0	97671	0.000
T1	291.84 - 279.84 (667)	MC12x35	4.00	3.92	42.4 K=1.00	21.600	10.3000	0	97671	0.000
T1	291.84 - 279.84 (670)	MC12x35	4.00	3.92	42.4 K=1.00	21.600	10.3000	0	97671	0.000
T1	291.84 - 279.84 (671)	MC12x35	4.00	3.92	42.4 K=1.00	21.600	10.3000	0	97671	0.000
T1	291.84 - 279.84 (674)	MC12x35	4.00	3.92	42.4 K=1.00	21.600	10.3000	0	97671	0.000
T1	291.84 - 279.84 (675)	MC12x35	4.00	3.92	42.4 K=1.00	21.600	10.3000	0	97671	0.000
T3	259.84 - 239.84 (678)	MC12x35	4.00	3.91	125.2 K=1.00	9.519	10.3000	-975	98046	0.010
T3	259.84 - 239.84 (679)	MC12x35	4.00	3.91	125.2 K=1.00	9.519	10.3000	-934	98046	0.010
T3	259.84 - 239.84 (682)	MC12x35	4.00	3.91	125.2 K=1.00	9.519	10.3000	-758	98046	0.008
T3	259.84 - 239.84 (683)	MC12x35	4.00	3.91	125.2 K=1.00	9.519	10.3000	-761	98046	0.008
T3	259.84 - 239.84 (686)	MC12x35	4.00	3.91	125.2 K=1.00	9.519	10.3000	-816	98046	0.008
T3	259.84 - 239.84 (687)	MC12x35	4.00	3.91	125.2 K=1.00	9.519	10.3000	-720	98046	0.007
T5	219.84 - 199.84 (690)	MC12x35	4.00	3.90	125.0 K=1.00	9.555	10.3000	-3730	98421	0.038
T5	219.84 - 199.84 (691)	MC12x35	4.00	3.90	125.0 K=1.00	9.555	10.3000	-3566	98421	0.036
T5	219.84 - 199.84 (694)	MC12x35	4.00	3.90	125.0 K=1.00	9.555	10.3000	-3263	98421	0.033
T5	219.84 - 199.84 (695)	MC12x35	4.00	3.90	125.0 K=1.00	9.555	10.3000	-3171	98421	0.032
T5	219.84 - 199.84 (698)	MC12x35	4.00	3.90	125.0 K=1.00	9.555	10.3000	-3230	98421	0.033
T5	219.84 - 199.84 (699)	MC12x35	4.00	3.90	125.0 K=1.00	9.555	10.3000	-3145	98421	0.032
T7	179.84 - 159.84 (702)	MC12x35	4.00	3.89	124.7 K=1.00	9.592	10.3000	-7816	98797	0.079
T7	179.84 - 159.84 (703)	MC12x35	4.00	3.89	124.7 K=1.00	9.592	10.3000	-6281	98797	0.064
T7	179.84 - 159.84 (706)	MC12x35	4.00	3.89	124.7 K=1.00	9.592	10.3000	-5209	98797	0.053
T7	179.84 - 159.84 (707)	MC12x35	4.00	3.89	124.7 K=1.00	9.592	10.3000	-5440	98797	0.055
T7	179.84 - 159.84 (710)	MC12x35	4.00	3.89	124.7 K=1.00	9.592	10.3000	-5229	98797	0.053
T7	179.84 - 159.84 (711)	MC12x35	4.00	3.89	124.7 K=1.00	9.592	10.3000	-5405	98797	0.055
T10	119.84 - 99.84 (714)	MC12x35	4.00	3.89	124.7 K=1.00	9.592	10.3000	-9363	98797	0.095
T10	119.84 - 99.84 (715)	MC12x35	4.00	3.89	124.7 K=1.00	9.592	10.3000	-7796	98797	0.079
T10	119.84 - 99.84 (718)	MC12x35	4.00	3.89	124.7 K=1.00	9.592	10.3000	-6388	98797	0.065
T10	119.84 - 99.84 (719)	MC12x35	4.00	3.89	124.7 K=1.00	9.592	10.3000	-6725	98797	0.068
T10	119.84 - 99.84 (722)	MC12x35	4.00	3.89	124.7 K=1.00	9.592	10.3000	-7831	98797	0.079

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	119.84 - 99.84 (723)	MC12x35	4.00	3.89	124.7 K=1.00	9.592	10.3000	-6278	98797	0.064
T13	59.84 - 39.84 (726)	MC12x35	4.00	3.88	124.5 K=1.00	9.628	10.3000	-3189	99173	0.032
T13	59.84 - 39.84 (727)	MC12x35	4.00	3.88	124.5 K=1.00	9.628	10.3000	-3117	99173	0.031
T13	59.84 - 39.84 (730)	MC12x35	4.00	3.88	124.5 K=1.00	9.628	10.3000	-2864	99173	0.029
T13	59.84 - 39.84 (731)	MC12x35	4.00	3.88	124.5 K=1.00	9.628	10.3000	-3023	99173	0.030
T13	59.84 - 39.84 (734)	MC12x35	4.00	3.88	124.5 K=1.00	9.628	10.3000	-2493	99173	0.025
T13	59.84 - 39.84 (735)	MC12x35	4.00	3.88	124.5 K=1.00	9.628	10.3000	-2563	99173	0.026

Torque-Arm Top Bending Design Data

Section No.	Elevation ft	Size	Actual M_x lb-ft	Actual f_{bx} ksi	Allow. F_{bx} ksi	Ratio $\frac{f_{bx}}{F_{bx}}$	Actual M_y lb-ft	Actual f_{by} ksi	Allow. F_{by} ksi	Ratio $\frac{f_{by}}{F_{by}}$
T1	291.84 - 279.84 (666)	MC12x35	-65580.83	-21.800	21.600	1.009	-0.00	-0.000	21.600	0.000
T1	291.84 - 279.84 (667)	MC12x35	-66070.58	-21.962	21.600	1.017	0.00	-0.000	21.600	0.000
T1	291.84 - 279.84 (670)	MC12x35	-65648.50	-21.822	21.600	1.010	-0.00	-0.000	21.600	0.000
T1	291.84 - 279.84 (671)	MC12x35	-61014.00	-20.282	21.600	0.939	-0.00	-0.000	21.600	0.000
T1	291.84 - 279.84 (674)	MC12x35	-61142.33	-20.324	21.600	0.941	-0.00	-0.000	21.600	0.000
T1	291.84 - 279.84 (675)	MC12x35	-65892.00	-21.903	21.600	1.014	0.00	-0.000	21.600	0.000
T3	259.84 - 239.84 (678)	MC12x35	-66861.17	-22.225	21.600	1.029	0.00	-0.000	21.600	0.000
T3	259.84 - 239.84 (679)	MC12x35	-66538.58	-22.118	21.600	1.024	-0.00	-0.000	21.600	0.000
T3	259.84 - 239.84 (682)	MC12x35	-61140.67	-20.324	21.600	0.941	0.00	-0.000	21.600	0.000
T3	259.84 - 239.84 (683)	MC12x35	-66244.50	-22.020	21.600	1.019	-0.00	-0.000	21.600	0.000
T3	259.84 - 239.84 (686)	MC12x35	-60889.83	-20.240	21.600	0.937	0.00	-0.000	21.600	0.000
T3	259.84 - 239.84 (687)	MC12x35	-66934.83	-22.250	21.600	1.030	0.00	-0.000	21.600	0.000
T5	219.84 - 199.84 (690)	MC12x35	-68389.33	-22.733	21.600	1.052	0.00	-0.000	21.600	0.000
T5	219.84 - 199.84 (691)	MC12x35	-67727.83	-22.513	21.600	1.042	-0.00	-0.000	21.600	0.000
T5	219.84 - 199.84 (694)	MC12x35	-60951.42	-20.261	21.600	0.938	-0.00	-0.000	21.600	0.000
T5	219.84 - 199.84 (695)	MC12x35	-67324.75	-22.379	21.600	1.036	-0.00	-0.000	21.600	0.000
T5	219.84 - 199.84 (698)	MC12x35	-60710.92	-20.181	21.600	0.934	-0.00	-0.000	21.600	0.000
T5	219.84 - 199.84 (699)	MC12x35	-68479.42	-22.763	21.600	1.054	0.00	-0.000	21.600	0.000

Section No.	Elevation ft	Size	Actual M_x lb-ft	Actual f_{bx} ksi	Allow. F_{bx} ksi	Ratio $\frac{f_{bx}}{F_{bx}}$	Actual M_y lb-ft	Actual f_{by} ksi	Allow. F_{by} ksi	Ratio $\frac{f_{by}}{F_{by}}$
T7	179.84 - 159.84 (702)	MC12x35	-60923.75	-20.252	21.600	0.938	-0.00	-0.000	21.600	0.000
T7	179.84 - 159.84 (703)	MC12x35	-63486.83	-21.104	21.600	0.977	0.00	-0.000	21.600	0.000
T7	179.84 - 159.84 (706)	MC12x35	-61847.00	-20.559	21.600	0.952	-0.00	-0.000	21.600	0.000
T7	179.84 - 159.84 (707)	MC12x35	-53113.75	-17.656	21.600	0.817	-0.00	-0.000	21.600	0.000
T7	179.84 - 159.84 (710)	MC12x35	-53326.42	-17.726	21.600	0.821	-0.00	-0.000	21.600	0.000
T7	179.84 - 159.84 (711)	MC12x35	-63102.00	-20.976	21.600	0.971	0.00	-0.000	21.600	0.000
T10	119.84 - 99.84 (714)	MC12x35	-45219.08	-15.031	21.600	0.696	-0.00	-0.000	21.600	0.000
T10	119.84 - 99.84 (715)	MC12x35	-47504.58	-15.791	21.600	0.731	0.00	-0.000	21.600	0.000
T10	119.84 - 99.84 (718)	MC12x35	-45982.33	-15.285	21.600	0.708	-0.00	-0.000	21.600	0.000
T10	119.84 - 99.84 (719)	MC12x35	-35564.50	-11.822	21.600	0.547	-0.00	-0.000	21.600	0.000
T10	119.84 - 99.84 (722)	MC12x35	-34609.25	-11.505	21.600	0.533	-0.00	-0.000	21.600	0.000
T10	119.84 - 99.84 (723)	MC12x35	-47077.25	-15.649	21.600	0.724	0.00	-0.000	21.600	0.000
T13	59.84 - 39.84 (726)	MC12x35	-11191.17	-3.720	21.600	0.172	0.00	-0.000	21.600	0.000
T13	59.84 - 39.84 (727)	MC12x35	-10788.58	-3.586	21.600	0.166	-0.00	-0.000	21.600	0.000
T13	59.84 - 39.84 (730)	MC12x35	-7003.31	-2.328	21.600	0.108	-0.00	-0.000	21.600	0.000
T13	59.84 - 39.84 (731)	MC12x35	-10687.00	-3.552	21.600	0.164	0.00	-0.000	21.600	0.000
T13	59.84 - 39.84 (734)	MC12x35	-6773.07	-2.251	21.600	0.104	-0.00	-0.000	21.600	0.000
T13	59.84 - 39.84 (735)	MC12x35	-10914.50	-3.628	21.600	0.168	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	291.84 - 279.84 (666)	MC12x35	0.000	1.009	0.000	1.009 ✔	1.333	H1-3 ✔
T1	291.84 - 279.84 (667)	MC12x35	0.000	1.017	0.000	1.017 ✔	1.333	H1-3 ✔
T1	291.84 - 279.84 (670)	MC12x35	0.000	1.010	0.000	1.010 ✔	1.333	H1-3 ✔
T1	291.84 - 279.84 (671)	MC12x35	0.000	0.939	0.000	0.939 ✔	1.333	H1-3 ✔
T1	291.84 - 279.84 (674)	MC12x35	0.000	0.941	0.000	0.941 ✔	1.333	H1-3 ✔
T1	291.84 - 279.84 (675)	MC12x35	0.000	1.014	0.000	1.014 ✔	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
T3	259.84 - 239.84 (678)	MC12x35	0.010	1.029	0.000	1.039 ✔	1.333	H1-3 ✔
T3	259.84 - 239.84 (679)	MC12x35	0.010	1.024	0.000	1.034 ✔	1.333	H1-3 ✔
T3	259.84 - 239.84 (682)	MC12x35	0.008	0.941	0.000	0.949 ✔	1.333	H1-3 ✔
T3	259.84 - 239.84 (683)	MC12x35	0.008	1.019	0.000	1.027 ✔	1.333	H1-3 ✔
T3	259.84 - 239.84 (686)	MC12x35	0.008	0.937	0.000	0.945 ✔	1.333	H1-3 ✔
T3	259.84 - 239.84 (687)	MC12x35	0.007	1.030	0.000	1.037 ✔	1.333	H1-3 ✔
T5	219.84 - 199.84 (690)	MC12x35	0.038	1.052	0.000	1.090 ✔	1.333	H1-3 ✔
T5	219.84 - 199.84 (691)	MC12x35	0.036	1.042	0.000	1.079 ✔	1.333	H1-3 ✔
T5	219.84 - 199.84 (694)	MC12x35	0.033	0.938	0.000	0.971 ✔	1.333	H1-3 ✔
T5	219.84 - 199.84 (695)	MC12x35	0.032	1.036	0.000	1.068 ✔	1.333	H1-3 ✔
T5	219.84 - 199.84 (698)	MC12x35	0.033	0.934	0.000	0.967 ✔	1.333	H1-3 ✔
T5	219.84 - 199.84 (699)	MC12x35	0.032	1.054	0.000	1.086 ✔	1.333	H1-3 ✔
T7	179.84 - 159.84 (702)	MC12x35	0.079	0.938	0.000	1.017 ✔	1.333	H1-3 ✔
T7	179.84 - 159.84 (703)	MC12x35	0.064	0.977	0.000	1.041 ✔	1.333	H1-3 ✔
T7	179.84 - 159.84 (706)	MC12x35	0.053	0.952	0.000	1.005 ✔	1.333	H1-3 ✔
T7	179.84 - 159.84 (707)	MC12x35	0.055	0.817	0.000	0.872 ✔	1.333	H1-3 ✔
T7	179.84 - 159.84 (710)	MC12x35	0.053	0.821	0.000	0.874 ✔	1.333	H1-3 ✔
T7	179.84 - 159.84 (711)	MC12x35	0.055	0.971	0.000	1.026 ✔	1.333	H1-3 ✔
T10	119.84 - 99.84 (714)	MC12x35	0.095	0.696	0.000	0.791 ✔	1.333	H1-3 ✔
T10	119.84 - 99.84 (715)	MC12x35	0.079	0.731	0.000	0.810 ✔	1.333	H1-3 ✔
T10	119.84 - 99.84 (718)	MC12x35	0.065	0.708	0.000	0.772 ✔	1.333	H1-3 ✔
T10	119.84 - 99.84 (719)	MC12x35	0.068	0.547	0.000	0.615 ✔	1.333	H1-3 ✔
T10	119.84 - 99.84 (722)	MC12x35	0.079	0.533	0.000	0.612 ✔	1.333	H1-3 ✔
T10	119.84 - 99.84 (723)	MC12x35	0.064	0.724	0.000	0.788 ✔	1.333	H1-3 ✔
T13	59.84 - 39.84 (726)	MC12x35	0.032	0.172	0.000	0.204 ✔	1.333	H1-3 ✔
T13	59.84 - 39.84 (727)	MC12x35	0.031	0.166	0.000	0.197 ✔	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
T13	59.84 - 39.84 (730)	MC12x35	0.029	0.108	0.000	0.137 ✔	1.333	H1-3 ✔
T13	59.84 - 39.84 (731)	MC12x35	0.030	0.164	0.000	0.195 ✔	1.333	H1-3 ✔
T13	59.84 - 39.84 (734)	MC12x35	0.025	0.104	0.000	0.129 ✔	1.333	H1-3 ✔
T13	59.84 - 39.84 (735)	MC12x35	0.026	0.168	0.000	0.194 ✔	1.333	H1-3 ✔

Tension Checks

Leg Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P lb	Allow. P_a lb	Ratio $\frac{P}{P_a}$
T1	291.84 - 279.84	2	12.00	3.00	72.0	30.000	3.1416	9730	94248	0.103

Leg Bending Design Data (Tension)

Section No.	Elevation ft	Size	Actual M_x lb-ft	Actual f_{bx} ksi	Allow. F_{bx} ksi	Ratio $\frac{f_{bx}}{F_{bx}}$	Actual M_y lb-ft	Actual f_{by} ksi	Allow. F_{by} ksi	Ratio $\frac{f_{by}}{F_{by}}$
T1	291.84 - 279.84	2	0.00	0.000	37.500	0.000	0.00	0.000	37.500	0.000

Leg Interaction Design Data (Tension)

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	291.84 - 279.84	2	0.103	0.000	0.000	0.103 ✔	1.333	H2-1 ✔

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	291.84 - 279.84	1 3/8	4.74	4.52	157.9	21.600	1.4849	2911	32074	0.091

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P lb	Allow. P_a lb	Ratio $\frac{P}{P_a}$
T2	279.84 - 259.84	1 3/8	4.96	4.73	165.1	21.600	1.4849	2091	32074	0.065 ✔
T3	259.84 - 239.84	1 3/8	4.96	4.70	164.1	21.600	1.4849	6176	32074	0.193 ✔
T4	239.84 - 219.84	1 3/8	4.96	4.70	164.1	21.600	1.4849	4618	32074	0.144 ✔
T5	219.84 - 199.84	1 1/2	4.96	4.67	149.6	21.600	1.7672	9947	38170	0.261 ✔
T6	199.84 - 179.84	1 1/4	4.96	4.67	179.5	21.600	1.2272	9337	26507	0.352 ✔
T7	179.84 - 159.84	1 1/2	4.96	4.65	148.7	21.600	1.7672	13495	38170	0.354 ✔
T8	159.84 - 139.84	1 3/8	4.96	4.67	163.2	21.600	1.4849	4610	32074	0.144 ✔
T9	139.84 - 119.84	1 1/4	4.96	4.65	178.4	21.600	1.2272	5414	26507	0.204 ✔
T10	119.84 - 99.84	1 1/2	4.96	4.65	148.7	21.600	1.7672	13225	38170	0.346 ✔
T11	99.84 - 79.84	1 3/8	4.96	4.62	161.2	21.600	1.4849	10713	32074	0.334 ✔
T12	79.84 - 59.84	1 1/4	4.96	4.62	177.3	21.600	1.2272	2801	26507	0.106 ✔
T13	59.84 - 39.84	1 1/4	4.96	4.62	177.3	21.600	1.2272	3422	26507	0.129 ✔
T14	39.84 - 19.84	1 1/4	4.96	4.62	177.3	21.600	1.2272	2847	26507	0.107 ✔
T15	19.84 - 6.5	1 1/4	4.96	4.62	177.4	21.600	1.2272	5361	26507	0.202 ✔

Horizontal Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P lb	Allow. P_a lb	Ratio $\frac{P}{P_a}$
T1	291.84 - 279.84	1	3.67	3.50	168.0	21.600	0.7854	1309	16965	0.077 ✔
T2	279.84 - 259.84	1	3.67	3.50	168.0	21.600	0.7854	654	16965	0.039 ✔
T3	259.84 - 239.84	1	3.67	3.48	167.0	21.600	0.7854	1168	16965	0.069 ✔
T4	239.84 - 219.84	1	3.67	3.48	167.0	21.600	0.7854	1181	16965	0.070 ✔
T5	219.84 - 199.84	1	3.67	3.46	166.0	21.600	0.7854	1940	16965	0.114 ✔
T6	199.84 - 179.84	1	3.67	3.46	166.0	21.600	0.7854	3846	16965	0.227 ✔
T7	179.84 - 159.84	1	3.67	3.44	165.0	21.600	0.7854	1756	16965	0.103 ✔
T8	159.84 - 139.84	1	3.67	3.46	166.0	21.600	0.7854	1714	16965	0.101

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 $\frac{P}{P_a}$
T9	139.84 - 119.84	1	3.67	3.44	165.0	21.600	0.7854	1809	16965	0.107 ✓
T10	119.84 - 99.84	1	3.67	3.44	165.0	21.600	0.7854	2427	16965	0.143 ✓
T11	99.84 - 79.84	1	3.67	3.42	164.0	21.600	0.7854	3047	16965	0.180 ✓
T12	79.84 - 59.84	1	3.67	3.42	164.0	21.600	0.7854	2842	16965	0.168 ✓
T13	59.84 - 39.84	1	3.67	3.42	164.0	21.600	0.7854	3054	16965	0.180 ✓
T14	39.84 - 19.84	1	3.67	3.42	164.0	21.600	0.7854	3064	16965	0.181 ✓
T15	19.84 - 6.5	1	3.67	3.42	164.0	21.600	0.7854	2789	16965	0.164 ✓

Secondary Horizontal Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P lb	Allow. P_a lb	Ratio $\frac{P}{P_a}$
T1	291.84 - 279.84	1	1.83	1.75	84.0	21.600	0.7854	0	16965	0.000 ✓
T2	279.84 - 259.84	1	1.83	1.75	84.0	21.600	0.7854	0	16965	0.000 ✓
T3	259.84 - 239.84	1	1.83	1.74	83.5	21.600	0.7854	0	16965	0.000 ✓
T4	239.84 - 219.84	1	1.83	1.74	83.5	21.600	0.7854	0	16965	0.000 ✓
T5	219.84 - 199.84	1	1.83	1.73	83.0	21.600	0.7854	0	16965	0.000 ✓
T6	199.84 - 179.84	1	1.83	1.73	83.0	21.600	0.7854	0	16965	0.000 ✓
T7	179.84 - 159.84	1	1.83	1.72	82.5	21.600	0.7854	0	16965	0.000 ✓
T8	159.84 - 139.84	1	1.83	1.73	83.0	21.600	0.7854	0	16965	0.000 ✓
T9	139.84 - 119.84	1	1.83	1.72	82.5	21.600	0.7854	0	16965	0.000 ✓
T10	119.84 - 99.84	1	1.83	1.72	82.5	21.600	0.7854	0	16965	0.000 ✓
T11	99.84 - 79.84	1	1.83	1.71	82.0	21.600	0.7854	0	16965	0.000 ✓
T12	79.84 - 59.84	1	1.83	1.71	82.0	21.600	0.7854	0	16965	0.000 ✓
T13	59.84 - 39.84	1	1.83	1.71	82.0	21.600	0.7854	0	16965	0.000 ✓
T14	39.84 - 19.84	1	1.83	1.71	82.0	21.600	0.7854	0	16965	0.000 ✓
T15	19.84 - 6.5	1	1.83	1.71	82.0	21.600	0.7854	0	16965	0.000 ✓

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	291.84 - 279.84	1	3.67	3.50	168.0	21.600	0.7854	0	16965	0.000
T2	279.84 - 259.84	1	3.67	3.50	168.0	21.600	0.7854	441	16965	0.026
T3	259.84 - 239.84	1	3.67	3.50	168.0	21.600	0.7854	970	16965	0.057
T4	239.84 - 219.84	1	3.67	3.48	167.0	21.600	0.7854	714	16965	0.042
T5	219.84 - 199.84	1	3.67	3.48	167.0	21.600	0.7854	1112	16965	0.066
T6	199.84 - 179.84	1	3.67	3.46	166.0	21.600	0.7854	1024	16965	0.060
T7	179.84 - 159.84	1	3.67	3.46	166.0	21.600	0.7854	1172	16965	0.069
T8	159.84 - 139.84	1	3.67	3.44	165.0	21.600	0.7854	1219	16965	0.072
T9	139.84 - 119.84	1	3.67	3.46	166.0	21.600	0.7854	1137	16965	0.067
T10	119.84 - 99.84	1	3.67	3.44	165.0	21.600	0.7854	1110	16965	0.065
T11	99.84 - 79.84	1	3.67	3.44	165.0	21.600	0.7854	1366	16965	0.081
T12	79.84 - 59.84	1	3.67	3.42	164.0	21.600	0.7854	1322	16965	0.078
T13	59.84 - 39.84	1	3.67	3.42	164.0	21.600	0.7854	1373	16965	0.081
T14	39.84 - 19.84	1	3.67	3.42	164.0	21.600	0.7854	1486	16965	0.088
T15	19.84 - 6.5	1	3.67	3.42	164.0	21.600	0.7854	1500	16965	0.088
T16	6.5 - 0	12x3/8	3.67	3.42	378.8	21.600	4.5000	26040	97200	0.268

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 $\frac{P}{P_a}$
T16	6.5 - 0	9x3/8	2.54	2.29	253.7	21.600	3.3750	407	72900	0.006

Section No.	Elevation	Size	L	L_u	Kl/r	F_a	A	Actual P	Allow. P_a	Ratio $\frac{P}{P_a}$
	ft		ft	ft		ksi	in^2	lb	lb	

Top Guy Pull-Off Design Data (Tension)

Section No.	Elevation	Size	L	L_u	Kl/r	F_a	A	Actual P	Allow. P_a	Ratio $\frac{P}{P_a}$
	ft		ft	ft		ksi	in^2	lb	lb	
T1	291.84 - 279.84	MC12x35	3.67	3.50	37.8	29.000	7.4623	4887	216407	0.023
T3	259.84 - 239.84	MC12x35	3.67	3.48	37.6	29.000	7.4623	7772	216407	0.036
T5	219.84 - 199.84	MC12x35	3.67	3.46	37.4	29.000	7.4623	12945	216407	0.060
T7	179.84 - 159.84	MC12x35	3.67	3.44	37.2	29.000	7.4623	17779	216407	0.082
T10	119.84 - 99.84	MC12x35	3.67	3.44	37.2	29.000	7.4623	20756	216407	0.096
T13	59.84 - 39.84	MC12x35	3.67	3.42	36.9	29.000	7.4623	7722	216407	0.036

Top Guy Pull-Off Bending Design Data

Section No.	Elevation	Size	Actual M_x	Actual f_{bx}	Allow. F_{bx}	Ratio $\frac{f_{bx}}{F_{bx}}$	Actual M_y	Actual f_{by}	Allow. F_{by}	Ratio $\frac{f_{by}}{F_{by}}$
	ft		lb-ft	ksi	ksi		lb-ft	ksi	ksi	
T1	291.84 - 279.84	MC12x35	72.45	0.024	21.600	0.001	-0.00	0.000	27.000	0.000
T3	259.84 - 239.84	MC12x35	72.45	0.024	21.600	0.001	-0.00	0.000	27.000	0.000
T5	219.84 - 199.84	MC12x35	72.45	0.024	21.600	0.001	-0.00	0.000	27.000	0.000
T7	179.84 - 159.84	MC12x35	72.45	0.024	21.600	0.001	0.00	0.000	27.000	0.000
T10	119.84 - 99.84	MC12x35	72.45	0.024	21.600	0.001	0.00	0.000	27.000	0.000
T13	59.84 - 39.84	MC12x35	72.45	0.024	21.600	0.001	0.00	0.000	27.000	0.000

Top Guy Pull-Off Interaction Design Data

Section No.	Elevation	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
	ft							
T1	291.84 - 279.84	MC12x35	0.023	0.001	0.000	0.024 ✔	1.333	H2-1 ✔
T3	259.84 - 239.84	MC12x35	0.036	0.001	0.000	0.037 ✔	1.333	H2-1 ✔
T5	219.84 - 199.84	MC12x35	0.060	0.001	0.000	0.061 ✔	1.333	H2-1 ✔
T7	179.84 - 159.84	MC12x35	0.082	0.001	0.000	0.083 ✔	1.333	H2-1 ✔
T10	119.84 - 99.84	MC12x35	0.096	0.001	0.000	0.097 ✔	1.333	H2-1 ✔
T13	59.84 - 39.84	MC12x35	0.036	0.001	0.000	0.037 ✔	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

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	291.84 - 279.84 (666)	MC12x35	4.00	3.92	42.4	21.600	10.3000	609	222480	0.003
T1	291.84 - 279.84 (667)	MC12x35	4.00	3.92	42.4	21.600	10.3000	617	222480	0.003
T1	291.84 - 279.84 (670)	MC12x35	4.00	3.92	42.4	21.600	10.3000	795	222480	0.004
T1	291.84 - 279.84 (671)	MC12x35	4.00	3.92	42.4	21.600	10.3000	666	222480	0.003
T1	291.84 - 279.84 (674)	MC12x35	4.00	3.92	42.4	21.600	10.3000	724	222480	0.003
T1	291.84 - 279.84 (675)	MC12x35	4.00	3.92	42.4	21.600	10.3000	830	222480	0.004
T3	259.84 - 239.84 (678)	MC12x35	4.00	3.91	42.3	21.600	10.3000	1512	222480	0.007
T3	259.84 - 239.84 (679)	MC12x35	4.00	3.91	42.3	21.600	10.3000	1537	222480	0.007
T3	259.84 - 239.84 (682)	MC12x35	4.00	3.91	42.3	21.600	10.3000	351	222480	0.002
T3	259.84 - 239.84 (683)	MC12x35	4.00	3.91	42.3	21.600	10.3000	460	222480	0.002
T3	259.84 - 239.84 (686)	MC12x35	4.00	3.91	42.3	21.600	10.3000	1592	222480	0.007
T3	259.84 - 239.84 (687)	MC12x35	4.00	3.91	42.3	21.600	10.3000	1924	222480	0.009
T5	219.84 - 199.84 (690)	MC12x35	4.00	3.90	42.2	21.600	10.3000	218	222480	0.001
T5	219.84 - 199.84 (691)	MC12x35	4.00	3.90	42.2	21.600	10.3000	489	222480	0.002
T5	219.84 - 199.84 (694)	MC12x35	4.00	3.90	42.2	21.600	10.3000	581	222480	0.003
T5	219.84 - 199.84 (695)	MC12x35	4.00	3.90	42.2	21.600	10.3000	1045	222480	0.005
T5	219.84 - 199.84 (698)	MC12x35	4.00	3.90	42.2	21.600	10.3000	597	222480	0.003
T5	219.84 - 199.84 (699)	MC12x35	4.00	3.90	42.2	21.600	10.3000	983	222480	0.004
T7	179.84 - 159.84 (702)	MC12x35	4.00	3.89	42.1	21.600	10.3000	7338	222480	0.033
T7	179.84 - 159.84 (703)	MC12x35	4.00	3.89	42.1	21.600	10.3000	2543	222480	0.011
T7	179.84 - 159.84 (706)	MC12x35	4.00	3.89	42.1	21.600	10.3000	529	222480	0.002
T7	179.84 - 159.84 (707)	MC12x35	4.00	3.89	42.1	21.600	10.3000	6626	222480	0.030
T7	179.84 - 159.84 (710)	MC12x35	4.00	3.89	42.1	21.600	10.3000	28	222480	0.000
T7	179.84 - 159.84 (711)	MC12x35	4.00	3.89	42.1	21.600	10.3000	73	222480	0.000
T10	119.84 - 99.84 (714)	MC12x35	4.00	3.89	42.1	21.600	10.3000	8670	222480	0.039

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	119.84 - 99.84 (715)	MC12x35	4.00	3.89	42.1	21.600	10.3000	2467	222480	0.011
T10	119.84 - 99.84 (718)	MC12x35	4.00	3.89	42.1	21.600	10.3000	50	222480	0.000
T10	119.84 - 99.84 (719)	MC12x35	4.00	3.89	42.1	21.600	10.3000	7423	222480	0.033
T10	119.84 - 99.84 (722)	MC12x35	4.00	3.89	42.1	21.600	10.3000	8395	222480	0.038
T10	119.84 - 99.84 (723)	MC12x35	4.00	3.89	42.1	21.600	10.3000	3394	222480	0.015
T13	59.84 - 39.84 (726)	MC12x35	4.00	3.88	41.9	21.600	10.3000	577	222480	0.003
T13	59.84 - 39.84 (727)	MC12x35	4.00	3.88	41.9	21.600	10.3000	1182	222480	0.005
T13	59.84 - 39.84 (730)	MC12x35	4.00	3.88	41.9	21.600	10.3000	875	222480	0.004
T13	59.84 - 39.84 (731)	MC12x35	4.00	3.88	41.9	21.600	10.3000	1161	222480	0.005
T13	59.84 - 39.84 (734)	MC12x35	4.00	3.88	41.9	21.600	10.3000	1352	222480	0.006
T13	59.84 - 39.84 (735)	MC12x35	4.00	3.88	41.9	21.600	10.3000	1225	222480	0.006

Torque-Arm Top Bending Design Data

Section No.	Elevation ft	Size	Actual M_x lb-ft	Actual f_{bx} ksi	Allow. F_{bx} ksi	Ratio $\frac{f_{bx}}{F_{bx}}$	Actual M_y lb-ft	Actual f_{by} ksi	Allow. F_{by} ksi	Ratio $\frac{f_{by}}{F_{by}}$
T1	291.84 - 279.84 (666)	MC12x35	-65580.83	21.800	21.600	1.009	-0.00	0.000	27.000	0.000
T1	291.84 - 279.84 (667)	MC12x35	-66070.58	21.962	21.600	1.017	0.00	0.000	27.000	0.000
T1	291.84 - 279.84 (670)	MC12x35	-65648.50	21.822	21.600	1.010	-0.00	0.000	27.000	0.000
T1	291.84 - 279.84 (671)	MC12x35	-61014.00	20.282	21.600	0.939	-0.00	0.000	27.000	0.000
T1	291.84 - 279.84 (674)	MC12x35	-61142.33	20.324	21.600	0.941	-0.00	0.000	27.000	0.000
T1	291.84 - 279.84 (675)	MC12x35	-65892.00	21.903	21.600	1.014	0.00	0.000	27.000	0.000
T3	259.84 - 239.84 (678)	MC12x35	-62211.42	20.680	21.600	0.957	0.00	0.000	27.000	0.000
T3	259.84 - 239.84 (679)	MC12x35	-61905.00	20.578	21.600	0.953	-0.00	0.000	27.000	0.000
T3	259.84 - 239.84 (682)	MC12x35	-60277.00	20.037	21.600	0.928	-0.00	0.000	27.000	0.000
T3	259.84 - 239.84 (683)	MC12x35	-65531.00	21.783	21.600	1.008	-0.00	0.000	27.000	0.000
T3	259.84 - 239.84 (686)	MC12x35	-57171.33	19.004	21.600	0.880	0.00	0.000	27.000	0.000
T3	259.84 - 239.84 (687)	MC12x35	-63453.17	21.093	21.600	0.977	0.00	0.000	27.000	0.000
T5	219.84 - 199.84 (690)	MC12x35	-62832.42	20.886	21.600	0.967	0.00	0.000	27.000	0.000
T5	219.84 - 199.84 (691)	MC12x35	-62216.75	20.682	21.600	0.957	-0.00	0.000	27.000	0.000

Section No.	Elevation ft	Size	Actual M_x lb-ft	Actual f_{bx} ksi	Allow. F_{bx} ksi	Ratio $\frac{f_{bx}}{F_{bx}}$	Actual M_y lb-ft	Actual f_{by} ksi	Allow. F_{by} ksi	Ratio $\frac{f_{by}}{F_{by}}$
T5	219.84 - 199.84 (694)	MC12x35	-56733.50	18.859	21.600	0.873	-0.00	0.000	27.000	0.000
T5	219.84 - 199.84 (695)	MC12x35	-63472.25	21.099	21.600	0.977	-0.00	0.000	27.000	0.000
T5	219.84 - 199.84 (698)	MC12x35	-56302.42	18.715	21.600	0.866	0.00	0.000	27.000	0.000
T5	219.84 - 199.84 (699)	MC12x35	-64556.25	21.459	21.600	0.993	0.00	0.000	27.000	0.000
T7	179.84 - 159.84 (702)	MC12x35	-45173.92	15.016	21.600	0.695	0.00	0.000	27.000	0.000
T7	179.84 - 159.84 (703)	MC12x35	-53199.58	17.684	21.600	0.819	0.00	0.000	27.000	0.000
T7	179.84 - 159.84 (706)	MC12x35	-58842.50	19.560	21.600	0.906	-0.00	0.000	27.000	0.000
T7	179.84 - 159.84 (707)	MC12x35	-39622.42	13.171	21.600	0.610	-0.00	0.000	27.000	0.000
T7	179.84 - 159.84 (710)	MC12x35	-49466.50	16.443	21.600	0.761	0.00	0.000	27.000	0.000
T7	179.84 - 159.84 (711)	MC12x35	-59728.67	19.854	21.600	0.919	0.00	0.000	27.000	0.000
T10	119.84 - 99.84 (714)	MC12x35	-34791.83	11.565	21.600	0.535	0.00	0.000	27.000	0.000
T10	119.84 - 99.84 (715)	MC12x35	-40132.75	13.341	21.600	0.618	0.00	0.000	27.000	0.000
T10	119.84 - 99.84 (718)	MC12x35	-43582.58	14.487	21.600	0.671	0.00	0.000	27.000	0.000
T10	119.84 - 99.84 (719)	MC12x35	-26588.67	8.838	21.600	0.409	0.00	0.000	27.000	0.000
T10	119.84 - 99.84 (722)	MC12x35	-26887.17	8.938	21.600	0.414	-0.00	0.000	27.000	0.000
T10	119.84 - 99.84 (723)	MC12x35	-40998.50	13.628	21.600	0.631	-0.00	0.000	27.000	0.000
T13	59.84 - 39.84 (726)	MC12x35	-11181.33	3.717	21.600	0.172	-0.00	0.000	27.000	0.000
T13	59.84 - 39.84 (727)	MC12x35	-10916.42	3.629	21.600	0.168	-0.00	0.000	27.000	0.000
T13	59.84 - 39.84 (730)	MC12x35	-7106.39	2.362	21.600	0.109	0.00	0.000	27.000	0.000
T13	59.84 - 39.84 (731)	MC12x35	-10895.75	3.622	21.600	0.168	0.00	0.000	27.000	0.000
T13	59.84 - 39.84 (734)	MC12x35	-7053.71	2.345	21.600	0.109	0.00	0.000	27.000	0.000
T13	59.84 - 39.84 (735)	MC12x35	-11363.50	3.777	21.600	0.175	-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 $\frac{f_{by}}{F_{by}}$	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
T1	291.84 - 279.84 (666)	MC12x35	0.003	1.009	0.000	1.012 ✔	1.333	H2-1 ✔
T1	291.84 - 279.84 (667)	MC12x35	0.003	1.017	0.000	1.020 ✔	1.333	H2-1 ✔
T1	291.84 - 279.84 (670)	MC12x35	0.004	1.010	0.000	1.014	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
T1	291.84 - 279.84 (671)	MC12x35	0.003	0.939	0.000	0.942	1.333	H2-1
T1	291.84 - 279.84 (674)	MC12x35	0.003	0.941	0.000	0.944	1.333	H2-1
T1	291.84 - 279.84 (675)	MC12x35	0.004	1.014	0.000	1.018	1.333	H2-1
T3	259.84 - 239.84 (678)	MC12x35	0.007	0.957	0.000	0.964	1.333	H2-1
T3	259.84 - 239.84 (679)	MC12x35	0.007	0.953	0.000	0.960	1.333	H2-1
T3	259.84 - 239.84 (682)	MC12x35	0.002	0.928	0.000	0.929	1.333	H2-1
T3	259.84 - 239.84 (683)	MC12x35	0.002	1.008	0.000	1.011	1.333	H2-1
T3	259.84 - 239.84 (686)	MC12x35	0.007	0.880	0.000	0.887	1.333	H2-1
T3	259.84 - 239.84 (687)	MC12x35	0.009	0.977	0.000	0.985	1.333	H2-1
T5	219.84 - 199.84 (690)	MC12x35	0.001	0.967	0.000	0.968	1.333	H2-1
T5	219.84 - 199.84 (691)	MC12x35	0.002	0.957	0.000	0.960	1.333	H2-1
T5	219.84 - 199.84 (694)	MC12x35	0.003	0.873	0.000	0.876	1.333	H2-1
T5	219.84 - 199.84 (695)	MC12x35	0.005	0.977	0.000	0.981	1.333	H2-1
T5	219.84 - 199.84 (698)	MC12x35	0.003	0.866	0.000	0.869	1.333	H2-1
T5	219.84 - 199.84 (699)	MC12x35	0.004	0.993	0.000	0.998	1.333	H2-1
T7	179.84 - 159.84 (702)	MC12x35	0.033	0.695	0.000	0.728	1.333	H2-1
T7	179.84 - 159.84 (703)	MC12x35	0.011	0.819	0.000	0.830	1.333	H2-1
T7	179.84 - 159.84 (706)	MC12x35	0.002	0.906	0.000	0.908	1.333	H2-1
T7	179.84 - 159.84 (707)	MC12x35	0.030	0.610	0.000	0.640	1.333	H2-1
T7	179.84 - 159.84 (710)	MC12x35	0.000	0.761	0.000	0.761	1.333	H2-1
T7	179.84 - 159.84 (711)	MC12x35	0.000	0.919	0.000	0.920	1.333	H2-1
T10	119.84 - 99.84 (714)	MC12x35	0.039	0.535	0.000	0.574	1.333	H2-1
T10	119.84 - 99.84 (715)	MC12x35	0.011	0.618	0.000	0.629	1.333	H2-1
T10	119.84 - 99.84 (718)	MC12x35	0.000	0.671	0.000	0.671	1.333	H2-1
T10	119.84 - 99.84 (719)	MC12x35	0.033	0.409	0.000	0.443	1.333	H2-1
T10	119.84 - 99.84 (722)	MC12x35	0.038	0.414	0.000	0.452	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
T10	119.84 - 99.84 (723)	MC12x35	0.015	0.631	0.000	0.646	1.333	H2-1
T13	59.84 - 39.84 (726)	MC12x35	0.003	0.172	0.000	0.175	1.333	H2-1
T13	59.84 - 39.84 (727)	MC12x35	0.005	0.168	0.000	0.173	1.333	H2-1
T13	59.84 - 39.84 (730)	MC12x35	0.004	0.109	0.000	0.113	1.333	H2-1
T13	59.84 - 39.84 (731)	MC12x35	0.005	0.168	0.000	0.173	1.333	H2-1
T13	59.84 - 39.84 (734)	MC12x35	0.006	0.109	0.000	0.115	1.333	H2-1
T13	59.84 - 39.84 (735)	MC12x35	0.006	0.175	0.000	0.180	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
L1	327 - 291.84	Pole	P10.75x0.843	1	-3682	290041	15.0	Pass
T1	291.84 - 279.84	Leg	2	4	-27705	86118	32.2	Pass
T2	279.84 - 259.84	Leg	2	37	-29523	79619	37.1	Pass
T3	259.84 - 239.84	Leg	2 1/4	81	-67454	109877	61.4	Pass
T4	239.84 - 219.84	Leg	2 1/4	128	-68181	109877	62.1	Pass
T5	219.84 - 199.84	Leg	2 1/2	173	-112023	144104	77.7	Pass
T6	199.84 - 179.84	Leg	2 1/2	218	-122399	144104	84.9	Pass
T7	179.84 - 159.84	Leg	2 3/4	263	-101359	182302	55.6	Pass
T8	159.84 - 139.84	Leg	2 1/2	308	-98967	144104	68.7	Pass
T9	139.84 - 119.84	Leg	2 3/4	353	-104451	182302	57.3	Pass
T10	119.84 - 99.84	Leg	2 3/4	396	-140122	182302	76.9	Pass
T11	99.84 - 79.84	Leg	3	443	-155596	224468	69.3	Pass
T12	79.84 - 59.84	Leg	3	486	-164084	224468	73.1	Pass
T13	59.84 - 39.84	Leg	3	531	-176332	224468	78.6	Pass
T14	39.84 - 19.84	Leg	3	576	-176906	224468	78.8	Pass
T15	19.84 - 6.5	Leg	3	621	-161017	224428	71.7	Pass
T16	6.5 - 0	Leg	3	652	-146364	201931	72.5	Pass
T1	291.84 - 279.84	Diagonal	1 3/8	25	-2964	22966	12.9	Pass
T2	279.84 - 259.84	Diagonal	1 3/8	43	-2268	21586	10.5	Pass
T3	259.84 - 239.84	Diagonal	1 3/8	117	-7117	21775	32.7	Pass
T4	239.84 - 219.84	Diagonal	1 3/8	133	-6046	21775	27.8	Pass
T5	219.84 - 199.84	Diagonal	1 1/2	207	-11653	29149	40.0	Pass
T6	199.84 - 179.84	Diagonal	1 1/4	223	-10740	15475	69.4	Pass
T7	179.84 - 159.84	Diagonal	1 1/2	283	-15167	29342	51.7	Pass
T8	159.84 - 139.84	Diagonal	1 3/8	349	-6159	21964	28.0	Pass
T9	139.84 - 119.84	Diagonal	1 1/4	359	-7595	15658	48.5	Pass
T10	119.84 - 99.84	Diagonal	1 1/2	409	-16180	29342	55.1	Pass
T11	99.84 - 79.84	Diagonal	1 3/8	482	-14076	22339	63.0	Pass
T12	79.84 - 59.84	Diagonal	1 1/4	527	-5009	15841	31.6	Pass
T13	59.84 - 39.84	Diagonal	1 1/4	565	-6147	15841	38.8	Pass
T14	39.84 - 19.84	Diagonal	1 1/4	583	-5731	15841	36.2	Pass
T15	19.84 - 6.5	Diagonal	1 1/4	634	-7183	15834	45.4	Pass
T1	291.84 - 279.84	Horizontal	1	15	-885	11121	8.0	Pass
T2	279.84 - 259.84	Horizontal	1	46	-511	11121	4.6	Pass

Section No.	Elevation ft	Component Type	Size	Critical Element	P lb	$SF*P_{allow}$ lb	% Capacity	Pass Fail
T3	259.84 - 239.84	Horizontal	1	112	-1194	11224	10.6	Pass
T4	239.84 - 219.84	Horizontal	1	137	-1181	11224	10.5	Pass
T5	219.84 - 199.84	Horizontal	1	189	-1940	11327	17.1	Pass
T6	199.84 - 179.84	Horizontal	1	235	-2854	11327	25.2	Pass
T7	179.84 - 159.84	Horizontal	1	286	-1756	11429	15.4	Pass
T8	159.84 - 139.84	Horizontal	1	317	-1714	11327	15.1	Pass
T9	139.84 - 119.84	Horizontal	1	362	-1809	11429	15.8	Pass
T10	119.84 - 99.84	Horizontal	1	406	-2427	11429	21.2	Pass
T11	99.84 - 79.84	Horizontal	1	459	-2695	11531	23.4	Pass
T12	79.84 - 59.84	Horizontal	1	503	-2842	11531	24.6	Pass
T13	59.84 - 39.84	Horizontal	1	548	-3054	11531	26.5	Pass
T14	39.84 - 19.84	Horizontal	1	586	-3064	11531	26.6	Pass
T15	19.84 - 6.5	Horizontal	1	631	-2789	11531	24.2	Pass
T1	291.84 - 279.84	Secondary Horizontal	1	28	0	15902	0.0	Pass
T2	279.84 - 259.84	Secondary Horizontal	1	73	0	15902	0.0	Pass
T3	259.84 - 239.84	Secondary Horizontal	1	118	0	15922	0.0	Pass
T4	239.84 - 219.84	Secondary Horizontal	1	149	0	15922	0.0	Pass
T5	219.84 - 199.84	Secondary Horizontal	1	180	0	15943	0.0	Pass
T6	199.84 - 179.84	Secondary Horizontal	1	225	0	15943	0.0	Pass
T7	179.84 - 159.84	Secondary Horizontal	1	284	0	15964	0.0	Pass
T8	159.84 - 139.84	Secondary Horizontal	1	315	0	22614	0.0	Pass
T9	139.84 - 119.84	Secondary Horizontal	1	360	0	22614	0.0	Pass
T10	119.84 - 99.84	Secondary Horizontal	1	433	0	22614	0.0	Pass
T11	99.84 - 79.84	Secondary Horizontal	1	450	0	22614	0.0	Pass
T12	79.84 - 59.84	Secondary Horizontal	1	495	0	22614	0.0	Pass
T13	59.84 - 39.84	Secondary Horizontal	1	540	0	15985	0.0	Pass
T14	39.84 - 19.84	Secondary Horizontal	1	585	0	15985	0.0	Pass
T15	19.84 - 6.5	Secondary Horizontal	1	644	0	15985	0.0	Pass
T1	291.84 - 279.84	Top Girt	1	6	0	11121	0.0	Pass
T2	279.84 - 259.84	Top Girt	1	10	441	22614	1.9	Pass
T3	259.84 - 239.84	Top Girt	1	39	970	22614	4.3	Pass
T4	239.84 - 219.84	Top Girt	1	86	714	22614	3.2	Pass
T5	219.84 - 199.84	Top Girt	1	130	1112	22614	4.9	Pass
T6	199.84 - 179.84	Top Girt	1	174	1024	22614	4.5	Pass
T7	179.84 - 159.84	Top Girt	1	221	1172	22614	5.2	Pass
T8	159.84 - 139.84	Top Girt	1	266	1219	22614	5.4	Pass
T9	139.84 - 119.84	Top Girt	1	311	1137	22614	5.0	Pass
T10	119.84 - 99.84	Top Girt	1	356	1110	22614	4.9	Pass
T11	99.84 - 79.84	Top Girt	1	401	1366	22614	6.0	Pass
T12	79.84 - 59.84	Top Girt	1	446	1322	22614	5.8	Pass
T13	59.84 - 39.84	Top Girt	1	489	1373	22614	6.1	Pass
T14	39.84 - 19.84	Top Girt	1	536	1486	22614	6.6	Pass
T15	19.84 - 6.5	Top Girt	1	581	1500	22614	6.6	Pass
T16	6.5 - 0	Top Girt	12x3/8	626	26040	129568	20.1	Pass
T16	6.5 - 0	Bottom Girt	12x3/8	657	-4096	128700	7.0	Pass
T16	6.5 - 0	Mid Girt	9x3/8	659	-269	40604	0.7	Pass
T1	291.84 - 279.84	Guy A@285.84	3/4	673	20529	29150	70.4	Pass
T3	259.84 - 239.84	Guy A@256.507	3/4	685	21820	29150	74.9	Pass
T5	219.84 - 199.84	Guy A@216.507	3/4	697	24203	29150	83.0	Pass
T7	179.84 - 159.84	Guy A@166.507	3/4	709	25521	29150	87.5	Pass
T10	119.84 - 99.84	Guy A@106.507	3/4	721	24773	29150	85.0	Pass
T13	59.84 - 39.84	Guy A@56.5067	7/16	733	8959	10400	86.1	Pass
T1	291.84 - 279.84	Guy B@285.84	3/4	668	19661	29150	67.4	Pass
T3	259.84 - 239.84	Guy B@256.507	3/4	681	20825	29150	71.4	Pass
T5	219.84 - 199.84	Guy B@216.507	3/4	692	22835	29150	78.3	Pass
T7	179.84 - 159.84	Guy B@166.507	3/4	704	23773	29150	81.6	Pass
T10	119.84 - 99.84	Guy B@106.507	3/4	716	23050	29150	79.1	Pass
T13	59.84 - 39.84	Guy B@56.5067	7/16	728	8460	10400	81.3	Pass
T1	291.84 - 279.84	Guy C@285.84	3/4	664	20483	29150	70.3	Pass
T3	259.84 - 239.84	Guy C@256.507	3/4	676	21723	29150	74.5	Pass
T5	219.84 - 199.84	Guy C@216.507	3/4	688	23952	29150	82.2	Pass

Section No.	Elevation ft	Component Type	Size	Critical Element	P lb	$SF*P_{allow}$ lb	% Capacity	Pass Fail
T7	179.84 - 159.84	Guy C@166.507	3/4	700	25171	29150	86.4	Pass
T10	119.84 - 99.84	Guy C@106.507	3/4	712	24329	29150	83.5	Pass
T13	59.84 - 39.84	Guy C@56.5067	7/16	724	8685	10400	83.5	Pass
T1	291.84 - 279.84	Top Guy Pull-Off@285.84	MC12x35	23	-4128	150590	2.8 11.4 (b)	Pass
T3	259.84 - 239.84	Top Guy Pull-Off@256.507	MC12x35	119	-6545	151609	4.4 18.1 (b)	Pass
T5	219.84 - 199.84	Top Guy Pull-Off@216.507	MC12x35	209	-11150	152626	7.4 30.1 (b)	Pass
T7	179.84 - 159.84	Top Guy Pull-Off@166.507	MC12x35	280	-15897	153646	10.4 41.4 (b)	Pass
T10	119.84 - 99.84	Top Guy Pull-Off@106.507	MC12x35	415	-18666	153646	12.2 48.3 (b)	Pass
T13	59.84 - 39.84	Top Guy Pull-Off@56.5067	MC12x35	569	-5349	154665	3.5 18.0 (b)	Pass
T1	291.84 - 279.84	Torque Arm Top@285.84	MC12x35	667	617	296566	76.5	Pass
T3	259.84 - 239.84	Torque Arm Top@256.507	MC12x35	678	-975	130695	77.9	Pass
T5	219.84 - 199.84	Torque Arm Top@216.507	MC12x35	690	-3730	131195	81.8	Pass
T7	179.84 - 159.84	Torque Arm Top@166.507	MC12x35	703	-6281	131696	78.1	Pass
T10	119.84 - 99.84	Torque Arm Top@106.507	MC12x35	715	-7796	131696	60.8	Pass
T13	59.84 - 39.84	Torque Arm Top@56.5067	MC12x35	726	-3189	132197	15.3 19.2 (b)	Pass
						Summary		
						Pole (L1)	15.0	Pass
						Leg (T6)	84.9	Pass
						Diagonal (T6)	69.4	Pass
						Horizontal (T14)	26.6	Pass
						Secondary Horizontal (T15)	0.0	Pass
						Top Girt (T16)	20.1	Pass
						Bottom Girt (T16)	7.0	Pass
						Mid Girt (T16)	0.7	Pass
						Guy A (T7)	87.5	Pass
						Guy B (T7)	81.6	Pass
						Guy C (T7)	86.4	Pass
						Top Guy Pull-Off (T10)	48.3	Pass
						Torque Arm Top (T5)	81.8	Pass
						Bolt Checks	52.8	Pass
						RATING =	**87.5**	**Pass**

FOUNDATION ANALYSIS

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FOUNDATION ANALYSIS

TOWER FORCES:

Moment Caused by Tower	$M_t := 0 \cdot ft \cdot kips$
Shear at Base of Tower	$S_t := 5.188 kip$
Max Compressive Force	$C_t := 366.113 kip$
Height of Tower	$H_t := 327 \cdot ft$
Base Plate Bolt Circle	$MP := 1.0 ft$

FOOTING DIMENSIONS:

Overall Depth of Footing	$D_f := 4 ft$
Length of Pier	$L_p := 2.5 \cdot ft$
Extension of Pier Above Grade	$L_{pag} := 0.5 \cdot ft$
Diameter of Pier	$d_p := 3.0 \cdot ft$
Thickness of Footing	$T_f := 2.0 \cdot ft$
Width of Footing:	$W_f := 10.0 ft$
Length of Anchor Bolts:	$L_{st} := 24 in$
Projection of anchor bolts above pier	$A_{BP} := 12 \cdot in$
Anchor bolts area	$A_{anchor} := 3.97 \cdot in^2$

PROPERTIES:

Compressive Strength of Concrete	$f'c := 3000 psi$
Yield Strength of Steel Reinforcement	$fy := 60000 psi$
Internal Friction Angle of Soil	$\phi_s := 30 \cdot deg$
Allowable Bearing Capacity	$q_s := 5000 \cdot psf$
Unit Weight of Soil	$\gamma_s := 125 \cdot pcf$
Unit Weight of Concrete	$\gamma_c := 150 \cdot pcf$
Depth to Neglect	$n := 1 ft$
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 soil and Concrete:	$\mu := 0.5$
Clear Cover of Reinforcement Pier:	$Cvr_{pier} := 3 \cdot in$
Clear Cover of Reinforcement Pad:	$Cvr_{pad} := 3 \cdot in$

PIER REINFORCEMENT:

Bar Size	$BSpier := 7$	Bar Diameter	$d_{bpier} := 0.875 in$
Number of Bars	$NBpier := 10$	Bar Area	$A_{bpier} := 0.60 \cdot in^2$

PAD REINFORCEMENT:

TOP:	Bar Size	$BS_{top} := 7$	Bar Diameter	$d_{btop} := 0.875 \cdot in$
	Number of Bars	$NB_{top} := 0$	Bar Area	$A_{btop} := 0.60 \cdot in^2$
BOTTOM:	Bar Size	$BS_{bot} := 7$	Bar Diameter	$d_{bbot} := 0.875 \cdot in$
	Number of Bars	$NB_{bot} := 18$	Bar Area	$A_{bot} := 0.60 \cdot in^2$

Coefficient of Lateral Soil Pressure: $K_p := \frac{1 + \sin(\phi_s)}{1 - \sin(\phi_s)}$ $K_p = 3$

Load Factor (EIA 3.1.1): $LF := if\left[H_t \le 700 \cdot ft, 1.3, if\left[H_t \ge 1200, 1.7, 1.3 + \left(\frac{H_t - 700}{1200 - 700}\right) \cdot 0.4\right]\right]$ $LF = 1.3$

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CHECK ANCHOR STEEL EMBEDMENT

$$L_{anchor} := \frac{(0.11 \cdot fy) \cdot in}{\sqrt{f'c \cdot psi}}$$

Depth:

$D_{ab} := L_{st} - A_{BP}$ $\quad D_{ab} = 1 \cdot ft$

$DepthCheck := if(D_{ab} \geq L_{anchor}, "Okay", "No Good")$

$L_{anchor} = 10.0416 \cdot ft$

$DepthCheck = "No Good"$ anchor plate is provided

STABILITY OF FOOTING

Passive Pressure:

$P_{pn} := K_p \cdot \gamma_s \cdot n + c \cdot 2 \cdot \sqrt{K_p}$ $\quad P_{pn} = 0.375 \cdot ksf$

$P_{pt} := K_p \cdot \gamma_s \cdot (D_f - T_f) + c \cdot 2 \cdot \sqrt{K_p}$ $\quad P_{pt} = 0.75 \cdot ksf$

$P_{top} := if[n < (D_f - T_f), P_{pt}, P_{pn}]$ $\quad P_{top} = 0.75 \cdot ksf$

$P_{bot} := K_p \cdot \gamma_s \cdot D_f + c \cdot 2 \cdot \sqrt{K_p}$ $\quad P_{bot} = 1.5 \cdot ksf$

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

$T_p := if[n < (D_f - T_f), T_f, (D_f - n)]$ $\quad T_p = 2 \cdot ft$

$A_p := W_f \cdot T_p$ $\quad A_p = 20 \cdot ft^2$

Ultimate Shear:

$S_u := P_{ave} \cdot A_p$ $\quad S_u = 22.5 \cdot kip$

Weight of Concrete Pad:

$WT_c := \left[\left(W_f^2 \cdot T_f \right) + \frac{d_p^2 \cdot \pi}{4} L_p \right] \cdot \gamma_c$ $\quad WT_c = 32.6507 \cdot kip$

Weight of Soil: above Footing:

$WT_{s1} := \left[W_f^2 \cdot \left(|L_p - L_{pag}| \right) - \frac{d_p^2 \cdot \pi}{4} \cdot \left(|L_p - L_{pag}| \right) \right] \cdot \gamma_s$ $\quad WT_{s1} = 23.2329 \cdot kip$

Weight of Soil Wedge at back face:

$WT_{s2} := \left(\frac{D_f^2 \cdot \tan(\phi_s)}{2} \cdot W_f \right) \cdot \gamma_s$ $\quad WT_{s2} = 5.7735 \cdot kip$

Total Weight:

$WT_{tot} := WT_c + WT_{s1} + C_t$ $\quad WT_{tot} = 421.9966 \cdot kip$

Resisting Moment:

$M_r := (WT_{tot}) \cdot \frac{W_f}{2} + S_u \cdot \frac{T_f}{3} + WT_{s2} \cdot \left(W_f + \frac{D_f \cdot \tan(\phi_s)}{3} \right)$ $\quad M_r = 2187.1623 \cdot kip \cdot ft$

Overturning Moment:

$M_{ot} := M_t + S_t \cdot (L_p + T_f)$ $\quad M_{ot} = 23.346 \cdot kip \cdot ft$

Factor of Safety:

$FS := \frac{M_r}{M_{ot}}$ $\quad FS_{req} := 2$ $\quad FS = 93.68$

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

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SHEAR CAPACITY IN PIER

$FS := 2$

$$S_p := \frac{P_{ave} \cdot A_p + \mu \cdot WT_{tot}}{FS}$$

$S_p = 116.7491 \cdot kips$

$ShearCheck := if(S_p > S_t, "Okay", "No Good")$

$ShearCheck = "Okay"$

BEARING PRESSURE CAUSED BY FOOTING

$A_{mat} := W_f^2$ $\quad A_{mat} = 100 \cdot ft^2$

$S := \frac{W_f^3}{6}$ $\quad S = 166.6667 \cdot ft^3$

$P_{max} := \frac{WT_{tot}}{A_{mat}} + \frac{M_{ot}}{S}$ $\quad P_{max} = 4.36 \cdot ksf$

$P_{min} := \frac{WT_{tot}}{A_{mat}} - \frac{M_{ot}}{S}$ $\quad P_{min} = 4.0799 \cdot ksf$

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

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

Distance to Resultant of Pressure Distribution:

$$X_p := \frac{P_{max}}{\frac{P_{max} - P_{min}}{W_f}} \cdot \frac{1}{3}$$

$X_p = 51.8771 \cdot ft$

Distance to Kern: $X_k := \frac{W_f}{3}$ $\quad X_k = 3.3333 \cdot ft$

Since Resultant Force is Not in Kern, Area to which Pressure is Applied Must be Reduced.

Eccentricity: $e := \frac{M_{ot}}{WT_{tot}}$ $\quad e = 0.0553$

Adjusted Soil Pressure:

$$P_a := \frac{2 \cdot WT_{tot}}{3 \cdot W_f \cdot \left(\frac{W_f}{2} - e\right)}$$

$P_a = 5.6896 \cdot ksf$

$$q_{adj} := if\left(P_{min} < 0, P_a, \frac{P_{max}}{ft^2}\right)$$

$q_{adj} = 4.36 \cdot ksf$

$PressureCheck := if(q_{adj} < q_s, "Okay", "No Good")$ $\quad PressureCheck = "Okay"$

CONCRETE BEARING CAPACITY (ACI 10.17)

$\phi_c := 0.75$ (ACI 9.3.2.2)

$P_b := \phi_c \cdot 0.85 \cdot f'c \cdot \frac{d_p^2 \cdot \pi}{4}$ $P_b = 1946.6879 \cdot kip$

$BearingCheck := if(P_b > LF \cdot C_t, "Okay", "No Good")$ BearingCheck = "Okay"

SHEAR STRENGTH OF CONCRETE

Beam Shear: (Critical section located at a distance d from the face of Pier) (ACI 11.3.1.1)

$\phi_{vc} := .85$ (ACI 9.3.2.3)

$d := T_f - Cvr_{pier} - .5 \cdot in$ $d = 20.5 \cdot in$

$d_1 := \frac{W_f}{2} - \frac{d_p}{2}$ $d_1 = 3.5 \cdot ft$

$d_2 := d_1 - d$ $d_2 = 1.7917 \cdot ft$

$L := \left(\frac{W_f}{2} - e\right) \cdot 3$ $L = 14.834 \cdot ft$

$Slope := if\left(L > W_f, \frac{P_{max} - P_{min}}{W_f}, \frac{q_{adj}}{L}\right)$ $Slope = 0.028 \cdot kcf$

$V_{req} := LF \cdot \left[\left(q_{adj} - Slope \cdot d_1\right) + \left(\frac{Slope \cdot d_1}{2}\right)\right] \cdot W_f \cdot d_1$ $V_{req} = 196.1512 \cdot kip$

ACI 11.3.1.1 $V_{Avail} := \phi_c \cdot 2 \cdot \sqrt{f'c \cdot psi} \cdot W_f \cdot d$ $V_{Avail} = 229.0576 \cdot kip$

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

Punching Shear: (Critical Section Located at a distance of d/2 from the face of pier) (ACI 11.12.2.1)

$b_o := (d_p + d) \cdot \pi$ $b_o = 14.7917 \cdot ft$

Area included inside bo: $A_{bo} := \frac{\pi \cdot (d_p + d)^2}{4}$ $A_{bo} = 17.411 \cdot ft^2$

Area outside of bo: $A_{out} := A_{mat} - A_{bo}$ $A_{out} = 82.589 \cdot ft^2$

Guess Value: $v_u := 1ksf$

(From "Foundation Analysis and design", By Joseph Bowles, Eq. 8-9)

Given $d^2 + d_p \cdot d = \frac{WT_{tot}}{\pi \cdot v_u}$

$v_u := \text{Find}(v_u)$ $v_u = 16.7001 \cdot ksf$

$V_u := v_u \cdot d \cdot W_f$ $V_u = 285.2935 \cdot kips$

$V_{req} := LF \cdot V_u$ $V_{req} = 370.8815 \cdot kips$

$V_{Avail} := \phi_c \cdot 4 \cdot \sqrt{f'c \cdot psi} \cdot b_o \cdot d$ $V_{Avail} = 677.6286 \cdot kips$

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

STEEL REINFORCEMENT IN THE PAD $\phi_m := .90$ ACI 9.3.2.2

Take Maximum Bending at face of Pier:

$q_b := q_{adj} - d_1 \cdot Slope$ $q_b = 4.262 \cdot ksf$

$M_n := \frac{LF}{\phi_m} \cdot \left[(q_{adj} - q_b) \cdot \frac{d_1^2}{3} + q_b \cdot \frac{d_1^2}{2} \right] \cdot W_f$ $M_n = 382.8509 \cdot kip \cdot ft$

ACI 10.2.7.3 $\beta := \text{if}\left[f'c \le 4000 \cdot psi, .85, \text{if}\left[f'c \ge 8000 \cdot psi, .65, .85 - \left(\frac{f'c}{psi} - 4000 \right) \cdot .05 \right] \right]$ $\beta = 0.85$

$A_s := \frac{M_n}{\phi_m \cdot fy \cdot d}$ $A_s = 4.1501 \cdot in^2$

$a := \frac{A_s \cdot fy}{\beta \cdot f'c \cdot W_f}$ $a = 0.8138 \cdot in$

$A_s := \frac{M_n}{fy \cdot \left(d - \frac{a}{2} \right)}$ $A_s = 3.8108 \cdot in^2$

$\rho := \frac{A_s}{W_f \cdot d}$ $\rho = 0.0015$

$\rho_{min} := \frac{3 \cdot \sqrt{f'c \cdot psi}}{fy}$ $\rho_{min} = 0.0027$

Temperature and Shrinkage: $\rho_{sh} := if(fy \geq 60000 \cdot psi, 0.0018, 0.0020)$ $\rho_{sh} = 0.0018$

(ACI 7.12.2.1b)

FOR BOTTOM BARS: $As := \max(\rho, \rho_{min}, \rho_{sh}) \cdot W_f \cdot d$ $As = 6.737 \cdot in^2$

$As_{prov} := A_{bot} \cdot NB_{bot}$ $As_{prov} = 10.8 \cdot in^2$

$PadReinforcement := if(As_{prov} > As, "Okay", "No Good")$ $PadReinforcement = "Okay"$

TENSION (ACI 12.2.3) **DEVELOPMENT LENGTH OF PAD REINFORCEMENT**

Bar Spacing: $B_{sPad} := \frac{W_f - 2 \cdot Cvr_{pad} - NB_{bot} \cdot d_{bbot}}{NB_{bot} - 1}$ $B_{sPad} = 5.7794 \cdot in$

Development Length Factors:

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

Spacing or Cover Dimension: $c := if\left(Cvr_{pad} < \frac{B_{sPad}}{2}, Cvr_{pad}, \frac{B_{sPad}}{2}\right)$ $c = 2.8897 \cdot in$

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

$$L_{dbt} := \frac{3}{40} \cdot \frac{fy}{\sqrt{f'c \cdot psi}} \cdot \frac{\alpha \cdot \beta \cdot \gamma \cdot \lambda}{\frac{c + k_{tr}}{d_{bbot}}} \cdot d_{bbot}$$ $L_{dbt} = 21.7678 \cdot in$

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

Minimum Development Length: (ACI 12.2.1) $L_{dbtCheck} := if(L_{dbt} \geq L_{dbmin}, "Use\ L.dbt", "Use\ L.dbmin")$ $L_{dbtCheck} = "Use\ L.dbt"$

Available Length in Pad: $L_{Pad} := \frac{W_f}{2} - \frac{d_p}{2} - Cvr_{pad}$ $L_{Pad} = 39 \cdot in$

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

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REINFORCEMENT IN PIER

Pier Area: $A_{pv} := \frac{\pi \cdot d_p^2}{4}$ $A_p = 1017.876 \cdot in^2$

(ACI 10.8.4 and 10.9.1) $A_{smin} := 0.01 \cdot 0.05 \cdot A_p$ $A_{smin} = 0.5089 \cdot in^2$

$A_{sprov} := NBpier \cdot A_{bpier}$ $A_{sprov} = 6 \cdot in^2$

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

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

Bar Spacing In Pier: $B_{sPier} := \frac{d_p \cdot \pi}{NBpier} - d_{bpier}$ $B_{sPier} = 10.4347 \cdot in$

Diamter of Reinforcement Cage: $Diam_{cage} := d_p - 2 \cdot Cvr_{pier}$ $Diam_{cage} = 30 \cdot in$

Maximum Moment in Pier: $M_p := \left[M_t + S_t \cdot \left(L_p + \frac{A_{BP}}{2} \right) \right] \cdot LF$ $M_p = 242.7984 \cdot in \cdot kips$

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

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

The required input is column diameter in inches, number of reinforcing bars, bar size number, factored axial load in kips and moment in kip inches:

$(D \ N \ n \ P_u \ M_{xu}) := (36 \ 10 \ 7 \ 712 \ 50)$

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

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

The Output is given as useable axial load in kips, moment capacity in kip inches, splicing stress in ksi, and reinforcement ratio:

$(\phi P_n \ \phi M_{xn} \ f_{sp} \ \rho) = (2644.9842 \ 185.7433 \ 47.6351 \ 0.0059)$

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

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

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

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DEVELOPMENT LENGTH OF PIER REINFORCEMENT

TENSION (ACI 12.2.3)

Factors for development:

Reinforcement Location Factor $\alpha := 1.0$

Coating Factor $\beta := 1.0$

Concrete strength Factor $\lambda := 1.0$

Reinforcement Size Factor $\gamma := 1.0$

Spacing or Cover Dimension: $c := \text{if}\left(Cvr_{pier} < \frac{B_{sPier}}{2}, Cvr_{pier}, \frac{B_{sPier}}{2}\right)$ $\quad c = 3\cdot in$

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

$$L_{dbt} := \frac{3}{40}\cdot\frac{fy}{\sqrt{f'c\cdot psi}}\cdot\frac{\alpha\cdot\beta\cdot\gamma\cdot\lambda}{\frac{c+k_{tr}}{d_{bpier}}}\cdot d_{bpier} \qquad L_{dbt} = 20.9675\cdot in$$

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

Pier reinforcement bars are standard 90 degree hooks and therefore developement in the pad is computed as follows:

$$L_{dh} := \frac{1200\cdot d_{bpier}}{\sqrt{\frac{f'c}{psi}}}\cdot .7 \qquad L_{dh} = 13.4192\cdot in$$

$$L_{db} := \max\left(L_{dbt}, L_{dbmin}\right) \qquad L_{db} = 20.9675\cdot in$$

COMPRESSION: (ACI 12.3.2)

$$L_{dbc1} := \frac{.02\cdot d_{bpier}\cdot fy}{\sqrt{f'c\cdot psi}} \qquad L_{dbc1} = 19.1703\cdot in$$

$$L_{dbmin} := 0.0003\cdot\frac{in^2}{lb}\cdot\left(d_{bpier}\cdot fy\right) \qquad L_{dbmin} = 15.75\cdot in$$

$$L_{dbc} := \text{if}\left(L_{dbc1} \geq L_{dbmin}, L_{dbc1}, L_{dbmin}\right) \qquad L_{dbc} = 19.1703\cdot in$$

Available Length in Pier:

$$L_{pier} := L_p - 3\cdot in \qquad L_{pier} = 27\cdot in$$

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

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

Available Length in Pad:

$$L_{pad} := T_f - 3\cdot in \qquad L_{pad} = 21\cdot in$$

$$L_{padtension} := \text{if}\left(L_{pad} > L_{dh}, \text{"Okay"}, \text{"No Good"}\right) \qquad L_{padtension} = \text{"Okay"}$$

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

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TIE SIZE AND SPACING IN COLUMN

Minimum Tie Size:

$Tie_{min} := if(BSpier \le 10, 3, 4)$ $\quad Tie_{min} = 3$

Used #4 Ties

$d_{Tie} := 3$

Seismic factor:
(ACI 21.10.5)

$z := if(Z \le 2, 1, 0.5)$ $\quad z = 1$

$s_{lim1} := 16 \cdot d_{bpier} \cdot z$ $\quad s_{lim1} = 14 \cdot in$

$s_{lim2} := \frac{48 \cdot d_{Tie} \cdot in}{8} \cdot z$ $\quad s_{lim2} = 18 \cdot in$

$s_{lim3} := D_f \cdot z$ $\quad s_{lim3} = 48 \cdot in$

$s_{lim4} := 18in$ $\quad s_{lim4} = 18 \cdot in$

Maximum Spacing:

$s_{tie} := \min\left(\begin{pmatrix} s_{lim1} \\ s_{lim2} \\ s_{lim3} \\ s_{lim4} \end{pmatrix}\right)$ $\quad s_{tie} = 14 \cdot in$

Number of Ties Required:

$n_{tie} := \frac{L_{pier} - 3 \cdot in}{s_{tie}} + 1$ $\quad n_{tie} = 2.7143$

GUY ANCHOR ANALYSIS

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	Typical Anchor Block	**Checked by:**		**Date**	3/16/15
				Date	

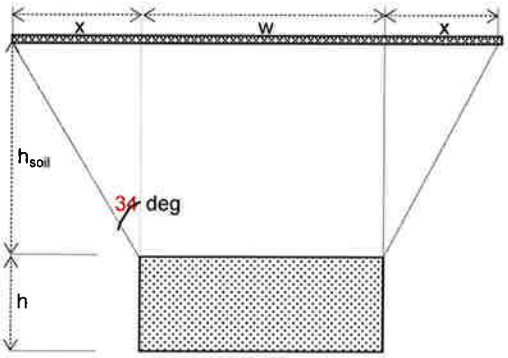
CHECK UPLIFT RESISTANCE

RESULTS FROM COMPUTER ANALYSIS:

Uplift =	150.362	kips
Sliding =	185.021	kips

CONCRETE PARAMETERS:

γ_{conc} =	150	pcf
w =	4.5	ft
h =	4	ft
d =	24	ft
Vol. =	*432*	ft^3
Wc =	*64.80*	kips



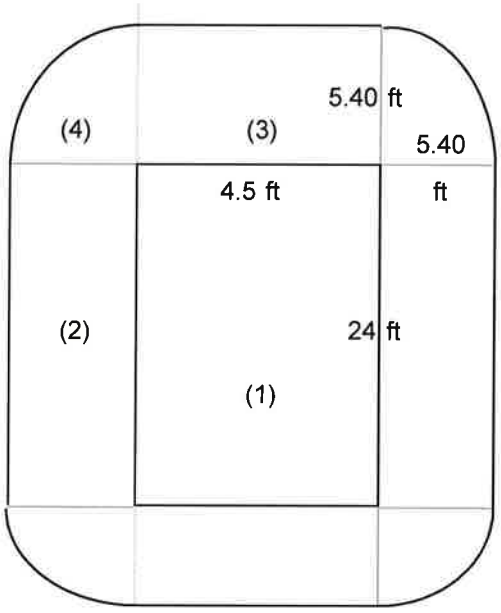
Foundation Section

SOIL PARAMETERS:

γ_{soil} =	120	pcf
h_{soil} =	8	ft
x =	*5.40*	ft

Soil Weight (Wr):

(1) =	103.68	kips
(2) =	124.33	kips
(3) =	23.31	kips
(4) =	29.27	kips
*(5) Anchor Reinf. =	0	kips
Total =	280.59	kips



Foundation Plan View

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

Wr / 2.0 + Wc / 1.25 > UPLIFT				(Wr + Wc) / 1.5 > UPLIFT			
192.13	>	*150.362*	***OK***	*230.26*	>	*150.362*	***OK***

CHECK UPLIFT (PER 2005 CT BLDG CODE 3108.4):

(Wr + Wc) / 2.0 > UPLIFT				
172.69	>	*150.362*	***OK***	

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

87.1%

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Description:	Anchor Block Evaluation - UCONN	Computed by:	MCD	Sheet	2 of 2
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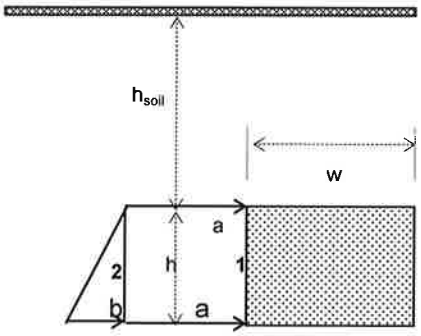
CHECK SLIDING RESISTANCE

SOIL PARAMETERS

$\gamma soil$ =	120	pcf
h_{soil} =	8	ft
h =	4	ft
ϕ =	34	degrees

ANCHOR PARAMETERS

w =	4.5 ft
h =	4.0 ft
d =	24.0 ft



Foundation Elevation View

K_a = 0.28

K_p = 3.54

Δ = 3.25

HORIZONTAL FORCES

1 =	299.93	k
2 =	18.75	k
RESIST TO SLIDING =	318.67	k

SOIL & CONCRETE WEIGHT =	Wr + Wc =	345.39	k
UPLIFT REACTIONS =		-150.362	k
SUM =		195.03	k

COEF. OF FRICTION, (0.5) =	97.51	k
RESIST TO SLIDING =	318.67	k
SUM =	416.19	k

SF AGAINST SLIDING

SF = 2.25 > 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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