

January 26, 2015

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

Re: **Notice of Exempt Modification – Facility Modification
138 Main Street, Coventry, Connecticut**

Dear Ms. Bachman:

Cellco Partnership d/b/a Verizon Wireless (“Cellco”) currently maintains fifteen (15) antennas at the top of the existing 101-foot tower at 138 Main Street in Coventry (the “Property”). The tower is owned by Richard Pelletier. Cellco’s shared use of this tower was approved by the Council in 2009 (Petition No. 909). Cellco now intends to modify its facility by replacing nine (9) of its existing antennas with three (3) model LNX-6514DS-VTM, 700 MHz antennas; three (3) model HBXX-6517DS-VTM, 1900 MHz antennas; and three (3) model HBXX-6517DS-VTM, 2100 MHz antennas, all at the same level on the tower. Cellco also intends to install six (6) remote radio heads (“RRHs”) behind its 1900 MHz and 2100 MHz antennas and two (2) HYBRIFLEX™ antenna cables, inside the monopole tower. 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 John Elsesser, Town Manager of the Town of Coventry. A copy of this letter is also being sent to Richard Pelletier, 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).

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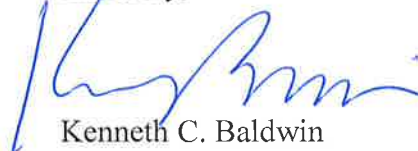
Robinson+Cole

Melanie A. Bachman
January 26, 2015
Page 2

1. The proposed modifications will not result in an increase in the height of the existing tower. Cellco's replacement antennas and RRHs will be installed on its existing antenna platform at the 100-foot level of the tower.
2. The proposed modifications will not involve any change to ground-mounted equipment and, therefore, will not require the extension of the site boundary.
3. The proposed modifications will not increase noise levels at the facility by six decibels or more, or to levels that exceed state and local criteria.
4. The operation of the replacement antennas will not increase radio frequency (RF) emissions at the facility to a level at or above the Federal Communications Commission (FCC) safety standard. A cumulative General Power Density table for Cellco's modified facility is included in Attachment 2.
5. The proposed modifications will not cause a change or alteration in the physical or environmental characteristics of the site.
6. The tower and its foundation can support Cellco's proposed modifications. (*See Structural Analysis Report included in Attachment 3*).

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

Sincerely,



Kenneth C. Baldwin

Enclosures

Copy to:

John Elsesser, Coventry Town Manger
Richard Pelletier
Sandy M. Carter

ATTACHMENT 1

Product Specifications

COMMSCOPE®

LNX-6514DS-VTM

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

POWERED BY



Electrical Specifications

Frequency Band, MHz	698–806	806–896
Gain, dBi	15.7	16.3
Beamwidth, Horizontal, degrees	65	65
Beamwidth, Horizontal Tolerance, degrees	±3	±3
Beamwidth, Vertical, degrees	12.5	11.2
Beam Tilt, degrees	0–10	0–10
USLS, typical, dB	17	18
Front-to-Back Ratio at 180°, dB	32	30
CPR at Boresight, dB	20	20
CPR at Sector, dB	10	10
Isolation, dB	30	30
VSWR Return Loss, dB	1.4 15.6	1.4 15.6
PIM, 3rd Order, 2 x 20 W, dBc	-153	-153
Input Power per Port, maximum, watts	400	400
Polarization	±45°	±45°

Mechanical Specifications

Color Radome Material	Light gray Fiberglass, UV resistant
Connector Interface Location Quantity	7-16 DIN Female Bottom 2
Wind Loading, maximum	617.7 N @ 150 km/h 138.9 lbf @ 150 km/h
Wind Speed, maximum	241.0 km/h 149.8 mph
Antenna Dimensions, L x W x D	1847.0 mm x 301.0 mm x 181.0 mm 72.7 in x 11.9 in x 7.1 in
Net Weight	17.6 kg 38.8 lb
Model with factory installed AISG 2.0 RET	LNX-6514DS-A1M



Product Specifications

COMMSCOPE®

HBXX-6517DS-VTM

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



Electrical Specifications

Frequency Band, MHz	1710–1880	1850–1990	1920–2180
Gain by all Beam Tilts, average, dBi	18.5	18.6	18.8
Gain by all Beam Tilts Tolerance, dB	±0.4	±0.3	±0.4
	0° 18.4	0° 18.4	0° 18.7
Gain by Beam Tilt, average, dBi	3° 18.7	3° 18.7	3° 18.9
	6° 18.4	6° 18.5	6° 18.6
Beamwidth, Horizontal, degrees	67	66	65
Beamwidth, Horizontal Tolerance, degrees	±2.4	±1.7	±2.9
Beamwidth, Vertical, degrees	5.0	4.7	4.4
Beamwidth, Vertical Tolerance, degrees	±0.3	±0.3	±0.3
Beam Tilt, degrees	0–6	0–6	0–6
USLS, dB	18	19	19
Front-to-Back Total Power at 180° ± 30°, dB	25	26	26
CPR at Boresight, dB	22	23	22
CPR at Sector, dB	10	10	9
Isolation, dB	30	30	30
VSWR Return Loss, dB	1.4 15.6	1.4 15.6	1.4 15.6
PIM, 3rd Order, 2 x 20 W, dBc	-153	-153	-153
Input Power per Port, maximum, watts	350	350	350
Polarization	±45°	±45°	±45°

*Values calculated using NGMN Alliance N-P-BASTA v9.6

Mechanical Specifications

Color Radome Material	Light gray PVC, UV resistant
Connector Interface Location Quantity	7-16 DIN Female Bottom 4
Wind Loading, maximum	668.0 N @ 150 km/h 150.2 lbf @ 150 km/h
Wind Speed, maximum	241.0 km/h 149.8 mph
Antenna Dimensions, L x W x D	1903.0 mm x 305.0 mm x 166.0 mm 74.9 in x 12.0 in x 6.5 in
Net Weight	19.5 kg 43.0 lb
Model with factory installed AISG 2.0 RET	HBXX-6517DS-A2M

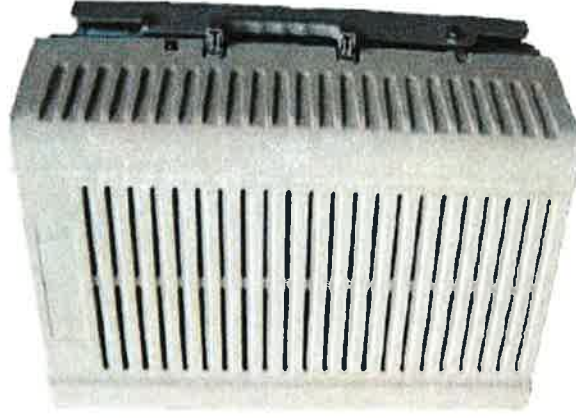


PCS RF MODULES

RRH1900 2X60 - HW CHARACTERISTICS

LA6.0.1/13.3

RRH2X60	
RF Output Power	2x60W
Instantaneous Bandwidth	20MHz
Transmitter	2 TX
Receiver	2 Branch RX – LA6.0.1 4 Branch RX – LR13.3
Features	AISG 2.0 for RET/TMA Internal Smart Bias-T
Power	-48VDC
CPRI Ports	2 CPRI Rate 3 Ports
External Alarms	4 External User Alarms
Monitor Ports	TX
Environmental	GR487 Compliance
RF Connectors	7/16 DIN (top mounted)



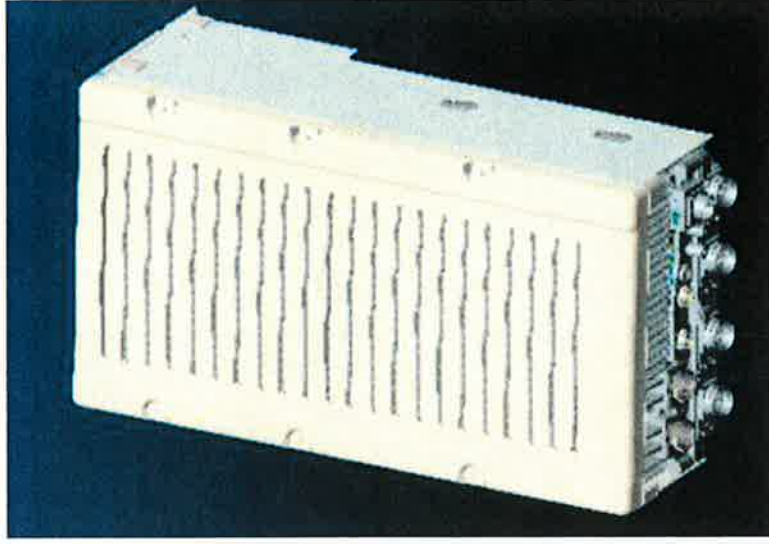
** Not a Verizon Wireless deployed product

NEW PCS RF MODULES FOR VZW

RRH2X60 - HW CHARACTERISTICS

LR14.3

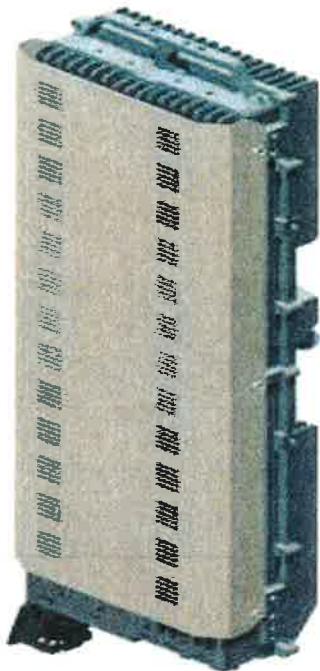
RRH2X60	
RF Output Power	2x60W (4x30W HW Ready)
Instantaneous Bandwidth	60MHz
Target Reliability (Annual Return Rate)	<2%
Receiver	4 Branch Rx
Features	AISG 2.0 for RET/TMA
Power	-48VDC Internal Smart Bias-T
CPRI Ports	2 CPRI Rate 5 Ports
External Alarms	4 External User Alarms
Monitor Ports	TX, RX
Environmental	GR487 Compliance
RF Connectors	7/16 DIN (downward facing)
Dimensions	22"(h) x 12"(w) x 9.4" (d)**
Weight	55lb**



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

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

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



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

The Alcatel-Lucent RRH2x60-AWS is linked to the BBU by an optical-fiber connection carrying downlink and uplink digital radio signals

along with operations, administration and maintenance (OA&M) information.

SUPERIOR RF PERFORMANCE

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

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

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

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

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

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

OPTIMIZED TCO

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

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

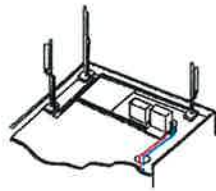
EASY INSTALLATION

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

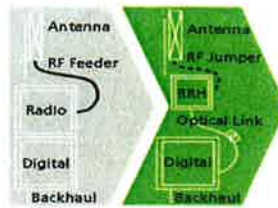
The limited space available in some sites may prevent the installation of traditional single-cabinet BTS equipment. However, many of these sites can host an Alcatel-Lucent RRH2x60-AWS installation, providing more flexible site selection and improved network quality along with greatly reduced installation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

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

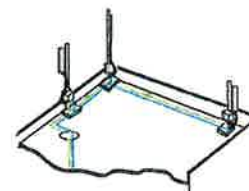
Installation can easily be done by a single person as the Alcatel-Lucent RRH2x60-AWS is compact and weighs about 20 kg, eliminating the need for a crane to hoist the BTS cabinet to the rooftop. A site can be in operation in less than one day.



Macro



RRH for space-constrained cell sites



Distributed

FEATURES

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

BENEFITS

- MIMO LTE operation with only one single unit per sector
- Improved uplink coverage with built-in 4-way receive diversity capability
- RRH can be mounted close to the antenna, eliminating nearly all losses in RF cables and thus reducing power consumption by 50% compared to conventional solutions
- Distributed configurations provide easily deployable and cost-effective solutions, near zero footprint and

silent solutions, with minimum impact on the neighborhood, which ease the deployment

- RETA and TMA support without additional hardware thanks to the AISG v2.0 port and the integrated Bias-Tees. Bias-Tees support AISG DC supply and signaling.

TECHNICAL SPECIFICATIONS

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

Dimensions and weights

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

Electrical Data

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

RF Characteristics

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

Connectivity

- Two CPRI optical ports for daisy chaining 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

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.....Alcatel-Lucent

AT THE SPEED OF IDEAS™





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

Product Description

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

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

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

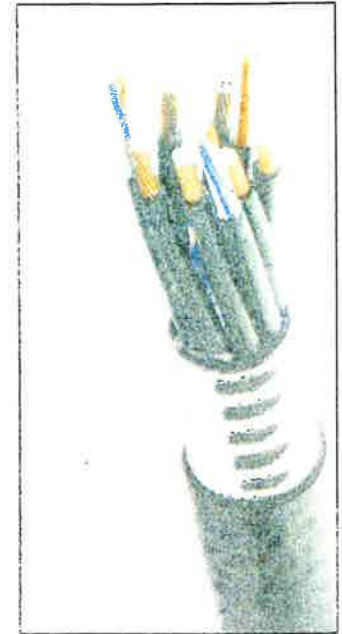


Figure 1: HYBRIFLEX Series

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))	0.68 (0.255)
DC-Resistance Power Cable 8 4mm ² (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)		(mm (AWG))	8.4 (8)
Quantity, Wire Count (Power)			16 (8 pairs)
Size (Alarm)		(mm (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 X-HW-2, UL 44 UL-LS Limited Smoke, UL VW-1 IEEE-383 (1974), IEEE1292/FT4 RoHS Compliant
Installation Temperature		(°C (°F))	-40 to +65 (-40 to 149)
Operation Temperature		(°C (°F))	-40 to +65 (-40 to 149)

* This data is provisional and subject to change

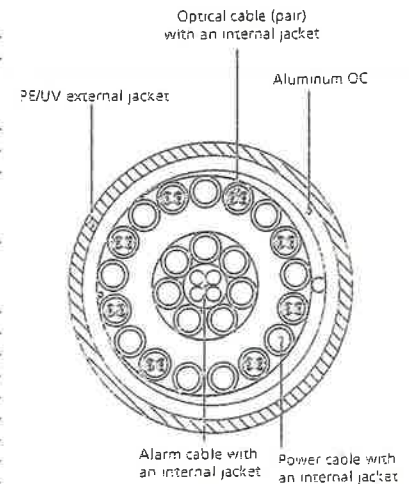


Figure 2: Construction Detail

All information contained in the present datasheet is subject to confirmation at time of ordering

ATTACHMENT 2

		General	Power	Density				
Site Name: Mansfield SW (Coventry)								
Tower Height: 101ft								
CARRIER	# OF CHAN.	WATTS ERP	HEIGHT	CALC. POWER DENS	FREQ.	MAX. PERMISS. EXP.	FRACTION MPE	Total
*AT&T UMTS	2	565	90	0.0502	880	0.5867	8.55%	
*AT&T UMTS	2	875	90	0.0777	1900	1.0000	7.77%	
*AT&T GSM	1	283	90	0.0126	880	0.5867	2.14%	
*AT&T GSM	4	525	90	0.0932	1900	1.0000	9.32%	
*AT&T LTE	1	1313	90	0.0583	734	0.4893	11.91%	
*Pelletier Builders	1	110	97	0.0042	31.16	0.2000	2.10%	
Verizon PCS	11	459	100	0.1815	1970	1.0000	18.15%	
Verizon Cellular	9	416	100	0.1346	869	0.5793	23.24%	
Verizon AWS	1	1750	100	0.0629	2145	1.0000	6.29%	
Verizon 700	1	1050	100	0.0378	746	0.4973	7.59%	97.07%
* Source: Siting Council								

ATTACHMENT 3

STRUCTURAL ANALYSIS REPORT

For

MANSFIELD SW CT

138 MAIN STREET
COVENTRY, CT 06238

Antennas Mounted to the Monopole



Prepared for:



99 East River Drive
East Hartford, CT 06108

Dated: January 20, 2015

Prepared by:



1600 Osgood Street Bldg. 20N Suite 3090
North Andover, MA 01845
(P) 978.557.5553 (F) 978.336.5586
www.hudsondesigngroupllc.com



Gi Kai Wang 1/20/2015



SCOPE OF WORK:

Hudson Design Group LLC (HDG) has been authorized by Verizon to conduct a structural evaluation of the 101' monopole supporting the existing and proposed Verizon's antennas located at elevation 100' above the ground level.

This report represents this office's findings, conclusions and recommendations pertaining to the support of Verizon's existing and proposed antennas listed below.

Structural design calculations of the existing monopole prepared by Engineered Endeavors Inc., dated January 6, 2009, was available and obtained for our use. The previous structural analysis report prepared by this office, dated September 13, 2012, was available for our use.

CONCLUSION SUMMARY:

Based on our evaluation, we have determined that the existing monopole, base plate, anchor bolts and foundation are in conformance with the ANSI/TIA-222-F Standard for the loading considered under the criteria listed in this report. The monopole structure is rated at 40.5% - (Pole Section L3 from El.0' to El.46.17' Controlling).



APPURTENANCES CONFIGURATION:

Tenant	Appurtenances	Elev.	Mount
VERIZON	(6) SC-E 6016 Antennas	100'	Low Profile Platform
VERIZON	(6) HBXX-6517DS Antennas	100'	Low Profile Platform
VERIZON	(3) LNX-6514DS Antennas	100'	Low Profile Platform
VERIZON	(3) RRH2X60 AWS	100'	Low Profile Platform
VERIZON	(3) RRH2X60 PCS	100'	Low Profile Platform
VERIZON	(2) DB-T1-6Z-8AB-0Z	100'	Low Profile Platform
AT&T	(6) Powerwave 7770 Antennas	90'	Low Profile Platform
AT&T	(6) LGP 21400 TMA	90'	Low Profile Platform
AT&T	(6) LGP 21900	90'	Low Profile Platform
AT&T	(3) DAS-HY-DFDM	90'	Low Profile Platform
AT&T	(3) AM-X-CD-16-65 Antennas	90'	Low Profile Platform
AT&T	(6) RRHs	90'	Ring Mount
AT&T	Surge Arrestor DC6-48-60-18-8F	87'	Ring Mount
	8' Omni	87'	12' T-Frame
	Grid Dish	80.5'	Ring Mount
	20' Dipole	70.2'	12' T-Frame

**Proposed Verizon Appurtenances shown in Bold.*

VERIZON EXISTING/PROPOSED COAX CABLES:

Tenant	Coax Cables	Elev.	Mount
VERIZON	(18) 1 5/8" Cables	100'	Inside Monopole
VERIZON	(2) Fiber Cables	100'	Inside Monopole

**Proposed Verizon Coax Cables shown in Bold.*



ANALYSIS RESULTS SUMMARY:

Component	Max. Stress Ratio	Elev. of Component (ft)	Pass/Fail	Comments
Pole Section-L1	6.5 %	91.25 – 101.25	PASS	
Pole Section-L2	31.4 %	46.17 – 91.25	PASS	
Pole Section-L3	40.5 %	0 – 46.17	PASS	Controlling
Base Plate	36.8 %	0	PASS	

FOUNDATION ANALYSIS RESULTS SUMMARY:

	Design Reactions (DL + WL)	Base Reactions (DL + WL)	Pass/Fail	Comments
AXIAL	30.5 k	25.3 k	PASS	
SHEAR	31.5 k	20.0 k	PASS	
MOMENT	3082 ft-k	1526 ft-k	PASS	



DESIGN CRITERIA:

1. EIA/TIA-222-F Structural Standards for Steel Antenna Towers and Antenna Supporting Structures

County: Tolland
Wind Load: 85 mph (fastest mile)
 105 mph (3 second gust)
Nominal Ice Thickness: 1/2 inch

2. Approximate height above grade to proposed antennas: 100'

***Calculations and referenced documents are attached.**

ASSUMPTIONS:

1. The material strength of the monopole, base plate, anchor bolts and foundation are as indicated in the structural design calculations prepared by Engineered Endeavors Inc., dated January 6, 2009.
2. The monopole and foundation are properly constructed and maintained. All structural members and their connections are assumed to be in good condition and are free from defects with no deterioration to its member capacities.
3. The appurtenances configuration is as stated in this report. All antennas, coax cables and waveguide cables are assumed to be properly installed and supported as per the manufacturer requirements.
4. The support mounts and platforms are not analyzed and are considered adequate to support the loading. The analysis is limited to the primary support structure itself.
5. All prior structural modification, if any, are assumed to be as per the data supplied (if available), and installed properly.

SUPPORT RECOMMENDATIONS:

HDG recommends that the proposed antennas, RRHs and main distribution boxes be mounted on the existing steel platform supported by the monopole.



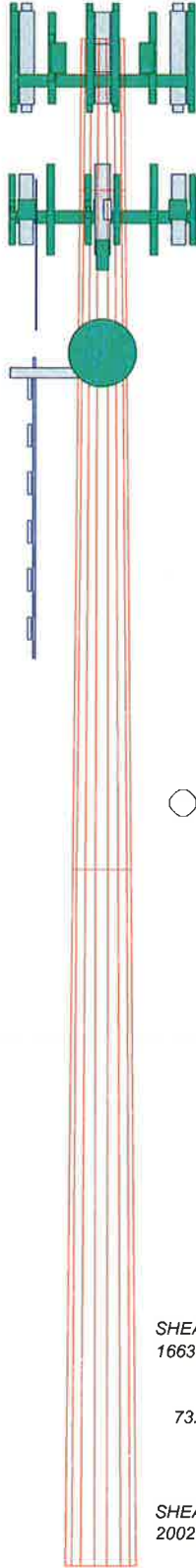
Photo 1: Photo illustrating the monopole with Appurtenances shown.



CALCULATIONS

Section	1	2	3	
Length (ft)	10.00	45.08	46.17	
Number of Sides	18	18	18	
Thickness (in)	0.2800	0.3125	0.3750	
Top Dia (in)	33.0800	35.2900	45.3200	
Bot Dia (in)	35.2900	46.3200	55.2800	
Grade		A572-65		
Weight (lb)	916.3	6161.0	9427.4	16504.7

101.3 ft
91.3 ft
46.2 ft
0.0 ft



DESIGNED APPURTENANCE LOADING

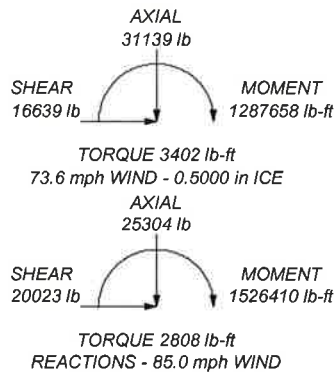
TYPE	ELEVATION	TYPE	ELEVATION
(2) SC-E 6016 w/mount pipe	100	(2) Powerwave TMA LGP21400	90
(2) SC-E 6016 w/mount pipe	100	(2) Powerwave TMA LGP21400	90
(2) SC-E 6016 w/mount pipe	100	(2) Powerwave TMA LGP21400	90
(2) HBXX-6517DS-VTM w/ Mount Pipe (VERIZON - proposed)	100	(2) Powerwave LGP21900	90
(2) HBXX-6517DS-VTM w/ Mount Pipe	100	(2) Powerwave LGP21900	90
(2) HBXX-6517DS-VTM w/ Mount Pipe	100	(2) Powerwave LGP21900	90
Andrew LNX-6514DS-VTM w/mount pipe	100	DAS-HY-DFDM	90
Andrew LNX-6514DS-VTM w/mount pipe	100	DAS-HY-DFDM	90
Andrew LNX-6514DS-VTM w/mount pipe	100	DAS-HY-DFDM	90
Andrew LNX-6514DS-VTM w/mount pipe	100	KMW AM-X-CD-16-65-00T-RET w/mount pipe	90
Andrew LNX-6514DS-VTM w/mount pipe	100	KMW AM-X-CD-16-65-00T-RET w/mount pipe	90
RRH2X60 AWS	100	KMW AM-X-CD-16-65-00T-RET w/mount pipe	90
RRH2X60 AWS	100	(2) Ericsson RRU	90
RRH2X60 AWS	100	(2) Ericsson RRU	90
RRH2x60 PCS	100	(2) Ericsson RRU	90
RRH2x60 PCS	100	(2) Ericsson RRU	90
RRH2x60 PCS	100	12' Low Profile Platform (ATI)	89.5
RFS DB-T1-6Z-8AB-0Z	100	Ring Mount	88.5
RFS DB-T1-6Z-8AB-0Z	100	Surge Arrestor (DC6-48-60-18-8F)	87
12' Low Profile Platform (VERIZON - existing)	98.5	Omni 1"x8'	87
(2) Powerwave 7770 w/mount pipe	90	Kathrein PR-950	80.5
(2) Powerwave 7770 w/mount pipe	90	Ring Mount	79.5
(2) Powerwave 7770 w/mount pipe	90	PIROD 12' Lightweight T-Frame	79.5
		20' Dipole	70.2

MATERIAL STRENGTH

GRADE	Fy	Fu	GRADE	Fy	Fu
A572-65	65 ksi	80 ksi			

TOWER DESIGN NOTES

1. Tower is located in Tolland County, Connecticut.
2. Tower designed for a 85.0 mph basic wind in accordance with the TIA/EIA-222-F Standard.
3. Tower is also designed for a 73.6 mph basic wind with 0.50 in ice.
4. Deflections are based upon a 50.0 mph wind.
5. TOWER RATING: 40.5%



Hudson Design Group, LLC		Job: MANSFIELD SW CT	
1600 Osgood Street, Building 20 North, Suite 3090 North Andover, MA 01845 Phone: (978) 557-5553 FAX: (978) 226-5586		Project: 101 ft Monopole	
Client: VERIZON	Drawn by: kw	App'd:	
Code: TIA/EIA-222-F	Date: 01/20/15	Scale: NTS	
Path:		Dwg No. E-1	

tnxTower Hudson Design Group, LLC 1600 Osgood Street, Building 20 North, Suite 3090 North Andover, MA 01845 Phone: (978) 557-5553 FAX: (978) 226-5586	Job MANSFIELD SW CT	Page 1 of 8
	Project 101 ft Monopole	Date 11:55:28 01/20/15
	Client VERIZON	Designed by kw

Tower Input Data

There is a pole section.

This tower is designed using the TIA/EIA-222-F standard.

The following design criteria apply:

Tower is located in Tolland County, Connecticut.

Basic wind speed of 85.0 mph.

Nominal ice thickness of 0.5000 in.

Ice density of 56.0 pcf.

A wind speed of 73.6 mph is used in combination with ice.

Temperature drop of 50.0 °F.

Deflections calculated using a wind speed of 50.0 mph.

A non-linear (P-delta) analysis was used.

Pressures are calculated at each section.

Stress ratio used in pole design is 1.333.

Local bending stresses due to climbing loads, feed line supports, and appurtenance mounts are not considered.

Tapered Pole Section Geometry

Section	Elevation ft	Section Length ft	Splice Length ft	Number of Sides	Top Diameter in	Bottom Diameter in	Wall Thickness in	Bend Radius in	Pole Grade
L1	101.25-91.25	10.00	0.00	18	33.0800	35.2900	0.2500	1.0000	A572-65 (65 ksi)
L2	91.25-46.17	45.08	0.00	18	35.2900	46.3200	0.3125	1.2500	A572-65 (65 ksi)
L3	46.17-0.00	46.17		18	46.3200	55.2600	0.3750	1.5000	A572-65 (65 ksi)

Monopole Base Plate Data

Base Plate Data	
Base plate is square	
Base plate is grouted	
Anchor bolt grade	A615-75
Anchor bolt size	2.2500 in
Number of bolts	18
Embedment length	60.0000 in
f_c	4.0 ksi
Grout space	3.2500 in
Base plate grade	A572-50
Base plate thickness	3.0000 in
Bolt circle diameter	63.5000 in
Outer diameter	69.5000 in
Inner diameter	31.0000 in
Base plate type	Plain Plate

tnxTower Hudson Design Group, LLC 1600 Osgood Street, Building 20 North, Suite 3090 North Andover, MA 01845 Phone: (978) 557-5553 FAX: (978) 226-5586	Job MANSFIELD SW CT	Page 2 of 8
	Project 101 ft Monopole	Date 11:55:28 01/20/15
	Client VERIZON	Designed by kw

Feed Line/Linear Appurtenances - Entered As Area

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Total Number	C _A A _A		Weight plf
						No Ice	1/2" Ice	
1 5/8 (VERIZON - existing)	A	No	Inside Pole	100.00 - 6.00	18	No Ice	0.00	1.04
1 5/8 Fiber Cable (VERIZON - proposed)	A	No	Inside Pole	100.00 - 6.00	2	No Ice	0.00	1.04
1 5/8 (AT&T)	A	No	Inside Pole	90.00 - 6.00	12	No Ice	0.00	1.04
1/2 (AT&T)	A	No	Inside Pole	90.00 - 6.00	12	No Ice	0.00	0.25
7/8	A	No	Inside Pole	80.00 - 6.00	1	No Ice	0.00	0.54
1/2	A	No	Inside Pole	80.00 - 6.00	1	No Ice	0.00	0.25
3/8	A	No	Inside Pole	80.00 - 6.00	1	No Ice	0.00	0.25
*****						1/2" Ice	0.00	0.25
FB-L98B-002 (AT&T)	A	No	Inside Pole	90.00 - 6.00	1	No Ice	0.00	0.25
WR-VG122ST-BRDA (AT&T)	A	No	Inside Pole	90.00 - 6.00	2	No Ice	0.00	0.25
						1/2" Ice	0.00	0.25

Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets:		Azimuth Adjustment °	Placement ft	C _A A _A		Weight lb	
			Horz Lateral ft	Vert ft			Front ft ²	Side ft ²		
12' Low Profile Platform (VERIZON - existing)	A	None			0.0000	98.50	No Ice	14.00	14.00	1200.00
(2) SC-E 6016 w/mount pipe	A	From Leg	2.50		0.0000	100.00	1/2" Ice	15.00	15.00	1587.51
			0.00				No Ice	8.16	9.87	77.11
			0.00				1/2" Ice	8.89	11.34	156.59
(2) SC-E 6016 w/mount pipe	B	From Leg	2.50		0.0000	100.00	No Ice	8.16	9.87	77.11
			0.00				1/2" Ice	8.89	11.34	156.59
(2) SC-E 6016 w/mount pipe	C	From Leg	2.50		0.0000	100.00	No Ice	8.16	9.87	77.11
			0.00				1/2" Ice	8.89	11.34	156.59

(2) HBXX-6517DS-VTM w/ Mount Pipe (VERIZON - proposed)	A	From Leg	2.50		0.0000	100.00	No Ice	8.92	6.91	66.35
			0.00				1/2" Ice	9.56	8.10	135.34
(2) HBXX-6517DS-VTM w/ Mount Pipe	B	From Leg	2.50		0.0000	100.00	No Ice	8.92	6.91	66.35
			0.00				1/2" Ice	9.56	8.10	135.34
(2) HBXX-6517DS-VTM w/ Mount Pipe	C	From Leg	2.50		0.0000	100.00	No Ice	8.92	6.91	66.35
			0.00				1/2" Ice	9.56	8.10	135.34
Andrew LNX-6514DS-VTM w/mount pipe	A	From Leg	2.50		0.0000	100.00	No Ice	8.63	7.07	63.95
			0.00				1/2" Ice	9.29	8.25	132.95
Andrew LNX-6514DS-VTM	B	From Leg	2.50		0.0000	100.00	No Ice	8.63	7.07	63.95

tnxTower Hudson Design Group, LLC 1600 Osgood Street, Building 20 North, Suite 3090 North Andover, MA 01845 Phone: (978) 557-5553 FAX: (978) 226-5586	Job	MANSFIELD SW CT	Page	3 of 8
	Project	101 ft Monopole	Date	11:55:28 01/20/15
	Client	VERIZON	Designed by	kw

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft	C _A A _{Front} ft ²	C _A A _{Side} ft ²	Weight lb
w/mount pipe			0.00		1/2" Ice	9.29	8.25	132.95
Andrew LNX-6514DS-VTM	C	From Leg	2.50	0.0000	100.00	No Ice	8.63	63.95
w/mount pipe			0.00		1/2" Ice	9.29	8.25	132.95
RRH2X60 AWS	A	From Leg	2.50	0.0000	100.00	No Ice	3.96	55.00
			0.00		1/2" Ice	4.27	2.44	79.31
RRH2X60 AWS	B	From Leg	2.50	0.0000	100.00	No Ice	3.96	55.00
			0.00		1/2" Ice	4.27	2.44	79.31
RRH2X60 AWS	C	From Leg	2.50	0.0000	100.00	No Ice	3.96	55.00
			0.00		1/2" Ice	4.27	2.44	79.31
RRH2x60 PCS	A	From Leg	2.50	0.0000	100.00	No Ice	2.51	55.00
			0.00		1/2" Ice	2.73	1.74	72.75
RRH2x60 PCS	B	From Leg	2.50	0.0000	100.00	No Ice	2.51	55.00
			0.00		1/2" Ice	2.73	1.74	72.75
RRH2x60 PCS	C	From Leg	2.50	0.0000	100.00	No Ice	2.51	55.00
			0.00		1/2" Ice	2.73	1.74	72.75
RFS DB-T1-6Z-8AB-0Z	B	From Leg	2.00	0.0000	100.00	No Ice	5.60	44.00
			0.00		1/2" Ice	5.92	2.56	80.13
RFS DB-T1-6Z-8AB-0Z	C	From Leg	2.00	0.0000	100.00	No Ice	5.60	44.00
			0.00		1/2" Ice	5.92	2.56	80.13

12' Low Profile Platform (AT&T)	A	None		0.0000	89.50	No Ice	14.00	1200.00
						1/2" Ice	15.00	1587.51
(2) Powerwave 7770 w/mount pipe	A	From Leg	2.50	0.0000	90.00	No Ice	6.02	57.25
			0.00			1/2" Ice	6.47	103.17
(2) Powerwave 7770 w/mount pipe	B	From Leg	2.50	0.0000	90.00	No Ice	6.02	57.25
			0.00			1/2" Ice	6.47	103.17
(2) Powerwave 7770 w/mount pipe	C	From Leg	2.50	0.0000	90.00	No Ice	6.02	57.25
			0.00			1/2" Ice	6.47	103.17
(2) Powerwave TMA LGP21400	A	From Leg	2.50	0.0000	90.00	No Ice	1.23	14.10
			0.00			1/2" Ice	1.38	21.29
(2) Powerwave TMA LGP21400	B	From Leg	2.50	0.0000	90.00	No Ice	1.23	14.10
			0.00			1/2" Ice	1.38	21.29
(2) Powerwave TMA LGP21400	C	From Leg	2.50	0.0000	90.00	No Ice	1.23	14.10
			0.00			1/2" Ice	1.38	21.29
(2) Powerwave LGP21900	A	From Leg	2.50	0.0000	90.00	No Ice	0.23	5.50
			0.00			1/2" Ice	0.30	7.70
(2) Powerwave LGP21900	B	From Leg	2.50	0.0000	90.00	No Ice	0.23	5.50
			0.00			1/2" Ice	0.30	7.70
(2) Powerwave LGP21900	C	From Leg	2.50	0.0000	90.00	No Ice	0.23	5.50

tnxTower Hudson Design Group, LLC 1600 Osgood Street, Building 20 North, Suite 3090 North Andover, MA 01845 Phone: (978) 557-5553 FAX: (978) 226-5586	Job	MANSFIELD SW CT	Page	4 of 8
	Project	101 ft Monopole	Date	11:55:28 01/20/15
	Client	VERIZON	Designed by	kw

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft	C _{AA} Front ft ²	C _{AA} Side ft ²	Weight lb
			0.00		1/2" Ice	0.30	0.17	7.70
DAS-HY-DFDM	A	From Leg	0.00	0.0000	90.00	No Ice	0.12	5.00
			2.50		1/2" Ice	0.18	0.06	6.21
			0.00					
DAS-HY-DFDM	B	From Leg	0.00	0.0000	90.00	No Ice	0.12	5.00
			2.50		1/2" Ice	0.18	0.06	6.21
			0.00					
DAS-HY-DFDM	C	From Leg	0.00	0.0000	90.00	No Ice	0.12	5.00
			2.50		1/2" Ice	0.18	0.06	6.21
			0.00					

KMW	A	From Leg	2.50	0.0000	90.00	No Ice	8.50	74.05
AM-X-CD-16-65-00T-RET			0.00		1/2" Ice	9.15	7.48	139.04
w/mount pipe			0.00					
KMW	B	From Leg	2.50	0.0000	90.00	No Ice	8.50	74.05
AM-X-CD-16-65-00T-RET			0.00		1/2" Ice	9.15	7.48	139.04
w/mount pipe			0.00					
KMW	C	From Leg	2.50	0.0000	90.00	No Ice	8.50	74.05
AM-X-CD-16-65-00T-RET			0.00		1/2" Ice	9.15	7.48	139.04
w/mount pipe			0.00					
(2) Ericsson RRU	A	From Face	1.00	0.0000	90.00	No Ice	2.07	44.00
			0.00		1/2" Ice	2.26	1.23	58.64
			0.00					
(2) Ericsson RRU	B	From Face	1.00	0.0000	90.00	No Ice	2.07	44.00
			0.00		1/2" Ice	2.26	1.23	58.64
			0.00					
(2) Ericsson RRU	C	From Face	1.00	0.0000	90.00	No Ice	2.07	44.00
			0.00		1/2" Ice	2.26	1.23	58.64
			0.00					
Surge Arrestor	C	From Face	1.00	0.0000	87.00	No Ice	1.27	20.00
(DC6-48-60-18-8F)			0.00		1/2" Ice	1.46	1.46	35.12
			0.00					
Ring Mount	A	None		0.0000	88.50	No Ice	1.40	90.00
					1/2" Ice	2.40	2.40	130.00

Ring Mount	A	None		0.0000	79.50	No Ice	1.40	90.00
					1/2" Ice	2.40	2.40	130.00
PiROD 12' Lightweight	A	From Face	2.00	0.0000	79.50	No Ice	10.20	253.00
T-Frame			0.00		1/2" Ice	16.20	16.20	355.00
			0.00					
Omni 1"x8'	A	From Face	3.50	0.0000	87.00	No Ice	0.80	20.00
			0.00		1/2" Ice	1.62	1.62	27.43
			0.00					
20' Dipole	A	From Face	3.50	0.0000	70.20	No Ice	8.00	60.00
			0.00		1/2" Ice	10.04	10.04	115.61
			0.00					

Dishes

tnxTower Hudson Design Group, LLC 1600 Osgood Street, Building 20 North, Suite 3090 North Andover, MA 01845 Phone: (978) 557-5553 FAX: (978) 226-5586	Job MANSFIELD SW CT	Page 5 of 8
	Project 101 ft Monopole	Date 11:55:28 01/20/15
	Client VERIZON	Designed by kw

Description	Face or Leg	Dish Type	Offset Type	Offsets: Horz Lateral Vert ft	Azimuth Adjustment °	3 dB Beam Width °	Elevation ft	Outside Diameter ft	Aperture Area ft ²	Weight lb
Kathrein PR-950	C	Grid	From Face	2.00 0.00 0.00	0.0000		80.50	4.50	No Ice 1/2" Ice	38.00 98.00

Load Combinations

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

Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical lb	Horizontal, X lb	Horizontal, Z lb
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tnxTower Hudson Design Group, LLC 1600 Osgood Street, Building 20 North, Suite 3090 North Andover, MA 01845 Phone: (978) 557-5553 FAX: (978) 226-5586	Job	MANSFIELD SW CT	Page	6 of 8
	Project	101 ft Monopole	Date	11:55:28 01/20/15
	Client	VERIZON	Designed by	kw

Location	Condition	Gov. Load Comb.	Vertical lb	Horizontal, X lb	Horizontal, Z lb
Pole	Max. Vert	15	31138.58	-0.00	16638.81
	Max. H _x	11	25304.05	20023.03	-12.29
	Max. H _z	2	25304.05	0.00	19953.76
	Max. M _x	2	1517180.38	0.00	19953.76
	Max. M _z	5	1524091.26	-20023.03	-12.29
	Max. Torsion	16	3401.50	-8153.84	14467.25
	Min. Vert	1	25304.05	0.00	0.00
	Min. H _x	5	25304.05	-20023.03	-12.29
	Min. H _z	8	25304.05	0.00	-19967.93
	Min. M _x	8	-1517673.78	0.00	-19967.93
	Min. M _z	11	-1526410.17	20023.03	-12.29
	Min. Torsion	21	-3043.51	-0.00	-16503.76

Tower Mast Reaction Summary

Load Combination	Vertical lb	Shear _x lb	Shear _z lb	Overturning Moment, M _x lb-ft	Overturning Moment, M _z lb-ft	Torque lb-ft
Dead Only	25304.05	0.00	0.00	-324.38	1142.89	0.00
Dead+Wind 0 deg - No Ice	25304.05	-0.00	-19953.76	-1517180.38	1158.73	-2808.26
Dead+Wind 30 deg - No Ice	25304.05	10037.98	-17279.85	-1313910.34	-763616.40	-2766.53
Dead+Wind 60 deg - No Ice	25304.05	17357.76	-9968.84	-758100.92	-1321152.15	-2100.34
Dead+Wind 90 deg - No Ice	25304.05	20023.03	12.29	669.20	-1524091.26	-894.26
Dead+Wind 120 deg - No Ice	25304.05	17356.81	9976.41	758057.47	-1321075.19	703.16
Dead+Wind 150 deg - No Ice	25304.05	10031.36	17283.63	1313559.66	-763078.96	2072.82
Dead+Wind 180 deg - No Ice	25304.05	-0.00	19967.93	1517673.78	1158.73	2808.26
Dead+Wind 210 deg - No Ice	25304.05	-10031.36	17283.63	1313560.30	765396.79	2791.21
Dead+Wind 240 deg - No Ice	25304.05	-17356.81	9976.41	758058.11	1323393.73	2105.08
Dead+Wind 270 deg - No Ice	25304.05	-20023.03	12.29	669.21	1526410.17	894.25
Dead+Wind 300 deg - No Ice	25304.05	-17357.76	-9968.84	-758101.55	1323470.70	-707.90
Dead+Wind 330 deg - No Ice	25304.05	-10037.98	-17279.85	-1313910.98	765934.23	-2097.50
Dead+Ice+Temp	31138.58	0.00	0.00	-295.00	1742.03	0.00
Dead+Wind 0 deg+Ice+Temp	31138.58	0.00	-16638.81	-1287657.05	1775.81	-3043.48
Dead+Wind 30 deg+Ice+Temp	31138.58	8153.84	-14467.25	-1119876.96	-629493.00	-3401.50
Dead+Wind 60 deg+Ice+Temp	31138.58	14203.53	-8557.06	-663336.23	-1098183.47	-2576.49
Dead+Wind 90 deg+Ice+Temp	31138.58	16418.27	3.19	-40.10	-1269770.03	-869.92
Dead+Wind 120 deg+Ice+Temp	31138.58	14262.01	8232.74	636319.42	-1102947.90	959.71
Dead+Wind 150 deg+Ice+Temp	31138.58	8268.68	14254.58	1101954.82	-638847.64	2466.62
Dead+Wind 180 deg+Ice+Temp	31138.58	0.00	16503.76	1276057.83	1775.83	3043.51
Dead+Wind 210 deg+Ice+Temp	31138.58	-8268.68	14254.58	1101955.69	642399.80	2804.92
Dead+Wind 240 deg+Ice+Temp	31138.58	-14262.01	8232.74	636320.29	1106501.05	2083.81
Dead+Wind 270 deg+Ice+Temp	31138.58	-16418.27	3.19	-40.10	1273323.69	869.92
Dead+Wind 300 deg+Ice+Temp	31138.58	-14203.53	-8557.06	-663337.09	1101736.59	-466.93
Dead+Wind 330 deg+Ice+Temp	31138.58	-8153.84	-14467.25	-1119877.82	633045.12	-1869.94
Dead+Wind 0 deg - Service	25304.05	-0.00	-6904.41	-525232.53	1159.92	-972.19
Dead+Wind 30 deg - Service	25304.05	3473.35	-5979.19	-454891.59	-263489.20	-957.72
Dead+Wind 60 deg - Service	25304.05	6006.14	-3449.43	-262554.92	-456423.79	-727.08
Dead+Wind 90 deg - Service	25304.05	6928.38	4.25	16.30	-526650.72	-309.59
Dead+Wind 120 deg - Service	25304.05	6005.82	3452.04	262109.38	-456397.21	243.40
Dead+Wind 150 deg - Service	25304.05	3471.06	5980.49	454339.77	-263303.25	717.57
Dead+Wind 180 deg - Service	25304.05	-0.00	6909.32	524972.88	1159.92	972.19
Dead+Wind 210 deg - Service	25304.05	-3471.06	5980.49	454339.85	265623.13	966.32
Dead+Wind 240 deg - Service	25304.05	-6005.82	3452.04	262109.45	458717.18	728.79
Dead+Wind 270 deg - Service	25304.05	-6928.38	4.25	16.30	528970.73	309.58
Dead+Wind 300 deg - Service	25304.05	-6006.14	-3449.43	-262554.99	458743.76	-245.12
Dead+Wind 330 deg - Service	25304.05	-3473.35	-5979.19	-454891.66	265809.08	-726.17

tnxTower Hudson Design Group, LLC 1600 Osgood Street, Building 20 North, Suite 3090 North Andover, MA 01845 Phone: (978) 557-5553 FAX: (978) 226-5586	Job MANSFIELD SW CT	Page 7 of 8
	Project 101 ft Monopole	Date 11:55:28 01/20/15
	Client VERIZON	Designed by kw

Solution Summary

Load Comb.	Sum of Applied Forces			Sum of Reactions			% Error
	PX lb	PY lb	PZ lb	PX lb	PY lb	PZ lb	
1	0.00	-25304.05	0.00	0.00	25304.05	0.00	0.000%
2	0.00	-25304.05	-19953.76	0.00	25304.05	19953.76	0.000%
3	10037.98	-25304.05	-17279.85	-10037.98	25304.05	17279.85	0.000%
4	17357.76	-25304.05	-9968.84	-17357.76	25304.05	9968.84	0.000%
5	20023.03	-25304.05	12.29	-20023.03	25304.05	-12.29	0.000%
6	17356.81	-25304.05	9976.41	-17356.81	25304.05	-9976.41	0.000%
7	10031.36	-25304.05	17283.63	-10031.36	25304.05	-17283.63	0.000%
8	0.00	-25304.05	19967.93	0.00	25304.05	-19967.93	0.000%
9	-10031.36	-25304.05	17283.63	10031.36	25304.05	-17283.63	0.000%
10	-17356.81	-25304.05	9976.41	17356.81	25304.05	-9976.41	0.000%
11	-20023.03	-25304.05	12.29	20023.03	25304.05	-12.29	0.000%
12	-17357.76	-25304.05	-9968.84	17357.76	25304.05	9968.84	0.000%
13	-10037.98	-25304.05	-17279.85	10037.98	25304.05	17279.85	0.000%
14	0.00	-31138.58	0.00	0.00	31138.58	0.00	0.000%
15	0.00	-31138.58	-16638.80	-0.00	31138.58	16638.81	0.000%
16	8153.84	-31138.58	-14467.25	-8153.84	31138.58	14467.25	0.000%
17	14203.53	-31138.58	-8557.06	-14203.53	31138.58	8557.06	0.000%
18	16418.27	-31138.58	3.19	-16418.27	31138.58	-3.19	0.000%
19	14262.01	-31138.58	8232.74	-14262.01	31138.58	-8232.74	0.000%
20	8268.68	-31138.58	14254.58	-8268.68	31138.58	-14254.58	0.000%
21	0.00	-31138.58	16503.76	-0.00	31138.58	-16503.76	0.000%
22	-8268.68	-31138.58	14254.58	8268.68	31138.58	-14254.58	0.000%
23	-14262.01	-31138.58	8232.74	14262.01	31138.58	-8232.74	0.000%
24	-16418.27	-31138.58	3.19	16418.27	31138.58	-3.19	0.000%
25	-14203.53	-31138.58	-8557.06	14203.53	31138.58	8557.06	0.000%
26	-8153.84	-31138.58	-14467.25	8153.84	31138.58	14467.25	0.000%
27	0.00	-25304.05	-6904.41	0.00	25304.05	6904.41	0.000%
28	3473.35	-25304.05	-5979.19	-3473.35	25304.05	5979.19	0.000%
29	6006.14	-25304.05	-3449.43	-6006.14	25304.05	3449.43	0.000%
30	6928.38	-25304.05	4.25	-6928.38	25304.05	-4.25	0.000%
31	6005.82	-25304.05	3452.04	-6005.82	25304.05	-3452.04	0.000%
32	3471.06	-25304.05	5980.49	-3471.06	25304.05	-5980.49	0.000%
33	0.00	-25304.05	6909.32	0.00	25304.05	-6909.32	0.000%
34	-3471.06	-25304.05	5980.49	3471.06	25304.05	-5980.49	0.000%
35	-6005.82	-25304.05	3452.04	6005.82	25304.05	-3452.04	0.000%
36	-6928.38	-25304.05	4.25	6928.38	25304.05	-4.25	0.000%
37	-6006.14	-25304.05	-3449.43	6006.14	25304.05	3449.43	0.000%
38	-3473.35	-25304.05	-5979.19	3473.35	25304.05	5979.19	0.000%

Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	101.25 - 91.25	5.5635	36	0.4355	0.0020
L2	91.25 - 46.17	4.6555	36	0.4288	0.0020
L3	46.17 - 0	1.2778	36	0.2539	0.0009

Critical Deflections and Radius of Curvature - Service Wind

tnxTower Hudson Design Group, LLC 1600 Osgood Street, Building 20 North, Suite 3090 North Andover, MA 01845 Phone: (978) 557-5553 FAX: (978) 226-5586	Job MANSFIELD SW CT	Page 8 of 8
	Project 101 ft Monopole	Date 11:55:28 01/20/15
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Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
100.00	(2) SC-E 6016 w/mount pipe	36	5.4495	0.4350	0.0020	94407
98.50	12' Low Profile Platform	36	5.3127	0.4344	0.0020	94407
90.00	(2) Powerwave 7770 w/mount pipe	36	4.5433	0.4271	0.0020	41493
89.50	12' Low Profile Platform	36	4.4985	0.4264	0.0020	39647
88.50	Ring Mount	36	4.4092	0.4248	0.0020	36386
87.00	Surge Arrestor (DC6-48-60-18-8F)	36	4.2759	0.4221	0.0019	32364
80.50	Kathrein PR-950	36	3.7090	0.4064	0.0018	21856
79.50	Ring Mount	36	3.6236	0.4035	0.0018	20816
70.20	20' Dipole	36	2.8611	0.3705	0.0016	14431

Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P lb	SF*P _{allow} lb	% Capacity	Pass Fail	
L1	101.25 - 91.25	Pole	TP35.29x33.08x0.25	1	-3599.17	1445465.15	6.5	Pass	
L2	91.25 - 46.17	Pole	TP46.32x35.29x0.3125	2	-14136.20	2372353.33	31.4	Pass	
L3	46.17 - 0	Pole	TP55.26x46.32x0.375	3	-25297.00	3396150.61	40.5	Pass	
							Summary		
							Pole (L3)	40.5	Pass
							Base Plate	36.8	Pass
							RATING =	40.5	Pass