Robinson+Cole

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Also admitted in Massachusetts

February 11, 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**
21 East Main Street (a/k/a 1 Central Square), Plainville, Connecticut

Dear Ms. Bachman:

Cellco Partnership d/b/a Verizon Wireless ("Cellco") currently maintains wireless telecommunications antennas and remote radio heads (RRHs) at the top of the existing 81-foot tower at 21 East Main Street (a/k/a 1 Central Square) in Plainville, Connecticut (the "Property"). The tower and underlying property are owned by the Town of Plainville. The Council approved Cellco's shared use of this tower in 2004. Cellco now intends to modify its facility by removing nine (9) RRHs and installing six (6) new RRHs behind its antennas. Included in Attachment 1 are specifications for the new 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 Robert E. Lee, Plainville Town Manager and Garrett Daigle, Interim Town Planner.

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 RRHs will be attached to Cellco's antenna mounting platform behind its existing antennas at the top level on the tower.

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

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

4. The operation of the facility with the new RRHs will not increase radio frequency (RF) emissions to a level at or above the Federal Communications Commission (FCC) safety standard. Far Field Approximation tables for each of Cellco's operating frequencies are included behind Attachment 2. The Far Field calculations demonstrate that Cellco's modified facility will operate well within the RF emissions limits established by the FCC.

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

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

A copy of the parcel map and owner information for the Property is included in Attachment 4. A Certificate of Mailing verifying that this filing was sent to municipal officials 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:
Robert E. Lee, Plainville Town Manager
Garrett Daigle, Interim Town Planner
Tim Parks

ATTACHMENT 1

SAMSUNG

Ultra-Compact Radio Unit 700MHz (B13)

RFD01P-13A

Samsung's RFD01P-13 is a compact remote Radio Unit (RU) designed for deployments that require extreme flexibility in installation and rapid onlining, without compromising on coverage, capacity or operational expenses.

The RFD01P-13 RU targets support for Band 13 (700MHz) over a near-zero footprint, which makes it ideal for extending broad baseline LTE coverage in virtually any environment.

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

- Ultra-minimal footprint reduces site acquisition and deployment costs
- Rapid, easy installation
- Flexibly deployable in any location
- Remote RF monitoring capability minimizes site maintenance visits
- Convection cooled, silent operation

Key Technical Specifications

Duplex Type: FDD
Operating Frequency:
B13: DL(746-756MHz)/UL(777-787MHz)
Instantaneous Bandwidth: 10MHz
RF Chain: 4T4R/2T4R/2T2R changeable
Output Power: Total 160W
DU-RU Interface: CPRI (10Gbps)
Dimensions(WHD): 320 x 320 x 151mm (15.4L)
Weight: 17kg
Input Power: -48V DC
Operating Temp.: -40 - 55°(w/o solar load)
Cooling: Natural convection

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

ATTACHMENT 2

Far Field Approximation
with downtilt variation

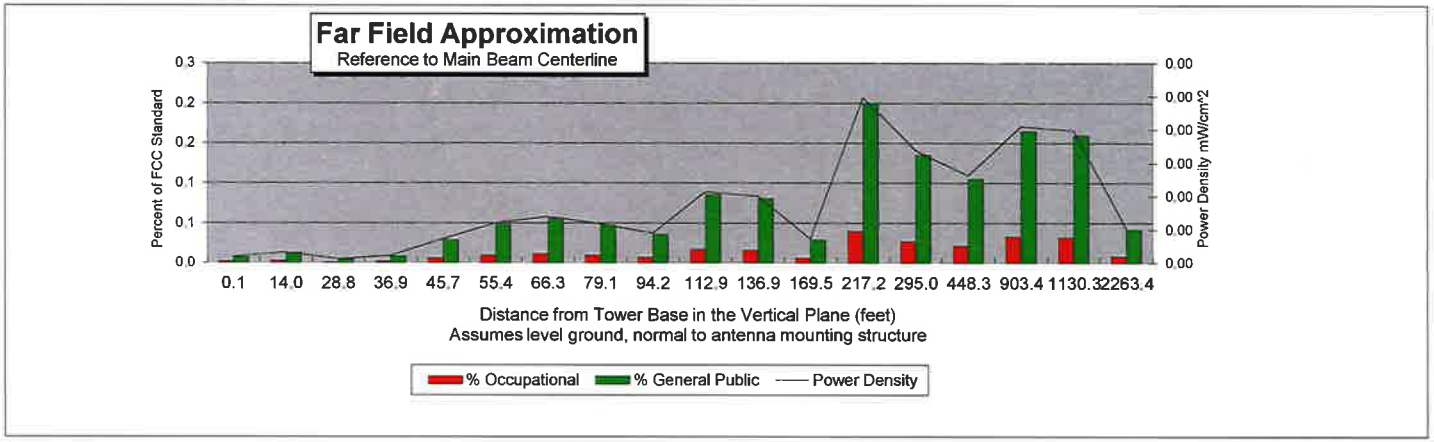
Estimated Radiated Emission

Single Emitter Far Field Model

Dipole / Wire/ Yagi Antenna Types

Location:	Plainville 3, CT
Site #:	
Date:	02/06/19
Name:	Mark Brauer
File Name:	Plainville 3, CT - FF Power

Operating Freq. (MHz)	**746.0**
Antenna Height (ft):	**81.0**
Antenna Gain (dBi):	**14.8**
Antenna Size (in.):	**72.0**
Downtilt (degrees):	**0.0**
Feedline Loss (dB):	**0.0**
Power @ J4 (w):	**160.0**
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	79.0	80.2	84.1	87.2	91.2	96.5	103.2	111.8	123.0	137.8	158.1	187.0	231.1	305.4	455.2	906.9	1133.1	2264.8	
Distance from Antenna Structure Base in Horizontal plane	0.1	14.0	28.8	36.9	45.7	55.4	66.3	79.1	94.2	112.9	136.9	169.5	217.2	295.0	448.3	903.4	1130.3	2263.4	
Angle from Main Beam (reference to horizontal plane)	90	80	70	65	60	55	50	45	40	35	30	25	20	15	10	5	4	2	
dB down from centerline (referenced to centerline)	36.76	34.35	38.52	35.34	29.54	26.8	25.59	25.63	25.99	21.21	20.29	23.24	13.03	12.3	9.92	2	0.2	0	
Reflection Coefficient (1 to 4, 2.56 typical)	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	
Power Density (mW/cm^2)	0.00	0.00	0.00	0.00	0.00	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	0.1	0.0	0.0	0.1	0.1	0.0	0.2	0.1	0.1	0.2	0.2	0.0	

Antenna Type SBNHH-1D65B
Max% 0.20%

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 Pov
4) From manufacturer's plots, or data sheet, input Angle from mainbeam and dB below mainbeam centerline.
5) Enter Reflection coefficient (2.56 would be typical, 1 for free space)
6) Spreadsheet calculates actual power density, then relates as Occupational or General Population percentage of FCC Standard.
7) An odd distance may be entered in the rightmost column of the lower table.

Far Field Approximation
with downtilt variation

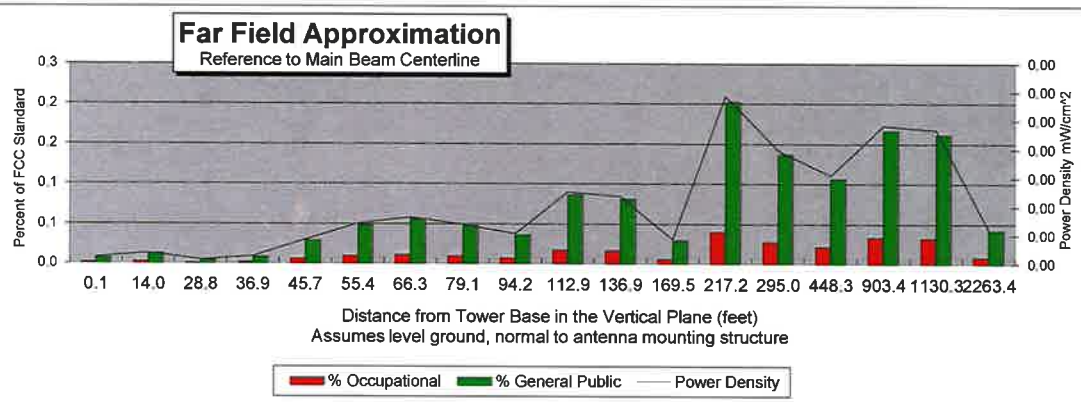
Estimated Radiated Emission

Single Emitter Far Field Model

Dipole / Wire/ Yagi Antenna Types

Location:	Plainville 3, CT
Site #:	
Date:	02/06/19
Name:	Mark Brauer
File Name:	Plainville 3, CT - FF Power

Operating Freq. (MHz)	869.0
Antenna Height (ft):	81.0
Antenna Gain (dBi):	15.5
Antenna Size (in.):	72.0
Downtilt (degrees):	0.0
Feedline Loss (dB):	0.0
Power @ J4 (w):	160.0
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	79.0	80.2	84.1	87.2	91.2	96.5	103.2	111.8	123.0	137.8	158.1	187.0	231.1	305.4	455.2	906.9	1133.1	2264.8	
Distance from Antenna Structure Base in Horizontal plane	0.1	14.0	28.8	36.9	45.7	55.4	66.3	79.1	94.2	112.9	136.9	169.5	217.2	295.0	448.3	903.4	1130.3	2263.4	
Angle from Main Beam (reference to horizontal plane)	90	80	70	65	60	55	50	45	40	35	30	25	20	15	10	5	4	2	
dB down from centerline (referenced to centerline)	36.76	34.35	38.52	35.34	29.54	26.8	25.59	25.63	25.99	21.21	20.29	23.24	13.03	12.3	9.92	2	0.2	0	
Reflection Coefficient (1 to 4, 2.56 typical)	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	
Power Density (mW/cm^2)	0.00	0.00	0.00	0.00	0.00	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	0.1	0.0	0.0	0.1	0.1	0.0	0.2	0.1	0.1	0.2	0.2	0.0	

Antenna Type SBNHH-1D65B
Max% 0.20%

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 Pov
4) From manufacturer's plots, or data sheet, input Angle from mainbeam and dB below mainbeam centerline.
5) Enter Reflection coefficient (2.56 would be typical, 1 for free space)
6) Spreadsheet calculates actual power density, then relates as Occupational or General Population percentage of FCC Standard.
7) An odd distance may be entered in the rightmost column of the lower table.

Far Field Approximation
with downtilt variation

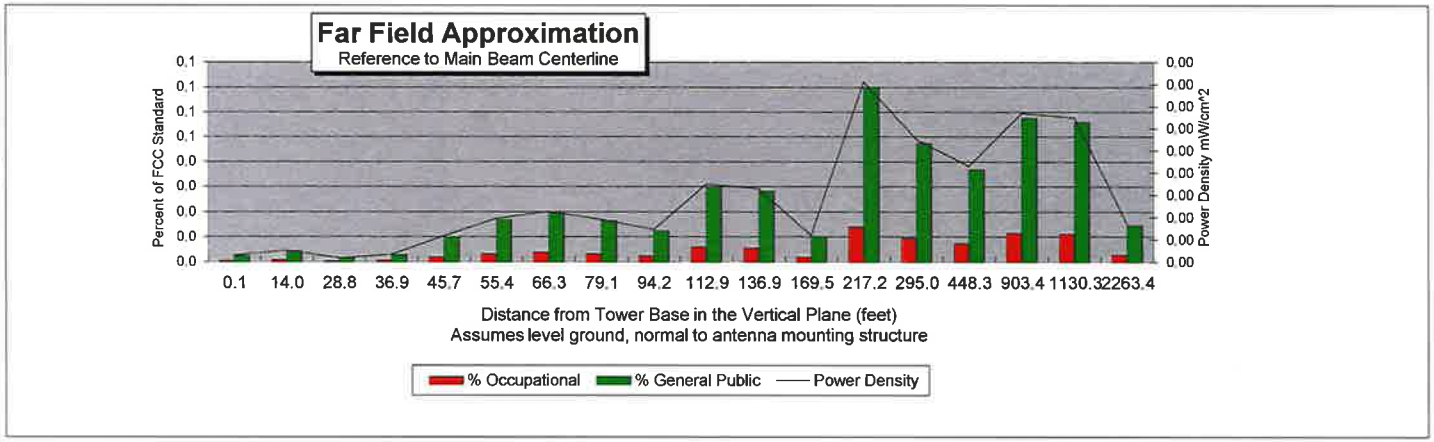
Estimated Radiated Emission

Single Emitter Far Field Model

Dipole / Wire/ Yagi Antenna Types

Location:	Plainville 3, CT
Site #:	
Date:	02/06/19
Name:	Mark Brauer
File Name:	Plainville 3, CT - FF Power

Operating Freq. (MHz)	**869.0**
Antenna Height (ft):	**81.0**
Antenna Gain (dBi):	**15.2**
Antenna Size (in.):	**48.0**
Downtilt (degrees):	**0.0**
Feedline Loss (dB):	**0.0**
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	79.0	80.2	84.1	87.2	91.2	96.5	103.2	111.8	123.0	137.8	158.1	187.0	231.1	305.4	455.2	906.9	1133.1	2264.8	
Distance from Antenna Structure Base in Horizontal plane	0.1	14.0	28.8	36.9	45.7	55.4	66.3	79.1	94.2	112.9	136.9	169.5	217.2	295.0	448.3	903.4	1130.3	2263.4	
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dB down from centerline (referenced to centerline)	36.76	34.35	38.52	35.34	29.54	26.8	25.59	25.63	25.99	21.21	20.29	23.24	13.03	12.3	9.92	2	0.2	0	
Reflection Coefficient (1 to 4, 2.56 typical)	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	
Power Density (mW/cm^2)	0.00	0.00	0.00	0.00	0.00	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	0.1	0.0	0.0	0.1	0.1	0.0	

Antenna Type BXA-70063-4CF
Max% 0.07%

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 Pov
4) From manufacturer's plots, or data sheet, input Angle from mainbeam and dB below mainbeam centerline.
5) Enter Reflection coefficient (2.56 would be typical, 1 for free space)
6) Spreadsheet calculates actual power density, then relates as Occupational or General Population percentage of FCC Standard.
7) An odd distance may be entered in the rightmost column of the lower table.

Far Field Approximation
with downtilt variation

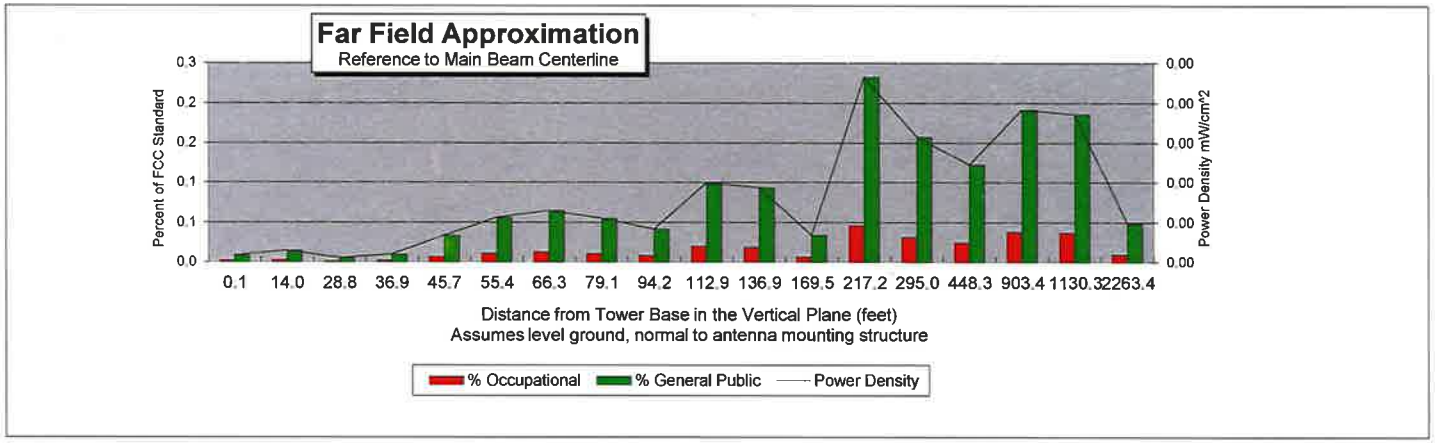
Estimated Radiated Emission

Single Emitter Far Field Model

Dipole / Wire/ Yagi Antenna Types

Location:	Plainville 3, CT
Site #:	
Date:	02/06/19
Name:	Mark Brauer
File Name:	Plainville 3, CT - FF Power

Operating Freq. (MHz)	**1970.0**
Antenna Height (ft):	**81.0**
Antenna Gain (dBi):	**18.5**
Antenna Size (in.):	**72.0**
Downtilt (degrees):	**0.0**
Feedline Loss (dB):	**0.0**
Power @ J4 (w):	**160.0**
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	79.0	80.2	84.1	87.2	91.2	96.5	103.2	111.8	123.0	137.8	158.1	187.0	231.1	305.4	455.2	906.9	1133.1	2264.8	
Distance from Antenna Structure Base in Horizontal plane	0.1	14.0	28.8	36.9	45.7	55.4	66.3	79.1	94.2	112.9	136.9	169.5	217.2	295.0	448.3	903.4	1130.3	2263.4	
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dB down from centerline (referenced to centerline)	36.76	34.35	38.52	35.34	29.54	26.8	25.59	25.63	25.99	21.21	20.29	23.24	13.03	12.3	9.92	2	0.2	0	
Reflection Coefficient (1 to 4, 2.56 typical)	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	
Power Density (mW/cm^2)	0.00	0.00	0.00	0.00	0.00	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	0.1	0.1	0.1	0.0	0.1	0.1	0.0	0.2	0.2	0.1	0.2	0.2	0.0	

Antenna Type SBNHH-1D65B
Max% 0.23%

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 Pov
4) From manufacturer's plots, or data sheet, input Angle from mainbeam and dB below mainbeam centerline.
5) Enter Reflection coefficient (2.56 would be typical, 1 for free space)
6) Spreadsheet calculates actual power density, then relates as Occupational or General Population percentage of FCC Standard.
7) An odd distance may be entered in the rightmost column of the lower table.

Far Field Approximation
with downtilt variation

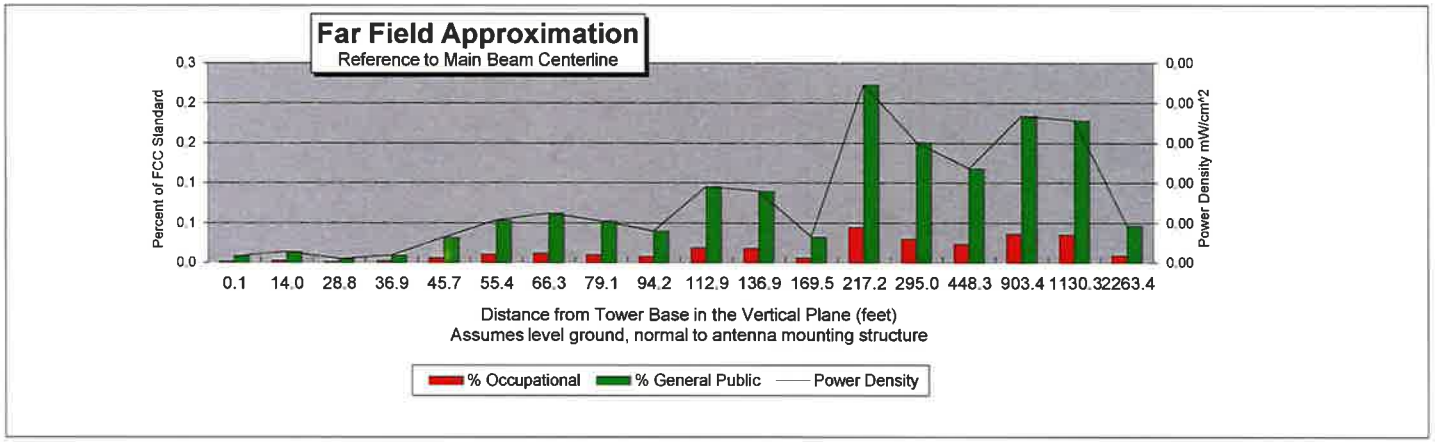
Estimated Radiated Emission

Single Emitter Far Field Model

Dipole / Wire/ Yagi Antenna Types

Location:	Plainville 3, CT
Site #:	
Date:	02/06/19
Name:	Mark Brauer
File Name:	Plainville 3, CT - FF Power

Operating Freq. (MHz)	**2110.0**
Antenna Height (ft):	**81.0**
Antenna Gain (dBi):	**18.3**
Antenna Size (in.):	**72.0**
Downtilt (degrees):	**0.0**
Feedline Loss (dB):	**0.0**
Power @ J4 (w):	**160.0**
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	79.0	80.2	84.1	87.2	91.2	96.5	103.2	111.8	123.0	137.8	158.1	187.0	231.1	305.4	455.2	906.9	1133.1	2264.8	
Distance from Antenna Structure Base in Horizontal plane	0.1	14.0	28.8	36.9	45.7	55.4	66.3	79.1	94.2	112.9	136.9	169.5	217.2	295.0	448.3	903.4	1130.3	2263.4	
Angle from Main Beam (reference to horizontal plane)	90	80	70	65	60	55	50	45	40	35	30	25	20	15	10	5	4	2	
dB down from centerline (referenced to centerline)	36.76	34.35	38.52	35.34	29.54	26.8	25.59	25.63	25.99	21.21	20.29	23.24	13.03	12.3	9.92	2	0.2	0	
Reflection Coefficient (1 to 4, 2.56 typical)	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	
Power Density (mW/cm^2)	0.00	0.00	0.00	0.00	0.00	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	0.1	0.1	0.1	0.0	0.1	0.1	0.0	0.2	0.2	0.1	0.2	0.2	0.0	

Antenna Type SBNHH-1D65B
Max% 0.22%

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 Pov
4) From manufacturer's plots, or data sheet, input Angle from mainbeam and dB below mainbeam centerline.
5) Enter Reflection coefficient (2.56 would be typical, 1 for free space)
6) Spreadsheet calculates actual power density, then relates as Occupational or General Population percentage of FCC Standard.
7) An odd distance may be entered in the rightmost column of the lower table.

ATTACHMENT 3

STRUCTURAL ANALYSIS REPORT

For

PLAINVILLE 3 CT

11 EAST MAIN STREET
PLAINVILLE, CT 06062

Antennas Mounted to the Monopole

Prepared for:

verizon

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

Dated: January 25, 2019

Prepared by:

HDG HUDSON Design Group LLC

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

HUDSON
Design Group LLC

SCOPE OF WORK:

Hudson Design Group LLC (HDG) has been authorized by Verizon to conduct a structural evaluation of the 81' monopole supporting the existing and proposed Verizon's antennas located at elevation 81' 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 prepared by Engineered Endeavors Inc., dated November 20, 2002, were available for our use. The previous structural analysis report prepared by Centek Engineering, dated April 6, 2015, was also available and obtained for our use.

The previous structural analysis report and tower modification drawings prepared by this office, dated May 16, 2017, was used for analysis.

CONCLUSION SUMMARY:

Based on our evaluation, we have determined that the existing monopole **IS 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 **82.2%** - (Pole section L3 from EL.30.0' to EL.37.55' Controlling).

HUDSON
Design Group LLC

APPURTENANCES CONFIGURATION:

Tenant	Appurtenances	Elev.	Mount
VERIZON	(6) BXA-70063-4CF Antennas	81'	Steel Platform
VERIZON	(6) SBNHH-1D65B Antennas	81'	Steel Platform
VERIZON	(2) DB-T1-6Z-8AB-0Z	81'	Steel Platform
VERIZON	***(3) B5/B13 RRH-BR04C***	81'	Steel Platform
VERIZON	***(3) B2/B66A RRH-BR049***	81'	Steel Platform
	20' Dipole	62.5'	Steel Platform
	(2) 4' Omni	62.5'	Steel Platform
	10' Omni	62.5'	Steel Platform
	(3) 10' Dipole	42.5'	Steel Platform
	(2) 3' Yagi	42.5'	Steel Platform
	10' Omni	42.5'	Steel Platform

Proposed VERIZON Appurtenances shown in Bold.

VERIZON EXISTING/PROPOSED COAX CABLES:

Tenant	Coax Cables	Elev.	Mount
VERIZON	(6) 1 1/4" Cables	81'	Inside Monopole
VERIZON	(2) Fiber Cables	81'	Inside Monopole

Proposed VERIZON Coax Cables shown in Bold.

ANALYSIS RESULTS SUMMARY:

Component	Max. Stress Ratio	Elev. of Component (ft)	Pass/Fail	Comments
Pole Section-L1	78.1 %	47.55 – 81	PASS	
Pole Section-L2	67.5 %	37.55 – 47.55	PASS	
Pole Section-L3	**82.2 %**	30 – 37.55	PASS	**Controlling**
Pole Section-L4	79.3 %	0 – 30	PASS	

HUDSON
Design Group LLC

DESIGN CRITERIA:

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

   County: Hartford
   Wind Load: 105 mph (3 second gust)
   Structural Class: II
   Exposure Category: B
   Topographic Category: 1
   Ice Thickness: 1.0 inch

2. Approximate height above grade to proposed antennas: 81'

Calculations and referenced documents are attached

ASSUMPTIONS:

1. The monopole dimensions, member sizes and material strength are as indicated in the record drawings of the monopole prepared by Engineered Endeavors Inc., dated November 20, 2002.

2. The appurtenances configuration is as stated in the previous structural analysis report prepared by Centek Engineering, dated April 6, 2015. All antennas, coax cables and waveguide cables are assumed to be properly installed and supported as per the manufacturer's requirements.

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

4. The support mounts and platforms are not analyzed and are considered adequate to support the loading. The analysis is limited to the primary support structure itself.

5. All prior structural modification, if any, are assumed to be as per the data supplied (if available), and installed properly.

6. The foundation of the monopole 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.

SUPPORT RECOMMENDATIONS:

HDG recommends that the proposed RRHs be mounted on the existing steel platform supported by the monopole.

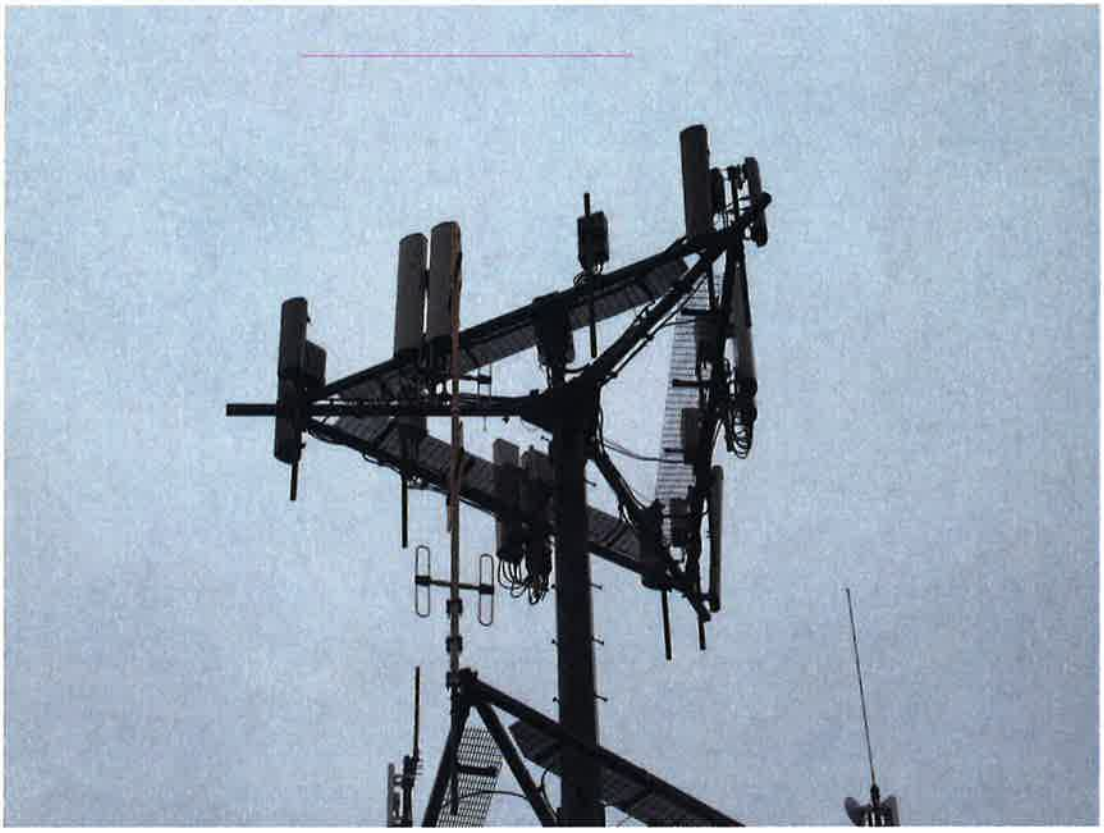
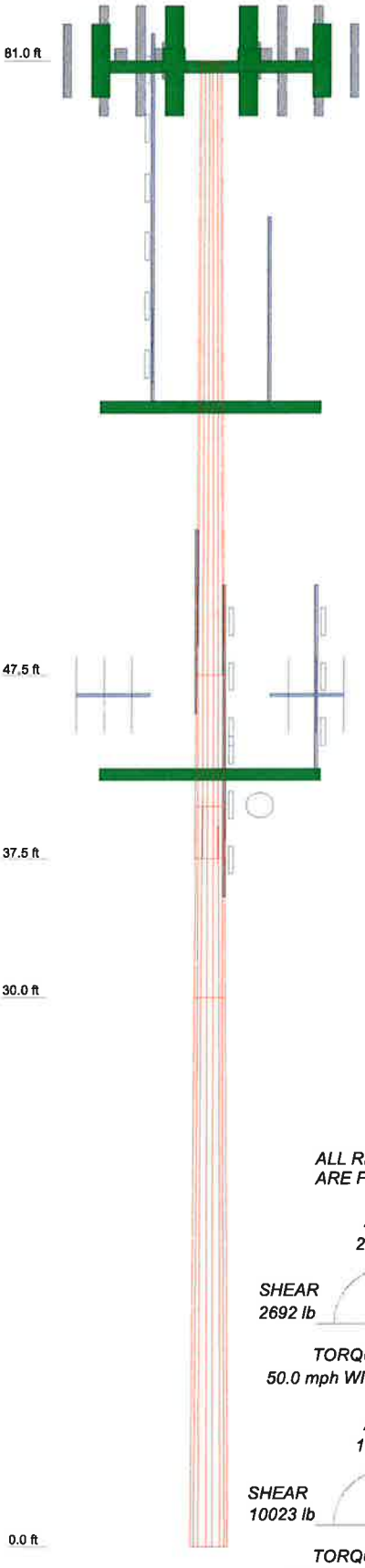


Photo 1: Photo illustrating the Monopole with Appurtenances shown.

HUDSON
Design Group LLC

CALCULATIONS



Section	1	2	3	4
Length (ft)	33.45	10.00	10.45	30.00
Number of Sides	18	18	18	18
Thickness (in)	0.1875	0.2500	0.2500	0.3125
Socket Length (ft)		2.90		
Top Dia (in)	13.0000	17.7500	18.2582	19.7400
Bot Dia (in)	17.7500	19.1700	19.7400	24.0000
Grade	A572-65			
Weight (lb)	1028.8	491.7	529.0	2182.8

Total Weight: 4232.3

DESIGNED APPURTENANCE LOADING

TYPE	ELEVATION	TYPE	ELEVATION
PIROD 15' Low Profile Platform (VERIZON - existing)	81	B5/B13 RRH-BR04C	81
		B5/B13 RRH-BR04C	81
BXA-70063-4CF-EDIN w/mount pipe	81	B2/B66A RRH-BR049	81
BXA-70063-4CF-EDIN w/mount pipe	81	B2/B66A RRH-BR049	81
BXA-70063-4CF-EDIN w/mount pipe	81	B2/B66A RRH-BR049	81
BXA-70063-4CF-EDIN w/mount pipe	81	PIROD 13' Low Profile Platform	62.5
BXA-70063-4CF-EDIN w/mount pipe	81	20' Dipole	62.5
BXA-70063-4CF-EDIN w/mount pipe	81	Omni 2"x4'	62.5
SBNHH-1D65B w/ Mount Pipe	81	Omni 2"x4'	62.5
SBNHH-1D65B w/ Mount Pipe	81	Omni 3"x10'	62.5
SBNHH-1D65B w/ Mount Pipe	81	PIROD 13' Low Profile Platform	42.5
SBNHH-1D65B w/ Mount Pipe	81	10' Dipole	42.5
SBNHH-1D65B w/ Mount Pipe	81	10' Dipole	42.5
SBNHH-1D65B w/ Mount Pipe	81	10' Dipole	42.5
RFS DB-T1-6Z-8AB-0Z	81	3' Yagi antenna	42.5
RFS DB-T1-6Z-8AB-0Z	81	Omni 3"x10'	42.5
B5/B13 RRH-BR04C (VERIZON - proposed)	81	3' Yagi antenna	42.5

MATERIAL STRENGTH

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

TOWER DESIGN NOTES

1. Tower is located in Hartford County, Connecticut.
2. Tower designed for Exposure B to the TIA-222-G Standard.
3. Tower designed for a 105.0 mph basic wind in accordance with the TIA-222-G Standard.
4. Tower is also designed for a 50.0 mph basic wind with 1.00 in ice. Ice is considered to increase in thickness with height.
5. Deflections are based upon a 60.0 mph wind.
6. Tower Structure Class II.
7. Topographic Category 1 with Crest Height of 0.00 ft
8. TOWER RATING: 82.2%

ALL REACTIONS ARE FACTORED

AXIAL 29211 lb

SHEAR 2692 lb *MOMENT 199592 lb-ft*

TORQUE 1067 lb-ft

50.0 mph WIND - 1.0000 in ICE

AXIAL 12614 lb

SHEAR 10023 lb *MOMENT 664484 lb-ft*

TORQUE 3415 lb-ft

REACTIONS - 105.0 mph WIND

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

Job: ***PLAINVILLE 3 CT***
Project: ***81 ft Monopole***
Client: VERIZON | Drawn by: kw | App'd:
Code: TIA-222-G | Date: 01/25/19 | Scale: N
Path: | Dwg No.

Tower Input Data

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

Tower is located in Hartford County, Connecticut.
Basic wind speed of 105.0 mph.
Structure Class II.
Exposure Category B.
Topographic Category 1.
Crest Height 0.00 ft.
Nominal ice thickness of 1.0000 in.
Ice thickness is considered to increase with height.
Ice density of 56.0 pcf.
A wind speed of 50.0 mph is used in combination with ice.
Temperature drop of 50.0 °F.
Deflections calculated using a wind speed of 60.0 mph.
A non-linear (P-delta) analysis was used.
Pressures are calculated at each section.
Stress ratio used in pole design is 1.
Local bending stresses due to climbing loads, feed line supports, and appurtenance mounts are not considered.

Tapered Pole Section Geometry

Section	Elevation ft	Section Length ft	Splice Length ft	Number of Sides	Top Diameter in	Bottom Diameter in	Wall Thickness in	Bend Radius in	Pole Grade
L1	81.00-47.55	33.45	0.00	18	13.0000	17.7500	0.1875	0.7500	A572-65 (65 ksi)
L2	47.55-37.55	10.00	2.90	18	17.7500	19.1700	0.2500	1.0000	A572-65 (65 ksi)
L3	37.55-30.00	10.45	0.00	18	18.2582	19.7400	0.2500	1.0000	A572-65 (65 ksi)
L4	30.00-0.00	30.00		18	19.7400	24.0000	0.3125	1.2500	A572-65 (65 ksi)

Feed Line/Linear Appurtenances - Entered As Area

Description	Face or Leg	Allow Shield	Exclude From Torque Calculation	Component Type	Placement ft	Total Number		C_AA_A ft^2/ft	Weight plf
1 1/4 (VERIZON - existing)	A	No	No	Inside Pole	81.00 - 0.00	6	No Ice	0.00	0.66
							1/2" Ice	0.00	0.66
							1" Ice	0.00	0.66
1 5/8 Fiber Cable	A	No	No	Inside Pole	81.00 - 0.00	2	No Ice	0.00	1.04
							1/2" Ice	0.00	1.04
							1" Ice	0.00	1.04

****

Description	Face or Leg	Allow Shield	Exclude From Torque Calculation	Component Type	Placement ft	Total Number		C_AA_A ft^2/ft	Weight plf
7/8	A	No	No	Inside Pole	62.00 - 0.00	4	No Ice	0.00	0.54
							1/2" Ice	0.00	0.54
							1" Ice	0.00	0.54
7/8	A	No	No	Inside Pole	42.00 - 0.00	6	No Ice	0.00	0.54
							1/2" Ice	0.00	0.54
							1" Ice	0.00	0.54

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 15' Low Profile Platform (VERIZON - existing)	A	None		0.0000	81.00	No Ice	17.30	17.30	1500.00
						1/2" Ice	22.10	22.10	2030.00
						1" Ice	26.90	26.90	2560.00
BXA-70063-4CF-EDIN w/mount pipe	A	From Face	5.00 -6.00 0.00	0.0000	81.00	No Ice 1/2" Ice 1" Ice	4.96 5.34 5.73	3.70 4.32 4.94	28.25 70.71 118.98
BXA-70063-4CF-EDIN w/mount pipe	B	From Face	5.00 -6.00 0.00	0.0000	81.00	No Ice 1/2" Ice 1" Ice	4.96 5.34 5.73	3.70 4.32 4.94	28.25 70.71 118.98
BXA-70063-4CF-EDIN w/mount pipe	C	From Face	5.00 -6.00 0.00	0.0000	81.00	No Ice 1/2" Ice 1" Ice	4.96 5.34 5.73	3.70 4.32 4.94	28.25 70.71 118.98
BXA-70063-4CF-EDIN w/mount pipe	A	From Face	5.00 6.00 0.00	0.0000	81.00	No Ice 1/2" Ice 1" Ice	4.96 5.34 5.73	3.70 4.32 4.94	28.25 70.71 118.98
BXA-70063-4CF-EDIN w/mount pipe	B	From Face	5.00 6.00 0.00	0.0000	81.00	No Ice 1/2" Ice 1" Ice	4.96 5.34 5.73	3.70 4.32 4.94	28.25 70.71 118.98
BXA-70063-4CF-EDIN w/mount pipe	C	From Face	5.00 6.00 0.00	0.0000	81.00	No Ice 1/2" Ice 1" Ice	4.96 5.34 5.73	3.70 4.32 4.94	28.25 70.71 118.98
SBNHH-1D65B w/ Mount Pipe	A	From Face	5.00 -2.00 0.00	0.0000	81.00	No Ice 1/2" Ice 1" Ice	8.42 8.98 9.50	7.09 8.27 9.17	66.55 135.68 212.84
SBNHH-1D65B w/ Mount Pipe	A	From Face	5.00 2.00 0.00	0.0000	81.00	No Ice 1/2" Ice 1" Ice	8.42 8.98 9.50	7.09 8.27 9.17	66.55 135.68 212.84
SBNHH-1D65B w/ Mount Pipe	B	From Face	5.00 -2.00 0.00	0.0000	81.00	No Ice 1/2" Ice 1" Ice	8.42 8.98 9.50	7.09 8.27 9.17	66.55 135.68 212.84
SBNHH-1D65B w/ Mount Pipe	B	From Face	5.00 2.00 0.00	0.0000	81.00	No Ice 1/2" Ice 1" Ice	8.42 8.98 9.50	7.09 8.27 9.17	66.55 135.68 212.84
SBNHH-1D65B w/ Mount Pipe	C	From Face	5.00 -2.00 0.00	0.0000	81.00	No Ice 1/2" Ice 1" Ice	8.42 8.98 9.50	7.09 8.27 9.17	66.55 135.68 212.84
SBNHH-1D65B w/ Mount Pipe	C	From Face	5.00 2.00 0.00	0.0000	81.00	No Ice 1/2" Ice 1" Ice	8.42 8.98 9.50	7.09 8.27 9.17	66.55 135.68 212.84
RFS DB-T1-6Z-8AB-0Z	A	From Face	2.00	0.0000	81.00	No Ice	4.80	2.00	44.00

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			1/2" Ice	5.07	2.19	80.13
			0.00			1" Ice	5.35	2.39	120.22
RFS DB-T1-6Z-8AB-0Z	B	From Face	2.00	0.0000	81.00	No Ice	4.80	2.00	44.00
			0.00			1/2" Ice	5.07	2.19	80.13
			0.00			1" Ice	5.35	2.39	120.22
**********									
B5/B13 RRH-BR04C	A	From Face	4.00	0.0000	81.00	No Ice	1.88	1.01	82.00
(VERIZON - proposed)			-2.00			1/2" Ice	2.05	1.14	98.43
			0.00			1" Ice	2.22	1.28	117.53
B5/B13 RRH-BR04C	B	From Face	4.00	0.0000	81.00	No Ice	1.88	1.01	82.00
			-2.00			1/2" Ice	2.05	1.14	98.43
			0.00			1" Ice	2.22	1.28	117.53
B5/B13 RRH-BR04C	C	From Face	4.00	0.0000	81.00	No Ice	1.88	1.01	82.00
			-2.00			1/2" Ice	2.05	1.14	98.43
			0.00			1" Ice	2.22	1.28	117.53
B2/B66A RRH-BR049	A	From Face	4.00	0.0000	81.00	No Ice	1.88	1.25	97.50
			2.00			1/2" Ice	2.05	1.39	115.84
			0.00			1" Ice	2.22	1.54	136.97
B2/B66A RRH-BR049	B	From Face	4.00	0.0000	81.00	No Ice	1.88	1.25	97.50
			2.00			1/2" Ice	2.05	1.39	115.84
			0.00			1" Ice	2.22	1.54	136.97
B2/B66A RRH-BR049	C	From Face	4.00	0.0000	81.00	No Ice	1.88	1.25	97.50
			2.00			1/2" Ice	2.05	1.39	115.84
			0.00			1" Ice	2.22	1.54	136.97
**********									
PiROD 13' Low Profile Platform	A	None		0.0000	62.50	No Ice	15.70	15.70	1300.00
						1/2" Ice	20.10	20.10	1765.00
						1" Ice	24.50	24.50	2230.00
20' Dipole	A	From Face	3.00	0.0000	62.50	No Ice	7.87	7.87	60.00
			0.00			1/2" Ice	10.04	10.04	115.61
			10.00			1" Ice	12.10	12.10	184.01
Omni 2"x4'	A	From Face	3.00	0.0000	62.50	No Ice	0.79	0.79	15.00
			0.00			1/2" Ice	1.03	1.03	21.34
			3.00			1" Ice	1.28	1.28	30.48
Omni 2"x4'	A	From Face	3.00	0.0000	62.50	No Ice	0.79	0.79	15.00
			0.00			1/2" Ice	1.03	1.03	21.34
			3.00			1" Ice	1.28	1.28	30.48
Omni 3"x10'	B	From Face	3.00	0.0000	62.50	No Ice	3.00	3.00	20.00
			0.00			1/2" Ice	4.03	4.03	41.79
			5.00			1" Ice	5.03	5.03	70.14
********									
PiROD 13' Low Profile Platform	A	None		0.0000	42.50	No Ice	15.70	15.70	1300.00
						1/2" Ice	20.10	20.10	1765.00
						1" Ice	24.50	24.50	2230.00
10' Dipole	B	From Face	3.00	0.0000	42.50	No Ice	4.00	4.00	25.00
			5.00			1/2" Ice	4.97	4.97	53.13
			5.00			1" Ice	5.57	5.57	87.92
10' Dipole	B	From Face	3.00	0.0000	42.50	No Ice	4.00	4.00	25.00
			-5.00			1/2" Ice	4.97	4.97	53.13
			5.00			1" Ice	5.57	5.57	87.92
10' Dipole	B	From Face	3.00	0.0000	42.50	No Ice	4.00	4.00	25.00
			-5.00			1/2" Ice	4.97	4.97	53.13
			-2.00			1" Ice	5.57	5.57	87.92
3' Yagi antenna	B	From Face	3.00	0.0000	42.50	No Ice	0.60	0.30	10.00
			0.00			1/2" Ice	0.81	0.41	36.35
			4.00			1" Ice	1.04	0.54	66.52
Omni 3"x10'	A	From Face	3.00	0.0000	42.50	No Ice	3.00	3.00	20.00

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
			5.00			1/2" Ice	4.03	4.03	41.79
			8.00			1" Ice	5.03	5.03	70.14
3' Yagi antenna	A	From Face	3.00	0.0000	42.50	No Ice	0.60	0.30	10.00
			0.00			1/2" Ice	0.81	0.41	36.35
			4.00			1" Ice	1.04	0.54	66.52

Load Combinations

Comb. No.	Description
1	Dead Only
2	1.2 Dead+1.6 Wind 0 deg - No Ice
3	0.9 Dead+1.6 Wind 0 deg - No Ice
4	1.2 Dead+1.6 Wind 30 deg - No Ice
5	0.9 Dead+1.6 Wind 30 deg - No Ice
6	1.2 Dead+1.6 Wind 60 deg - No Ice
7	0.9 Dead+1.6 Wind 60 deg - No Ice
8	1.2 Dead+1.6 Wind 90 deg - No Ice
9	0.9 Dead+1.6 Wind 90 deg - No Ice
10	1.2 Dead+1.6 Wind 120 deg - No Ice
11	0.9 Dead+1.6 Wind 120 deg - No Ice
12	1.2 Dead+1.6 Wind 150 deg - No Ice
13	0.9 Dead+1.6 Wind 150 deg - No Ice
14	1.2 Dead+1.6 Wind 180 deg - No Ice
15	0.9 Dead+1.6 Wind 180 deg - No Ice
16	1.2 Dead+1.6 Wind 210 deg - No Ice
17	0.9 Dead+1.6 Wind 210 deg - No Ice
18	1.2 Dead+1.6 Wind 240 deg - No Ice
19	0.9 Dead+1.6 Wind 240 deg - No Ice
20	1.2 Dead+1.6 Wind 270 deg - No Ice
21	0.9 Dead+1.6 Wind 270 deg - No Ice
22	1.2 Dead+1.6 Wind 300 deg - No Ice
23	0.9 Dead+1.6 Wind 300 deg - No Ice
24	1.2 Dead+1.6 Wind 330 deg - No Ice
25	0.9 Dead+1.6 Wind 330 deg - No Ice
26	1.2 Dead+1.0 Ice+1.0 Temp
27	1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp
28	1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp
29	1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp
30	1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp
31	1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp
32	1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp
33	1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp
34	1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp
35	1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp
36	1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp
37	1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp
38	1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp
39	Dead+Wind 0 deg - Service
40	Dead+Wind 30 deg - Service
41	Dead+Wind 60 deg - Service
42	Dead+Wind 90 deg - Service
43	Dead+Wind 120 deg - Service

Comb. No.	Description
44	Dead+Wind 150 deg - Service
45	Dead+Wind 180 deg - Service
46	Dead+Wind 210 deg - Service
47	Dead+Wind 240 deg - Service
48	Dead+Wind 270 deg - Service
49	Dead+Wind 300 deg - Service
50	Dead+Wind 330 deg - Service

Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical lb	Horizontal, X lb	Horizontal, Z lb
Pole	Max. Vert	27	29210.94	0.00	2668.80
	Max. H_x	21	9460.65	10023.36	0.00
	Max. H_z	2	12614.21	-0.00	9889.17
	Max. M_x	2	654244.03	-0.00	9889.17
	Max. M_z	8	664330.16	-10023.36	0.00
	Max. Torsion	8	3415.07	-10023.36	0.00
	Min. Vert	5	9460.65	-5011.68	8564.27
	Min. H_x	9	9460.65	-10023.36	0.00
	Min. H_z	14	12614.21	-0.00	-9889.17
	Min. M_x	14	-652358.83	-0.00	-9889.17
	Min. M_z	20	-664483.42	10023.36	0.00
	Min. Torsion	20	-3415.00	10023.36	0.00

Tower Mast Reaction Summary

Load Combination	Vertical lb	$Shear_x$ lb	$Shear_z$ lb	Overturning Moment, M_x lb-ft	Overturning Moment, M_z lb-ft	Torque lb-ft
Dead Only	10511.84	-0.00	-0.00	-770.43	63.30	0.01
1.2 Dead+1.6 Wind 0 deg - No Ice	12614.21	0.00	-9889.17	-654244.03	74.07	137.48
0.9 Dead+1.6 Wind 0 deg - No Ice	9460.65	0.00	-9889.17	-643349.30	52.86	139.13
1.2 Dead+1.6 Wind 30 deg - No Ice	12614.21	5011.68	-8564.27	-566685.72	-332184.44	-1591.80
0.9 Dead+1.6 Wind 30 deg - No Ice	9460.65	5011.68	-8564.27	-557221.36	-326778.94	-1581.54
1.2 Dead+1.6 Wind 60 deg - No Ice	12614.21	8680.49	-4944.59	-327522.54	-575357.46	-2891.71
0.9 Dead+1.6 Wind 60 deg - No Ice	9460.65	8680.49	-4944.59	-321961.54	-565986.75	-2875.64
1.2 Dead+1.6 Wind 90 deg - No Ice	12614.21	10023.36	-0.00	-896.95	-664330.16	-3415.07
0.9 Dead+1.6 Wind 90 deg - No Ice	9460.65	10023.36	-0.00	-657.86	-653514.56	-3397.55
1.2 Dead+1.6 Wind 120 deg - No Ice	12614.21	8680.49	4944.59	325705.84	-575319.04	-3024.42
0.9 Dead+1.6 Wind 120 deg - No Ice	9460.65	8680.49	4944.59	320629.49	-565959.21	-3010.06
1.2 Dead+1.6 Wind 150 deg - No Ice	12614.21	5011.68	8564.27	564823.36	-332145.99	-1825.08
0.9 Dead+1.6 Wind 150 deg -	9460.65	5011.68	8564.27	555856.59	-326751.37	-1817.72

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
No Ice						
1.2 Dead+1.6 Wind 180 deg - No Ice	12614.21	0.00	9889.17	652358.83	74.10	-137.42
0.9 Dead+1.6 Wind 180 deg - No Ice	9460.65	0.00	9889.17	641968.15	52.87	-139.09
1.2 Dead+1.6 Wind 210 deg - No Ice	12614.21	-5011.68	8564.27	564825.74	332295.44	1586.91
0.9 Dead+1.6 Wind 210 deg - No Ice	9460.65	-5011.68	8564.27	555858.29	326858.03	1576.67
1.2 Dead+1.6 Wind 240 deg - No Ice	12614.21	-8680.49	4944.59	325708.24	575471.03	2886.72
0.9 Dead+1.6 Wind 240 deg - No Ice	9460.65	-8680.49	4944.59	320631.20	566067.68	2870.72
1.2 Dead+1.6 Wind 270 deg - No Ice	12614.21	-10023.36	-0.00	-896.89	664483.42	3415.00
0.9 Dead+1.6 Wind 270 deg - No Ice	9460.65	-10023.36	-0.00	-657.84	653623.96	3397.49
1.2 Dead+1.6 Wind 300 deg - No Ice	12614.21	-8680.49	-4944.59	-327524.86	575509.44	3029.33
0.9 Dead+1.6 Wind 300 deg - No Ice	9460.65	-8680.49	-4944.59	-321963.21	566095.23	3014.92
1.2 Dead+1.6 Wind 330 deg - No Ice	12614.21	-5011.68	-8564.27	-566688.06	332333.86	1830.03
0.9 Dead+1.6 Wind 330 deg - No Ice	9460.65	-5011.68	-8564.27	-557223.05	326885.57	1822.63
1.2 Dead+1.0 Ice+1.0 Temp	29210.94	-0.01	-0.10	-7045.60	51.90	0.47
1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp	29210.94	-0.00	-2668.80	-199592.34	50.68	-29.87
1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp	29210.94	1346.06	-2311.25	-173794.50	-97303.71	-559.18
1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp	29210.94	2331.39	-1334.36	-103326.73	-168580.86	-938.55
1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp	29210.94	2692.13	-0.01	-7052.25	-194646.47	-1066.18
1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp	29210.94	2331.45	1334.39	89208.53	-168558.15	-908.04
1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp	29210.94	1346.06	2311.24	159674.30	-97294.53	-506.52
1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp	29210.94	-0.00	2668.79	185466.99	51.03	30.84
1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp	29210.94	-1346.06	2311.24	159676.12	97397.49	560.05
1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp	29210.94	-2331.45	1334.39	89210.45	168662.88	939.31
1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp	29210.94	-2692.13	-0.01	-7051.99	194751.96	1067.08
1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp	29210.94	-2331.39	-1334.36	-103328.21	168685.38	909.12
1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp	29210.94	-1346.06	-2311.25	-173796.06	97406.06	507.57
Dead+Wind 0 deg - Service	10511.84	0.00	-1805.76	-119178.71	64.14	24.21
Dead+Wind 30 deg - Service	10511.84	915.13	-1563.83	-103316.15	-60149.03	-295.45
Dead+Wind 60 deg - Service	10511.84	1585.05	-902.88	-59980.20	-104228.94	-535.87
Dead+Wind 90 deg - Service	10511.84	1830.26	-0.00	-781.11	-120360.67	-632.64
Dead+Wind 120 deg - Service	10511.84	1585.05	902.88	58416.52	-104226.41	-559.89
Dead+Wind 150 deg - Service	10511.84	915.13	1563.83	101752.06	-60147.98	-337.19
Dead+Wind 180 deg - Service	10511.84	0.00	1805.76	117614.00	64.15	-24.19
Dead+Wind 210 deg - Service	10511.84	-915.13	1563.83	101753.55	60277.15	295.29
Dead+Wind 240 deg - Service	10511.84	-1585.05	902.88	58416.59	104354.81	535.71
Dead+Wind 270 deg - Service	10511.84	-1830.26	-0.00	-781.10	120489.10	632.65
Dead+Wind 300 deg - Service	10511.84	-1585.05	-902.88	-59980.26	104357.34	560.09

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+Wind 330 deg - Service	10511.84	-915.13	-1563.83	-103316.21	60277.35	337.39

Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	81 - 47.55	14.6201	48	1.5791	0.0153
L2	47.55 - 37.55	5.0292	48	1.0106	0.0103
L3	40.45 - 30	3.6390	48	0.8577	0.0088
L4	30 - 0	1.9773	48	0.6313	0.0057

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
81.00	PiROD 15' Low Profile Platform	48	14.6201	1.5791	0.0153	12441
62.50	PiROD 13' Low Profile Platform	48	8.8533	1.2889	0.0127	3362
42.50	PiROD 13' Low Profile Platform	48	4.0171	0.9025	0.0093	2878

Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P lb	ϕP_{allow} lb	% Capacity	Pass Fail
L1	81 - 47.55	Pole	TP17.75x13x0.1875	1	-5711.56	776523.00	78.1	Pass
L2	47.55 - 37.55	Pole	TP19.17x17.75x0.25	2	-7898.17	1091120.00	67.5	Pass
L3	37.55 - 30	Pole	TP19.74x18.2582x0.25	3	-9015.63	1149000.00	82.2	Pass
L4	30 - 0	Pole	TP24x19.74x0.3125	4	-12599.20	1745560.00	79.3	Pass
							Summary	
						Pole (L3)	82.2	Pass
						RATING =	**82.2**	**Pass**

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

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

Site Data

BU#: *0*
Site Name: *Plainville 3 CT*
App #: *0*

Pole Manufacturer:	*Other*

Reactions		
Mu:	664	ft-kips
Axial, Pu:	13	kips
Shear, Vu:	10	kips
Eta Factor, η	0.5	TIA G (Fig. 4-4)

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

Anchor Rod Data		
Qty:	8	
Diam:	2.25	in
Rod Material:	A615-J	
Strength (Fu):	100	ksi
Yield (Fy):	75	ksi
Bolt Circle:	32	in

Anchor Rod Results

		Non-Rigid
Max Rod (Cu+ Vu/ŋ):	128.7 Kips	AISC LRFD
Allowable Axial, Φ*Fu*Anet:	260.0 Kips	φ*Tn
Anchor Rod Stress Ratio:	49.5% **Pass**	

Plate Data		
Diam:	38	in
Thick:	1.75	in
Grade:	60	ksi
Single-Rod B-eff:	9.52	in

Base Plate Results

	Flexural Check	Non-Rigid
Base Plate Stress:	40.1 ksi	AISC LRFD
Allowable Plate Stress:	54.0 ksi	φ*Fy
Base Plate Stress Ratio:	74.2% **Pass**	Y.L. Length: 21.17

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

n/a

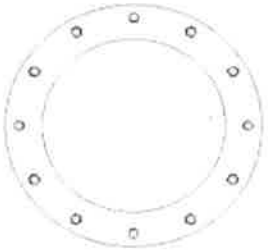
Stiffener Results

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

Pole Data		
Diam:	24	in
Thick:	0.3125	in
Grade:	65	ksi
# of Sides:	18	"0" IF Round
Fu	80	ksi
Reinf. Fillet Weld	0	"0" if None



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

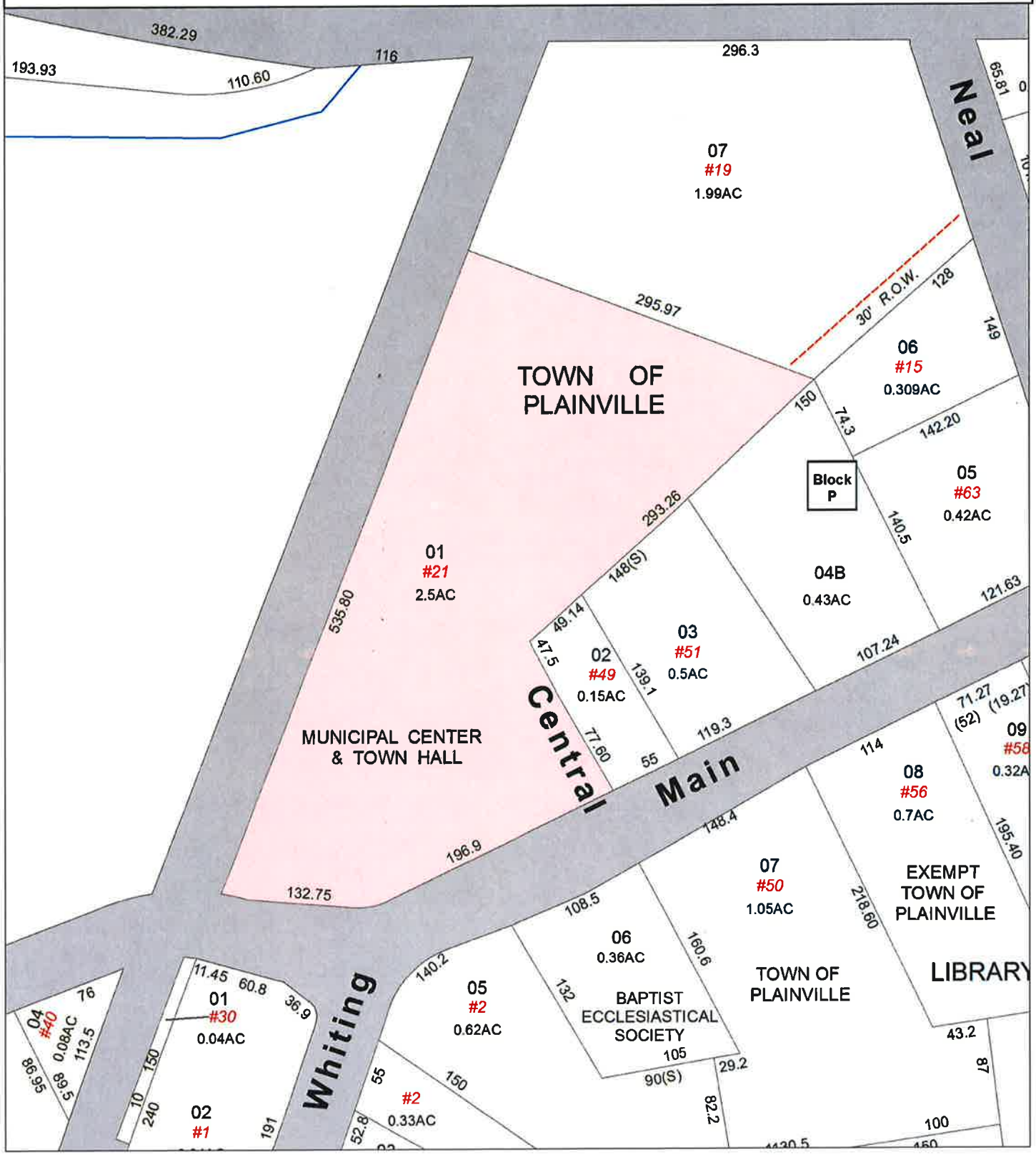
** Note: for complete joint penetration groove welds the groove depth must be exactly 1/2 the stiffener thickness for calculation purposes

ATTACHMENT 4

Town of Plainville, Connecticut - Assessment Parcel Map

Parcel: 24-P-01

Address: 21 EAST MAIN ST



0 30 60 90 120

Feet

Approximate Scale: 1 inch = 100 feet

Map Produced February 2017

Plainville, CT : Assessor Database

Property Search:

Parcel ID: **Alternate ID:** **Owner 1 Name:** **Street Number:** **Street Name:**

Search Reset

Property Detail:

Parcel ID:	Alternate ID/Map Block Lot:	Card:	Card:	Street Name:	Street Number:	Zoning:	LUC:	Acres:
24-P-01	R07119	1	1	EAST MAIN ST	21	CC	Town of Plainville	2.50

Owner Information:

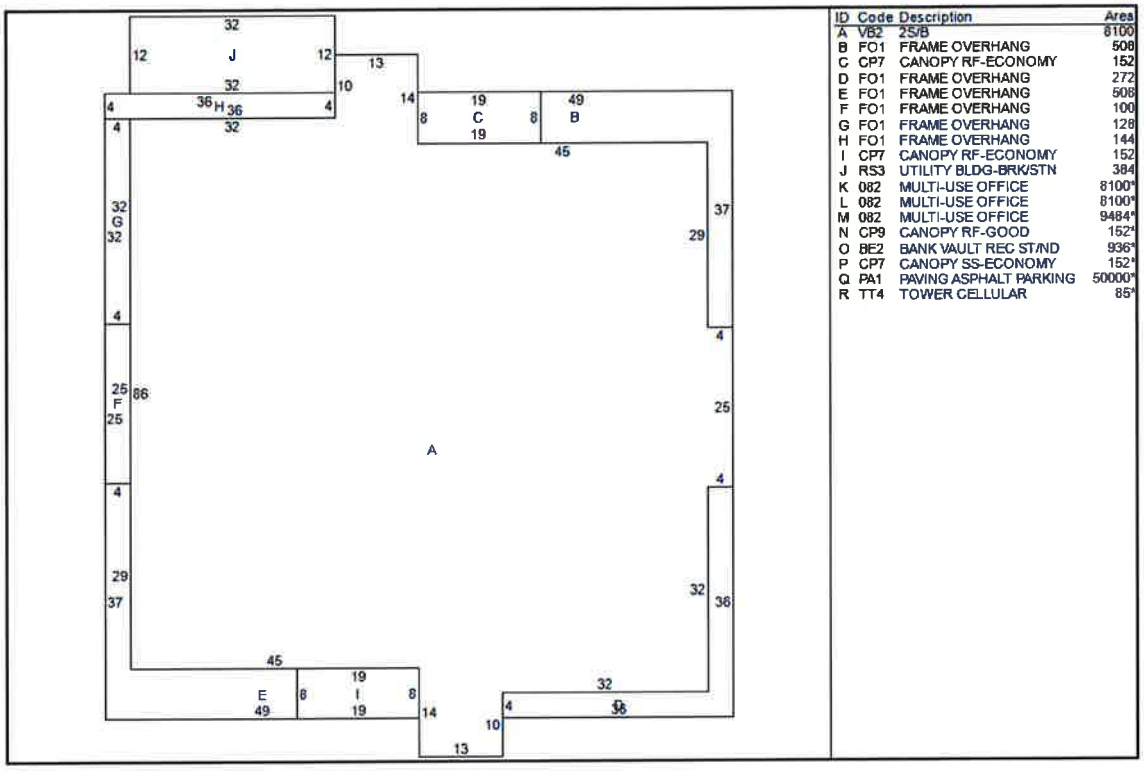
Owner 1 Name: PLAINVILLE TOWN OF
Owner 2 Name:
Street 1: 1 CENTRAL SQ
Street 2:
City: PLAINVILLE
State: CT
Zip: 06062
Volume: 173
Page: 633
Deed Date: 1971-11-19

Property Images:

Picture:

There is no picture available.

Sketch:



ID	Code	Description	Area
A	VB2	2S/B	8100
B	FO1	FRAME OVERHANG	508
C	CP7	CANOPY RF-ECONOMY	152
D	FO1	FRAME OVERHANG	272
E	FO1	FRAME OVERHANG	508
F	FO1	FRAME OVERHANG	100
G	FO1	FRAME OVERHANG	128
H	FO1	FRAME OVERHANG	144
I	CP7	CANOPY RF-ECONOMY	152
J	RS3	UTILITY BLDG-BRK/STN	384
K	082	MULTI-USE OFFICE	8100*
L	082	MULTI-USE OFFICE	8100*
M	082	MULTI-USE OFFICE	9484*
N	CP9	CANOPY RF-GOOD	152*
O	BE2	BANK VAULT REC ST/ND	936*
P	CP7	CANOPY SS-ECONOMY	152*
Q	PA1	PAVING ASPHALT PARKING	50000*
R	TT4	TOWER CELLULAR	85*

Building Information:

Building Number: 1
Units: 1
Structure Type: OFFICE BLDG L/R 1-4S
Grade: A
Identical Units: 1
Year Built: 1973

Valuation:

Appraised Land:	$320,000.00
Appraised Bldg:	$4,361,000.00
Appraised Total:	$4,681,000.00
Total Assessment:	$3,276,700.00

Sales History:

Book:	Page:	Sale Date:	Price:	Validity:	Sale Type:
158	641	02/05/1968			
173	633	11/19/1971			

Out-Buildings:

Code:	Description:	Units:	Year Built:	Size1:	Size2:	Area:	Grade:	Condition:
TT4	TOWER CELLULAR	1	2003	1	85	85	C	NORMAL (Comm)
PA1	PAVING ASPHALT PARKING	1	1973	0	0	50000	C	GOOD (Comm)
CP7	CANOPY SS-ECONOMY	2	1973	1	152	152	C	GOOD (Comm)

Building Interior/Exterior Information:

Floor From:	Floor To:	Area:	Use Type:	Exterior Walls:	Contruction Type:	Heating:	A/C:	Plumbing:	Functional Utility:
B1	B1	8100	MULTI-USE OFFICE	BRICK VENEER	WOOD FRAME/JOIST/BEAM	HOT AIR	CENTRAL	NORMAL	4
02	02	9484	MULTI-USE OFFICE	BRICK VENEER	WOOD FRAME/JOIST/BEAM	HOT AIR	CENTRAL	NORMAL	4
01	01	8100	MULTI-USE OFFICE	BRICK VENEER	WOOD FRAME/JOIST/BEAM	HOT AIR	CENTRAL	NORMAL	4

Wed. February 6, 2019 : 01:15 PM : 0.15s : 10mb

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	2	2	neopost 02/11/2019 US POSTAGE $002.79[2] ZIP 06103 041L12203937
	Postmaster, per *(name of receiving employee)*		

USPS® Tracking Number / Firm-specific Identifier	Address (Name, Street, City, State, and ZIP Code™)	Postage	Fee	Special Handling	Parcel Airlift
1.	Robert E. Lee, Town Manager Town of Plainville 1 Central Square Plainville, CT 06062				
2.	Garrett Daigle, Interim Town Planner Town of Plainville 1 Central Square Plainville, CT 06062				
3.					
4.					
5.					
6.					

OLD STATE HOUSE STA 06103 FEB 11 2019 USPS