

January 22, 2018

Melanie A. Bachman, Esq.
Executive Director/Staff Attorney
Connecticut Siting Council
10 Franklin Square
New Britain, CT 06051

Re: **Notice of Exempt Modification – Facility Modification**
345 Bushy Hill Road, Simsbury, Connecticut

Dear Ms. Bachman:

Cellco Partnership d/b/a Verizon Wireless (“Cellco”) currently maintains twelve (12) antennas at the 100-foot level of the existing 106-foot tower at 345 Bushy Hill Road in Simsbury, Connecticut (the “Property”). The tower and underlying property are owned by the Simsbury Fire District (“SFD”). The Council approved Cellco’s use of this tower in 2013 (Petition No. 1077). Cellco now intends to replace all of its existing antennas with three (3) model SBNHH-1D65B, 700 MHz antennas; three (3) model SBNHH-1D65B, 850 MHz antennas; three (3) model SBNHH-1D65B, 1900 MHz antennas; and three (3) model SBNHH-1D65B, 2100 MHz antennas, all at the same level on the tower. Cellco also intends to install nine (9) remote radio heads (“RRHs”) behind the replacement antennas. Included in Attachment 1 are specifications for Cellco’s replacement antennas and RRHs.

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 Eric Wellman, Simsbury’s First Selectman; James D. Rabbitt, Simsbury’s Director of Planning and Community Development; and the SFD, the owner of the Property and the tower.

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 remain at the 100-foot level of the tower.

17555629-v1

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

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

4. The operation of the replacement antennas will not increase radio frequency (RF) emissions at the facility to a level at or above the Federal Communications Commission (FCC) safety standard. Far Field Approximation tables for each of Cellco's operating frequencies, for the modified facility, are included behind Attachment 2. These tables demonstrate that the modified facility will comply with the RF emissions standards established by the FCC.

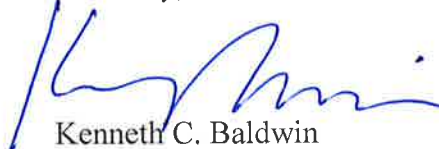
5. The proposed modifications will not cause a change or alteration in the physical or environmental characteristics of the site.

6. The tower and its foundation can support Cellco's proposed modifications. (See Structural Analysis Report included in Attachment 3).

A copy of the parcel map and owner information for the Property is included in Attachment 4. A Certificate of Mailing verifying that this filing was sent to municipal officials and the owner of the Property is included in Attachment 5.

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:

Eric Wellman, Simsbury First Selectman
James D. Rabbitt, Simsbury Director of Planning and Community Development
Simsbury Fire District
Tim Parks

ATTACHMENT 1



SBNHH-1D65B

6-port sector antenna, 2x 698–896 and 4x 1695–2360 MHz, 65° HPBW, 2x RET. Both high bands share the same electrical tilt.

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

Electrical Specifications

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

Electrical Specifications, BASTA*

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

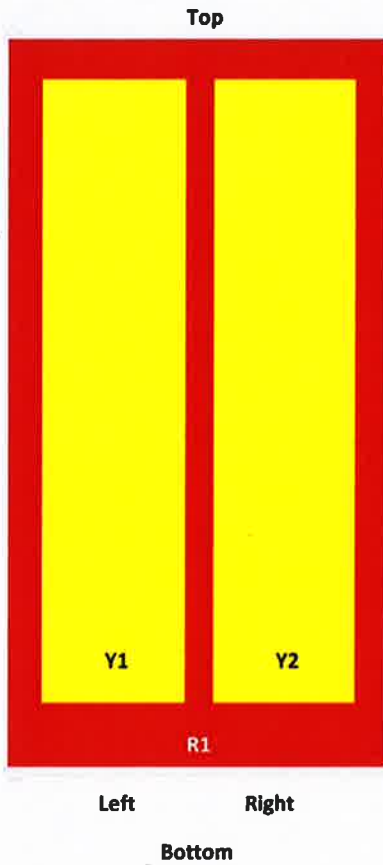
* CommScope® supports NGMN recommendations on Base Station Antenna Standards (BASTA). To learn more about the benefits of BASTA, [download the whitepaper Time to Raise the Bar on BSAs.](#)

Array Layout

SBNHH-1D65B

SBNHH 65

Array	Freq (MHz)	Cones	RET (MRET)	AISG RET UID
R1	698-896	1-2	1	ANXXXXXXXXXXXXXXXXX.1
Y1	1695-2360	3-4	2	ANXXXXXXXXXXXXXXXXX.2
Y2	1695-2360	5-6		



View from the front of the antenna
(Sizes of colored boxes are not true depictions of array sizes)

General Specifications

Operating Frequency Band	1695 – 2360 MHz 698 – 896 MHz
Antenna Type	Sector
Band	Multiband
Performance Note	Outdoor usage

Mechanical Specifications

RF Connector Quantity, total	6
RF Connector Quantity, low band	2
RF Connector Quantity, high band	4
RF Connector Interface	7-16 DIN Female

SBNHH-1D65B

Color	Light gray
Grounding Type	RF connector inner conductor and body grounded to reflector and mounting bracket
Radiator Material	Aluminum Low loss circuit board
Radome Material	Fiberglass, UV resistant
Reflector Material	Aluminum
RF Connector Location	Bottom
Wind Loading, frontal	618.0 N @ 150 km/h 138.9 lbf @ 150 km/h
Wind Loading, lateral	197.0 N @ 150 km/h 44.3 lbf @ 150 km/h
Wind Loading, rear	728.0 N @ 150 km/h 163.7 lbf @ 150 km/h
Wind Speed, maximum	241 km/h 150 mph

Dimensions

Length	1851.0 mm 72.9 in
Width	301.0 mm 11.9 in
Depth	180.0 mm 7.1 in
Net Weight, without mounting kit	18.4 kg 40.6 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

Length	2025.0 mm 79.7 in
Width	390.0 mm 15.4 in
Depth	296.0 mm 11.7 in
Shipping Weight	31.0 kg 68.3 lb

Regulatory Compliance/Certifications

Agency

RoHS 2011/65/EU
China RoHS SJ/T 11364-2006
ISO 9001:2008

Classification

Compliant by Exemption
Above Maximum Concentration Value (MCV)
Designed, manufactured and/or distributed under this quality management system



SBNHH-1D65B

Included Products

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

* Footnotes

Performance Note Severe environmental conditions may degrade optimum performance

ALCATEL-LUCENT B13 RRH4X30-4R

Alcatel-Lucent B13 Remote Radio Head 4x30-4R is the newest addition of Remote Radio Head to the extended product line of Alcatel-Lucent's distributed Base Station solutions, aimed at facilitating smooth RF site acquisition and related civil engineering.

Supporting 2Tx/4Tx MIMO and 4-way Rx diversity, Alcatel-Lucent B13 RRH4x30-4R allows operators to have a compact radio solution to deploy LTE in the 700U band (700 MHz, 3GPP band 13), providing them with the means to achieve high capacity, high quality and high coverage with minimum site requirements.

The Alcatel-Lucent B13 RRH4x30-4R product has four transmit RF paths, offering the possibility to **select, via software only, 2Tx or 4Tx MIMO configurations** with either 2x60 W or 4x30 W RF output power. It supports also 4-way Rx diversity and up to 10MHz instantaneous bandwidth.

The Alcatel-Lucent B13 RRH4x30-4R is a near zero-footprint solution and operates noise free, simplifying negotiations with site property owners and minimizing environmental impacts.

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

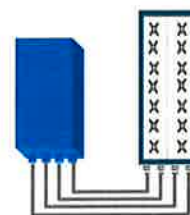


FEATURES

- Supporting LTE in 700 MHz band (700U, 3GPP band 13)
- LTE 2Tx or 4Tx MIMO (SW switchable)
- Output power: Up to 2x60W or 4x30W
- 10MHz LTE carrier with 4Rx Diversity
- Convection-cooled (fan-less)
- Supports AISG 2.0 ALD devices (RET, TMA) through RS485 or RF ports

BENEFITS

- Compact to reduce additional footprint when adding LTE in 700U band
- MIMO scheme operation selection (2Tx or 4Tx) by software only
- Improves downlink spectral efficiency through MIMO4
- Increases LTE coverage thanks to 4Rx diversity capability and best in class Rx sensitivity
- Flexible mounting options: Pole or Wall



4x30W with 4T4R
or
2x60W with 2T4R

Can be switched between
modes via SW w/o site
visit

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
Size (HxWxD) in mm (in.)	550 x 305 x 230 (21.6" x 12.0" x 9") (with solar shield)
Volume in L	38 (with solar shield)
Weight in kg (lb) (w/o mounting HW)	26 (57.2) (with solar shield)
DC voltage range	-40.5 to -57V at full performance, -38 to -57V with relaxation on power consumption
DC power consumption	550W typical @100% RF load (in 2Tx or 4TX mode)
Environmental conditions	-40°C (-40°F) /+55°C (+131°F) IP65
Wind load (@150km/h or 93mph)	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

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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.

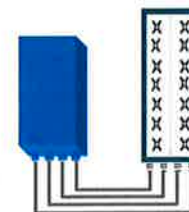


FEATURES

- 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

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)	2.0 dB typ. (<2.5 dB max)
RX Diversity scheme	2 or 4 way Rx diversity
Sizes (HxWxD)(w/ solar shield) in mm (in.)	538 x 304 x 182 (21.2" x 12.0" x 7.2")
Volume (w/ solar shield) in L	30
Weight (w/ solar shield) in kg (lb)	24 (53)
DC voltage range	-40.5 to -57V at full performance, -38 to -57V with relaxation on power consumption
DC power consumption	580W typical @100% RF load
Environmental conditions	-40°C (-40°F) / +55°C (+131°F) IP65
Wind load (@150km/h or 93mph)	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

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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.

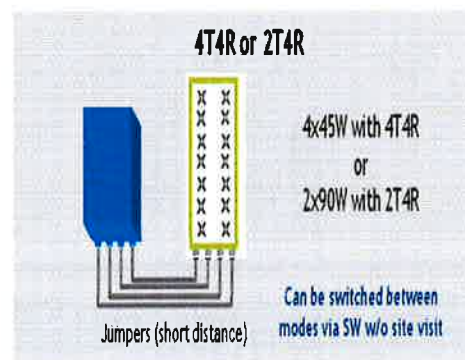
Its compactness and slim design makes the Alcatel-Lucent B66a RRH4x45 easy to install close to the antenna: operators can therefore locate this Remote Radio Head where RF design conditions are deemed ideal, minimizing trade-offs between available sites and RF optimum sites, together with reducing the 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
Size (HxWxD) in mm (in.)	655x299x182 (25.8x11.8x7.2) (with solar shield) 640x290x160 (25.2x11.4x6.3) (without solar shield)
Volume in Liters	35.5 (with solar shield) 29.7 (without solar shield)
Weight in kg (lb) (w/o mounting HW)	25.8kg (56.8lb) (with solar shield)
DC voltage range	Nominal: -48V, -40.5 to -57V at full performance, -38 to -57V with relaxation on power consumption
DC power consumption	750W typical @100% RF load (in 2Tx or 4Tx mode); Add 58W for 2A*29V for AISG
Environmental conditions	-40°C (-40°F) / +55°C (+131°F) UL50E Type 4 Enclosure
Wind load (@150km/h or 93mph)	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

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ATTACHMENT 2

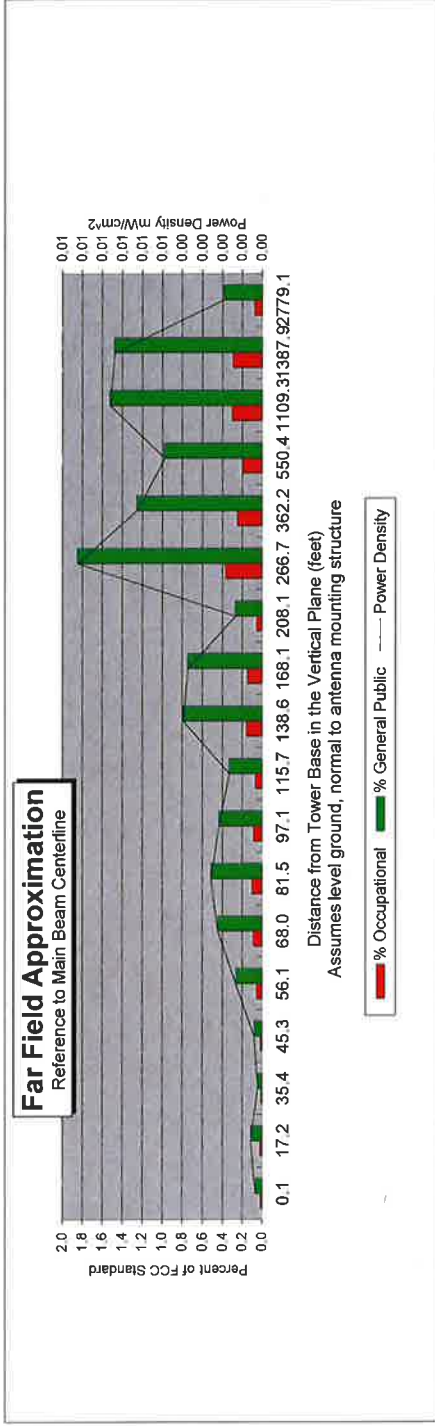
Far Field Approximation
with downtilt variation

Estimated Radiated Emission
Single Emitter Far Field Model
Dipole / Wire/ Yagi Antenna Types



Location:	Simsbury 2, CT
Site #:	
Date:	01/19/18
Name:	Mark Brauer
File Name:	Simsbury 2, CT - FF Power

Operating Freq. (MHz)	746.0
Antenna Height (ft)	100.0
Antenna Gain (dBi)	14.9
Antenna Size (in.)	72.0
Downtilt (degrees)	0.0
Feedline Loss (dB)	0.0
Power @ J4 (w)	2200.0
Number of Channels	1



Distance in feet below:

Calc Angle	90.0	80.0	70.0	65.0	60.0	55.0	50.0	45.0	40.0	35.0	30.0	25.0	20.0	15.0	10.0	5.0	4.0	2.0
Solve for r. dx to antenna	97.0	98.5	103.2	107.1	112.0	118.5	126.7	137.2	151.0	169.2	194.1	229.6	283.7	375.0	558.9	1113.5	1391.3	2780.8
Distance from Antenna Structure Base in Horizontal plane	0.1	17.2	35.4	45.3	56.1	68.0	81.5	97.1	115.7	138.6	168.1	208.1	266.7	362.2	550.4	1109.3	1387.9	2779.1
Angle from Main Beam (reference to horizontal plane)	90	80	70	65	60	55	50	45	40	35	30	25	20	15	10	5	4	2
dB down from centerline (referenced to centerline)	36.76	34.35	38.52	35.34	29.54	26.8	25.59	25.63	25.99	21.21	20.29	23.24	13.03	12.3	9.92	2	0.2	0
Reflection Coefficient (1 to 4, 2.56 typical)	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56
Power Density (mW/cm²)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.00	0.01	0.01	0.00
Percent of Occupational Standard	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.4	0.3	0.2	0.3	0.1
Percent of General Population Standard	0.1	0.1	0.0	0.1	0.3	0.4	0.5	0.4	0.3	0.8	0.7	0.3	1.9	1.3	1.0	1.5	1.5	0.4

Antenna Type SBNHH-1D65B
Max% 1.85%

Instructions:

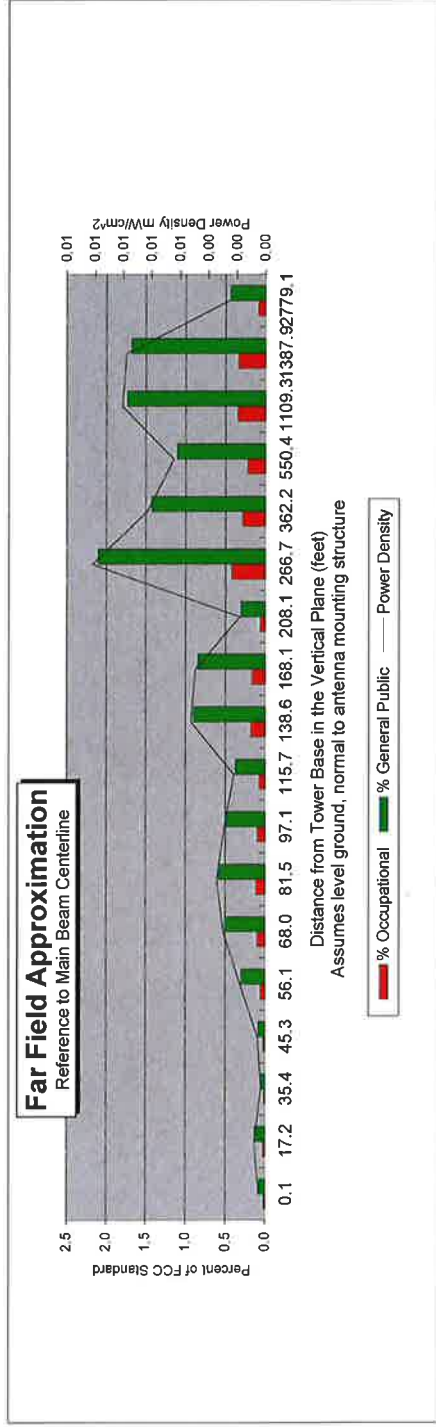
- 1) Fill in Site Location, Site number, Date, Name of Person Responsible for Data, and enter File Name to be saved as.
- 2) References to J4 refer to a point where the transmission line exits the equipment shelter and proceeds to the antenna(s). There is typically a connector located here where power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

Far Field Approximation
with downtilt variation

**Estimated Radiated Emission
Single Emitter Far Field Model
Dipole / Wire/ Yagi Antenna Types**



Location:	Simsbury 2, CT
Site #:	
Date:	01/19/18
Name:	Mark Brauer
File Name:	Simsbury 2, CT - FF Power
Operating Freq. (MHz)	869.0
Antenna Height (ft):	100.0
Antenna Gain (dBi):	14.7
Antenna Size (in.):	72.0
Downtilt (degrees):	0.0
Feedline Loss (dB):	0.0
Power @ J4 (w):	3050.0
Number of Channels	1



		Distance in feet below:																	
		90.0	80.0	70.0	65.0	60.0	55.0	50.0	45.0	40.0	35.0	30.0	25.0	20.0	15.0	10.0	5.0	4.0	2.0
Calc Angle		97.0	98.5	103.2	107.1	112.0	118.5	126.7	137.2	151.0	169.2	194.1	229.6	283.7	375.0	558.9	1113.5	1391.3	2780.8
Solve for r, dx to antenna																			
Distance from Antenna Structure Base in Horizontal plane	0.1	17.2	35.4	45.3	56.1	68.0	81.5	97.1	115.7	138.6	168.1	208.1	266.7	362.2	550.4	1109.3	1387.9	2779.1	
Angle from Main Beam (reference to horizontal plane)	90	80	70	65	60	55	50	45	40	35	30	25	20	15	10	5	4	2	
dB down from centerline (referenced to centerline)		36.76	34.35	38.52	35.34	29.54	26.8	25.59	25.63	25.99	21.21	20.29	23.24	13.03	12.3	9.92	2	0.2	0
Reflection Coefficient (1 to 4, 2.56 typical)		2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56
Power Density (mW/cm²)		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.01	0.01	0.01	0.01	0.01	0.00
Percent of Occupational Standard		0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.1	0.4	0.3	0.2	0.3	0.3	0.1
Percent of General Population Standard		0.1	0.1	0.0	0.1	0.3	0.5	0.6	0.5	0.4	0.9	0.8	0.3	2.1	1.4	1.1	1.7	1.7	0.4

Antenna Type SBNHH-1D65B
Max% 2.11%

Instructions:

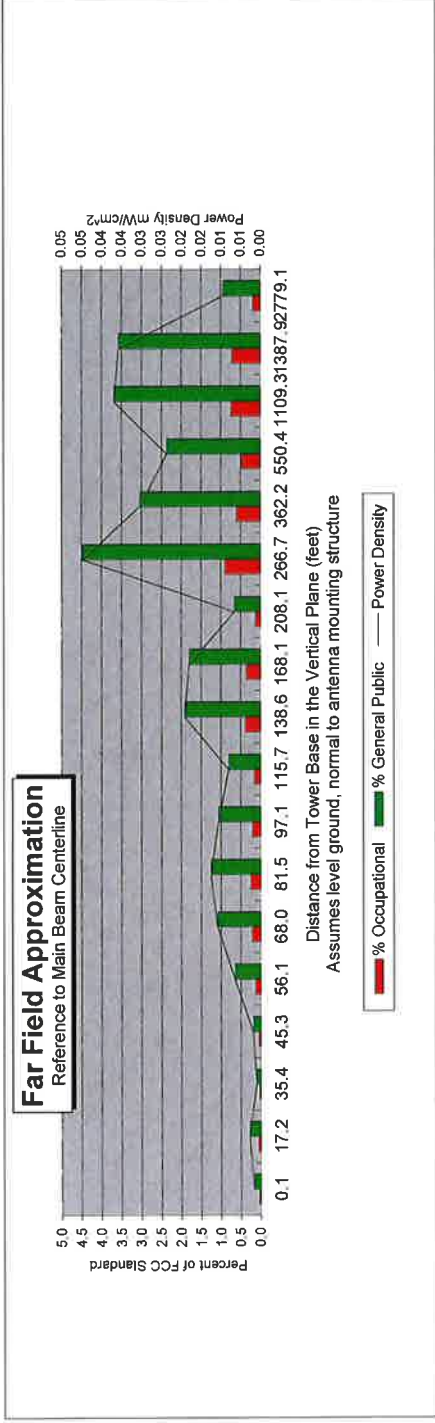
- 1) Fill in Site Location, Site number, Date, Name of Person Responsible for Date, and enter File Name to be saved as.
- 2) References to J4 refer to a point where the transmission line exits the equipment shelter and proceeds to the antenna(s). There is typically a connector located here where power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

Far Field Approximation
with downtilt variation

**Estimated Radiated Emission
Single Emitter Far Field Model
Dipole / Wire/ Yagi Antenna Types**



Location:	Simsbury 2, CT
Site #:	
Date:	01/19/18
Name:	Mark Brauer
File Name:	Simsbury 2, CT - FF Power
Operating Freq. (MHz)	1970.0
Antenna Height (ft)	100.0
Antenna Gain (dBi)	18.2
Antenna Size (in.)	72.0
Downtilt (degrees)	0.0
Feedline Loss (dB)	0.0
Power @ J4 (w)	5000.0
Number of Channels	1



Distance in feet below:

Calc Angle	90.0	80.0	70.0	65.0	60.0	55.0	50.0	45.0	40.0	35.0	30.0	25.0	20.0	15.0	10.0	5.0	4.0	2.0
Solve for r. dx to antenna	97.0	98.5	103.2	107.1	112.0	118.5	126.7	137.2	151.0	169.2	194.1	229.6	283.7	375.0	558.9	1113.5	1391.3	2780.8
Distance from Antenna Structure Base in Horizontal plane	0.1	17.2	35.4	45.3	56.1	68.0	81.5	97.1	115.7	138.6	168.1	208.1	266.7	362.2	550.4	1109.3	1387.9	2779.1
Angle from Main Beam (reference to horizontal plane)	90	80	70	65	60	55	50	45	40	35	30	25	20	15	10	5	4	2
dB down from centerline (referenced to centerline)	36.76	34.35	38.52	35.34	29.54	26.8	25.59	25.63	25.99	21.21	20.29	23.24	13.03	12.3	9.92	2	0.2	0
Reflection Coefficient (1 to 4, 2.56 typical)	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56
Power Density (mW/cm ²)	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.01	0.02	0.02	0.01	0.04	0.03	0.02	0.04	0.04	0.01
Percent of Occupational Standard	0.0	0.1	0.0	0.0	0.1	0.2	0.2	0.2	0.4	0.4	0.4	0.1	0.9	0.6	0.5	0.7	0.7	0.2
Percent of General Population Standard	0.2	0.3	0.1	0.2	0.6	1.1	1.2	1.1	0.8	1.9	1.8	0.7	4.5	3.0	2.4	3.7	3.6	0.9

Antenna Type: SBNH-H-1D65B
Max%: 4.48%

Instructions:

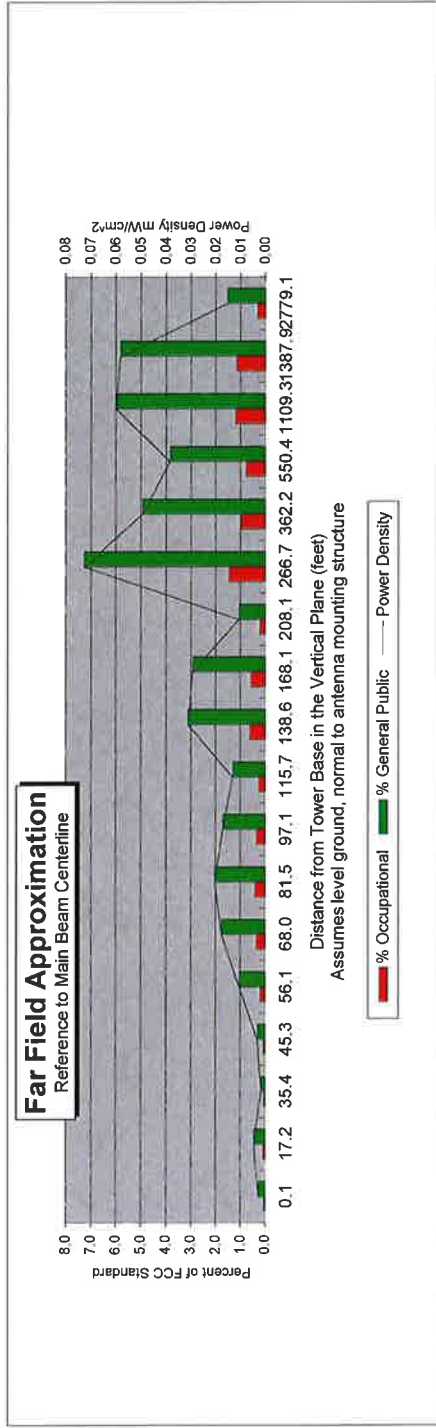
- 1) Fill in Site Location, Site number, Date, Name of Person Responsible for Date, and enter File Name to be saved as.
- 2) References to J4 refer to a point where the transmission line exits the equipment shelter and proceeds to the antenna(s). There is typically a connector located here where power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

Far Field Approximation
with downtilt variation

Estimated Radiated Emission
Single Emitter Far Field Model
Dipole / Wire/ Yagi Antenna Types



Location:	Simsbury 2, CT
Site #:	
Date:	01/19/18
Name:	Mark Brauer
File Name:	Simsbury 2, CT - FF Power
Operating Freq. (MHz)	2145.0
Antenna Height (ft):	100.0
Antenna Gain (dBi):	18.6
Antenna Size (ft.):	72.0
Downtilt (degrees):	0.0
Feedline Loss (dB):	0.0
Power @ J4 (w):	7400.0
Number of Channels	1



Calc Angle	90.0	80.0	70.0	65.0	60.0	55.0	50.0	45.0	40.0	35.0	30.0	25.0	20.0	15.0	10.0	5.0	4.0	2.0
Solve for r, dx to antenna	97.0	98.5	103.2	107.1	112.0	118.5	126.7	137.2	151.0	169.2	194.1	229.6	283.7	375.0	558.9	1113.5	1391.3	2780.8
Distance from Antenna Structure Base in Horizontal plane	0.1	17.2	35.4	45.3	56.1	68.0	81.5	97.1	115.7	138.6	168.1	208.1	266.7	362.2	550.4	1109.3	1387.9	2779.1
Angle from Main Beam (reference to horizontal plane)	90	80	70	65	60	55	50	45	40	35	30	25	20	15	10	5	4	2
dB down from centerline (referenced to centerline)	36.76	34.35	38.52	35.34	29.54	26.8	25.59	25.63	25.99	21.21	20.29	23.24	13.03	12.3	9.92	2	0.2	0
Reflection Coefficient (1 to 4, 2.56 typical)	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56
Power Density (mW/cm²)	0.00	0.00	0.00	0.00	0.01	0.02	0.02	0.02	0.01	0.03	0.03	0.01	0.07	0.05	0.04	0.06	0.06	0.02
Percent of Occupational Standard	0.1	0.1	0.0	0.1	0.2	0.4	0.4	0.3	0.3	0.6	0.6	0.2	1.5	1.0	0.8	1.2	1.2	0.3
Percent of General Population Standard	0.3	0.4	0.2	0.3	1.0	1.8	2.0	1.7	1.3	3.1	2.9	1.1	7.3	4.9	3.8	6.0	5.8	1.5

Distance in feet below:

Antenna Type: SBNH-1D65B
Max%: 7.27%

- Instructions:
- 1) Fill in Site Location, Site number, Date, Name of Person Responsible for Data, and enter File Name to be saved as.
 - 2) References to J4 refer to a point where the transmission line exits the equipment shelter and proceeds to the antenna(s). There is typically a connector located here where power measurements are made.
 - 3) Enter Antenna Height (in feet to bottom of antenna), Antenna Gain (expressed as dBi, add 2.17 to dBd to obtain dBi), Antenna Size (vertical size in inches), Downtilt (in Degrees, enter zero if none), Feedline loss from J4 to Antenna, and J4 Power Density (mW/cm²).
 - 4) From manufacturer's plots, or data sheet, input Angle from mainbeam and dB below mainbeam centerline.
 - 5) Enter Reflection coefficient (2.56 would be typical, 1 for free space)
 - 6) Spreadsheet calculates actual power density, then relates as Occupational or General Population percentage of FCC Standard.
 - 7) An odd distance may be entered in the rightmost column of the lower table.

ATTACHMENT 3

STRUCTURAL ANALYSIS REPORT

For

SIMSBURY 2 CT

345 BUSHY HILL ROAD
SIMSBURY, CT 06070

Antennas Mounted to the Monopole



Prepared for:

verizon✓

99 East River Road, 9th Floor
East Hartford, CT 06108

Dated: November 6, 2017

Prepared by:

HGD | **HUDSON**
Design Group LLC

45 Beechwood Drive
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 106' monopole supporting the existing and proposed VERIZON's antennas located at elevation 100' above the ground level.

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

Record drawings of the existing monopole were not available for our use. The previous structural analysis report prepared by Centek Engineering, dated March 18, 2016, was provided to this office.

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 95.0% - (Pole section L3 from EL.41.5' to EL.80.0' Controlling).**



APPURTENANCES CONFIGURATION:

Tenant	Appurtenances	Elev.	Mount
	6' Omni	105'	Side Mount Standoff
	DB404	105'	Side Mount Standoff
	ANT220D3	105'	Side Mount Standoff
	DB201-A	105'	Side Mount Standoff
VERIZON	(12) SBNHH-1D65B Antennas	100'	T - Frame
VERIZON	(3) RRH4X45-AWS	100'	T - Frame
VERIZON	(3) B13 RRH4X30-4R	100'	T - Frame
VERIZON	(3) RRH2X60 PCS	100'	T - Frame
VERIZON	(2) RC2DC-3315-PF-48	100'	T - Frame
	(3) APX16DWV-16DWVS-E Antennas	77'	Tri - Bracket
	(3) TMA	77'	Tri - Bracket

**Proposed VERIZON Appurtenances shown in Bold.*

VERIZON EXISTING/PROPOSED COAX CABLES:

Tenant	Coax Cables	Elev.	Mount
VERIZON	(2) 1 5/8" Cables	0' - 80'	Inside Monopole
VERIZON	(2) 1 5/8" Cables	80' - 100'	Outside 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	59.1 %	80.5 – 106	PASS	
Pole Section-L2	68.9 %	80 – 80.5	PASS	
Pole Section-L3	95.0 %	41.5 – 80	PASS	Controlling
Pole Section-L4	92.5 %	0 – 41.5	PASS	
Anchor bolts & Base Plate	80.0 %	0	PASS	



HUDSON
Design Group LLC

DESIGN CRITERIA:

1. EIA/TIA-222-G Structural Standards for Steel Antenna Towers and Antenna Supporting Structures
 - County: Hartford
 - Wind Load: 100 mph (3 second gust)
 - Structural Class: II
 - Exposure Category: B
 - Topographic Category: 1
 - Crest Height: 0 ft.
 - Nominal Ice Thickness: 1.0 inch

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

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

ASSUMPTIONS:

1. The monopole geometry and member sizes are as indicated in the previous structural analysis report prepared by Centek Engineering, dated March 18, 2016.
2. The appurtenances configuration is as stated in the previous structural analysis report prepared by Centek Engineering, dated March 18, 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 and RRHs be mounted on the existing T-frame supported by the monopole.



HUDSON
Design Group LLC



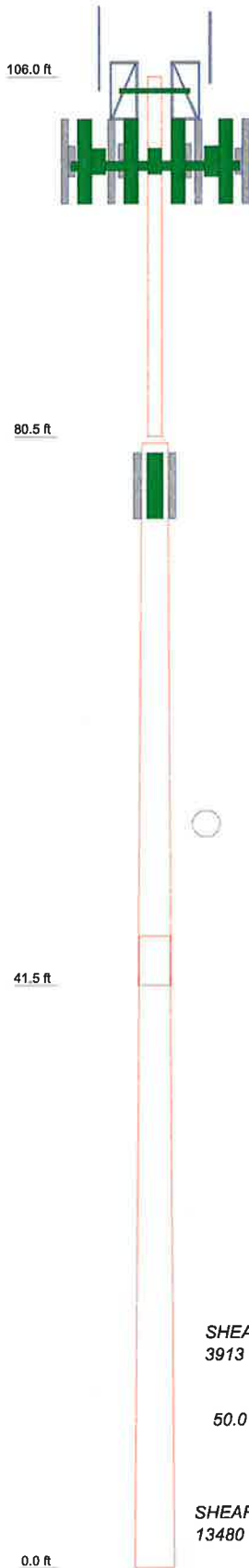
Photo 1: Photo illustrating the monopole with Appurtenances shown.



HUDSON
Design Group LLC

CALCULATIONS

Section	Length (ft)	Number of Sides	Thickness (in)	Socket Length (ft)	Top Dia (in)	Bot Dia (in)	Grade	Weight (lb)
1	25.50	1	0.6250	12.7500	12.7500		A500-42	2065.8
2	0.50	1	0.6250	12.7500	22.0000		A36	56.0
3	38.50	18	0.1875	3.50	22.0000	27.7000	A607-65	1922.8
4	45.00	18	0.2500	26.8068	33.4700		A607-65	3631.6
								7676.2



DESIGNED APPURTENANCE LOADING

TYPE	ELEVATION	TYPE	ELEVATION
Pirod 4' Side Mount Standoff (1)	105	B13 RRH4X30-4R	100
Pirod 4' Side Mount Standoff (1)	105	RRH2x60 PCS	100
Pirod 4' Side Mount Standoff (1)	105	RRH2x60 PCS	100
3.5"x60" horizontal pipe	105	RRH2x60 PCS	100
Omni 2"x6"	105	RxxDC-3315-PF-48	100
DB404	105	RxxDC-3315-PF-48	100
ANT220D3	105	APX16DWV-16DWVS-E-A20 w/mount pipe	77
DB201-A	105	APX16DWV-16DWVS-E-A20 w/mount pipe	77
Valmont T-Arm (3) (Verizon)	100	APX16DWV-16DWVS-E-A20 w/mount pipe	77
(4) SBNHH-1D65B w/ Mount Pipe	100	APX16DWV-16DWVS-E-A20 w/mount pipe	77
(4) SBNHH-1D65B w/ Mount Pipe	100	Gen. TMA	77
(4) SBNHH-1D65B w/ Mount Pipe	100	Gen. TMA	77
RRH 4X45 AWS	100	Gen. TMA	77
RRH 4X45 AWS	100	Valmont Light Duty Tri-Bracket (1)	77
RRH 4X45 AWS	100		
B13 RRH4X30-4R	100		
B13 RRH4X30-4R	100		

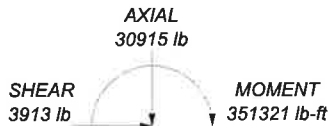
MATERIAL STRENGTH

GRADE	Fy	Fu	GRADE	Fy	Fu
A500-42	42 ksi	58 ksi	A607-65	65 ksi	80 ksi
A36	36 ksi	58 ksi			

TOWER DESIGN NOTES

1. Tower is located in Hartford County, Connecticut.
2. Tower designed for Exposure B to the TIA-222-G Standard.
3. Tower designed for a 100.0 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: 95%

ALL REACTIONS
ARE FACTORED



TORQUE 495 lb-ft
50.0 mph WIND - 1.0000 in ICE



TORQUE 922 lb-ft
REACTIONS - 100.0 mph WIND

Hudson Design Group LLC

Job: **SIMSBURY 2 CT**
 45 Beechwood Drive
 North Andover, MA 01845
 Phone: (978) 557-5553
 FAX: (978) 336-5586

Project: **106 ft Monopole**

Client: VERIZON

Code: TIA-222-G

Path:

Drawn by: kw

Date: 11/06/17

App'd:

Scale: N

Dwg No. J

tnxTower Hudson Design Group LLC 45 Beechwood Drive North Andover, MA 01845 Phone: (978) 557-5553 FAX: (978) 336-5586	Job SIMSBURY 2 CT	Page 1 of 8
	Project 106 ft Monopole	Date 11:13:00 11/06/17
	Client VERIZON	Designed by 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 Hartford County, Connecticut.

Basic wind speed of 100.0 mph.

Structure Class II.

Exposure Category B.

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	106.00-80.50	25.50	0.00	Round	12.7500	12.7500	0.6250		A500-42 (42 ksi)
L2	80.50-80.00	0.50	0.00	Round	12.7500	22.0000	0.6250		A36 (36 ksi)
L3	80.00-41.50	38.50	3.50	18	22.0000	27.7000	0.1875	0.7500	A607-65 (65 ksi)
L4	41.50-0.00	45.00		18	26.8068	33.4700	0.2500	1.0000	A607-65 (65 ksi)

Feed Line/Linear Appurtenances - Entered As Round Or Flat

Description	Sector	Component Type	Placement ft	Total Number	Number Per Row	Start/End Position	Width or Diameter in	Perimeter in	Weight plf
7/8	C	Surface Ar (CaAa)	100.00 - 80.00	3	3	0.000 0.000	1.1100		0.54
1 1/4	C	Surface Ar (CaAa)	100.00 - 80.00	1	1	0.000 0.000	1.5500		0.66
1 5/8 Fiber Cable (Verizon)	C	Surface Ar (CaAa)	100.00 - 80.00	2	1	0.000 0.000	1.9800		1.04

tnxTower Hudson Design Group LLC 45 Beechwood Drive North Andover, MA 01845 Phone: (978) 557-5553 FAX: (978) 336-5586	Job	SIMSBURY 2 CT	Page	2 of 8
	Project	106 ft Monopole	Date	11:13:00 11/06/17
	Client	VERIZON	Designed by	kw

Feed Line/Linear Appurtenances - Entered As Area

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Total Number		C _{AA}		Weight
							ft ² /ft	plf	
1 5/8	C	No	Inside Pole	77.00 - 0.00	6	No Ice	0.00	1.04	
						1/2" Ice	0.00	1.04	
						1" Ice	0.00	1.04	
7/8	C	No	Inside Pole	80.00 - 0.00	3	No Ice	0.00	0.54	
						1/2" Ice	0.00	0.54	
						1" Ice	0.00	0.54	
1 1/4	C	No	Inside Pole	80.00 - 0.00	1	No Ice	0.00	0.66	
						1/2" Ice	0.00	0.66	
						1" Ice	0.00	0.66	
1 5/8 Fiber Cable (Verizon)	C	No	Inside Pole	80.00 - 0.00	2	No Ice	0.00	1.04	
						1/2" Ice	0.00	1.04	
						1" Ice	0.00	1.04	

Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets:		Azimuth Adjustment	Placement ft	C _{AA}		Weight
			Horz Lateral ft	Vert ft			Front ft ²	Side ft ²	lb
Pirod 4' Side Mount Standoff (1)	A	From Face	2.00	0.0000	105.00	No Ice	2.72	2.72	50.00
						1/2" Ice	4.91	4.91	89.00
						1" Ice	7.10	7.10	128.00
Pirod 4' Side Mount Standoff (1)	A	From Face	2.00	0.0000	105.00	No Ice	2.72	2.72	50.00
						1/2" Ice	4.91	4.91	89.00
						1" Ice	7.10	7.10	128.00
Pirod 4' Side Mount Standoff (1)	B	From Face	2.00	0.0000	105.00	No Ice	2.72	2.72	50.00
						1/2" Ice	4.91	4.91	89.00
						1" Ice	7.10	7.10	128.00
3.5"x60" horizontal pipe	C	From Face	2.00	0.0000	105.00	No Ice	1.75	0.10	38.00
						1/2" Ice	2.11	0.14	54.21
						1" Ice	2.47	0.19	74.96
Omni 2"x6'	A	From Face	4.00	0.0000	105.00	No Ice	1.20	1.20	25.00
						1/2" Ice	1.80	1.80	34.39
						1" Ice	2.17	2.17	47.81
DB404	A	From Face	4.00	0.0000	105.00	No Ice	1.14	1.14	14.00
						1/2" Ice	2.05	2.05	18.20
						1" Ice	2.96	2.96	22.40
ANT220D3	B	From Face	4.00	0.0000	105.00	No Ice	1.39	1.39	20.00
						1/2" Ice	1.70	1.70	31.28
						1" Ice	2.02	2.02	46.11
DB201-A	C	From Face	4.00	0.0000	105.00	No Ice	1.10	1.10	25.00
						1/2" Ice	1.98	1.98	32.50
						1" Ice	2.86	2.86	40.00

Valmont T-Arm (3) (Verizon)	C	None		0.0000	100.00	No Ice	21.00	21.00	1008.00
						1/2" Ice	29.00	29.00	1236.00
						1" Ice	37.00	37.00	1464.00
(4) SBNHH-1D65B w/ Mount Pipe	A	From Face	4.00	0.0000	100.00	No Ice	8.42	7.09	66.55
						1/2" Ice	8.98	8.27	135.68
						1" Ice	9.50	9.17	212.84
(4) SBNHH-1D65B w/	B	From Face	4.00	0.0000	100.00	No Ice	8.42	7.09	66.55

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	Client	VERIZON	Designed by	kw

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft	C _{AA} Front ft ²	C _{AA} Side ft ²	Weight lb
Mount Pipe			0.00			1/2" Ice 8.98	8.27	135.68
			0.00			1" Ice 9.50	9.17	212.84
(4) SBNHH-1D65B w/ Mount Pipe	C	From Face	4.00	0.0000	100.00	No Ice 8.42	7.09	66.55
			0.00			1/2" Ice 8.98	8.27	135.68
			0.00			1" Ice 9.50	9.17	212.84
RRH 4X45 AWS	A	From Face	4.00	0.0000	100.00	No Ice 2.66	1.59	64.00
			-4.00			1/2" Ice 2.88	1.77	84.35
			0.00			1" Ice 3.10	1.96	107.85
RRH 4X45 AWS	B	From Face	4.00	0.0000	100.00	No Ice 2.66	1.59	64.00
			-4.00			1/2" Ice 2.88	1.77	84.35
			0.00			1" Ice 3.10	1.96	107.85
RRH 4X45 AWS	C	From Face	4.00	0.0000	100.00	No Ice 2.66	1.59	64.00
			-4.00			1/2" Ice 2.88	1.77	84.35
			0.00			1" Ice 3.10	1.96	107.85
B13 RRH4X30-4R	A	From Face	4.00	0.0000	100.00	No Ice 2.16	1.62	57.20
			0.00			1/2" Ice 2.35	1.79	76.81
			0.00			1" Ice 2.55	1.97	99.38
B13 RRH4X30-4R	B	From Face	4.00	0.0000	100.00	No Ice 2.16	1.62	57.20
			0.00			1/2" Ice 2.35	1.79	76.81
			0.00			1" Ice 2.55	1.97	99.38
B13 RRH4X30-4R	C	From Face	4.00	0.0000	100.00	No Ice 2.16	1.62	57.20
			0.00			1/2" Ice 2.35	1.79	76.81
			0.00			1" Ice 2.55	1.97	99.38
RRH2x60 PCS	A	From Face	4.00	0.0000	100.00	No Ice 2.15	1.35	55.00
			4.00			1/2" Ice 2.34	1.50	72.75
			0.00			1" Ice 2.54	1.67	93.35
RRH2x60 PCS	B	From Face	4.00	0.0000	100.00	No Ice 2.15	1.35	55.00
			4.00			1/2" Ice 2.34	1.50	72.75
			0.00			1" Ice 2.54	1.67	93.35
RRH2x60 PCS	C	From Face	4.00	0.0000	100.00	No Ice 2.15	1.35	55.00
			4.00			1/2" Ice 2.34	1.50	72.75
			0.00			1" Ice 2.54	1.67	93.35
RxxDC-3315-PF-48	A	From Face	2.00	0.0000	100.00	No Ice 4.59	2.52	32.00
			0.00			1/2" Ice 4.86	2.73	67.82
			0.00			1" Ice 5.14	2.95	107.61
RxxDC-3315-PF-48	B	From Face	2.00	0.0000	100.00	No Ice 4.59	2.52	32.00
			0.00			1/2" Ice 4.86	2.73	67.82
			0.00			1" Ice 5.14	2.95	107.61

APX16DWV-16DWVS-E-A 20 w/mount pipe	A	From Face	0.50	0.0000	77.00	No Ice 6.78	3.57	62.60
			0.00			1/2" Ice 7.26	4.41	111.44
			0.00			1" Ice 7.73	5.13	166.82
APX16DWV-16DWVS-E-A 20 w/mount pipe	B	From Face	0.50	0.0000	77.00	No Ice 6.78	3.57	62.60
			0.00			1/2" Ice 7.26	4.41	111.44
			0.00			1" Ice 7.73	5.13	166.82
APX16DWV-16DWVS-E-A 20 w/mount pipe	C	From Face	0.50	0.0000	77.00	No Ice 6.78	3.57	62.60
			0.00			1/2" Ice 7.26	4.41	111.44
			0.00			1" Ice 7.73	5.13	166.82
Gen. TMA	A	From Face	4.00	0.0000	77.00	No Ice 0.58	0.40	13.20
			5.00			1/2" Ice 0.69	0.49	18.38
			0.00			1" Ice 0.80	0.59	25.16
Gen. TMA	B	From Face	4.00	0.0000	77.00	No Ice 0.58	0.40	13.20
			5.00			1/2" Ice 0.69	0.49	18.38
			0.00			1" Ice 0.80	0.59	25.16
Gen. TMA	C	From Face	4.00	0.0000	77.00	No Ice 0.58	0.40	13.20
			5.00			1/2" Ice 0.69	0.49	18.38
			0.00			1" Ice 0.80	0.59	25.16

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Description	Face or Leg	Offset Type	Offsets:		Azimuth Adjustment	Placement	C _{AA} Front	C _{AA} Side	Weight	
			Horz Lateral	Vert						
			ft	ft	°	ft	ft ²	ft ²	lb	
Valmont Light Duty Tri-Bracket (1)	C	None			0.0000	77.00	No Ice	1.76	1.76	54.00
							1/2" Ice	2.08	2.08	70.00
							1" Ice	2.40	2.40	86.00

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
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

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Comb. No.	Description
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	36	30914.78	3913.03	0.00
	Max. H _x	21	10390.73	13479.57	0.00
	Max. H _z	2	13854.31	0.00	11880.83
	Max. M _x	2	971630.09	0.00	11880.83
	Max. M _z	8	1125758.77	-13479.57	0.00
	Max. Torsion	7	921.58	-11340.55	6539.01
	Min. Vert	19	10390.73	11340.55	-6539.01
	Min. H _x	9	10390.73	-13479.57	0.00
	Min. H _z	14	13854.31	0.00	-11880.83
	Min. M _x	14	-971126.05	0.00	-11880.83
	Min. M _z	20	-1126231.96	13479.57	0.00
	Min. Torsion	19	-921.50	11340.55	-6539.01

Tower Mast Reaction Summary

Load Combination	Vertical lb	Shear _x lb	Shear _z lb	Overturning Moment, M _x lb-ft	Overturning Moment, M _z lb-ft	Torque lb-ft
Dead Only	11545.26	-0.00	-0.00	-198.02	186.98	-0.00
1.2 Dead+1.6 Wind 0 deg - No Ice	13854.31	-0.00	-11880.83	-971630.09	234.67	-407.95
0.9 Dead+1.6 Wind 0 deg - No Ice	10390.73	-0.00	-11880.83	-959506.45	171.95	-408.32
1.2 Dead+1.6 Wind 30 deg - No Ice	13854.31	5948.88	-10289.10	-841485.29	-486154.94	-769.50
0.9 Dead+1.6 Wind 30 deg - No Ice	10390.73	5948.88	-10289.10	-830977.72	-480180.87	-770.52
1.2 Dead+1.6 Wind 60 deg - No Ice	13854.31	11340.55	-6539.01	-543931.99	-942676.16	-919.98
0.9 Dead+1.6 Wind 60 deg - No Ice	10390.73	11340.55	-6539.01	-537110.53	-931021.40	-921.58
1.2 Dead+1.6 Wind 90 deg - No Ice	13854.31	13479.57	-0.00	-239.58	-1125758.77	-826.40
0.9 Dead+1.6 Wind 90 deg - No Ice	10390.73	13479.57	-0.00	-175.63	-1111827.37	-828.07
1.2 Dead+1.6 Wind 120 deg - No Ice	13854.31	11340.55	6539.01	543446.27	-942667.03	-514.02
0.9 Dead+1.6 Wind 120 deg - No Ice	10390.73	11340.55	6539.01	536754.47	-931014.72	-515.18
1.2 Dead+1.6 Wind 150 deg - No Ice	13854.31	5948.88	10289.10	840986.16	-486146.48	-62.88
0.9 Dead+1.6 Wind 150 deg - No Ice	10390.73	5948.88	10289.10	830611.89	-480174.68	-63.24

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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
1.2 Dead+1.6 Wind 180 deg - No Ice	13854.31	-0.00	11880.83	971126.05	234.69	407.97
0.9 Dead+1.6 Wind 180 deg - No Ice	10390.73	-0.00	11880.83	959137.05	171.96	408.35
1.2 Dead+1.6 Wind 210 deg - No Ice	13854.31	-5948.88	10289.10	840989.16	486617.57	769.48
0.9 Dead+1.6 Wind 210 deg - No Ice	10390.73	-5948.88	10289.10	830614.12	480519.88	770.49
1.2 Dead+1.6 Wind 240 deg - No Ice	13854.31	-11340.55	6539.01	543449.31	943139.27	919.88
0.9 Dead+1.6 Wind 240 deg - No Ice	10390.73	-11340.55	6539.01	536756.74	931360.84	921.50
1.2 Dead+1.6 Wind 270 deg - No Ice	13854.31	-13479.57	-0.00	-239.55	1126231.96	826.32
0.9 Dead+1.6 Wind 270 deg - No Ice	10390.73	-13479.57	-0.00	-175.62	1112174.24	828.01
1.2 Dead+1.6 Wind 300 deg - No Ice	13854.31	-11340.55	-6539.01	-543935.00	943148.38	514.03
0.9 Dead+1.6 Wind 300 deg - No Ice	10390.73	-11340.55	-6539.01	-537112.78	931367.52	515.20
1.2 Dead+1.6 Wind 330 deg - No Ice	13854.31	-5948.88	-10289.10	-841488.29	486626.02	62.91
0.9 Dead+1.6 Wind 330 deg - No Ice	10390.73	-5948.88	-10289.10	-830979.94	480526.06	63.27
1.2 Dead+1.0 Ice+1.0 Temp	30914.78	-0.01	-0.01	-1737.10	842.87	-0.05
1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp	30914.78	-0.00	-3671.41	-326512.93	855.44	-329.10
1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp	30914.78	1833.11	-3179.53	-283003.29	-161147.34	-476.20
1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp	30914.78	3324.24	-1921.85	-173370.13	-295731.15	-495.26
1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp	30914.78	3913.03	-0.00	-1767.33	-349597.26	-381.74
1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp	30914.78	3324.24	1921.85	169833.11	-295727.75	-166.29
1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp	30914.78	1833.11	3179.53	279461.51	-161143.92	93.77
1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp	30914.78	-0.00	3671.41	322969.36	855.63	329.06
1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp	30914.78	-1833.11	3179.53	279465.24	162857.28	476.15
1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp	30914.78	-3324.24	1921.85	169837.04	297444.73	495.16
1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp	30914.78	-3913.03	-0.00	-1767.19	351316.14	381.61
1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp	30914.78	-3324.24	-1921.85	-173373.81	297447.94	166.18
1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp	30914.78	-1833.11	-3179.53	-283006.88	162860.37	-93.85
Dead+Wind 0 deg - Service	11545.26	-0.00	-2394.52	-194859.69	198.76	-83.69
Dead+Wind 30 deg - Service	11545.26	1198.96	-2073.71	-168782.39	-97266.06	-157.89
Dead+Wind 60 deg - Service	11545.26	2283.03	-1316.41	-109077.84	-188607.45	-189.70
Dead+Wind 90 deg - Service	11545.26	2713.65	-0.00	-210.19	-225317.41	-170.72
Dead+Wind 120 deg - Service	11545.26	2283.03	1316.41	108657.24	-188607.14	-106.04
Dead+Wind 150 deg - Service	11545.26	1198.96	2073.71	168361.33	-97265.77	-12.95
Dead+Wind 180 deg - Service	11545.26	-0.00	2394.52	194438.47	198.76	83.68
Dead+Wind 210 deg - Service	11545.26	-1198.96	2073.71	168361.43	97663.35	157.89
Dead+Wind 240 deg - Service	11545.26	-2283.03	1316.41	108657.34	189004.75	189.70
Dead+Wind 270 deg - Service	11545.26	-2713.65	-0.00	-210.19	225715.06	170.71
Dead+Wind 300 deg - Service	11545.26	-2283.03	-1316.41	-109077.94	189005.06	106.04
Dead+Wind 330 deg - Service	11545.26	-1198.96	-2073.71	-168782.49	97663.63	12.95

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	Client	VERIZON	Designed by	kw

Solution Summary

Load Comb.	Sum of Applied Forces			Sum of Reactions			% Error
	PX lb	PY lb	PZ lb	PX lb	PY lb	PZ lb	
1	0.00	-11545.26	0.00	0.00	11545.26	0.00	0.000%
2	0.00	-13854.31	-11880.83	0.00	13854.31	11880.83	0.000%
3	0.00	-10390.73	-11880.83	0.00	10390.73	11880.83	0.000%
4	5948.88	-13854.31	-10289.10	-5948.88	13854.31	10289.10	0.000%
5	5948.88	-10390.73	-10289.10	-5948.88	10390.73	10289.10	0.000%
6	11340.55	-13854.31	-6539.01	-11340.55	13854.31	6539.01	0.000%
7	11340.55	-10390.73	-6539.01	-11340.55	10390.73	6539.01	0.000%
8	13479.57	-13854.31	0.00	-13479.57	13854.31	0.00	0.000%
9	13479.57	-10390.73	0.00	-13479.57	10390.73	0.00	0.000%
10	11340.55	-13854.31	6539.01	-11340.55	13854.31	-6539.01	0.000%
11	11340.55	-10390.73	6539.01	-11340.55	10390.73	-6539.01	0.000%
12	5948.88	-13854.31	10289.10	-5948.88	13854.31	-10289.10	0.000%
13	5948.88	-10390.73	10289.10	-5948.88	10390.73	-10289.10	0.000%
14	0.00	-13854.31	11880.83	0.00	13854.31	-11880.83	0.000%
15	0.00	-10390.73	11880.83	0.00	10390.73	-11880.83	0.000%
16	-5948.88	-13854.31	10289.10	5948.88	13854.31	-10289.10	0.000%
17	-5948.88	-10390.73	10289.10	5948.88	10390.73	-10289.10	0.000%
18	-11340.55	-13854.31	6539.01	11340.55	13854.31	-6539.01	0.000%
19	-11340.55	-10390.73	6539.01	11340.55	10390.73	-6539.01	0.000%
20	-13479.57	-13854.31	0.00	13479.57	13854.31	0.00	0.000%
21	-13479.57	-10390.73	0.00	13479.57	10390.73	0.00	0.000%
22	-11340.55	-13854.31	-6539.01	11340.55	13854.31	6539.01	0.000%
23	-11340.55	-10390.73	-6539.01	11340.55	10390.73	6539.01	0.000%
24	-5948.88	-13854.31	-10289.10	5948.88	13854.31	10289.10	0.000%
25	-5948.88	-10390.73	-10289.10	5948.88	10390.73	10289.10	0.000%
26	0.00	-30914.78	0.00	0.01	30914.78	0.01	0.000%
27	0.00	-30914.78	-3671.40	0.00	30914.78	3671.41	0.000%
28	1833.11	-30914.78	-3179.53	-1833.11	30914.78	3179.53	0.000%
29	3324.24	-30914.78	-1921.84	-3324.24	30914.78	1921.85	0.000%
30	3913.02	-30914.78	0.00	-3913.03	30914.78	0.00	0.000%
31	3324.24	-30914.78	1921.84	-3324.24	30914.78	-1921.85	0.000%
32	1833.11	-30914.78	3179.53	-1833.11	30914.78	-3179.53	0.000%
33	0.00	-30914.78	3671.40	0.00	30914.78	-3671.41	0.000%
34	-1833.11	-30914.78	3179.53	1833.11	30914.78	-3179.53	0.000%
35	-3324.24	-30914.78	1921.84	3324.24	30914.78	-1921.85	0.000%
36	-3913.02	-30914.78	0.00	3913.03	30914.78	0.00	0.000%
37	-3324.24	-30914.78	-1921.84	3324.24	30914.78	1921.85	0.000%
38	-1833.11	-30914.78	-3179.53	1833.11	30914.78	3179.53	0.000%
39	0.00	-11545.26	-2394.51	0.00	11545.26	2394.52	0.000%
40	1198.96	-11545.26	-2073.71	-1198.96	11545.26	2073.71	0.000%
41	2283.03	-11545.26	-1316.41	-2283.03	11545.26	1316.41	0.000%
42	2713.65	-11545.26	0.00	-2713.65	11545.26	0.00	0.000%
43	2283.03	-11545.26	1316.41	-2283.03	11545.26	-1316.41	0.000%
44	1198.96	-11545.26	2073.71	-1198.96	11545.26	-2073.71	0.000%
45	0.00	-11545.26	2394.51	0.00	11545.26	-2394.52	0.000%
46	-1198.96	-11545.26	2073.71	1198.96	11545.26	-2073.71	0.000%
47	-2283.03	-11545.26	1316.41	2283.03	11545.26	-1316.41	0.000%
48	-2713.65	-11545.26	0.00	2713.65	11545.26	0.00	0.000%
49	-2283.03	-11545.26	-1316.41	2283.03	11545.26	1316.41	0.000%
50	-1198.96	-11545.26	-2073.71	1198.96	11545.26	2073.71	0.000%

Maximum Tower Deflections - Service Wind

tnxTower Hudson Design Group LLC 45 Beechwood Drive North Andover, MA 01845 Phone: (978) 557-5553 FAX: (978) 336-5586	Job	SIMSBURY 2 CT	Page	8 of 8
	Project	106 ft Monopole	Date	11:13:00 11/06/17
	Client	VERIZON	Designed by	kw

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	106 - 80.5	20.2958	48	1.6174	0.0071
L2	80.5 - 80	11.9699	48	1.3989	0.0034
L3	80 - 41.5	11.8235	48	1.3968	0.0034
L4	45 - 0	3.7262	48	0.7628	0.0011

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
105.00	Pirod 4' Side Mount Standoff (1)	48	19.9529	1.6066	0.0069	15828
100.00	Valmont T-Arm (3)	48	18.2435	1.5532	0.0059	13190
77.00	APX16DWV-16DWVS-E-A20 w/mount pipe	48	10.9601	1.3781	0.0033	4041

Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P lb	ϕP_{allow} lb	% Capacity	Pass Fail
L1	106 - 80.5	Pole	TP12.75x12.75x0.625	1	-4677.76	899919.00	59.1	Pass
L2	80.5 - 80	Pole	TP22x12.75x0.625	2	-4689.72	771359.00	68.9	Pass
L3	80 - 41.5	Pole	TP27.7x22x0.1875	3	-7910.34	1062140.00	95.0	Pass
L4	41.5 - 0	Pole	TP33.47x26.8068x0.25	4	-13831.80	1797250.00	92.5	Pass
Summary								
Pole (L3)							95.0	Pass
RATING =							95.0	Pass

Square, Stiffened / Unstiffened Base Plate, Any Rod Material - Rev. F / G

- Assumptions:**
- 1) Rod groups at corners. Total # rods divisible by 4. Maximum total # of rods = 48 (12 per Corner).
 - 2) Rod Spacing = Straight Center-to-Center distance between any (2) adjacent rods (same corner)
 - 3) Clear space between bottom of leveling nut and top of concrete **not** exceeding (1)*(Rod Diameter)

Site Data

BU#: SIMSBURY 2 CT
 Site Name: 0
 App #: 0

Anchor Rod Data		
Eta Factor, η	0.55	TIA G (Fig. 4-4)
Qty:	8	
Diam:	2.25	in
Rod Material:	A615-J	
Yield, Fy:	75	ksi
Strength, Fu:	100	ksi
Bolt Circle:	39	in
Anchor Spacing:	6	in

Plate Data

W=Side:	38	in
Thick:	2	in
Grade:	60	ksi
Clip Distance:	6	in

Stiffener Data (Welding at both sides)

Configuration:	Unstiffened	
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:	33.47	in
Thick:	0.25	in
Grade:	65	ksi
# of Sides:	18	"0" IF Round

Base Reactions

TIA Revision:	G	
Factored Moment, Mu:	1126	ft-kips
Factored Axial, Pu:	14	kips
Factored Shear, Vu:	14	kips

Anchor Rod Results

TIA G --> Max Rod (Cu+ Vu/ η): 178.1 Kips
 Axial Design Strength, Φ^*Fu^*Anet : 260.0 Kips
 Anchor Rod Stress Ratio: 68.5% **Pass**

Base Plate Results

Base Plate Stress: 43.2 ksi
 PL Design Bending Strength, Φ^*Fy : 54.0 ksi
 Base Plate Stress Ratio: 80.0% **Pass**

Flexural Check

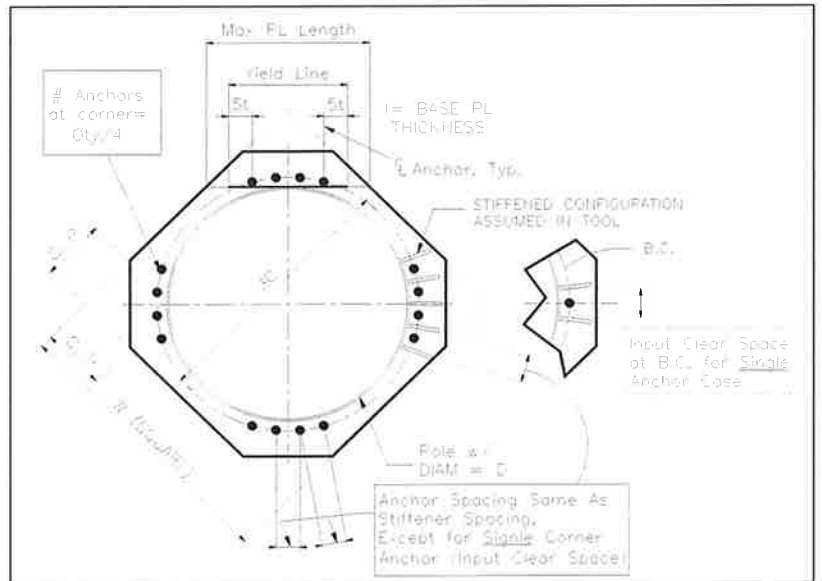
PL Ref. Data

Yield Line (in):	20.27
Max PL Length:	20.27

N/A - Unstiffened

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



** 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 # : SIMSBURY 2 CT

Site Name:

App. Number:

TIA-222 Revision: G

Design Reactions		
Shear, S :	13.5	kips
Moment, M :	1126	ft-kips
Tower Height, H :	106	ft
Tower Weight, Wt :	13.9	kips
Base Diameter, BD :	2.79	ft

Foundation Dimensions		
Depth, D :	6	ft
Pad Width, W :	17	ft
Neglected Depth, N :	0	ft
Thickness, T :	3.00	ft
Pier Diameter, Pd :	5.00	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 :	5.0	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 :	3000	psi
Concrete Unit Weight, δ_c :	0.150	kcf
Seismic Zone, z :	1	

Rebar Properties		
Pier Rebar Size, Sp :	11	
Pier Rebar Quantity, mp :	12	10
Pad Rebar Size, Spad :	8	
Pad Rebar Quantity, mpad :	17	9
Pier Tie Size, St :		4
Tie Quantity, mt :		5

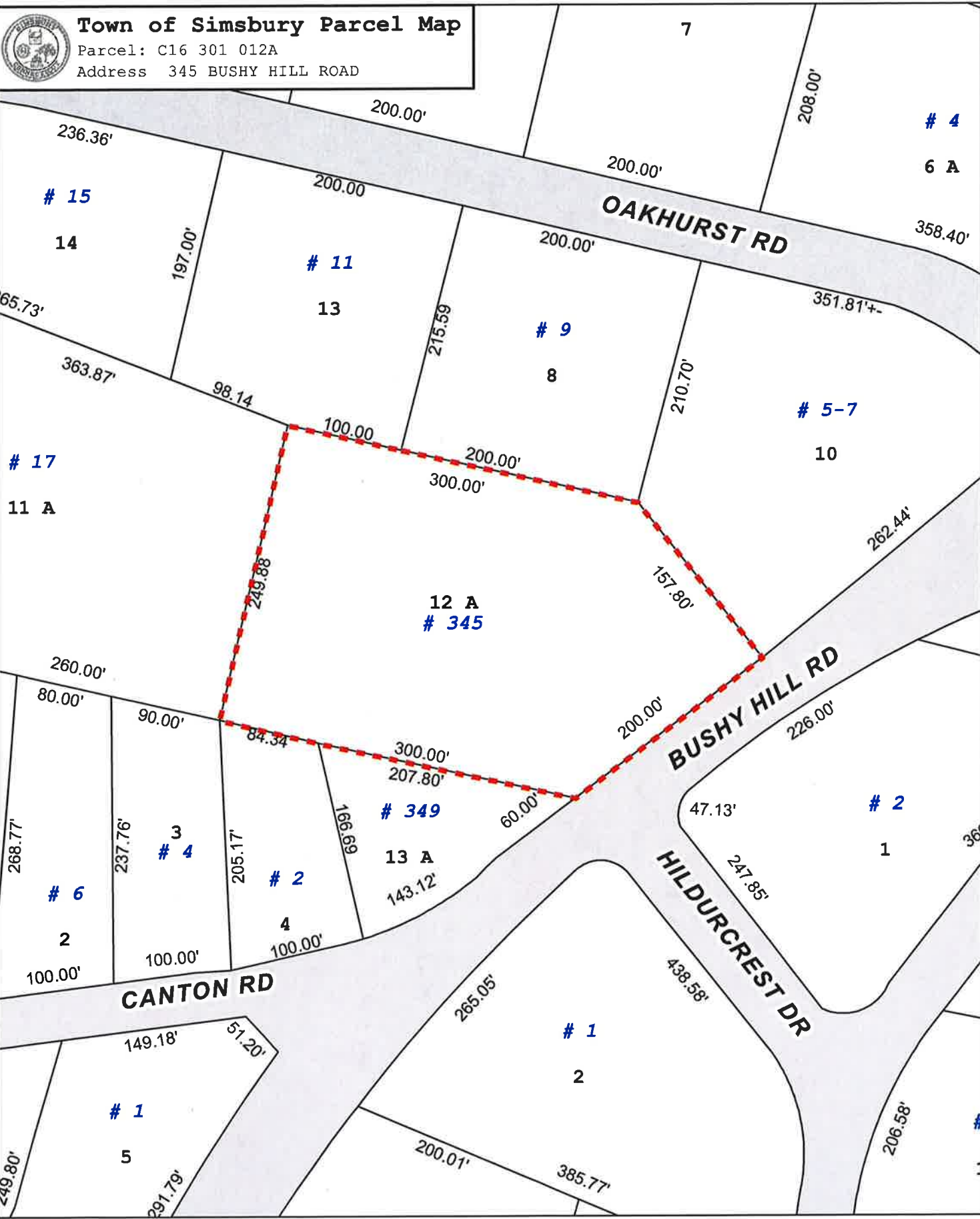
Design Checks			
	Capacity/ Availability	Demand/ Limits	Check
<i>Req'd Pier Diam. (ft)</i>	5	4.29	OK
<i>Overturing (ft-kips)</i>	1428.48	1126.00	78.8%
<i>Shear Capacity (kips)</i>	85.70	13.50	15.8%
<i>Bearing (ksf)</i>	3.75	2.34	62.4%
<i>Pad Shear - 1-way (kips)</i>	544.71	127.70	23.4%
<i>Pad Shear - 2-way (kips)</i>	1551.88	33.04	2.1%
<i>Pad Moment Capacity (k-ft)</i>	1917.33	418.16	21.8%
<i>Pier Moment Capacity (k-ft)</i>	9815.92	1173.25	12.0%

ATTACHMENT 4



Town of Simsbury Parcel Map

Parcel: C16 301 012A
Address 345 BUSHY HILL ROAD



1 inch = 100 feet



Disclaimer: This map is for informational purposes only All information is subject to verification by any user. The Town of Simsbury and its mapping contractors assume no legal responsibility for the information contained herein.

Map Produced: November 2017



Property Information

Owner	SIMSBURY FIRE DISTRICT
Address	345 BUSHY HILL ROAD
Mailing Address	869 HOPMEADOW STREET SIMSBURY , CT 06070
Land Use	- Fire Station - Volunteer
Land Class	Public Utility

Census Tract	4661010
Neighborhood	0225
Zoning	R-40
Acreage	1.74
Utilities	
Lot Setting/ Desc	/

Photo



C16-301-012A 03/17/2012

PARCEL VALUATIONS (Assessed value = 70% of Appraised Value)

	Appraised	Assessed
Buildings		
Outbuildings		
Improvements		
Extras		
Land		
Total	1136375	795460
Previous		

Construction Details

Year Built	
Stories	1
Building Style	
Building Use	
Building Condition	Very Good
Total Rooms	0
Bedrooms	0
Full Bathrooms	0
Half Bathrooms	
Bath Style	
Kitchen Style	
Roof Style	
Roof Cover	Compo_Built-Up

EXTERIOR WALLS:

Primary	Brick
Secondary	

INTERIOR WALLS:

Primary	Dry Wall
Secondary	

FLOORS:

Primary	Carpet
Secondary	

HEATING/AC:

Heating Type	Hot Water
Heating Fuel	Gas
AC Type	Central

BUILDING AREA:

Effective Building Area	
Gross Building Area	
Total Living Area	6328

SALES HISTORY:

Sale Date	12/21/1981
Sale Price	0
Book/ Page	0257/0645

ATTACHMENT 5



Certificate of Mailing — Firm

Name and Address of Sender	TOTAL NO. of Pieces Listed by Sender	TOTAL NO. of Pieces Received at Post Office™	Affix Stamp Here Postmark with Date of Receipt.
Kenneth C. Baldwin, Esq. Robinson & Cole LLP 280 Trumbull Street Hartford, CT 06103	3	3	
Postmaster, per (name of receiving employee)	1		
USPS® Tracking Number Firm-specific Identifier	Address (Name, Street, City, State, and ZIP Code™)	Postage	Parcel Airlift
1.	Eric Wellman, First Selectman Town of Simsbury 933 Hopmeadow Street Simsbury, CT 06070		
2.	James D. Rabbit, AICP, Director of Planning and Community Development Town of Simsbury 933 Hopmeadow Street Simsbury, CT 06070		
3.	Simsbury Fire District 869 Hopmeadow Street Simsbury, CT 06070		
4.			
5.			
6.			

