

GEHRING & ASSOCIATES, LLC

Wireless Planning & Zoning

*Post Office Box 98
West Mystic, CT 06388*

*860-536-0675
wireless@gehringzone.com*

July 29, 2020

Zoning Board of Appeals
Town of Holliston
703 Washington Street
Holliston, MA 01746

RE: Special Permit Application of Celco Partnership d/b/a Verizon Wireless for the Installation of Interior Antennas and Exterior Ground Equipment at 725 Washington Street, Assessor's ID: 8A-1-26, in the AR-2 Zoning District.

Dear Members of the Zoning Board of Appeals:

Celco Partnership d/b/a Verizon Wireless ("Applicant") is pleased to submit the attached application for a Special Permit to install a Personal Wireless Service Facility at 725 Washington Street, Assessor's ID 8A-1-26 ("Subject Property"). The Subject Property is located in the AR-2 zoning district.

Verizon Wireless has identified certain significant gaps in its wireless coverage in the area that can be alleviated by creating a new cell site in this section of Town. A search for existing towers did not reveal any such structures nearby. Alternatively, tall buildings or other suitable mounting structures were sought and the subject Church was discovered to already host an antenna installation for another carrier (T-Mobile).

Verizon Wireless proposes to install antennas hidden inside the steeple of the subject Church and place the radio cabinets needed to serve those antennas outside, in a rear area, surrounded by a solid fence to hide the equipment from view.

The proposed installation will be unmanned, unoccupied and will create no nuisance of any sort. In fact, the only impact that will result from the proposed installation will be the beneficial effect of providing enhanced wireless connectivity for the surrounding neighborhood.

Zoning Board of Appeals
Town of Holliston
July 29, 2020
Page 2 of 2

Enclosed for your review and consideration are the following which are incorporated into and made part of this Application:

- Tab 1 - Board of Appeals Application Form
- Tab 2 - Statement in Support of Application
- Tab 3 - Landowner Authorization
- Tab 4 - Assessor's Field Card, Tax Map and Deed
- Tab 5 - Applicant's FCC Licenses
- Tab 6 - Radio Frequency ("RF") Engineer's Report and Coverage Plots
- Tab 7 - RF Emissions Compliance Report
- Tab 8 - SHPO Approval
- Tab 9 - Photos and Photosimulations
- Tab 10 - Site Plan and Elevation Drawings

The Applicant looks forward to its Public Hearing where the enclosed may be presented for your consideration and approval.

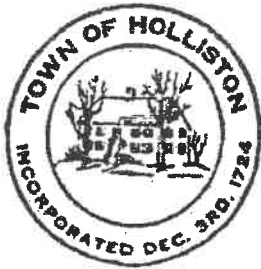
Sincerely,

Gehring & Associates, LLC

By 
Carl W. Gehring, on behalf of Celco Partnership d/b/a Verizon Wireless

Enclosures

cc: Greg Richard – Verizon Wireless Real Estate Department
First Congregational Church of Holliston - Landlord



TOWN OF HOLLISTON
ZONING BOARD OF APPEALS
TOWN HALL

HOLLISTON, MASSACHUSETTS 01746

APPLICATION FOR GRANT OF A SPECIAL PERMIT

Date Filed: _____

Applicant's Name: Cellco Partnership d/b/a Verizon Wireless

Applicant's Address: c/o Gehring & Associates, LLC, P.O. Box 98, West Mystic, CT 06388

Applicant's Phone Number: c/o 860-536-0675

Owner's Name: First Congregational Church of Holliston

Owner's Address: 725 Washington St., Holliston, MA

The Owner hereby appoints Verizon Wireless or its agent to act as his/her/its agent for the purposes of submitting and processing this application for a special permit.

The Owner's title to the land that is the subject matter of this application is derived

under deed from Holliston First Parish, dated April 5, 1894

And recorded in Middlesex South Registry of Deeds, Book 2287, Page 132

Or Land Court Certificate of Title No. _____, registered in

District Book _____, Page _____

The land is shown in the Assessor's records as Lot 26 on Map 8A, Block 1

And has an address of or is located at 725 Washington Street (Church Next to Town Hall)

in the AR-2 zoning district.

Under the provisions of Section VI-D (2) to vary the terms of Section I-B and the following, the Applicant hereby petitions the Board of Appeals:

Nature and subject matter of Special Permit:

Install antennas in steeple of Church, hidden from view, and place radio equipment outside on-grade on a concrete pad pursuant to the enclosed plans and supporting materials.

Section of Zoning Bylaw that permits this use by grant of Special Permit:

Sections V-O and VI-E, and M.G.L. c.40A and 47 U.S.C. 332(c)(7)(B), all rights reserved.

Previous Zoning Information (To be completed by Inspector of Buildings):

The Applicant presents the following evidence that supports the grant of the special Permit:

a. The use is in harmony with the general purpose and intent of the bylaw because:

See enclosed Statement and supporting material incorporated into and made part of this Application.

b. The general or specific provisions of a grant of a special permit, as set forth in the zoning bylaw are satisfied because:

See enclosed Statement and supporting material incorporated into and made part of this Application.

Will the proposed use include the storage or process of any hazardous substances?

Yes _____ (Please attach additional information.) No X

Cellco Partnership d/b/a Verizon Wireless

Applicant's Signature: Bv  Its Agent

Owner's Signature: See enclosed Letter of Authorization

RCYO VIA EMAIL
7-27-20

Under the provisions of Section VI-D (2) to vary the terms of Section I-B and the following, the Applicant hereby petitions the Board of Appeals:

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Sections V-O and VI-E, and M.G.L. c.40A and 47 U.S.C. 332(c)(7)(B), all rights reserved.

Previous Zoning Information (To be completed by Inspector of Buildings):
PROPERTY IS USED AS A CHURCH + PRESCHOOL + HOUSES AN EXISTING WIRELESS COMMUNICATIONS FACILITY WITHIN THE EXISTING BUILDING. PROPOSED NEW W.C.F. WILL INCLUDE INSTALLATION OF EXTERIOR EQUIPMENT NECESSITATING A SPECIAL PERMIT PER SECTION V.O.4.C.2

The Applicant presents the following evidence that supports the grant of the special Permit:

a. The use is in harmony with the general purpose and intent of the bylaw because:

See enclosed Statement and supporting material incorporated into and made part of this Application.

b. The general or specific provisions of a grant of a special permit, as set forth in the zoning bylaw are satisfied because:

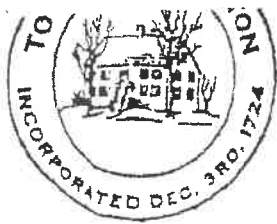
See enclosed Statement and supporting material incorporated into and made part of this Application.

Will the proposed use include the storage or process of any hazardous substances?
Yes (Please attach additional information.) No X

Cellco Partnership d/b/a Verizon Wireless

Applicant's Signature: By C. Gehrig Its Agent

Owner's Signature: See enclosed Letter of Authorization



TOWN OF HOLLISTON
ZONING BOARD OF APPEALS

703 Washington Street
Holliston, MA 01746
(508)429-0635

APPLICATION CHECKLIST

- X Completed application signed by the Building Inspector and an additional 15 copies
- X Plot plan (original and 15 copies) attached to the applications
- X Certified abutters list (1 copy)
- X Two sets of stamped envelopes to all abutters. Also include two envelopes addressed to the Owner and Applicant (if different than the Owner). Labels will be supplied by the Assessor's office.
- X Filing Fee (Refer to fee schedule)

Please note: Failure to submit a complete application can result in a hearing continuance until the Zoning Board of Appeals receives all information.

GateHouse Media
New England

GATEHOUSE MEDIA NEW ENGLAND
COMMUNITY NEWSPAPER COMPANY
PATRIOT LEDGER/THE ENTERPRISE
HERALD NEWS FALL RIVER/TAUNTON GAZETTE
WALPOLE TIMES/PROVINCETOWN BANNER
NANTUCKET INDEPENDENT/WICKED LOCAL.COM
254 Second Ave., Needham, MA 02494-2811
Remittance Address: P.O. Box 9113, Needham, MA 02492-9113

Date: ____/____/20____

I hereby acknowledge that the application I am submitting to the:

TOWN OF HOLLISTON, MASSACHUSETTS

- ☒ Zoning Board Of Appeals ☐ Planning Board
☐ Conservation Commission ☐ Historic Districts Commission
☐ Other: _____ ☐ Board Of Selectmen

requires a legal notice of public hearing. Said hearing is to be held on: ____/____/20____. Legal notices are currently submitted to the METRO WEST DAILY NEWS for publication on the following date(s): ____/____/20____: ____/____/20____.

I hereby AUTHORIZE that the required legal notice be billed directly to me by, GateHouse Media New England, d/b/a, Community Newspaper Company Inc.

Printed Name: Gehring & Associates, LLC

Signature: By C. Gehring, Esq. Agent

Address: P. O. Box 98

City: West Mystic, State: CT, Zip: 06388

Phone: (860) 536 - 0675

Original copy to Town, copy to customer and copy to Legal Publication Dept of CNC with ad copy.

HOLLISTON BOARD OF HEALTH
OPERATIONS INFORMATION QUESTIONNAIRE

IMPORTANT

COMPLETION OF THIS FORM IS REQUIRED FOR ALL SUBMITTALS AND REQUESTS TO THE BOARD OF HEALTH FOR PROJECT EVALUATION OF ALL INDUSTRIAL OR COMMERCIAL PROPOSALS, AND FOR ALL OTHERS EXCEPT FOR ONE AND TWO FAMILY DWELLINGS. THE BOARD OF HEALTH RELIES ON THE COMPLETE SUBMITTAL OF THIS INFORMATION IN ORDER TO MAKE FINDINGS AS TO PROJECT ACCEPTABILITY FOR EITHER A BOARD OF HEALTH PERMIT OR FOR EVALUATION OR RECOMMENDATION OR RECOMMENDATION TO OTHER BOARDS SUCH AS THE ZONING BOARD OF APPEALS OR THE PLANNING BOARD. FAILURE BY THE APPLICANT TO PROVIDE ALL THE INFORMATION REQUESTED IN THIS QUESTIONNAIRE SHALL RESULT IN AN ADVERSE FINDING OR RECOMMENDATION BY THE BOARD OF HEALTH. SUPPORTING DOCUMENTATION FOR THE DATA SHALL BE ATTACHED TO THE COMPLETED QUESTIONNAIRE.

RESPONSIBLE PARTY -

A SINGLE PARTY OF RESPONSIBILITY must be designated for the proposed project. All applications for permits of the Board of Health will be expected to be submitted by this responsible party, usually the owner of the building or facility, and not from individual tenants. All limitations and conditions with regards to any wastewater or atmospheric discharge shall be the responsibility of the "RESPONSIBLE PARTY", who shall see that all tenants operate within the limitations and conditions of the permits issued. While the Board of Health reserves the right to take whatever appropriate action might be necessary against an individual tenant, the Board will hold the "RESPONSIBLE PARTY" as the entity of primary responsibility.

PLEASE PRINT OR TYPE

Date: July 6, 2020

Project Location: 725 Washington St (Church next to Town Hall)

Project Description: Install antennas in steeple and radio equipment on-grade outside.

Applicant's Name: Celco Partnership d/b/a Verizon Wireless PHONE # 860-536-0675

Applicant's Address: 118 Flanders Road, Westborough, MA 01581

Applicant's Signature: By [Signature] Its Agent

Owner's Name: First Congregational Church of Holliston PHONE # _____

Owner's Address: 725 Washington St, Holliston, MA

Owner's Signature: See enclosed Letter of Authorization

What is the building GROSS FLOOR AREA 16,383 Square Feet

How many EMPLOYEES will occupy the building (all shifts)

1st shift 0 2nd shift 0 3rd shift 0

Will there be any process operations? Process operations refer to any manufacturing or other similar work procedures such as: painting, servicing vehicles, making semi-conductors, filling chemical containers, photographic developing, printing, x-rays, washing or rinsing of metal, glass, crystals, plastic, or other products, woodworking. If you are still not sure if your operation is not a process operation, describe it anyway so it can be evaluated.

YES _____ NO X

If YES, provide a complete description with a flow diagram and attach it to this questionnaire.

EXISTING WASTEWATER FACILITIES –

If NO - it will be necessary to obtain a Disposal Works Construction Permit from the Board of Health. Inquire at the office for details.

Unknown and Not Applicable.
Unmanned wireless facility uses no water and no sewer.

For Mixed Use Buildings: Unit 1 _____ GPD; Unit 2 _____ GPD,
Unit 3 _____ GPD; Unit 4 _____ GPD; Unit 5 _____ GPD
Use a separate sheet if there are more than 5 tenant units within a building.

PROPOSED WASTEWATER DISCHARGE –

If Process Wastewater is proposed:

What is the method of disposal

If YES – What will flow into the floor drain? _____

If YES - is the spray painting approved by DEP? YES _____ NO _____

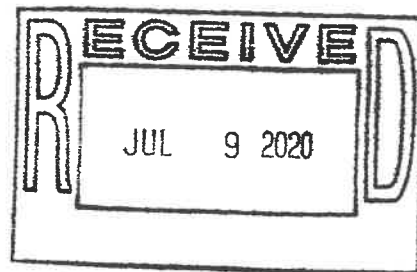
If YES – Attach a complete description to this questionnaire.

If YES - Has the discharge been approved by DEP?

Will the proposed facility USE, STORE, MANUFACTURE, OR DISCHARGE any materials, compounds, or chemicals which are on the Massachusetts Substance List? YES NO **X**

If YES - Attach a complete list which includes the following information:
TYPES, MATERIAL SAFETY DATA SHEETS, QUANTITIES, METHOD OF
STORAGE AND LOCATION. (Show location on a sketch plan of the proposed
Facility – draw to scale if possible)

COPY



BOARD OF ASSESSORS
HOLLISTON, MASSACHUSETTS 01746

COPY

ABUTTER CERTIFICATION REQUEST

DATE: July 6, 2020

Paid
7/6/2020
check #1791
\$50.00

APPLICANT'S NAME: Cellco Partnership d/b/a Verizon Wireless

APPLICANT'S ADDRESS: c/o Gehring & Assoc. LLC, P.O.Box 98, West Mystic, CT 06388

APPLICANT'S PHONE: 860-536-0675

SUBJECT PROPERTY ADDRESS: 725 Washington Street (Church next to Town Hall)

MAP 8A BLOCK 1 LOT 26

ASSOCIATED PERMIT/APPROVAL (i.e. Special Permit)

Special Permit

PERMIT GRANTING AUTHORITY (i.e. Planning Board)

Zoning Board of Appeals

RADIUS FOR NOTICE (i.e. 300 feet) 300 feet

FEE (made payable to Town of Holliston): \$50.00

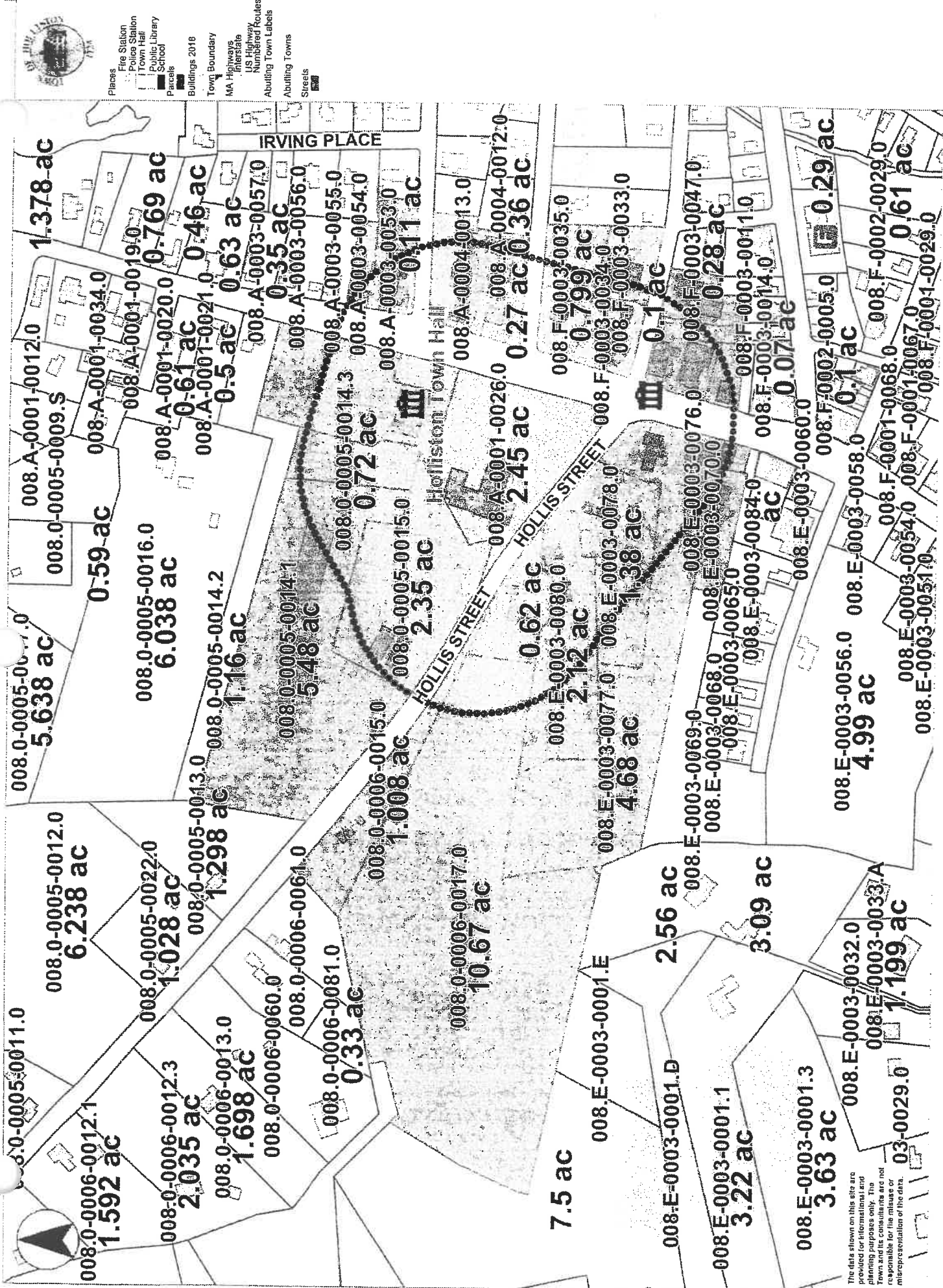
Signed under the pains and penalties of perjury:

Cellco Partnership d/b/a Verizon Wireless

By

Its Agent

Applicant's Signature



CERTIFIED ABUTTERS LIST
SUBJ PROP: 725 WASHINGTON ST
HOLLIS: 300 FT

abutters_id	field	abutters_owner1	abutters_owner2	abutters_address	abutters_address2	abutters_town	abutters_state	abutters_zip	abutters_blockpage	abutters_location
008.0-0005-0014.1		HOLLISTON, TOWN OF	C/O CHRISTINE CHIRASIA	79 HOLLIS ST		HOLLISTON	MA	01746	/0000	79 HOLLIS ST
008.0-0005-0014.2		HOLLISTON, TOWN OF		703 WASHINGTON ST		HOLLISTON	MA	01746	/0000	0 HOLLIS ST
008.0-0005-0015.0		HOLLISTON HOUSING AUTHORITY	CUTLER BUILDING	492 WASHINGTON ST		HOLLISTON	MA	01746	17840/224	59 HOLLIS ST
008.0-0006-0015.0		ADAMS, ROBERT E & RUZ, MONICA		94 HOLLIS ST		HOLLISTON	MA	01746	10755/0047	94 HOLLIS ST
008.0-0006-0016.0		DEANGELO, GARY H. & CHRISTINA HAGER		42 HOLLIS ST		HOLLISTON	MA	01746	45474/426	42 HOLLIS ST
008.0-0006-0017.0		THEMELL, JOHN A		40 SMITHURST DR		HOLLISTON	MA	01746	27139/0490	0 HOLLIS ST
008.A-0001-0024.0		HOLLISTON, TOWN OF		703 WASHINGTON ST		HOLLISTON	MA	01746	30993/0244	0 WASHINGTON ST
008.A-0001-0025.0		HOLLISTON, TOWN OF		703 WASHINGTON ST		HOLLISTON	MA	01746	07080/0021	703 WASHINGTON ST
008.A-0001-0026.0		FIRST CONGREGATIONAL CHURCH OF HOLLISTON		18 ELM ST		HOLLISTON	MA	01746	/0000	725 WASHINGTON ST
008.A-0003-0052.0		EVETT, RONALD C & SWENDORSKI, ELLEN TTEES	EVETT REALTY TRUST	379 LINDEN ST		HOLLISTON	MA	01746	63896/312	18 ELM ST
008.A-0003-0053.0		HART, DOUGLAS J		688 WASHINGTON ST		WELLESLEY	MA	02481	43248/461	688 WASHINGTON ST
008.A-0003-0054.0		STEVENSON, HAROLD & LAURA ZIMAN		8 CHURCH ST		HOLLISTON	MA	01746	30559/0217	8 CHURCH ST
008.A-0004-0001.0		ROMAN CATHOLIC ARCHBISHOP OF BOSTON		8 CHURCH ST		HOLLISTON	MA	01746	/0000	0 WASHINGTON ST
008.A-0004-0001.A		ROMAN CATHOLIC ARCHBISHOP OF BOSTON		8 CHURCH ST		HOLLISTON	MA	01746	13543/0491	0 CHURCH ST
008.A-0004-0002.0		ROMAN CATHOLIC ARCHBISHOP OF BOSTON		8 CHURCH ST		HOLLISTON	MA	01746	10906/0148	769 WASHINGTON ST
008.A-0004-0013.0		ROMAN CATHOLIC ARCHBISHOP OF BOSTON		2101 COMMONWEALTH AVE		BRIGHTON	MA	02135	69920/288	765 WASHINGTON ST
008.E-0003-0070.0		BST PROPERTIES LLC		1226 WASHINGTON ST		HOLLISTON	MA	01746	70154/595	747 WASHINGTON ST
008.E-0003-0075.0		CASAVANT, RICHARD A & ELIZABETH		755 WASHINGTON ST		HOLLISTON	MA	02053	21052/0072	20 HOLLIS ST
008.E-0003-0077.0		KOSHIVAS, KONSTANTINE P JR & BARBARA		16 BRIGHAM ST		MEDWAY	MA	01746	42422/447	24 HOLLIS ST
008.E-0003-0078.0		THORN, WILLIAM DAVID JR. & SUSAN V		20 HOLLIS ST		HOLLISTON	MA	01746	/0000	761 WASHINGTON ST
008.E-0003-0080.0		FIRST CONGREGATIONAL CHURCH		723 WASHINGTON ST		HOLLISTON	MA	01581-0104	26613/574	760 WASHINGTON ST
008.E-0003-0081.0		NICHOLS, ROBERT TRUSTEE		50 HOPKINTON RD		WESTBORO	MA	01760	49116/128	752 WASHINGTON ST
008.F-0003-0004.0		760 WASHINGTON STREET, LLC	761-763 WASHINGTON STREET REALTY TRUST	192 WORCESTER RD		NATICK	MA	01746	03020/0017	746 WASHINGTON ST
008.F-0003-0005.0		HOLLISTON, TOWN OF	C/O EUGENE CROWLEY	703 WASHINGTON ST		HOLLISTON	MA	01746	28680/0264	71 CHARLES ST
008.F-0003-0006.0		TD BANK	ATTN: BGIS/CBRE C/O PUROLATOR INTERNATIONAL	12 JERICHO PLAZA, SUITE 204		JERICHO	NY	11753	13152/0164	752 WASHINGTON ST
008.F-0003-0007.0		VALPEY, THEODORE S III/ DEBORAH A TRSTS	T & D REALTY TRUST	22 PINE ST		HOLLISTON	MA	01746	17356/0035	26 CHARLES ST
008.F-0003-0008.0		HOLLISTON, TOWN OF	TRUSTEES OF THE PUBLIC LIBRARY	746 WASHINGTON ST		HOLLISTON	MA	01746	10641/0287	736 WASHINGTON ST
008.F-0003-0033.0		NEW ENGLAND TELE CO	C/O DUFF AND PHELPS	P.O. BOX 2749		ADDISON	TX	75001	30344/0072	736 WASHINGTON ST
008.F-0003-0034.0		NASH, DANIEL R & KATHLEEN		736 WASHINGTON ST		HOLLISTON	MA	01746	58782/448	726 WASHINGTON ST
008.F-0003-0035.0		TRUNFIO, SUSAN E TRUSTEE	SUSAN E TRUNFIO TRUST	726 WASHINGTON ST		HOLLISTON	MA	01746	11241/0402	26 CHARLES ST
008.F-0003-0046.0		NEW ENGLAND TELE CO	C/O DUFF AND PHELPS	P.O. BOX 2749		ADDISON	TX	75001		

STATEMENT IN SUPPORT
OF
APPLICATION FOR A SPECIAL PERMIT

Applicant: Cellco Partnership d/b/a Verizon Wireless

Subject Parcel: 725 Washington Street, Assessor's Parcel ID:
8A-1-26; First Congregational Church

Zoning District: AR-2

Proposed Use: Install wireless communications antennas inside the Church steeple and place accessory radio equipment outside in rear surrounded by a solid fence to hide from view.

Relief Requested: Special Permit pursuant to Sections V-O and VI-E and other applicable sections of the Holliston Zoning Bylaws and M.G.L. Chapter 40A, and the Telecommunications Act of 1996, 47 U.S.C. 332(c)(7)(B), all rights reserved.

Date: July 29, 2020

A. DESCRIPTION OF PROPOSED INSTALLATION

Verizon Wireless has identified certain coverage gaps and capacity issues in the vicinity of the Subject Property that could be alleviated by creating a new wireless installation in the area. The Applicant seeks approval of a Special Permit to construct a Wireless Communications Facility on-site to satisfy its coverage objectives in this section of the Town of Holliston.

The Applicant searched the area for existing cell towers but found none in proximity to where coverage improvements are needed. Tall buildings and other such suitable structures were sought and the subject Church was discovered to be a viable candidate to accept the installation of a new wireless facility because it already hosts a wireless installation for one of the Applicant's competitors (T-Mobile).

The antenna portion of the Applicant's installation will be hidden inside the Church's steeple. The radio equipment needed to service the antennas will be placed outside, out back, surrounded by a solid fence to hide the equipment from view.

The entire installation will be serviced by existing power and telephone lines that currently service the site. The facility will be unmanned and unoccupied, requiring only infrequent (approximately once per month) maintenance visits. Ingress and egress to service the installation will utilize existing access points into the site.

The installation will produce no odor, dust, light or nuisance of any kind. The proposed use is really more of a "non-use" in the conventional sense in that, once constructed, nothing will occur on site. The only noticeable effect of the proposed installation will be the beneficial impact of enhanced and improved wireless communications in the area.

B. WIRELESS COMMUNICATIONS FACILITIES SPECIAL PERMIT REQUIREMENTS

Section V-O of the Zoning Bylaws ("Bylaw") outlines the regulations and criteria pertaining to wireless installations. In order to demonstrate the Applicant's compliance, the provisions of the Bylaws are enumerated below (*in italics*) with the Applicant's responses thereto (in plain text) as follows:

4. Regulations and Restrictions

a. General Standards

The construction, erection, installation and/or placement of all devices, except devices for customary private household use as further described in paragraph 4b(1) and devices used by amateur radio operators pursuant to paragraph 4b (3), whether allowed by right in accordance with paragraph 4c, upon the granting of a Special Permit pursuant to paragraph 4c or pursuant to the provisions of paragraph B.6 of Section III, Schedule of Use Regulations, are subject to the following general standards:

(1) Screening, Landscaping and Preservation of Existing Vegetation.

Whenever possible devices shall be sited so as to minimize the visibility of such devices from adjacent property and shall be suitably screened from abutters and residential neighborhoods. To the extent feasible installation of freestanding devices shall minimize the removal of existing trees and other vegetation.

The antenna portion of the proposed installation will be hidden entirely inside the existing church steeple and thus will not be visible at all. As was done when T-Mobile installed in the steeple, certain wood siding pieces will be removed and replaced with fiberglass to allow RF transmission without interference. The pieces replaced will be fabricated to appear similar to the wood that was removed. The equipment needed to serve those antennas will be placed out back, on-grade, surrounded by a solid fence to limit their visibility as well. The entire installation is designed in such a manner to reduce and minimize visibility as required under this provision of the Bylaw.

(2) Camouflage.

To the extent reasonably possible, devices shall be camouflaged by location and/or design to disguise them from public view, whether by designing the device so as to disguise it as an existing or new building or structure appropriate in type and scale to its location (e.g. a light standard adjacent to a recreational area, a flagpole in a park, a silo in a field) where the antennae are hidden within or mounted on a structure so as to make them essentially invisible, or whether located in a place and manner that renders the device essentially invisible (e.g., siting the device within existing trees, providing effective screening by the use of landscaped buffers which camouflage the device at the time of planting and are effective year-round).

As stated above, this provision of the Bylaw is achieved by hiding the antennas inside the church steeple completely hidden from view, and surrounding the outdoor equipment with a solid fence to limit its visibility as well.

(3) Height.

A device shall be designed and installed at the minimum height necessary for the reasonable and proper functioning of the telecommunications services to be provided by the device at that location. Freestanding devices shall not exceed 40 feet in height unless the Zoning Board makes the findings under paragraph 4c(2)d. required for installation of a device at a height greater than 40 feet.

Not Applicable. No new free-standing tower structure is proposed.

(4) Color

Free-standing, wall mounted and roof mounted devices shall be painted or otherwise colored or finished in a manner which aesthetically minimizes the visibility of the devices in the surrounding landscape or on the building or structure to which they are attached.

Not Applicable. The proposed installation is neither free-standing, wall mounted, nor roof mounted. All antennas will be hidden inside the steeple completely hidden from view.

(5) Fencing

Any fencing necessary to control access to devices shall be compatible with the character of the area.

Understood. The proposed solid fencing to surround the outdoor equipment will be compatible with the area.

(6) Signs

There shall be no advertising permitted on or in the vicinity of devices. There shall be a sign not exceeding 4 square feet in area at each installation which shall display a phone number where the person responsible for the maintenance of the installation may be reached on a 24 hour basis. All other signage shall be consistent with the provision of Section V-B.

Understood and agreed.

(7) Lighting

Night lighting of installations shall be prohibited except for such lighting as may be necessary for emergency repair purposes, public safety purposes or Federal Aviation Administration regulations.

Understood and agreed.

(8) Personal Safety

When devices are mounted in locations above or in the vicinity of pedestrian areas or other areas open to the public such installations shall be made in a manner that does not impede or restrict the movement of pedestrians nor pose a hazard to any person.

There will be no equipment installed in any pedestrian area.

(9) Prohibitions

- a. Lattice style towers and facilities requiring three or more legs and/or guy wires for support are not allowed.*
- b. Advertising signs are not allowed*
- c. Fences using razor wire or barbed wire or similar wire types shall not be allowed.*

No new tower is proposed. No advertising is proposed. No razor wire is proposed.

b. By Right Provisions

The following devices may be constructed, erected, installed, placed and/or used within the Town subject to the issuance of a building permit by the Inspector of Buildings in those instances when a building permit is required:

- (1) A device for customary private household use such as a conventional chimney-mount television antenna or home satellite dish not over 3 feet in diameter;*

Not Applicable.

(2) A device or (combination of devices) installed on a building or other structure provided that such a device or combination of devices, including its supports, is:
a. finished in a manner designed to be aesthetically consistent with the exterior finish of such building or structure and otherwise in accordance with the General Standards set forth in paragraph 4a; and
b. mounted in such a manner so that it does not:
(i) obscure any window or other exterior architectural feature;
(ii) extend above the highest point of the building or structure by more than 12 feet;
(iii) extend beyond the face of any wall, or exterior surface in the case of structures that do not have walls, by more than 18 inches;
(iv) extend below the top of the wall, or exterior surface in the case of structures that do not have walls, of a one-story building or structure; or
(v) extend more than 8 feet below the top of the wall, or exterior surface in the case of structures that do not have walls, or a multi-story building or structure; and
c. is comprised of devices which do not individually or in the aggregate have a visible surface area facing surrounding streets and adjacent properties that exceeds 50 square feet in area;

The proposed installation conforms in all manners to the above requirements with the minor exception of the outdoor equipment. All of the antennas will be hidden inside the steeple completely hidden from view. The outdoor cabinets will be hidden behind a solid fence.

(3) A device owned by and located on the property of an amateur radio operator licensed by the FCC, which device shall be installed at the minimum height necessary for the proper functioning of amateur radio communications in accordance with the licensing requirements for that location.

Not applicable.

(4) A device installed wholly within and not protruding from the interior space of an existing building or structure (including interior space behind existing roofs or within existing mechanical penthouse space) or behind existing rooftop mechanical screens in such a manner that the device would not be visible from surrounding streets and from adjacent properties and only for so long as such device remains wholly within such space or behind such roofs or screens.

The Applicant complies with this provision with its antennas because they will be located entirely inside the Church steeple and will not protrude outside the building at all. The only elements of the proposed installation that are not compliant with this By Right provision are the outdoor equipment cabinets and the coax cable needed to connect the

equipment cabinets to the antennas. Otherwise, the proposed installation would be By Right.

All other devices shall require a special permit in accordance with paragraph 4c.

c. Special Permit Provisions

In reviewing special permit applications for devices, the Zoning Board may hire an independent consultant, cost for same to be borne by the applicant in accordance with Chapter 583 of the Acts of 1989.

The Zoning Board may issue a special permit in accordance with Section VI-E for:

(1) A device (or combination of devices) installed on a building or structure, where such device or combination exceeds any one or more of the dimensional requirements of paragraph B above;

The only limited aspect of the proposed installation that does not comply with the By Right provisions enumerated above is the outdoor equipment. The antenna portion of the installation can be considered compliant with the By Right provisions.

(2) All other devices, provided the Zoning Board finds:

a. that the device complies with the General Standards set forth in paragraph 4a;

Yes. The proposed installation complies with all the provisions of paragraph 4a as discussed above.

b. that the requested installation is essential to the proper functioning of the telecommunications services to be provided by the device at that location and that an alternative installation (or installations), which would meet the By-Right provisions of paragraph 4b, is not workable;

The outdoor equipment is absolutely essential to the functioning of the proposed installation. It is not feasible to place this equipment inside, as T-Mobile has done, because there is no room inside the Church to accommodate the Applicant's equipment. The Applicant's Landlord (the Church) does not have any additional free space inside to make room for more telecommunications cabinets inside.

c. that the requested installation will not adversely impact adjacent property materially;

The proposed outdoor equipment will be surrounded by a solid fence and will be located toward the rear of the property where it will have no impact whatsoever on any adjacent property.

d. in the case of a free standing device, that the center point of the base of the monopole is set back from the property lines of the lot on which such device is located by a distance equal to the overall vertical height of the monopole and mounted device plus five feet, unless the applicant demonstrates that due to topography and/or other characteristics of the site lesser setbacks shall not pose any public safety danger to any adjacent properties; and

Not Applicable. No tower is proposed.

e. that the overall height does not exceed 40 feet, unless the Zoning Board also finds that a greater height is essential to the proper functioning of the telecommunications services to be provided by the device at that location and that a less intrusive, alternative installation (or installations) is not workable.

Not Applicable. New free-standing device is not proposed.

5. Certification and Evidence

In all cases, whether use is By-Right or otherwise, the owner and/or operator of any device except as described in paragraph 4b(1) and 4b(3) shall, prior to installation of any device and annually thereafter, file with the Inspector of Buildings a certificate attesting that the device is in use and submit copies of the device's current FCC license, evidence of continuing insurance coverage, and underlying lease agreement with the land and/or structure owner, a periodic (at least annual) maintenance schedule for the device and evidence that the device complies with the applicable standards of the Federal Communications Commission and the Federal Aviation Administration.

The Applicant is an FCC licensee. See copies of relevant licenses enclosed in this Application Binder. The proposed installation is on private property therefore the lease agreement with the property owner is confidential and not public. The FAA, and its regulations, are not implicated here because the antenna portion of the installation will take place entirely inside an existing structure without increasing that structure's height.

6. Cessation of Use

Each device, except as described in paragraph 4b(1) and 4b(3), shall be removed within one (1) year of cessation of use by the owner and/or operator of the device or, in the absence of a current owner and/or operator, by the owner of the property or structure on which the device is located.

Should the owner and/or operator, or the owner of the land or structure on which the device is located, fail to remove a device within one (1) year of cessation of use, the Town may remove the same. A performance guarantee may be required as a condition of any special permit granted under this Section, in an amount

deemed sufficient to cover the Town's cost of the demolition and removal of the device in the event of cessation of use.

The proposed installation will take place entirely on private property and is governed by the terms and conditions of the private lease agreement between the Applicant and the property owner. Said agreement includes provisions for removal of equipment upon termination of tenancy. For the foregoing reasons, and because no new tower is proposed, the Applicant respectfully suggests that a removal bond is neither appropriate nor required in the present instance.

C. GENERAL SPECIAL PERMIT REQUIREMENTS

Section VI-E of the Bylaw enumerates the review criteria utilized when analyzing a petition for a Special Permit. In order to demonstrate the Applicant's compliance, the Bylaw provisions are stated below (*in italics*) with the Applicant's responses thereto (in plain text) as follows:

5. Before granting a Special Permit, the SPGA shall consider the proposed use in relation to the site as well as the adjacent uses and structures and shall find that there will be no significant adverse effects to the neighborhood or the town, considering the following criteria:

a. The degree to which the proposed use complies with the dimensional requirements of the by-law, is in an appropriate location and does not significantly alter the character of the neighborhood; the project is compatible with existing uses and other uses allowed by-right in the district and is designed to be compatible with the character and the scale of neighboring properties.

The proposed installation complies in all respects with the dimensional requirements of the Bylaw, without variance. The proposed installation is compatible with other By Right wireless installations in the area because it is substantially similar to the T-Mobile facility that currently exists inside the same Church, except the Applicant's radio equipment must be sited outside due to space constraints inside the Church. And finally, the proposed installation is wholly compatible with the character and scale of neighboring properties because the installation will be primarily inside the building save for the radio equipment cabinets which will be located in the rear of the property.

b. To the extent feasible, the proposal has been integrated into the existing terrain and surrounding landscape, minimizing the impacts to the aquifer and/or recharge area, wetlands, steep slopes, and floodplains.

The antenna portion of the installation will be hidden entirely inside the steeple. The only ground equipment will be two outdoor radio cabinets surrounded by a solid fence to help hide them from view. The area where the outdoor cabinets are proposed is flat and no

grade changes are proposed. The proposed installation uses no water or sewer services. There will be no impact to ground water. No wetlands are in the vicinity. No steep slopes or floodplains will be built upon.

c. Adequate and appropriate facilities shall be provided for the proper operation of the proposed use, including screening and provisions for convenient and safe vehicular and pedestrian circulation within the site and in relation to adjacent streets and properties.

The proposed installation will be unmanned and unoccupied and host no employees, visitors or guests. Occasionally, once per month, a technician will check on the site. Other than that, there will be no traffic generation and the installation will have zero impact on vehicular and pedestrian circulation on site and on adjacent streets and properties.

d. The proposed project shall not create any significant emission of noise, dust, fumes, noxious gases or any other adverse environmental impact including stormwater, erosion and sedimentation.

The proposed installation will create no noise, dust, fumes, gases or any other adverse environmental impact whatsoever. The proposed use is really more of a “non-use” in the sense that, once constructed, nothing will occur on site.

e. There shall be no unreasonable glare from lighting, whether direct or reflected, onto ways, the night sky or onto adjacent properties. (Amended May 2012 – ATM, Art. 33)

No lighting is proposed.

D. CONCLUSION

Verizon Wireless's proposal, to install a new stealth, primarily interior-mounted wireless facility, conforms in all respects to the requirements set forth in Sections V-O and VI-E and other applicable sections of the Town of Holliston Zoning Bylaw. Furthermore, the Applicant has met the general standards of approval as set forth in Chapter 40A of the Massachusetts General Laws.

In addition to state and local law, certain provisions of federal law are also applicable to the Applicant's proposal in that Verizon Wireless is a federally licensed communications provider. Pursuant to the Telecommunications Act of 1996 ("TCA"), Verizon Wireless is afforded certain protections in the analysis of local land use issues which, in effect, act as a federal overlay on a local board's zoning review process. Among other provisions, the

TCA provides specifically in 47 U.S.C. Section 332(c)(7)(B)(i) that the action of local governments may not prohibit or have the effect of prohibiting wireless services in their communities. This provision is relevant because Verizon Wireless has a very specific coverage and capacity issue resulting in significant gaps in reliable network coverage in the vicinity of the Subject Property that will continue to exist should this site not be approved.

For all the foregoing reasons, the Board can, in clear conscience, approve the requested Special Permit knowing that the submitted Petition complies in all respects with the requirements of the Town of Holliston Zoning Bylaw, the purpose and intent of the specific wireless communications regulations enumerated therein, and state and federal law governing the petition at hand.

Accordingly, the Applicant respectfully requests approval of the requested relief pursuant to the submitted Application and Plans.

LETTER OF AUTHORIZATION

First Congregational Church of Holliston
(of the United Church of Christ)
725 Washington Street
Holliston, MA 01746

March 27, 2020 (date)

Building Department
Planning Board
Zoning Board
Town of Holliston
703 Washington Street
Holliston, MA 01746

RE: Authorization of Cellco Partnership d/b/a Verizon Wireless

Dear Ladies and Gentlemen:

The undersigned, as owner and lessor of property in the Town of Holliston, commonly identified and described as 725 Washington Street, Holliston, Massachusetts 01746, hereby authorizes Cellco Partnership d/b/a Verizon Wireless, and its employees, agents, and consultants, to seek any and all approvals that may be required from the Town of Holliston (including a building permit, zoning relief, site plan review, and/or special permit) in connection with the construction and installation of a wireless communications facility on the property.

Very Truly Yours,

Signature: Todd Keiller

Printed Name: Todd Keiller

Title: Moderator

Date: 3/27/2020

Commercial Property Record Card

Parcel ID: 136/008.A-0001-0026.0

MAP: 008.A

BLOCK: 0001

LOT: 0026.0

Parcel Address: 725 WASHINGTON ST

FY: 2019

EL INFORMATION

Use-Code: 960

Sale Price:

1

Book:

Road Type:

T

Inspect Date:

04/22/2015

Tax Class: E

Sale Date:

01/01/2001

Page:

Rd Condition:

P

Meas Date:

X

Tot Fin Area: 32766

Sale Type:

P

Cert/Doc:

Traffic:

H

Entrance:

DC

Tot Land Area: 2.450

Sale Valid:

Y

Water:

PS

Collect Id:

DC

Sewer:

Grantor:

Comm-B/L%

Sewer:

SP

Inspect Reas:

C

Exempt-B/L%

Resid-B/L%

Indust-B/L%

Open Sp-B/L%

LAND INFORMATION

NBHD CODE: 95

NBHD CLASS: 5

ZONE: 40

Seg

Type

Code

Method

Sq-Ft

Acres

Influ-Y/N

Value

Class

1

P

906

S

40000

0.918

N

298,400

2

R

906

A

66722

1.532

N

12,654

VALUATION INFORMATION

Current Total:

5,266,100

Bldg:

4,955,000

Land:

311,100

MktLnd:

311,100

Prior Total:

5,266,100

Bldg:

4,955,000

Land:

311,100

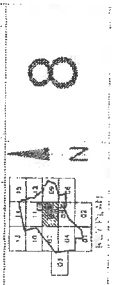
MktLnd:

311,100

No Sketch
Available

No Picture
Available

Photo



8

TOWN OF HOLLISTON - BOARD OF ASSESSORS

NOTE
THE LINES, BOUNDARIES AND DIMENSIONS SHOWN
ON THIS MAP ARE FOR INFORMATION ONLY AND
DO NOT CONSTITUTE A WARRANTY OR
GARANTEE OF ANY KIND.
NOT FOR CONVEYANCE

PLANNING AND DEVELOPMENT
COMMUNITY DEVELOPMENT

assumes and agrees to pay. Intending to convey part of the same premises to me conveyed by deed recorded in said Registry, Libro 1872, Folio 78 from, George W. Ireland To Have and to Hold the granted premises, with all the privileges and appurtenances thereto belonging, to the said Flora J. Pitcher and her heirs and assigns to their own use and behoof forever. And I do hereby for myself and my heirs, executors, and administrators, covenant with the said grantee and her heirs and assigns that I am lawfully seized in fee simple of the granted premises, that they are free from all incumbrances, that I have good right to sell and convey the same as aforesaid: and that I will and my heirs, executors, and administrators shall warrant and defend the same to the said grantee and her heirs and assigns forever against the lawful claims and demands of all persons. And for the consideration aforesaid I, Katie F. Bowlby wife of said James B. Bowlby do hereby release unto the said grantee and her heirs and assigns all right of or to both dower and homestead in the granted premises. In Witness Whereof we the said James B. Bowlby and Katie F. Bowlby hereunto set our hands and common seal this Twenty-fifth day of June in the year one thousand eight hundred and ninety four.

Signed, sealed, and delivered in the presence of L. Roger Wentworth by J. B. } Katie F. Bowlby. *seal*
James B. Bowlby
Commonwealth of Massachusetts. Middlesex, ss, June 26, 1894. Then personally appeared the above-named James B. Bowlby and acknowledged the foregoing instrument to be his free act and deed, before me - L. Roger Wentworth, Justice of the Peace. Middlesex ss. June 30, 1894. Rec'd Recorded.
Attest Chas. H. Stevens Reg.

Holliston
First Parish
to
First Cong'l Ch.
of Holliston.
B

Know all Men by these Presents that The Holliston First Parish of Holliston County of Middlesex and Commonwealth of Massachusetts, a Corporation existing under the laws of Massachusetts, by its Committee duly authorized in consideration of an agreement made and concluded with the First Congregational Church in said Holliston. A Corporation organized under laws of said State or Commonwealth - and one dollar

paid by said Church the receipt whereof is hereby acknowl-
edged, do hereby remise, release, and forever quitclaim
to the said First Congregational Church all right, title and
interest in and to all property or rights in property
of whatever kind Real or Personal, now and heretofore owned or con-
trolled by the said Parish. For a description of said Property-
See Deed. Col Samuel Brown to Town of Holliston - dated Nov. 16. A. D. 1725
See Deed. Margaret Dickinson to Town of Holliston - " Sept. 29. A. D. 1821
See Deed. Peabody Brown to Town of Holliston - " Aug 5. A. D. 1822
See Deed of Land to said Town dated January 1. A. D. 1855. Also
see Plan of Land conveyed as above - All of the above
Deeds are Recorded with Middlesex Co. Dist. Deeds Lib. 2184
Folio 466- 457- 458 - respectively - Also the Meeting House
situate on said land - together with so much of the Organ-Pew
and other Ch. Furnishing as belong to said Parish - By the
agreement named above, the said Church assumes and becomes
responsible for all debts and obligations, of whatever kind, for
which said Parish is responsible - To Have and to Hold the granted
premises with all the privileges and appurtenances thereto be-
longing, to the said First Congregational Church and its assigns,
to their own use and behoof forever. In Witness Whereof we
the said Committee - afore mentioned having been chosen for
this purpose at a regular meeting of said Parish - duly called
and assembled in their Meeting House on the fifth day of
April A. D. 1894. hereunto set our hands and seals the eight-
teenth day of April in the year one thousand eight hundred and ninety four.

Signed and sealed in presence of
Geo. B. Fiske. } Uriel Butler (seal) Committee of
J. B. Woodford. } P. R. Johnson (seal) the Holliston
F. D. Fiske. } Tho. E. Andrews (seal) First Parish.
Commonwealth of Massachusetts. Holliston, April 18th 1894. These
personally appeared the above named Uriel Butler, Peter R. John-
son and Thomas E. Andrews and acknowledged the foregoing
instrument to be the free act and deed of the Holliston
First Parish before me - Geo. B. Fiske, Justice of the Peace,
Middlesex Co. July 2, 1894. Rec'd & Recorded.

Attest What B. Sturges

We hereby certify that on the twenty
first day of June in the year one thousand eight hun-
dred and ninety four we were present and saw Nathaniel

Crosmond
to
Leonant
Poss'n

REFERENCE COPY

This is not an official FCC license. It is a record of public information contained in the FCC's licensing database on the date that this reference copy was generated. In cases where FCC rules require the presentation, posting, or display of an FCC license, this document may not be used in place of an official FCC license.



**Federal Communications Commission
Wireless Telecommunications Bureau**

RADIO STATION AUTHORIZATION

LICENSEE: CELLCO PARTNERSHIP

ATTN: REGULATORY
CELLCO PARTNERSHIP
5055 NORTH POINT PK WY, NP2NE NETWORK ENGINEERING
ALPHARETTA, GA 30022

Call Sign WQJQ689	File Number 0008587211
Radio Service WU - 700 MHz Upper Band (Block C)	

FCC Registration Number (FRN): 0003290673

Grant Date 09-11-2019	Effective Date 09-11-2019	Expiration Date 06-13-2029	Print Date
Market Number REA001	Channel Block C	Sub-Market Designator 0	
Market Name Northeast			
1st Build-out Date 06-13-2013	2nd Build-out Date 06-13-2019	3rd Build-out Date	4th Build-out Date

Waivers/Conditions:

If the facilities authorized herein are used to provide broadcast operations, whether exclusively or in combination with other services, the licensee must seek renewal of the license either within eight years from the commencement of the broadcast service or within the term of the license had the broadcast service not been provided, whichever period is shorter in length. See 47 CFR §27.13(b).

License renewal granted on a conditional basis, subject to the outcome of FCC proceeding WT Docket No. 10-112 (see FCC 10-86, paras. 113 and 126).

This authorization is conditioned upon compliance with section 27.16 of the Commission's rules

Conditions:

Pursuant to §309(h) of the Communications Act of 1934, as amended, 47 U.S.C. §309(h), this license is subject to the following conditions: This license shall not vest in the licensee any right to operate the station nor any right in the use of the frequencies designated in the license beyond the term thereof nor in any other manner than authorized herein. Neither the license nor the right granted thereunder shall be assigned or otherwise transferred in violation of the Communications Act of 1934, as amended. See 47 U.S.C. § 310(d). This license is subject in terms to the right of use or control conferred by §706 of the Communications Act of 1934, as amended. See 47 U.S.C. §606.

This license may not authorize operation throughout the entire geographic area or spectrum identified on the hardcopy version. To view the specific geographic area and spectrum authorized by this license, refer to the Spectrum and Market Area information under the Market Tab of the license record in the Universal Licensing System (ULS). To view the license record, go to the ULS homepage at <http://wireless.fcc.gov/uls/index.htm?job=home> and select "License Search". Follow the instructions on how to search for license information.

Licensee Name: CELLCO PARTNERSHIP

Call Sign: WQJQ689

File Number: 0008587211

Print Date:

700 MHz Relicensed Area Information:

Market	Market Name	Buildout Deadline	Buildout Notification	Status
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REFERENCE COPY

This is not an official FCC license. It is a record of public information contained in the FCC's licensing database on the date that this reference copy was generated. In cases where FCC rules require the presentation, posting, or display of an FCC license, this document may not be used in place of an official FCC license.



**Federal Communications Commission
Wireless Telecommunications Bureau**

RADIO STATION AUTHORIZATION

LICENSEE: CELLCO PARTNERSHIP

ATTN: REGULATORY
CELLCO PARTNERSHIP
1120 SANCTUARY PKWY, #150 GASA5REG
ALPHARETTA, GA 30009-7630

Call Sign KNKA201	File Number 0006356224
Radio Service CL - Cellular	
Market Numer CMA006	Channel Block B
Sub-Market Designator 0	

FCC Registration Number (FRN): 0003290673

Market Name Boston-Lowell-Brockton-Lawrenc
--

Grant Date 08-26-2014	Effective Date 08-26-2014	Expiration Date 10-01-2024	Five Yr Build-Out Date	Print Date 08-26-2014
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Site Information:

Location	Latitude	Longitude	Ground Elevation (meters)	Structure Hgt to Tip (meters)	Antenna Structure Registration No.
1	42-38-26.3 N	070-36-25.2 W	36.3	35.7	

Address: (Rockport) Thatcher Road

City: Rockport **County:** ESSEX **State:** MA **Construction Deadline:**

Antenna: 5 Azimuth (from true north)	0	45	90	135	180	225	270	315
Antenna Height AAT (meters)	70.400	34.100	34.100	34.100	70.400	67.800	55.200	61.300
Transmitting ERP (watts)	246.920	325.500	33.310	0.940	0.820	0.820	1.210	20.070
Antenna: 6 Azimuth (from true north)	0	45	90	135	180	225	270	315
Antenna Height AAT (meters)	70.400	34.100	34.100	34.100	70.400	67.800	55.200	61.300
Transmitting ERP (watts)	0.820	3.330	54.020	373.730	191.670	10.780	0.820	0.820
Antenna: 7 Azimuth (from true north)	0	45	90	135	180	225	270	315
Antenna Height AAT (meters)	70.400	34.100	34.100	34.100	70.400	67.800	55.200	61.300
Transmitting ERP (watts)	3.330	0.820	0.820	0.820	7.810	126.630	409.780	89.650

Conditions:

Pursuant to §309(h) of the Communications Act of 1934, as amended, 47 U.S.C. §309(h), this license is subject to the following conditions: This license shall not vest in the licensee any right to operate the station nor any right in the use of the frequencies designated in the license beyond the term thereof nor in any other manner than authorized herein. Neither the license nor the right granted thereunder shall be assigned or otherwise transferred in violation of the Communications Act of 1934, as amended. See 47 U.S.C. § 310(d). This license is subject in terms to the right of use or control conferred by §706 of the Communications Act of 1934, as amended. See 47 U.S.C. §606.

Licensee Name: CELLCO PARTNERSHIP

Call Sign: KNKA201

File Number: 0006356224

Print Date: 08-26-2014

Location	Latitude	Longitude	Ground Elevation (meters)	Structure Hgt to Tip (meters)	Antenna Structure Registration No.
4	42-08-56.4 N	071-24-55.2 W	75.6	44.2	

Address: 113 Main Street

City: Medway County: NORFOLK State: MA Construction Deadline:

Antenna: 4 Azimuth (from true north)	0	45	90	135	180	225	270	315
Antenna Height AAT (meters)	59.500	66.700	61.200	46.900	23.900	39.300	13.900	12.300
Transmitting ERP (watts)	81.280	89.130	24.550	1.120	0.200	0.200	0.420	16.600
Antenna: 5 Azimuth (from true north)	0	45	90	135	180	225	270	315
Antenna Height AAT (meters)	59.500	66.700	61.200	46.900	23.900	39.300	13.900	12.300
Transmitting ERP (watts)	0.200	2.000	33.800	95.500	67.610	10.700	0.200	0.200
Antenna: 6 Azimuth (from true north)	0	45	90	135	180	225	270	315
Antenna Height AAT (meters)	59.500	66.700	61.200	46.900	23.900	39.300	13.900	12.300
Transmitting ERP (watts)	3.890	0.200	0.200	0.200	6.760	57.540	100.000	44.670

Location	Latitude	Longitude	Ground Elevation (meters)	Structure Hgt to Tip (meters)	Antenna Structure Registration No.
9	42-11-42.4 N	070-49-10.2 W	57.9	56.1	

Address: (Scituate) OFF CLAPP RD

City: SCITUATE County: PLYMOUTH State: MA Construction Deadline:

Antenna: 7 Azimuth (from true north)	0	45	90	135	180	225	270	315
Antenna Height AAT (meters)	105.300	106.100	93.800	85.900	95.600	76.500	81.800	104.300
Transmitting ERP (watts)	172.400	167.230	26.990	1.190	0.960	0.960	1.720	28.870
Antenna: 8 Azimuth (from true north)	0	45	90	135	180	225	270	315
Antenna Height AAT (meters)	105.300	106.100	93.800	85.900	95.600	76.500	81.800	104.300
Transmitting ERP (watts)	0.980	3.910	54.020	409.780	200.700	15.220	0.980	0.980
Antenna: 9 Azimuth (from true north)	0	45	90	135	180	225	270	315
Antenna Height AAT (meters)	105.300	106.100	93.800	85.900	95.600	76.500	81.800	104.300
Transmitting ERP (watts)	4.490	0.980	0.980	1.300	10.060	123.750	449.320	96.060

Licensee Name: CELLCO PARTNERSHIP

Call Sign: KNKA201

File Number: 0006356224

Print Date: 08-26-2014

Location	Latitude	Longitude	Ground Elevation (meters)	Structure Hgt to Tip (meters)	Antenna Structure Registration No.
10	42-52-57.3 N	071-16-28.2 W	163.0	58.2	

Address: (Derry) 46 FLOYD ROAD

City: DERRY County: ROCKINGHAM State: NH Construction Deadline:

Antenna: 4 Azimuth (from true north)	0	45	90	135	180	225	270	315
Antenna Height AAT (meters)	82.200	129.400	144.500	155.100	136.800	127.900	126.200	118.100
Transmitting ERP (watts)	31.810	146.820	102.310	15.410	1.000	1.000	1.000	1.130
Antenna: 5 Azimuth (from true north)	0	45	90	135	180	225	270	315
Antenna Height AAT (meters)	82.200	129.400	144.500	155.100	136.800	127.900	126.200	118.100
Transmitting ERP (watts)	1.000	1.000	4.660	82.110	250.350	80.300	3.790	1.000
Antenna: 6 Azimuth (from true north)	0	45	90	135	180	225	270	315
Antenna Height AAT (meters)	80.200	129.400	144.500	155.100	136.800	127.900	126.200	118.100
Transmitting ERP (watts)	32.480	1.680	1.000	1.000	1.000	13.740	107.220	143.470

Location	Latitude	Longitude	Ground Elevation (meters)	Structure Hgt to Tip (meters)	Antenna Structure Registration No.
12	41-52-08.3 N	070-52-56.1 W	29.6	58.2	

Address: (Middleboro) E. GROVE ST.

City: MIDDLESBORO County: PLYMOUTH State: MA Construction Deadline:

Antenna: 7 Azimuth (from true north)	0	45	90	135	180	225	270	315
Antenna Height AAT (meters)	57.600	32.400	40.200	47.600	44.900	41.300	50.300	52.600
Transmitting ERP (watts)	277.330	364.730	40.890	2.250	0.960	0.960	2.410	20.640
Antenna: 8 Azimuth (from true north)	0	45	90	135	180	225	270	315
Antenna Height AAT (meters)	57.600	32.400	40.200	47.600	44.900	41.300	50.300	52.600
Transmitting ERP (watts)	0.960	3.730	61.620	418.280	215.780	13.090	1.700	0.960
Antenna: 9 Azimuth (from true north)	0	45	90	135	180	225	270	315
Antenna Height AAT (meters)	57.600	32.400	40.200	47.600	44.900	41.300	50.300	52.600
Transmitting ERP (watts)	5.070	1.130	0.610	1.600	5.050	89.040	278.490	66.210

Licensee Name: CELLCO PARTNERSHIP

Call Sign: KNKA201

File Number: 0006356224

Print Date: 08-26-2014

Location	Latitude	Longitude	Ground Elevation (meters)	Structure Hgt to Tip (meters)	Antenna Structure Registration No.
14	42-28-06.3 N	071-27-16.2 W	102.1	54.0	

Address: Main Street

City: South Acton County: MIDDLESEX State: MA Construction Deadline:

Antenna: 4 Azimuth (from true north)	0	45	90	135	180	225	270	315
Antenna Height AAT (meters)	69.000	79.000	105.500	96.200	72.600	76.300	47.400	58.700
Transmitting ERP (watts)	65.200	77.960	20.970	2.400	0.200	0.200	2.000	13.720
Antenna: 5 Azimuth (from true north)	0	45	90	135	180	225	270	315
Antenna Height AAT (meters)	69.000	79.900	105.500	96.200	72.600	76.300	47.400	58.700
Transmitting ERP (watts)	0.200	3.880	23.800	59.780	43.360	10.290	0.830	0.200
Antenna: 6 Azimuth (from true north)	0	45	90	135	180	225	270	315
Antenna Height AAT (meters)	76.400	65.500	105.500	96.200	72.600	76.300	47.400	58.700
Transmitting ERP (watts)	5.010	0.420	0.200	0.740	6.570	43.660	91.210	34.920

Location	Latitude	Longitude	Ground Elevation (meters)	Structure Hgt to Tip (meters)	Antenna Structure Registration No.
15	42-30-08.4 N	070-55-02.2 W	39.6	46.3	

Address: 12 First Street

City: Salem County: ESSEX State: MA Construction Deadline:

Antenna: 7 Azimuth (from true north)	0	45	90	135	180	225	270	315
Antenna Height AAT (meters)	63.400	62.100	62.800	77.900	77.500	70.500	40.900	50.900
Transmitting ERP (watts)	49.150	56.730	19.190	2.360	0.200	0.200	1.930	12.920
Antenna: 8 Azimuth (from true north)	0	45	90	135	180	225	270	315
Antenna Height AAT (meters)	63.400	62.100	62.800	77.900	77.500	70.500	40.900	50.900
Transmitting ERP (watts)	0.100	1.550	9.520	23.920	17.350	4.120	0.330	0.100
Antenna: 9 Azimuth (from true north)	0	45	90	135	180	225	270	315
Antenna Height AAT (meters)	63.400	62.100	62.800	77.900	77.500	70.500	40.900	50.900
Transmitting ERP (watts)	5.010	0.380	0.200	0.680	6.510	35.500	64.630	29.380

Licensee Name: CELLCO PARTNERSHIP

Call Sign: KNKA201

File Number: 0006356224

Print Date: 08-26-2014

Location	Latitude	Longitude	Ground Elevation (meters)	Structure Hgt to Tip (meters)	Antenna Structure Registration No.
16	42-16-51.4 N	071-02-04.2 W	5.2	53.0	

Address: 100 HANCOCK STREET

City: QUINCY County: NORFOLK State: MA Construction Deadline:

Antenna: 5 Azimuth (from true north)	0	45	90	135	180	225	270	315
Antenna Height AAT (meters)	43.000	44.100	42.200	29.000	8.300	14.800	12.100	31.500
Transmitting ERP (watts)	7.170	6.480	6.790	0.320	0.100	0.100	0.160	5.630
Antenna: 6 Azimuth (from true north)	0	45	90	135	180	225	270	315
Antenna Height AAT (meters)	40.900	41.900	40.000	26.800	6.200	12.600	9.900	29.300
Transmitting ERP (watts)	0.100	0.340	3.140	2.480	2.970	1.500	0.100	0.100
Antenna: 7 Azimuth (from true north)	0	45	90	135	180	225	270	315
Antenna Height AAT (meters)	43.000	44.100	42.200	29.000	8.300	14.800	12.100	31.500
Transmitting ERP (watts)	0.100	0.100	0.100	0.120	2.640	2.770	2.720	2.360

Location	Latitude	Longitude	Ground Elevation (meters)	Structure Hgt to Tip (meters)	Antenna Structure Registration No.
21	42-30-36.4 N	070-51-21.2 W	23.2	47.2	

Address: Tioga Way

City: Marblehead County: ESSEX State: MA Construction Deadline:

Antenna: 2 Azimuth (from true north)	0	45	90	135	180	225	270	315
Antenna Height AAT (meters)	44.200	46.700	37.200	60.400	60.400	54.600	28.000	43.700
Transmitting ERP (watts)	0.100	0.130	3.130	7.860	6.600	1.220	0.100	0.100
Antenna: 3 Azimuth (from true north)	0	45	90	135	180	225	270	315
Antenna Height AAT (meters)	44.200	46.700	37.200	60.400	60.400	54.600	28.000	43.700
Transmitting ERP (watts)	0.410	0.100	0.100	0.100	0.530	5.070	8.210	4.870
Antenna: 4 Azimuth (from true north)	0	45	90	135	180	225	270	315
Antenna Height AAT (meters)	44.200	46.700	37.200	60.400	60.400	54.600	28.000	43.700
Transmitting ERP (watts)	6.780	7.760	2.800	0.100	0.100	0.100	0.100	1.540

Licensee Name: CELLCO PARTNERSHIP

Call Sign: KNKA201

File Number: 0006356224

Print Date: 08-26-2014

Location	Latitude	Longitude	Ground Elevation (meters)	Structure Hgt to Tip (meters)	Antenna Structure Registration No.
22	42-51-55.4 N	070-56-13.2 W	94.5	50.9	

Address: (Amesbury) 10 DENNET WAY

City: AMESBURY County: ESSEX State: MA Construction Deadline:

Antenna: 4 Azimuth (from true north)	0	45	90	135	180	225	270	315
Antenna Height AAT (meters)	117.000	123.800	125.500	137.800	126.100	109.800	94.200	100.300
Transmitting ERP (watts)	178.880	225.190	34.880	0.860	0.860	0.860	0.860	10.780
Antenna: 5 Azimuth (from true north)	0	45	90	135	180	225	270	315
Antenna Height AAT (meters)	117.000	123.800	125.500	137.800	126.100	109.800	94.200	100.300
Transmitting ERP (watts)	0.860	1.240	35.690	258.560	148.780	12.380	0.860	0.860
Antenna: 6 Azimuth (from true north)	0	45	90	135	180	225	270	315
Antenna Height AAT (meters)	117.000	123.800	125.500	137.800	126.100	109.800	94.200	100.300
Transmitting ERP (watts)	3.110	0.830	0.860	0.860	3.110	89.650	270.740	81.760

Location	Latitude	Longitude	Ground Elevation (meters)	Structure Hgt to Tip (meters)	Antenna Structure Registration No.
24	42-03-31.4 N	071-17-29.2 W	105.5	59.1	

Address: (Wrentham) 415 Washington St. - Route 1

City: WRENTHAM County: NORFOLK State: MA Construction Deadline:

Antenna: 4 Azimuth (from true north)	0	45	90	135	180	225	270	315
Antenna Height AAT (meters)	99.900	78.700	94.600	120.300	114.800	77.800	71.700	95.700
Transmitting ERP (watts)	2.580	85.500	401.990	363.280	54.920	1.060	0.850	0.850
Antenna: 5 Azimuth (from true north)	0	45	90	135	180	225	270	315
Antenna Height AAT (meters)	99.900	78.700	94.600	120.300	114.800	77.800	71.700	95.700
Transmitting ERP (watts)	0.850	0.850	0.850	8.930	146.240	311.250	197.740	18.980
Antenna: 6 Azimuth (from true north)	0	45	90	135	180	225	270	315
Antenna Height AAT (meters)	99.900	78.700	94.600	120.300	114.800	77.800	71.700	95.700
Transmitting ERP (watts)	352.500	136.390	5.560	0.980	0.980	0.980	39.210	263.760

Licensee Name: CELLCO PARTNERSHIP

Call Sign: KNKA201

File Number: 0006356224

Print Date: 08-26-2014

Location	Latitude	Longitude	Ground Elevation (meters)	Structure Hgt to Tip (meters)	Antenna Structure Registration No.
25	43-10-34.3 N	071-12-24.2 W	335.3	31.4	

Address: (Northwood) SADDLEBACK MOUNTAIN

City: NORTHWOOD County: ROCKINGHAM State: NH Construction Deadline:

Antenna: 4 Azimuth (from true north)	0	45	90	135	180	225	270	315
Antenna Height AAT (meters)	152.900	213.700	260.100	268.500	234.000	215.400	150.700	173.600
Transmitting ERP (watts)	45.240	219.790	199.540	31.860	1.550	1.000	1.000	2.360
Antenna: 5 Azimuth (from true north)	0	45	90	135	180	225	270	315
Antenna Height AAT (meters)	152.900	213.700	260.100	268.500	234.000	215.400	150.700	173.600
Transmitting ERP (watts)	1.000	1.000	6.160	105.350	236.610	142.220	7.190	1.780
Antenna: 6 Azimuth (from true north)	0	45	90	135	180	225	270	315
Antenna Height AAT (meters)	152.900	213.700	260.100	268.500	234.000	215.400	150.700	173.600
Transmitting ERP (watts)	55.630	1.980	1.000	1.000	2.260	8.170	110.540	141.320

Location	Latitude	Longitude	Ground Elevation (meters)	Structure Hgt to Tip (meters)	Antenna Structure Registration No.
27	41-41-13.4 N	070-48-25.1 W	22.9	59.4	

Address: (Mattapoisett) Industrial Drive

City: Mattapoisett County: PLYMOUTH State: MA Construction Deadline:

Antenna: 4 Azimuth (from true north)	0	45	90	135	180	225	270	315
Antenna Height AAT (meters)	61.700	76.400	79.200	79.900	80.600	75.400	56.100	60.600
Transmitting ERP (watts)	217.540	281.390	29.920	2.050	0.980	0.980	2.340	21.270
Antenna: 5 Azimuth (from true north)	0	45	90	135	180	225	270	315
Antenna Height AAT (meters)	61.700	76.400	79.300	79.900	80.600	75.400	56.100	60.600
Transmitting ERP (watts)	0.980	10.610	118.800	349.190	74.510	4.550	0.980	0.980
Antenna: 6 Azimuth (from true north)	0	45	90	135	180	225	270	315
Antenna Height AAT (meters)	61.700	76.400	79.200	79.900	80.600	75.400	56.100	60.600
Transmitting ERP (watts)	2.220	0.980	0.980	2.540	27.640	252.570	253.110	22.510

Licensee Name: CELLCO PARTNERSHIP

Call Sign: KNKA201

File Number: 0006356224

Print Date: 08-26-2014

Location	Latitude	Longitude	Ground Elevation (meters)	Structure Hgt to Tip (meters)	Antenna Structure Registration No.
29	41-55-21.0 N	070-39-05.0 W	39.6	77.4	1021869

Address: (Plymouth) CALEB ST

City: Plymouth County: PLYMOUTH State: MA Construction Deadline:

Antenna: 4 Azimuth (from true north)	0	45	90	135	180	225	270	315
Antenna Height AAT (meters)	94.600	84.200	79.500	67.900	61.400	63.600	52.500	63.200
Transmitting ERP (watts)	252.450	246.240	37.800	1.470	0.940	0.940	2.080	39.370
Antenna: 5 Azimuth (from true north)	0	45	90	135	180	225	270	315
Antenna Height AAT (meters)	94.600	84.200	79.500	67.900	61.400	63.600	52.500	63.200
Transmitting ERP (watts)	1.000	3.000	53.330	346.500	184.150	15.870	1.000	1.000
Antenna: 6 Azimuth (from true north)	0	45	90	135	180	225	270	315
Antenna Height AAT (meters)	94.600	84.200	79.500	67.900	61.400	63.600	52.500	63.200
Transmitting ERP (watts)	4.660	1.000	1.000	1.000	5.610	128.480	425.450	99.740

Location	Latitude	Longitude	Ground Elevation (meters)	Structure Hgt to Tip (meters)	Antenna Structure Registration No.
31	42-14-40.0 N	071-30-38.0 W	142.6	102.0	1009024

Address: 1.25 MI NNE

City: HOPKINTON County: MIDDLESEX State: MA Construction Deadline:

Antenna: 4 Azimuth (from true north)	0	45	90	135	180	225	270	315
Antenna Height AAT (meters)	107.800	138.000	130.800	126.800	101.200	85.900	73.000	97.500
Transmitting ERP (watts)	23.200	21.890	16.370	2.550	0.130	0.100	1.640	13.250
Antenna: 5 Azimuth (from true north)	0	45	90	135	180	225	270	315
Antenna Height AAT (meters)	107.800	138.000	130.800	126.800	101.200	85.900	73.000	97.500
Transmitting ERP (watts)	0.940	9.100	53.990	96.320	78.580	26.320	3.730	0.460
Antenna: 6 Azimuth (from true north)	0	45	90	135	180	225	270	315
Antenna Height AAT (meters)	107.800	138.000	130.800	126.800	101.200	85.900	73.000	97.500
Transmitting ERP (watts)	13.400	1.700	0.620	2.340	18.300	72.460	95.170	63.740

Licensee Name: CELLCO PARTNERSHIP

Call Sign: KNKA201

File Number: 0006356224

Print Date: 08-26-2014

Location	Latitude	Longitude	Ground Elevation (meters)	Structure Hgt to Tip (meters)	Antenna Structure Registration No.
34	42-23-29.5 N	071-07-22.9 W	7.9	26.8	

Address: 2067 MASSACHUSETTS AVENUE

City: CAMBRIDGE County: SUFFOLK State: MA Construction Deadline:

Antenna: 4 Azimuth (from true north)	0	45	90	135	180	225	270	315
Antenna Height AAT (meters)	-3.400	5.800	21.700	28.600	13.000	-2.600	-14.400	-21.300
Transmitting ERP (watts)	6.780	7.760	2.800	0.100	0.100	0.100	0.100	1.540
Antenna: 5 Azimuth (from true north)	0	45	90	135	180	225	270	315
Antenna Height AAT (meters)	-3.400	5.800	21.700	28.600	13.000	-2.600	-14.400	-21.300
Transmitting ERP (watts)	0.100	0.130	3.130	7.860	6.600	1.220	0.100	0.100
Antenna: 6 Azimuth (from true north)	0	45	90	135	180	225	270	315
Antenna Height AAT (meters)	-3.400	5.800	21.700	28.300	13.000	-2.600	-14.400	-21.300
Transmitting ERP (watts)	0.410	0.100	0.100	0.100	0.530	5.070	8.210	4.870

Location	Latitude	Longitude	Ground Elevation (meters)	Structure Hgt to Tip (meters)	Antenna Structure Registration No.
35	42-39-16.7 N	071-44-12.3 W	192.6	51.2	

Address: 84 Bayberry Hill Road

City: Townsend County: MIDDLESEX State: MA Construction Deadline:

Antenna: 2 Azimuth (from true north)	0	45	90	135	180	225	270	315
Antenna Height AAT (meters)	57.900	139.500	149.200	136.100	102.200	42.700	-79.000	-25.700
Transmitting ERP (watts)	0.580	7.080	42.660	95.500	77.620	22.390	2.820	0.460
Antenna: 4 Azimuth (from true north)	0	45	90	135	180	225	270	315
Antenna Height AAT (meters)	51.300	146.600	148.900	136.600	101.300	25.000	-79.700	-22.300
Transmitting ERP (watts)	35.060	35.620	17.670	2.660	0.200	0.150	1.860	13.500
Antenna: 5 Azimuth (from true north)	0	45	90	135	180	225	270	315
Antenna Height AAT (meters)	51.300	146.600	148.900	136.600	101.300	25.000	-79.700	-22.300
Transmitting ERP (watts)	5.360	0.690	0.250	0.930	7.320	28.980	38.070	25.500

Licensee Name: CELLCO PARTNERSHIP

Call Sign: KNKA201

File Number: 0006356224

Print Date: 08-26-2014

Location	Latitude	Longitude	Ground Elevation (meters)	Structure Hgt to Tip (meters)	Antenna Structure Registration No.
38	42-38-45.8 N	071-05-37.7 W	117.3	52.4	

Address: 5 Boston Hill Road

City: North Andover County: ESSEX State: MA Construction Deadline:

Antenna: 4 Azimuth (from true north)	0	45	90	135	180	225	270	315
Antenna Height AAT (meters)	96.900	98.200	110.000	111.300	110.000	101.700	90.300	106.200
Transmitting ERP (watts)	83.180	87.100	23.990	2.290	0.200	0.200	1.820	20.420
Antenna: 5 Azimuth (from true north)	0	45	90	135	180	225	270	315
Antenna Height AAT (meters)	96.900	98.100	110.000	111.300	110.000	101.700	90.200	106.200
Transmitting ERP (watts)	0.240	4.170	38.020	97.720	66.070	11.750	1.050	0.200
Antenna: 6 Azimuth (from true north)	0	45	90	135	180	225	270	315
Antenna Height AAT (meters)	96.900	98.200	110.000	111.300	110.000	101.700	90.200	106.200
Transmitting ERP (watts)	5.250	0.340	0.200	0.830	9.770	60.262	100.000	42.660

Location	Latitude	Longitude	Ground Elevation (meters)	Structure Hgt to Tip (meters)	Antenna Structure Registration No.
39	42-18-13.0 N	071-13-05.0 W	44.8	96.0	1018331

Address: 140 CABOT ST

City: NEEDHAM County: NORFOLK State: MA Construction Deadline:

Antenna: 1 Azimuth (from true north)	0	45	90	135	180	225	270	315
Antenna Height AAT (meters)	44.200	68.400	58.900	48.800	36.300	40.300	44.100	41.600
Transmitting ERP (watts)	30.340	35.650	9.380	0.920	0.100	0.100	0.610	6.050
Antenna: 2 Azimuth (from true north)	0	45	90	135	180	225	270	315
Antenna Height AAT (meters)	44.200	68.400	58.900	48.800	36.300	40.300	44.100	41.600
Transmitting ERP (watts)	0.100	1.230	10.440	23.990	19.000	4.420	0.370	0.100
Antenna: 3 Azimuth (from true north)	0	45	90	135	180	225	270	315
Antenna Height AAT (meters)	44.200	68.400	58.900	48.800	36.300	40.300	44.100	41.600
Transmitting ERP (watts)	2.200	0.190	0.100	0.300	2.700	19.270	35.660	16.260

Licensee Name: CELLCO PARTNERSHIP

Call Sign: KNKA201

File Number: 0006356224

Print Date: 08-26-2014

Location	Latitude	Longitude	Ground Elevation (meters)	Structure Hgt to Tip (meters)	Antenna Structure Registration No.
41	42-22-16.6 N	071-05-49.6 W	6.3	18.6	

Address: (Cambridge Donnelly Field site) 284 Norfolk Street

City: Cambridge County: MIDDLESEX State: MA Construction Deadline: 07-03-2014

Antenna: 1 Azimuth (from true north)	0	45	90	135	180	225	270	315
Antenna Height AAT (meters)	-11.600	16.500	20.700	21.000	2.200	-20.400	2.300	-16.900
Transmitting ERP (watts)	48.150	197.980	63.920	1.080	0.680	0.680	0.680	0.850
Antenna: 2 Azimuth (from true north)	0	45	90	135	180	225	270	315
Antenna Height AAT (meters)	-11.600	16.500	20.700	21.000	2.200	-20.400	2.300	-16.900
Transmitting ERP (watts)	0.670	0.670	18.990	128.120	74.750	3.300	0.670	0.670
Antenna: 3 Azimuth (from true north)	0	45	90	135	180	225	270	315
Antenna Height AAT (meters)	-10.600	17.600	21.700	22.000	3.200	-19.400	3.400	-15.900
Transmitting ERP (watts)	28.690	0.650	0.650	0.650	0.650	5.700	114.450	208.740

Control Points:

Control Pt. No. 3

Address: 500 W. Dove Rd.

City: Southlake County: TARRANT State: TX Telephone Number: (800)264-6620

Waivers/Conditions:

License renewal granted on a conditional basis, subject to the outcome of FCC proceeding WT Docket No. 10-112 (see FCC 10-86, paras. 113 and 126).

THE FOLLOWING CELLULAR GEOGRAPHIC SERVICE AREAS HAVE BEEN COMBINED (LISTED BY CALL SIGN, MARKET NUMBER AND BLOCK, AND MARKET NAME): KNKA201 6B BOSTON, MASSACHUSETTS KNKA251 76B

REFERENCE COPY

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Federal Communications Commission

Wireless Telecommunications Bureau

RADIO STATION AUTHORIZATION

LICENSEE: CELLCO PARTNERSHIP

ATTN: REGULATORY
CELLCO PARTNERSHIP
5055 NORTH POINT PKWY, NP2NE NETWORK ENGINEERING
ALPHARETTA, GA 30022

Call Sign KNLH242	File Number 0007716969
Radio Service CW - PCS Broadband	

FCC Registration Number (FRN): 0003290673

Grant Date 06-02-2017	Effective Date 06-02-2017	Expiration Date 06-27-2027	Print Date 06-06-2017
Market Number BTA051	Channel Block F	Sub-Market Designator 0	
Market Name Boston, MA			
1st Build-out Date 06-27-2002	2nd Build-out Date	3rd Build-out Date	4th Build-out Date

Waivers/Conditions:

This authorization is subject to the condition that, in the event that systems using the same frequencies as granted herein are authorized in an adjacent foreign territory (Canada/United States), future coordination of any base station transmitters within 72 km (45 miles) of the United States/Canada border shall be required to eliminate any harmful interference to operations in the adjacent foreign territory and to ensure continuance of equal access to the frequencies by both countries.

This authorization is conditioned upon the full and timely payment of all monies due pursuant to Sections 1.2110 and 24.716 of the Commission's Rules and the terms of the Commission's installment plan as set forth in the Note and Security Agreement executed by the licensee. Failure to comply with this condition will result in the automatic cancellation of this authorization.

Conditions:

Pursuant to §309(h) of the Communications Act of 1934, as amended, 47 U.S.C. §309(h), this license is subject to the following conditions: This license shall not vest in the licensee any right to operate the station nor any right in the use of the frequencies designated in the license beyond the term thereof nor in any other manner than authorized herein. Neither the license nor the right granted thereunder shall be assigned or otherwise transferred in violation of the Communications Act of 1934, as amended. See 47 U.S.C. § 310(d). This license is subject in terms to the right of use or control conferred by §706 of the Communications Act of 1934, as amended. See 47 U.S.C. §606.

This license may not authorize operation throughout the entire geographic area or spectrum identified on the hardcopy version. To view the specific geographic area and spectrum authorized by this license, refer to the Spectrum and Market Area information under the Market Tab of the license record in the Universal Licensing System (ULS). To view the license record, go to the ULS homepage at <http://wireless.fcc.gov/uls/index.htm?job=home> and select "License Search". Follow the instructions on how to search for license information.

Licensee Name: CELLCO PARTNERSHIP

Call Sign: KNLH242

File Number: 0007716969

Print Date: 06-06-2017

License renewal granted on a conditional basis, subject to the outcome of FCC proceeding WT Docket No. 10-112 (see FCC 10-86, paras. 113 and 126).

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Federal Communications Commission

Wireless Telecommunications Bureau

RADIO STATION AUTHORIZATION

LICENSEE: AIRTOUCH CELLULAR

ATTN: REGULATORY
AIRTOUCH CELLULAR
5055 NORTH POINT PKWY, NP2NE NETWORK ENGINEERING
ALPHARETTA, GA 30022

Call Sign KNLF646	File Number
Radio Service CW - PCS Broadband	

FCC Registration Number (FRN): 0006146468

Grant Date 12-02-2016	Effective Date 11-30-2017	Expiration Date 01-03-2027	Print Date
Market Number BTA051	Channel Block C	Sub-Market Designator 3	
Market Name Boston, MA			
1st Build-out Date 12-07-2003	2nd Build-out Date 01-03-2007	3rd Build-out Date	4th Build-out Date

Waivers/Conditions:

This authorization is subject to the condition that, in the event that systems using the same frequencies as granted herein are authorized in an adjacent foreign territory (Canada/United States), future coordination of any base station transmitters within 72 km (45 miles) of the United States/Canada border shall be required to eliminate any harmful interference to operations in the adjacent foreign territory and to ensure continuance of equal access to the frequencies by both countries.

Grant of the request to update licensee name is conditioned on it not reflecting an assignment or transfer of control (see Rule 1.948); if an assignment or transfer occurred without proper notification or FCC approval, the grant is void and the station is licensed under the prior name.

Conditions:

Pursuant to §309(h) of the Communications Act of 1934, as amended, 47 U.S.C. §309(h), this license is subject to the following conditions: This license shall not vest in the licensee any right to operate the station nor any right in the use of the frequencies designated in the license beyond the term thereof nor in any other manner than authorized herein. Neither the license nor the right granted thereunder shall be assigned or otherwise transferred in violation of the Communications Act of 1934, as amended. See 47 U.S.C. § 310(d). This license is subject in terms to the right of use or control conferred by §706 of the Communications Act of 1934, as amended. See 47 U.S.C. §606.

This license may not authorize operation throughout the entire geographic area or spectrum identified on the hardcopy version. To view the specific geographic area and spectrum authorized by this license, refer to the Spectrum and Market Area information under the Market Tab of the license record in the Universal Licensing System (ULS). To view the license record, go to the ULS homepage at <http://wireless.fcc.gov/uls/index.htm?job=home> and select "License Search". Follow the instructions on how to search for license information.

Licensee Name: AIRTOUCH CELLULAR

Call Sign: KNLF646

File Number:

Print Date:

License renewal granted on a conditional basis, subject to the outcome of FCC proceeding WT Docket No. 10-112 (see FCC 10-86, paras. 113 and 126).

REFERENCE COPY

This is not an official FCC license. It is a record of public information contained in the FCC's licensing database on the date that this reference copy was generated. In cases where FCC rules require the presentation, posting, or display of an FCC license, this document may not be used in place of an official FCC license.



Federal Communications Commission

Wireless Telecommunications Bureau

RADIO STATION AUTHORIZATION

LICENSEE: AIRTOUCH CELLULAR

ATTN: REGULATORY
AIRTOUCH CELLULAR
5055 NORTH POINT PKWY, NP2NE NETWORK ENGINEERING
ALPHARETTA, GA 30022

Call Sign KNLH310	File Number
Radio Service CW - PCS Broadband	

FCC Registration Number (FRN): 0006146468

Grant Date 06-08-2017	Effective Date 11-30-2017	Expiration Date 06-27-2027	Print Date
Market Number BTA051	Channel Block E	Sub-Market Designator 0	
Market Name Boston, MA			
1st Build-out Date 06-27-2002	2nd Build-out Date	3rd Build-out Date	4th Build-out Date

Waivers/Conditions:

License renewal granted on a conditional basis, subject to the outcome of FCC proceeding WT Docket No. 10-112 (see FCC 10-86, paras. 113 and 126).

Conditions:

Pursuant to §309(h) of the Communications Act of 1934, as amended, 47 U.S.C. §309(h), this license is subject to the following conditions: This license shall not vest in the licensee any right to operate the station nor any right in the use of the frequencies designated in the license beyond the term thereof nor in any other manner than authorized herein. Neither the license nor the right granted thereunder shall be assigned or otherwise transferred in violation of the Communications Act of 1934, as amended. See 47 U.S.C. § 310(d). This license is subject in terms to the right of use or control conferred by §706 of the Communications Act of 1934, as amended. See 47 U.S.C. §606.

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Federal Communications Commission
Wireless Telecommunications Bureau

RADIO STATION AUTHORIZATION

LICENSEE: CELLCO PARTNERSHIP

ATTN: REGULATORY
 CELLCO PARTNERSHIP
 1120 SANCTUARY PKWY, #150 GASA5REG
 ALPHARETTA, GA 30009-7630

Call Sign WQGB266	File Number 0006150458
Radio Service AW - AWS (1710-1755 MHz and 2110-2155 MHz)	

FCC Registration Number (FRN): 0003290673

Grant Date 11-29-2006	Effective Date 01-04-2014	Expiration Date 11-29-2021	Print Date 02-14-2014
Market Number CMA006	Channel Block A	Sub-Market Designator 0	
Market Name Boston-Lowell-Brockton-Lawrenc			
1st Build-out Date	2nd Build-out Date	3rd Build-out Date	4th Build-out Date

Waivers/Conditions:

This authorization is conditioned upon the licensee, prior to initiating operations from any base or fixed station, making reasonable efforts to coordinate frequency usage with known co-channel and adjacent channel incumbent federal users operating in the 1710-1755 MHz band whose facilities could be affected by the proposed operations. See, e.g., FCC and NTIA Coordination Procedures in the 1710-1755 MHz Band, Public Notice, FCC 06-50, WTB Docket No. 02-353, rel. April 20, 2006.

Conditions:

Pursuant to §309(h) of the Communications Act of 1934, as amended, 47 U.S.C. §309(h), this license is subject to the following conditions: This license shall not vest in the licensee any right to operate the station nor any right in the use of the frequencies designated in the license beyond the term thereof nor in any other manner than authorized herein. Neither the license nor the right granted thereunder shall be assigned or otherwise transferred in violation of the Communications Act of 1934, as amended. See 47 U.S.C. § 310(d). This license is subject in terms to the right of use or control conferred by §706 of the Communications Act of 1934, as amended. See 47 U.S.C. §606.

This license may not authorize operation throughout the entire geographic area or spectrum identified on the hardcopy version. To view the specific geographic area and spectrum authorized by this license, refer to the Spectrum and Market Area information under the Market Tab of the license record in the Universal Licensing System (ULS). To view the license record, go to the ULS homepage at <http://wireless.fcc.gov/uls/index.htm?job=home> and select "License Search". Follow the instructions on how to search for license information.

Licensee Name: CELLCO PARTNERSHIP

Call Sign: WQGB266

File Number: 0006150458

Print Date: 02-14-2014

The license is subject to compliance with the provisions of the January 12, 2001 Agreement between Deutsche Telekom AG, VoiceStream Wireless Corporation, VoiceStream Wireless Holding Corporation and the Department of Justice (DOJ) and the Federal Bureau of Investigation (FBI), which addresses national security, law enforcement, and public safety issues of the FBI and the DOJ regarding the authority granted by this license. Nothing in the Agreement is intended to limit any obligation imposed by Federal law or regulation including, but not limited to, 47 U.S.C. Section 222(a) and (c)(1) and the FCC's implementing regulations. The Agreement is published at VoiceStream-DT Order, IB Docket No. 00-187, FCC 01-142, 16 FCC Rcd 9779, 9853 (2001).

REFERENCE COPY

This is not an official FCC license. It is a record of public information contained in the FCC's licensing database on the date that this reference copy was generated. In cases where FCC rules require the presentation, posting, or display of an FCC license, this document may not be used in place of an official FCC license.



Federal Communications Commission

Wireless Telecommunications Bureau

RADIO STATION AUTHORIZATION

LICENSEE: CELLCO PARTNERSHIP

ATTN: REGULATORY
CELLCO PARTNERSHIP
5055 NORTH POINT PKWY, NP2NE NETWORK ENGINEERING
ALPHARETTA, GA 30022

Call Sign WQGA900	File Number
Radio Service AW - AWS (1710-1755 MHz and 2110-2155 MHz)	

FCC Registration Number (FRN): 0003290673

Grant Date 11-29-2006	Effective Date 11-01-2016	Expiration Date 11-29-2021	Print Date
Market Number BEA003	Channel Block B	Sub-Market Designator 1	
Market Name Boston-Worcester-Lawrence-Lowe			
1st Build-out Date	2nd Build-out Date	3rd Build-out Date	4th Build-out Date

Waivers/Conditions:

This authorization is conditioned upon the licensee, prior to initiating operations from any base or fixed station, making reasonable efforts to coordinate frequency usage with known co-channel and adjacent channel incumbent federal users operating in the 1710-1755 MHz band whose facilities could be affected by the proposed operations. See, e.g., FCC and NTIA Coordination Procedures in the 1710-1755 MHz Band, Public Notice, FCC 06-50, WTB Docket No. 02-353, rel. April 20, 2006.

AWS operations must not cause harmful interference across the Canadian or Mexican Border. The authority granted herein is subject to future international agreements with Canada or Mexico, as applicable.

Conditions:

Pursuant to §309(h) of the Communications Act of 1934, as amended, 47 U.S.C. §309(h), this license is subject to the following conditions: This license shall not vest in the licensee any right to operate the station nor any right in the use of the frequencies designated in the license beyond the term thereof nor in any other manner than authorized herein. Neither the license nor the right granted thereunder shall be assigned or otherwise transferred in violation of the Communications Act of 1934, as amended. See 47 U.S.C. § 310(d). This license is subject in terms to the right of use or control conferred by §706 of the Communications Act of 1934, as amended. See 47 U.S.C. §606.

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RF Report

Proposed Wireless Facility
725 Washington Street
Holliston, MA 01581

verizon✓

July 9, 2020

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ATTACHMENTS

- Attachment A: Holliston 4 – Existing/Approved 700 MHz & 2100 MHz LTE Coverage
- Attachment B: Holliston 4 – 700 MHz & 2100 MHz LTE Coverage with Proposed Site
- Attachment C: Holliston 4 – Existing/Approved 700 MHz LTE Sector Footprints
- Attachment D: Holliston 4 – 700 MHz LTE Sector Footprints with Proposed Site
- Attachment E: Holliston 4 – Area Topography Map

1. Overview

This RF Report has been prepared on behalf of Verizon Wireless in support of its proposal to the Town of Holliston for the installation and operation of a wireless facility located at 725 Washington Street at the First Congregational Church of Holliston. The proposed facility consists of a fenced equipment area at ground level on the north side of the church, along with antennas and associated equipment mounted within the belfry behind RF transparent material for concealment purposes.

This report concludes that the proposed site will fill in coverage gaps and provide additional capacity to Holliston in order to improve deficient service areas along Route 16/126 (Washington Street), Central Street, Holliston Center, and the surrounding roads, neighborhoods, businesses, and community areas in the proximity of the proposed site.

Included in this report is: a brief summary of the site's objectives, maps showing Verizon Wireless' current network plan, and modeled Radio Frequency coverage of the subject site and the surrounding sites in Verizon Wireless' network.

2. Introduction

Verizon Wireless provides digital voice and data communications services using 3rd Generation (3G) CDMA/EVDO technology in the Cellular (800 MHz) and PCS (1900 MHz) frequency bands, and is deploying advanced 4th Generation (4G) voice and data services over LTE technology in the 700 MHz, Cellular, PCS, and AWS (2100 MHz) frequency bands as allocated by the FCC. These networks are used by mobile devices for fast web browsing, media streaming, and other applications that require broadband connections. The mobile devices that benefit from these advanced networks are not limited to basic handheld phones, but also include devices such as smartphones, PDA's, tablets, and laptop air-cards. With the evolving rollout of 4G LTE services and devices, Verizon Wireless customers will have even faster connections to people, information, and entertainment.

As explained within this report, Verizon Wireless has identified the need to add a new facility to its existing network of sites in the Holliston area to improve coverage and capacity to a significant gap in service in order to support reliable communications and meet the growing demand in the area.

To maintain a reliable and robust communications system for the individuals, businesses, public safety workers and others who use its network, Verizon Wireless deploys a network of cell sites (also called wireless communications facilities) throughout the areas in which it is licensed to provide service. These cell sites consist of antennas mounted on structures, such as buildings and towers, supported by radio and power equipment. The receivers and transmitters at each of these sites process signals within a limited geographic area known as a "cell."

Mobile subscriber handsets and wireless devices operate by transmitting and receiving low power radio frequency signals to and from these cell sites. Handset signals that reach the cell site are transferred through land lines (or other means of backhaul transport) and routed to their destinations by sophisticated electronic equipment. In order for Verizon Wireless' network to function effectively, there must be adequate overlapping coverage between the "serving cell" and adjoining cells. This not only allows a user to access the network initially, but also allows for the transfer or "hand-off" of calls and data transmissions from one cell to another and prevents unintended disconnections or "dropped calls."

Verizon Wireless' antennas also must be located high enough above ground level to allow transmission (a.k.a. propagation) of the radio frequency signals above trees, buildings, and other natural or man-made structures that may obstruct or diminish the signals. Areas without adequate radio frequency coverage have substandard service, characterized by dropped and blocked calls, slow data connections, or no wireless service at all, and are commonly referred to as coverage gaps.

The size of the area potentially served by each cell site depends on several factors including the number of antennas used, the height at which the antennas are deployed, the topography of the surrounding land, vegetative cover, and natural or man-made obstructions in the area. The actual service area at any given time also depends on the number of customers who are on the network in range of that cell site. As customers move throughout the service area, the transmission from the phone or other device is automatically transferred to the Verizon Wireless facility with the best reception, without interruption in service, provided that there is overlapping coverage between the cells.

Each cell site must be primarily designed to strike a balance between the overall geographic coverage area it will serve, and the site's capacity to support the usage within the coverage footprint. In rural areas, cell sites are generally designed to have broader coverage footprints because the potential traffic is sparser and distributed over a larger area. In more densely populated suburban and urban environments, the capacity to handle calls and data transmissions is of increasing concern, and cell sites must limit their coverage footprint to an area where the offered network traffic can be supported by the radio equipment and resources. Due to the aggressive historical and projected growth of mobile usage, particularly for mobile data (82% in 2017-2018 in the U.S.¹), instances arise where the usage demand can no longer be supported by the site(s) serving an area, and new facilities must be integrated to provide capacity relief to those sites.

We have concluded that by developing the proposed wireless communication facility at 275 Washington Street with an antenna centerline height of 66' AGL (above ground level), Verizon Wireless will be able to provide substantially improved coverage and additional capacity to residents, businesses, and traffic corridors within Holliston's downtown area that are currently located within gaps in service of Verizon Wireless' network.

¹ "2019 Annual Survey Highlights", June 20, 2019, CTIA.
<https://www.ctia.org/news/2019-annual-survey-highlights>

3. The Proposed Facility

Verizon Wireless' proposal consists principally of the following elements:

- 1) A 12' x 24' equipment area at grade on the northern side of the church, surrounded by a 6' tall stockade privacy fence;
- 2) Six (6) panel antennas (two per sector) mounted within the belfry behind RF transparent screening, at a centerline elevation of 66' AGL (above ground level);
- 3) Remote Radio Heads (RRH) with accessory junction boxes and surge suppressors mounted below the antennas within the clock tower;
- 4) Fiber and power cabling routed between the equipment area and the proposed equipment within the belfry – please refer to the associated site plans²;

² Zoning Drawings prepared by ProTerra Design Group, LLC, dated 6/22/2020 (Rev. 0)

4. Coverage and Capacity Objectives

As mentioned above, Verizon Wireless is in the process of rolling out its 4G LTE high-speed wireless broadband system in the 700 MHz, Cellular, PCS, and AWS frequency bands, in accordance with its licenses from the FCC. In order to expand and enhance their wireless services throughout New England, Verizon Wireless must fill in existing coverage gaps and address capacity, interference, and high-speed broadband issues. As part of this effort, Verizon Wireless has determined that significant gaps in service exist in and around sections of Holliston, as described further below.

Verizon Wireless currently operates wireless facilities similar to the proposed facility within Holliston and the surrounding cities/towns. Due in large part to the distances between the surrounding sites, the intervening topography, and volume of user traffic in the area, these facilities do not provide sufficient coverage to portions of Town. Specifically, Verizon Wireless determined that much of central Holliston is without reliable service in the following areas and town roads³, including but not limited to:

- Route 16/126 (Washington Street), through Holliston Center;
 - Serves ~ 12,700 vehicles per day, as measured west of High Street (2020);
- Central Street;
- Holliston Center;
- The surrounding roads, neighborhoods, and business/community areas in the proximity of the proposed site and the above-mentioned roads.

The proposed site located at 275 Washington Street (“Holliston 4”) is needed to fill in these targeted gaps in service, in order to improve network quality and reliability for Verizon Wireless subscribers traveling along these roads, as well as to the numerous residents, businesses, and visitors in this area.

³ Traffic counts are sourced from the MA Department of Transportation, Transportation Data Management System, <https://mhd.ms2soft.com/tcds/tsearch.asp?loc=Mhd&mod=>.

5. Site Search, Selection Process, and Alternate Candidates

To find a site that provides acceptable service, adequate capacity, and fills the gaps in coverage, computer modeling software is used to define a search ring. The search ring identifies the area within which a site could be located (assuming sufficient height is considered) that would have a high probability of addressing the significant coverage gap and/or meeting the capacity objectives established by the Verizon Wireless RF (Radio Frequency) engineers.

Once a search ring is determined, Verizon Wireless' real estate specialists search within the proximity of the defined area for existing buildings, towers, and other structures of sufficient height that would meet the intended objectives. If none are found, then the focus shifts to "raw land" sites. A suitable site must satisfy the technical requirements identified by the RF engineers, must be available for lease, and must have access to a road and be otherwise suitable for constructing a cell site of the required size and height. Every effort is made to use existing structures before pursuing a "raw land" build to minimize the number of new towers throughout the towns being served.

After the search of the area had been completed, Verizon Wireless determined that collocating a wireless communication facility within the First Congregational Church at 275 Washington Street is the most appropriate solution to address its targeted coverage and capacity objectives.

6. Pertinent Site Data

Table 1 below details the site-specific information for the on-air, approved, and proposed Verizon Wireless macro-sites used to perform the coverage analysis and generate the coverage plots provided herein.

Site Name	Address	City/Town	Location		Structure Type	Antenna Height (ft AGL)	Status
			Latitude	Longitude			
Ashland	Albert Ray Drive	Ashland	42.2737	-71.4515	Monopole	102	On-Air
Ashland 2	20 Ponderosa Road	Ashland	42.2638	-71.4749	Monopole	130	On-Air
Ashland S	400 Cedar Street	Ashland	42.2353	-71.4396	Water Tank	75	On-Air
Holliston	Mellen Street	Holliston	42.2117	-71.4426	Lattice	154	On-Air
Holliston 2	Pope Road	Holliston	42.1814	-71.4546	Monopole	147	On-Air
Holliston S	40 Hill Street	Medway	42.1780	-71.4158	Powerline	142.5	On-Air
Hopkinton 4	89 Hayden Rowe Street	Hopkinton	42.2189	-71.5158	Guyed	60	On-Air
Hopkinton 5	123 East Main Street	Hopkinton	42.2386	-71.4942	Stealth Pole	147	On-Air
Hopkinton Relo	59 Wilson Street	Hopkinton	42.2478	-71.5118	Monopole	158	On-Air
Hopkinton South	231 Hayden Rowe Street	Hopkinton	42.2017	-71.5054	Stealth Pole	114	On-Air
Medfield	16 West Mill Street	Medfield	42.1952	-71.3274	Monopole	150	On-Air
Medfield 5	45 Hospital Road	Medfield	42.2127	-71.3328	Water Tank	143	Approved
Medway	113 Main Street	Medway	42.1492	-71.4153	Monopole	128	On-Air
Medway 2	15 West Street	Medway	42.1360	-71.4493	Monopole	146	Approved
Milford 2	Cedar Street	Milford	42.1687	-71.5077	Monopole	154	On-Air
Milford E	100 Medway Road	Milford	42.1486	-71.4898	Rooftop	46	On-Air
Milford North	McGill Lane	Milford	42.1872	-71.5325	Monopole	70	On-Air
Millis	725 Main Street	Millis	42.1706	-71.3539	Smokestack	94	On-Air
Sherborn	16 Kendall Avenue	Sherborn	42.2704	-71.3852	Guyed	100	On-Air
Sherborn 2	3 Sanger Street	Sherborn	42.2403	-71.3702	Steeple	52.6	On-Air
Sherborn 3	36 Brook Street	Sherborn	42.2228	-71.4077	Powerline	151.3	On-Air
Sherborn 5	Lake Street	Sherborn	42.2299	-71.3546	Stealth Pole	92	On-Air
Holliston 4	275 Washington Street	Holliston	42.2016	-71.4300	Steeple	66	Proposed

Table 1: Verizon Wireless Site Information Used in Coverage Analysis⁴

⁴ Some sites listed in this table are outside the plot view but are included for completeness of information.

7. Coverage Analysis and Propagation Plots

The signal propagation plots provided in this report show coverage for the 700 MHz and 2100 MHz frequency range and were produced using deciBel Planner™, a Windows-based RF propagation computer modeling program and network planning tool. The software considers the topographical features of an area, land cover, antenna models, antenna heights, RF transmitting power and receiver thresholds to predict coverage and other related RF parameters used in site design and network expansion.

The coverage plots included as attachments show coverage based on RSRP signal strengths of -95 dBm and above. All other areas (depicted in white) fall within coverage areas characterized by poor service quality, low data throughput, and the substantial likelihood of unreliable service.

Attachments A - E are discussed below:

Attachment A titled “Holliston 4 – Existing/Approved 700 MHz & 2100 MHz LTE Coverage” shows the coverage provided to areas of Holliston from the “On-Air” and “Approved” macro-sites listed in Table 1. The green and yellow shaded areas represent the minimum desired level of coverage for most of this area for the 700 MHz and 2100 MHz network layers, respectively. Because of the superior propagation characteristics of 700 MHz relative to 2100 MHz, the 2100 MHz coverage areas (yellow) are generally contained within the 700 MHz coverage areas (green). As such, the deficient areas of 700 MHz coverage are defined by the unshaded or white areas, whereas the deficient areas of 2100 MHz coverage consist of both the green and white areas. As shown in this plot and described in the Coverage and Capacity Objectives section of this report, portions of Holliston are in areas of deficient coverage. These coverage gaps, particularly at 2100 MHz, include Route 16/126 (Washington Street), Central Street, Holliston Center, and the surrounding roads, neighborhoods, and business/community areas in the proximity of the proposed site.

Attachment B titled “Holliston 4 – 700 MHz & 2100 MHz LTE Coverage with Proposed Site” shows the composite coverage with the proposed “Holliston 4” facility. As shown by the additional areas of coverage, the proposed facility will provide coverage to:

- ~ 0.6 mi along Route 16 / 126 (Washington Street);
- ~ 0.5 mi along Central Street;
- Holliston Center;
- ~ 1,250 (700 MHz) and ~900 (2100 MHz) additional residents⁵ within the proximity of the proposed facility;
- ~ 725 (700 MHz) and ~800 (2100 MHz) additional employees⁶ within the surrounding area;
- ~ 650 (700 MHz) and ~ 500 (2100 MHz) additional structures⁷
- The surrounding roads, neighborhoods, and business/community areas in the proximity of the proposed site and the above-mentioned roads.

⁵ Residential population counts referenced here and elsewhere in this report are based upon the 2010 U.S. Census data.

⁶ Employee population counts referenced here and elsewhere in this report are based upon the 2017 U.S. Census Bureau LEHD database.

⁷ Structure counts referenced here and elsewhere within this report are based upon “roofprint” data sourced from MassGIS (Bureau of Geographic Information). The dataset contains two-dimensional roof outlines for all building larger than 150 ft² and may not necessarily include only dwellings. For additional information, refer to <https://docs.digital.mass.gov/dataset/massgis-data-building-structures-2-d>

Attachment C titled “Holliston 4 – Existing/Approved 700 MHz LTE Sector Footprints” depicts the areas primarily served by the sectors (a.k.a. signal “footprints”) of the surrounding Verizon Wireless macro-sites in the area, which are shown by the unique color for each particular sector of interest. For clarity, all other sectors of less interest with respect to the proposed site are shown in grey. As demand for wireless voice and data services continues to grow, Verizon Wireless manages the footprint of each sector so that it can support the demand within the area it is primarily serving. In addition to improving coverage to the area, the proposed site will also serve existing and anticipated demand in the vicinity and thereby offload some of the burden experienced by the surrounding sites. In that way, those sites will be able to more adequately serve the demand for service in the areas nearer to those surrounding sites. Please note that the outer parts of each sector footprint may include areas that presently have signal strength below the targeted value required for reliable service to Verizon Wireless’ customers. The fact that low-level signal may reach these areas does not mean that these areas experience adequate coverage. These unreliable areas of low signal level can impose a significant capacity burden on the sites primarily serving the area.

Attachment D titled “Holliston 4 - 700 MHz LTE Sector Footprints with Proposed Site” shows the composite coverage with the overall footprint of the proposed facility in green. As shown in this map, the proposed “Holliston 4” facility is an effective solution to provide capacity relief to Holliston Center, particularly to the “Holliston S” gamma sector (red), the “Holliston” beta sector (orange), and the “Holliston 2” alpha sector (blue). The proposed facility is centrally located in the area of deficient coverage making it particularly suited to distribute the traffic load of this busier area across multiple sectors and provide a dominant server to this gap in service. Table 2 below details the capacity relief based on the sector footprints shown in Attachments C and D.

Sector	Current			With "Holliston 4"			Offload Summary		
	Residential Pops	Employee Pops	Structures	Residential Pops	Employee Pops	Structures	Total Residential Pops Offloaded	Total Employee Pops Offloaded	Structures Offloaded
Holliston S Gamma	1341	605	550	780	22	230	561 (41.8%)	583 (96.4%)	320 (58.2%)
Holliston Beta	1017	504	518	657	261	311	360 (35.4%)	243 (48.2%)	207 (40%)
Holliston 2 Alpha	1664	392	791	937	164	432	727 (43.7%)	228 (58.2%)	359 (45.4%)

Table 2: Capacity Offload Summary

Attachment E titled “Holliston 4 – Area Topography Map” details the topographical features around the proposed “Holliston 4” site. These terrain features play a key role in dictating both the unique coverage areas served from a given location, and the coverage gaps within the network. This map is included to provide a visual representation of the terrain variations that must be considered when determining the appropriate location and design of a proposed wireless facility. The blue and green shades correspond to lower elevations, whereas the orange, red and grey shades indicate higher elevations.

8. Certification of Non-Interference

Verizon Wireless certifies that the proposed facility will not cause interference to any lawfully operating emergency communication system, television, telephone or radio, in the surrounding area. The FCC has licensed Verizon Wireless to transmit and receive in the Upper C-Block of the 700 MHz band, B Block of the Cellular (850 MHz) band, the C3, E and F Blocks of the PCS (1900 MHz) band, and the A & B Blocks of the AWS (2100 MHz) band of the RF spectrum. As a condition of the FCC licenses, Verizon Wireless is prohibited from interfering with other licensed devices that are being operated in a lawful manner. Furthermore, no emergency communication system, television, telephone, or radio is licensed to operate on these frequencies, and therefore interference is highly unlikely.

9. Summary

In undertaking its build-out of 4G LTE service in Middlesex County, Verizon Wireless has determined that an additional facility is needed to provide reliable service and additional capacity throughout areas of Holliston, MA. Verizon Wireless determined that developing the proposed wireless communications facility at 275 Washington Street in Holliston at an antenna centerline height of 66 feet (AGL) will provide additional coverage and capacity needed in the targeted coverage areas including key roadways such as Route 16 / 126 (Washington Street), Central Street, Holliston Center, and the surrounding roads, neighborhoods, and business/community areas in the proximity of the proposed site. Without the installation of the proposed site, Verizon Wireless will be unable to improve and expand their existing 4G LTE wireless communication services in this area of Town; therefore, Verizon Wireless respectfully requests that the Town of Holliston act favorably upon the proposed facility.

10. Statement of Certification

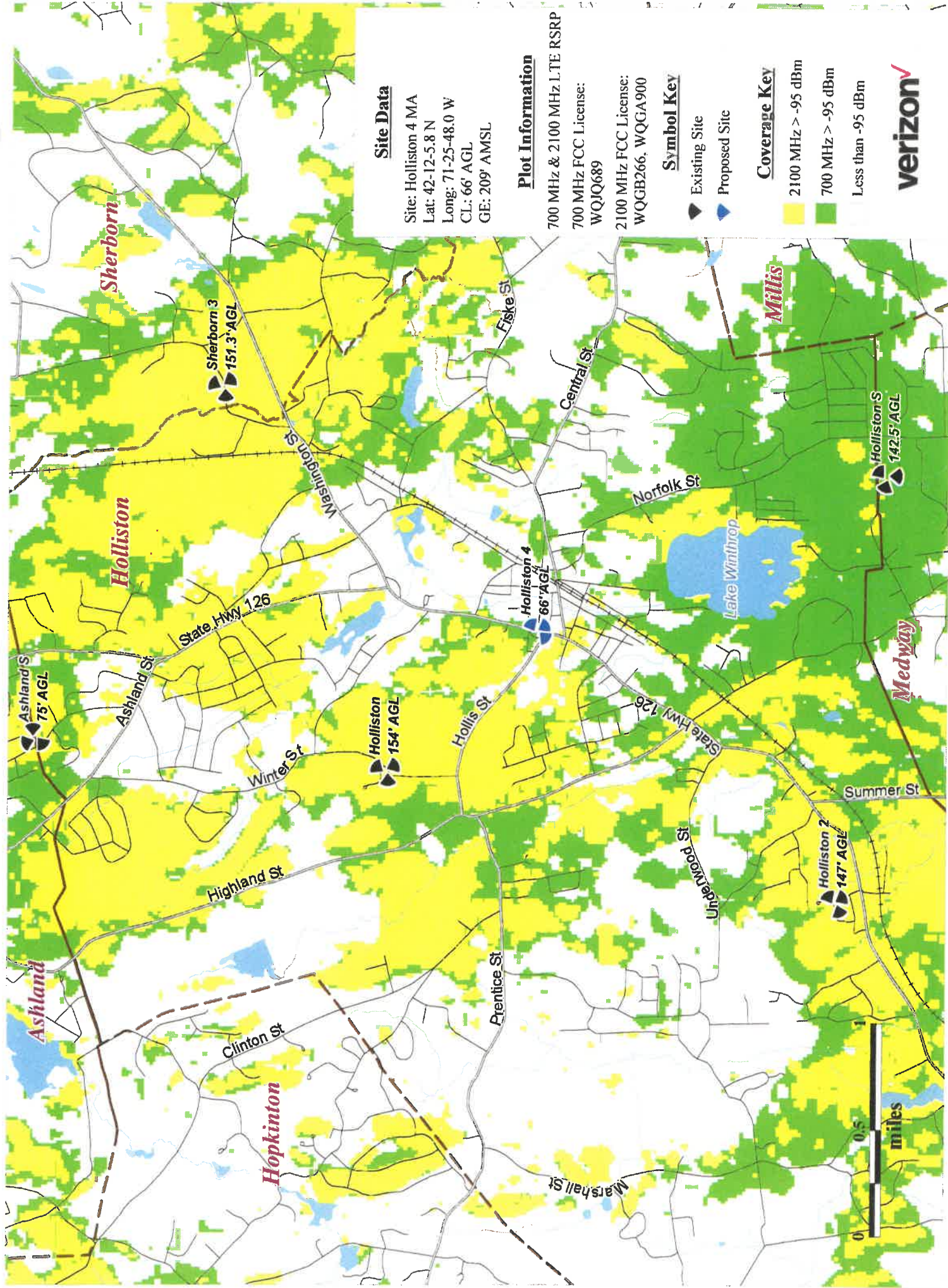
I certify to the best of my knowledge that the statements in this report are true and accurate.

Keith Vellante

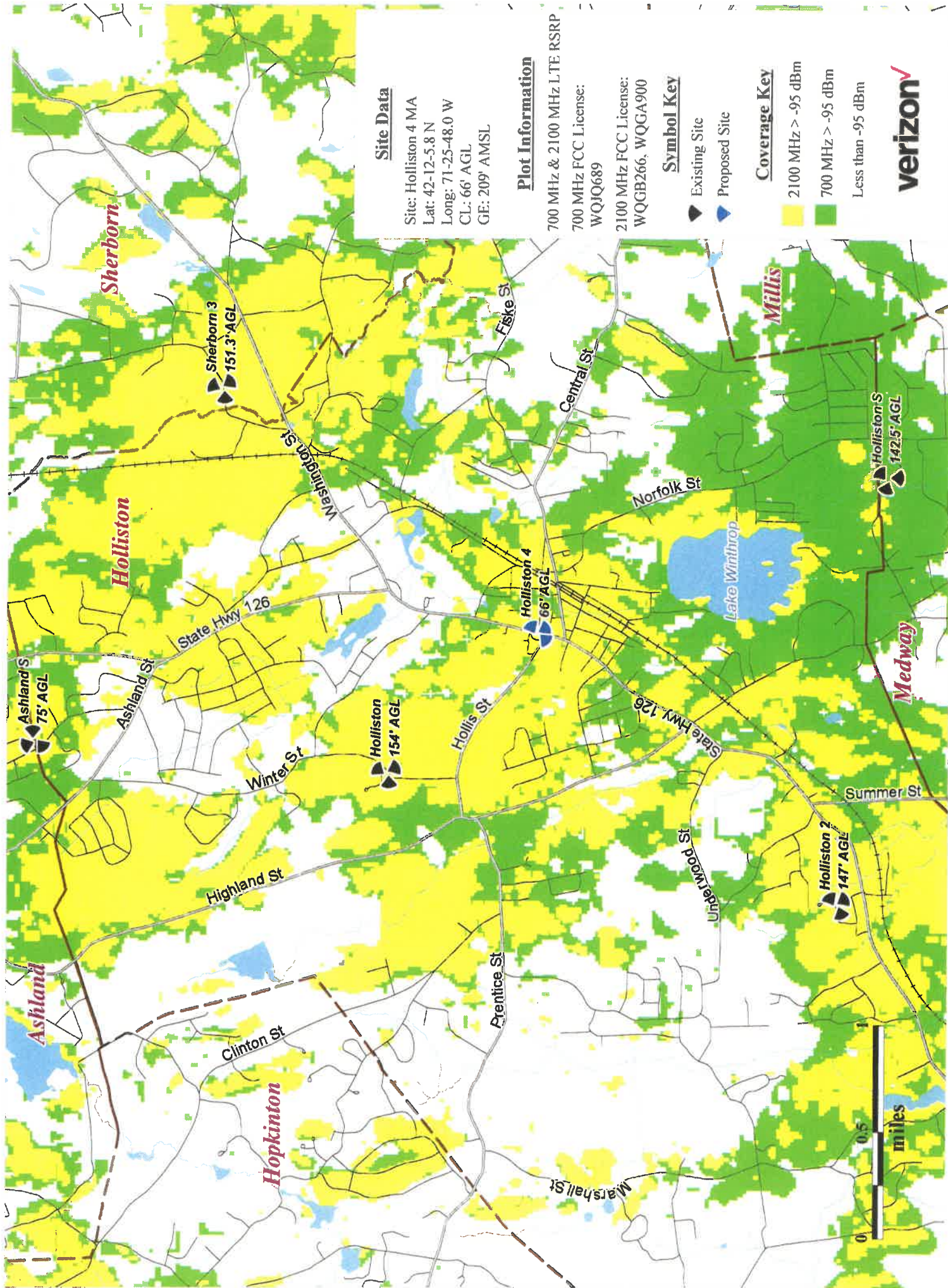
Keith Vellante
RF Engineer
C Squared Systems, LLC

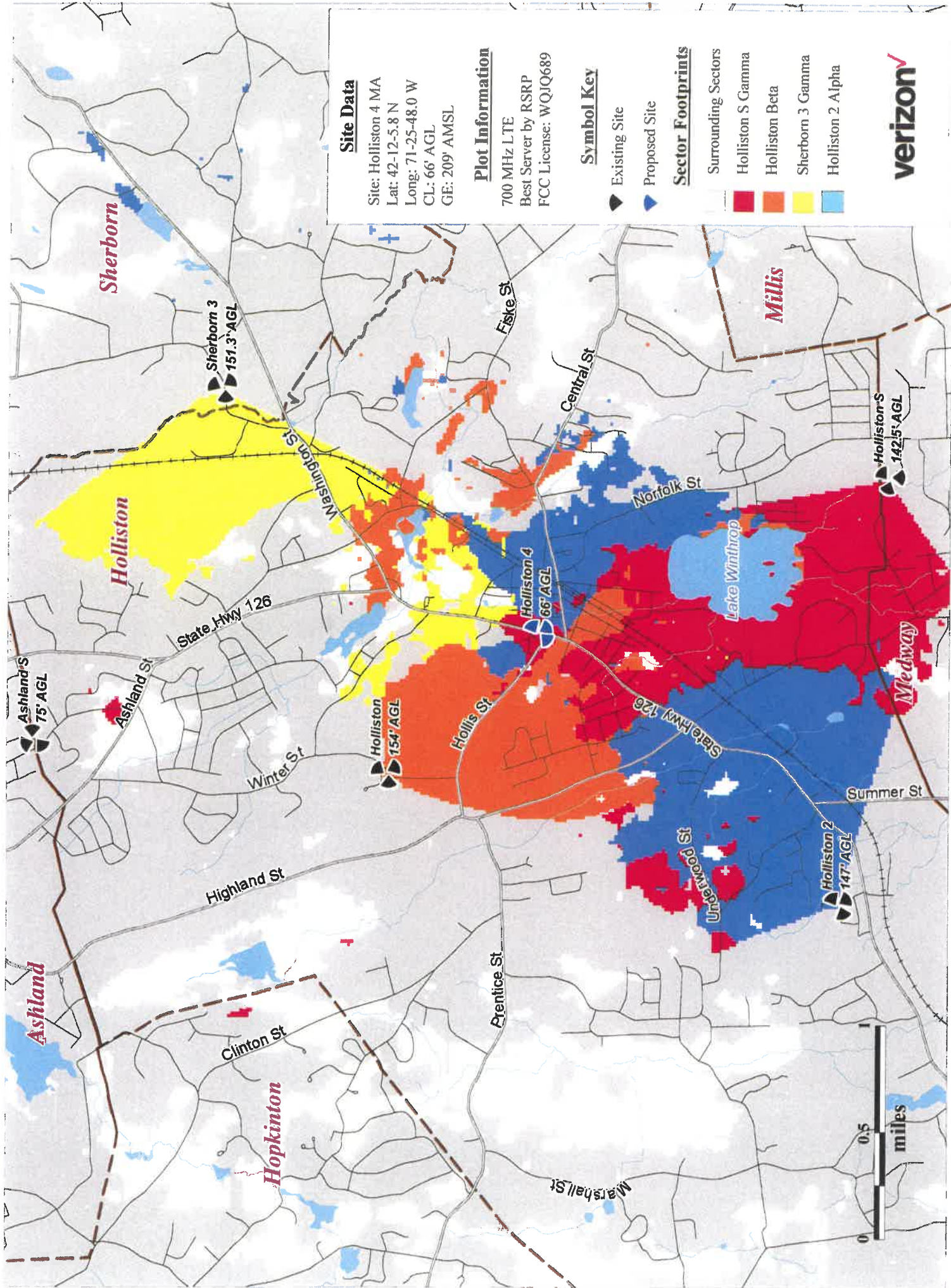
July 9, 2020
Date

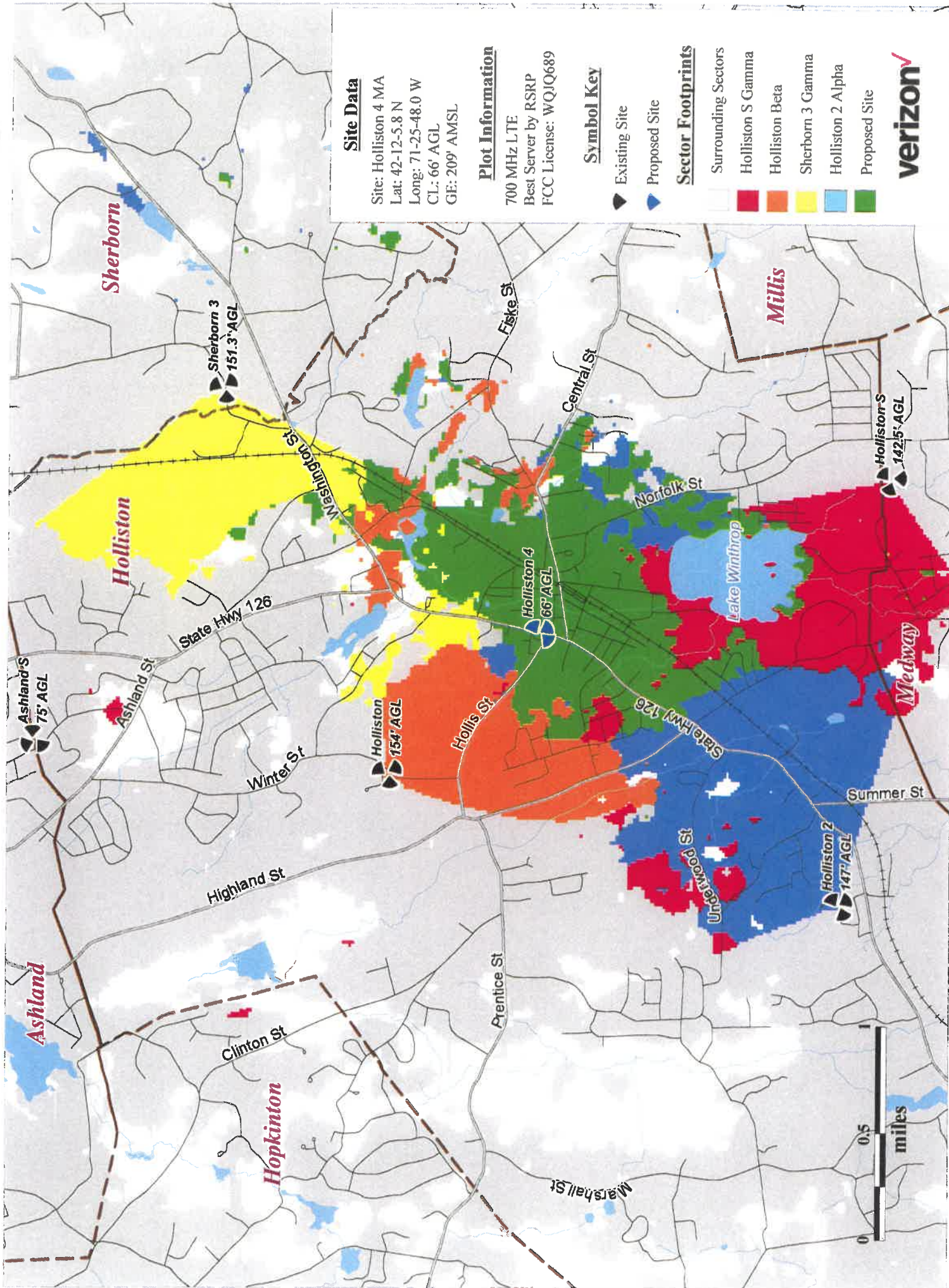
11. Attachments

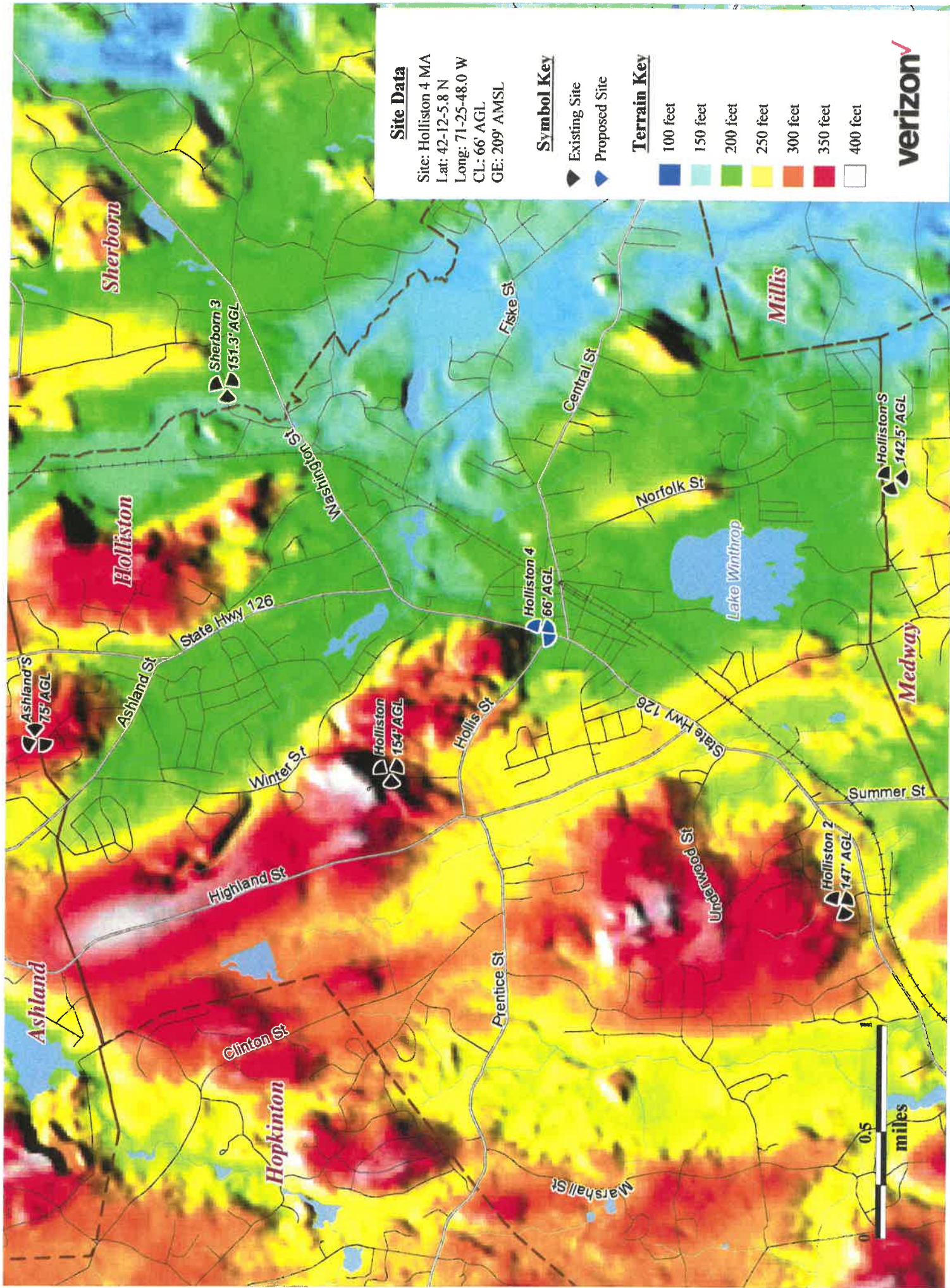


Attachment F
Holliston 4 - 700 MHz & 2100 MHz LTE Coverage with Proposed Site









DONALD L. HAES, JR., CHP, CLSO

Radiation Safety Specialist

PO Box 198, Hampstead, NH 03841

617-680-6262

Email: donald_haes_chp@comcast.net

July 23, 2020

RE: Installation of radio base station antennas and associated equipment for the Verizon Wireless Personal Wireless Services facility to be located on the existing First Congregational Church building 725 Washington Street, Holliston, MA.

PURPOSE

I have reviewed the information pertinent to the proposed installation at the above location. To determine regulatory compliance, theoretical calculations of maximal radio-frequency (RF) fields have been prepared. The physical conditions are that Verizon Wireless proposes to install personal wireless services (PWS) directional panel antennas (one panel each in three "arrays" aimed 90° in azimuth apart) in the steeple of the existing building (See Figure 2). The mounting centerline height of the antennas is proposed to be 66' above ground level (AGL). The proposed installation will allow Verizon Wireless to continue deployment of their long-term evolution ("LTE" a.k.a. "4G") and Advanced Wireless Services (AWS) systems. PWS provider T-Mobile has an existing installation at this site and are included in these calculations.

This report considers the contributions of the proposed Verizon Wireless PWS transmitters operating at their FCC-licensed capacity. The calculated values of RF fields are presented as a percent of current Maximum Permissible Exposures (%MPE) as adopted by the Federal Communications Commission (FCC),^{i,ii} and those established by the Massachusetts Department of Public Health (MDPH).ⁱⁱⁱ

SUMMARY

Theoretical RF field calculations data indicate the summation of the proposed Verizon Wireless and existing T-Mobile PWS RF contributions would be well-within the established RF exposure guidelines in areas accessible to the general public which includes the ground and areas within the occupied building. These calculations include the proposed Verizon Wireless and existing T-Mobile PWS installation. These results mean there could be more similar installations at this location, and still be within Federal and State guidelines for RF exposure.

Based on the theoretical RF fields I have calculated, it is my expert opinion that this facility would comply with all regulatory guidelines for RF exposure to members of the public with the proposed Verizon Wireless personal wireless services antennas.

Note: The analyses, conclusions and professional opinions are based upon the precise parameters and conditions of this particular site: **First Congregational Church building 725 Washington Street, Holliston, MA.** Utilization of these analyses, conclusions and professional opinions for any personal wireless services installation, existing or proposed, other than the aforementioned has not been sanctioned by the author, and therefore should not be accepted as evidence of regulatory compliance.

EXPOSURE LIMITS AND GUIDELINES

RF exposure guidelines enforced by the FCC were established by the American National Standards Institute (ANSI)^{iv} and the National Council on Radiation Protection and Measurement (NCRP).^v The RF exposure guidelines are listed for RF workers and members of the public. The applicable FCC RF exposure guidelines for the public are listed in Table 1 and depicted in Figure 1. All listed values are intended to be averaged over any contiguous 30-minute period. The applicable exposure limits for workers (the “controlled area”) are five times higher but averaged over any 6-minute period.

Table 1: Maximum Permissible Exposure (MPE) Values in Public Areas			
Frequency Bands	Maximum Permissible Exposure (MPE)		
	Electric Fields	Magnetic Fields	Equivalent Power Density
0.3 – 1.34 MHz	614 (V/m)	1.63 (A/m)	(100) mW/cm ²
1.34 - 30 MHz	824/f (V/m)	2.19/f (A/m)	(100) mW/cm ²
30 - 300 MHz	27.5 (V/m)	0.073 (A/m)	0.2 mW/cm ²
300 - 1500 MHz	--	--	f/1500 mW/cm ²
1500 - 100,000	--	--	1.0 mW/cm ²

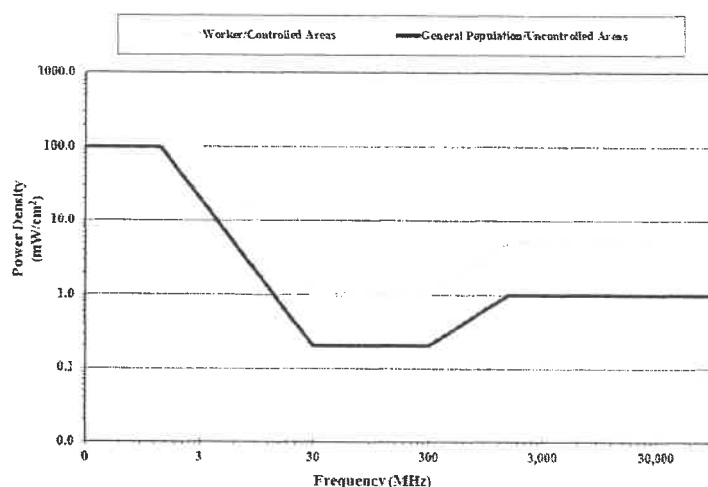


Figure 1: FCC Limits for Maximum Permissible Exposure (MPE)

NOTE: FCC 5% Rule – When the exposure limits are exceeded in an accessible area due to the emissions from multiple fixed RF sources, actions necessary to bring the area into compliance are the shared responsibility of all licensees whose RF sources produce, at the area in question, levels that exceed 5% of the applicable exposure limit proportional to power. (Federal Register / Vol. 85, No. 63 / Wednesday, April 1, 2020 / Rules and Regulations 18145)

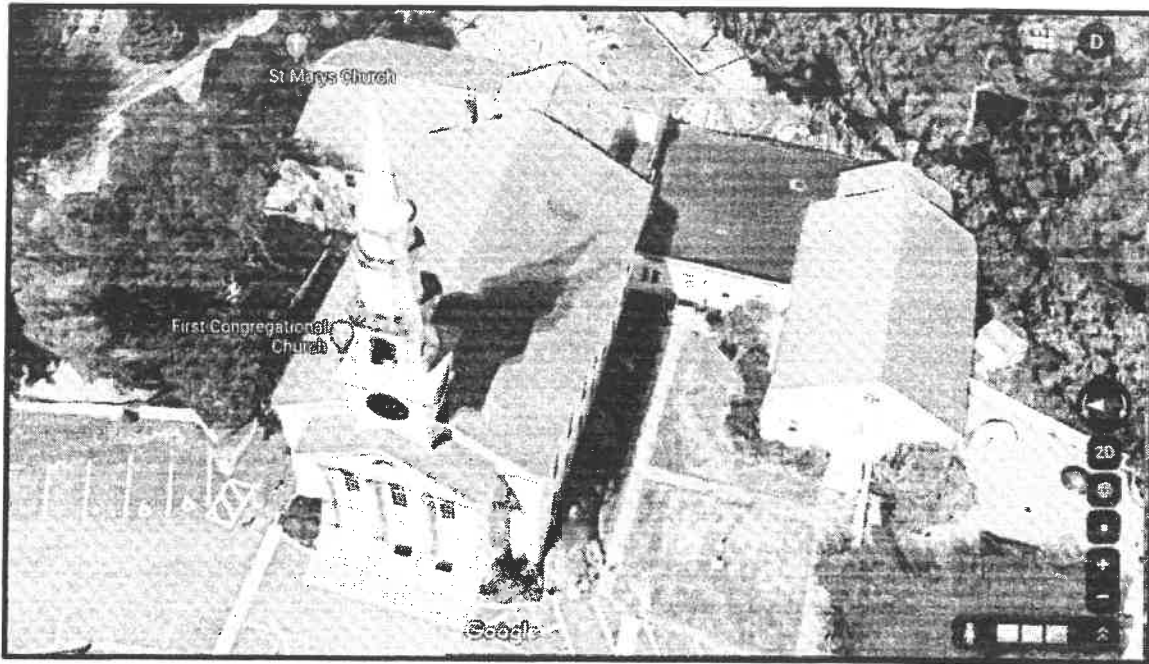


Figure 2: Proposed Verizon Wireless PWS Site “Holliston 4, MA”
725 Washington Street, Holliston, MA
(Picture Courtesy Google Earth^{©2020} and may not represent current conditions)

THEORETICAL RF FIELD CALCULATIONS

These calculations are based on what are called “worst-case” estimates. That is, the estimates assume 100% use of all transmitters simultaneously. The resultant values are thus conservative in that they over predict actual resultant power densities. The areas evaluated for these proposed and existing PWS antennas includes the grounds and surrounding neighborhood, and the locations within the building under the antennas.

NOTE: If the area is not controlled by the PWS facility or landlord, the FCC’s public (“uncontrolled areas”) limits apply. If the area is controlled by the PWS facility or landlord, the FCC’s worker (“controlled areas”) limits may apply, assuming an RF Safety program has been implemented.

INTRODUCTORY INFORMATION: MAKING SENSE OF THE “G”s

There are many references to the so-called “generation” of wireless technologies in use. Each new “generation” of wireless technologies has colloquially been designated a numbered “G”.¹ The latest “G” to come out, the fifth generation of wireless technologies or so called “5G”, has attracted extensive research interest, both inside and outside the scientific community. According to the 3rd generation partnership project,² 5G networks should support three major families of applications: (1) Enhanced mobile broadband; (2) Machine type communications, and (3) Ultra-reliable and low-latency communications. There are also enhanced “vehicle-to-everything” communications which are expected to be supported by 5G networks. These situations require much more “connectivity” than the latest fourth generation (aka “4G” or “Long Term Evolution (LTE)”) networks can handle. Thus, new networks must be able to handle this high system throughput, in addition to supporting existing older technologies still in use. This is being accomplished through additional spectrum assignments both higher and lower than currently assigned frequencies used by PWS facilities. In fact, currently deployed 5G networks are operating at frequencies once used by television stations.

Nonetheless, frequencies assigned by the FCC for 5G use are all within the bands currently under regulatory oversight, including setting safe limits of exposure to RF energy for both workers, and members of the public. Just recently (4/2020) the FCC has reaffirmed the efficacy of their regulatory exposure limits to RF energy; including those for 5G. On another note, the premiere journal on matters associated with radiation safety (The Health Physics Journal) has released an article on 5G: IEEE Committee on Man and Radiation—Comar Technical Information Statement: Health and Safety Issues Concerning Exposure of the General Public to Electromagnetic Energy from 5G Wireless Communications Networks; Bushberg, J.T.; Chou, C.K.; Foster, K.R.; Kavet, R.; Maxson, D.P.; Tell, R.A.; Ziskin, M.C.

From an RF safety standpoint, there is nothing peculiar about the fifth generation of wireless technologies that would set it apart from any of the other advancements of technologies; including the first two generations (first analog then digital communications), the third generation (the first to be referred to a numbered-series as “3G”), and the currently deployed fourth generations (LTE). Recently published studies in peer-reviewed journals^{vi} have shown typical exposures to RF energy from operating 5G systems to be well-within the exposure limits.

¹ PWS “Generations”: 1G: Analog voice; 2G: Digital voice; 3G: Mobile data; 4G: LTE and mobile Internet; 5G: Mobile networks interconnect people, control machines, objects, and devices with multi-Gbps peak rates and ultra-low latency.

² SOURCE: (<https://www.3gpp.org/about-3gpp>) The 3rd Generation Partnership Project (3GPP) unites [Seven] telecommunications standard development organizations (ARIB, ATIS, CCSA, ETSI, TSDSI, TTA, TTC), known as “Organizational Partners” and provides their members with a stable environment to produce the Reports and Specifications that define 3GPP technologies.

THEORETICAL RF FIELD CALCULATIONS - GROUND LEVELS METHODOLOGY

These calculations make the assumption that the surrounding area is a flat plane. The calculations are based on the information listed in Table 2 for Verizon Wireless. Similarly, the calculations are based on the information in Table 3 for T-Mobile. The information required to perform the theoretical calculations include:

1. Effective Radiated Power (ERP; See Appendix A for Verizon Wireless).
2. Antenna height (centerline, above ground level (AGL)).
3. Antenna vertical radiation patterns (See Appendix B for Verizon Wireless); the source of the negative gain (G) values. "Directional" antennas are designed to focus the RF signal, resulting in "patterns" of signal loss and gain. Antenna vertical radiation patterns display the loss of signal strength relative to the direction of propagation due to elevation angle changes.

The gain can be expressed as " G^E ".

Note: G is a unitless factor usually expressed in decibels (dB); where $G = 10^{(dB/10)}$

For example: for an antenna *gain* of 3 dB, the net factor (G) = $10^{(3/10)} = 2$; an antenna with a *loss* of -3 dB, the net factor (G) = $10^{(-3/10)} = 0.5$

To determine the magnitude of the RF field, the power density (S) from an isotropic RF source is calculated, making use of the power density formula as outlined in the FCC's OET Bulletin 65, Edition 97-01: vii

$$S = \frac{P \cdot G}{4 \cdot \pi \cdot R^2}$$

Where:

P → Power to antenna (watts)

G → Gain of antenna

R → Distance (range) from antenna source to point of intersection with the ground (feet)

$R^2 = (\text{Height})^2 + (\text{Horizontal distance})^2$

Since: $P \cdot G = \text{EIRP}$ (Effective Isotropic Radiated Power) for broadcast antennas, the equation can be presented in the following form:

$$S = \frac{\text{EIRP}}{4 \cdot \pi \cdot R^2}$$

In the situation of off-axis power density calculations, apply the negative elevation gain (G^E) value from the vertical radiation patterns with the following formula:

$$S = \frac{\text{EIRP} \cdot G^E}{4 \cdot \pi \cdot R^2}$$

Ground reflections may add in-phase with the direct wave, and essentially double the electric field intensity. Because power density is proportional to the *square* of the electric field, the power density may quadruple, that is, increase by a factor of four (4). Since ERP is routinely used, it is necessary to convert ERP into EIRP; this is done by multiplying the ERP by the factor of 1.64, which is the gain of a half-wave dipole relative to an isotropic radiator. Therefore, downrange power density estimates can be calculated by using the formula:

$$S = \frac{4 \cdot (\text{ERP} \cdot 1.64) \cdot G^E}{4 \cdot \pi \cdot R^2} = \frac{\text{ERP} \cdot 1.64 \cdot G^E}{\pi \cdot R^2} = \frac{0.522 \cdot \text{ERP} \cdot G^E}{R^2}$$

To calculate the % MPE, use the formula:

$$\% \text{ MPE} = \frac{S}{\text{MPE}} \cdot 100$$

The results of the percent Maximum Permissible Exposure (% MPE) calculations for locations on the ground from the summation of the proposed Verizon Wireless and existing T-Mobile PWS RF emissions are depicted in Figure 3 for any direction, as plotted against linear distance from the base of the building. The values have been calculated for a height of six feet above ground level in accordance with regulatory rationale. A logarithmic scale was used to plot the calculated theoretical %MPE values in order to compare with the MPE of 100%, which is so much larger that it would be off the page in a linear plot. Also depicted on the graph are values for a height of 16' AGL (height of a typical 2nd story), albeit not required by FCC rules.

OBSERVATIONS IN CONSIDERATION WITH FCC RULES §1.1307(B) & §1.1310

Will it be physically possible to stand next to or touch any omnidirectional antenna?

NO; access to the steeple is restricted, and the site will adhere to RF safety guidelines regarding the PWS antennas, including appropriate signage.

ANTENNA INVENTORY

**Table 2: Transmitter and Antenna Data and Supporting Parameters for
Proposed Verizon Wireless PWS Site "Holliston 4, MA"
725 Washington Street, Holliston, MA**

Remote Radio Head Unit (RRH or RRU) See Appendix A for Specifications			Antenna Information See Appendix B for Radiation Patterns			
Model	Frequency (MHz) [†] / Technology	# Tx X Output Power (watts) [‡]	Manufacturer/ Model	Gain (dBd)	ERP (watts) ^{**}	Centerline Height (AGL)
Sector A@ 62°						
RFV01U-D2A (B13)	777 / LTE	2 X 60	CommScope/ NHH-45A-R2B	13.14	2,473	66'
RFV01U-D2A (B5)	850 / CDMA	4 X 40		14.15	4,160	
RFV01U-D1A (B2)	1948 / LTE	4 X 40		16.37	6,936	
RFV01U-D1A (B66)	2100 / LTE	4 X 60		16.92	11,809	
Sector B @ 152°						
RFV01U-D2A (B13)	777 / LTE	2 X 60	CommScope/ NHH-45A-R2B	13.14	2,473	66'
RFV01U-D2A (B5)	850 / CDMA	4 X 40		14.15	4,160	
RFV01U-D1A (B2)	1948 / LTE	4 X 40		16.37	6,936	
RFV01U-D1A (B66)	2100 / LTE	4 X 60		16.92	11,809	
Sector C @ 242°						
RFV01U-D2A (B13)	777 / LTE	2 X 60	CommScope/ NHH-45A-R2B	13.14	2,473	66'
RFV01U-D2A (B5)	850 / CDMA	4 X 40		14.15	4,160	
RFV01U-D1A (B2)	1948 / LTE	4 X 40		16.37	6,936	
RFV01U-D1A (B66)	2100 / LTE	4 X 60		16.92	11,809	

Table Notes

- † Transmitter (Tx) Frequency: Central transmit frequency used to account for multiple channels.
- ‡ Maximum rated output power (per channel).
- ** ERP: Effective Radiated Power is the directional (RF) power (in watts) that would have to be radiated by a half-wave dipole antenna to give the same radiation intensity as the actual source at a distant receiver located in the direction of the antenna's strongest beam (main lobe). (Source Wiki).

Personal Wireless Services (PWS) Technologies

- AWS: Advanced Wireless Services
- CDMA: Code Division Multiple Access
- LTE: Long Term Evolution (a.k.a. "4G")
- PCS: Personal Communication System

**Table 3: Transmitter and Antenna Data and Supporting Parameters for
Existing T-MOBILE PWS Installation (each per sector)
725 Washington Street, Holliston, MA**

Remote Radio Head Unit (RRH or RRU)			Antenna			
Typical Model	Frequency (MHz) [†] / Technology	# Tx X Output Power (watts) [‡]	Typical Manufacturer/ Model	Gain (dBd)	ERP (watts) [*]	Centerline Height (AGL)
RRUS-4449	2100 / AWS-2100	2 X 40	Ericsson / AIR 32 KRD9011461 _B66*_B2A	15.7	2,972	76'
	1950 / LTE-PCS	2 X 40		15.1	2,589	
	720 / LTE-700	2 X 20		13.4	875	
	600 / ERLTE-600	2 X 40		13.0	1,596	

Table Notes

[†] Transmitter (Tx) Frequency: Central transmit frequency used to account for multiple channels.

[‡] Maximum rated output power (per channel).

^{*} **ERP**: Effective Radiated Power is the directional (RF) power (in watts) that would have to be radiated by a half-wave dipole antenna to give the same radiation intensity as the actual source at a distant receiver located in the direction of the antenna's strongest beam (main lobe).

ERP measures the combination of the power emitted by the transmitter and the ability of the antenna to direct that power in a given direction. It is equal to the input power to the antenna multiplied by the gain of the antenna. (Source Wiki).

Personal Wireless Services (PWS) Technologies

AWS: Advanced Wireless Services

LTE: Long Term Evolution (a.k.a. "4G")

ERLTE: Extended Range LTE (600 MHz).

PCS: Personal Communication System

RESULTS

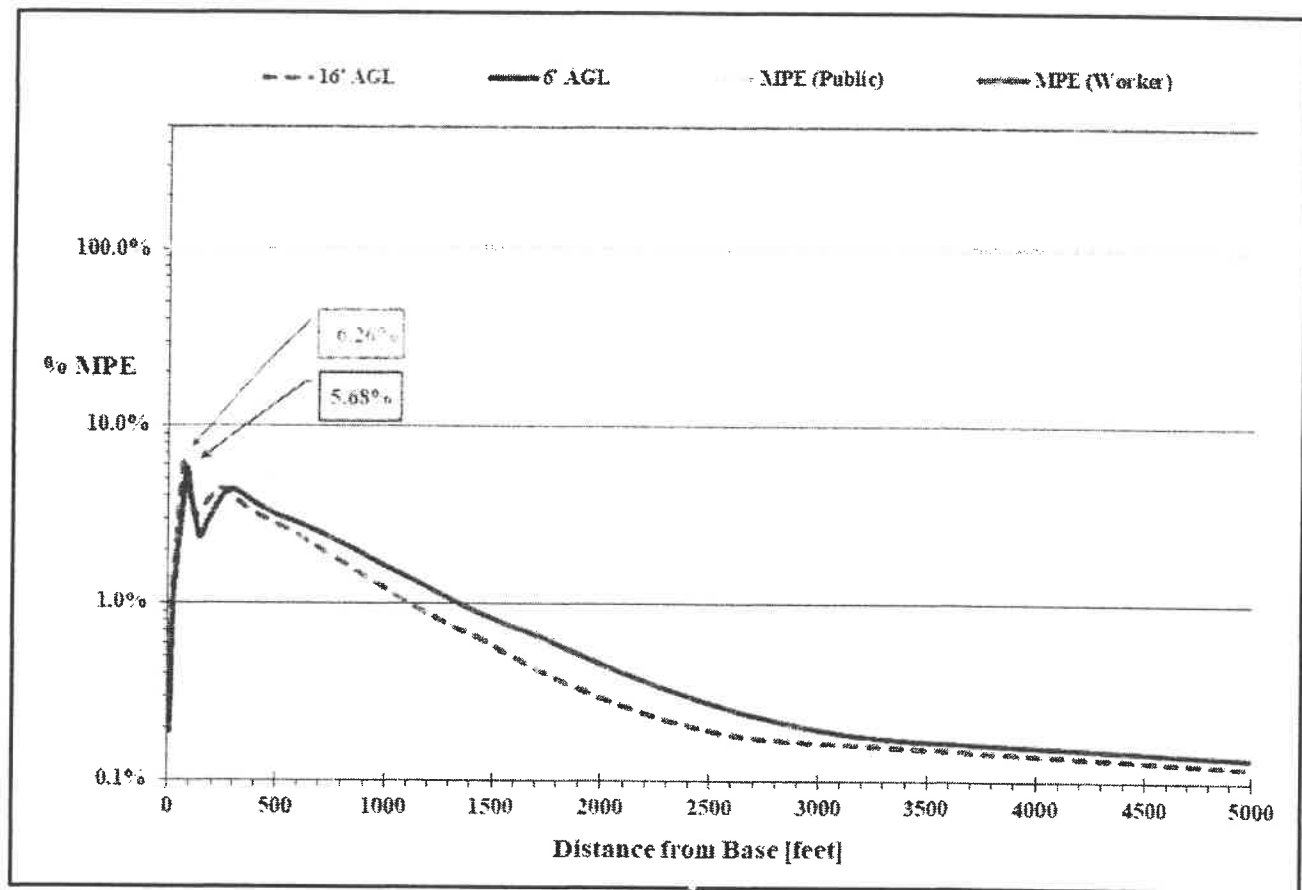


Figure 3: Theoretical Cumulative Maximum Percent MPE - vs. – Distance
Summation of the *Proposed* Verizon Wireless and *Existing* T-Mobile
PWS RF Emissions (Maximum in any direction)
725 Washington Street, Holliston, MA

THEORETICAL RF FIELD CALCULATIONS - WITHIN THE BUILDING (UNDER THE ANTENNAS) METHODOLOGY

In addition to intensity losses at angles away from the main beam (90° down), there are losses due to attenuation by building materials. A good approximation of these losses is -10 dB, or $(10^{(-10/10)} = 0.1)$.

RESULTS

The results of the percent Maximum Permissible Exposure (% MPE) calculations for locations within the building (10') under the antennas from the **summation** of the proposed Verizon Wireless PWS RF emissions are listed in Table 4.

Table 4: Transmitter and Antenna Data and Supporting Parameters for Exposure Guidelines Calculations Proposed Verizon Wireless PWS Site “Holliston 4, MA” 725 Washington Street, Holliston, MA				
Frequency (MHz) [†] / Technology	Manufacturer / Model	ERP (watts)	Gain (dBd) at -90°	Total % MPE 10’ Below
Sector A @ 62°				
777 / LTE-700	CommScope/ NHH-45A-R2B	2473	-30.21	0.47% MPE Or 214 Times Below FCC Exposure Guidelines
850 / LTE-850		4,160	-37.22	
777 / LTE-700		6,936	-41.11	
850 / LTE-850		11,809	-38.44	
Sector B @ 152°				
777 / LTE-700	CommScope/ NHH-45A-R2B	2473	-30.21	0.47% MPE Or 214 Times Below FCC Exposure Guidelines
850 / LTE-850		4,160	-37.22	
777 / LTE-700		6,936	-41.11	
850 / LTE-850		11,809	-38.44	
Sector C @ 242°				
777 / LTE-700	CommScope/ NHH-45A-R2B	2473	-30.21	0.47% MPE Or 214 Times Below FCC Exposure Guidelines
850 / LTE-850		4,160	-37.22	
777 / LTE-700		6,936	-41.11	
850 / LTE-850		11,809	-38.44	

CONCLUSION

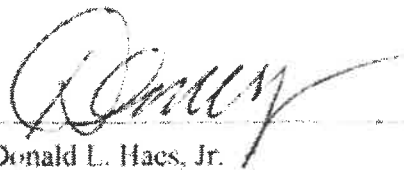
Theoretical RF field calculations data indicate the summation of the proposed Verizon Wireless and existing T-Mobile PWS RF contributions would be well-within the established RF exposure guidelines in areas accessible to the general public which includes the ground and areas within the occupied building. These calculations include the proposed Verizon Wireless and existing T-Mobile PWS installation. These results mean there could be more similar installations at this location, and still be within Federal and State guidelines for RF exposure.

The number and duration of calls passing through PWS facilities cannot be accurately predicted. Thus, in order to estimate the highest RF fields possible from operation of these installations, the maximal amount of usage was considered. Even in this so-called "worst-case," the resultant increase in RF field levels are far below established levels considered safe.

Based on the theoretical RF fields I have calculated, it is my expert opinion that this facility would comply with all regulatory guidelines for RF exposure to members of the public with the proposed Verizon Wireless personal wireless services antennas.

Feel free to contact me if you have any questions.

Sincerely,



Donald L. Haes, Jr.
Certified Health Physicist

Note: The analyses, conclusions and professional opinions are based upon the precise parameters and conditions of this particular site: **First Congregational Church building 725 Washington Street, Holliston, MA.** Utilization of these analyses, conclusions and professional opinions for any personal wireless services installation, existing or proposed, other than the aforementioned has not been sanctioned by the author, and therefore should not be accepted as evidence of regulatory compliance.

DONALD L. HAES, JR., CHP, CLSO

Radiation Safety Specialist

PO Box 198, Hampstead, NH 03841

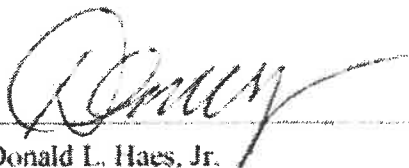
617-680-6162

Email: donald_haes_chp@comcast.net

STATEMENT OF CERTIFICATION

1. I certify to the best of my knowledge and belief, the statements of fact contained in this report are true and correct.
2. The reported analyses, opinions, and conclusions are limited only by the reported assumptions and limiting conditions, and are personal, unbiased professional analyses, opinions and conclusions.
3. I have no present or prospective interest in the property that is the subject of this report and I have no personal interest or bias with respect to the parties involved.
4. My compensation is not contingent upon the reporting of a predetermined energy level or direction in energy level that favors the cause of the client, the amount of energy level estimate, the attainment of a stipulated result, or the occurrence of a subsequent event.
5. This assignment was not based on a requested minimum environmental energy level or specific power density.
6. My compensation is not contingent on an action or event resulting from the analyses, opinions, or conclusions in, or the use of, this report.
7. The consultant has accepted this assessment assignment having the knowledge and experience necessary to complete the assignment competently.
8. My analyses, opinions, and conclusions were developed and this report has been prepared in conformity with the *American Board of Health Physics* (ABHP) statements of standards of professional responsibility for Certified Health Physicists.

Date: July 23, 2020



Donald L. Haes, Jr.

Certified Health Physicist

DONALD L. HAES, JR., CHP, CLSO

Radiation Safety Specialist

PO Box 198, Hampstead, NH 03841

617-680-6262

Email: donald_haes_chp@comcast.net

SUMMARY OF QUALIFICATIONS

• Academic Training -

- Graduated from Chelmsford High School, Chelmsford, MA; June 1973.
- Completed Naval Nuclear Power School, 6-12/1976.
- Completed Naval Nuclear Reactor Plant Mechanical Operator and Engineering Laboratory Technician (ELT) schools and qualifications, Prototype Training Unit, Knolls Atomic Power Laboratory, Windsor, Connecticut, 1-9/1977.
- Graduated Magna Cum Laude from University of Lowell with a Bachelor of Science Degree in *Radiological Health Physics*; 5/1987.
- Graduated from University of Lowell with a Master of Science Degree in *Radiological Sciences and Protection*; 5/1988.

• Certification -

- Board Certified by the American Board of Health Physics 1994; renewed 1998, 2002, 2006, 2010, 2014, and 2018. Expiration 12/31/2022.
- Board Certified by the Board of Laser Safety 2008; renewed 2011, 2014, 2017. Expiration 12/31/2020.

• Employment History -

- Consulting Health Physicist; Ionizing/Nonionizing Radiation, 1988 - present.
- Radiation, RF and Laser Safety Officer; BAE Systems, 2005–2018 (retired).
- Assistant Radiation Safety Officer; MIT, 1988 – 2005 (retired).
- Radiopharmaceutical Production Supervisor - DuPont/NEN, 1981 – 1988 (retired).
- United States Navy; Nuclear Power Qualifications, 1975 – 1981 (Honorably Discharged).

• Professional Societies -

- Health Physics Society [HPS].
- American Academy of Health Physics [AAHP]
- Institute of Electrical and Electronics Engineers [IEEE];
- International Committee on Electromagnetic Safety [ICES] (ANSI C95 series).
- Laser Institute of America [LIA].
- Board of Laser Safety [BLS].
- American National Standards Institute Accredited Standards Committee [ASC Z136].
- Committee on Man and Radiation [COMAR].

APPENDIX A

SPECIFIC REMOTE RADIO HEAD UNITS RFV01U-D1A RRU

	CTK Co., Ltd. (Headong) 113, Yeosu-ro, Cheonan-gu, Taean-si, Gyeonggi-do, Korea Tel: +82-31-339-9970 Fax: +82-31-624-9301	Document No. CTK-2017-01418 Revision: (000) - 0000
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1. General Information

1.1 Client Information

Company	Samsung Electronics Co., Ltd.
Contact Point	Samsung Electronics Co., Ltd. (Korea)
Contact Person	Samsung Electronics Co., Ltd. (Korea)

1.2 Product Information

FCC ID	KCC-2017-01418
Product Description	Remote Radio Head (RRU)
Model name	RFV01U-D1A
Power Supply	DC 12V
Operating Frequency	1920~1980 MHz
RF Output Power	1W
Channel Bandwidth	1.4 MHz
Modulation Type	QPSK, 16QAM, 64QAM
Antenna Specification	2x2 MIMO
FCC Rule	FCC Part 15

SPECIFIC REMOTE RADIO HEAD UNITS
RFV01U-D2A RRU

HCT CO.,LTD.

74, Seoicheon-ro 578beon-gil, Majang-myeon, Icheon-si, Gyeonggi-do, 17383, Rep. of KOREA
TEC: +82-31-645-6300 FAX: +82-31-645-6401

FCC REPORT
FCC Certification

Applicant Name: SAMSUNG Electronics Co.,Ltd.	Date of Issue: August 7, 2017
Address: 129, Samsung-ro, Yeongtong-gu, Suwon-si, Gyeonggi-do, 16677, Rep. of Korea	Test Site/Location: HCT CO., LTD., 74, Seoicheon-ro 578beon-gil, Majang-myeon, Icheon-si, Gyeonggi-do, 17383, Rep. of KOREA Report No.: HCT-R-1707-F009-2 HCT FRN: 0005866421

FCC ID:	A3LRFV01 U-D2A
APPLICANT:	SAMSUNG Electronics Co.,Ltd.

FCC Model: RFV01U-D2A
EUT Type: RRU(RFVOI U)
Frequency Range: TX : 746 756 MHz (Band 13) / 369 - 894 MHz (Band 5)
RX : 777 787 MHz (Band 13) / 824 - 849 MHz (Band 5)
Conducted Output Power: Band 13 : 40W/path x 4 paths or 60W/path x 2 paths (Max output power :160W)
FCC Rule Part(s): Band 5 : 40Wfpath x 4 paths or 60W/path x 2 paths (Max output power : 160W)
Data of Test: CFR 47 Part 2, Part 22, Part 27
June 28, 2017 July 21, 2017

Engineering Statement;

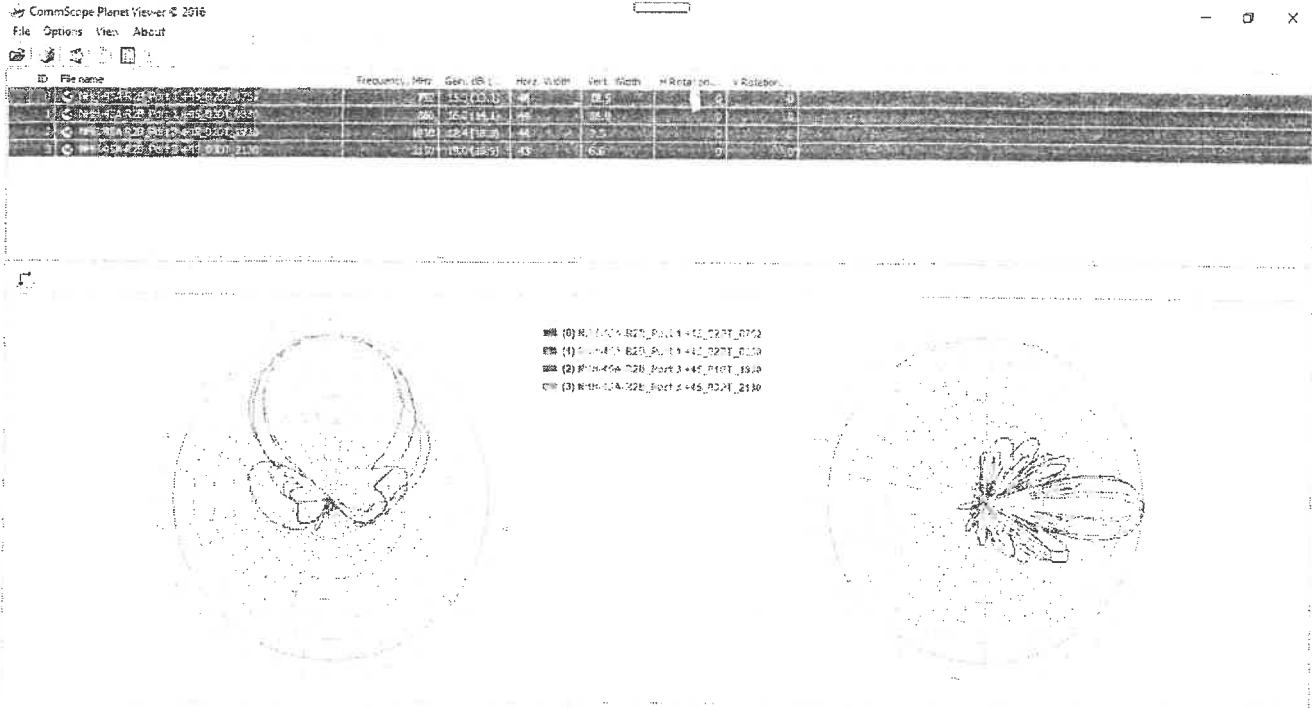
The measurements shown in this report were made in accordance with the procedures indicated, and the emissions from this equipment were found to be within the limits applicable. I assume full responsibility for the accuracy and completeness of these measurements, and for the qualifications of all persons taking them. It is further stated that upon the basis of the measurements made, the equipment tested is capable of operation in accordance with the requirements of FCC Part 27 of the FCC Rules under normal use and maintenance.

Report prepared by : Kyung Soo Kang
Engineer of Telecommunication testing center

Approved by : Jong Seok Lee
Manager of Telecommunication testing center

This report only responds to the tested sample and may not be reproduced, except in full, without written approval of the HCT Co., Ltd.

APPENDIX B **SPECIFIC ANTENNA RADIATION PATTERNS** **CommScope / NHH-45A-R2B**



ENDNOTES

- i. Federal Register, Federal Communications Commission Rules; *Radiofrequency radiation; environmental effects evaluation guidelines* Volume 1, No. 153, 41006-41199, August 7, 1996. (47 CFR Part 1; Federal Communications Commission).
- ii. Telecommunications Act of 1996, 47 USC; Second Session of the 104th Congress of the United States of America, January 3, 1996.
- iii. 105 CMR 122.000: Massachusetts Department of Public Health, *Non-Ionizing Radiation Limits for: The General Public from Non-Occupational Exposure to Electromagnetic Fields, Employees from Occupational Exposure to Electromagnetic Fields, and Exposure from Microwave Ovens*.
- iv. ANSI/IEEE C95.1-1999: American National Standard, *Safety levels with respect to human exposure to radio frequency electromagnetic fields, from 3 KHz to 300 GHz (Updated in 2020; ANSI/IEEE C95.1-2019 was published in 2020)*.
- v. National Council on Radiation Protection and Measurements (NCRP); *Biological Effects and Exposure Criteria for Radiofrequency Electromagnetic Fields*, NCRP Report 86, 1986.
- vi. Jamshed, Muhammad Ali (Institute of Communication Systems (ICS), Home of 5G Innovation entre (5GIC), University of Surrey, Guildford GU2 7XH, U.K). *Electro-magnetic field exposure reduction/avoidance for the next generations of wireless communication systems*. IEEE Journal of Electromagnetics, RF, And Microwaves in Medicine and Biology, Vol. 4, No. 1, March 2020.
- vii. OET Bulletin 65: Federal Communications Commission Office of Engineering and Technology, *Evaluating Compliance with FCC Guidelines for Human Exposure to Radiofrequency Electromagnetic Fields*; Edition 97-01, August 1999.

November 8, 2019

Massachusetts Historical Commission
Massachusetts Archives Building
220 Morrissey Boulevard
Boston, MA 02125
Attn.: Historic Review

RECEIVED

NOV 12 2019

MASS. HIST. COMM

RC.41129

Subject: Submission Packet, FCC Form 621, for proposed Collocation Project
725 Washington Street, Holliston, Middlesex County, Massachusetts 01746
HOLLISTON_4_MA - B / FUZE #616289069
EBI Project #6119004476

In accordance with the Federal Communication Commission (FCC) National Environmental Policy Act (NEPA) rules and Section 106 of the National Historic Preservation Act (NHPA), the above-referenced telecommunications project is being evaluated by EBI for its potential effects to districts, sites, buildings, structures, or objects significant in American history, architecture, archeology, engineering, or culture that are listed, or potentially eligible for listing in the National Register of Historic Places (NRHP). Based on EBI's review of the characteristics and location of the proposed project, the project does not meet the exclusions stated in the "Nationwide Programmatic Agreement for Review of Effects on Historic Properties for Certain Undertakings Approved by the Federal Communications Commission," dated September 2004 ("Nationwide Agreement"); therefore, the project is required to undergo Section 106 review with the State Historic Preservation Office.

The proposed undertaking includes collocating new antennas within an existing 123-foot steeple and installing new ground-level support equipment. Per the FCC's rules, the APE for Direct Effects is the existing building and the proposed lease area and utility/access easements. The APE 'E' is a radius of 500 feet.

In accordance with the Nationwide Agreement, please find the attached Submission Packet, FCC Form 621, which presents the details on the proposed project as well as efforts that have been taken to identify, assess, and make determinations of effect on the impacts of the proposed project on Historic Properties. The research, fieldwork and consultation process has identified historic properties within either APE. Therefore, the finding of effect is "No Adverse Effect on Historic Properties in the Area of Potential Effects." We request your concurrence with this determination.

Please note that further archeological investigation is not recommended for this project.

We would appreciate your review of the data for the proposed project presented above and shown on the attached form and attachments. On behalf of Cellco Partnership and its controlled affiliates doing business as Verizon Wireless (Verizon Wireless), I would appreciate your comments on this proposed telecommunications installation in a letter directed to the address noted above. Please do not hesitate to contact us if you have any questions or concerns on the proposed project or the information contained in this Submission Packet.

Sincerely,



Kate Ritter
Architectural Historian
(413) 281-4650
kritter@ebiconsulting.com

After review of the MHC's files and the materials you submitted, the MHC has determined that the proposed project will have "no adverse effect" on significant historic or archaeological properties.

 12/5/19
Date

Brona Simon
Executive Director
State Historic Preservation Officer
Massachusetts Historical Commission



SITE NAME: HOLLISTON 4 MA
LOCATION CODE: 430505
ADDRESS: 725 WASHINGTON STREET
HOLLISTON, MA 07146
CO-LOCATE - STEEPLE

NOTES:
-PHOTOS FOR PHOTOSIM TAKEN ON WEDNESDAY 6/17/2020
-ANTENNAS IN STEEPLE HEIGHT SHOWN AT 65' AGL
-WEATHER CONDITIONS WERE CLEAR SKIES

ProTerra
DESIGN GROUP, LLC

4 Boy Road, Bldg. A
Suite 200
Hadley, MA 01035
Ph: (413)320-4918

HOLLISTON 4 MA
LOCATION CODE: 430505
ADDRESS: 725 WASHINGTON STREET
HOLLISTON, MA 01746

THIS DOCUMENT IS FOR VISUAL REFERENCE ONLY.
VISIBILITY MAY VARY DEPENDING ON CONDITIONS, SEASONS, AND VIEWER LOCATION.

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118 FLANDERS ROAD
THIRD FLOOR
WESTBOROUGH, MA 01581

PHOTO LOCATION MAP



ProTerra
DESIGN GROUP, LLC

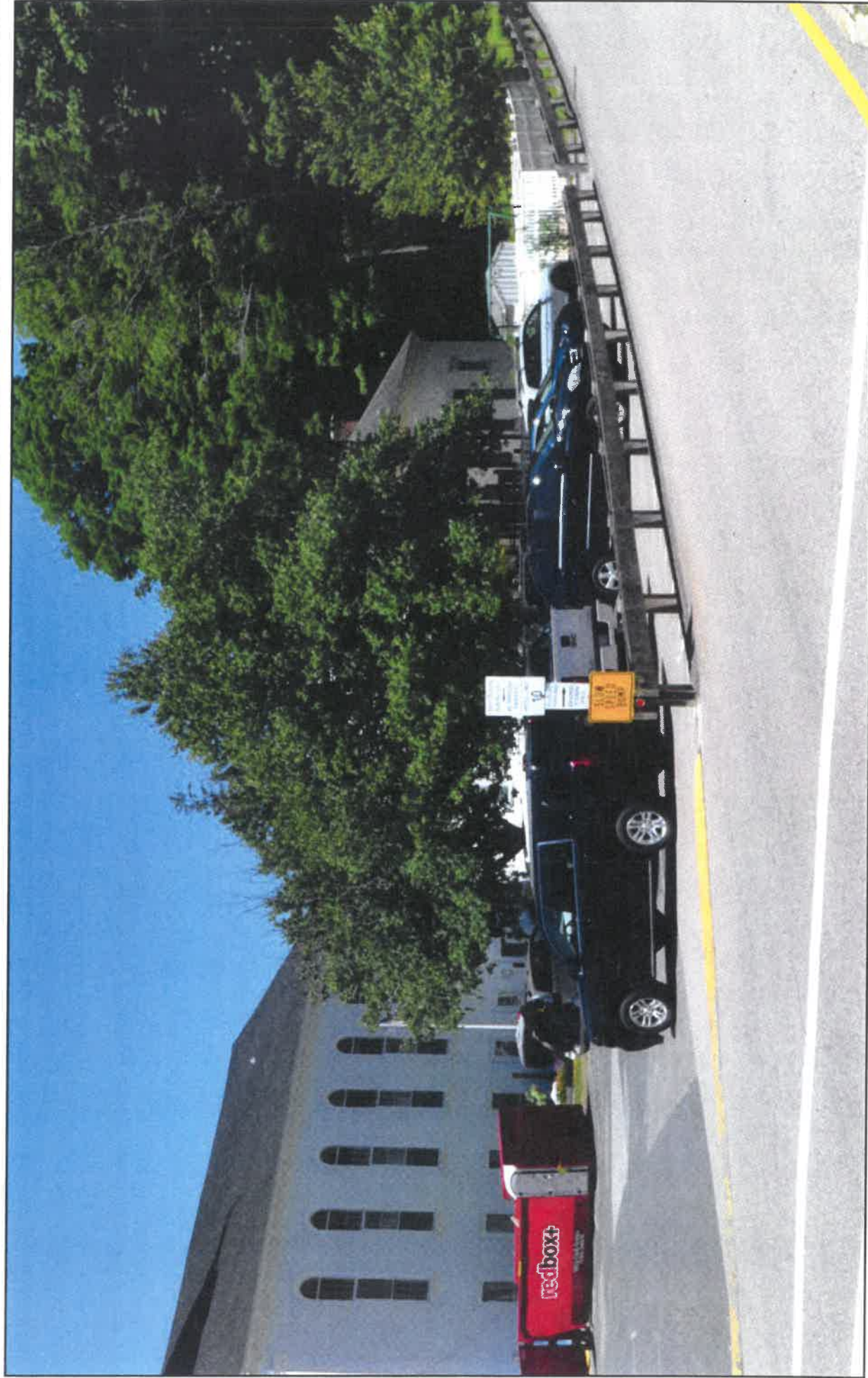
4 Bay Road, Bldg. A
Suite 200
Hadley, MA 01035
Ph: (413) 320-4918

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LOCATION CODE: 430505

ADDRESS: 725 WASHINGTON STREET

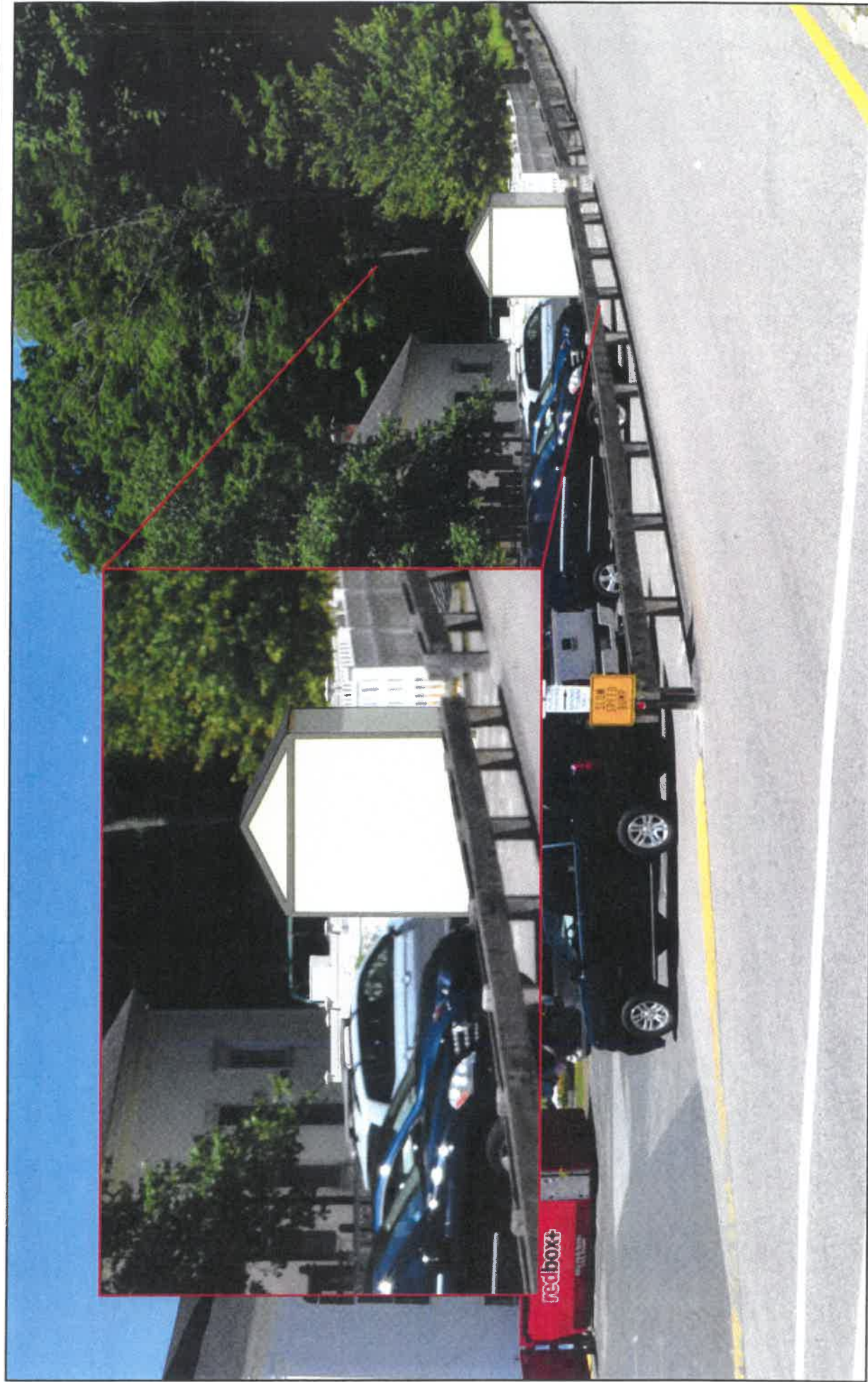
HOLLISTON, MA 01746

DISTANCE 160'±, 50MM LENS LENGTH

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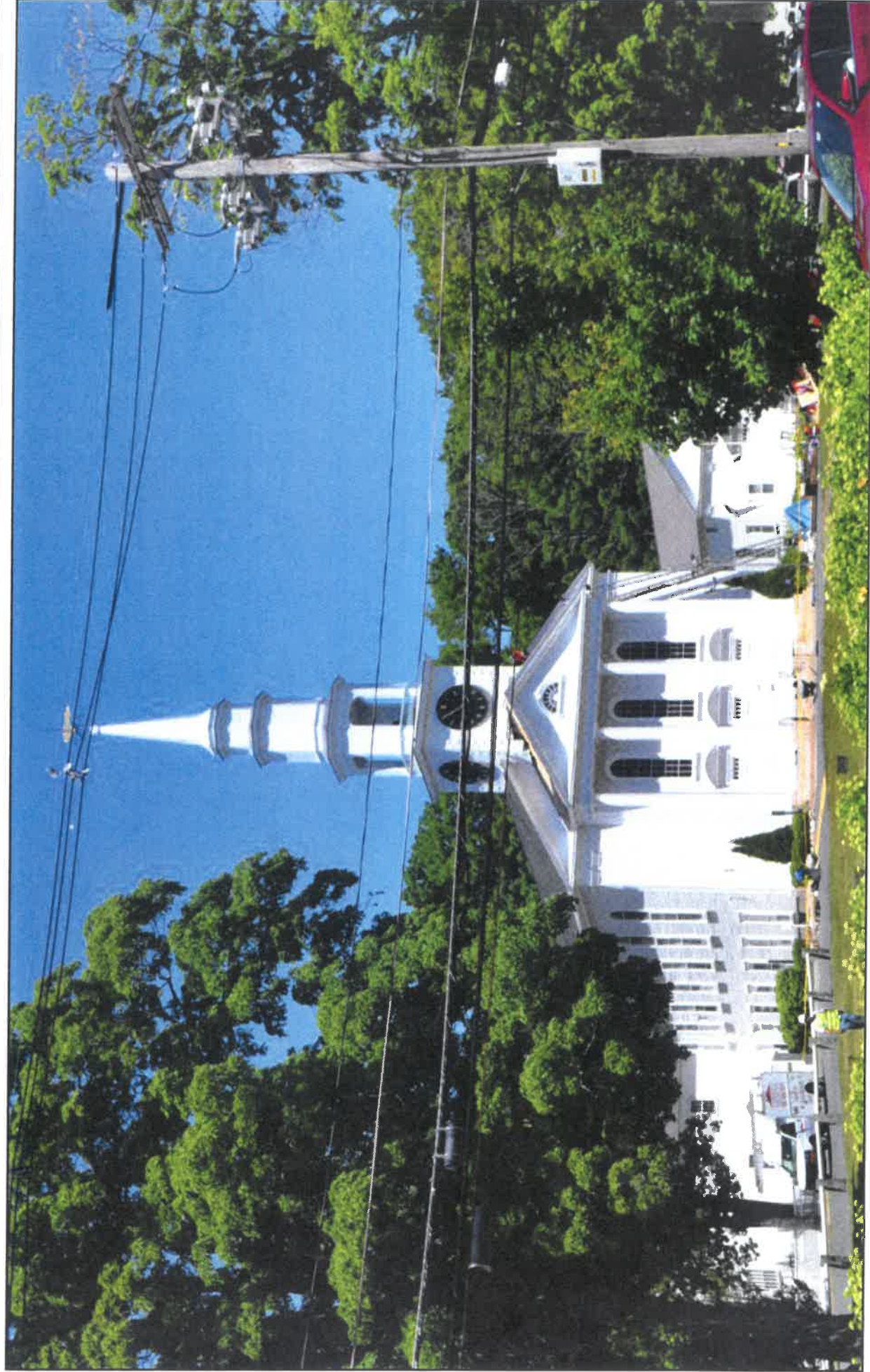
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HOLLISTON 4 MA

LOCATION CODE: 430505

ADDRESS: 725 WASHINGTON STREET

HOLLISTON, MA 01746

DISTANCE 330'±, 50MM LENS LENGTH

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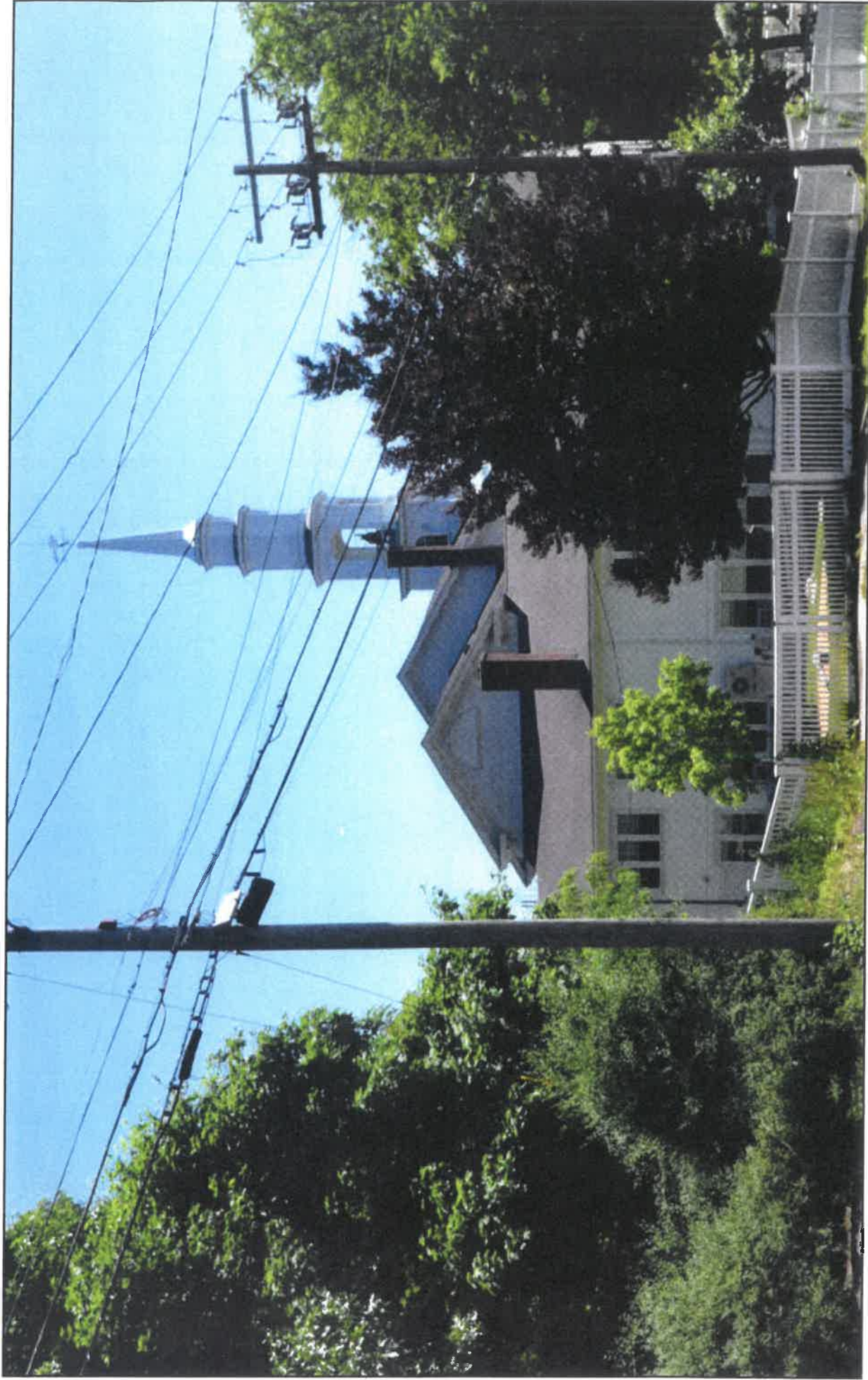
HOLLISTON, MA 01746

DISTANCE 330' ±, 50MM LENS LENGTH

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LOCATION CODE: 430505

ADDRESS: 725 WASHINGTON STREET

HOLLISTON, MA 01746

DISTANCE 300' ±, 50MM LENS LENGTH

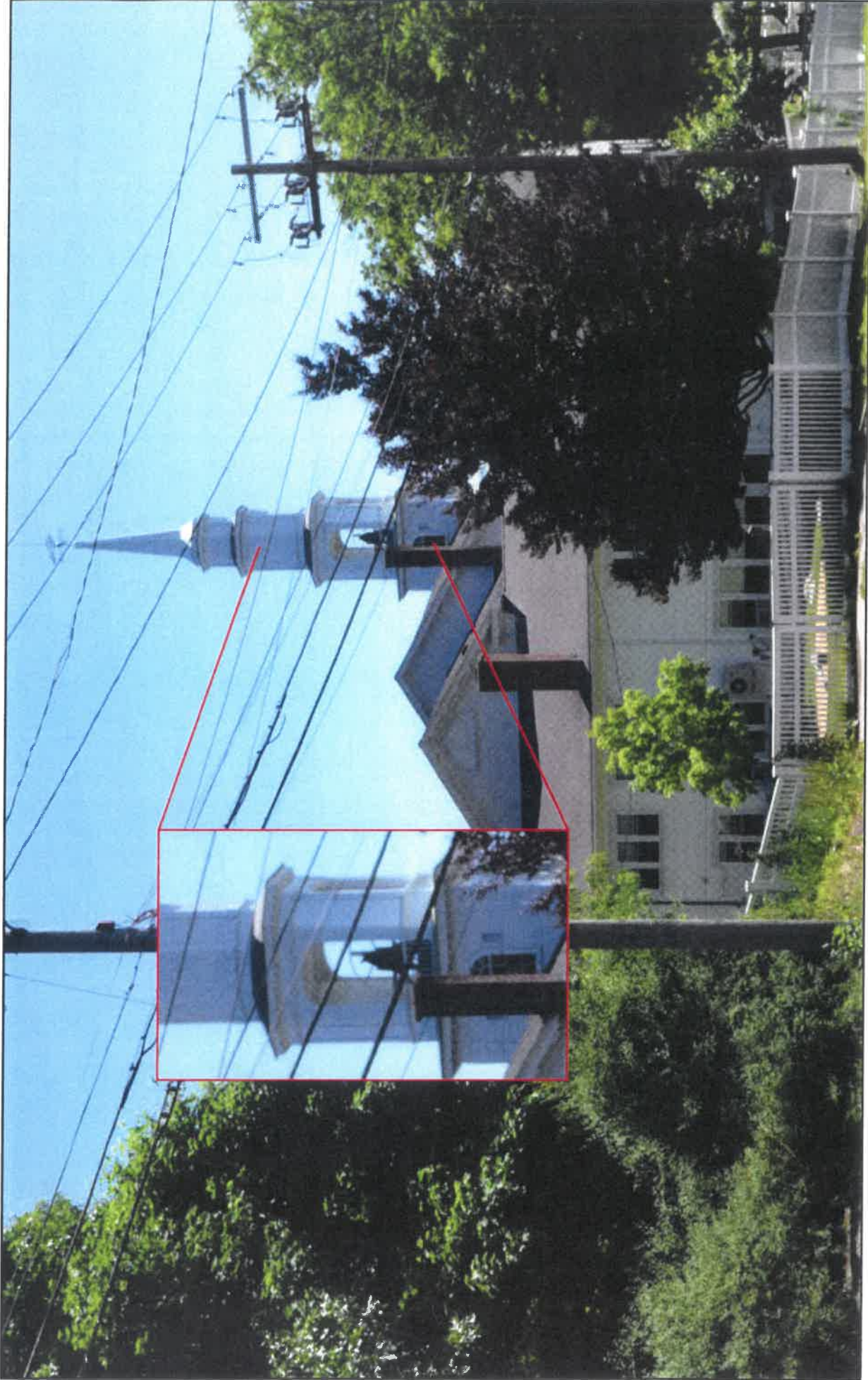
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PROPOSED CONDITIONS (P₃)



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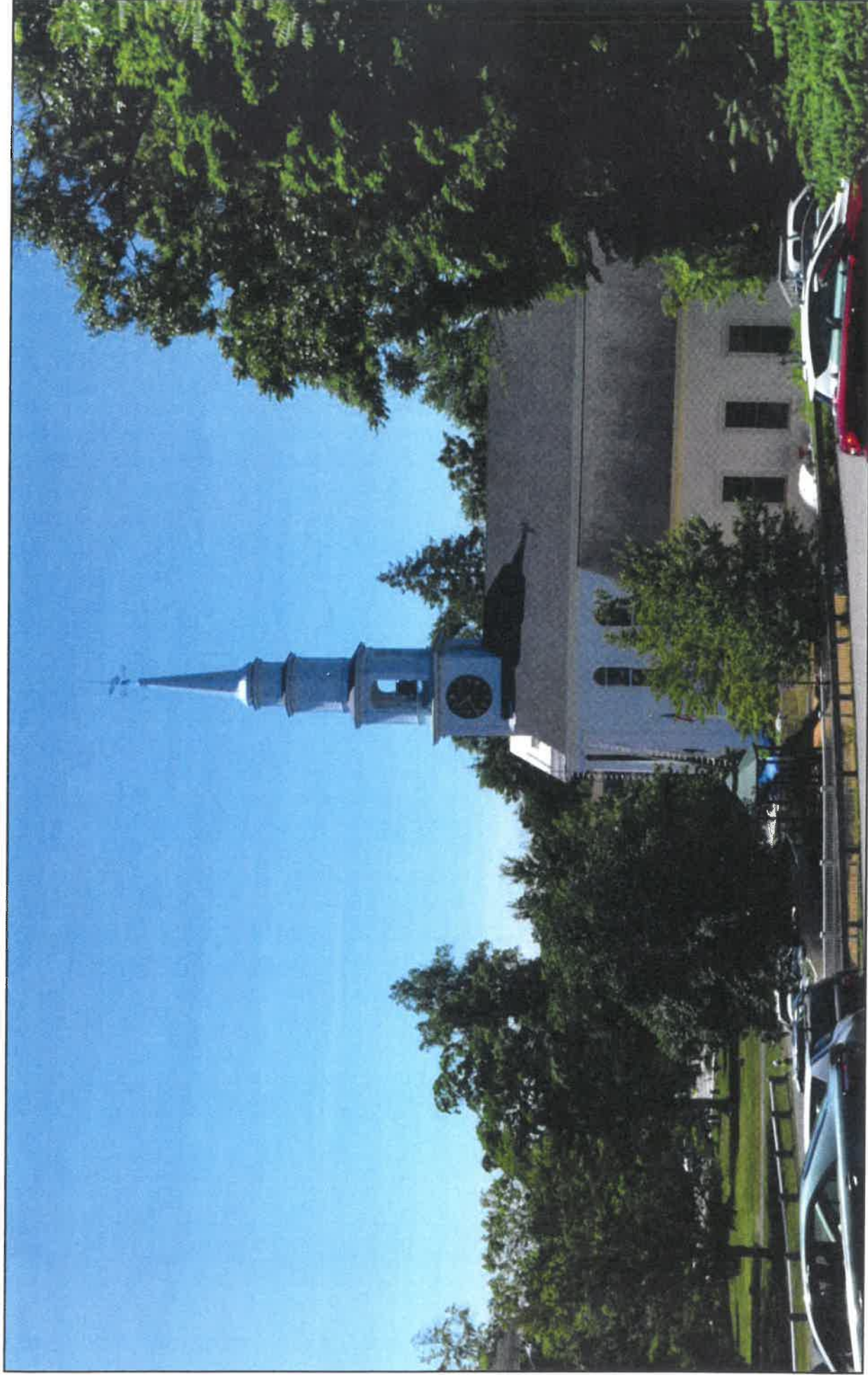
DISTANCE 300'±, 50MM LENS LENGTH

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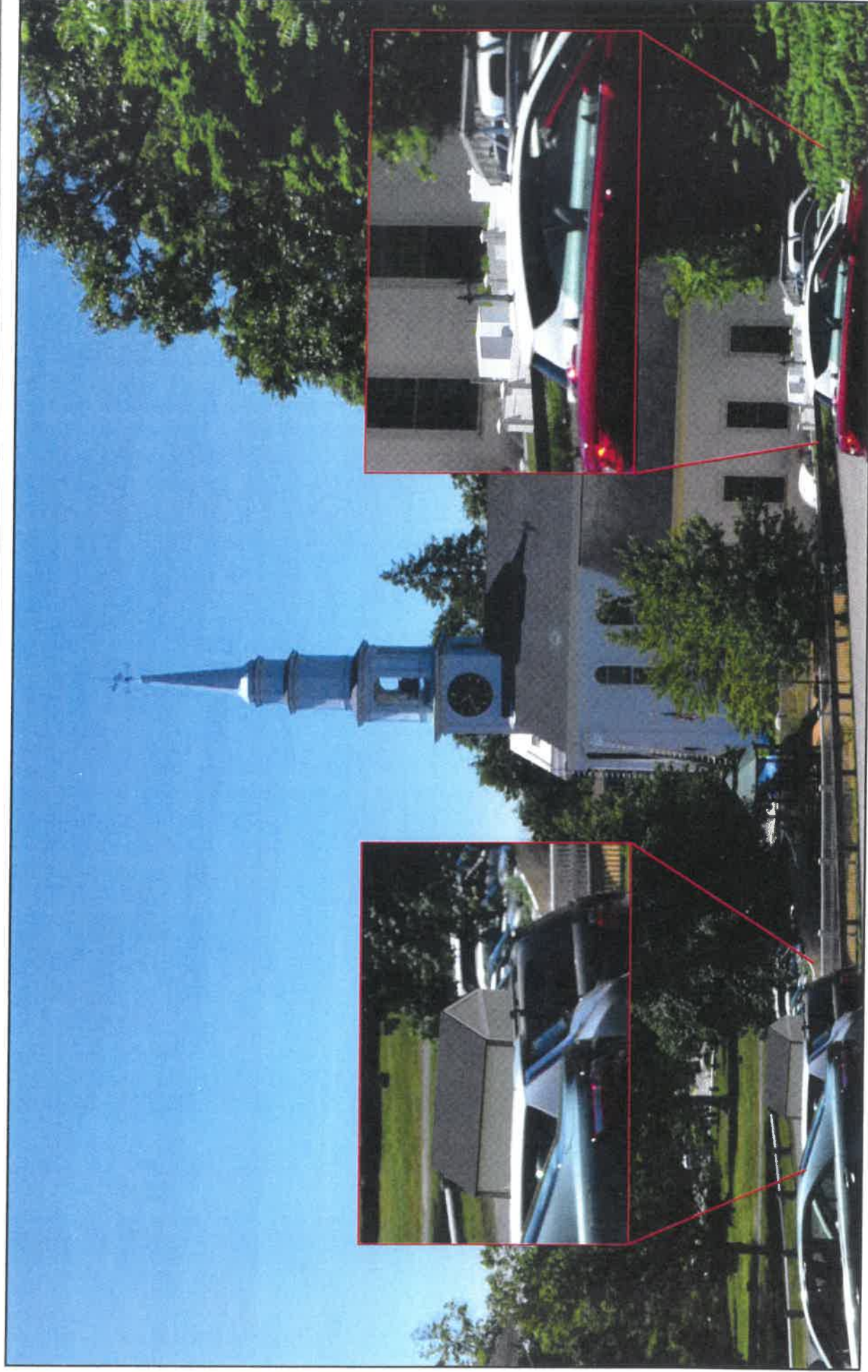
4 Bay Road, Bldg. A
Suite 200
Hadley, MA 01035
Ph: (413) 320-4918

HOLLISTON 4 MA
LOCATION CODE: 430505
ADDRESS: 725 WASHINGTON STREET
HOLLISTON, MA 01746
DISTANCE 400' ±, 50MM LENS LENGTH

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