Robinson+Cole

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December 20, 2016

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

Re: **Notice of Exempt Modification – Facility Modification**
347 Riverside Drive, Thompson, Connecticut

Dear Ms. Bachman:

Cellco Partnership d/b/a Verizon Wireless ("Cellco") currently maintains twelve (12) antennas at the top of the existing 139-foot tower at 347 Riverside Drive in Thompson, Connecticut (the "Property"). The tower is owned by MCF Communications ("MCF"). The Council approved Cellco's use of this tower in 2009 (Docket No. 358). Cellco now intends to replace six (6) of its existing antennas with three (3) model SBNHH-1D65B, 1900 MHz antennas and three (3) model SBNHH-1D65B, 700/2100 MHz antennas, all at the same level on the tower. Cellco also intends to install nine (9) remote radio heads ("RRHs") and two (2) 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 Ken Beausoleil, First Selectman of the Town of Thompson. A copy of this letter is also being sent to Rene B. Santerre and Mary V. Santerre, Trustees, the owners of the Property and MCF, the tower owner.

The planned modifications to the facility fall squarely within those activities explicitly provided for in R.C.S.A. § 16-50j-72(b)(2).

1. The proposed modifications will not result in an increase in the height of the existing tower. Cellco's replacement antennas and RRH's will be located on its existing platform at the top 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 worst-case 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).

A copy of the Town Assessor's Parcel Map and property owner information is included in Attachment 4.

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

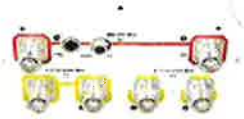
Enclosures
Copy to:
Ken Beausoleil, Thompson First Selectman
Rene B. Santerre and Mary V. Santerre, Trustees
Mike McFadden, MCF
Tim Parks

ATTACHMENT 1

Product Specifications

COMMSCOPE®

POWERED BY ANDREW.



SBNHH-1D65B

Andrew® Tri-band Antenna, 698–896 and 2 x 1710–2360 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	1710–1880	1850–1990	1920–2180	2300–2360
Gain, dBi	14.9	14.7	17.7	18.2	18.6	18.6
Beamwidth, Horizontal, degrees	68	66	69	66	63	58
Beamwidth, Vertical, degrees	12.1	10.7	5.6	5.2	5.0	4.5
Beam Tilt, degrees	0–14	0–14	0–7	0–7	0–7	0–7
USLS, dB	14	13	15	15	15	13
Front-to-Back Ratio at 180°, dB	27	29	28	28	28	27
CPR at Boresight, dB	20	23	20	20	17	21
CPR at Sector, dB	14	10	12	10	9	1
Isolation, dB	25	25	25	25	25	25
Isolation, Intersystem, dB	30	30	30	30	30	30
VSWR | Return Loss, dB	1.5 | 14.0	1.5 | 14.0	1.5 | 14.0	1.5 | 14.0	1.5 | 14.0	1.5 | 14.0
PIM, 3rd Order, 2 x 20 W, dBc	-153	-153	-153	-153	-153	-153
Input Power per Port, maximum, watts	350	350	350	350	350	300
Polarization	±45°	±45°	±45°	±45°	±45°	±45°
Impedance	50 ohm	50 ohm	50 ohm	50 ohm	50 ohm	50 ohm

Electrical Specifications, BASTA*

Frequency Band, MHz	698–806	806–896	1710–1880	1850–1990	1920–2180	2300–2360
Gain by all Beam Tilts, average, dBi	14.5	14.3	17.4	17.9	18.2	18.3
Gain by all Beam Tilts Tolerance, dB	±0.5	±0.8	±0.4	±0.3	±0.5	±0.3
Gain by Beam Tilt, average, dBi	0 ° | 14.6	0 ° | 14.5	0 ° | 17.4	0 ° | 17.8	0 ° | 18.1	0 ° | 18.2
	7 ° | 14.6	7 ° | 14.4	3 ° | 17.5	3 ° | 17.9	3 ° | 18.3	3 ° | 18.4
	14 ° | 14.2	14 ° | 13.6	7 ° | 17.4	7 ° | 17.9	7 ° | 18.2	7 ° | 18.4
Beamwidth, Horizontal Tolerance, degrees	±2.2	±3.4	±2	±4.6	±5.7	±4.3
Beamwidth, Vertical Tolerance, degrees	±0.8	±1	±0.3	±0.2	±0.3	±0.2
USLS, dB	16	14	16	16	16	15
Front-to-Back Total Power at 180° ± 30°, dB	25	26	27	26	26	26
CPR at Boresight, dB	22	23	21	20	20	22
CPR at Sector, dB	13	11	16	12	11	4

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

General Specifications

Antenna Brand	Andrew®
Antenna Type	DualPol® multiband with internal RET
Band	Multiband
Brand	DualPol® | Teletilt®
Operating Frequency Band	1710 – 2360 MHz | 698 – 896 MHz

Mechanical Specifications

Product Specifications

SBNHH-1D65B

Color	Light gray
Lightning Protection	dc Ground
Radiator Material	Aluminum | Low loss circuit board
Radome Material	Fiberglass, UV resistant
Reflector Material	Aluminum
RF Connector Interface	7-16 DIN Female
RF Connector Location	Bottom
RF Connector Quantity, total	6
Wind Loading, maximum	617.7 N @ 150 km/h 138.9 lbf @ 150 km/h
Wind Speed, maximum	241.4 km/h | 150.0 mph

Dimensions

Depth	181.0 mm | 7.1 in
Length	1828.0 mm | 72.0 in
Width	301.0 mm | 11.9 in
Net Weight	18.4 kg | 40.6 lb

Remote Electrical Tilt (RET) Information

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

Regulatory Compliance/Certifications

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

Included Products

BSAMNT-1 — Wide Profile Antenna Downtilt Mounting Kit for 2.4 - 4.5 in (60 - 115 mm) OD round members. Kit contains one scissor top bracket set and one bottom bracket set.

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.

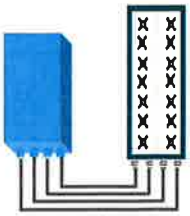
Its compactness and slim design makes the Alcatel-Lucent B13 RRH4x30-4R easy to install close to the antenna: operators can therefore locate this Remote Radio Head where RF design conditions are deemed ideal, minimizing trade-offs between available sites and RF optimum sites, together with reducing the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

TECHNICAL SPECIFICATIONS

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.

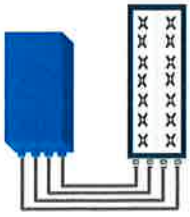
Its compactness and slim design makes the Alcatel-Lucent B25 RRH4x30 easy to install close to the antenna: operators can therefore locate this Remote Radio Head where RF design conditions are deemed ideal, minimizing trade-offs between available sites and RF optimum sites, together with reducing the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

TECHNICAL SPECIFICATIONS

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.

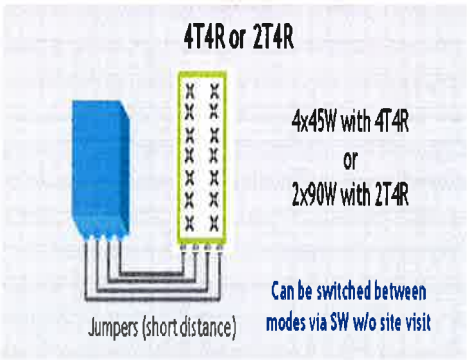
The Alcatel-Lucent B66a RRH4x45 product has four transmit RF paths, offering the possibility to **select, via software only, 2Tx or 4Tx MIMO configurations** with either 2x90W or 4x45W RF output power. It also supports 4-way Rx diversity at the 70 MHz instantaneous bandwidth.

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

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-99-658 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)

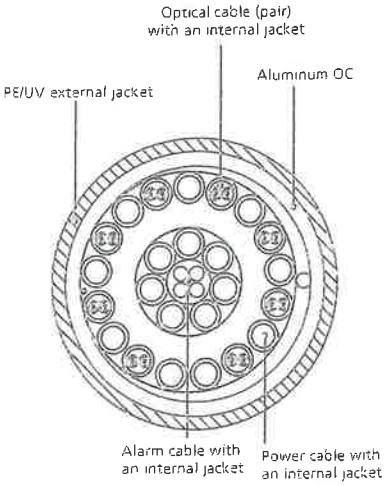


Figure 2: Construction Detail

* This data is provisional and subject to change

ATTACHMENT 2

Site Name: Thompson 2, CT
Cumulative Power Density

Operator	Operating Frequency	Number of Trans.	ERP Per Trans.	Total ERP	Distance to Target	Calculated Power Density	Maximum Permissable Exposure*	Fraction of MPE
	(MHz)		(watts)	(watts)	(feet)	(mW/cm^2)	(mW/cm^2)	(%)
VZW PCS	1970	11	431	4737.756	137	0.0908	1.0	9.08%
VZW Cellular	869	9	295	2659.264	137	0.0510	0.579333333	8.79%
VZW AWS	2145	1	6907	6907	137	0.1323	1.0	13.23%
VZW 700	746	1	1658	1658	137	0.0318	0.497333333	6.39%

Total Percentage of Maximum Permissible Exposure 37.49%

*Guidelines adopted by the FCC on August 1, 1996, 47 CFR Part 1 based on NCRP Report 86, 1986 and generally on ANSI/IEEE C95.1-1992

MHz = Megahertz
mW/cm^2 = milliwatts per square centimeter
ERP = Effective Radiated Power

Absolute worst case maximum values used.

ATTACHMENT 3

STRUCTURAL ANALYSIS REPORT

For

THOMPSON 2 CT

347 RIVERSIDE DRIVE
THOMPSON, CT

139-ft Monopole

Prepared for:

verizon

Dated: December 6, 2016

Prepared by:

Hudson Design Group LLC

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North Andover, MA 01845
(P) 978.557.5553 (F) 978.336.5586
www.hudsondesigngroupllc.com

Hudson Design Group LLC

SCOPE OF WORK:

Hudson Design Group LLC (HDG) has been authorized by Verizon to conduct a structural evaluation of the 139' monopole supporting the existing and proposed Verizon's antennas located at elevation 137' 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.

Record drawings of the existing monopole were not available for our use. The previous structural analysis report prepared by Centek Engineering, dated September 15, 2016, was available and obtained for our use.

CONCLUSION SUMMARY:

Based on our evaluation, we have determined that the existing monopole, anchor bolts, base plate and foundation **ARE IN CONFORMANCE** with the ANSI/TIA-222-G Standard for the loading considered under the criteria listed in this report. The monopole structure is rated at **48.8%** - (Anchor bolts at EL.0' Controlling).

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APPURTENANCES CONFIGURATION:

Tenant	Appurtenances	Elev.	Mount
VERIZON	(6) LPA-80063-6CF Antennas	137'	Steel Platform
VERIZON	***(6) SBNHH-1D65B Antennas***	137'	Steel Platform
VERIZON	***(3) RRH 4X45***	137'	Steel Platform
VERIZON	***(3) RRH 2X60***	137'	Steel Platform
VERIZON	***(3) RRH 4X30***	137'	Steel Platform
VERIZON	***(2)DB-T1-6Z-8AB-0Z***	137'	Steel Platform

Proposed VERIZON Appurtenances shown in Bold.

VERIZON EXISTING/PROPOSED COAX CABLES:

Tenant	Coax Cables	Elev.	Mount
VERIZON	(12) 1 5/8" Cables	137'	Inside Monopole
VERIZON	***(2) Fiber Cables***	137'	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	43.3 %	114 – 139	PASS	
Pole Section-L2	46.4 %	89 – 114	PASS	
Pole Section-L3	42.7 %	80 – 89	PASS	
Pole Section-L4	37.7 %	69 – 80	PASS	
Pole Section-L5	43.3 %	44 – 69	PASS	
Pole Section-L6	45.7 %	0 – 44	PASS	
Anchor Bolts	***48.8 %***	0	PASS	**Controlling**
Base Plate	35.0 %	0	PASS	
Foundation	46.0 %	--	PASS	

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DESIGN CRITERIA:

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

   County: Windham
   Wind Load: 110 mph (3 second gust)
   Structural Class: II
   Exposure Category: C
   Topographic Category: 1
   Ice Thickness: 1.0 inch

2. Approximate height above grade to proposed antennas: 137'

Calculations and referenced documents are attached

ASSUMPTIONS:

1. The monopole dimensions, member sizes and material strength are as indicated in the previous structural analysis report prepared by Centek Engineering, dated September 15, 2016.

2. The appurtenances configuration is as stated in the previous structural analysis report prepared by Centek Engineering, dated September 15, 2016. All antennas, coax cables and waveguide cables are assumed to be properly installed and supported as per the manufacturer's requirements.

3. 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.

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 distribution boxes be mounted on the existing steel platform supported by the monopole.

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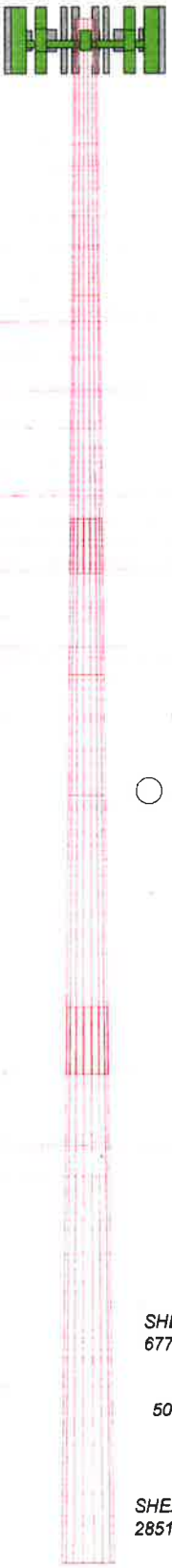
CALCULATIONS

Section	1	2	3	4	5	6
Length (ft)	25.00	25.00	14.00	11.00	25.00	50.00
Number of Sides	18	18	18	18	18	18
Thickness (in)	0.1875	0.2500	0.3125	0.3750	0.3750	0.4375
Socket Length (ft)		5.00			6.00	
Top Dia (in)	24.0000	29.8750	34.1254	37.3750	40.0000	43.7150
Bot Dia (in)	29.8750	35.8130	37.3750	40.0000	45.8750	55.6250
Grade				A572-65		
Weight (lb)	1354.3	2200.2	1674.5	1706.9	4309.6	11631.7

Total Weight: 22877.2



DESIGNED APPURTENANCE LOADING

TYPE	ELEVATION	TYPE	ELEVATION
PiROD 15' Low Profile Platform (VERIZON - existing)	137	SBNHH-1D65B w/ Mount Pipe	137
		SBNHH-1D65B w/ Mount Pipe	137
LPA-80063-6CF-EDIN w/mount pipe	137	RRH4X45-19	137
LPA-80063-6CF-EDIN w/mount pipe	137	RRH4X45-19	137
LPA-80063-6CF-EDIN w/mount pipe	137	RRH4X45-19	137
LPA-80063-6CF-EDIN w/mount pipe	137	RRH2x60 PCS	137
LPA-80063-6CF-EDIN w/mount pipe	137	RRH2x60 PCS	137
LPA-80063-6CF-EDIN w/mount pipe	137	RRH2x60 PCS	137
SBNHH-1D65B w/ Mount Pipe (VERIZON - proposed)	137	B13 RRH4X30-4R	137
		B13 RRH4X30-4R	137
SBNHH-1D65B w/ Mount Pipe	137	B13 RRH4X30-4R	137
SBNHH-1D65B w/ Mount Pipe	137	RFS DB-T1-6Z-8AB-0Z	137
SBNHH-1D65B w/ Mount Pipe	137	RFS DB-T1-6Z-8AB-0Z	137

MATERIAL STRENGTH

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

TOWER DESIGN NOTES

1. Tower is located in Windham County, Connecticut.
2. Tower designed for Exposure C to the TIA-222-G Standard.
3. Tower designed for a 110.0 mph basic wind in accordance with the TIA-222-G Standard.
4. Tower is also designed for a 50.0 mph basic wind with 1.00 in ice. Ice is considered to increase in thickness with height.
5. Deflections are based upon a 60.0 mph wind.
6. Tower Structure Class II.
7. Topographic Category 1 with Crest Height of 0.00 ft
8. TOWER RATING: 46.4%

ALL REACTIONS ARE FACTORED

AXIAL 59014 lb

SHEAR 6772 lb *MOMENT 632287 lb-ft*

TORQUE 103 lb-ft
50.0 mph WIND - 1.0000 in ICE

AXIAL 33175 lb

SHEAR 28510 lb *MOMENT 2720070 lb-ft*

TORQUE 567 lb-ft
REACTIONS - 110.0 mph WIND

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Job: *THOMPSON 2 CT*			
Project: *139 ft Monopole*			
Client: VERIZON	Drawn by: kw	App'd:	
Code: TIA-222-G	Date: 12/06/16	Scale: NTS	
Path:		Dwg No. E-1	

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Client	**Designed by**
VERIZON	kw

Tower Input Data

There is a pole section.
This tower is designed using the TIA-222-G standard.
The following design criteria apply:

Tower is located in Windham County, Connecticut.
Basic wind speed of 110.0 mph.
Structure Class II.
Exposure Category C.
Topographic Category 1.
Crest Height 0.00 ft.
Nominal ice thickness of 1.0000 in.
Ice thickness is considered to increase with height.
Ice density of 56.0 pcf.
A wind speed of 50.0 mph is used in combination with ice.
Temperature drop of 50.0 °F.
Deflections calculated using a wind speed of 60.0 mph.
A non-linear (P-delta) analysis was used.
Pressures are calculated at each section.
Stress ratio used in pole design is 1.
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	139.00-114.00	25.00	0.00	18	24.0000	29.8750	0.1875	0.7500	A572-65 (65 ksi)
L2	114.00-89.00	25.00	5.00	18	29.8750	35.8130	0.2500	1.0000	A572-65 (65 ksi)
L3	89.00-80.00	14.00	0.00	18	34.1254	37.3750	0.3125	1.2500	A572-65 (65 ksi)
L4	80.00-69.00	11.00	0.00	18	37.3750	40.0000	0.3750	1.5000	A572-65 (65 ksi)
L5	69.00-44.00	25.00	6.00	18	40.0000	45.8750	0.3750	1.5000	A572-65 (65 ksi)
L6	44.00-0.00	50.00		18	43.7150	55.6250	0.4375	1.7500	A572-65 (65 ksi)

Feed Line/Linear Appurtenances - Entered As Area

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Total Number		C_AA_A ft²/ft	Weight plf
1 5/8 (VERIZON - existing)	A	No	Inside Pole	137.00 - 3.00	12	No Ice	0.00	1.04
						1/2" Ice	0.00	1.04
						1" Ice	0.00	1.04
********								
1 5/8 Fiber Cable	A	No	Inside Pole	137.00 - 3.00	2	No Ice	0.00	1.04

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Description	Face or Leg	Allow Shield	Component Type	Placement ft	Total Number		C_AA_A ft^2/ft	Weight plf
(VERIZON - proposed)						1/2" Ice	0.00	1.04
						1" Ice	0.00	1.04

Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft / ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight lb
PiROD 15' Low Profile Platform	A	None		0.0000	137.00	No Ice	17.30	17.30	1500.00
(VERIZON - existing)						1/2" Ice	22.10	22.10	2030.00
						1" Ice	26.90	26.90	2560.00
LPA-80063-6CF-EDIN w/mount pipe	A	From Face	3.50 / -6.00 / 0.00	0.0000	137.00	No Ice	10.76	10.72	52.55
						1/2" Ice	11.44	12.00	145.96
						1" Ice	12.08	12.99	247.88
LPA-80063-6CF-EDIN w/mount pipe	A	From Face	3.50 / 6.00 / 0.00	0.0000	137.00	No Ice	10.76	10.72	52.55
						1/2" Ice	11.44	12.00	145.96
						1" Ice	12.08	12.99	247.88
LPA-80063-6CF-EDIN w/mount pipe	B	From Face	3.50 / -6.00 / 0.00	0.0000	137.00	No Ice	10.76	10.72	52.55
						1/2" Ice	11.44	12.00	145.96
						1" Ice	12.08	12.99	247.88
LPA-80063-6CF-EDIN w/mount pipe	B	From Face	3.50 / 6.00 / 0.00	0.0000	137.00	No Ice	10.76	10.72	52.55
						1/2" Ice	11.44	12.00	145.96
						1" Ice	12.08	12.99	247.88
LPA-80063-6CF-EDIN w/mount pipe	C	From Face	3.50 / -6.00 / 0.00	0.0000	137.00	No Ice	10.76	10.72	52.55
						1/2" Ice	11.44	12.00	145.96
						1" Ice	12.08	12.99	247.88
LPA-80063-6CF-EDIN w/mount pipe	C	From Face	3.50 / 6.00 / 0.00	0.0000	137.00	No Ice	10.76	10.72	52.55
						1/2" Ice	11.44	12.00	145.96
						1" Ice	12.08	12.99	247.88
**********									
SBNHH-1D65B w/ Mount Pipe	A	From Face	3.50 / -4.00 / 0.00	0.0000	137.00	No Ice	8.65	7.09	66.55
(VERIZON - proposed)						1/2" Ice	9.30	8.27	135.68
						1" Ice	9.92	9.17	212.84
SBNHH-1D65B w/ Mount Pipe	A	From Face	3.50 / 4.00 / 0.00	0.0000	137.00	No Ice	8.65	7.09	66.55
						1/2" Ice	9.30	8.27	135.68
						1" Ice	9.92	9.17	212.84
SBNHH-1D65B w/ Mount Pipe	B	From Face	3.50 / -4.00 / 0.00	0.0000	137.00	No Ice	8.65	7.09	66.55
						1/2" Ice	9.30	8.27	135.68
						1" Ice	9.92	9.17	212.84
SBNHH-1D65B w/ Mount Pipe	B	From Face	3.50 / 4.00 / 0.00	0.0000	137.00	No Ice	8.65	7.09	66.55
						1/2" Ice	9.30	8.27	135.68
						1" Ice	9.92	9.17	212.84
SBNHH-1D65B w/ Mount Pipe	C	From Face	3.50 / -4.00 / 0.00	0.0000	137.00	No Ice	8.65	7.09	66.55
						1/2" Ice	9.30	8.27	135.68
						1" Ice	9.92	9.17	212.84
SBNHH-1D65B w/ Mount Pipe	C	From Face	3.50 / 4.00 / 0.00	0.0000	137.00	No Ice	8.65	7.09	66.55
						1/2" Ice	9.30	8.27	135.68
						1" Ice	9.92	9.17	212.84
RRH4X45-19	A	From Face	2.50 / 4.00 / 0.00	0.0000	137.00	No Ice	2.70	2.77	59.50
						1/2" Ice	2.94	3.01	83.40
						1" Ice	3.18	3.26	110.58
RRH4X45-19	B	From Face	2.50 / 4.00	0.0000	137.00	No Ice	2.70	2.77	59.50
						1/2" Ice	2.94	3.01	83.40

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Client	**Designed by**
VERIZON	kw

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight lb
			0.00			1" Ice	3.18	3.26	110.58
RRH4X45-19	C	From Face	2.50	0.0000	137.00	No Ice	2.70	2.77	59.50
			4.00			1/2" Ice	2.94	3.01	83.40
			0.00			1" Ice	3.18	3.26	110.58
RRH2x60 PCS	A	From Face	2.50	0.0000	137.00	No Ice	2.51	1.55	55.00
			-4.00			1/2" Ice	2.73	1.74	72.75
			0.00			1" Ice	2.96	1.94	93.35
RRH2x60 PCS	B	From Face	2.50	0.0000	137.00	No Ice	2.51	1.55	55.00
			-4.00			1/2" Ice	2.73	1.74	72.75
			0.00			1" Ice	2.96	1.94	93.35
RRH2x60 PCS	C	From Face	2.50	0.0000	137.00	No Ice	2.51	1.55	55.00
			-4.00			1/2" Ice	2.73	1.74	72.75
			0.00			1" Ice	2.96	1.94	93.35
B13 RRH4X30-4R	A	From Face	2.50	0.0000	137.00	No Ice	2.52	1.89	57.20
			0.00			1/2" Ice	2.74	2.09	76.81
			0.00			1" Ice	2.97	2.30	99.38
B13 RRH4X30-4R	B	From Face	2.50	0.0000	137.00	No Ice	2.52	1.89	57.20
			0.00			1/2" Ice	2.74	2.09	76.81
			0.00			1" Ice	2.97	2.30	99.38
B13 RRH4X30-4R	C	From Face	2.50	0.0000	137.00	No Ice	2.52	1.89	57.20
			0.00			1/2" Ice	2.74	2.09	76.81
			0.00			1" Ice	2.97	2.30	99.38
RFS DB-T1-6Z-8AB-0Z	A	From Face	2.50	0.0000	137.00	No Ice	5.60	2.33	44.00
			0.00			1/2" Ice	5.92	2.56	80.13
			0.00			1" Ice	6.24	2.79	120.22
RFS DB-T1-6Z-8AB-0Z	B	From Face	2.50	0.0000	137.00	No Ice	5.60	2.33	44.00
			0.00			1/2" Ice	5.92	2.56	80.13
			0.00			1" Ice	6.24	2.79	120.22

Load Combinations

Comb. No.	Description
1	Dead Only
2	1.2 Dead+1.6 Wind 0 deg - No Ice
3	0.9 Dead+1.6 Wind 0 deg - No Ice
4	1.2 Dead+1.6 Wind 30 deg - No Ice
5	0.9 Dead+1.6 Wind 30 deg - No Ice
6	1.2 Dead+1.6 Wind 60 deg - No Ice
7	0.9 Dead+1.6 Wind 60 deg - No Ice
8	1.2 Dead+1.6 Wind 90 deg - No Ice
9	0.9 Dead+1.6 Wind 90 deg - No Ice
10	1.2 Dead+1.6 Wind 120 deg - No Ice
11	0.9 Dead+1.6 Wind 120 deg - No Ice
12	1.2 Dead+1.6 Wind 150 deg - No Ice
13	0.9 Dead+1.6 Wind 150 deg - No Ice
14	1.2 Dead+1.6 Wind 180 deg - No Ice
15	0.9 Dead+1.6 Wind 180 deg - No Ice
16	1.2 Dead+1.6 Wind 210 deg - No Ice
17	0.9 Dead+1.6 Wind 210 deg - No Ice
18	1.2 Dead+1.6 Wind 240 deg - No Ice
19	0.9 Dead+1.6 Wind 240 deg - No Ice
20	1.2 Dead+1.6 Wind 270 deg - No Ice

Comb. No.	Description
21	0.9 Dead+1.6 Wind 270 deg - No Ice
22	1.2 Dead+1.6 Wind 300 deg - No Ice
23	0.9 Dead+1.6 Wind 300 deg - No Ice
24	1.2 Dead+1.6 Wind 330 deg - No Ice
25	0.9 Dead+1.6 Wind 330 deg - No Ice
26	1.2 Dead+1.0 Ice+1.0 Temp
27	1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp
28	1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp
29	1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp
30	1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp
31	1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp
32	1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp
33	1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp
34	1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp
35	1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp
36	1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp
37	1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp
38	1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp
39	Dead+Wind 0 deg - Service
40	Dead+Wind 30 deg - Service
41	Dead+Wind 60 deg - Service
42	Dead+Wind 90 deg - Service
43	Dead+Wind 120 deg - Service
44	Dead+Wind 150 deg - Service
45	Dead+Wind 180 deg - Service
46	Dead+Wind 210 deg - Service
47	Dead+Wind 240 deg - Service
48	Dead+Wind 270 deg - Service
49	Dead+Wind 300 deg - Service
50	Dead+Wind 330 deg - Service

Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical lb	Horizontal, X lb	Horizontal, Z lb
Pole	Max. Vert	30	59014.48	-6772.23	0.00
	Max. H_x	20	33175.10	28510.16	0.00
	Max. H_z	2	33175.10	0.00	28281.36
	Max. M_x	2	2688370.92	0.00	28281.36
	Max. M_z	8	2720069.56	-28510.16	0.00
	Max. Torsion	9	567.38	-28510.16	0.00
	Min. Vert	25	24881.32	14255.08	24492.37
	Min. H_x	8	33175.10	-28510.16	0.00
	Min. H_z	14	33175.10	0.00	-28281.36
	Min. M_x	14	-2687988.87	0.00	-28281.36
	Min. M_z	20	-2720069.56	28510.16	0.00
	Min. Torsion	21	-567.38	28510.16	0.00

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

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Load Combination	Vertical	$Shear_x$	$Shear_z$	Overturning Moment, M_x	Overturning Moment, M_z	Torque
	lb	lb	lb	lb-ft	lb-ft	lb-ft
Dead Only	27645.92	0.00	0.00	-154.86	0.00	0.00
1.2 Dead+1.6 Wind 0 deg - No Ice	33175.10	0.00	-28281.36	-2688370.92	0.00	0.00
0.9 Dead+1.6 Wind 0 deg - No Ice	24881.32	0.00	-28281.36	-2676906.73	0.00	0.00
1.2 Dead+1.6 Wind 30 deg - No Ice	33175.10	14255.08	-24492.37	-2328212.53	-1360053.97	-282.79
0.9 Dead+1.6 Wind 30 deg - No Ice	24881.32	14255.08	-24492.37	-2318277.77	-1354267.78	-283.53
1.2 Dead+1.6 Wind 60 deg - No Ice	33175.10	24690.52	-14140.68	-1344262.07	-2355660.75	-489.90
0.9 Dead+1.6 Wind 60 deg - No Ice	24881.32	24690.52	-14140.68	-1338505.91	-2345639.28	-491.19
1.2 Dead+1.6 Wind 90 deg - No Ice	33175.10	28510.16	-0.00	-190.12	-2720069.56	-565.89
0.9 Dead+1.6 Wind 90 deg - No Ice	24881.32	28510.16	-0.00	-141.36	-2708498.34	-567.38
1.2 Dead+1.6 Wind 120 deg - No Ice	33175.10	24690.52	14140.68	1343881.38	-2355660.00	-490.29
0.9 Dead+1.6 Wind 120 deg - No Ice	24881.32	24690.52	14140.68	1338222.85	-2345638.72	-491.58
1.2 Dead+1.6 Wind 150 deg - No Ice	33175.10	14255.08	24492.37	2327830.93	-1360053.22	-283.18
0.9 Dead+1.6 Wind 150 deg - No Ice	24881.32	14255.08	24492.37	2317994.02	-1354267.22	-283.92
1.2 Dead+1.6 Wind 180 deg - No Ice	33175.10	0.00	28281.36	2687988.87	0.00	0.00
0.9 Dead+1.6 Wind 180 deg - No Ice	24881.32	0.00	28281.36	2676622.64	0.00	0.00
1.2 Dead+1.6 Wind 210 deg - No Ice	33175.10	-14255.08	24492.37	2327830.93	1360053.22	283.18
0.9 Dead+1.6 Wind 210 deg - No Ice	24881.32	-14255.08	24492.37	2317994.02	1354267.22	283.92
1.2 Dead+1.6 Wind 240 deg - No Ice	33175.10	-24690.52	14140.68	1343881.38	2355660.00	490.29
0.9 Dead+1.6 Wind 240 deg - No Ice	24881.32	-24690.52	14140.68	1338222.85	2345638.72	491.58
1.2 Dead+1.6 Wind 270 deg - No Ice	33175.10	-28510.16	-0.00	-190.12	2720069.56	565.89
0.9 Dead+1.6 Wind 270 deg - No Ice	24881.32	-28510.16	-0.00	-141.36	2708498.34	567.38
1.2 Dead+1.6 Wind 300 deg - No Ice	33175.10	-24690.52	-14140.68	-1344262.07	2355660.75	489.90
0.9 Dead+1.6 Wind 300 deg - No Ice	24881.32	-24690.52	-14140.68	-1338505.91	2345639.28	491.19
1.2 Dead+1.6 Wind 330 deg - No Ice	33175.10	-14255.08	-24492.37	-2328212.53	1360053.97	282.79
0.9 Dead+1.6 Wind 330 deg - No Ice	24881.32	-14255.08	-24492.37	-2318277.77	1354267.78	283.53
1.2 Dead+1.0 Ice+1.0 Temp	59014.48	0.00	-0.00	-926.02	0.00	0.00
1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp	59014.48	0.00	-6738.90	-628486.67	0.00	0.00
1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp	59014.48	3386.12	-5836.06	-544419.53	-316143.49	-51.73
1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp	59014.48	5864.92	-3369.45	-314744.01	-547576.41	-89.61
1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp	59014.48	6772.23	-0.00	-1001.65	-632286.67	-103.48
1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp	59014.48	5864.92	3369.45	312740.69	-547576.40	-89.62
1.2 Dead+1.0 Wind 150	59014.48	3386.12	5836.06	542416.19	-316143.48	-51.75

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Project	**Date**
139 ft Monopole	10:58:21 12/06/16
Client	**Designed by**
VERIZON	kw

Load Combination	Vertical	$Shear_x$	$Shear_z$	Overturning Moment, M_x	Overturning Moment, M_z	Torque
	lb	lb	lb	lb-ft	lb-ft	lb-ft
deg+1.0 Ice+1.0 Temp 1.2 Dead+1.0 Wind 180	59014.48	0.00	6738.90	626483.32	0.00	0.00
deg+1.0 Ice+1.0 Temp 1.2 Dead+1.0 Wind 210	59014.48	-3386.12	5836.06	542416.19	316143.48	51.75
deg+1.0 Ice+1.0 Temp 1.2 Dead+1.0 Wind 240	59014.48	-5864.92	3369.45	312740.69	547576.40	89.62
deg+1.0 Ice+1.0 Temp 1.2 Dead+1.0 Wind 270	59014.48	-6772.23	-0.00	-1001.65	632286.67	103.48
deg+1.0 Ice+1.0 Temp 1.2 Dead+1.0 Wind 300	59014.48	-5864.92	-3369.45	-314744.01	547576.41	89.61
deg+1.0 Ice+1.0 Temp 1.2 Dead+1.0 Wind 330	59014.48	-3386.12	-5836.06	-544419.53	316143.49	51.73
deg+1.0 Ice+1.0 Temp Dead+Wind 0 deg - Service	27645.92	0.00	-4705.36	-446402.50	0.00	0.00
Dead+Wind 30 deg - Service	27645.92	2371.71	-4074.96	-386617.20	-225771.86	-47.44
Dead+Wind 60 deg - Service	27645.92	4107.93	-2352.68	-223280.82	-391048.22	-82.17
Dead+Wind 90 deg - Service	27645.92	4743.43	-0.00	-159.32	-451543.52	-94.89
Dead+Wind 120 deg - Service	27645.92	4107.93	2352.68	222962.17	-391048.20	-82.18
Dead+Wind 150 deg - Service	27645.92	2371.71	4074.96	386298.52	-225771.84	-47.45
Dead+Wind 180 deg - Service	27645.92	0.00	4705.36	446083.81	0.00	0.00
Dead+Wind 210 deg - Service	27645.92	-2371.71	4074.96	386298.52	225771.84	47.45
Dead+Wind 240 deg - Service	27645.92	-4107.93	2352.68	222962.17	391048.20	82.18
Dead+Wind 270 deg - Service	27645.92	-4743.43	-0.00	-159.32	451543.52	94.89
Dead+Wind 300 deg - Service	27645.92	-4107.93	-2352.68	-223280.82	391048.22	82.17
Dead+Wind 330 deg - Service	27645.92	-2371.71	-4074.96	-386617.20	225771.86	47.44

Solution Summary

	Sum of Applied Forces			Sum of Reactions			
Load Comb.	PX lb	PY lb	PZ lb	PX lb	PY lb	PZ lb	% Error
1	0.00	-27645.92	0.00	0.00	27645.92	0.00	0.000%
2	0.00	-33175.10	-28281.36	0.00	33175.10	28281.36	0.000%
3	0.00	-24881.32	-28281.36	0.00	24881.32	28281.36	0.000%
4	14255.08	-33175.10	-24492.37	-14255.08	33175.10	24492.37	0.000%
5	14255.08	-24881.32	-24492.37	-14255.08	24881.32	24492.37	0.000%
6	24690.52	-33175.10	-14140.68	-24690.52	33175.10	14140.68	0.000%
7	24690.52	-24881.32	-14140.68	-24690.52	24881.32	14140.68	0.000%
8	28510.16	-33175.10	0.00	-28510.16	33175.10	0.00	0.000%
9	28510.16	-24881.32	0.00	-28510.16	24881.32	0.00	0.000%
10	24690.52	-33175.10	14140.68	-24690.52	33175.10	-14140.68	0.000%
11	24690.52	-24881.32	14140.68	-24690.52	24881.32	-14140.68	0.000%
12	14255.08	-33175.10	24492.37	-14255.08	33175.10	-24492.37	0.000%
13	14255.08	-24881.32	24492.37	-14255.08	24881.32	-24492.37	0.000%
14	0.00	-33175.10	28281.36	0.00	33175.10	-28281.36	0.000%
15	0.00	-24881.32	28281.36	0.00	24881.32	-28281.36	0.000%
16	-14255.08	-33175.10	24492.37	14255.08	33175.10	-24492.37	0.000%
17	-14255.08	-24881.32	24492.37	14255.08	24881.32	-24492.37	0.000%
18	-24690.52	-33175.10	14140.68	24690.52	33175.10	-14140.68	0.000%
19	-24690.52	-24881.32	14140.68	24690.52	24881.32	-14140.68	0.000%
20	-28510.16	-33175.10	0.00	28510.16	33175.10	0.00	0.000%
21	-28510.16	-24881.32	0.00	28510.16	24881.32	0.00	0.000%
22	-24690.52	-33175.10	-14140.68	24690.52	33175.10	14140.68	0.000%
23	-24690.52	-24881.32	-14140.68	24690.52	24881.32	14140.68	0.000%
24	-14255.08	-33175.10	-24492.37	14255.08	33175.10	24492.37	0.000%
25	-14255.08	-24881.32	-24492.37	14255.08	24881.32	24492.37	0.000%
26	0.00	-59014.48	0.00	0.00	59014.48	0.00	0.000%

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Client	**Designed by**
VERIZON	kw

Load Comb.	Sum of Applied Forces PX lb	PY lb	PZ lb	Sum of Reactions PX lb	PY lb	PZ lb	% Error
27	0.00	-59014.48	-6738.90	0.00	59014.48	6738.90	0.000%
28	3386.11	-59014.48	-5836.06	-3386.12	59014.48	5836.06	0.000%
29	5864.92	-59014.48	-3369.45	-5864.92	59014.48	3369.45	0.000%
30	6772.23	-59014.48	0.00	-6772.23	59014.48	0.00	0.000%
31	5864.92	-59014.48	3369.45	-5864.92	59014.48	-3369.45	0.000%
32	3386.11	-59014.48	5836.06	-3386.12	59014.48	-5836.06	0.000%
33	0.00	-59014.48	6738.90	0.00	59014.48	-6738.90	0.000%
34	-3386.11	-59014.48	5836.06	3386.12	59014.48	-5836.06	0.000%
35	-5864.92	-59014.48	3369.45	5864.92	59014.48	-3369.45	0.000%
36	-6772.23	-59014.48	0.00	6772.23	59014.48	0.00	0.000%
37	-5864.92	-59014.48	-3369.45	5864.92	59014.48	3369.45	0.000%
38	-3386.11	-59014.48	-5836.06	3386.12	59014.48	5836.06	0.000%
39	0.00	-27645.92	-4705.36	0.00	27645.92	4705.36	0.000%
40	2371.71	-27645.92	-4074.96	-2371.71	27645.92	4074.96	0.000%
41	4107.93	-27645.92	-2352.68	-4107.93	27645.92	2352.68	0.000%
42	4743.43	-27645.92	0.00	-4743.43	27645.92	0.00	0.000%
43	4107.93	-27645.92	2352.68	-4107.93	27645.92	-2352.68	0.000%
44	2371.71	-27645.92	4074.96	-2371.71	27645.92	-4074.96	0.000%
45	0.00	-27645.92	4705.36	0.00	27645.92	-4705.36	0.000%
46	-2371.71	-27645.92	4074.96	2371.71	27645.92	-4074.96	0.000%
47	-4107.93	-27645.92	2352.68	4107.93	27645.92	-2352.68	0.000%
48	-4743.43	-27645.92	0.00	4743.43	27645.92	0.00	0.000%
49	-4107.93	-27645.92	-2352.68	4107.93	27645.92	2352.68	0.000%
50	-2371.71	-27645.92	-4074.96	2371.71	27645.92	4074.96	0.000%

Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	139 - 114	9.7197	42	0.6670	0.0010
L2	114 - 89	6.3944	42	0.5712	0.0005
L3	94 - 80	4.2528	42	0.4461	0.0003
L4	80 - 69	3.0350	42	0.3749	0.0002
L5	69 - 44	2.2376	42	0.3171	0.0001
L6	50 - 0	1.1762	42	0.2163	0.0001

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
137.00	PiROD 15' Low Profile Platform	42	9.4414	0.6610	0.0010	40351

Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P lb	ϕP_{allow} lb	% Capacity	Pass Fail
L1	139 - 114	Pole	TP29.875x24x0.1875	1	-4568.69	1120820.00	43.3	Pass

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Client	**Designed by**
VERIZON	kw

Section No.	Elevation ft	Component Type	Size	Critical Element	P lb	ϕP_{allow} lb	% Capacity	Pass Fail
L2	114 - 89	Pole	TP35.813x29.875x0.25	2	-7063.96	1836280.00	46.4	Pass
L3	89 - 80	Pole	TP37.375x34.1254x0.3125	3	-9935.10	2604220.00	42.7	Pass
L4	80 - 69	Pole	TP40x37.375x0.375	4	-12237.30	3454780.00	37.7	Pass
L5	69 - 44	Pole	TP45.875x40x0.375	5	-16582.50	3727660.00	43.3	Pass
L6	44 - 0	Pole	TP55.625x43.715x0.4375	6	-33159.90	5321220.00	45.7	Pass
							Summary	
						Pole (L2)	46.4	Pass
						RATING =	**46.4**	**Pass**

Stiffened or Unstiffened, Ungrouted, Circular Base Plate - Any Rod Material

TIA Rev G Assumption: Clear space between bottom of leveling nut and top of concrete **not** exceeding (1)*(Rod Diameter)

Site Data

BU#: *0*
Site Name: *THOMPSON 2 CT*
App #: *0*

Pole Manufacturer:	*Other*

Anchor Rod Data		
Qty:	18	
Diam:	2	in
Rod Material:	Other	
Strength (Fu):	125	ksi
Yield (Fy):	105	ksi
Bolt Circle:	62	in

Plate Data		
Diam:	68	in
Thick:	2.5	in
Grade:	50	ksi
Single-Rod B-eff:	9.81	in

Stiffener Data (Welding at both sides)		
Config:	0	*
Weld Type:		
Groove Depth:		<-- Disregard
Groove Angle:		<-- Disregard
Fillet H. Weld:		in
Fillet V. Weld:		in
Width:		in
Height:		in
Thick:		in
Notch:		in
Grade:		ksi
Weld str.:		ksi

Pole Data		
Diam:	55.625	in
Thick:	0.4375	in
Grade:	65	ksi
# of Sides:	18	"0" IF Round
Fu	80	ksi
Reinf. Fillet Weld	0	"0" if None

Reactions		
Mu:	2720	ft-kips
Axial, Pu:	33	kips
Shear, Vu:	29	kips
Eta Factor, η	0.5	TIA G (Fig. 4-4)

If No stiffeners, Criteria:	AISC LRFD	<-Only Applcable to Unstiffened Cases

Anchor Rod Results

Max Rod (Cu+ Vu/ή):	122.0	Kips
Allowable Axial, Φ*Fu*Anet:	250.0	Kips
Anchor Rod Stress Ratio:	48.8%	Pass

Rigid
AISC LRFD
φ*Tn

Base Plate Results Flexural Check

Base Plate Stress:	15.7	ksi
Allowable Plate Stress:	45.0	ksi
Base Plate Stress Ratio:	35.0%	Pass

Rigid
AISC LRFD
φ*Fy
Y.L. Length:
27.38

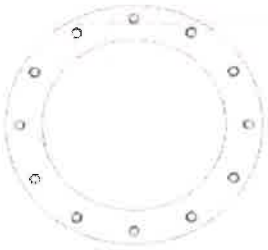
n/a

Stiffener Results

Horizontal Weld :	n/a
Vertical Weld:	n/a
Plate Flex+Shear, fb/Fb+(fv/Fv)^2:	n/a
Plate Tension+Shear, ft/Ft+(fv/Fv)^2:	n/a
Plate Comp. (AISC Bracket):	n/a

Pole Results

Pole Punching Shear Check: n/a



* 0 = none, 1 = every bolt, 2 = every 2 bolts, 3 = 2 per bolt

** Note: for complete joint penetration groove welds the groove depth must be exactly 1/2 the stiffener thickness for calculation purposes

Monopole Pier and Pad Foundation

BU # :
Site Name: THOMPSON 2 CT
App. Number:
TIA-222 Revision: G

Design Reactions		
Shear, **S**:	28.5	kips
Moment, **M**:	2720	ft-kips
Tower Height, **H**:	139	ft
Tower Weight, **Wt**:	33.2	kips
Base Diameter, **BD**:	4.64	ft

Foundation Dimensions		
Depth, **D**:	5	ft
Pad Width, **W**:	28	ft
Neglected Depth, **N**:	0	ft
Thickness, **T**:	3.00	ft
Pier Diameter, **Pd**:	7.00	ft
Ext. Above Grade, **E**:	0.50	ft
BP Dist. Above Pier:	3	in.
Clear Cover, **Cc**:	3.0	in

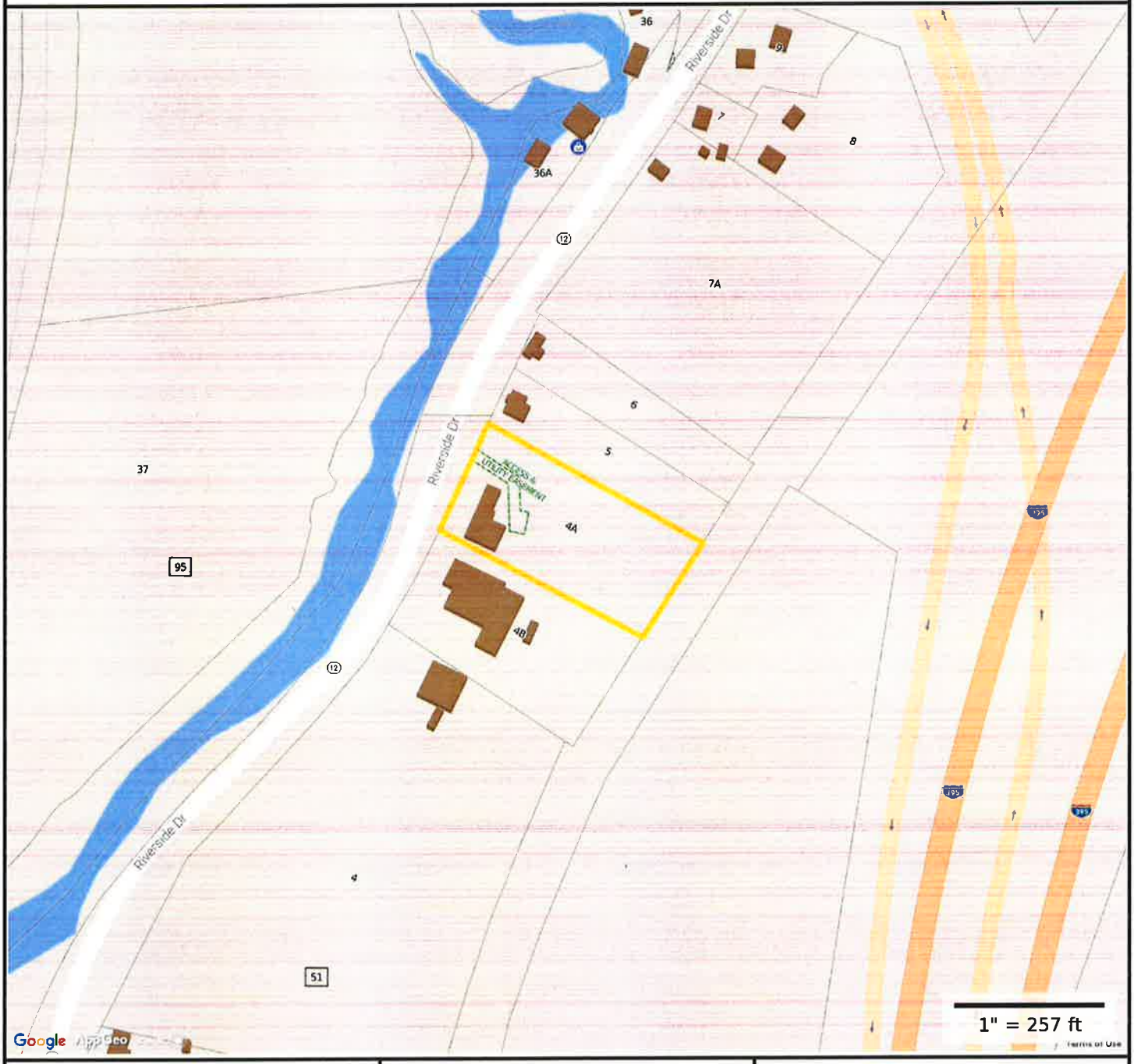
Soil Properties		
Soil Unit Weight, **γ**:	0.100	kcf
Ult. Bearing Capacity, Bc:	6.0	ksf
Angle of Friction, **Φ**:	30	deg
Cohesion, **Co**:	0.000	ksf
Passive Pressure, **Pp**:	0.000	ksf
Base Friction, **μ**:	0.45	

Material Properties		
Rebar Yield Strength, **Fy**:	60000	psi
Concrete Strength, **F'c**:	4000	psi
Concrete Unit Weight, **δc**:	0.150	kcf
Seismic Zone, **z**:	1	

Rebar Properties		
Pier Rebar Size, **Sp**:	11	
Pier Rebar Quanity, **mp**:	38	18
Pad Rebar Size, **Spad**:	11	
Pad Rebar Quanity, **mpad**:	28	7
Pier Tie Size, **St**:	4	4
Tie Quanity, **mt**:	6	4

Design Checks	Capacity/ Availability	Demand/ Limits	Check
Req'd Pier Diam.(ft)	7	6.135	**OK**
Overturning (ft-kips)	5911.34	2720.00	**46.0%**
Shear Capacity (kips)	189.95	28.50	**15.0%**
Bearing (ksf)	4.50	1.37	**30.4%**
Pad Shear - 1-way (kips)	1029.43	281.36	**27.3%**
Pad Shear - 2-way (kips)	2238.71	64.95	**2.9%**
Pad Moment Capacity (k-ft)	6122.44	978.85	**16.0%**
Pier Moment Capacity (k-ft)	9815.92	2791.25	**28.4%**

ATTACHMENT 4



Property Information

Property ID	005953
Location	347 RIVERSIDE DR #1
Owner	SANTERRE RENE B + MARY V TRUSTEE

MAP FOR REFERENCE ONLY NOT A LEGAL DOCUMENT

Town of Thompson, CT makes no claims and no warranties, expressed or implied, concerning the validity or accuracy of the GIS data presented on this map.

Parcels updated October 1, 2014
Properties updated October 1, 2015

347 RIVERSIDE DR #1

Location	347 RIVERSIDE DR #1	**Mblu**	85/ 51/ 4/A /1
Acct#	005953	**Owner**	SANTERRE RENE B + MARY V TRUSTEE
Assessment	$119,200	**Appraisal**	$170,200
PID	104880	**Building Count**	1

Current Value

Appraisal			
Valuation Year	**Improvements**	**Land**	**Total**
2015	$170,200	$0	$170,200
Assessment			
Valuation Year	**Improvements**	**Land**	**Total**
2015	$119,200	$0	$119,200

Owner of Record

Owner	SANTERRE RENE B + MARY V TRUSTEE
Co-Owner	R B + M V SANTERRE REV TRUST
Address	C/O MCF COMMUNICATIONS 733 TURNPIKE ST SUITE 105 N. ANDOVER , CT 01845

Sale Price	$0
Certificate	
Book & Page	0407/0236
Sale Date	12/15/1999

Ownership History

Ownership History				
Owner	**Sale Price**	**Certificate**	**Book & Page**	**Sale Date**
SANTERRE RENE B + MARY V TRUSTEE	$0		0407/0236	12/15/1999

Building Information

Building 1 : Section 1

Year Built:	
Living Area:	0
Replacement Cost:	$0
Building Percent Good:	
Replacement Cost Less Depreciation:	$0

Building Attributes

Field	Description
Style	Commercial
Model	
Grade:	
Stories:	
Occupancy	
Exterior Wall 1	
Exterior Wall 2	
Roof Structure:	
Roof Cover	
Interior Wall 1	
Interior Wall 2	
Interior Flr 1	
Interior Flr 2	
Heat Fuel	
Heat Type:	
AC Type:	
Total Bedrooms:	
Total Bthrms:	
Total Half Baths:	
Total Xtra Fixtrs:	
Total Rooms:	
Bath Style:	
Kitchen Style:	

Building Photo

(http://images.vgsi.com/photos/ThompsonCTPhotos//default.jp

Building Layout

Building Layout

Building Sub-Areas (sq ft)	Legend
No Data for Building Sub-Areas	

Extra Features

Extra Features	Legend
No Data for Extra Features	

Land

Land Use

Use Code	3030
Description	COMM LAND
Zone	C
Neighborhood	
Alt Land Appr	No
Category	

Land Line Valuation

Size (Acres)	0
Frontage	210
Depth	0
Assessed Value	$0
Appraised Value	$0

Outbuildings

Outbuildings						Legend
Code	**Description**	**Sub Code**	**Sub Description**	**Size**	**Value**	**Bldg #**
TWR2	MONOPOLE			125 HEIGHT	$112,500	1
FN3	FENCE-6' CHAIN			270 L.F.	$1,800	1
SLAB	CONC SLAB			360 S.F.	$900	1
CB1	PRECAST CONC CELL			360 S.F.	$55,000	1

Valuation History

Appraisal			
Valuation Year	**Improvements**	**Land**	**Total**
2014	$170,200	$0	$170,200
2013	$170,200	$0	$170,200
2012	$170,200	$0	$170,200

Assessment			
Valuation Year	**Improvements**	**Land**	**Total**
2014	$119,200	$0	$119,200
2013	$119,200	$0	$119,200
2012	$119,200	$0	$119,200