Robinson+Cole

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December 26, 2017

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**
48 Newtown Road, Danbury, Connecticut

Dear Ms. Bachman:

Cellco Partnership d/b/a Verizon Wireless ("Cellco") currently maintains twelve (12) antennas at the 90-foot level of an existing 110-foot tower at 48 Newtown Road in Danbury, Connecticut (the "Property"). The tower is owned by MW Cell REIT 1, LLC ("MW Cell"). Cellco's use of the tower was approved by the Council in 1999. Cellco now intends to remove nine (9) of its existing antennas and replace them with six (6) new antennas (three (3) model JAHH-65B-R3B, 700/2100 MHz antennas and three (3) model JAHH-65B-R3B, 850/1900 MHz antennas), for a total of nine (9) antennas all at the same level on the tower. Cellco also intends to replace six (6) remote radio heads ("RRHs") with six (6) newer model RRHs behind its 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 Mayor Mark D. Boughton of the City of Danbury; Sharon B. Calitro, Danbury's Director of Planning and Zoning; 48 Newtown Road Corp., the owner of the Property; and MW Cell, the tower owner.

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

1. The proposed modifications will not result in an increase in the height of the existing tower. Cellco's replacement antennas and RRHs will be installed at the 90-foot level of the 110-foot tower.

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

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

4. The operation of the replacement antennas will not increase radio frequency (RF) emissions at the facility to a level at or above the Federal Communications Commission (FCC) safety standard. Far Field Approximation tables for RF emissions at each of Cellco's operating frequencies, as modified, are included behind Attachment 2. These tables demonstrate that Cellco's modified facility will comply with the RF emissions standards adopted 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:
Mark D. Boughton, Danbury Mayor
Sharon B. Calitro, AICP, Danbury's Director of Planning and Zoning
48 Newtown Road Corp.
MW Cell REIT 1, LLC
Tim Parks

ATTACHMENT 1

Product Specifications

COMMSCOPE®

JAHH-65B-R3B

8-port sector antenna, 2x 698–787, 2x 824-894 and 4x 1695–2360 MHz, 65° HPBW, 3x RET and low bands have diplexers. Internal SBT's on first LB(Port 1) and first HB (Port 5).

- Internal SBT on low and high band allow remote RET control from the radio over the RF jumper cable
- One RET for 700MHz, one RET for 850MHz, and one RET for both high bands to ensure same tilt level for 4x Rx or 4x MIMO
- Internal filter on low band and interleaved dipole technology providing for attractive, low wind load mechanical package
- Separate RS-485 RET input/output for low and high band

Electrical Specifications

Frequency Band, MHz	698–787	824–894	1695–1880	1850–1990	1920–2200	2300–2360
Gain, dBi	14.5	15.8	18.0	18.4	18.5	18.8
Beamwidth, Horizontal, degrees	67	65	63	63	65	68
Beamwidth, Vertical, degrees	12.4	10.5	5.7	5.2	4.9	4.4
Beam Tilt, degrees	2–14	2–14	0–10	0–10	0–10	0–10
USLS (First Lobe), dB	18	18	20	20	21	23
Front-to-Back Ratio at 180°, dB	32	34	31	35	36	38
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	698–787	824–894	1695–1880	1850–1990	1920–2200	2300–2360
Gain by all Beam Tilts, average, dBi	14.3	14.9	17.6	18.1	18.2	18.5
Gain by all Beam Tilts Tolerance, dB	±0.3	±0.5	±0.6	±0.4	±0.5	±0.6
Gain by Beam Tilt, average, dBi	2 ° | 14.3	2 ° | 15.0	0 ° | 17.2	0 ° | 17.6	0 ° | 17.7	0 ° | 17.9
	8 ° | 14.3	8 ° | 14.9	5 ° | 17.6	5 ° | 18.2	5 ° | 18.3	5 ° | 18.7
	14 ° | 14.3	14 ° | 15.4	10 ° | 17.6	10 ° | 18.2	10 ° | 18.3	10 ° | 18.7
Beamwidth, Horizontal Tolerance, degrees	±1.2	±1.4	±4	±2.4	±2.9	±2.7
Beamwidth, Vertical Tolerance, degrees	±0.9	±0.5	±0.3	±0.2	±0.3	±0.1
USLS, beampeak to 20° above beampeak, dB	18	17	17	18	19	18
Front-to-Back Total Power at 180° ± 30°, dB	25	24	26	29	27	29
CPR at Boresight, dB	22	23	20	21	21	24
CPR at Sector, dB	11	12	11	11	11	8

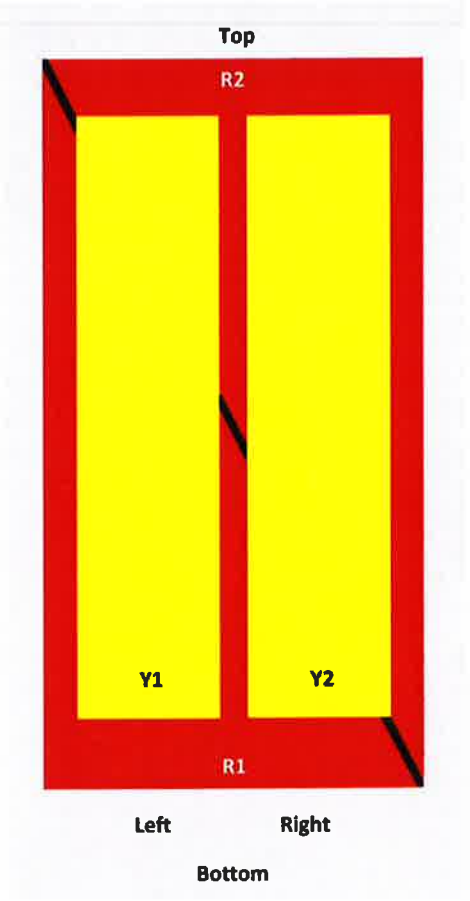
* CommScope® supports NGMN recommendations on Base Station Antenna Standards (BASTA). To learn more about the benefits of BASTA, download the whitepaper Time to Raise the Bar on BSAs.

Product Specifications

JAHH-65B-R3B

Array Layout

JAHH-65A-R3B JAHH-65B-R3B JAHH-65C-R3B



Array	Freq (MHz)	Conns	RET (SRET)	AISG RET UID
R1	698-798	1-2	1	ANxxxxxxxxxxxxxxx1
R2	824-894	3-4	2	ANxxxxxxxxxxxxxxx2
Y1	1695-2360	5-6	3	ANxxxxxxxxxxxxxxx3
Y2	1695-2360	7-8		

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 – 787 MHz | 824 – 894 MHz
Antenna Type	Sector
Band	Multiband
Performance Note	Outdoor usage

Mechanical Specifications

RF Connector Quantity, total	8
RF Connector Quantity, low band	4
RF Connector Quantity, high band	4
RF Connector Interface	4.3-10 Female

Product Specifications

JAHH-65B-R3B

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	746.0 N @ 150 km/h 167.7 lbf @ 150 km/h
Wind Loading, lateral	243.0 N @ 150 km/h 54.6 lbf @ 150 km/h
Wind Loading, rear	776.0 N @ 150 km/h 174.5 lbf @ 150 km/h
Wind Speed, maximum	241 km/h | 150 mph

Dimensions

Length	1828.0 mm | 72.0 in
Width	350.0 mm | 13.8 in
Depth	208.0 mm | 8.2 in
Net Weight, without mounting kit	28.7 kg | 63.3 lb

Remote Electrical Tilt (RET) Information

Input Voltage	10–30 Vdc
Internal Bias Tee	Port 1 | Port 5
Internal RET	High band (1) | Low band (2)
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

Length	1975.0 mm | 77.8 in
Width	456.0 mm | 18.0 in
Depth	357.0 mm | 14.1 in
Shipping Weight	42.0 kg | 92.6 lb

Regulatory Compliance/Certifications

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

Product Specifications

JAHH-65B-R3B

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.

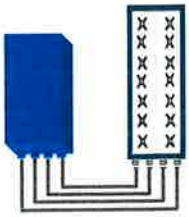
Its compactness and slim design makes the Alcatel-Lucent B13 RRH4x30-4R easy to install close to the antenna: operators can therefore locate this Remote Radio Head where RF design conditions are deemed ideal, minimizing trade-offs between available sites and RF optimum sites, together with reducing the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

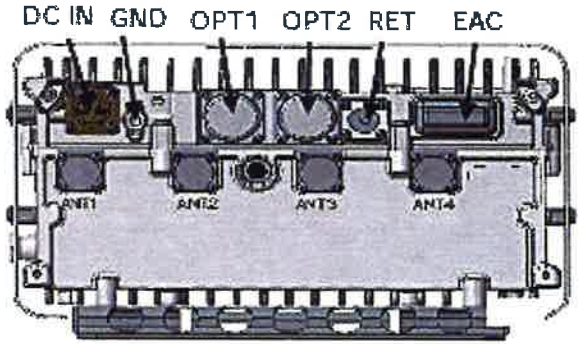
Alcatel·Lucent

TECHNICAL SPECIFICATIONS

Features & performance	
Number of TX/RX paths	4 duplexed (either 4T4R or 2T4R by SW)
Frequency band	U700 (C) (3GPP bands 13): DL: 746 - 756 MHz / UL: 777 - 787 MHz
Instantaneous bandwidth - # carriers	10MHz – 1 LTE carrier (in 10MHz occupied bandwidth)
LTE carrier bandwidth	10 MHz
RF output power	2x60W or 4x30W (by SW)
Noise figure – RX Diversity scheme	2 dB typ. (<2.5 dB max) – 2 or 4 way Rx diversity
Sizes (HxWxD) in mm (in.) Volume in L Weight in kg (lb) (w/o mounting HW)	550 x 305 x 230 (21.6" x 12.0" x 9") (with solar shield) 38 (with solar shield) 26 (57.2) (with solar shield)
DC voltage range DC power consumption	-40.5 to -57V at full performance, -38 to -57V with relaxation on power consumption 550W typical @100% RF load (in 2Tx or 4TX mode)
Environmental conditions Wind load (@150km/h or 93mph)	-40°C (-40°F) /+55°C (+131°F) IP65 Frontal:<200N / Lateral :<150N
Antenna ports	4 ports 7/16 DIN female (50 ohms) VSWR < 1.5
CPRI ports	2 CPRI ports (HW ready for Rate7, 9.8 Gbps) SFP single mode dual fiber
AISG interfaces	1 AISG2.0 output (RS485) Integrated Smart Bias Tees (x2)
Misc. interfaces	4 external alarms (1 connector) – 4 RF Tx & 4 RF Rx monitor ports - 1 DC connector (2 pins)
Installation conditions	Pole and wall mounting
Regulatory compliance	3GPP 36.141 / 3GPP 36.113 / GR-1089-CORE / GR-3108-CORE / UL 60950-1 / FCC Part 27

AHCA AirScale RRH 4T4R B5 160W

Supported Frequency bands	3GPP band 5
Frequencies	DL 869-894MHz, UL 824-849MHz
Number of TX/RX paths/pipes	4TX/4RX
Instantaneous Bandwidth IBW	25MHz (Full Band)
Occupied Bandwidth OBW	25MHz (Full Band)
Output Power	4T4R @ 40W / 2T4R @ 60W
RF Sharing	LTE, WCDMA, LTE + NB-IoT supported
256 QAM Back Off	No backoff at 40W and 0.8dB at 60W.
Supply Voltage / Voltage Range	DC-48V / -36V to -60V
Typical Power Consumption	365W [50% ETSI Busy Hour Load at 4TX @ 40W]
	529W [100% RF Load at 4 TX @ 40W]
	574W [100% RF Load at 4 TX @ 40W with SBT and AISG ON]
Antenna Ports	4 Ports, 4.3-10+
Optical Ports	2x CPRI 9.8 Gbps
ALD Control Interfaces	AISG3.0 from ANT1,2, 3, 4 and RET (Power supply ANT1 and ANT3)
Other Interfaces	External Alarm MDR-26 Serial connector (4 inputs, 1 Output) DC Circular Power Connector



Operational Temperature Range	-40°C to 55°C (with solar cover)
Dimensions (mm) Height x width x depth	337 x 295 x 165 (radio only) 13.3" x 11.7" x 6.5" 428 x 324 x 208 (with bracket and enclosure) 16.9" x 12.8" x 8.2"
Volume (liters)	16.5
Weight (kg)	16/ 35.3 lb – w/o bracket
Ingress protection class	IP65
Installation options	Pole or Wall, Vertical or Horizontal Book Mount
Surge protection	Class II 5kA

NOKIA

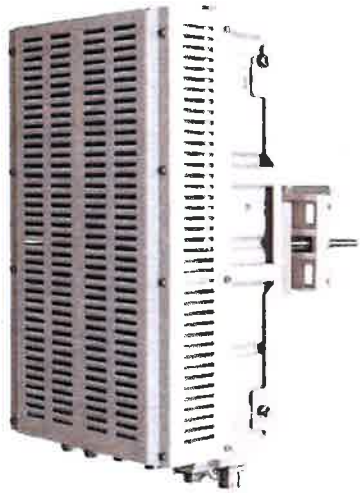
B66a RRH4x45W

Datasheet

Radio Technology FDD-LTE

Feature description:

- Remote Radio Head 4x45W or 2x90W Switchable via SW



Power Output	4 x 45 W or 2x90W (SW Switchable) w/o fans
IBW	70MHz
OBW	60 MHz
RF Sharing	LTE
Mass/Volume	25.8kg/56.9 lb Weight 655H x 299W x 182D mm 25.8"x11.8"x7.2" 29.7L / 35.5L
Antenna Conf.	4Tx/4Rx
Temperature	-40 to 55 °C
IP class	IP65
Input Power	DC 48 V
Cooling	Natural Convection
Mounting	Wall, Pole mount
BBU connection	2x 9.8Gbps SFP(Rate 7 HW ready)

B66a RRH 4x45 – Interfaces

Power:

- Max power: 816W (add 58W for AISG)
- Breaker size: 25A
- Max distance with 6ga power feed and 5.5V drop: 284 feet

RF Interfaces:

- 4.3/10 Connectors
- No monitoring ports(Spectrum analyzer SW takes place of monitoring ports)

AISG:

- Two Smart Bias-T
- One AISG port

B66 Details

- Max power for a single carrier is:
  - 2x60W for 10,15,20 MHz carrier
  - 2x40W for 5 MHz carrier
- Multi- Carrier Support with AWS-1 carriers: 15.1
- Multi- Carrier Support with AWS-3 carriers: 16.2

Carrier power: Multi-carrier

- Assuming 2 Tx power can be assigned per carrier subject to 40W max for 5Mhz, 60W for larger in 2T, cut that power in half for 4T
- Example:B4 (20Mhz) and AWS3 (10MHz)
  - Power can be varied between those two carriers, can go 60W for 20 MHz carrier, 30W for 10 MHz carrier to use the 90W in 2T.
  - It could be 45/45 for 20Mhz/10Mhz if desired.

ATTACHMENT 2

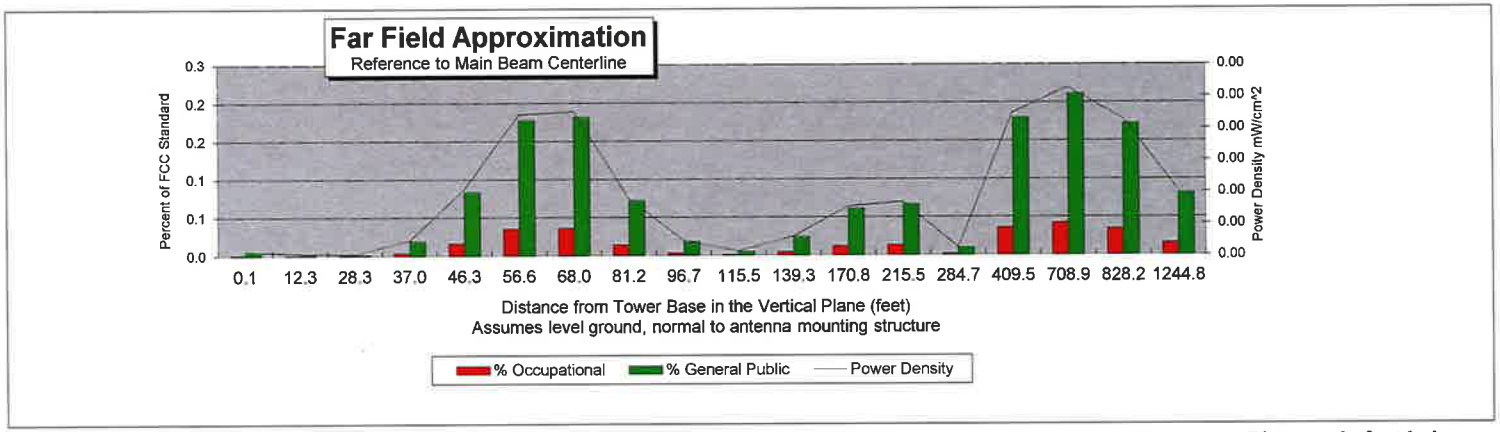
Estimated Radiated Emission

Single Emitter Far Field Model

Dipole / Wire/ Yagi Antenna Types

Location:	Germantown CT
Site #:	293_1
Date:	12/20/17
Name:	Maria Montrose
File Name:	Germantown, CT - FF Power

Operating Freq. (MHz):	746.0
Antenna Height (ft):	90.0
Antenna Gain (dBi):	14.5
Antenna Size (in.):	72.0
Downtilt (degrees):	2.0
Feedline Loss (dB):	0.5
Power @ J4 (w):	120.0
Number of Channels	1



Distance in feet below:

Calc Angle	90.0	82.0	72.0	67.0	62.0	57.0	52.0	47.0	42.0	37.0	32.0	27.0	22.0	17.0	12.0	7.0	6.0	4.0	
Solve for r, dx to antenna	87.0	87.9	91.5	94.5	98.6	103.8	110.4	119.0	130.1	144.6	164.3	191.7	232.4	297.7	418.7	714.2	832.7	1247.8	
Distance from Antenna Structure Base in Horizontal plane	0.1	12.3	28.3	37.0	46.3	56.6	68.0	81.2	96.7	115.5	139.3	170.8	215.5	284.7	409.5	708.9	828.2	1244.8	
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)	35.3	38.56	40.04	28.82	22.12	18.4	17.76	21.12	26.29	30.81	23.11	17.67	15.63	21.89	6.24	0.91	0.45	0.18	
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	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Percent of Occupational Standard	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Percent of General Population Standard	0.0	0.0	0.0	0.0	0.1	0.2	0.2	0.1	0.0	0.0	0.0	0.1	0.1	0.0	0.2	0.2	0.2	0.1	

Antenna Type JAHH-65B-R3B
Max% 0.21%

Instructions:

1) Fill in Site Location, Site number, Date, Name of Person Responsible for Date, and enter File Name to ba 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 (in watts).
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.

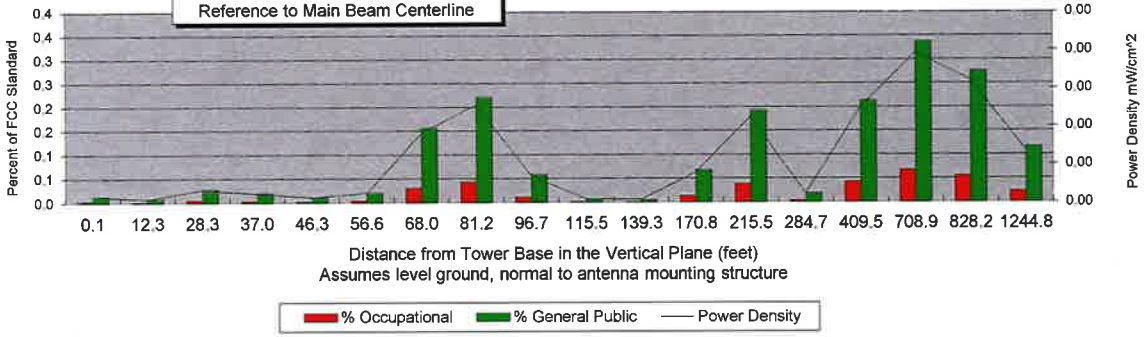
Estimated Radiated Emission

Single Emitter Far Field Model

Dipole / Wire/ Yagi Antenna Types

Location:	Germantown CT
Site #:	293_1_6
Date:	12/20/17
Name:	Maria Montrose
File Name:	Germantown, CT - FF Power

Operating Freq. (MHz):	**869.0**
Antenna Height (ft):	**90.0**
Antenna Gain (dBi):	**15.8**
Antenna Size (in.):	**72.0**
Downtilt (degrees):	**2.0**
Feedline Loss (dB):	**0.5**
Power @ J4 (w):	**160.0**
Number of Channels	**1**



Distance in feet below:

Calc Angle	90.0	82.0	72.0	67.0	62.0	57.0	52.0	47.0	42.0	37.0	32.0	27.0	22.0	17.0	12.0	7.0	6.0	4.0	
Solve for r, dx to antenna	87.0	87.9	91.5	94.5	98.6	103.8	110.4	119.0	130.1	144.6	164.3	191.7	232.4	297.7	418.7	714.2	832.7	1247.8	
Distance from Antenna Structure Base in Horizontal plane	0.1	12.3	28.3	37.0	46.3	56.6	68.0	81.2	96.7	115.5	139.3	170.8	215.5	284.7	409.5	708.9	828.2	1244.8	
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)	33.13	35.57	29.42	30.62	33	29.57	20.31	18.15	23.12	31.52	31.36	19.16	12.93	20.83	7.38	0.76	0.29	0.51	
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	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Percent of Occupational Standard	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0	
Percent of General Population Standard	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.2	0.1	0.0	0.0	0.1	0.2	0.0	0.2	0.3	0.3	0.1	

Antenna Type JAHH-65B-R3B
Max% 0.34%

Instructions:

1) Fill in Site Location, Site number, Date, Name of Person Responsible for Date, and enter File Name to ba 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 (in watts).
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.

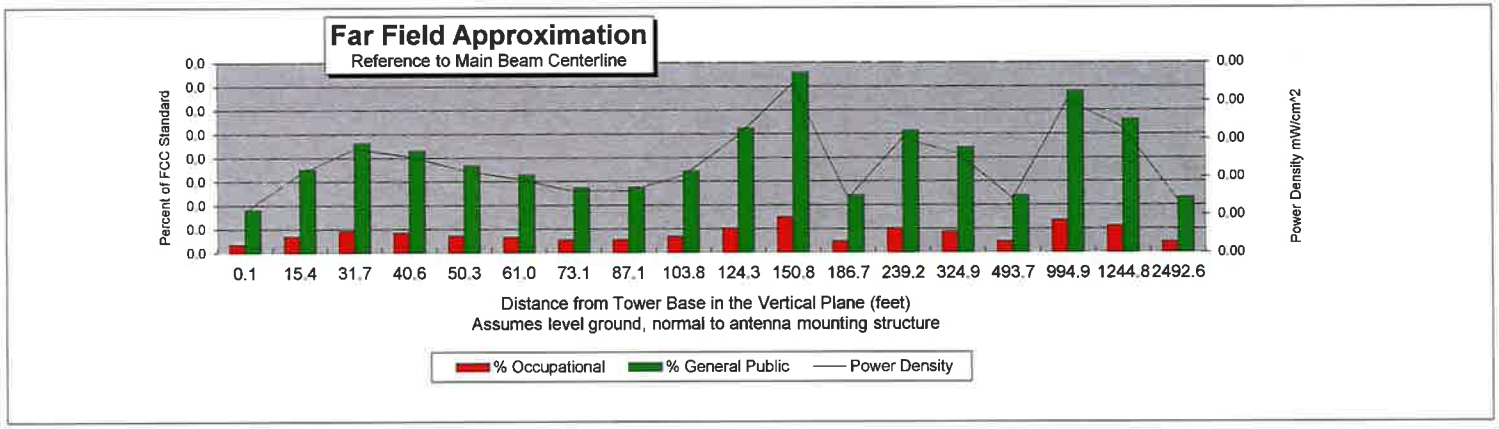
Estimated Radiated Emission

Single Emitter Far Field Model

Dipole / Wire/ Yagi Antenna Types

Location:	Germantown CT
Site #:	293
Date:	12/20/17
Name:	Maria Montrose
File Name:	Germantown, CT - FF Power

Operating Freq. (MHz):	880.0
Antenna Height (ft):	90.0
Antenna Gain (dBi):	16.6
Antenna Size (in.):	72.0
Downtilt (degrees):	0.0
Feedline Loss (dB):	1.4
Power @ J4 (w):	60.0
Number of Channels	3



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	87.0	88.4	92.6	96.0	100.5	106.2	113.6	123.1	135.4	151.7	174.1	206.0	254.5	336.3	501.3	998.7	1247.8	2494.1	
Distance from Antenna Structure Base in Horizontal plane	0.1	15.4	31.7	40.6	50.3	61.0	73.1	87.1	103.8	124.3	150.8	186.7	239.2	324.9	493.7	994.9	1244.8	2492.6	
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)	30.3	27.3	25.7	25.7	26	26	26.2	25.5	23.7	20.9	18.1	21.6	16.5	14.7	13.9	3.4	2.3	0.1	
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	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Percent of Occupational Standard	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Percent of General Population Standard	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	

Antenna Type BXA-80063/6CF - CDMA SERVICE
Max% 0.04%

Instructions:

1) Fill in Site Location, Site number, Date, Name of Person Responsible for Date, and enter File Name to ba 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 (in watts).
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.

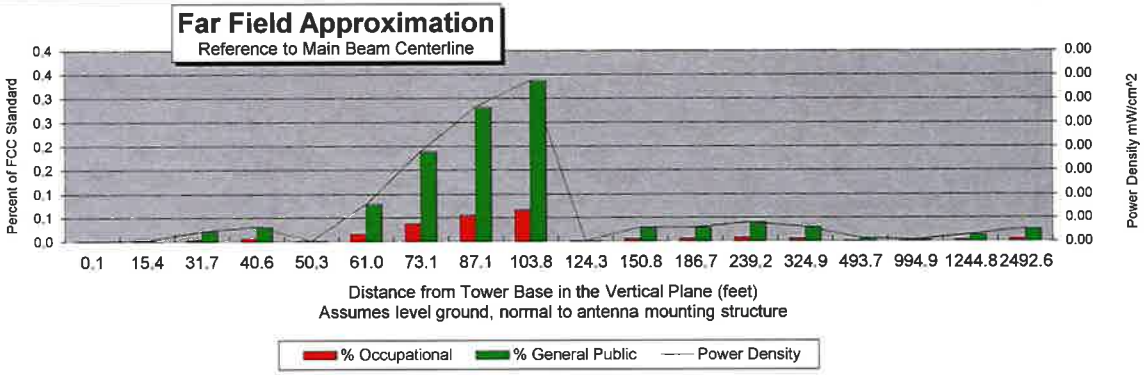
Estimated Radiated Emission

Single Emitter Far Field Model

Dipole / Wire/ Yagi Antenna Types

Location:	Germantown CT
Site #:	293_1_4
Date:	12/20/17
Name:	Maria Montrose
File Name:	Germantown, CT - FF Power

Operating Freq. (MHz):	**1970.0**
Antenna Height (ft):	**90.0**
Antenna Gain (dBi):	**18.4**
Antenna Size (in.):	**72.0**
Downtilt (degrees):	**0.0**
Feedline Loss (dB):	**0.5**
Power @ J4 (w):	**120.0**
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	87.0	88.4	92.6	96.0	100.5	106.2	113.6	123.1	135.4	151.7	174.1	206.0	254.5	336.3	501.3	998.7	1247.8	2494.1	
Distance from Antenna Structure Base in Horizontal plane	0.1	15.4	31.7	40.6	50.3	61.0	73.1	87.1	103.8	124.3	150.8	186.7	239.2	324.9	493.7	994.9	1244.8	2492.6	
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)	57.68	40.71	29.72	27.64	44.15	22.57	18.21	15.8	14.19	40.4	22.7	21.17	17.99	16.83	20.5	18.01	8.97	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	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Percent of Occupational Standard	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Percent of General Population Standard	0.0	0.0	0.0	0.0	0.0	0.1	0.2	0.3	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	

Antenna Type JAHH-65B-R3B
Max% 0.34%

Instructions:

1) Fill in Site Location, Site number, Date, Name of Person Responsible for Date, and enter File Name to ba 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 (in watts).
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.

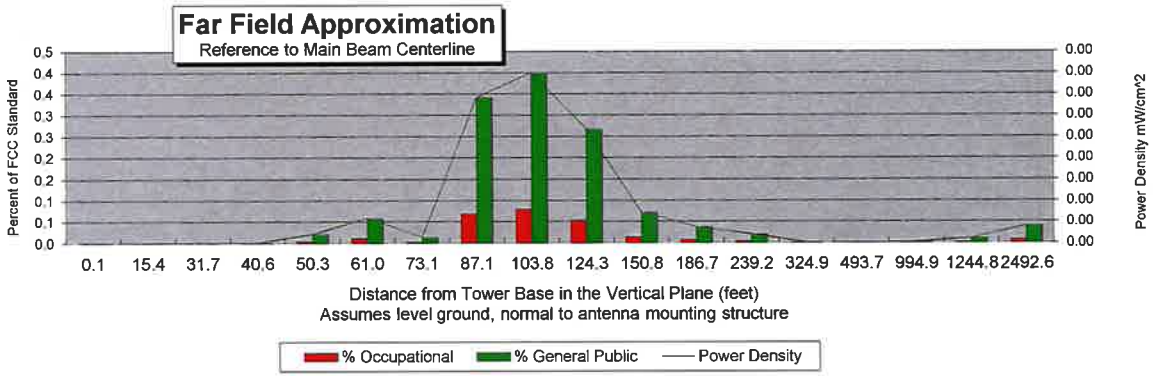
Estimated Radiated Emission

Single Emitter Far Field Model

Dipole / Wire/ Yagi Antenna Types

Location:	Germantown CT
Site #:	293_1_2
Date:	12/20/17
Name:	Mark Brauer
File Name:	Germantown, CT - FF Power

Operating Freq. (MHz):	**2145.0**
Antenna Height (ft):	**90.0**
Antenna Gain (dBi):	**18.5**
Antenna Size (in.):	**72.0**
Downtilt (degrees):	**0.0**
Feedline Loss (dB):	**0.5**
Power @ J4 (w):	**180.0**
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	87.0	88.4	92.6	96.0	100.5	106.2	113.6	123.1	135.4	151.7	174.1	206.0	254.5	336.3	501.3	998.7	1247.8	2494.1	
Distance from Antenna Structure Base in Horizontal plane	0.1	15.4	31.7	40.6	50.3	61.0	73.1	87.1	103.8	124.3	150.8	186.7	239.2	324.9	493.7	994.9	1244.8	2492.6	
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)	52.75	45.79	44.9	46.03	30.76	25.78	31.64	16.82	15.31	16.07	20.6	22.04	22.99	34.06	40.58	21.87	12.1	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	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Percent of Occupational Standard	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Percent of General Population Standard	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.3	0.4	0.3	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	

Antenna Type JAHH-65B-R3B
Max% 0.40%

Instructions:

1) Fill in Site Location, Site number, Date, Name of Person Responsible for Date, and enter File Name to ba 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 (in watts).
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

GERMANTOWN CT

50 NEWTOWN ROAD
DANBURY, CT 06810

Antennas Mounted to the Monopole

Prepared for:

verizon

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

Dated: October 5, 2017

Prepared by:

HUDSON Design Group LLC

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

STATE OF CONNECTICUT
No. 25020
LICENSED PROFESSIONAL ENGINEER
10/5/2017

HUDSON
Design Group LLC

SCOPE OF WORK:

Hudson Design Group LLC (HDG) has been authorized by VERIZON to conduct a structural evaluation of the 110' monopole supporting the existing and proposed VERIZON's antennas located at elevation 90' 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 this office, dated July 22, 2016, was used for analysis.

CONCLUSION SUMMARY:

Based on our evaluation, we have determined that the existing monopole 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 **68.0%** - (Pole Section L4 from El.47' to El.72' Controlling).

HUDSON
Design Group LLC

APPURTENANCES CONFIGURATION:

Tenant	Appurtenances	Elev.	Mount
AT&T	(3) Powerwave 7770 Antennas	100'	Low Profile Platform
AT&T	(1) OPA-65R-LCUU-H6 Antenna	100'	Low Profile Platform
AT&T	(2) OPA-65R-LCUU-H4 Antennas	100'	Low Profile Platform
AT&T	(1) HPA-65R-BUU-H6 Antenna	100'	Low Profile Platform
AT&T	(2) SBNHH-1D65A Antennas	100'	Low Profile Platform
AT&T	(6) LGP21401	100'	Low Profile Platform
AT&T	(6) TPX-070821	100'	Low Profile Platform
AT&T	(3) RRUS-11	100'	Low Profile Platform
AT&T	(3) RRUS-12	100'	Low Profile Platform
AT&T	(3) RRUS-32 B2	100'	Low Profile Platform
AT&T	(2) Surge Arrestor DC6-48-60-18-8F	100'	Low Profile Platform
VERIZON	(1) BXA-80063-6BF Antenna	90'	Low Profile Platform
VERIZON	(2) BXA-80080-6CF Antennas	90'	Low Profile Platform
VERIZON	(3) B25 RRH4X30-4R	90'	Low Profile Platform
VERIZON	(2) DB-T1-6Z-8AB-0Z	90'	Low Profile Platform
VERIZON	***(6) JAHH-65B-R3B Antennas***	90'	Low Profile Platform
VERIZON	***(3) RRH4X45 AWS***	90'	Low Profile Platform
VERIZON	***(3) B13 RRH4X30-4R***	90'	Low Profile Platform
VERIZON	***(3) B5 RRH4X30-4R***	90'	Low Profile Platform

Proposed VERIZON Appurtenances shown in Bold.

VERIZON EXISTING/PROPOSED COAX CABLES:

Tenant	Coax Cables	Elev.	Mount
VERIZON	(12) 1 5/8" Cables	90'	Inside Monopole
VERIZON	(2) Fiber Cables	90'	Inside Monopole

Proposed VERIZON Coax Cables shown in Bold.

HUDSON
Design Group LLC

ANALYSIS RESULTS SUMMARY:

Component	Max. Stress Ratio	Elev. of Component (ft)	Pass/Fail	Comments
Pole Section-L1	8.4 %	97.5 – 111	PASS	
Pole Section-L2	8.3 %	97 – 97.5	PASS	
Pole Section-L3	57.6 %	72 – 97	PASS	
Pole Section-L4	**68.0 %**	47 – 72	PASS	**Controlling**
Pole Section-L5	66.7 %	21 – 47	PASS	
Pole Section-L6	67.3 %	1 – 21	PASS	

HUDSON
Design Group LLC

DESIGN CRITERIA:

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

   County: Fairfield
   Wind Load: 110 mph (3 second gust)
   Structural Class: II
   Exposure Category: B
   Topographic Category: 1
   Nominal Ice Thickness: 0.75 inch

2. Approximate height above grade to proposed antennas: 90'

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

ASSUMPTIONS:

1. The appurtenances configuration is as stated in this report. All antennas, coax cables and waveguide cables are assumed to be properly installed and supported as per the manufacturer's requirements.

2. The monopole and foundation are properly constructed and maintained. All structural members and their connections are assumed to be in good condition and are free from defects with no deterioration to its member capacities.

3. The 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.

4. 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 steel platform supported by the monopole.

HUDSON
Design Group LLC

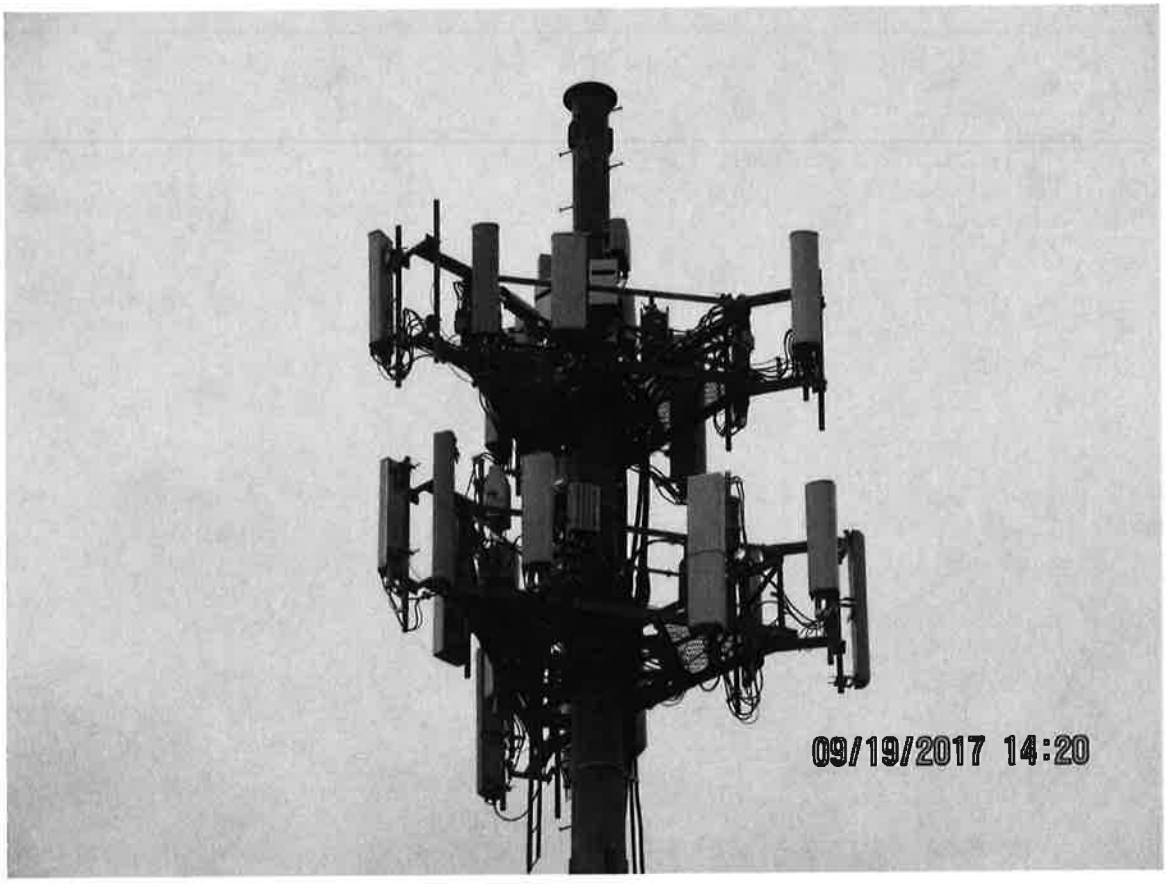
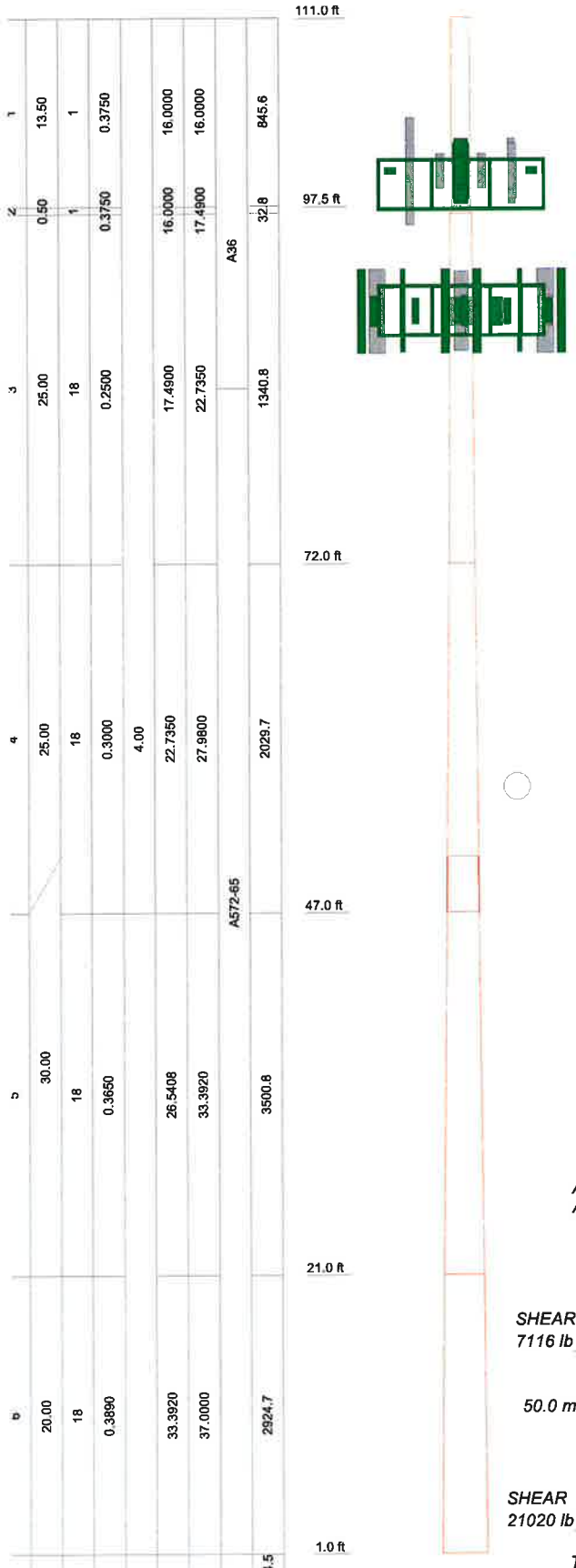


Photo 1: Photo illustrating the monopole with Appurtenances shown.

HUDSON
Design Group LLC

CALCULATIONS

Section	1	2	3	4	5	6	7
Length (ft)	13.50	0.50	25.00	25.00	30.00	20.00	
Number of Sides	1	1	18	18	18	18	
Thickness (in)	0.3750	0.3750	0.2500	0.3000	0.3650	0.3890	
Socket Length (ft)				4.00			
Top Dia (in)	16.0000	16.0000	17.4900	22.7350	26.5408	33.3920	
Bot Dia (in)	16.0000	17.4900	22.7350	27.9800	33.3920	37.0000	
Grade	A36			A572-65			
Weight (lb)	845.6	32.8	1340.8	2029.7	3500.8	2924.7	10674.5



DESIGNED APPURTENANCE LOADING

TYPE	ELEVATION	TYPE	ELEVATION
Powerwave 7770 w/mount pipe	100	PIROD 13' Platform w/handrail (Verizon - existing)	90
Powerwave 7770 w/mount pipe	100	BXA-80063-6BF-EDIN w/mount pipe	90
Powerwave 7770 w/mount pipe	100	BXA-80080-6CF-EDIN w/mount pipe	90
OPA-65R-LCUU-H6 w/mount pipe	100	BXA-80080-6CF-EDIN w/mount pipe	90
OPA-65R-LCUU-H4 w/mount pipe	100	B25 RRH4X30-4R	90
OPA-65R-LCUU-H4 w/mount pipe	100	B25 RRH4X30-4R	90
HPA-65R-BUU-H6 w/mount pipe	100	B25 RRH4X30-4R	90
SBNHH-1D65A w/ Mount Pipe	100	RFS DB-T1-6Z-8AB-0Z	90
SBNHH-1D65A w/ Mount Pipe	100	RFS DB-T1-6Z-8AB-0Z	90
(2) Powerwave TMA LGP21401	100	JAHH-65B-R3B w/ Mount Pipe (Verizon - proposed)	90
(2) Powerwave TMA LGP21401	100	JAHH-65B-R3B w/ Mount Pipe	90
(2) Powerwave TMA LGP21401	100	JAHH-65B-R3B w/ Mount Pipe	90
Ericsson RRUS-11	100	JAHH-65B-R3B w/ Mount Pipe	90
Ericsson RRUS-11	100	JAHH-65B-R3B w/ Mount Pipe	90
Ericsson RRUS-11	100	JAHH-65B-R3B w/ Mount Pipe	90
Ericsson RRUS-12	100	RRH 4X45 AWS	90
Ericsson RRUS-12	100	RRH 4X45 AWS	90
Ericsson RRUS-12	100	RRH 4X45 AWS	90
Surge Arrestor DC6-48-60-18-8F	100	B13 RRH4X30-4R	90
(2) TPX-070821 Triplexer	100	B13 RRH4X30-4R	90
(2) TPX-070821 Triplexer	100	B13 RRH4X30-4R	90
(2) TPX-070821 Triplexer	100	B5 RRH4X30-4R	90
Ericsson RRUS-32	100	B5 RRH4X30-4R	90
Ericsson RRUS-32	100	B5 RRH4X30-4R	90
Ericsson RRUS-32	100		
Surge Arrestor DC6-48-60-18-8F	100		
PIROD 13' Platform w/handrail (ATT)	99		

MATERIAL STRENGTH

GRADE	Fy	Fu	GRADE	Fy	Fu
A36	36 ksi	58 ksi	A572-65	65 ksi	80 ksi

TOWER DESIGN NOTES

1. Tower is located in Fairfield County, Connecticut.
2. Tower designed for Exposure B to the TIA-222-G Standard.
3. Tower designed for a 110.0 mph basic wind in accordance with the TIA-222-G Standard.
4. Tower is also designed for a 50.0 mph basic wind with 0.75 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: 68%

ALL REACTIONS ARE FACTORED

AXIAL
47689 lb

SHEAR
7116 lb

MOMENT
543786 lb-ft

TORQUE 222 lb-ft
50.0 mph WIND - 0.7500 in ICE

AXIAL
23250 lb

SHEAR
21020 lb

MOMENT
1680086 lb-ft

TORQUE 1299 lb-ft
REACTIONS - 110.0 mph WIND

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

Job: *GERMANTOWN CT*			
Project: *110 ft Monopole*			
Client: VERIZON	Drawn by: kw	App'd:	
Code: TIA-222-G	Date: 10/05/17	Scale: N	
Path:		Dwg No.	

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 Fairfield County, Connecticut.
Basic wind speed of 110.0 mph.
Structure Class II.
Exposure Category B.
Topographic Category 1.
Crest Height 0.00 ft.
Nominal ice thickness of 0.7500 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	111.00-97.50	13.50	0.00	Round	16.0000	16.0000	0.3750		A36 (36 ksi)
L2	97.50-97.00	0.50	0.00	Round	16.0000	17.4900	0.3750		A36 (36 ksi)
L3	97.00-72.00	25.00	0.00	18	17.4900	22.7350	0.2500	1.0000	A572-65 (65 ksi)
L4	72.00-47.00	25.00	4.00	18	22.7350	27.9800	0.3000	1.2000	A572-65 (65 ksi)
L5	47.00-21.00	30.00	0.00	18	26.5408	33.3920	0.3650	1.4600	A572-65 (65 ksi)
L6	21.00-1.00	20.00		18	33.3920	37.0000	0.3890	1.5560	A572-65 (65 ksi)

Feed Line/Linear Appurtenances - Entered As Area

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Total Number		C_AA_A ft^2/ft	Weight plf
1 5/8 (AT&T)	B	No	CaAa (Out Of Face)	100.00 - 16.00	2	No Ice	0.20	1.04
						1/2" Ice	0.30	2.55
						1" Ice	0.40	4.68
1 5/8	B	No	CaAa (Out Of	100.00 - 16.00	10	No Ice	0.00	1.04

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Total Number		C_AA_A ft^2/ft	Weight plf
			Face)			1/2" Ice	0.00	2.55
						1" Ice	0.40	4.68
WR-VG122ST-BRDA	B	No	Inside Pole	100.00 - 16.00	4	No Ice	0.00	0.25
						1/2" Ice	0.00	0.25
						1" Ice	0.00	0.25
FB-L98B-002	B	No	Inside Pole	100.00 - 16.00	2	No Ice	0.00	0.25
						1/2" Ice	0.00	0.25
						1" Ice	0.00	0.25
**********								
1 5/8 (Verizon - existing)	C	No	Inside Pole	90.00 - 16.00	12	No Ice	0.00	1.04
						1/2" Ice	0.00	1.04
						1" Ice	0.00	1.04
1 5/8 Fiber Cable	C	No	Inside Pole	90.00 - 16.00	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: Horz Lateral ft / Vert ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight lb
PiROD 13' Platform w/handrail (AT&T)	A	None		0.0000	99.00	No Ice	31.30	31.30	1822.00
						1/2" Ice	40.20	40.20	2452.00
						1" Ice	49.10	49.10	3082.00
Powerwave 7770 w/mount pipe	A	From Face	3.50 0.00 0.00	0.0000	100.00	No Ice	5.65	4.10	57.25
						1/2" Ice	6.03	4.75	103.17
						1" Ice	6.42	5.42	155.38
Powerwave 7770 w/mount pipe	B	From Face	3.50 0.00 0.00	0.0000	100.00	No Ice	5.65	4.10	57.25
						1/2" Ice	6.03	4.75	103.17
						1" Ice	6.42	5.42	155.38
Powerwave 7770 w/mount pipe	C	From Face	3.50 0.00 0.00	0.0000	100.00	No Ice	5.65	4.10	57.25
						1/2" Ice	6.03	4.75	103.17
						1" Ice	6.42	5.42	155.38
OPA-65R-LCUU-H6 w/mount pipe	A	From Face	3.50 0.00 0.00	0.0000	100.00	No Ice	9.95	7.53	112.53
						1/2" Ice	10.50	8.56	192.76
						1" Ice	11.04	9.45	282.09
OPA-65R-LCUU-H4 w/mount pipe	B	From Face	3.50 0.00 0.00	0.0000	100.00	No Ice	6.18	4.55	68.25
						1/2" Ice	6.57	5.16	120.98
						1" Ice	6.98	5.78	179.91
OPA-65R-LCUU-H4 w/mount pipe	C	From Face	3.50 0.00 0.00	0.0000	100.00	No Ice	6.18	4.55	68.25
						1/2" Ice	6.57	5.16	120.98
						1" Ice	6.98	5.78	179.91
HPA-65R-BUU-H6 w/mount pipe	A	From Face	3.50 0.00 0.00	0.0000	100.00	No Ice	13.28	9.65	100.85
						1/2" Ice	14.00	11.15	198.33
						1" Ice	14.73	12.68	305.71
SBNHH-1D65A w/ Mount Pipe	B	From Face	3.50 0.00 0.00	0.0000	100.00	No Ice	6.28	5.34	55.90
						1/2" Ice	6.76	6.20	111.21
						1" Ice	7.22	6.93	173.23
SBNHH-1D65A w/ Mount Pipe	C	From Face	3.50 0.00 0.00	0.0000	100.00	No Ice	6.28	5.34	55.90
						1/2" Ice	6.76	6.20	111.21
						1" Ice	7.22	6.93	173.23
(2) Powerwave TMA LGP21401	A	From Face	2.50 0.00	0.0000	100.00	No Ice	0.00	0.41	14.10
						1/2" Ice	0.00	0.52	21.29

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft / ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight lb
			0.00			1" Ice	1.54	0.65	30.37
(2) Powerwave TMA LGP21401	B	From Face	2.50	0.0000	100.00	No Ice	0.00	0.41	14.10
			0.00			1/2" Ice	0.00	0.52	21.29
			0.00			1" Ice	1.54	0.65	30.37
(2) Powerwave TMA LGP21401	C	From Face	2.50	0.0000	100.00	No Ice	0.00	0.41	14.10
			0.00			1/2" Ice	0.00	0.52	21.29
			0.00			1" Ice	1.54	0.65	30.37
Ericsson RRUS-11	A	From Face	2.50	0.0000	100.00	No Ice	0.00	1.38	50.70
			0.00			1/2" Ice	0.00	1.56	71.57
			0.00			1" Ice	3.75	1.74	95.48
Ericsson RRUS-11	B	From Face	2.50	0.0000	100.00	No Ice	0.00	1.38	50.70
			0.00			1/2" Ice	0.00	1.56	71.57
			0.00			1" Ice	3.75	1.74	95.48
Ericsson RRUS-11	C	From Face	2.50	0.0000	100.00	No Ice	0.00	1.38	50.70
			0.00			1/2" Ice	0.00	1.56	71.57
			0.00			1" Ice	3.75	1.74	95.48
Ericsson RRUS-12	A	From Face	1.00	0.0000	100.00	No Ice	3.15	1.29	58.00
			0.00			1/2" Ice	3.36	1.44	81.22
			0.00			1" Ice	3.59	1.60	107.64
Ericsson RRUS-12	B	From Face	1.00	0.0000	100.00	No Ice	3.15	1.29	58.00
			0.00			1/2" Ice	3.36	1.44	81.22
			0.00			1" Ice	3.59	1.60	107.64
Ericsson RRUS-12	C	From Face	1.00	0.0000	100.00	No Ice	3.15	1.29	58.00
			0.00			1/2" Ice	3.36	1.44	81.22
			0.00			1" Ice	3.59	1.60	107.64
Surge Arrestor DC6-48-60-18-8F	A	From Face	1.00	0.0000	100.00	No Ice	0.79	0.79	20.00
			0.00			1/2" Ice	1.27	1.27	35.12
			0.00			1" Ice	1.45	1.45	52.57
**********									
(2) TPX-070821 Triplexer	A	From Face	2.50	0.0000	100.00	No Ice	0.47	0.10	7.50
			0.00			1/2" Ice	0.56	0.15	10.96
			0.00			1" Ice	0.66	0.20	15.74
(2) TPX-070821 Triplexer	B	From Face	2.50	0.0000	100.00	No Ice	0.47	0.10	7.50
			0.00			1/2" Ice	0.56	0.15	10.96
			0.00			1" Ice	0.66	0.20	15.74
(2) TPX-070821 Triplexer	C	From Face	2.50	0.0000	100.00	No Ice	0.47	0.10	7.50
			0.00			1/2" Ice	0.56	0.15	10.96
			0.00			1" Ice	0.66	0.20	15.74
Ericsson RRUS-32	A	From Face	1.00	0.0000	100.00	No Ice	3.31	2.42	77.00
			0.00			1/2" Ice	3.56	2.64	104.93
			0.00			1" Ice	3.81	2.86	136.47
Ericsson RRUS-32	B	From Face	1.00	0.0000	100.00	No Ice	3.31	2.42	77.00
			0.00			1/2" Ice	3.56	2.64	104.93
			0.00			1" Ice	3.81	2.86	136.47
Ericsson RRUS-32	C	From Face	1.00	0.0000	100.00	No Ice	3.31	2.42	77.00
			0.00			1/2" Ice	3.56	2.64	104.93
			0.00			1" Ice	3.81	2.86	136.47
Surge Arrestor DC6-48-60-18-8F	C	From Face	1.00	0.0000	100.00	No Ice	0.79	0.79	20.00
			0.00			1/2" Ice	1.27	1.27	35.12
			0.00			1" Ice	1.45	1.45	52.57
**********									
PiROD 13' Platform w/handrail (Verizon - existing)	A	None		0.0000	90.00	No Ice	31.30	31.30	1822.00
						1/2" Ice	40.20	40.20	2452.00
						1" Ice	49.10	49.10	3082.00
BXA-80063-6BF-EDIN w/mount pipe	A	From Leg	4.00	0.0000	90.00	No Ice	7.33	5.46	41.10
			0.00			1/2" Ice	7.79	6.38	98.38
			0.00			1" Ice	8.25	7.18	163.05

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft / ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight lb
BXA-80080-6CF-EDIN w/mount pipe	B	From Leg	4.00 0.00 0.00	0.0000	90.00	No Ice 1/2" Ice 1" Ice	6.26 6.93 7.57	6.46 7.73 8.85	47.20 104.60 169.77
BXA-80080-6CF-EDIN w/mount pipe	C	From Leg	4.00 0.00 0.00	0.0000	90.00	No Ice 1/2" Ice 1" Ice	6.26 6.93 7.57	6.46 7.73 8.85	47.20 104.60 169.77
B25 RRH4X30-4R	A	From Leg	3.00 0.00 0.00	0.0000	90.00	No Ice 1/2" Ice 1" Ice	2.20 2.39 2.59	1.74 1.92 2.11	55.00 75.47 98.94
B25 RRH4X30-4R	B	From Leg	3.00 0.00 0.00	0.0000	90.00	No Ice 1/2" Ice 1" Ice	2.20 2.39 2.59	1.74 1.92 2.11	55.00 75.47 98.94
B25 RRH4X30-4R	C	From Leg	3.00 0.00 0.00	0.0000	90.00	No Ice 1/2" Ice 1" Ice	2.20 2.39 2.59	1.74 1.92 2.11	55.00 75.47 98.94
RFS DB-T1-6Z-8AB-0Z	A	From Leg	2.00 0.00 0.00	0.0000	90.00	No Ice 1/2" Ice 1" Ice	4.80 5.07 5.35	2.00 2.19 2.39	44.00 80.13 120.22
RFS DB-T1-6Z-8AB-0Z	B	From Leg	2.00 0.00 0.00	0.0000	90.00	No Ice 1/2" Ice 1" Ice	4.80 5.07 5.35	2.00 2.19 2.39	44.00 80.13 120.22
**********									
JAHH-65B-R3B w/ Mount Pipe (Verizon - proposed)	A	From Leg	4.00 6.00 0.00	0.0000	90.00	No Ice 1/2" Ice 1" Ice	9.35 9.92 10.46	7.65 8.83 9.73	88.85 165.42 250.16
JAHH-65B-R3B w/ Mount Pipe	A	From Leg	4.00 -6.00 0.00	0.0000	90.00	No Ice 1/2" Ice 1" Ice	9.35 9.92 10.46	7.65 8.83 9.73	88.85 165.42 250.16
JAHH-65B-R3B w/ Mount Pipe	B	From Leg	4.00 6.00 0.00	0.0000	90.00	No Ice 1/2" Ice 1" Ice	9.35 9.92 10.46	7.65 8.83 9.73	88.85 165.42 250.16
JAHH-65B-R3B w/ Mount Pipe	B	From Leg	4.00 -6.00 0.00	0.0000	90.00	No Ice 1/2" Ice 1" Ice	9.35 9.92 10.46	7.65 8.83 9.73	88.85 165.42 250.16
JAHH-65B-R3B w/ Mount Pipe	C	From Leg	4.00 6.00 0.00	0.0000	90.00	No Ice 1/2" Ice 1" Ice	9.35 9.92 10.46	7.65 8.83 9.73	88.85 165.42 250.16
JAHH-65B-R3B w/ Mount Pipe	C	From Leg	4.00 -6.00 0.00	0.0000	90.00	No Ice 1/2" Ice 1" Ice	9.35 9.92 10.46	7.65 8.83 9.73	88.85 165.42 250.16
RRH 4X45 AWS	A	From Leg	3.00 6.00 0.00	0.0000	90.00	No Ice 1/2" Ice 1" Ice	2.66 2.88 3.10	1.59 1.77 1.96	64.00 84.35 107.85
RRH 4X45 AWS	B	From Leg	3.00 6.00 0.00	0.0000	90.00	No Ice 1/2" Ice 1" Ice	2.66 2.88 3.10	1.59 1.77 1.96	64.00 84.35 107.85
RRH 4X45 AWS	C	From Leg	3.00 6.00 0.00	0.0000	90.00	No Ice 1/2" Ice 1" Ice	2.66 2.88 3.10	1.59 1.77 1.96	64.00 84.35 107.85
B13 RRH4X30-4R	A	From Leg	3.00 -6.00 0.00	0.0000	90.00	No Ice 1/2" Ice 1" Ice	2.16 2.35 2.55	1.62 1.79 1.97	57.20 76.81 99.38
B13 RRH4X30-4R	B	From Leg	3.00 -6.00 0.00	0.0000	90.00	No Ice 1/2" Ice 1" Ice	2.16 2.35 2.55	1.62 1.79 1.97	57.20 76.81 99.38
B13 RRH4X30-4R	C	From Leg	3.00 -6.00	0.0000	90.00	No Ice 1/2" Ice	2.16 2.35	1.62 1.79	57.20 76.81

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft / ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight lb
			0.00			1" Ice	2.55	1.97	99.38
B5 RRH4X30-4R	A	From Leg	3.00	0.0000	90.00	No Ice	2.12	1.29	53.00
			0.00			1/2" Ice	2.31	1.45	70.33
			0.00			1" Ice	2.50	1.61	90.48
B5 RRH4X30-4R	B	From Leg	3.00	0.0000	90.00	No Ice	2.12	1.29	53.00
			0.00			1/2" Ice	2.31	1.45	70.33
			0.00			1" Ice	2.50	1.61	90.48
B5 RRH4X30-4R	C	From Leg	3.00	0.0000	90.00	No Ice	2.12	1.29	53.00
			0.00			1/2" Ice	2.31	1.45	70.33
			0.00			1" Ice	2.50	1.61	90.48

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

Comb. No.	Description
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	$Shear_x$	$Shear_z$	Overturning Moment, M_x	Overturning Moment, M_z	Torque
	lb	lb	lb	lb-ft	lb-ft	lb-ft
Dead Only	19374.59	0.00	0.00	-201.67	244.94	0.01
1.2 Dead+1.6 Wind 0 deg - No Ice	23249.51	-137.28	-20922.25	-1669951.55	13859.14	-1133.18
0.9 Dead+1.6 Wind 0 deg - No Ice	17437.13	-137.28	-20922.25	-1652391.32	13624.26	-1137.53
1.2 Dead+1.6 Wind 30 deg - No Ice	23249.51	10300.64	-18050.56	-1439519.53	-819456.53	-1293.14
0.9 Dead+1.6 Wind 30 deg - No Ice	17437.13	10300.64	-18050.56	-1424378.93	-810955.07	-1298.56
1.2 Dead+1.6 Wind 60 deg - No Ice	23249.51	17978.51	-10342.24	-823388.94	-1433123.22	-1106.16
0.9 Dead+1.6 Wind 60 deg - No Ice	17437.13	17978.51	-10342.24	-814708.95	-1418185.82	-1111.21
1.2 Dead+1.6 Wind 90 deg - No Ice	23249.51	20839.06	137.28	13304.19	-1662652.52	-622.62
0.9 Dead+1.6 Wind 90 deg - No Ice	17437.13	20839.06	137.28	13216.72	-1645306.30	-625.95
1.2 Dead+1.6 Wind 120 deg - No Ice	23249.51	18115.79	10580.01	846310.98	-1446587.68	27.25
0.9 Dead+1.6 Wind 120 deg - No Ice	17437.13	18115.79	10580.01	837500.76	-1431501.32	26.54
1.2 Dead+1.6 Wind 150 deg - No Ice	23249.51	10538.42	18187.84	1452474.38	-842882.31	669.42
0.9 Dead+1.6 Wind 150 deg - No Ice	17437.13	10538.42	18187.84	1437320.03	-834116.87	671.53
1.2 Dead+1.6 Wind 180 deg - No Ice	23249.51	137.28	20922.25	1669435.13	-13254.28	1132.55
0.9 Dead+1.6 Wind 180 deg - No Ice	17437.13	137.28	20922.25	1652011.93	-13180.06	1136.91
1.2 Dead+1.6 Wind 210 deg - No Ice	23249.51	-10300.64	18050.56	1439015.38	820062.62	1292.64
0.9 Dead+1.6 Wind 210 deg - No Ice	17437.13	-10300.64	18050.56	1424008.58	811400.15	1298.06
1.2 Dead+1.6 Wind 240 deg - No Ice	23249.51	-17978.51	10342.24	822890.28	1433740.65	1106.27
0.9 Dead+1.6 Wind 240 deg - No Ice	17437.13	-17978.51	10342.24	814342.66	1418639.23	1111.32
1.2 Dead+1.6 Wind 270 deg - No Ice	23249.51	-20839.06	-137.28	-13809.64	1663280.03	623.26
0.9 Dead+1.6 Wind 270 deg -	17437.13	-20839.06	-137.28	-13587.98	1645767.15	626.58

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
No Ice 1.2 Dead+1.6 Wind 300 deg -	23249.51	-18115.79	-10580.01	-846828.69	1447213.95	-26.72
No Ice 0.9 Dead+1.6 Wind 300 deg -	17437.13	-18115.79	-10580.01	-837881.06	1431961.29	-26.03
No Ice 1.2 Dead+1.6 Wind 330 deg -	23249.51	-10538.42	-18187.84	-1452997.57	843497.26	-669.54
No Ice 0.9 Dead+1.6 Wind 330 deg -	17437.13	-10538.42	-18187.84	-1437704.39	834568.52	-671.65
No Ice 1.2 Dead+1.0 Ice+1.0 Temp	47688.77	-0.01	-0.01	-1046.16	1134.52	0.00
1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp	47688.77	-13.30	-7109.29	-542608.21	2567.10	-206.27
1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp	47688.77	3533.46	-6150.17	-469375.56	-267449.24	-222.07
1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp	47688.77	6133.44	-3543.13	-270669.89	-465482.12	-178.36
1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp	47688.77	7089.96	13.30	265.64	-538468.36	-86.84
1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp	47688.77	6146.74	3566.16	270833.58	-466851.67	27.94
1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp	47688.77	3556.50	6163.48	468535.90	-269822.27	135.22
1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp	47688.77	13.30	7109.29	540399.19	-173.46	206.26
1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp	47688.77	-3533.46	6150.17	467167.25	269843.47	222.04
1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp	47688.77	-6133.44	3543.12	268461.44	467877.29	178.34
1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp	47688.77	-7089.96	-13.30	-2474.94	540863.86	86.86
1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp	47688.77	-6146.74	-3566.16	-273043.58	469246.58	-27.90
1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp	47688.77	-3556.50	-6163.48	-470745.76	272216.24	-135.20
Dead+Wind 0 deg - Service	19374.59	-22.84	-3480.98	-276576.44	2505.09	-191.87
Dead+Wind 30 deg - Service	19374.59	1713.79	-3003.19	-238429.69	-135417.16	-218.97
Dead+Wind 60 deg - Service	19374.59	2991.21	-1720.71	-136453.53	-236984.20	-187.39
Dead+Wind 90 deg - Service	19374.59	3467.13	22.84	2027.39	-274981.05	-105.59
Dead+Wind 120 deg - Service	19374.59	3014.05	1760.27	139906.99	-239226.75	4.49
Dead+Wind 150 deg - Service	19374.59	1753.35	3026.03	240240.83	-139301.90	113.37
Dead+Wind 180 deg - Service	19374.59	22.84	3480.98	276144.87	-1981.00	191.87
Dead+Wind 210 deg - Service	19374.59	-1713.79	3003.19	237998.41	135941.29	218.96
Dead+Wind 240 deg - Service	19374.59	-2991.21	1720.71	136022.37	237508.59	187.38
Dead+Wind 270 deg - Service	19374.59	-3467.13	-22.84	-2458.70	275505.67	105.60
Dead+Wind 300 deg - Service	19374.59	-3014.05	-1760.27	-140338.58	239751.34	-4.48
Dead+Wind 330 deg - Service	19374.59	-1753.35	-3026.03	-240672.56	139826.23	-113.36

Solution Summary

Load Comb.	Sum of Applied Forces PX lb	PY lb	PZ lb	Sum of Reactions PX lb	PY lb	PZ lb	% Error
1	0.00	-19374.59	0.00	0.00	19374.59	0.00	0.000%
2	-137.28	-23249.51	-20922.25	137.28	23249.51	20922.25	0.000%
3	-137.28	-17437.13	-20922.25	137.28	17437.13	20922.25	0.000%
4	10300.64	-23249.51	-18050.56	-10300.64	23249.51	18050.56	0.000%
5	10300.64	-17437.13	-18050.56	-10300.64	17437.13	18050.56	0.000%

Load Comb.	Sum of Applied Forces PX lb	PY lb	PZ lb	Sum of Reactions PX lb	PY lb	PZ lb	% Error
6	17978.51	-23249.51	-10342.24	-17978.51	23249.51	10342.24	0.000%
7	17978.51	-17437.13	-10342.24	-17978.51	17437.13	10342.24	0.000%
8	20839.06	-23249.51	137.28	-20839.06	23249.51	-137.28	0.000%
9	20839.06	-17437.13	137.28	-20839.06	17437.13	-137.28	0.000%
10	18115.79	-23249.51	10580.01	-18115.79	23249.51	-10580.01	0.000%
11	18115.79	-17437.13	10580.01	-18115.79	17437.13	-10580.01	0.000%
12	10538.42	-23249.51	18187.84	-10538.42	23249.51	-18187.84	0.000%
13	10538.42	-17437.13	18187.84	-10538.42	17437.13	-18187.84	0.000%
14	137.28	-23249.51	20922.25	-137.28	23249.51	-20922.25	0.000%
15	137.28	-17437.13	20922.25	-137.28	17437.13	-20922.25	0.000%
16	-10300.64	-23249.51	18050.56	10300.64	23249.51	-18050.56	0.000%
17	-10300.64	-17437.13	18050.56	10300.64	17437.13	-18050.56	0.000%
18	-17978.51	-23249.51	10342.24	17978.51	23249.51	-10342.24	0.000%
19	-17978.51	-17437.13	10342.24	17978.51	17437.13	-10342.24	0.000%
20	-20839.06	-23249.51	-137.28	20839.06	23249.51	137.28	0.000%
21	-20839.06	-17437.13	-137.28	20839.06	17437.13	137.28	0.000%
22	-18115.79	-23249.51	-10580.01	18115.79	23249.51	10580.01	0.000%
23	-18115.79	-17437.13	-10580.01	18115.79	17437.13	10580.01	0.000%
24	-10538.42	-23249.51	-18187.84	10538.42	23249.51	18187.84	0.000%
25	-10538.42	-17437.13	-18187.84	10538.42	17437.13	18187.84	0.000%
26	0.00	-47688.77	0.00	0.01	47688.77	0.01	0.000%
27	-13.30	-47688.77	-7109.27	13.30	47688.77	7109.29	0.000%
28	3533.45	-47688.77	-6150.15	-3533.46	47688.77	6150.17	0.000%
29	6133.42	-47688.77	-3543.11	-6133.44	47688.77	3543.13	0.000%
30	7089.94	-47688.77	13.30	-7089.96	47688.77	-13.30	0.000%
31	6146.72	-47688.77	3566.15	-6146.74	47688.77	-3566.16	0.000%
32	3556.49	-47688.77	6163.46	-3556.50	47688.77	-6163.48	0.000%
33	13.30	-47688.77	7109.27	-13.30	47688.77	-7109.29	0.000%
34	-3533.45	-47688.77	6150.15	3533.46	47688.77	-6150.17	0.000%
35	-6133.42	-47688.77	3543.11	6133.44	47688.77	-3543.12	0.000%
36	-7089.94	-47688.77	-13.30	7089.96	47688.77	13.30	0.000%
37	-6146.72	-47688.77	-3566.15	6146.74	47688.77	3566.16	0.000%
38	-3556.49	-47688.77	-6163.46	3556.50	47688.77	6163.48	0.000%
39	-22.84	-19374.59	-3480.97	22.84	19374.59	3480.98	0.000%
40	1713.79	-19374.59	-3003.19	-1713.79	19374.59	3003.19	0.000%
41	2991.21	-19374.59	-1720.71	-2991.21	19374.59	1720.71	0.000%
42	3467.13	-19374.59	22.84	-3467.13	19374.59	-22.84	0.000%
43	3014.05	-19374.59	1760.27	-3014.05	19374.59	-1760.27	0.000%
44	1753.35	-19374.59	3026.03	-1753.35	19374.59	-3026.03	0.000%
45	22.84	-19374.59	3480.97	-22.84	19374.59	-3480.98	0.000%
46	-1713.79	-19374.59	3003.19	1713.79	19374.59	-3003.19	0.000%
47	-2991.21	-19374.59	1720.71	2991.21	19374.59	-1720.71	0.000%
48	-3467.13	-19374.59	-22.84	3467.13	19374.59	22.84	0.000%
49	-3014.05	-19374.59	-1760.27	3014.05	19374.59	1760.27	0.000%
50	-1753.35	-19374.59	-3026.03	1753.35	19374.59	3026.03	0.000%

Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	111 - 97.5	14.0962	50	1.0559	0.0051
L2	97.5 - 97	11.1127	50	1.0524	0.0047
L3	97 - 72	11.0025	50	1.0517	0.0046
L4	72 - 47	5.9267	50	0.8324	0.0018
L5	51 - 21	2.8714	50	0.5496	0.0008
L6	21 - 1	0.4390	50	0.2107	0.0002

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
100.00	Powerwave 7770 w/mount pipe	50	11.6640	1.0549	0.0049	75091
99.00	PiROD 13' Platform w/handrail	50	11.4434	1.0541	0.0048	53515
90.00	PiROD 13' Platform w/handrail	50	9.4796	1.0227	0.0037	9636

Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P lb	ϕP_{allow} lb	% Capacity	Pass Fail
L1	111 - 97.5	Pole	TP16x16x0.375	1	-4145.02	596412.00	8.4	Pass
L2	97.5 - 97	Pole	TP17.49x16x0.375	2	-4145.77	596412.00	8.3	Pass
L3	97 - 72	Pole	TP22.735x17.49x0.25	3	-9797.69	1325560.00	57.6	Pass
L4	72 - 47	Pole	TP27.98x22.735x0.3	4	-12893.30	1898820.00	68.0	Pass
L5	47 - 21	Pole	TP33.392x26.5408x0.365	5	-19113.40	2842680.00	66.7	Pass
L6	21 - 1	Pole	TP37x33.392x0.389	6	-23238.00	3358360.00	67.3	Pass
							Summary	
						Pole (L4)	68.0	Pass
						RATING =	**68.0**	**Pass**

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

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

Site Data

BU#: *GERMANTOWN CT*
Site Name: *0*
App #: *0*

Pole Manufacturer:	*Other*

Anchor Rod Data		
Qty:	8	
Diam:	2.25	in
Rod Material:	A615-J	
Strength (Fu):	100	ksi
Yield (Fy):	75	ksi
Bolt Circle:	45	in

Plate Data		
Diam:	51	in
Thick:	1.5	in
Grade:	60	ksi
Single-Rod B-eff:	14.68	in

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

Pole Data		
Diam:	37	in
Thick:	0.389	in
Grade:	65	ksi
# of Sides:	18	"0" IF Round
Fu	80	ksi
Reinf. Fillet Weld	0	"0" if None

Reactions		
Mu:	1200	ft-kips
Axial, Pu:	23	kips
Shear, Vu:	21	kips
Eta Factor, η	0.55	TIA G (Fig. 4-4)

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

Anchor Rod Results

		Non-Rigid
Max Rod (Cu+ Vu/ή):	167.7 Kips	AISC LRFD
Allowable Axial, Φ*Fu*Anet:	260.0 Kips	φ*Tn
Anchor Rod Stress Ratio:	64.5% **Pass**	

Base Plate Results

	Flexural Check	Non-Rigid
Base Plate Stress:	47.9 ksi	AISC LRFD
Allowable Plate Stress:	54.0 ksi	φ*Fy
Base Plate Stress Ratio:	88.6% **Pass**	Y.L. Length: 25.61

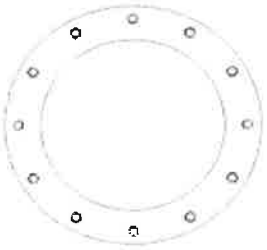
n/a

Stiffener Results

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

Pole Results

Pole Punching Shear Check:	n/a



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

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

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

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

Site Data

BU#: *CT2157 Modifications*
Site Name: *0*
App #: *0*

Pole Manufacturer:	*Other*

Anchor Rod Data		
Qty:	6	
Diam:	2.25	in
Rod Material:	Other	
Strength (Fu):	105	ksi
Yield (Fy):	125	ksi
Bolt Circle:	55	in

Plate Data		
Diam:	61	in
Thick:	1.75	in
Grade:	60	ksi
Single-Rod B-eff:	19.57	in

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

Pole Data		
Diam:	37	in
Thick:	0.389	in
Grade:	65	ksi
# of Sides:	18	"0" IF Round
Fu	80	ksi
Reinf. Fillet Weld	0	"0" if None

Reactions		
Mu:	500	ft-kips
Axial, Pu:	5	kips
Shear, Vu:	5	kips
Eta Factor, η	0.55	TIA G (Fig. 4-4)

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

Anchor Rod Results

		Non-Rigid
Max Rod (Cu+ Vu/ή):	75.1 Kips	AISC LRFD
Allowable Axial, Φ*Fu*Anet:	273.0 Kips	φ*Tn
Anchor Rod Stress Ratio:	27.5% **Pass**	

Base Plate Results

	Flexural Check	Non-Rigid
Base Plate Stress:	21.8 ksi	AISC LRFD
Allowable Plate Stress:	54.0 ksi	φ*Fy
Base Plate Stress Ratio:	40.3% **Pass**	Y.L. Length: 40.69

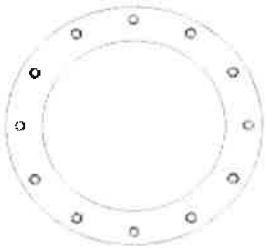
n/a

Stiffener Results

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

Pole Results

Pole Punching Shear Check:	n/a



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

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

CCI Foundation Tool Suite - Monopole Pier

CCIFTS 1.1.103.14128 - Phase 1 Date: 10/5/2017

BU:	GERMANTOWN CT
Site Name:	
App Number:	N/A
Work Order:	

Monopole Drilled Pier

Input

Criteria

TIA Revision:	G
ACI 318 Revision:	2008
Seismic Category:	B

Forces

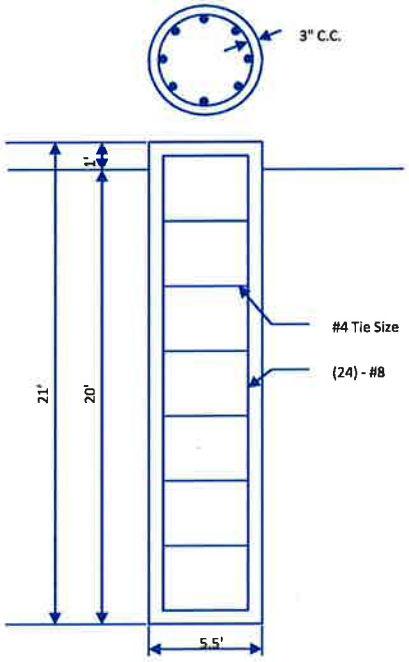
Compression	23 kips
Shear	21 kips
Moment	1680 k-ft
Swelling Force	0 kips

Foundation Dimensions

Pier Diameter:	5.5 ft
Ext. above grade:	1 ft
Depth below grade:	20 ft

Material Properties

Number of Rebar:	24
Rebar Size:	8
Tie Size	4
Rebar tensile strength:	60 ksi
Concrete Strength:	3000 psi
Ultimate Concrete Strain	0.003 in/in
Clear Cover to Ties:	3 in



Soil Profile: Profile 1

Layer	Thickness (ft)	From (ft)	To (ft)	Unit Weight (pcf)	Cohesion (psf)	Friction Angle (deg)	Ultimate Uplift Skin Friction (ksf)	Ultimate Comp. Skin Friction (ksf)	Ultimate Bearing Capacity (ksf)	SPT 'N' Counts
1	3	0	3	120	0	28				
2	10	3	13	78	0	38				
3	16	13	29	43	0	38				

Analysis Results

Soil Lateral Capacity

Depth to Zero Shear:	3.42 ft
Max Moment, Mu:	1752.64 k-ft
Soil Safety Factor:	2.52
Safety Factor Req'd:	1.33
RATING:	52.8%

Soil Axial Capacity

Skin Friction (k):	119.78 kips
End Bearing (k):	0.00 kips
Comp. Capacity (k), ϕCn:	119.78 kips
Comp. (k), Cu:	23.00 kips
RATING:	19.2%

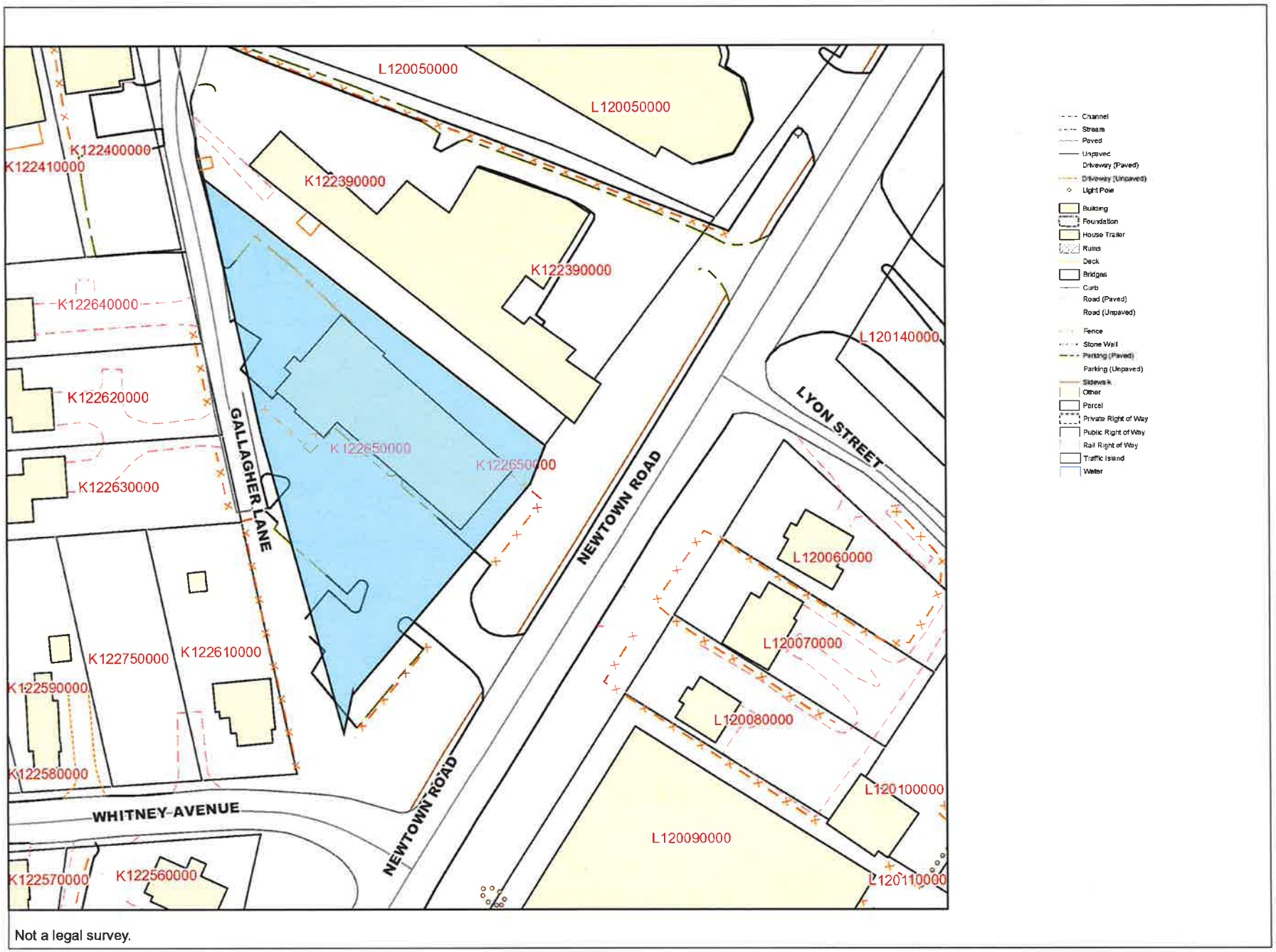
Concrete/Steel Check

Mu (from soil analysis)	1752.64 k-ft
ϕMn	2357.72 k-ft
RATING:	74.3%

rho provided	0.55	
rho required	0.33	OK
Rebar Spacing	6.59	
Spacing required	16.00	OK
Dev. Length required	16.33	
Dev. Length provided	43.82	OK

Overall Foundation Rating: 74.3%

ATTACHMENT 4



Not a legal survey.

48 NEWTOWN

Location	48 NEWTOWN	**Mblu**	K12/ / 265/ /
Acct#		**Owner**	48 NEWTOWN ROAD CORPORATION
Assessment	$798,100	**Appraisal**	$1,140,100
PID	7333	**Building Count**	1

Current Value

Appraisal			
Valuation Year	**Improvements**	**Land**	**Total**
2017	$764,800	$375,300	$1,140,100

Assessment			
Valuation Year	**Improvements**	**Land**	**Total**
2017	$535,400	$262,700	$798,100

Owner of Record

Owner	48 NEWTOWN ROAD CORPORATION	**Sale Price**	$0
Co-Owner		**Book & Page**	1706/ 908
Address	50 NEWTOWN RD DANBURY, CT 06810	**Sale Date**	11/08/2004
		Instrument	29

Ownership History

Ownership History				
Owner	**Sale Price**	**Book & Page**	**Instrument**	**Sale Date**
48 NEWTOWN ROAD CORPORATION	$0	1706/ 908	29	11/08/2004
MORRIS JULIA B NOMINEE	$0	1706/ 906	29	11/08/2004
FORTY EIGHT NEWTOWN ROAD	$0	1041/0377		03/04/1993

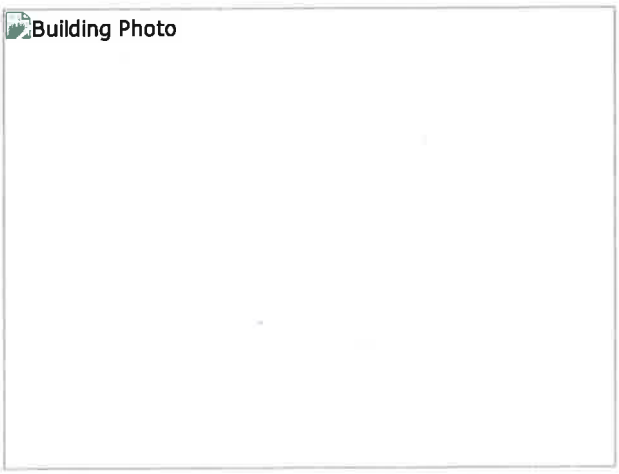
Building Information

Building 1 : Section 1

Year Built:	1988
Living Area:	5,680
Replacement Cost:	$913,424
Building Percent Good:	82
Replacement Cost Less Depreciation:	$749,000

Building Attributes	
Field	**Description**
STYLE	Restaurant
MODEL	Commercial
Grade	Good+
Stories:	2
Occupancy	4
Exterior Wall 1	Concr/Cinder
Exterior Wall 2	Glass/Thermo.
Roof Structure	Gable/Hip
Roof Cover	Metal/Tin
Interior Wall 1	Drywall/Sheet
Interior Wall 2	
Interior Floor 1	Ceram Clay Til
Interior Floor 2	Carpet
Heating Fuel	Gas
Heating Type	Forced Air-Duc
AC Type	Central
Bldg Use	Comm/Res MDL-94
Total Rooms	
Total Bedrms	00
Total Baths	0
1st Floor Use:	201
Heat/AC	HEAT/AC SPLIT
Frame Type	MASONRY
Baths/Plumbing	AVERAGE
Ceiling/Wall	SUS-CEIL & WL
Rooms/Prtns	AVERAGE
Wall Height	12
% Comn Wall	0

Building Photo



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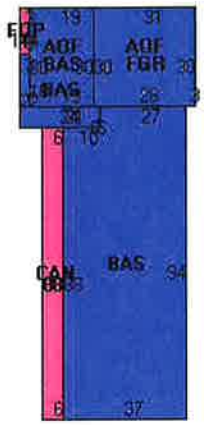
Building Layout



Building Sub-Areas (sq ft)			Legend
Code	**Description**	**Gross Area**	**Living Area**
BAS	First Floor	4,180	4,180
AOF	Office, (Average)	1,500	1,500
CAN	Canopy	528	0
FGR	Garage	930	0
FOP	Open Porch	42	0
		7,180	5,680

Building 1 : Section 1

Year Built: 1988
Living Area: 0
Replacement Cost: $913,424
Building Percent Good: 82
Replacement Cost Less Depreciation: $749,000

Building Attributes	
Field	**Description**

Style	Outbuildings
Model	
Grade:	
Stories:	
Occupancy	
Exterior Wall 1	
Exterior Wall 2	
Roof Structure:	
Roof Cover	
Interior Wall 1	
Interior Wall 2	
Interior Flr 1	
Interior Flr 2	
Heat Fuel	
Heat Type:	
AC Type:	
Total Bedrooms:	
Total Bthrms:	
Total Half Baths:	
Total Xtra Fixtrs:	
Total Rooms:	
Bath Style:	
Kitchen Style:	
Fireplaces	
Whirlpool	
Addn'l Kitchen	
Bsm Gar	
Fin Bsm Area	
Fin Bsm Qual	
Nhbd	
MH Park	

Building Photo

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Building Layout

Building Layout

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

Extra Features

Extra Features	Legend
No Data for Extra Features	

Land

Land Use

Land Line Valuation

Use Code	201	**Size (Acres)**	0.6
Description	Comm/Res MDL-94	**Frontage**	0
Zone	CG20	**Depth**	0
Neighborhood	6000	**Assessed Value**	$262,700
Alt Land Appr	No	**Appraised Value**	$375,300
Category			

Outbuildings

Outbuildings						Legend
Code	**Description**	**Sub Code**	**Sub Description**	**Size**	**Value**	**Bldg #**
CEL	Cell Tower			1 UNITS	$0	1
PAV1	Paving-Asphalt			10500 S.F.	$15,800	1
CEL	Cell Tower			1 UNITS	$0	1

Valuation History

Appraisal			
Valuation Year	**Improvements**	**Land**	**Total**
2015	$755,700	$375,300	$1,131,000
2014	$755,700	$375,300	$1,131,000
2013	$755,700	$375,300	$1,131,000

Assessment			
Valuation Year	**Improvements**	**Land**	**Total**
2015	$529,000	$262,700	$791,700
2014	$529,000	$262,700	$791,700
2013	$529,000	$262,700	$791,700

ATTACHMENT 5

UNITED STATES POSTAL SERVICE®

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	neopost 12/26/2017 US POSTAGE $002.38⁰ ZIP 06103 041L12203380
	Postmaster, per *(name of receiving employee)* a		

USPS® Tracking Number / Firm-specific Identifier	Address (Name, Street, City, State, and ZIP Code™)	Postage	Fee	Special Handling	Parcel Airlift
1.	Mark D. Boughton, Mayor City of Danbury 155 Deer Hill Avenue Danbury, CT 06810				
2.	Sharon B. Calitro, AICP Director of Planning and Zoning City of Danbury 155 Deer Hill Avenue Danbury, CT 06810				
3.	48 Newtown Road Corp. c/o BRT Realty 50 Newtown Road Danbury, CT 06810				
4.					
5.					
6.					

OLD STATE HOUSE STA 06103 DEC 20 2017 USPS