Robinson+Cole

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December 6, 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 Modifications**
281 Route 169, Woodstock, Connecticut

Dear Ms. Bachman:

Cellco Partnership d/b/a Verizon Wireless ("Cellco") currently maintains three (3) small cell wireless telecommunications facilities at the Woodstock Fairgrounds property, 281 Route 169 in Woodstock, Connecticut (the "Property"). These facilities were approved in 2014 in Council Petition No. 1119. Site 1 consists of a 35-foot pole supporting one (1) antenna and one (1) RRH. Site 2 consists of a 30-foot steel pole supporting two (2) antennas and two (2) RRHs. Site 3 consists of a 30-foot steel pole supporting one (1) antenna and one (1) RRH. The poles and Property are owned by Woodstock Agricultural Society, Inc. ("WASI"). Cellco now intends to replace all four (4) of its existing antennas with newer model antennas, at the same levels on each pole. Cellco also intends to replace all four (4) of its RRHs. 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 Michael L. Alberts, First Selectman for the Town of Woodstock; Delia Fey, Woodstock's Town Planner; and WASI, the owner of the Property and poles.

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 any of the existing poles.

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

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

4. The operation of the replacement antennas will not increase radio frequency (RF) emissions at the facility to a level at or above the Federal Communications Commission (FCC) safety standard. A cumulative Power Density table for each of the modified facilities is included in Attachment 2.

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

6. Each pole can support Cellco's proposed modifications. (*See* Structural Analysis Reports, for each pole, 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:
Michael L. Alberts, Woodstock First Selectman
Delia Fey, AICP, Woodstock Town Planner
Woodstock Agricultural Society, Inc.
Tim Parks

ATTACHMENT 1

Product Specifications

COMMSCOPE®

NH65S-DG-F0M

2-port small cell antenna, 2x (698-896 and 1710–2180 MHz), 65° HPBW with fixed tilt in the low band and manual tilt in the high band. Contains internal diplexer and active GPS L1 band antenna.

Electrical Specifications

Frequency Band, MHz	698–806	806–896	1710–1880	1850–1990	1920–2180
Gain, dBi	10.1	10.5	14.0	14.1	14.0
Beamwidth, Horizontal, degrees	69	65	60	60	61
Beamwidth, Vertical, degrees	39.9	35.7	14.1	13.5	13.1
Beam Tilt, degrees	0	0	0–16	0–16	0–16
USLS (First Lobe), dB	15	15	12	13	13
Front-to-Back Ratio at 180°, dB	24	32	24	25	25
Isolation, dB	25	25	25	25	25
VSWR | Return Loss, dB	1.5 | 14.0	1.5 | 14.0	1.5 | 14.0	1.5 | 14.0	1.5 | 14.0
PIM, 3rd Order, 2 x 20 W, dBc	-153	-153	-153	-153	-153
Input Power per Port, maximum, watts	125	125	125	125	125
Polarization	±45°	±45°	±45°	±45°	±45°
Impedance	50 ohm	50 ohm	50 ohm	50 ohm	50 ohm

Electrical Specifications, BASTA*

Frequency Band, MHz	698–806	806–896	1710–1880	1850–1990	1920–2180
Gain by all Beam Tilts, average, dBi	9.5	10.1	13.5	13.8	13.6
Gain by all Beam Tilts Tolerance, dB	±1.3	±0.8	±0.7	±0.5	±0.6
Gain by Beam Tilt, average, dBi			0 ° | 14.0 8 ° | 13.5 16 ° | 12.9	0 ° | 14.2 8 ° | 13.8 16 ° | 13.3	0 ° | 14.0 8 ° | 13.6 16 ° | 13.3
Beamwidth, Horizontal Tolerance, degrees	±7.5	±4.6	±5.1	±5.4	±7.7
Beamwidth, Vertical Tolerance, degrees	±6	±3.2	±1.1	±0.7	±0.8
USLS, beampeak to 20° above beampeak, dB			12	13	13
Front-to-Back Total Power at 180° ± 30°, dB	19	20	21	20	19
CPR at Boresight, dB	16	17	18	16	16
CPR at Sector, dB	9	5	9	9	10

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

General Specifications

Operating Frequency Band	1710 – 2180 MHz | 698 – 896 MHz
Antenna Type	Small Cell
Band	Multiband
Internal GPS frequency band	1575.42 MHz
Internal GPS VSWR	2.0
Performance Note	Outdoor usage

Mechanical Specifications

RF Connector Quantity, total	2

Product Specifications

NH65S-DG-F0M

RF Connector Interface	7-16 DIN Female
Color	Light gray
GPS Connector Interface	4.1-9.5 DIN Female
GPS Connector Quantity	1
Grounding Type	RF connector inner conductor and body grounded to reflector and mounting bracket
Radiator Material	Aluminum | Low loss circuit board
Radome Material	Fiberglass, UV resistant
RF Connector Location	Bottom
RF Connector Quantity, diplexed low and high bands	2
Wind Loading, frontal	224.0 N @ 150 km/h 50.4 lbf @ 150 km/h
Wind Loading, lateral	65.0 N @ 150 km/h 14.6 lbf @ 150 km/h
Wind Loading, rear	263.0 N @ 150 km/h 59.1 lbf @ 150 km/h
Wind Speed, maximum	241 km/h | 150 mph

Dimensions

Length	728.0 mm | 28.7 in
Width	301.0 mm | 11.9 in
Depth	181.0 mm | 7.1 in
Net Weight, without mounting kit	7.6 kg | 16.8 lb

Packed Dimensions

Length	976.0 mm | 38.4 in
Width	409.0 mm | 16.1 in
Depth	299.0 mm | 11.8 in
Shipping Weight	13.9 kg | 30.6 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

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**

Product Specifications

COMMSCOPE®

NH360QM-DG-2XR

2-port omni antenna, 2x (698-896 and 1695–2200 MHz), 360° HPBW, 2x RET with manual override, internal diplexer and active GPS L1 band antenna

Electrical Specifications

Frequency Band, MHz	698–806	806–896	1695–1880	1850–1990	1920–2200
Gain, dBi	6.1	7.1	9.7	9.9	9.9
Beamwidth, Horizontal, degrees	360	360	360	360	360
Beamwidth, Vertical, degrees	28.6	25.4	11.2	10.6	10.1
Beam Tilt, degrees	0–20	0–20	0–14	0–14	0–14
USLS (First Lobe), dB	16	15	14	13	13
Isolation, dB	25	25	25	25	25
VSWR | Return Loss, dB	1.5 | 14.0	1.5 | 14.0	1.5 | 14.0	1.5 | 14.0	1.5 | 14.0
PIM, 3rd Order, 2 x 20 W, dBc	-153	-153	-153	-153	-153
Input Power per Port, maximum, watts	125	125	125	125	125
Polarization	±45°	±45°	±45°	±45°	±45°
Impedance	50 ohm	50 ohm	50 ohm	50 ohm	50 ohm

Electrical Specifications, BASTA*

Frequency Band, MHz	698–806	806–896	1695–1880	1850–1990	1920–2200
Gain by all Beam Tilts, average, dBi	5.4	6.3	9.3	9.4	9.4
Gain by all Beam Tilts Tolerance, dB	±1	±0.7	±0.5	±0.7	±0.7
Gain by Beam Tilt, average, dBi	0 ° | 5.1	0 ° | 6.3	0 ° | 9.2	0 ° | 9.3	0 ° | 9.4
	10 ° | 5.4	10 ° | 6.3	7 ° | 9.3	7 ° | 9.5	7 ° | 9.6
	20 ° | 5.6	20 ° | 6.0	14 ° | 9.2	14 ° | 9.1	14 ° | 9.1
Beamwidth, Vertical Tolerance, degrees	±3.7	±3.2	±0.9	±1.1	±1.1
USLS, beampeak to 20° above beampeak, dB			13	13	13

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

General Specifications

Operating Frequency Band	1695 – 2200 MHz | 698 – 896 MHz
Antenna Type	Omni
Band	Multiband
Internal GPS frequency band	1575.42 MHz
Internal GPS VSWR	2.0
Performance Note	Outdoor usage
Total Input Power, maximum	400 W @ 50 °C

Mechanical Specifications

RF Connector Quantity, total	2
RF Connector Interface	7-16 DIN Female
Color	Light gray
GPS Connector Interface	4.1-9.5 DIN Female

Product Specifications

NH360QM-DG-2XR

GPS Connector Quantity	1
Grounding Type	RF connector inner conductor and body grounded to reflector and mounting bracket
Radiator Material	Aluminum | Low loss circuit board
Radome Material	ASA, UV stabilized
Reflector Material	Aluminum
RF Connector Location	Bottom
RF Connector Quantity, diplexed low and high bands	2
Wind Loading, maximum	225.0 N @ 150 km/h 50.6 lbf @ 150 km/h
Wind Speed, maximum	200 km/h | 124 mph

Dimensions

Length	982.0 mm | 38.7 in
Outer Diameter	305.0 mm | 12.0 in
Net Weight, without mounting kit	15.3 kg | 33.7 lb

Remote Electrical Tilt (RET) Information

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

Packed Dimensions

Length	1251.0 mm | 49.3 in
Width	427.0 mm | 16.8 in
Depth	407.0 mm | 16.0 in
Shipping Weight	20.6 kg | 45.4 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

* Footnotes

Performance Note	Severe environmental conditions may degrade optimum performance

NOKIA

Nokia 9768 Compact Metro Radio Outdoor

B13 2x5W

The Nokia 9768 Compact Metro Radio Outdoor B13 2x5W (9768 CMRO B13 2x5W) is a next-generation radio that brings together the latest innovations in amplifiers and transceivers to minimize size and improve performance. Operating in the B13 frequency band, the 9768 CMRO integrates a full sector remote radio head (RRH) into a single compact unit that connects to an external baseband unit (BBU). Its compact design and modular approach bring more flexibility to deployment, accelerating time to market and helping to streamline zoning approval. The 9768 CMRO, in association with the Nokia 9926 BBU, is ideal for covering high-capacity places and events.

The Nokia 9768 Compact Metro Radio Outdoor B13 2x5W is the latest enhancement to the industry leading Nokia end-to-end Small Cell solutions.

The 9768 CMRO connects to an external BBU. The BBU comes in a conventional or clustered configuration and may be located at the same location as the 9768 CMRO or at a different location. The 9768 CMRO supports daisy chaining, thereby enabling multiple 9768 CMROs to connect to the BBU over the same optical cable.

The unit is easily deployed almost anywhere without the complexity or cost associated with traditional macro cell site installation. The 9768 CMRO brings new deployment flexibility with its small dimensions and volume and its modular

NOKIA

approach in RF. It allows a smooth integration in urban furniture such as information panels for a respectful urban environment deployment.

Network deployment and optimization costs of the 9768 CMRO are also significantly reduced with self-organizing network (SON) features, powered by Bell Labs innovations.

SON technology increases operational efficiency and network performance by automating network configuration and optimization.

The 9768 CMRO interoperates with any vendor's macro network, which makes it well adapted for the deployment of heterogeneous networks (HetNets).

Features

- Small, lightweight unit that is virtually invisible when integrated in urban furniture or mounted on a lamppost, pole, or wall
- Supports up to 10 MHz carrier bandwidth
- Supports external antennas, providing maximum flexibility
- 2x2 multiple-input multiple-output (MIMO) configuration, 2 transmit and 2 receive path diversity for improved signal quality, capacity and range
- Daisy chaining with up to four 9768 CMRO B13 2x5W units
- Supports standard Common Public Radio Interface (CPRI™)
- Compliant with 3GPP Releases 8, 9 and 10
- Macro BBU features enable handovers to and from macro networks, SON capabilities and real-time operational status and service monitoring

Benefits

- High-capacity solution to cover places where a large number of LTE subscribers congregate
- Deployment flexibility including integration in urban furniture
- More compact footprint than the previous generation of Metro Radio Outdoor products
- Interworking with any other vendor's macro network (multivendor HetNet) to extend macro coverage and capacity to both outdoor and indoor locations with a low total cost of ownership (TCO)
- LTE-Advanced capable and fully compatible with virtual RAN next-generation architectures

Technical specifications

Physical dimensions

- Height: 265 mm (10.4 in)
- Width: 180 mm (7.09 in)
- Depth: 155 mm (6.1 in)
- Volume: 7.4 L (without antennas)

Weight

- 7.2kg (15.88 lb).

Mounting options

- Mountable on lamppost, pole or wall
- Vertical orientation
- Strand mount
- Integration in urban furniture

Power supply

- 110 V AC to 270 V AC or -40 V to -57 V DC
- Consumption: typical 85 W, max 100 W

NOKIA

Interfaces

- Two SFP connectors for CPRI rate 7
- Two 4.3-10 (Mini-DIN) connectors for external RF antennas
- AC or DC power input connector

Certifications and standards

- FCC
- Safety: CSA
- IP65 certified

Environmental parameters

- Temperature range: - 40°C to +50°C (+55°C with solar shield)
- Relative humidity: 5% to 100%

Radio characteristics

- Operating bands: 3GPP LTE B13
- Maximum transmission power: 2 x 37 dBm (2x5W) at the antenna connectors
- 2 x2 MIMO – 2Rx diversity
- Two LTE carriers of up to 20 MHz channel bandwidth (not supported in first release)
- LTE theoretical user peak rates (20 MHz bandwidth, 100 PRBs):
  - 150.752 Mb/s DL, UE Cat.4
  - 55.056 Mb/s UL, 16 QAM
- Receive sensitivity: -98 dBm at antenna connector

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Product code: PR1601017525EN

NOKIA

Nokia 9768 Compact Metro Radio Outdoor

B66 (AWS1-3) 2x5W

The Nokia 9768 Compact Metro Radio Outdoor B66 (AWS1-3) 2x5W (9768 CMRO B66 (AWS1-3) 2x5W) is a next-generation radio that brings together the latest innovations in amplifiers and transceivers to minimize size and improve performance. Operating in the B66 (AWS1-3) frequency band, the 9768 CMRO integrates a full sector remote radio head (RRH) into a single compact unit that connects to an external baseband unit (BBU). Its compact design and modular approach bring more flexibility to deployment, accelerating time to market and helping to streamline zoning approval. The 9768 CMRO, in association with the Nokia 9926 BBU, is ideal for covering high-capacity places and events.

The Nokia 9768 Compact Metro Radio Outdoor B66 (AWS-1-3) 2x5W is the latest enhancement to the industry leading Nokia end-to-end Small Cell solutions.

The 9768 CMRO connects to an external BBU. The BBU comes in a conventional or clustered configuration and may be located at the same location as the 9768 CMRO or at a different location. The 9768 CMRO supports daisy chaining, thereby enabling multiple 9768 CMROs to connect to the BBU over the same optical cable.

The unit is easily deployed almost anywhere without the complexity or cost associated with traditional macro cell site installation. The 9768 CMRO brings new deployment flexibility with its

NOKIA

small dimensions and volume and its modular approach in RF. It allows a smooth integration in urban furniture such as information panels for a respectful urban environment deployment.

Network deployment and optimization costs of the 9768 CMRO are also significantly reduced with self-organizing network (SON) features, powered by Bell Labs innovations.

SON technology increases operational efficiency and network performance by automating network configuration and optimization.

The 9768 CMRO interoperates with any vendor's macro network, which makes it well adapted for the deployment of heterogeneous networks (HetNets).

Features

- Small, lightweight unit that is virtually invisible when integrated in urban furniture or mounted on a lamppost, pole, or wall
- Supports up to 20 MHz carrier bandwidth
- Supports external antennas, providing maximum flexibility
- 2x2 multiple-input multiple-output (MIMO) configuration, 2 transmit and 2 receive path diversity for improved signal quality, capacity and range
- Daisy chaining with up to four 9768 CMRO B66 2x5W units
- Supports standard Common Public Radio Interface (CPRI™)
- Compliant with 3GPP Releases 8, 9 and 10
- Macro BBU features enable handovers to and from macro networks, SON capabilities and real-time operational status and service monitoring

Benefits

- High-capacity solution to cover places where a large number of LTE subscribers congregate
- Deployment flexibility including integration in urban furniture
- More compact footprint than the previous generation of Metro Radio Outdoor products
- Interworking with any other vendor's macro network (multivendor HetNet) to extend macro coverage and capacity to both outdoor and indoor locations with a low total cost of ownership (TCO)
- LTE-Advanced capable and fully compatible with virtual RAN next-generation architectures

Technical specifications

Physical dimensions

- Height: 265 mm (10.4 in)
- Width: 180 mm (7.09 in)
- Depth: 135 mm (5.3 in)
- Volume: <6.5 L (without antennas)

Weight

- Approximately 6.8 kg (15 lb) (without antennas)

Mounting options

- Mountable on lamppost, pole or wall
- Vertical orientation
- Strand mount
- Integration in urban furniture

Power supply

- 110 V AC to 270 V AC or -40 V to -57 V DC
- Consumption: typical 85 W, max 100 W

NOKIA

Interfaces

- Two SFP connectors for CPRI rate 7
- Two 4.3-10 (Mini-DIN) connectors for external RF antennas
- AC or DC power input connector

Certifications and standards

- FCC
- Safety: CSA
- IP65 certified

Environmental parameters

- Temperature range: - 40°C to +50°C (+55°C with solar shield)
- Relative humidity: 5% to 100%

Radio characteristics

- Operating bands: 3GPP LTE Band 66 (without AWS4)
- Maximum transmission power: 2 x 37 dBm (2x5W) at the antenna connectors
- 2 x2 MIMO – 2Rx diversity
- Two LTE carriers of up to 20 MHz channel bandwidth (not supported in first release)
- LTE theoretical user peak rates (20 MHz bandwidth, 100 PRBs):
  - 150.752 Mb/s DL, UE Cat.4
  - 55.056 Mb/s UL, 16 QAM
- Receive sensitivity: -98 dBm at antenna connector

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Product code: PR1601017525EN

ATTACHMENT 2

Site Name: Woodstock Fairgrounds CT - Site 1

Cumulative Power Density

Operator	Operating Frequency	Number of Trans.	ERP Per Trans.	Total ERP	Distance to Target	Calculated Power Density	Maximum Permissible Exposure*	Fraction of MPE
	(MHz)		(watts)	(watts)	(feet)	(mW/cm^2)	(mW/cm^2)	(%)
VZW PCS	1970	0	0	0	33.7	0.0000	1.0	0.00%
VZW Cellular	869	0	0	0	33.7	0.0000	0.579333333	0.00%
VZW AWS	2145	1	154	154	33.7	0.0488	1.0	4.88%
VZW 700	746	1	63	63	33.7	0.0199	0.497333333	4.01%

Total Percentage of Maximum Permissible Exposure 8.89%

*Guidelines adopted by the FCC on August 1, 1996, 47 CFR Section 1.13101 based on NCRP Report 86, 1986 and generally on ANSI/IEEE C95.1-1992

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

Absolute worst case maximum values used, including the following assumptions:
1. closest accessible point is distance from antenna to base of pole;
2. continuous transmission from all available channels at full power for indefinite time period; and,
3. all RF energy is assumed to be directed solely to the base of the pole.

Site Name: Woodstock Fairgrounds CT -Site 2

Cumulative Power Density

Operator	Operating Frequency	Number of Trans.	ERP Per Trans.	Total ERP	Distance to Target	Calculated Power Density	Maximum Permissible Exposure*	Fraction of MPE
	(MHz)		(watts)	(watts)	(feet)	(mW/cm^2)	(mW/cm^2)	(%)
VZW PCS	1970	0	0	0	28.7	0.0000	1.0	0.00%
VZW Cellular	869	0	0	0	28.7	0.0000	0.579333333	0.00%
VZW AWS	2145	2	154	308	28.7	0.1345	1.0	13.45%
VZW 700	746	2	63	126	28.7	0.0550	0.497333333	11.06%
Total Percentage of Maximum Permissible Exposure								24.51%

*Guidelines adopted by the FCC on August 1, 1996, 47 CFR Section 1.13101 based on NCRP Report 86, 1986 and generally on ANSI/IEEE C95.1-1992

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

Absolute worst case maximum values used, including the following assumptions:
1. closest accessible point is distance from antenna to base of pole;
2. continuous transmission from all available channels at full power for indefinite time period; and,
3. all RF energy is assumed to be directed solely to the base of the pole.

Site Name: Woodstock Fairgrounds CT - Site 3

Cumulative Power Density

Operator	Operating Frequency	Number of Trans.	ERP Per Trans.	Total ERP	Distance to Target	Calculated Power Density	Maximum Permissible Exposure*	Fraction of MPE
	(MHz)		(watts)	(watts)	(feet)	(mW/cm^2)	(mW/cm^2)	(%)
VZW PCS	1970	0	0	0	33.3	0.0000	1.0	0.00%
VZW Cellular	869	0	0	0	33.3	0.0000	0.579333333	0.00%
VZW AWS	2145	1	60	60	33.3	0.0195	1.0	1.95%
VZW 700	746	1	25	25	33.3	0.0081	0.497333333	1.63%

Total Percentage of Maximum Permissible Exposure 3.58%

*Guidelines adopted by the FCC on August 1, 1996, 47 CFR Section 1.13101 based on NCRP Report 86, 1986 and generally on ANSI/IEEE C95.1-1992

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

Absolute worst case maximum values used, including the following assumptions:
1. closest accessible point is distance from antenna to base of pole;
2. continuous transmission from all available channels at full power for indefinite time period; and,
3. all RF energy is assumed to be directed solely to the base of the pole.

ATTACHMENT 3

PJF PAUL J. FORD & COMPANY

Report Date:	October 10, 2017
Client:	All-Points Technology Corporation 3 Saddlebrook Drive Killingworth, CT 06419 Attn: Jason Mead 860-663-1697 jmead@allpointstech.com
Structure:	Existing 35-ft Distribution Pole #1
Site Name:	Verizon - Woodstock Fairgrounds CT Location #1
Site Reference #:	467218
Site Address:	281 Route 169
City, County, State:	Woodstock, Windham County, CT
Latitude, Longitude:	41.936583, -71.956653
PJF Project:	A99617-0008.001.6010

Paul J. Ford and Company is pleased to submit this "**Structural Analysis Report**". The purpose of this analysis is to determine if the structure has sufficient capacity to support the equipment and wire attachments described herein.

Analysis Criteria:

Reference Standard: IEEE Standards Association, "National Electrical Safety Code" (NESC) C2-2012
AWPA, Wood Poles: Specifications and Dimensions, ANSI 05.1-2008
USDA, RUS Bulletin 1724E-200, Section 12.3.1 (Foundation)

Loads:

The structure was analyzed with the equipment and wire attachments shown in Table 1 of this report.

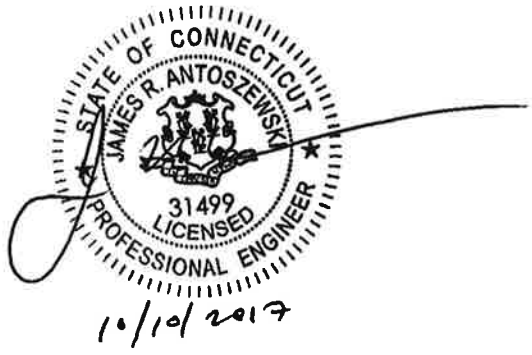
Summary of Analysis Results:

Existing Structure:	**Pass**
Existing Foundation:	**Pass**

We at Paul J. Ford and Company appreciate the opportunity of providing our continuing professional services to you and All-Points Technology Corporation. If you have any questions or need further assistance on this or any other projects please give us a call.

Respectfully Submitted by:
Paul J. Ford and Company

Chad B. Hines, P.E., S.E.
Engineering Manager
chines@pjfweb.com



10/10/2017

TABLE OF CONTENTS

1) INTRODUCTION

2) ANALYSIS CRITERIA

Table 1 – Equipment and Wire Attachments
Table 2 – Load Case Information

3) ANALYSIS PROCEDURE

Table 3 – Documents Provided
3.1) Analysis Method
3.2) Assumptions

4) ANALYSIS RESULTS

Table 4 – Maximum Structure Element Usage
Table 5 – Maximum Foundation Usages
4.1) Recommendations

5) CONCLUSION

STANDARD CONDITIONS

APPENDIX A – STRUCTURE PHOTO(S)

APPENDIX B – CALCULATIONS

1) INTRODUCTION

The purpose of this analysis is to determine if the wood pole and foundation have sufficient capacity to support the equipment and wire attachments described herein. The subject pole is a 45 foot long, Class 1, Southern Pine (SP) pole. The pole height above grade is 35'-0".

2) ANALYSIS CRITERIA

Table 1 – Equipment and Wire Attachments

Center Line Elevation (feet)	Status	Quantity	Description	Note
33.7	Proposed	1	Commscope NH65QS-DG-F0M	-
33	Proposed	2	Commscope Diplexers	-
30	Proposed	2	Nokia 9768 Compact Metro Radio Outdoor	-
26.8	Existing	1	Telco Service (0.5" dia x 0.221 lb/ft)	1
17.5	Existing	1	Lessee Fiber Termination Box	-
15	Existing	1	Lessee Electric Junction Box	-
7	Existing	1	Meter Box	-
5	Existing	1	Lessee Disconnect	-

Notes:
1. 63' Span

Table 2 - Load Case Information

Load Case Name	Radial Ice (inches)	Wind Speed (mph)	Overload Capacity Factors				Note
			Vertical	Wind	Wire Tension		
					Long.	Trans.	
NESC 250B (Heavy) – Grade C	0.5	39.5	1.9	1.75	1.0	1.3	-

Notes:
1. N/A

3) ANALYSIS PROCEDURE

Table 3 – Documents Provided

Document	Remarks	Reference	Source
Lease Exhibit Drawings (LE's)	All Points Technology, 9/21/17	20171656240, LE-1, LE-2, LE-3	All Points

Notes:
1. N/A

3.1) Analysis Method

The pole was analyzed using the commercially available software program Poleforeman. Loads from equipment and wire attachments are specified within the program. The software analyzes the pole per the NESC Loading District and NESC Construction Grade specified. The foundation strength is evaluated per the recommendations contained in RUS bulletin 1724E-200.

3.2) Assumptions

1) Wood pole species and class is in compliance with the specifications of ANSI 05.1.
2) Wood pole is in structurally sound condition and does not contain any "Prohibited Defects" as defined in ANSI 05.1 Section 5.2. Wood pole defects (if any) are in compliance with the "Permitted defects" of ANSI 05.1 Section 5.3 or the "Limited defects" as defined in ANSI 05.1 Section 5.4.
3) Wood pole is in a plumb vertical condition.
4) Overhead wire size and weight has been estimated as noted in Table 1.

5) Spans and wire sags/tensions are estimated based on google earth and/or photo imagery.
6) Crossarms, pins, and all other miscellaneous support hardware are adequate to support the attached equipment and wires.
7) Existing downguys and downguy anchors are sized and installed in accordance with the utility pole owner's engineering standards and are thus adequate to support the installed wire sags/tensions.
8) Foundation strength evaluation assumes "Average Soil" per RUS Bulletin 1724E-200 Section 12.3.1
9) No further modifications to the structure have been made other than those referenced herein.
10) This analysis does not imply to meet any serviceability criteria such as deflections, twist, sway, etc. unless expressly agreed to in writing.
11) The analysis does not consider the effects of long-term creep.

This analysis may be affected if any assumptions are not valid or have been made in error. If an assumption noted above is determined to be invalid, Paul J Ford and Company should be notified to determine the effect on the analysis results presented herein.

4) ANALYSIS RESULTS

The following table provides the maximum usages for each structure element type and the loading condition in which they occur:

Table 4 – Maximum Structure Element Usages

Pole Analysis		
Element Type	**Load Case**	**Usage (%)**
Pole Shaft	NESC 250B	31
	Maximum Structure Element Usage =	**31**
	Existing Structure Result =	**Pass**

Notes:
1. N/A

Table 5 – Maximum Structure Foundation Usages

Foundation Analysis		
	Load Case	**Usage (%)**
Direct Embed	NESC 250B	11
	Maximum Foundation Usage =	**11**
	Existing Foundation Result =	**Pass**

Notes:
1. N/A

4.1) Recommendations

None Required.

5) CONCLUSION

The wood pole has **sufficient** capacity to support the equipment and wire attachments described herein.

The foundation has **sufficient** capacity to support the equipment and wire attachments described herein.

This analysis is presented based upon the assumptions listed herein and information provided to Paul J. Ford and Company. If the existing conditions are different than those presented here, Paul J. Ford and Company should be contacted to verify the validity of the conclusions presented herein.

STANDARD CONDITIONS FOR FURNISHING OF PROFESSIONAL ENGINEERING SERVICES ON EXISTING STRUCTURES BY PAUL J. FORD AND COMPANY

1) It is the responsibility of the client to ensure that the information provided to Paul J. Ford and Company is accurate and complete. Paul J. Ford and Company will rely on the accuracy and completeness of such information in performing or furnishing services under this project.

2) If the existing conditions are not as represented on the referenced drawings and/or documents, Paul J. Ford and Company should be contacted immediately to evaluate the significance of the deviation.

3) The structure has been analyzed according to the minimum design loads recommended by the Reference Standard. If additional design loads are required, Paul J. Ford and Company should be made aware of this prior to the start of the project.

4) The standard of care for all Professional Engineering Services performed or furnished by Paul J. Ford and Company under this project will be the skill and care used by members of the Consultant's profession practicing under similar circumstances at the same time and in the same locality.

5) All Services are performed, results obtained, and recommendations made in accordance with generally accepted engineering principles and practices. Paul J. Ford and Company is not responsible for the conclusions, opinions and/or recommendations made by others based on the information supplied herein.

****

APPENDIX A

STRUCTURE PHOTOS

APPENDIX B

CALCULATIONS

PoleForeman - Pole Loading Analysis Report

License: Paul J Ford Co.

Version 5.8.11

POLE LOADING DATA

Pole: 45/1 Wood

Pole Loading
Horizontal: 31% (250B)
Vertical: 8% (k=1.20)

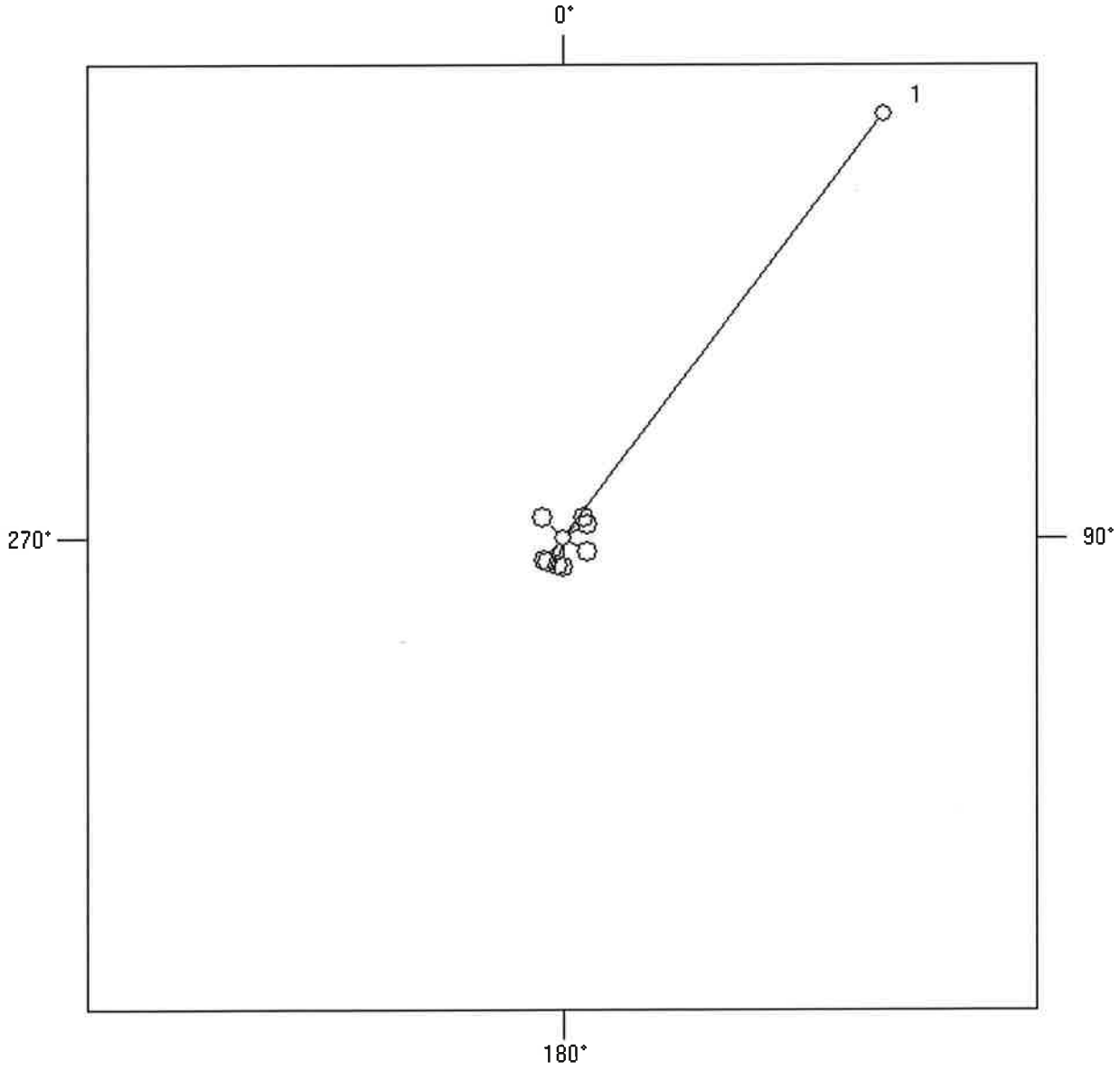
NESC Edition: 2012
Loading District: Heavy
Construction: Grade C (Elsewhere)

Rule 250B Loading: Wind (psf): 4 Ice (in): 0.5

POLES

Pole #	Length (ft)	Depth (ft)	Elevation (ft)
0	45	10	0
1	45	6.5	0

POLE LINE TOPOLOGY



SPANS

Span: 1 **Span Length (ft): 63** **Direction: 37°**

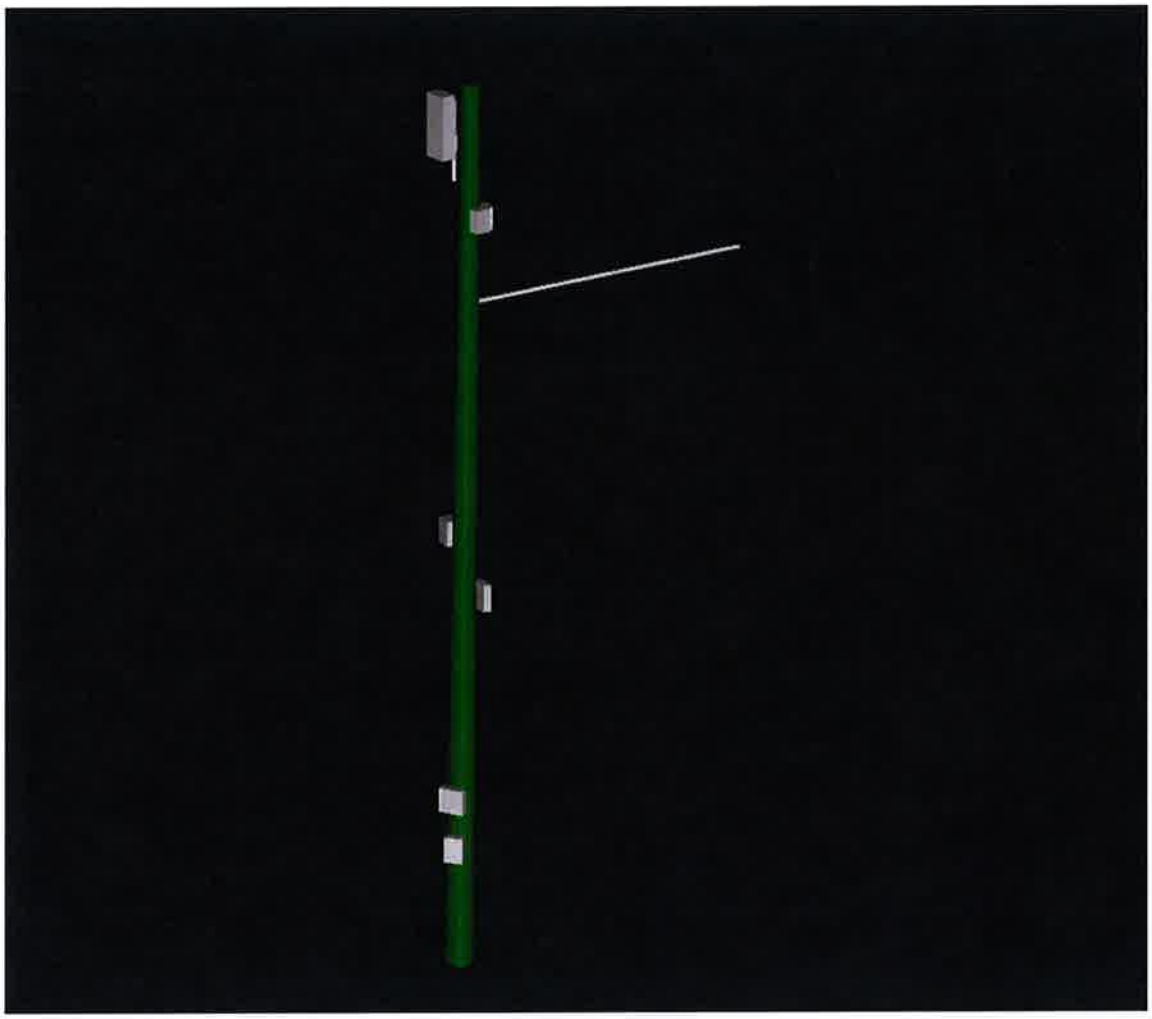
Joint Use

Joint Use Cable	Ruling Span (ft)	Diameter (in)	Weight (lbs/ft)	Attach A (ft)	Attach B (ft)	Tension (lbs)	Description
0.50" TELCO	50	0.50	0.22	26.7	30.2	970	Exist. Telco Service

EQUIPMENT

Equipment	Weight (lbs)	Attach (ft)	Direction
Commscope NH65S-DG-F0M	16.8	33.7	215°
User Defined Equipment	11.0	33.0	215°
(2) Commscope (diplexer/coupler)	28.1	33.0	220°
Nokia 9768 Compact Metro Radio Outdoor	44.0	30.0	120°
Nokia 9768 Compact Metro Radio Outdoor	44.0	30.0	60°
NRG NHC12128002 Fiber Box	10.0	17.5	315°
NRG Fiber / Square D Boxes	19.7	15.0	45°
Square D QO612L100RB Disconnect Box	9.7	5.0	180°
Meter_Box_12x12x4	20.0	7.0	190°

Solid Model View



PAUL J. FORD & COMPANY

Page 1 of 1
By CBH Date 10/10/2017
Project # 99617-0008.001.6010

Required Embedment Check - As per RUS Bulletin 1724E-200 Section 12.3.1

Pole Overall Height:	L	=	45	ft	
Embedment Depth:	D_e	=	10	ft	
Max Pole Groundline Moment:	M	=	39.8	ft-kips	(Worst Case - NESC 250C)
Max Equivalent Load @ 2' from top:	P	=	1206	lbs	
Soil Constant:	S_e	=	70		(Average Soil Assumed - RUS Section 12.3.1)
Overturning Load:	P_{ot}	=	$(S_e * D_e\text{^}3.75)/(L\text{-}2.0\text{-}0.662*D_e)$		(RUS Equation 12-1)
		=	10820	lbs	
Check Max Load < Overturning Load:		= = = >	OK		
			11%		

PJF PAUL J. FORD & COMPANY

Report Date:	October 10, 2017
Client:	All-Points Technology Corporation 3 Saddlebrook Drive Killingworth, CT 06419 Attn: Jason Mead 860-663-1697 jmead@allpointstech.com
Structure:	Existing 30-ft Distribution Pole #2
Site Name:	Verizon - Woodstock Fairgrounds CT Location #2
Site Reference #:	467218
Site Address:	281 Route 169
City, County, State:	Woodstock, Windham County, CT
Latitude, Longitude:	41.937149, -71.955139
PJF Project:	A99617-0009.001.6010

Paul J. Ford and Company is pleased to submit this "**Structural Analysis Report**". The purpose of this analysis is to determine if the structure has sufficient capacity to support the equipment and wire attachments described herein.

Analysis Criteria:

Reference Standard:	IEEE Standards Association, "National Electrical Safety Code" (NESC) C2-2012 AWPA, Wood Poles: Specifications and Dimensions, ANSI 05.1-2008 USDA, RUS Bulletin 1724E-200, Section 12.3.1 (Foundation)

Loads:

The structure was analyzed with the equipment and wire attachments shown in Table 1 of this report.

Summary of Analysis Results:

Existing Structure:	**Pass**
Existing Foundation:	**Pass**

We at Paul J. Ford and Company appreciate the opportunity of providing our continuing professional services to you and All-Points Technology Corporation. If you have any questions or need further assistance on this or any other projects please give us a call.

Respectfully Submitted by:
Paul J. Ford and Company

Chad B. Hines, P.E., S.E.
Engineering Manager
chines@pjfweb.com

STATE OF CONNECTICUT
JAMES R. ANTOSZEWSKI
31499
LICENSED
PROFESSIONAL ENGINEER

10/10/2017

TABLE OF CONTENTS

1) INTRODUCTION

2) ANALYSIS CRITERIA

Table 1 – Equipment and Wire Attachments
Table 2 – Load Case Information

3) ANALYSIS PROCEDURE

Table 3 – Documents Provided
3.1) Analysis Method
3.2) Assumptions

4) ANALYSIS RESULTS

Table 4 – Maximum Structure Element Usage
Table 5 – Maximum Foundation Usages
4.1) Recommendations

5) CONCLUSION

STANDARD CONDITIONS

APPENDIX A – STRUCTURE PHOTO(S)

APPENDIX B – CALCULATIONS

1) INTRODUCTION

The purpose of this analysis is to determine if the wood pole and foundation have sufficient capacity to support the equipment and wire attachments described herein. The subject pole is a 40 foot long, Class 1, Southern Pine (SP) pole. The pole height above grade is 30'-0".

2) ANALYSIS CRITERIA

Table 1 – Equipment and Wire Attachments

Center Line Elevation (feet)	Status	Quantity	Description	Note
28.7	Proposed	2	Commscope NH65S-DG-F0M	-
28	Proposed	4	Commscope Diplexers	-
12.5	Proposed	2	Nokia 9768 Compact Metro Radio Outdoor	-
26.5	Existing	1	Telco Service (0.5" dia x 0.221 lb/ft)	1
21.5	Existing	1	Secondary Power Service (0.64" dia x 0.165 lb/ft)	2
21 (top)	Existing	1	Riser (2")	-
16	Existing	1	Lessee Fiber Termination Box	-
5	Existing	1	Meter Box	-
4	Existing	1	Lessee Disconnect	-

Notes:
1. 100' Span
2. 75' Span

Table 2 - Load Case Information

Load Case Name	Radial Ice (inches)	Wind Speed (mph)	Overload Capacity Factors				Note
			Vertical	Wind	Wire Tension		
					Long.	Trans.	
NESC 250B (Heavy) – Grade C	0.5	39.5	1.9	1.75	1.0	1.3	-

Notes:
1. N/A

3) ANALYSIS PROCEDURE

Table 3 – Documents Provided

Document	Remarks	Reference	Source
Lease Exhibit Drawings (LE's)	All Points Technology, 9/21/17	20171656240, LE-1, LE-2, LE-4	All Points

Notes:
1. N/A

3.1) Analysis Method

The pole was analyzed using the commercially available software program Poleforeman. Loads from equipment and wire attachments are specified within the program. The software analyzes the pole per the NESC Loading District and NESC Construction Grade specified. The foundation strength is evaluated per the recommendations contained in RUS bulletin 1724E-200.

3.2) Assumptions

1) Wood pole species and class is in compliance with the specifications of ANSI 05.1.
2) Wood pole is in structurally sound condition and does not contain any "Prohibited Defects" as defined in ANSI 05.1 Section 5.2. Wood pole defects (if any) are in compliance with the "Permitted defects" of ANSI 05.1 Section 5.3 or the "Limited defects" as defined in ANSI 05.1 Section 5.4.
3) Wood pole is in a plumb vertical condition.

4) Overhead wire size and weight has been estimated as noted in Table 1.
5) Spans and wire sags/tensions are estimated based on google earth and/or photo imagery.
6) Crossarms, pins, and all other miscellaneous support hardware are adequate to support the attached equipment and wires.
7) Existing downguys and downguy anchors are sized and installed in accordance with the utility pole owner's engineering standards and are thus adequate to support the installed wire sags/tensions.
8) Foundation strength evaluation assumes "Average Soil" per RUS Bulletin 1724E-200 Section 12.3.1
9) No further modifications to the structure have been made other than those referenced herein.
10) This analysis does not imply to meet any serviceability criteria such as deflections, twist, sway, etc. unless expressly agreed to in writing.
11) The analysis does not consider the effects of long-term creep.

This analysis may be affected if any assumptions are not valid or have been made in error. If an assumption noted above is determined to be invalid, Paul J Ford and Company should be notified to determine the effect on the analysis results presented herein.

4) ANALYSIS RESULTS

The following table provides the maximum usages for each structure element type and the loading condition in which they occur:

Table 4 – Maximum Structure Element Usages

Pole Analysis		
Element Type	**Load Case**	**Usage (%)**
Pole Shaft	NESC 250B	25
	Maximum Structure Element Usage =	**25**
	Existing Structure Result =	**Pass**

Notes:
1. N/A

Table 5 – Maximum Structure Foundation Usages

Foundation Analysis		
	Load Case	**Usage (%)**
Direct Embed	NESC 250B	8
	Maximum Foundation Usage =	**8**
	Existing Foundation Result =	**Pass**

Notes:
1. N/A

4.1) Recommendations

None Required.

5) CONCLUSION

The wood pole has **sufficient** capacity to support the equipment and wire attachments described herein.

The foundation has **sufficient** capacity to support the equipment and wire attachments described herein.

This analysis is presented based upon the assumptions listed herein and information provided to Paul J. Ford and Company. If the existing conditions are different than those presented here, Paul J. Ford and Company should be contacted to verify the validity of the conclusions presented herein.

STANDARD CONDITIONS FOR FURNISHING OF PROFESSIONAL ENGINEERING SERVICES ON EXISTING STRUCTURES BY PAUL J. FORD AND COMPANY

1) It is the responsibility of the client to ensure that the information provided to Paul J. Ford and Company is accurate and complete. Paul J. Ford and Company will rely on the accuracy and completeness of such information in performing or furnishing services under this project.

2) If the existing conditions are not as represented on the referenced drawings and/or documents, Paul J. Ford and Company should be contacted immediately to evaluate the significance of the deviation.

3) The structure has been analyzed according to the minimum design loads recommended by the Reference Standard. If additional design loads are required, Paul J. Ford and Company should be made aware of this prior to the start of the project.

4) The standard of care for all Professional Engineering Services performed or furnished by Paul J. Ford and Company under this project will be the skill and care used by members of the Consultant's profession practicing under similar circumstances at the same time and in the same locality.

5) All Services are performed, results obtained, and recommendations made in accordance with generally accepted engineering principles and practices. Paul J. Ford and Company is not responsible for the conclusions, opinions and/or recommendations made by others based on the information supplied herein.

****

APPENDIX A

STRUCTURE PHOTOS

APPENDIX B

CALCULATIONS

PoleForeman - Pole Loading Analysis Report

License: Paul J Ford Co.

Version 5.8.11

POLE LOADING DATA

Pole: 40/1 Wood

Pole Loading
Horizontal: 25% (250B)
Vertical: 6% (k=1.20)

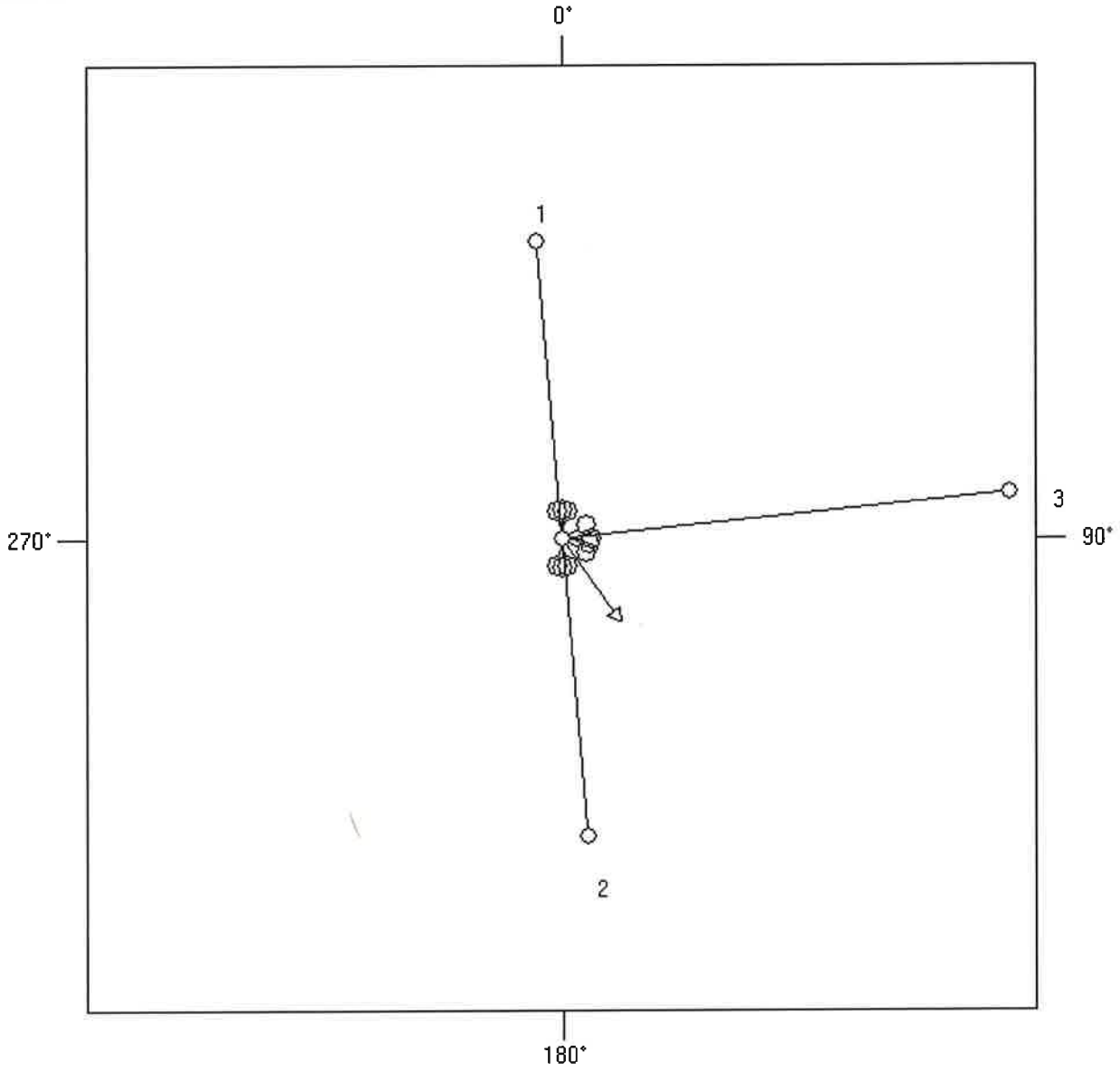
NESC Edition: 2012
Loading District: Heavy
Construction: Grade C (Elsewhere)

Rule 250B Loading: Wind (psf): 4 Ice (in): 0.5

POLES

Pole #	Length (ft)	Depth (ft)	Elevation (ft)
0	40	10	0
1	40	10	0
2	40	10	0
3	40	10	0

POLE LINE TOPOLOGY



PoleForeman - Pole Loading Analysis Report

License: Paul J Ford Co.

Version 5.8.11

SPANS

Span: 1 **Span Length (ft): 50** **Direction: 355°**

Joint Use

Joint Use Cable	Ruling Span (ft)	Diameter (in)	Weight (lbs/ft)	Attach A (ft)	Attach B (ft)	Tension (lbs)	Description
0.50" TELCO	50	0.50	0.22	26.5	26.5	970	Exist. Telco Service

Span: 2 **Span Length (ft): 50** **Direction: 175°**

Joint Use

Joint Use Cable	Ruling Span (ft)	Diameter (in)	Weight (lbs/ft)	Attach A (ft)	Attach B (ft)	Tension (lbs)	Description
0.50" TELCO	50	0.50	0.22	26.5	26.5	970	Exist. Telco Service

Span: 3 **Span Length (ft): 75** **Direction: 84°**

Secondary							
4 AL TX SECD	75	0	21.6	21.6		719	

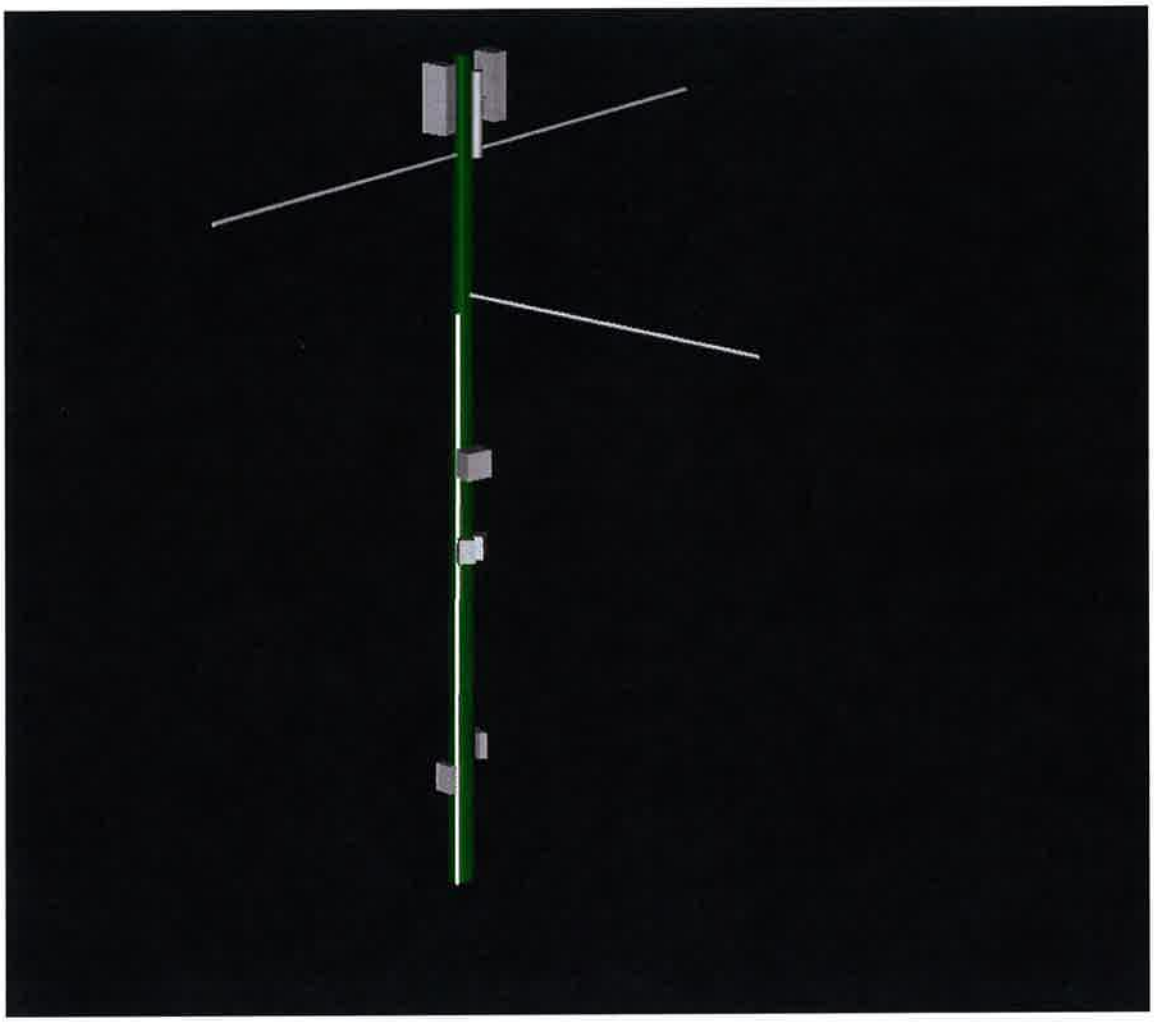
EQUIPMENT

Equipment	Weight (lbs)	Attach (ft)	Direction
Commscope NH65S-DG-F0M	16.8	28.7	170°
User Defined Equipment	22.0	28.0	90°
(2) Commscope (diplexer/coupler)	28.1	28.0	350°
Nokia 9768 Compact Metro Radio Outdoor	14.0	12.5	120°
Nokia 9768 Compact Metro Radio Outdoor	14.0	12.5	60°
NRG NHC12128002 Fiber Box	10.0	15.7	100°
Commscope NH65S-DG-F0M	16.8	28.7	0°
Square D QO612L100RB Disconnect Box	8.3	4.0	180°
Meter_Box_12x12x4	20.0	5.0	10°
(2) Commscope (diplexer/coupler)	28.1	28.0	190°

RISERS

Riser	Length (ft)	Direction
2" Riser - Primary	21	145°

Solid Model View



PAUL J. FORD & COMPANY

Page 1 of 1
By CBH Date 10/10/2017
Project # 99617-0009.001.6010

Required Embedment Check - As per RUS Bulletin 1724E-200 Section 12.3.1

Pole Overall Height:	L	=	40	ft	
Embedment Depth:	D_e	=	10	ft	
Max Pole Groundline Moment:	M	=	27	ft-kips	(Worst Case - NESC 250C)
Max Equivalent Load @ 2' from top:	P	=	964	lbs	
Soil Constant:	S_e	=	70		(Average Soil Assumed - RUS Section 12.3.1)
Overturning Load:	P_{ot}	=	$(S_e * D_e\text{^}3.75)/(L\text{-}2.0\text{-}0.662*D_e)$		(RUS Equation 12-1)
		=	12544	lbs	
Check Max Load < Overturning Load:		= = = >	OK		
			8%		

PJF PAUL J. FORD & COMPANY

Report Date:	October 10, 2017
Client:	All-Points Technology Corporation 3 Saddlebrook Drive Killingworth, CT 06419 Attn: Jason Mead 860-663-1697 jmead@allpointstech.com
Structure:	Existing 30-ft Distribution Pole #3
Site Name:	Verizon - Woodstock Fairgrounds CT Location #3
Site Reference #:	467218
Site Address:	281 Route 169
City, County, State:	Woodstock, Windham County, CT
Latitude, Longitude:	41.938868, -71.953089
PJF Project:	A99617-0010.001.6010

Paul J. Ford and Company is pleased to submit this "**Structural Analysis Report**". The purpose of this analysis is to determine if the structure has sufficient capacity to support the equipment and wire attachments described herein.

Analysis Criteria:

Reference Standard:	IEEE Standards Association, "National Electrical Safety Code" (NESC) C2-2012 AWPA, Wood Poles: Specifications and Dimensions, ANSI 05.1-2008 USDA, RUS Bulletin 1724E-200, Section 12.3.1 (Foundation)

Loads:

The structure was analyzed with the equipment and wire attachments shown in Table 1 of this report.

Summary of Analysis Results:

Existing Structure:	**Pass**
Existing Foundation:	**Pass**

We at Paul J. Ford and Company appreciate the opportunity of providing our continuing professional services to you and All-Points Technology Corporation. If you have any questions or need further assistance on this or any other projects please give us a call.

Respectfully Submitted by:
Paul J. Ford and Company

Chad B. Hines, P.E., S.E.
Engineering Manager
chines@pjfweb.com

TABLE OF CONTENTS

1) INTRODUCTION

2) ANALYSIS CRITERIA

Table 1 – Equipment and Wire Attachments
Table 2 – Load Case Information

3) ANALYSIS PROCEDURE

Table 3 – Documents Provided
3.1) Analysis Method
3.2) Assumptions

4) ANALYSIS RESULTS

Table 4 – Maximum Structure Element Usage
Table 5 – Maximum Foundation Usages
4.1) Recommendations

5) CONCLUSION

STANDARD CONDITIONS

APPENDIX A – STRUCTURE PHOTO(S)

APPENDIX B – CALCULATIONS

1) INTRODUCTION

The purpose of this analysis is to determine if the wood pole and foundation have sufficient capacity to support the equipment and wire attachments described herein. The subject pole is a 40 foot long, Class 1, Southern Pine (SP) pole. The pole height above grade is 30'-0".

2) ANALYSIS CRITERIA

Table 1 – Equipment and Wire Attachments

Center Line Elevation (feet)	Status	Quantity	Description	Note
33.3	Proposed	1	Commscope NH360QM-DG-2XR	-
29.5	Proposed	2	Commscope Diplexers	-
12.5	Proposed	2	Nokia 9768 Compact Metro Radio Outdoor	-
25	Existing	1	Secondary Power Service (0.64" dia x 0.165 lb/ft)	1
23.5	Existing	1	Telco Service (0.5" dia x 0.221 lb/ft)	1
25	Existing	1	Pole Mounted Spotlight (Rectangular)	-
24	Existing	1	Pole Mounted Spotlight (Rectangular)	
15.5	Existing	1	Lessee Fiber Termination Box	-
6	Existing	1	Electric Box	-

Notes:
1. 50 ft. span

Table 2 - Load Case Information

Load Case Name	Radial Ice (inches)	Wind Speed (mph)	Overload Capacity Factors				Note
			Vertical	Wind	Wire Tension		
					Long.	Trans.	
NESC 250B (Heavy) – Grade C	0.5	39.5	1.9	1.75	1.0	1.3	-

Notes:
1. N/A

3) ANALYSIS PROCEDURE

Table 3 – Documents Provided

Document	Remarks	Reference	Source
Lease Exhibit Drawings (LE's)	All Points Technology, 9/21/17	20171656240, LE-1, LE-2, LE-5	All Points

Notes:
1. N/A

3.1) Analysis Method

The pole was analyzed using the commercially available software program Poleforeman. Loads from equipment and wire attachments are specified within the program. The software analyzes the pole per the NESC Loading District and NESC Construction Grade specified. The foundation strength is evaluated per the recommendations contained in RUS bulletin 1724E-200.

3.2) Assumptions

1) Wood pole species and class is in compliance with the specifications of ANSI 05.1.
2) Wood pole is in structurally sound condition and does not contain any "Prohibited Defects" as defined in ANSI 05.1 Section 5.2. Wood pole defects (if any) are in compliance with the "Permitted defects" of ANSI 05.1 Section 5.3 or the "Limited defects" as defined in ANSI 05.1 Section 5.4.
3) Wood pole is in a plumb vertical condition.
4) Overhead wire size and weight has been estimated as noted in Table 1.

5) Spans and wire sags/tensions are estimated based on google earth and/or photo imagery.
6) Crossarms, pins, and all other miscellaneous support hardware are adequate to support the attached equipment and wires.
7) Existing downguys and downguy anchors are sized and installed in accordance with the utility pole owner's engineering standards and are thus adequate to support the installed wire sags/tensions.
8) Foundation strength evaluation assumes "Average Soil" per RUS Bulletin 1724E-200 Section 12.3.1
9) No further modifications to the structure have been made other than those referenced herein.
10) This analysis does not imply to meet any serviceability criteria such as deflections, twist, sway, etc. unless expressly agreed to in writing.
11) The analysis does not consider the effects of long-term creep.

This analysis may be affected if any assumptions are not valid or have been made in error. If an assumption noted above is determined to be invalid, Paul J Ford and Company should be notified to determine the effect on the analysis results presented herein.

4) ANALYSIS RESULTS

The following table provides the maximum usages for each structure element type and the loading condition in which they occur:

Table 4 – Maximum Structure Element Usages

Pole Analysis		
Element Type	**Load Case**	**Usage (%)**
Pole Shaft	NESC 250B	53
	Maximum Structure Element Usage =	**53**
	Existing Structure Result =	**Pass**

Notes:
1. N/A

Table 5 – Maximum Structure Foundation Usages

Foundation Analysis		
	Load Case	**Usage (%)**
Direct Embed	NESC 250B	16
	Maximum Foundation Usage =	**16**
	Existing Foundation Result =	**Pass**

Notes:
1. N/A

4.1) Recommendations

None Required.

5) CONCLUSION

The wood pole has **sufficient** capacity to support the equipment and wire attachments described herein.

The foundation has **sufficient** capacity to support the equipment and wire attachments described herein.

This analysis is presented based upon the assumptions listed herein and information provided to Paul J. Ford and Company. If the existing conditions are different than those presented here, Paul J. Ford and Company should be contacted to verify the validity of the conclusions presented herein.

STANDARD CONDITIONS FOR FURNISHING OF PROFESSIONAL ENGINEERING SERVICES ON EXISTING STRUCTURES BY PAUL J. FORD AND COMPANY

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2) If the existing conditions are not as represented on the referenced drawings and/or documents, Paul J. Ford and Company should be contacted immediately to evaluate the significance of the deviation.

3) The structure has been analyzed according to the minimum design loads recommended by the Reference Standard. If additional design loads are required, Paul J. Ford and Company should be made aware of this prior to the start of the project.

4) The standard of care for all Professional Engineering Services performed or furnished by Paul J. Ford and Company under this project will be the skill and care used by members of the Consultant's profession practicing under similar circumstances at the same time and in the same locality.

5) All Services are performed, results obtained, and recommendations made in accordance with generally accepted engineering principles and practices. Paul J. Ford and Company is not responsible for the conclusions, opinions and/or recommendations made by others based on the information supplied herein.

****

APPENDIX A

STRUCTURE PHOTOS


COURTESY
SHUTTLE
STOP

APPENDIX B

CALCULATIONS

PoleForeman - Pole Loading Analysis Report

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Version 5.8.11

POLE LOADING DATA

Pole: 40/1 Wood

Pole Loading
Horizontal: 53% (250B)
Vertical: 9% (k=1.20)

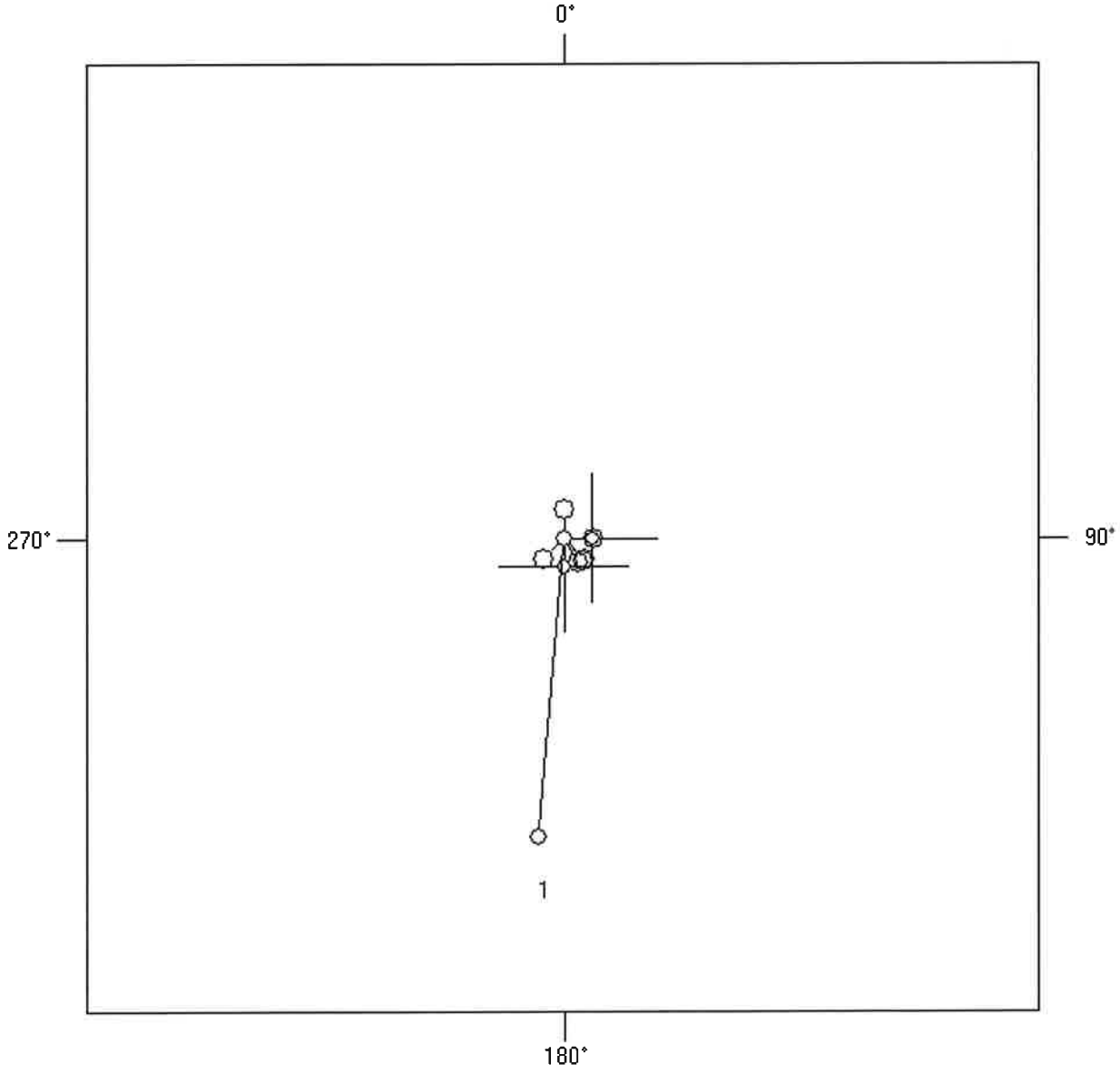
NESC Edition: 2012
Loading District: Heavy
Construction: Grade C (Elsewhere)

Rule 250B Loading: Wind (psf): 4 Ice (in): 0.5

POLES

Pole #	Length (ft)	Depth (ft)	Elevation (ft)
0	40+4.0	10	0
1	40	10	0

POLE LINE TOPOLOGY



PoleForeman - Pole Loading Analysis Report

License: Paul J Ford Co.

Version 5.8.11

SPANS

Span: 1 **Span Length (ft): 50** **Direction: 185°**

Secondary					
4 AL TX SECD	50	0	25.0	21.0	622

Joint Use

Joint Use Cable	Ruling Span (ft)	Diameter (in)	Weight (lbs/ft)	Attach A (ft)	Attach B (ft)	Tension (lbs)	Description
0.50" TELCO	50	0.50	0.22	23.5	19.5	970	Exist. Telco Service

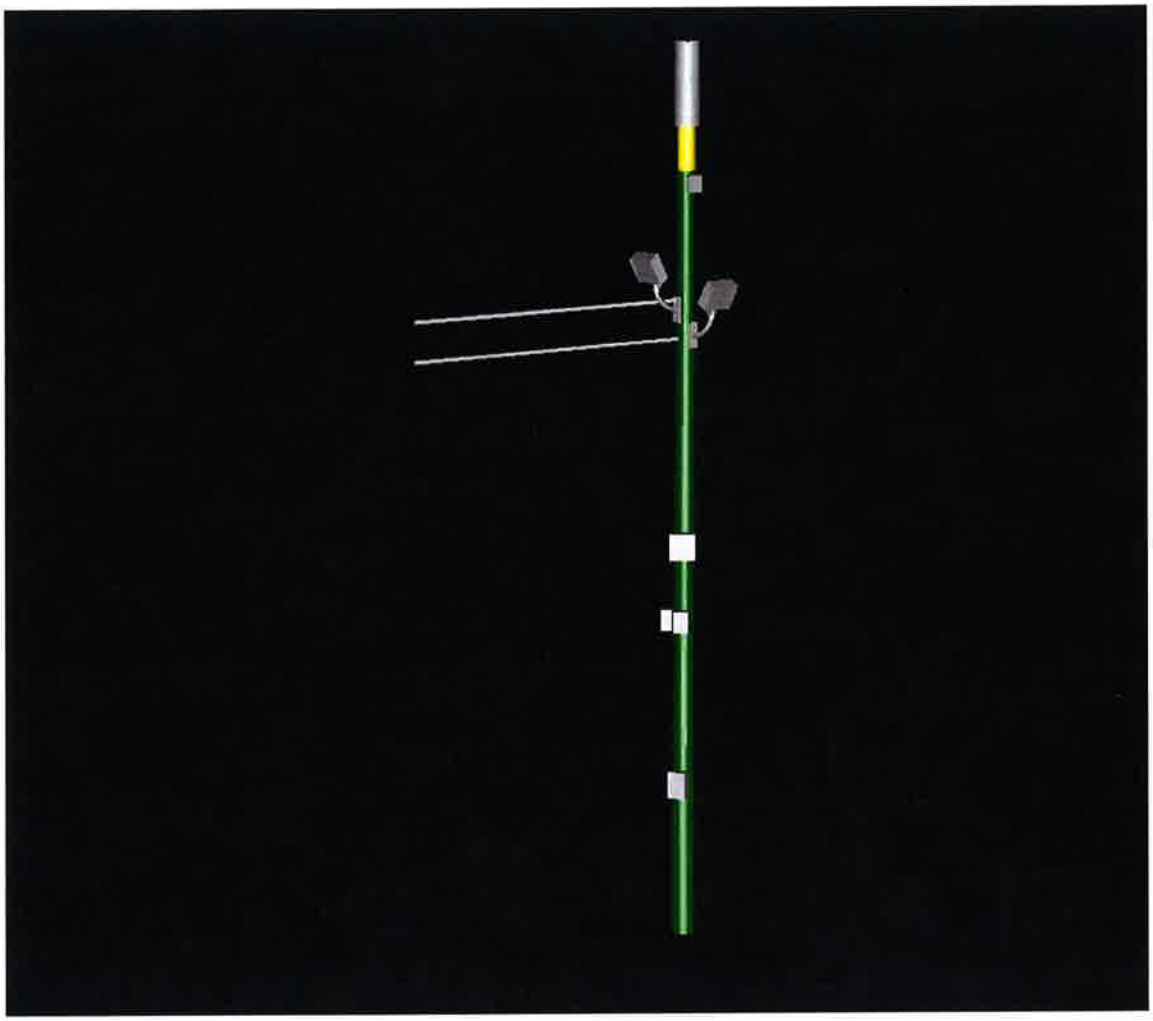
EQUIPMENT

Equipment	Weight (lbs)	Attach (ft)	Direction
Commscope_NH360QM-DG-2XR	33.7	33.3	0°
(2) Commscope (diplexer/coupler)	28.1	29.5	90°
NRG NHC12128002 Fiber Box	10.0	15.5	135°
Nokia 9768 Compact Metro Radio Outdoor	[illegible]	12.5	225°
Nokia 9768 Compact Metro Radio Outdoor	[illegible]	12.5	140°
Square D QO612L100RB Disconnect Box	[illegible]	6.0	150°

LIGHTS

Light	Bracket	Weight	EPA	Attach	Direction
150-400W Flood	Flood Light Bracket	48	1.3	25.0	180°
150-400W Flood	Flood Light Bracket	48	1.3	24.0	90°

Solid Model View



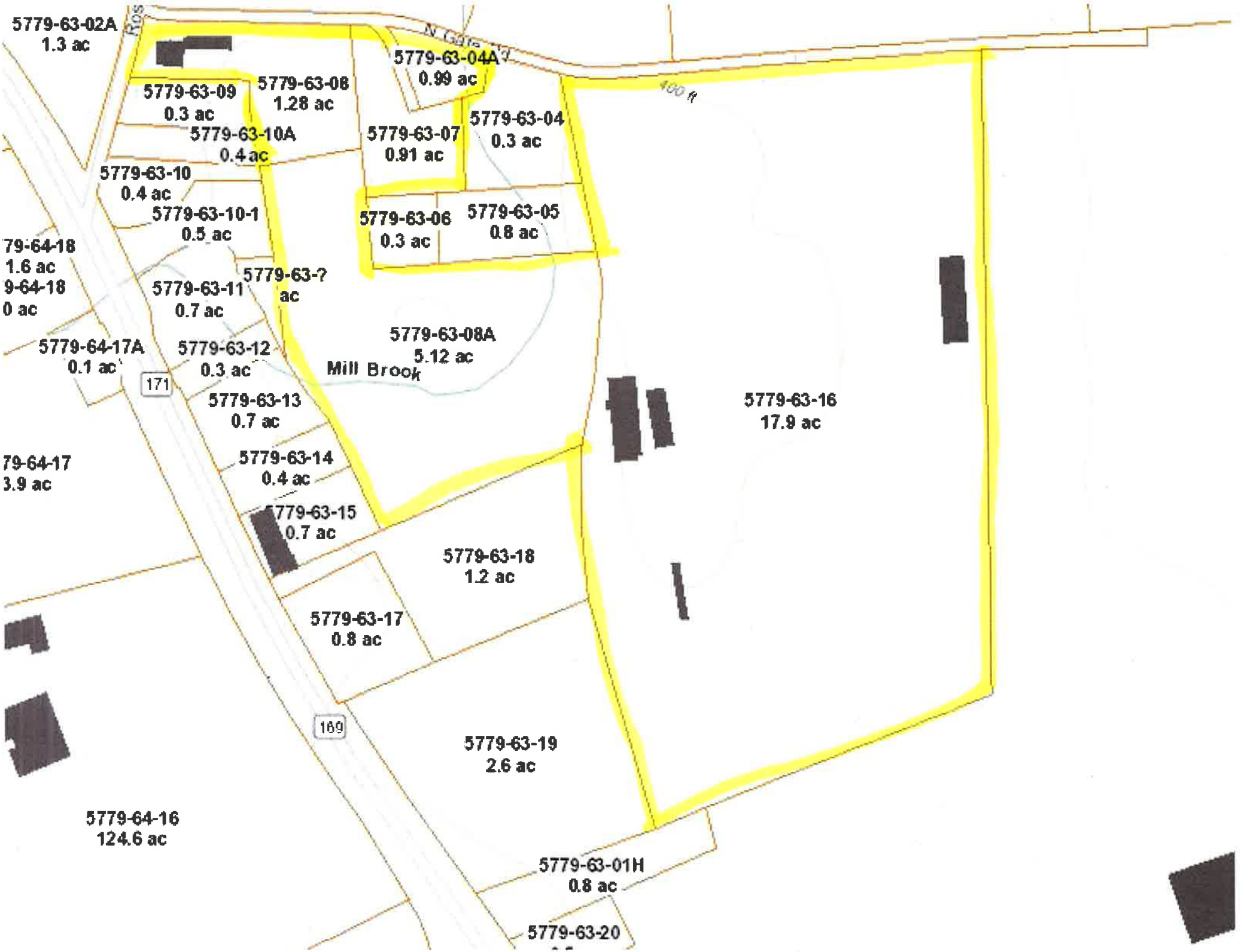
PAUL J. FORD & COMPANY

Page 1 of 1
By CBH Date 10/10/2017
Project # 99617-0010.001.6010

Required Embedment Check - As per RUS Bulletin 1724E-200 Section 12.3.1

Pole Overall Height:	L	=	40	ft
Embedment Depth:	D_e	=	10	ft
Max Pole Groundline Moment:	M	=	57.4	ft-kips
Max Equivalent Load @ 2' from top:	P	=	2050	lbs
Soil Constant:	S_e	=	70	(Average Soil Assumed - RUS Section 12.3.1)
Overturning Load:	P_{ot}	=	$(S_e * D_e\text{^}3.75)/(L\text{-}2.0\text{-}0.662*D_e)$	(RUS Equation 12-1)
		=	12544	lbs
Check Max Load < Overturning Load:		= = = >	OK	
			16%	

ATTACHMENT 4


5779-63-02A
1.3 ac
5779-63-04A
0.99 ac
5779-63-09
0.3 ac
5779-63-08
1.28 ac
5779-63-10A
0.4 ac
5779-63-07
0.91 ac
5779-63-04
0.3 ac
5779-63-10
0.4 ac
5779-63-10-1
0.5 ac
5779-63-06
0.3 ac
5779-63-05
0.8 ac
79-64-18
1.6 ac
9-64-18
0 ac
5779-63-?
ac
5779-63-11
0.7 ac
5779-63-08A
5.12 ac
5779-64-17A
0.1 ac
5779-63-12
0.3 ac
Mill Brook
171
5779-63-13
0.7 ac
5779-63-16
17.9 ac
79-64-17
3.9 ac
5779-63-14
0.4 ac
5779-63-15
0.7 ac
5779-63-18
1.2 ac
5779-63-17
0.8 ac
169
5779-63-19
2.6 ac
5779-64-16
124.6 ac
5779-63-01H
0.8 ac
5779-63-20

281 RT 169

Location	281 RT 169	**Mblu**	5779/ 63/ 08A/ /
Acct#	W0435600	**Owner**	WOODSTOCK AGRICULTURAL SOCIETY
Assessment	$491,400	**Appraisal**	$701,900
PID	4503	**Building Count**	1

Current Value

Appraisal			
Valuation Year	**Improvements**	**Land**	**Total**
2016	$499,200	$202,700	$701,900
Assessment			
Valuation Year	**Improvements**	**Land**	**Total**
2016	$349,500	$141,900	$491,400

Owner of Record

Owner	WOODSTOCK AGRICULTURAL SOCIETY	**Sale Price**	$0
Co-Owner		**Certificate**	1
Address	PO BOX 1 SO WOODSTOCK , CT 06267	**Book & Page**	62/ 343
		Sale Date	

Ownership History

Ownership History				
Owner	**Sale Price**	**Certificate**	**Book & Page**	**Sale Date**
WOODSTOCK AGRICULTURAL SOCIETY	$0	1	62/ 343	

Building Information

Building 1 : Section 1

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

Building Attributes	
Field	**Description**
Style	Commercial
Model	

Grade:	
Stories:	
Living Units	
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:	
Whirlpool Tubs	
Bsmt. Garages	

Building Photo

(http://images.vgsi.com/photos/WoodstockCTPhotos//\00\00\2

Building Layout

Building Layout

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

Building 1 : Section 1

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

Building Attributes	
Field	**Description**
Style	Outbuildings
Model	
Grade:	
Stories:	
Living Units	
Exterior Wall 1	
Exterior Wall 2	
Roof Structure:	
Roof Cover	
Interior Wall 1	
Interior Wall 2	

Building Photo

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

Building Layout

Building Layout

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

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:	
Whirlpool Tubs	
Bsmt. Garages	

Extra Features

Extra Features	Legend
No Data for Extra Features	

Land

Land Use

Use Code 980
Description Non-Profit Lnd
Zone
Neighborhood 400
Alt Land Appr No
Category

Land Line Valuation

Size (Acres) 5.12
Frontage
Depth
Assessed Value $141,900
Appraised Value $202,700

Outbuildings

Outbuildings						Legend
Code	**Description**	**Sub Code**	**Sub Description**	**Size**	**Value**	**Bldg #**
FN1	Fence 4'			2500 L.F.	$16,600	1
FN3	Fence 6'			7400 L.F.	$67,700	1
PAV1	Paving Asph.			220000 S.F.	$319,000	1
LT1	Light 1			19 UNITS	$18,100	1
LT2	Light 2			19 UNITS	$52,200	1
LT3	Light 3			4 UNITS	$11,900	1
LT4	Light 4			2 UNITS	$6,400	1
SHD1	Shed	FR	Frame	20 S.F.	$100	1
SHD1	Shed	FR	Frame	470 S.F.	$2,900	1
SHD1	Shed	FR	Frame	80 S.F.	$800	1
PMPR	Pump Hse Res	FR	Frame	140 S.F.	$3,500	1

Valuation History

Appraisal			
Valuation Year	**Improvements**	**Land**	**Total**
2016	$499,200	$202,700	$701,900
2015	$98,800	$202,700	$301,500
2014	$98,800	$202,700	$301,500

Assessment			
Valuation Year	**Improvements**	**Land**	**Total**
2016	$349,500	$141,900	$491,400
2015	$69,100	$141,900	$211,000
2014	$69,100	$141,900	$211,000

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 12/06/2017 US POSTAGE $002.38 ZIP 06103 041L122083
	Postmaster, per *(name of receiving employee)* V.P		

USPS® Tracking Number / Firm-specific Identifier	Address (Name, Street, City, State, and ZIP Code™)	Postage	Fee	Special Handling	Parcel Airlift
1.	Michael L. Alberts, Woodstock First Selectman Town of Woodstock 415 Route 169 Woodstock, CT 06281-3039				
2.	Delia Fey, AICP, Woodstock Town Planner Town of Woodstock 415 Route 169 Woodstock, CT 06281-3039	OLD STATE HOUSE STATION 06103 DEC 06 2017 USPS	[redacted]		
3.	Woodstock Agricultural Society, Inc. 281 Route 169 South Woodstock, CT 06267		[redacted]		
4.					
5.					
6.					

See Reverse for Instructions