

January 25, 2019

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
36 Lower Road, North Canaan, Connecticut**

Dear Ms. Bachman:

Cellco Partnership d/b/a Verizon Wireless (“Cellco”) currently maintains twelve (12) telecommunications antennas at the 168-foot level on the existing 195-foot tower at 36 Lower Road in North Canaan (the “Property”). The tower and underlying property are owned by Litchfield County Dispatch, Inc. Cellco’s use of the tower was approved by the Council in 2006. Cellco now intends to replace six (6) of its existing antennas with four (4) model NHH-65B-R2B antennas and two (2) model NHH-85B-R2B antennas, all at the same level on the tower. Cellco also intends to install three (3) remote radio heads (“RRHs”) and one (1) Hybriflex fiber optic antenna cable. Included in Attachment 1 are specifications for Cellco’s new antennas, RRHs and fiber optic line.

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 notice is being sent to North Canaan’s First Selectman, Charles P. Perotti; Richelle Hodza, North Canaan’s Zoning Enforcement Officer; and Litchfield County Dispatch, Inc., the owner of the Property and 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 antennas and RRHs will be installed at the 168-foot level on the existing 195-foot tower.

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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 and RRHs will not increase radio frequency (RF) emissions at the facility to a level at or above the Federal Communications Commission (FCC) safety standard. A cumulative 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 parcel map and property owner information 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:

Charles P. Perotti, North Canaan First Selectman
Richelle Hodza, North Canaan Zoning Enforcement Officer
Litchfield County Dispatch, Inc.
Tim Parks

ATTACHMENT 1

NHH-65B-R2B



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
- Internal SBT on low and high band allow remote RET control from the radio over the RF jumper cable
- Separate RS-485 RET input/output for low and high band
- One RET for low band and one RET for both high bands to ensure same tilt level for 4x Rx or 4x MIMO

Electrical Specifications

Frequency Band, MHz	698–806	806–896	1695–1880	1850–1990	1920–2200	2300–2360
Gain, dBi	14.9	15.0	17.7	17.9	18.4	18.7
Beamwidth, Horizontal, degrees	65	60	71	69	64	57
Beamwidth, Vertical, degrees	12.4	11.2	5.7	5.2	4.9	4.6
Beam Tilt, degrees	0–14	0–14	0–7	0–7	0–7	0–7
USLS (First Lobe), dB	13	14	18	18	19	18
Front-to-Back Ratio at 180°, dB	30	29	31	30	29	31
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 at 50°C, maximum, watts	300	300	300	300	300	300
Polarization	±45°	±45°	±45°	±45°	±45°	±45°
Impedance	50 ohm	50 ohm	50 ohm	50 ohm	50 ohm	50 ohm

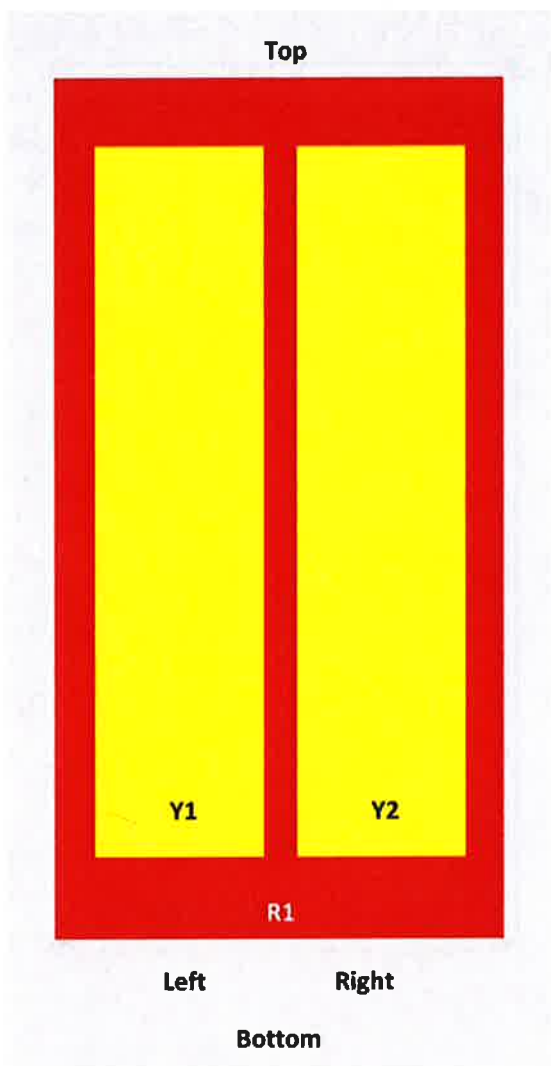
Electrical Specifications, BASTA*

Frequency Band, MHz	698–806	806–896	1695–1880	1850–1990	1920–2200	2300–2360
Gain by all Beam Tilts, average, dBi	14.5	14.5	17.3	17.7	18.1	18.5
Gain by all Beam Tilts Tolerance, dB	±0.6	±1.1	±0.4	±0.4	±0.5	±0.3
Gain by Beam Tilt, average, dBi	0° 14.4 7° 14.6 14° 14.3	0° 14.7 7° 14.7 14° 14.1	0° 17.2 4° 17.3 7° 17.3	0° 17.6 4° 17.7 7° 17.7	0° 18.0 4° 18.2 7° 18.1	0° 18.3 4° 18.5 7° 18.6
Beamwidth, Horizontal Tolerance, degrees	±2	±2.1	±3	±4.1	±6.5	±2.9
Beamwidth, Vertical Tolerance, degrees	±0.7	±0.7	±0.3	±0.2	±0.3	±0.2
USLS, beampeak to 20° above beampeak, dB	13	14	16	16	17	15
Front-to-Back Total Power at 180° ± 30°, dB	23	22	27	27	25	25
CPR at Boresight, dB	22	21	23	23	22	19
CPR at Sector, dB	10	7	16	13	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

NHH



Array	Freq (MHz)	Coors	RET (SRET)	AISG RET UID
R1	698-896	1-2	1	ANXXXXXXXXXXXXX1
Y1	1695-2360	3-4	2	ANXXXXXXXXXXXXX2
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

NHH-65B-R2B

Band	Multiband
Performance Note	Outdoor usage
Total Input Power, maximum	600 W @ 50 °C

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
Color	Light gray
Grounding Type	RF connector body grounded to reflector and mounting bracket
Radiator Material	Low loss circuit board
Radome Material	Fiberglass, UV resistant
Reflector Material	Aluminum
RF Connector Location	Bottom
Wind Loading, frontal	278.0 N @ 150 km/h 62.5 lbf @ 150 km/h
Wind Loading, lateral	230.0 N @ 150 km/h 51.7 lbf @ 150 km/h
Wind Loading, maximum	537.0 N @ 150 km/h 120.7 lbf @ 150 km/h
Wind Speed, maximum	241 km/h 150 mph

Dimensions

Length	1828.0 mm 72.0 in
Width	301.0 mm 11.9 in
Depth	180.0 mm 7.1 in
Net Weight, without mounting kit	19.8 kg 43.7 lb

Remote Electrical Tilt (RET) Information

Input Voltage	10–30 Vdc
Internal Bias Tee	Port 1 Port 3
Internal RET	High band (1) Low band (1)
Power Consumption, idle state, maximum	2 W
Power Consumption, normal conditions, maximum	13 W
Protocol	3GPP/AISG 2.0 (Single RET)
RET Interface	8-pin DIN Female 8-pin DIN Male
RET Interface, quantity	2 female 2 male

Packed Dimensions

NHH-65B-R2B

Length	1952.0 mm 76.9 in
Width	409.0 mm 16.1 in
Depth	299.0 mm 11.8 in
Shipping Weight	32.3 kg 71.2 lb

Regulatory Compliance/Certifications

Agency

RoHS 2011/65/EU
China RoHS SJ/T 11364-2006
ISO 9001:2015

Classification

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



Included Products

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

* Footnotes

Performance Note Severe environmental conditions may degrade optimum performance

NHH-85B-R2B



6-port sector antenna, 2x 698–896 and 4x 1695–2360 MHz, 85° HPBW, 2x RET. Both high bands share the same electrical tilt.

- Interleaved dipole technology providing for attractive, low wind load mechanical package
- Internal SBT on low and high band allow remote RET control from the radio over the RF jumper cable
- Separate RS-485 RET input/output for low and high band
- One RET for low band and one RET for both high bands to ensure same tilt level for 4x Rx or 4x MIMO

Electrical Specifications

Frequency Band, MHz	698–806	806–896	1695–1880	1850–1990	1920–2200	2300–2360
Gain, dBi	14.4	14.4	17.1	17.6	17.9	18.1
Beamwidth, Horizontal, degrees	83	87	80	79	78	78
Beamwidth, Vertical, degrees	12.3	11.2	5.7	5.3	5.0	4.6
Beam Tilt, degrees	0–12	0–12	0–8	0–8	0–8	0–8
USLS (First Lobe), dB	18	16	14	16	17	18
Front-to-Back Ratio at 180°, dB	28	26	34	30	30	30
Isolation, dB	25	25	25	25	25	25
Isolation, Intersystem, dB	30	30	25	25	25	25
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 at 50°C, maximum, watts	300	300	250	250	250	200
Polarization	±45°	±45°	±45°	±45°	±45°	±45°
Impedance	50 ohm	50 ohm	50 ohm	50 ohm	50 ohm	50 ohm

Electrical Specifications, BASTA*

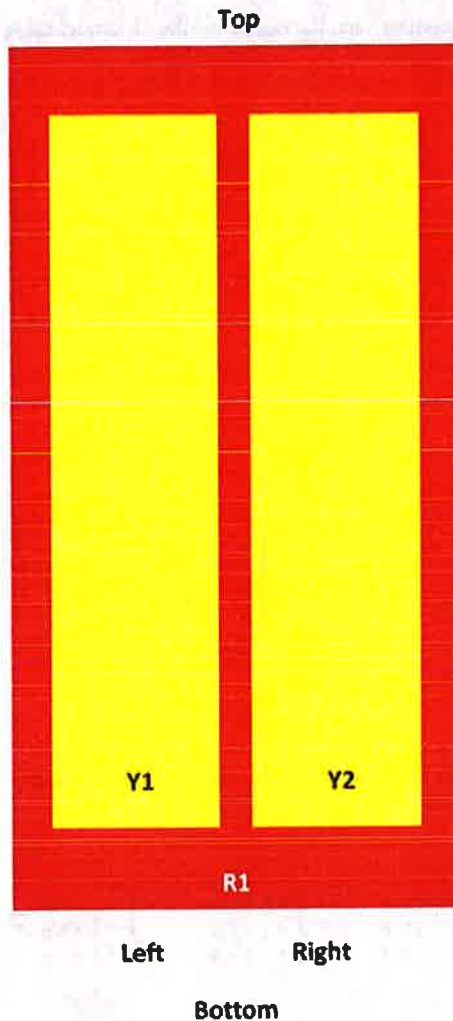
Frequency Band, MHz	698–806	806–896	1695–1880	1850–1990	1920–2200	2300–2360
Gain by all Beam Tilts, average, dBi	14.1	14.1	16.6	17.3	17.6	17.7
Gain by all Beam Tilts Tolerance, dB	±0.3	±0.5	±0.6	±0.4	±0.4	±0.4
Gain by Beam Tilt, average, dBi	0° 14.1 6° 14.2 12° 14.0	0° 14.0 6° 14.3 12° 13.8	0° 16.6 4° 16.6 8° 16.7	0° 17.3 4° 17.4 8° 17.3	0° 17.6 4° 17.6 8° 17.5	0° 17.6 4° 17.8 8° 17.6
Beamwidth, Horizontal Tolerance, degrees	±1.8	±2	±4.8	±4	±4	±2.6
Beamwidth, Vertical Tolerance, degrees	±0.8	±0.9	±0.2	±0.2	±0.3	±0.2
USLS, beampeak to 20° above beampeak, dB	18	16	14	15	16	17
Front-to-Back Total Power at 180° ± 30°, dB	22	22	27	26	25	26
CPR at Boresight, dB	21	22	19	19	19	22
CPR at Sector, dB	20	20	15	17	17	16

* 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

NHH

Array	Freq (MHz)	Conns	RET (SRET)	AISG RET UID
R1	698-896	1-2	1	ANXXXXXXXXXXXXX1
Y1	1695-2360	3-4	2	ANXXXXXXXXXXXXX2
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

NHH-85B-R2B

Band	Multiband
Performance Note	Outdoor usage
Total Input Power, maximum	900 W @ 50 °C

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
Color	Light gray
Grounding Type	RF connector 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	283.0 N @ 150 km/h 63.6 lbf @ 150 km/h
Wind Loading, lateral	234.0 N @ 150 km/h 52.6 lbf @ 150 km/h
Wind Loading, maximum	545.0 N @ 150 km/h 122.5 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	19.8 kg 43.7 lb

Remote Electrical Tilt (RET) Information

Input Voltage	10–30 Vdc
Internal Bias Tee	Port 1 Port 3
Internal RET	High band (1) Low band (1)
Power Consumption, idle state, maximum	2 W
Power Consumption, normal conditions, maximum	13 W
Protocol	3GPP/AISG 2.0 (Single RET)
RET Interface	8-pin DIN Female 8-pin DIN Male
RET Interface, quantity	2 female 2 male

Packed Dimensions

NHH-85B-R2B

Length	1970.0 mm 77.6 in
Width	409.0 mm 16.1 in
Depth	299.0 mm 11.8 in
Shipping Weight	31.9 kg 70.3 lb

Regulatory Compliance/Certifications

Agency

RoHS 2011/65/EU

China RoHS SJ/T 11364-2006

ISO 9001:2015

Classification

Compliant by Exemption

Above Maximum Concentration Value (MCV)

Designed, manufactured and/or distributed under this quality management system



Included Products

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

* Footnotes

Performance Note

Severe environmental conditions may degrade optimum performance

SAMSUNG

Dual-Band Radio Unit AWS/PCS (B66/B2)

RFV01U-D1A

Samsung's RFV01U-D1A is a compact remote Radio Unit (RU) designed for deployments that require flexibility in installation and rapid onlining, without compromising on coverage, capacity or operational expenses.



The RFV01U-D1A RU targets dual-band support across Band 66 (AWS) and Band 2 (PCS), making it an ideal product for broad coverage footprints across multiple common mid-range frequencies.

The RU handles all Radio Frequency (RF) processing in a single, compact unit, and is designed to interface via CPRI with Samsung's CDU baseband offerings, in both distributed- and central-RAN configurations.

In addition to its minimal footprint and ease of installation, the RU is also designed to reduce cost of ownership through its integrated spectrum analyzer, which allows for remote RF monitoring, greatly reducing the need for on-site maintenance visits.

Features and Benefits

- Dual-band support for broad frequency coverage
- Minimal footprint reduces site costs
- Rapid, easy installation
- Flexibly deployable in any location
- Remote RF monitoring capability
- Convection cooled, silent operation
- Built-in Broadcast Auxiliary Services (BAS) filter ensures compliant AWS operation without impacting footprint

Key Technical Specifications

Duplex Type: FDD

Operating Frequencies:

B66: DL(2,110-2,180MHz)/UL(1,710-1,780MHz)

B2: DL(1,930-1,990MHz)/UL(1,850-1,910MHz)

Instantaneous Bandwidth:

70MHz(B66) + 60MHz(B2)

RF Chain: 4T4R/2T4R/2T2R

Output Power: Total 320W

DU-RU Interface: CPRI (10Gbps)

Dimensions: 380 x 380 x 255mm (36.8L)

Weight: 38.3kg

Input Power: -48V DC

Operating Temp.: -40 - 55°(w/o solar load)

Cooling: Natural convection

SAMSUNG

Dual-Band Radio Unit 700/850MHz (B13/B5) RFV01U-D2A

Samsung's RFV01U-D2A is a compact remote Radio Unit (RU) designed for deployments that require flexibility in installation and rapid onlining, without compromising on coverage, capacity or operational expenses.



The RFV01U-D2A RU targets dual-band support across Band 13 (700MHz) and Band 5 (850MHz), making it an ideal product for broad coverage footprints across multiple common low-end, long-range frequencies.

The RU handles all Radio Frequency (RF) processing in a single, compact unit, and is designed to interface via CPRI with Samsung's CDU baseband offerings, in both distributed- and central-RAN configurations.

In addition to its minimal footprint and ease of installation, the RU is also designed to reduce cost of ownership through its integrated spectrum analyzer, which allows for remote RF monitoring, greatly reducing the need for on-site maintenance visits.

Features and Benefits

- Dual-band support for broad frequency coverage
- Minimal footprint reduces site costs
- Rapid, easy installation
- Flexibly deployable in any location
- Remote RF monitoring capability
- Convection cooled, silent operation

Key Technical Specifications

Duplex Type: FDD
Operating Frequencies:
B13: DL(746-756MHz)/UL(777-787MHz)
B5: DL(869-894MHz)/UL(824-849MHz)
Instantaneous Bandwidth: 10MHz(B13) + 25MHz(B5)
RF Chain: 4T4R/2T4R/2T2R
Output Power: Total 320W
DU-RU Interface: CPRI (10Gbps)
Dimensions: 380 x 380 x 207mm (29.9L)
Weight: 31.9kg
Input Power: -48V DC
Operating Temp.: -40 - 55°(w/o solar load)
Cooling: Natural convection



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

Product Description

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

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

Features/Benefits

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



Figure 1: HYBRIFLEX Series

Technical Specifications

Outer Conductor Armor	Corrugated Aluminum	[mm (in.)]	46.5 (1.83)
Jacket	Polyethylene, PE	[mm (in.)]	50.3 (1.98)
UV-Protection	Individual and External Jacket		Yes
Mechanical Properties			
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)
Electrical Properties			
DC-Resistance Outer Conductor Armor		[Ω/km (Ω/1000ft)]	0.68 (0.205)
DC-Resistance Power Cable, 8.4mm ² (8AWG)		[Ω/km (Ω/1000ft)]	2.1 (0.307)
Optical Properties			
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
Dimensions - Wire Properties			
Size (Power)		[mm (AWG)]	8.4 (8)
Quantity, Wire Count (Power)			16 (8 pairs)
Size (Alarm)		[mm (AWG)]	0.8 (18)
Quantity, Wire Count (Alarm)			4 (2 pairs)
Type			UV protected
Strands			19
Primary Jacket Diameter, Nominal		[mm (in.)]	6.8 (0.27)
Standards (Meets or exceeds)			NFPA 130, ICEA S-95-658 UL Type XHHW-2, UL 44 UL-LS Limited Smoke, UL VW-1 IEEE-383 (1974), IEEE1202/FT4 RoHS Compliant
Operating Range			
Installation Temperature		[°C (°F)]	-40 to +65 (-40 to 149)
Operation Temperature		[°C (°F)]	-40 to +65 (-40 to 149)

* This data is provisional and subject to change

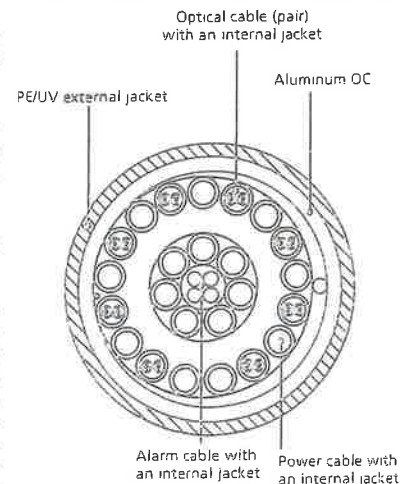


Figure 2: Construction Detail

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

ATTACHMENT 2

Site Name: North Canaan Tower Height: 195ft		General	Power	Density				
CARRIER	# OF CHAN.	WATTS ERP	HEIGHT	CALC. POWER DENS	FREQ.	MAX. PERMISS. EXP.	FRACTION MPE	Total
*CT State Police	1	5549	195	6675	0.0559	1.0000	0.56%	
*CT State Police	5	200	185	867	0.0112	0.5780	0.19%	
*CT State Police	3	200	185	866	0.0067	0.5773	0.12%	
*LCD	1	419	185	150	0.0047	0.2000	0.24%	
*LCD	1	300	185	33.5	0.0034	0.2000	0.17%	
*LCD	1	250	180	150	0.0030	0.2000	0.15%	
*CL&P	1	1000	124	48	0.0258	0.2000	1.29%	
*CL&P	1	400	120	154.5	0.0111	0.2000	0.55%	
*Arch	1	1000	120	929	0.0277	0.6193	0.45%	
*CT State Police	1	5818	100	6835	0.2368	1.0000	2.37%	
*LCD	1	335	80	155.2	0.0220	0.2000	1.10%	
*CL&P	1	100	80	48.4	0.0066	0.2000	0.33%	
*Town of No. Canaan	1	150	80	151.4	0.0099	0.2000	0.49%	
*Sprint	1	310	154	850	0.0051	0.5667	0.09%	
*Sprint	2	310	154	850	0.0102	0.5667	0.18%	
*Sprint	5	495	154	1900	0.0406	1.0000	0.41%	
*Sprint	2	1236	154	1900	0.0406	1.0000	0.41%	
*Sprint	8	640	154	2500	0.0841	1.0000	0.84%	
*AT&T-GSM	2	414	140	850	0.0166	0.5667	0.29%	
*AT&T-PCS-UMTS	2	656	140	1900	0.0263	1.0000	0.26%	
*AT&T-UMTS	2	414	140	850	0.0166	0.5667	0.29%	
*AT&T-AWS-LTE	2	1919	140	2100	0.0769	1.0000	0.77%	
*AT&T-LTE	2	940	140	700	0.0377	0.4667	0.81%	
*T-Mobile	2	2334	125	2100	0.1185	1.0000	1.19%	
*T-Mobile	2	2334	125	1900	0.1185	1.0000	1.19%	
*T-Mobile	2	1403	125	1900	0.0713	1.0000	0.71%	
*T-Mobile	1	679	125	700	0.0172	0.4667	0.37%	
*T-Mobile	1	1718	125	11000	0.0436	1.0000	0.44%	
VZW PCS	1	1040	168	0.0133	1970	1.0000	1.33%	
VZW 850 LTE	1	324	168	0.0041	869	0.5793	0.71%	
VZW 850 Cellular	3	233	168	0.0030	876	0.5840	0.51%	
VZW AWS	1	1634	168	0.0208	2145	1.0000	2.08%	
VZW 700	1	929	168	0.0118	746	0.4970	2.38%	23.25%
* Source: Siting Council								

ATTACHMENT 3

(Revised)
STRUCTURAL ANALYSIS REPORT

For

NORTH CANAAN CT

38 LOWER ROAD
CANAAN, CT 06018

Antennas Mounted on the Tower



Prepared for:

verizon✓

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

Dated: January 9, 2019 (Rev 1)

Dated: November 16, 2018

Prepared by:



HGD | **HUDSON**
Design Group LLC

45 Beechwood Drive
North Andover, MA 01845
(P) 978.557.5553 (F) 978.336.5586
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HUDSON
Design Group LLC

SCOPE OF WORK:

Hudson Design Group LLC (HDG) has been authorized by Verizon to conduct a structural evaluation of the 195' self-supporting tower supporting the proposed Verizon's antennas located at elevation 168' 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 tower structure were not available for our use. The previous structural analysis report prepared by Centek Engineering, dated February 27, 2018, was available and obtained for our use.

CONCLUSION SUMMARY:

Based on our evaluation, we have determined that the existing tower **is in conformance** with the ANSI/TIA-222-G Standard for the loadings considered under the criteria listed in this report. The tower structure is rated at **79.9%** - (Diagonals at Tower Section T6 from EL.120' to EL.140' Controlling).



APPURTENANCES CONFIGURATION:

Tenant	Appurtenances	Elev.	Mount
	6' Dish	188'	Tower Leg
	(4) OTG9-840	184'	Side Mount Standoff
	(1) ANT150D3	184'	Side Mount Standoff
	(1) ANT150F2	183'	Side Mount Standoff
Verizon	(2) LPA-80080-4CF Antennas	168'	T - Frame
Verizon	(4) LPA- LPA-80090/4CF Antennas	168'	T - Frame
Verizon	(4) NHH-65B-R2B Antennas	168'	T - Frame
Verizon	(2) NHH-85B-R2B Antennas	168'	T - Frame
Verizon	(3) B5/B13 RRH-BR04C	168'	T - Frame
Verizon	(3) B2/B66A RRH-BR049	168'	T - Frame
Verizon	(1) RVZDC-6627-PF-48	168'	T - Frame
SPRINT	(3) APXV9ERR18-C Antennas	154'	T - Frame
SPRINT	(3) DT465B-2XR Antennas	154'	T - Frame
SPRINT	(6) RRH-800	154'	T - Frame
SPRINT	(3) RRH-1900	154'	T - Frame
SPRINT	(3) TD-RRH8x20-25	154'	T - Frame
AT&T	(6) Powerwave 7770 Antennas	140'	T - Frame
AT&T	(2) HPA-65R-BUU-H6 Antennas	140'	T - Frame
AT&T	(1) SBNHH-1D65A Antenna	140'	T - Frame
AT&T	(6) TT19-08BP111-001	140'	T - Frame
AT&T	(6) RRUS-11	140'	T - Frame
AT&T	(1) DC6-48-60-18-8F	140'	T - Frame
T-MOBILE	(4) AIR 32 Antennas	125'	T - Frame
T-MOBILE	(4) APXVAA24-43 Antennas	125'	T - Frame
T-MOBILE	(4) APXV18-206517S Antennas	125'	T - Frame
T-MOBILE	(12) RRUS-11	125'	T - Frame
T-MOBILE	(1) SC2-W100AB	125'	T - Frame
	(1) ANT150D3	105'	Side Mount Standoff
	(1) Ice shield	101'	Tower Leg
	(1) PD458-2	98'	Side Mount Standoff
	(1) 6' Dish	97'	Tower Leg
	(1) PD220	78'	Side Mount Standoff
	(1) PD1142	78'	Side Mount Standoff
	(1) BCD-80609	78'	Side Mount Standoff
	(1) 6' Yagi	78'	Side Mount Standoff
	(1) DB222	78'	Side Mount Standoff
	(1) GPS	32'	Side Mount Standoff

***Proposed Verizon Appurtenances shown in Bold.**



VERIZON EXISTING/PROPOSED COAX CABLES:

Tenant	Coax Cables	Elev.	Mount
VERIZON	(12) 1 5/8" Cables	168'	Tower Leg
VERIZON	(1) 1 7/8" Fiber Cable	168'	Tower Leg

**Proposed Verizon Coax Cables shown in Bold.*

ANALYSIS RESULTS SUMMARY:

Component	Max. Stress Ratio	Elev. of Component (ft)	Pass/Fail	Comments
Legs	76.4 %	150 – 160	PASS	
Diagonals	79.9 %	120 – 140	PASS	Controlling
Secondary Horizontal	6.2 %	110 – 120	PASS	
Top Girt	7.7 %	120 – 140	PASS	



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DESIGN CRITERIA:

1. EIA/TIA-222-G Structural Standards for Steel Antenna Towers and Antenna Supporting Structures
2. Connecticut State Building Code
 - County: Litchfield
 - City/Town: Canaan
 - Wind Load: 89 mph
 - Structural Class: III
 - Exposure Category: C
 - Topographic Category: 1
 - Crest Height: 0 ft.
 - Ice Thickness: 1.0 inch
3. Approximate height above grade to proposed antennas: 168'

Calculations and referenced documents are attached

ASSUMPTIONS:

1. The tower dimensions, member sizes and material strength are as indicated in the previous structural analysis report prepared by Centek Engineering, dated February 27, 2018.
2. The appurtenances configuration is as stated in the previous structural analysis report prepared by Centek Engineering, dated February 27, 2018. All antennas, coax cables and waveguide cables are assumed to be properly installed and supported as per the manufacturer's requirements.
3. The tower 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.
6. The foundation of the tower was not checked due to lack of information. As-built foundation drawings and geotechnical report would be required to determine whether the foundation is capable of supporting the proposed loadings.



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SUPPORT RECOMMENDATIONS:

HDG recommends that the proposed antennas, RRHs and OVP box be mounted on the existing T-frame supported by the tower.



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Photo 1: Photo illustrating the Tower with Appurtenances shown.

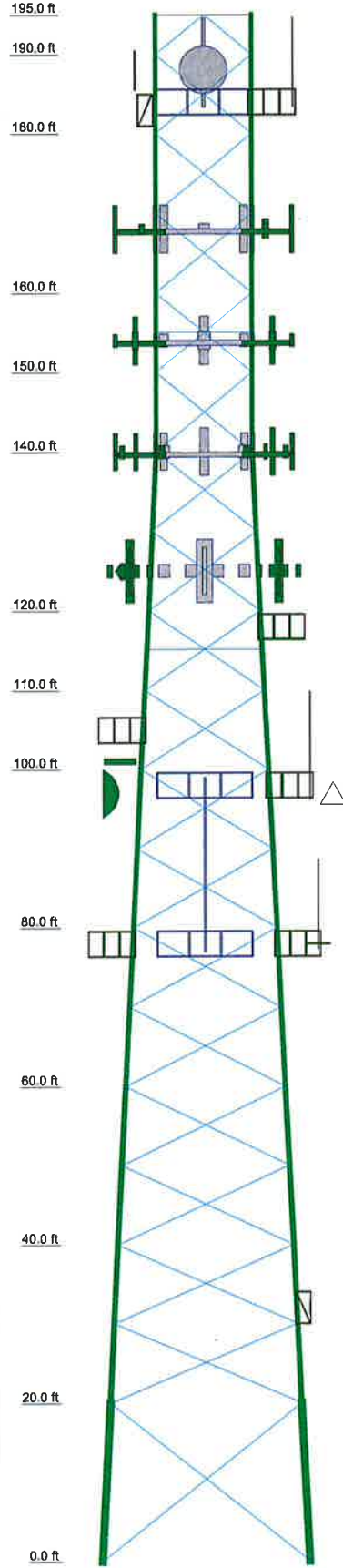


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CALCULATIONS

T1	Pirod 105244	A	12	1 @ 5	900.5
T2	Pirod 105216	B			1091.6
T3	Pirod 105217	N.A.			2108.9
T4	Pirod 105218	N.A.			1670.5
T5	Pirod 105219	N.A.			1425.5
T6	Pirod 105220	N.A.			3859.9
T7	Pirod 105221	N.A.			2140.4
T8	Pirod 105222	N.A.			1686.9
T9	Pirod 105223	N.A.			4265.1
T10	Pirod 105224	N.A.			5210.2
T11	Pirod 105225	N.A.			6937.7
T12	Pirod 105226	N.A.			6906.0
T13	Pirod 105227	N.A.			7967.4

Legs	A572-50
Leg Grade	A36
Diagonals	L3 1/2x3 1/2x5/16
Diagonal Grade	N.A.
Top Girts	L3x3x5/16
Sec. Horizontals	N.A.
Face Width (ft)	26
# Panels @ (ft)	1 @ 20
Weight (lb)	45426.4



DESIGNED APPURTENANCE LOADING

TYPE	ELEVATION	TYPE	ELEVATION
PAR6-59	188	(2) Powerwave 7770 w/mount pipe	140
OTG9-840	184	(2) Powerwave 7770 w/mount pipe	140
Pirod 6-8' Box Arm (1)	184	(2) Powerwave 7770 w/mount pipe	140
OTG9-840	184	HPA-65R-BUU-H6 w/mount pipe	140
OTG9-840	184	HPA-65R-BUU-H6 w/mount pipe	140
Pirod 6-8' Box Arm (1)	184	SBNHH-1D65A w/ Mount Pipe	140
ANT150D3	184	(2) Powerwave TT19-08BP111-001	140
Pirod 6-8' Box Arm (1)	184	(2) Powerwave TT19-08BP111-001	140
OTG9-840	184	(2) Powerwave TT19-08BP111-001	140
3' Side Mount Standoff	183	(2) Ericsson RRUS-11	140
ANT150F2	183	(2) Ericsson RRUS-11	140
PIROD 12' T-Frame (VERIZON - existing)	168	(2) Ericsson RRUS-11	140
PIROD 12' T-Frame	168	DC6-48-60-18-8F	140
PIROD 12' T-Frame	168	Custom 4-sided Sector Mount (T-MOBILE)	125
(2) LPA-80080-4CF w/mount pipe	168	AIR 32 B4A/B2P w/ Mount Pipe	125
(2) LPA-80090-4CF w/Mount Pipe	168	APXVAA24-43-U-A20 w/mount pipe	125
(2) LPA-80090-4CF w/Mount Pipe	168	APXV18-206517S-C w/mount pipe	125
(2) NHH-65B-R2B w/ Mount Pipe (VERIZON - proposed)	168	AIR 32 B4A/B2P w/ Mount Pipe	125
(2) NHH-65B-R2B w/ Mount Pipe	168	APXVAA24-43-U-A20 w/mount pipe	125
(2) NHH-65B-R2B w/ Mount Pipe	168	APXV18-206517S-C w/mount pipe	125
(2) NHH-65B-R2B w/ Mount Pipe	168	AIR 32 B4A/B2P w/ Mount Pipe	125
B5/B13 RRH-BRO4C	168	APXVAA24-43-U-A20 w/mount pipe	125
B5/B13 RRH-BRO4C	168	APXV18-206517S-C w/mount pipe	125
B5/B13 RRH-BRO4C	168	AIR 32 B4A/B2P w/ Mount Pipe	125
B2/B66A RRH-BRO49	168	APXVAA24-43-U-A20 w/mount pipe	125
B2/B66A RRH-BRO49	168	APXV18-206517S-C w/mount pipe	125
B2/B66A RRH-BRO49	168	(4) Ericsson RRUS-11	125
RxxDC-6627-PF-48	168	(4) Ericsson RRUS-11	125
PIROD 12' T-Frame (SPRINT)	154	SC2-W100AB	125
PIROD 12' T-Frame	154	Pirod 6-8' Box Arm (1)	118
PIROD 12' T-Frame	154	ANT150D3	105
APXV9ERR18-C w/mount pipe	154	Pirod 6-8' Box Arm (1)	105
APXV9ERR18-C w/mount pipe	154	Ice shield 4'x8'	101
DT465B-2XR w/ Mount Pipe	154	PD458-2	98
DT465B-2XR w/ Mount Pipe	154	Pirod 6-8' Box Arm (1)	98
DT465B-2XR w/ Mount Pipe	154	Pirod 6-8' Box Arm (1)	98
(2) RRH-800	154	PAR6-59	97
(2) RRH-800	154	Pirod 6-8' Box Arm (1)	78
(2) RRH-800	154	DB222	78
RRH-1900	154	Pirod 6-8' Box Arm (1)	78
RRH-1900	154	PD1142-1	78
RRH-1900	154	Pirod 6-8' Box Arm (1)	78
TD-RRH8x20-25	154	PD220	78
TD-RRH8x20-25	154	6' Yagi	78
TD-RRH8x20-25	154	BCD-80609	78
PIROD 12' T-Frame (AT&T)	140	2' Side Mount Standoff	32
PIROD 12' T-Frame	140	GPS	32
PIROD 12' T-Frame	140		

SYMBOL LIST

MARK	SIZE	MARK	SIZE
A	2L2 1/2x2 1/2x3/16	C	L3 1/2x3 1/2x5/16
B	L2 1/2x2 1/2x3/16		

MATERIAL STRENGTH

GRADE	Fy	Fu	GRADE	Fy	Fu
A572-50	50 ksi	65 ksi	A36	36 ksi	58 ksi

TOWER DESIGN NOTES

1. Tower is located in Litchfield County, Connecticut.
2. Tower designed for Exposure C to the TIA-222-G Standard.
3. Tower designed for a 89 mph basic wind in accordance with the TIA-222-G Standard.
4. Tower is also designed for a 40 mph basic wind with 1.00 in ice. Ice is considered to increase in thickness with height.
5. Deflections are based upon a 60 mph wind.
6. Tower Structure Class III.
7. Topographic Category 1 with Crest Height of 0.00 ft

Hudson Design Group LLC Job: **NORTH CANAAN CT**
 45 Beechwood Drive
 North Andover, MA 01845
 Phone: (978) 557-5553
 FAX: (978) 336-5586

Project: **195 ft Self Supporting Tower**
 Client: VERIZON
 Code: TIA-222-G
 Path:

Drawn by: kw
 Date: 01/09/19

App'd:
 Scale: N
 Dwg No.:

tnxTower Hudson Design Group LLC 45 Beechwood Drive North Andover, MA 01845 Phone: (978) 557-5553 FAX: (978) 336-5586	Job NORTH CANAAN CT	Page 1 of 13
	Project 195 ft Self Supporting Tower	Date 10:44:51 01/09/19
	Client VERIZON	Designed by kw

Tower Input Data

The main tower is a 3x free standing tower with an overall height of 195.00 ft above the ground line.

The base of the tower is set at an elevation of 0.00 ft above the ground line.

The face width of the tower is 12.00 ft at the top and 26.00 ft at the base.

This tower is designed using the TIA-222-G standard.

The following design criteria apply:

Tower is located in Litchfield County, Connecticut.

Basic wind speed of 89 mph.

Structure Class III.

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 pcf.

A wind speed of 40 mph is used in combination with ice.

Temperature drop of 50 °F.

Deflections calculated using a wind speed of 60 mph.

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

Pressures are calculated at each section.

Stress ratio used in tower member design is 1.

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

Tower Section Geometry

Tower Section	Tower Elevation <i>ft</i>	Assembly Database	Description	Section Width <i>ft</i>	Number of Sections	Section Length <i>ft</i>
T1	195.00-190.00			12.00	1	5.00
T2	190.00-180.00			12.00	1	10.00
T3	180.00-160.00			12.00	1	20.00
T4	160.00-150.00			12.00	1	10.00
T5	150.00-140.00			12.00	1	10.00
T6	140.00-120.00			12.00	1	20.00
T7	120.00-110.00			14.00	1	10.00
T8	110.00-100.00			15.00	1	10.00
T9	100.00-80.00			16.00	1	20.00
T10	80.00-60.00			18.00	1	20.00
T11	60.00-40.00			20.00	1	20.00
T12	40.00-20.00			22.00	1	20.00
T13	20.00-0.00			24.00	1	20.00

Tower Section Geometry (cont'd)

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	Client	VERIZON	Designed by	kw

Tower Section	Tower Elevation ft	Diagonal Spacing ft	Bracing Type	Has K Brace End Panels	Has Horizontals	Top Girt Offset in	Bottom Girt Offset in
T1	195.00-190.00	5.00	K Brace Down	No	Yes	0.0000	0.0000
T2	190.00-180.00	10.00	X Brace	No	No	0.0000	0.0000
T3	180.00-160.00	10.00	X Brace	No	No	0.0000	0.0000
T4	160.00-150.00	10.00	X Brace	No	Yes	0.0000	0.0000
T5	150.00-140.00	10.00	X Brace	No	No	0.0000	0.0000
T6	140.00-120.00	10.00	X Brace	No	No	0.0000	0.0000
T7	120.00-110.00	10.00	X Brace	No	Yes	0.0000	0.0000
T8	110.00-100.00	10.00	X Brace	No	No	0.0000	0.0000
T9	100.00-80.00	10.00	X Brace	No	No	0.0000	0.0000
T10	80.00-60.00	10.00	X Brace	No	No	0.0000	0.0000
T11	60.00-40.00	10.00	X Brace	No	No	0.0000	0.0000
T12	40.00-20.00	10.00	X Brace	No	No	0.0000	0.0000
T13	20.00-0.00	20.00	X Brace	No	No	0.0000	0.0000

Tower Section Geometry (cont'd)

Tower Elevation ft	Leg Type	Leg Size	Leg Grade	Diagonal Type	Diagonal Size	Diagonal Grade
T1 195.00-190.00	Truss Leg	Pirod 105244	A572-50 (50 ksi)	Double Equal Angle	2L2 1/2x2 1/2x3/16	A36 (36 ksi)
T2 190.00-180.00	Truss Leg	Pirod 105244	A572-50 (50 ksi)	Equal Angle	L2 1/2x2 1/2x3/16	A36 (36 ksi)
T3 180.00-160.00	Truss Leg	Pirod 105216	A572-50 (50 ksi)	Equal Angle	L3x3x3/16	A36 (36 ksi)
T4 160.00-150.00	Truss Leg	Pirod 105217	A572-50 (50 ksi)	Equal Angle	L3x3x5/16	A36 (36 ksi)
T5 150.00-140.00	Truss Leg	Pirod 105217	A572-50 (50 ksi)	Equal Angle	L3x3x5/16	A36 (36 ksi)
T6 140.00-120.00	Truss Leg	Pirod 105218	A572-50 (50 ksi)	Equal Angle	L3x3x5/16	A36 (36 ksi)
T7 120.00-110.00	Truss Leg	Pirod 105218	A572-50 (50 ksi)	Equal Angle	L3 1/2x3 1/2x5/16	A36 (36 ksi)
T8 110.00-100.00	Truss Leg	Pirod 105218	A572-50 (50 ksi)	Equal Angle	L3 1/2x3 1/2x5/16	A36 (36 ksi)
T9 100.00-80.00	Truss Leg	Pirod 105219	A572-50 (50 ksi)	Equal Angle	L4x4x1/4	A36 (36 ksi)
T10 80.00-60.00	Truss Leg	Pirod 105219	A572-50 (50 ksi)	Equal Angle	L4x4x3/8	A36 (36 ksi)
T11 60.00-40.00	Truss Leg	Pirod 105220	A572-50 (50 ksi)	Equal Angle	L5x5x3/8	A36 (36 ksi)
T12 40.00-20.00	Truss Leg	Pirod 105220	A572-50 (50 ksi)	Equal Angle	L5x5x3/8	A36 (36 ksi)
T13 20.00-0.00	Truss Leg	Pirod 112738	A572-50 (50 ksi)	Double Equal Angle	2L3 1/2x3 1/2x5/16	A36 (36 ksi)

Tower Section Geometry (cont'd)

Tower Elevation ft	Top Girt Type	Top Girt Size	Top Girt Grade	Bottom Girt Type	Bottom Girt Size	Bottom Girt Grade
T6 140.00-120.00	Equal Angle	L3x3x5/16	A36 (36 ksi)	Equal Angle		A36 (36 ksi)

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	Client	VERIZON	Designed by	kw

Tower Section Geometry (cont'd)

Tower Elevation ft	No. of Mid Girts	Mid Girt Type	Mid Girt Size	Mid Girt Grade	Horizontal Type	Horizontal Size	Horizontal Grade
T1 195.00-190.00	None	Equal Angle		A36 (36 ksi)	Double Equal Angle	2L2 1/2x2 1/2x3/16	A36 (36 ksi)

Tower Section Geometry (cont'd)

Tower Elevation ft	Secondary Horizontal Type	Secondary Horizontal Size	Secondary Horizontal Grade	Inner Bracing Type	Inner Bracing Size	Inner Bracing Grade
T4 160.00-150.00	Equal Angle	L3x3x5/16	A36 (36 ksi)	Single Angle		A36 (36 ksi)
T7 120.00-110.00	Equal Angle	L3 1/2x3 1/2x5/16	A36 (36 ksi)	Single Angle		A36 (36 ksi)

Feed Line/Linear Appurtenances - Entered As Round Or Flat

Description	Face or Leg	Allow Shield	Exclude From Torque Calculation	Component Type	Placement ft	Total Number	Number Per Row	Clear Spacing in	Width or Diameter in	Perimeter in	Weight plf
WE65	A	No	Yes	Ar (CaAa)	188.00 - 8.00	1	1	0.0000	1.5836		0.53
1 5/8	A	No	Yes	Ar (CaAa)	184.00 - 8.00	1	1	0.0000	1.9800		1.04
7/8	A	No	Yes	Ar (CaAa)	184.00 - 8.00	4	4	0.0000	1.1100		0.54

1 5/8	B	No	Yes	Ar (CaAa)	183.00 - 8.00	1	1	0.0000	1.9800		1.04
1 1/4 Fiber Cable	B	No	Yes	Ar (CaAa)	154.00 - 8.00	4	4	0.0000	1.5500		0.66
1 5/8	B	No	Yes	Ar (CaAa)	140.00 - 8.00	12	6	0.0000	1.9800		1.04
WR-VG122ST-BRD A	B	No	Yes	Ar (CaAa)	140.00 - 8.00	2	2	0.0000	0.4000		0.25
FB-L98B-002	B	No	Yes	Ar (CaAa)	140.00 - 8.00	1	1	0.0000	0.4000		0.25
1 5/8 Fiber Cable	B	No	Yes	Ar (CaAa)	125.00 - 8.00	4	4	0.0000	1.9800		1.04
1/2	B	No	Yes	Ar (CaAa)	125.00 - 8.00	1	1	0.0000	0.5800		0.25
7/8	B	No	Yes	Ar (CaAa)	98.00 - 8.00	1	1	0.0000	1.1100		0.54
7/8	B	No	Yes	Ar (CaAa)	105.00 - 8.00	1	1	0.0000	1.1100		0.54
7/8	A	No	Yes	Ar (CaAa)	98.00 - 8.00	1	1	0.0000	1.1100		0.54
WE65	A	No	Yes	Ar (CaAa)	97.00 - 8.00	1	1	0.0000	1.5836		0.53
1 5/8	A	No	Yes	Ar (CaAa)	78.00 - 8.00	1	1	0.0000	1.9800		1.04
7/8	A	No	Yes	Ar (CaAa)	78.00 - 8.00	1	1	0.0000	1.1100		0.54
1/2	A	No	Yes	Ar (CaAa)	78.00 - 8.00	3	3	0.0000	0.5800		0.25
1/2	A	No	Yes	Ar (CaAa)	32.00 - 8.00	1	1	0.0000	0.5800		0.25

1 5/8 (Verizon - existing)	C	No	Yes	Ar (CaAa)	168.00 - 8.00	12	8	0.0000	1.9800		1.04

1 7/8 Fiber Cable (Verizon - proposed)	C	No	Yes	Ar (CaAa)	168.00 - 8.00	1	1	0.0000	2.2500		1.04

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	Client	VERIZON	Designed by	kw

Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets:		Azimuth Adjustment	Placement	C _{AA} Front	C _{AA} Side	Weight
			Horz Lateral	Vert					
OTG9-840	A	From Leg	6.00	0.0000	184.00	No Ice	3.41	3.41	22.00
			0.00			1/2" Ice	4.58	4.58	46.71
			5.00			1" Ice	5.77	5.77	78.82
OTG9-840	A	From Leg	6.00	0.0000	184.00	No Ice	3.41	3.41	22.00
			0.00			1/2" Ice	4.58	4.58	46.71
			5.00			1" Ice	5.77	5.77	78.82
Pirod 6-8' Box Arm (1)	A	From Leg	3.00	0.0000	184.00	No Ice	4.50	4.50	214.00
			0.00			1/2" Ice	9.87	9.87	275.00
			0.00			1" Ice	15.24	15.24	336.00
OTG9-840	B	From Leg	6.00	0.0000	184.00	No Ice	3.41	3.41	22.00
			0.00			1/2" Ice	4.58	4.58	46.71
			5.00			1" Ice	5.77	5.77	78.82
OTG9-840	B	From Leg	6.00	0.0000	184.00	No Ice	3.41	3.41	22.00
			0.00			1/2" Ice	4.58	4.58	46.71
			5.00			1" Ice	5.77	5.77	78.82
Pirod 6-8' Box Arm (1)	B	From Leg	3.00	0.0000	184.00	No Ice	4.50	4.50	214.00
			0.00			1/2" Ice	9.87	9.87	275.00
			0.00			1" Ice	15.24	15.24	336.00
ANT150D3	C	From Leg	6.00	0.0000	184.00	No Ice	1.60	1.60	18.00
			0.00			1/2" Ice	2.88	2.88	23.40
			5.00			1" Ice	4.16	4.16	28.80
Pirod 6-8' Box Arm (1)	B	From Leg	3.00	0.0000	184.00	No Ice	4.50	4.50	214.00
			0.00			1/2" Ice	9.87	9.87	275.00
			0.00			1" Ice	15.24	15.24	336.00
ANT150F2	C	From Leg	3.00	0.0000	183.00	No Ice	1.29	1.29	7.00
			0.00			1/2" Ice	1.60	1.60	17.28
			5.00			1" Ice	1.91	1.91	31.06
3' Side Mount Standoff	C	From Leg	1.50	0.0000	183.00	No Ice	1.50	1.50	45.00
			0.00			1/2" Ice	2.20	2.20	70.00
			0.00			1" Ice	2.90	2.90	95.00
Pirod 6-8' Box Arm (1)	B	From Leg	3.00	0.0000	118.00	No Ice	4.50	4.50	214.00
			0.00			1/2" Ice	9.87	9.87	275.00
			0.00			1" Ice	15.24	15.24	336.00
ANT150D3	C	From Leg	6.00	0.0000	105.00	No Ice	1.60	1.60	18.00
			0.00			1/2" Ice	2.88	2.88	23.40
			5.00			1" Ice	4.16	4.16	28.80
Pirod 6-8' Box Arm (1)	C	From Leg	3.00	0.0000	105.00	No Ice	4.50	4.50	214.00
			0.00			1/2" Ice	9.87	9.87	275.00
			0.00			1" Ice	15.24	15.24	336.00
Ice shield 4'x8'	C	From Leg	3.00	0.0000	101.00	No Ice	7.20	4.50	550.00
			0.00			1/2" Ice	7.79	4.89	787.55
			0.00			1" Ice	8.38	5.28	1035.98
Pirod 6-8' Box Arm (1)	A	From Leg	3.00	0.0000	98.00	No Ice	4.50	4.50	214.00
			0.00			1/2" Ice	9.87	9.87	275.00
			0.00			1" Ice	15.24	15.24	336.00
PD458-2	B	From Leg	6.00	0.0000	98.00	No Ice	3.40	3.40	22.00
			0.00			1/2" Ice	4.79	4.79	47.24
			5.00			1" Ice	6.20	6.20	81.19
Pirod 6-8' Box Arm (1)	B	From Leg	3.00	0.0000	98.00	No Ice	4.50	4.50	214.00
			0.00			1/2" Ice	9.87	9.87	275.00
			0.00			1" Ice	15.24	15.24	336.00
PD220	A	From Leg	6.00	0.0000	78.00	No Ice	3.08	3.08	23.00
			0.00			1/2" Ice	5.30	5.30	48.68
			10.00			1" Ice	7.54	7.54	88.10

tnxTower Hudson Design Group LLC 45 Beechwood Drive North Andover, MA 01845 Phone: (978) 557-5553 FAX: (978) 336-5586	Job	NORTH CANAAN CT	Page	5 of 13
	Project	195 ft Self Supporting Tower	Date	10:44:51 01/09/19
	Client	VERIZON	Designed by	kw

Description	Face or Leg	Offset Type	Offsets:		Azimuth Adjustment	Placement	C _{AA}		Weight
			Horz	Vert			Front	Side	
			ft	ft	°	ft	ft ²	ft ²	lb
PD1142-1	A	From Leg	6.00	0.00	0.0000	78.00	No Ice 1.32	1.32	10.00
			0.00				1/2" Ice 3.21	3.21	23.85
			-5.00				1" Ice 5.12	5.12	49.42
Pirod 6-8' Box Arm (1)	A	From Leg	3.00	0.00	0.0000	78.00	No Ice 4.50	4.50	214.00
			0.00				1/2" Ice 9.87	9.87	275.00
			0.00				1" Ice 15.24	15.24	336.00
BCD-80609	B	From Leg	6.00	0.00	0.0000	78.00	No Ice 2.95	2.95	27.00
			0.00				1/2" Ice 4.11	4.11	48.79
			5.00				1" Ice 5.29	5.29	77.92
6' Yagi	B	From Leg	6.00	0.00	0.0000	78.00	No Ice 1.20	0.30	35.00
			0.00				1/2" Ice 1.61	0.41	85.85
			0.00				1" Ice 2.04	0.54	142.85
Pirod 6-8' Box Arm (1)	B	From Leg	3.00	0.00	0.0000	78.00	No Ice 4.50	4.50	214.00
			0.00				1/2" Ice 9.87	9.87	275.00
			0.00				1" Ice 15.24	15.24	336.00
DB222	C	From Leg	6.00	0.00	0.0000	78.00	No Ice 1.60	1.60	16.00
			0.00				1/2" Ice 2.88	2.88	20.80
			7.00				1" Ice 4.16	4.16	25.60
Pirod 6-8' Box Arm (1)	C	From Leg	3.00	0.00	0.0000	78.00	No Ice 4.50	4.50	214.00
			0.00				1/2" Ice 9.87	9.87	275.00
			0.00				1" Ice 15.24	15.24	336.00
GPS	B	From Leg	2.00	0.00	0.0000	32.00	No Ice 0.21	0.21	5.00
			0.00				1/2" Ice 0.31	0.31	7.52
			0.00				1" Ice 0.42	0.42	11.31
2' Side Mount Standoff	B	From Leg	1.00	0.00	0.0000	32.00	No Ice 1.00	1.00	30.00
			0.00				1/2" Ice 1.50	1.50	50.00
			0.00				1" Ice 2.00	2.00	70.00

PIROD 12' T-Frame (VERIZON - existing)	A	From Leg	2.00	0.00	0.0000	168.00	No Ice 12.20	12.20	360.00
			0.00				1/2" Ice 17.60	17.60	490.00
			0.00				1" Ice 23.00	23.00	620.00
PIROD 12' T-Frame	B	From Leg	2.00	0.00	0.0000	168.00	No Ice 12.20	12.20	360.00
			0.00				1/2" Ice 17.60	17.60	490.00
			0.00				1" Ice 23.00	23.00	620.00
PIROD 12' T-Frame	C	From Leg	2.00	0.00	0.0000	168.00	No Ice 12.20	12.20	360.00
			0.00				1/2" Ice 17.60	17.60	490.00
			0.00				1" Ice 23.00	23.00	620.00
(2) LPA-80080-4CF w/mount pipe	A	From Leg	3.00	0.00	0.0000	168.00	No Ice 2.87	6.59	30.25
			0.00				1/2" Ice 3.24	7.22	76.66
			0.00				1" Ice 3.62	7.87	129.00
(2) LPA-80090/4CF w/Mount Pipe	B	From Leg	3.00	0.00	0.0000	168.00	No Ice 3.35	5.71	36.55
			0.00				1/2" Ice 3.97	6.74	81.55
			0.00				1" Ice 4.47	7.49	132.66
(2) LPA-80090/4CF w/Mount Pipe	C	From Leg	3.00	0.00	0.0000	168.00	No Ice 3.35	5.71	36.55
			0.00				1/2" Ice 3.97	6.74	81.55
			0.00				1" Ice 4.47	7.49	132.66

(2) NHH-65B-R2B w/ Mount Pipe (VERIZON - proposed)	A	From Leg	3.00	0.00	0.0000	168.00	No Ice 8.32	7.00	69.25
			0.00				1/2" Ice 8.88	8.19	137.80
			0.00				1" Ice 9.40	9.08	214.31
(2) NHH-65B-R2B w/ Mount Pipe	B	From Leg	3.00	0.00	0.0000	168.00	No Ice 8.32	7.00	69.25
			0.00				1/2" Ice 8.88	8.19	137.80
			0.00				1" Ice 9.40	9.08	214.31
(2) NHH-85B-R2B w/ Mount Pipe	C	From Leg	3.00	0.00	0.0000	168.00	No Ice 8.42	7.09	69.25
			0.00				1/2" Ice 8.98	8.27	138.38
			0.00				1" Ice 9.50	9.17	215.54
B5/B13 RRH-BRO4C	A	From Leg	2.00	0.00	0.0000	168.00	No Ice 1.88	1.01	82.00

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	Project	195 ft Self Supporting Tower	Date	10:44:51 01/09/19
	Client	VERIZON	Designed by	kw

Description	Face or Leg	Offset Type	Offsets:		Azimuth Adjustment	Placement	C _{AA} Front	C _{AA} Side	Weight
			Horz	Vert					
			ft	ft	°	ft	ft ²	ft ²	lb
			ft	ft					
			0.00			1/2" Ice	2.05	1.14	98.43
			0.00			1" Ice	2.22	1.28	117.53
B5/B13 RRH-BRO4C	B	From Leg	2.00	0.0000	168.00	No Ice	1.88	1.01	82.00
			0.00			1/2" Ice	2.05	1.14	98.43
			0.00			1" Ice	2.22	1.28	117.53
B5/B13 RRH-BRO4C	C	From Leg	2.00	0.0000	168.00	No Ice	1.88	1.01	82.00
			0.00			1/2" Ice	2.05	1.14	98.43
			0.00			1" Ice	2.22	1.28	117.53
B2/B66A RRH-BRO49	A	From Leg	2.00	0.0000	168.00	No Ice	1.88	1.25	97.50
			0.00			1/2" Ice	2.05	1.39	115.84
			0.00			1" Ice	2.22	1.54	136.97
B2/B66A RRH-BRO49	B	From Leg	2.00	0.0000	168.00	No Ice	1.88	1.25	97.50
			0.00			1/2" Ice	2.05	1.39	115.84
			0.00			1" Ice	2.22	1.54	136.97
B2/B66A RRH-BRO49	C	From Leg	2.00	0.0000	168.00	No Ice	1.88	1.25	97.50
			0.00			1/2" Ice	2.05	1.39	115.84
			0.00			1" Ice	2.22	1.54	136.97
RxxDC-6627-PF-48	B	From Leg	2.00	0.0000	168.00	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

PiROD 12' T-Frame (SPRINT)	A	From Leg	2.00	0.0000	154.00	No Ice	12.20	12.20	360.00
			0.00			1/2" Ice	17.60	17.60	490.00
			0.00			1" Ice	23.00	23.00	620.00
PiROD 12' T-Frame	B	From Leg	2.00	0.0000	154.00	No Ice	12.20	12.20	360.00
			0.00			1/2" Ice	17.60	17.60	490.00
			0.00			1" Ice	23.00	23.00	620.00
PiROD 12' T-Frame	C	From Leg	2.00	0.0000	154.00	No Ice	12.20	12.20	360.00
			0.00			1/2" Ice	17.60	17.60	490.00
			0.00			1" Ice	23.00	23.00	620.00
APXV9ERR18-C w/mount pipe	A	From Leg	3.00	0.0000	154.00	No Ice	8.31	7.85	69.53
			0.00			1/2" Ice	8.85	8.88	143.46
			0.00			1" Ice	9.37	9.78	226.32
APXV9ERR18-C w/mount pipe	B	From Leg	3.00	0.0000	154.00	No Ice	8.31	7.85	69.53
			0.00			1/2" Ice	8.85	8.88	143.46
			0.00			1" Ice	9.37	9.78	226.32
APXV9ERR18-C w/mount pipe	C	From Leg	3.00	0.0000	154.00	No Ice	8.31	7.85	69.53
			0.00			1/2" Ice	8.85	8.88	143.46
			0.00			1" Ice	9.37	9.78	226.32
DT465B-2XR w/ Mount Pipe	A	From Leg	3.00	0.0000	154.00	No Ice	9.35	7.65	83.55
			0.00			1/2" Ice	9.92	8.83	160.12
			0.00			1" Ice	10.46	9.73	244.86
DT465B-2XR w/ Mount Pipe	B	From Leg	3.00	0.0000	154.00	No Ice	9.35	7.65	83.55
			0.00			1/2" Ice	9.92	8.83	160.12
			0.00			1" Ice	10.46	9.73	244.86
DT465B-2XR w/ Mount Pipe	C	From Leg	3.00	0.0000	154.00	No Ice	9.35	7.65	83.55
			0.00			1/2" Ice	9.92	8.83	160.12
			0.00			1" Ice	10.46	9.73	244.86
(2) RRH-800	A	From Leg	3.00	0.0000	154.00	No Ice	2.13	2.76	64.00
			0.00			1/2" Ice	2.32	2.96	91.74
			0.00			1" Ice	2.51	3.18	122.88
(2) RRH-800	B	From Leg	3.00	0.0000	154.00	No Ice	2.13	2.76	64.00
			0.00			1/2" Ice	2.32	2.96	91.74
			0.00			1" Ice	2.51	3.18	122.88
(2) RRH-800	C	From Leg	3.00	0.0000	154.00	No Ice	2.13	2.76	64.00
			0.00			1/2" Ice	2.32	2.96	91.74
			0.00			1" Ice	2.51	3.18	122.88

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	Project	195 ft Self Supporting Tower	Date	10:44:51 01/09/19
	Client	VERIZON	Designed by	kw

Description	Face or Leg	Offset Type	Offsets:		Azimuth Adjustment	Placement	C _{AA}		Weight
			Horz	Vert			Front	Side	
			ft	ft	°	ft	ft ²	ft ²	lb
RRH-1900	A	From Leg	3.00	0.0000	154.00	No Ice	2.32	3.14	60.00
			0.00			1/2" Ice	2.53	3.36	88.32
			0.00			1" Ice	2.74	3.60	120.15
RRH-1900	B	From Leg	3.00	0.0000	154.00	No Ice	2.32	3.14	60.00
			0.00			1/2" Ice	2.53	3.36	88.32
			0.00			1" Ice	2.74	3.60	120.15
RRH-1900	C	From Leg	3.00	0.0000	154.00	No Ice	2.32	3.14	60.00
			0.00			1/2" Ice	2.53	3.36	88.32
			0.00			1" Ice	2.74	3.60	120.15
TD-RRH8x20-25	A	From Leg	3.00	0.0000	154.00	No Ice	4.05	1.53	70.00
			0.00			1/2" Ice	4.30	1.71	97.15
			0.00			1" Ice	4.56	1.90	127.83
TD-RRH8x20-25	B	From Leg	3.00	0.0000	154.00	No Ice	4.05	1.53	70.00
			0.00			1/2" Ice	4.30	1.71	97.15
			0.00			1" Ice	4.56	1.90	127.83
TD-RRH8x20-25	C	From Leg	3.00	0.0000	154.00	No Ice	4.05	1.53	70.00
			0.00			1/2" Ice	4.30	1.71	97.15
			0.00			1" Ice	4.56	1.90	127.83

PiROD 12' T-Frame (A&T)	A	From Leg	2.00	0.0000	140.00	No Ice	12.20	12.20	360.00
			0.00			1/2" Ice	17.60	17.60	490.00
			0.00			1" Ice	23.00	23.00	620.00
PiROD 12' T-Frame	B	From Leg	2.00	0.0000	140.00	No Ice	12.20	12.20	360.00
			0.00			1/2" Ice	17.60	17.60	490.00
			0.00			1" Ice	23.00	23.00	620.00
PiROD 12' T-Frame	C	From Leg	2.00	0.0000	140.00	No Ice	12.20	12.20	360.00
			0.00			1/2" Ice	17.60	17.60	490.00
			0.00			1" Ice	23.00	23.00	620.00
(2) Powerwave 7770 w/mount pipe	A	From Leg	3.00	0.0000	140.00	No Ice	5.65	4.10	57.25
			0.00			1/2" Ice	6.03	4.75	103.17
			0.00			1" Ice	6.42	5.42	155.38
(2) Powerwave 7770 w/mount pipe	B	From Leg	3.00	0.0000	140.00	No Ice	5.65	4.10	57.25
			0.00			1/2" Ice	6.03	4.75	103.17
			0.00			1" Ice	6.42	5.42	155.38
(2) Powerwave 7770 w/mount pipe	C	From Leg	3.00	0.0000	140.00	No Ice	5.65	4.10	57.25
			0.00			1/2" Ice	6.03	4.75	103.17
			0.00			1" Ice	6.42	5.42	155.38
HPA-65R-BUU-H6 w/mount pipe	A	From Leg	3.00	0.0000	140.00	No Ice	9.72	7.15	68.55
			0.00			1/2" Ice	10.29	8.33	144.37
			0.00			1" Ice	10.83	9.23	228.36
HPA-65R-BUU-H6 w/mount pipe	B	From Leg	3.00	0.0000	140.00	No Ice	9.72	7.15	68.55
			0.00			1/2" Ice	10.29	8.33	144.37
			0.00			1" Ice	10.83	9.23	228.36
SBNHH-1D65A w/ Mount Pipe	C	From Leg	3.00	0.0000	140.00	No Ice	6.28	5.34	55.90
			0.00			1/2" Ice	6.76	6.20	111.21
			0.00			1" Ice	7.22	6.93	173.23
(2) Powerwave TT19-08BP111-001	A	From Leg	3.00	0.0000	140.00	No Ice	0.55	0.45	16.00
			0.00			1/2" Ice	0.65	0.53	21.80
			0.00			1" Ice	0.75	0.63	29.22
(2) Powerwave TT19-08BP111-001	B	From Leg	3.00	0.0000	140.00	No Ice	0.55	0.45	16.00
			0.00			1/2" Ice	0.65	0.53	21.80
			0.00			1" Ice	0.75	0.63	29.22
(2) Powerwave TT19-08BP111-001	C	From Leg	3.00	0.0000	140.00	No Ice	0.55	0.45	16.00
			0.00			1/2" Ice	0.65	0.53	21.80
			0.00			1" Ice	0.75	0.63	29.22
(2) Ericsson RRUS-11	A	From Leg	2.00	0.0000	140.00	No Ice	2.79	1.19	50.70
			0.00			1/2" Ice	3.00	1.34	71.57

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	Project	195 ft Self Supporting Tower	Date	10:44:51 01/09/19
	Client	VERIZON	Designed by	kw

Description	Face or Leg	Offset Type	Offsets:		Azimuth Adjustment	Placement	C _{AA} Front	C _{AA} Side	Weight
			Horz	Lateral					
			ft	ft					
			0.00						95.48
(2) Ericsson RRUS-11	B	From Leg	2.00		0.0000	140.00	1" Ice 3.21	1.50	50.70
			0.00				No Ice 2.79	1.19	71.57
			0.00				1/2" Ice 3.00	1.34	95.48
(2) Ericsson RRUS-11	C	From Leg	2.00		0.0000	140.00	1" Ice 3.21	1.50	50.70
			0.00				No Ice 2.79	1.19	71.57
			0.00				1/2" Ice 3.00	1.34	95.48
DC6-48-60-18-8F	B	From Leg	2.00		0.0000	140.00	1" Ice 3.21	1.50	20.00
			0.00				No Ice 0.79	0.79	35.12
			0.00				1/2" Ice 1.27	1.27	52.57
			0.00				1" Ice 1.45	1.45	

Custom 4-sided Sector Mount (T-MOBILE)	A	None			0.0000	125.00	No Ice 36.00	36.00	3000.00
							1/2" Ice 42.00	42.00	3300.00
							1" Ice 48.00	48.00	3600.00
AIR 32 B4A/B2P w/ Mount Pipe	A	From Leg	3.00		0.0000	125.00	No Ice 6.81	6.14	127.90
			0.00				1/2" Ice 7.30	6.99	189.61
			0.00				1" Ice 7.76	7.73	258.26
APXVAA24-43-U-A20 w/mount pipe	A	From Leg	3.00		0.0000	125.00	No Ice 20.50	10.88	134.25
			0.00				1/2" Ice 21.26	12.41	269.87
			0.00				1" Ice 22.02	13.96	416.30
APXV18-206517S-C w/mount pipe	A	From Leg	3.00		0.0000	125.00	No Ice 5.40	4.70	51.95
			0.00				1/2" Ice 5.96	5.86	97.04
			0.00				1" Ice 6.48	6.73	149.52
AIR 32 B4A/B2P w/ Mount Pipe	B	From Leg	3.00		0.0000	125.00	No Ice 6.81	6.14	127.90
			0.00				1/2" Ice 7.30	6.99	189.61
			0.00				1" Ice 7.76	7.73	258.26
APXVAA24-43-U-A20 w/mount pipe	B	From Leg	3.00		0.0000	125.00	No Ice 20.50	10.88	134.25
			0.00				1/2" Ice 21.26	12.41	269.87
			0.00				1" Ice 22.02	13.96	416.30
APXV18-206517S-C w/mount pipe	B	From Leg	3.00		0.0000	125.00	No Ice 5.40	4.70	51.95
			0.00				1/2" Ice 5.96	5.86	97.04
			0.00				1" Ice 6.48	6.73	149.52
AIR 32 B4A/B2P w/ Mount Pipe	C	From Leg	3.00		0.0000	125.00	No Ice 6.81	6.14	127.90
			0.00				1/2" Ice 7.30	6.99	189.61
			0.00				1" Ice 7.76	7.73	258.26
APXVAA24-43-U-A20 w/mount pipe	C	From Leg	3.00		0.0000	125.00	No Ice 20.50	10.88	134.25
			0.00				1/2" Ice 21.26	12.41	269.87
			0.00				1" Ice 22.02	13.96	416.30
APXV18-206517S-C w/mount pipe	C	From Leg	3.00		0.0000	125.00	No Ice 5.40	4.70	51.95
			0.00				1/2" Ice 5.96	5.86	97.04
			0.00				1" Ice 6.48	6.73	149.52
AIR 32 B4A/B2P w/ Mount Pipe	A	From Leg	3.00		0.0000	125.00	No Ice 6.81	6.14	127.90
			0.00				1/2" Ice 7.30	6.99	189.61
			0.00				1" Ice 7.76	7.73	258.26
APXVAA24-43-U-A20 w/mount pipe	A	From Leg	3.00		0.0000	125.00	No Ice 20.50	10.88	134.25
			0.00				1/2" Ice 21.26	12.41	269.87
			0.00				1" Ice 22.02	13.96	416.30
APXV18-206517S-C w/mount pipe	A	From Leg	3.00		0.0000	125.00	No Ice 5.40	4.70	51.95
			0.00				1/2" Ice 5.96	5.86	97.04
			0.00				1" Ice 6.48	6.73	149.52
(4) Ericsson RRUS-11	A	From Leg	3.00		0.0000	125.00	No Ice 2.79	1.19	50.70
			0.00				1/2" Ice 3.00	1.34	71.57
			0.00				1" Ice 3.21	1.50	95.48
(4) Ericsson RRUS-11	B	From Leg	3.00		0.0000	125.00	No Ice 2.79	1.19	50.70
			0.00				1/2" Ice 3.00	1.34	71.57
			0.00				1" Ice 3.21	1.50	95.48
(4) Ericsson RRUS-11	C	From Leg	3.00		0.0000	125.00	No Ice 2.79	1.19	50.70

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	Client	VERIZON	Designed by	kw

Description	Face or Leg	Offset Type	Offsets:		Azimuth Adjustment	Placement	C _{AA} Front	C _{AA} Side	Weight
			Horz	Lateral					
			ft	ft	°	ft	ft ²	ft ²	lb
			0.00			1/2" Ice	3.00	1.34	71.57
			0.00			1" Ice	3.21	1.50	95.48

Dishes

Description	Face or Leg	Dish Type	Offset Type	Offsets:		Azimuth Adjustment	3 dB Beam Width	Elevation	Outside Diameter	Aperture Area	Weight	
				Horz	Lateral							
				ft	ft	°	°	ft	ft	ft ²	lb	
SC2-W100AB	C	Paraboloid w/Radome	From Leg	3.00	0.0000			125.00	2.20	No Ice	3.80	22.00
				0.00						1/2" Ice	4.10	40.00
				0.00						1" Ice	4.40	58.00
PAR6-59	C	Paraboloid w/o Radome	From Leg	3.00	0.0000			97.00	6.00	No Ice	28.27	143.00
				0.00						1/2" Ice	29.05	292.13
				0.00						1" Ice	29.83	441.25
PAR6-59	A	Paraboloid w/o Radome	From Leg	3.00	0.0000			188.00	6.00	No Ice	28.27	143.00
				0.00						1/2" Ice	29.05	292.13
				0.00						1" Ice	29.83	441.25

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

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Comb. No.	Description
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

Tower Mast Reaction Summary

Load Combination	Vertical lb	Shear _x lb	Shear _y lb	Overturning Moment, M _x lb-ft	Overturning Moment, M _y lb-ft	Torque lb-ft
Dead Only	66273.30	-0.00	0.00	1703.95	150.19	-0.00
1.2 Dead+1.6 Wind 0 deg - No Ice	79527.93	1267.28	-76081.43	-8403574.53	-123542.13	5298.64
0.9 Dead+1.6 Wind 0 deg - No Ice	59645.95	1267.28	-76081.48	-8396607.04	-123498.26	5295.11
1.2 Dead+1.6 Wind 30 deg - No Ice	79527.95	37819.78	-64063.57	-7059882.85	-4152469.85	-2999.50
0.9 Dead+1.6 Wind 30 deg - No Ice	59645.94	37819.94	-64063.66	-7054131.56	-4148859.61	-3000.52
1.2 Dead+1.6 Wind 60 deg - No Ice	79527.90	62289.52	-36175.66	-3997731.36	-6857955.32	-11000.13
0.9 Dead+1.6 Wind 60 deg - No Ice	59645.93	62289.38	-36175.57	-3994698.47	-6851935.58	-11002.32
1.2 Dead+1.6 Wind 90 deg - No Ice	79527.94	71544.99	-787.35	-75865.20	-7871853.64	-15379.44
0.9 Dead+1.6 Wind 90 deg - No Ice	59645.95	71545.14	-787.43	-76331.35	-7864933.66	-15379.59
1.2 Dead+1.6 Wind 120 deg - No Ice	79527.93	63466.61	36841.01	4205607.78	-6984439.00	-12441.59
0.9 Dead+1.6 Wind 120 deg - No Ice	59645.95	63466.65	36841.03	4201255.98	-6978293.32	-12440.42
1.2 Dead+1.6 Wind 150 deg - No Ice	79527.94	34646.25	61767.84	6985858.54	-3840065.30	-6530.61
0.9 Dead+1.6 Wind 150 deg - No Ice	59645.95	34646.26	61768.00	6979051.63	-3836685.65	-6528.39
1.2 Dead+1.6 Wind 180 deg - No Ice	79527.89	-156.00	72123.46	8095734.83	15210.85	-1605.66
0.9 Dead+1.6 Wind 180 deg - No Ice	59645.93	-156.00	72123.29	8087966.60	15159.11	-1602.64

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<i>Load Combination</i>	<i>Vertical</i>	<i>Shear_x</i>	<i>Shear_y</i>	<i>Overturning Moment, M_x</i>	<i>Overturning Moment, M_y</i>	<i>Torque</i>
	<i>lb</i>	<i>lb</i>	<i>lb</i>	<i>lb-ft</i>	<i>lb-ft</i>	<i>lb-ft</i>
No Ice						
1.2 Dead+1.6 Wind 210 deg - No Ice	79527.95	-36485.17	64867.50	7220075.49	3979920.44	3119.88
0.9 Dead+1.6 Wind 210 deg - No Ice	59645.94	-36485.16	64867.69	7213124.17	3976370.62	3121.46
1.2 Dead+1.6 Wind 240 deg - No Ice	79527.93	-65151.46	39277.09	4411337.54	7093694.16	7139.67
0.9 Dead+1.6 Wind 240 deg - No Ice	59645.95	-65151.50	39277.11	4406850.07	7087400.55	7142.67
1.2 Dead+1.6 Wind 270 deg - No Ice	79527.95	-71060.96	36.56	4471.83	7824055.47	9652.81
0.9 Dead+1.6 Wind 270 deg - No Ice	59645.95	-71061.10	36.48	3951.37	7817086.25	9653.06
1.2 Dead+1.6 Wind 300 deg - No Ice	79527.91	-59246.55	-34238.66	-3840229.37	6615574.60	12604.86
0.9 Dead+1.6 Wind 300 deg - No Ice	59645.94	-59246.43	-34238.59	-3837298.37	6609629.27	12604.08
1.2 Dead+1.6 Wind 330 deg - No Ice	79527.95	-35099.30	-60913.96	-6820432.64	3926083.60	12135.03
0.9 Dead+1.6 Wind 330 deg - No Ice	59645.95	-35099.42	-60914.04	-6814830.01	3922536.36	12132.66
1.2 Dead+1.0 Ice+1.0 Temp	309136.76	-0.00	0.00	-11895.73	-6974.64	-1.68
1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp	309136.76	157.12	-18364.73	-2085018.46	-22605.59	4060.17
1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp	309136.76	9214.95	-15782.67	-1790963.46	-1043143.68	2575.12
1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp	309136.76	15701.18	-9091.51	-1036552.39	-1772647.57	378.65
1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp	309136.76	17974.48	-97.28	-21547.17	-2031015.53	-1835.84
1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp	309136.76	15691.99	9084.75	1029836.58	-1774275.97	-3202.51
1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp	309136.76	8845.68	15537.48	1759780.70	-1006429.18	-3756.50
1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp	309136.76	-18.98	18045.93	2038408.34	-5260.69	-3613.53
1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp	309136.76	-9048.87	15880.64	1785855.29	1007668.42	-2575.54
1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp	309136.76	-15904.75	9389.01	1055307.90	1773174.66	-859.89
1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp	309136.76	-17912.58	4.68	-11507.44	2010556.48	1138.94
1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp	309136.76	-15317.44	-8848.05	-1016994.71	1728257.88	3234.81
1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp	309136.76	-8900.11	-15432.50	-1764152.53	1002264.42	4452.64
Dead+Wind 0 deg - Service	66273.30	313.02	-18792.52	-2073326.01	-30395.20	1309.40
Dead+Wind 30 deg - Service	66273.30	9341.66	-15824.02	-1741609.90	-1024988.41	-743.27
Dead+Wind 60 deg - Service	66273.30	15385.69	-8935.49	-985676.39	-1692866.45	-2718.23
Dead+Wind 90 deg - Service	66273.30	17671.96	-194.47	-17519.25	-1943155.02	-3796.89
Dead+Wind 120 deg - Service	66273.30	15676.59	9099.92	1039398.83	-1724090.56	-3072.21
Dead+Wind 150 deg - Service	66273.30	8557.80	15256.95	1725724.58	-947854.40	-1614.57
Dead+Wind 180 deg - Service	66273.30	-38.53	17814.69	1999710.84	3859.97	-395.88
Dead+Wind 210 deg - Service	66273.30	-9012.03	16022.58	1783552.63	982593.69	772.88
Dead+Wind 240 deg - Service	66273.30	-16092.76	9701.65	1090190.72	1751274.65	1762.08
Dead+Wind 270 deg - Service	66273.30	-17552.40	9.04	2312.60	1931558.00	2381.60
Dead+Wind 300 deg - Service	66273.30	-14634.07	-8457.05	-946786.88	1633227.39	3113.49
Dead+Wind 330 deg - Service	66273.30	-8669.68	-15046.05	-1682484.15	969303.53	2999.88

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	Client	VERIZON	Designed by	kw

Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
T1	195 - 190	3.557	39	0.1363	0.0133
T2	190 - 180	3.415	39	0.1363	0.0133
T3	180 - 160	3.126	39	0.1360	0.0121
T4	160 - 150	2.549	39	0.1321	0.0091
T5	150 - 140	2.267	39	0.1284	0.0082
T6	140 - 120	1.994	39	0.1223	0.0072
T7	120 - 110	1.483	39	0.1089	0.0054
T8	110 - 100	1.250	39	0.1001	0.0043
T9	100 - 80	1.038	39	0.0899	0.0035
T10	80 - 60	0.665	39	0.0723	0.0021
T11	60 - 40	0.380	39	0.0519	0.0013
T12	40 - 20	0.177	39	0.0343	0.0008
T13	20 - 0	0.046	39	0.0155	0.0003

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
188.00	PAR6-59	39	3.358	0.1363	0.0132	160074
184.00	OTG9-840	39	3.242	0.1362	0.0128	301882
183.00	ANT150F2	39	3.213	0.1361	0.0126	381340
168.00	PiROD 12' T-Frame	39	2.779	0.1341	0.0102	407040
154.00	PiROD 12' T-Frame	39	2.379	0.1302	0.0085	148969
140.00	PiROD 12' T-Frame	39	1.994	0.1223	0.0072	104717
125.00	SC2-W100AB	39	1.606	0.1126	0.0058	88019
118.00	PiROD 6-8' Box Arm (1)	39	1.435	0.1073	0.0052	72841
105.00	ANT150D3	39	1.141	0.0950	0.0039	63070
101.00	Ice shield 4'x8'	39	1.058	0.0909	0.0036	75458
98.00	PiROD 6-8' Box Arm (1)	39	0.997	0.0880	0.0033	77151
97.00	PAR6-59	39	0.977	0.0871	0.0033	75860
78.00	PD220	39	0.632	0.0704	0.0020	50931
32.00	GPS	39	0.115	0.0268	0.0006	60281

Section Capacity Table

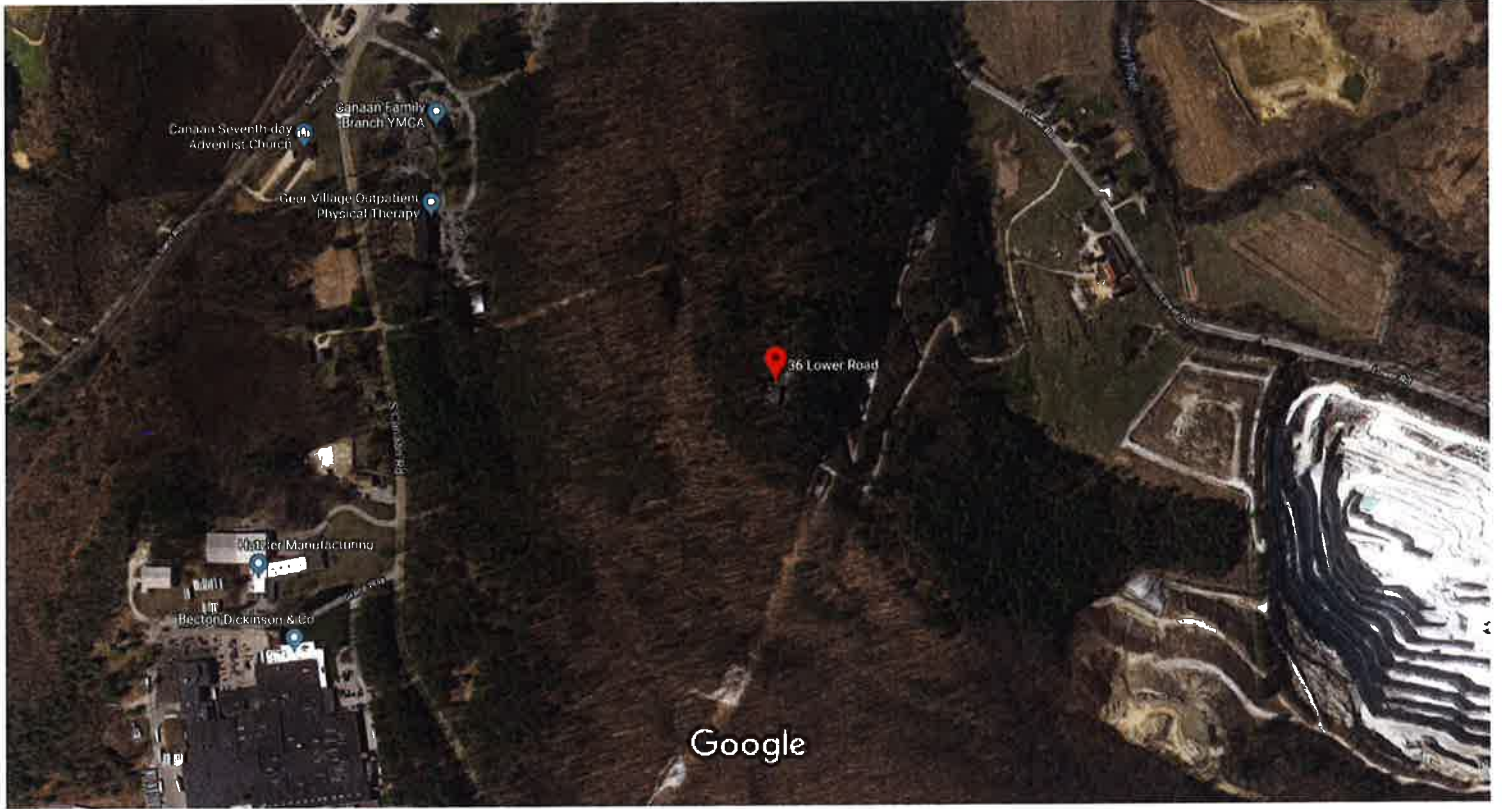
Section No.	Elevation ft	Component Type	Size	Critical Element	P lb	ϕP_{allow} lb	% Capacity	Pass Fail
T1	195 - 190	Leg	PiROD 105244	3	-673.49	142493.00	12.3	Pass
T2	190 - 180	Leg	PiROD 105244	15	-5917.49	142493.00	37.0	Pass
T3	180 - 160	Leg	PiROD 105216	22	-16091.20	142493.00	62.1	Pass
T4	160 - 150	Leg	PiROD 105217	39	-31494.10	214859.00	76.4	Pass
T5	150 - 140	Leg	PiROD 105217	51	-50985.70	214859.00	23.7	Pass
T6	140 - 120	Leg	PiROD 105218	60	-99441.60	300681.00	66.9	Pass
T7	120 - 110	Leg	PiROD 105218	78	-124044.00	300681.00	60.1	Pass
T8	110 - 100	Leg	PiROD 105218	90	-150770.00	300681.00	50.1	Pass
T9	100 - 80	Leg	PiROD 105219	99	-201103.00	399868.00	50.3	Pass
T10	80 - 60	Leg	PiROD 105219	114	-250561.00	399868.00	62.7	Pass

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Section No.	Elevation ft	Component Type	Size	Critical Element	P lb	ϕP_{allow} lb	% Capacity	Pass Fail	
T11	60 - 40	Leg	Pirod 105220	129	-298554.00	512375.00	58.3	Pass	
T12	40 - 20	Leg	Pirod 105220	144	-346917.00	512375.00	67.7	Pass	
T13	20 - 0	Leg	Pirod 112738	159	-370906.00	613145.00	60.5	Pass	
T1	195 - 190	Diagonal	2L2 1/2x2 1/2x3/16	9	-555.78	30691.50	1.8	Pass	
T2	190 - 180	Diagonal	L2 1/2x2 1/2x3/16	18	-1627.04	6764.59	24.1	Pass	
T3	180 - 160	Diagonal	L3x3x3/16	28	-5507.92	11850.70	46.5	Pass	
T4	160 - 150	Diagonal	L3x3x5/16	43	-8535.39	18900.60	45.2	Pass	
T5	150 - 140	Diagonal	L3x3x5/16	55	-10209.60	18900.60	54.0	Pass	
T6	140 - 120	Diagonal	L3x3x5/16	67	-11824.60	14801.00	79.9	Pass	
T7	120 - 110	Diagonal	L3 1/2x3 1/2x5/16	82	-14017.50	21583.50	64.9	Pass	
T8	110 - 100	Diagonal	L3 1/2x3 1/2x5/16	94	-13128.70	19590.60	67.0	Pass	
T9	100 - 80	Diagonal	L4x4x1/4	104	-13807.10	20066.10	68.8	Pass	
T10	80 - 60	Diagonal	L4x4x3/8	119	-14569.10	24438.30	59.6	Pass	
T11	60 - 40	Diagonal	L5x5x3/8	134	-14965.20	41386.20	36.2	Pass	
T12	40 - 20	Diagonal	L5x5x3/8	155	-16443.10	38277.90	43.0	Pass	
T13	20 - 0	Diagonal	2L3 1/2x3 1/2x5/16	163	-23448.30	31069.20	75.5	Pass	
T4	160 - 150	Secondary Horizontal	L3x3x5/16	48	-1011.40	22312.40	4.5	Pass	
T7	120 - 110	Secondary Horizontal	L3 1/2x3 1/2x5/16	86	-1530.04	24674.00	6.2	Pass	
T1	195 - 190	Top Girt	2L2 1/2x2 1/2x3/16	4	-141.49	36194.40	0.7	Pass	
T6	140 - 120	Top Girt	L3x3x5/16	63	-613.73	8006.50	7.7	Pass	
							Summary		
							Leg (T4)	76.4	Pass
							Diagonal (T6)	79.9	Pass
							Secondary Horizontal (T7)	6.2	Pass
							Top Girt (T6)	7.7	Pass
							RATING =	79.9	Pass

ATTACHMENT 4


Google Maps 36 Lower Rd



Imagery ©2019 Google, Map data ©2019 Google 200 ft



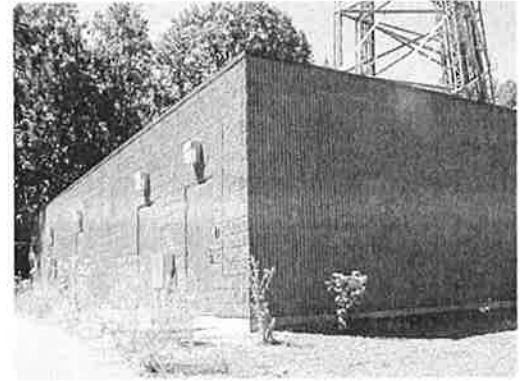
36 Lower Rd
 Canaan, CT 06018

 2M7F+WF North Canaan, Connecticut

qPublic.net™ Town of North Canaan, CT

Summary

Parcel ID 15/086-2
 Account Number 98102063
 Section Plat
 Neighborhood 7 - Commercial
 Property Address Lower Rd 036
 North Canaan, CT 06018
 Legal Description CENSUS TRACT: 2602
 (Note: Not to be used on legal documents)
 Acreage 6.37
 Class 901 - BAAX Municipal
 Tax District/Area 100 - NORTH CANAAN, CT



Owner

Primary Owner
 Litchfield County Dispatch Inc
 452 Bantam Rd
 Litchfield, CT 06759-0000

Land

Lot Dimensions Regular Lot: x
 Lot Area 6.3700 Acres; 277477 SF

Site Description

Topography
 Public Utilities
 Street or Road
 Zoning Residential- Agricultural
 Legal Acres 6.3700
 Legal Sq Ft 277,477

Buildings

Commercial Building
 Primary Use Storage - Maintenance Bldg
 Year Built 1999
 Building Type Storage - Maintenance Bldg:001
 Condition AV - Normal for age
 Exterior Material
 Roof Type 4
 Roof Material
 Interior Walls
 Predominate Floor Covs
 Stories/Floors 1
 Above-Grade Living Area 1804 SF
 Attic Type None
 Number of Rooms 1
 Basement Type
 Basement Area SF
 Basement Finished Area SF
 Number of Bathrooms
 Central Air N
 Heat Type 0 sf
 Porches
 Decks SF
 Garages
 Other Features Cell Tower-Self Supported
 General Purpose Bldg Steel Frame
 General Purpose Bldg Steel Frame
 General Purpose Bldg Steel Frame

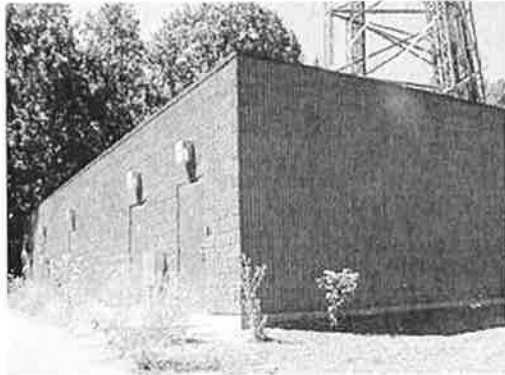
Sales

Date	Grantor	Recording	Type	Amount
12/29/1997	FOLEY THOMAS J JR & DOROTHY	Blk:0084 Pg:984		\$75,000.00

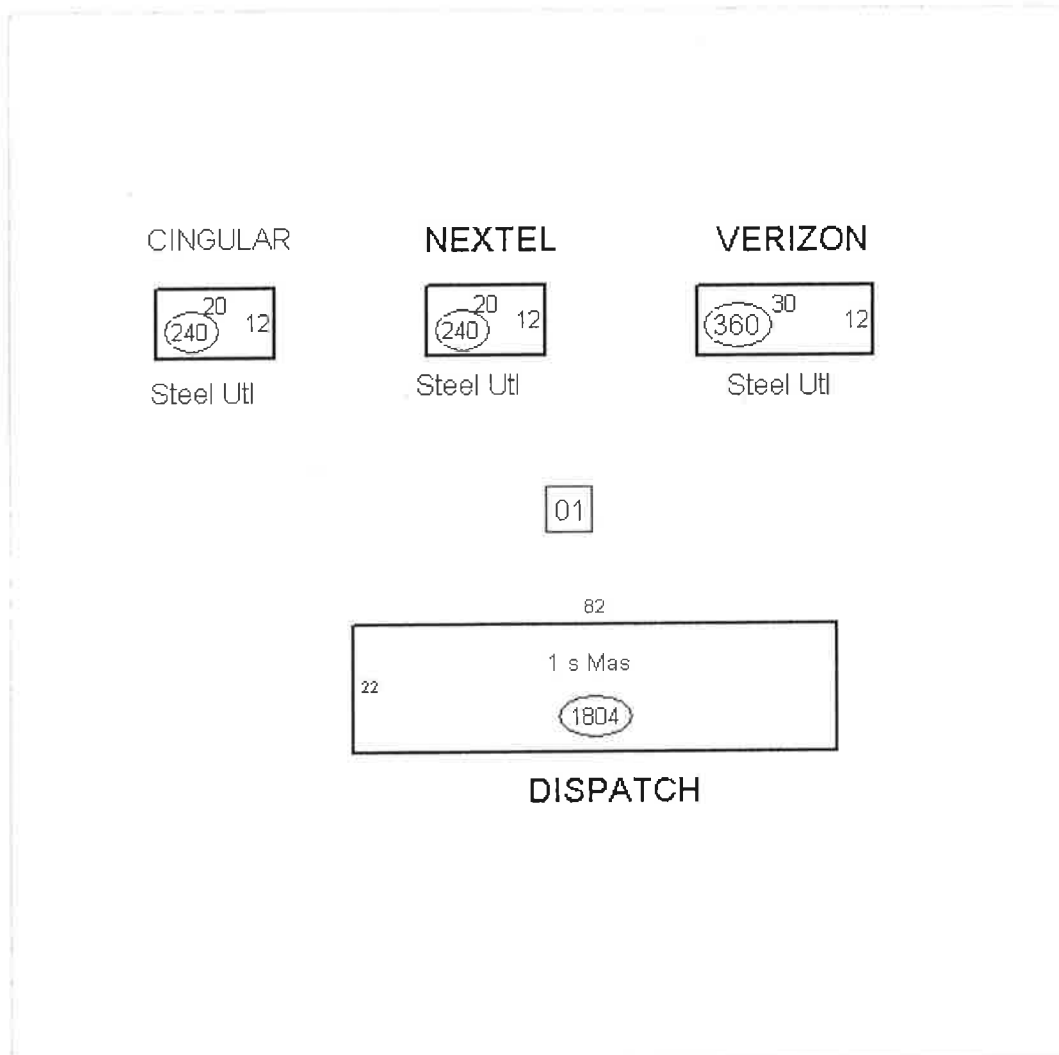
Valuation

Assessment Year		10/01/2017	10/01/2012	10/01/2007
Reason for Change		2017 Reval	2012 REVAL	2007 Reval
VALUATION (Market Value)	Land	\$105,560	\$107,920	\$126,220
	Improvements	\$970,330	\$977,310	\$956,910
	Total	\$1,075,890	\$1,085,230	\$1,083,130
VALUATION (Assessed/Use Value)	Land	\$73,900	\$75,540	\$88,350
	Improvements	\$679,240	\$684,130	\$669,850
	Total	\$753,140	\$759,670	\$758,200

Photos



Sketches



The Town of North Canaan Assessor's Office makes every effort to produce the most accurate information possible. No warranties, expressed or implied, are provided for the data herein, its use or interpretability.

Last Data Upload: 1/17/2019, 8:07:15 PM



ATTACHMENT 5



Certificate of Mailing — Firm

Name and Address of Sender

Kenneth C. Baldwin, Esq.
Robinson & Cole LLP
280 Trumbull Street
Hartford, CT 06103

TOTAL NO.
of Pieces Listed by Sender

3

TOTAL NO.
of Pieces Received at Post Office™

3

Affix Stamp Here
Postmark with Date of Receipt.

reopost
01/25/2019
US POSTAGE \$002.38
ZIP 06103
0471L 12203837

Postmaster, per (name of receiving employee)

[Signature]

USPS® Tracking Number
Firm-specific Identifier

Address
(Name, Street, City, State, and ZIP Code™)

Postage

Fee

Special Handling

Parcel/Airift

1.

Charles P. Perotti, First Selectman
Town of North Canaan
100 Pease Street
North Canaan, CT 06018

2.

Richelle Hodza, Zoning Enforcement Officer
Town of North Canaan
100 Pease Street
North Canaan, CT 06018

3.

Litchfield County Dispatch, Inc.
452 Bantam Road
Litchfield, CT 06759

4.

5.

6.

