

STATE OF CONNECTICUT
CONNECTICUT SITING COUNCIL

IN RE:	:	
	:	
A PETITION OF CELLCO PARTNERSHIP	:	PETITION NO. _____
D/B/A VERIZON WIRELESS FOR A	:	
DECLARATORY RULING ON THE NEED	:	
TO OBTAIN A SITING COUNCIL	:	
CERTIFICATE FOR THE INSTALLATION	:	
OF A WIRELESS TELECOMMUNICATIONS	:	
FACILITY AT 7 COLBURN ROAD,	:	
CANTERBURY, CONNECTICUT	:	JULY 6, 2017

PETITION FOR A DECLARATORY RULING:
INSTALLATION HAVING NO
SUBSTANTIAL ADVERSE ENVIRONMENTAL EFFECT

I. Introduction

Pursuant to Sections 16-50j-38 and 16-50j-39 of the Regulations of Connecticut State Agencies (“R.C.S.A.”), Cellco Partnership d/b/a Verizon Wireless (“Cellco”) hereby petitions the Connecticut Siting Council (the “Council”) for a declaratory ruling (“Petition”) that no Certificate of Environmental Compatibility and Public Need (“Certificate”) is required under Section 16-50k(a) of the Connecticut General Statutes (“C.G.S.”) to establish a wireless telecommunications facility at 7 Colburn Road in Canterbury, Connecticut (the “Property”). The Property is owned by John Piela. This cell site is identified as Cellco’s “Canterbury West Facility”.

II. Factual Background

The Property is a 3.0-acre parcel in Canterbury’s Rural District and is used primarily for residential purposes. The Property is surrounded by residential and agricultural uses. In 1984, the Council approved Docket No. 43, an application by Tele-Media Company of Northeastern

Connecticut to construct a 111-foot guyed-lattice telecommunications tower at the Property. *See Attachment 1 – Site Vicinity and Site Schematic Maps (Aerial Photograph).*

III. Proposed Canterbury West Facility

Cellco is licensed to provide wireless telecommunications services in the 700 MHz, 850 MHz, 1900 MHz and 2100 MHz frequency ranges in Canterbury and throughout the State of Connecticut. Cellco has identified a need for improved wireless service along Route 14 and local roadways and, in general, to significant portions of northwest Canterbury.

Cellco proposes to install nine (9) antennas and six (6) remote radio heads (“RRHs”) at the 105-foot level on the existing tower. Equipment associated with Cellco’s antennas and a 20 kW diesel-fueled back-up generator will be located on a 9’-4” x 16’ steel platform with canopy, on concrete piers near the base of the tower. A 24’-6” x 29’ compound expansion will be required to accommodate Cellco’s equipment platform. Power and telephone service to Cellco’s Canterbury West Facility will extend from existing service at the site. (*See Cellco’s Project Plans included in Attachment 2*). Specifications for Cellco’s antennas and RRHs are included in Attachment 3.

IV. Discussion

A. The Proposed Facility Modifications Will Not Have A Substantial Adverse Environmental Effect

The Public Utility Environmental Standards Act (the “Act”), C.G.S. § 16-50g et seq., provides for the orderly and environmentally compatible development of telecommunications towers in the state to avoid “a significant impact on the environment and ecology of the State of Connecticut.” C.G.S. § 16-50g. To achieve these goals, the Act established the Council, and requires a Certificate of Environmental Compatibility and Public Need for the construction of cellular telecommunication towers “that may, as determined by the council, have a substantial

adverse environmental effect”. C.G.S. § 16-50k(a).

1. Physical Environmental Effects

Cellco respectfully submits that the installation of antennas and RRHs on the existing tower and the expansion of the existing fenced compound to accommodate Cellco’s equipment platform, will not involve a significant alteration in the physical and environmental characteristics of the Property. No grading of the Property and no significant tree removal is required to complete Cellco’s improvements.

2. Visual Effects

Cellco submits that the Canterbury West Facility would have minimal visual effects on the Property and the surrounding area. (See Visual Assessment & Photo-Simulations (“Visual Assessment”) included in Attachment 4). As discussed in the Visual Assessment, the visibility of the existing tower and Cellco’s antennas on the existing tower would be limited to locations within approximately 0.25 miles in all directions, where the tower can be seen today. The addition of Cellco’s antennas and related equipment does not severely alter the profile of the tower or change sight-lines toward the existing structure. The facility would not, therefore, have an adverse visual impact on existing views or the character of the community.

3. FCC Compliance

Radio frequency (“RF”) emissions from the proposed installation will be well below the standards adopted by the Federal Communications Commission (“FCC”). Included in Attachment 5 is a General Power Density table that demonstrates that Cellco’s Canterbury West Facility will operate well within the FCC safety standard.

4. FAA Summary Report

Included in Attachment 6 is a Federal Airways & Airspace Summary Report (the “FAA

Report”) verifying that the existing tower does not constitute a hazard to air navigation and would not, therefore, require obstruction marking or lighting. Notification to the FAA of Cellco’s improvements is not required.

B. Notice to the Town, Property Owner and Abutting Landowners

On July 6, 2017, a copy of this Petition was sent to Canterbury’s First Selectman Roy A. Piper; Melissa Gil, Canterbury’s Land Use Director; and to John Piela, the owner of the Property via Certificate of Mailing. Copies of the letters sent to the Mr. Piper, Ms. Gil and Mr. Piela are included in Attachment 7. A copy of the stamped Certificate of Mailing will be forwarded to the Council upon receipt.

A copy of Cellco’s Petition was also sent to the owners of land that abuts the Property. A sample abutter’s letter, and the list of those abutting landowners to whom notice was sent is included in Attachment 8.

V. Conclusion

Based on the information provided above, Cellco respectfully requests that the Council issue a determination in the form of a declaratory ruling that the installation of a tower, supporting antennas and associated equipment and the installation of a screening enclosure on the roof of the building at the Property will not have a substantial adverse environmental effect and does not require the issuance of a Certificate of Environmental Compatibility and Public Need pursuant to § 16-50k of the General Statutes.

Respectfully submitted,

CELLCO PARTNERSHIP d/b/a VERIZON
WIRELESS

A handwritten signature in black ink, appearing to read "Kenneth C. Baldwin".

By _____

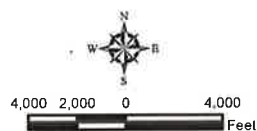
Kenneth C. Baldwin, Esq.
Robinson & Cole LLP
280 Trumbull Street
Hartford, CT 06103-3597
(860) 275-8200
Its Attorneys

ATTACHMENT 1



- Legend**
- ✕ Proposed Verizon Wireless Facility
 - ✕ Surrounding Verizon Wireless Facilities
 - ▭ Municipal Boundary

Base Map Source: 2012 Aerial Photograph (CTECO)
 Map Scale: 1 inch = 8,000 feet
 Map Date: December 2016

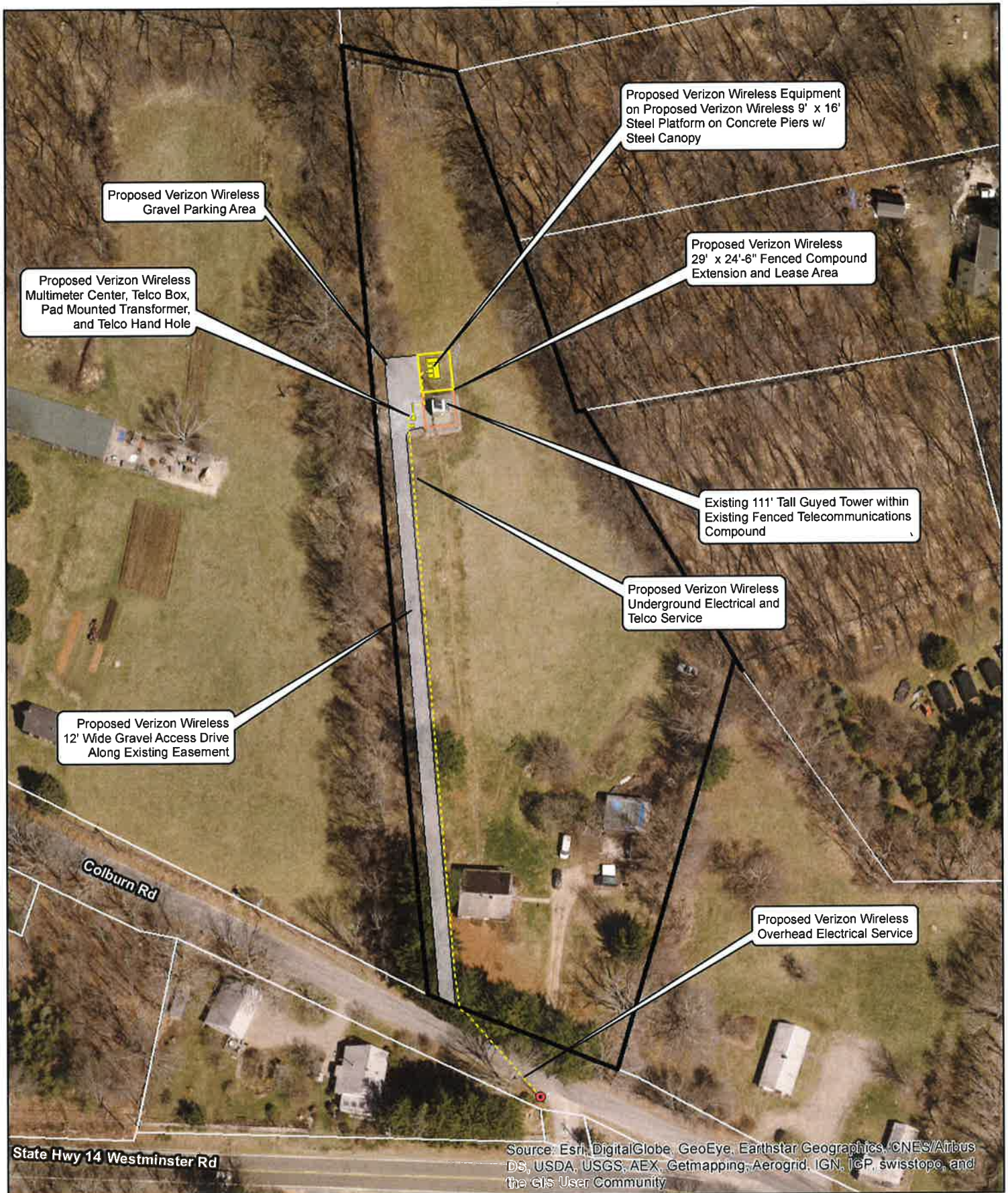


Site Vicinity Map

Proposed Wireless
 Telecommunications Facility
 Canterbury West CT
 7 Colburn Road
 Canterbury, Connecticut

verizon





Legend

- Proposed Verizon Wireless Compound Expansion/Lease Area
- Proposed Verizon Wireless Equipment
- Proposed Verizon Wireless Access Drive
- Proposed Verizon Wireless Electrical and Telco Service
- Existing Utility Pole

- Existing Compound (By Others)
- Subject Property
- Approximate Parcel Boundary (CTDEEP GIS Parcels Last Updated 2010)



Map Notes:
 Base Map Source: ESRI World Imagery
 Map Scale: 1 inch = 100 feet
 Map Date: July 2017

Site Schematic

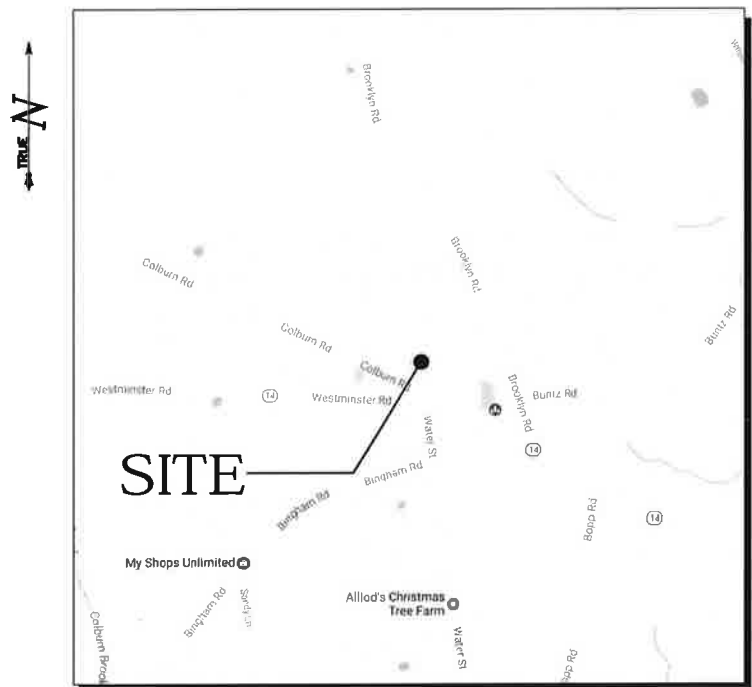
Proposed Wireless Telecommunications Facility
 Canterbury West CT
 7 Colburn Road
 Canterbury, Connecticut

verizon



ATTACHMENT 2

verizon
WIRELESS SERVICES FACILITY
CANTERBURY WEST CT
7 COLBURN ROAD
CANTERBURY, CT 06331



LOCATION MAP
SCALE : 1" = 1000'-0"

SITE INFORMATION

SITE TYPE: CO-LOCATION ON EXISTING GUYED TOWER

SCOPE OF WORK: PROPOSED RF EQUIPMENT ON EXISTING GUYED TOWER AND GROUND EQUIPMENT WITHIN A PROPOSED FENCED COMPOUND EXPANSION

SITE NAME: CANTERBURY WEST CT

SITE ADDRESS: 7 COLBURN ROAD
CANTERBURY, CT 06331

ZONING JURISDICTION: CANTERBURY, CT

COUNTY: WINDHAM

ASSESSOR'S TAX ID#: MAP: 24, LOT: 18

LATITUDE: 41°42'40.0243" N (41.71111786° N)

LONGITUDE: 72°01'22.0463" W (72.02279063° W)

PROPERTY OWNER: JOHN PIELA
67 TURQUOISE AVENUE
NAPLES, FL 34114

TOWER OWNER: JOHN PIELA
67 TURQUOISE AVENUE
NAPLES, FL 34114

APPLICANT: CELLCO PARTNERSHIP
d/b/a VERIZON WIRELESS
99 EAST RIVER DRIVE
9TH FLOOR
EAST HARTFORD, CT 06108

LEGAL: ROBINSON & COLE, LLP
KENNETH C. BALDWIN
280 TRUMBULL STREET
HARTFORD, CT 06103

SITE ENGINEER: ALL-POINTS TECHNOLOGY CORP.
3 SADDLEBROOK DRIVE
KILLINGWORTH, CT 06419
(860) 663-1697

LIST OF DRAWINGS

- T-1 TITLE SHEET & INDEX
- R-1 ABUTTERS MAP
- A-1 COMPOUND PLAN & TOWER ELEVATION
- C-1 SITE DETAILS
- C-2 VERIZON EQUIPMENT DETAILS

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verizon
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EAST HARTFORD, CT 06108

ALL-POINTS
TECHNOLOGY CORPORATION
3 SADDLEBROOK DRIVE
KILLINGWORTH, CT 06419
PHONE: (860)-663-1697
FAX: (860)-663-0935
WWW.ALLPOINTSTECH.COM

PERMITTING DOCUMENTS		
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4	07/05/17	CLIENT REVISIONS: RCB
5		
6		

DESIGN PROFESSIONALS OF RECORD

PROF: SCOTT M. CHASSE P.E.
COMP: ALL-POINTS TECHNOLOGY CORPORATION, P.C.
ADD: 3 SADDLEBROOK DRIVE
KILLINGWORTH, CT 06419

VERIZON AT
CANTERBURY WEST CT

SITE 7 COLBURN ROAD
ADDRESS: CANTERBURY, CT 06331

APT FILING NUMBER: CT141NB8760

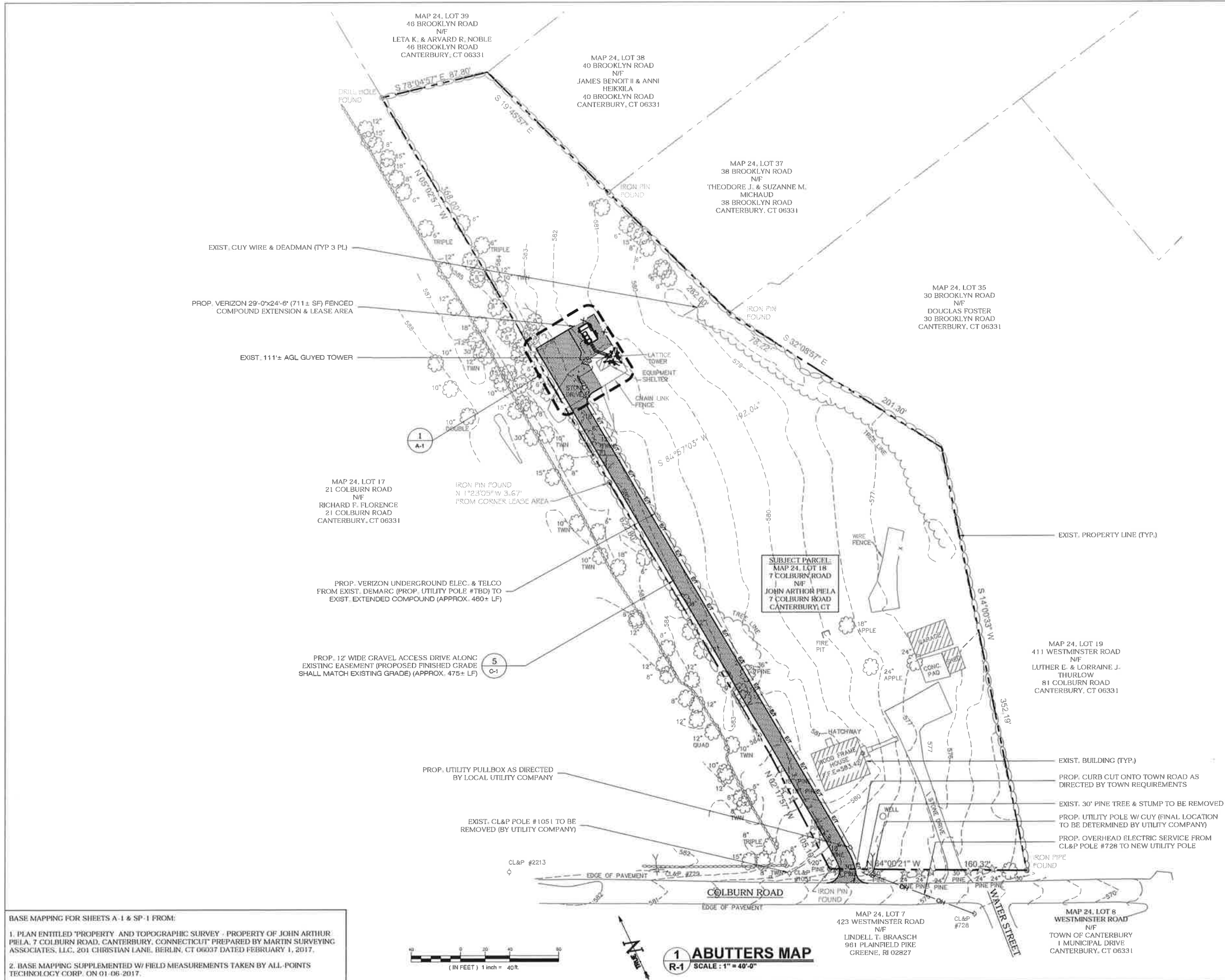
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CHECKED BY: RCB

SHEET TITLE:
TITLE SHEET & INDEX

SHEET NUMBER:
T-1



BASE MAPPING FOR SHEETS A-1 & SP-1 FROM:

1. PLAN ENTITLED "PROPERTY AND TOPOGRAPHIC SURVEY - PROPERTY OF JOHN ARTHUR PIELA, 7 COLBURN ROAD, CANTERBURY, CONNECTICUT" PREPARED BY MARTIN SURVEYING ASSOCIATES, LLC, 201 CHRISTIAN LANE, BERLIN, CT 06037 DATED FEBRUARY 1, 2017.

2. BASE MAPPING SUPPLEMENTED W/ FIELD MEASUREMENTS TAKEN BY ALL-POINTS TECHNOLOGY CORP. ON 01-06-2017.

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EAST HARTFORD, CT 06108

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TECHNOLOGY CORPORATION

3 SADDLEBROOK DRIVE PHONE: (800) 663-1687
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COMP: ALL-POINTS TECHNOLOGY CORPORATION, P.C.
ADD: 3 SADDLEBROOK DRIVE
KILLINGWORTH, CT 06419

VERIZON AT
CANTERBURY WEST CT

SITE 7 COLBURN ROAD
ADDRESS: CANTERBURY, CT 06331

APT FILING NUMBER: CT141NB8760

DRAWN BY: CSH

DATE: 02/22/17

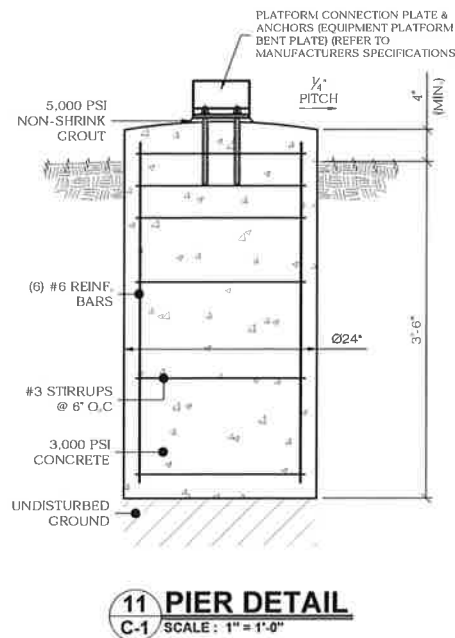
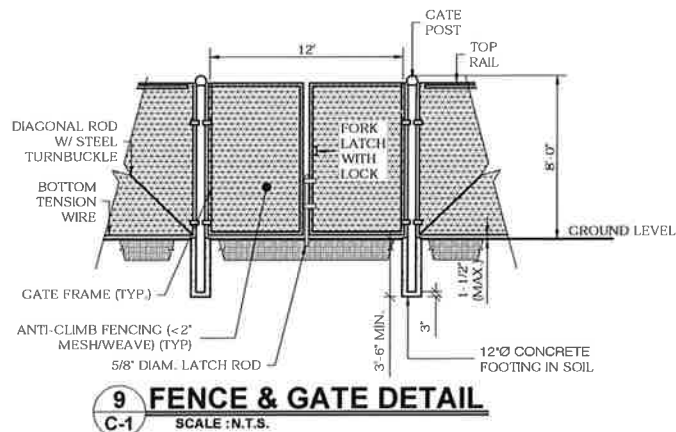
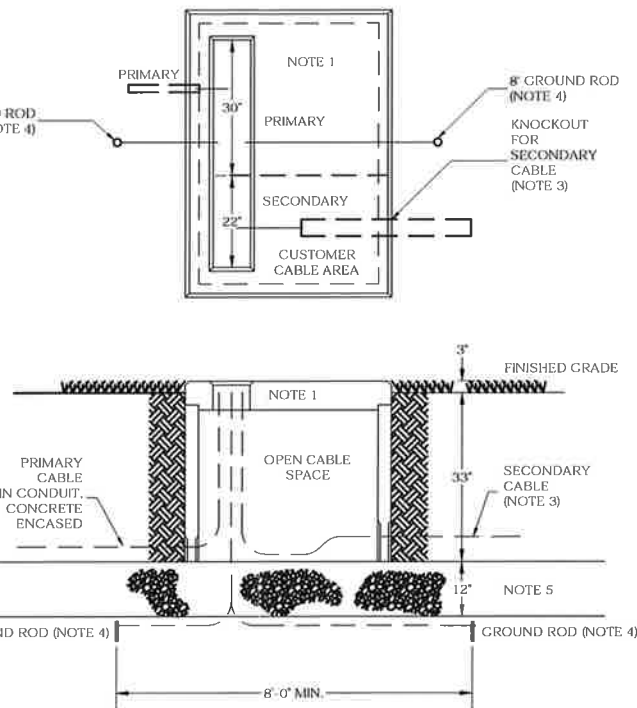
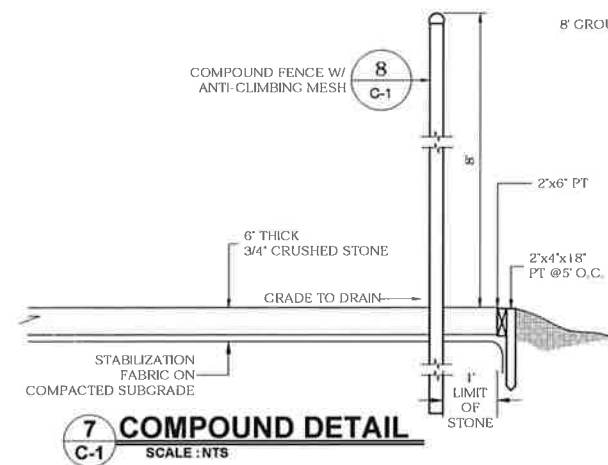
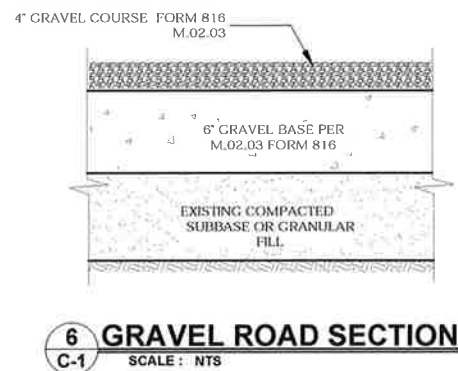
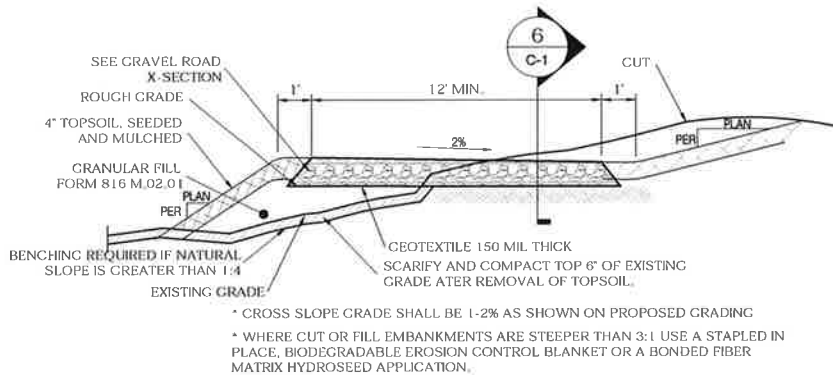
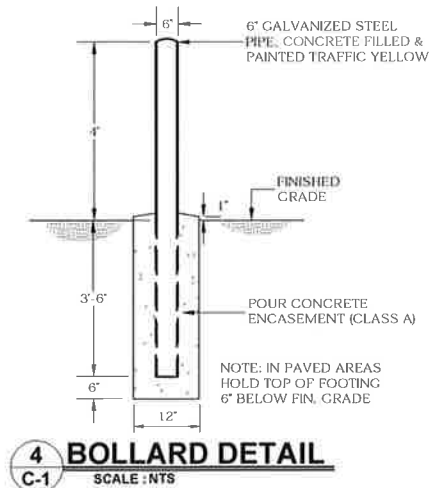
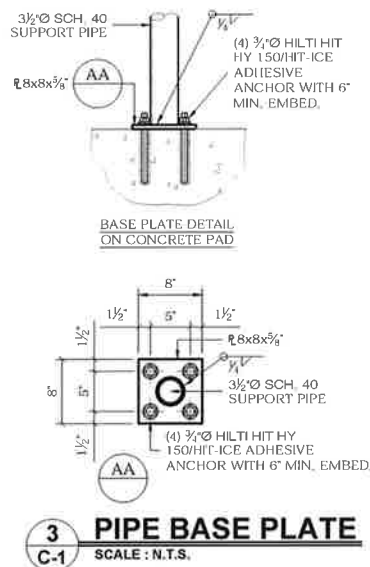
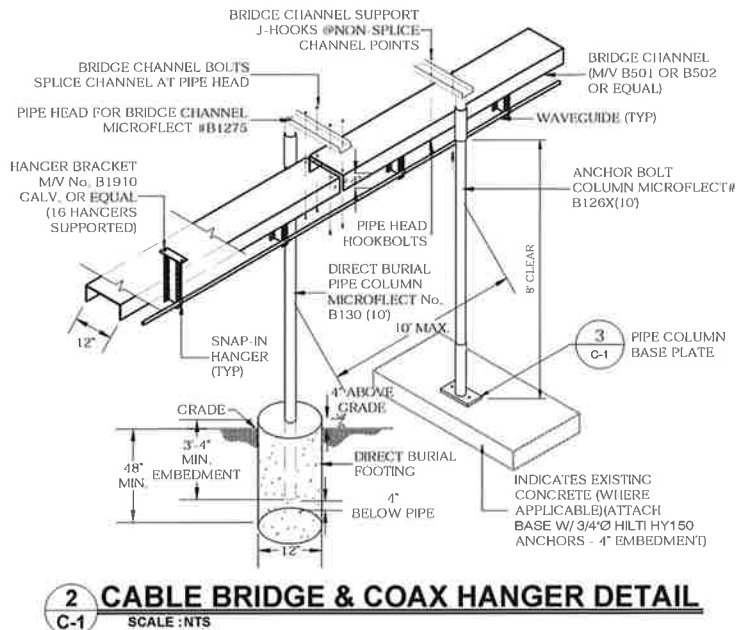
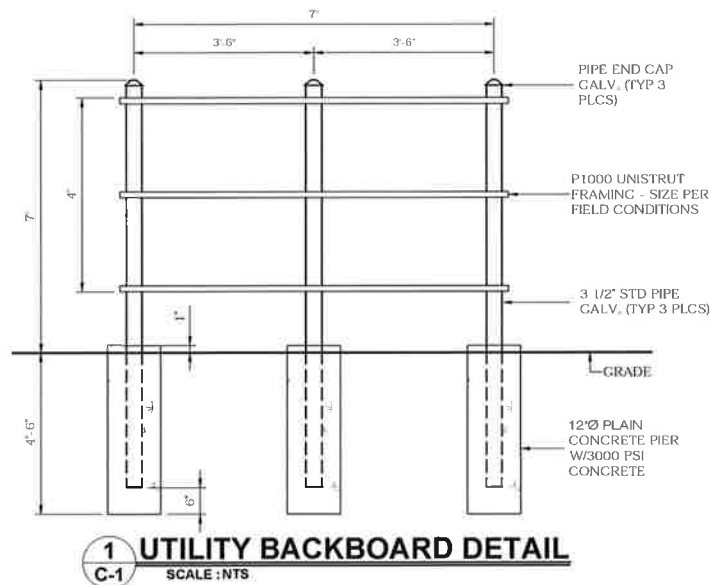
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ABUTTERS
MAP

SHEET NUMBER:

R-1



- NOTES**
- 75 - 300KVA - INSTALL 76"x54"x36" PAD AS PER SPC P-013 AND P-014. 500-2500KVA - INSTALL 76"x70"x36" PAD AS PER SPC P-015 AND P-016. (COORDINATE REQUIRED PAD SIZE FOR PROJECT WITH UTILITY COMPANY)
 - PRIMARY CABLE: BY UTILITY COMPANY
 - SECONDARY CABLE: LEAVE SLACK FOR FUTURE RECONNECTING TO TRANSFORMERS WITH HIGHER SECONDARY TERMINALS. CUSTOMER CABLE(S) SHALL ENTER FROM THE REAR AND SHALL BE CONFINED TO THE AREA DEFINED AS THE "CUSTOMER CABLE AREA".
 - GALVANIZED GROUND RODS: INSTALL IN TRENCH AND CONNECT A #2 COPPER CONDUCTOR FROM ROD THROUGH PAD OPENING AND EXTENDING 5'-0" ABOVE PAD. GROUND RODS SHALL BE A MINIMUM OF 8' FROM EACH OTHER.
 - THE EXCAVATION FOR THE PAD SHALL BE CARRIED TO A DEPTH OF 12 INCHES BELOW THE BOTTOM OF THE PAD WALLS. THE BACKFILL UNDER THE PAD WALLS SHALL BE A CLEAN GRAVEL, FREE OF FOREIGN MATTER AND CONSTRUCTION DEBRIS, AND IN ACCORDANCE WITH CONNECTICUT DOT SPEC M.02.06 GRADING "A"; BACKFILL SHALL BE PLACED IN 6 INCH LAYERS AND COMPACTED WITH MECHANICAL TAMPERS TO NOT LESS THAN 95% OF THE MAXIMUM DRY DENSITY AS DETERMINED BY STANDARD COMPACTION TESTS, AASHTO T180 OR ASTM D698.
 - ALL WORK SHALL CONFORM TO EVERSOURCE TRANSFORMER PAD INSTALLATION REQUIREMENTS. REFER TO EVERSOURCE CONSTRUCTION STANDARD DTR 58.301 FOR ADDITIONAL INFORMATION.



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99 EAST RIVER DRIVE
EAST HARTFORD, CT 06108

ALL-POINTS
TECHNOLOGY CORPORATION

3 SADDLEBROOK DRIVE PHONE: (860)-663-1697
KILLINGWORTH, CT 06419 FAX: (860)-663-0935
WWW.ALLPOINTSTECH.COM

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DESIGN PROFESSIONALS OF RECORD

PROF: SCOTT M. CHASSE P.E.
COMP: ALL-POINTS TECHNOLOGY
CORPORATION, P.C.
ADD: 3 SADDLEBROOK DRIVE
KILLINGWORTH, CT 06419

VERIZON AT
CANTERBURY WEST CT

SITE ADDRESS: 7 COLBURN ROAD
CANTERBURY, CT 06331

APT FILING NUMBER: CT141NB8780

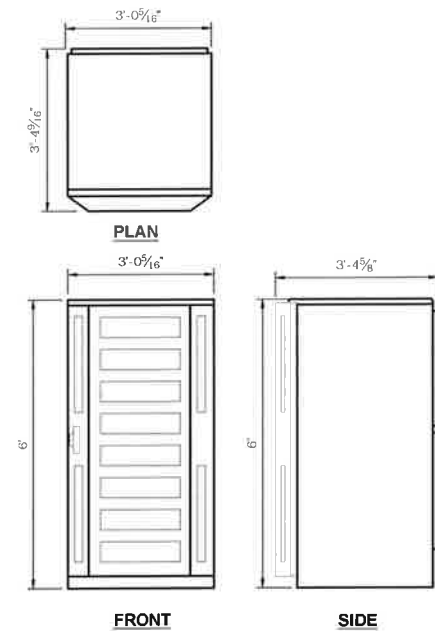
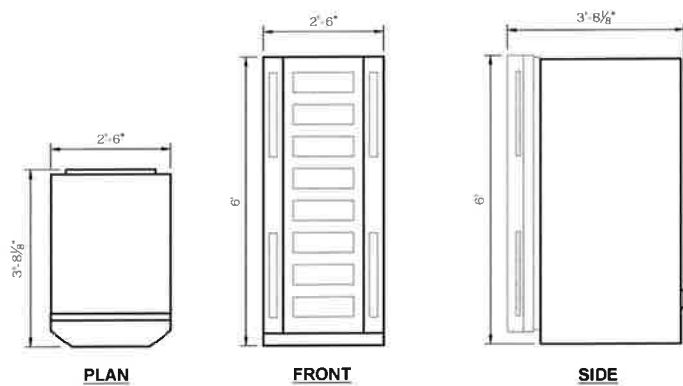
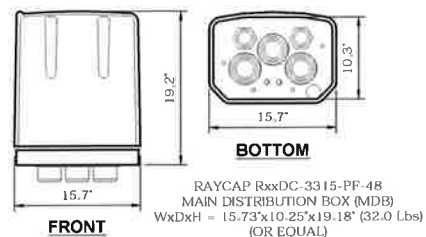
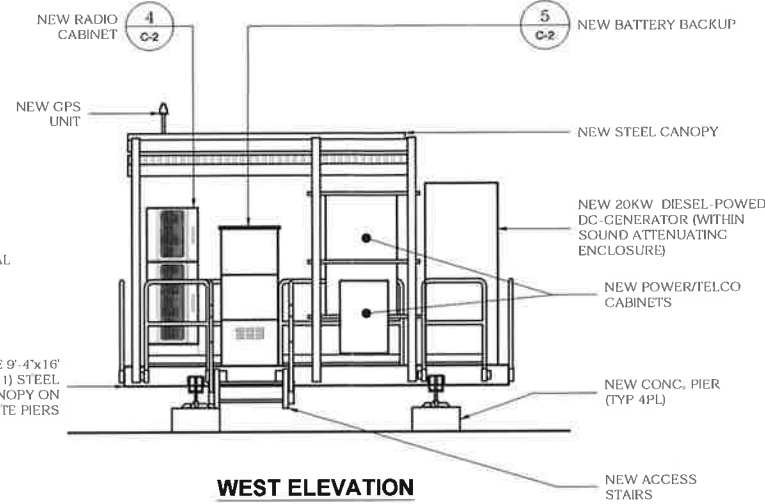
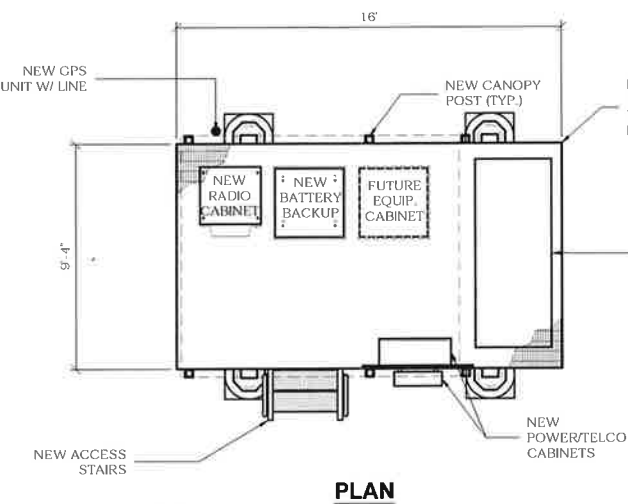
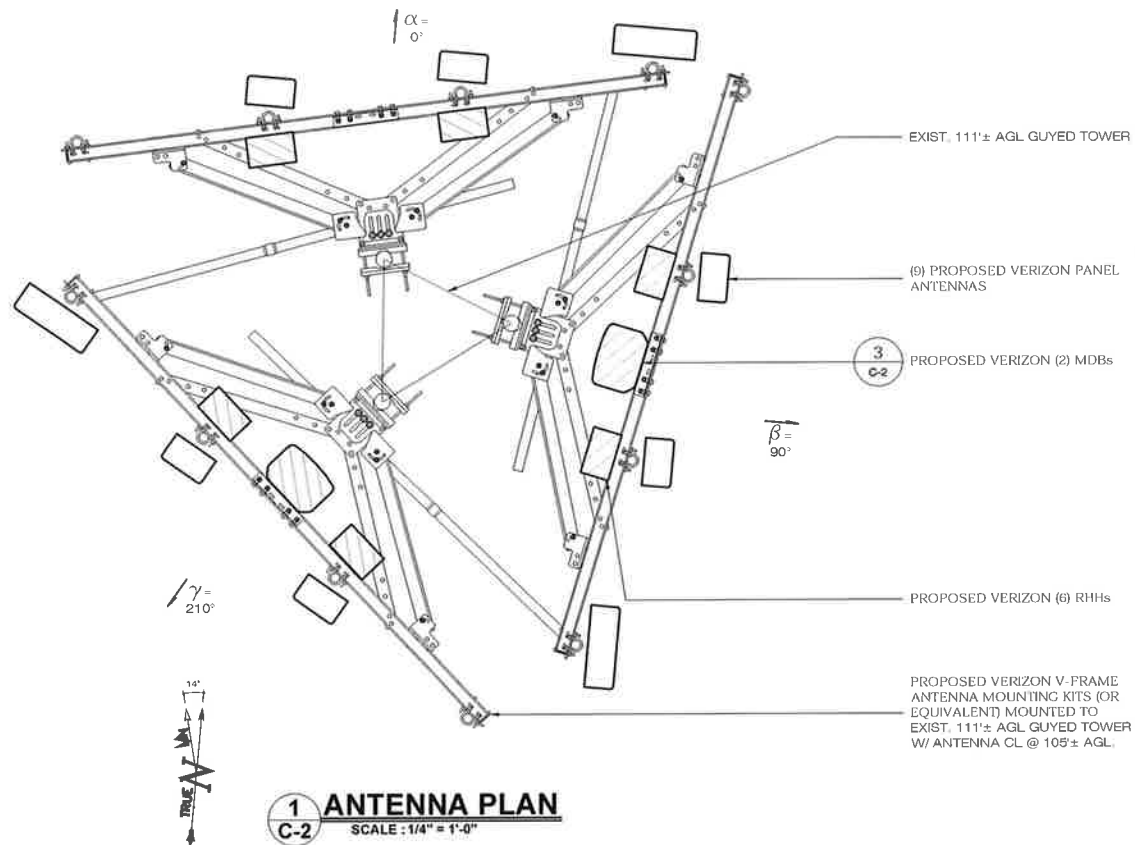
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SITE DETAILS

SHEET NUMBER:

C-1



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COMP: ALL-POINTS TECHNOLOGY
CORPORATION, P.C.
ADD: 3 SADDLEBROOK DRIVE
KILLINGWORTH, CT 06419

VERIZON AT
CANTERBURY WEST CT

SITE 7 COLBURN ROAD

ADDRESS: CANTERBURY, CT 06331

APT FILING NUMBER: CT141NB8760

DRAWN BY: CSH

DATE: 02/22/17 CHECKED BY: RCB

SHEET TITLE:

VERIZON EQUIPMENT
DETAILS

SHEET NUMBER:

C-2

ATTACHMENT 3

QUAD656C0000x

Twin Band | Quad Port | Panel Antenna | (2x) X-Pol | 65° / 65° | 15.0 / 15.0 dBi | Variable Tilt

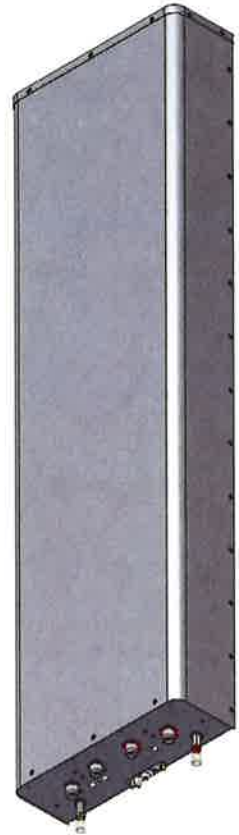
- Twin band, quad-port panel antenna with variable electrical tilt
- 4x4 MIMO
- Patented internal RET actuator adds no additional length to the antenna

Ordering Options	Model Number
When ordering, replace "x" in the model number with one of the options listed below.	
Manual Electrical Tilt	QUAD656C0000M
Remote Electrical Tilt AISG v2.0 / 3GPP with an MDCU RET Actuator	QUAD656C0000G
Remote Electrical Tilt AISG v2.0 / 3GPP with an MDDU RET Actuator	QUAD656C0000L

Mounting bracket kits and other accessories are ordered separately.

Electrical Characteristics	(2x) 696-900 MHz	
Frequency Bands	696-806 MHz	806-900 MHz
Polarization	(2x) $\pm 45^\circ$ (Quad-Pol)	
Horizontal Beamwidth	67°	66°
Vertical Beamwidth	13.6°	12.4°
Gain	14.5 dBi	15.0 dBi
Electrical Downtilt	0-12°	
Impedance	50 Ω	
VSWR	$\leq 1.5:1$	
Upper Sidelobe Suppression	18 dB	18 dB
Front-to-Back Ratio	> 25 dB	> 25 dB
Inband Isolation	25 dB	
Isolation Between Bands	28 dB	
IM3 (2x20W carrier)	< -153 dBc	
Input Power	(4x) 500 W	
Total Number of Connectors	Antennas has 4 connectors located at the bottom	
Connectors Per Band	696-900 MHz	(2x) 7/16-DIN Female
	696-900 MHz	(2x) 7/16-DIN Female
Diplexed	No	
Lightning Protection	Direct Ground	
Operating Temperature	-40° to +60° C (-40° to +140° F)	

Mechanical Characteristics			
Dimensions (Length x Width x Depth)		1889 x 520 x 182 mm	74.4 x 20.5 x 7.2 in
Depth with Z-Brackets		227 mm	8.9 in
Weight without Mounting Brackets: MET		24.5 kg	54.0 lbs
Weight without Mounting Brackets: RET		24.8 kg	54.7 lbs
Survival Wind Speed		> 241 km/hr	> 150 mph
Wind Area	Front	0.98 m ²	10.6 ft ²
	Side	0.34 m ²	3.7 ft ²
Wind Loads (160 km/hr or 100 mph)	Front	1200 N	270 lbf
	Side	415 N	93 lbf



Quoted performance parameters are provided to offer typical, peak or range values only and may vary as a result of normal testing, manufacturing and operational conditions. Extreme operational conditions and/or stress on structural supports is beyond our control. Such conditions may result in damage to this product. Improvements to products may be made without notice.

QUAD656C0000x

Twin Band | Quad Port | Panel Antenna | (2x) X-Pol | 65° / 65° | 15.0 / 15.0 dBi | Variable Tilt

Electrical Downtilt Control

Electrical downtilt for each band can be controlled separately. Tilt indicator(s) are covered by removable transparent cap(s).


Manual Electrical Tilt (MET) Control	A colored knob at the end of the tilt indicator allows change of the tilt without need of a tool. The knob color is identical to the corresponding connector ring color. To access the knob, remove the cap by turning it counter-clockwise. It is re-installed by opposite rotation. Do not remove the transparent cap(s) from the antenna.	
Remote Electrical Tilt (RET) Control	The remote control of the electrical tilt is managed by either a Multi-Device Control Unit (MDCU) or a Multi-Device Dual Unit (MDDU) inserted in the bottom of the antenna. A single actuator individually controls the tilt of each band (no need for daisy chain cables between the bands). This module does not add any additional length to the antenna. For RET control, the transparent caps must be in place and locked. The tilt angle indicators always remain visible and the antenna still has manual tilt control (manual override).	
RET Actuator	Select one of the following RET actuators when ordering this antenna.	
	Multi-Device Control Unit (MDCU)	The MDCU is an electronic module that allows the remote control of the electrical downtilt (RET) in Amphenol antennas with factory embedded motors. The MDCU is factory installed. Refer to ordering options.
	Multi-Device Dual Unit (MDDU)	The MDDU allows two separate RET Controllers to independently drive the RETs in Amphenol antennas with factory installed motors (for antenna sharing). The MDDU is factory installed. Refer to ordering options.

Important Installation Instructions



In order to operate RET control, the transparent caps covering the tilt adjustment indicators must be engaged and locked. Do not cut them from the antenna.

Do not install the antenna with the connectors facing upward.

Mounting Options	Part Number	Image	Fits Pipe Diameter	Weight
3-Point Mounting and Downtilt Bracket Kit	36210008		40-115 mm 1.6-4.5 in	6.9 kg 15.2 lbs

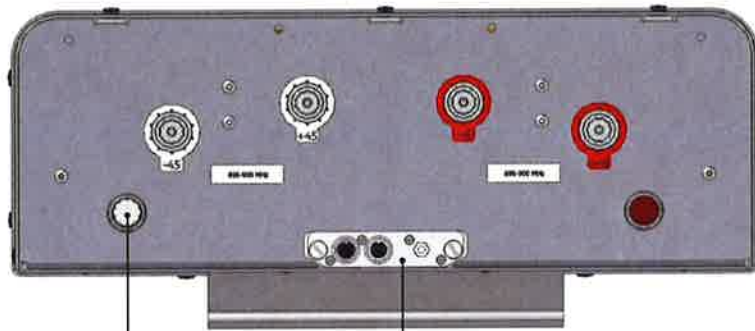
Configuration Options

This antenna model cannot be used with Amphenol's UNICELL 3-sector antenna enclosures.

QUAD656C0000x

Twin Band | Quad Port | Panel Antenna | (2x) X-Pol | 65° / 65° | 15.0 / 15.0 dBi | Variable Tilt

Bottom View of Antenna



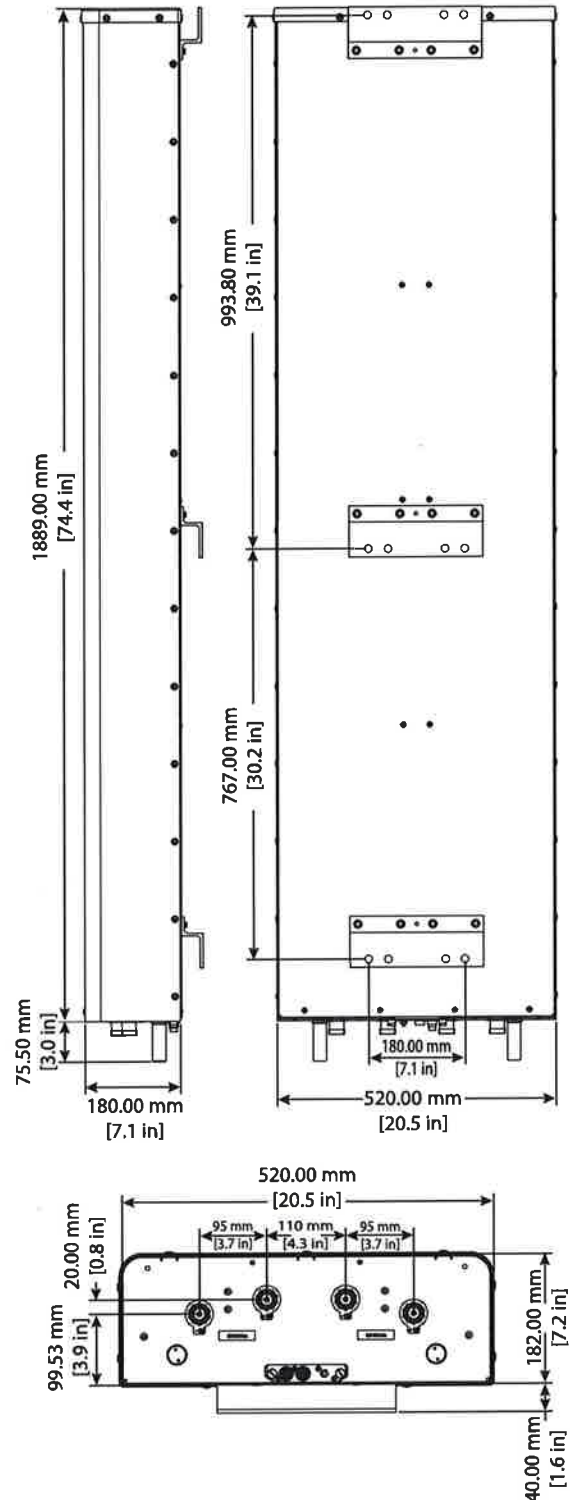
Location of the MDCU or MDDU
for RET Control (*MDCU shown*)

Tilt indicators covered by transparent caps.
Manual adjustment is accessed by removing the caps.
Knob colors are the same as the connectors.



In order to operate RET control, the transparent caps covering the tilt adjustment indicators must be engaged and locked. Do not cut them from the antenna.

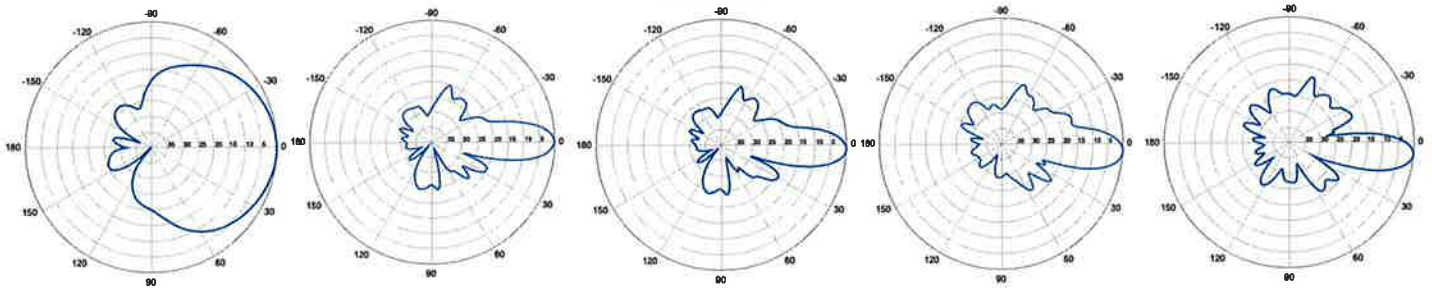
Dimensions



QUAD656C0000x

Twin Band | Quad Port | Panel Antenna | (2x) X-Pol | 65° / 65° | 15.0 / 15.0 dBi | Variable Tilt

696-900 MHz



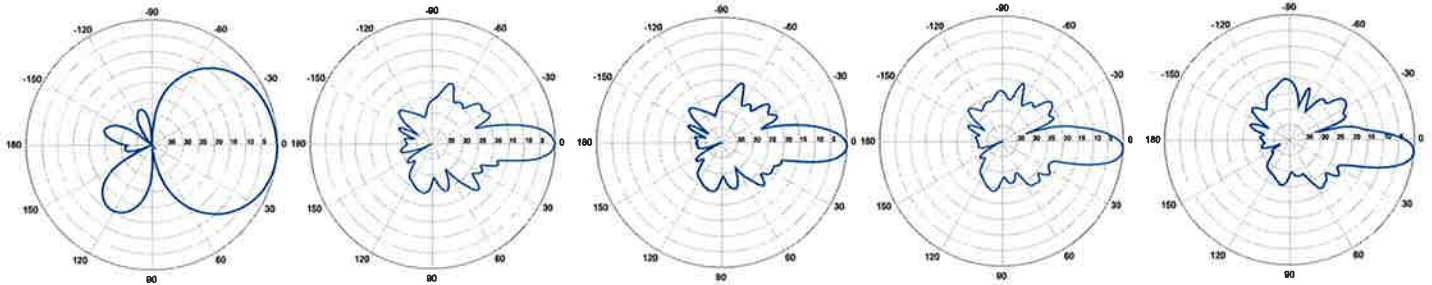
Horizontal | 750 MHz

0° | Vertical | 750 MHz

2° | Vertical | 750 MHz

4° | Vertical | 750 MHz

6° | Vertical | 750 MHz



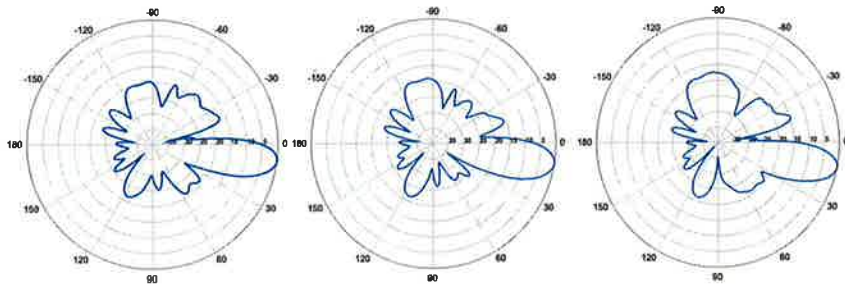
Horizontal | 850 MHz

0° | Vertical | 850 MHz

2° | Vertical | 850 MHz

4° | Vertical | 850 MHz

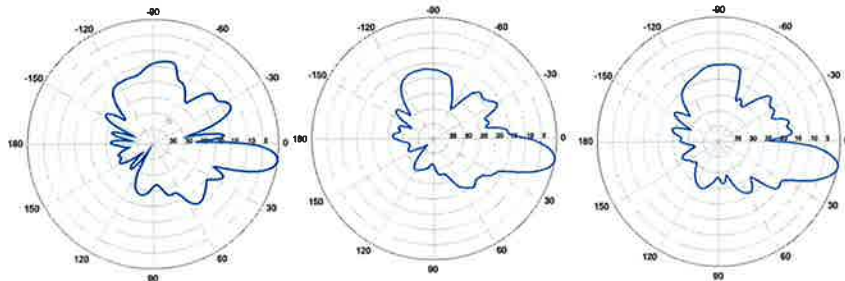
6° | Vertical | 850 MHz



8° | Vertical | 750 MHz

10° | Vertical | 750 MHz

12° | Vertical | 750 MHz



8° | Vertical | 850 MHz

10° | Vertical | 850 MHz

12° | Vertical | 850 MHz

Quoted performance parameters are provided to offer typical, peak or range values only and may vary as a result of normal testing, manufacturing and operational conditions. Extreme operational conditions and/or stress on structural supports is beyond our control. Such conditions may result in damage to this product. Improvements to products may be made without notice.



SBNHH-1D65B

Multiband Antenna, 698–896 and 2x 1695–2360 MHz, 65° horizontal beamwidth, internal RET. Both high bands share the same electrical tilt.

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

Electrical Specifications

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

Electrical Specifications, BASTA*

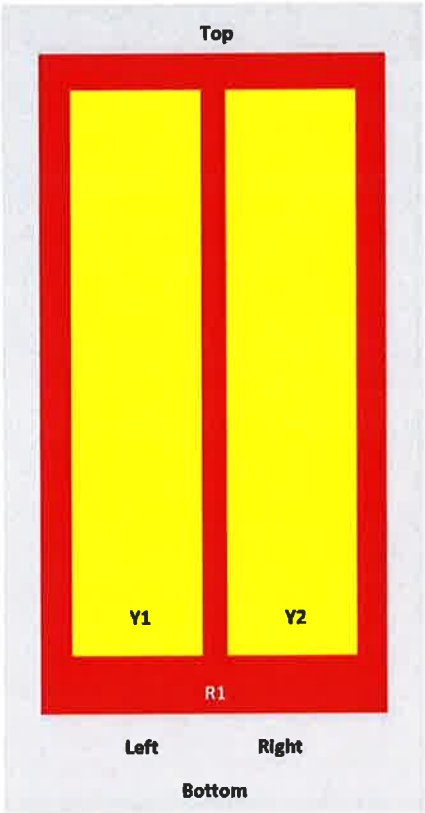
Frequency Band, MHz	698–806	806–896	1695–1880	1850–1990	1920–2200	2300–2360
Gain by all Beam Tilts, average, dBi	14.5	14.3	17.4	17.9	18.2	18.3
Gain by all Beam Tilts Tolerance, dB	±0.5	±0.8	±0.4	±0.3	±0.5	±0.3
	0 ° 14.6	0 ° 14.5	0 ° 17.4	0 ° 17.8	0 ° 18.1	0 ° 18.2
Gain by Beam Tilt, average, dBi	7 °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

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

Array Layout

SBNHH-1D65B

SBNHH 65



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

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

General Specifications

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

Mechanical Specifications

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

SBNHH-1D65B

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

Dimensions

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

Remote Electrical Tilt (RET) Information

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

Packed Dimensions

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

Regulatory Compliance/Certifications

Agency	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

SBNHH-1D65B

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

*** Footnotes**

Performance Note Severe environmental conditions may degrade optimum performance

ALCATEL-LUCENT B13 RRH4X30-4R

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

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

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

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

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

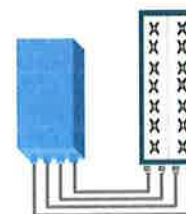


FEATURES

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

BENEFITS

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



4x30W with 4T4R
or
2x60W with 2T4R

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

TECHNICAL SPECIFICATIONS

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

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ALCATEL-LUCENT B25 RRH4X30

Alcatel-Lucent Band 25 Remote Radio Head 4x30W is the new addition of Remote Radio Head to the extended product line of Alcatel-Lucent's distributed Base Station solutions, aimed at facilitating smooth RF site acquisition and related civil engineering.

Supporting 2Tx/4Tx MIMO and 4-way Rx diversity, Alcatel-Lucent B25 RRH4x30 allows operators to have a compact radio solution to deploy LTE in the PCS band (1.9 GHz, 3GPP band 25), providing them with the means to achieve high capacity, high quality and high coverage with minimum site requirements.

The Alcatel-Lucent B25 RRH4x30 product has four transmit RF paths, offering the possibility to **select, via software only, 2Tx or 4Tx MIMO configurations** with either 2x60 W or 4x30 W RF output power. It supports also 4-way Rx diversity, LTE carriers from 3 MHz up to 20 MHz and up to 65 MHz instantaneous bandwidth.

The Alcatel-Lucent B25 RRH4x30 is a near zero-footprint solution and operates noise free, simplifying negotiations with site property owners and minimizing environmental impacts.

Its compactness and slim design makes the Alcatel-Lucent B25 RRH4x30 easy to install close to the antenna: operators can therefore locate this Remote Radio Head where RF design conditions are deemed ideal, minimizing trade-offs between available sites and RF optimum sites, together with reducing the RF feeder needs and installation costs.

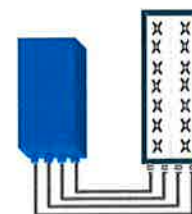


FEATURES

- Supporting LTE in 1.9 GHz band (PCS, 3GPP band 2 & 25)
- LTE 2Tx or 4Tx MIMO (SW switchable)
- Output power: Up to 2x60W or 4x30W
- Ready for 3, 5, 10, 15 or 20MHz LTE carrier operation with 4Rx Diversity
- Ready to support up to 4 carriers anywhere in 65MHz instantaneous bandwidth
- Convection-cooled (fan-less)
- Supports AISG 2.0 devices (RET, TMA) through RS485 or RF ports

BENEFITS

- Compact to reduce additional footprint when adding LTE in PCS band
- MIMO scheme operation selection (2Tx or 4Tx) by software only
- Full flexibility for multiple carriers operation over entire PCS spectrum
- Improves downlink spectral efficiency and cell edge throughput through MIMO4
- Increases LTE coverage thanks to 4-way Rx diversity capability and best in class Rx sensitivity
- Flexible mounting options (Pole or Wall)



4x30W with 4T4R
or
2x60W with 2T4R

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

TECHNICAL SPECIFICATIONS

Features & performance	
Number of TX/RX paths	4 duplexed (either 4T4R or 2T4R by SW)
Frequency band	3GPP bands 2 & 25 (PCS-G) DL: 1930 - 1995 MHz UL: 1850 - 1915 MHz
Instantaneous bandwidth - #carriers	65MHz – Up to 4 LTE carriers (in 40MHz occupied bandwidth)
LTE carrier bandwidth	3, 5, 10, 15 or 20 MHz
RF output power	2x60W or 4x30W (by SW)
Noise figure (3GPP band 2)	2.0 dB typ. (<2.5 dB max)
RX Diversity scheme	2 or 4 way Rx diversity
Sizes (HxWxD)(w/ solar shield) in mm (in.)	538 x 304 x 182 (21.2" x 12.0" x 7.2")
Volume (w/ solar shield) in L	30
Weight (w/ solar shield) in kg (lb)	24 (53)
DC voltage range	-40.5 to -57V at full performance, -38 to -57V with relaxation on power consumption
DC power consumption	580W typical @100% RF load
Environmental conditions	-40°C (-40°F) / +55°C (+131°F) IP65
Wind load (@150km/h or 93mph)	Frontal: <200N / Lateral :<150N
Antenna ports	4 ports 7/16 DIN female (50 ohms) VSWR < 1.5 (> 14dB)
CPRI ports	2 CPRI ports (HW ready for Rate7 / 9.8 Gbps)
AISG interfaces	1 AISG2.0 output (RS485), +24V/2A DC power Integrated Smart Bias Tees (x2)
Misc. Interfaces	1 external alarms connector (4 alarms) 4 RF Tx & 4 RF Rx monitor ports 1 DC connector (2 pins)
Installation conditions	Pole and wall mounting
Regulatory compliance	3GPP 36.141 / 3GPP 36.113 / GR-1089-CORE / GR-3108-CORE / UL 60950-1 / FCC Part 27

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ALCATEL-LUCENT B66A RRH4X45

The Alcatel-Lucent B66a Remote Radio Head 4x45 is the newest addition of Remote Radio Head to the extended product line of Alcatel-Lucent's distributed Base Station solutions, aimed at facilitating smooth RF site acquisition and related civil engineering. Its operational range covers beyond that of B4 (AWS) and B10 (AWS+).

Supporting 2Tx/4Tx MIMO and 2-way/4-way Rx diversity, the Alcatel-Lucent B66a RRH4x45 allows operators to have a compact radio solution to deploy LTE in the 2100 band (3GPP band 4, 10, and 66), providing them with the means to achieve high capacity, high quality, high reliability, large instantaneous bandwidth, and high coverage with minimum site requirements.

The Alcatel-Lucent B66a RRH4x45 product has four transmit RF paths, offering the possibility to **select, via software only, 2Tx or 4Tx MIMO configurations** with either 2x90W or 4x45W RF output power. It also supports 4-way Rx diversity at the 70 MHz instantaneous bandwidth.



The Alcatel-Lucent B66a RRH4x45 is a compact (near zero-footprint) solution and operates noise free, simplifying negotiations with site property owners and minimizing environmental impacts.

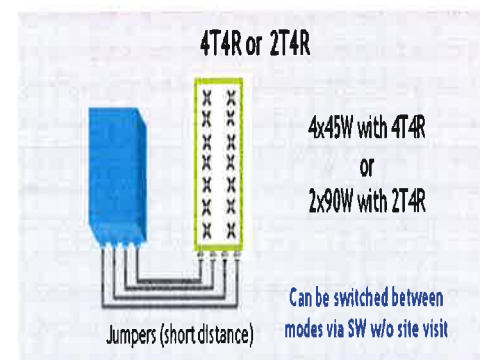
Its compactness and slim design makes the Alcatel-Lucent B66a RRH4x45 easy to install close to the antenna: operators can therefore locate this Remote Radio Head where RF design conditions are deemed ideal, minimizing trade-offs between available sites and RF optimum sites, together with reducing the RF feeder needs and installation costs.

FEATURES

- Supporting LTE in 2110 - 2180 MHz band/DL, 1710-1780MHz/UL (3GPP band 4, 10, and 66a)
- LTE 2Tx or 4Tx MIMO (SW selectable)
- Configuration: 2T2R/2T4R/4T4R
- Output power: Up to 2x90W or 4x45W (SW configurable)
- 70MHz LTE carrier with 4Rx Diversity
- Convection-cooled (fan-less)
- Supports AISG 2.0 ALD devices (RET, TMA) through RS485 or RF ports

BENEFITS

- Compact to reduce additional footprint when adding LTE in AWS 1-3 band
- Selection of MIMO configuration (2Tx or 4Tx) by software only
- Improves downlink spectral efficiency through 4Tx MIMO
- Increases LTE coverage thanks to 4Rx diversity capability and best in class Rx sensitivity
- Flexible mounting options: Pole or Wall



TECHNICAL SPECIFICATIONS

Features & Performance	
Number of TX/RX paths	4 duplexed (either 4T4R or 2T4R selectable by SW)
Frequency band	AWS 1-3, B4/B66a DL: 2110-2180 MHz / UL: 1710-1780 MHz
Instantaneous bandwidth - #carriers	70 MHz – 4 LTE MIMO carriers (in 70 MHz occupied bandwidth)
LTE carrier bandwidth	5, 10, 15, 20 MHz
RF output power	2x90W or 4x45W (selectable by SW)
Noise figure – RX Diversity scheme Receiver Sensivity (FRC A1-3)	2 dB typical (<2.5 dB max) – 2 or 4 way Rx diversity -104.5 dBm maximum
Sizes (HxWxD) in mm (in.)	655x299x182 (25.8x11.8x7.2) (with solar shield) 640x290x160 (25.2x11.4x6.3) (without solar shield)
Volume in Liters	35.5 (with solar shield) 29.7 (without solar shield)
Weight in kg (lb) (w/o mounting HW)	25.8kg (56.8lb) (with solar shield)
DC voltage range	Nominal: -48V, -40.5 to -57V at full performance, -38 to -57V with relaxation on power consumption
DC power consumption	750W typical @100% RF load (in 2Tx or 4Tx mode); Add 58W for 2A*29V for AISG
Environmental conditions	-40°C (-40°F) / +55°C (+131°F) UL50E Type 4 Enclosure
Wind load (@150km/h or 93mph)	250N (56lb) Frontal/150N (34lb) Lateral
Antenna ports	4 ports 4.3-10 female (50 ohms) VSWR < 1.5
CPRI ports	2 CPRI ports (HW ready for Rate 7, 9.8 Gbps) SFP: SMDF (HW supports also SMSF and MMDF)
AISG interfaces	1 AISG 2.0 output (RS485) Integrated Smart Bias Tees (x2)
Misc. Interfaces	4 external alarms (1 connector) 1 DC connector (2 pins)
Installation conditions	Pole and wall mounting
Regulatory compliance	3GPP 36.141 / 3GPP 36.113 / GR-487 / GR-1089-CORE / GR-3108-CORE / UL 60950-1 / FCC Part 27 / FCC Part 15 / GR-3178-CORE

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SDC20 | 2.5L | 20 kW - AC

INDUSTRIAL DIESEL GENERATOR SET

EPA Certified Stationary Emergency

GENERAC | INDUSTRIAL
POWER

Standby Power Rating

20 kW AC, 60 Hz



Image used for illustration purposes only

Codes and Standards

Generac products are designed to the following standards:



UL2200, UL508, UL142, UL489



NFPA 37, 70, 99, 110



NEC700, 701, 702, 708



ISO 3046, 7637, 8528, 9001



NEMA ICS10, MG1, 250, ICS6, AB1



ANSI C62.41

Powering Ahead

For over 50 years, Generac has provided innovative design and superior manufacturing.

Generac ensures superior quality by designing and manufacturing most of its generator components, including alternators, enclosures and base tanks, control systems and communications software.

Generac gensets utilize a wide variety of options, configurations and arrangements, allowing us to meet the standby power needs of practically every application.

Generac searched globally to ensure the most reliable engines power our generators. We choose only engines that have already been proven in heavy-duty industrial applications under adverse conditions.

Generac is committed to ensuring our customers' service support continues after their generator purchase.

STANDARD OPTIONS**ENGINE SYSTEM**

- Oil Drain Extension
- Air Cleaner with Service Indicator
- Fan Guard
- Stainless Steel Flexible Exhaust Connection
- Exhaust Silencer with Drain
- Factory Filled Oil & Coolant

Fuel System

- Primary Fuel Filter

Cooling System

- 120V AC Coolant Heater
- Closed Coolant Recovery System
- UV/Ozone Resistant Hoses
- Factory-Installed Radiator
- 50/50 Ethylene Glycol Antifreeze
- Radiator Drain Extension

Electrical System

- Battery Charging Alternator
- AGM Spill Proof Battery
- Battery Cables
- Rubber-Booted Engine Electrical Connections
- Solenoid Activated Starter Motor

ALTERNATOR SYSTEM

- Class H Insulation Material
- Vented Rotor
- 2/3 Pitch
- Skewed Stator
- Auxiliary Voltage Regulator Power Winding
- Amortisseur Winding
- Brushless Excitation
- Sealed Bearings
- Automated Manufacturing (Winding, Insertion, Lacing and Varnishing)
- Rotor Dynamically Spin Balanced
- Full Load Capacity Alternator
- Protective Thermal Switch

GENERATOR SET

- Single-Side Service
- Internal Genset Puck Style Vibration Isolators
- Separation of Circuits- High/Low Voltage
- Silencer Heat Shield
- High Heat Wrapped Exhaust Piping
- Silencer Enclosed Within Generator
- 5 Year Extended Warranty
- Extended Factory Testing
- 12 Gallon System Spill Containment
- 2.5 Gallon Fuel Fill Spill Containment

ENCLOSURE

- Serviceable Items Accessible Through Single Lift-Off Side Door
- High Performance Sound-Absorbing Material
- Gasketed Door
- Stamped Air-Intake Louvers
- Single Door Latch Lockable with Key & Padlock
- Rhino Coat™ - Textured Polyester Powder Coat
- 150 MPH Wind Rating
- 36" Snow Rating
- 4 Point Lift System

FUEL TANK

- UL 142 Compliant
- Double Wall Construction
- Thermal Valve (Fusible Link)
- Factory Pressure Tested (5 psi)
- Rupture Basin Alarm
- Fuel Level Gauge and Sender
- Check Valve in Supply Line
- Fire Rated Hose
- Rhino Coat™ - Textured Polyester Powder Coat
- Stainless Steel Hardware
- Integrated Fork Pockets

CONTROL SYSTEM

- Digital H Control Panel - Dual 4x20 Display
- Programmable Crank Limiter
- 7-Day Programmable Exerciser
- Special Applications Programmable PLC
- RS-232/485
- All-Phase Sensing DVR
- Full System Status
- Utility Monitoring
- 2-Wire Start Compatible
- Power Output (kW)
- Power Factor
- kW Hours, Total & Last Run
- Real/Reactive/Apparent Power
- All Phase AC Voltage
- All Phase Currents
- Oil Pressure
- Coolant Temperature
- Coolant Level
- Engine Speed

- Battery Voltage
- Frequency
- Date/Time Fault History (Event Log)
- Isochronous Governor Control
- Waterproof/Sealed Connectors
- Audible Alarms and Shutdowns
- Not in Auto (Flashing Light)
- Auto/Off/Manual Switch
- E-Stop (Red Mushroom-Type)
- NFPA110 Level I and II (Programmable)
- Customizable Alarms, Warnings, and Events
- Modbus protocol
- Predictive Maintenance Algorithm
- Sealed Boards
- Password Parameter Adjustment Protection
- Single Point Ground
- 15 Channel Data Logging
- 0.2 msec High Speed Data Logging
- Alarm Information Automatically Comes Up On the Display

Alarms

- Generator Run- Dry Contact
- Major Alarm- Dry Contact
- Minor Alarm- Dry Contact
- Low Fuel Alarm- Dry Contact
- Generator Fluid Spill Alarm- Dry Contact
- Alarms & Warnings Time and Date Stamped
- Alarms & Warnings for Transient and Steady State Conditions
- Snap Shots of Key Operation Parameters During Alarms & Warnings
- Alarms and Warnings Spelled Out (No Alarm Codes)

MODEL OPTIONS**CONTROL SYSTEM**

- 21 Light Annunciator- Shipped Loose Kit and Field Installed
- External E-Stop-Shipped Loose Kit and Field Installed

ENCLOSURE

- Aluminum Enclosure
- Extreme Cold Weather Kit (-40°C)- Shipped Loose Kit and Field Installed

TANKS

- MDEQ 5 Gallon Fuel Spill Box with 90% Fill Alarm- Shipped Loose Kit and Field Installed
- MDEQ Fuel Vent- Shipped Loose Kit and Field Installed

SDC20 | 2.5L | 20 kW - AC

INDUSTRIAL DIESEL GENERATOR SET

EPA Certified Stationary Emergency

APPLICATION AND ENGINEERING DATA

ENGINE SPECIFICATIONS

General		Cooling System	
Make	Mitsubishi	Cooling System Type	Forced Circulation
EPA Emissions Compliance	Interim Tier 4	Water Pump Type	Centrifugal Pump
Cylinder #	4	Fan Type	Pusher
Type	In-Line	Fan Speed (rpm)	2376
Displacement - L (Cu In)	2.5 (158)	Fan Diameter - mm (in)	380 (15)
Bore - mm (in)	88 (3.5)	Coolant Heater Wattage	1000
Stroke - mm (in)	103 (4.1)	Coolant Heater Standard Voltage	120
Compression Ratio	22:1	Fuel System	
Intake Air Method	Naturally Aspirated	Fuel Type	Ultra Low Sulfur Diesel #2
Engine Governing		Fuel Specifications	ASTM
Governor	Electronic Isochronous	Fuel Filtering (microns)	6
Frequency Regulation (Steady State)	± 0.25%	Fuel Inject Pump Make	Bosch
Lubrication System		Injector Type	Engine Driven Gear
Oil Pump Type	Trochoid Gear Pump	Engine Type	Diesel
Oil Filter Type	Filtering Paper, Full Flow	Fuel Supply Line - mm (in.)	6.6 (0.26)
Crankcase Capacity - L (qts)	6.5 (6.9)	Engine Electrical System	
		System Voltage	12 VDC
		Battery Charger Alternator	12V-50A
		Battery Size	650 CCA
		Battery Group	35
		Battery Voltage	12 VDC
		Ground Polarity	Negative

ALTERNATOR SPECIFICATIONS

Standard Model	Mecc Alte ECP 28-2L/4	Bearings	Dual Sealed
Poles	4	Coupling	Belt, Pulley
Field Type	Revolving	Load Capacity - Standby	100%
Insulation Class - Rotor	H	Prototype Short Circuit Test	Yes
Insulation Class - Stator	H	Voltage Regulator Type	Digital
Total Harmonic Distortion	<5%	Number of Sensed Phases	All
Telephone Interference Factor (TIF)	<45	Regulation Accuracy (Steady State)	± 1.0%
Standard Excitation	Brushless		

RATING DEFINITIONS

Standby - Applicable for a varying emergency load for the duration of a utility power outage with no overload capability.

SDC20 | 2.5L | 20 kW - AC

INDUSTRIAL DC DIESEL GENERATOR SET

EPA Certified Stationary Emergency



OPERATING DATA

POWER RATINGS

Single-Phase 120/240 VAC @1.0pf	20 kW*	Amps: 83
Circuit Breaker	100A	

*18 kW output until 50 hour break-in complete

FUEL CONSUMPTION RATES*

Diesel - gph (lph)	
Percent Load	Standby
50%	1.02 (3.78)
75%	1.37 (5.18)
100%	1.81 (6.85)

* Fuel supply installation must accommodate fuel consumption rates at 100% load.

COOLING

		Standby
Coolant Flow per Minute	gpm (lpm)	15.9 (60)
Coolant System Capacity	gal (L)	6 (22.7)
Heat Rejection to Coolant	BTU/hr	238,200
Inlet Air	cfm (m³/min)	67.1 (1.9)
Max. Operating Ambient Temperature (Before Derate)	°F (°C)	104° (40°)
Maximum Radiator Backpressure	in H ₂ O	0.50

COMBUSTION AIR REQUIREMENTS

	Standby
Flow at Rated Power cfm (m³/min)	88 (2.49)

ENGINE

EXHAUST

		Standby
Rated Engine Speed	rpm	1800
Horsepower at Rated kW**	hp	33.5
Piston Speed	ft/min	1220.47
BMEP	psi	96.5

		Standby
Exhaust Flow (Rated Output)	cfm (m³/min)	193 (328)
Max. Backpressure (Post Silencer)	inHg (kPa)	1.96 (6.67)
Exhaust Temp (Rated Output - Post Silencer)	°F (°C)	928 (497.7)

** Refer to "Emissions Data Sheet" for maximum bHP for EPA and SCAQMD permitting purposes.

Deration – Operational characteristics consider maximum ambient conditions. Derate factors may apply under atypical site conditions. Please consult a Generac Power Systems Industrial Dealer for additional details. All performance ratings in accordance with ISO3046, BS5514, ISO8528 and DIN6271 standards.

ATTACHMENT 4

Visual Assessment and Photosimulations

CANTERBURY WEST CT
7 COLBURN ROAD
CANTERBURY, CT 06331

Prepared in June 2017 by:
All-Points Technology Corporation, P.C.
3 Saddlebrook Drive
Killingworth, CT 06419

Prepared for Verizon Wireless



VISUAL ASSESSMENT & PHOTO-SIMULATIONS

At the request of Cellco partnership LLC d/b/a Verizon Wireless, All-Points Technology Corporation, P.C. ("APT") completed this visual assessment and prepared computer-generated photo-simulations depicting the proposed colocation of a wireless telecommunications facility on an existing communication tower ("Facility") at 7 Colburn Road Canterbury, Connecticut (the "Site").

Project Setting

The host property is developed with a single-family residence, with two accessory structures and an existing ± 129 -foot guyed lattice tower (including all appurtenances) and fenced equipment compound. The existing lattice tower is located approximately 500 feet north of Colburn Road along the western side of the Site. The surrounding land use is a mix of residential, agricultural, and undeveloped forested land. Connecticut Route 14 is located to the south and Brooklyn Road to the east.

The proposed Verizon Wireless Facility would include the installation of three (3) antenna arrays located on the existing lattice tower at a center line elevation of ± 105 feet above ground level ("AGL"). The arrays would include nine (9) new panel antennas and associated appurtenances mounted to new V-Frame antenna mounting kits. All proposed antennas and appurtenances will be installed below the overall height of the existing lattice tower. An existing dish antenna at the proposed Verizon Wireless center line will require relocation to a higher position (110 feet AGL) on the tower.

The existing fenced compound area would be expanded ± 771 square feet to accommodate new equipment cabinets, including a 20 KW diesel fueled generator, installed on a prefabricated steel platform. A new 475-foot long, 12-foot wide, gravel access drive originating off of Colburn Road, is proposed to be installed along the western side of the Site. Power for the Facility would be routed approximately 490 feet underground along the proposed access road to CL&P Pole #1051 located on Colburn Road.

Methodology

On March 22, 2017, APT personnel conducted a field reconnaissance to determine where the existing tower is visible and to obtain photographs for use in this report. The geographic coordinates of the camera's position at each photo location were logged via GPS. Photographs were taken with a Canon EOS 6D digital camera body and Canon EF 24 to 105 millimeter ("mm") zoom lens, with the lens set to 50 mm, to provide a consistent field of view.

Three-dimensional computer models were developed for the existing tower and components of the proposed Facility installation from AutoCAD information. Photographic simulations were then generated to portray scaled renderings of the proposed installation from representative locations where portions of the Verizon Wireless Facility would be visible. Using field data, site plan information and image editing software, the proposed Facility was scaled to the correct location and height, relative to the existing tower and surrounding area. For presentation purposes in this report, all of the photographs were produced in an approximate 7-inch by 10.5-inch format. A photolog map and copies of the existing conditions and photo-simulations are attached. The photo-simulations depict the proposed Verizon Wireless installation only and do not include those additional future antennas and appurtenances that are included on the Site drawings (prepared by APT dated 6/19/17).

Three (3) of the locations presented in the attachment were simulated to provide a representation of the proposed Facility under similar settings as those encountered during the field reconnaissance. Views of the Facility can change throughout the seasons as well as the time of day, and are dependent on weather and other atmospheric conditions including but not necessarily limited to haze, fog, and clouds; the location, angle and intensity of the sun; light conditions, and the specific viewer location.

The table below summarizes the photographs and simulations presented in the attachment to this report including a description of each location, the view orientation to the Facility, the distance from where the photo was taken relative to the existing tower and the general characteristics of that view.

View	Location	Orientation	Dist. To Project	View Characteristics
1	Colburn Road	Northeast	±472 Feet	Year-Round
2	Colburn Road at Water Street	North	±0.10 Mile	Year-Round
3	Westminster Road	Northwest	±0.14 Mile	Year-round
4	Brooklyn Road	Southwest	±0.18 Mile	Not Visible

Conclusions

The visibility of the proposed Facility appears limited to locations within less than ±0.25 mile in all directions of where the existing tower can be seen today. The addition of the proposed antennas and appurtenances would not severely alter the profile of the existing tower or significantly change current sightlines within the general area. Based on the results of this assessment, it is our opinion that the proposed installation of the Verizon Wireless Facility will not have an adverse visual impact on existing views or on the character of the community.

Limitations

The photo-simulations provide a representation of the Facility under similar settings as those encountered during the reconnaissance. Views of the Facility can change throughout the seasons and the time of day, and are dependent on weather and other atmospheric conditions (e.g., haze, fog, clouds); the location, angle and intensity of the sun; and the specific viewer location. Weather conditions on the day of the balloon float included partly cloudy skies. The photo-simulations presented in this report provide an accurate portrayal of the Facility under comparable conditions.

ATTACHMENTS



PHOTO LOG

- Legend
- Site
 - Not Visible
 - Year-Round Visibility





EXISTING

PHOTO

1

LOCATION

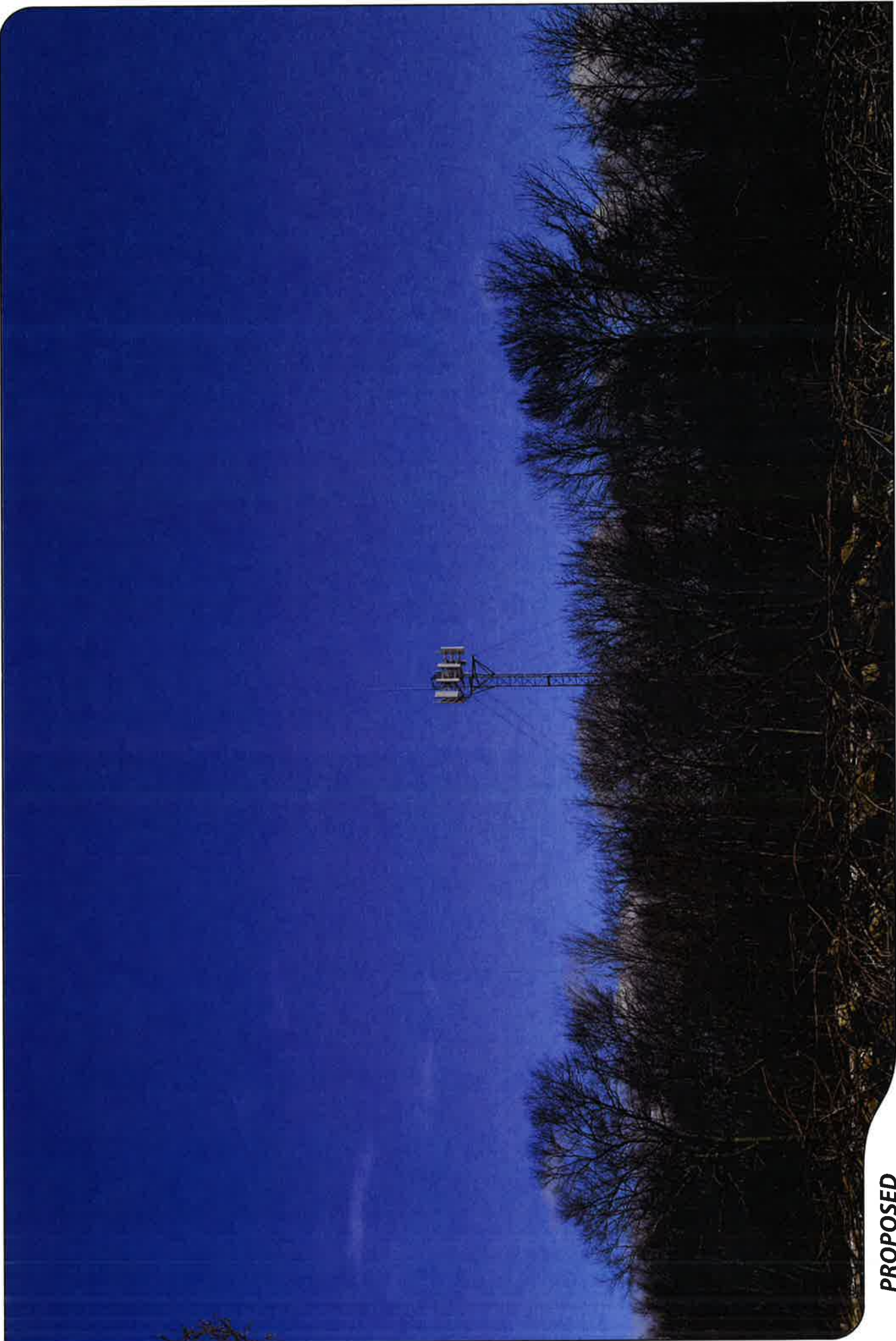
COLBURN ROAD

ORIENTATION

NORTHEAST

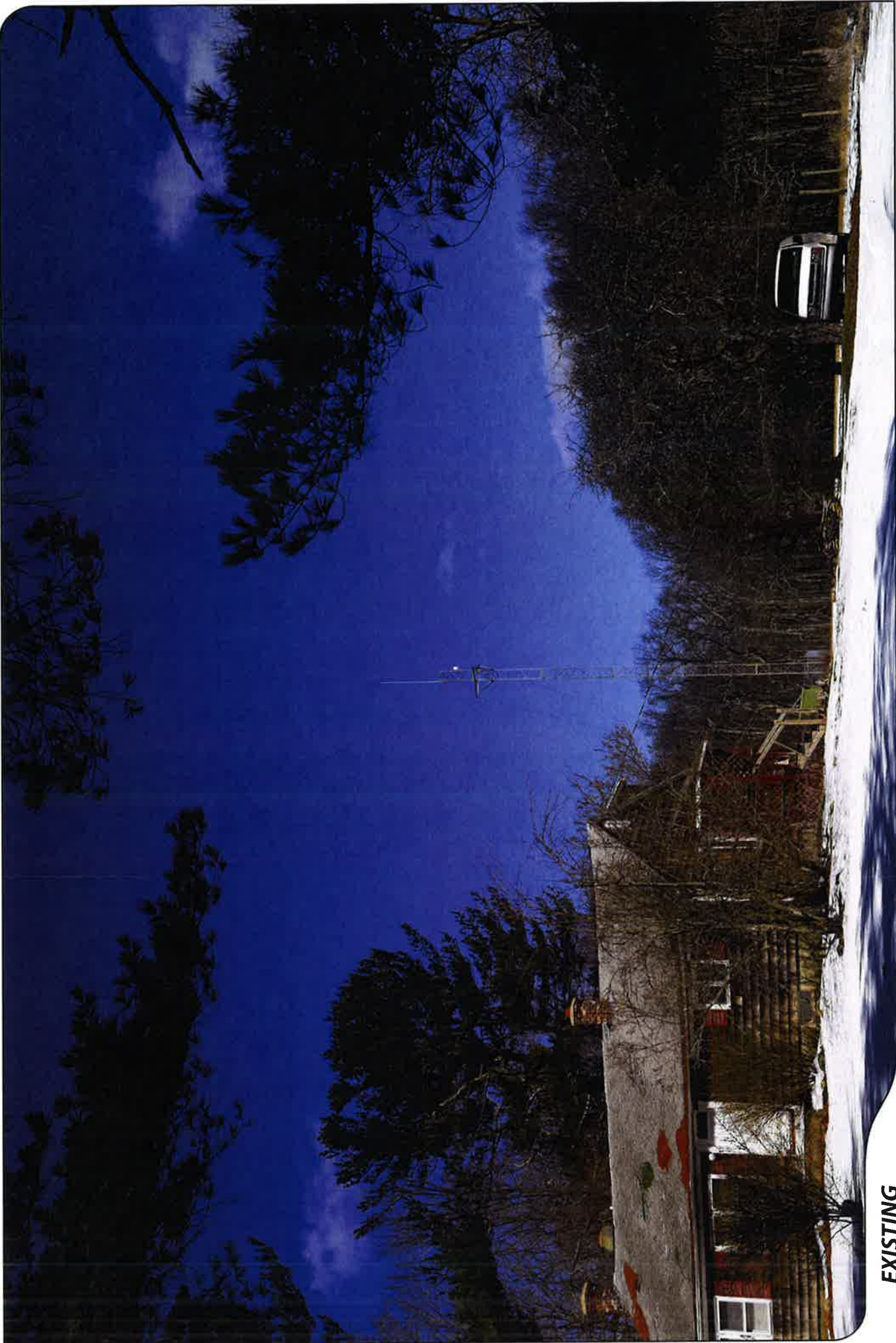
DISTANCE TO SITE

+/- 472 FEET



PROPOSED

PHOTO	LOCATION	ORIENTATION	DISTANCE TO SITE
1	COLBURN ROAD	NORTHEAST	+/- 472 FEET



EXISTING

PHOTO

2

LOCATION

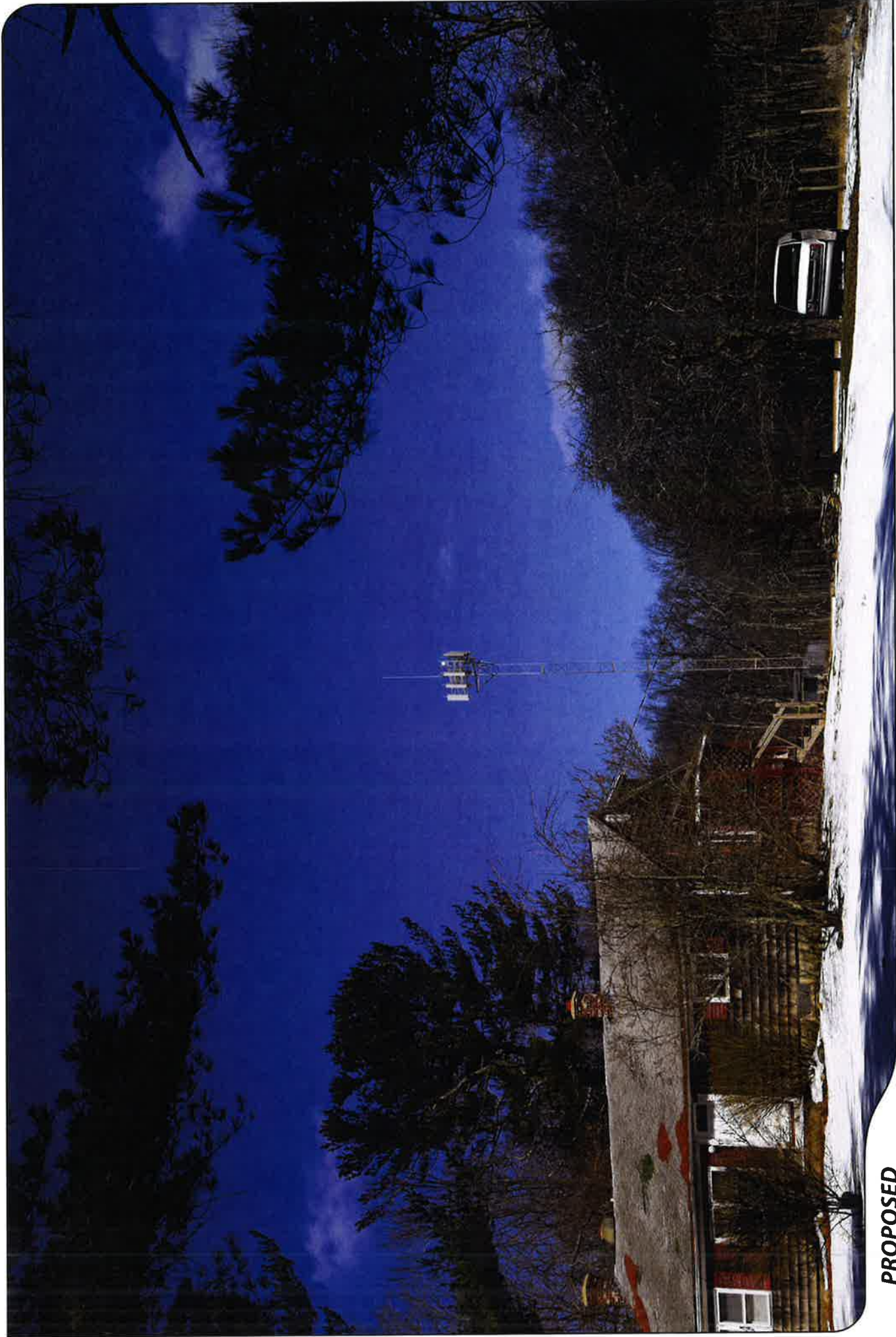
COLBURN ROAD AT WATER STREET

ORIENTATION

NORTH

DISTANCE TO SITE

+/- 0.10 MILE



PROPOSED

PHOTO

2

LOCATION

COLBURN ROAD AT WATER STREET

ORIENTATION

NORTH

DISTANCE TO SITE

+/- 0.10 MILE



EXISTING

PHOTO

3

LOCATION

WESTMINSTER ROAD

ORIENTATION

NORTHWEST

DISTANCE TO SITE

+/- 0.14 MILE



PROPOSED

PHOTO

3

LOCATION

WESTMINSTER ROAD

ORIENTATION

NORTHWEST

DISTANCE TO SITE

+/- 0.14 MILE



NOT VISIBLE FROM THIS LOCATION

EXISTING

PHOTO

4

LOCATION

BROOKLYN ROAD

ORIENTATION

SOUTHWEST

DISTANCE TO SITE

+/- 0.18 MILE

ATTACHMENT 5

General Power Density

Site Name: Canterbury West, CT
Cumulative Power Density

Operator	Operating Frequency (MHz)	Number of Trans.	ERP Per Trans. (watts)	Total ERP (watts)	Distance to Target (feet)	Calculated Power Density (mW/cm ²)	Maximum Permissible Exposure*	Fraction of MPE (%)
VZW PCS	1970	1	3524	3523.557	105	0.1149	1.0	11.49%
VZW Cellular	869	9	305	2745.064	105	0.0895	0.5793333333	15.46%
VZW AWS	2145	1	6987	6987	105	0.2279	1.0	22.79%
VZW 700	746	1	1711	1711	105	0.0558	0.4973333333	11.22%

Total Percentage of Maximum Permissible Exposure

60.96%

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

MHz = Megahertz
mW/cm² = 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 6

CANTERBURY_WEST_CT.txt

* Federal Airways & Airspace *
* Summary Report: Existing Structure *
* Antenna Structure *

Airspace User: Your Name

File: CANTERBURY_WEST_CT

Location: Jewett City, CT

Latitude: 41°-42'-40.02" Longitude: 72°-1'-22.05"

SITE ELEVATION AMSL.....582 ft.

STRUCTURE HEIGHT.....129 ft.

OVERALL HEIGHT AMSL.....711 ft.

NOTICE CRITERIA

FAR 77.9(a): NNR (DNE 200 ft AGL)
FAR 77.9(b): NNR (DNE Notice Slope)
FAR 77.9(c): NNR (Not a Traverse Way)
FAR 77.9: NNR FAR 77.9 IFR Straight-In Notice Criteria for IJD
FAR 77.9: NNR FAR 77.9 IFR Straight-In Notice Criteria for LZD
FAR 77.9(d): NNR (Off Airport Construction)

NR = Notice Required

NNR = Notice Not Required

PNR = Possible Notice Required (depends upon actual IFR procedure)
For new construction review Air Navigation Facilities at bottom
of this report.

The location and analysis were based upon an existing structure. However, no existing aeronautical study number was identified. If the 'existing' structure penetrates an obstruction surface defined by CFR 77.17, 77.19, 77.21 or 77.23 (see below) it is strongly recommended the FAA be notified of the 'existing' structure to determine obstruction marking or lighting requirements. It is not uncommon for the FAA to issue a Determination of No Hazard (DNH) for an existing structure and modify the airspace to accommodate the structure, should that be required. If the FAA issues a DNH enter the aeronautical study number (ASN) in the space provided on the Airspace Analysis Window Form and re-run Airspace.

The below analysis reflects the aeronautical conditions that exist as of the date stamped on this analysis.

Notice to the FAA is not required at the analyzed location and height for slope, height or Straight-In procedures. Please review the 'Air Navigation' section for notice requirements for offset IFR procedures and EMI.

OBSTRUCTION STANDARDS

FAR 77.17(a)(1): DNE 499 ft AGL
FAR 77.17(a)(2): DNE - Airport Surface
FAR 77.19(a): DNE - Horizontal Surface
FAR 77.19(b): DNE - Conical Surface
FAR 77.19(c): DNE - Primary Surface
FAR 77.19(d): DNE - Approach Surface
FAR 77.19(e): DNE - Transitional Surface

VFR TRAFFIC PATTERN AIRSPACE FOR: IJD: WINDHAM

Type: A RD: 42232.76 RE: 239.7

FAR 77.17(a)(1): DNE

CANTERBURY_WEST_CT.txt
 FAR 77.17(a)(2): DNE - Greater Than 5.99 NM.
 VFR Horizontal Surface: DNE
 VFR Conical Surface: DNE
 VFR Approach Slope: DNE
 VFR Transitional Slope: DNE

VFR TRAFFIC PATTERN AIRSPACE FOR: LZD: DANIELSON
 Type: A RD: 51458.72 RE: 231.4
 FAR 77.17(a)(1): DNE
 FAR 77.17(a)(2): Does Not Apply.
 VFR Horizontal Surface: DNE
 VFR Conical Surface: DNE
 VFR Approach Slope: DNE
 VFR Transitional Slope: DNE

TERPS DEPARTURE PROCEDURE (FAA Order 8260.3, Volume 4)
 FAR 77.17(a)(3) Departure Surface Criteria (40:1)
 DNE Departure Surface

MINIMUM OBSTACLE CLEARANCE ALTITUDE (MOCA)
 FAR 77.17(a)(4) MOCA Altitude Enroute Criteria
 The Maximum Height Permitted is 1100 ft AMSL

PRIVATE LANDING FACILITIES
 No Private Landing Facilities Are Within 6 NM

AIR NAVIGATION ELECTRONIC FACILITIES

APCH	FAC	ST	DIST	DELTA	GRND					
BEAR	IDNT	TYPE	AT	FREQ	VECTOR	(ft)	ELEVA	ST	LOCATION	ANGLE
	ORW	VOR/DME	I	110.0	173.52	56743	+401	CT	NORWICH	.40
	PUT	VOR/DME	R	117.4	28.62	101483	+59	CT	PUTNAM	.03
	PVD	RADAR	Y	2735.	88.11	115929	+145	RI	THEODORE FRANCIS	.07
<p>No Impact. Existing Structures Do Not Require Notice based upon EMI. The FAA takes into account and adjusts radar facilities for reflection, clutter and false targets. The studied location is within 20 NM of an Air Traffic Radar facility. The calculated Radar Line-Of-Sight (LOS) distance is: 62 NM. This location and height is within the Radar Line-Of-Sight.</p>										
	GON	VOR/DME	R	110.8	183.29	138958	+702	CT	GROTON	.29
	HFD	VOR/DME	R	114.9	259.73	145581	-138	CT	HARTFORD	-.05
	PVD	VOR/DME	R	115.6	88.1	162024	+662	RI	PROVIDENCE	.23
	BDL	RADAR	ON		294.97	197989	+475	CT	BRADLEY INTL	.14
	BDL	VORTAC	D	109.0	295.00	199865	+551	CT	BRADLEY	.16
	ORH	RADAR WXL	Y		11.36	208447	-292	MA	WORCESTER	-.08

CFR Title 47, §1.30000-§1.30004

AM STUDY NOT REQUIRED: Structure is not near a FCC licensed AM station.
 Movement Method Proof as specified in §73.151(c) is not required.
 Please review 'AM Station Report' for details.

CANTERBURY_WEST_CT.txt

Nearest AM Station: WILI @ 13853 meters.

Airspace® Summary Version 17.3.436

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04-04-2017
10:31:00

ATTACHMENT 7

280 Trumbull Street
Hartford, CT 06103-3597
Main (860) 275-8200
Fax (860) 275-8299
kbaldwin@rc.com
Direct (860) 275-8345

Also admitted in Massachusetts

July 6, 2017

Via Certificate of Mailing

Roy A. Piper, First Selectman
Town of Canterbury
1 Municipal Drive
Canterbury, CT 06331

Re: **Petition for Declaratory Ruling Filed with the Connecticut Siting Council for the Installation of a Wireless Telecommunications Facility at 7 Colburn Road, Canterbury, Connecticut**

Dear Mr. Piper:

This firm represents Cellco Partnership d/b/a Verizon Wireless ("Cellco"). Today, Cellco filed a Petition for Declaratory Ruling ("Petition") with the Connecticut Siting Council ("Council") seeking approval to install a new telecommunications facility at 7 Colburn Road in Canterbury (the "Property"). The facility will consist of nine (9) antennas and six (6) remote radio heads attached at the 105-foot level of the existing 111-foot tower at the Property. Equipment associated with Cellco's antennas and a diesel-fueled back-up generator will be located on a 12' x 26' steel platform with a roof canopy.

A copy of the Petition is attached for your review. Landowners whose parcels abut the Property were also sent notice of this filing along with a copy of the Petition.

Please contact me if you have any questions regarding this proposal.

Sincerely,



Kenneth C. Baldwin

Attachment

16006426-v1

July 6, 2017

Via Certificate of Mailing

Melissa Gil, Land Use Director
Town of Canterbury
1 Municipal Drive
Canterbury, CT 06331

Re: **Petition for Declaratory Ruling Filed with the Connecticut Siting Council for the Installation of a Wireless Telecommunications Facility at 7 Colburn Road, Canterbury, Connecticut**

Dear Ms. Gil:

This firm represents Cellco Partnership d/b/a Verizon Wireless (“Cellco”). Today, Cellco filed a Petition for Declaratory Ruling (“Petition”) with the Connecticut Siting Council (“Council”) seeking approval to install a new telecommunications facility at 7 Colburn Road in Canterbury (the “Property”). The facility will consist of nine (9) antennas and six (6) remote radio heads attached at the 105-foot level of the existing 111-foot tower at the Property. Equipment associated with Cellco’s antennas and a diesel-fueled back-up generator will be located on a 12’ x 26’ steel platform with a roof canopy.

A copy of the Petition is attached for your review. Landowners whose parcels abut the Property were also sent notice of this filing along with a copy of the Petition.

Please contact me if you have any questions regarding this proposal.

Sincerely,



Kenneth C. Baldwin

Attachment

16237000-v1

July 6, 2017

Via Certificate of Mailing

John Piela
67 Turquoise Avenue
Naples, FL 34114

Re: **Petition for Declaratory Ruling Filed with the Connecticut Siting Council for the Installation of a Wireless Telecommunications Facility at 7 Colburn Road, Canterbury, Connecticut**

Dear Mr. Piela:

This firm represents Cellco Partnership d/b/a Verizon Wireless ("Cellco"). Today, Cellco filed a Petition for Declaratory Ruling ("Petition") with the Connecticut Siting Council ("Council") seeking approval to install a new telecommunications facility at 7 Colburn Road in Canterbury (the "Property"). The facility will consist of nine (9) antennas and six (6) remote radio heads attached at the 105-foot level of the existing 111-foot tower at the Property. Equipment associated with Cellco's antennas and a diesel-fueled back-up generator will be located on a 12' x 26' steel platform with a roof canopy.

A copy of the Petition is attached for your review. Landowners whose parcels abut the Property were also sent notice of this filing along with a copy of the Petition.

Please contact me if you have any questions regarding this proposal.

Sincerely,



Kenneth C. Baldwin

Attachment

16006436-v1



Certificate of Mailing — Firm

Name and Address of Sender Kenneth C. Baldwin, Esq. Robinson & Cole LLP 280 Trumbull Street Hartford, CT 06103		TOTAL NO. of Pieces Listed by Sender	TOTAL NO. of Pieces Received at Post Office™	Affix Stamp Here Postmark with Date of Receipt.				
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 Airift
1.		Roy A. Piper, First Selectman Town of Canterbury 1 Municipal Drive Canterbury, CT 06331						
2.		Melissa Gil, Land Use Director Town of Canterbury 1 Municipal Drive Canterbury, CT 06331						
3.		John Piela 67 Turquoise Avenue Naples, FL 34114						
4.								
5.								
6.								

ATTACHMENT 8

KENNETH C. BALDWIN

280 Trumbull Street
Hartford, CT 06103-3597
Main (860) 275-8200
Fax (860) 275-8299
kbaldwin@rc.com
Direct (860) 275-8345

Also admitted in Massachusetts

July 6, 2017

Via Certificate of Mailing

«Name_and_Address»

Re: Petition for Declaratory Ruling Filed with the Connecticut Siting Council for the Installation of a Wireless Telecommunications Facility at 7 Colburn Road, Canterbury, Connecticut

Dear «Salutation»:

This firm represents Cellco Partnership d/b/a Verizon Wireless (“Cellco”). Today, Cellco filed a Petition for Declaratory Ruling (“Petition”) with the Connecticut Siting Council (“Council”) seeking approval to install a new telecommunications facility at 7 Colburn Road in Canterbury (the “Property”). The facility will consist of nine (9) antennas and six (6) remote radio heads attached at the 105-foot level of the existing 111-foot tower at the Property. Equipment associated with Cellco’s antennas and a diesel-fueled back-up generator will be located on a 12’ x 26’ steel platform with a roof canopy. A copy of the Petition is attached for your review.

This notice is being sent to you because you are listed on the Town Assessor’s records as an owner of land that abuts the Property. If you have any questions regarding the Petition, the Council’s process for reviewing the Petition or the details of the filing itself, please feel free to contact me at the number listed above. You may also contact the Council directly at 860-827-2935.

Sincerely,



Kenneth C. Baldwin

Attachment

CELLCO PARTNERSHIP D/B/A VERIZON WIRELESS

ABUTTING PROPERTY OWNERS

**7 COLBURN ROAD
CANTERBURY, CONNECTICUT**

	Property Address	Owner's and Mailing Address
1.	21 Colburn Road	Richard F. Florence 21 Colburn Road Canterbury, CT 06331
2.	46 Brooklyn Road	Arvard R. and Leta Noble 46 Brooklyn Road Canterbury, CT 06331
3.	40 Brooklyn Road	Anni Heikkica and James Benoit II 40 Brooklyn Road Canterbury, CT 06331
4.	38 Brooklyn Road	Theodore J. and Suzanne M. Michaud 38 Brooklyn Road Canterbury, CT 06331
5.	30 Brooklyn Road	Douglas Foster 30 Brooklyn Road Canterbury, CT 06331
6.	411 Westminster Road	Luther E. and Lorraine J. Thurlow 81 Colburn Road Canterbury, CT 06331
7.	Westminster Road	Town of Canterbury 1 Municipal Drive Canterbury, CT 06331
8.	423 Westminster Road	Lindell T. Braasch 961 Plainfield Pike Greene, RI 02827