Robinson+Cole

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November 10, 2016

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

Re: **Notice of Exempt Modification – Facility Modification**
7 Broadway Avenue Extension, Stonington, Connecticut

Dear Ms. Bachman:

Cellco Partnership d/b/a Verizon Wireless ("Cellco") currently maintains twelve (12) antennas at the 93-foot level of the existing 155-foot water tank at 7 Broadway Avenue Extension in Stonington (the "Property"). The water tank is owned by Planeta Properties and is managed by Message Center Management ("MCM"). The Council approved Cellco's shared use of this water tank in 2005. Cellco now intends to modify its facility by replacing six (6) of its existing antennas with three (3) model SBNHH-1D65A, 700/1900 MHZ antennas and three (3) model SBNHH-1D65A, 700/1900 MHZ antennas. Cellco also intends to replace six (6) remote radio heads ("RRHs") and install three (3) new RRHs, behind its antennas and three (3) HYBRIFLEX™ fiber optic 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 Robert Simmons, First Selectman for the Town of Stonington. A copy of this letter is also being sent to Planeta Properties, the owner of the Property and MCM, the tank manager.

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 water tower. Cellco's replacement antennas and RRHs will be located at the 93-foot level of the 155-foot water tank.

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 water tank 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:
Robert Simmons, First Selectman
Planeta Properties
MCM
Tim Parks

ATTACHMENT 1

Product Specifications

COMMSCOPE®

SBNHH-1D65A

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

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

Electrical Specifications

Frequency Band, MHz	698–806	806–896	1695–1880	1850–1990	1920–2200	2300–2360
Gain, dBi	13.4	13.5	16.5	16.7	17.2	17.5
Beamwidth, Horizontal, degrees	66	61	70	65	62	61
Beamwidth, Vertical, degrees	17.6	15.9	7.1	6.6	6.2	5.5
Beam Tilt, degrees	0–18	0–18	0–10	0–10	0–10	0–10
USLS (First Lobe), dB	16	13	13	13	12	12
Front-to-Back Ratio at 180°, dB	25	27	28	28	27	29
Isolation, dB	25	25	25	25	25	25
Isolation, Intersystem, dB	30	30	30	30	30	30
VSWR | Return Loss, dB	1.5 | 14.0	1.5 | 14.0	1.5 | 14.0	1.5 | 14.0	1.5 | 14.0	1.5 | 14.0
PIM, 3rd Order, 2 x 20 W, dBc	-153	-153	-153	-153	-153	-153
Input Power per Port, maximum, watts	350	350	350	350	350	300
Polarization	±45°	±45°	±45°	±45°	±45°	±45°
Impedance	50 ohm	50 ohm	50 ohm	50 ohm	50 ohm	50 ohm

Electrical Specifications, BASTA*

Frequency Band, MHz	698–806	806–896	1695–1880	1850–1990	1920–2200	2300–2360
Gain by all Beam Tilts, average, dBi	13.1	13.1	16.1	16.5	16.7	17.2
Gain by all Beam Tilts Tolerance, dB	±0.5	±0.5	±0.5	±0.3	±0.5	±0.4
	0 ° | 13.4	0 ° | 13.4	0 ° | 16.0	0 ° | 16.3	0 ° | 16.5	0 ° | 17.0
Gain by Beam Tilt, average, dBi	9 ° | 13.1	9 ° | 13.1	5 ° | 16.2	5 ° | 16.5	5 ° | 16.8	5 ° | 17.3
	18 ° | 12.7	18 ° | 12.7	10 ° | 16.1	10 ° | 16.5	10 ° | 16.6	10 ° | 16.9
Beamwidth, Horizontal Tolerance, degrees	±3.1	±5.4	±2.8	±4	±6.6	±4.6
Beamwidth, Vertical Tolerance, degrees	±1.8	±1.4	±0.3	±0.4	±0.5	±0.3
USLS, beampeak to 20° above beampeak, dB	15	14	15	15	15	14
Front-to-Back Total Power at 180° ± 30°, dB	22	21	26	26	24	25
CPR at Boresight, dB	22	16	22	25	21	22
CPR at Sector, dB	10	6	12	8	5	4

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

General Specifications

Antenna Type	Sector with internal RET
Band	Multiband
Brand	DualPol®
Operating Frequency Band	1695 – 2360 MHz | 698 – 896 MHz
Performance Note	Outdoor usage

Mechanical Specifications

Color	Light gray
Lightning Protection	dc Ground

Product Specifications

SBNHH-1D65A

Radiator Material	Aluminum | Low loss circuit board
Radome Material	Fiberglass, UV resistant
RF Connector Interface	7-16 DIN Female
RF Connector Location	Bottom
RF Connector Quantity, total	6
Wind Loading, frontal	445.0 N @ 150 km/h 100.0 lbf @ 150 km/h
Wind Loading, lateral	145.0 N @ 150 km/h 32.6 lbf @ 150 km/h
Wind Loading, rear	523.0 N @ 150 km/h 117.6 lbf @ 150 km/h
Wind Speed, maximum	241 km/h | 150 mph

Dimensions

Depth	180.0 mm | 7.1 in
Length	1413.0 mm | 55.6 in
Width	301.0 mm | 11.9 in
Net Weight, without mounting kit	15.2 kg | 33.5 lb

Remote Electrical Tilt (RET) Information

Input Voltage	10–30 Vdc
Internal RET	High band (1) | Low band (1)
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

Packed Dimensions

Depth	296.0 mm | 11.7 in
Length	1589.0 mm | 62.6 in
Width	390.0 mm | 15.4 in
Shipping Weight	26.1 kg | 57.5 lb

Regulatory Compliance/Certifications

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

Included Products

Product Specifications

SBNHH-1D65A

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.

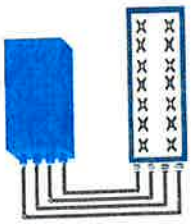
Its compactness and slim design makes the Alcatel-Lucent B13 RRH4x30-4R easy to install close to the antenna: operators can therefore locate this Remote Radio Head where RF design conditions are deemed ideal, minimizing trade-offs between available sites and RF optimum sites, together with reducing the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

ALCATEL-LUCENT B25 RRH4X30

Alcatel-Lucent Band 25 Remote Radio Head 4x30W is the new 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 B25 RRH4x30 allows operators to have a compact radio solution to deploy LTE in the PCS band (1.9 GHz, 3GPP band 25), providing them with the means to achieve high capacity, high quality and high coverage with minimum site requirements.

The Alcatel-Lucent B25 RRH4x30 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, LTE carriers from 3 MHz up to 20 MHz and up to 65 MHz instantaneous bandwidth.

The Alcatel-Lucent B25 RRH4x30 is a near zero-footprint solution and operates noise free, simplifying negotiations with site property owners and minimizing environmental impacts.

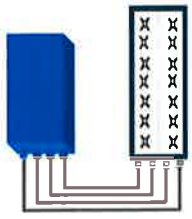
Its compactness and slim design makes the Alcatel-Lucent B25 RRH4x30 easy to install close to the antenna: operators can therefore locate this Remote Radio Head where RF design conditions are deemed ideal, minimizing trade-offs between available sites and RF optimum sites, together with reducing the RF feeder needs and installation costs.

FEATURES

- Supporting LTE in 1.9 GHz band (PCS, 3GPP band 2 & 25)
- LTE 2Tx or 4Tx MIMO (SW switchable)
- Output power: Up to 2x60W or 4x30W
- Ready for 3, 5, 10, 15 or 20MHz LTE carrier operation with 4Rx Diversity
- Ready to support up to 4 carriers anywhere in 65MHz instantaneous bandwidth
- Convection-cooled (fan-less)
- Supports AISG 2.0 devices (RET, TMA) through RS485 or RF ports

BENEFITS

- Compact to reduce additional footprint when adding LTE in PCS band
- MIMO scheme operation selection (2Tx or 4Tx) by software only
- Full flexibility for multiple carriers operation over entire PCS spectrum
- Improves downlink spectral efficiency and cell edge throughput through MIMO4
- Increases LTE coverage thanks to 4-way Rx 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	3GPP bands 2 & 25 (PCS-G) DL: 1930 - 1995 MHz UL: 1850 - 1915 MHz
Instantaneous bandwidth - #carriers	65MHz – Up to 4 LTE carriers (in 40MHz occupied bandwidth)
LTE carrier bandwidth	3, 5, 10, 15 or 20 MHz
RF output power	2x60W or 4x30W (by SW)
Noise figure (3GPP band 2) RX Diversity scheme	2.0 dB typ. (<2.5 dB max) 2 or 4 way Rx diversity
Sizes (HxWxD)(w/ solar shield) in mm (in.) Volume (w/ solar shield) in L Weight (w/ solar shield) in kg (lb)	538 x 304 x 182 (21.2" x 12.0" x 7.2") 30 24 (53)
DC voltage range DC power consumption	-40.5 to -57V at full performance, -38 to -57V with relaxation on power consumption 580W typical @100% RF load
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 (> 14dB)
CPRI ports	2 CPRI ports (HW ready for Rate7 / 9.8 Gbps)
AISG interfaces	1 AISG2.0 output (RS485), +24V/2A DC power Integrated Smart Bias Tees (x2)
Misc. Interfaces	1 external alarms connector (4 alarms) 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

ALCATEL-LUCENT B66A RRH4X45

The Alcatel-Lucent B66a Remote Radio Head 4x45 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. Its operational range covers beyond that of B4 (AWS) and B10 (AWS+).

Supporting 2Tx/4Tx MIMO and 2-way/4-way Rx diversity, the Alcatel-Lucent B66a RRH4x45 allows operators to have a compact radio solution to deploy LTE in the 2100 band (3GPP band 4, 10, and 66), providing them with the means to achieve high capacity, high quality, high reliability, large instantaneous bandwidth, and high coverage with minimum site requirements.

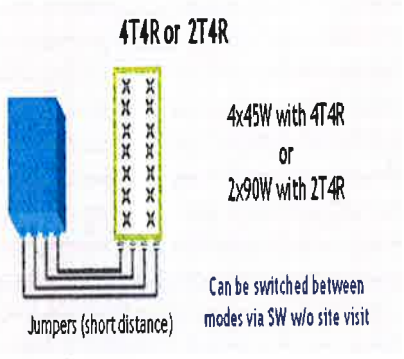
The Alcatel-Lucent B66a RRH4x45 product has four transmit RF paths, offering the possibility to **select, via software only, 2Tx or 4Tx MIMO configurations** with either 2x90W or 4x45W RF output power. It also supports 4-way Rx diversity at the 70 MHz instantaneous bandwidth.

The Alcatel-Lucent B66a RRH4x45 is a compact (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 B66a RRH4x45 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 2110 - 2180 MHz band/DL, 1710-1780MHz/UL (3GPP band 4, 10, and 66a)
- LTE 2Tx or 4Tx MIMO (SW selectable)
- Configuration: 2T2R/2T4R/4T4R
- Output power: Up to 2x90W or 4x45W (SW configurable)
- 70MHz 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 AWS 1-3 band
- Selection of MIMO configuration (2Tx or 4Tx) by software only
- Improves downlink spectral efficiency through 4Tx MIMO
- Increases LTE coverage thanks to 4Rx diversity capability and best in class Rx sensitivity
- Flexible mounting options: Pole or Wall

TECHNICAL SPECIFICATIONS

Features & Performance	
Number of TX/RX paths	4 duplexed (either 4T4R or 2T4R selectable by SW)
Frequency band	AWS 1-3, B4/B66a DL: 2110-2180 MHz / UL: 1710-1780 MHz
Instantaneous bandwidth - #carriers	70 MHz – 4 LTE MIMO carriers (in 70 MHz occupied bandwidth)
LTE carrier bandwidth	5, 10, 15, 20 MHz
RF output power	2x90W or 4x45W (selectable by SW)
Noise figure – RX Diversity scheme Receiver Sensivity (FRC A1-3)	2 dB typical (<2.5 dB max) – 2 or 4 way Rx diversity -104.5 dBm maximum
Sizes (HxWxD) in mm (in.) Volume in Liters Weight in kg (lb) (w/o mounting HW)	655x299x182 (25.8x11.8x7.2) (with solar shield) 640x290x160 (25.2x11.4x6.3) (without solar shield) 35.5 (with solar shield) 29.7 (without solar shield) 25.8kg (56.8lb) (with solar shield)
DC voltage range DC power consumption	Nominal: -48V, -40.5 to -57V at full performance, -38 to -57V with relaxation on power consumption 750W typical @100% RF load (in 2Tx or 4Tx mode); Add 58W for 2A*29V for AISG
Environmental conditions Wind load (@150km/h or 93mph)	-40°C (-40°F) /+55°C (+131°F) UL50E Type 4 Enclosure 250N (56lb) Frontal/150N (34lb) Lateral
Antenna ports	4 ports 4.3-10 female (50 ohms) VSWR < 1.5
CPRI ports	2 CPRI ports (HW ready for Rate 7, 9.8 Gbps) SFP: SMDF (HW supports also SMSF and MMDF)
AISG interfaces	1 AISG 2.0 output (RS485) Integrated Smart Bias Tees (x2)
Misc. Interfaces	4 external alarms (1 connector) 1 DC connector (2 pins)
Installation conditions	Pole and wall mounting
Regulatory compliance	3GPP 36.141 / 3GPP 36.113 / GR-487 / GR-1089-CORE / GR-3108-CORE / UL 60950-1 / FCC Part 27 / FCC Part 15 / GR-3178-CORE

Alcatel·Lucent

Product Data Sheet HB158-1-08U8-S8J18

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

Product Description

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

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

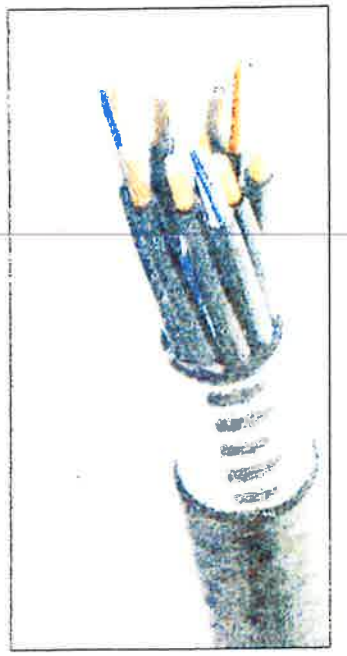


Figure 1: HYBRIFLEX Series

Features/Benefits

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

Technical Specifications

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

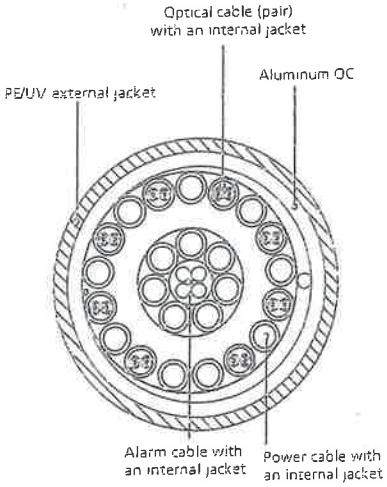


Figure 2: Construction Detail

* This data is provisional and subject to change

ATTACHMENT 2

	General	Power	Density					
Site Name: Mystic S (Stonington)								
Tower Height: 155ft								
CARRIER	**# OF CHAN.**	**WATTS ERP**	**HEIGHT**	**CALC. POWER DENS**	**FREQ.**	**MAX. PERMISS. EXP.**	**FRACTION MPE**	**Total**
*American Messaging	1	100	143	929	0.0019	0.6193	0.03%	
*Town of Stonington	receive only							
*Sprint	12	250	143	1962.5	0.0575	1.0000	0.57%	
*AT&T microwave	1	1216	140	6004	0.0244	1.0000	0.24%	
*T-Mobile GSM/UMTS	4	1167	116.5	1900/2100	0.1375	1.0000	1.37%	
*T-Mobile UMTS	2	2335	116.5	1900/2100	0.1375	1.0000	1.38%	
*T-Mobile LTE	1	865	116.5	700	0.0255	0.4667	0.55%	
*AT&T GSM	2	427	143	1900	0.0164	1.0000	0.16%	
*AT&T GSM	4	296	143	880	0.0227	0.5867	0.39%	
*AT&T UMTS	1	500	143	880	0.0096	0.5867	0.16%	
*AT&T LTE	1	500	143	740	0.0096	0.4933	0.19%	
Verizon PCS	**1**	**2518**	**93**	**0.1047**	**1970**	**1.0000**	**10.47%**	
Verizon Cellular	**9**	**251**	**93**	**0.0939**	**869**	**0.5793**	**16.21%**	
Verizon AWS	**1**	**4958**	**93**	**0.2061**	**2145**	**1.0000**	**20.61%**	
Verizon 700	**1**	**1301**	**93**	**0.0541**	**746**	**0.4973**	**10.88%**	
								63.22%
* Source: Siting Council								

ATTACHMENT 3

ALL-POINTS
TECHNOLOGY CORPORATION

STRUCTURAL ANALYSIS REPORT
155'± WATER TOWER
MYSTIC, CONNECTICUT

Prepared for
Verizon Wireless

Verizon Site: Mystic

October 26, 2016

APT Project #CT141157

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STRUCTURAL ANALYSIS REPORT
of
155'± WATER TOWER
MYSTIC, CONNECTICUT
prepared for
Verizon Wireless

EXECUTIVE SUMMARY:

All-Points Technology Corporation, P.C. (APT) performed a structural analysis of this 155'± water tower. The analysis was performed for Verizon Wireless's proposed replacement of six panel antennas and six remote radio heads (RRH) and addition of three remote radio heads, fed by three 1-5/8" hybrid lines to 93'.

Our analysis indicates the water tower meets the requirements of TIA-222 Revision G and the Connecticut State Building Code with the proposed equipment changes.

INTRODUCTION:

A structural analysis was performed on the above-mentioned water tower by APT for Verizon Wireless. The tower is located at 7 Broadway Avenue Extension in Mystic, Connecticut.

APT previously climbed the structure on June 30, 2016 to record information regarding physical and dimensional properties of the structure and its appurtenances. This analysis also relied on a structural analysis by Infinigy Engineering for AT&T Mobility dated July 15, 2014 and an equipment inventory dated May 2015 provided by Message Center Management.

The structure is a 155'± painted steel, four-legged water tower. A schematic drawing with a listing of existing, reserved and proposed equipment is provided in Appendix A.

STRUCTURAL ANALYSIS:

Methodology:

The structural analysis was done in accordance with the Connecticut State Building Code and TIA-222, Revision G (TIA), Structural Standard for Antenna Supporting Structures and Antennas. In accordance with paragraph 15.4 of TIA-222-G, for appurtenance changes that are not significant (less than 5 percent increase in all structural components), the existing structure may be evaluated based on TIA-222 Revision F. In this case, the proposed changes

represent a reduction in loading and use of Revision F of the TIA-222 standard is allowed. The analysis was conducted using a fastest mile wind speed of 85 miles per hour in accordance with the TIA Standard for this area of Connecticut.

Verizon's equipment configuration will be as follows (proposed changes in **bold** text):

Equipment	Elev.	Feed Lines
(3) BXA-80080/4, (3) LNX-6514DS, **(6) SBNHH-1D65A** panels, (6) FD9R6004/2C-3L diplexers, **(3) RRH2x60-700 RRHs, (3) ALU RRU 4x45-AWS RRHs, (3) RRH2x60-PCS RRHs,** **(3)** DB-B1-6C-12AB-0Z D-boxes [1]	93'	**(3) 1-5/8" hybrid**

[1] Currently three LNX-6514DS, three BXA-80080/4, three MG D5-800TX and three BXA-171063/12 panel antennas, six FD9R6004/2C-3L diplexers, three RRH2x40-700 RRHs, three RRH2x40-AWS RRHs, three DB-E1-2C-4AB-0Z sector D-boxes and one DB-T1-6Z-8AB-0Z main D-box.

The following table summarizes the results of the analysis based on stresses of individual leg and bracing members:

Elevation	Legs	Bracing
117'-138'	6%	57%
92'-117'	13%	83%
65'-92'	22%	76%
35'-65'	33%	86%
0'-35'	49%	100%

Evaluation of the existing base foundations could not be performed, as information on their design or construction was not available to APT. Base reactions with the proposed equipment changes are as follows:

Compression:	151.8 kips
Uplift:	102.5 kips
Shear:	33.9 kips
Overturning Moment:	6473 ft-kips

CONCLUSIONS AND RECOMMENDATIONS:

Our structural analysis indicates the 155-foot self-supporting water tank located at 7 Broadway Avenue Extension in Mystic, Connecticut meets requirements of the Connecticut State Building Code with the equipment changes proposed by Verizon Wireless.

LIMITATIONS:

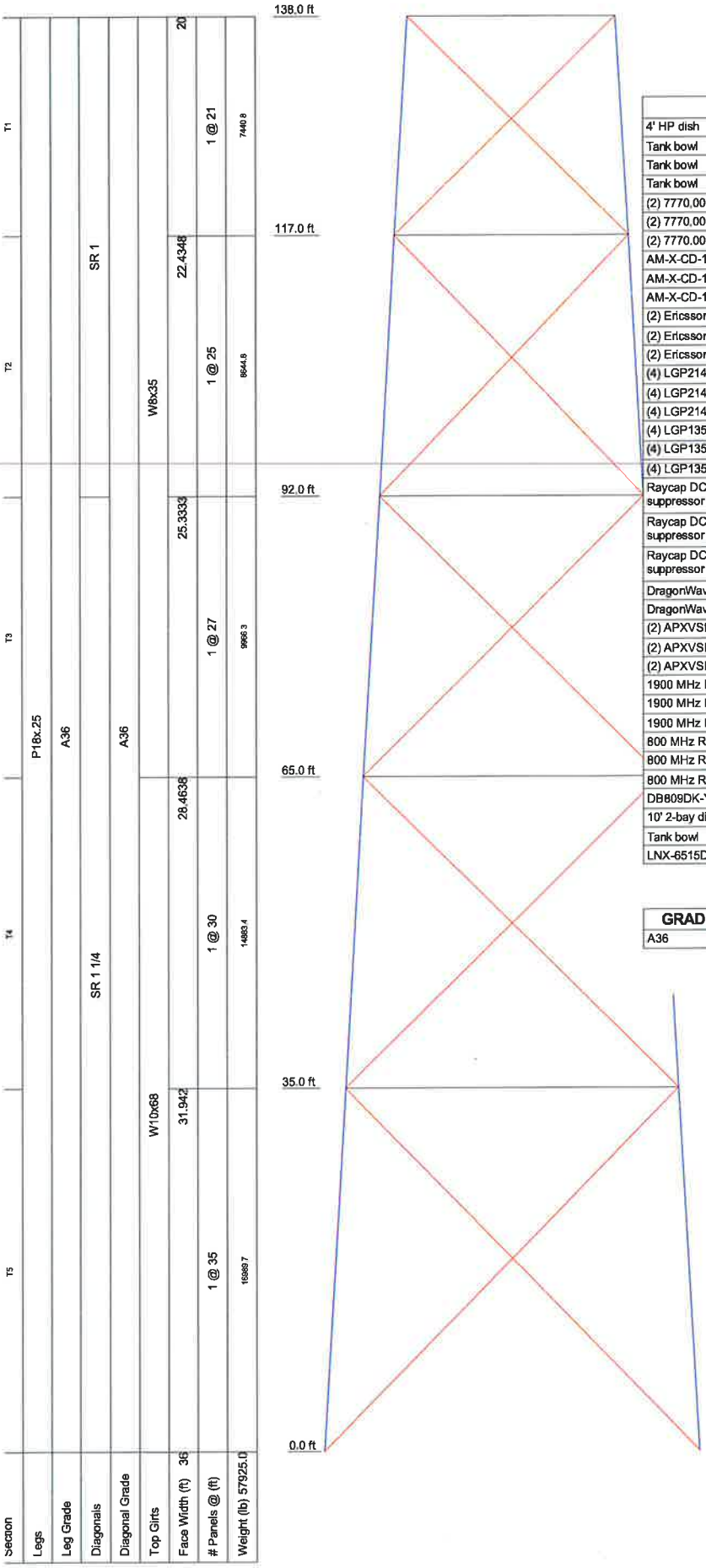
All-Points Technology Corporation, P.C. (APT) is not responsible for any modifications completed hereafter which APT is not directly involved. Modifications include but are not limited to:

1. Replacing or strengthening bracing members.
2. Reinforcing leg members in any manner.
3. Installing antennas and/or mounting brackets or side arms.

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

Appendix A

Tower Schematic



Section	T1	T2	T3	T4	T5
Legs	P18x.25				
Leg Grade	A36				
Diagonals	SR 1			SR 1 1/4	
Diagonal Grade	A36				
Top Girts	W8x35			W10x68	
Face Width (ft)	20	22.4348	25.3333	28.4638	31.942
# Panels @ (ft)	1 @ 21	1 @ 25	1 @ 27	1 @ 30	1 @ 35
Weight (lb) 57925.0	7440.8	8644.8	9968.3	14883.4	16988.7

DESIGNED APPURTENANCE LOADING

TYPE	ELEVATION	TYPE	ELEVATION
4' HP dish	140	LNX-6515DS-T4M	117
Tank bowl	138	AIR 21 B2A B4P panel	117
Tank bowl	138	AIR 21 B2A B4P panel	117
Tank bowl	138	AIR 21 B2A B4P panel	117
(2) 7770.00	138	AIR 21 B4A B2P panel	117
(2) 7770.00	138	AIR 21 B4A B2P panel	117
(2) 7770.00	138	AIR 21 B4A B2P panel	117
AM-X-CD-14-65	138	KRY 112 7 1/2 TMA	117
AM-X-CD-14-65	138	KRY 112 7 1/2 TMA	117
AM-X-CD-14-65	138	KRY 112 7 1/2 TMA	117
(2) Ericsson RRUS-11	138	Ericsson RRUS-11	117
(2) Ericsson RRUS-11	138	Ericsson RRUS-11	117
(2) Ericsson RRUS-11	138	Ericsson RRUS-11	117
(4) LGP2140X TMA	138	LNX-6515DS-T4M	117
(4) LGP2140X TMA	138	(2) SBNHH-1D65A	93
(4) LGP2140X TMA	138	(2) SBNHH-1D65A	93
(4) LGP13519 Diplexer	138	LNX-6514DS-VTM	93
(4) LGP13519 Diplexer	138	LNX-6514DS-VTM	93
(4) LGP13519 Diplexer	138	LNX-6514DS-VTM	93
Raycap DC6-48-60-18-8F surge suppressor	138	BXA-80080/4	93
		BXA-80080/4	93
Raycap DC6-48-60-18-8F surge suppressor	138	BXA-80080/4	93
		ALU RRH2x60-PCS w/bracket	93
Raycap DC6-48-60-18-8F surge suppressor	138	ALU RRH2x60-PCS w/bracket	93
		ALU RRH2x60-PCS w/bracket	93
DragonWave Horizon Compact+ ODU	138	ALU RRH4x45-AWS w/bracket	93
DragonWave Horizon Compact+ ODU	138	ALU RRH4x45-AWS w/bracket	93
(2) APXVSPP18-C-A20	138	ALU RRH4x45-AWS w/bracket	93
(2) APXVSPP18-C-A20	138	ALU RRH2x60-700 w/bracket	93
(2) APXVSPP18-C-A20	138	ALU RRH2x60-700 w/bracket	93
1900 MHz RRH	138	ALU RRH2x60-700 w/bracket	93
1900 MHz RRH	138	RFS DB-B1-6C-12AB-0Z D-box	93
1900 MHz RRH	138	RFS DB-B1-6C-12AB-0Z D-box	93
800 MHz RRH	138	RFS DB-B1-6C-12AB-0Z D-box	93
800 MHz RRH	138	(2) RFS FD9R6004_2C-3L diplexer	93
800 MHz RRH	138	(2) RFS FD9R6004_2C-3L diplexer	93
DB809DK-Y	138	(2) RFS FD9R6004_2C-3L diplexer	93
10' 2-bay dipole	138	(2) SBNHH-1D65A	93
Tank bowl	138	GPS on 3' standoff	68
LNX-6515DS-T4M	117		

MATERIAL STRENGTH

GRADE	Fy	Fu	GRADE	Fy	Fu
A36	36 ksi	58 ksi			

MAX. CORNER REACTIONS AT BASE:
DOWN: 151764 lb
SHEAR: 13349 lb

UPLIFT: -102516 lb
SHEAR: 33860 lb

AXIAL
142434 lb

SHEAR
67043 lb

MOMENT
5861249 lb-ft

TORQUE 64798 lb-ft
74 mph WIND - 0.7500 in ICE

AXIAL
97870 lb

SHEAR
73638 lb

MOMENT
6473125 lb-ft

TORQUE 77989 lb-ft
REACTIONS - 85 mph WIND

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Job: **Mystic Water Tank**			
Project: **CT141157 Mystic**			
Client: Verizon Wireless	Drawn by: Rob Adair	App'd:	
Code: TIA/EIA-222-F	Date: 10/26/16	Scale: N	
Path: Z:\Shared\NH Office\Jobs\2 Verizon LTE\CT141150 Mystic South\CT141157 Mystic F.eri		Dwg No.	

Appendix B

Calculations

Tower Input Data

The main tower is a 4x free standing tower with an overall height of 138.00 ft above the ground line.
The face width of the tower is 20.00 ft at the top and 36.00 ft at the base.
This tower is designed using the TIA/EIA-222-F standard.
The following design criteria apply:

Tower is located in New London County, Connecticut.
Basic wind speed of 85 mph.
Nominal ice thickness of 0.7500 in.
Ice density of 56 pcf.
A wind speed of 74 mph is used in combination with ice.
Deflections calculated using a wind speed of 60 mph.
A non-linear (P-delta) analysis was used.
Pressures are calculated at each section.
Stress ratio used in tower member design is 1.333.
Local bending stresses due to climbing loads, feed line supports, and appurtenance mounts are not considered.

Feed Line/Linear Appurtenances

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Face Offset in	Lateral Offset (Frac FW)	#	# Per Row	Clear Spacing in	Width or Diameter in	Perimeter in	Weight plf
1 5/8	C	Yes	Ar (CfAe)	138.00 - 8.00	0.0000	0.5	18	6	0.5000	1.9800		1.04
7/8	C	Yes	Ar (CfAe)	138.00 - 8.00	0.0000	0.5	2	2	0.5000	1.1100		0.54
1-1/4" Hybrid fiber-power cable	D	Yes	Ar (CfAe)	138.00 - 8.00	0.0000	0.5	3	3	0.5000	1.2500		0.66
3/4" hybrid	B	Yes	Ar (CfAe)	117.00 - 8.00	0.0000	0.5	3	3	0.7950	0.7950		0.58
1 1/4	B	Yes	Ar (CfAe)	117.00 - 8.00	0.0000	0.5	6	6	0.5000	1.5500		0.66
1 5/8	B	Yes	Ar (CfAe)	117.00 - 8.00	0.0000	0.5	6	3	0.5000	1.9800		1.04
2" conduit	C	Yes	Ar (CfAe)	138.00 - 8.00	0.0000	0.5	1	1	0.5000	2.0000		2.00
1.57" Hybrid fiber-power cable	D	Yes	Ar (CfAe)	93.00 - 8.00	0.0000	0.5	3	3	0.5000	1.5700		0.66
Feedline Ladder (Af)	C	Yes	Af (CfAe)	138.00 - 10.00	0.0000	0.5	1	1	3.0000	3.0000	12.0000	8.40

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Face Offset in	Lateral Offset (Frac FW)	#		C_AA_A ft^2/ft	Weight plf
36" standpipe	A	No	CaAa (Out Of Face)	130.00 - 0.00	-120.0000	0	1	No Ice	3.60	47.44
								1/2" Ice	3.70	69.74
								1" Ice	3.80	92.04

Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight lb
Tank bowl	A	None		0.0000	138.00	No Ice	75.66	75.66	5844.00
						1/2" Ice	76.96	76.96	6893.00
						1" Ice	78.26	78.26	7942.00
Tank bowl	B	None		0.0000	138.00	No Ice	75.66	75.66	5844.00
						1/2" Ice	76.96	76.96	6893.00

Description	Face or Leg	Offset Type	Offsets: Horz Lateral / Vert	Azimuth Adjustment	Placement		C_AA_A Front	C_AA_A Side	Weight
			ft	°	ft		ft^2	ft^2	lb
						1" Ice	78.26	78.26	7942.00
Tank bowl	C	None		0.0000	138.00	No Ice	75.66	75.66	5844.00
						1/2" Ice	76.96	76.96	6893.00
						1" Ice	78.26	78.26	7942.00
Tank bowl	D	None		0.0000	138.00	No Ice	75.66	75.66	5844.00
						1/2" Ice	76.96	76.96	6893.00
						1" Ice	78.26	78.26	7942.00
(2) 7770.00	A	From Leg	3.00	0.0000	138.00	No Ice	5.88	2.93	35.00
			0.00			1/2" Ice	6.31	3.27	67.63
			2.00			1" Ice	6.75	3.63	105.06
(2) 7770.00	B	From Leg	3.00	0.0000	138.00	No Ice	5.88	2.93	35.00
			0.00			1/2" Ice	6.31	3.27	67.63
			2.00			1" Ice	6.75	3.63	105.06
(2) 7770.00	C	From Leg	3.00	0.0000	138.00	No Ice	5.88	2.93	35.00
			0.00			1/2" Ice	6.31	3.27	67.63
			2.00			1" Ice	6.75	3.63	105.06
AM-X-CD-14-65	A	From Leg	3.00	0.0000	138.00	No Ice	5.51	2.83	40.00
			0.00			1/2" Ice	5.90	3.14	71.95
			2.00			1" Ice	6.30	3.47	108.36
AM-X-CD-14-65	B	From Leg	3.00	0.0000	138.00	No Ice	5.51	2.83	40.00
			0.00			1/2" Ice	5.90	3.14	71.95
			2.00			1" Ice	6.30	3.47	108.36
AM-X-CD-14-65	C	From Leg	3.00	0.0000	138.00	No Ice	5.51	2.83	40.00
			0.00			1/2" Ice	5.90	3.14	71.95
			2.00			1" Ice	6.30	3.47	108.36
(2) Ericsson RRUS-11	A	From Leg	2.50	0.0000	138.00	No Ice	3.25	1.19	55.00
			0.00			1/2" Ice	3.50	1.35	75.86
			2.00			1" Ice	3.75	1.52	99.77
(2) Ericsson RRUS-11	B	From Leg	2.50	0.0000	138.00	No Ice	3.25	1.19	55.00
			0.00			1/2" Ice	3.50	1.35	75.86
			2.00			1" Ice	3.75	1.52	99.77
(2) Ericsson RRUS-11	C	From Leg	2.50	0.0000	138.00	No Ice	3.25	1.19	55.00
			0.00			1/2" Ice	3.50	1.35	75.86
			2.00			1" Ice	3.75	1.52	99.77
(4) LGP2140X TMA	A	From Leg	2.50	0.0000	138.00	No Ice	1.26	0.38	20.00
			0.00			1/2" Ice	1.42	0.49	27.13
			2.00			1" Ice	1.58	0.62	36.14
(4) LGP2140X TMA	B	From Leg	2.50	0.0000	138.00	No Ice	1.26	0.38	20.00
			0.00			1/2" Ice	1.42	0.49	27.13
			2.00			1" Ice	1.58	0.62	36.14
(4) LGP2140X TMA	C	From Leg	2.50	0.0000	138.00	No Ice	1.26	0.38	20.00
			0.00			1/2" Ice	1.42	0.49	27.13
			2.00			1" Ice	1.58	0.62	36.14
(4) LGP13519 Diplexer	A	From Leg	2.50	0.0000	138.00	No Ice	0.27	0.13	6.00
			0.00			1/2" Ice	0.34	0.18	8.41
			2.00			1" Ice	0.43	0.24	11.91
(4) LGP13519 Diplexer	B	From Leg	2.50	0.0000	138.00	No Ice	0.27	0.13	6.00
			0.00			1/2" Ice	0.34	0.18	8.41
			2.00			1" Ice	0.43	0.24	11.91
(4) LGP13519 Diplexer	C	From Leg	2.50	0.0000	138.00	No Ice	0.27	0.13	6.00
			0.00			1/2" Ice	0.34	0.18	8.41
			2.00			1" Ice	0.43	0.24	11.91
Raycap DC6-48-60-18-8F surge suppressor	A	From Leg	2.50	0.0000	138.00	No Ice	1.19	1.19	30.00
			0.00			1/2" Ice	1.37	1.37	44.34
			2.00			1" Ice	1.56	1.56	60.93
Raycap DC6-48-60-18-8F surge suppressor	B	From Leg	2.50	0.0000	138.00	No Ice	1.19	1.19	30.00
			0.00			1/2" Ice	1.37	1.37	44.34
			2.00			1" Ice	1.56	1.56	60.93
Raycap DC6-48-60-18-8F	C	From Leg	2.50	0.0000	138.00	No Ice	1.19	1.19	30.00

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Phone: (603) 496-5853
FAX: (603) 447-2124

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert	Azimuth Adjustment	Placement		C_AA_A Front	C_AA_A Side	Weight
			ft	°	ft		ft^2	ft^2	lb
surge suppressor			0.00			1/2" Ice	1.37	1.37	44.34
			2.00			1" Ice	1.56	1.56	60.93
DragonWave Horizon Compact+ ODU	A	From Leg	3.00	0.0000	138.00	No Ice	0.81	0.37	10.00
			0.00			1/2" Ice	0.93	0.46	15.82
			2.00			1" Ice	1.06	0.57	23.28
DragonWave Horizon Compact+ ODU	B	From Leg	3.00	0.0000	138.00	No Ice	0.81	0.37	10.00
			0.00			1/2" Ice	0.93	0.46	15.82
			2.00			1" Ice	1.06	0.57	23.28
(2) APXVSPP18-C-A20	A	From Leg	3.00	0.0000	138.00	No Ice	8.26	5.28	107.00
			0.00			1/2" Ice	8.81	5.74	156.52
			2.00			1" Ice	9.36	6.20	212.12
(2) APXVSPP18-C-A20	B	From Leg	3.00	0.0000	138.00	No Ice	8.26	5.28	107.00
			0.00			1/2" Ice	8.81	5.74	156.52
			2.00			1" Ice	9.36	6.20	212.12
(2) APXVSPP18-C-A20	C	From Leg	3.00	0.0000	138.00	No Ice	8.26	5.28	107.00
			0.00			1/2" Ice	8.81	5.74	156.52
			2.00			1" Ice	9.36	6.20	212.12
1900 MHz RRH	A	From Leg	3.00	0.0000	138.00	No Ice	3.80	2.91	144.00
			0.00			1/2" Ice	4.06	3.14	175.27
			2.00			1" Ice	4.34	3.39	210.18
1900 MHz RRH	B	From Leg	3.00	0.0000	138.00	No Ice	3.80	2.91	144.00
			0.00			1/2" Ice	4.06	3.14	175.27
			2.00			1" Ice	4.34	3.39	210.18
1900 MHz RRH	C	From Leg	3.00	0.0000	138.00	No Ice	3.80	2.91	144.00
			0.00			1/2" Ice	4.06	3.14	175.27
			2.00			1" Ice	4.34	3.39	210.18
800 MHz RRH	A	From Leg	3.00	0.0000	138.00	No Ice	2.83	3.45	82.00
			0.00			1/2" Ice	3.06	3.70	112.15
			2.00			1" Ice	3.30	3.95	145.84
800 MHz RRH	B	From Leg	3.00	0.0000	138.00	No Ice	2.83	3.45	82.00
			0.00			1/2" Ice	3.06	3.70	112.15
			2.00			1" Ice	3.30	3.95	145.84
800 MHz RRH	C	From Leg	3.00	0.0000	138.00	No Ice	2.83	3.45	82.00
			0.00			1/2" Ice	3.06	3.70	112.15
			2.00			1" Ice	3.30	3.95	145.84
DB809DK-Y	C	From Leg	3.00	0.0000	138.00	No Ice	3.39	3.39	32.00
			0.00			1/2" Ice	4.55	4.55	56.57
			2.00			1" Ice	5.73	5.73	88.49
10' 2-bay dipole	C	From Leg	3.00	0.0000	138.00	No Ice	2.50	2.50	75.00
			0.00			1/2" Ice	3.53	3.53	93.64
			2.00			1" Ice	4.58	4.58	118.79
LNX-6515DS-T4M	A	From Leg	1.00	0.0000	117.00	No Ice	11.39	7.66	50.00
			0.00			1/2" Ice	12.01	8.25	115.61
			0.00			1" Ice	12.63	8.84	188.87
LNX-6515DS-T4M	B	From Leg	1.00	0.0000	117.00	No Ice	11.39	7.66	50.00
			0.00			1/2" Ice	12.01	8.25	115.61
			0.00			1" Ice	12.63	8.84	188.87
LNX-6515DS-T4M	C	From Leg	1.00	0.0000	117.00	No Ice	11.39	7.66	50.00
			0.00			1/2" Ice	12.01	8.25	115.61
			0.00			1" Ice	12.63	8.84	188.87
AIR 21 B2A B4P panel	A	From Leg	1.00	0.0000	117.00	No Ice	6.59	4.31	95.00
			0.00			1/2" Ice	7.03	4.72	136.89
			0.00			1" Ice	7.49	5.15	183.90
AIR 21 B2A B4P panel	B	From Leg	1.00	0.0000	117.00	No Ice	6.59	4.31	95.00
			0.00			1/2" Ice	7.03	4.72	136.89
			0.00			1" Ice	7.49	5.15	183.90
AIR 21 B2A B4P panel	C	From Leg	1.00	0.0000	117.00	No Ice	6.59	4.31	95.00
			0.00			1/2" Ice	7.03	4.72	136.89
			0.00			1" Ice	7.49	5.15	183.90

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert	Azimuth Adjustment	Placement		C_AA_A Front	C_AA_A Side	Weight
			ft	°	ft		ft^2	ft^2	lb
AIR 21 B4A B2P panel	A	From Leg	1.00	0.0000	117.00	No Ice	6.59	4.31	95.00
			0.00			1/2" Ice	7.03	4.72	136.89
			0.00			1" Ice	7.49	5.15	183.90
AIR 21 B4A B2P panel	B	From Leg	1.00	0.0000	117.00	No Ice	6.59	4.31	95.00
			0.00			1/2" Ice	7.03	4.72	136.89
			0.00			1" Ice	7.49	5.15	183.90
AIR 21 B4A B2P panel	C	From Leg	1.00	0.0000	117.00	No Ice	6.59	4.31	95.00
			0.00			1/2" Ice	7.03	4.72	136.89
			0.00			1" Ice	7.49	5.15	183.90
KRY 112 7 1/2 TMA	A	From Leg	1.00	0.0000	117.00	No Ice	0.73	0.44	15.00
			0.00			1/2" Ice	0.86	0.55	20.32
			0.00			1" Ice	0.99	0.66	27.27
KRY 112 7 1/2 TMA	B	From Leg	1.00	0.0000	117.00	No Ice	0.73	0.44	15.00
			0.00			1/2" Ice	0.86	0.55	20.32
			0.00			1" Ice	0.99	0.66	27.27
KRY 112 7 1/2 TMA	C	From Leg	1.00	0.0000	117.00	No Ice	0.73	0.44	15.00
			0.00			1/2" Ice	0.86	0.55	20.32
			0.00			1" Ice	0.99	0.66	27.27
Ericsson RRUS-11	A	From Leg	1.00	0.0000	117.00	No Ice	3.25	1.19	55.00
			0.00			1/2" Ice	3.50	1.35	75.86
			0.00			1" Ice	3.75	1.52	99.77
Ericsson RRUS-11	B	From Leg	1.00	0.0000	117.00	No Ice	3.25	1.19	55.00
			0.00			1/2" Ice	3.50	1.35	75.86
			0.00			1" Ice	3.75	1.52	99.77
Ericsson RRUS-11	C	From Leg	1.00	0.0000	117.00	No Ice	3.25	1.19	55.00
			0.00			1/2" Ice	3.50	1.35	75.86
			0.00			1" Ice	3.75	1.52	99.77
(2) SBNHH-1D65A	A	From Leg	1.00	0.0000	93.00	No Ice	6.36	3.86	44.00
			0.00			1/2" Ice	6.80	4.22	83.03
			0.00			1" Ice	7.25	4.62	127.06
(2) SBNHH-1D65A	B	From Leg	1.00	0.0000	93.00	No Ice	6.36	3.86	44.00
			0.00			1/2" Ice	6.80	4.22	83.03
			0.00			1" Ice	7.25	4.62	127.06
(2) SBNHH-1D65A	C	From Leg	1.00	0.0000	93.00	No Ice	6.36	3.86	44.00
			0.00			1/2" Ice	6.80	4.22	83.03
			0.00			1" Ice	7.25	4.62	127.06
LNX-6514DS-VTM	A	From Leg	1.00	0.0000	93.00	No Ice	8.41	4.17	30.00
			0.00			1/2" Ice	8.96	4.61	74.68
			0.00			1" Ice	9.52	5.07	125.36
LNX-6514DS-VTM	B	From Leg	1.00	0.0000	93.00	No Ice	8.41	4.17	30.00
			0.00			1/2" Ice	8.96	4.61	74.68
			0.00			1" Ice	9.52	5.07	125.36
LNX-6514DS-VTM	C	From Leg	1.00	0.0000	93.00	No Ice	8.41	4.17	30.00
			0.00			1/2" Ice	8.96	4.61	74.68
			0.00			1" Ice	9.52	5.07	125.36
BXA-80080/4	A	From Leg	1.00	0.0000	93.00	No Ice	5.25	2.84	20.00
			0.00			1/2" Ice	5.64	3.15	51.00
			0.00			1" Ice	6.04	3.48	86.43
BXA-80080/4	B	From Leg	1.00	0.0000	93.00	No Ice	5.25	2.84	20.00
			0.00			1/2" Ice	5.64	3.15	51.00
			0.00			1" Ice	6.04	3.48	86.43
BXA-80080/4	C	From Leg	1.00	0.0000	93.00	No Ice	5.25	2.84	20.00
			0.00			1/2" Ice	5.64	3.15	51.00
			0.00			1" Ice	6.04	3.48	86.43
ALU RRH2x60-PCS w/bracket	A	None		0.0000	93.00	No Ice	2.50	1.56	60.00
						1/2" Ice	2.72	1.75	77.80
						1" Ice	2.95	1.95	98.44
ALU RRH2x60-PCS w/bracket	B	None		0.0000	93.00	No Ice	2.50	1.56	60.00
						1/2" Ice	2.72	1.75	77.80

Description	Face or Leg	Offset Type	Offsets: Horz Lateral / Vert	Azimuth Adjustment	Placement		C_AA_A Front	C_AA_A Side	Weight
			ft	°	ft		ft^2	ft^2	lb
ALU RRH2x60-PCS w/bracket	C	None		0.0000	93.00	1" Ice	2.95	1.95	98.44
						No Ice	2.50	1.56	60.00
						1/2" Ice	2.72	1.75	77.80
						1" Ice	2.95	1.95	98.44
ALU RRH4x45-AWS w/bracket	A	None		0.0000	93.00	No Ice	3.01	1.83	80.00
						1/2" Ice	3.26	2.05	100.47
						1" Ice	3.52	2.28	124.06
ALU RRH4x45-AWS w/bracket	B	None		0.0000	93.00	No Ice	3.01	1.83	80.00
						1/2" Ice	3.26	2.05	100.47
						1" Ice	3.52	2.28	124.06
ALU RRH4x45-AWS w/bracket	C	None		0.0000	93.00	No Ice	3.01	1.83	80.00
						1/2" Ice	3.26	2.05	100.47
						1" Ice	3.52	2.28	124.06
ALU RRH2x60-700 w/bracket	A	None		0.0000	93.00	No Ice	3.77	2.06	60.00
						1/2" Ice	4.08	2.34	83.19
						1" Ice	4.40	2.63	110.02
ALU RRH2x60-700 w/bracket	B	None		0.0000	93.00	No Ice	3.77	2.06	60.00
						1/2" Ice	4.08	2.34	83.19
						1" Ice	4.40	2.63	110.02
ALU RRH2x60-700 w/bracket	C	None		0.0000	93.00	No Ice	3.77	2.06	60.00
						1/2" Ice	4.08	2.34	83.19
						1" Ice	4.40	2.63	110.02
RFS DB-B1-6C-12AB-0Z D-box	A	None		0.0000	93.00	No Ice	2.94	1.91	27.00
						1/2" Ice	3.17	2.11	49.89
						1" Ice	3.41	2.31	75.90
RFS DB-B1-6C-12AB-0Z D-box	B	None		0.0000	93.00	No Ice	2.94	1.91	27.00
						1/2" Ice	3.17	2.11	49.89
						1" Ice	3.41	2.31	75.90
RFS DB-B1-6C-12AB-0Z D-box	C	None		0.0000	93.00	No Ice	2.94	1.91	27.00
						1/2" Ice	3.17	2.11	49.89
						1" Ice	3.41	2.31	75.90
(2) RFS FD9R6004_2C-3L diplexer	A	None		0.0000	93.00	No Ice	0.37	0.08	5.00
						1/2" Ice	0.45	0.14	7.30
						1" Ice	0.54	0.20	10.69
(2) RFS FD9R6004_2C-3L diplexer	B	None		0.0000	93.00	No Ice	0.37	0.08	5.00
						1/2" Ice	0.45	0.14	7.30
						1" Ice	0.54	0.20	10.69
(2) RFS FD9R6004_2C-3L diplexer	C	None		0.0000	93.00	No Ice	0.37	0.08	5.00
						1/2" Ice	0.45	0.14	7.30
						1" Ice	0.54	0.20	10.69
GPS on 3' standoff	C	From Leg	1.00 0.00 0.00	0.0000	68.00	No Ice	0.60	0.60	50.00
						1/2" Ice	0.79	0.79	55.81
						1" Ice	0.99	0.99	63.86

Dishes

Description	Face or Leg	Dish Type	Offset Type	Offsets: Horz Lateral / Vert	Azimuth Adjustment	3 dB Beam Width	Elevation	Outside Diameter		Aperture Area	Weight
				ft	°	°	ft	ft		ft^2	lb
4' HP dish	A	Paraboloid w/Shroud (HP)	From Leg	3.00 0.00 0.00	0.0000		140.00	4.00	No Ice	12.57	150.00
									1/2" Ice	13.10	217.33
									1" Ice	13.62	284.66

Solution Summary

Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
T1	138 - 117	1.350	10	0.0037	0.0182
T2	117 - 92	1.243	10	0.0051	0.0165
T3	92 - 65	1.007	10	0.0073	0.0135
T4	65 - 35	0.757	10	0.0069	0.0106
T5	35 - 0	0.434	10	0.0046	0.0066

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
140.00	4' HP dish	10	1.350	0.0037	0.0182	163160
138.00	Tank bowl	10	1.350	0.0037	0.0182	163160
117.00	LNX-6515DS-T4M	10	1.243	0.0051	0.0165	42433
93.00	(2) SBNHH-1D65A	10	1.017	0.0073	0.0136	145697
68.00	GPS on 3' standoff	10	0.785	0.0071	0.0109	178066

Bolt Design Data

Section No.	Elevation ft	Component Type	Bolt Grade	Bolt Size in	Number Of Bolts	Maximum Load per Bolt lb	Allowable Load lb	Ratio Load / Allowable	Allowable Ratio	Criteria
T5	35	Leg	A307	1.2500	4	16988.00	24543.70	0.692 ✔	1.333	Bolt Tension

Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P lb	$SF*P_{allow}$ lb	% Capacity	Pass Fail
T1	**138 - 117**	**Leg**	**P18x.25**	**3**	**-22929.60**	**356177.59**	**6.4**	**Pass**
		Diagonal	1	14	12929.10	22613.81	57.2	Pass
		Top Girt	W8x35	7	-5305.07	216033.97	2.5	Pass
T2	**117 - 92**	**Leg**	**P18x.25**	**19**	**-45523.80**	**344319.22**	**13.2**	**Pass**
		Diagonal	1	30	18711.30	22613.81	82.7	Pass
		Top Girt	W8x35	23	-11322.90	200473.86	5.6	Pass
T3	**92 - 65**	**Leg**	**P18x.25**	**35**	**-74501.20**	**338046.12**	**22.0**	**Pass**
		Diagonal	1 1/4	46	26690.90	35334.10	75.5	Pass
		Top Girt	W8x35	39	-16164.10	180570.84	9.0	Pass
T4	**65 - 35**	**Leg**	**P18x.25**	**51**	**-109603.00**	**328224.58**	**33.4**	**Pass**
		Diagonal	1 1/4	62	30346.90	35334.10	85.9	Pass
		Top Girt	W10x68	55	-20443.60	386711.28	5.3	Pass
T5	**35 - 0**	**Leg**	**P18x.25**	**67**	**-151712.00**	**310778.27**	**48.8**	**Pass**
							51.9 (b)	
		Diagonal	1 1/4	78	35228.10	35334.10	99.7	Pass
		Top Girt	W10x68	71	-23511.20	350253.73	6.7	Pass
						Summary		
						Leg (T5)	51.9	Pass

tnxTower	Job	Page
	Mystic Water Tank	7 of 7
All-Points Technology Corporation 116 Grandview Road Conway, NH 03818 Phone: (603) 496-5853 FAX: (603) 447-2124	**Project** CT141157 Mystic	**Date** 09:09:31 10/26/16
	Client Verizon Wireless	**Designed by** Rob Adair

Section No.	Elevation ft	Component Type	Size	Critical Element	P lb	$SF*P_{allow}$ lb	% Capacity	Pass Fail
						Diagonal (T5)	99.7	Pass
						Top Girt (T3)	9.0	Pass
						Bolt Checks	51.9	Pass
						RATING =	**99.7**	**Pass**