Robinson+Cole

KENNETH C. BALDWIN

280 Trumbull Street
Hartford, CT 06103-3597
Main (860) 275-8200
Fax (860) 275-8299
kbaldwin@rc.com
Direct (860) 275-8345

Also admitted in Massachusetts

January 15, 2016

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

Re: **Notice of Exempt Modification – Facility Modification**
208 Reed Road, Tolland, Connecticut

Dear Ms. Bachman:

Cellco Partnership d/b/a Verizon Wireless ("Cellco") currently maintains fifteen (15) wireless telecommunications antennas at the 127-foot level on an existing 150-foot tower at 208 Reed Road in Tolland, Connecticut (the "Property"). The tower is owned by SBA. Cellco's use of the tower was approved by the Council in 2010. Cellco now intends to modify its facility by replacing six (6) of its existing antennas with three (3) model SBNHH-1D65B, 1900 MHz antennas and three (3) model SBNHH-1D65A, 2100 MHz antennas, all at the 127-foot level on the tower. Cellco also intends to install six (6) remote radio heads ("RRHs") 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 Steven R. Werbner, Town Manager of the Town of Tolland. A copy of this letter is also being sent to Reed Road Realty, the owner of the Property and SBA, 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. Cellco's antennas and RRHs will be installed at the 127-foot level on the existing 150-foot tower.

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

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

4. The operation of the replacement antennas will not increase radio frequency (RF) emissions at the facility to a level at or above the Federal Communications Commission (FCC) safety standard. A cumulative General Power Density table for Cellco's modified facility is included in 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 Report included in Attachment 3).

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

Sincerely,

Kenneth C. Baldwin

Enclosures
Copy to:
Stephen R. Werbner, Tolland Town Manager
Reed Road Realty
SBA
Tim Parks

ATTACHMENT 1

Product Specifications

COMMSCOPE®

SBNHH-1D65A

Andrew® Tri-band Antenna, 698–896 and 2x 1695–2360 MHz, 65° horizontal beamwidth, internal RET. Both high bands share the same electrical tilt.

POWERED BY ANDREW.

Electrical Specifications

Frequency Band, MHz	698–806	806–896	1695–1880	1850–1990	1920–2180	2300–2360
Gain, dBi	13.6	13.7	16.5	16.9	17.1	17.6
Beamwidth, Horizontal, degrees	66	61	70	65	62	61
Beamwidth, Vertical, degrees	17.6	15.9	7.1	6.6	6.2	5.5
Beam Tilt, degrees	0–18	0–18	0–10	0–10	0–10	0–10
USLS, dB	16	13	13	13	12	12
Front-to-Back Ratio at 180°, dB	25	27	28	28	27	29
CPR at Boresight, dB	20	16	20	23	17	20
CPR at Sector, dB	10	5	11	6	1	4
Isolation, dB	25	25	25	25	25	25
Isolation, Intersystem, dB	30	30	30	30	30	30
VSWR | Return Loss, dB	1.5 | 14.0	1.5 | 14.0	1.5 | 14.0	1.5 | 14.0	1.5 | 14.0	1.5 | 14.0
PIM, 3rd Order, 2 x 20 W, dBc	-153	-153	-153	-153	-153	-153
Input Power per Port, maximum, watts	350	350	350	350	350	300
Polarization	±45°	±45°	±45°	±45°	±45°	±45°

Electrical Specifications, BASTA*

Frequency Band, MHz	698–806	806–896	1695–1880	1850–1990	1920–2180	2300–2360
Gain by all Beam Tilts, average, dBi	13.1	13.1	16.1	16.5	16.7	17.2
Gain by all Beam Tilts Tolerance, dB	±0.5	±0.5	±0.5	±0.3	±0.5	±0.4
Gain by Beam Tilt, average, dBi	0 ° | 13.4	0 ° | 13.4	0 ° | 16.0	0 ° | 16.3	0 ° | 16.5	0 ° | 17.0
	9 ° | 13.1	9 ° | 13.1	5 ° | 16.2	5 ° | 16.5	5 ° | 16.8	5 ° | 17.3
	18 ° | 12.7	18 ° | 12.7	10 ° | 16.1	10 ° | 16.5	10 ° | 16.6	10 ° | 16.9
Beamwidth, Horizontal Tolerance, degrees	±3.1	±5.4	±2.8	±4	±6.6	±4.6
Beamwidth, Vertical Tolerance, degrees	±1.8	±1.4	±0.3	±0.4	±0.5	±0.3
USLS, dB	15	14	15	15	15	14
Front-to-Back Total Power at 180° ± 30°, dB	22	21	26	26	24	25
CPR at Boresight, dB	22	16	22	25	21	22
CPR at Sector, dB	10	6	12	8	5	4

* 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.

Mechanical Specifications

Color | Radome Material	Light gray | Fiberglass, UV resistant
Connector Interface | Location | Quantity	7-16 DIN Female | Bottom | 6
Wind Loading, maximum	445.0 N @ 150 km/h 100.0 lbf @ 150 km/h
Wind Speed, maximum	241.4 km/h | 150.0 mph
Antenna Dimensions, L x W x D	1409.0 mm x 301.0 mm x 180.0 mm | 55.5 in x 11.9 in x 7.1 in
Net Weight	15.2 kg | 33.5 lb

Product Specifications

COMMSCOPE®

POWERED BY ANDREW.

SBNHH-1D65B

Andrew® Tri-band Antenna, 698–896 and 2x 1695–2360 MHz, 65° horizontal beamwidth, internal RET. Both high bands share the same electrical tilt.

- Interleaved dipole technology providing for attractive, low wind load mechanical package

Electrical Specifications

Frequency Band, MHz	698–806	806–896	1695–1880	1850–1990	1920–2200	2300–2360
Gain, dBi	14.9	14.7	17.7	18.2	18.6	18.6
Beamwidth, Horizontal, degrees	68	66	69	66	63	58
Beamwidth, Vertical, degrees	12.1	10.7	5.6	5.2	5.0	4.5
Beam Tilt, degrees	0–14	0–14	0–7	0–7	0–7	0–7
USLS (First Lobe), dB	14	13	15	15	15	13
Front-to-Back Ratio at 180°, dB	27	29	28	28	28	27
CPR at Boresight, dB	20	23	20	20	17	21
CPR at Sector, dB	14	10	12	10	9	1
Isolation, dB	25	25	25	25	25	25
Isolation, Intersystem, dB	30	30	30	30	30	30
VSWR | Return Loss, dB	1.5 | 14.0	1.5 | 14.0	1.5 | 14.0	1.5 | 14.0	1.5 | 14.0	1.5 | 14.0
PIM, 3rd Order, 2 x 20 W, dBc	-153	-153	-153	-153	-153	-153
Input Power per Port, maximum, watts	350	350	350	350	350	300
Polarization	±45°	±45°	±45°	±45°	±45°	±45°
Impedance	50 ohm	50 ohm	50 ohm	50 ohm	50 ohm	50 ohm

Electrical Specifications, BASTA*

Frequency Band, MHz	698–806	806–896	1695–1880	1850–1990	1920–2200	2300–2360
Gain by all Beam Tilts, average, dBi	14.5	14.3	17.4	17.9	18.2	18.3
Gain by all Beam Tilts Tolerance, dB	±0.5	±0.8	±0.4	±0.3	±0.5	±0.3
Gain by Beam Tilt, average, dBi	0 ° | 14.6	0 ° | 14.5	0 ° | 17.4	0 ° | 17.8	0 ° | 18.1	0 ° | 18.2
	7 ° | 14.6	7 ° | 14.4	3 ° | 17.5	3 ° | 17.9	3 ° | 18.3	3 ° | 18.4
	14 ° | 14.2	14 ° | 13.6	7 ° | 17.4	7 ° | 17.9	7 ° | 18.2	7 ° | 18.4
Beamwidth, Horizontal Tolerance, degrees	±2.2	±3.4	±2	±4.6	±5.7	±4.3
Beamwidth, Vertical Tolerance, degrees	±0.8	±1	±0.3	±0.2	±0.3	±0.2
USLS, beampeak to 20° above beampeak, dB	16	14	16	16	16	15
Front-to-Back Total Power at 180° ± 30°, dB	25	26	27	26	26	26
CPR at Boresight, dB	22	23	21	20	20	22
CPR at Sector, dB	13	11	16	12	11	4

* 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® multiband with internal RET
Band	Multiband
Brand	DualPol® | Teletilt®
Operating Frequency Band	1695 – 2360 MHz | 698 – 896 MHz
Performance Note	Outdoor usage

Product Specifications

SBNHH-1D65B

Mechanical Specifications

Color	Light gray
Lightning Protection	dc Ground
Radiator Material	Aluminum | Low loss circuit board
Radome Material	Fiberglass, UV resistant
Reflector Material	Aluminum
RF Connector Interface	7-16 DIN Female
RF Connector Location	Bottom
RF Connector Quantity, total	6
Wind Loading, maximum	617.7 N @ 150 km/h 138.9 lbf @ 150 km/h
Wind Speed, maximum	241 km/h | 150 mph

Dimensions

Depth	180.0 mm | 7.1 in
Length	1851.0 mm | 72.9 in
Width	301.0 mm | 11.9 in
Net Weight	18.4 kg | 40.6 lb

Remote Electrical Tilt (RET) Information

Input Voltage	10–30 Vdc
Power Consumption, idle state, maximum	2.0 W
Power Consumption, normal conditions, maximum	13.0 W
Protocol	3GPP/AISG 2.0 (Multi-RET)
RET Interface	8-pin DIN Female | 8-pin DIN Male
RET Interface, quantity	1 female | 1 male
RET System	Teletilt®

Packed Dimensions

Depth	299.0 mm | 11.8 in
Length	1970.0 mm | 77.6 in
Width	409.0 mm | 16.1 in
Shipping Weight	31.0 kg | 68.3 lb

Regulatory Compliance/Certifications

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

Included Products

Product Specifications

SBNHH-1D65B

BSAMNT-1 — Wide Profile Antenna 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.

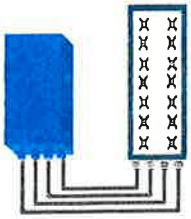
Its compactness and slim design makes the Alcatel-Lucent B13 RRH4x30-4R easy to install close to the antenna: operators can therefore locate this Remote Radio Head where RF design conditions are deemed ideal, minimizing trade-offs between available sites and RF optimum sites, together with reducing the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

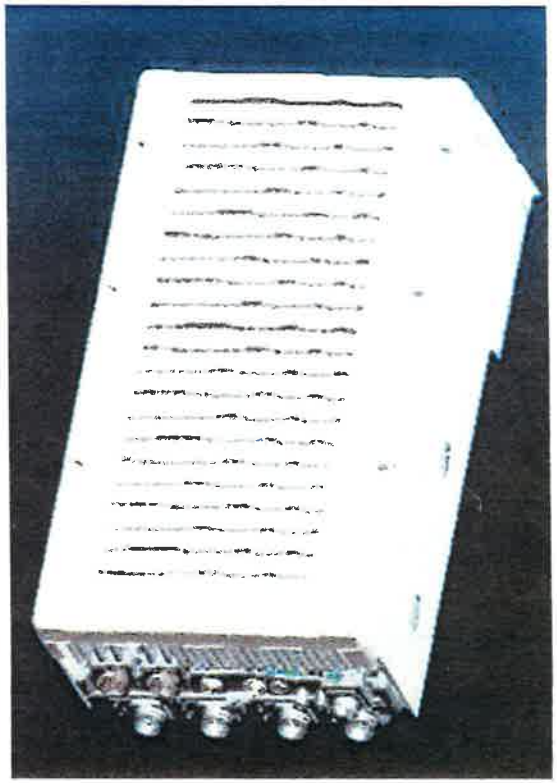
		RRH2x60
RF Output Power		2x60W
Instantaneous Bandwidth		20MHz
Transmitter		2 TX
Receiver	1900 HW version	2 Branch RX – LA6.0.1
	1900A HW version	4 Branch RX – LR13.3
Features		AISG 2.0 for RET/TMA
		Internal Smart Bias-T
Power		-48VDC
CPRI Ports		2 CPRI Rate 3 Ports
External Alarms		4 External User Alarms
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

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)

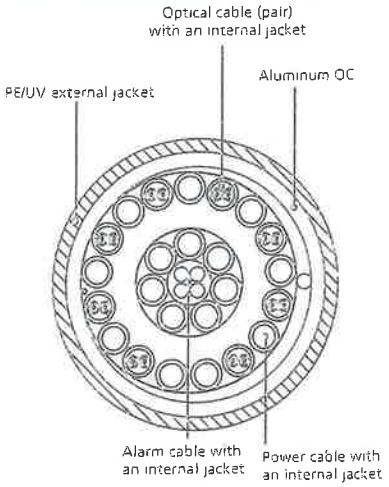


Figure 2: Construction Detail

* This data is provisional and subject to change

ATTACHMENT 2

	General	Power	Density					
Site Name: Tolland 2								
Tower Height: 150'								
CARRIER	**# OF CHAN.**	**WATTS ERP**	**HEIGHT**	**CALC. POWER DENS**	**FREQ.**	**MAX. PERMISS. EXP.**	**FRACTION MPE**	**Total**
*Nextel	9	100	148	0.0161	851	0.5673	0.28%	
*T-Mobile	6	1102	140.5	0.1314	1900	1.0000	1.31%	
*T-Mobile	1	865	140.5	0.0172	700	1.0000	0.17%	
Verizon	**1**	**1665**	**127**	**0.0371**	**1970**	**1.0000**	**3.71%**	
Verizon	**9**	**424**	**127**	**0.0851**	**869**	**0.5793**	**14.69%**	
Verizon	**1**	**1585**	**127**	**0.0353**	**2145**	**1.0000**	**3.53%**	
Verizon	**1**	**850**	**127**	**0.0189**	**746**	**0.4973**	**3.81%**	
								27.5%
* Source: Siting Council								

ATTACHMENT 3

Tower Engineering Solutions
Phone (972) 483-0607, Fax (972) 975-9615
8445 Freeport Parkway, Suite 375, Irving, Texas 75063

Structural Analysis Report

Existing 150 ft EEI Monopole

Customer Name: SBA Communications Corp

Customer Site Number: CT46129-A

Customer Site Name: Tolland-reed Rd

Carrier Name: Verizon

Carrier Site ID / Name: Tolland 2

Site Location: 208 Reed Road

Tolland, Connecticut

Tolland County

Latitude: 41.853361

Longitude: -72.406139

Analysis Result:

Max Structural Usage: 77.8% [Pass]

Max Foundation Usage: 78% [Pass]

Report Prepared By : Tawfeeq Alajaj

Introduction

The purpose of this report is to summarize the analysis results on the 150 ft EEI Monopole to support the proposed antennas and transmission lines in addition to those currently installed. Any modification listed under Sources of Information was assumed completed and was included in this analysis.

Sources of Information

Tower Drawings	Structure design report prepared by EEI. job #:3238 dated 12/17/1997
Foundation Drawing	Foundation report prepared by EEI. job #:3238 dated 12/17/1997
Geotechnical Report	Geotechnical report prepared by APPLEID EARTH TECHNOLOGIES. dated 12/10/2007
Modification Drawings	N/A

Analysis Criteria

The analysis was performed in accordance with the requirements and stipulations of the ANSI/TIA/EIA 222-F. In accordance with this standard, the structure was analyzed using **TESPoles,** a proprietary analysis software. The program considers the structure as an elastic 3-D model with second-order effects and temperature effects incorporated in the analysis. The analysis was performed using multiple wind directions.

Basic Wind Speed Used in the Analysis:	85.0 mph (fastest mile)
Basic Wind Speed with Ice:	74 mph (fastest mile) with 1/2" radial ice concurrent
Operational Wind Speed:	50 mph + 0" Radial ice
Standard/Codes:	ANSI/TIA/EIA 222-F / 2005 Connecticut State Building Code

Existing Antennas, Mounts and Transmission Lines

The table below summarizes the antennas, mounts and transmission lines that were considered in the analysis as existing on the tower.

Items	Elevation (ft)	Qty.	Antenna Descriptions	Mount Type & Qty.	Transmission Lines	Owner
1	149.08	3	Scala - AP11-880/090/XP - Panel	Low Profile Platform	(15) 1 1/4"	Sprint
2		9	Andrew - DB844H90E-XY - Panel			
3	140.5	3	EMS - RR90-17-00DP - Panel	(3) Side Arm	(12) 1-5/8"	T-Mobile
4	139.3	3	Kathrein 782 11056	(3) Side Arm		
5		3	Andrew - LNX-6515DS - Panel			
6	127.0	4	Antel - LPA-80080/6CF - Panel	Low Profile Platform	(1) 1-5/8" Fiber (12) 1 5/8"	Verizon
7		3	Antel BXA-70063-6CF-EDIN			
8		6	FD9R6004/2CL-3CL Diplexer			
9		2	Antel 80063/6			
10		6	Kathrein 742213_2110			
11		3	ALU RRH 2x40 AWS			
12		1	RFS DB-T1-6Z-8AB-0Z			

Proposed Carrier's Final Configuration of Antennas, Mounts and Transmission Lines

Information pertaining to the proposed carrier's final configuration of antennas and transmission lines was provided by SBA Communications Corp. The proposed antennas and lines are listed below.

Items	Elevation (ft)	Qty.	Antenna Descriptions	Mount Type & Qty.	Transmission Lines	Owner
6	127.0	2	Antel - LPA-80063/6CF - Panel	Low Profile Platform	(11) 1 5/8" (2) 1 5/8" Fiber Hybrid	Verizon
7		4	Antel - LPA-80080/6CF - Panel			
8		3	Commscope - SBNHH-1D65A - Panel			
9		3	Commscope - SBNHH-1D65B - Panel			
10		3	Amphenol Antel - BXA-70063-6CF-2 - Panel			
11		2	RFs DB-T1-6Z-8AB-0Z			
12		6	RFs FD9R6004/2CL-3CL Diplexer			
13		3	ALU RRH2x60-700			
14		3	ALU RRH2X60-AWS			
15		3	ALU RRH2X60-PCS			

All transmission lines are considered running inside of the pole shafts.

Analysis Results

The results of the structural analysis, performed for the wind and ice loading and antenna equipment as defined above, are summarized as the following:

	Pole shafts	Anchor Bolts	Base Plate
Max. Usage:	**69.1%**	**57.5%**	**77.8%**
Pass/Fail	**Pass**	**Pass**	**Pass**

Foundations

	Moment (Kip-Ft)	Shear (Kips)
Original Design Reactions	4611.0	39.0
Analysis Reactions	3582.1	34.9
% of Design Reactions	77.7%	89.4%

The foundation has been investigated using the supplied documents and soils report and was found adequate. Therefore, no modification to the foundation will be required.

Operational Condition (Rigidity):

Operational characteristics of the tower are found to be within the limits prescribed by ANSI/TIA/EIA 222-F for the installed antennas. Maximum twist/sway at the elevation of the proposed equipment is 1.2714 degrees under the operational wind speed as specified in the Analysis Criteria.

Conclusions

Based on the analysis results, the existing structure and its foundation were found to be adequate to safely support the existing and proposed equipment and meet the minimum requirements per the ANSI/TIA/EIA 222-F Standard under the design basic wind speed as specified in the Analysis Criteria.

Standard Conditions

1. This analysis was performed based on the information supplied to **(TES) Tower Engineering Solutions, LLC.** Verification of the information provided was not included in the Scope of Work for **TES**. The accuracy of the analysis is dependent on the accuracy of the information provided.

2. The analysis is based on the presumption that the tower members and components along with any existing reinforcement items have been correctly and properly designed, manufactured, installed and maintained.

3. All the existing structural members were assumed to be in good condition with no physical damage or deterioration associated with corrosion.

4. An initial tension of 10% of the break strength on all the existing guy wires was assumed in all the structural analyses of guyed towers unless different values were provided by the client. **TES** cannot take responsibility for the deviations in the analysis results because of differences in the initial tension forces of the existing guy wires.

5. Secondary component or connection secondary components, welds and bolts are assumed to be able to carry their intended original design loads. **TES** cannot take responsibility for verification of the adequacy on the connections, bolts and welds present in the structure.

6. The analyses will be performed based on the codes as specified by the client or based on the best knowledge of the engineering staff of **TES**. In the absence of information to the contrary, all work will be performed in accordance with the latest relevant revision of ANSI/TIA-222. If wind speed or/and ice loads are different from the minimum values recommended by the EIA/TIA-222 standard or other codes, **TES** should be notified in writing and the applicable minimum values provided by the client.

7. The configuration of the existing mounts, antennas, coax and other appurtenances were supplied by the customer for the current structural analysis. **TES** has not visited the tower site to verify the adequacy of the information provided. If there is any discrepancy found in the report regarding the existing conditions, **TES** should be notified immediately to evaluate the effect of the discrepancy on the analysis results.

8. The client will assume responsibility for rework associated with the differences in initially provided information, including tower and foundation information, existing and/or proposed equipment and transmission lines.

9. If a feasibility analysis was performed, final acceptance of changed conditions shall be based upon a rigorous structural analysis.

Usage Diagram - Max Stress 69.1% at 0.0ft

Structure:	CT46129-A-SBA	**Code:**	EIA/TIA-222-F	12/14/2015
Site Name:	Tolland-reed Rd	**Exposure:**	C	
Height:	150.00 (ft)	**Gh:**	1.69	
Base Elev:	0.000 (ft)			Page: 1

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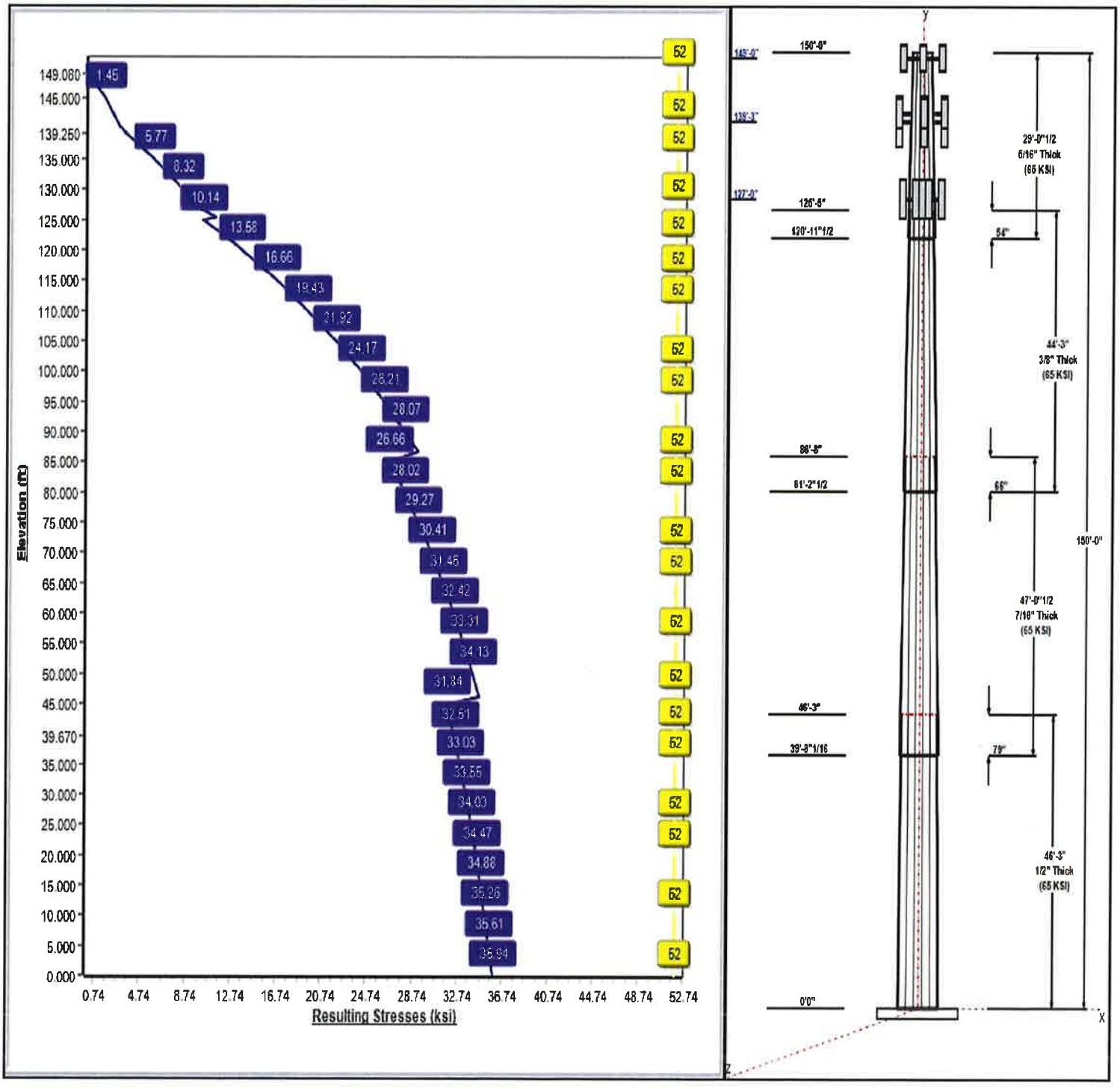
Dead Load Factor: 1.00
Wind Load Factor: 1.00

52 Alllowable Stress
36 Resulting Stress

Load Case : 85 mph Wind with 0 in Ice

Iterations: 23



Structure: CT46129-A-SBA

Type: Tapered
Site Name: Tolland-reed Rd
Height: 150.00 (ft)
Base Elev: 0.00 (ft)

Base Shape: 12 Sided
Taper: 0.22340

12/14/2015

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Shaft Properties

Seq	Length (ft)	Top (in)	Bottom (in)	Thick (in)	Joint Type	Taper	Grade (ksi)
1	46.25	45.67	56.00	0.500		0.22340	65
2	47.04	37.50	48.01	0.438	Slip	0.22340	65
3	44.25	29.60	39.48	0.375	Slip	0.22340	65
4	29.04	24.74	31.23	0.313	Slip	0.22340	65

Discrete Appurtenances

Attach Elev (ft)	Force Elev (ft)	Qty	Description	Carrier
149.08	149.08	3	AP11-880/090/XP	Sprint
149.08	149.08	9	DB844H90E-XY	Sprint
149.08	149.08	1	Low Profile Platform	Sprint
140.50	140.50	3	RR90-17-00DP	T-Mobile
140.50	140.50	3	Side Arm	T-Mobile
139.25	139.25	3	Kathrein 782 11056	T-Mobile
139.25	139.25	3	LNX-6515DS	T-Mobile
139.25	139.25	3	Side Arm	T-Mobile
127.00	127.00	3	BXA-70063-6CF-2	Verizon
127.00	127.00	2	DB-T1-6Z-8AB-0Z	Verizon
127.00	127.00	6	FD9R6004/2CL-3CL	Verizon
127.00	127.00	1	Low Profile Platform	Verizon
127.00	127.00	2	LPA-80063/6CF	Verizon
127.00	127.00	4	LPA-80080/6CF	Verizon
127.00	127.00	3	RRH2x60-700	Verizon
127.00	127.00	3	RRH2X60-AWS	Verizon
127.00	127.00	3	RRH2X60-PCS	Verizon
127.00	127.00	3	SBNHH-1D65A	Verizon
127.00	127.00	3	SBNHH-1D65B	Verizon

Linear Appurtenances

Elev From (ft)	Elev To (ft)	Placement	Description	Carrier
0.00	149.08	Inside	1 1/4" Coax	Sprint
0.00	140.50	Inside	1 5/8" Coax	T-Mobile
0.00	127.00	Inside	1 5/8" Coax	Verizon
0.00	127.00	Inside	1 5/8" Fiber Hybrid	Verizon

Anchor Bolts

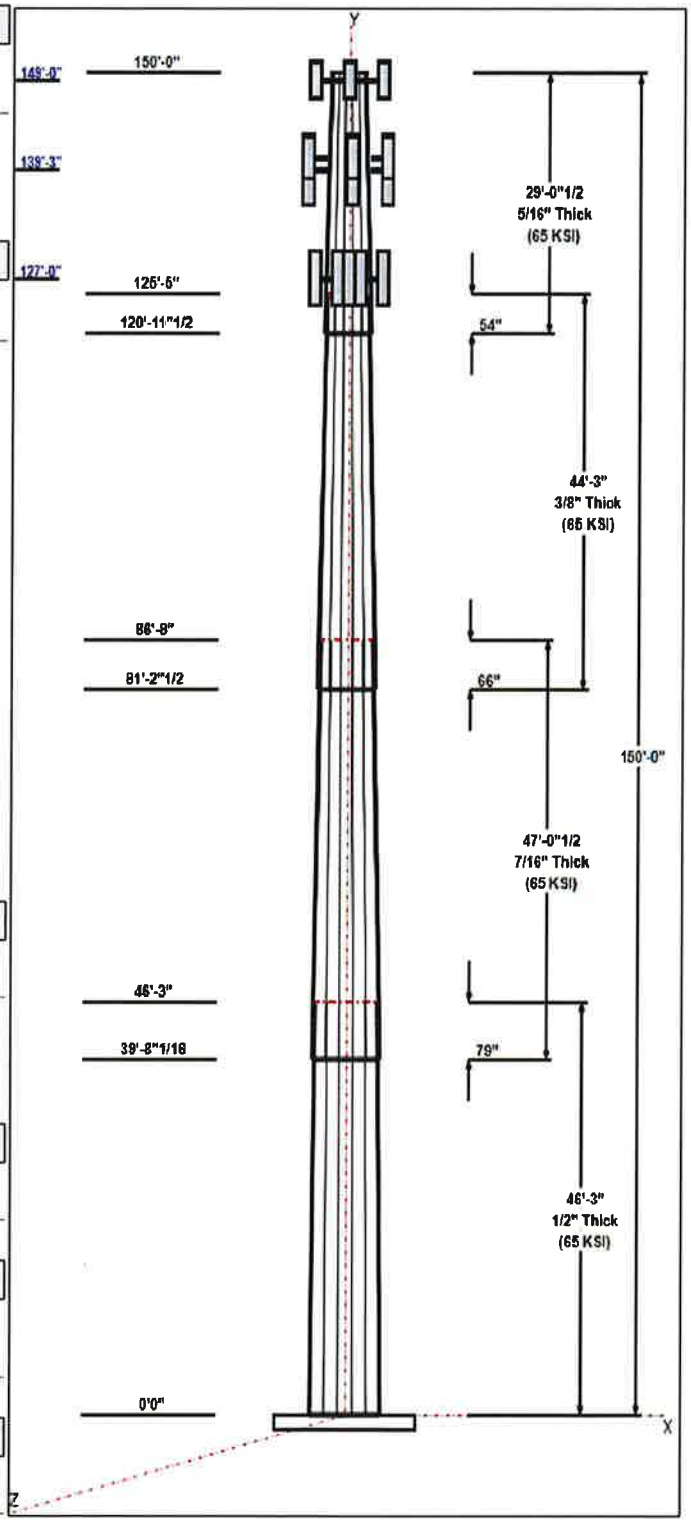
Qty	Specifications	Grade (ksi)	Arrangement
24	2.25" 18J	75.0	Radial

Base Plate

Thickness (in)	Specifications (in)	Grade (ksi)	Geometry
2.2500	71.0	60.0	Round

Reactions

Load Case	Moment	Shear	Axial
85 mph Wind with 0" Ice	3582.1	34.9	39.9
73.61 mph Wind with 0.5" Ice	2604.3	25.5	45.1
50 mph Wind with 0" Ice	1240.2	12.1	39.9



Structure: CT46129-A-SBA - Coax Line Placement

Type: Monopole
Site Name: Tolland-reed Rd
Height: 150.00 (ft)

12/14/2015

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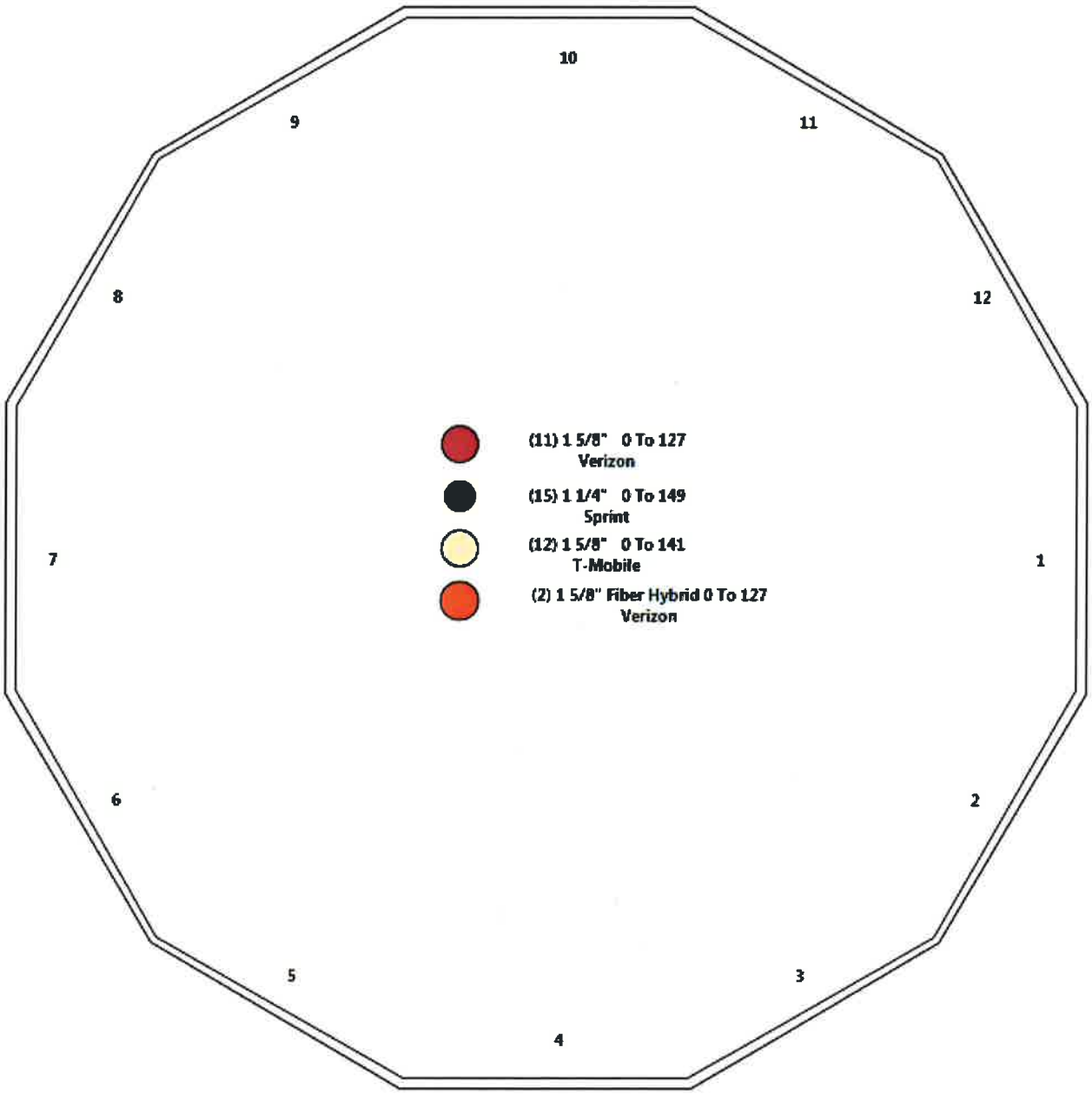

Shaft Properties

Structure:	CT46129-A-SBA	**Code:**	EIA/TIA-222-F	12/14/2015	
Site Name:	Tolland-reed Rd	**Exposure:**	C		
Height:	150.00 (ft)	**Gh:**	1.69		
Base Elev:	0.000 (ft)	**Struct Class:**	II	Page: 4	

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Sec. No.	Shape	Length (ft)	Thick (in)	Fy (ksi)	Joint Type	Overlap (in)	Weight (lb)
1	12	46.250	0.5000	65		0.00	12,754
2	12	47.040	0.4375	65	Slip	78.96	9,543
3	12	44.250	0.3750	65	Slip	66.00	6,212
4	12	29.040	0.3125	65	Slip	54.00	2,751
					Total Shaft Weight:		**31,260**

	Bottom						Top						
Sec. No.	Dia (in)	Elev (ft)	Area (sqin)	Ix (in^4)	W/t Ratio	D/t Ratio	Dia (in)	Elev (ft)	Area (sqin)	Ix (in^4)	W/t Ratio	D/t Ratio	Taper
1	56.00	0.00	89.36	35131.02	27.86	112	45.67	46.25	72.72	18936.3	22.32	91.33	0.223400
2	48.01	39.67	67.02	19362.54	27.26	109.7	37.50	86.71	52.22	9157.23	20.82	85.72	0.223400
3	39.48	81.21	47.22	9218.48	26.06	105.2	29.60	125.4	35.29	3846.04	19.00	78.92	0.223400
4	31.23	120.9	31.11	3794.91	24.63	99.92	24.74	150.0	24.58	1872.10	19.06	79.16	0.223400

Loading Summary

Structure:	CT46129-A-SBA	**Code:**	EIA/TIA-222-F	12/14/2015	
Site Name:	Tolland-reed Rd	**Exposure:**	C		
Height:	150.00 (ft)	**Gh:**	1.69		
Base Elev:	0.000 (ft)	**Struct Class:**	II	Page: 5	

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Discrete Appurtenances

				No Ice			Ice				
No.	Elev (ft)	Description	Qty	Weight (lb)	CaAa (sf)	CaAa Factor	Weight (lb)	CaAa (sf)	CaAa Factor	Hor. Ecc. (ft)	Vert Ecc (ft)
1	149.0	AP11-880/090/XP	3	17.60	4.83	0.72	0.00	0.000	0.72	0.00	0.00
2	149.0	DB844H90E-XY	9	14.00	3.73	1.12	0.00	4.290	1.12	0.00	0.00
3	149.0	Low Profile Platform	1	1200.00	25.00	1.00	1500.00	31.00	1.00	0.00	0.00
4	140.5	RR90-17-00DP	3	13.50	4.36	0.73	0.00	0.000	0.73	0.00	0.00
5	140.5	Side Arm	3	200.00	8.50	1.00	250.00	10.50	1.00	0.00	0.00
6	139.2	Kathrein 782 11056	3	12.60	0.60	0.76	17.30	0.760	0.76	0.00	0.00
7	139.2	LNX-6515DS	3	49.80	11.41	0.80	115.60	12.34	0.80	0.00	0.00
8	139.2	Side Arm	3	200.00	8.50	1.00	250.00	10.50	1.00	0.00	0.00
9	127.0	BXA-70063-6CF-2	3	17.00	7.73	0.73	59.50	8.540	0.73	0.00	0.00
10	127.0	DB-T1-6Z-8AB-0Z	2	18.90	5.60	0.71	46.00	5.870	0.71	0.00	0.00
11	127.0	FD9R6004/2CL-3CL Diplexer	6	3.10	0.37	0.62	5.40	0.500	0.62	0.00	0.00
12	127.0	Low Profile Platform	1	1200.00	25.00	1.00	1500.00	31.00	1.00	0.00	0.00
13	127.0	LPA-80063/6CF	2	27.00	9.60	0.94	0.00	0.000	0.94	0.00	0.00
14	127.0	LPA-80080/6CF	4	21.00	4.33	1.70	0.00	0.000	1.70	0.00	0.00
15	127.0	RRH2x60-700	3	60.00	3.96	0.76	80.10	4.230	0.76	0.00	0.00
16	127.0	RRH2X60-AWS	3	60.00	3.96	0.76	80.10	4.230	0.76	0.00	0.00
17	127.0	RRH2X60-PCS	3	55.00	2.57	0.89	70.90	2.760	0.89	0.00	0.00
18	127.0	SBNHH-1D65A	3	33.50	6.36	0.83	68.80	6.740	0.83	0.00	0.00
19	127.0	SBNHH-1D65B	3	40.60	8.33	0.83	87.00	8.800	0.83	0.00	0.00
		Totals:	**61**	**4,999.20**			**6,362.30**				

Linear Appurtenances

			No Ice		Ice		
Bottom Elev. (ft)	Top Elev. (ft)	Description	Weight (lb/ft)	CaAa (sf/ft)	Weight (lb/ft)	CaAa (sf/ft)	Exposed
0.00	149.0	(15) 1 1/4" Coax	9.90	0.00	9.90	0.00	Inside
0.00	140.5	(12) 1 5/8" Coax	12.48	0.00	12.48	0.00	Inside
0.00	127.0	(11) 1 5/8" Coax	3.12	0.00	3.12	0.00	Inside
0.00	127.0	(2) 1 5/8" Fiber Hybrid	1.10	0.00	1.10	0.00	Inside
		Totals:	**3,765.27**		**3,765.27**		

Shaft Section Properties

Structure: CT46129-A-SBA
Site Name: Tolland-reed Rd
Height: 150.00 (ft)
Base Elev: 0.000 (ft)

Code: EIA/TIA-222-F
Exposure: C
Gh: 1.69
Struct Class: II

12/14/2015

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Increment Length: 5 (ft)

Elev (ft)	Description	Thick (in)	Dia (in)	Area (in^2)	Ix (in^4)	W/t Ratio	D/t Ratio	Fy (ksi)	Fb (ksi)	Weight (lb)
0.00		0.5000	56.000	89.355	35131.0	27.87	112.00	65	52	0.0
5.00		0.5000	54.883	87.557	33052.3	27.27	109.77	65	52	1505.0
10.00		0.5000	53.766	85.758	31057.2	26.67	107.53	65	52	1474.4
15.00		0.5000	52.649	83.960	29144.0	26.07	105.30	65	52	1443.8
20.00		0.5000	51.532	82.162	27311.1	25.47	103.06	65	52	1413.2
25.00		0.5000	50.415	80.363	25556.7	24.87	100.83	65	52	1382.6
30.00		0.5000	49.298	78.565	23879.1	24.28	98.60	65	52	1352.0
35.00		0.5000	48.181	76.766	22276.5	23.68	96.36	65	52	1321.4
39.67	Bot - Section 2	0.5000	47.138	75.087	20846.1	23.12	94.28	65	52	1206.5
40.00		0.5000	47.064	74.968	20747.4	23.08	94.13	65	52	159.5
45.00		0.5000	45.947	73.170	19289.8	22.48	91.89	65	52	2385.3
46.25	Top - Section 1	0.4375	46.543	64.951	17622.6	26.36	106.38	65	52	587.4
50.00		0.4375	45.705	63.771	16679.4	25.85	104.47	65	52	821.3
55.00		0.4375	44.588	62.197	15474.9	25.16	101.92	65	52	1071.6
60.00		0.4375	43.471	60.623	14329.8	24.48	99.36	65	52	1044.8
65.00		0.4375	42.354	59.050	13242.7	23.80	96.81	65	52	1018.1
70.00		0.4375	41.237	57.476	12211.9	23.11	94.26	65	52	991.3
75.00		0.4375	40.120	55.903	11236.1	22.43	91.70	65	52	964.5
80.00		0.4375	39.003	54.329	10313.8	21.74	89.15	65	52	937.7
81.21	Bot - Section 3	0.4375	38.733	53.948	10098.4	21.58	88.53	65	52	222.9
85.00		0.4375	37.886	52.756	9443.3	21.06	86.60	65	52	1290.5
86.71	Top - Section 2	0.3750	38.254	45.739	8376.6	25.19	102.01	65	52	572.9
90.00		0.3750	37.519	44.851	7898.4	24.66	100.05	65	52	507.1
95.00		0.3750	36.402	43.503	7207.0	23.87	97.07	65	52	751.6
100.00		0.3750	35.285	42.154	6557.3	23.07	94.09	65	52	728.7
105.00		0.3750	34.168	40.805	5947.8	22.27	91.11	65	52	705.7
110.00		0.3750	33.051	39.456	5377.2	21.47	88.14	65	52	682.8
115.00		0.3750	31.934	38.107	4844.4	20.67	85.16	65	52	659.8
120.00		0.3750	30.817	36.759	4348.0	19.88	82.18	65	52	636.9
120.96	Bot - Section 4	0.3750	30.603	36.500	4256.8	19.72	81.61	65	52	119.7
125.00		0.3750	29.700	35.410	3886.8	19.08	79.20	65	52	915.7
125.46	Top - Section 3	0.3125	30.222	30.097	3436.6	23.77	96.71	65	52	102.5
127.00		0.3125	29.878	29.750	3319.4	23.48	95.61	65	52	156.8
130.00		0.3125	29.208	29.076	3098.7	22.90	93.47	65	52	300.3
135.00		0.3125	28.091	27.952	2753.1	21.94	89.89	65	52	485.1
139.25		0.3125	27.142	26.997	2480.3	21.13	86.85	65	52	397.3
140.00		0.3125	26.974	26.828	2434.1	20.98	86.32	65	52	68.7
140.50		0.3125	26.862	26.716	2403.7	20.89	85.96	65	52	45.5
145.00		0.3125	25.857	25.704	2140.8	20.03	82.74	65	52	401.3
149.08		0.3125	24.946	24.787	1919.8	19.25	79.83	65	52	350.5
150.00		0.3125	24.740	24.580	1872.1	19.07	79.17	65	52	77.3
										31259.9

Wind Loading - Shaft

Structure: CT46129-A-SBA
Site Name: Tolland-reed Rd
Height: 150.00 (ft)
Base Elev: 0.000 (ft)

Code: EIA/TIA-222-F
Exposure: C
Gh: 1.69
Struct Class: II

12/14/2015
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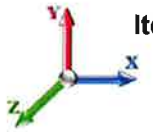
Load Case: 85 mph Wind with 0" Ice
Dead Load Factor 1.00
Wind Load Factor 1.00



Iterations: 23

Elev (ft)	Description	Kzt	Kz	qz (psf)	qzGh (psf)	C (mph-ft)	Cf	Ice Thick (in)	Tributary (ft)	Aa (sf)	CfAa (sf)	Wind Force X (lb)	Dead Load Ice (lb)	Tot Dead Load (lb)
0.00		0.00	1.00	18.496	31.26	396.67	1.030	0.000	0.00	0.000	0.00	0.0	0.0	0.0
5.00		0.00	1.00	18.496	31.26	388.75	1.030	0.000	5.00	23.101	23.79	743.7	0.0	1505.0
10.00		0.00	1.00	18.496	31.26	380.84	1.030	0.000	5.00	22.635	23.31	728.8	0.0	1474.4
15.00		0.00	1.00	18.496	31.26	372.93	1.030	0.000	5.00	22.170	22.83	713.8	0.0	1443.8
20.00		0.00	1.00	18.496	31.26	365.02	1.030	0.000	5.00	21.704	22.36	698.8	0.0	1413.2
25.00		0.00	1.00	18.496	31.26	357.11	1.030	0.000	5.00	21.239	21.88	683.8	0.0	1382.6
30.00		0.00	1.00	18.496	31.26	349.19	1.030	0.000	5.00	20.774	21.40	668.8	0.0	1352.0
35.00		0.00	1.02	18.810	31.79	344.16	1.030	0.000	5.00	20.308	20.92	664.9	0.0	1321.4
39.67	Bot - Section 2	0.00	1.05	19.495	32.95	342.79	1.030	0.000	4.67	18.547	19.10	629.4	0.0	1206.5
40.00		0.00	1.06	19.541	33.02	342.66	1.030	0.000	0.33	1.319	1.36	44.9	0.0	159.5
45.00		0.00	1.09	20.210	34.15	340.20	1.030	0.000	5.00	19.742	20.33	694.5	0.0	2385.3
46.25	Top - Section 1	0.00	1.10	20.369	34.42	339.46	1.030	0.000	1.25	4.863	5.01	172.4	0.0	587.4
50.00		0.00	1.13	20.827	35.20	343.54	1.030	0.000	3.75	14.414	14.85	522.6	0.0	821.3
55.00		0.00	1.16	21.402	36.17	339.74	1.030	0.000	5.00	18.811	19.38	700.8	0.0	1071.6
60.00		0.00	1.19	21.941	37.08	335.37	1.030	0.000	5.00	18.346	18.90	700.7	0.0	1044.8
65.00		0.00	1.21	22.449	37.94	330.51	1.030	0.000	5.00	17.880	18.42	698.7	0.0	1018.1
70.00		0.00	1.24	22.929	38.75	325.22	1.030	0.000	5.00	17.415	17.94	695.1	0.0	991.3
75.00		0.00	1.26	23.386	39.52	319.55	1.030	0.000	5.00	16.949	17.46	690.0	0.0	964.5
80.00		0.00	1.29	23.821	40.26	313.53	1.030	0.000	5.00	16.484	16.98	683.5	0.0	937.7
81.21	Bot - Section 3	0.00	1.29	23.923	40.43	312.02	1.030	0.000	1.21	3.919	4.04	163.2	0.0	222.9
85.00		0.00	1.31	24.237	40.96	307.20	1.030	0.000	3.79	12.336	12.71	520.5	0.0	1290.5
86.71	Top - Section 2	0.00	1.32	24.375	41.19	304.97	1.030	0.000	1.71	5.478	5.64	232.4	0.0	572.9
90.00		0.00	1.33	24.636	41.63	306.72	1.030	0.000	3.29	10.387	10.70	445.4	0.0	507.1
95.00		0.00	1.35	25.020	42.28	299.89	1.030	0.000	5.00	15.400	15.86	670.7	0.0	751.6
100.00		0.00	1.37	25.389	42.91	292.83	1.030	0.000	5.00	14.935	15.38	660.0	0.0	728.7
105.00		0.00	1.39	25.745	43.51	285.54	1.030	0.000	5.00	14.469	14.90	648.4	0.0	705.7
110.00		0.00	1.41	26.090	44.09	278.05	1.030	0.000	5.00	14.004	14.42	636.0	0.0	682.8
115.00		0.00	1.43	26.423	44.66	270.36	1.030	0.000	5.00	13.539	13.94	622.7	0.0	659.8
120.00		0.00	1.45	26.747	45.20	262.50	1.030	0.000	5.00	13.073	13.47	608.7	0.0	636.9
120.96	Bot - Section 4	0.00	1.45	26.808	45.30	260.97	1.030	0.000	0.96	2.457	2.53	114.6	0.0	119.7
125.00		0.00	1.46	27.060	45.73	254.46	1.030	0.000	4.04	10.361	10.67	488.1	0.0	915.7
125.46	Top - Section 3	0.00	1.46	27.089	45.78	253.71	1.030	0.000	0.46	1.160	1.20	54.7	0.0	102.5
127.00	Appurtenance(s)	0.00	1.47	27.183	45.94	256.57	1.030	0.000	1.54	3.856	3.97	182.5	0.0	156.8
130.00		0.00	1.48	27.365	46.25	251.65	1.030	0.000	3.00	7.386	7.61	351.8	0.0	300.3
135.00		0.00	1.50	27.662	46.75	243.34	1.030	0.000	5.00	11.937	12.30	574.8	0.0	485.1
139.25	Appurtenance(s)	0.00	1.51	27.908	47.16	236.16	1.030	0.000	4.25	9.781	10.07	475.1	0.0	397.3
140.00		0.00	1.51	27.951	47.24	234.88	1.030	0.000	0.75	1.691	1.74	82.3	0.0	68.7
140.50	Appurtenance(s)	0.00	1.51	27.979	47.29	234.02	1.030	0.000	0.50	1.122	1.16	54.6	0.0	45.5
145.00		0.00	1.53	28.233	47.71	226.28	1.030	0.000	4.50	9.885	10.18	485.8	0.0	401.3
149.08	Appurtenance(s)	0.00	1.54	28.457	48.09	219.17	1.030	0.000	4.08	8.636	8.90	427.8	0.0	350.5
150.00		0.00	1.54	28.507	48.18	217.56	1.030	0.000	0.92	1.905	1.96	94.5	0.0	77.3
								Totals:	**150.00**			**19,729.9**		**31,259.9**

Discrete Appurtenance Forces

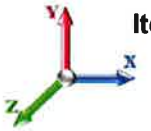
Structure:	CT46129-A-SB	**Code:**	EIA/TIA-222-F	12/14/2015	
Site Name:	Tolland-reed Rd	**Exposure:**	C		
Height:	150.00 (ft)	**Gh:**	1.69		
Base Elev:	0.000 (ft)	**Struct Class:**	II	Page: 8	

Tower Engineering Solutions

Load Case: 85 mph Wind with 0" Ice

Dead Load Factor 1.00

Wind Load Factor 1.00



Iterations: 23

No.	Elev (ft)	Description	Qty	qz (psf)	qzGh (psf)	CaAa Factor	Total CaAa (sf)	Dead Load (lb)	Horiz Ecc (ft)	Vert Ecc (ft)	Wind FX (lb)	Mom Y (lb-ft)	Mom Z (lb-ft)
1	149.08	DB844H90E-XY	9	28.457	48.093	1.12	37.60	126.00	0.000	0.000	1808.21	0.00	0.00
2	149.08	AP11-880/090/XP	3	28.457	48.093	0.72	10.43	52.80	0.000	0.000	501.74	0.00	0.00
3	149.08	Low Profile Platform	1	28.457	48.093	1.00	25.00	1200.00	0.000	0.000	1202.32	0.00	0.00
4	140.50	Side Arm	3	27.979	47.285	1.00	25.50	600.00	0.000	0.000	1205.77	0.00	0.00
5	140.50	RR90-17-00DP	3	27.979	47.285	0.73	9.55	40.50	0.000	0.000	451.50	0.00	0.00
6	139.25	Side Arm	3	27.908	47.165	1.00	25.50	600.00	0.000	0.000	1202.70	0.00	0.00
7	139.25	LNX-6515DS	3	27.908	47.165	0.80	27.38	149.40	0.000	0.000	1291.56	0.00	0.00
8	139.25	Kathrein 782 11056	3	27.908	47.165	0.76	1.37	37.80	0.000	0.000	64.52	0.00	0.00
9	127.00	SBNHH-1D65B	3	27.183	45.940	0.83	20.74	121.80	0.000	0.000	952.87	0.00	0.00
10	127.00	BXA-70063-6CF-2	3	27.183	45.940	0.73	16.93	51.00	0.000	0.000	777.70	0.00	0.00
11	127.00	SBNHH-1D65A	3	27.183	45.940	0.83	15.84	100.50	0.000	0.000	727.52	0.00	0.00
12	127.00	RRH2X60-PCS	3	27.183	45.940	0.89	6.86	165.00	0.000	0.000	315.24	0.00	0.00
13	127.00	RRH2X60-AWS	3	27.183	45.940	0.76	9.03	180.00	0.000	0.000	414.78	0.00	0.00
14	127.00	RRH2x60-700	3	27.183	45.940	0.76	9.03	180.00	0.000	0.000	414.78	0.00	0.00
15	127.00	LPA-80080/6CF	4	27.183	45.940	1.70	29.44	84.00	0.000	0.000	1352.65	0.00	0.00
16	127.00	LPA-80063/6CF	2	27.183	45.940	0.94	18.05	54.00	0.000	0.000	829.12	0.00	0.00
17	127.00	Low Profile Platform	1	27.183	45.940	1.00	25.00	1200.00	0.000	0.000	1148.50	0.00	0.00
18	127.00	FD9R6004/2CL-3CL Diplexer	6	27.183	45.940	0.62	1.38	18.60	0.000	0.000	63.23	0.00	0.00
19	127.00	DB-T1-6Z-8AB-0Z	2	27.183	45.940	0.71	7.95	37.80	0.000	0.000	365.31	0.00	0.00
						Totals:		**4,999.20**			**15,090.04**		

Total Applied Force Summary

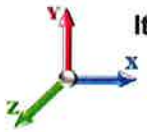
Structure:	CT46129-A-SB	**Code:**	EIA/TIA-222-F	12/14/2015
Site Name:	Tolland-reed Rd	**Exposure:**	C	
Height:	150.00 (ft)	**Gh:**	1.69	
Base Elev:	0.000 (ft)	**Struct Class:**	II	Page: 9

Tower Engineering Solutions

Load Case: 85 mph Wind with 0" Ice

Dead Load Factor 1.00

Wind Load Factor 1.00



Iterations: 23

Elev (ft)	Description	Lateral FX (-) (lb)	Axial FY (-) (lb)	Torsion MY (lb-ft)	Moment MZ (lb-ft)
0.00		0.00	0.00	0.00	0.00
5.00		743.75	1637.98	0.00	0.00
10.00		728.76	1607.38	0.00	0.00
15.00		713.78	1576.78	0.00	0.00
20.00		698.79	1546.19	0.00	0.00
25.00		683.81	1515.59	0.00	0.00
30.00		668.82	1484.99	0.00	0.00
35.00		664.93	1454.39	0.00	0.00
39.67		629.40	1330.77	0.00	0.00
40.00		44.88	168.23	0.00	0.00
45.00		694.51	2518.34	0.00	0.00
46.25		172.41	620.62	0.00	0.00
50.00		522.56	921.02	0.00	0.00
55.00		700.81	1204.60	0.00	0.00
60.00		700.67	1177.83	0.00	0.00
65.00		698.70	1151.05	0.00	0.00
70.00		695.07	1124.28	0.00	0.00
75.00		689.96	1097.51	0.00	0.00
80.00		683.51	1070.74	0.00	0.00
81.21		163.21	255.09	0.00	0.00
85.00		520.46	1391.28	0.00	0.00
86.71		232.45	618.38	0.00	0.00
90.00		445.45	594.60	0.00	0.00
95.00		670.70	884.62	0.00	0.00
100.00		660.04	861.67	0.00	0.00
105.00		648.44	838.73	0.00	0.00
110.00		635.98	815.78	0.00	0.00
115.00		622.71	792.83	0.00	0.00
120.00		608.66	769.88	0.00	0.00
120.96		114.64	145.19	0.00	0.00
125.00		488.06	1023.15	0.00	0.00
125.46		54.72	114.76	0.00	0.00
127.00	(33) appurtenances	7544.20	2390.47	0.00	0.00
130.00		351.82	367.40	0.00	0.00
135.00		574.80	597.04	0.00	0.00
139.25	(9) appurtenances	3033.92	1279.64	0.00	0.00
140.00		82.28	85.47	0.00	0.00
140.50	(6) appurtenances	1711.90	697.24	0.00	0.00
145.00		485.79	401.34	0.00	0.00
149.08	(13) appurtenances	3940.09	1729.29	0.00	0.00
150.00		94.51	77.27	0.00	0.00
	Totals:	**34,819.94**	**39,939.43**	**0.00**	**0.00**

Resulting Forces and Deflections

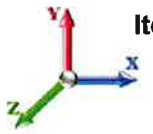
Structure:	CT46129-A-SB	**Code:**	EIA/TIA-222-F	12/14/2015	
Site Name:	Tolland-reed Rd	**Exposure:**	C		
Height:	150.00 (ft)	**Gh:**	1.69		
Base Elev:	0.000 (ft)	**Struct Class:**	II	Page: 10	

Tower Engineering Solutions

Load Case: 85 mph Wind with 0" Ice

Dead Load Factor 1.00

Wind Load Factor 1.00



Iterations: 23

Elev (ft)	Lateral FX (-) (kips)	Axial FY (-) (kips)	Lateral FZ (kips)	Moment MX (ft-kips)	Torsion MY (ft-kips)	Moment MZ (ft-kips)	Deflect X (in)	Deflect Z (in)	Deflect Resultant (in)	Rotation Sway (deg)	Rotation Twist (deg)
0.00	-34.870	-39.895	0.000	0.000	0.000	-3582.1	0.000	0.000	0.000	0.000	0.000
5.00	-34.219	-38.173	0.000	0.000	0.000	-3407.7	-0.076	0.000	0.076	-0.142	0.000
10.00	-33.576	-36.484	0.000	0.000	0.000	-3236.6	-0.302	0.000	0.302	-0.285	0.000
15.00	-32.941	-34.829	0.000	0.000	0.000	-3068.8	-0.677	0.000	0.677	-0.429	0.000
20.00	-32.314	-33.206	0.000	0.000	0.000	-2904.1	-1.205	0.000	1.205	-0.575	0.000
25.00	-31.694	-31.617	0.000	0.000	0.000	-2742.5	-1.886	0.000	1.886	-0.722	0.000
30.00	-31.083	-30.061	0.000	0.000	0.000	-2584.0	-2.722	0.000	2.722	-0.870	0.000
35.00	-30.466	-28.541	0.000	0.000	0.000	-2428.6	-3.714	0.000	3.714	-1.019	0.000
39.67	-29.847	-27.183	0.000	0.000	0.000	-2286.3	-4.782	0.000	4.782	-1.160	0.000
40.00	-29.837	-26.974	0.000	0.000	0.000	-2276.5	-4.862	0.000	4.862	-1.170	0.000
45.00	-29.128	-24.423	0.000	0.000	0.000	-2127.3	-6.169	0.000	6.169	-1.321	0.000
46.25	-28.973	-23.768	0.000	0.000	0.000	-2090.9	-6.520	0.000	6.520	-1.360	0.000
50.00	-28.484	-22.791	0.000	0.000	0.000	-1982.2	-7.635	0.000	7.635	-1.475	0.000
55.00	-27.812	-21.527	0.000	0.000	0.000	-1839.8	-9.268	0.000	9.268	-1.638	0.000
60.00	-27.134	-20.293	0.000	0.000	0.000	-1700.8	-11.071	0.000	11.071	-1.800	0.000
65.00	-26.451	-19.091	0.000	0.000	0.000	-1565.1	-13.044	0.000	13.044	-1.963	0.000
70.00	-25.767	-17.921	0.000	0.000	0.000	-1432.9	-15.186	0.000	15.186	-2.124	0.000
75.00	-25.082	-16.781	0.000	0.000	0.000	-1304.0	-17.496	0.000	17.496	-2.283	0.000
80.00	-24.381	-15.699	0.000	0.000	0.000	-1178.6	-19.971	0.000	19.971	-2.440	0.000
81.21	-24.228	-15.417	0.000	0.000	0.000	-1149.1	-20.595	0.000	20.595	-2.479	0.000
85.00	-23.668	-14.015	0.000	0.000	0.000	-1057.3	-22.611	0.000	22.611	-2.597	0.000
86.71	-23.425	-13.377	0.000	0.000	0.000	-1016.8	-23.551	0.000	23.551	-2.650	0.000
90.00	-22.981	-12.751	0.000	0.000	0.000	-939.79	-25.412	0.000	25.412	-2.750	0.000
95.00	-22.300	-11.840	0.000	0.000	0.000	-824.89	-28.378	0.000	28.378	-2.909	0.000
100.00	-21.624	-10.959	0.000	0.000	0.000	-713.39	-31.507	0.000	31.507	-3.061	0.000
105.00	-20.955	-10.106	0.000	0.000	0.000	-605.27	-34.790	0.000	34.790	-3.204	0.000
110.00	-20.294	-9.284	0.000	0.000	0.000	-500.49	-38.217	0.000	38.217	-3.336	0.000
115.00	-19.642	-8.491	0.000	0.000	0.000	-399.02	-41.775	0.000	41.775	-3.455	0.000
120.00	-18.995	-7.741	0.000	0.000	0.000	-300.81	-45.449	0.000	45.449	-3.558	0.000
120.96	-18.878	-7.589	0.000	0.000	0.000	-282.58	-46.167	0.000	46.167	-3.576	0.000
125.00	-18.330	-6.587	0.000	0.000	0.000	-206.31	-49.222	0.000	49.222	-3.642	0.000
125.46	-18.270	-6.472	0.000	0.000	0.000	-197.88	-49.573	0.000	49.573	-3.649	0.000
127.00	-10.591	-4.562	0.000	0.000	0.000	-169.75	-50.753	0.000	50.753	-3.670	0.000
130.00	-10.219	-4.210	0.000	0.000	0.000	-137.97	-53.071	0.000	53.071	-3.710	0.000
135.00	-9.609	-3.645	0.000	0.000	0.000	-86.881	-56.984	0.000	56.984	-3.761	0.000
139.25	-6.498	-2.566	0.000	0.000	0.000	-46.041	-60.345	0.000	60.345	-3.790	0.000
140.00	-6.411	-2.486	0.000	0.000	0.000	-41.168	-60.940	0.000	60.940	-3.794	0.000
140.50	-4.657	-1.903	0.000	0.000	0.000	-37.962	-61.337	0.000	61.337	-3.797	0.000
145.00	-4.146	-1.534	0.000	0.000	0.000	-17.006	-64.921	0.000	64.921	-3.811	0.000
149.08	-0.099	-0.071	0.000	0.000	0.000	-0.091	-68.179	0.000	68.179	-3.816	0.000
150.00	-0.094	0.000	0.000	0.000	0.000	0.000	0.000	0.000	68.914	-3.816	0.000

Resulting Stresses

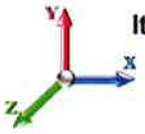
Structure:	CT46129-A-SBA	**Code:**	EIA/TIA-222-F	12/14/2015	
Site Name:	Tolland-reed Rd	**Exposure:**	C		
Height:	150.00 (ft)	**Gh:**	1.69		
Base Elev:	0.000 (ft)	**Struct Class:**	II	Page: 11	

Tower Engineering Solutions

Load Case: 85 mph Wind with 0" Ice

Dead Load Factor 1.00

Wind Load Factor 1.00



Iterations: 23

Applied Stresses

Elev (ft)	fa Axial (Y) (ksi)	fvx Shear (X) (ksi)	fvz Shear (Z) (ksi)	fvt Torsion (ksi)	fbx Bending (X) (ksi)	fbz Bending (Z) (ksi)	fb Combined (ksi)	Allow Stress (ksi)	f/Fb Stress Ratio
0.00	0.45	0.79	0.00	0.00	0.00	35.47	35.94	52.0	0.691
5.00	0.44	0.79	0.00	0.00	0.00	35.15	35.61	52.0	0.685
10.00	0.43	0.80	0.00	0.00	0.00	34.81	35.26	52.0	0.678
15.00	0.41	0.80	0.00	0.00	0.00	34.44	34.88	52.0	0.671
20.00	0.40	0.80	0.00	0.00	0.00	34.04	34.47	52.0	0.663
25.00	0.39	0.80	0.00	0.00	0.00	33.61	34.03	52.0	0.654
30.00	0.38	0.80	0.00	0.00	0.00	33.14	33.55	52.0	0.645
35.00	0.37	0.81	0.00	0.00	0.00	32.63	33.03	52.0	0.635
39.67	0.36	0.81	0.00	0.00	0.00	32.11	32.51	52.0	0.625
40.00	0.36	0.81	0.00	0.00	0.00	32.08	32.47	52.0	0.624
45.00	0.33	0.81	0.00	0.00	0.00	31.48	31.84	52.0	0.612
46.25	0.37	0.91	0.00	0.00	0.00	34.30	34.70	52.0	0.667
50.00	0.36	0.91	0.00	0.00	0.00	33.74	34.13	52.0	0.656
55.00	0.35	0.91	0.00	0.00	0.00	32.93	33.31	52.0	0.641
60.00	0.33	0.91	0.00	0.00	0.00	32.05	32.42	52.0	0.624
65.00	0.32	0.91	0.00	0.00	0.00	31.09	31.46	52.0	0.605
70.00	0.31	0.91	0.00	0.00	0.00	30.06	30.41	52.0	0.585
75.00	0.30	0.91	0.00	0.00	0.00	28.92	29.27	52.0	0.563
80.00	0.29	0.91	0.00	0.00	0.00	27.69	28.02	52.0	0.539
81.21	0.29	0.91	0.00	0.00	0.00	27.38	27.71	52.0	0.533
85.00	0.27	0.91	0.00	0.00	0.00	26.35	26.66	52.0	0.513
86.71	0.29	1.04	0.00	0.00	0.00	28.85	29.19	52.0	0.561
90.00	0.28	1.04	0.00	0.00	0.00	27.73	28.07	52.0	0.540
95.00	0.27	1.04	0.00	0.00	0.00	25.88	26.21	52.0	0.504
100.00	0.26	1.04	0.00	0.00	0.00	23.85	24.17	52.0	0.465
105.00	0.25	1.04	0.00	0.00	0.00	21.60	21.92	52.0	0.422
110.00	0.24	1.05	0.00	0.00	0.00	19.11	19.43	52.0	0.374
115.00	0.22	1.05	0.00	0.00	0.00	16.34	16.66	52.0	0.320
120.00	0.21	1.05	0.00	0.00	0.00	13.24	13.58	52.0	0.261
120.96	0.21	1.05	0.00	0.00	0.00	12.62	12.96	52.0	0.249
125.00	0.19	1.05	0.00	0.00	0.00	9.79	10.14	52.0	0.195
125.46	0.22	1.23	0.00	0.00	0.00	10.81	11.23	52.0	0.216
127.00	0.15	0.72	0.00	0.00	0.00	9.49	9.73	52.0	0.187
130.00	0.14	0.71	0.00	0.00	0.00	8.08	8.32	52.0	0.160
135.00	0.13	0.70	0.00	0.00	0.00	5.51	5.77	52.0	0.111
139.25	0.10	0.49	0.00	0.00	0.00	3.13	3.33	52.0	0.064
140.00	0.09	0.49	0.00	0.00	0.00	2.83	3.04	52.0	0.059
140.50	0.07	0.35	0.00	0.00	0.00	2.64	2.78	52.0	0.053
145.00	0.06	0.33	0.00	0.00	0.00	1.28	1.45	52.0	0.028
149.08	0.00	0.01	0.00	0.00	0.00	0.01	0.02	52.0	0.000
150.00	0.00	0.01	0.00	0.00	0.00	0.00	0.01	52.0	0.000

Wind Loading - Shaft

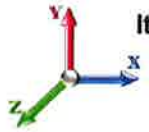
Structure: CT46129-A-SBA
Site Name: Tolland-reed Rd
Height: 150.00 (ft)
Base Elev: 0.000 (ft)

Code: EIA/TIA-222-F
Exposure: C
Gh: 1.69
Struct Class: II

12/14/2015
Page: 12

Tower Engineering Solutions

Load Case: 73.61 mph Wind with 0.5" Ice
Dead Load Factor 1.00
Wind Load Factor 1.00



Iterations: 22

Elev (ft)	Description	Kzt	Kz	qz (psf)	qzGh (psf)	C (mph-ft)	Cf	Ice Thick (in)	Tributary (ft)	Aa (sf)	CfAa (sf)	Wind Force X (lb)	Dead Load Ice (lb)	Tot Dead Load (lb)
0.00		0.00	1.00	13.871	23.44	343.51	1.030	0.500	0.00	0.000	0.00	0.0	0.0	0.0
5.00		0.00	1.00	13.871	23.44	336.66	1.030	0.500	5.00	23.517	24.22	567.8	173.4	1678.4
10.00		0.00	1.00	13.871	23.44	329.81	1.030	0.500	5.00	23.052	23.74	556.6	169.9	1644.3
15.00		0.00	1.00	13.871	23.44	322.96	1.030	0.500	5.00	22.586	23.26	545.4	166.4	1610.2
20.00		0.00	1.00	13.871	23.44	316.11	1.030	0.500	5.00	22.121	22.78	534.1	162.9	1576.1
25.00		0.00	1.00	13.871	23.44	309.25	1.030	0.500	5.00	21.656	22.31	522.9	159.4	1542.0
30.00		0.00	1.00	13.871	23.44	302.40	1.030	0.500	5.00	21.190	21.83	511.6	155.9	1507.9
35.00		0.00	1.02	14.106	23.84	298.05	1.030	0.500	5.00	20.725	21.35	508.9	152.4	1473.8
39.67	Bot - Section 2	0.00	1.05	14.620	24.71	296.86	1.030	0.500	4.67	18.937	19.50	481.9	139.3	1345.8
40.00		0.00	1.06	14.655	24.77	296.74	1.030	0.500	0.33	1.347	1.39	34.4	10.0	169.5
45.00		0.00	1.09	15.156	25.61	294.62	1.030	0.500	5.00	20.159	20.76	531.8	148.1	2533.5
46.25	Top - Section 1	0.00	1.10	15.276	25.82	293.97	1.030	0.500	1.25	4.967	5.12	132.1	36.8	624.2
50.00		0.00	1.13	15.620	26.40	297.51	1.030	0.500	3.75	14.726	15.17	400.4	108.5	929.8
55.00		0.00	1.16	16.051	27.13	294.22	1.030	0.500	5.00	19.228	19.80	537.2	141.2	1212.7
60.00		0.00	1.19	16.455	27.81	290.43	1.030	0.500	5.00	18.762	19.33	537.4	137.7	1182.5
65.00		0.00	1.21	16.836	28.45	286.22	1.030	0.500	5.00	18.297	18.85	536.2	134.2	1152.2
70.00		0.00	1.24	17.196	29.06	281.64	1.030	0.500	5.00	17.831	18.37	533.7	130.7	1121.9
75.00		0.00	1.26	17.538	29.64	276.73	1.030	0.500	5.00	17.366	17.89	530.2	127.2	1091.7
80.00		0.00	1.29	17.865	30.19	271.51	1.030	0.500	5.00	16.901	17.41	525.6	123.7	1061.4
81.21	Bot - Section 3	0.00	1.29	17.941	30.32	270.21	1.030	0.500	1.21	4.020	4.14	125.5	29.7	252.6
85.00		0.00	1.31	18.177	30.72	266.03	1.030	0.500	3.79	12.652	13.03	400.3	92.9	1383.3
86.71	Top - Section 2	0.00	1.32	18.280	30.89	264.10	1.030	0.500	1.71	5.621	5.79	178.9	41.5	614.4
90.00		0.00	1.33	18.476	31.22	265.62	1.030	0.500	3.29	10.661	10.98	342.9	78.3	585.4
95.00		0.00	1.35	18.764	31.71	259.71	1.030	0.500	5.00	15.817	16.29	516.6	115.5	867.1
100.00		0.00	1.37	19.041	32.18	253.59	1.030	0.500	5.00	15.351	15.81	508.8	112.0	840.7
105.00		0.00	1.39	19.308	32.63	247.28	1.030	0.500	5.00	14.886	15.33	500.3	108.5	814.3
110.00		0.00	1.41	19.566	33.07	240.79	1.030	0.500	5.00	14.421	14.85	491.2	105.0	787.8
115.00		0.00	1.43	19.816	33.49	234.13	1.030	0.500	5.00	13.955	14.37	481.4	101.5	761.4
120.00		0.00	1.45	20.059	33.90	227.32	1.030	0.500	5.00	13.490	13.89	471.0	98.0	734.9
120.96	Bot - Section 4	0.00	1.45	20.104	33.98	226.00	1.030	0.500	0.96	2.537	2.61	88.8	18.7	138.4
125.00		0.00	1.46	20.294	34.30	220.36	1.030	0.500	4.04	10.698	11.02	377.9	78.0	993.7
125.46	Top - Section 3	0.00	1.46	20.315	34.33	219.72	1.030	0.500	0.46	1.199	1.23	42.4	8.8	111.4
127.00	Appurtenance(s)	0.00	1.47	20.386	34.45	222.19	1.030	0.500	1.54	3.985	4.10	141.4	29.3	186.1
130.00		0.00	1.48	20.523	34.68	217.93	1.030	0.500	3.00	7.636	7.86	272.8	55.8	356.1
135.00		0.00	1.50	20.745	35.06	210.73	1.030	0.500	5.00	12.354	12.72	446.1	89.5	574.6
139.25	Appurtenance(s)	0.00	1.51	20.930	35.37	204.51	1.030	0.500	4.25	10.135	10.44	369.2	73.6	470.9
140.00		0.00	1.51	20.962	35.43	203.40	1.030	0.500	0.75	1.754	1.81	64.0	12.9	81.6
140.50	Appurtenance(s)	0.00	1.51	20.983	35.46	202.67	1.030	0.500	0.50	1.163	1.20	42.5	8.6	54.1
145.00		0.00	1.53	21.173	35.78	195.96	1.030	0.500	4.50	10.260	10.57	378.1	74.3	475.6
149.08	Appurtenance(s)	0.00	1.54	21.342	36.07	189.80	1.030	0.500	4.08	8.976	9.25	333.5	65.0	415.5
150.00		0.00	1.54	21.379	36.13	188.41	1.030	0.500	0.92	1.981	2.04	73.7	14.5	91.8
								Totals:	**150.00**			**15,175.6**		**35,049.3**

Discrete Appurtenance Forces

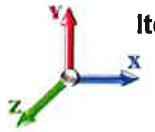
Structure:	CT46129-A-SB	**Code:**	EIA/TIA-222-F	12/14/2015	
Site Name:	Tolland-reed Rd	**Exposure:**	C		
Height:	150.00 (ft)	**Gh:**	1.69		
Base Elev:	0.000 (ft)	**Struct Class:**	II	Page: 13	

Tower Engineering Solutions

Load Case: 73.61 mph Wind with 0.5" Ice

Dead Load Factor 1.00

Wind Load Factor 1.00



Iterations: 22

No.	Elev (ft)	Description	Qty	qz (psf)	qzGh (psf)	CaAa Factor	Total CaAa (sf)	Dead Load (lb)	Horiz Ecc (ft)	Vert Ecc (ft)	Wind FX (lb)	Mom Y (lb-ft)	Mom Z (lb-ft)
1	149.08	DB844H90E-XY	9	21.342	36.068	1.12	43.24	0.00	0.000	0.000	1559.67	0.00	0.00
2	149.08	AP11-880/090/XP	3	21.342	36.068	0.72	0.00	0.00	0.000	0.000	0.00	0.00	0.00
3	149.08	Low Profile Platform	1	21.342	36.068	1.00	31.00	1500.00	0.000	0.000	1118.09	0.00	0.00
4	140.50	Side Arm	3	20.983	35.462	1.00	31.50	750.00	0.000	0.000	1117.05	0.00	0.00
5	140.50	RR90-17-00DP	3	20.983	35.462	0.73	0.00	0.00	0.000	0.000	0.00	0.00	0.00
6	139.25	Side Arm	3	20.930	35.371	1.00	31.50	750.00	0.000	0.000	1114.20	0.00	0.00
7	139.25	LNX-6515DS	3	20.930	35.371	0.80	29.62	346.80	0.000	0.000	1047.56	0.00	0.00
8	139.25	Kathrein 782 11056	3	20.930	35.371	0.76	1.73	51.90	0.000	0.000	61.29	0.00	0.00
9	127.00	SBNHH-1D65B	3	20.386	34.453	0.83	21.91	261.00	0.000	0.000	754.93	0.00	0.00
10	127.00	BXA-70063-6CF-2	3	20.386	34.453	0.73	18.70	178.50	0.000	0.000	644.36	0.00	0.00
11	127.00	SBNHH-1D65A	3	20.386	34.453	0.83	16.78	206.40	0.000	0.000	578.21	0.00	0.00
12	127.00	RRH2X60-PCS	3	20.386	34.453	0.89	7.37	212.70	0.000	0.000	253.89	0.00	0.00
13	127.00	RRH2X60-AWS	3	20.386	34.453	0.76	9.64	240.30	0.000	0.000	332.28	0.00	0.00
14	127.00	RRH2x60-700	3	20.386	34.453	0.76	9.64	240.30	0.000	0.000	332.28	0.00	0.00
15	127.00	LPA-80080/6CF	4	20.386	34.453	1.70	0.00	0.00	0.000	0.000	0.00	0.00	0.00
16	127.00	LPA-80063/6CF	2	20.386	34.453	0.94	0.00	0.00	0.000	0.000	0.00	0.00	0.00
17	127.00	Low Profile Platform	1	20.386	34.453	1.00	31.00	1500.00	0.000	0.000	1068.04	0.00	0.00
18	127.00	FD9R6004/2CL-3CL Diplexer	6	20.386	34.453	0.62	1.86	32.40	0.000	0.000	64.08	0.00	0.00
19	127.00	DB-T1-6Z-8AB-0Z	2	20.386	34.453	0.71	8.34	92.00	0.000	0.000	287.18	0.00	0.00
						Totals:		**6,362.30**			**10,333.11**		

Total Applied Force Summary

Structure:	CT46129-A-SB	**Code:**	EIA/TIA-222-F	12/14/2015	
Site Name:	Tolland-reed Rd	**Exposure:**	C		
Height:	150.00 (ft)	**Gh:**	1.69		
Base Elev:	0.000 (ft)	**Struct Class:**	II	Page: 14	

TES Tower Engineering Solutions

Load Case: 73.61 mph Wind with 0.5" Ice

Dead Load Factor 1.00

Wind Load Factor 1.00

Iterations: 22

Elev (ft)	Description	Lateral FX (-) (lb)	Axial FY (-) (lb)	Torsion MY (lb-ft)	Moment MZ (lb-ft)
0.00		0.00	0.00	0.00	0.00
5.00		567.84	1811.36	0.00	0.00
10.00		556.60	1777.26	0.00	0.00
15.00		545.36	1743.17	0.00	0.00
20.00		534.13	1709.07	0.00	0.00
25.00		522.89	1674.98	0.00	0.00
30.00		511.65	1640.89	0.00	0.00
35.00		508.90	1606.79	0.00	0.00
39.67		481.93	1470.06	0.00	0.00
40.00		34.36	178.24	0.00	0.00
45.00		531.84	2666.49	0.00	0.00
46.25		132.07	657.44	0.00	0.00
50.00		400.39	1029.50	0.00	0.00
55.00		537.22	1345.75	0.00	0.00
60.00		537.41	1315.48	0.00	0.00
65.00		536.20	1285.21	0.00	0.00
70.00		533.75	1254.94	0.00	0.00
75.00		530.16	1224.67	0.00	0.00
80.00		525.56	1194.40	0.00	0.00
81.21		125.55	284.82	0.00	0.00
85.00		400.31	1484.15	0.00	0.00
86.71		178.86	659.87	0.00	0.00
90.00		342.88	672.91	0.00	0.00
95.00		516.61	1000.15	0.00	0.00
100.00		508.81	973.70	0.00	0.00
105.00		500.31	947.26	0.00	0.00
110.00		491.15	920.81	0.00	0.00
115.00		481.38	894.37	0.00	0.00
120.00		471.01	867.92	0.00	0.00
120.96		88.78	163.89	0.00	0.00
125.00		377.92	1101.12	0.00	0.00
125.46		42.39	123.60	0.00	0.00
127.00	(33) appurtenances	4456.65	3190.66	0.00	0.00
130.00		272.78	423.20	0.00	0.00
135.00		446.12	686.54	0.00	0.00
139.25	(9) appurtenances	2592.29	1714.70	0.00	0.00
140.00		63.99	98.37	0.00	0.00
140.50	(6) appurtenances	1159.54	815.31	0.00	0.00
145.00		378.14	475.60	0.00	0.00
149.08	(13) appurtenances	3011.24	1915.49	0.00	0.00
150.00		73.73	91.81	0.00	0.00
	Totals:	**25,508.68**	**45,091.97**	**0.00**	**0.00**

Resulting Forces and Deflections

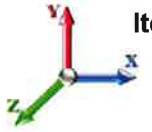
Structure:	CT46129-A-SB	**Code:**	EIA/TIA-222-F	12/14/2015	
Site Name:	Tolland-reed Rd	**Exposure:**	C		
Height:	150.00 (ft)	**Gh:**	1.69		
Base Elev:	0.000 (ft)	**Struct Class:**	II	Page: 15	

Tower Engineering Solutions

Load Case: 73.61 mph Wind with 0.5" Ice

Dead Load Factor 1.00

Wind Load Factor 1.00



Iterations: 22

Elev (ft)	Lateral FX (-) (kips)	Axial FY (-) (kips)	Lateral FZ (kips)	Moment MX (ft-kips)	Torsion MY (ft-kips)	Moment MZ (ft-kips)	Deflect X (in)	Deflect Z (in)	Deflect Resultant (in)	Rotation Sway (deg)	Rotation Twist (deg)
0.00	-25.549	-45.068	0.000	0.000	0.000	-2604.3	0.000	0.000	0.000	0.000	0.000
5.00	-25.058	-43.212	0.000	0.000	0.000	-2476.5	-0.055	0.000	0.055	-0.103	0.000
10.00	-24.572	-41.392	0.000	0.000	0.000	-2351.2	-0.219	0.000	0.219	-0.207	0.000
15.00	-24.091	-39.607	0.000	0.000	0.000	-2228.4	-0.492	0.000	0.492	-0.312	0.000
20.00	-23.617	-37.858	0.000	0.000	0.000	-2107.9	-0.876	0.000	0.876	-0.417	0.000
25.00	-23.147	-36.144	0.000	0.000	0.000	-1989.8	-1.371	0.000	1.371	-0.524	0.000
30.00	-22.684	-34.465	0.000	0.000	0.000	-1874.1	-1.978	0.000	1.978	-0.632	0.000
35.00	-22.216	-32.824	0.000	0.000	0.000	-1760.7	-2.698	0.000	2.698	-0.740	0.000
39.67	-21.744	-31.340	0.000	0.000	0.000	-1656.9	-3.473	0.000	3.473	-0.842	0.000
40.00	-21.739	-31.140	0.000	0.000	0.000	-1649.8	-3.531	0.000	3.531	-0.849	0.000
45.00	-21.199	-28.457	0.000	0.000	0.000	-1541.1	-4.480	0.000	4.480	-0.959	0.000
46.25	-21.083	-27.782	0.000	0.000	0.000	-1514.6	-4.735	0.000	4.735	-0.987	0.000
50.00	-20.711	-26.723	0.000	0.000	0.000	-1435.5	-5.544	0.000	5.544	-1.070	0.000
55.00	-20.200	-25.347	0.000	0.000	0.000	-1331.9	-6.728	0.000	6.728	-1.188	0.000
60.00	-19.683	-24.003	0.000	0.000	0.000	-1231.0	-8.036	0.000	8.036	-1.306	0.000
65.00	-19.163	-22.692	0.000	0.000	0.000	-1132.5	-9.467	0.000	9.467	-1.423	0.000
70.00	-18.640	-21.413	0.000	0.000	0.000	-1036.7	-11.020	0.000	11.020	-1.540	0.000
75.00	-18.116	-20.168	0.000	0.000	0.000	-943.57	-12.695	0.000	12.695	-1.655	0.000
80.00	-17.578	-18.968	0.000	0.000	0.000	-852.99	-14.490	0.000	14.490	-1.769	0.000
81.21	-17.463	-18.670	0.000	0.000	0.000	-831.72	-14.942	0.000	14.942	-1.797	0.000
85.00	-17.033	-17.181	0.000	0.000	0.000	-765.54	-16.403	0.000	16.403	-1.882	0.000
86.71	-16.849	-16.511	0.000	0.000	0.000	-736.41	-17.084	0.000	17.084	-1.921	0.000
90.00	-16.509	-15.823	0.000	0.000	0.000	-680.98	-18.434	0.000	18.434	-1.993	0.000
95.00	-15.987	-14.811	0.000	0.000	0.000	-598.43	-20.584	0.000	20.584	-2.108	0.000
100.00	-15.467	-13.828	0.000	0.000	0.000	-518.50	-22.852	0.000	22.852	-2.219	0.000
105.00	-14.952	-12.875	0.000	0.000	0.000	-441.17	-25.232	0.000	25.232	-2.323	0.000
110.00	-14.443	-11.952	0.000	0.000	0.000	-366.41	-27.718	0.000	27.718	-2.419	0.000
115.00	-13.939	-11.060	0.000	0.000	0.000	-294.19	-30.299	0.000	30.299	-2.507	0.000
120.00	-13.438	-10.203	0.000	0.000	0.000	-224.50	-32.967	0.000	32.967	-2.583	0.000
120.96	-13.348	-10.036	0.000	0.000	0.000	-211.60	-33.487	0.000	33.487	-2.597	0.000
125.00	-12.924	-8.947	0.000	0.000	0.000	-157.67	-35.707	0.000	35.707	-2.646	0.000
125.46	-12.877	-8.823	0.000	0.000	0.000	-151.73	-35.962	0.000	35.962	-2.652	0.000
127.00	-8.280	-5.840	0.000	0.000	0.000	-131.90	-36.820	0.000	36.820	-2.668	0.000
130.00	-7.991	-5.425	0.000	0.000	0.000	-107.06	-38.507	0.000	38.507	-2.699	0.000
135.00	-7.516	-4.756	0.000	0.000	0.000	-67.107	-41.355	0.000	41.355	-2.739	0.000
139.25	-4.845	-3.167	0.000	0.000	0.000	-35.167	-43.804	0.000	43.804	-2.761	0.000
140.00	-4.776	-3.071	0.000	0.000	0.000	-31.533	-44.238	0.000	44.238	-2.764	0.000
140.50	-3.579	-2.312	0.000	0.000	0.000	-29.145	-44.527	0.000	44.527	-2.766	0.000
145.00	-3.179	-1.855	0.000	0.000	0.000	-13.040	-47.139	0.000	47.139	-2.777	0.000
149.08	-0.078	-0.088	0.000	0.000	0.000	-0.072	-49.513	0.000	49.513	-2.780	0.000
150.00	-0.074	0.000	0.000	0.000	0.000	0.000	0.000	0.000	50.049	-2.780	0.000

Resulting Stresses

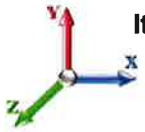
Structure:	CT46129-A-SBA	**Code:**	EIA/TIA-222-F	12/14/2015	
Site Name:	Tolland-reed Rd	**Exposure:**	C		
Height:	150.00 (ft)	**Gh:**	1.69		
Base Elev:	0.000 (ft)	**Struct Class:**	II	Page: 16	

Tower Engineering Solutions

Load Case: 73.61 mph Wind with 0.5" Ice

Dead Load Factor 1.00

Wind Load Factor 1.00



Iterations: 22

	Applied Stresses								
Elev (ft)	fa Axial (Y) (ksi)	fvx Shear (X) (ksi)	fvz Shear (Z) (ksi)	fvt Torsion (ksi)	fbx Bending (X) (ksi)	fbz Bending (Z) (ksi)	fb Combined (ksi)	Allow Stress (ksi)	f/Fb Stress Ratio
0.00	0.50	0.58	0.00	0.00	0.00	25.79	26.31	52.0	0.506
5.00	0.49	0.58	0.00	0.00	0.00	25.54	26.06	52.0	0.501
10.00	0.48	0.58	0.00	0.00	0.00	25.28	25.79	52.0	0.496
15.00	0.47	0.58	0.00	0.00	0.00	25.01	25.50	52.0	0.490
20.00	0.46	0.58	0.00	0.00	0.00	24.71	25.19	52.0	0.484
25.00	0.45	0.59	0.00	0.00	0.00	24.38	24.85	52.0	0.478
30.00	0.44	0.59	0.00	0.00	0.00	24.03	24.49	52.0	0.471
35.00	0.43	0.59	0.00	0.00	0.00	23.66	24.10	52.0	0.464
39.67	0.42	0.59	0.00	0.00	0.00	23.27	23.71	52.0	0.456
40.00	0.42	0.59	0.00	0.00	0.00	23.25	23.68	52.0	0.455
45.00	0.39	0.59	0.00	0.00	0.00	22.80	23.21	52.0	0.446
46.25	0.43	0.66	0.00	0.00	0.00	24.85	25.30	52.0	0.487
50.00	0.42	0.66	0.00	0.00	0.00	24.43	24.88	52.0	0.478
55.00	0.41	0.66	0.00	0.00	0.00	23.84	24.27	52.0	0.467
60.00	0.40	0.66	0.00	0.00	0.00	23.20	23.62	52.0	0.454
65.00	0.38	0.66	0.00	0.00	0.00	22.50	22.91	52.0	0.441
70.00	0.37	0.66	0.00	0.00	0.00	21.75	22.15	52.0	0.426
75.00	0.36	0.66	0.00	0.00	0.00	20.93	21.32	52.0	0.410
80.00	0.35	0.66	0.00	0.00	0.00	20.04	20.42	52.0	0.393
81.21	0.35	0.66	0.00	0.00	0.00	19.82	20.19	52.0	0.388
85.00	0.33	0.66	0.00	0.00	0.00	19.08	19.44	52.0	0.374
86.71	0.36	0.75	0.00	0.00	0.00	20.89	21.29	52.0	0.409
90.00	0.35	0.75	0.00	0.00	0.00	20.09	20.49	52.0	0.394
95.00	0.34	0.75	0.00	0.00	0.00	18.78	19.16	52.0	0.368
100.00	0.33	0.75	0.00	0.00	0.00	17.33	17.71	52.0	0.341
105.00	0.32	0.74	0.00	0.00	0.00	15.74	16.11	52.0	0.310
110.00	0.30	0.74	0.00	0.00	0.00	13.99	14.35	52.0	0.276
115.00	0.29	0.74	0.00	0.00	0.00	12.05	12.40	52.0	0.239
120.00	0.28	0.74	0.00	0.00	0.00	9.88	10.24	52.0	0.197
120.96	0.27	0.74	0.00	0.00	0.00	9.45	9.81	52.0	0.189
125.00	0.25	0.74	0.00	0.00	0.00	7.48	7.84	52.0	0.151
125.46	0.29	0.87	0.00	0.00	0.00	8.29	8.71	52.0	0.168
127.00	0.20	0.57	0.00	0.00	0.00	7.37	7.63	52.0	0.147
130.00	0.19	0.56	0.00	0.00	0.00	6.27	6.53	52.0	0.126
135.00	0.17	0.55	0.00	0.00	0.00	4.25	4.52	52.0	0.087
139.25	0.12	0.36	0.00	0.00	0.00	2.39	2.59	52.0	0.050
140.00	0.11	0.36	0.00	0.00	0.00	2.17	2.37	52.0	0.046
140.50	0.09	0.27	0.00	0.00	0.00	2.02	2.16	52.0	0.042
145.00	0.07	0.25	0.00	0.00	0.00	0.98	1.14	52.0	0.022
149.08	0.00	0.01	0.00	0.00	0.00	0.01	0.01	52.0	0.000
150.00	0.00	0.01	0.00	0.00	0.00	0.00	0.01	52.0	0.000

Wind Loading - Shaft

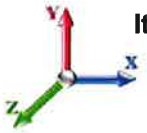
Structure: CT46129-A-SBA
Site Name: Tolland-reed Rd
Height: 150.00 (ft)
Base Elev: 0.000 (ft)

Code: EIA/TIA-222-F
Exposure: C
Gh: 1.69
Struct Class: II

12/14/2015

Tower Engineering Solutions

Load Case: 50 mph Wind with 0" Ice
Dead Load Factor 1.00
Wind Load Factor 1.00



Iterations: 22

Elev (ft)	Description	Kzt	Kz	qz (psf)	qzGh (psf)	C (mph-ft)	Cf	Ice Thick (in)	Tributary (ft)	Aa (sf)	CfAa (sf)	Wind Force X (lb)	Dead Load Ice (lb)	Tot Dead Load (lb)
0.00		0.00	1.00	6.400	10.82	233.33	1.030	0.000	0.00	0.000	0.00	0.0	0.0	0.0
5.00		0.00	1.00	6.400	10.82	228.68	1.030	0.000	5.00	23.101	23.79	257.4	0.0	1505.0
10.00		0.00	1.00	6.400	10.82	224.03	1.030	0.000	5.00	22.635	23.31	252.2	0.0	1474.4
15.00		0.00	1.00	6.400	10.82	219.37	1.030	0.000	5.00	22.170	22.83	247.0	0.0	1443.8
20.00		0.00	1.00	6.400	10.82	214.72	1.030	0.000	5.00	21.704	22.36	241.8	0.0	1413.2
25.00		0.00	1.00	6.400	10.82	210.06	1.030	0.000	5.00	21.239	21.88	236.6	0.0	1382.6
30.00		0.00	1.00	6.400	10.82	205.41	1.030	0.000	5.00	20.774	21.40	231.4	0.0	1352.0
35.00		0.00	1.02	6.509	11.00	202.45	1.030	0.000	5.00	20.308	20.92	230.1	0.0	1321.4
39.67	Bot - Section 2	0.00	1.05	6.746	11.40	201.64	1.030	0.000	4.67	18.547	19.10	217.8	0.0	1206.5
40.00		0.00	1.06	6.762	11.43	201.56	1.030	0.000	0.33	1.319	1.36	15.5	0.0	159.5
45.00		0.00	1.09	6.993	11.82	200.12	1.030	0.000	5.00	19.742	20.33	240.3	0.0	2385.3
46.25	Top - Section 1	0.00	1.10	7.048	11.91	199.68	1.030	0.000	1.25	4.863	5.01	59.7	0.0	587.4
50.00		0.00	1.13	7.207	12.18	202.08	1.030	0.000	3.75	14.414	14.85	180.8	0.0	821.3
55.00		0.00	1.16	7.406	12.52	199.85	1.030	0.000	5.00	18.811	19.38	242.5	0.0	1071.6
60.00		0.00	1.19	7.592	12.83	197.28	1.030	0.000	5.00	18.346	18.90	242.4	0.0	1044.8
65.00		0.00	1.21	7.768	13.13	194.42	1.030	0.000	5.00	17.880	18.42	241.8	0.0	1018.1
70.00		0.00	1.24	7.934	13.41	191.31	1.030	0.000	5.00	17.415	17.94	240.5	0.0	991.3
75.00		0.00	1.26	8.092	13.68	187.97	1.030	0.000	5.00	16.949	17.46	238.7	0.0	964.5
80.00		0.00	1.29	8.242	13.93	184.43	1.030	0.000	5.00	16.484	16.98	236.5	0.0	937.7
81.21	Bot - Section 3	0.00	1.29	8.278	13.99	183.54	1.030	0.000	1.21	3.919	4.04	56.5	0.0	222.9
85.00		0.00	1.31	8.387	14.17	180.70	1.030	0.000	3.79	12.336	12.71	180.1	0.0	1290.5
86.71	Top - Section 2	0.00	1.32	8.434	14.25	179.39	1.030	0.000	1.71	5.478	5.64	80.4	0.0	572.9
90.00		0.00	1.33	8.525	14.41	180.42	1.030	0.000	3.29	10.387	10.70	154.1	0.0	507.1
95.00		0.00	1.35	8.657	14.63	176.41	1.030	0.000	5.00	15.400	15.86	232.1	0.0	751.6
100.00		0.00	1.37	8.785	14.85	172.25	1.030	0.000	5.00	14.935	15.38	228.4	0.0	728.7
105.00		0.00	1.39	8.908	15.06	167.97	1.030	0.000	5.00	14.469	14.90	224.4	0.0	705.7
110.00		0.00	1.41	9.028	15.26	163.56	1.030	0.000	5.00	14.004	14.42	220.1	0.0	682.8
115.00		0.00	1.43	9.143	15.45	159.04	1.030	0.000	5.00	13.539	13.94	215.5	0.0	659.8
120.00		0.00	1.45	9.255	15.64	154.41	1.030	0.000	5.00	13.073	13.47	210.6	0.0	636.9
120.96	Bot - Section 4	0.00	1.45	9.276	15.68	153.51	1.030	0.000	0.96	2.457	2.53	39.7	0.0	119.7
125.00		0.00	1.46	9.363	15.82	149.68	1.030	0.000	4.04	10.361	10.67	168.9	0.0	915.7
125.46	Top - Section 3	0.00	1.46	9.373	15.84	149.24	1.030	0.000	0.46	1.160	1.20	18.9	0.0	102.5
127.00	Appurtenance(s)	0.00	1.47	9.406	15.90	150.92	1.030	0.000	1.54	3.856	3.97	63.1	0.0	156.8
130.00		0.00	1.48	9.469	16.00	148.03	1.030	0.000	3.00	7.386	7.61	121.7	0.0	300.3
135.00		0.00	1.50	9.572	16.18	143.14	1.030	0.000	5.00	11.937	12.30	198.9	0.0	485.1
139.25	Appurtenance(s)	0.00	1.51	9.657	16.32	138.92	1.030	0.000	4.25	9.781	10.07	164.4	0.0	397.3
140.00		0.00	1.51	9.672	16.35	138.16	1.030	0.000	0.75	1.691	1.74	28.5	0.0	68.7
140.50	Appurtenance(s)	0.00	1.51	9.681	16.36	137.66	1.030	0.000	0.50	1.122	1.16	18.9	0.0	45.5
145.00		0.00	1.53	9.769	16.51	133.11	1.030	0.000	4.50	9.885	10.18	168.1	0.0	401.3
149.08	Appurtenance(s)	0.00	1.54	9.847	16.64	128.93	1.030	0.000	4.08	8.636	8.90	148.0	0.0	350.5
150.00		0.00	1.54	9.864	16.67	127.98	1.030	0.000	0.92	1.905	1.96	32.7	0.0	77.3
								Totals:	**150.00**			**6,827.0**		**31,259.9**

Discrete Appurtenance Forces

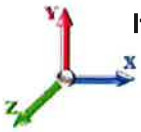
Structure:	CT46129-A-SB	**Code:**	EIA/TIA-222-F	12/14/2015	
Site Name:	Tolland-reed Rd	**Exposure:**	C		
Height:	150.00 (ft)	**Gh:**	1.69		
Base Elev:	0.000 (ft)	**Struct Class:**	II	Page: 18	

Tower Engineering Solutions

Load Case: 50 mph Wind with 0" Ice

Dead Load Factor 1.00

Wind Load Factor 1.00



Iterations: 22

No.	Elev (ft)	Description	Qty	qz (psf)	qzGh (psf)	CaAa Factor	Total CaAa (sf)	Dead Load (lb)	Horiz Ecc (ft)	Vert Ecc (ft)	Wind FX (lb)	Mom Y (lb-ft)	Mom Z (lb-ft)
1	149.08	DB844H90E-XY	9	9.847	16.641	1.12	37.60	126.00	0.000	0.000	625.68	0.00	0.00
2	149.08	AP11-880/090/XP	3	9.847	16.641	0.72	10.43	52.80	0.000	0.000	173.61	0.00	0.00
3	149.08	Low Profile Platform	1	9.847	16.641	1.00	25.00	1200.00	0.000	0.000	416.03	0.00	0.00
4	140.50	Side Arm	3	9.681	16.362	1.00	25.50	600.00	0.000	0.000	417.22	0.00	0.00
5	140.50	RR90-17-00DP	3	9.681	16.362	0.73	9.55	40.50	0.000	0.000	156.23	0.00	0.00
6	139.25	Side Arm	3	9.657	16.320	1.00	25.50	600.00	0.000	0.000	416.16	0.00	0.00
7	139.25	LNX-6515DS	3	9.657	16.320	0.80	27.38	149.40	0.000	0.000	446.91	0.00	0.00
8	139.25	Kathrein 782 11056	3	9.657	16.320	0.76	1.37	37.80	0.000	0.000	22.33	0.00	0.00
9	127.00	SBNHH-1D65B	3	9.406	15.896	0.83	20.74	121.80	0.000	0.000	329.71	0.00	0.00
10	127.00	BXA-70063-6CF-2	3	9.406	15.896	0.73	16.93	51.00	0.000	0.000	269.10	0.00	0.00
11	127.00	SBNHH-1D65A	3	9.406	15.896	0.83	15.84	100.50	0.000	0.000	251.74	0.00	0.00
12	127.00	RRH2X60-PCS	3	9.406	15.896	0.89	6.86	165.00	0.000	0.000	109.08	0.00	0.00
13	127.00	RRH2X60-AWS	3	9.406	15.896	0.76	9.03	180.00	0.000	0.000	143.52	0.00	0.00
14	127.00	RRH2x60-700	3	9.406	15.896	0.76	9.03	180.00	0.000	0.000	143.52	0.00	0.00
15	127.00	LPA-80080/6CF	4	9.406	15.896	1.70	29.44	84.00	0.000	0.000	468.05	0.00	0.00
16	127.00	LPA-80063/6CF	2	9.406	15.896	0.94	18.05	54.00	0.000	0.000	286.89	0.00	0.00
17	127.00	Low Profile Platform	1	9.406	15.896	1.00	25.00	1200.00	0.000	0.000	397.40	0.00	0.00
18	127.00	FD9R6004/2CL-3CL Diplexer	6	9.406	15.896	0.62	1.38	18.60	0.000	0.000	21.88	0.00	0.00
19	127.00	DB-T1-6Z-8AB-0Z	2	9.406	15.896	0.71	7.95	37.80	0.000	0.000	126.41	0.00	0.00
						Totals:		**4,999.20**			**5,221.47**		

Total Applied Force Summary

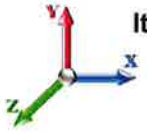
Structure:	CT46129-A-SB	**Code:**	EIA/TIA-222-F	12/14/2015	
Site Name:	Tolland-reed Rd	**Exposure:**	C		
Height:	150.00 (ft)	**Gh:**	1.69		
Base Elev:	0.000 (ft)	**Struct Class:**	II	Page: 19	

Tower Engineering Solutions

Load Case: 50 mph Wind with 0" Ice

Dead Load Factor 1.00

Wind Load Factor 1.00



Iterations: 22

Elev (ft)	Description	Lateral FX (-) (lb)	Axial FY (-) (lb)	Torsion MY (lb-ft)	Moment MZ (lb-ft)
0.00		0.00	0.00	0.00	0.00
5.00		257.35	1637.98	0.00	0.00
10.00		252.17	1607.38	0.00	0.00
15.00		246.98	1576.78	0.00	0.00
20.00		241.80	1546.19	0.00	0.00
25.00		236.61	1515.59	0.00	0.00
30.00		231.43	1484.99	0.00	0.00
35.00		230.08	1454.39	0.00	0.00
39.67		217.79	1330.77	0.00	0.00
40.00		15.53	168.23	0.00	0.00
45.00		240.31	2518.34	0.00	0.00
46.25		59.66	620.62	0.00	0.00
50.00		180.82	921.02	0.00	0.00
55.00		242.49	1204.60	0.00	0.00
60.00		242.45	1177.83	0.00	0.00
65.00		241.76	1151.05	0.00	0.00
70.00		240.51	1124.28	0.00	0.00
75.00		238.74	1097.51	0.00	0.00
80.00		236.51	1070.74	0.00	0.00
81.21		56.47	255.09	0.00	0.00
85.00		180.09	1391.28	0.00	0.00
86.71		80.43	618.38	0.00	0.00
90.00		154.13	594.60	0.00	0.00
95.00		232.08	884.62	0.00	0.00
100.00		228.39	861.67	0.00	0.00
105.00		224.38	838.73	0.00	0.00
110.00		220.06	815.78	0.00	0.00
115.00		215.47	792.83	0.00	0.00
120.00		210.61	769.88	0.00	0.00
120.96		39.67	145.19	0.00	0.00
125.00		168.88	1023.15	0.00	0.00
125.46		18.93	114.76	0.00	0.00
127.00	(33) appurtenances	2610.45	2390.47	0.00	0.00
130.00		121.74	367.40	0.00	0.00
135.00		198.89	597.04	0.00	0.00
139.25	(9) appurtenances	1049.80	1279.64	0.00	0.00
140.00		28.47	85.47	0.00	0.00
140.50	(6) appurtenances	592.35	697.24	0.00	0.00
145.00		168.09	401.34	0.00	0.00
149.08	(13) appurtenances	1363.35	1729.29	0.00	0.00
150.00		32.70	77.27	0.00	0.00
	Totals:	**12,048.42**	**39,939.43**	**0.00**	**0.00**

Resulting Forces and Deflections

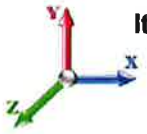
Structure:	CT46129-A-SB	**Code:**	EIA/TIA-222-F	12/14/2015	
Site Name:	Tolland-reed Rd	**Exposure:**	C		
Height:	150.00 (ft)	**Gh:**	1.69		
Base Elev:	0.000 (ft)	**Struct Class:**	II	Page: 20	

TES Tower Engineering Solutions

Load Case: 50 mph Wind with 0" Ice

Dead Load Factor 1.00

Wind Load Factor 1.00



Iterations: 22

Elev (ft)	Lateral FX (-) (kips)	Axial FY (-) (kips)	Lateral FZ (kips)	Moment MX (ft-kips)	Torsion MY (ft-kips)	Moment MZ (ft-kips)	Deflect X (in)	Deflect Z (in)	Deflect Resultant (in)	Rotation Sway (deg)	Rotation Twist (deg)
0.00	-12.065	-39.934	0.000	0.000	0.000	-1240.2	0.000	0.000	0.000	0.000	0.000
5.00	-11.840	-38.286	0.000	0.000	0.000	-1179.8	-0.026	0.000	0.026	-0.049	0.000
10.00	-11.618	-36.669	0.000	0.000	0.000	-1120.6	-0.104	0.000	0.104	-0.099	0.000
15.00	-11.398	-35.083	0.000	0.000	0.000	-1062.5	-0.235	0.000	0.235	-0.149	0.000
20.00	-11.181	-33.527	0.000	0.000	0.000	-1005.6	-0.417	0.000	0.417	-0.199	0.000
25.00	-10.967	-32.003	0.000	0.000	0.000	-949.70	-0.653	0.000	0.653	-0.250	0.000
30.00	-10.756	-30.509	0.000	0.000	0.000	-894.86	-0.943	0.000	0.943	-0.301	0.000
35.00	-10.543	-29.047	0.000	0.000	0.000	-841.08	-1.286	0.000	1.286	-0.353	0.000
39.67	-10.329	-27.713	0.000	0.000	0.000	-791.84	-1.656	0.000	1.656	-0.402	0.000
40.00	-10.326	-27.540	0.000	0.000	0.000	-788.43	-1.684	0.000	1.684	-0.405	0.000
45.00	-10.081	-25.018	0.000	0.000	0.000	-736.80	-2.136	0.000	2.136	-0.457	0.000
46.25	-10.028	-24.393	0.000	0.000	0.000	-724.20	-2.258	0.000	2.258	-0.471	0.000
50.00	-9.859	-23.465	0.000	0.000	0.000	-686.60	-2.644	0.000	2.644	-0.511	0.000
55.00	-9.627	-22.254	0.000	0.000	0.000	-637.30	-3.209	0.000	3.209	-0.567	0.000
60.00	-9.393	-21.069	0.000	0.000	0.000	-589.17	-3.834	0.000	3.834	-0.624	0.000
65.00	-9.158	-19.912	0.000	0.000	0.000	-542.21	-4.517	0.000	4.517	-0.680	0.000
70.00	-8.921	-18.782	0.000	0.000	0.000	-496.42	-5.259	0.000	5.259	-0.735	0.000
75.00	-8.685	-17.680	0.000	0.000	0.000	-451.81	-6.059	0.000	6.059	-0.791	0.000
80.00	-8.443	-16.607	0.000	0.000	0.000	-408.39	-6.917	0.000	6.917	-0.845	0.000
81.21	-8.391	-16.349	0.000	0.000	0.000	-398.17	-7.133	0.000	7.133	-0.859	0.000
85.00	-8.197	-14.957	0.000	0.000	0.000	-366.37	-7.831	0.000	7.831	-0.899	0.000
86.71	-8.113	-14.336	0.000	0.000	0.000	-352.36	-8.157	0.000	8.157	-0.918	0.000
90.00	-7.960	-13.737	0.000	0.000	0.000	-325.66	-8.802	0.000	8.802	-0.953	0.000
95.00	-7.725	-12.850	0.000	0.000	0.000	-285.86	-9.830	0.000	9.830	-1.008	0.000
100.00	-7.492	-11.986	0.000	0.000	0.000	-247.24	-10.914	0.000	10.914	-1.060	0.000
105.00	-7.261	-11.145	0.000	0.000	0.000	-209.78	-12.051	0.000	12.051	-1.110	0.000
110.00	-7.033	-10.329	0.000	0.000	0.000	-173.47	-13.239	0.000	13.239	-1.156	0.000
115.00	-6.808	-9.536	0.000	0.000	0.000	-138.31	-14.472	0.000	14.472	-1.197	0.000
120.00	-6.584	-8.768	0.000	0.000	0.000	-104.27	-15.746	0.000	15.746	-1.233	0.000
120.96	-6.543	-8.622	0.000	0.000	0.000	-97.955	-15.994	0.000	15.994	-1.239	0.000
125.00	-6.354	-7.602	0.000	0.000	0.000	-71.520	-17.053	0.000	17.053	-1.262	0.000
125.46	-6.333	-7.487	0.000	0.000	0.000	-68.598	-17.175	0.000	17.175	-1.264	0.000
127.00	-3.671	-5.154	0.000	0.000	0.000	-58.845	-17.584	0.000	17.584	-1.271	0.000
130.00	-3.543	-4.788	0.000	0.000	0.000	-47.832	-18.388	0.000	18.388	-1.285	0.000
135.00	-3.331	-4.195	0.000	0.000	0.000	-30.119	-19.744	0.000	19.744	-1.303	0.000
139.25	-2.253	-2.940	0.000	0.000	0.000	-15.961	-20.909	0.000	20.909	-1.313	0.000
140.00	-2.222	-2.855	0.000	0.000	0.000	-14.272	-21.115	0.000	21.115	-1.314	0.000
140.50	-1.614	-2.171	0.000	0.000	0.000	-13.161	-21.253	0.000	21.253	-1.315	0.000
145.00	-1.437	-1.774	0.000	0.000	0.000	-5.896	-22.496	0.000	22.496	-1.320	0.000
149.08	-0.034	-0.076	0.000	0.000	0.000	-0.032	-23.625	0.000	23.625	-1.322	0.000
150.00	-0.033	0.000	0.000	0.000	0.000	0.000	0.000	0.000	23.879	-1.322	0.000

Resulting Stresses

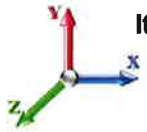
Structure:	CT46129-A-SBA	**Code:**	EIA/TIA-222-F	12/14/2015	
Site Name:	Tolland-reed Rd	**Exposure:**	C		
Height:	150.00 (ft)	**Gh:**	1.69		
Base Elev:	0.000 (ft)	**Struct Class:**	II	Page: 21	

Tower Engineering Solutions

Load Case: 50 mph Wind with 0" Ice

Dead Load Factor 1.00

Wind Load Factor 1.00



Iterations: 22

Applied Stresses

Elev (ft)	fa Axial (Y) (ksi)	fvx Shear (X) (ksi)	fvz Shear (Z) (ksi)	fvt Torsion (ksi)	fbx Bending (X) (ksi)	fbz Bending (Z) (ksi)	fb Combined (ksi)	Allow Stress (ksi)	f/Fb Stress Ratio
0.00	0.45	0.27	0.00	0.00	0.00	12.28	12.74	52.0	0.245
5.00	0.44	0.27	0.00	0.00	0.00	12.17	12.62	52.0	0.243
10.00	0.43	0.28	0.00	0.00	0.00	12.05	12.49	52.0	0.240
15.00	0.42	0.28	0.00	0.00	0.00	11.92	12.35	52.0	0.238
20.00	0.41	0.28	0.00	0.00	0.00	11.79	12.20	52.0	0.235
25.00	0.40	0.28	0.00	0.00	0.00	11.64	12.05	52.0	0.232
30.00	0.39	0.28	0.00	0.00	0.00	11.48	11.87	52.0	0.228
35.00	0.38	0.28	0.00	0.00	0.00	11.30	11.69	52.0	0.225
39.67	0.37	0.28	0.00	0.00	0.00	11.12	11.50	52.0	0.221
40.00	0.37	0.28	0.00	0.00	0.00	11.11	11.49	52.0	0.221
45.00	0.34	0.28	0.00	0.00	0.00	10.90	11.25	52.0	0.216
46.25	0.38	0.31	0.00	0.00	0.00	11.88	12.27	52.0	0.236
50.00	0.37	0.31	0.00	0.00	0.00	11.69	12.07	52.0	0.232
55.00	0.36	0.31	0.00	0.00	0.00	11.41	11.78	52.0	0.226
60.00	0.35	0.31	0.00	0.00	0.00	11.10	11.46	52.0	0.220
65.00	0.34	0.32	0.00	0.00	0.00	10.77	11.12	52.0	0.214
70.00	0.33	0.32	0.00	0.00	0.00	10.41	10.75	52.0	0.207
75.00	0.32	0.32	0.00	0.00	0.00	10.02	10.35	52.0	0.199
80.00	0.31	0.32	0.00	0.00	0.00	9.59	9.91	52.0	0.191
81.21	0.30	0.32	0.00	0.00	0.00	9.49	9.80	52.0	0.189
85.00	0.28	0.32	0.00	0.00	0.00	9.13	9.43	52.0	0.181
86.71	0.31	0.36	0.00	0.00	0.00	10.00	10.33	52.0	0.199
90.00	0.31	0.36	0.00	0.00	0.00	9.61	9.94	52.0	0.191
95.00	0.30	0.36	0.00	0.00	0.00	8.97	9.29	52.0	0.179
100.00	0.28	0.36	0.00	0.00	0.00	8.26	8.57	52.0	0.165
105.00	0.27	0.36	0.00	0.00	0.00	7.49	7.78	52.0	0.150
110.00	0.26	0.36	0.00	0.00	0.00	6.62	6.91	52.0	0.133
115.00	0.25	0.36	0.00	0.00	0.00	5.66	5.95	52.0	0.114
120.00	0.24	0.36	0.00	0.00	0.00	4.59	4.87	52.0	0.094
120.96	0.24	0.36	0.00	0.00	0.00	4.37	4.65	52.0	0.089
125.00	0.21	0.36	0.00	0.00	0.00	3.39	3.66	52.0	0.070
125.46	0.25	0.43	0.00	0.00	0.00	3.75	4.06	52.0	0.078
127.00	0.17	0.25	0.00	0.00	0.00	3.29	3.49	52.0	0.067
130.00	0.16	0.25	0.00	0.00	0.00	2.80	3.00	52.0	0.058
135.00	0.15	0.24	0.00	0.00	0.00	1.91	2.10	52.0	0.040
139.25	0.11	0.17	0.00	0.00	0.00	1.08	1.23	52.0	0.024
140.00	0.11	0.17	0.00	0.00	0.00	0.98	1.13	52.0	0.022
140.50	0.08	0.12	0.00	0.00	0.00	0.91	1.02	52.0	0.020
145.00	0.07	0.11	0.00	0.00	0.00	0.44	0.55	52.0	0.011
149.08	0.00	0.00	0.00	0.00	0.00	0.00	0.01	52.0	0.000
150.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	52.0	0.000

Reactions

Load Case	Shear FX (kips)	Shear FZ (kips)	Axial FY (kips)	Moment MX (ft-kips)	Moment MY (ft-kips)	t MZ (ft-kips)
85 mph Wind with 0" Ice	34.9	0.00	39.90	0.00	0.00	3582.14
73.61 mph Wind with 0.5" Ice	25.5	0.00	45.07	0.00	0.00	2604.30
50 mph Wind with 0" Ice	12.1	0.00	39.93	0.00	0.00	1240.21

Max Stresses

Load Case	fa Axial (Y) (ksi)	fvx Shear (X) (ksi)	fvz Shear (Z) (ksi)	fvt Torsion (ksi)	fbx Bending (X) (ksi)	fbz Bending (Z) (ksi)	Combined Stress (ksi)	Allowable Stress (ksi)	Elev (ft)	Stress Ratio
85 mph Wind with 0" Ice	0.45	0.79	0.00	0.00	0.00	35.47	35.94	52.0	0.00	0.691
73.61 mph Wind with 0.5" Ice	0.50	0.58	0.00	0.00	0.00	25.79	26.31	52.0	0.00	0.506
50 mph Wind with 0" Ice	0.45	0.27	0.00	0.00	0.00	12.28	12.74	52.0	0.00	0.245