Robinson+Cole

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Also admitted in Massachusetts

July 16, 2015

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

Re: **Notice of Exempt Modification – Facility Modification**
60 Adams Street, Manchester, Connecticut

Dear Ms. Bachman:

Cellco Partnership d/b/a Verizon Wireless ("Cellco") currently maintains twelve (12) wireless telecommunications antennas at the 90-foot level on the existing 141-foot tower at 60 Adams Street in Manchester, Connecticut (the "Property"). The tower is owned by SBA. The Council approved Cellco's shared use of this tower in 1998. Cellco now intends to modify its facility by replacing six (6) of its existing antennas with three (3) model SBNHH-1D65B, 700/2100 MHz antennas and three (3) model SBNHH-1D65B, 1900 MHz antennas, all at the same 90-foot level on the tower. Cellco also intends to replace three (3) existing remote radio heads ("RRHs") with three (3) newer model RRHs and install six (6) additional RRHs and two (2) HYBRIFLEX™ antenna cables. Included in Attachment 1 are specifications for Cellco's replacement antennas, RRHs and HYBRIFLEX™ cables.

Please accept this letter as notification pursuant to R.C.S.A. § 16-50j-73, for construction that constitutes an exempt modification pursuant to R.C.S.A. § 16-50j-72(b)(2). In accordance with R.C.S.A. § 16-50j-73, a copy of this letter is being sent to Jay Moran, Mayor for the Town of Manchester. A copy of this letter is also being sent to Pom-Pom Gali, LLC, the owner of the Property.

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 90-foot level on the 141-foot tower.

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

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

4. The operation of the replacement antennas will not increase radio frequency (RF) emissions at the facility to a level at or above the Federal Communications Commission (FCC) safety standard. Far Field Approximation tables for each of Cellco's operating frequencies for the modified Adams Street facility are included in Attachment 2. As indicated on these tables, Cellco's modified facility will operate well within the FCC standards for RF emissions.

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:
Jay Moran, Manchester Mayor
Pom-Pom Gali, LLC
Tim Parks

ATTACHMENT 1

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	1920–2180	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, 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	1920–2180	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, 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	241.4 km/h | 150.0 mph

Dimensions

Depth	181.0 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®

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

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.

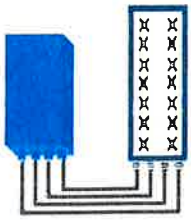
Its compactness and slim design makes the Alcatel-Lucent B13 RRH4x30-4R easy to install close to the antenna: operators can therefore locate this Remote Radio Head where RF design conditions are deemed ideal, minimizing trade-offs between available sites and RF optimum sites, together with reducing the 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 1900A HW version	2 Branch RX – LA6.0.1 4 Branch RX – LR13.3
Features		AISG 2.0 for RET/TMA
		Internal Smart Bias-T
Power		-48VDC
CPRI Ports		2 CPRI Rate 3 Ports
External Alarms		4 External User Alarms
Monitor Ports		TX
Environmental		GR487 Compliance
RF Connectors		7/16 DIN (top mounted)

** Not a Verizon Wireless deployed product

Alcatel·Lucent

NEW PCS RF MODULES FOR VZW
RRH2X60 - HW CHARACTERISTICS

LR14.3

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

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

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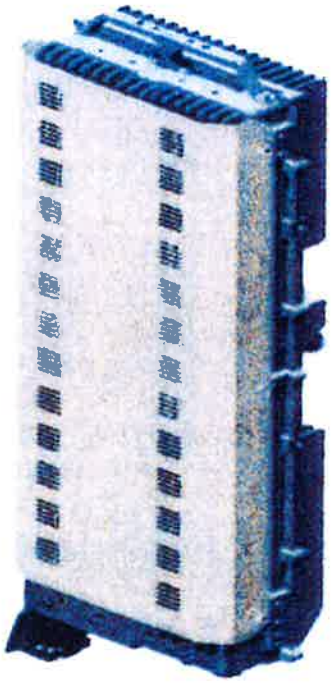
The Alcatel-Lucent RRH2x60-AWS is a high power, small form factor Remote Radio Head operating in the AWS frequency band (3GPP Band 4) for LTE technology. It is designed with an eco-efficient approach, providing operators with the means to achieve high quality and high capacity coverage with minimum site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

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.

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).

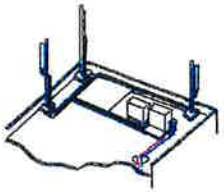
The Alcatel-Lucent RRH2x60-AWS is a very cost-effective solution to deploy LTE MIMO.

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.

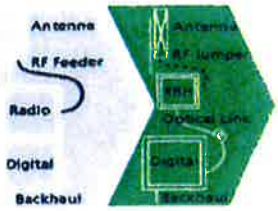
The limited space available in some sites may prevent the installation of traditional single-cabinet BTS equipment. However, many of these sites can host an Alcatel-Lucent RRH2x60-AWS installation, providing more flexible site selection and improved network quality along with greatly reduced installation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

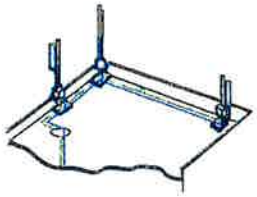
Installation can easily be done by a single person as the Alcatel-Lucent RRH2x60-AWS is compact and weighs about 20 kg, eliminating the need for a crane to hoist the BTS cabinet to the rooftop. A site can be in operation in less than one day.



Macro



RRH for space-constrained cell sites



Distributed

- RRH2x60-AWS integrates two power amplifiers of 60W rating (at each antenna connector)
- Support multiple carriers over the entire 3GPP band 4
- RRH2x60-AWS is optimized for LTE operation
- RRH2x60-AWS is a very compact and lightweight product
- Advanced power management techniques are embedded to provide power savings, such as PA bias control
- MIMO LTE operation with only one single unit per sector
- Improved uplink coverage with built-in 4-way receive diversity capability
- RRH can be mounted close to the antenna, eliminating nearly all losses in RF cables and thus reducing power consumption by 50% compared to conventional solutions
- Distributed configurations provide easily deployable and cost-effective solutions, near zero footprint and silent solutions, with minimum impact on the neighborhood, which ease the deployment
- RETA and TMA support without additional hardware thanks to the AISG v2.0 port and the integrated Bias-Tees. Bias-Tees support AISG DC supply and signaling.

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

Dimensions and weights

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

Electrical Data

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

RF Characteristics

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

Connectivity

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

Environmental specifications

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

Safety and Regulatory Data

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

Alcatel·Lucent

AT THE SPEED OF IDEAS™

Product Data Sheet HB158-1-08U8-S8J18

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

Product Description

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

It was developed to reduce installation complexity and costs at Cellular sites. HYBRIFLEX allows mobile operators deploying an RRH architecture to standardize the RRH installation process and eliminate the need for and cost of cable grounding. HYBRIFLEX combines optical fiber (multi-mode or single-mode) and power in a single corrugated cable. It eliminates the need for junction boxes and can connect multiple RRHs with a single feeder. Standard RFS CELLFLEX³ 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)

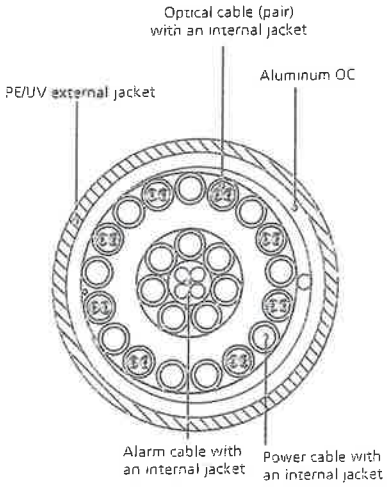


Figure 2: Construction Detail

* This data is provisional and subject to change

ATTACHMENT 2

Far Field Approximation
with downtilt variation

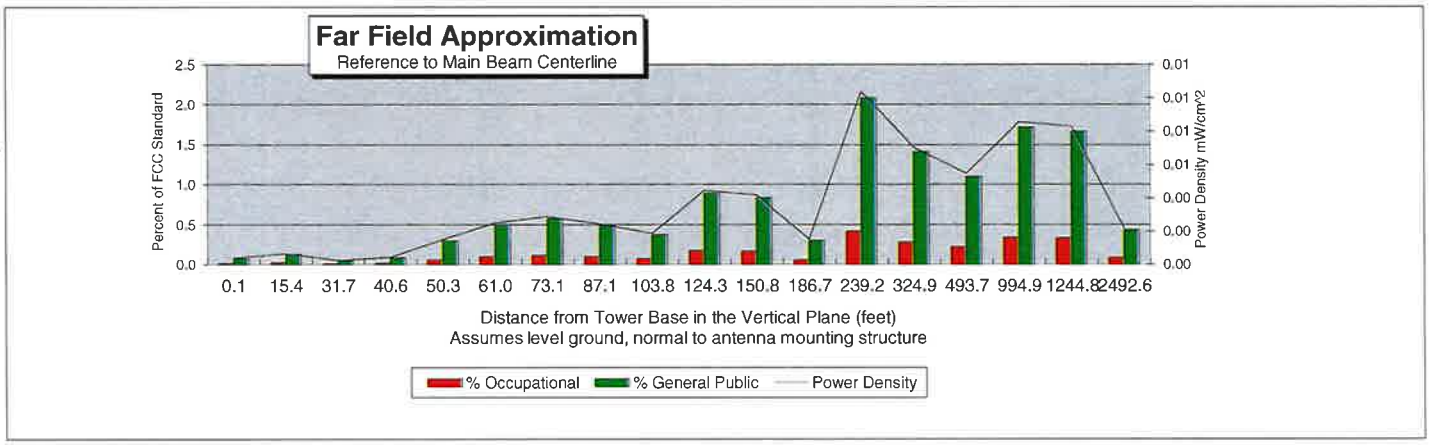
Estimated Radiated Emission

Single Emitter Far Field Model

Dipole / Wire/ Yagi Antenna Types

Location:	MANCHESTER W, CT
Site #:	
Date:	07/08/15
Name:	Mark Brauer
File Name:	Manchester W, CT - FF Power

Operating Freq. (MHz)	**746.0**
Antenna Height (ft):	**90.0**
Antenna Gain (dBi):	**14.7**
Antenna Size (in.):	**72.0**
Downtilt (degrees):	**0.0**
Feedline Loss (dB):	**0.0**
ERP (w):	**2100.0**
Number of Channels	**1**



Calc Angle	90.0	80.0	70.0	65.0	60.0	55.0	50.0	45.0	40.0	35.0	30.0	25.0	20.0	15.0	10.0	5.0	4.0	2.0
Solve for r, dx to antenna	87.0	88.4	92.6	96.0	100.5	106.2	113.6	123.1	135.4	151.7	174.1	206.0	254.5	336.3	501.3	998.7	1247.8	2494.1
Distance from Antenna Structure Base in Horizontal plane	0.1	15.4	31.7	40.6	50.3	61.0	73.1	87.1	103.8	124.3	150.8	186.7	239.2	324.9	493.7	994.9	1244.8	2492.6
Angle from Main Beam (reference to horizontal plane)	90	80	70	65	60	55	50	45	40	35	30	25	20	15	10	5	4	2
dB down from centerline (referenced to centerline)	36.76	34.35	38.52	35.34	29.54	26.8	25.59	25.63	25.99	21.21	20.29	23.24	13.03	12.3	9.92	2	0.2	0
Reflection Coefficient (1 to 4, 2.56 typical)	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56
Power Density (mW/cm^2)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.01	0.00
Percent of Occupational Standard	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.1	0.4	0.3	0.2	0.3	0.3	0.1
Percent of General Population Standard	0.1	0.1	0.0	0.1	0.3	0.5	0.6	0.5	0.4	0.9	0.8	0.3	2.1	1.4	1.1	1.7	1.7	0.4

Antenna Type SBNHH-1D65B
Max% 2.09%

Instructions:

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

Far Field Approximation
with downtilt variation

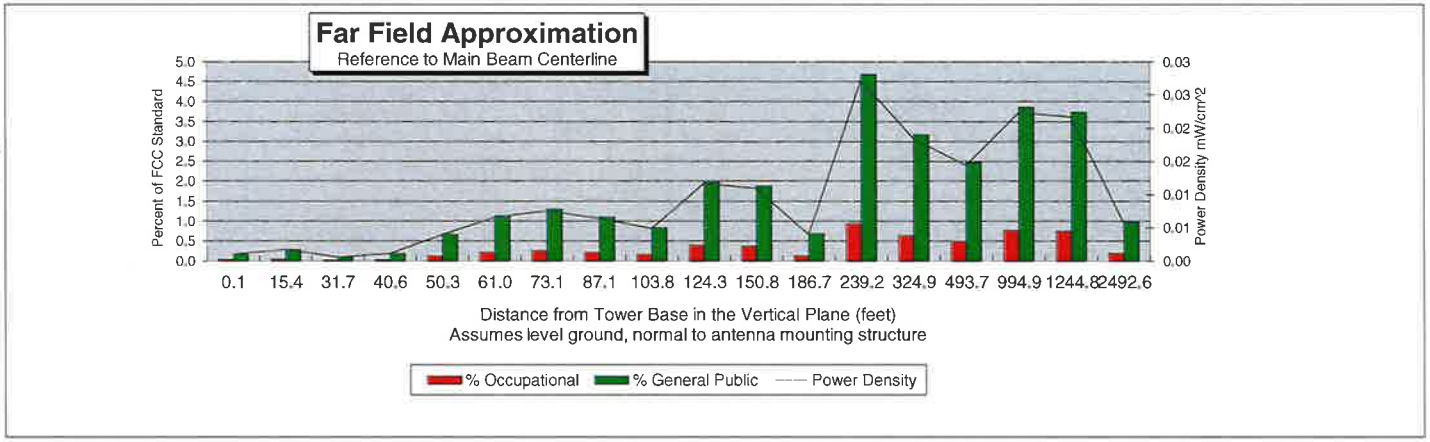
Estimated Radiated Emission

Single Emitter Far Field Model

Dipole / Wire/ Yagi Antenna Types

Location:	MANCHESTER W, CT
Site #:	
Date:	07/08/15
Name:	Mark Brauer
File Name:	Manchester W, CT - FF Power

Operating Freq. (MHz)	**869.0**
Antenna Height (ft):	**90.0**
Antenna Gain (dBi):	**16.3**
Antenna Size (in.):	**53.0**
Downtilt (degrees):	**0.0**
Feedline Loss (dB):	**0.0**
ERP (w):	**3795.0**
Number of Channels	**9**



Calc Angle	90.0	80.0	70.0	65.0	60.0	55.0	50.0	45.0	40.0	35.0	30.0	25.0	20.0	15.0	10.0	5.0	4.0	2.0
Solve for r, dx to antenna	87.0	88.4	92.6	96.0	100.5	106.2	113.6	123.1	135.4	151.7	174.1	206.0	254.5	336.3	501.3	998.7	1247.8	2494.1
Distance from Antenna Structure Base in Horizontal plane	0.1	15.4	31.7	40.6	50.3	61.0	73.1	87.1	103.8	124.3	150.8	186.7	239.2	324.9	493.7	994.9	1244.8	2492.6
Angle from Main Beam (reference to horizontal plane)	90	80	70	65	60	55	50	45	40	35	30	25	20	15	10	5	4	2
dB down from centerline (referenced to centerline)	36.76	34.35	38.52	35.34	29.54	26.8	25.59	25.63	25.99	21.21	20.29	23.24	13.03	12.3	9.92	2	0.2	0
Reflection Coefficient (1 to 4, 2.56 typical)	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56
Power Density (mW/cm^2)	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.00	0.01	0.01	0.00	0.03	0.02	0.01	0.02	0.02	0.01
Percent of Occupational Standard	0.0	0.1	0.0	0.0	0.1	0.2	0.3	0.2	0.2	0.4	0.4	0.1	0.9	0.6	0.5	0.8	0.7	0.2
Percent of General Population Standard	0.2	0.3	0.1	0.2	0.7	1.1	1.3	1.1	0.8	2.0	1.9	0.7	4.7	3.2	2.5	3.9	3.7	1.0

Antenna Type SLCP 2X6014
Max% 4.69%

Instructions:

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

Far Field Approximation
with downtilt variation

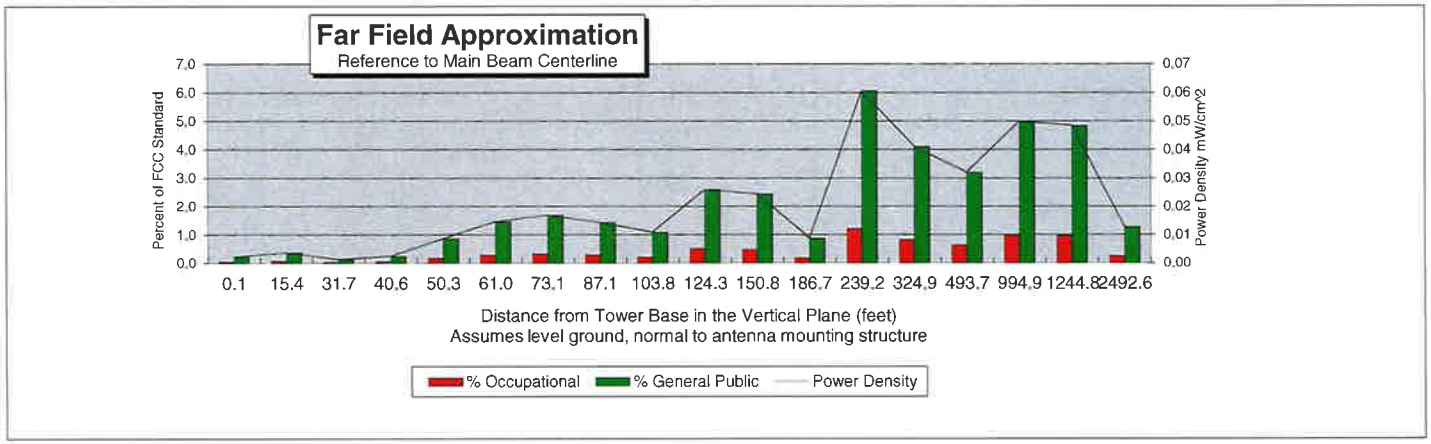
Estimated Radiated Emission

Single Emitter Far Field Model

Dipole / Wire/ Yagi Antenna Types

Location:	MANCHESTER W, CT
Site #:	
Date:	07/08/15
Name:	Mark Brauer
File Name:	Manchester W, CT - FF Power

Operating Freq. (MHz)	**1970.0**
Antenna Height (ft):	**90.0**
Antenna Gain (dBi):	**18.4**
Antenna Size (in.):	**72.0**
Downtilt (degrees):	**0.0**
Feedline Loss (dB):	**0.0**
ERP (w):	**5173.0**
Number of Channels	**11**



Calc Angle	90.0	80.0	70.0	65.0	60.0	55.0	50.0	45.0	40.0	35.0	30.0	25.0	20.0	15.0	10.0	5.0	4.0	2.0
Solve for r, dx to antenna	87.0	88.4	92.6	96.0	100.5	106.2	113.6	123.1	135.4	151.7	174.1	206.0	254.5	336.3	501.3	998.7	1247.8	2494.1
Distance from Antenna Structure Base in Horizontal plane	0.1	15.4	31.7	40.6	50.3	61.0	73.1	87.1	103.8	124.3	150.8	186.7	239.2	324.9	493.7	994.9	1244.8	2492.6
Angle from Main Beam (reference to horizontal plane)	90	80	70	65	60	55	50	45	40	35	30	25	20	15	10	5	4	2
dB down from centerline (referenced to centerline)	36.76	34.35	38.52	35.34	29.54	26.8	25.59	25.63	25.99	21.21	20.29	23.24	13.03	12.3	9.92	2	0.2	0
Reflection Coefficient (1 to 4, 2.56 typical)	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56
Power Density (mW/cm^2)	0.00	0.00	0.00	0.00	0.01	0.01	0.02	0.01	0.01	0.03	0.02	0.01	0.06	0.04	0.03	0.05	0.05	0.01
Percent of Occupational Standard	0.0	0.1	0.0	0.1	0.2	0.3	0.3	0.3	0.2	0.5	0.5	0.2	1.2	0.8	0.6	1.0	1.0	0.3
Percent of General Population Standard	0.2	0.4	0.1	0.3	0.9	1.5	1.7	1.4	1.1	2.6	2.4	0.9	6.1	4.1	3.2	5.0	4.8	1.3

Antenna Type SBNHH-1D65B
Max% 6.06%

Instructions:

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

Far Field Approximation
with downtilt variation

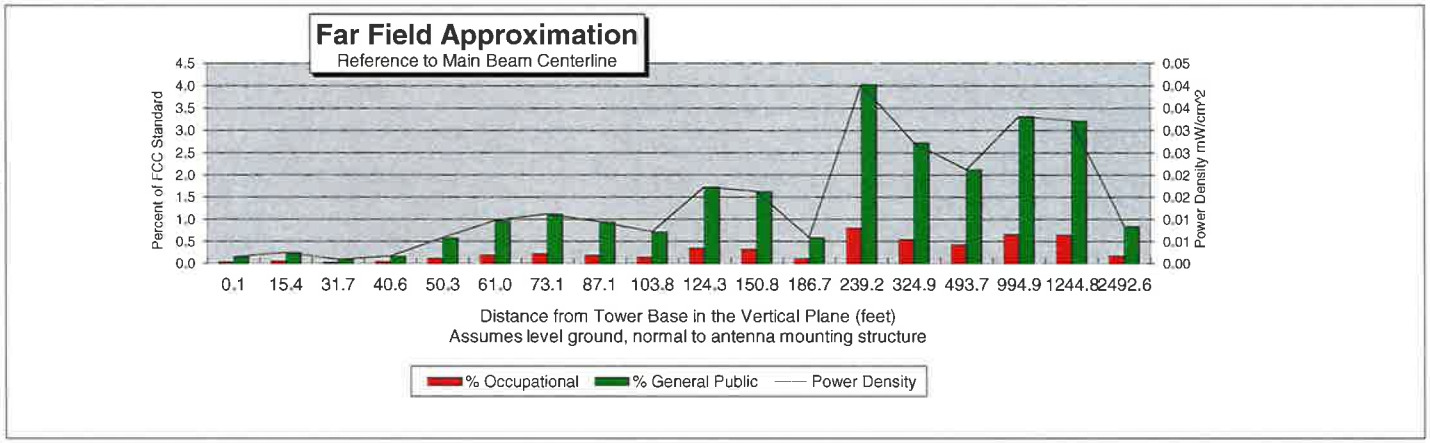
Estimated Radiated Emission

Single Emitter Far Field Model

Dipole / Wire/ Yagi Antenna Types

Location:	MANCHESTER W, CT
Site #:	
Date:	07/08/15
Name:	Mark Brauer
File Name:	Manchester W, CT - FF Power

Operating Freq. (MHz)	**2145.0**
Antenna Height (ft):	**90.0**
Antenna Gain (dBi):	**18.3**
Antenna Size (in.):	**72.0**
Downtilt (degrees):	**0.0**
Feedline Loss (dB):	**0.0**
ERP (w):	**3500.0**
Number of Channels	**1**



Calc Angle	90.0	80.0	70.0	65.0	60.0	55.0	50.0	45.0	40.0	35.0	30.0	25.0	20.0	15.0	10.0	5.0	4.0	2.0
Solve for r, dx to antenna	87.0	88.4	92.6	96.0	100.5	106.2	113.6	123.1	135.4	151.7	174.1	206.0	254.5	336.3	501.3	998.7	1247.8	2494.1
Distance from Antenna Structure Base in Horizontal plane	0.1	15.4	31.7	40.6	50.3	61.0	73.1	87.1	103.8	124.3	150.8	186.7	239.2	324.9	493.7	994.9	1244.8	2492.6
Angle from Main Beam (reference to horizontal plane)	90	80	70	65	60	55	50	45	40	35	30	25	20	15	10	5	4	2
dB down from centerline (referenced to centerline)	36.76	34.35	38.52	35.34	29.54	26.8	25.59	25.63	25.99	21.21	20.29	23.24	13.03	12.3	9.92	2	0.2	0
Reflection Coefficient (1 to 4, 2.56 typical)	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56
Power Density (mW/cm^2)	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.01	0.02	0.02	0.01	0.04	0.03	0.02	0.03	0.03	0.01
Percent of Occupational Standard	0.0	0.0	0.0	0.0	0.1	0.2	0.2	0.2	0.1	0.3	0.3	0.1	0.8	0.5	0.4	0.7	0.6	0.2
Percent of General Population Standard	0.1	0.2	0.1	0.2	0.6	1.0	1.1	0.9	0.7	1.7	1.6	0.6	4.0	2.7	2.1	3.3	3.2	0.8

Antenna Type SBNHH-1D65B
Max% 4.03%

Instructions:

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

ATTACHMENT 3

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

Structural Analysis Report

Existing 141 ft. Monopole

Customer Name: SBA Communications Corp

Customer Site Number: CT16504-A

Customer Site Name: Manchester 12, CT

Carrier Name: Verizon

Carrier Site ID / Name: Manchester West

Site Location: 60 Adams Street

Manchester, Connecticut 06042

Hartford County

Latitude: 41.794100

Longitude: -72.555300

Analysis Result:

Max Structural Usage: 99.7% [Pass]

Max Foundation Usage: 76.0% [Pass]

Report Prepared By : Kyle Wyant

Introduction

The purpose of this report is to summarize the analysis results on the 141 ft. 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	FDH Velocitel, Inc., "Monopole Mapping Report," Project No. 15BRLA1500, dated June 15, 2015
Foundation Drawing	FDH Velocitel, Inc., "Dispersive Wave Propagation Testing and Rebar Investigation of an Existing Tower Foundation," Project No. 15BRLC1500, dated June 16, 2015
Geotechnical Report	FDH Velocitel, Inc., "Geotechnical Evaluation of Subsurface Conditions," Project No. 15BRNG1600, dated June 17, 2015
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:	80.0 mph (Fastest Mile)
Basic Wind Speed with Ice:	69 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	139.0	-	-	(2) 3.5' Standoffs w/ (2) 2.4" x 5.0' Pipe Mounts	-	N/A
2	132.5	-	-	(1) 5.0' Standoff w/ (1) 2.4" x 3.0' Pipe Mount	-	
3	129.5	1	Raycap DC6-48-60-18-8F	Direct Mount	(12) 1 5/8" (1) 2 1/8" F.C. (1) Fiber (2) Power	AT&T
4	124.0	6	CCI DTMABP7819VG12A	Platform w/ Hand Rails		
5		3	Ericsson RRUS 11 B12			
6		3	Ericsson RRUS 11 B2			
7		3	Kathrein 800 10121 - Panel			
8		6	KMW AM-X-CD-16-65-00T-RET - Panel			
9	118.5	1	Andrew VHLP1-23-DW1 - Dish	Low Profile Platform	(2) 5/8" (2) 2 1/8" F.C.	Clearwire
10		1	Andrew VHLP2-23-DW1 - Dish			
11	114.5	3	Argus LLPX310R-V1 - Panel			
12	114.0	1	20" x 18" x 9" Junction Box			
13	113.0	3	Samsung SPI-22132825WB			
14	117.0	3	RFS APXVTM14 - Panel		(1) 3/4" (3) 1 1/4"	Sprint
15		3	Alcatel Lucent RRH8x20-25-FEU - RRU			
16		3	Alcatel Lucent RRH1900-4X45 - RRU			
17	115.0	3	RFS APXVSPP18 - Panel			
18	112.5	3	Alcatel Lucent RRH2X50-800 - RRU			
19	104.0	-	-	(2) 4.0' Standoffs w/ (1) 1.5" x 2.0' Pipe Mount	-	N/A
20	92.0	1	Raycap RFDC-3315-PF-48	Direct Mount	(12) 1 5/8" (1) 1 1/4"	Verizon
21	91.5	3	Alcatel Lucent 9442 RRH2x40-AWS - RRU	Platform w/ Hand Rails		
22	90.5	3	Swedcom SLCP 2x6014 - Panel			
23		2	RFS APX18-206517-T2 - Panel			
24		1	Antel BXA-171085-12BF-EDIN-2 - Panel			
31	90.0	3	Rymsa MGD3-900T2 - Panel			
32	89.5	6	RFS FD9R6004/2C-3L – TMA/TTA			
33	89.0	3	Antel BXA-70063-6CF-EDIN-x - Panel			

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
22	90.0	3	Swedcom SLCP 2x6014 - Panel	Platform w/ Hand Rails	(12) 1 5/8" Coax (2) 1 5/8" Hybrid	Verizon
25		3	Alcatel Lucent RRH2X60-700 - RRU			
26		3	Alcatel Lucent RRH2X60-AWS - RRU			
27		3	Alcatel Lucent RRH2X60-PCS - RRU			
28		3	Antel BXA-70063-6CF-EDIN-x - Panel			
29		6	Commscope SBNHH-1D65B - Panel			
30		1	RFS DB-T1-6Z-8AB-0Z – Distribution Box			

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:	**99.7%**	**91.2%**	**80.0%**
Pass/Fail	**Pass**	**Pass**	**Pass**

Foundations

	Moment (Kip-Ft)	Shear (Kips)	Axial (Kips)
Original Design Reactions	1939.1	19.7	22.2
Analysis Reactions	2229.5	22.6	28.5
% of Design Reactions	115.0%	114.5%	128.2%

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. The maximum twist/sway at the elevation of the proposed equipment is 2.06 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 and the 2005 Connecticut State Building Code 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 99.7% at 0.0ft

Structure:	CT16504-A-SBA	**Code:**	EIA/TIA-222-F	7/6/2015	
Site Name:	Manchester 12, CT	**Exposure:**	C		
Height:	140.50 (ft)	**Gh:**	1.69		
Base Elev:	0.000 (ft)			Page: 1	

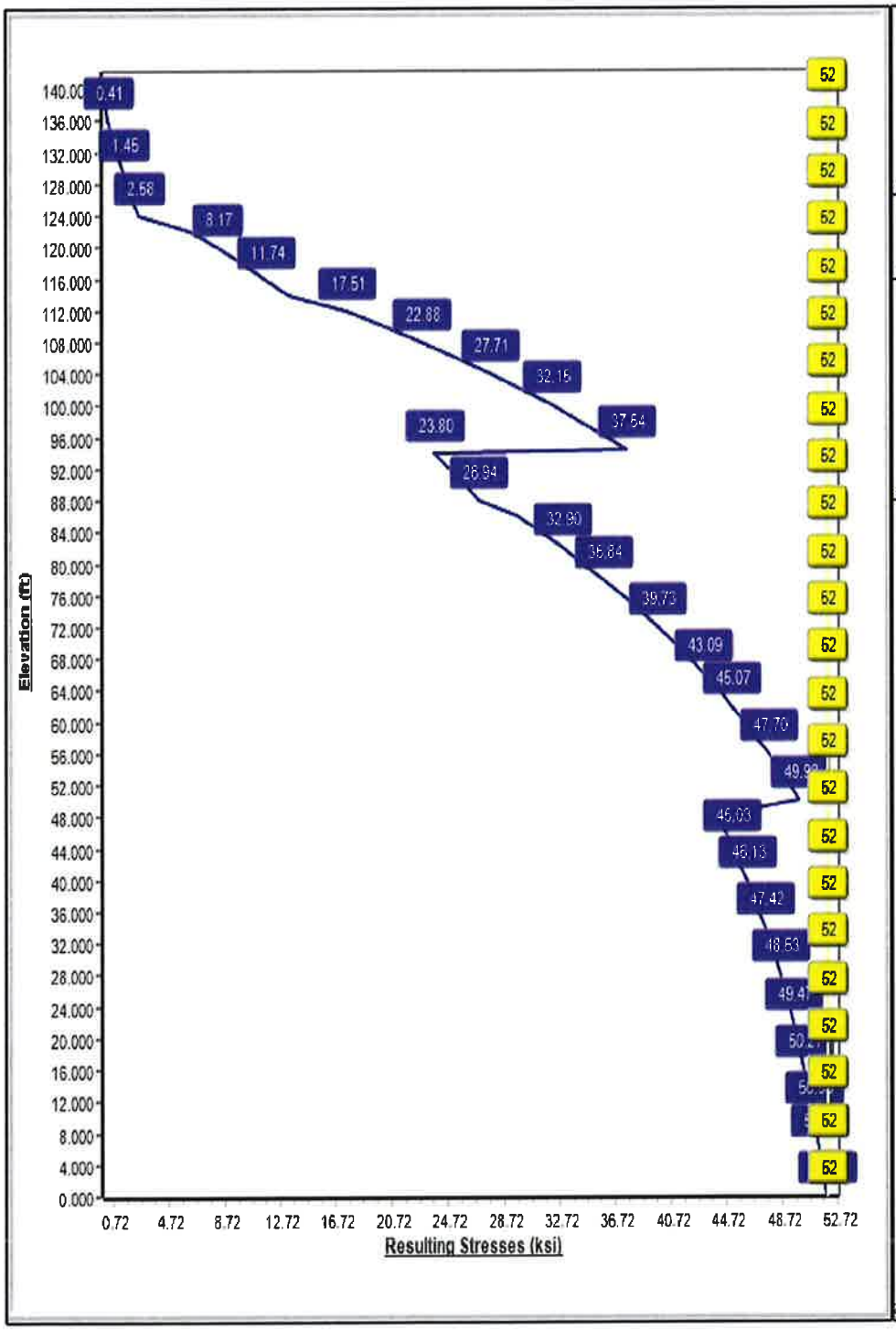
Tower Engineering Solutions

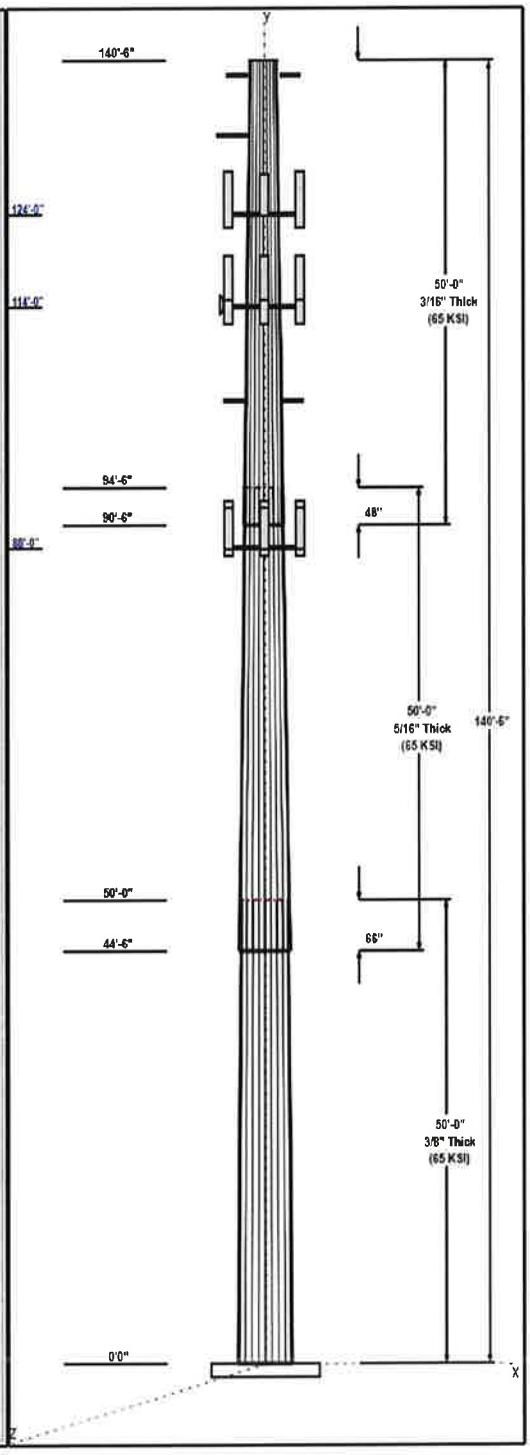
Dead Load Factor: 1.00
Wind Load Factor: 1.00

52 Alllowable Stress
52 Resulting Stress

Load Case : 80 mph Wind with 0 in Ice

Iterations: 33





Structure: CT16504-A-SBA

Type: Tapered
Site Name: Manchester 12, CT
Height: 140.50 (ft)
Base Elev: 0.00 (ft)

Base Shape: 18 Sided
Taper: 0.18206

7/6/2015

TES Tower Engineering Solutions

Shaft Properties

Seq	Length (ft)	Top (in)	Bottom (in)	Thick (in)	Joint Type	Taper	Grade (ksi)
1	50.00	33.44	42.54	0.375		0.18206	65
2	50.00	25.96	35.06	0.313	Slip	0.18206	65
3	50.00	17.96	27.06	0.188	Slip	0.18206	65

Discrete Appurtenances

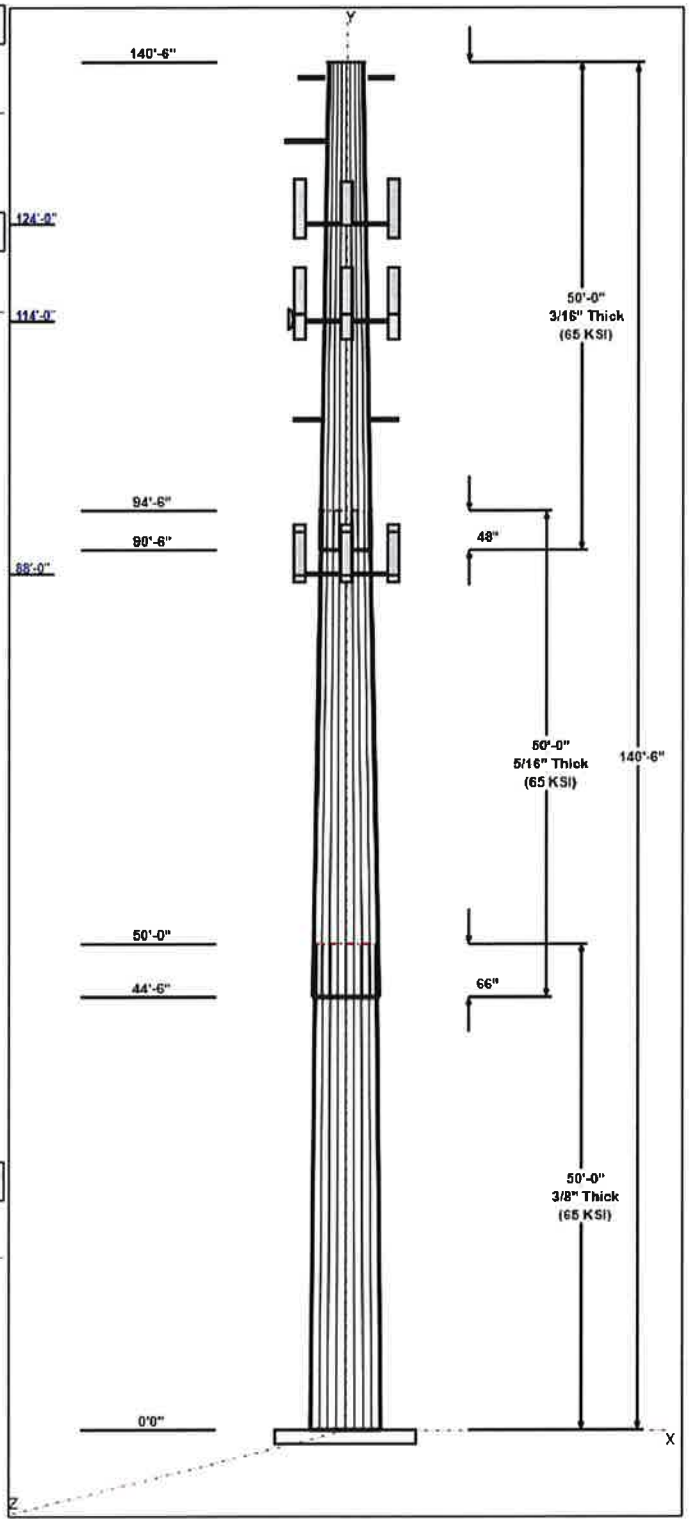
Attach Elev (ft)	Force Elev (ft)	Qty	Description	Carrier
139.00	139.00	2	3.5' Standoff Mount	N/A
132.50	132.50	1	5' Standoff Mount	N/A
129.50	129.50	1	Raycap DC6-48-60-18-8F	AT&T
124.00	125.50	6	CCI DTMABP7819VG12A	AT&T
124.00	128.50	3	Ericsson RRUS 11 B12	AT&T
124.00	128.50	3	Ericsson RRUS 11 B2	AT&T
124.00	126.00	3	Kathrein 800 10121	AT&T
124.00	125.50	6	KMW	AT&T
124.00	124.00	1	Platform w/ Hand Rails	AT&T
114.00	114.00	1	20" x 18" x 9" Junction Box	Clearwire
114.00	117.00	3	Alcatel Lucent	Sprint
114.00	112.50	3	Alcatel Lucent	Sprint
114.00	117.00	3	Alcatel Lucent	Sprint
114.00	118.50	1	Andrew VHLP1-23-DW1	Clearwire
114.00	118.50	1	Andrew VHLP2-23-DW1	Clearwire
114.00	114.50	3	Argus LLPX310R-V1	Clearwire
114.00	114.00	1	Low Profile Platform	Sprint
114.00	115.00	3	RFS APXVSPP18	Sprint
114.00	117.00	3	RFS APXVTM14	Sprint
114.00	113.00	3	Samsung	Clearwire
104.00	104.00	2	4' Standoff Mount	N/A
88.00	90.00	3	Alcatel Lucent	Verizon
88.00	90.00	3	Alcatel Lucent	Verizon
88.00	90.00	3	Alcatel Lucent	Verizon
88.00	90.00	3	Antel	Verizon
88.00	90.00	6	Commscope	Verizon
88.00	90.00	1	Platform w/ Hand Rails	Verizon
88.00	90.00	1	RFS DB-T1-6Z-8AB-0Z	Verizon
88.00	90.00	3	Swedcom SLCP 2x6014	Verizon

Linear Appurtenances

Elev From (ft)	Elev To (ft)	Placement	Description	Carrier
0.00	124.00	Inside	1 5/8" Coax	AT&T
0.00	124.00	Inside	2 1/8" F.C.	AT&T
0.00	124.00	Inside	Fiber	AT&T
0.00	124.00	Inside	Power	AT&T
0.00	114.00	Inside	1-1/4"	Sprint
0.00	114.00	Inside	2 1/8" F.C.	Clearwire
0.00	114.00	Inside	3/4"	Sprint
0.00	114.00	Inside	5/8"	Clearwire
0.00	90.00	Inside	1 5/8" Coax	Verizon
0.00	90.00	Inside	1 5/8" Hybrid	Verizon

Anchor Bolts

Qty	Specifications	Grade (ksi)	Arrangement



12	2.25" 18J	75.0	Radial

Base Plate

Thickness (in)	Specifications (in)	Grade (ksi)	Geometry
1.7500	57.0	60.0	Round

Reactions

Load Case	Moment	Shear	Axial
80 mph Wind with 0" Ice	2229.5	22.6	28.5
69.28 mph Wind with 0.5" Ice	1937.8	19.0	35.3
50 mph Wind with 0" Ice	872.3	8.8	28.5

Shaft Properties

Structure:	CT16504-A-SBA	**Code:**	EIA/TIA-222-F	7/6/2015	
Site Name:	Manchester 12, CT	**Exposure:**	C		
Height:	140.50 (ft)	**Gh:**	1.69		
Base Elev:	0.000 (ft)	**Struct Class:**	II	Page: 4	

Tower Engineering Solutions

Sec. No.	Shape	Length (ft)	Thick (in)	Fy (ksi)	Joint Type	Overlap (in)	Weight (lb)
1	18	50.000	0.3750	65		0.00	7,617
2	18	50.000	0.3125	65	Slip	66.00	5,096
3	18	50.000	0.1875	65	Slip	48.00	2,260
					Total Shaft Weight:		**14,973**

	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	42.54	0.00	50.19	11272.80	18.59	113.4	33.44	50.00	39.35	5434.44	14.31	89.16	0.182064
2	35.06	44.50	34.47	5258.76	18.37	112.2	25.96	94.50	25.44	2114.11	13.23	83.07	0.182064
3	27.06	90.50	15.99	1459.57	24.03	144.3	17.96	140.5	10.58	422.08	15.47	95.78	0.182064

Loading Summary

Structure:	CT16504-A-SBA	**Code:**	EIA/TIA-222-F	7/6/2015	
Site Name:	Manchester 12, CT	**Exposure:**	C		
Height:	140.50 (ft)	**Gh:**	1.69		
Base Elev:	0.000 (ft)	**Struct Class:**	II	Page: 5	

Tower Engineering Solutions

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	139.0	3.5' Standoff Mount	2	50.00	3.50	1.00	75.00	4.000	1.00	0.00	0.00
2	132.5	5' Standoff Mount	1	50.00	3.50	1.00	75.00	4.000	1.00	2.50	0.00
3	129.5	Raycap DC6-48-60-18-8F	1	32.80	1.47	1.00	50.50	1.670	1.00	0.00	0.00
4	124.0	CCI DTMABP7819VG12A	6	19.20	0.39	0.50	24.55	0.480	0.58	0.00	1.50
5	124.0	Ericsson RRUS 11 B12	3	54.40	2.94	0.50	71.50	3.140	0.81	0.00	4.50
6	124.0	Ericsson RRUS 11 B2	3	72.70	3.85	0.88	98.50	4.430	0.91	0.00	4.50
7	124.0	Kathrein 800 10121	3	68.30	5.75	0.91	108.80	6.230	0.94	0.00	2.00
8	124.0	KMW AM-X-CD-16-65-00T-RET	6	70.50	8.26	0.86	124.50	8.730	0.90	0.00	1.50
9	124.0	Platform w/ Hand Rails	1	1600.00	31.30	1.00	2200.00	40.00	1.00	0.00	0.00
10	114.0	20" x 18" x 9" Junction Box	1	20.00	3.50	0.90	38.00	3.510	0.95	0.00	0.00
11	114.0	Alcatel Lucent RRH1900-4X45	3	60.00	2.61	0.50	83.10	2.820	0.50	0.00	3.00
12	114.0	Alcatel Lucent RRH2X50-800	3	64.00	2.25	0.50	86.10	2.430	0.50	0.00	-1.50
13	114.0	Alcatel Lucent RRH8x20-25-FEU	3	70.00	1.70	0.50	92.00	1.890	0.50	0.00	3.00
14	114.0	Andrew VHLP1-23-DW1	1	14.00	1.61	0.80	24.10	1.820	0.80	0.00	4.50
15	114.0	Andrew VHLP2-23-DW1	1	31.00	4.69	0.80	59.00	5.050	0.80	0.00	4.50
16	114.0	Argus LLPX310R-V1	3	50.70	5.32	0.81	84.50	5.840	0.85	0.00	0.50
17	114.0	Low Profile Platform	1	1800.00	19.56	1.00	2200.00	26.60	1.00	0.00	0.00
18	114.0	RFS APXVSPP18	3	125.30	9.14	0.96	193.00	9.860	0.99	0.00	1.00
19	114.0	RFS APXVTM14	3	116.70	7.86	0.90	172.20	8.530	0.93	0.00	3.00
20	114.0	Samsung SPI-22132825WB	3	33.10	1.82	0.80	45.60	2.100	0.85	0.00	-1.00
21	104.0	4' Standoff Mount	2	50.00	1.50	1.00	75.00	4.000	1.00	0.00	0.00
22	88.00	Alcatel Lucent RRH2X60-700	3	90.00	4.53	0.88	120.60	5.050	0.91	0.00	2.00
23	88.00	Alcatel Lucent RRH2X60-AWS	3	90.00	4.53	0.88	120.60	5.050	0.91	0.00	2.00
24	88.00	Alcatel Lucent RRH2X60-PCS	3	55.00	2.57	0.91	70.90	2.760	0.92	0.00	2.00
25	88.00	Antel BXA-70063-6CF-EDIN-x	3	42.60	7.95	0.89	94.50	8.500	0.92	0.00	2.00
26	88.00	Commscope SBNHH-1D65B	6	76.40	8.49	0.92	134.70	9.050	0.95	0.00	2.00
27	88.00	Platform w/ Hand Rails	1	1503.00	36.21	1.00	2301.00	42.82	1.00	0.00	2.00
28	88.00	RFS DB-T1-6Z-8AB-0Z	1	44.00	5.60	0.76	0.00	6.080	0.77	0.00	2.00
29	88.00	Swedcom SLCP 2x6014	3	45.60	7.73	0.98	102.20	8.320	1.01	0.00	2.00
		Totals:	**76**	**9,406.60**			**13,582.40**				

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	124.0	(12) 1 5/8" Coax	12.48	0.00	12.48	0.00	Inside
0.00	124.0	(1) 2 1/8" F.C.	1.61	0.00	1.61	0.00	Inside
0.00	124.0	(1) Fiber	0.12	0.00	0.12	0.00	Inside
0.00	124.0	(2) Power	1.30	0.00	1.30	0.00	Inside
0.00	114.0	(3) 1-1/4"	2.86	0.00	2.86	0.00	Inside
0.00	114.0	(2) 2 1/8" F.C.	3.22	0.00	3.22	0.00	Inside
0.00	114.0	(1) 3/4"	0.40	0.00	0.40	0.00	Inside
0.00	114.0	(2) 5/8"	1.04	0.00	1.04	0.00	Inside
0.00	90.00	(12) 1 5/8" Coax	12.48	0.00	12.48	0.00	Inside
0.00	90.00	(2) 1 5/8" Hybrid	2.20	0.00	2.20	0.00	Inside

Discrete Appurtenances

No.	Elev (ft)	Description	Qty	No Ice Weight (lb)	No Ice CaAa (sf)	No Ice CaAa Factor	Ice Weight (lb)	Ice CaAa (sf)	Ice CaAa Factor	Hor. Ecc. (ft)	Vert Ecc (ft)
		Totals:		4,101.95			4,101.72				

Shaft Section Properties

Structure: CT16504-A-SBA
Site Name: Manchester 12, CT
Height: 140.50 (ft)
Base Elev: 0.000 (ft)
Increment Length: 2 (ft)

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

7/6/2015

Tower Engineering Solutions

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		0.3750	42.540	50.185	11272.8	18.59	113.44	65	52	0.0
2.00		0.3750	42.176	49.752	10983.3	18.42	112.47	65	52	340.1
4.00		0.3750	41.812	49.318	10698.7	18.25	111.50	65	52	337.1
6.00		0.3750	41.448	48.885	10419.2	18.08	110.53	65	52	334.2
8.00		0.3750	41.083	48.452	10144.5	17.91	109.56	65	52	331.2
10.00		0.3750	40.719	48.018	9874.7	17.74	108.58	65	52	328.3
12.00		0.3750	40.355	47.585	9609.7	17.56	107.61	65	52	325.3
14.00		0.3750	39.991	47.151	9349.6	17.39	106.64	65	52	322.4
16.00		0.3750	39.627	46.718	9094.1	17.22	105.67	65	52	319.4
18.00		0.3750	39.263	46.285	8843.4	17.05	104.70	65	52	316.5
20.00		0.3750	38.899	45.851	8597.3	16.88	103.73	65	52	313.5
22.00		0.3750	38.535	45.418	8355.8	16.71	102.76	65	52	310.6
24.00		0.3750	38.170	44.984	8118.9	16.54	101.79	65	52	307.6
26.00		0.3750	37.806	44.551	7886.5	16.37	100.82	65	52	304.7
28.00		0.3750	37.442	44.118	7658.5	16.19	99.85	65	52	301.7
30.00		0.3750	37.078	43.684	7435.0	16.02	98.87	65	52	298.8
32.00		0.3750	36.714	43.251	7215.9	15.85	97.90	65	52	295.8
34.00		0.3750	36.350	42.817	7001.2	15.68	96.93	65	52	292.9
36.00		0.3750	35.986	42.384	6790.7	15.51	95.96	65	52	289.9
38.00		0.3750	35.622	41.951	6584.5	15.34	94.99	65	52	287.0
40.00		0.3750	35.257	41.517	6382.6	15.17	94.02	65	52	284.0
42.00		0.3750	34.893	41.084	6184.8	15.00	93.05	65	52	281.1
44.00		0.3750	34.529	40.651	5991.1	14.83	92.08	65	52	278.1
44.50	Bot - Section 2	0.3750	34.438	40.542	5943.3	14.78	91.84	65	52	69.1
46.00		0.3750	34.165	40.217	5801.5	14.65	91.11	65	52	381.3
48.00		0.3750	33.801	39.784	5616.0	14.48	90.14	65	52	503.7
50.00	Top - Section 1	0.3125	34.062	33.474	4817.1	17.81	109.00	65	52	498.3
52.00		0.3125	33.698	33.113	4662.9	17.60	107.83	65	52	226.6
54.00		0.3125	33.334	32.752	4512.0	17.40	106.67	65	52	224.1
56.00		0.3125	32.969	32.390	4364.4	17.19	105.50	65	52	221.7
58.00		0.3125	32.605	32.029	4220.0	16.99	104.34	65	52	219.2
60.00		0.3125	32.241	31.668	4078.8	16.78	103.17	65	52	216.7
62.00		0.3125	31.877	31.307	3940.9	16.58	102.01	65	52	214.3
64.00		0.3125	31.513	30.946	3806.1	16.37	100.84	65	52	211.8
66.00		0.3125	31.149	30.585	3674.3	16.16	99.68	65	52	209.4
68.00		0.3125	30.785	30.223	3545.7	15.96	98.51	65	52	206.9
70.00		0.3125	30.421	29.862	3420.1	15.75	97.35	65	52	204.5
72.00		0.3125	30.056	29.501	3297.5	15.55	96.18	65	52	202.0
74.00		0.3125	29.692	29.140	3177.9	15.34	95.02	65	52	199.5
76.00		0.3125	29.328	28.779	3061.2	15.14	93.85	65	52	197.1
78.00		0.3125	28.964	28.418	2947.4	14.93	92.68	65	52	194.6
80.00		0.3125	28.600	28.057	2836.4	14.73	91.52	65	52	192.2
82.00		0.3125	28.236	27.695	2728.3	14.52	90.35	65	52	189.7
84.00		0.3125	27.872	27.334	2623.0	14.32	89.19	65	52	187.3
86.00		0.3125	27.507	26.973	2520.4	14.11	88.02	65	52	184.8
88.00		0.3125	27.143	26.612	2420.5	13.90	86.86	65	52	182.3
90.00		0.3125	26.779	26.251	2323.2	13.70	85.69	65	52	179.9
90.50	Bot - Section 3	0.3125	26.688	26.160	2299.4	13.65	85.40	65	52	44.6
92.00		0.3125	26.415	25.890	2228.7	13.49	84.53	65	52	214.1
94.00		0.3125	26.051	25.528	2136.7	13.29	83.36	65	52	282.0
94.50	Top - Section 2	0.1875	26.335	15.560	1344.1	23.36	140.45	65	52	69.9
96.00		0.1875	26.062	15.398	1302.4	23.10	139.00	65	52	79.0

Increment Length: 2 (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)
98.00		0.1875	25.698	15.181	1248.2	22.76	137.05	65	52	104.1
100.00		0.1875	25.334	14.965	1195.5	22.41	135.11	65	52	102.6
102.00		0.1875	24.969	14.748	1144.3	22.07	133.17	65	52	101.1
104.00		0.1875	24.605	14.531	1094.6	21.73	131.23	65	52	99.6
106.00		0.1875	24.241	14.314	1046.4	21.39	129.29	65	52	98.2
108.00		0.1875	23.877	14.098	999.6	21.04	127.34	65	52	96.7
110.00		0.1875	23.513	13.881	954.2	20.70	125.40	65	52	95.2
112.00		0.1875	23.149	13.664	910.2	20.36	123.46	65	52	93.7
114.00		0.1875	22.785	13.448	867.6	20.02	121.52	65	52	92.3
116.00		0.1875	22.421	13.231	826.3	19.67	119.58	65	52	90.8
118.00		0.1875	22.056	13.014	786.4	19.33	117.63	65	52	89.3
120.00		0.1875	21.692	12.798	747.7	18.99	115.69	65	52	87.8
122.00		0.1875	21.328	12.581	710.4	18.65	113.75	65	52	86.4
124.00		0.1875	20.964	12.364	674.3	18.30	111.81	65	52	84.9
126.00		0.1875	20.600	12.148	639.5	17.96	109.87	65	52	83.4
128.00		0.1875	20.236	11.931	605.9	17.62	107.92	65	52	81.9
129.50		0.1875	19.963	11.768	581.4	17.36	106.47	65	52	60.5
130.00		0.1875	19.872	11.714	573.5	17.28	105.98	65	52	20.0
132.00		0.1875	19.508	11.497	542.2	16.93	104.04	65	52	79.0
132.50		0.1875	19.417	11.443	534.6	16.85	103.55	65	52	19.5
134.00		0.1875	19.143	11.281	512.1	16.59	102.10	65	52	58.0
136.00		0.1875	18.779	11.064	483.2	16.25	100.16	65	52	76.0
138.00		0.1875	18.415	10.847	455.3	15.91	98.21	65	52	74.6
139.00		0.1875	18.233	10.739	441.8	15.74	97.24	65	52	36.7
140.00		0.1875	18.051	10.631	428.6	15.56	96.27	65	52	36.4
140.50		0.1875	17.960	10.576	422.1	15.48	95.79	65	52	18.0
										14973.2

Wind Loading - Shaft

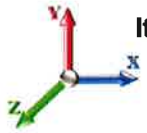
Structure: CT16504-A-SBA
Site Name: Manchester 12, CT
Height: 140.50 (ft)
Base Elev: 0.000 (ft)

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

7/6/2015

IES Tower Engineering Solutions

Load Case: 80 mph Wind with 0" Ice
Dead Load Factor 1.00
Wind Load Factor 1.00



Iterations: 33

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	16.384	27.69	283.60	0.650	0.000	0.00	0.000	0.00	0.0	0.0	0.0
2.00		0.00	1.00	16.384	27.69	281.17	0.650	0.000	2.00	7.060	4.59	127.1	0.0	340.1
4.00		0.00	1.00	16.384	27.69	278.74	0.650	0.000	2.00	6.999	4.55	126.0	0.0	337.1
6.00		0.00	1.00	16.384	27.69	276.32	0.650	0.000	2.00	6.938	4.51	124.9	0.0	334.2
8.00		0.00	1.00	16.384	27.69	273.89	0.650	0.000	2.00	6.878	4.47	123.8	0.0	331.2
10.00		0.00	1.00	16.384	27.69	271.46	0.650	0.000	2.00	6.817	4.43	122.7	0.0	328.3
12.00		0.00	1.00	16.384	27.69	269.03	0.650	0.000	2.00	6.756	4.39	121.6	0.0	325.3
14.00		0.00	1.00	16.384	27.69	266.61	0.650	0.000	2.00	6.696	4.35	120.5	0.0	322.4
16.00		0.00	1.00	16.384	27.69	264.18	0.650	0.000	2.00	6.635	4.31	119.4	0.0	319.4
18.00		0.00	1.00	16.384	27.69	261.75	0.650	0.000	2.00	6.574	4.27	118.3	0.0	316.5
20.00		0.00	1.00	16.384	27.69	259.32	0.650	0.000	2.00	6.513	4.23	117.2	0.0	313.5
22.00		0.00	1.00	16.384	27.69	256.90	0.650	0.000	2.00	6.453	4.19	116.1	0.0	310.6
24.00		0.00	1.00	16.384	27.69	254.47	0.650	0.000	2.00	6.392	4.15	115.0	0.0	307.6
26.00		0.00	1.00	16.384	27.69	252.04	0.650	0.000	2.00	6.331	4.12	114.0	0.0	304.7
28.00		0.00	1.00	16.384	27.69	249.61	0.650	0.000	2.00	6.271	4.08	112.9	0.0	301.7
30.00		0.00	1.00	16.384	27.69	247.19	0.650	0.000	2.00	6.210	4.04	111.8	0.0	298.8
32.00		0.00	1.00	16.384	27.69	244.76	0.650	0.000	2.00	6.149	4.00	110.7	0.0	295.8
34.00		0.00	1.01	16.524	27.93	243.37	0.650	0.000	2.00	6.089	3.96	110.5	0.0	292.9
36.00		0.00	1.03	16.796	28.39	242.91	0.650	0.000	2.00	6.028	3.92	111.2	0.0	289.9
38.00		0.00	1.04	17.058	28.83	242.31	0.650	0.000	2.00	5.967	3.88	111.8	0.0	287.0
40.00		0.00	1.06	17.310	29.25	241.60	0.650	0.000	2.00	5.907	3.84	112.3	0.0	284.0
42.00		0.00	1.07	17.553	29.66	240.78	0.650	0.000	2.00	5.846	3.80	112.7	0.0	281.1
44.00		0.00	1.09	17.788	30.06	239.85	0.650	0.000	2.00	5.785	3.76	113.0	0.0	278.1
44.50	Bot - Section 2	0.00	1.09	17.845	30.16	239.61	0.650	0.000	0.50	1.437	0.93	28.2	0.0	69.1
46.00		0.00	1.10	18.015	30.45	238.83	0.650	0.000	1.50	4.366	2.84	86.4	0.0	381.3
48.00		0.00	1.11	18.235	30.82	237.73	0.650	0.000	2.00	5.768	3.75	115.5	0.0	503.7
50.00	Top - Section 1	0.00	1.13	18.449	31.18	236.54	0.650	0.000	2.00	5.707	3.71	115.7	0.0	498.3
52.00		0.00	1.14	18.657	31.53	239.73	0.650	0.000	2.00	5.647	3.67	115.7	0.0	226.6
54.00		0.00	1.15	18.859	31.87	238.42	0.650	0.000	2.00	5.586	3.63	115.7	0.0	224.1
56.00		0.00	1.16	19.056	32.21	237.04	0.650	0.000	2.00	5.525	3.59	115.7	0.0	221.7
58.00		0.00	1.17	19.248	32.53	235.60	0.650	0.000	2.00	5.465	3.55	115.5	0.0	219.2
60.00		0.00	1.19	19.436	32.85	234.10	0.650	0.000	2.00	5.404	3.51	115.4	0.0	216.7
62.00		0.00	1.20	19.619	33.16	232.55	0.650	0.000	2.00	5.343	3.47	115.2	0.0	214.3
64.00		0.00	1.21	19.797	33.46	230.94	0.650	0.000	2.00	5.282	3.43	114.9	0.0	211.8
66.00		0.00	1.22	19.972	33.75	229.27	0.650	0.000	2.00	5.222	3.39	114.6	0.0	209.4
68.00		0.00	1.23	20.143	34.04	227.56	0.650	0.000	2.00	5.161	3.35	114.2	0.0	206.9
70.00		0.00	1.24	20.311	34.33	225.80	0.650	0.000	2.00	5.100	3.32	113.8	0.0	204.5
72.00		0.00	1.25	20.475	34.60	224.00	0.650	0.000	2.00	5.040	3.28	113.4	0.0	202.0
74.00		0.00	1.26	20.636	34.87	222.15	0.650	0.000	2.00	4.979	3.24	112.9	0.0	199.5
76.00		0.00	1.27	20.794	35.14	220.27	0.650	0.000	2.00	4.918	3.20	112.3	0.0	197.1
78.00		0.00	1.28	20.949	35.40	218.34	0.650	0.000	2.00	4.858	3.16	111.8	0.0	194.6
80.00		0.00	1.29	21.101	35.66	216.38	0.650	0.000	2.00	4.797	3.12	111.2	0.0	192.2
82.00		0.00	1.30	21.250	35.91	214.38	0.650	0.000	2.00	4.736	3.08	110.6	0.0	189.7
84.00		0.00	1.31	21.397	36.16	212.34	0.650	0.000	2.00	4.676	3.04	109.9	0.0	187.3
86.00		0.00	1.31	21.541	36.40	210.27	0.650	0.000	2.00	4.615	3.00	109.2	0.0	184.8
88.00	Appurtenance(s)	0.00	1.32	21.683	36.64	208.17	0.650	0.000	2.00	4.554	2.96	108.5	0.0	182.3
90.00		0.00	1.33	21.823	36.88	206.04	0.650	0.000	2.00	4.494	2.92	107.7	0.0	179.9
90.50	Bot - Section 3	0.00	1.33	21.858	36.94	205.50	0.650	0.000	0.50	1.114	0.72	26.7	0.0	44.6

Wind Loading - Shaft

Structure: CT16504-A-SBA
Site Name: Manchester 12, CT
Height: 140.50 (ft)
Base Elev: 0.000 (ft)

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

7/6/2015

Tower Engineering Solutions

92.00	0.00	1.34	21.960	37.11	203.88	0.650	0.000	1.50	3.366	2.19	81.2	0.0	214.1
94.00	0.00	1.35	22.096	37.34	201.69	0.650	0.000	2.00	4.435	2.88	107.6	0.0	282.0
94.50 Top - Section 2	0.00	1.35	22.129	37.40	201.13	0.650	0.000	0.50	1.099	0.71	26.7	0.0	69.9
96.00	0.00	1.36	22.229	37.57	202.38	0.650	0.000	1.50	3.275	2.13	80.0	0.0	79.0
98.00	0.00	1.36	22.360	37.79	200.14	0.650	0.000	2.00	4.313	2.80	105.9	0.0	104.1
100.00	0.00	1.37	22.490	38.01	197.87	0.650	0.000	2.00	4.253	2.76	105.1	0.0	102.6
102.00	0.00	1.38	22.617	38.22	195.58	0.650	0.000	2.00	4.192	2.72	104.1	0.0	101.1
104.00 Appurtenance(s)	0.00	1.39	22.743	38.44	193.27	0.650	0.000	2.00	4.131	2.69	103.2	0.0	99.6
106.00	0.00	1.40	22.867	38.65	190.92	0.650	0.000	2.00	4.071	2.65	102.3	0.0	98.2
108.00	0.00	1.40	22.990	38.85	188.56	0.650	0.000	2.00	4.010	2.61	101.3	0.0	96.7
110.00	0.00	1.41	23.111	39.06	186.17	0.650	0.000	2.00	3.949	2.57	100.3	0.0	95.2
112.00	0.00	1.42	23.230	39.26	183.76	0.650	0.000	2.00	3.888	2.53	99.2	0.0	93.7
114.00 Appurtenance(s)	0.00	1.43	23.348	39.46	181.33	0.650	0.000	2.00	3.828	2.49	98.2	0.0	92.3
116.00	0.00	1.43	23.464	39.65	178.87	0.650	0.000	2.00	3.767	2.45	97.1	0.0	90.8
118.00	0.00	1.44	23.579	39.85	176.40	0.650	0.000	2.00	3.706	2.41	96.0	0.0	89.3
120.00	0.00	1.45	23.692	40.04	173.90	0.650	0.000	2.00	3.646	2.37	94.9	0.0	87.8
122.00	0.00	1.45	23.805	40.23	171.39	0.650	0.000	2.00	3.585	2.33	93.7	0.0	86.4
124.00 Appurtenance(s)	0.00	1.46	23.915	40.42	168.85	0.650	0.000	2.00	3.524	2.29	92.6	0.0	84.9
126.00	0.00	1.47	24.025	40.60	166.30	0.650	0.000	2.00	3.464	2.25	91.4	0.0	83.4
128.00	0.00	1.47	24.133	40.79	163.73	0.650	0.000	2.00	3.403	2.21	90.2	0.0	81.9
129.50 Appurtenance(s)	0.00	1.48	24.214	40.92	161.79	0.650	0.000	1.50	2.512	1.63	66.8	0.0	60.5
130.00	0.00	1.48	24.241	40.97	161.14	0.650	0.000	0.50	0.830	0.54	22.1	0.0	20.0
132.00	0.00	1.49	24.347	41.15	158.53	0.650	0.000	2.00	3.282	2.13	87.8	0.0	79.0
132.50 Appurtenance(s)	0.00	1.49	24.373	41.19	157.88	0.650	0.000	0.50	0.811	0.53	21.7	0.0	19.5
134.00	0.00	1.49	24.451	41.32	155.91	0.650	0.000	1.50	2.410	1.57	64.7	0.0	58.0
136.00	0.00	1.50	24.555	41.50	153.27	0.650	0.000	2.00	3.160	2.05	85.2	0.0	76.0
138.00	0.00	1.50	24.658	41.67	150.61	0.650	0.000	2.00	3.100	2.01	84.0	0.0	74.6
139.00 Appurtenance(s)	0.00	1.51	24.709	41.76	149.27	0.650	0.000	1.00	1.527	0.99	41.4	0.0	36.7
140.00	0.00	1.51	24.759	41.84	147.93	0.650	0.000	1.00	1.512	0.98	41.1	0.0	36.4
140.50	0.00	1.51	24.785	41.89	147.26	0.650	0.000	0.50	0.750	0.49	20.4	0.0	18.0
							Totals:	**140.50**			**7,610.4**		**14,973.2**

Discrete Appurtenance Forces

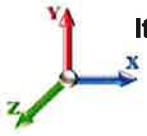
Structure:	CT16504-A-SB	**Code:**	EIA/TIA-222-F	7/6/2015	
Site Name:	Manchester 12, CT	**Exposure:**	C		
Height:	140.50 (ft)	**Gh:**	1.69		
Base Elev:	0.000 (ft)	**Struct Class:**	II	Page: 11	

Tower Engineering Solutions

Load Case: 80 mph Wind with 0" Ice

Dead Load Factor 1.00

Wind Load Factor 1.00



Iterations: 33

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	88.00	Alcatel Lucent RRH2X60-700	3	21.823	36.881	0.88	11.96	270.00	0.000	2.000	441.07	0.00	882.13
2	88.00	Alcatel Lucent	3	21.823	36.881	0.88	11.96	270.00	0.000	2.000	441.07	0.00	882.13
3	88.00	Alcatel Lucent	3	21.823	36.881	0.91	7.02	165.00	0.000	2.000	258.76	0.00	517.52
4	88.00	Antel	3	21.823	36.881	0.89	21.23	127.80	0.000	2.000	782.85	0.00	1565.70
5	88.00	Commscope SBNHH-1D65B	6	21.823	36.881	0.92	46.86	458.40	0.000	2.000	1728.41	0.00	3456.82
6	88.00	Platform w/ Hand Rails	1	21.823	36.881	1.00	36.21	1503.00	0.000	2.000	1335.45	0.00	2670.91
7	88.00	RFS DB-T1-6Z-8AB-0Z	1	21.823	36.881	0.76	4.26	44.00	0.000	2.000	156.96	0.00	313.93
8	88.00	Swedcom SLCP 2x6014	3	21.823	36.881	0.98	22.73	136.80	0.000	2.000	838.16	0.00	1676.32
9	104.00	4' Standoff Mount	2	22.743	38.436	1.00	3.00	100.00	0.000	0.000	115.31	0.00	0.00
10	114.00	20" x 18" x 9" Junction Box	1	23.348	39.458	0.90	3.15	20.00	0.000	0.000	124.29	0.00	0.00
11	114.00	Alcatel Lucent	3	23.522	39.752	0.50	3.92	180.00	0.000	3.000	155.63	0.00	466.88
12	114.00	Alcatel Lucent RRH2X50-800	3	23.260	39.309	0.50	3.38	192.00	0.000	-1.500	132.67	0.00	-199.00
13	114.00	Alcatel Lucent	3	23.522	39.752	0.50	2.55	210.00	0.000	3.000	101.37	0.00	304.10
14	114.00	Andrew VHLP1-23-DW1	1	23.607	39.897	0.80	1.29	14.00	0.000	4.500	51.39	0.00	231.24
15	114.00	Andrew VHLP2-23-DW1	1	23.607	39.897	0.80	3.75	31.00	0.000	4.500	149.69	0.00	673.62
16	114.00	Argus LLPX310R-V1	3	23.377	39.507	0.81	12.93	152.10	0.000	0.500	510.73	0.00	255.37
17	114.00	Low Profile Platform	1	23.348	39.458	1.00	19.56	1800.00	0.000	0.000	771.79	0.00	0.00
18	114.00	RFS APXVSPP18	3	23.406	39.556	0.96	26.32	375.90	0.000	1.000	1041.25	0.00	1041.25
19	114.00	RFS APXVTM14	3	23.522	39.752	0.90	21.22	350.10	0.000	3.000	843.61	0.00	2530.83
20	114.00	Samsung SPI-22132825WB	3	23.289	39.359	0.80	4.37	99.30	0.000	-1.000	171.92	0.00	-171.92
21	124.00	CCI DTMABP7819VG12A	6	23.998	40.556	0.50	1.17	115.20	0.000	1.500	47.45	0.00	71.18
22	124.00	Ericsson RRUS 11 B12	3	24.160	40.831	0.50	4.41	163.20	0.000	4.500	180.06	0.00	810.29
23	124.00	Ericsson RRUS 11 B2	3	24.160	40.831	0.88	10.16	218.10	0.000	4.500	415.01	0.00	1867.53
24	124.00	Kathrein 800 10121	3	24.025	40.602	0.91	15.70	204.90	0.000	2.000	637.36	0.00	1274.71
25	124.00	KMW	6	23.998	40.556	0.86	42.62	423.00	0.000	1.500	1728.57	0.00	2592.86
26	124.00	Platform w/ Hand Rails	1	23.915	40.417	1.00	31.30	1600.00	0.000	0.000	1265.06	0.00	0.00
27	129.50	Raycap DC6-48-60-18-8F	1	24.214	40.921	1.00	1.47	32.80	0.000	0.000	60.15	0.00	0.00
28	132.50	5' Standoff Mount	1	24.373	41.190	1.00	3.50	50.00	3.322	0.000	144.17	478.85	0.00
29	139.00	3.5' Standoff Mount	2	24.709	41.758	1.00	7.00	100.00	0.000	0.000	292.30	0.00	0.00
						Totals:		**9,406.60**			**14,922.51**		

Total Applied Force Summary

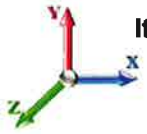
Structure:	CT16504-A-SB	**Code:**	EIA/TIA-222-F	7/6/2015	
Site Name:	Manchester 12, CT	**Exposure:**	C		
Height:	140.50 (ft)	**Gh:**	1.69		
Base Elev:	0.000 (ft)	**Struct Class:**	II	Page: 12	

Tower Engineering Solutions

Load Case: 80 mph Wind with 0" Ice

Dead Load Factor 1.00

Wind Load Factor 1.00



Iterations: 33

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
2.00		127.06	415.49	0.00	0.00
4.00		125.97	412.54	0.00	0.00
6.00		124.87	409.59	0.00	0.00
8.00		123.78	406.64	0.00	0.00
10.00		122.69	403.69	0.00	0.00
12.00		121.60	400.74	0.00	0.00
14.00		120.50	397.79	0.00	0.00
16.00		119.41	394.84	0.00	0.00
18.00		118.32	391.89	0.00	0.00
20.00		117.23	388.94	0.00	0.00
22.00		116.14	385.99	0.00	0.00
24.00		115.04	383.04	0.00	0.00
26.00		113.95	380.09	0.00	0.00
28.00		112.86	377.14	0.00	0.00
30.00		111.77	374.19	0.00	0.00
32.00		110.67	371.24	0.00	0.00
34.00		110.52	368.30	0.00	0.00
36.00		111.22	365.35	0.00	0.00
38.00		111.82	362.40	0.00	0.00
40.00		112.31	359.45	0.00	0.00
42.00		112.72	356.50	0.00	0.00
44.00		113.04	353.55	0.00	0.00
44.50		28.17	87.93	0.00	0.00
46.00		86.40	437.91	0.00	0.00
48.00		115.54	579.14	0.00	0.00
50.00		115.67	573.74	0.00	0.00
52.00		115.73	302.00	0.00	0.00
54.00		115.72	299.55	0.00	0.00
56.00		115.66	297.09	0.00	0.00
58.00		115.54	294.63	0.00	0.00
60.00		115.37	292.17	0.00	0.00
62.00		115.15	289.71	0.00	0.00
64.00		114.88	287.26	0.00	0.00
66.00		114.56	284.80	0.00	0.00
68.00		114.20	282.34	0.00	0.00
70.00		113.80	279.88	0.00	0.00
72.00		113.35	277.42	0.00	0.00
74.00		112.87	274.97	0.00	0.00
76.00		112.35	272.51	0.00	0.00
78.00		111.79	270.05	0.00	0.00
80.00		111.19	267.59	0.00	0.00
82.00		110.56	265.14	0.00	0.00
84.00		109.90	262.68	0.00	0.00
86.00		109.20	260.22	0.00	0.00
88.00	(23) appurtenances	6091.21	3232.76	0.00	11965.46
90.00		107.72	255.30	0.00	0.00
90.50		26.75	56.10	0.00	0.00
92.00		81.20	248.60	0.00	0.00

Total Applied Force Summary

Structure:	CT16504-A-SB	**Code:**	EIA/TIA-222-F	7/6/2015
Site Name:	Manchester 12, CT	**Exposure:**	C	
Height:	140.50 (ft)	**Gh:**	1.69	
Base Elev:	0.000 (ft)	**Struct Class:**	II	Page: 13

Tower Engineering Solutions

94.00		107.64	328.03	0.00	0.00
94.50		26.72	81.39	0.00	0.00
96.00		79.97	113.56	0.00	0.00
98.00		105.95	150.12	0.00	0.00
100.00		105.06	148.64	0.00	0.00
102.00		104.15	147.17	0.00	0.00
104.00	(2) appurtenances	218.52	245.69	0.00	0.00
106.00		102.25	144.22	0.00	0.00
108.00		101.27	142.74	0.00	0.00
110.00		100.26	141.27	0.00	0.00
112.00		99.23	139.79	0.00	0.00
114.00	(25) appurtenances	4152.51	3562.72	0.00	5132.37
116.00		97.10	121.80	0.00	0.00
118.00		96.00	120.33	0.00	0.00
120.00		94.88	118.85	0.00	0.00
122.00		93.75	117.38	0.00	0.00
124.00	(22) appurtenances	4366.10	2840.30	0.00	6616.56
126.00		91.41	83.41	0.00	0.00
128.00		90.21	81.93	0.00	0.00
129.50	(1) appurtenances	126.98	93.28	0.00	0.00
130.00		22.10	19.98	0.00	0.00
132.00		87.77	78.98	0.00	0.00
132.50	(1) appurtenances	165.88	69.52	478.85	0.00
134.00		64.73	57.99	0.00	0.00
136.00		85.24	76.03	0.00	0.00
138.00		83.96	74.56	0.00	0.00
139.00	(2) appurtenances	333.75	136.73	0.00	0.00
140.00		41.12	36.36	0.00	0.00
140.50		20.43	18.04	0.00	0.00
	Totals:	**22,532.90**	**28,481.70**	**478.85**	**23,714.40**

Resulting Forces and Deflections

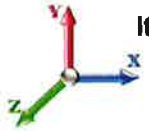
Structure: CT16504-A-SB
Site Name: Manchester 12, CT
Height: 140.50 (ft)
Base Elev: 0.000 (ft)

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

7/6/2015

Tower Engineering Solutions

Load Case: 80 mph Wind with 0" Ice
Dead Load Factor 1.00
Wind Load Factor 1.00



Iterations: 33

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	-22.561	-28.459	0.000	-0.011	-0.465	-2229.4	0.000	0.000	0.000	0.000	0.000
2.00	-22.489	-28.000	0.000	-0.011	-0.465	-2184.3	-0.024	0.000	0.024	-0.111	0.000
4.00	-22.415	-27.544	0.000	-0.011	-0.465	-2139.3	-0.095	0.000	0.095	-0.223	0.000
6.00	-22.342	-27.091	0.000	-0.011	-0.465	-2094.5	-0.213	0.000	0.213	-0.336	0.000
8.00	-22.268	-26.641	0.000	-0.011	-0.465	-2049.8	-0.378	0.000	0.378	-0.449	0.000
10.00	-22.194	-26.194	0.000	-0.011	-0.465	-2005.3	-0.591	0.000	0.591	-0.563	0.000
12.00	-22.120	-25.751	0.000	-0.011	-0.465	-1960.9	-0.852	0.000	0.852	-0.677	0.000
14.00	-22.045	-25.310	0.000	-0.012	-0.465	-1916.6	-1.160	0.000	1.160	-0.792	0.000
16.00	-21.970	-24.873	0.000	-0.012	-0.466	-1872.6	-1.517	0.000	1.517	-0.907	0.000
18.00	-21.895	-24.439	0.000	-0.012	-0.466	-1828.6	-1.922	0.000	1.922	-1.023	0.000
20.00	-21.819	-24.008	0.000	-0.012	-0.466	-1784.8	-2.376	0.000	2.376	-1.139	0.000
22.00	-21.743	-23.580	0.000	-0.012	-0.466	-1741.2	-2.878	0.000	2.878	-1.256	0.000
24.00	-21.666	-23.156	0.000	-0.012	-0.466	-1697.7	-3.430	0.000	3.430	-1.373	0.000
26.00	-21.590	-22.734	0.000	-0.013	-0.466	-1654.4	-4.030	0.000	4.030	-1.491	0.000
28.00	-21.513	-22.316	0.000	-0.013	-0.466	-1611.2	-4.680	0.000	4.680	-1.608	0.000
30.00	-21.435	-21.901	0.000	-0.013	-0.466	-1568.2	-5.380	0.000	5.380	-1.726	0.000
32.00	-21.358	-21.489	0.000	-0.013	-0.466	-1525.3	-6.128	0.000	6.128	-1.845	0.000
34.00	-21.279	-21.081	0.000	-0.014	-0.466	-1482.6	-6.927	0.000	6.927	-1.963	-0.001
36.00	-21.197	-20.676	0.000	-0.014	-0.466	-1440.0	-7.775	0.000	7.775	-2.082	-0.001
38.00	-21.114	-20.274	0.000	-0.014	-0.466	-1397.6	-8.673	0.000	8.673	-2.201	-0.001
40.00	-21.029	-19.876	0.000	-0.015	-0.467	-1355.4	-9.620	0.000	9.620	-2.320	-0.001
42.00	-20.942	-19.481	0.000	-0.015	-0.467	-1313.4	-10.618	0.000	10.618	-2.439	-0.001
44.00	-20.839	-19.105	0.000	-0.015	-0.467	-1271.5	-11.665	0.000	11.665	-2.558	-0.001
44.50	-20.826	-18.997	0.000	-0.016	-0.467	-1261.1	-11.934	0.000	11.934	-2.588	-0.001
46.00	-20.754	-18.526	0.000	-0.016	-0.467	-1229.8	-12.762	0.000	12.762	-2.677	-0.001
48.00	-20.648	-17.910	0.000	-0.017	-0.467	-1188.3	-13.909	0.000	13.909	-2.796	-0.001
50.00	-20.539	-17.301	0.000	-0.017	-0.467	-1147.0	-15.105	0.000	15.105	-2.914	-0.001
52.00	-20.445	-16.960	0.000	-0.018	-0.468	-1105.9	-16.351	0.000	16.351	-3.032	-0.001
54.00	-20.352	-16.621	0.000	-0.018	-0.468	-1065.0	-17.650	0.000	17.650	-3.165	-0.001
56.00	-20.257	-16.284	0.000	-0.019	-0.468	-1024.3	-19.003	0.001	19.003	-3.297	-0.001
58.00	-20.161	-15.951	0.000	-0.020	-0.468	-983.87	-20.412	0.001	20.412	-3.427	-0.001
60.00	-20.063	-15.621	0.000	-0.020	-0.468	-943.55	-21.875	0.001	21.875	-3.557	-0.001
62.00	-19.964	-15.294	0.000	-0.021	-0.469	-903.43	-23.392	0.001	23.392	-3.686	-0.001
64.00	-19.864	-14.971	0.000	-0.022	-0.469	-863.50	-24.963	0.001	24.963	-3.814	-0.001
66.00	-19.763	-14.652	0.000	-0.022	-0.469	-823.77	-26.587	0.001	26.587	-3.940	-0.001
68.00	-19.660	-14.336	0.000	-0.023	-0.469	-784.25	-28.263	0.001	28.263	-4.064	-0.001
70.00	-19.556	-14.023	0.000	-0.024	-0.469	-744.93	-29.991	0.001	29.991	-4.187	-0.001
72.00	-19.451	-13.714	0.000	-0.025	-0.470	-705.82	-31.770	0.001	31.770	-4.308	-0.002
74.00	-19.345	-13.409	0.000	-0.026	-0.470	-666.91	-33.599	0.001	33.599	-4.426	-0.002
76.00	-19.238	-13.108	0.001	-0.027	-0.470	-628.22	-35.477	0.002	35.477	-4.542	-0.002
78.00	-19.130	-12.810	0.001	-0.028	-0.470	-589.75	-37.402	0.002	37.402	-4.655	-0.002
80.00	-19.021	-12.517	0.001	-0.029	-0.471	-551.49	-39.375	0.002	39.375	-4.766	-0.002
82.00	-18.911	-12.227	0.001	-0.030	-0.471	-513.45	-41.392	0.002	41.392	-4.872	-0.002
84.00	-18.800	-11.942	0.001	-0.031	-0.471	-475.63	-43.453	0.002	43.453	-4.975	-0.002
86.00	-18.688	-11.661	0.001	-0.032	-0.471	-438.03	-45.557	0.003	45.557	-5.075	-0.002
88.00	-12.347	-8.966	0.000	-0.034	-0.471	-388.69	-47.701	0.003	47.701	-5.169	-0.002
90.00	-12.225	-8.709	0.000	-0.034	-0.472	-363.99	-49.883	0.003	49.883	-5.258	-0.002
90.50	-12.199	-8.647	0.000	-0.035	-0.472	-357.88	-50.434	0.003	50.434	-5.280	-0.002
92.00	-12.106	-8.391	0.000	-0.035	-0.472	-339.58	-52.101	0.003	52.101	-5.345	-0.003

Resulting Forces and Deflections

Structure: CT16504-A-SB | **Code:** EIA/TIA-222-F | 7/6/2015

Site Name: Manchester 12, CT | **Exposure:** C

Height: 140.50 (ft) | **Gh:** 1.69

Base Elev: 0.000 (ft) | **Struct Class:** II | Page: 15

Tower Engineering Solutions

94.00	-11.976	-8.064	0.000	-0.036	-0.472	-315.37	-54.355	0.004	54.355	-5.428	-0.003
94.50	-11.947	-7.977	0.000	-0.036	-0.472	-309.38	-54.924	0.004	54.924	-5.449	-0.003
96.00	-11.869	-7.852	0.000	-0.037	-0.473	-291.46	-56.643	0.004	56.643	-5.510	-0.003
98.00	-11.765	-7.688	0.000	-0.038	-0.474	-267.72	-58.974	0.004	58.974	-5.632	-0.003
100.00	-11.661	-7.528	0.001	-0.039	-0.474	-244.19	-61.356	0.005	61.356	-5.748	-0.003
102.00	-11.556	-7.370	0.001	-0.040	-0.474	-220.87	-63.784	0.005	63.784	-5.859	-0.003
104.00	-11.326	-7.128	0.001	-0.041	-0.475	-197.76	-66.257	0.006	66.257	-5.963	-0.004
106.00	-11.221	-6.978	0.001	-0.042	-0.475	-175.11	-68.773	0.007	68.773	-6.060	-0.004
108.00	-11.115	-6.830	0.001	-0.043	-0.475	-152.67	-71.327	0.007	71.327	-6.149	-0.004
110.00	-11.009	-6.686	0.001	-0.044	-0.475	-130.44	-73.916	0.008	73.916	-6.230	-0.004
112.00	-10.903	-6.545	0.001	-0.046	-0.476	-108.42	-76.537	0.009	76.537	-6.301	-0.005
114.00	-6.386	-3.456	0.000	-0.048	-0.476	-81.485	-79.185	0.010	79.185	-6.362	-0.005
116.00	-6.278	-3.341	0.001	-0.048	-0.476	-68.714	-81.856	0.010	81.856	-6.411	-0.005
118.00	-6.172	-3.228	0.001	-0.049	-0.476	-56.157	-84.546	0.011	84.546	-6.454	-0.006
120.00	-6.066	-3.117	0.001	-0.050	-0.476	-43.814	-87.252	0.012	87.252	-6.490	-0.006
122.00	-5.961	-3.009	0.001	-0.051	-0.476	-31.683	-89.972	0.014	89.972	-6.519	-0.006
124.00	-1.300	-0.683	0.000	-0.053	-0.476	-13.145	-92.703	0.015	92.703	-6.540	-0.007
126.00	-1.200	-0.610	0.000	-0.054	-0.476	-10.546	-95.438	0.016	95.438	-6.550	-0.007
128.00	-1.101	-0.539	0.000	-0.054	-0.476	-8.146	-98.178	0.017	98.178	-6.558	-0.008
129.50	-0.964	-0.461	0.000	-0.054	-0.476	-6.495	-100.23	0.019	100.235	-6.563	-0.008
130.00	-0.940	-0.444	0.000	-0.054	-0.476	-6.013	-100.92	0.019	100.920	-6.565	-0.008
132.00	-0.844	-0.375	0.000	-0.054	-0.476	-4.134	-103.66	0.021	103.666	-6.570	-0.009
132.50	-0.671	-0.325	0.000	0.001	0.000	-3.712	-104.35	0.021	104.352	-6.571	-0.009
134.00	-0.600	-0.275	0.000	0.000	0.000	-2.706	-106.41	0.022	106.412	-6.573	-0.009
136.00	-0.507	-0.209	0.000	0.000	0.000	-1.506	-109.16	0.022	109.160	-6.576	-0.009
138.00	-0.415	-0.145	0.000	0.000	0.000	-0.493	-111.90	0.023	111.909	-6.577	-0.009
139.00	-0.067	-0.047	0.000	0.000	0.000	-0.079	-113.28	0.024	113.284	-6.577	-0.009
140.00	-0.022	-0.016	0.000	0.000	0.000	-0.011	-114.65	0.024	114.658	-6.577	-0.009
140.50	-0.020	0.000	0.000	0.000	0.000	0.000	0.000	0.000	115.345	-6.577	-0.009

Resulting Stresses

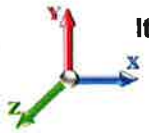
Structure: CT16504-A-SBA
Site Name: Manchester 12, CT
Height: 140.50 (ft)
Base Elev: 0.000 (ft)

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

7/6/2015

TES Tower Engineering Solutions

Load Case: 80 mph Wind with 0" Ice
Dead Load Factor 1.00
Wind Load Factor 1.00



Iterations: 33

	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)	Fb Allow Stress (ksi)	f/Fb Stress Ratio
0.00	0.57	0.91	0.00	0.01	0.00	51.26	51.85	52.0	0.997
2.00	0.56	0.91	0.00	0.01	0.00	51.10	51.69	52.0	0.994
4.00	0.56	0.92	0.00	0.01	0.00	50.94	51.52	52.0	0.991
6.00	0.55	0.92	0.00	0.01	0.00	50.76	51.34	52.0	0.988
8.00	0.55	0.93	0.00	0.01	0.00	50.58	51.15	52.0	0.984
10.00	0.55	0.93	0.00	0.01	0.00	50.38	50.95	52.0	0.980
12.00	0.54	0.94	0.00	0.01	0.00	50.17	50.74	52.0	0.976
14.00	0.54	0.94	0.00	0.01	0.00	49.95	50.51	52.0	0.972
16.00	0.53	0.95	0.00	0.01	0.00	49.71	50.27	52.0	0.967
18.00	0.53	0.95	0.00	0.01	0.00	49.47	50.02	52.0	0.962
20.00	0.52	0.96	0.00	0.01	0.00	49.20	49.75	52.0	0.957
22.00	0.52	0.96	0.00	0.01	0.00	48.92	49.47	52.0	0.952
24.00	0.51	0.97	0.00	0.01	0.00	48.63	49.17	52.0	0.946
26.00	0.51	0.98	0.00	0.01	0.00	48.32	48.86	52.0	0.940
28.00	0.51	0.98	0.00	0.01	0.00	47.99	48.53	52.0	0.934
30.00	0.50	0.99	0.00	0.01	0.00	47.65	48.18	52.0	0.927
32.00	0.50	1.00	0.00	0.01	0.00	47.28	47.81	52.0	0.920
34.00	0.49	1.00	0.00	0.01	0.00	46.90	47.42	52.0	0.912
36.00	0.49	1.01	0.00	0.01	0.00	46.49	47.02	52.0	0.904
38.00	0.48	1.01	0.00	0.01	0.00	46.07	46.58	52.0	0.896
40.00	0.48	1.02	0.00	0.01	0.00	45.62	46.13	52.0	0.887
42.00	0.47	1.03	0.00	0.01	0.00	45.15	45.66	52.0	0.878
44.00	0.47	1.03	0.00	0.01	0.00	44.65	45.15	52.0	0.869
44.50	0.47	1.04	0.00	0.01	0.00	44.52	45.03	52.0	0.866
46.00	0.46	1.04	0.00	0.01	0.00	44.13	44.62	52.0	0.858
48.00	0.45	1.05	0.00	0.01	0.00	43.58	44.06	52.0	0.848
50.00	0.52	1.24	0.00	0.01	0.00	49.42	49.98	52.0	0.962
52.00	0.51	1.24	0.00	0.01	0.00	48.70	49.26	52.0	0.948
54.00	0.51	1.25	0.00	0.01	0.00	47.94	48.50	52.0	0.933
56.00	0.50	1.26	0.00	0.01	0.00	47.15	47.70	52.0	0.918
58.00	0.50	1.27	0.00	0.01	0.00	46.31	46.87	52.0	0.902
60.00	0.49	1.28	0.00	0.01	0.00	45.44	45.99	52.0	0.885
62.00	0.49	1.29	0.00	0.01	0.00	44.52	45.07	52.0	0.867
64.00	0.48	1.29	0.00	0.01	0.00	43.56	44.10	52.0	0.848
66.00	0.48	1.30	0.00	0.01	0.00	42.55	43.09	52.0	0.829
68.00	0.47	1.31	0.00	0.01	0.00	41.48	42.02	52.0	0.808
70.00	0.47	1.32	0.00	0.01	0.00	40.37	40.90	52.0	0.787
72.00	0.46	1.33	0.00	0.01	0.00	39.20	39.73	52.0	0.764
74.00	0.46	1.34	0.00	0.01	0.00	37.96	38.50	52.0	0.741
76.00	0.46	1.35	0.00	0.01	0.00	36.67	37.20	52.0	0.716
78.00	0.45	1.36	0.00	0.01	0.00	35.31	35.84	52.0	0.689
80.00	0.45	1.37	0.00	0.01	0.00	33.88	34.41	52.0	0.662
82.00	0.44	1.38	0.00	0.01	0.00	32.37	32.90	52.0	0.633
84.00	0.44	1.39	0.00	0.02	0.00	30.79	31.32	52.0	0.603
86.00	0.43	1.40	0.00	0.02	0.00	29.13	29.66	52.0	0.571
88.00	0.34	0.94	0.00	0.02	0.00	26.56	26.94	52.0	0.518
90.00	0.33	0.94	0.00	0.02	0.00	25.56	25.95	52.0	0.499

Resulting Stresses

Structure:	CT16504-A-SBA			**Code:**	EIA/TIA-222-F	7/6/2015			
Site Name:	Manchester 12, CT			**Exposure:**	C				
Height:	140.50 (ft)			**Gh:**	1.69				
Base Elev:	0.000 (ft)			**Struct Class:**	II	Page: 17			

90.50	0.33	0.94	0.00	0.02	0.00	25.31	25.69	52.0	0.494
92.00	0.32	0.94	0.00	0.02	0.00	24.52	24.90	52.0	0.479
94.00	0.32	0.95	0.00	0.02	0.00	23.43	23.80	52.0	0.458
94.50	0.51	1.55	0.00	0.03	0.00	36.93	37.54	52.0	0.722
96.00	0.51	1.55	0.00	0.03	0.00	35.53	36.15	52.0	0.695
98.00	0.51	1.56	0.00	0.03	0.00	33.58	34.20	52.0	0.658
100.00	0.50	1.57	0.00	0.03	0.01	31.53	32.15	52.0	0.618
102.00	0.50	1.58	0.00	0.03	0.01	29.36	29.99	52.0	0.577
104.00	0.49	1.57	0.00	0.03	0.01	27.08	27.71	52.0	0.533
106.00	0.49	1.58	0.00	0.03	0.01	24.72	25.36	52.0	0.488
108.00	0.48	1.59	0.00	0.03	0.01	22.22	22.88	52.0	0.440
110.00	0.48	1.60	0.00	0.04	0.01	19.58	20.26	52.0	0.390
112.00	0.48	1.61	0.00	0.04	0.01	16.80	17.51	52.0	0.337
114.00	0.26	0.96	0.00	0.04	0.01	13.04	13.41	52.0	0.258
116.00	0.25	0.96	0.00	0.04	0.01	11.36	11.74	52.0	0.226
118.00	0.25	0.96	0.00	0.04	0.01	9.60	9.99	52.0	0.192
120.00	0.24	0.96	0.00	0.04	0.01	7.74	8.17	52.0	0.157
122.00	0.24	0.95	0.00	0.04	0.01	5.80	6.28	52.0	0.121
124.00	0.06	0.21	0.00	0.05	0.01	2.49	2.58	52.0	0.050
126.00	0.05	0.20	0.00	0.05	0.01	2.07	2.16	52.0	0.042
128.00	0.05	0.19	0.00	0.05	0.01	1.66	1.75	52.0	0.034
129.50	0.04	0.17	0.00	0.05	0.01	1.36	1.45	52.0	0.028
130.00	0.04	0.16	0.00	0.05	0.01	1.27	1.36	52.0	0.026
132.00	0.03	0.15	0.00	0.05	0.01	0.91	1.00	52.0	0.019
132.50	0.03	0.12	0.00	0.00	0.00	0.82	0.87	52.0	0.017
134.00	0.02	0.11	0.00	0.00	0.00	0.62	0.67	52.0	0.013
136.00	0.02	0.09	0.00	0.00	0.00	0.36	0.41	52.0	0.008
138.00	0.01	0.08	0.00	0.00	0.00	0.12	0.19	52.0	0.004
139.00	0.00	0.01	0.00	0.00	0.00	0.02	0.03	52.0	0.001
140.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	52.0	0.000
140.50	0.00	0.00	0.00	0.00	0.00	0.00	0.01	52.0	0.000

Wind Loading - Shaft

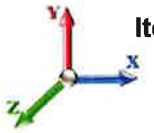
Structure: CT16504-A-SBA
Site Name: Manchester 12, CT
Height: 140.50 (ft)
Base Elev: 0.000 (ft)

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

7/6/2015

TES Tower Engineering Solutions

Load Case: 69.28 mph Wind with 0.5" Ice
Dead Load Factor 1.00
Wind Load Factor 1.00



Iterations: 33

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	12.287	20.77	245.60	0.650	0.500	0.00	0.000	0.00	0.0	0.0	0.0
2.00		0.00	1.00	12.287	20.77	243.50	0.650	0.500	2.00	7.226	4.70	97.5	52.7	392.7
4.00		0.00	1.00	12.287	20.77	241.39	0.650	0.500	2.00	7.166	4.66	96.7	52.2	389.3
6.00		0.00	1.00	12.287	20.77	239.29	0.650	0.500	2.00	7.105	4.62	95.9	51.8	385.9
8.00		0.00	1.00	12.287	20.77	237.19	0.650	0.500	2.00	7.044	4.58	95.1	51.3	382.5
10.00		0.00	1.00	12.287	20.77	235.09	0.650	0.500	2.00	6.984	4.54	94.3	50.9	379.1
12.00		0.00	1.00	12.287	20.77	232.98	0.650	0.500	2.00	6.923	4.50	93.4	50.4	375.7
14.00		0.00	1.00	12.287	20.77	230.88	0.650	0.500	2.00	6.862	4.46	92.6	50.0	372.3
16.00		0.00	1.00	12.287	20.77	228.78	0.650	0.500	2.00	6.802	4.42	91.8	49.5	368.9
18.00		0.00	1.00	12.287	20.77	226.68	0.650	0.500	2.00	6.741	4.38	91.0	49.1	365.5
20.00		0.00	1.00	12.287	20.77	224.58	0.650	0.500	2.00	6.680	4.34	90.2	48.6	362.1
22.00		0.00	1.00	12.287	20.77	222.47	0.650	0.500	2.00	6.619	4.30	89.3	48.2	358.7
24.00		0.00	1.00	12.287	20.77	220.37	0.650	0.500	2.00	6.559	4.26	88.5	47.7	355.3
26.00		0.00	1.00	12.287	20.77	218.27	0.650	0.500	2.00	6.498	4.22	87.7	47.3	352.0
28.00		0.00	1.00	12.287	20.77	216.17	0.650	0.500	2.00	6.437	4.18	86.9	46.8	348.6
30.00		0.00	1.00	12.287	20.77	214.06	0.650	0.500	2.00	6.377	4.14	86.1	46.4	345.2
32.00		0.00	1.00	12.287	20.77	211.96	0.650	0.500	2.00	6.316	4.11	85.3	45.9	341.8
34.00		0.00	1.01	12.393	20.94	210.76	0.650	0.500	2.00	6.255	4.07	85.2	45.5	338.4
36.00		0.00	1.03	12.597	21.29	210.36	0.650	0.500	2.00	6.195	4.03	85.7	45.0	335.0
38.00		0.00	1.04	12.793	21.62	209.84	0.650	0.500	2.00	6.134	3.99	86.2	44.6	331.6
40.00		0.00	1.06	12.982	21.94	209.22	0.650	0.500	2.00	6.073	3.95	86.6	44.1	328.2
42.00		0.00	1.07	13.164	22.25	208.51	0.650	0.500	2.00	6.013	3.91	86.9	43.7	324.8
44.00		0.00	1.09	13.340	22.54	207.71	0.650	0.500	2.00	5.952	3.87	87.2	43.2	321.4
44.50	Bot - Section 2	0.00	1.09	13.383	22.62	207.50	0.650	0.500	0.50	1.478	0.96	21.7	10.8	79.9
46.00		0.00	1.10	13.510	22.83	206.83	0.650	0.500	1.50	4.491	2.92	66.6	32.7	414.0
48.00		0.00	1.11	13.676	23.11	205.87	0.650	0.500	2.00	5.935	3.86	89.2	43.1	546.8
50.00	Top - Section 1	0.00	1.13	13.836	23.38	204.85	0.650	0.500	2.00	5.874	3.82	89.3	42.7	541.0
52.00		0.00	1.14	13.992	23.65	207.61	0.650	0.500	2.00	5.813	3.78	89.4	42.2	268.8
54.00		0.00	1.15	14.144	23.90	206.47	0.650	0.500	2.00	5.753	3.74	89.4	41.8	265.9
56.00		0.00	1.16	14.291	24.15	205.28	0.650	0.500	2.00	5.692	3.70	89.4	41.3	263.0
58.00		0.00	1.17	14.435	24.40	204.03	0.650	0.500	2.00	5.631	3.66	89.3	40.9	260.1
60.00		0.00	1.19	14.576	24.63	202.73	0.650	0.500	2.00	5.571	3.62	89.2	40.4	257.2
62.00		0.00	1.20	14.713	24.87	201.39	0.650	0.500	2.00	5.510	3.58	89.1	40.0	254.3
64.00		0.00	1.21	14.847	25.09	199.99	0.650	0.500	2.00	5.449	3.54	88.9	39.5	251.3
66.00		0.00	1.22	14.978	25.31	198.55	0.650	0.500	2.00	5.388	3.50	88.7	39.1	248.4
68.00		0.00	1.23	15.107	25.53	197.07	0.650	0.500	2.00	5.328	3.46	88.4	38.6	245.5
70.00		0.00	1.24	15.232	25.74	195.55	0.650	0.500	2.00	5.267	3.42	88.1	38.2	242.6
72.00		0.00	1.25	15.355	25.95	193.98	0.650	0.500	2.00	5.206	3.38	87.8	37.7	239.7
74.00		0.00	1.26	15.476	26.15	192.39	0.650	0.500	2.00	5.146	3.34	87.5	37.3	236.8
76.00		0.00	1.27	15.594	26.35	190.75	0.650	0.500	2.00	5.085	3.31	87.1	36.8	233.9
78.00		0.00	1.28	15.711	26.55	189.08	0.650	0.500	2.00	5.024	3.27	86.7	36.4	231.0
80.00		0.00	1.29	15.825	26.74	187.38	0.650	0.500	2.00	4.964	3.23	86.3	35.9	228.1
82.00		0.00	1.30	15.937	26.93	185.65	0.650	0.500	2.00	4.903	3.19	85.8	35.5	225.2
84.00		0.00	1.31	16.047	27.12	183.89	0.650	0.500	2.00	4.842	3.15	85.4	35.0	222.3
86.00		0.00	1.31	16.155	27.30	182.10	0.650	0.500	2.00	4.782	3.11	84.9	34.6	219.4
88.00	Appurtenance(s)	0.00	1.32	16.262	27.48	180.28	0.650	0.500	2.00	4.721	3.07	84.3	34.1	216.5
90.00		0.00	1.33	16.366	27.66	178.43	0.650	0.500	2.00	4.660	3.03	83.8	33.7	213.6
90.50	Bot - Section 3	0.00	1.33	16.392	27.70	177.97	0.650	0.500	0.50	1.156	0.75	20.8	8.4	53.0

Wind Loading - Shaft

Structure: CT16504-A-SBA
Site Name: Manchester 12, CT
Height: 140.50 (ft)
Base Elev: 0.000 (ft)

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

7/6/2015

Tower Engineering Solutions

92.00	0.00	1.34	16.469	27.83	176.56	0.650	0.500	1.50	3.491	2.27	63.2	25.3	239.3
94.00	0.00	1.35	16.571	28.00	174.66	0.650	0.500	2.00	4.601	2.99	83.8	33.2	315.2
94.50 Top - Section 2	0.00	1.35	16.596	28.05	174.18	0.650	0.500	0.50	1.141	0.74	20.8	8.3	78.2
96.00	0.00	1.36	16.671	28.17	175.26	0.650	0.500	1.50	3.400	2.21	62.3	24.6	103.6
98.00	0.00	1.36	16.769	28.34	173.32	0.650	0.500	2.00	4.480	2.91	82.5	32.3	136.4
100.00	0.00	1.37	16.866	28.50	171.36	0.650	0.500	2.00	4.419	2.87	81.9	31.9	134.5
102.00	0.00	1.38	16.962	28.67	169.37	0.650	0.500	2.00	4.359	2.83	81.2	31.4	132.5
104.00 Appurtenance(s)	0.00	1.39	17.056	28.83	167.37	0.650	0.500	2.00	4.298	2.79	80.5	31.0	130.6
106.00	0.00	1.40	17.150	28.98	165.34	0.650	0.500	2.00	4.237	2.75	79.8	30.5	128.7
108.00	0.00	1.40	17.241	29.14	163.29	0.650	0.500	2.00	4.177	2.71	79.1	30.1	126.8
110.00	0.00	1.41	17.332	29.29	161.22	0.650	0.500	2.00	4.116	2.68	78.4	29.6	124.8
112.00	0.00	1.42	17.421	29.44	159.14	0.650	0.500	2.00	4.055	2.64	77.6	29.2	122.9
114.00 Appurtenance(s)	0.00	1.43	17.510	29.59	157.03	0.650	0.500	2.00	3.994	2.60	76.8	28.7	121.0
116.00	0.00	1.43	17.597	29.74	154.90	0.650	0.500	2.00	3.934	2.56	76.0	28.3	119.1
118.00	0.00	1.44	17.683	29.88	152.76	0.650	0.500	2.00	3.873	2.52	75.2	27.8	117.1
120.00	0.00	1.45	17.768	30.03	150.60	0.650	0.500	2.00	3.812	2.48	74.4	27.4	115.2
122.00	0.00	1.45	17.852	30.17	148.42	0.650	0.500	2.00	3.752	2.44	73.6	26.9	113.3
124.00 Appurtenance(s)	0.00	1.46	17.936	30.31	146.23	0.650	0.500	2.00	3.691	2.40	72.7	26.5	111.4
126.00	0.00	1.47	18.018	30.45	144.02	0.650	0.500	2.00	3.630	2.36	71.9	26.0	109.5
128.00	0.00	1.47	18.099	30.59	141.79	0.650	0.500	2.00	3.570	2.32	71.0	25.6	107.5
129.50 Appurtenance(s)	0.00	1.48	18.159	30.69	140.11	0.650	0.500	1.50	2.637	1.71	52.6	18.9	79.4
130.00	0.00	1.48	18.179	30.72	139.55	0.650	0.500	0.50	0.872	0.57	17.4	6.3	26.3
132.00	0.00	1.49	18.259	30.86	137.29	0.650	0.500	2.00	3.448	2.24	69.2	24.7	103.7
132.50 Appurtenance(s)	0.00	1.49	18.279	30.89	136.72	0.650	0.500	0.50	0.853	0.55	17.1	6.1	25.7
134.00	0.00	1.49	18.337	30.99	135.02	0.650	0.500	1.50	2.535	1.65	51.1	18.2	76.2
136.00	0.00	1.50	18.415	31.12	132.73	0.650	0.500	2.00	3.327	2.16	67.3	23.8	99.8
138.00	0.00	1.50	18.492	31.25	130.43	0.650	0.500	2.00	3.266	2.12	66.3	23.3	97.9
139.00 Appurtenance(s)	0.00	1.51	18.530	31.32	129.27	0.650	0.500	1.00	1.610	1.05	32.8	11.6	48.3
140.00	0.00	1.51	18.568	31.38	128.11	0.650	0.500	1.00	1.595	1.04	32.5	11.4	47.8
140.50	0.00	1.51	18.587	31.41	127.53	0.650	0.500	0.50	0.792	0.51	16.2	5.7	23.7
							Totals:	**140.50**			**5,902.2**		**17,629.5**

Discrete Appurtenance Forces

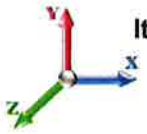
Structure:	CT16504-A-SB	**Code:**	EIA/TIA-222-F	7/6/2015	
Site Name:	Manchester 12, CT	**Exposure:**	C		
Height:	140.50 (ft)	**Gh:**	1.69		
Base Elev:	0.000 (ft)	**Struct Class:**	II	Page: 20	

Tower Engineering Solutions

Load Case: 69.28 mph Wind with 0.5" Ice

Dead Load Factor 1.00

Wind Load Factor 1.00



Iterations: 33

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	88.00	Alcatel Lucent RRH2X60-700	3	16.366	27.659	0.91	13.80	361.80	0.000	2.000	381.74	0.00	763.48
2	88.00	Alcatel Lucent	3	16.366	27.659	0.91	13.80	361.80	0.000	2.000	381.74	0.00	763.48
3	88.00	Alcatel Lucent	3	16.366	27.659	0.92	7.58	212.70	0.000	2.000	209.78	0.00	419.56
4	88.00	Antel	3	16.366	27.659	0.92	23.49	283.50	0.000	2.000	649.59	0.00	1299.17
5	88.00	Commscope SBNHH-1D65B	6	16.366	27.659	0.95	51.86	808.20	0.000	2.000	1434.30	0.00	2868.60
6	88.00	Platform w/ Hand Rails	1	16.366	27.659	1.00	42.82	2301.00	0.000	2.000	1184.36	0.00	2368.72
7	88.00	RFS DB-T1-6Z-8AB-0Z	1	16.366	27.659	0.77	4.66	0.00	0.000	2.000	128.82	0.00	257.63
8	88.00	Swedcom SLCP 2x6014	3	16.366	27.659	1.01	25.13	306.60	0.000	2.000	695.20	0.00	1390.40
9	104.00	4' Standoff Mount	2	17.056	28.825	1.00	8.00	150.00	0.000	0.000	230.60	0.00	0.00
10	114.00	20" x 18" x 9" Junction Box	1	17.510	29.592	0.95	3.33	38.00	0.000	0.000	98.67	0.00	0.00
11	114.00	Alcatel Lucent	3	17.640	29.812	0.50	4.23	249.30	0.000	3.000	126.10	0.00	378.31
12	114.00	Alcatel Lucent RRH2X50-800	3	17.444	29.480	0.50	3.65	258.30	0.000	-1.500	107.45	0.00	-161.18
13	114.00	Alcatel Lucent	3	17.640	29.812	0.50	2.83	276.00	0.000	3.000	84.52	0.00	253.55
14	114.00	Andrew VHLP1-23-DW1	1	17.705	29.921	0.80	1.46	24.10	0.000	4.500	43.56	0.00	196.04
15	114.00	Andrew VHLP2-23-DW1	1	17.705	29.921	0.80	4.04	59.00	0.000	4.500	120.88	0.00	543.96
16	114.00	Argus LLPX310R-V1	3	17.532	29.629	0.85	14.87	253.50	0.000	0.500	440.71	0.00	220.36
17	114.00	Low Profile Platform	1	17.510	29.592	1.00	26.60	2200.00	0.000	0.000	787.14	0.00	0.00
18	114.00	RFS APXVSPP18	3	17.554	29.666	0.99	29.25	579.00	0.000	1.000	867.85	0.00	867.85
19	114.00	RFS APXVTM14	3	17.640	29.812	0.93	23.72	516.60	0.000	3.000	707.20	0.00	2121.60
20	114.00	Samsung SPI-22132825WB	3	17.466	29.517	0.85	5.36	136.80	0.000	-1.000	158.06	0.00	-158.06
21	124.00	CCI DTMABP7819VG12A	6	17.997	30.415	0.58	1.68	147.30	0.000	1.500	50.98	0.00	76.47
22	124.00	Ericsson RRUS 11 B12	3	18.119	30.621	0.81	7.58	214.50	0.000	4.500	232.21	0.00	1044.92
23	124.00	Ericsson RRUS 11 B2	3	18.119	30.621	0.91	12.04	295.50	0.000	4.500	368.70	0.00	1659.17
24	124.00	Kathrein 800 10121	3	18.018	30.450	0.94	17.57	326.40	0.000	2.000	534.96	0.00	1069.93
25	124.00	KMW	6	17.997	30.415	0.90	46.88	747.00	0.000	1.500	1425.88	0.00	2138.82
26	124.00	Platform w/ Hand Rails	1	17.936	30.311	1.00	40.00	2200.00	0.000	0.000	1212.44	0.00	0.00
27	129.50	Raycap DC6-48-60-18-8F	1	18.159	30.689	1.00	1.67	50.50	0.000	0.000	51.25	0.00	0.00
28	132.50	5' Standoff Mount	1	18.279	30.891	1.00	4.00	75.00	3.322	0.000	123.56	410.41	0.00
29	139.00	3.5' Standoff Mount	2	18.530	31.316	1.00	8.00	150.00	0.000	0.000	250.53	0.00	0.00
						Totals:		**13,582.40**			**13,088.80**		

Total Applied Force Summary

Structure: CT16504-A-SB
Site Name: Manchester 12, CT
Height: 140.50 (ft)
Base Elev: 0.000 (ft)

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

7/6/2015

Tower Engineering Solutions

Load Case: 69.28 mph Wind with 0.5" Ice

Dead Load Factor 1.00
Wind Load Factor 1.00

Iterations: 33

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
2.00		97.54	468.16	0.00	0.00
4.00		96.72	464.76	0.00	0.00
6.00		95.90	461.36	0.00	0.00
8.00		95.08	457.96	0.00	0.00
10.00		94.26	454.57	0.00	0.00
12.00		93.44	451.17	0.00	0.00
14.00		92.62	447.77	0.00	0.00
16.00		91.80	444.37	0.00	0.00
18.00		90.98	440.97	0.00	0.00
20.00		90.17	437.57	0.00	0.00
22.00		89.35	434.17	0.00	0.00
24.00		88.53	430.77	0.00	0.00
26.00		87.71	427.37	0.00	0.00
28.00		86.89	423.98	0.00	0.00
30.00		86.07	420.58	0.00	0.00
32.00		85.25	417.18	0.00	0.00
34.00		85.15	413.78	0.00	0.00
36.00		85.72	410.38	0.00	0.00
38.00		86.20	406.98	0.00	0.00
40.00		86.61	403.58	0.00	0.00
42.00		86.94	400.18	0.00	0.00
44.00		87.22	396.78	0.00	0.00
44.50		21.74	98.71	0.00	0.00
46.00		66.65	470.58	0.00	0.00
48.00		89.15	622.25	0.00	0.00
50.00		89.28	616.40	0.00	0.00
52.00		89.35	344.21	0.00	0.00
54.00		89.38	341.31	0.00	0.00
56.00		89.36	338.40	0.00	0.00
58.00		89.30	335.49	0.00	0.00
60.00		89.19	332.58	0.00	0.00
62.00		89.05	329.68	0.00	0.00
64.00		88.87	326.77	0.00	0.00
66.00		88.66	323.86	0.00	0.00
68.00		88.41	320.95	0.00	0.00
70.00		88.13	318.05	0.00	0.00
72.00		87.82	315.14	0.00	0.00
74.00		87.48	312.23	0.00	0.00
76.00		87.11	309.33	0.00	0.00
78.00		86.71	306.42	0.00	0.00
80.00		86.29	303.51	0.00	0.00
82.00		85.83	300.60	0.00	0.00
84.00		85.36	297.70	0.00	0.00
86.00		84.86	294.79	0.00	0.00
88.00	(23) appurtenances	5149.85	4927.48	0.00	10131.03
90.00		83.78	288.97	0.00	0.00
90.50		20.81	64.49	0.00	0.00
92.00		63.15	273.87	0.00	0.00

Total Applied Force Summary

Structure:	CT16504-A-SB	**Code:**	EIA/TIA-222-F	7/6/2015	
Site Name:	Manchester 12, CT	**Exposure:**	C		
Height:	140.50 (ft)	**Gh:**	1.69		
Base Elev:	0.000 (ft)	**Struct Class:**	II	Page: 22	

94.00		83.76	361.27	0.00	0.00
94.50		20.80	89.67	0.00	0.00
96.00		62.26	138.15	0.00	0.00
98.00		82.53	182.45	0.00	0.00
100.00		81.88	180.53	0.00	0.00
102.00		81.21	178.61	0.00	0.00
104.00	(2) appurtenances	311.13	326.68	0.00	0.00
106.00		79.82	174.76	0.00	0.00
108.00		79.10	172.83	0.00	0.00
110.00		78.36	170.91	0.00	0.00
112.00		77.61	168.98	0.00	0.00
114.00	(25) appurtenances	3618.99	4757.66	0.00	4262.43
116.00		76.04	150.09	0.00	0.00
118.00		75.23	148.17	0.00	0.00
120.00		74.41	146.24	0.00	0.00
122.00		73.57	144.32	0.00	0.00
124.00	(22) appurtenances	3897.90	4073.10	0.00	5989.31
126.00		71.85	109.45	0.00	0.00
128.00		70.97	107.53	0.00	0.00
129.50	(1) appurtenances	103.86	129.92	0.00	0.00
130.00		17.40	26.26	0.00	0.00
132.00		69.16	103.68	0.00	0.00
132.50	(1) appurtenances	140.68	100.66	410.41	0.00
134.00		51.06	76.18	0.00	0.00
136.00		67.30	99.83	0.00	0.00
138.00		66.35	97.91	0.00	0.00
139.00	(2) appurtenances	283.31	198.29	0.00	0.00
140.00		32.54	47.81	0.00	0.00
140.50		16.17	23.74	0.00	0.00
	Totals:	**18,991.00**	**35,313.83**	**410.41**	**20,382.77**

Resulting Forces and Deflections

Structure: CT16504-A-SB
Site Name: Manchester 12, CT
Height: 140.50 (ft)
Base Elev: 0.000 (ft)

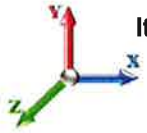
Code: EIA/TIA-222-F
Exposure: C
Gh: 1.69
Struct Class: II

7/6/2015

Tower Engineering Solutions

Load Case: 69.28 mph Wind with 0.5" Ice

Dead Load Factor 1.00
Wind Load Factor 1.00



Iterations: 33

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	-19.022	-35.297	0.000	-0.011	-0.401	-1937.8	0.000	0.000	0.000	0.000	0.000
2.00	-18.983	-34.797	0.000	-0.012	-0.401	-1899.7	-0.021	0.000	0.021	-0.097	0.000
4.00	-18.943	-34.300	0.000	-0.012	-0.401	-1861.8	-0.083	0.000	0.083	-0.194	0.000
6.00	-18.904	-33.807	0.000	-0.012	-0.401	-1823.9	-0.185	0.000	0.185	-0.292	0.000
8.00	-18.863	-33.317	0.000	-0.012	-0.401	-1786.1	-0.329	0.000	0.329	-0.391	0.000
10.00	-18.822	-32.831	0.000	-0.012	-0.401	-1748.4	-0.514	0.000	0.514	-0.490	0.000
12.00	-18.781	-32.348	0.000	-0.012	-0.401	-1710.7	-0.741	0.000	0.741	-0.590	0.000
14.00	-18.739	-31.868	0.000	-0.012	-0.401	-1673.2	-1.010	0.000	1.010	-0.690	0.000
16.00	-18.697	-31.392	0.000	-0.012	-0.401	-1635.7	-1.321	0.000	1.321	-0.791	0.000
18.00	-18.655	-30.919	0.000	-0.012	-0.402	-1598.3	-1.674	0.000	1.674	-0.892	0.000
20.00	-18.611	-30.450	0.000	-0.012	-0.402	-1561.0	-2.069	0.000	2.069	-0.993	0.000
22.00	-18.568	-29.985	0.000	-0.012	-0.402	-1523.8	-2.507	0.000	2.507	-1.095	0.000
24.00	-18.524	-29.523	0.000	-0.012	-0.402	-1486.6	-2.988	0.000	2.988	-1.198	0.000
26.00	-18.479	-29.064	0.000	-0.013	-0.402	-1449.6	-3.513	0.000	3.513	-1.301	0.000
28.00	-18.434	-28.609	0.000	-0.013	-0.402	-1412.6	-4.080	0.000	4.080	-1.404	0.000
30.00	-18.388	-28.158	0.000	-0.013	-0.402	-1375.7	-4.690	0.000	4.690	-1.508	0.000
32.00	-18.342	-27.710	0.000	-0.013	-0.402	-1339.0	-5.344	0.000	5.344	-1.612	0.000
34.00	-18.294	-27.265	0.000	-0.013	-0.402	-1302.3	-6.042	0.000	6.042	-1.716	0.000
36.00	-18.245	-26.825	0.000	-0.014	-0.402	-1265.7	-6.783	0.000	6.783	-1.820	0.000
38.00	-18.193	-26.387	0.000	-0.014	-0.402	-1229.2	-7.568	0.000	7.568	-1.925	0.000
40.00	-18.140	-25.954	0.000	-0.014	-0.402	-1192.8	-8.397	0.000	8.397	-2.029	-0.001
42.00	-18.086	-25.524	0.000	-0.015	-0.402	-1156.5	-9.269	0.000	9.269	-2.134	-0.001
44.00	-18.012	-25.111	0.000	-0.015	-0.402	-1120.4	-10.186	0.000	10.186	-2.239	-0.001
44.50	-18.010	-24.996	0.000	-0.015	-0.402	-1111.4	-10.422	0.000	10.422	-2.265	-0.001
46.00	-17.963	-24.500	0.000	-0.015	-0.402	-1084.4	-11.146	0.000	11.146	-2.344	-0.001
48.00	-17.892	-23.849	0.000	-0.015	-0.403	-1048.4	-12.150	0.000	12.150	-2.449	-0.001
50.00	-17.818	-23.205	0.000	-0.016	-0.403	-1012.7	-13.198	0.000	13.198	-2.553	-0.001
52.00	-17.757	-22.831	0.000	-0.016	-0.403	-977.06	-14.290	0.000	14.290	-2.657	-0.001
54.00	-17.698	-22.458	0.000	-0.017	-0.403	-941.55	-15.428	0.000	15.428	-2.774	-0.001
56.00	-17.636	-22.089	0.000	-0.017	-0.403	-906.15	-16.615	0.000	16.615	-2.891	-0.001
58.00	-17.574	-21.723	0.000	-0.018	-0.403	-870.88	-17.851	0.001	17.851	-3.007	-0.001
60.00	-17.510	-21.361	0.000	-0.018	-0.403	-835.73	-19.135	0.001	19.135	-3.122	-0.001
62.00	-17.444	-21.002	0.000	-0.018	-0.403	-800.71	-20.467	0.001	20.467	-3.236	-0.001
64.00	-17.377	-20.647	0.000	-0.019	-0.404	-765.83	-21.846	0.001	21.846	-3.349	-0.001
66.00	-17.309	-20.295	0.000	-0.019	-0.404	-731.07	-23.273	0.001	23.273	-3.461	-0.001
68.00	-17.239	-19.947	0.000	-0.020	-0.404	-696.46	-24.746	0.001	24.746	-3.571	-0.001
70.00	-17.168	-19.603	0.000	-0.021	-0.404	-661.98	-26.265	0.001	26.265	-3.680	-0.001
72.00	-17.096	-19.263	0.000	-0.021	-0.404	-627.64	-27.829	0.001	27.829	-3.788	-0.001
74.00	-17.022	-18.926	0.000	-0.022	-0.404	-593.45	-29.437	0.001	29.437	-3.893	-0.001
76.00	-16.947	-18.593	0.000	-0.022	-0.405	-559.41	-31.090	0.001	31.090	-3.996	-0.001
78.00	-16.871	-18.264	0.000	-0.023	-0.405	-525.52	-32.784	0.001	32.784	-4.097	-0.002
80.00	-16.793	-17.940	0.000	-0.024	-0.405	-491.77	-34.521	0.002	34.521	-4.195	-0.002
82.00	-16.714	-17.619	0.000	-0.025	-0.405	-458.19	-36.298	0.002	36.298	-4.291	-0.002
84.00	-16.634	-17.302	0.000	-0.025	-0.405	-424.76	-38.113	0.002	38.113	-4.383	-0.002
86.00	-16.552	-16.990	0.000	-0.026	-0.405	-391.50	-39.967	0.002	39.967	-4.471	-0.002
88.00	-11.048	-12.468	0.000	-0.027	-0.405	-348.26	-41.857	0.002	41.857	-4.556	-0.002
90.00	-10.952	-12.177	0.000	-0.028	-0.406	-326.17	-43.781	0.002	43.781	-4.635	-0.002
90.50	-10.934	-12.107	0.000	-0.028	-0.406	-320.69	-44.267	0.003	44.267	-4.655	-0.002
92.00	-10.862	-11.826	0.000	-0.028	-0.406	-304.29	-45.737	0.003	45.737	-4.713	-0.002

Resulting Forces and Deflections

Structure:	CT16504-A-SB	**Code:**	EIA/TIA-222-F	7/6/2015	
Site Name:	Manchester 12, CT	**Exposure:**	C		
Height:	140.50 (ft)	**Gh:**	1.69		
Base Elev:	0.000 (ft)	**Struct Class:**	II	Page: 24	

TES Tower Engineering Solutions

94.00	-10.758	-11.465	0.000	-0.029	-0.406	-282.57	-47.726	0.003	47.726	-4.788	-0.002
94.50	-10.737	-11.370	0.000	-0.029	-0.406	-277.19	-48.228	0.003	48.228	-4.806	-0.002
96.00	-10.680	-11.222	0.000	-0.030	-0.407	-261.08	-49.745	0.003	49.745	-4.861	-0.002
98.00	-10.603	-11.028	0.000	-0.030	-0.407	-239.72	-51.803	0.004	51.803	-4.970	-0.003
100.00	-10.525	-10.836	0.000	-0.031	-0.407	-218.52	-53.905	0.004	53.905	-5.075	-0.003
102.00	-10.446	-10.648	0.000	-0.032	-0.407	-197.47	-56.050	0.004	56.050	-5.174	-0.003
104.00	-10.122	-10.335	0.000	-0.032	-0.408	-176.58	-58.235	0.005	58.235	-5.267	-0.003
106.00	-10.041	-10.154	0.000	-0.033	-0.408	-156.33	-60.458	0.005	60.458	-5.353	-0.003
108.00	-9.959	-9.976	0.000	-0.034	-0.408	-136.25	-62.715	0.006	62.715	-5.433	-0.004
110.00	-9.877	-9.802	0.000	-0.035	-0.408	-116.33	-65.004	0.006	65.004	-5.505	-0.004
112.00	-9.793	-9.631	0.000	-0.036	-0.408	-96.585	-67.320	0.007	67.320	-5.568	-0.004
114.00	-5.732	-5.245	0.000	-0.037	-0.408	-72.736	-69.662	0.007	69.662	-5.622	-0.004
116.00	-5.645	-5.099	0.000	-0.037	-0.408	-61.273	-72.023	0.008	72.023	-5.666	-0.005
118.00	-5.558	-4.955	0.000	-0.038	-0.408	-49.984	-74.402	0.009	74.402	-5.705	-0.005
120.00	-5.472	-4.815	0.000	-0.039	-0.408	-38.867	-76.795	0.010	76.795	-5.737	-0.005
122.00	-5.386	-4.676	0.000	-0.039	-0.409	-27.923	-79.200	0.010	79.200	-5.762	-0.006
124.00	-1.099	-1.016	0.000	-0.041	-0.408	-11.162	-81.615	0.011	81.615	-5.780	-0.006
126.00	-1.016	-0.914	0.000	-0.041	-0.408	-8.965	-84.034	0.012	84.034	-5.789	-0.006
128.00	-0.935	-0.814	0.000	-0.041	-0.408	-6.932	-86.456	0.013	86.456	-5.796	-0.007
129.50	-0.818	-0.695	0.000	-0.041	-0.408	-5.530	-88.275	0.014	88.275	-5.800	-0.007
130.00	-0.798	-0.671	0.000	-0.041	-0.408	-5.121	-88.881	0.015	88.881	-5.801	-0.007
132.00	-0.719	-0.575	0.000	-0.041	-0.408	-3.524	-91.308	0.016	91.308	-5.806	-0.007
132.50	-0.569	-0.489	0.000	0.000	0.000	-3.164	-91.915	0.016	91.915	-5.807	-0.007
134.00	-0.511	-0.418	0.000	0.000	0.000	-2.311	-93.736	0.017	93.736	-5.809	-0.007
136.00	-0.434	-0.326	0.000	0.000	0.000	-1.290	-96.166	0.017	96.166	-5.811	-0.007
138.00	-0.358	-0.235	0.000	0.000	0.000	-0.423	-98.596	0.018	98.596	-5.812	-0.007
139.00	-0.056	-0.066	0.000	0.000	0.000	-0.065	-99.811	0.018	99.811	-5.812	-0.007
140.00	-0.018	-0.022	0.000	0.000	0.000	-0.009	-101.02	0.018	101.027	-5.812	-0.007
140.50	-0.016	0.000	0.000	0.000	0.000	0.000	0.000	0.000	101.634	-5.812	-0.007

Resulting Stresses

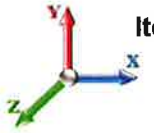
Structure:	CT16504-A-SBA	**Code:**	EIA/TIA-222-F	7/6/2015	
Site Name:	Manchester 12, CT	**Exposure:**	C		
Height:	140.50 (ft)	**Gh:**	1.69		
Base Elev:	0.000 (ft)	**Struct Class:**	II	Page: 25	

TES Tower Engineering Solutions

Load Case: 69.28 mph Wind with 0.5" Ice

Dead Load Factor 1.00

Wind Load Factor 1.00



Iterations: 33

	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)	Fb Allow Stress (ksi)	f/Fb Stress Ratio
0.00	0.70	0.76	0.00	0.00	0.00	44.55	45.28	52.0	0.871
2.00	0.70	0.77	0.00	0.00	0.00	44.45	45.17	52.0	0.869
4.00	0.70	0.77	0.00	0.00	0.00	44.33	45.05	52.0	0.867
6.00	0.69	0.78	0.00	0.00	0.00	44.21	44.92	52.0	0.864
8.00	0.69	0.78	0.00	0.00	0.00	44.07	44.78	52.0	0.861
10.00	0.68	0.79	0.00	0.01	0.00	43.93	44.63	52.0	0.859
12.00	0.68	0.80	0.00	0.01	0.00	43.77	44.47	52.0	0.856
14.00	0.68	0.80	0.00	0.01	0.00	43.60	44.30	52.0	0.852
16.00	0.67	0.81	0.00	0.01	0.00	43.43	44.12	52.0	0.849
18.00	0.67	0.81	0.00	0.01	0.00	43.23	43.93	52.0	0.845
20.00	0.66	0.82	0.00	0.01	0.00	43.03	43.72	52.0	0.841
22.00	0.66	0.82	0.00	0.01	0.00	42.81	43.50	52.0	0.837
24.00	0.66	0.83	0.00	0.01	0.00	42.58	43.26	52.0	0.832
26.00	0.65	0.84	0.00	0.01	0.00	42.34	43.02	52.0	0.828
28.00	0.65	0.84	0.00	0.01	0.00	42.08	42.75	52.0	0.822
30.00	0.64	0.85	0.00	0.01	0.00	41.80	42.47	52.0	0.817
32.00	0.64	0.85	0.00	0.01	0.00	41.51	42.17	52.0	0.811
34.00	0.64	0.86	0.00	0.01	0.00	41.20	41.86	52.0	0.805
36.00	0.63	0.87	0.00	0.01	0.00	40.87	41.53	52.0	0.799
38.00	0.63	0.87	0.00	0.01	0.00	40.52	41.17	52.0	0.792
40.00	0.63	0.88	0.00	0.01	0.00	40.15	40.80	52.0	0.785
42.00	0.62	0.89	0.00	0.01	0.00	39.76	40.41	52.0	0.777
44.00	0.62	0.89	0.00	0.01	0.00	39.34	39.99	52.0	0.769
44.50	0.62	0.90	0.00	0.01	0.00	39.24	39.88	52.0	0.767
46.00	0.61	0.90	0.00	0.01	0.00	38.91	39.55	52.0	0.761
48.00	0.60	0.91	0.00	0.01	0.00	38.45	39.08	52.0	0.752
50.00	0.69	1.07	0.00	0.01	0.00	43.63	44.36	52.0	0.853
52.00	0.69	1.08	0.00	0.01	0.00	43.02	43.75	52.0	0.842
54.00	0.69	1.09	0.00	0.01	0.00	42.38	43.11	52.0	0.829
56.00	0.68	1.10	0.00	0.01	0.00	41.71	42.43	52.0	0.816
58.00	0.68	1.11	0.00	0.01	0.00	41.00	41.72	52.0	0.803
60.00	0.67	1.11	0.00	0.01	0.00	40.25	40.97	52.0	0.788
62.00	0.67	1.12	0.00	0.01	0.00	39.46	40.18	52.0	0.773
64.00	0.67	1.13	0.00	0.01	0.00	38.63	39.35	52.0	0.757
66.00	0.66	1.14	0.00	0.01	0.00	37.76	38.47	52.0	0.740
68.00	0.66	1.15	0.00	0.01	0.00	36.84	37.55	52.0	0.722
70.00	0.66	1.16	0.00	0.01	0.00	35.87	36.59	52.0	0.704
72.00	0.65	1.17	0.00	0.01	0.00	34.85	35.57	52.0	0.684
74.00	0.65	1.18	0.00	0.01	0.00	33.78	34.49	52.0	0.664
76.00	0.65	1.19	0.00	0.01	0.00	32.65	33.36	52.0	0.642
78.00	0.64	1.20	0.00	0.01	0.00	31.46	32.17	52.0	0.619
80.00	0.64	1.21	0.00	0.01	0.00	30.21	30.92	52.0	0.595
82.00	0.64	1.22	0.00	0.01	0.00	28.89	29.60	52.0	0.570
84.00	0.63	1.23	0.00	0.01	0.00	27.50	28.21	52.0	0.543
86.00	0.63	1.24	0.00	0.01	0.00	26.03	26.75	52.0	0.515
88.00	0.47	0.84	0.00	0.01	0.00	23.79	24.31	52.0	0.468
90.00	0.46	0.84	0.00	0.01	0.00	22.91	23.42	52.0	0.450

Resulting Stresses

Structure:	CT16504-A-SBA			**Code:**	EIA/TIA-222-F	7/6/2015			
Site Name:	Manchester 12, CT			**Exposure:**	C				
Height:	140.50 (ft)			**Gh:**	1.69				
Base Elev:	0.000 (ft)			**Struct Class:**	II	Page: 26			

90.50	0.46	0.84	0.00	0.01	0.00	22.68	23.19	52.0	0.446
92.00	0.46	0.85	0.00	0.01	0.00	21.97	22.48	52.0	0.432
94.00	0.45	0.85	0.00	0.02	0.00	20.99	21.49	52.0	0.413
94.50	0.73	1.39	0.00	0.02	0.00	33.09	33.91	52.0	0.652
96.00	0.73	1.40	0.00	0.02	0.00	31.83	32.65	52.0	0.628
98.00	0.73	1.41	0.00	0.03	0.00	30.07	30.90	52.0	0.594
100.00	0.72	1.42	0.00	0.03	0.00	28.21	29.04	52.0	0.559
102.00	0.72	1.43	0.00	0.03	0.00	26.25	27.09	52.0	0.521
104.00	0.71	1.40	0.00	0.03	0.00	24.18	25.02	52.0	0.481
106.00	0.71	1.41	0.00	0.03	0.00	22.07	22.91	52.0	0.441
108.00	0.71	1.42	0.00	0.03	0.00	19.83	20.69	52.0	0.398
110.00	0.71	1.43	0.00	0.03	0.01	17.47	18.35	52.0	0.353
112.00	0.70	1.44	0.00	0.03	0.01	14.97	15.88	52.0	0.305
114.00	0.39	0.86	0.00	0.03	0.01	11.64	12.13	52.0	0.233
116.00	0.39	0.86	0.00	0.03	0.01	10.13	10.63	52.0	0.204
118.00	0.38	0.86	0.00	0.03	0.01	8.54	9.06	52.0	0.174
120.00	0.38	0.86	0.00	0.04	0.01	6.87	7.41	52.0	0.143
122.00	0.37	0.86	0.00	0.04	0.01	5.11	5.70	52.0	0.110
124.00	0.08	0.18	0.00	0.04	0.01	2.11	2.23	52.0	0.043
126.00	0.08	0.17	0.00	0.04	0.01	1.76	1.87	52.0	0.036
128.00	0.07	0.16	0.00	0.04	0.01	1.41	1.52	52.0	0.029
129.50	0.06	0.14	0.00	0.04	0.01	1.16	1.26	52.0	0.024
130.00	0.06	0.14	0.00	0.04	0.01	1.08	1.18	52.0	0.023
132.00	0.05	0.13	0.00	0.04	0.01	0.77	0.87	52.0	0.017
132.50	0.04	0.10	0.00	0.00	0.00	0.70	0.76	52.0	0.015
134.00	0.04	0.09	0.00	0.00	0.00	0.53	0.59	52.0	0.011
136.00	0.03	0.08	0.00	0.00	0.00	0.31	0.36	52.0	0.007
138.00	0.02	0.07	0.00	0.00	0.00	0.10	0.17	52.0	0.003
139.00	0.01	0.01	0.00	0.00	0.00	0.02	0.03	52.0	0.001
140.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	52.0	0.000
140.50	0.00	0.00	0.00	0.00	0.00	0.00	0.01	52.0	0.000

Wind Loading - Shaft

Structure: CT16504-A-SBA
Site Name: Manchester 12, CT
Height: 140.50 (ft)
Base Elev: 0.000 (ft)

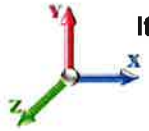
Code: EIA/TIA-222-F
Exposure: C
Gh: 1.69
Struct Class: II

7/6/2015

IES Tower Engineering Solutions

Load Case: 50 mph Wind with 0" Ice

Dead Load Factor 1.00
Wind Load Factor 1.00



Iterations: 31

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	177.25	0.650	0.000	0.00	0.000	0.00	0.0	0.0	0.0
2.00		0.00	1.00	6.400	10.82	175.73	0.650	0.000	2.00	7.060	4.59	49.6	0.0	340.1
4.00		0.00	1.00	6.400	10.82	174.22	0.650	0.000	2.00	6.999	4.55	49.2	0.0	337.1
6.00		0.00	1.00	6.400	10.82	172.70	0.650	0.000	2.00	6.938	4.51	48.8	0.0	334.2
8.00		0.00	1.00	6.400	10.82	171.18	0.650	0.000	2.00	6.878	4.47	48.4	0.0	331.2
10.00		0.00	1.00	6.400	10.82	169.66	0.650	0.000	2.00	6.817	4.43	47.9	0.0	328.3
12.00		0.00	1.00	6.400	10.82	168.15	0.650	0.000	2.00	6.756	4.39	47.5	0.0	325.3
14.00		0.00	1.00	6.400	10.82	166.63	0.650	0.000	2.00	6.696	4.35	47.1	0.0	322.4
16.00		0.00	1.00	6.400	10.82	165.11	0.650	0.000	2.00	6.635	4.31	46.6	0.0	319.4
18.00		0.00	1.00	6.400	10.82	163.60	0.650	0.000	2.00	6.574	4.27	46.2	0.0	316.5
20.00		0.00	1.00	6.400	10.82	162.08	0.650	0.000	2.00	6.513	4.23	45.8	0.0	313.5
22.00		0.00	1.00	6.400	10.82	160.56	0.650	0.000	2.00	6.453	4.19	45.4	0.0	310.6
24.00		0.00	1.00	6.400	10.82	159.04	0.650	0.000	2.00	6.392	4.15	44.9	0.0	307.6
26.00		0.00	1.00	6.400	10.82	157.53	0.650	0.000	2.00	6.331	4.12	44.5	0.0	304.7
28.00		0.00	1.00	6.400	10.82	156.01	0.650	0.000	2.00	6.271	4.08	44.1	0.0	301.7
30.00		0.00	1.00	6.400	10.82	154.49	0.650	0.000	2.00	6.210	4.04	43.7	0.0	298.8
32.00		0.00	1.00	6.400	10.82	152.97	0.650	0.000	2.00	6.149	4.00	43.2	0.0	295.8
34.00		0.00	1.01	6.455	10.91	152.10	0.650	0.000	2.00	6.089	3.96	43.2	0.0	292.9
36.00		0.00	1.03	6.561	11.09	151.82	0.650	0.000	2.00	6.028	3.92	43.4	0.0	289.9
38.00		0.00	1.04	6.663	11.26	151.44	0.650	0.000	2.00	5.967	3.88	43.7	0.0	287.0
40.00		0.00	1.06	6.762	11.43	151.00	0.650	0.000	2.00	5.907	3.84	43.9	0.0	284.0
42.00		0.00	1.07	6.857	11.59	150.48	0.650	0.000	2.00	5.846	3.80	44.0	0.0	281.1
44.00		0.00	1.09	6.948	11.74	149.91	0.650	0.000	2.00	5.785	3.76	44.2	0.0	278.1
44.50	Bot - Section 2	0.00	1.09	6.971	11.78	149.75	0.650	0.000	0.50	1.437	0.93	11.0	0.0	69.1
46.00		0.00	1.10	7.037	11.89	149.27	0.650	0.000	1.50	4.366	2.84	33.7	0.0	381.3
48.00		0.00	1.11	7.123	12.04	148.58	0.650	0.000	2.00	5.768	3.75	45.1	0.0	503.7
50.00	Top - Section 1	0.00	1.13	7.207	12.18	147.84	0.650	0.000	2.00	5.707	3.71	45.2	0.0	498.3
52.00		0.00	1.14	7.288	12.32	149.83	0.650	0.000	2.00	5.647	3.67	45.2	0.0	226.6
54.00		0.00	1.15	7.367	12.45	149.01	0.650	0.000	2.00	5.586	3.63	45.2	0.0	224.1
56.00		0.00	1.16	7.444	12.58	148.15	0.650	0.000	2.00	5.525	3.59	45.2	0.0	221.7
58.00		0.00	1.17	7.519	12.71	147.25	0.650	0.000	2.00	5.465	3.55	45.1	0.0	219.2
60.00		0.00	1.19	7.592	12.83	146.32	0.650	0.000	2.00	5.404	3.51	45.1	0.0	216.7
62.00		0.00	1.20	7.664	12.95	145.34	0.650	0.000	2.00	5.343	3.47	45.0	0.0	214.3
64.00		0.00	1.21	7.733	13.07	144.34	0.650	0.000	2.00	5.282	3.43	44.9	0.0	211.8
66.00		0.00	1.22	7.802	13.18	143.30	0.650	0.000	2.00	5.222	3.39	44.8	0.0	209.4
68.00		0.00	1.23	7.869	13.30	142.23	0.650	0.000	2.00	5.161	3.35	44.6	0.0	206.9
70.00		0.00	1.24	7.934	13.41	141.13	0.650	0.000	2.00	5.100	3.32	44.5	0.0	204.5
72.00		0.00	1.25	7.998	13.52	140.00	0.650	0.000	2.00	5.040	3.28	44.3	0.0	202.0
74.00		0.00	1.26	8.061	13.62	138.85	0.650	0.000	2.00	4.979	3.24	44.1	0.0	199.5
76.00		0.00	1.27	8.123	13.73	137.67	0.650	0.000	2.00	4.918	3.20	43.9	0.0	197.1
78.00		0.00	1.28	8.183	13.83	136.46	0.650	0.000	2.00	4.858	3.16	43.7	0.0	194.6
80.00		0.00	1.29	8.242	13.93	135.24	0.650	0.000	2.00	4.797	3.12	43.4	0.0	192.2
82.00		0.00	1.30	8.301	14.03	133.99	0.650	0.000	2.00	4.736	3.08	43.2	0.0	189.7
84.00		0.00	1.31	8.358	14.13	132.71	0.650	0.000	2.00	4.676	3.04	42.9	0.0	187.3
86.00		0.00	1.31	8.415	14.22	131.42	0.650	0.000	2.00	4.615	3.00	42.7	0.0	184.8
88.00	Appurtenance(s)	0.00	1.32	8.470	14.31	130.11	0.650	0.000	2.00	4.554	2.96	42.4	0.0	182.3
90.00		0.00	1.33	8.525	14.41	128.78	0.650	0.000	2.00	4.494	2.92	42.1	0.0	179.9
90.50	Bot - Section 3	0.00	1.33	8.538	14.43	128.44	0.650	0.000	0.50	1.114	0.72	10.4	0.0	44.6

Wind Loading - Shaft

Structure: CT16504-A-SBA
Site Name: Manchester 12, CT
Height: 140.50 (ft)
Base Elev: 0.000 (ft)

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

7/6/2015

Tower Engineering Solutions

92.00	0.00	1.34	8.578	14.50	127.42	0.650	0.000	1.50	3.366	2.19	31.7	0.0	214.1
94.00	0.00	1.35	8.631	14.59	126.05	0.650	0.000	2.00	4.435	2.88	42.0	0.0	282.0
94.50 Top - Section 2	0.00	1.35	8.644	14.61	125.71	0.650	0.000	0.50	1.099	0.71	10.4	0.0	69.9
96.00	0.00	1.36	8.683	14.67	126.49	0.650	0.000	1.50	3.275	2.13	31.2	0.0	79.0
98.00	0.00	1.36	8.735	14.76	125.09	0.650	0.000	2.00	4.313	2.80	41.4	0.0	104.1
100.00	0.00	1.37	8.785	14.85	123.67	0.650	0.000	2.00	4.253	2.76	41.0	0.0	102.6
102.00	0.00	1.38	8.835	14.93	122.24	0.650	0.000	2.00	4.192	2.72	40.7	0.0	101.1
104.00 Appurtenance(s)	0.00	1.39	8.884	15.01	120.79	0.650	0.000	2.00	4.131	2.69	40.3	0.0	99.6
106.00	0.00	1.40	8.933	15.10	119.33	0.650	0.000	2.00	4.071	2.65	39.9	0.0	98.2
108.00	0.00	1.40	8.980	15.18	117.85	0.650	0.000	2.00	4.010	2.61	39.6	0.0	96.7
110.00	0.00	1.41	9.028	15.26	116.36	0.650	0.000	2.00	3.949	2.57	39.2	0.0	95.2
112.00	0.00	1.42	9.074	15.34	114.85	0.650	0.000	2.00	3.888	2.53	38.8	0.0	93.7
114.00 Appurtenance(s)	0.00	1.43	9.120	15.41	113.33	0.650	0.000	2.00	3.828	2.49	38.3	0.0	92.3
116.00	0.00	1.43	9.166	15.49	111.80	0.650	0.000	2.00	3.767	2.45	37.9	0.0	90.8
118.00	0.00	1.44	9.211	15.57	110.25	0.650	0.000	2.00	3.706	2.41	37.5	0.0	89.3
120.00	0.00	1.45	9.255	15.64	108.69	0.650	0.000	2.00	3.646	2.37	37.1	0.0	87.8
122.00	0.00	1.45	9.299	15.71	107.12	0.650	0.000	2.00	3.585	2.33	36.6	0.0	86.4
124.00 Appurtenance(s)	0.00	1.46	9.342	15.79	105.53	0.650	0.000	2.00	3.524	2.29	36.2	0.0	84.9
126.00	0.00	1.47	9.385	15.86	103.94	0.650	0.000	2.00	3.464	2.25	35.7	0.0	83.4
128.00	0.00	1.47	9.427	15.93	102.33	0.650	0.000	2.00	3.403	2.21	35.2	0.0	81.9
129.50 Appurtenance(s)	0.00	1.48	9.459	15.98	101.12	0.650	0.000	1.50	2.512	1.63	26.1	0.0	60.5
130.00	0.00	1.48	9.469	16.00	100.71	0.650	0.000	0.50	0.830	0.54	8.6	0.0	20.0
132.00	0.00	1.49	9.510	16.07	99.08	0.650	0.000	2.00	3.282	2.13	34.3	0.0	79.0
132.50 Appurtenance(s)	0.00	1.49	9.521	16.09	98.67	0.650	0.000	0.50	0.811	0.53	8.5	0.0	19.5
134.00	0.00	1.49	9.551	16.14	97.44	0.650	0.000	1.50	2.410	1.57	25.3	0.0	58.0
136.00	0.00	1.50	9.592	16.21	95.79	0.650	0.000	2.00	3.160	2.05	33.3	0.0	76.0
138.00	0.00	1.50	9.632	16.28	94.13	0.650	0.000	2.00	3.100	2.01	32.8	0.0	74.6
139.00 Appurtenance(s)	0.00	1.51	9.652	16.31	93.30	0.650	0.000	1.00	1.527	0.99	16.2	0.0	36.7
140.00	0.00	1.51	9.672	16.35	92.46	0.650	0.000	1.00	1.512	0.98	16.1	0.0	36.4
140.50	0.00	1.51	9.681	16.36	92.04	0.650	0.000	0.50	0.750	0.49	8.0	0.0	18.0
							Totals:	**140.50**			**2,972.8**		**14,973.2**

Discrete Appurtenance Forces

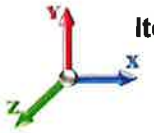
Structure:	CT16504-A-SB	**Code:**	EIA/TIA-222-F	7/6/2015	
Site Name:	Manchester 12, CT	**Exposure:**	C		
Height:	140.50 (ft)	**Gh:**	1.69		
Base Elev:	0.000 (ft)	**Struct Class:**	II	Page: 29	

Tower Engineering Solutions

Load Case: 50 mph Wind with 0" Ice

Dead Load Factor 1.00

Wind Load Factor 1.00



Iterations: 31

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	88.00	Alcatel Lucent RRH2X60-700	3	8.525	14.407	0.88	11.96	270.00	0.000	2.000	172.29	0.00	344.58
2	88.00	Alcatel Lucent	3	8.525	14.407	0.88	11.96	270.00	0.000	2.000	172.29	0.00	344.58
3	88.00	Alcatel Lucent	3	8.525	14.407	0.91	7.02	165.00	0.000	2.000	101.08	0.00	202.16
4	88.00	Antel	3	8.525	14.407	0.89	21.23	127.80	0.000	2.000	305.80	0.00	611.60
5	88.00	Commscope SBNHH-1D65B	6	8.525	14.407	0.92	46.86	458.40	0.000	2.000	675.16	0.00	1350.32
6	88.00	Platform w/ Hand Rails	1	8.525	14.407	1.00	36.21	1503.00	0.000	2.000	521.66	0.00	1043.32
7	88.00	RFS DB-T1-6Z-8AB-0Z	1	8.525	14.407	0.76	4.26	44.00	0.000	2.000	61.31	0.00	122.63
8	88.00	Swedcom SLCP 2x6014	3	8.525	14.407	0.98	22.73	136.80	0.000	2.000	327.41	0.00	654.81
9	104.00	4' Standoff Mount	2	8.884	15.014	1.00	3.00	100.00	0.000	0.000	45.04	0.00	0.00
10	114.00	20" x 18" x 9" Junction Box	1	9.120	15.413	0.90	3.15	20.00	0.000	0.000	48.55	0.00	0.00
11	114.00	Alcatel Lucent	3	9.188	15.528	0.50	3.92	180.00	0.000	3.000	60.79	0.00	182.38
12	114.00	Alcatel Lucent RRH2X50-800	3	9.086	15.355	0.50	3.38	192.00	0.000	-1.500	51.82	0.00	-77.73
13	114.00	Alcatel Lucent	3	9.188	15.528	0.50	2.55	210.00	0.000	3.000	39.60	0.00	118.79
14	114.00	Andrew VHLP1-23-DW1	1	9.222	15.585	0.80	1.29	14.00	0.000	4.500	20.07	0.00	90.33
15	114.00	Andrew VHLP2-23-DW1	1	9.222	15.585	0.80	3.75	31.00	0.000	4.500	58.47	0.00	263.13
16	114.00	Argus LLPX310R-V1	3	9.132	15.432	0.81	12.93	152.10	0.000	0.500	199.50	0.00	99.75
17	114.00	Low Profile Platform	1	9.120	15.413	1.00	19.56	1800.00	0.000	0.000	301.48	0.00	0.00
18	114.00	RFS APXVSPP18	3	9.143	15.452	0.96	26.32	375.90	0.000	1.000	406.74	0.00	406.74
19	114.00	RFS APXVTM14	3	9.188	15.528	0.90	21.22	350.10	0.000	3.000	329.54	0.00	988.61
20	114.00	Samsung SPI-22132825WB	3	9.097	15.374	0.80	4.37	99.30	0.000	-1.000	67.16	0.00	-67.16
21	124.00	CCI DTMABP7819VG12A	6	9.374	15.842	0.50	1.17	115.20	0.000	1.500	18.54	0.00	27.80
22	124.00	Ericsson RRUS 11 B12	3	9.438	15.950	0.50	4.41	163.20	0.000	4.500	70.34	0.00	316.52
23	124.00	Ericsson RRUS 11 B2	3	9.438	15.950	0.88	10.16	218.10	0.000	4.500	162.11	0.00	729.50
24	124.00	Kathrein 800 10121	3	9.385	15.860	0.91	15.70	204.90	0.000	2.000	248.97	0.00	497.93
25	124.00	KMW	6	9.374	15.842	0.86	42.62	423.00	0.000	1.500	675.22	0.00	1012.84
26	124.00	Platform w/ Hand Rails	1	9.342	15.788	1.00	31.30	1600.00	0.000	0.000	494.16	0.00	0.00
27	129.50	Raycap DC6-48-60-18-8F	1	9.459	15.985	1.00	1.47	32.80	0.000	0.000	23.50	0.00	0.00
28	132.50	5' Standoff Mount	1	9.521	16.090	1.00	3.50	50.00	3.322	0.000	56.31	187.05	0.00
29	139.00	3.5' Standoff Mount	2	9.652	16.312	1.00	7.00	100.00	0.000	0.000	114.18	0.00	0.00
						Totals:		**9,406.60**			**5,829.11**		

Total Applied Force Summary

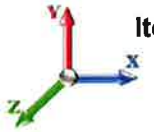
Structure:	CT16504-A-SB	**Code:**	EIA/TIA-222-F	7/6/2015	
Site Name:	Manchester 12, CT	**Exposure:**	C		
Height:	140.50 (ft)	**Gh:**	1.69		
Base Elev:	0.000 (ft)	**Struct Class:**	II	Page: 30	

Tower Engineering Solutions

Load Case: 50 mph Wind with 0" Ice

Dead Load Factor 1.00

Wind Load Factor 1.00



Iterations: 31

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
2.00		49.63	415.49	0.00	0.00
4.00		49.21	412.54	0.00	0.00
6.00		48.78	409.59	0.00	0.00
8.00		48.35	406.64	0.00	0.00
10.00		47.93	403.69	0.00	0.00
12.00		47.50	400.74	0.00	0.00
14.00		47.07	397.79	0.00	0.00
16.00		46.65	394.84	0.00	0.00
18.00		46.22	391.89	0.00	0.00
20.00		45.79	388.94	0.00	0.00
22.00		45.37	385.99	0.00	0.00
24.00		44.94	383.04	0.00	0.00
26.00		44.51	380.09	0.00	0.00
28.00		44.09	377.14	0.00	0.00
30.00		43.66	374.19	0.00	0.00
32.00		43.23	371.24	0.00	0.00
34.00		43.17	368.30	0.00	0.00
36.00		43.45	365.35	0.00	0.00
38.00		43.68	362.40	0.00	0.00
40.00		43.87	359.45	0.00	0.00
42.00		44.03	356.50	0.00	0.00
44.00		44.16	353.55	0.00	0.00
44.50		11.00	87.93	0.00	0.00
46.00		33.75	437.91	0.00	0.00
48.00		45.13	579.14	0.00	0.00
50.00		45.18	573.74	0.00	0.00
52.00		45.21	302.00	0.00	0.00
54.00		45.20	299.55	0.00	0.00
56.00		45.18	297.09	0.00	0.00
58.00		45.13	294.63	0.00	0.00
60.00		45.07	292.17	0.00	0.00
62.00		44.98	289.71	0.00	0.00
64.00		44.88	287.26	0.00	0.00
66.00		44.75	284.80	0.00	0.00
68.00		44.61	282.34	0.00	0.00
70.00		44.45	279.88	0.00	0.00
72.00		44.28	277.42	0.00	0.00
74.00		44.09	274.97	0.00	0.00
76.00		43.88	272.51	0.00	0.00
78.00		43.67	270.05	0.00	0.00
80.00		43.43	267.59	0.00	0.00
82.00		43.19	265.14	0.00	0.00
84.00		42.93	262.68	0.00	0.00
86.00		42.66	260.22	0.00	0.00
88.00	(23) appurtenances	2379.38	3232.76	0.00	4674.01
90.00		42.08	255.30	0.00	0.00
90.50		10.45	56.10	0.00	0.00
92.00		31.72	248.60	0.00	0.00

Total Applied Force Summary

Structure:	CT16504-A-SB	**Code:**	EIA/TIA-222-F	7/6/2015	
Site Name:	Manchester 12, CT	**Exposure:**	C		
Height:	140.50 (ft)	**Gh:**	1.69		
Base Elev:	0.000 (ft)	**Struct Class:**	II	Page: 31	

94.00		42.05	328.03	0.00	0.00
94.50		10.44	81.39	0.00	0.00
96.00		31.24	113.56	0.00	0.00
98.00		41.39	150.12	0.00	0.00
100.00		41.04	148.64	0.00	0.00
102.00		40.68	147.17	0.00	0.00
104.00	(2) appurtenances	85.36	245.69	0.00	0.00
106.00		39.94	144.22	0.00	0.00
108.00		39.56	142.74	0.00	0.00
110.00		39.16	141.27	0.00	0.00
112.00		38.76	139.79	0.00	0.00
114.00	(25) appurtenances	1622.08	3562.72	0.00	2004.83
116.00		37.93	121.80	0.00	0.00
118.00		37.50	120.33	0.00	0.00
120.00		37.06	118.85	0.00	0.00
122.00		36.62	117.38	0.00	0.00
124.00	(22) appurtenances	1705.51	2840.30	0.00	2584.59
126.00		35.71	83.41	0.00	0.00
128.00		35.24	81.93	0.00	0.00
129.50	(1) appurtenances	49.60	93.28	0.00	0.00
130.00		8.63	19.98	0.00	0.00
132.00		34.28	78.98	0.00	0.00
132.50	(1) appurtenances	64.80	69.52	187.05	0.00
134.00		25.29	57.99	0.00	0.00
136.00		33.30	76.03	0.00	0.00
138.00		32.80	74.56	0.00	0.00
139.00	(2) appurtenances	130.37	136.73	0.00	0.00
140.00		16.06	36.36	0.00	0.00
140.50		7.98	18.04	0.00	0.00
	Totals:	**8,801.91**	**28,481.70**	**187.05**	**9,263.44**

Resulting Forces and Deflections

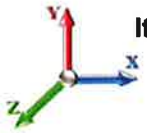
Structure: CT16504-A-SB
Site Name: Manchester 12, CT
Height: 140.50 (ft)
Base Elev: 0.000 (ft)

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

7/6/2015

TES Tower Engineering Solutions

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



Iterations: 31

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	-8.813	-28.478	0.000	-0.002	-0.186	-872.34	0.000	0.000	0.000	0.000	0.000
2.00	-8.784	-28.056	0.000	-0.002	-0.186	-854.71	-0.009	0.000	0.009	-0.044	0.000
4.00	-8.756	-27.637	0.000	-0.002	-0.186	-837.14	-0.037	0.000	0.037	-0.087	0.000
6.00	-8.727	-27.221	0.000	-0.002	-0.186	-819.63	-0.083	0.000	0.083	-0.131	0.000
8.00	-8.699	-26.807	0.000	-0.002	-0.186	-802.18	-0.148	0.000	0.148	-0.176	0.000
10.00	-8.670	-26.397	0.000	-0.002	-0.186	-784.78	-0.231	0.000	0.231	-0.220	0.000
12.00	-8.641	-25.990	0.000	-0.002	-0.186	-767.44	-0.333	0.000	0.333	-0.265	0.000
14.00	-8.612	-25.586	0.000	-0.002	-0.186	-750.16	-0.454	0.000	0.454	-0.310	0.000
16.00	-8.583	-25.184	0.000	-0.002	-0.186	-732.94	-0.594	0.000	0.594	-0.355	0.000
18.00	-8.554	-24.786	0.000	-0.002	-0.186	-715.77	-0.752	0.000	0.752	-0.400	0.000
20.00	-8.525	-24.390	0.000	-0.002	-0.186	-698.66	-0.930	0.000	0.930	-0.446	0.000
22.00	-8.495	-23.998	0.000	-0.002	-0.186	-681.62	-1.126	0.000	1.126	-0.492	0.000
24.00	-8.466	-23.609	0.000	-0.002	-0.186	-664.63	-1.342	0.000	1.342	-0.537	0.000
26.00	-8.436	-23.222	0.000	-0.002	-0.186	-647.69	-1.577	0.000	1.577	-0.583	0.000
28.00	-8.406	-22.839	0.000	-0.002	-0.186	-630.82	-1.832	0.000	1.832	-0.629	0.000
30.00	-8.377	-22.458	0.000	-0.002	-0.186	-614.01	-2.105	0.000	2.105	-0.676	0.000
32.00	-8.347	-22.081	0.000	-0.002	-0.186	-597.26	-2.399	0.000	2.399	-0.722	0.000
34.00	-8.316	-21.707	0.000	-0.002	-0.186	-580.56	-2.711	0.000	2.711	-0.769	0.000
36.00	-8.285	-21.335	0.000	-0.002	-0.186	-563.93	-3.043	0.000	3.043	-0.815	0.000
38.00	-8.253	-20.967	0.000	-0.002	-0.186	-547.36	-3.395	0.000	3.395	-0.862	0.000
40.00	-8.221	-20.601	0.000	-0.002	-0.186	-530.85	-3.766	0.000	3.766	-0.908	0.000
42.00	-8.187	-20.239	0.000	-0.002	-0.186	-514.41	-4.156	0.000	4.156	-0.955	0.000
44.00	-8.147	-19.882	0.000	-0.002	-0.186	-498.04	-4.566	0.000	4.566	-1.001	0.000
44.50	-8.143	-19.791	0.000	-0.002	-0.186	-493.97	-4.672	0.000	4.672	-1.013	0.000
46.00	-8.115	-19.348	0.000	-0.002	-0.186	-481.75	-4.996	0.000	4.996	-1.048	0.000
48.00	-8.074	-18.763	0.000	-0.003	-0.186	-465.52	-5.445	0.000	5.445	-1.095	0.000
50.00	-8.033	-18.184	0.000	-0.003	-0.186	-449.37	-5.913	0.000	5.913	-1.141	0.000
52.00	-7.997	-17.876	0.000	-0.003	-0.186	-433.31	-6.401	0.000	6.401	-1.187	0.000
54.00	-7.961	-17.570	0.000	-0.003	-0.186	-417.32	-6.910	0.000	6.910	-1.239	0.000
56.00	-7.925	-17.267	0.000	-0.003	-0.186	-401.39	-7.440	0.000	7.440	-1.291	0.000
58.00	-7.888	-16.967	0.000	-0.003	-0.186	-385.55	-7.992	0.000	7.992	-1.342	0.000
60.00	-7.851	-16.669	0.000	-0.003	-0.186	-369.77	-8.565	0.000	8.565	-1.393	0.000
62.00	-7.813	-16.373	0.000	-0.003	-0.186	-354.07	-9.160	0.000	9.160	-1.443	0.000
64.00	-7.775	-16.081	0.000	-0.003	-0.186	-338.44	-9.775	0.000	9.775	-1.493	-0.001
66.00	-7.736	-15.791	0.000	-0.003	-0.186	-322.89	-10.412	0.000	10.412	-1.543	-0.001
68.00	-7.697	-15.503	0.000	-0.004	-0.186	-307.42	-11.068	0.000	11.068	-1.592	-0.001
70.00	-7.657	-15.218	0.000	-0.004	-0.186	-292.03	-11.746	0.000	11.746	-1.640	-0.001
72.00	-7.617	-14.936	0.000	-0.004	-0.186	-276.72	-12.443	0.000	12.443	-1.687	-0.001
74.00	-7.576	-14.656	0.000	-0.004	-0.187	-261.48	-13.160	0.000	13.160	-1.733	-0.001
76.00	-7.535	-14.379	0.000	-0.004	-0.187	-246.33	-13.896	0.000	13.896	-1.779	-0.001
78.00	-7.494	-14.105	0.000	-0.004	-0.187	-231.26	-14.651	0.000	14.651	-1.823	-0.001
80.00	-7.452	-13.834	0.000	-0.004	-0.187	-216.27	-15.424	0.000	15.424	-1.867	-0.001
82.00	-7.410	-13.565	0.000	-0.005	-0.187	-201.37	-16.215	0.000	16.215	-1.908	-0.001
84.00	-7.368	-13.298	0.000	-0.005	-0.187	-186.55	-17.023	0.000	17.023	-1.949	-0.001
86.00	-7.325	-13.035	0.000	-0.005	-0.187	-171.81	-17.848	0.000	17.848	-1.988	-0.001
88.00	-4.840	-9.885	0.000	-0.005	-0.187	-152.49	-18.689	0.000	18.689	-2.025	-0.001
90.00	-4.792	-9.629	0.000	-0.005	-0.187	-142.81	-19.544	0.000	19.544	-2.060	-0.001
90.50	-4.783	-9.572	0.000	-0.005	-0.187	-140.41	-19.760	0.000	19.760	-2.068	-0.001
92.00	-4.747	-9.322	0.000	-0.005	-0.187	-133.24	-20.414	0.001	20.414	-2.094	-0.001

Resulting Forces and Deflections

Structure: CT16504-A-SB
Site Name: Manchester 12, CT
Height: 140.50 (ft)
Base Elev: 0.000 (ft)

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

7/6/2015

Tower Engineering Solutions

94.00	-4.696	-8.994	0.000	-0.006	-0.187	-123.75	-21.298	0.001	21.298	-2.126	-0.001
94.50	-4.685	-8.912	0.000	-0.006	-0.187	-121.40	-21.521	0.001	21.521	-2.135	-0.001
96.00	-4.655	-8.797	0.000	-0.006	-0.187	-114.37	-22.196	0.001	22.196	-2.158	-0.001
98.00	-4.615	-8.645	0.000	-0.006	-0.187	-105.06	-23.111	0.001	23.111	-2.206	-0.001
100.00	-4.575	-8.494	0.000	-0.006	-0.187	-95.836	-24.045	0.001	24.045	-2.252	-0.001
102.00	-4.534	-8.345	0.000	-0.006	-0.187	-86.687	-24.998	0.001	24.998	-2.296	-0.001
104.00	-4.445	-8.100	0.000	-0.006	-0.187	-77.618	-25.968	0.001	25.968	-2.336	-0.001
106.00	-4.404	-7.955	0.000	-0.007	-0.187	-68.729	-26.955	0.001	26.955	-2.374	-0.002
108.00	-4.363	-7.812	0.000	-0.007	-0.187	-59.921	-27.957	0.001	27.957	-2.409	-0.002
110.00	-4.322	-7.670	0.000	-0.007	-0.187	-51.195	-28.974	0.001	28.974	-2.441	-0.002
112.00	-4.281	-7.530	0.000	-0.007	-0.187	-42.551	-30.002	0.001	30.002	-2.469	-0.002
114.00	-2.507	-4.040	0.000	-0.007	-0.187	-31.985	-31.042	0.001	31.042	-2.493	-0.002
116.00	-2.465	-3.919	0.000	-0.007	-0.187	-26.970	-32.090	0.002	32.090	-2.512	-0.002
118.00	-2.424	-3.800	0.000	-0.008	-0.187	-22.040	-33.146	0.002	33.146	-2.529	-0.002
120.00	-2.382	-3.682	0.000	-0.008	-0.187	-17.193	-34.209	0.002	34.209	-2.543	-0.002
122.00	-2.341	-3.566	0.000	-0.008	-0.187	-12.428	-35.277	0.002	35.277	-2.555	-0.003
124.00	-0.510	-0.805	0.000	-0.008	-0.187	-5.162	-36.348	0.002	36.348	-2.563	-0.003
126.00	-0.471	-0.723	0.000	-0.008	-0.187	-4.141	-37.422	0.002	37.422	-2.567	-0.003
128.00	-0.432	-0.643	0.000	-0.008	-0.187	-3.199	-38.498	0.003	38.498	-2.570	-0.003
129.50	-0.379	-0.552	0.000	-0.008	-0.187	-2.551	-39.305	0.003	39.305	-2.572	-0.003
130.00	-0.369	-0.532	0.000	-0.008	-0.187	-2.361	-39.575	0.003	39.575	-2.573	-0.003
132.00	-0.331	-0.455	0.000	-0.008	-0.187	-1.623	-40.652	0.003	40.652	-2.575	-0.003
132.50	-0.263	-0.388	0.000	0.000	0.000	-1.458	-40.922	0.003	40.922	-2.575	-0.003
134.00	-0.236	-0.331	0.000	0.000	0.000	-1.063	-41.731	0.003	41.731	-2.576	-0.003
136.00	-0.199	-0.257	0.000	0.000	0.000	-0.591	-42.810	0.003	42.810	-2.577	-0.003
138.00	-0.163	-0.184	0.000	0.000	0.000	-0.194	-43.889	0.004	43.889	-2.577	-0.003
139.00	-0.026	-0.053	0.000	0.000	0.000	-0.031	-44.429	0.004	44.429	-2.577	-0.003
140.00	-0.009	-0.018	0.000	0.000	0.000	-0.004	-44.968	0.004	44.968	-2.577	-0.003
140.50	-0.008	0.000	0.000	0.000	0.000	0.000	0.000	0.000	45.238	-2.577	-0.003

Resulting Stresses

Structure: CT16504-A-SBA
Site Name: Manchester 12, CT
Height: 140.50 (ft)
Base Elev: 0.000 (ft)

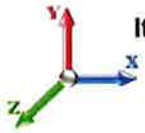
Code: EIA/TIA-222-F
Exposure: C
Gh: 1.69
Struct Class: II

7/6/2015

TES Tower Engineering Solutions

Load Case: 50 mph Wind with 0" Ice

Dead Load Factor 1.00
Wind Load Factor 1.00



Iterations: 31

	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)	Fb Allow Stress (ksi)	f/Fb Stress Ratio
0.00	0.57	0.35	0.00	0.00	0.00	20.06	20.63	52.0	0.397
2.00	0.56	0.36	0.00	0.00	0.00	20.00	20.57	52.0	0.396
4.00	0.56	0.36	0.00	0.00	0.00	19.93	20.50	52.0	0.394
6.00	0.56	0.36	0.00	0.00	0.00	19.86	20.43	52.0	0.393
8.00	0.55	0.36	0.00	0.00	0.00	19.79	20.36	52.0	0.392
10.00	0.55	0.36	0.00	0.00	0.00	19.72	20.28	52.0	0.390
12.00	0.55	0.37	0.00	0.00	0.00	19.64	20.19	52.0	0.388
14.00	0.54	0.37	0.00	0.00	0.00	19.55	20.10	52.0	0.387
16.00	0.54	0.37	0.00	0.00	0.00	19.46	20.01	52.0	0.385
18.00	0.54	0.37	0.00	0.00	0.00	19.36	19.91	52.0	0.383
20.00	0.53	0.37	0.00	0.00	0.00	19.26	19.80	52.0	0.381
22.00	0.53	0.38	0.00	0.00	0.00	19.15	19.69	52.0	0.379
24.00	0.52	0.38	0.00	0.00	0.00	19.04	19.57	52.0	0.377
26.00	0.52	0.38	0.00	0.00	0.00	18.92	19.45	52.0	0.374
28.00	0.52	0.38	0.00	0.00	0.00	18.79	19.32	52.0	0.372
30.00	0.51	0.39	0.00	0.00	0.00	18.66	19.18	52.0	0.369
32.00	0.51	0.39	0.00	0.00	0.00	18.51	19.04	52.0	0.366
34.00	0.51	0.39	0.00	0.00	0.00	18.36	18.88	52.0	0.363
36.00	0.50	0.39	0.00	0.00	0.00	18.21	18.72	52.0	0.360
38.00	0.50	0.40	0.00	0.00	0.00	18.04	18.55	52.0	0.357
40.00	0.50	0.40	0.00	0.00	0.00	17.87	18.38	52.0	0.354
42.00	0.49	0.40	0.00	0.00	0.00	17.68	18.19	52.0	0.350
44.00	0.49	0.40	0.00	0.00	0.00	17.49	17.99	52.0	0.346
44.50	0.49	0.40	0.00	0.00	0.00	17.44	17.94	52.0	0.345
46.00	0.48	0.41	0.00	0.00	0.00	17.28	17.78	52.0	0.342
48.00	0.47	0.41	0.00	0.00	0.00	17.07	17.56	52.0	0.338
50.00	0.54	0.48	0.00	0.00	0.00	19.36	19.92	52.0	0.383
52.00	0.54	0.49	0.00	0.00	0.00	19.08	19.64	52.0	0.378
54.00	0.54	0.49	0.00	0.00	0.00	18.78	19.34	52.0	0.372
56.00	0.53	0.49	0.00	0.00	0.00	18.47	19.03	52.0	0.366
58.00	0.53	0.50	0.00	0.00	0.00	18.15	18.70	52.0	0.360
60.00	0.53	0.50	0.00	0.00	0.00	17.81	18.35	52.0	0.353
62.00	0.52	0.50	0.00	0.00	0.00	17.45	17.99	52.0	0.346
64.00	0.52	0.51	0.00	0.00	0.00	17.07	17.61	52.0	0.339
66.00	0.52	0.51	0.00	0.00	0.00	16.68	17.22	52.0	0.331
68.00	0.51	0.51	0.00	0.00	0.00	16.26	16.80	52.0	0.323
70.00	0.51	0.52	0.00	0.01	0.00	15.83	16.36	52.0	0.315
72.00	0.51	0.52	0.00	0.01	0.00	15.37	15.90	52.0	0.306
74.00	0.50	0.52	0.00	0.01	0.00	14.89	15.42	52.0	0.297
76.00	0.50	0.53	0.00	0.01	0.00	14.38	14.91	52.0	0.287
78.00	0.50	0.53	0.00	0.01	0.00	13.85	14.37	52.0	0.277
80.00	0.49	0.54	0.00	0.01	0.00	13.29	13.81	52.0	0.266
82.00	0.49	0.54	0.00	0.01	0.00	12.70	13.22	52.0	0.254
84.00	0.49	0.54	0.00	0.01	0.00	12.08	12.60	52.0	0.242
86.00	0.48	0.55	0.00	0.01	0.00	11.42	11.95	52.0	0.230
88.00	0.37	0.37	0.00	0.01	0.00	10.42	10.81	52.0	0.208
90.00	0.37	0.37	0.00	0.01	0.00	10.03	10.42	52.0	0.200

Resulting Stresses

Structure:	CT16504-A-SBA			**Code:**	EIA/TIA-222-F	7/6/2015			
Site Name:	Manchester 12, CT			**Exposure:**	C				
Height:	140.50 (ft)			**Gh:**	1.69				
Base Elev:	0.000 (ft)			**Struct Class:**	II	Page: 35			

90.50	0.37	0.37	0.00	0.01	0.00	9.93	10.32	52.0	0.198
92.00	0.36	0.37	0.00	0.01	0.00	9.62	10.00	52.0	0.192
94.00	0.35	0.37	0.00	0.01	0.00	9.19	9.57	52.0	0.184
94.50	0.57	0.61	0.00	0.01	0.00	14.49	15.10	52.0	0.291
96.00	0.57	0.61	0.00	0.01	0.00	13.94	14.55	52.0	0.280
98.00	0.57	0.61	0.00	0.01	0.00	13.18	13.79	52.0	0.265
100.00	0.57	0.62	0.00	0.01	0.00	12.37	12.99	52.0	0.250
102.00	0.57	0.62	0.00	0.01	0.00	11.52	12.14	52.0	0.234
104.00	0.56	0.62	0.00	0.01	0.00	10.63	11.24	52.0	0.216
106.00	0.56	0.62	0.00	0.01	0.00	9.70	10.31	52.0	0.198
108.00	0.55	0.62	0.00	0.01	0.00	8.72	9.34	52.0	0.180
110.00	0.55	0.63	0.00	0.01	0.00	7.69	8.31	52.0	0.160
112.00	0.55	0.63	0.00	0.01	0.00	6.59	7.23	52.0	0.139
114.00	0.30	0.38	0.00	0.01	0.00	5.12	5.46	52.0	0.105
116.00	0.30	0.38	0.00	0.02	0.00	4.46	4.80	52.0	0.092
118.00	0.29	0.38	0.00	0.02	0.00	3.77	4.11	52.0	0.079
120.00	0.29	0.38	0.00	0.02	0.00	3.04	3.39	52.0	0.065
122.00	0.28	0.38	0.00	0.02	0.00	2.27	2.65	52.0	0.051
124.00	0.07	0.08	0.00	0.02	0.00	0.98	1.06	52.0	0.020
126.00	0.06	0.08	0.00	0.02	0.00	0.81	0.89	52.0	0.017
128.00	0.05	0.07	0.00	0.02	0.00	0.65	0.72	52.0	0.014
129.50	0.05	0.06	0.00	0.02	0.00	0.53	0.60	52.0	0.012
130.00	0.05	0.06	0.00	0.02	0.00	0.50	0.56	52.0	0.011
132.00	0.04	0.06	0.00	0.02	0.00	0.36	0.42	52.0	0.008
132.50	0.03	0.05	0.00	0.00	0.00	0.32	0.37	52.0	0.007
134.00	0.03	0.04	0.00	0.00	0.00	0.24	0.28	52.0	0.005
136.00	0.02	0.04	0.00	0.00	0.00	0.14	0.17	52.0	0.003
138.00	0.02	0.03	0.00	0.00	0.00	0.05	0.08	52.0	0.002
139.00	0.00	0.00	0.00	0.00	0.00	0.01	0.02	52.0	0.000
140.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	52.0	0.000
140.50	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)
80 mph Wind with 0" Ice	22.6	0.00	28.46	0.01	0.47	2229.47
69.28 mph Wind with 0.5" Ice	19.0	0.00	35.30	0.01	0.40	1937.83
50 mph Wind with 0" Ice	8.8	0.00	28.48	0.00	0.19	872.34

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
80 mph Wind with 0" Ice	0.57	0.91	0.00	0.01	0.00	51.26	51.85	52.0	0.00	0.997
69.28 mph Wind with 0.5" Ice	0.70	0.76	0.00	0.00	0.00	44.55	45.28	52.0	0.00	0.871
50 mph Wind with 0" Ice	0.57	0.35	0.00	0.00	0.00	20.06	20.63	52.0	0.00	0.397

Pier Foundation Design For Monopole

			Date: 7/6/2015
Customer Name:	Verizon	EIA/TIA Standard:	EIA-222-F
Site Name:	Manchester 12, CT	Structure Height (Ft.):	140.5
Site Number:	CT16504-A-SBA	Engineer Name:	K. Wyant
Engr. Number:	16339	Engineer Login ID:	

Foundation Info Obtained from: Drawings/Calculations

Structure Type: Monopole

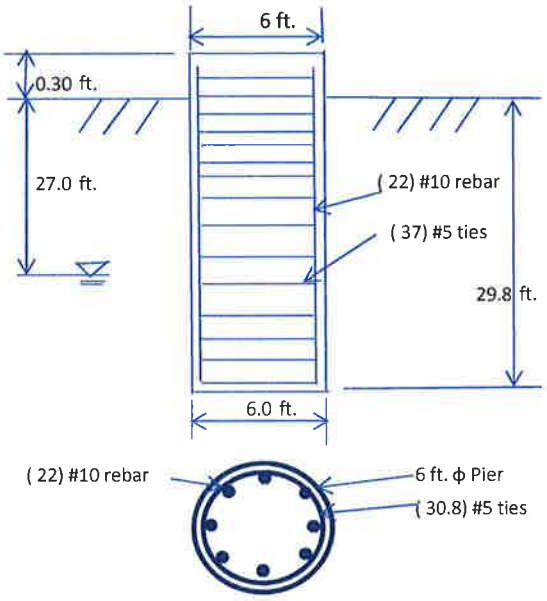
Analysis or Design? Analysis

Base Reactions (Unfactored)

Axial Load (Kips):	28.5	Shear Force (Kips):	22.6
Uplift Force (Kips):	0.0	Moment (Kips-ft):	2229.5

Foundation Geometries:

Mods required -Yes/No ?:	No			ft.
Diameter of Pier (ft.):	6.0	Depth of Base B. G. S. :	29.8	ft.
Pier Height A. G. (ft.):	0.30			



Material Properties and Reabr Info:

Concrete Strength (psi):	3000	Steel Elastic Modulus:	29000	ksi
Vertical bar yield (ksi)	60	Tie steel yield strength:	40	ksi
Vertical Rebar Size #:	10	Tie / Stirrup Size #:	5	
Qty. of Vertical Rebars:	22	Tie Spacing:	12.0	in.
Concrete Cover (in.):	4	Concrete unit weight:	150.0	pcf

Monopole Pier Foundation

Soil Design Parameters:

Water Table B.G.S. (ft):	27.0	Unit weight of water:	62.4	psf
Ratio of Uplift/Axial Skin Friction:	1.0	Pullout failure Angle:	30	(°)

Skin Frictions are to be obtained from: Calculations

Please Enter Allowable End Bearing Pressure (psf): 11600

Kc = 1.15 For Sand

Kc = 1.0 Silt/Clay

Kt = 0.7 For Sand and Silt

Kt = 0.85 For Clay

Friction δ Between Pier & Soil = 0.95

Depth of Layers (ft) Top	Bottom	γ_{soil} (pcf)	ϕ (°)	Cohesion (psf)			Soil Types	Allow. Uplift Skin Friction (psf)	Allow. Axial Skin Friction (psf)	Kc	Kt	α
0.0	1.0	100	0	0		0	Sand			1.15	0.70	
1.0	5.0	135	40	0		0	Sand	87.5	143.8	1.15	0.70	
5.0	7.0	120	33	0		0	Sand	93.8	154.1	1.15	0.70	
7.0	10.0	130	38	0		0	Sand	162.1	266.3	1.15	0.70	
10.0	15.0	128	37	0		0	Sand	235.4	386.6	1.15	0.70	
15.0	30.0	132	39	0		11600	Sand	494.4	812.3	1.15	0.70	
30.0	40.0	127	36	0		11600	Sand	537.0	882.2	1.15	0.70	
40.0	52.0	130	38	0		11600	Sand	699.6	1149.4	1.15	0.70	
52.0	57.0							#VALUE!	#VALUE!			

Soil weight Increase Factor for bouyant soils (1.0 to 1.15): 1.1

Foundation Analysis and Design:

Total Dry Soil Volume from Conical Failure (cu. Ft.):	#N/A	Dry Soil Weight from Conical Failure:	#N/A	Kips
Total Buoyant Soil Volume from Conical Failure (cu. Ft.):	#N/A	Buoyant Soil Weight from Conical Failure (K	#N/A	Kips
Total Dry Concrete Volume (cu. Ft.):	#N/A	Total Dry Concrete Weight:	#N/A	Kips
Total Buoyant Concrete Volume (cu. Ft.):	#N/A	Total Buoyant Concrete Weight:	#N/A	Kips
Total Effective Concrete Weight (Kips):	#N/A	Total Effective Soil Weight:	#N/A	Kips
Total Effective Vertical Load on Base (Kips):	#N/A			

Check Soil Capacities:

					Usage	
Allowable Foundation Overturning Resistance (kips-ft.):	10548.3	>	Applied Momont (kips-ft):	2697	0.26	OK!
Factor of Safety of Passive Soil Resistance against Moment:	7.82	OK!				

Check the capacities of Reinforceing Concrete:

Strength reduction factor (Flexure and axial tension):	0.90	Strength reduction factor (Shear):	0.75	
Strength reduction factor (Axial compresion):	0.65	Wind Load Factor on Concrete Design:	1.30	

Reinforcing Concrete Pier:

					Usage	
Vertical Steel Rebar Area (sq. in./each):	1.27		Tie / Stirrup Area (sq. in./each):	0.31		
Calculated Moment Capacity (Mn,Kips-Ft):	3925	>	Design Factored Moment (Mu, K-Ft):	2965.8	0.76	OK!
Calculated Shear Capacity (Kips):	707.8	>	Design Factored Shear (Kips):	253.3	0.36	OK!
Calculated Tension Capacity (Tn, Kips):	1508.8	>	Design Factored Tension (Tu Kips):	0.0	0.00	OK!
Calculated Compression Capacity (Pn, Kips):	5362	>	Design Factored Axial Load (Pu Kips):	37.1	0.01	OK!
Moment & Axial Strength Combination(Tu/Tn+Mu/Mn):	0.76	OK!	Max. Allowable Tie/Stirrup Spacing:	12.00	in.	
Pier Reinforcement Ratio:	0.007	Reinforcement Ratio Is satisfied per ACI				