Robinson+Cole

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Also admitted in Massachusetts

November 11, 2015

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

Re: **Notice of Exempt Modification – Facility Modification**
2 Hinckley Hill Road, Norwich, Connecticut

Dear Ms. Bachman:

Cellco Partnership d/b/a Verizon Wireless ("Cellco") currently maintains fifteen (15) wireless telecommunications antennas at the 127.5-foot level of the existing 150-foot tower at 2 Hinckley Hill Road in Norwich, Connecticut (the "Property"). The tower is owned by Cordless Data Transfer, Inc. ("CDT"). The Council approved Cellco's use of the existing tower in 2000. Cellco now intends to modify its facility by replacing nine (9) of its existing antennas with three (3) model LNX-6514DS, 700 MHz antennas; three (3) model HBXX-9014DS, 1900 MHz antennas; and three (3) model HBXX-6517DS, 2100 MHz antennas, all at the same 127.5-foot level on the tower. Cellco also intends to install nine (9) remote radio heads ("RRHs") behind its antennas and one (1) HYBRIFLEX™ fiber optic 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 Deb Hinchey, Mayor for the City of Norwich. A copy of this letter is also being sent to James and Laverne Irwin, the owners of the Property and CDT, the tower owner.

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 127.5-foot level on the 155-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 modified facility will not increase radio frequency (RF) emissions at the facility to a level at or above the Federal Communications Commission (FCC) safety standard. A cumulative General Power Density table for Cellco's modified facility is included behind Attachment 2.

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

6. The tower and its foundation can support Cellco's proposed modifications. (*See* Structural Analysis 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:
Deb Hinchey, Norwich Mayor
James and Laverne Irwin
CDT
Tim Parks

ATTACHMENT 1

Product Specifications

COMMSCOPE®

POWERED BY ANDREW.

LNX-6514DS-VTM

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

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

Electrical Specifications

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

Electrical Specifications, BASTA*

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

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

General Specifications

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

Product Specifications

LNX-6514DS-VTM

Operating Frequency Band	698 – 896 MHz
Performance Note	Outdoor usage

Mechanical Specifications

Color	Light gray
Lightning Protection	dc Ground
Radiator Material	Aluminum
Radome Material	Fiberglass, UV resistant
RF Connector Interface	7-16 DIN Female
RF Connector Location	Bottom
RF Connector Quantity, total	2
Wind Loading, maximum	617.7 N @ 150 km/h 138.9 lbf @ 150 km/h
Wind Speed, maximum	241.0 km/h | 149.8 mph

Dimensions

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

Remote Electrical Tilt (RET) Information

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

Regulatory Compliance/Certifications

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

Included Products

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

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

* Footnotes

Performance Note	Severe environmental conditions may degrade optimum performance

Product Specifications

COMMSCOPE®

on the go

HBXX-9014DS-VTM

DualPol® Quad Teletilt® Antenna, 1710–2180 MHz, 90° horizontal beamwidth, RET compatible

- 2x2 MIMO ready
- Two DualPol® antennas under one radome
- High front-to-back ratio aids in minimizing co-channel interference
- Fully compatible with Andrew remote electrical tilt system for greater OpEx savings
- Enhanced control of out-of-sector power improves co-channel interference, reduces softer hand-offs, improves capacity
- Fully supports PCS 1900, GSM 1800, UMTS 2100, and AWS spectrum

Electrical Specifications

Frequency Band, MHz	**1710–1880**	**1850–1990**	**1920–2180**
Gain, dBi	16.0	16.0	16.2
Beamwidth, Horizontal, degrees	90	90	90
Beamwidth, Vertical, degrees	7.4	7.0	6.6
Beam Tilt, degrees	0–10	0–10	0–10
USLS, typical, dB	17	17	18
Front-to-Back Ratio at 180°, dB	30	30	30
Isolation, dB	30	30	30
VSWR | Return Loss, dB	1.4:1 | 15.6	1.4:1 | 15.6	1.4:1 | 15.6
PIM, 3rd Order, 2 x 20 W, dBc	-150	-150	-150
Input Power per Port, maximum, watts	350	350	350
Polarization	±45°	±45°	±45°
Impedance	50 ohm	50 ohm	50 ohm
Lightning Protection	dc Ground	dc Ground	dc Ground

Mechanical Specifications

Color | Radome Material	Light gray | PVC, UV resistant
Connector Interface | Location | Quantity	7-16 DIN Female | Bottom | 4
Wind Loading, maximum	419.5 N @ 150 km/h 94.3 lbf @ 150 km/h
Wind Speed, maximum	241.0 km/h | 149.8 mph

Dimensions

Depth	166.0 mm | 6.5 in
Length	1294.00 mm | 50.94 in
Width	305.00 mm | 12.01 in
Net Weight	13.50 kg | 29.76 lb

Remote Electrical Tilt (RET) Information

Model with Factory Installed AISG 1.1 Actuator	HBXX-9014DS-R2M
Model with Factory Installed AISG 2.0 Actuator	HBXX-9014DS-A2M

Regulatory Compliance/Certifications

Agency	**Classification**
RoHS 2002/95/EC	Compliant by Exemption

Product Specifications

HBXX-9014DS-VTM

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

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 B13 RRH4X30-4R

Alcatel-Lucent B13 Remote Radio Head 4x30-4R is the newest addition of Remote Radio Head to the extended product line of Alcatel-Lucent's distributed Base Station solutions, aimed at facilitating smooth RF site acquisition and related civil engineering.

Supporting 2Tx/4Tx MIMO and 4-way Rx diversity, Alcatel-Lucent B13 RRH4x30-4R allows operators to have a compact radio solution to deploy LTE in the 700U band (700 MHz, 3GPP band 13), providing them with the means to achieve high capacity, high quality and high coverage with minimum site requirements.

The Alcatel-Lucent B13 RRH4x30-4R product has four transmit RF paths, offering the possibility to **select, via software only, 2Tx or 4Tx MIMO configurations** with either 2x60 W or 4x30 W RF output power. It supports also 4-way Rx diversity and up to 10MHz instantaneous bandwidth.

The Alcatel-Lucent B13 RRH4x30-4R is a near zero-footprint solution and operates noise free, simplifying negotiations with site property owners and minimizing environmental impacts.

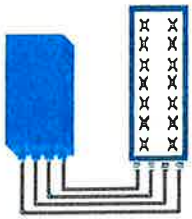
Its compactness and slim design makes the Alcatel-Lucent B13 RRH4x30-4R easy to install close to the antenna: operators can therefore locate this Remote Radio Head where RF design conditions are deemed ideal, minimizing trade-offs between available sites and RF optimum sites, together with reducing the RF feeder needs and installation costs.

FEATURES

- Supporting LTE in 700 MHz band (700U, 3GPP band 13)
- LTE 2Tx or 4Tx MIMO (SW switchable)
- Output power: Up to 2x60W or 4x30W
- 10MHz LTE carrier with 4Rx Diversity
- Convection-cooled (fan-less)
- Supports AISG 2.0 ALD devices (RET, TMA) through RS485 or RF ports

BENEFITS

- Compact to reduce additional footprint when adding LTE in 700U band
- MIMO scheme operation selection (2Tx or 4Tx) by software only
- Improves downlink spectral efficiency through MIMO4
- Increases LTE coverage thanks to 4Rx diversity capability and best in class Rx sensitivity
- Flexible mounting options: Pole or Wall



4x30W with 4T4R
or
2x60W with 2T4R

Can be switched between modes via SW w/o site visit

Alcatel·Lucent

Features & performance	
Number of TX/RX paths	4 duplexed (either 4T4R or 2T4R by SW)
Frequency band	U700 (C) (3GPP bands 13): DL: 746 - 756 MHz / UL: 777 - 787 MHz
Instantaneous bandwidth - #carriers	10MHz – 1 LTE carrier (in 10MHz occupied bandwidth)
LTE carrier bandwidth	10 MHz
RF output power	2x60W or 4x30W (by SW)
Noise figure – RX Diversity scheme	2 dB typ. (<2.5 dB max) – 2 or 4 way Rx diversity
Sizes (HxWxD) in mm (in.) Volume in L Weight in kg (lb) (w/o mounting HW)	550 x 305 x 230 (21.6" x 12.0" x 9") (with solar shield) 38 (with solar shield) 26 (57.2) (with solar shield)
DC voltage range DC power consumption	-40.5 to -57V at full performance, -38 to -57V with relaxation on power consumption 550W typical @100% RF load (in 2Tx or 4TX mode)
Environmental conditions Wind load (@150km/h or 93mph)	-40°C (-40°F) /+55°C (+131°F) IP65 Frontal:<200N / Lateral :<150N
Antenna ports	4 ports 7/16 DIN female (50 ohms) VSWR < 1.5
CPRI ports	2 CPRI ports (HW ready for Rate7, 9.8 Gbps) SFP single mode dual fiber
AISG interfaces	1 AISG2.0 output (RS485) Integrated Smart Bias Tees (x2)
Misc. Interfaces	4 external alarms (1 connector) – 4 RF Tx & 4 RF Rx monitor ports - 1 DC connector (2 pins)
Installation conditions	Pole and wall mounting
Regulatory compliance	3GPP 36.141 / 3GPP 36.113 / GR-1089-CORE / GR-3108-CORE / UL 60950-1 / FCC Part 27

PCS RF MODULES

RRH1900 2X60 - HW CHARACTERISTICS

LA6.0.1/13.3

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

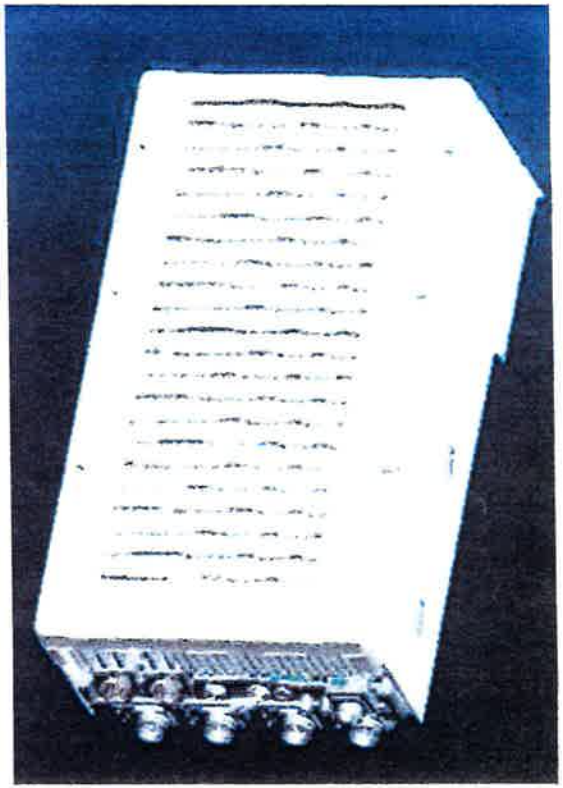
** Not a Verizon Wireless deployed product

NEW PCS RF MODULES FOR VZW

RRH2X60 - HW CHARACTERISTICS

LR14.3

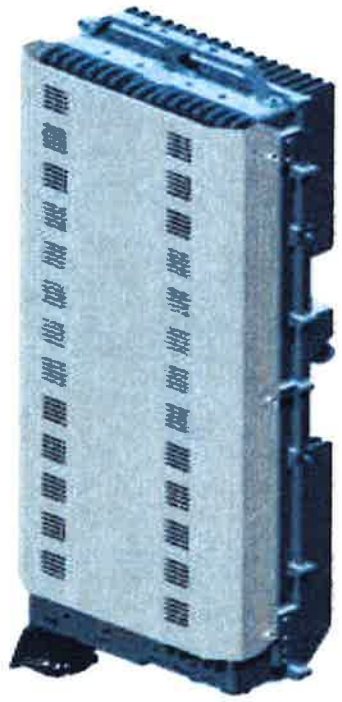
	RRH2x60
RF Output Power	2x60W (4x30W HW Ready)
Instantaneous Bandwidth	60MHz
Target Reliability (Annual Return Rate)	<2%
Receiver	4 Branch Rx
Features	AISG 2.0 for RET/TMA
Power	-48VDC
	Internal Smart Bias-T
CPRI Ports	2 CPRI Rate 5 Ports
External Alarms	4 External User Alarms
Monitor Ports	TX, RX
Environmental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



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

ALCATEL-LUCENT
WIRELESS PRODUCT DATASHEET
RRH2X60-AWS FOR BAND 4 APPLICATIONS

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



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

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

SUPERIOR RF PERFORMANCE

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

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

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

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

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

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

OPTIMIZED TCO

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

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

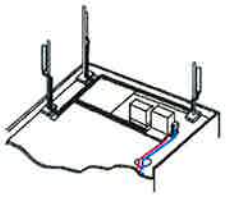
EASY INSTALLATION

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

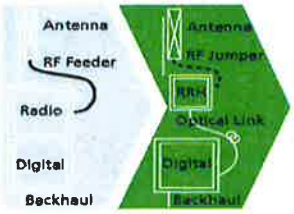
The limited space available in some sites may prevent the installation of traditional single-cabinet BTS equipment. However, many of these sites can host an Alcatel-Lucent RRH2x60-AWS installation, providing more flexible site selection and improved network quality along with greatly reduced installation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

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

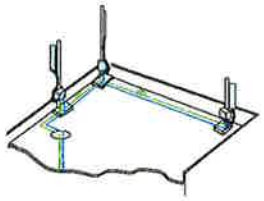
Installation can easily be done by a single person as the Alcatel–Lucent RRH2x60-AWS is compact and weighs about 20 kg, eliminating the need for a crane to hoist the BTS cabinet to the rooftop. A site can be in operation in less than one day.



Macro



RRH for space-constrained cell sites



Distributed

FEATURES

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

BENEFITS

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

TECHNICAL SPECIFICATIONS

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

Dimensions and weights

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

Electrical Data

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

RF Characteristics

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

Connectivity

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

Environmental specifications

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

Safety and Regulatory Data

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

Alcatel·Lucent

AT THE SPEED OF IDEAS™

Product Data Sheet HB158-1-08U8-S8J18

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

Product Description

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

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

Figure 1: HYBRIFLEX Series

Features/Benefits

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

Technical Specifications

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

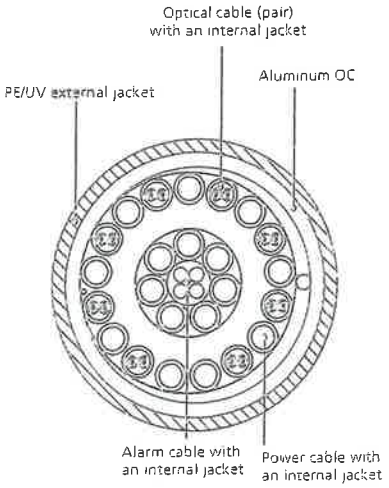


Figure 2: Construction Detail

* This data is provisional and subject to change

ATTACHMENT 2

	General	Power	Density					
Site Name: Norwich E								
Tower Height: 150'								
CARRIER	**# OF CHAN.**	**WATTS ERP**	**HEIGHT**	**CALC. POWER DENS**	**FREQ.**	**MAX. PERMISS. EXP.**	**FRACTION MPE**	**Total**
*Sprint CDMA/LTE	7	156	140	0.0219	1900	1.0000	0.22%	
*Sprint CDMA/LTE	2	87	140	0.0035	850	0.5667	0.06%	
*T-Mobile GSM/UMTS/LTE	8	1706	150	0.2367	1900/2100	1.0000	2.37%	
*T-Mobile LTE	2	865	150	0.0300	700	0.4667	0.64%	
*AT&T UMTS	2	565	115	0.0342	880	0.5867	0.58%	
*AT&T UMTS	2	875	115	0.0530	1900	1.0000	0.53%	
*AT&T GSM	1	283	115	0.0086	880	0.5867	0.15%	
*AT&T GSM	4	525	115	0.0636	1900	1.0000	0.64%	
*AT&T LTE	1	1615	115	0.0489	734	0.4893	1.00%	
*Verizon Paging	1	500	145	0.0093	806	0.5373	0.17%	
*TSR Paging	1	500	135	0.0108	824	0.5493	0.20%	
*Aquis Paging	1	500	135	0.0108	890	0.5933	0.18%	
Verizon	**1**	**1002**	**127.5**	**0.0222**	**1970**	**1.0000**	**2.22%**	
Verizon	**9**	**314**	**127.5**	**0.0625**	**869**	**0.5793**	**10.79%**	
Verizon	**1**	**1750**	**127.5**	**0.0387**	**2145**	**1.0000**	**3.87%**	
Verizon	**1**	**2813**	**127.5**	**0.0622**	**746**	**0.4973**	**12.51%**	
								36.1%
* Source: Siting Council								

ATTACHMENT 3

FRED A. NUDD CORPORATION

1743 ROUTE 104, BOX 577
ONTARIO, NY 14519
(315) 524-2531 FAX (315) 524-4249

www.nuddtowers.com

Mark LeGault
Cordless Data Transfer, Inc.
600 Old Hartford Road
Colchester, CT 06415
August 29, 2015

Fred A. Nudd Job Number: 115-23120

Location: 2 Hinkley Hill Road, Norwich, CT 06360, New London County (Lat. & Long: 41-30-53.45, -72-03-42.08)

Subject: Structural Analysis of a 150 ft Self-Supporting Tower

Fred A. Nudd Corporation has completed a three-dimensional, finite element model structural analysis of the above noted self-supporting tower. This tower was analyzed considered appurtenance loads noted in the appurtenance loading table on the following page. The design loading criteria and strength design are per the TIA/EIA-222-F standard, which is the recommended design standard per the 2003 International Building Code (Sec. 1609 & 3108), including 2005, 2009, 2011 & 2013 Connecticut Building Code Amendments. Additional standards used in this analysis include the AISC Manual for Steel Construction, Allowable Stress Design, 9th Ed. and ACI 318-05, Building Code Requirements for Structural Concrete and Commentary. Tower and foundation dimensions have been taken from original design drawings by Fred A. Nudd Corporation (Drawing Number 99-6864-1 & 99-6864-2R, dated July 22, 1999 & November 20, 1999). Onsite subsurface conditions were taken from a geotechnical report by Coneco (Project Number C104.0CDT, dated November 15, 1999). The tower is assumed to be in good, undamaged and equivalent to as new condition and has been maintained / inspected per criteria by TIA-222.

The purpose of this analysis is to determine the structure's ability to support new Verizon equipment installed at a rad center of 127.5 ft above ground level (AGL). The new equipment to be installed, which included antennas, coax, mounts and associated hardware are listed on the following page in the appurtenance loading table.

Results of the analysis indicate the tower will be able to the support the design loads noted in the appurtenance loading table on the following page. Specific section design loads, capacities and stress ratios are provided on the following pages. Maximum member usage was found to be 89%. Detailed calculation of the applied forces and member capacities are provided in the following pages.

The tower base foundation was analyzed using soil properties from the aforementioned geotechnical report. Based on this analysis, the foundation is capable of supporting the existing and proposed equipment. Factor of safety in excess of two was calculated regarding foundation resistance to applied axial and lateral loads. Detailed calculation of the applied forces and member capacities are provided in the following pages.

In conclusion, the tower superstructure and substructure can support the listed existing and proposed appurtenance loading.

We trust this report satisfies your needs. Please contact us with any questions or concerns regarding this report.

Best Regards,

Code Design Criteria

TIA/EIA-222-F
Windspeed = 85 mph, fastest mile
Exposure = C
Radial Ice = 0.5 inch
Ice Windspeed = 74 mph, fastest mile

Appurtenance Loading – Existing and To Remain on Tower

Height (ft)	Carrier	Appurtenance	Mount	Coax (in)
150	T-Mobile	(3) RFS APX16DWV-16DWVS-E-A20 (3) Ericsson KRY112 71 3) Commscope LNX-6515DS-VTM (3) Andrew Smart Bias Tee	(3) 12 ft Boom / Frame	(18) 1-5/8
140	Sprint	(1) KMW ET-X-TU-42-15-37-18-IR-RA (1) RFS APXVSPP18-C-A20 (1) RFS APXV9ERR18-C-A20 (3) Alcatel Lucent 4X45 65 RRU (3) Alcatel Lucent 2X50W RRU (3) Alcatel Lucent 1900 MHz RRH, 65 MHz (3) RFS IBC1900BB-3	(3) 12 ft Boom / Frame	(3) 1-1/4 Hybriflex
127.5	Verizon	(4) RFS APL868013 (6) RFS FD9R6004/2C-3L (2) RFS APL866513 (1) RFS DB-T1-6Z-8AB-0Z	(3) 12 ft Boom / Frame	(6) 1-5/8 (1) 1-5/8 Fiber Cable
115	AT&T Mobility	(3) Powerwave 7770.00 (6) Powerwave LGP21401 (1) Powerwavce P65-17-XLH-RR (1) KMW AM-X-CD-16-65-00T-RET (6) Ericsson RRUS11 (1) Raycap DC6-48-60-18-8F	(3) 10 ft Boom / Frame	(12) 1-1/4 (2) 0.65 DC (1) 1.34 Fiber

- *Height measurement taken as distance from top of base foundation to center of appurtenance.*

Appurtenance Loading – Additional/New Loading Configuration For Verizon

Height (ft)	Carrier	Appurtenance	Mount	Coax (in)
127.5	Verizon	(3) Commscope LNX-6514DS-1AM (3) Commscope HBXX-9014DS-VTM (3) Commscope HBXX-6517DS-A2M (3) Alcatel Lucent RH_2x60-AWS (3) Alcatel Lucent RH_2x60-70OU (3) Alcatel Lucent RH_2x60-PCS	--	(1) 1-5/8 Fiber Cable

- *Height measurement taken as distance from top of base foundation to center of appurtenance.*
- *Additional coax to be installed alongside existing Verizon coax.*

Maximum Member Usage

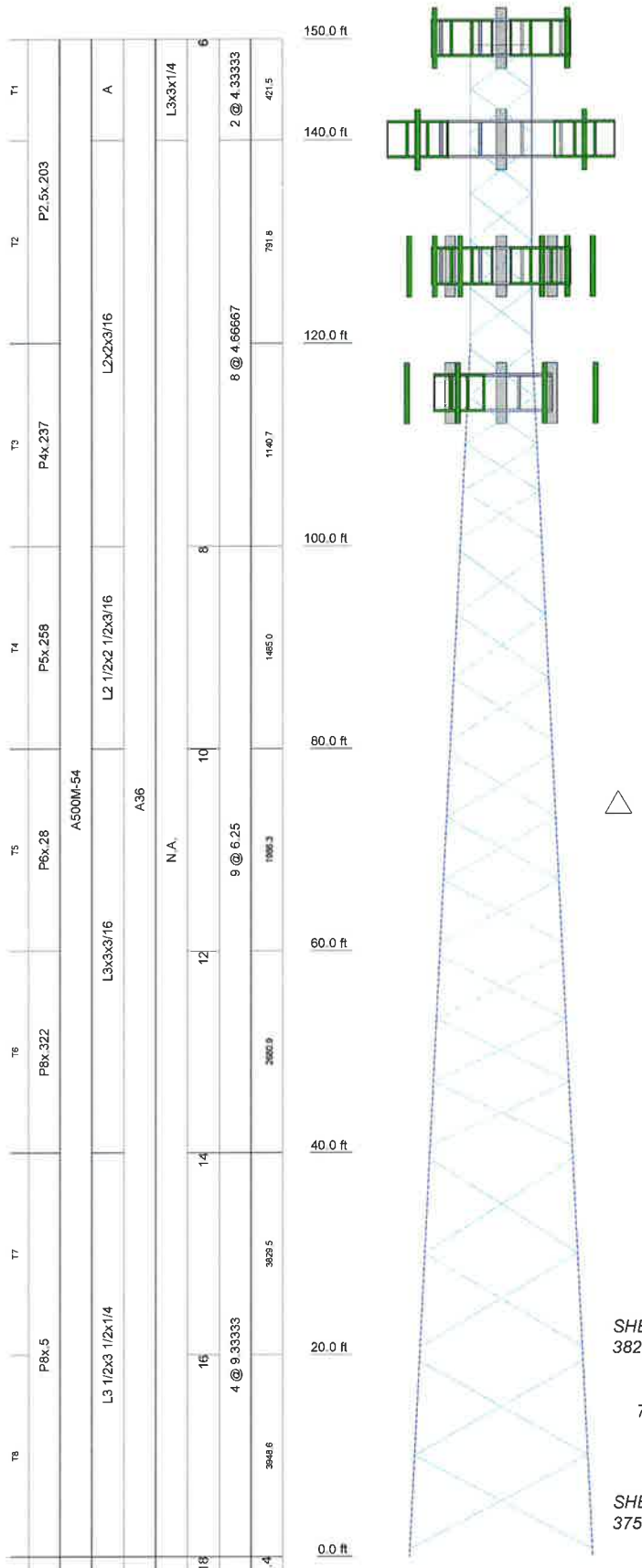
Member	Percentage
Leg	75
Diagonal	89
Horizontal	2
Anchor Bolts	76
Splice/Connection Bolts	89

- *Percentage equal to or less than 100% denote member stress levels are satisfactory for loading.*
- *Percentage greater than 100% indicates member strengthening is required.*

Foundation Reaction Usage

Design Load	Capacity (kip)	Design Load (kip)	Percentage
Compression / Leg	288.6	240.2	83
Uplift / Leg	318.8	203.8	64
Shear / Leg	47.9	23.8	50

- *Percentage equal to or less than 100% denote foundation is satisfactory for loading.*
- *Percentage greater than 100% indicates foundation strengthening is required.*
- *Listed capacities include a factor of safety ≥ 2.0.*



DESIGNED APPURTENANCE LOADING

TYPE	ELEVATION	TYPE	ELEVATION
RFS APX16DWV-16DWVS-E-A20 (T-Mobile)	150	Commscope LNX-6514DS-VTM (Verizon)	127.5
RFS APX16DWV-16DWVS-E-A20 (T-Mobile)	150	Commscope HBXX-9014DS-VTM (Verizon)	127.5
RFS APX16DWV-16DWVS-E-A20 (T-Mobile)	150	Commscope HBXX-9014DS-VTM (Verizon)	127.5
Commscope LNX-6515DS-VTM (T-Mobile)	150	Commscope HBXX-9014DS-VTM (Verizon)	127.5
Commscope LNX-6515DS-VTM (T-Mobile)	150	Commscope HBXX-6517DS-A2M (Verizon)	127.5
Commscope LNX-6515DS-VTM (T-Mobile)	150	Commscope HBXX-6517DS-A2M (Verizon)	127.5
Ericsson KRY112 71 (T-Mobile)	150	Commscope HBXX-6517DS-A2M (Verizon)	127.5
Ericsson KRY112 71 (T-Mobile)	150		
Ericsson KRY112 71 (T-Mobile)	150	Alcatel Lucent RH_2x60-AWS (Verizon)	127.5
Nudd 12' boom	150		
Nudd 12' boom	150	Alcatel Lucent RH_2x60-AWS (Verizon)	127.5
Nudd 12' boom	150		
KMW ET-X-TU-42-15-37-18-IR-RA	140	Alcatel Lucent RH_2x60-AWS (Verizon)	127.5
RFS APXVSPP18-C	140		
RFS APXV9ERR18-C-A20	140	Alcatel Lucent RH_2x60-70OU (Verizon)	127.5
Alcatel Lucent 1900 MHz	140		
Alcatel Lucent 800 MHz	140	Alcatel Lucent RH_2x60-70OU (Verizon)	127.5
Alcatel Lucent 1900 MHz	140		
Alcatel Lucent 800 MHz	140	Alcatel Lucent RH_2x60-70OU (Verizon)	127.5
Alcatel Lucent 1900 MHz	140		
Alcatel Lucent 800 MHz	140	Alcatel Lucent RH_2x60-PCS (Verizon)	127.5
Nudd 12' boom	140		
Alcatel Lucent 1900 MHz RRH	140	Alcatel Lucent RH_2x60-PCS (Verizon)	127.5
Alcatel Lucent 1900 MHz RRH	140		
Alcatel Lucent 1900 MHz RRH	140	Raycap DC6-48-60-18-8F (ATI)	115
RFS IBC1900BB-3	140	(2) Powerwave LGP21401 (ATI)	115
RFS IBC1900BB-3	140	(2) Powerwave LGP21401 (ATI)	115
RFS IBC1900BB-3	140	(2) Powerwave LGP21401 (ATI)	115
Nudd 12' boom	127.5	Powerwave P65-17-XLH-RR (ATI)	115
Nudd 12' boom	127.5	KMW AM-X-CD-16-65-00T-RET (ATI)	115
Nudd 12' boom	127.5	Andrew SBNH-1D6565C (ATI)	115
(2) RFS APL868013 (Verizon)	127.5	Powerwave 7770.00 (ATI)	115
(2) RFS APL868013 (Verizon)	127.5	Powerwave 7770.00 (ATI)	115
(2) RFS APL866513 (Verizon)	127.5	Powerwave 7770.00 (ATI)	115
(2) RFS FD9R6004/2C-3L (Verizon)	127.5	(2) Ericsson RRUs11 (ATI)	115
(2) RFS FD9R6004/2C-3L (Verizon)	127.5	(2) Ericsson RRUs11 (ATI)	115
(2) RFS FD9R6004/2C-3L (Verizon)	127.5	(2) Ericsson RRUs11 (ATI)	115
RFS DB-T1-6Z-8AB-0Z (Verizon)	127.5 - 12.75	Nudd 10' boom	115
Commscope LNX-6514DS-VTM (Verizon)	127.5	Nudd 10' boom	115
		Nudd 10' boom	115
Commscope LNX-6514DS-VTM (Verizon)	127.5		

SYMBOL LIST

MARK	SIZE	MARK	SIZE
A	L1 1/2x1 1/2x3/16		

MATERIAL STRENGTH

GRADE	Fy	Fu	GRADE	Fy	Fu
A500M-54	54 ksi	70 ksi	A36	36 ksi	58 ksi

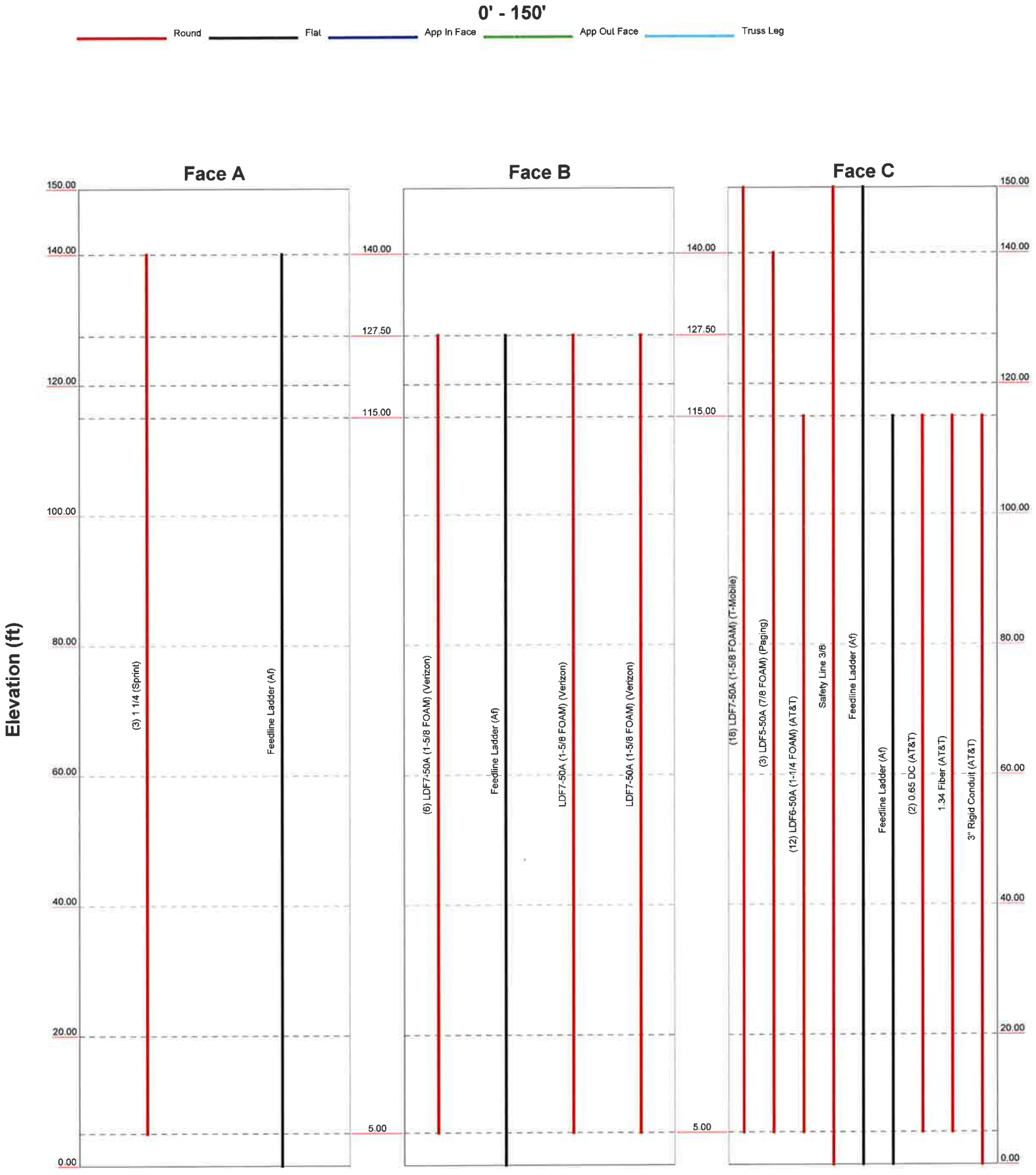
SHEAR 38226 lb — *MOMENT 3486832 lb-ft*

TORQUE 12757 lb-ft
74 mph WIND - 0.5000 in ICE
AXIAL 30627 lb

SHEAR 37537 lb — *MOMENT 3364755 lb-ft*

TORQUE 12006 lb-ft
REACTIONS - 85 mph WIND

Phone: FAX:	Job: 150' SS Tower Norwich, CT. Analy			
	Project: 115-23120			
	Client: CDT	Drawn by: FAN	App'd:	
	Code: TIA/EIA-222-F	Date: 08/29/15	Scale: N	
	Path:		Dwg No. E	



Phone: FAX:	Job: 150' SS Tower Norwich, CT. Analy		
	Project: 115-23120		
	Client: CDT	Drawn by: FAN	App'd:
	Code: TIA/EIA-222-F	Date: 08/29/15	Scale: N
	Path:		Dwg No. E

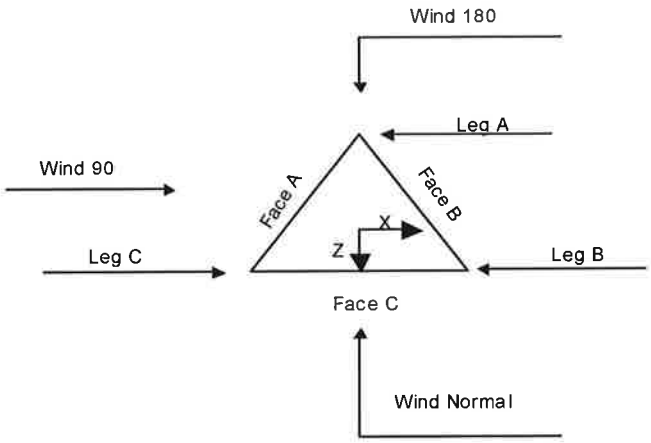
Tower Input Data

The main tower is a 3x free standing tower with an overall height of 150.00 ft above the ground line.
The base of the tower is set at an elevation of 0.00 ft above the ground line.
The face width of the tower is 6.00 ft at the top and 18.00 ft at the base.
This tower is designed using the TIA/EIA-222-F standard.
The following design criteria apply:

Basic wind speed of 85 mph.
Nominal ice thickness of 0.5000 in.
Ice density of 56 pcf.
A wind speed of 74 mph is used in combination with ice.
Temperature drop of 50 °F.
Deflections calculated using a wind speed of 60 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..
A non-linear (P-delta) analysis was used.
Pressures are calculated at each section.
Stress ratio used in tower member design is 1.333.
Local bending stresses due to climbing loads, feedline supports, and appurtenance mounts are not considered.

Options

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



Triangular Tower

Tower Section Geometry

Tower Section	Tower Elevation ft	Assembly Database	Description	Section Width ft	Number of Sections	Section Length ft
T1	150.00-140.00			6.00	1	10.00
T2	140.00-120.00			6.00	1	20.00
T3	120.00-100.00			6.00	1	20.00
T4	100.00-80.00			8.00	1	20.00
T5	80.00-60.00			10.00	1	20.00
T6	60.00-40.00			12.00	1	20.00
T7	40.00-20.00			14.00	1	20.00
T8	20.00-0.00			16.00	1	20.00

Tower Section Geometry *(cont'd)*

Tower Section	Tower Elevation ft	Diagonal Spacing ft	Bracing Type	Has K Brace End Panels	Has Horizontals	Top Girt Offset in	Bottom Girt Offset in
T1	150.00-140.00	4.33	X Brace	No	No	8.0000	8.0000
T2	140.00-120.00	4.67	X Brace	No	No	8.0000	8.0000
T3	120.00-100.00	4.67	X Brace	No	No	8.0000	8.0000
T4	100.00-80.00	6.25	X Brace	No	No	7.5000	7.5000
T5	80.00-60.00	6.25	X Brace	No	No	7.5000	7.5000
T6	60.00-40.00	6.25	X Brace	No	No	7.5000	7.5000
T7	40.00-20.00	9.33	X Brace	No	No	8.0000	8.0000

Tower Section	Tower Elevation ft	Diagonal Spacing ft	Bracing Type	Has K Brace End Panels	Has Horizontals	Top Girt Offset in	Bottom Girt Offset in
T8	20.00-0.00	9.33	X Brace	No	No	8.0000	8.0000

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Leg Type	Leg Size	Leg Grade	Diagonal Type	Diagonal Size	Diagonal Grade
T1 150.00-140.00	Pipe	P2.5x.203	A500M-54 (54 ksi)	Equal Angle	L1 1/2x1 1/2x3/16	A36 (36 ksi)
T2 140.00-120.00	Pipe	P2.5x.203	A500M-54 (54 ksi)	Equal Angle	L2x2x3/16	A36 (36 ksi)
T3 120.00-100.00	Pipe	P4x.237	A500M-54 (54 ksi)	Equal Angle	L2x2x3/16	A36 (36 ksi)
T4 100.00-80.00	Pipe	P5x.258	A500M-54 (54 ksi)	Equal Angle	L2 1/2x2 1/2x3/16	A36 (36 ksi)
T5 80.00-60.00	Pipe	P6x.28	A500M-54 (54 ksi)	Equal Angle	L3x3x3/16	A36 (36 ksi)
T6 60.00-40.00	Pipe	P8x.322	A500M-54 (54 ksi)	Equal Angle	L3x3x3/16	A36 (36 ksi)
T7 40.00-20.00	Pipe	P8x.5	A500M-54 (54 ksi)	Equal Angle	L3 1/2x3 1/2x1/4	A36 (36 ksi)
T8 20.00-0.00	Pipe	P8x.5	A500M-54 (54 ksi)	Equal Angle	L3 1/2x3 1/2x1/4	A36 (36 ksi)

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Secondary Horizontal Type	Secondary Horizontal Size	Secondary Horizontal Grade	Inner Bracing Type	Inner Bracing Size	Inner Bracing Grade
T1 150.00-140.00	Solid Round		A572-50 (50 ksi)	Solid Round	9/16	A572-50 (50 ksi)
T2 140.00-120.00	Solid Round		A572-50 (50 ksi)	Solid Round	9/16	A572-50 (50 ksi)
T3 120.00-100.00	Solid Round		A572-50 (50 ksi)	Solid Round	9/16	A572-50 (50 ksi)
T4 100.00-80.00	Solid Round		A572-50 (50 ksi)	Solid Round	9/16	A572-50 (50 ksi)
T5 80.00-60.00	Solid Round		A572-50 (50 ksi)	Solid Round	9/16	A572-50 (50 ksi)
T6 60.00-40.00	Solid Round		A572-50 (50 ksi)	Solid Round	9/16	A572-50 (50 ksi)
T7 40.00-20.00	Solid Round		A572-50 (50 ksi)	Solid Round	9/16	A572-50 (50 ksi)
T8 20.00-0.00	Solid Round		A572-50 (50 ksi)	Solid Round	9/16	A572-50 (50 ksi)

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Gusset Area (per face) ft²	Gusset Thickness in	Gusset Grade	Adjust. Factor A_f	Adjust. Factor A_r	Weight Mult.	Double Angle Stitch Bolt Spacing Diagonals in	Double Angle Stitch Bolt Spacing Horizontals in
T1 150.00-140.00	0.00	0.0000	A36 (36 ksi)	1	1	1	36.0000	36.0000
T2 140.00-120.00	0.00	0.0000	A36 (36 ksi)	1	1	1	36.0000	36.0000
T3 120.00-100.00	0.00	0.0000	A36 (36 ksi)	1	1	1	36.0000	36.0000
T4 100.00-80.00	0.00	0.0000	A36 (36 ksi)	1	1	1	36.0000	36.0000
T5 80.00-60.00	0.00	0.0000	A36 (36 ksi)	1	1	1	36.0000	36.0000
T6 60.00-40.00	0.00	0.0000	A36 (36 ksi)	1	1	1	36.0000	36.0000
T7 40.00-20.00	0.00	0.0000	A36 (36 ksi)	1	1	1	36.0000	36.0000
T8 20.00-0.00	0.00	0.0000	A36 (36 ksi)	1	1	1	36.0000	36.0000

Tower Section Geometry (cont'd)

Tower Elevation ft	Calc K Single Angles	Calc K Solid Rounds	K Factors[1] Legs	X Brace Diags X	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	Yes	No	1	1		1		1		1		1		1		1	
150.00-140.00				1		1		1		1		1		1		1	
T2	Yes	No	1	1		1		1		1		1		1		1	
140.00-120.00				1		1		1		1		1		1		1	
T3	Yes	No	1	1		1		1		1		1		1		1	
120.00-100.00				1		1		1		1		1		1		1	
T4	Yes	No	1	1		1		1		1		1		1		1	
100.00-80.00				1		1		1		1		1		1		1	
T5	Yes	No	1	1		1		1		1		1		1		1	
80.00-60.00				1		1		1		1		1		1		1	
T6	Yes	No	1	1		1		1		1		1		1		1	
60.00-40.00				1		1		1		1		1		1		1	
T7	Yes	No	1	1		1		1		1		1		1		1	
40.00-20.00				1		1		1		1		1		1		1	
T8 20.00-0.00	Yes	No	1	1		1		1		1		1		1		1	
				1		1		1		1		1		1		1	

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

Tower Section Geometry (cont'd)

Tower Elevation ft	Leg		Diagonal		Top Girt		Bottom Girt		Mid Girt		Long Horizontal		Short Horizontal	
	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U
T1 150.00-140.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T2 140.00-120.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T3 120.00-100.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T4 100.00-80.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T5 80.00-60.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T6 60.00-40.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T7 40.00-20.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T8 20.00-0.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Leg Connection Type	Leg		Diagonal		Top Girt		Bottom Girt		Mid Girt		Long Horizontal		Short Horizontal	
		Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.
T1 150.00-140.00	Flange	0.7500 A325N	4	0.5000 A325N	1	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T2 140.00-120.00	Flange	1.0000 A325N	4	0.6250 A325N	1	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T3 120.00-100.00	Flange	1.0000 A325N	6	0.6250 A325N	1	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T4 100.00-80.00	Flange	1.0000 A325N	8	0.6250 A325N	1	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T5 80.00-60.00	Flange	1.2500 A325N	8	0.6250 A325N	1	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T6 60.00-40.00	Flange	1.2500 A325N	8	0.6250 A325N	1	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T7 40.00-20.00	Flange	1.2500 A325N	8	0.7500 A325N	1	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T8 20.00-0.00	Flange	1.5000 F1554-36	8	0.7500 A325N	1	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0

Feed Line/Linear Appurtenances - Entered As Round Or Flat

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Face Offset in	Lateral Offset (Frac FW)	#	# Per Row	Clear Spacing in	Width or Diameter in	Perimeter in	Weight plf
LDF7-50A (1-5/8 FOAM) (T-Mobile)	C	Yes	Ar (CfAe)	150.00 - 5.00	0.0000	-0.25	18	9	1.9800	1.9800		0.82
LDF5-50A (7/8 FOAM) (Paging)	C	Yes	Ar (CfAe)	140.00 - 5.00	0.0000	-0.35	3	3	1.0900	1.0900		0.33

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Face Offset in	Lateral Offset (Frac FW)	#	# Per Row	Clear Spacing in	Width or Diameter in	Perimeter in	Weight plf
1 1/4 (Sprint)	A	Yes	Ar (CfAe)	140.00 - 5.00	0.0000	-0.25	3	3	1.5500	1.5500		0.66
LDF7-50A (1-5/8 FOAM) (Verizon)	B	Yes	Ar (CfAe)	127.50 - 5.00	0.0000	-0.25	6	6	1.9800	1.9800		0.82
LDF6-50A (1-1/4 FOAM) (AT&T)	C	Yes	Ar (CfAe)	115.00 - 5.00	0.0000	0.25	12	6	1.5500	1.5500		0.66
Safety Line 3/8	C	No	Ar (Leg)	150.00 - 0.00	0.0000	0	1	1	0.3750	0.3750		0.22
Feedline Ladder (Af)	C	Yes	Af (CfAe)	150.00 - 0.00	0.0000	-0.25	1	1	3.0000	3.0000	12.0000	8.40
Feedline Ladder (Af)	C	Yes	Af (CfAe)	115.00 - 0.00	0.0000	0.25	1	1	3.0000	3.0000	12.0000	8.40
Feedline Ladder (Af)	B	Yes	Af (CfAe)	127.50 - 0.00	0.0000	-0.25	1	1	3.0000	3.0000	12.0000	8.40
Feedline Ladder (Af)	A	Yes	Af (CfAe)	140.00 - 0.00	0.0000	-0.25	1	1	3.0000	3.0000	12.0000	8.40
0.65 DC (AT&T)	C	Yes	Ar (CfAe)	115.00 - 5.00	0.0000	0.25	2	2	0.6300	0.0000		0.15
1.34 Fiber (AT&T)	C	Yes	Ar (CfAe)	115.00 - 5.00	0.0000	0.25	1	1	0.6300	0.0000		0.15
3" Rigid Conduit (AT&T)	C	Yes	Ar (CfAe)	115.00 - 0.00	0.0000	-0.25	1	1	2.0000	3.0000		2.80
LDF7-50A (1-5/8 FOAM) (Verizon)	B	Yes	Ar (CfAe)	127.50 - 5.00	0.0000	-0.25	1	1	1.9800	1.9800		0.82
LDF7-50A (1-5/8 FOAM) (Verizon)	B	Yes	Ar (CfAe)	127.50 - 5.00	0.0000	-0.25	1	1	1.9800	1.9800		0.82

Feed Line/Linear Appurtenances Section Areas

Tower Section	Tower Elevation ft	Face	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight lb
T1	150.00-140.00	A	0.313	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	15.163	2.500	0.000	0.000	233.80
T2	140.00-120.00	A	8.375	5.000	0.000	0.000	207.60
		B	9.900	1.875	0.000	0.000	112.20
		C	35.775	5.000	0.000	0.000	487.40
T3	120.00-100.00	A	8.375	5.000	0.000	0.000	207.60
		B	26.400	5.000	0.000	0.000	299.20
		C	51.150	8.750	0.000	0.000	780.95
T4	100.00-80.00	A	8.375	5.000	0.000	0.000	207.60
		B	26.400	5.000	0.000	0.000	299.20
		C	56.275	10.000	0.000	0.000	878.80
T5	80.00-60.00	A	8.375	5.000	0.000	0.000	207.60
		B	26.400	5.000	0.000	0.000	299.20
		C	56.275	10.000	0.000	0.000	878.80
T6	60.00-40.00	A	8.375	5.000	0.000	0.000	207.60
		B	26.400	5.000	0.000	0.000	299.20
		C	56.275	10.000	0.000	0.000	878.80
T7	40.00-20.00	A	8.375	5.000	0.000	0.000	207.60
		B	26.400	5.000	0.000	0.000	299.20

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
		C	56.275	10.000	0.000	0.000	878.80
T8	20.00-0.00	A	6.438	5.000	0.000	0.000	197.70
		B	19.800	5.000	0.000	0.000	266.40
		C	43.612	10.000	0.000	0.000	758.20

Feed Line/Linear Appurtenances Section Areas - With Ice

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight lb
T1	150.00-140.00	A	0.500	1.146	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		23.496	3.056	0.000	0.000	538.85
T2	140.00-120.00	A	0.500	15.042	6.111	0.000	0.000	336.76
		B		14.900	2.292	0.000	0.000	223.36
		C		57.442	6.111	0.000	0.000	1155.77
T3	120.00-100.00	A	0.500	15.042	6.111	0.000	0.000	336.76
		B		39.733	6.111	0.000	0.000	595.62
		C		84.067	11.482	0.000	0.000	1760.16
T4	100.00-80.00	A	0.500	15.042	6.111	0.000	0.000	336.76
		B		39.733	6.111	0.000	0.000	595.62
		C		92.942	13.272	0.000	0.000	1961.63
T5	80.00-60.00	A	0.500	15.042	6.111	0.000	0.000	336.76
		B		39.733	6.111	0.000	0.000	595.62
		C		92.942	13.272	0.000	0.000	1961.63
T6	60.00-40.00	A	0.500	15.042	6.111	0.000	0.000	336.76
		B		39.733	6.111	0.000	0.000	595.62
		C		92.942	13.272	0.000	0.000	1961.63
T7	40.00-20.00	A	0.500	15.042	6.111	0.000	0.000	336.76
		B		39.733	6.111	0.000	0.000	595.62
		C		92.942	13.272	0.000	0.000	1961.63
T8	20.00-0.00	A	0.500	11.854	6.111	0.000	0.000	308.08
		B		29.800	6.111	0.000	0.000	502.22
		C		71.946	13.010	0.000	0.000	1610.70

Feed Line Shielding

Section	Elevation ft	Face	A_R ft^2	A_R Ice ft^2	A_F ft^2	A_F Ice ft^2
T1	150.00-140.00	A	0.000	0.000	0.000	0.000
		B	0.000	0.000	0.000	0.000
		C	0.000	1.270	1.504	2.226
T2	140.00-120.00	A	0.000	0.820	1.077	1.640
		B	0.000	0.735	0.994	1.470
		C	0.000	2.610	3.391	5.221
T3	120.00-100.00	A	0.000	0.780	1.024	1.559
		B	0.000	1.863	2.522	3.726
		C	0.000	3.784	4.760	7.567
T4	100.00-80.00	A	0.000	0.592	0.971	1.479
		B	0.000	1.414	2.393	3.535
		C	0.000	3.201	5.002	8.003
T5	80.00-60.00	A	0.000	0.559	1.101	1.676
		B	0.000	1.335	2.710	4.005

Section	Elevation ft	Face	A_R ft²	A_R Ice ft²	A_F ft²	A_F Ice ft²
		C	0.000	3.022	5.667	9.067
T6	60.00-40.00	A	0.000	0.539	1.061	1.616
		B	0.000	1.288	2.614	3.863
		C	0.000	2.915	5.465	8.744
T7	40.00-20.00	A	0.000	0.381	0.876	1.334
		B	0.000	0.911	2.158	3.189
		C	0.000	2.062	4.512	7.219
T8	20.00-0.00	A	0.000	0.309	0.720	1.080
		B	0.000	0.693	1.651	2.427
		C	0.000	1.593	3.527	5.576

Feed Line Center of Pressure

Section	Elevation ft	CP_X in	CP_Z in	CP_X Ice in	CP_Z Ice in
T1	150.00-140.00	5.9789	8.2828	5.2625	8.0542
T2	140.00-120.00	3.8532	5.3712	3.7014	5.6219
T3	120.00-100.00	2.9348	3.7639	2.6130	4.3322
T4	100.00-80.00	2.8680	5.0061	2.4960	5.8806
T5	80.00-60.00	3.0644	5.2661	2.7354	6.3644
T6	60.00-40.00	3.2208	5.4691	2.9397	6.7721
T7	40.00-20.00	3.7818	6.3578	3.4989	7.9846
T8	20.00-0.00	3.2792	6.2626	2.9797	7.8725

Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft / ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft²	C_AA_A Side ft²	Weight lb
RFS APX16DWV-16DWVS-E-A20 (T-Mobile)	C	From Leg	4.00 0.00 0.00	0.0000	150.00	No Ice 1/2" Ice	6.46 6.82	2.15 2.55	53.90 86.90
RFS APX16DWV-16DWVS-E-A20 (T-Mobile)	A	From Leg	4.00 0.00 0.00	0.0000	150.00	No Ice 1/2" Ice	6.46 6.82	2.15 2.55	53.90 86.90
RFS APX16DWV-16DWVS-E-A20 (T-Mobile)	B	From Leg	4.00 0.00 0.00	0.0000	150.00	No Ice 1/2" Ice	6.46 6.82	2.15 2.55	53.90 86.90
Commscope LNX-6515DS-VTM (T-Mobile)	A	From Leg	4.00 0.00 0.00	0.0000	150.00	No Ice 1/2" Ice	11.39 12.00	7.66 8.31	43.70 109.30
Commscope LNX-6515DS-VTM (T-Mobile)	B	From Leg	4.00 0.00 0.00	0.0000	150.00	No Ice 1/2" Ice	11.39 12.00	7.66 8.31	43.70 109.30

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
Commscope LNX-6515DS-VTM (T-Mobile)	C	From Leg	4.00 0.00 0.00	0.0000	150.00	No Ice 1/2" Ice	11.39 12.00	7.66 8.31	43.70 109.30
Ericsson KRY112 71 (T-Mobile)	C	From Leg	4.00 0.00 0.00	0.0000	150.00	No Ice 1/2" Ice	1.40 1.64	1.40 1.64	5.00 8.00
Ericsson KRY112 71 (T-Mobile)	A	From Leg	4.00 0.00 0.00	0.0000	150.00	No Ice 1/2" Ice	1.40 1.64	1.40 1.64	5.00 8.00
Ericsson KRY112 71 (T-Mobile)	B	From Leg	4.00 0.00 0.00	0.0000	150.00	No Ice 1/2" Ice	1.40 1.64	1.40 1.64	5.00 8.00
Powerwave 7770.00 (AT&T)	A	From Leg	4.00 0.00 0.00	0.0000	115.00	No Ice 1/2" Ice	5.88 6.25	2.93 3.29	35.00 67.60
Powerwave 7770.00 (AT&T)	B	From Leg	4.00 0.00 0.00	0.0000	115.00	No Ice 1/2" Ice	5.88 6.25	2.93 3.29	35.00 67.60
Powerwave 7770.00 (AT&T)	C	From Leg	4.00 0.00 0.00	0.0000	115.00	No Ice 1/2" Ice	5.88 6.25	2.93 3.29	35.00 67.60
(2) Powerwave LGP21401 (AT&T)	A	From Leg	4.00 0.00 0.00	0.0000	115.00	No Ice 1/2" Ice	1.95 2.11	0.53 0.63	31.00 42.00
(2) Powerwave LGP21401 (AT&T)	B	From Leg	4.00 0.00 0.00	0.0000	115.00	No Ice 1/2" Ice	1.95 2.11	0.53 0.63	31.00 42.00
(2) Powerwave LGP21401 (AT&T)	C	From Leg	4.00 0.00 0.00	0.0000	115.00	No Ice 1/2" Ice	1.95 2.11	0.53 0.63	31.00 42.00
Powerwave P65-17-XLH-RR (AT&T)	A	From Leg	4.00 0.00 0.00	0.0000	115.00	No Ice 1/2" Ice	11.47 12.08	4.00 4.68	62.00 124.10
KMW AM-X-CD-16-65-00T-RET (AT&T)	B	From Leg	4.00 0.00 0.00	0.0000	115.00	No Ice 1/2" Ice	8.26 8.73	4.64 5.12	48.50 95.00
Andrew SBNH-1D6565C (AT&T)	C	From Leg	4.00 0.00 0.00	0.0000	115.00	No Ice 1/2" Ice	11.41 12.03	7.70 8.36	60.90 126.60
(2) Ericsson RRUs11 (AT&T)	A	From Leg	4.00 0.00 0.00	0.0000	115.00	No Ice 1/2" Ice	2.99 3.19	0.36 0.48	50.00 63.50
(2) Ericsson RRUs11 (AT&T)	B	From Leg	4.00 0.00 0.00	0.0000	115.00	No Ice 1/2" Ice	2.99 3.19	0.36 0.48	50.00 63.50
(2) Ericsson RRUs11 (AT&T)	C	From Leg	4.00 0.00 0.00	0.0000	115.00	No Ice 1/2" Ice	2.99 3.19	0.36 0.48	50.00 63.50
Raycap DC6-48-60-18-8F (AT&T)	A	From Leg	4.00 0.00 0.00	0.0000	115.00	No Ice 1/2" Ice	2.57 2.77	2.57 2.77	31.80 54.40
KMW ET-X-TU-42-15-37-18-IR-R A	A	From Leg	4.00 0.00 0.00	0.0000	140.00	No Ice 1/2" Ice	7.28 7.61	3.29 3.59	50.00 95.80
RFS APXVSPP18-C	B	From Leg	4.00 0.00 0.00	0.0000	140.00	No Ice 1/2" Ice	8.02 8.48	5.28 5.75	57.00 106.50

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
RFS APXV9ERR18-C-A20	C	From Leg	4.00 0.00 0.00	0.0000	140.00	No Ice 1/2" Ice	8.02 8.48	5.81 6.27	62.00 114.00
Alcatel Lucent 1900 MHz	A	From Leg	4.00 0.00 0.00	0.0000	140.00	No Ice 1/2" Ice	2.41 2.59	2.47 2.66	60.00 84.70
Alcatel Lucent 800 MHz	A	From Leg	4.00 0.00 0.00	0.0000	140.00	No Ice 1/2" Ice	1.70 1.85	1.28 1.41	60.00 77.00
Alcatel Lucent 1900 MHz	B	From Leg	4.00 0.00 0.00	0.0000	140.00	No Ice 1/2" Ice	2.41 2.59	2.47 2.66	60.00 84.70
Alcatel Lucent 800 MHz	B	From Leg	4.00 0.00 0.00	0.0000	140.00	No Ice 1/2" Ice	1.70 1.85	1.28 1.41	60.00 77.00
Alcatel Lucent 1900 MHz	C	From Leg	4.00 0.00 0.00	0.0000	140.00	No Ice 1/2" Ice	2.41 2.59	2.47 2.66	60.00 84.70
Alcatel Lucent 800 MHz	C	From Leg	4.00 0.00 0.00	0.0000	140.00	No Ice 1/2" Ice	1.70 1.85	1.28 1.41	60.00 77.00
Nudd 12' boom	C	From Leg	1.00 0.00 0.00	0.0000	150.00	No Ice 1/2" Ice	17.10 21.40	9.30 21.40	254.00 376.00
Nudd 12' boom	A	From Leg	1.00 0.00 0.00	0.0000	150.00	No Ice 1/2" Ice	17.10 21.40	9.30 21.40	254.00 376.00
Nudd 12' boom	B	From Leg	1.00 0.00 0.00	0.0000	150.00	No Ice 1/2" Ice	17.10 21.40	9.30 21.40	254.00 376.00
Nudd 12' boom	C	From Leg	1.00 0.00 0.00	0.0000	127.50	No Ice 1/2" Ice	17.10 21.40	9.30 21.40	254.00 376.00
Nudd 12' boom	A	From Leg	1.00 0.00 0.00	0.0000	127.50	No Ice 1/2" Ice	17.10 21.40	9.30 21.40	254.00 376.00
Nudd 12' boom	B	From Leg	1.00 0.00 0.00	0.0000	127.50	No Ice 1/2" Ice	17.10 21.40	9.30 21.40	254.00 376.00
Nudd 10' boom	C	From Leg	1.00 0.00 0.00	0.0000	115.00	No Ice 1/2" Ice	15.50 19.60	9.30 19.60	255.00 367.00
Nudd 10' boom	C	From Leg	1.00 0.00 0.00	0.0000	115.00	No Ice 1/2" Ice	15.50 19.60	9.30 19.60	255.00 367.00
Nudd 10' boom	A	From Leg	1.00 0.00 0.00	0.0000	115.00	No Ice 1/2" Ice	15.50 19.60	9.30 19.60	255.00 367.00
Nudd 12' boom	A	From Leg	1.00 0.00 0.00	0.0000	140.00	No Ice 1/2" Ice	17.10 21.40	9.30 21.40	254.00 376.00
Alcatel Lucent 1900 MHz RRH	A	From Leg	4.00 0.00 0.00	0.0000	140.00	No Ice 1/2" Ice	2.58 2.77	2.54 2.73	60.00 86.50
Alcatel Lucent 1900 MHz RRH	B	From Leg	4.00 0.00 0.00	0.0000	140.00	No Ice 1/2" Ice	2.91 3.11	3.80 4.03	60.00 86.50

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
Alcatel Lucent 1900 MHz RRH	C	From Leg	4.00 0.00 0.00	0.0000	140.00	No Ice 1/2" Ice	2.91 3.11	3.80 4.03	60.00 68.50
RFS IBC1900BB-3	A	From Leg	4.00 0.00 0.00	0.0000	140.00	No Ice 1/2" Ice	1.41 1.55	0.63 0.74	22.00 31.00
RFS IBC1900BB-3	B	From Leg	4.00 0.00 0.00	0.0000	140.00	No Ice 1/2" Ice	1.41 1.55	0.63 0.74	22.00 31.00
RFS IBC1900BB-3	C	From Leg	4.00 0.00 0.00	0.0000	140.00	No Ice 1/2" Ice	1.41 1.55	0.63 0.74	22.00 31.00
(2) RFS APL868013 (Verizon)	C	From Leg	4.00 0.00 0.00	0.0000	127.50	No Ice 1/2" Ice	2.87 3.17	3.61 3.92	8.20 33.60
(2) RFS APL868013 (Verizon)	A	From Leg	4.00 0.00 0.00	0.0000	127.50	No Ice 1/2" Ice	2.87 3.17	3.61 3.92	8.20 33.60
(2) RFS APL866513 (Verizon)	B	From Leg	4.00 0.00 0.00	0.0000	127.50	No Ice 1/2" Ice	4.29 4.62	3.73 4.05	15.70 47.00
(2) RFS FD9R6004/2C-3L (Verizon)	C	From Leg	4.00 0.00 0.00	0.0000	127.50	No Ice 1/2" Ice	0.31 0.38	0.08 0.12	3.10 5.40
(2) RFS FD9R6004/2C-3L (Verizon)	A	From Leg	4.00 0.00 0.00	0.0000	127.50	No Ice 1/2" Ice	0.31 0.38	0.08 0.12	3.10 5.40
(2) RFS FD9R6004/2C-3L (Verizon)	B	From Leg	4.00 0.00 0.00	0.0000	127.50	No Ice 1/2" Ice	0.31 0.38	0.08 0.12	3.10 5.40
RFS DB-T1-6Z-8AB-0Z (Verizon)	C	From Leg	4.00 0.00 0.00	0.0000	12.75 - 127.50	No Ice 1/2" Ice	4.80 5.04	2.00 2.17	10.00 46.10
Commscope LNX-6514DS-VTM (Verizon)	A	From Leg	4.00 0.00 0.00	0.0000	127.50	No Ice 1/2" Ice	8.17 8.63	5.41 5.88	38.80 89.30
Commscope LNX-6514DS-VTM (Verizon)	B	From Leg	4.00 0.00 0.00	0.0000	127.50	No Ice 1/2" Ice	8.17 8.63	5.41 5.88	38.80 89.30
Commscope LNX-6514DS-VTM (Verizon)	C	From Leg	4.00 0.00 0.00	0.0000	127.50	No Ice 1/2" Ice	8.17 8.63	5.41 5.88	38.80 89.30
Commscope HBXX-9014DS-VTM (Verizon)	A	From Leg	4.00 0.00 0.00	0.0000	127.50	No Ice 1/2" Ice	5.42 5.74	3.28 3.60	29.80 65.10
Commscope HBXX-9014DS-VTM (Verizon)	B	From Leg	4.00 0.00 0.00	0.0000	127.50	No Ice 1/2" Ice	5.42 5.74	3.28 3.60	29.80 65.10
Commscope HBXX-9014DS-VTM (Verizon)	C	From Leg	4.00 0.00 0.00	0.0000	127.50	No Ice 1/2" Ice	5.42 5.74	3.28 3.60	29.80 65.10
Commscope HBXX-6517DS-A2M (Verizon)	A	From Leg	4.00 0.00 0.00	0.0000	127.50	No Ice 1/2" Ice	8.53 9.00	5.24 5.74	43.00 93.50
Commscope HBXX-6517DS-A2M (Verizon)	B	From Leg	4.00 0.00 0.00	0.0000	127.50	No Ice 1/2" Ice	8.53 9.00	5.24 5.74	43.00 93.50

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
Commscope HBXX-6517DS-A2M (Verizon)	C	From Leg	4.00 0.00 0.00	0.0000	127.50	No Ice 1/2" Ice	8.53 9.00	5.24 5.74	43.00 93.50
Alcatel Lucent RH_2x60-AWS (Verizon)	A	From Leg	4.00 0.00 0.00	0.0000	127.50	No Ice 1/2" Ice	1.88 2.03	1.24 1.37	44.00 60.00
Alcatel Lucent RH_2x60-AWS (Verizon)	B	From Leg	4.00 0.00 0.00	0.0000	127.50	No Ice 1/2" Ice	1.88 2.03	1.24 1.37	44.00 60.00
Alcatel Lucent RH_2x60-AWS (Verizon)	C	From Leg	4.00 0.00 0.00	0.0000	127.50	No Ice 1/2" Ice	1.88 2.03	1.24 1.37	44.00 60.00
Alcatel Lucent RH_2x60-70OU (Verizon)	A	From Leg	4.00 0.00 0.00	0.0000	127.50	No Ice 1/2" Ice	2.16 2.33	1.62 1.77	44.00 63.60
Alcatel Lucent RH_2x60-70OU (Verizon)	B	From Leg	4.00 0.00 0.00	0.0000	127.50	No Ice 1/2" Ice	2.16 2.33	1.62 1.77	44.00 63.60
Alcatel Lucent RH_2x60-70OU (Verizon)	C	From Leg	4.00 0.00 0.00	0.0000	127.50	No Ice 1/2" Ice	2.16 2.33	1.62 1.77	44.00 63.60
Alcatel Lucent RH_2x60-PCS (Verizon)	A	From Leg	4.00 0.00 0.00	0.0000	127.50	No Ice 1/2" Ice	1.84 2.00	1.34 1.48	46.00 62.60
Alcatel Lucent RH_2x60-PCS (Verizon)	B	From Leg	4.00 0.00 0.00	0.0000	127.50	No Ice 1/2" Ice	1.84 2.00	1.34 1.48	46.00 62.60
Alcatel Lucent RH_2x60-PCS (Verizon)	C	From Leg	4.00 0.00 0.00	0.0000	127.50	No Ice 1/2" Ice	1.84 2.00	1.34 1.48	46.00 62.60

Tower Pressures - No Ice

$G_H = 1.133$

Section Elevation ft	z ft	K_Z	q_z psf	A_G ft^2	Face	A_F ft^2	A_R ft^2	A_{leg} ft^2	Leg %	C_AA_A In Face ft^2	C_AA_A Out Face ft^2
T1	145.00	1.526	28	62.396	A	4.993	5.104	4.792	47.46	0.000	0.000
150.00-140.00					B	4.993	4.792		48.97	0.000	0.000
					C	5.989	19.954		18.47	0.000	0.000
T2	130.00	1.48	27	124.792	A	13.653	17.958	9.583	30.32	0.000	0.000
140.00-120.00					B	10.611	19.483		31.84	0.000	0.000
					C	11.339	45.358		16.90	0.000	0.000
T3	110.00	1.411	26	147.509	A	14.599	23.400	15.025	39.54	0.000	0.000
120.00-100.00					B	13.102	41.425		27.56	0.000	0.000
					C	14.613	66.175		18.60	0.000	0.000
T4	90.00	1.332	25	189.283	A	17.025	26.949	18.574	42.24	0.000	0.000
100.00-80.00					B	15.604	44.974		30.66	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
					C	17.995	74.849		20.01	0.000	0.000
T5 80.00-60.00	70.00	1.24	23	231.055	A	21.929	30.495	22.120	42.19	0.000	0.000
					B	20.319	48.520		32.13	0.000	0.000
					C	22.363	78.395		21.95	0.000	0.000
T6 60.00-40.00	50.00	1.126	21	274.393	A	24.383	37.173	28.798	46.78	0.000	0.000
					B	22.830	55.198		36.91	0.000	0.000
					C	24.979	85.073		26.17	0.000	0.000
T7 40.00-20.00	30.00	1	18	314.393	A	23.751	37.173	28.798	47.27	0.000	0.000
					B	22.470	55.198		37.08	0.000	0.000
					C	25.116	85.073		26.14	0.000	0.000
T8 20.00-0.00	10.00	1	18	354.393	A	25.953	35.235	28.798	47.06	0.000	0.000
					B	25.022	48.598		39.12	0.000	0.000
					C	28.146	72.410		28.64	0.000	0.000

Tower Pressure - With Ice

$G_H = 1.133$

Section Elevation ft	z ft	K_Z	q_z psf	t_Z in	A_G ft²	Face	A_F ft²	A_R ft²	A_{leg} ft²	Leg %	C_AA_A In Face ft²	C_AA_A Out Face ft²
T1 150.00-140.00	145.00	1.526	21	0.5000	63.229	A	4.993	10.453	6.458	41.81	0.000	0.000
						B	4.993	9.307		45.16	0.000	0.000
						C	5.822	31.533		17.29	0.000	0.000
T2 140.00-120.00	130.00	1.48	21	0.5000	126.458	A	14.201	32.003	12.917	27.96	0.000	0.000
						B	10.552	31.947		30.39	0.000	0.000
						C	10.620	72.613		15.52	0.000	0.000
T3 120.00-100.00	110.00	1.411	20	0.5000	149.178	A	15.175	37.937	18.364	34.58	0.000	0.000
						B	13.008	61.546		24.63	0.000	0.000
						C	14.538	103.959		15.50	0.000	0.000
T4 100.00-80.00	90.00	1.332	18	0.5000	190.952	A	17.629	41.562	21.913	37.02	0.000	0.000
						B	15.573	65.431		27.05	0.000	0.000
						C	18.266	116.852		16.22	0.000	0.000
T5 80.00-60.00	70.00	1.24	17	0.5000	232.724	A	22.465	45.952	25.459	37.21	0.000	0.000
						B	20.136	69.867		28.29	0.000	0.000
						C	22.236	121.388		17.73	0.000	0.000
T6 60.00-40.00	50.00	1.126	16	0.5000	276.062	A	24.939	53.454	32.137	40.99	0.000	0.000
						B	22.692	77.397		32.11	0.000	0.000
						C	24.972	128.978		20.87	0.000	0.000
T7 40.00-20.00	30.00	1	14	0.5000	316.062	A	24.404	52.405	32.137	41.84	0.000	0.000
						B	22.550	76.567		32.42	0.000	0.000
						C	25.681	128.624		20.83	0.000	0.000
T8 20.00-0.00	10.00	1	14	0.5000	356.062	A	26.704	49.875	32.137	41.97	0.000	0.000
						B	25.357	67.435		34.63	0.000	0.000
						C	29.106	108.682		23.32	0.000	0.000

Tower Pressure - Service

$G_H = 1.133$

Section Elevation ft	z ft	K_Z	q_z psf	A_G ft²	Face	A_F ft²	A_R ft²	A_{leg} ft²	Leg %	C_AA_A In Face ft²	C_AA_A Out Face ft²
T1	145.00	1.526	14	62.396	A	4.993	5.104	4.792	47.46	0.000	0.000
150.00-140.00					B	4.993	4.792		48.97	0.000	0.000
					C	5.989	19.954		18.47	0.000	0.000
T2	130.00	1.48	14	124.792	A	13.653	17.958	9.583	30.32	0.000	0.000
140.00-120.00					B	10.611	19.483		31.84	0.000	0.000
					C	11.339	45.358		16.90	0.000	0.000
T3	110.00	1.411	13	147.509	A	14.599	23.400	15.025	39.54	0.000	0.000
120.00-100.00					B	13.102	41.425		27.56	0.000	0.000
					C	14.613	66.175		18.60	0.000	0.000
T4	90.00	1.332	12	189.283	A	17.025	26.949	18.574	42.24	0.000	0.000
100.00-80.00					B	15.604	44.974		30.66	0.000	0.000
					C	17.995	74.849		20.01	0.000	0.000
T5 80.00-60.00	70.00	1.24	11	231.055	A	21.929	30.495	22.120	42.19	0.000	0.000
					B	20.319	48.520		32.13	0.000	0.000
					C	22.363	78.395		21.95	0.000	0.000
T6 60.00-40.00	50.00	1.126	10	274.393	A	24.383	37.173	28.798	46.78	0.000	0.000
					B	22.830	55.198		36.91	0.000	0.000
					C	24.979	85.073		26.17	0.000	0.000
T7 40.00-20.00	30.00	1	9	314.393	A	23.751	37.173	28.798	47.27	0.000	0.000
					B	22.470	55.198		37.08	0.000	0.000
					C	25.116	85.073		26.14	0.000	0.000
T8 20.00-0.00	10.00	1	9	354.393	A	25.953	35.235	28.798	47.06	0.000	0.000
					B	25.022	48.598		39.12	0.000	0.000
					C	28.146	72.410		28.64	0.000	0.000

Tower Forces - No Ice - Wind Normal To Face

Section Elevation ft	Add Weight lb	Self Weight lb	Face	e	C_F	R_R	D_F	D_R	A_E ft²	F lb	w plf	Ctrl. Face
T1	233.80	421.53	A	0.162	2.728	0.583	1	1	7.970	1244.22	124.42	C
150.00-140.00			B	0.157	2.747	0.583	1	1	7.784			
			C	0.416	2.034	0.658	1	1	19.122			
T2	807.20	791.76	A	0.253	2.428	0.603	1	1	24.477	2559.47	127.97	C
140.00-120.00			B	0.241	2.464	0.6	1	1	22.294			
			C	0.454	1.966	0.675	1	1	41.969			
T3	1287.75	1140.72	A	0.258	2.415	0.604	1	1	28.729	3408.47	170.42	C
120.00-100.00			B	0.37	2.127	0.64	1	1	39.600			
			C	0.548	1.846	0.723	1	1	62.456			
T4	1385.60	1485.02	A	0.232	2.492	0.598	1	1	33.128	3729.69	186.48	C
100.00-80.00			B	0.32	2.244	0.622	1	1	43.589			
			C	0.491	1.913	0.693	1	1	69.843			
T5	1385.60	1986.33	A	0.227	2.509	0.596	1	1	40.112	3873.86	193.69	C
80.00-60.00			B	0.298	2.302	0.615	1	1	50.172			
			C	0.436	1.997	0.667	1	1	74.651			
T6	1385.60	2680.91	A	0.224	2.517	0.596	1	1	46.525	3915.31	195.77	C
60.00-40.00			B	0.284	2.338	0.611	1	1	56.569			
			C	0.401	2.062	0.652	1	1	80.449			
T7	1385.60	3829.48	A	0.194	2.617	0.589	1	1	45.652	3591.18	179.56	C
40.00-20.00			B	0.247	2.446	0.601	1	1	55.650			
			C	0.35	2.17	0.633	1	1	78.937			
T8 20.00-0.00	1222.30	3948.61	A	0.173	2.69	0.585	1	1	46.573	3551.07	177.55	C
			B	0.208	2.57	0.592	1	1	53.792			
			C	0.284	2.34	0.611	1	1	72.393			
Sum Weight:	9093.45	16284.35						OTM	1833929.37 lb-ft	25873.28		

Tower Forces - No Ice - Wind 60 To Face

Section Elevation ft	Add Weight lb	Self Weight lb	Face	e	C_F	R_R	D_F	D_R	A_E ft^2	F lb	w plf	Ctrl. Face
T1	233.80	421.53	A	0.162	2.728	0.583	0.8	1	6.972	1166.28	116.63	C
150.00-140.00			B	0.157	2.747	0.583	0.8	1	6.786			
			C	0.416	2.034	0.658	0.8	1	17.924			
T2	807.20	791.76	A	0.253	2.428	0.603	0.8	1	21.747	2421.17	121.06	C
140.00-120.00			B	0.241	2.464	0.6	0.8	1	20.172			
			C	0.454	1.966	0.675	0.8	1	39.701			
T3	1287.75	1140.72	A	0.258	2.415	0.604	0.8	1	25.809	3248.98	162.45	C
120.00-100.00			B	0.37	2.127	0.64	0.8	1	36.980			
			C	0.548	1.846	0.723	0.8	1	59.533			
T4	1385.60	1485.02	A	0.232	2.492	0.598	0.8	1	29.723	3537.51	176.88	C
100.00-80.00			B	0.32	2.244	0.622	0.8	1	40.468			
			C	0.491	1.913	0.693	0.8	1	66.244			
T5	1385.60	1986.33	A	0.227	2.509	0.596	0.8	1	35.726	3641.76	182.09	C
80.00-60.00			B	0.298	2.302	0.615	0.8	1	46.109			
			C	0.436	1.997	0.667	0.8	1	70.179			
T6	1385.60	2680.91	A	0.224	2.517	0.596	0.8	1	41.649	3672.18	183.61	C
60.00-40.00			B	0.284	2.338	0.611	0.8	1	52.003			
			C	0.401	2.062	0.652	0.8	1	75.454			
T7	1385.60	3829.48	A	0.194	2.617	0.589	0.8	1	40.902	3362.65	168.13	C
40.00-20.00			B	0.247	2.446	0.601	0.8	1	51.156			
			C	0.35	2.17	0.633	0.8	1	73.914			
T8 20.00-0.00	1222.30	3948.61	A	0.173	2.69	0.585	0.8	1	41.382	3274.94	163.75	C
			B	0.208	2.57	0.592	0.8	1	48.788			
			C	0.284	2.34	0.611	0.8	1	66.764			
Sum Weight:	9093.45	16284.35						OTM	1731786.65 lb-ft	24325.47		

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 ft^2	F lb	w plf	Ctrl. Face
T1	233.80	421.53	A	0.162	2.728	0.583	0.85	1	7.222	1185.77	118.58	C
150.00-140.00			B	0.157	2.747	0.583	0.85	1	7.035			
			C	0.416	2.034	0.658	0.85	1	18.224			
T2	807.20	791.76	A	0.253	2.428	0.603	0.85	1	22.429	2455.74	122.79	C
140.00-120.00			B	0.241	2.464	0.6	0.85	1	20.702			
			C	0.454	1.966	0.675	0.85	1	40.268			
T3	1287.75	1140.72	A	0.258	2.415	0.604	0.85	1	26.539	3288.85	164.44	C
120.00-100.00			B	0.37	2.127	0.64	0.85	1	37.635			
			C	0.548	1.846	0.723	0.85	1	60.264			
T4	1385.60	1485.02	A	0.232	2.492	0.598	0.85	1	30.574	3585.55	179.28	C
100.00-80.00			B	0.32	2.244	0.622	0.85	1	41.248			
			C	0.491	1.913	0.693	0.85	1	67.144			
T5	1385.60	1986.33	A	0.227	2.509	0.596	0.85	1	36.823	3699.79	184.99	C
80.00-60.00			B	0.298	2.302	0.615	0.85	1	47.125			
			C	0.436	1.997	0.667	0.85	1	71.297			
T6	1385.60	2680.91	A	0.224	2.517	0.596	0.85	1	42.868	3732.96	186.65	C

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
60.00-40.00			B	0.284	2.338	0.611	0.85	1	53.145			
			C	0.401	2.062	0.652	0.85	1	76.703			
T7	1385.60	3829.48	A	0.194	2.617	0.589	0.85	1	42.089	3419.79	170.99	C
40.00-20.00			B	0.247	2.446	0.601	0.85	1	52.280			
			C	0.35	2.17	0.633	0.85	1	75.169			
T8 20.00-0.00	1222.30	3948.61	A	0.173	2.69	0.585	0.85	1	42.680	3343.98	167.20	C
			B	0.208	2.57	0.592	0.85	1	50.039			
			C	0.284	2.34	0.611	0.85	1	68.171			
Sum Weight:	9093.45	16284.35						OTM	1757322.33 lb-ft	24712.42		

Tower Forces - With Ice - Wind Normal To Face

Section Elevation ft	Add Weight lb	Self Weight lb	Face	e	C_F	R_R	D_F	D_R	A_E ft²	F lb	w plf	Ctrl. Face
T1	538.85	669.78	A	0.244	2.455	0.6	1	1	11.269	1277.36	127.74	C
150.00-140.00			B	0.226	2.511	0.596	1	1	10.541			
			C	0.591	1.81	0.748	1	1	29.409			
T2	1715.89	1268.88	A	0.365	2.137	0.638	1	1	34.622	2816.65	140.83	C
140.00-120.00			B	0.336	2.204	0.628	1	1	30.602			
			C	0.658	1.779	0.791	1	1	68.053			
T3	2692.54	1715.74	A	0.356	2.158	0.635	1	1	39.252	4309.22	215.46	C
120.00-100.00			B	0.5	1.9	0.697	1	1	55.929			
			C	0.794	1.812	0.892	1	1	107.247			
T4	2894.01	2166.64	A	0.31	2.27	0.619	1	1	43.355	4267.61	213.38	C
100.00-80.00			B	0.424	2.018	0.662	1	1	58.873			
			C	0.708	1.777	0.825	1	1	114.711			
T5	2894.01	2866.41	A	0.294	2.312	0.614	1	1	50.683	4021.83	201.09	C
80.00-60.00			B	0.387	2.091	0.646	1	1	65.289			
			C	0.617	1.794	0.764	1	1	115.006			
T6	2894.01	3721.00	A	0.284	2.34	0.611	1	1	57.606	3866.76	193.34	C
60.00-40.00			B	0.363	2.143	0.637	1	1	71.998			
			C	0.558	1.836	0.729	1	1	118.947			
T7	2894.01	4822.68	A	0.243	2.459	0.6	1	1	55.854	3452.54	172.63	C
40.00-20.00			B	0.314	2.26	0.62	1	1	70.033			
			C	0.488	1.916	0.692	1	1	114.632			
T8 20.00-0.00	2421.00	5006.11	A	0.215	2.546	0.594	1	1	56.309	3265.08	163.25	C
			B	0.261	2.406	0.605	1	1	66.131			
			C	0.387	2.09	0.646	1	1	99.355			
Sum Weight:	18944.31	22237.23						OTM	2020573.97 lb-ft	27277.05		

Tower Forces - With Ice - Wind 60 To Face

Section Elevation ft	Add Weight lb	Self Weight lb	Face	e	C_F	R_R	D_F	D_R	A_E ft²	F lb	w plf	Ctrl. Face
T1	538.85	669.78	A	0.244	2.455	0.6	0.8	1	10.271	1226.78	122.68	C

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
150.00-140.00			B	0.226	2.511	0.596	0.8	1	9.542			
			C	0.591	1.81	0.748	0.8	1	28.245			
T2	1715.89	1268.88	A	0.365	2.137	0.638	0.8	1	31.782	2728.74	136.44	C
140.00-120.00			B	0.336	2.204	0.628	0.8	1	28.492			
			C	0.658	1.779	0.791	0.8	1	65.929			
T3	2692.54	1715.74	A	0.356	2.158	0.635	0.8	1	36.217	4192.39	209.62	C
120.00-100.00			B	0.5	1.9	0.697	0.8	1	53.327			
			C	0.794	1.812	0.892	0.8	1	104.339			
T4	2894.01	2166.64	A	0.31	2.27	0.619	0.8	1	39.830	4131.70	206.59	C
100.00-80.00			B	0.424	2.018	0.662	0.8	1	55.759			
			C	0.708	1.777	0.825	0.8	1	111.058			
T5	2894.01	2866.41	A	0.294	2.312	0.614	0.8	1	46.190	3866.31	193.32	C
80.00-60.00			B	0.387	2.091	0.646	0.8	1	61.262			
			C	0.617	1.794	0.764	0.8	1	110.559			
T6	2894.01	3721.00	A	0.284	2.34	0.611	0.8	1	52.618	3704.40	185.22	C
60.00-40.00			B	0.363	2.143	0.637	0.8	1	67.459			
			C	0.558	1.836	0.729	0.8	1	113.952			
T7	2894.01	4822.68	A	0.243	2.459	0.6	0.8	1	50.973	3297.84	164.89	C
40.00-20.00			B	0.314	2.26	0.62	0.8	1	65.523			
			C	0.488	1.916	0.692	0.8	1	109.496			
T8 20.00-0.00	2421.00	5006.11	A	0.215	2.546	0.594	0.8	1	50.968	3073.78	153.69	C
			B	0.261	2.406	0.605	0.8	1	61.059			
			C	0.387	2.09	0.646	0.8	1	93.534			
Sum Weight:	18944.31	22237.23						OTM	1951169.9 2 lb-ft	26221.94		

Tower Forces - With Ice - Wind 90 To Face

Section Elevation ft	Add Weight lb	Self Weight lb	Face	e	C_F	R_R	D_F	D_R	A_E ft²	F lb	w plf	Ctrl. Face
T1	538.85	669.78	A	0.244	2.455	0.6	0.85	1	10.520	1239.43	123.94	C
150.00-140.00			B	0.226	2.511	0.596	0.85	1	9.792			
			C	0.591	1.81	0.748	0.85	1	28.536			
T2	1715.89	1268.88	A	0.365	2.137	0.638	0.85	1	32.492	2750.72	137.54	C
140.00-120.00			B	0.336	2.204	0.628	0.85	1	29.019			
			C	0.658	1.779	0.791	0.85	1	66.460			
T3	2692.54	1715.74	A	0.356	2.158	0.635	0.85	1	36.976	4221.60	211.08	C
120.00-100.00			B	0.5	1.9	0.697	0.85	1	53.977			
			C	0.794	1.812	0.892	0.85	1	105.066			
T4	2894.01	2166.64	A	0.31	2.27	0.619	0.85	1	40.711	4165.68	208.28	C
100.00-80.00			B	0.424	2.018	0.662	0.85	1	56.537			
			C	0.708	1.777	0.825	0.85	1	111.971			
T5	2894.01	2866.41	A	0.294	2.312	0.614	0.85	1	47.313	3905.19	195.26	C
80.00-60.00			B	0.387	2.091	0.646	0.85	1	62.269			
			C	0.617	1.794	0.764	0.85	1	111.670			
T6	2894.01	3721.00	A	0.284	2.34	0.611	0.85	1	53.865	3744.99	187.25	C
60.00-40.00			B	0.363	2.143	0.637	0.85	1	68.594			
			C	0.558	1.836	0.729	0.85	1	115.201			
T7	2894.01	4822.68	A	0.243	2.459	0.6	0.85	1	52.193	3336.52	166.83	C
40.00-20.00			B	0.314	2.26	0.62	0.85	1	66.651			
			C	0.488	1.916	0.692	0.85	1	110.780			
T8 20.00-0.00	2421.00	5006.11	A	0.215	2.546	0.594	0.85	1	52.303	3121.61	156.08	C
			B	0.261	2.406	0.605	0.85	1	62.327			
			C	0.387	2.09	0.646	0.85	1	94.989			

Section Elevation ft	Add Weight lb	Self Weight lb	Face	e	C_F	R_R	D_F	D_R	A_E ft²	F lb	w plf	Ctrl. Face
Sum Weight:	18944.31	22237.23						OTM	1968520.93 lb-ft	26485.72		

Tower Forces - Service - Wind Normal To Face

Section Elevation ft	Add Weight lb	Self Weight lb	Face	e	C_F	R_R	D_F	D_R	A_E ft²	F lb	w plf	Ctrl. Face
T1	233.80	421.53	A	0.162	2.728	0.583	1	1	7.970	619.96	62.00	C
150.00-140.00			B	0.157	2.747	0.583	1	1	7.784			
			C	0.416	2.034	0.658	1	1	19.122			
T2	807.20	791.76	A	0.253	2.428	0.603	1	1	24.477	1275.31	63.77	C
140.00-120.00			B	0.241	2.464	0.6	1	1	22.294			
			C	0.454	1.966	0.675	1	1	41.969			
T3	1287.75	1140.72	A	0.258	2.415	0.604	1	1	28.729	1698.34	84.92	C
120.00-100.00			B	0.37	2.127	0.64	1	1	39.600			
			C	0.548	1.846	0.723	1	1	62.456			
T4	1385.60	1485.02	A	0.232	2.492	0.598	1	1	33.128	1858.39	92.92	C
100.00-80.00			B	0.32	2.244	0.622	1	1	43.589			
			C	0.491	1.913	0.693	1	1	69.843			
T5	1385.60	1986.33	A	0.227	2.509	0.596	1	1	40.112	1930.23	96.51	C
80.00-60.00			B	0.298	2.302	0.615	1	1	50.172			
			C	0.436	1.997	0.667	1	1	74.651			
T6	1385.60	2680.91	A	0.224	2.517	0.596	1	1	46.525	1950.88	97.54	C
60.00-40.00			B	0.284	2.338	0.611	1	1	56.569			
			C	0.401	2.062	0.652	1	1	80.449			
T7	1385.60	3829.48	A	0.194	2.617	0.589	1	1	45.652	1789.38	89.47	C
40.00-20.00			B	0.247	2.446	0.601	1	1	55.650			
			C	0.35	2.17	0.633	1	1	78.937			
T8 20.00-0.00	1222.30	3948.61	A	0.173	2.69	0.585	1	1	46.573	1769.39	88.47	C
			B	0.208	2.57	0.592	1	1	53.792			
			C	0.284	2.34	0.611	1	1	72.393			
Sum Weight:	9093.45	16284.35						OTM	913791.80 lb-ft	12891.87		

Tower Forces - Service - Wind 60 To Face

Section Elevation ft	Add Weight lb	Self Weight lb	Face	e	C_F	R_R	D_F	D_R	A_E ft²	F lb	w plf	Ctrl. Face
T1	233.80	421.53	A	0.162	2.728	0.583	0.8	1	6.972	581.12	58.11	C
150.00-140.00			B	0.157	2.747	0.583	0.8	1	6.786			
			C	0.416	2.034	0.658	0.8	1	17.924			
T2	807.20	791.76	A	0.253	2.428	0.603	0.8	1	21.747	1206.40	60.32	C
140.00-120.00			B	0.241	2.464	0.6	0.8	1	20.172			
			C	0.454	1.966	0.675	0.8	1	39.701			
T3	1287.75	1140.72	A	0.258	2.415	0.604	0.8	1	25.809	1618.87	80.94	C
120.00-100.00			B	0.37	2.127	0.64	0.8	1	36.980			
			C	0.548	1.846	0.723	0.8	1	59.533			

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
T4	1385.60	1485.02	A	0.232	2.492	0.598	0.8	1	29.723	1762.63	88.13	C
100.00-80.00			B	0.32	2.244	0.622	0.8	1	40.468			
			C	0.491	1.913	0.693	0.8	1	66.244			
T5	1385.60	1986.33	A	0.227	2.509	0.596	0.8	1	35.726	1814.58	90.73	C
80.00-60.00			B	0.298	2.302	0.615	0.8	1	46.109			
			C	0.436	1.997	0.667	0.8	1	70.179			
T6	1385.60	2680.91	A	0.224	2.517	0.596	0.8	1	41.649	1829.73	91.49	C
60.00-40.00			B	0.284	2.338	0.611	0.8	1	52.003			
			C	0.401	2.062	0.652	0.8	1	75.454			
T7	1385.60	3829.48	A	0.194	2.617	0.589	0.8	1	40.902	1675.51	83.78	C
40.00-20.00			B	0.247	2.446	0.601	0.8	1	51.156			
			C	0.35	2.17	0.633	0.8	1	73.914			
T8 20.00-0.00	1222.30	3948.61	A	0.173	2.69	0.585	0.8	1	41.382	1631.81	81.59	C
			B	0.208	2.57	0.592	0.8	1	48.788			
			C	0.284	2.34	0.611	0.8	1	66.764			
Sum Weight:	9093.45	16284.35						OTM	862897.16 lb-ft	12120.65		

Tower Forces - Service - Wind 90 To Face

Section Elevation ft	Add Weight lb	Self Weight lb	Face	e	C_F	R_R	D_F	D_R	A_E ft²	F lb	w plf	Ctrl. Face
T1	233.80	421.53	A	0.162	2.728	0.583	0.85	1	7.222	590.83	59.08	C
150.00-140.00			B	0.157	2.747	0.583	0.85	1	7.035			
			C	0.416	2.034	0.658	0.85	1	18.224			
T2	807.20	791.76	A	0.253	2.428	0.603	0.85	1	22.429	1223.62	61.18	C
140.00-120.00			B	0.241	2.464	0.6	0.85	1	20.702			
			C	0.454	1.966	0.675	0.85	1	40.268			
T3	1287.75	1140.72	A	0.258	2.415	0.604	0.85	1	26.539	1638.74	81.94	C
120.00-100.00			B	0.37	2.127	0.64	0.85	1	37.635			
			C	0.548	1.846	0.723	0.85	1	60.264			
T4	1385.60	1485.02	A	0.232	2.492	0.598	0.85	1	30.574	1786.57	89.33	C
100.00-80.00			B	0.32	2.244	0.622	0.85	1	41.248			
			C	0.491	1.913	0.693	0.85	1	67.144			
T5	1385.60	1986.33	A	0.227	2.509	0.596	0.85	1	36.823	1843.49	92.17	C
80.00-60.00			B	0.298	2.302	0.615	0.85	1	47.125			
			C	0.436	1.997	0.667	0.85	1	71.297			
T6	1385.60	2680.91	A	0.224	2.517	0.596	0.85	1	42.868	1860.02	93.00	C
60.00-40.00			B	0.284	2.338	0.611	0.85	1	53.145			
			C	0.401	2.062	0.652	0.85	1	76.703			
T7	1385.60	3829.48	A	0.194	2.617	0.589	0.85	1	42.089	1703.98	85.20	C
40.00-20.00			B	0.247	2.446	0.601	0.85	1	52.280			
			C	0.35	2.17	0.633	0.85	1	75.169			
T8 20.00-0.00	1222.30	3948.61	A	0.173	2.69	0.585	0.85	1	42.680	1666.20	83.31	C
			B	0.208	2.57	0.592	0.85	1	50.039			
			C	0.284	2.34	0.611	0.85	1	68.171			
Sum Weight:	9093.45	16284.35						OTM	875620.82 lb-ft	12313.45		

Force Totals

Load Case	Vertical Forces lb	Sum of Forces X lb	Sum of Forces Z lb	Sum of Overturning Moments, M_x lb-ft	Sum of Overturning Moments, M_z lb-ft	Sum of Torques lb-ft
Leg Weight	10129.62					
Bracing Weight	6154.73					
Total Member Self-Weight	16284.35			11652.34	829.07	
Total Weight	30627.40			11652.34	829.07	
Wind 0 deg - No Ice		151.48	-37537.25	-3355695.31	-14561.33	3874.17
Wind 30 deg - No Ice		18138.40	-31578.62	-2845907.83	-1632433.34	8592.74
Wind 60 deg - No Ice		30930.03	-18125.91	-1634278.60	-2790559.45	11127.31
Wind 90 deg - No Ice		36014.42	-151.48	-3738.06	-3239038.78	11047.04
Wind 120 deg - No Ice		32118.99	18637.44	1681997.68	-2863627.24	8100.02
Wind 150 deg - No Ice		17876.02	31427.14	2853822.10	-1605776.38	2454.30
Wind 180 deg - No Ice		-151.48	35989.44	3276857.26	16219.47	-3433.98
Wind 210 deg - No Ice		-18138.40	31578.62	2869212.50	1634091.47	-8592.74
Wind 240 deg - No Ice		-32270.47	18899.81	1708654.64	2880675.77	-11974.19
Wind 270 deg - No Ice		-36014.42	151.48	27042.74	3240696.92	-11047.04
Wind 300 deg - No Ice		-30778.55	-17863.53	-1607621.65	2776827.18	-7693.33
Wind 330 deg - No Ice		-17876.02	-31427.14	-2830517.43	1607434.52	-2454.30
Member Ice	5952.88					
Total Weight Ice	49508.15			28375.22	-4171.04	
Wind 0 deg - Ice		-6.98	-38226.16	-3432988.81	-1817.12	2403.60
Wind 30 deg - Ice		18668.59	-32416.02	-2922997.75	-1700685.70	8228.99
Wind 60 deg - Ice		32113.49	-18579.48	-1665566.22	-2929948.13	11891.73
Wind 90 deg - Ice		37349.26	6.98	30729.13	-3401277.47	12646.66
Wind 120 deg - Ice		33034.21	19119.12	1761095.78	-2992407.72	10131.45
Wind 150 deg - Ice		18680.67	32423.00	2982102.10	-1704762.81	4417.67
Wind 180 deg - Ice		6.98	37171.05	3420335.19	-6524.95	-2132.76
Wind 210 deg - Ice		-18668.59	32416.02	2979748.18	1692343.63	-8228.99
Wind 240 deg - Ice		-33027.24	19107.04	1757018.68	2981711.73	-12535.04
Wind 270 deg - Ice		-37349.26	-6.98	26021.30	3392935.40	-12646.66
Wind 300 deg - Ice		-32120.46	-18591.57	-1669643.32	2923959.97	-9758.98
Wind 330 deg - Ice		-18680.67	-32423.00	-2925351.67	1696420.73	-4417.67
Total Weight	30627.40			11652.34	829.07	
Wind 0 deg - Service		75.48	-18703.68	-1679106.30	-5461.09	1930.38
Wind 30 deg - Service		9037.82	-15734.68	-1425094.54	-811598.00	4281.50
Wind 60 deg - Service		15411.50	-9031.60	-821376.18	-1388657.38	5544.40
Wind 90 deg - Service		17944.90	-75.48	-8926.91	-1612121.13	5504.41
Wind 120 deg - Service		16003.92	9286.47	831024.46	-1425064.86	4036.00
Wind 150 deg - Service		8907.08	15659.20	1414909.30	-798315.64	1222.90
Wind 180 deg - Service		-75.48	17932.45	1625694.98	9876.06	-1711.05
Wind 210 deg - Service		-9037.82	15734.68	1422577.87	816012.98	-4281.50
Wind 240 deg - Service		-16079.40	9417.21	844306.82	1437148.41	-5966.38
Wind 270 deg - Service		-17944.90	75.48	6410.24	1616536.11	-5504.41
Wind 300 deg - Service		-15336.02	-8900.86	-808093.82	1385403.78	-3833.35
Wind 330 deg - Service		-8907.08	-15659.20	-1417425.97	802730.62	-1222.90

Load Combinations

Comb. No.	Description
1	Dead Only
2	Dead+Wind 0 deg - No Ice
3	Dead+Wind 30 deg - No Ice
4	Dead+Wind 60 deg - No Ice
5	Dead+Wind 90 deg - No Ice
6	Dead+Wind 120 deg - No Ice
7	Dead+Wind 150 deg - No Ice

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

Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical lb	Horizontal, X lb	Horizontal, Z lb
Leg C	Max. Vert	23	239447.15	18485.83	-10179.29
	Max. H_x	10	225627.69	19889.96	-11042.39
	Max. H_z	17	-200613.13	-20670.05	11519.44
	Min. Vert	17	-200613.13	-20670.05	11519.44
	Min. H_x	17	-200613.13	-20670.05	11519.44
	Min. H_z	10	225627.69	19889.96	-11042.39
Leg B	Max. Vert	19	240175.29	-18462.84	-10257.38
	Max. H_x	25	-200411.37	20640.12	11575.61
	Max. H_z	25	-200411.37	20640.12	11575.61
	Min. Vert	25	-200411.37	20640.12	11575.61
	Min. H_x	6	223820.88	-19696.57	-11059.36
	Min. H_z	6	223820.88	-19696.57	-11059.36
Leg A	Max. Vert	15	237660.68	79.11	21099.68
	Max. H_x	11	8468.66	2322.40	610.75
	Max. H_z	2	226056.24	111.43	22821.53
	Min. Vert	21	-203841.76	-63.24	-23755.40
	Min. H_x	5	10448.01	-2323.74	794.48
	Min. H_z	21	-203841.76	-63.24	-23755.40

Tower Mast Reaction Summary

Load Combination	Vertical	$Shear_x$	$Shear_z$	Overturning Moment, M_x	Overturning Moment, M_z	Torque
	lb	lb	lb	lb-ft	lb-ft	lb-ft
Dead Only	30627.40	-0.00	0.00	11652.45	828.22	-0.00
Dead+Wind 0 deg - No Ice	30627.40	151.48	-37536.90	-3364723.36	-14599.00	3865.03
Dead+Wind 30 deg - No Ice	30627.40	18138.21	-31578.32	-2853596.61	-1636840.06	8607.88
Dead+Wind 60 deg - No Ice	30627.40	30929.71	-18125.72	-1638685.04	-2798097.35	11157.93
Dead+Wind 90 deg - No Ice	30627.40	36014.07	-151.47	-3723.68	-3247763.95	11085.46
Dead+Wind 120 deg - No Ice	30627.40	32118.70	18637.26	1686537.39	-2871288.69	8141.22
Dead+Wind 150 deg - No Ice	30627.40	17875.86	31426.82	2861535.67	-1610092.51	2485.77
Dead+Wind 180 deg - No Ice	30627.40	-151.48	35989.07	3285718.17	16260.06	-3424.37
Dead+Wind 210 deg - No Ice	30627.40	-18138.24	31578.30	2876964.88	1638478.83	-8607.71
Dead+Wind 240 deg - No Ice	30627.40	-32270.18	18899.64	1713261.43	2888382.15	-12006.22
Dead+Wind 270 deg - No Ice	30627.40	-36014.07	151.50	27131.26	3249431.41	-11086.18
Dead+Wind 300 deg - No Ice	30627.40	-30778.23	-17863.35	-1611966.54	2784335.63	-7733.53
Dead+Wind 330 deg - No Ice	30627.40	-17875.83	-31426.84	-2838172.43	1611780.42	-2485.17
Dead+Ice+Temp	49508.15	-0.00	-0.00	28385.66	-4176.06	0.03
Dead+Wind 0 deg+Ice+Temp	49508.14	-6.98	-38225.58	-3447511.54	-1812.74	2419.71
Dead+Wind 30 deg+Ice+Temp	49508.14	18668.27	-32415.52	-2935397.23	-1707896.78	8302.36
Dead+Wind 60 deg+Ice+Temp	49508.14	32112.95	-18579.18	-1672633.31	-2942389.86	11995.38
Dead+Wind 90 deg+Ice+Temp	49508.14	37348.66	6.99	30871.33	-3415691.54	12757.35
Dead+Wind 120 deg+Ice+Temp	49508.14	33033.71	19118.82	1768542.91	-3005037.57	10222.89
Dead+Wind 150 deg+Ice+Temp	49508.14	18680.40	32422.46	2994729.75	-1711974.27	4463.51
Dead+Wind 180 deg+Ice+Temp	49508.14	6.99	37170.43	3434830.46	-6549.55	-2144.72
Dead+Wind 210 deg+Ice+Temp	49508.14	-18668.32	32415.48	2992358.94	1699505.91	-8302.57
Dead+Wind 240 deg+Ice+Temp	49508.14	-33026.74	19106.74	1764438.92	2994300.54	-12642.62
Dead+Wind 270 deg+Ice+Temp	49508.14	-37348.67	-6.96	26134.92	3407322.20	-12757.39
Dead+Wind 300 deg+Ice+Temp	49508.14	-32119.92	-18591.26	-1676732.12	2936391.83	-9846.13
Dead+Wind 330 deg+Ice+Temp	49508.14	-18680.35	-32422.50	-2937762.42	1703636.10	-4463.30
Dead+Wind 0 deg - Service	30627.40	75.48	-18703.50	-1670713.48	-6854.96	1925.76
Dead+Wind 30 deg - Service	30627.40	9037.72	-15734.52	-1416027.87	-815180.37	4285.46
Dead+Wind 60 deg - Service	30627.40	15411.35	-9031.50	-810665.56	-1393804.89	5559.57
Dead+Wind 90 deg - Service	30627.40	17944.72	-75.48	3994.71	-1617870.13	5528.26
Dead+Wind 120 deg - Service	30627.40	16003.77	9286.38	846219.19	-1430287.36	4056.73
Dead+Wind 150 deg - Service	30627.40	8907.00	15659.04	1431697.94	-801856.78	1234.61
Dead+Wind 180 deg - Service	30627.40	-75.48	17932.27	1643055.88	8521.01	-1706.30
Dead+Wind 210 deg - Service	30627.40	-9037.73	15734.52	1439385.63	816839.14	-4285.42
Dead+Wind 240 deg - Service	30627.40	-16079.25	9417.12	859534.31	1439642.46	-5982.58
Dead+Wind 270 deg - Service	30627.40	-17944.72	75.48	19368.98	1619537.96	-5528.38
Dead+Wind 300 deg - Service	30627.40	-15335.87	-8900.77	-797351.76	1387784.79	-3853.26
Dead+Wind 330 deg - Service	30627.40	-8906.99	-15659.04	-1408341.44	803531.57	-1234.50

Solution Summary

	Sum of Applied Forces			Sum of Reactions			
Load Comb.	PX lb	PY lb	PZ lb	PX lb	PY lb	PZ lb	% Error
1	-0.00	-30627.40	-0.00	0.00	30627.40	-0.00	0.000%
2	151.48	-30627.40	-37537.25	-151.48	30627.40	37536.90	0.001%
3	18138.40	-30627.40	-31578.62	-18138.21	30627.40	31578.32	0.001%
4	30930.03	-30627.40	-18125.91	-30929.71	30627.40	18125.72	0.001%
5	36014.42	-30627.40	-151.48	-36014.07	30627.40	151.47	0.001%
6	32118.99	-30627.40	18637.43	-32118.70	30627.40	-18637.26	0.001%
7	17876.02	-30627.40	31427.14	-17875.86	30627.40	-31426.82	0.001%
8	-151.48	-30627.40	35989.44	151.48	30627.40	-35989.07	0.001%
9	-18138.40	-30627.40	31578.62	18138.24	30627.40	-31578.30	0.001%
10	-32270.47	-30627.40	18899.81	32270.18	30627.40	-18899.64	0.001%
11	-36014.42	-30627.40	151.48	36014.07	30627.40	-151.50	0.001%

Load Comb.	Sum of Applied Forces PX lb	PY lb	PZ lb	Sum of Reactions PX lb	PY lb	PZ lb	% Error
12	-30778.55	-30627.40	-17863.53	30778.23	30627.40	17863.35	0.001%
13	-17876.02	-30627.40	-31427.14	17875.83	30627.40	31426.84	0.001%
14	-0.00	-49508.15	-0.00	0.00	49508.15	0.00	0.000%
15	-6.98	-49508.15	-38226.16	6.98	49508.14	38225.58	0.001%
16	18668.59	-49508.15	-32416.02	-18668.27	49508.14	32415.52	0.001%
17	32113.49	-49508.15	-18579.48	-32112.95	49508.14	18579.18	0.001%
18	37349.26	-49508.15	6.98	-37348.66	49508.14	-6.99	0.001%
19	33034.21	-49508.15	19119.12	-33033.71	49508.14	-19118.82	0.001%
20	18680.67	-49508.15	32423.00	-18680.40	49508.14	-32422.46	0.001%
21	6.98	-49508.15	37171.05	-6.99	49508.14	-37170.43	0.001%
22	-18668.59	-49508.15	32416.02	18668.32	49508.14	-32415.48	0.001%
23	-33027.24	-49508.15	19107.04	33026.74	49508.14	-19106.74	0.001%
24	-37349.26	-49508.15	-6.98	37348.67	49508.14	6.96	0.001%
25	-32120.46	-49508.15	-18591.57	32119.92	49508.14	18591.26	0.001%
26	-18680.67	-49508.15	-32423.00	18680.35	49508.14	32422.50	0.001%
27	75.48	-30627.40	-18703.68	-75.48	30627.40	18703.50	0.001%
28	9037.82	-30627.40	-15734.68	-9037.72	30627.40	15734.52	0.001%
29	15411.50	-30627.40	-9031.60	-15411.35	30627.40	9031.50	0.001%
30	17944.90	-30627.40	-75.48	-17944.72	30627.40	75.48	0.001%
31	16003.92	-30627.40	9286.47	-16003.77	30627.40	-9286.38	0.000%
32	8907.08	-30627.40	15659.20	-8907.00	30627.40	-15659.04	0.001%
33	-75.48	-30627.40	17932.45	75.48	30627.40	-17932.27	0.001%
34	-9037.82	-30627.40	15734.68	9037.73	30627.40	-15734.52	0.001%
35	-16079.40	-30627.40	9417.21	16079.25	30627.40	-9417.12	0.000%
36	-17944.90	-30627.40	75.48	17944.72	30627.40	-75.48	0.001%
37	-15336.02	-30627.40	-8900.86	15335.87	30627.40	8900.77	0.001%
38	-8907.08	-30627.40	-15659.20	8906.99	30627.40	15659.04	0.001%

Non-Linear Convergence Results

Load Combination	Converged?	Number of Cycles	Displacement Tolerance	Force Tolerance
1	Yes	4	0.00000001	0.00000001
2	Yes	4	0.00000001	0.00007968
3	Yes	4	0.00000001	0.00008263
4	Yes	4	0.00000001	0.00008543
5	Yes	4	0.00000001	0.00008273
6	Yes	4	0.00000001	0.00007967
7	Yes	4	0.00000001	0.00008288
8	Yes	4	0.00000001	0.00008553
9	Yes	4	0.00000001	0.00008266
10	Yes	4	0.00000001	0.00007950
11	Yes	4	0.00000001	0.00008264
12	Yes	4	0.00000001	0.00008553
13	Yes	4	0.00000001	0.00008276
14	Yes	4	0.00000001	0.00000001
15	Yes	4	0.00000001	0.00013970
16	Yes	4	0.00000001	0.00014310
17	Yes	4	0.00000001	0.00014620
18	Yes	4	0.00000001	0.00014298
19	Yes	4	0.00000001	0.00013957
20	Yes	4	0.00000001	0.00014298
21	Yes	4	0.00000001	0.00014622
22	Yes	4	0.00000001	0.00014296
23	Yes	4	0.00000001	0.00013956
24	Yes	4	0.00000001	0.00014299

25	Yes	4	0.00000001	0.00014622
26	Yes	4	0.00000001	0.00014314
27	Yes	4	0.00000001	0.00008242
28	Yes	4	0.00000001	0.00008387
29	Yes	4	0.00000001	0.00008517
30	Yes	4	0.00000001	0.00008374
31	Yes	4	0.00000001	0.00008223
32	Yes	4	0.00000001	0.00008393
33	Yes	4	0.00000001	0.00008529
34	Yes	4	0.00000001	0.00008381
35	Yes	4	0.00000001	0.00008214
36	Yes	4	0.00000001	0.00008374
37	Yes	4	0.00000001	0.00008531
38	Yes	4	0.00000001	0.00008399

Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
T1	150 - 140	6.283	27	0.4088	0.0369
T2	140 - 120	5.379	27	0.4037	0.0339
T3	120 - 100	3.698	27	0.3347	0.0268
T4	100 - 80	2.365	27	0.2516	0.0193
T5	80 - 60	1.404	35	0.1728	0.0141
T6	60 - 40	0.761	35	0.1064	0.0099
T7	40 - 20	0.348	27	0.0611	0.0055
T8	20 - 0	0.112	27	0.0307	0.0027

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
150.00	RFS APX16DWV-16DWVS-E-A20	27	6.283	0.4088	0.0369	75339
140.00	KMW ET-X-TU-42-15-37-18-IR-RA	27	5.379	0.4037	0.0339	37711
127.50	Nudd 12' boom	27	4.296	0.3665	0.0292	16292
122.28	RFS DB-T1-6Z-8AB-0Z	27	3.875	0.3446	0.0276	13186
117.07	RFS DB-T1-6Z-8AB-0Z	27	3.478	0.3222	0.0257	12206
115.00	Powerwave 7770.00	27	3.328	0.3134	0.0249	12248
111.85	RFS DB-T1-6Z-8AB-0Z	27	3.108	0.3002	0.0237	12354
106.64	RFS DB-T1-6Z-8AB-0Z	27	2.764	0.2787	0.0217	12534
101.42	RFS DB-T1-6Z-8AB-0Z	27	2.447	0.2574	0.0198	12732
96.20	RFS DB-T1-6Z-8AB-0Z	35	2.155	0.2362	0.0181	13070
90.99	RFS DB-T1-6Z-8AB-0Z	35	1.888	0.2152	0.0166	13504
85.77	RFS DB-T1-6Z-8AB-0Z	35	1.645	0.1947	0.0153	13969
80.56	RFS DB-T1-6Z-8AB-0Z	35	1.426	0.1748	0.0142	14554
75.34	RFS DB-T1-6Z-8AB-0Z	35	1.229	0.1558	0.0132	15789
70.13	RFS DB-T1-6Z-8AB-0Z	35	1.053	0.1377	0.0121	17498
64.91	RFS DB-T1-6Z-8AB-0Z	35	0.895	0.1209	0.0110	19622
59.69	RFS DB-T1-6Z-8AB-0Z	35	0.754	0.1055	0.0098	21926
54.48	RFS DB-T1-6Z-8AB-0Z	35	0.627	0.0917	0.0086	23335
49.26	RFS DB-T1-6Z-8AB-0Z	35	0.515	0.0795	0.0074	24625
44.05	RFS DB-T1-6Z-8AB-0Z	27	0.416	0.0686	0.0063	26062
38.83	RFS DB-T1-6Z-8AB-0Z	27	0.330	0.0591	0.0053	27570

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
33.61	RFS DB-T1-6Z-8AB-0Z	27	0.255	0.0506	0.0044	29027
28.40	RFS DB-T1-6Z-8AB-0Z	27	0.192	0.0428	0.0038	30602
23.18	RFS DB-T1-6Z-8AB-0Z	27	0.139	0.0352	0.0031	32407
17.97	RFS DB-T1-6Z-8AB-0Z	27	0.096	0.0277	0.0025	37611
12.75	RFS DB-T1-6Z-8AB-0Z	27	0.062	0.0198	0.0018	52601

Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
T1	150 - 140	12.916	19	0.8332	0.0740
T2	140 - 120	11.075	19	0.8223	0.0681
T3	120 - 100	7.654	19	0.6848	0.0538
T4	100 - 80	4.920	19	0.5194	0.0413
T5	80 - 60	2.926	19	0.3589	0.0312
T6	60 - 40	1.586	19	0.2216	0.0217
T7	40 - 20	0.722	19	0.1275	0.0119
T8	20 - 0	0.230	19	0.0639	0.0059

Critical Deflections and Radius of Curvature - Design Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
150.00	RFS APX16DWV-16DWVS-E-A20	19	12.916	0.8332	0.0740	36643
140.00	KMW ET-X-TU-42-15-37-18-IR-RA	19	11.075	0.8223	0.0681	18366
127.50	Nudd 12' boom	19	8.873	0.7480	0.0587	8121
122.28	RFS DB-T1-6Z-8AB-0Z	19	8.015	0.7044	0.0554	6568
117.07	RFS DB-T1-6Z-8AB-0Z	19	7.205	0.6599	0.0517	6078
115.00	Powerwave 7770.00	19	6.899	0.6426	0.0501	6098
111.85	RFS DB-T1-6Z-8AB-0Z	19	6.448	0.6165	0.0477	6149
106.64	RFS DB-T1-6Z-8AB-0Z	19	5.743	0.5736	0.0450	6236
101.42	RFS DB-T1-6Z-8AB-0Z	19	5.089	0.5310	0.0421	6332
96.20	RFS DB-T1-6Z-8AB-0Z	19	4.486	0.4884	0.0392	6499
90.99	RFS DB-T1-6Z-8AB-0Z	19	3.933	0.4459	0.0365	6699
85.77	RFS DB-T1-6Z-8AB-0Z	19	3.429	0.4040	0.0340	6863
80.56	RFS DB-T1-6Z-8AB-0Z	19	2.972	0.3632	0.0315	7084
75.34	RFS DB-T1-6Z-8AB-0Z	19	2.562	0.3239	0.0291	7651
70.13	RFS DB-T1-6Z-8AB-0Z	19	2.194	0.2866	0.0266	8453
64.91	RFS DB-T1-6Z-8AB-0Z	19	1.864	0.2517	0.0242	9443
59.69	RFS DB-T1-6Z-8AB-0Z	19	1.570	0.2199	0.0216	10526
54.48	RFS DB-T1-6Z-8AB-0Z	19	1.306	0.1912	0.0189	11183
49.26	RFS DB-T1-6Z-8AB-0Z	19	1.071	0.1658	0.0162	11782
44.05	RFS DB-T1-6Z-8AB-0Z	19	0.864	0.1432	0.0136	12449
38.83	RFS DB-T1-6Z-8AB-0Z	19	0.684	0.1232	0.0114	13150
33.61	RFS DB-T1-6Z-8AB-0Z	19	0.528	0.1055	0.0096	13824
28.40	RFS DB-T1-6Z-8AB-0Z	19	0.396	0.0892	0.0081	14557
23.18	RFS DB-T1-6Z-8AB-0Z	19	0.286	0.0735	0.0067	15396
17.97	RFS DB-T1-6Z-8AB-0Z	19	0.198	0.0577	0.0053	17852
12.75	RFS DB-T1-6Z-8AB-0Z	15	0.128	0.0413	0.0038	24966

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	150	Leg	A325N	0.7500	4	1526.19	19415.50	0.079 ✔	1.333	Bolt Tension
		Diagonal	A325N	0.5000	1	1973.66	4123.34	0.479 ✔	1.333	Bolt Shear
T2	140	Leg	A325N	1.0000	4	9243.55	34426.50	0.269 ✔	1.333	Bolt Tension
		Diagonal	A325N	0.6250	1	5762.75	6117.19	0.942 ✔	1.333	Member Bearing
T3	120	Leg	A325N	1.0000	6	12241.70	34503.90	0.355 ✔	1.333	Bolt Tension
		Diagonal	A325N	0.6250	1	5698.91	6117.19	0.932 ✔	1.333	Member Bearing
T4	100	Leg	A325N	1.0000	8	13039.60	34520.50	0.378 ✔	1.333	Bolt Tension
		Diagonal	A325N	0.6250	1	6238.32	6117.19	1.020 ✔	1.333	Member Bearing
T5	80	Leg	A325N	1.2500	8	16602.30	53963.30	0.308 ✔	1.333	Bolt Tension
		Diagonal	A325N	0.6250	1	6559.90	6117.19	1.072 ✔	1.333	Member Bearing
T6	60	Leg	A325N	1.2500	8	19863.10	53954.80	0.368 ✔	1.333	Bolt Tension
		Diagonal	A325N	0.6250	1	7239.26	6117.19	1.183 ✔	1.333	Member Bearing
T7	40	Leg	A325N	1.2500	8	22843.70	53938.50	0.424 ✔	1.333	Bolt Tension
		Diagonal	A325N	0.7500	1	8497.20	9062.50	0.938 ✔	1.333	Member Bearing
T8	20	Leg	F1554-36	1.5000	8	25615.10	33823.20	0.757 ✔	1.333	Bolt Tension
		Diagonal	A325N	0.7500	1	9745.04	9062.50	1.075 ✔	1.333	Member Bearing

Compression Checks

Leg Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P lb	Allow. P_a lb	Ratio P / P_a
T1	150 - 140	P2.5x.203	10.00	0.67	8.4 K=1.00	31.707	1.7040	-7855.05	54030.80	0.145 ✔
T2	140 - 120	P2.5x.203	20.00	4.67	59.1 K=1.00	24.270	1.7040	-36571.30	41357.70	0.884 ✔
T3	120 - 100	P4x.237	20.03	4.67	37.2 K=1.00	28.107	3.1741	-77936.10	89211.40	0.874 ✔
T4	100 - 80	P5x.258	20.03	6.26	40.0 K=1.00	27.658	4.2999	-119574.00	118925.00	1.005 ✔
T5	80 - 60	P6x.28	20.03	6.26	33.5 K=1.00	28.667	5.5813	-152524.00	160002.00	0.953 ✔
T6	60 - 40	P8x.322	20.03	6.26	25.6 K=1.00	29.771	8.3993	-183627.00	250055.00	0.734

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P lb	Allow. P_a lb	Ratio $\frac{P}{P_a}$
T7	40 - 20	P8x.5	20.03	9.35	39.0 K=1.00	27.821	12.7627	-206519.00	355075.00	0.582 ✔
T8	20 - 0	P8x.5	20.03	9.35	39.0 K=1.00	27.821	12.7627	-235090.00	355075.00	0.662 ✔

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	150 - 140	L1 1/2x1 1/2x3/16	7.40	3.42	139.8 K=1.00	7.641	0.5273	-1918.17	4029.59	0.476 ✔
T2	140 - 120	L2x2x3/16	7.60	3.51	110.3 K=1.03	11.637	0.7150	-5721.60	8320.76	0.688 ✔
T3	120 - 100	L2x2x3/16	9.00	4.28	130.5 K=1.00	8.771	0.7150	-5652.83	6271.25	0.901 ✔
T4	100 - 80	L2 1/2x2 1/2x3/16	11.48	5.51	133.7 K=1.00	8.359	0.9020	-6284.01	7540.03	0.833 ✔
T5	80 - 60	L3x3x3/16	13.20	6.33	127.4 K=1.00	9.196	1.0900	-6573.93	10023.70	0.656 ✔
T6	60 - 40	L3x3x3/16	14.99	7.14	143.7 K=1.00	7.232	1.0900	-6886.05	7883.35	0.873 ✔
T7	40 - 20	L3 1/2x3 1/2x1/4	17.27	8.35	144.4 K=1.00	7.165	1.6900	-8281.14	12109.70	0.684 ✔
T8	20 - 0	L3 1/2x3 1/2x1/4	18.99	9.21	159.2 K=1.00	5.890	1.6900	-9185.20	9954.30	0.923 ✔

Top Girt Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P lb	Allow. P_a lb	Ratio $\frac{P}{P_a}$
T1	150 - 140	L3x3x1/4	6.00	5.76	118.4 K=1.01	10.513	1.4400	-464.37	15138.80	0.031 ✔

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	150 - 140	P2.5x.203	10.00	0.67	8.4	32.400	1.7040	6104.77	55211.20	0.111 ✔
T2	140 - 120	P2.5x.203	20.00	0.67	8.4	32.400	1.7040	36974.20	55211.20	0.670 ✔
T3	120 - 100	P4x.237	20.03	0.67	5.3	32.400	3.1741	73450.30	102839.00	0.714 ✔
T4	100 - 80	P5x.258	20.03	0.63	4.0	32.400	4.2999	104317.00	139316.00	0.749 ✔
T5	80 - 60	P6x.28	20.03	0.63	3.3	32.400	5.5813	132818.00	180836.00	0.734 ✔
T6	60 - 40	P8x.322	20.03	0.63	2.6	32.400	8.3993	158905.00	272136.00	0.584 ✔
T7	40 - 20	P8x.5	20.03	0.67	2.8	32.400	12.7627	182749.00	413512.00	0.442 ✔
T8	20 - 0	P8x.5	20.03	0.67	2.8	32.400	12.7627	204921.00	413512.00	0.496 ✔

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	150 - 140	L1 1/2x1 1/2x3/16	7.40	3.42	93.4	29.000	0.3076	1973.66	8920.90	0.221 ✔
T2	140 - 120	L2x2x3/16	7.60	3.51	71.0	29.000	0.4308	5762.75	12492.70	0.461 ✔
T3	120 - 100	L2x2x3/16	9.00	4.28	86.0	29.000	0.4308	5698.91	12492.70	0.456 ✔
T4	100 - 80	L2 1/2x2 1/2x3/16	10.45	5.01	79.3	29.000	0.5710	6238.32	16559.90	0.377 ✔
T5	80 - 60	L3x3x3/16	12.11	5.79	75.7	29.000	0.7120	6559.90	20648.90	0.318 ✔
T6	60 - 40	L3x3x3/16	14.99	7.14	92.9	29.000	0.7120	7239.26	20648.90	0.351 ✔
T7	40 - 20	L3 1/2x3 1/2x1/4	18.07	8.74	97.8	29.000	1.1034	8497.20	31999.70	0.266 ✔
T8	20 - 0	L3 1/2x3 1/2x1/4	19.81	9.61	107.4	29.000	1.1034	9745.04	31999.70	0.305 ✔

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	150 - 140	L3x3x1/4	6.00	5.76	74.3	21.600	1.4400	439.15	31104.00	0.014 ✔

Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P lb	SF*P_{allow} lb	% Capacity	Pass Fail
T1	150 - 140	Leg	P2.5x.203	2	-7855.05	72023.05	10.9	Pass
		Diagonal	L1 1/2x1 1/2x3/16	7	-1918.17	5371.44	35.7	Pass
							35.9 (b)	
		Top Girt	L3x3x1/4	4	-464.37	20180.02	2.3	Pass
T2	140 - 120	Leg	P2.5x.203	20	-36571.30	55129.81	66.3	Pass
		Diagonal	L2x2x3/16	25	-5721.60	11091.57	51.6	Pass
							70.7 (b)	
T3	120 - 100	Leg	P4x.237	47	-77936.10	118918.79	65.5	Pass
		Diagonal	L2x2x3/16	50	-5652.83	8359.58	67.6	Pass
							69.9 (b)	
T4	100 - 80	Leg	P5x.258	74	-119574.00	158527.02	75.4	Pass
		Diagonal	L2 1/2x2 1/2x3/16	76	-6284.01	10050.86	62.5	Pass
							76.5 (b)	
T5	80 - 60	Leg	P6x.28	95	-152524.00	213282.66	71.5	Pass
		Diagonal	L3x3x3/16	97	-6573.93	13361.59	49.2	Pass
							80.4 (b)	
T6	60 - 40	Leg	P8x.322	116	-183627.00	333323.30	55.1	Pass
		Diagonal	L3x3x3/16	118	-6886.05	10508.51	65.5	Pass
							88.8 (b)	
T7	40 - 20	Leg	P8x.5	137	-206519.00	473314.96	43.6	Pass
		Diagonal	L3 1/2x3 1/2x1/4	145	-8281.14	16142.23	51.3	Pass
							70.3 (b)	
T8	20 - 0	Leg	P8x.5	152	-235090.00	473314.96	49.7	Pass
							56.8 (b)	
		Diagonal	L3 1/2x3 1/2x1/4	160	-9185.20	13269.08	69.2	Pass
							80.7 (b)	
							Summary	
						Leg (T4)	75.4	Pass
						Diagonal (T6)	88.8	Pass
						Top Girt (T1)	2.3	Pass
						Bolt Checks	88.8	Pass
						RATING =	**88.8**	**Pass**

Site Name:	**Norwich, CT**
Client:	**CDT**
Project Number:	**115-23120**
Date:	**8/29/2015**

Design Base Loads (Unfactored)

Moment (Overturning) (M_u):	0.0	k-ft
Shear/Leg (V_u):	23.8	k
Compression/Leg (P_u):	240.2	k
Uplift/Leg (T_u):	203.8	k
Tower Type (GT / SST / MP):	SST	

Diameter of Caisson (d):	3.5	ft
Length of Caisson (l):	4.3	ft
Caisson Height Above Ground (h):	0.5	ft
Depth Below Ground Surface to Water Table (w):	100.0	ft
Unit Weight of Concrete:	150.0	pcf
Unit Weight of Soil:	135.0	pcf
Unit Weight of Water:	62.4	pcf
Ultimate Compressive Bearing Pressure:	60000	psf
Capacity Increase (Due to Transient Loads):	1.00	
Pullout Angle:	30.0	degrees
Rod Diameter:	1.00	in
Rod Ultimate Strength:	150	ksi
Rod Net Area:	0.85	in^2
Number of Rods:	5	
Diameter of Cored Hole:	3.00	in
Ultimate Grout / Rock Interface Bond Strength:	250	psi
Rod Embedment Length:	78	in
Rod Exposure Above Lock Off Nut in Foundation:	60	in
Rod Embedment Circle:	26	in
Free Stress Length:	150	in
Lock Off Load:	89	k

Volume of Concrete:	41.7	ft^3
Weight of Concrete (Buoyancy Effect Considered):	6.3	k
Compressive Bearing Resistance:	577.3	k
Pullout Weight:	711.9	k
Rod Bond Strength:	918.9	k
Williams Rod Strength:	637.5	k
Maximum Lock Off Load:	95.6	k > Design Lock Off Load, OK
Nominal Uplift Capacity per Leg (Factor of Safety ≥ 2.0):	318.8	k
Nominal Compressive Capacity per Leg (Factor of Safety ≥ 2.0):	288.6	k
T_u:	203.8	k
P_u:	240.9	k
$T_u/T_{Allowable}$:	0.64	Result: OK
$P_u/P_{Allowable}$:	0.83	Result: OK

Lateral Capacity

Depth (ft) Top	Depth (ft) Bottom	Ultimate Lateral Bearing Pressure (psf)	Increment (psf/ft)	γ_{Soil} (pcf)	Cohesion (psf)	ϕ (degree)
0.0	0.5	0.0	100.0	100	0	0
0.5	1.0	47.9	100.0	100	0	0
1.0	1.5	100.0	100.0	100	0	0
1.5	2.5	41636.6	567.5	135	10000	38
2.5	3.0	42204.1	567.5	135	10000	38
3.0	3.5	42274.6	567.5	135	10000	38
3.5	3.9	42327.6	567.5	135	10000	38
3.9	3.8	42389.4	567.5	135	10000	38

Total Lateral Resistance:	461.1	k
Inflection Point (Below Ground Surface):	3.8	ft
Design Overturning Moment At Inflection Point (M_{uip}):	103.1	k-ft
Nominal Moment Capacity per Leg (Factor of Safety ≥ 2.0):	206.9	k-ft
$M_{uip}/M_{Allowable}$:	0.50	Result: OK

Caisson Strength Capacity

Concrete Compressive Strength (f'_c):	3000	psi
Vertical Steel Rebar Size #:	6	
# of Vertical Steel Rebars:	23	
Vertical Steel Rebar Yield Strength (F_y):	60	ksi
Horizontal Tie / Stirrup Size #:	4	
Horizontal Tie / Stirrup Spacing:	12.0	in
Horizontal Tie / Stirrup Steel Yield Strength (F_y):	40	ksi
Load Factor:	1.30	
Design Moment (M_u):	134.1	k-ft
Nominal Moment Capacity ($\phi_B M_n$):	692.9	k-ft
$M_u/\phi_B M_n$:	0.19	Result: OK
Design Shear (V_u):	30.9	k
Nominal Shear Capacity ($\phi_V V_n$):	158.6	k
$V_u/\phi_V V_n$:	0.20	Result: OK
Design Tension (T_u):	264.9	k
Nominal Tension Capacity ($\phi_T T_n$):	546.5	k
$T_u/\phi_T T_n$:	0.48	Result: OK
Design Compression (P_u):	312.3	k
Nominal Compression Capacity ($\phi_P P_n$):	2145.5	k
$P_u/\phi_P P_n$:	0.15	Result: OK