Application
for
Special Permit with
Environmental Impact and
Design Review

20 East Street
Westwood, MA

DUVAL & KLASNICK LLC
COUNSELORS AT LAW

OUR EXPERTISE. YOUR FUTURE. SUCCEEDING TOGETHER.®

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January 24, 2017

Town of Westwood Planning Board
Carby Street Municipal Office Building
50 Carby Street
Westwood, Massachusetts 02090

Re: Application for Wireless Communication Overlay District – Special Permit with Environmental Impact and Design Review
20 East Street, Westwood, Massachusetts
Applicant: Cellco Partnership d/b/a Verizon Wireless

Dear Board Members:

Enclosed is an Application for Wireless Communication Overlay District Special Permit with Environmental Impact and Design Review ("Application") for the installation of a Wireless Communications Facility located at 20 East Street, Westwood, Massachusetts. I have also enclosed the $1,500.00 application fee.

This Application is filed on behalf of Cellco Partnership d/b/a Verizon Wireless the Operator and Tenant of the Wireless Communications Facility on the building ("Applicant").

To satisfy filing requirements, eleven (11) sets of the Application and supporting materials are attached herewith for the Board's consideration. The Application includes a set of plans that are 11" x 17" with four (4) full size plan sets.

The Applicant would be happy to provide any additional information that you may require and would appreciate reasonable notice of any additional information you require in time to provide such information for the public hearing.

The Applicant looks forward to meeting with you and presenting this Application. Should the Board require any additional information, please contact me at (781) 873-0021.

Very truly yours,
DUVAL & KLASNICK LLC

By: Daniel D. Klasnick
Attorney at Law

210 Broadway, Suite 204, Lynnfield, MA 01940
Direct: (781) 873-0021 • Mobile: (774) 249-2814

WESTWOOD PLANNING BOARD APPLICATION FOR HEARING

1. Requested Approval(s):
   Special Permit pursuant to Section 9.4 for a Major Wireless Communications Facility within the Wireless Communications Overlay District with Section 7.3 Environmental Impact and Design Review
2. Brief Narrative of Proposal:
   Installation of six (6) antennas on the rooftop of the building inside three (3) stealth canisters installed at a maximum height of 48.5' above ground level with rooftop ballast mounted remote radio heads and junction boxes. The antennas will be mounted in three (3) separate arrays of two (2) antennas per array. The cabling will run from the antennas through rooftop cable trays to the proposed equipment located inside building. Verizon Wireless will install a natural gas backup generator on a 10' x 4' concrete pad next to the building. Please see attached project brief and exhibits.
3. Address/Location of Property Subject to Hearing:
   20 East Street, Westwood, MA
4. Assessor's Map and Parcel Number(s): Map 18, Parcel 54
5. Size of Parcel: 2.7 acres
6. Name of Applicant:
   Cellco Partnership d/b/a Verizon Wireless
7. Applicant's Mailing Address:
   c/o Duval & Klasnick, 210 Broadway, Suite 204, Lynnfield, MA 01940
   Attention: Daniel D. Klasnick, Esquire
8. Applicant's Telephone: (H) (781) 873-0021 (W) (774) 249-2814
9. Applicant's E-Mail Address: dklasnick@dkp-law.com
10. Applicant is: Owner __ Tenant X Licensee __ Prospective Purchaser __ Other __
11. Name of Property Owner(s):
    Westwood East Property Acquisition LLC
12. Property Owner's Mailing Address:
    c/o Public Storage, 701 Western Avenue, Glendale, California 91201
13. Deed Recorded in:
    a. County Registry of Deeds, Book 16813 Page 45
    b. Registry District of the Land Court, Certificate Number _____ Page _____ Book _____

TOWN CLERK
TOWN OF WESTWOOD
2017 JAN 25 A 11: 52

14. Has any Application ever been filed with the Planning Board regarding this Property?

X Yes, When? April 5, 2016
__ No

15. Has the Lot been surveyed by a Registered Land Surveyor?

__ Yes, When? _____
X No

The Applicant hereby requests a public hearing before the Westwood Planning Board and consents to pay for the cost of all legal advertisements required by the Zoning Bylaw and/or Planning Board Rules and Regulations, which will be billed directly to the Applicant by the newspaper at a later date. The Applicant also consents to pay for all costs required pursuant to applicable sections of the Westwood Zoning Bylaw and/or Planning Board Rules and Regulations, unless expressly waived by the Planning Board, including all project review fees, inspection fees, and costs associated transcription, in addition to all other fees, expenses and costs in connection with the Planning Board's review and evaluation of this Application.

Signed: _____
Applicant (or Agent) Signature

Daniel D. Klasnick, Esquire
Printed Name of Applicant

2017 JAN 25 A 11: 52
TOWN CLERK
TOWN OF WESTWOOD

Signed: Please see attached Letter of Authorization
Property Owner(s) of Record Signature(s)

_____
Printed Name(s) of Property Owner(s) of Record

Date: January 24, 2017

Payments Received: Application Fee: $_____

Project Review Fees: $_____
(if applicable)

Inspection Fees: $_____
(if applicable)

Other Fees: $_____
(if applicable)

Carby Street Municipal Building • 50 Carby Street • Westwood, MA 02090
www.westwoodma.gov/planning

APPLICATION
FOR
WIRELESS COMMUNICATIONS OVERLAY DISTRICT
SPECIAL PERMIT AND
ENVIRONMENTAL IMPACT AND DESIGN REVIEW

REQUEST FOR WAIVERS STATEMENT

APPLICANT: Cellco Partnership d/b/a Verizon Wireless

SITE ADDRESS: 20 East Street
Westwood, Massachusetts

ASSESSOR'S LOT I.D.: Map 18, Block 54

ZONING DISTRICT: Highway Business
Wireless Communications Overlay District

I. OVERVIEW

The Applicant request that the Planning Board of the Town of Westwood approve the application of Verizon Wireless for a Wireless Communications Overlay District Special Permit ("WCOD-Special Permit") with Environmental Impact and Design Review ("WCOD-EIDR"), *with all rights reserved,* for the installation of a concealed Major Wireless Communications Facility ("WCF") pursuant to Sections 7.3 and 9.4.

The Applicant requests waivers because of the nature of the application for the installation of a concealed Major Wireless Communications Facility, the existing site conditions, and the fact that the Applicant's equipment would be placed at the same location as a competitor's existing major wireless communications facility.

The applicants request waivers because of the zoning drawing which are titled East Street and dated 1/20/17, prepared by Chappell Engineering Associates, LLC and other materials are sufficient for the Planning Board to review and approve the Applicant's request to install at Major Wireless Communications Facility pursuant to Sections 7.3 and 9.4.

The Applicant requests waivers, which, when granted allow the Applicant to also comply with the Special Permit and Environmental Impact and Design Review and Wireless Communications Overlay District standards.

II. WAIVERS REQUESTED AND BRIEF EXPLANATION

Environmental Impact and Design Review

The Applicant complied with the requirement of the sections contained in this 7.3 and 9.4 but requests waivers of the following numbers due to the limited nature of the proposed antenna replacement.

7.3.7 Site Plan. The site plan shall be prepared by a Registered Professional Engineer, Registered Landscape Architect and/or Registered Professional Land Surveyor and shall show the following information, except to the extent waived by the Planning Board:

7.3.7.1.1 Existing and proposed planting, landscaping and screening, which shall show the location, dimension and arrangement of all open spaces and yards, including type and size of planting materials, methods to be employed for screening and proposed grades and a plan for maintenance;

7.3.7.1.2 Location, type, size and dimension of existing trees, rock masses and other natural features with designations as to which features will be retained;

7.3.7.1.3 Dimension and location of existing and proposed buildings and structures;

7.3.7.1.4 Existing topography, including any proposed grade changes;

7.3.7.1.5 Parking areas and facilities, traffic circulation, driveways, loading areas, access and egress points;

7.3.7.1.6 Storm drainage, including direction of flow and means of ultimate disposal. Stormwater drainage runoff calculations used for the drainage system design shall be prepared by a Registered Professional Engineer and must support the sizing of all drainage structures and pipes and demonstrate compliance with the stormwater management standards adopted and as amended from time to time by the Massachusetts Department of Environmental Protection;

7.3.7.1.7 Provisions for sanitary sewerage and water supply, including fire protection measures;

7.3.7.1.8 Location of all utilities, signage, outdoor storage and trash disposal

7.3.7.1.9 Location and description of any proposed disturbance to existing vegetation, or alteration of natural or historic features, which are proposed in relation to temporary access, utility installation, or other aspects of construction, including provisions for site restoration.

7.3.7.2 Exterior Lighting Plan. The Exterior Lighting Plan shall show the information as required in Section 6.4.4 of this Bylaw, except to the extent waived by the Planning Board.

7.3.7.3 Traffic Study. The traffic study shall be prepared by a Registered Professional Engineer consistent with study guidelines adopted and from time to time amended by the Planning Board, except to the extent waived by the Planning Board.

7.3.7.7 Model. A presentation model at a minimum scale of one (1) inch equals twenty (20) feet (or such other scale as the Planning Board shall determine) showing the tract, abutting streets, proposed contours, proposed buildings and the massing of abutting buildings, except to the extent waived by the Planning Board. This Subsection is not applicable to additions, alterations or changes which

The Applicant has prepared plans and photo simulations which accurately depict the property and location of the Applicant's equipment upon the rooftop of the building and property. Due to the size and scope of the proposed concealed Major Wireless Communications Facility, Applicant believes that the Plans, Project Brief, and other documents submitted meet the requirements of §7.3 to the extent applicable to this proposal. To the extent the Board believes that the provided Plans and other documents do not comply with the requirements of §7.3, the additional detail will not tend to provide substantive assistance to the Board and therefore the Applicant requests a waiver from any such requirements.

Wireless Communications Overlay District

9.4.6.1 Locus map at a scale of 1":200' which shall show all streets, landscape features, dwellings units and all other structures within five hundred (500) feet of the proposed wireless communication facility.

9.4.6.2 Site plan prepared by a Registered Professional Engineer at a scale of 1":40' which shall show the following information:
9.4.6.2.2 Property boundaries of the site.
9.4.6.2.3 Topographical site information, including existing and proposed elevations.
9.4.6.2.4 Fencing, landscaping, lighting and signage.
9.4.6.2.5 Areas to be cleared of vegetation and trees.
9.4.6.2.6 Location and identification of all existing buildings, structures and uses of land located on the site.
9.4.6.2.7 Location and identification of all existing buildings, structures and uses of land located within five hundred (500) feet of the property boundaries of the site.

9.4.6.3 Profile or elevation drawings to illustrate the view lines from the wireless communication facility to all nearby residences and public areas.

9.4.6.4 For a Major wireless communication facility, a rendition shall also be prepared to illustrate the view lines from all neighboring streets.

9.4.6.10 After the submittal of an application, the Planning Board may require that the Applicant perform a "balloon test" or other test in the field sufficient to illustrate the proposed height and location of the wireless communication facility in relation to the surrounding area.

The Applicant has prepared plans and photo simulations, which accurately depict the property and location of the Applicant's equipment upon the building and property. Due to the size and scope of the proposed concealed Major Wireless Communications Facility, Applicant believes that the Plans, Project Narrative, and other documents submitted meet the requirements of §9.4 to the extent applicable to this proposal. To the extent the Board believes that the provided Plans and other documents do not comply with the requirements of §9.4, the additional detail will not tend to provide substantive assistance to the Board and therefore the Applicant requests a waiver from any such requirements.

III. SUMMARY

The Applicant's plans, photo simulations, narrative and supporting documentation as submitted are sufficient for review by the Planning Board to determine whether to grant the Applicant's Wireless Communications Overlay District – Special Permit and Environmental Impact and Design Review approval and all Waivers requested by the Applicant contained herein should be granted by the Planning Board.

BRIEF IN SUPPORT OF APPLICATION FOR WIRELESS COMMUNICATIONS OVERLAY DISTRICT SPECIAL PERMIT AND ENVIRONMENTAL IMPACT AND DESIGN REVIEW

APPLICANT: Cellco Partnership d/b/a Verizon Wireless

SITE ADDRESS: 20 East Street
Westwood, Massachusetts

ASSESSOR'S LOT I.D.: Map 18, Block 54

ZONING DISTRICT: Highway Business
Wireless Communications Overlay District

This Brief in Support of the Application for Wireless Communications Overlay District Special Permit ("WCOD-Special Permit") with Environmental Impact and Design Review ("WCOD-EIDR"), *with all rights reserved*, for the installation of a concealed Major Wireless Communications Facility ("WCF") on the rooftop of the Public Storage building is respectfully submitted by Cellco Partnership d/b/a Verizon Wireless ("Verizon Wireless") to the Town of Westwood Planning Board (the "Board").

I. DESCRIPTION OF APPLICANT

Verizon Wireless headquartered in Basking Ridge, New Jersey is a leader in wireless voice and data services:

- **Powerful technology.**: The nation's largest and most reliable 4G LTE network. America's first nationwide 3G wireless broadband network. Verizon Wireless consistently delivers the most advanced wireless technology available.
- **Technology innovators.** Our innovative solutions are changing the mobile landscape, revolutionizing the way people interact with it and raising everyone's expectations of what it can be done. What seemed impossible yesterday is the way we live today. Imagine what we'll do tomorrow.
- **Change agents.** Our investment in people and commitment to technology drive positive change in the communities we serve. Through our core initiatives we work to improve the lives of domestic violence victims, prioritize accessibility and take steps to ensure a sustainable future.
- **Award winners.** The network. Technology. Innovation. Leadership. Corporate citizenship. Diversity. Customer care. We're proud to be recognized for those efforts as well as the privilege of improving the lives of the people and communities we serve.

II. APPLICANT'S INTEREST IN THE PROPERTY

Westwood East Property Acquisition, LLC ("Property Owner") and Verizon Wireless have entered into a certain Lease Supplement ("Lease") by which Owner has leased to Verizon Wireless a portion of space for equipment and space for antennas located on the building at 20 East Street, Westwood, Massachusetts, identified by the Town of Westwood Assessor's Office as Map 18, Block 54.

As required for submittal of this application, the Property Owner has provided full and complete authorization to Verizon Wireless and its representatives to apply for all necessary zoning permits, petitions or any other necessary approvals for the proposed installation.

See Exhibit 1, Letter of Authorization from the Property Owner.
See Exhibit 2, Property Deed.

III. PROJECT SUMMARY

A. The Proposed Antennas

Six (6) Panel Antennas with Remote Radio Heads

Verizon Wireless proposes to stealth mount six (6) antennas to the rooftop of the Public Storage Building with remote radio heads. The Panel Antennas will be mounted in three (3) separate sectors of two (2) antennas per sector inside of three (3) stealth canisters with nine (9) ballast mounted remote radio heads on the rooftop of the Building.

(a) The first two (2) panel antenna sector will be mounted to the rooftop inside a canister 3'Ø designed to match the appearance of the existing features on the Building with remote radio heads in a northerly orientation at a top height of 48.5' above ground level, which is designated on the attached Zoning Drawings as the Alpha Sector. The remote radio heads will be ballast mounted on the rooftop of the building.

(b) The second two (2) panel antenna sector will be mounted to the rooftop inside a canister 3'Ø designed to match the appearance of the existing features on the Building with remote radio heads in a southerly orientation at a top height of 48.5' above ground level, which is designated on the attached Zoning Drawings as the Beta Sector. The remote radio heads will be ballast mounted on the rooftop of the building.

(c) The third two (2) panel antenna sector will be mounted to the rooftop inside a canister 3'Ø designed to match the appearance of the existing features on the Building with remote radio heads in a westerly orientation at a top height of 48.5' above ground level, which is designated on the attached Zoning Drawings as the Gamma Sector. The remote radio heads will be ballast mounted on the rooftop of the building.

See Exhibit 3, Site Drawings.
See Exhibit 4, Photo Simulations.
See Exhibit 5, Antenna and Remote Radio Head Specifications.

B. Proposed Equipment Room

Verizon Wireless proposes to construct an equipment room (7'-6" wide x 10' long) which will be located on the third floor of the Building and will therefore not be visible from the outside of the Building. The equipment room will contain Verizon Wireless radio equipment and appurtenances necessary for the operation of the WCF.

C. Emergency Backup Power

For the purposes of providing emergency backup power to the site, Verizon Wireless proposes to place a natural gas emergency generator on a 10' x 4' concrete pad. The natural gas service will be obtained by gas line installed underground to existing service at the building.

See Exhibit 6, Generator Specifications.

D. Proposed Access and Utility Service

Access to the site is directly available via the property's frontage on East Street. Parking is available on the subject property which will be utilized by Verizon Wireless technicians for routine maintenance visits. The site will be visited by Verizon Wireless personnel approximately once per month in a single service vehicle.

Verizon Wireless proposes to run electric and telephone lines from the proposed equipment room to existing sources in the building. A new gas line will be installed underground from existing building service for connection to the proposed emergency backup generator.

IV. SATISFACTION OF WIRELESS COMMUNICATIONS OVERLAY DISTRICT AND SPECIAL PERMIT AND ENVIRONMENTAL IMPACT AND DESIGN REVIEW STANDARDS

The project site is located within the HB (Highway Business) and Wireless Communications Overlay District (WCOD) zoning district. The proposed Major Wireless Communications Facility is permitted use in this district, subject to a Special Permit, pursuant to Section 9.4 and Section 7.3 of the Westwood Zoning Bylaw.

9.4.8 A WCOD Special Permit or WCOD EIDR Approval shall only be granted upon the determination of the Planning Board that the application meets the objectives cited herein. The Planning Board may impose reasonable conditions at the expense of the Applicant, including performance guarantees, to promote these objectives. Prior to the issuance of any WCOD Special Permit or WCOD EIDR Approval, the Planning Board shall make positive findings that:

9.4.8.1 The Applicant has demonstrated to the satisfaction of the Planning Board that there exists a significant gap in coverage and that said gap would be sufficiently reduced or eliminated by the proposed wireless communication

facility.

The project site is located within the HB (Highway Business) and Wireless Communications Overlay District (WCOD) zoning district. This location was previously found to be appropriate for the existing T-Mobile facility.

A gap in coverage is evidenced by the inability to adequately transmit or to receive calls, or by the interruption or disconnection of calls. Verizon Wireless currently has a significant gap in coverage in the Town of Westwood. The gap in coverage that exists in the Town prevents Verizon Wireless from providing uninterrupted wireless service to current and future public and private users of its wireless communications system.

The location of a Major Wireless Communications Facility on the rooftop of the building located on East Street is an integral part of Verizon Wireless' network of telecommunications facilities necessary to provide adequate coverage to those persons living in Westwood, as well as those persons commuting through the Westwood area on the various State and/or Federal highways. Following a thorough analysis, Verizon Wireless submits that it can fulfill its significant coverage gaps by locating equipment at this site and consequently at this time a new separate free standing tower will not be required.

See Exhibit 7, Radio Frequency Report.

9.4.8.2 The Applicant has demonstrated to the satisfaction of the Planning Board that the wireless communication facility must be located at the proposed site due to technical, topographical or other unique circumstances, in order to satisfy a demonstrated gap in coverage.

The site's location in relation to Verizon Wireless' regional network needs is unique. The proposed location and height will allow for adequate service to the residents, businesses and public safety officials of the Town of Westwood. The installation of the concealed rooftop antenna mounts allows Verizon Wireless to maintain a suitable location for the installation which incorporates the existing building features to allow for a height of the above the roofline to lessen the impact. The proposed facility is the least intrusive means by which Verizon Wireless can fill its existing significant gap in coverage.

When considering the permitting of a wireless communications facility, a local board must also consider the provisions of Section 704 of the Telecommunications Act of 1996 ("TCA"), codified at 47 U.S.C. §332. Any decision by the municipality may not "unreasonably discriminate against providers of functionally equivalent services" and "shall not prohibit or have the effect of prohibiting the provision of personal wireless service." 47 U.S.C. §332(c)(7)(B). Verizon Wireless, through its Application and presentation at the public hearing will demonstrate that a significant gap in coverage exists in this area of Westwood and that the requested special permit is necessary to fill that gap. Without the installation of the proposed wireless communications facility, there will continue to be significant gaps in coverage in this area of Westwood.

9.4.8.3 The Applicant has demonstrated to the satisfaction of the Planning Board that the visual and aesthetic impacts of the wireless communication facility on nearby properties will be minimal, and that no reasonable combination of locations, techniques or technologies will mitigate the height or visual impact of the proposed wireless communication facility.

Verizon Wireless is proposing to co-locate its antennas using concealment cylinders on the rooftop with related equipment located inside the Building at a location that already includes the facilities of another wireless service provider, which will minimize any adverse impact on adjacent properties.

9.4.8.4 The Applicant has demonstrated, in any case where a major wireless communication facility is permitted within the WCOD, that the location of the proposed facility would provide adequate screening and buffering such that the proposed facility would not be detrimental to the Town or to the general character or visual appearance of the surrounding neighborhood or abutting uses, and would be consistent with the intent of the Bylaw.

The installation of antennas concealed inside rooftop canisters and cable tray have been sited and designed in a manner that minimizes its visibility from neighboring residences and streets and in accordance with the Town of Westwood Zoning Bylaws. The installation of Verizon Wireless' antenna arrays utilizes concealment features and the wireless equipment so mounted will not detract from the visual appearance of the surrounding neighborhood.

The proposed installation is necessary to provide acceptable service coverage in the Town of Westwood. Verizon Wireless does not currently provide acceptable service on its network in this area. The Coverage Maps as an exhibit of our submittal depicts coverage provided from Verizon Wireless sites in the vicinity of Westwood MA, without the proposed installation. As can be seen from this attachment, a significant gap in service exists in Westwood.

Verizon Wireless' installation will also further the goals of the zoning bylaws to encourage the co-location of antennas at locations with existing wireless communication facilities and reduce the number of new locations within the Town of Westwood.

9.4.8.5 The Applicant has demonstrated to the satisfaction of the Planning Board that the wireless communication facility will have no significant adverse impact on the town and surrounding residential properties.

The proposed installation will not be injurious, obnoxious, offensive, dangerous, or a nuisance to the community or the neighborhood. The proposed installation will generate no traffic or other negative impacts on surrounding properties or the Town of Westwood. The proposed installation will be unoccupied, with no employees or customers. The proposed installation has been designed in compliance with applicable Federal Communications Commission ("FCC") standards related to Radio Frequency emissions, and thus will not be detrimental to the health of nearby residents.

The proposed installation will be unmanned once operational. The site will be visited approximately once per month in a single service vehicle by technicians for routine maintenance purposes, which will not significantly affect traffic on adjacent ways. The existing access and parking will be utilized by Verizon Wireless' service technicians.

As for the benefits, the neighborhood will enjoy more reliable wireless services from Verizon Wireless. A faster and more reliable network will enhance the quality of service to Verizon Wireless customers with benefits such as streaming movies and television, nearly instant song and picture downloads, and faster web browsing.

See Exhibit 8, Environmental Sound Assessment.

9.4.7 Development Standards.

9.4.7.1 An Applicant proposing a wireless communication facility must demonstrate to the satisfaction of the Planning Board that the visual and aesthetic impacts of the wireless communication facility on nearby properties will be minimal. The Applicant must also demonstrate that the facility must be located at the proposed site due to technical, topographical or other unique circumstances, and that no reasonable combination of locations, techniques, or technologies will mitigate the height or visual impact of the proposed wireless communication facility.

The proposed installation of concealed antennas will not be injurious, obnoxious, offensive, dangerous, or a nuisance to the community or the neighborhood through noise, vibration, concussion, odors, fumes, smoke, gases, dust, harmful fluids or substances, danger of fire or explosion or other objectionable feature detrimental to the community or neighborhood health, safety, convenience, morals or welfare.

The proposed concealed antennas with remote radio heads and cabling will not result in a discernable change to the existing building features and there will not result in any impact to the integrity of adjoining districts nor will it be detrimental to health, morals or welfare.

Verizon Wireless' proposed facility is both essential and desirable to the public convenience and welfare, as it will allow for improved wireless communications within the town of Westwood. Citizens of Westwood will have better wireless service for emergency, business and personal calls.

9.4.7.2 Co-location of wireless communication facilities is encouraged. To the extent possible, wireless communication facilities shall be located in or on existing buildings or structures, including, but not limited to, buildings, communication facilities, utility transmission towers or poles, water towers, and related facilities, provided that such installation preserves the character and integrity of these buildings or structures. The Applicant shall have the burden of demonstrating to the satisfaction of the Planning Board that a good faith effort has been made to co-locate on an existing building or structure, or on an existing Major or Minor wireless communication facility, that there are no feasible existing buildings or structures upon which to locate, and that no reasonable combination of locations,

techniques or technologies will obviate the need for the proposed wireless communication facility.

Verizon Wireless is committed to working with local communities in siting and construction of its wireless communication facilities. Because of Verizon Wireless' desire to be a good neighbor and establish long-term relationships, Verizon Wireless makes every effort to identify potential community concerns and incorporate all appropriate mitigation measures in the site selection process. By focusing on a location with existing antennas, Verizon Wireless is reducing the need for additional siting. The proposed concealed antennas with remote radio heads and cabling will utilize an existing location that currently contains the wireless equipment of its competitor.

9.4.7.3 Major wireless communication facilities shall be designed and constructed to accommodate the maximum number of presently interested users that is technologically practical, except where the Planning Board determines that a reduction in the size or height of a facility would be preferable despite a negative effect on co-location opportunity. In addition, if the number of proposed users is less than four, the applicant shall provide a plan showing how the proposed tower can be expanded to accommodate up to four users. In the event that the Planning Board finds that co-location is preferable, the applicant must agree to allow co-location pursuant to commercially reasonable terms to additional users.

This provision is not applicable to proposed installation of concealed rooftop antennas with the addition of remote radio heads, equipment room and backup generator at an existing building.

9.4.7.4 All new antenna support structures shall be buildings or monopoles. Where appropriate to the surrounding area, at the sole discretion of the Planning Board, monopoles shall be disguised as flag poles or trees.

The proposed installation of concealed rooftop antennas with the addition of remote radio heads, equipment room and backup generator will be installed at an existing building that currently contains the equipment of a competitor.

9.4.7.5 The highest point of a Major wireless communication facility, including its antenna support structure and any component thereof or attachment thereto, shall not exceed one hundred (100) feet above ground level, except that this height limit may be increased, at the sole discretion of the Planning Board, subject to a finding that such increased height will have no significant adverse impact on the town and surrounding residential properties.

This provision is not applicable to proposed installation of concealed rooftop antennas with the addition of remote radio heads, equipment room and backup generator at an existing building. The highest point of the concealed rooftop antennas is 48.5', which is below the height of the existing T-Mobile concealed antennas.

9.4.7.6 The maximum diameter or width of any Major wireless communication facility antenna support system shall be no more than three (3) feet, except that this diameter or width may be increased, at the sole discretion of the Planning Board, subject to a finding that such increased diameter or width will have no significant adverse impact on the town and surrounding residential properties.

This provision is not applicable to installation of concealed rooftop antennas with the addition of remote radio heads at an existing building. The proposed antenna concealment cylinders shall not exceed 3' in diameter.

9.4.7.7 All Major wireless communication facilities shall be setback from all property lines abutting any public way, including any sidewalk, a distance equal to one hundred percent (100%) of the height of the highest point of the wireless communication facility, except that this setback requirement may be reduced, at the sole discretion of the Planning Board, to allow the integration of a wireless communication facility into an existing or proposed building or structure.

This provision is not applicable to proposed installation of concealed rooftop antennas with the addition of remote radio heads, equipment room and backup generator at an existing building.

9.4.7.8 No Major wireless communication facility shall be constructed within a distance equal to one hundred percent (100%) of the height of the highest point of the wireless communication facility from any existing residential dwelling or any proposed dwelling for which a building permit or subdivision approval has been issued. However, this regulation shall not prohibit the later development of any residential dwelling within said distance from an existing wireless communication facility.

This provision is not applicable to proposed installation of concealed rooftop antennas with the addition of remote radio heads, equipment room and backup generator at an existing building.

9.4.7.9 All equipment enclosures and other improvements included within a wireless communication facility shall be architecturally designed to blend in with the surrounding environment and shall be maintained in good appearance and repair.

In the same manner as the existing wireless communications facility at the building, Verizon Wireless proposes to stealth mount six (6) antennas to the rooftop of the Public Storage Building with remote radio heads. The Panel Antennas will be mounted in three (3) separate sectors of two (2) antennas per sector inside of three (3) stealth canisters with nine (9) ballast mounted remote radio heads on the rooftop of the Building. The panel antennas will be mounted to the rooftop inside a canister 3'Ø designed to match the appearance of the existing features on the Building. Verizon Wireless will maintain the equipment enclosures and other improvements in good appearance and repair.

9.4.7.10 Unless waived by the Planning Board, fencing shall be provided to control access to the base of a Major wireless communication facility. The fencing shall be

compatible with the scenic character of the Town, as determined by the Planning Board, and shall not consist of chain link, barbed wire or razor wire.

This provision is not applicable to proposed installation of concealed rooftop antennas with the addition of remote radio heads, equipment room and backup generator at an existing building. Alternatively and as related to the pad mounted backup generator, Verizon Wireless, with all rights reserved, requests a waiver of the fencing requirement.

9.4.7.11 All exterior wireless communication facilities shall be painted, colored, molded, installed or otherwise screened to minimize their visibility to abutters, adjacent streets, views from scenic roads, and residential neighborhoods. Ground mounted equipment shall be screened from view by suitable vegetation, except where a design of non-vegetative screening better reflects and complements the architectural character of the surrounding neighborhood. Existing on-site vegetation shall be preserved to the maximum extent feasible.

Verizon Wireless proposes to stealth mount six (6) antennas to the rooftop of the Public Storage Building with remote radio heads. The Panel Antennas will be mounted in three (3) separate sectors of two (2) antennas per sector inside of three (3) stealth canisters with nine (9) ballast mounted remote radio heads on the rooftop of the Building that minimizes visibility from neighboring residences and streets and in accordance with the Town of Westwood, Zoning By-Law encouragement of co-location. The location of the ground based backup generator will not tend to be visible from surrounding neighborhoods and therefore requires no further screening.

9.4.7.12 All antennas on a Major wireless communication facility shall be single unit cross-polar antennas. Antennas shall be designed and mounted in such a manner as to present the smallest possible silhouette, profile, or cross-section.

Verizon Wireless proposes to stealth mount six (6) antennas to the rooftop of the Public Storage Building with remote radio heads. The Panel Antennas will be mounted in three (3) separate sectors of two (2) antennas per sector inside of three (3) stealth canisters with nine (9) ballast mounted remote radio heads on the rooftop of the Building that minimizes visibility from neighboring residences and streets and in accordance with the Town of Westwood, Zoning By-Law encouragement of co-location.

9.4.7.13Wireless communication facilities shall not be lighted unless required by the Federal Aviation Administration (FAA), or unless after consultation with the Police and Fire Chiefs, the Planning Board requires such lighting for public safety reasons, or unless the Planning Board requires the lighting of a monopole disguised as a flag pole.

The installation of the concealed antennas will not require lighting.

9.4.7.14 Wireless communication facilities shall not interfere with nor have any negative effect on the Town's emergency radio communications.

The wireless facility will be operated in compliance with all applicable federal and state regulations, including regulations governing radio frequency emissions.

Verizon Wireless is in compliance with federal and state regulations to ensure that its wireless telecommunications facilities are operating in compliance with all applicable standards and mandates.

See Exhibit 9, FCC Licenses.
See Exhibit 10, RF Exposure Guidelines for Verizon Wireless.

9.4.7.15 Signs posted for advertisement or any other reasons shall not be allowed on or in the vicinity of a Major wireless communication facility, with the exception of one (1) sign not exceeding four (4) square feet in area at the facility which shall display the name and telephone number of the person and company responsible for the maintenance of the facility. The signage shall also display a 'No Trespassing' warning.

As part of the proposed installation, Verizon Wireless' signage shall only be posted to comply with standards to provide notice of the installation of a wireless facility on the rooftop of the Building and will contain contact information.

9.4.9 Discontinuance of Use. A wireless communication facility, and all accessory equipment, shall be removed within six (6) months of abandonment or discontinuation of use. As a condition of any special permit for the placement, construction or modification of a Major wireless communication facility, the Applicant shall provide a bond, in a form acceptable to the Town, or shall place into escrow a sum of money sufficient to cover the costs of removing the facility from the subject property and said funds shall be held by an independent escrow agent to be appointed by the Applicant and the Planning Board. The amount of the surety shall be certified by a Registered Professional Engineer or Registered Professional Architect. The Applicant shall authorize and, as necessary, shall provide the authorization of the owner of the property to allow the Town or the escrow agent to enter upon the subject property to remove the facility when the facility has been abandoned or discontinued.

Pursuant to Section 9.4.9, the Applicant specifically agrees that if the wireless communications facility remains unused for a period of six (6) months, the Applicant will promptly remove the facility. Verizon Wireless further agrees to post a bond for the removal of the building mounted major wireless communications facility.

See Exhibit 11, Removal Cost Estimate.

7.3 ENVIRONMENTAL IMPACT AND DESIGN REVIEW (EIDR)

7.3.1 Purpose. The purpose of this Section is to provide individual detailed review of certain uses and structures which have a substantial impact upon the character of the Town and upon traffic, utilities and property values therein, thereby affecting the public health, safety and general welfare thereof. The environmental impact and design review process is intended to promote the specific purposes listed in Section 1.1, Purpose.

The proposed concealed major wireless facility will not have a substantial impact upon the character of the Town. To the extent that character relates to visual impact, its appearance will be virtually identical to the existing wireless facility. The Wireless Communications Overlay District includes the Highway Business zoning district. As a concealed facility in the WCOD it is an allowed use, the installation of the facility is consistent with the intent and purpose of the Town of Westwood Zoning bylaws.

7.3.8 Environmental Impact and Design Standards. The following standards shall be utilized by the Planning Board to review and evaluate all applications pursuant to this Section. These standards are intended to provide a frame of reference for the Applicant in the development of their project and building plans as well as criteria for review by the Planning Board. These standards shall not be regarded as inflexible requirements. They are not intended to discourage creativity, invention and innovation. The specification of one or more particular architectural styles is not included in these standards. The standards of review outlined in this Section shall also apply to all accessory buildings, structures, freestanding signs and other site features, however related to the principal buildings or structures.

7.3.8.1 Preservation of Landscape. The landscape shall be preserved in its natural state, insofar as practicable. Tree and soil removal shall be minimized, and any grade changes shall be consistent with the general appearance of neighboring developed areas. Due regard shall be given to the attractive utilization of the natural features of the area, including trees, woods, streams and ponds. All open areas which cannot be preserved in their natural state shall be replanted as far as practicable with as many trees and plantings as previously existed.

The proposed installation of a major wireless communications facility on the building will not affect the existing landscaping or involve the removal of soil or result in any change of the grade of the property. The antennas with remote radio heads will be designed to match the existing antennas of a competing wireless service provider and therefore will continue to blend with the appearance of the building.

7.3.8.2 Relation of Buildings to Environment. The proposed development shall be related harmoniously to the terrain and to the use, scale and architecture of existing buildings in the vicinity that have functional or visual relationship to the proposed building. The Planning Board may require a modification in massing so as to reduce the effect of shadows on abutting property, public open space or streets.

The proposed concealed antennas will not affect the scale or architecture of the building. The concealed antennas with remote radio heads will be installed below the height of the existing antennas and designed to match the current installation in a manner that minimizes its visibility from neighboring residences and streets and in accordance with the Town of Westwood, Zoning By-Law encouragement of co-location within the WCOD. The proposed concealed antennas with remote radio heads will not extend above the current installation.

7.3.8.3 Open Space. All open space shall be so designed as to add to the visual amenities of the vicinity by maximizing its visibility for persons passing the site or overlooking it from nearby properties.

The proposed concealed antennas with remote radio heads will be mounted on the building at below the height of the existing antennas and following the installation. The proposed installation of concealed antennas will not affect open space or alter the appearance of the existing building for persons passing by the site or overlooking it from nearby properties.

7.3.8.4 Circulation, Traffic Impact and Alternative Means of Transportation. With respect to vehicular and pedestrian circulation and traffic, including entrances, ramps, walkways, drives and parking, special attention shall be given to location, number and function of access points to the public streets (especially in relation to existing traffic flow, traffic controls and mass transit facilities), width of interior drives and access points, general interior circulation, separation of pedestrian and vehicular traffic, access to community facilities, the arrangement, safety and convenience of both vehicle and bicycle parking areas and the effect thereof upon the use and enjoyment of proposed buildings and structures and the neighboring properties, and the traffic impact of the proposed development on nearby public and private streets. Each proposed facility is encouraged to incorporate alternative means of transportation, including bicycle and shuttle bus, and shall make adequate provision for the convenience of vehicular and pedestrian movement within the site in which the facility is to be located, and in relation to nearby streets, property and improvements.

The installation and operation of another major wireless communications facility will generate no traffic or other negative impacts on surrounding properties or the Town of Westwood. A Verizon Wireless technician in a standard sport-utility type vehicle will service the equipment at the WCF approximately once a month.

7.3.8.5 Stormwater Drainage and Erosion Control. Special attention shall be given to proper site surface drainage (i) so that removal of surface waters will not adversely affect neighboring properties or the public storm drainage system and (ii) so as to minimize any adverse impact upon nearby "downstream" properties. Stormwater shall be removed from all roofs, canopies and paved areas in a manner complying with the stormwater management standards adopted and as amended from time to time by the Massachusetts Department of Environmental Protection. Surface water in all paved areas shall be collected at intervals so that it will not obstruct the flow of vehicular or pedestrian traffic and will not create puddles in the paved area. Erosion and sediment controls must be implemented to prevent any negative impacts during construction or other land disturbance activities. Permanent post-development erosion controls must be implemented and maintained where necessary.

The proposed installation of the rooftop mounted concealed major wireless communications facility with equipment room inside the building and concrete pad mounted backup generator will not impact storm water drainage on the site.

7.3.8.6 Advertising Features. The size, location, design, color texture, lighting and materials of all permanent signs and outdoor advertising structures or features shall

not detract from the use and enjoyment of proposed buildings and structures and the surrounding properties.

There is no advertising proposed as part of the installation of the concealed wireless communications facility. The only signage that will be installed will provide notice of the installation of a wireless facility on the rooftop of the building with contact information.

7.3.8.7 Special Features. Exposed storage areas, exposed machinery installations, service areas, truck loading areas, utility buildings and structures shall be subject to such setbacks, screen plantings or other screening methods as shall reasonably be required to prevent their being incongruous with the existing or contemplated environment and the surrounding properties. All towers, antennas and poles shall be sited, designed and sized to have minimal visual impact on nearby properties.

The concealed rooftop antennas will be installed at lower height than as the existing antennas and designed to match in a manner that minimizes its visibility from neighboring residences and streets and in accordance with the Town of Westwood, Zoning By-Law encouragement of co-location. There will be no perceptible change to the existing conditions as a result of the installation of the concealed antennas.

7.3.8.8 Safety. With respect to personal safety, all open and enclosed spaces shall be designed to facilitate building evacuation and maximize accessibility by fire, police and other emergency personnel and equipment. Insofar as practicable, all exterior spaces and interior public and semi-public spaces shall be designed to minimize the fear and probability of personal harm or injury by increasing the potential surveillance by neighboring residents and passersby of an accident or attempted criminal act. Traffic to and from any facility shall not cause safety hazards or increased congestion in nearby residential neighborhoods.

The installation of the major wireless communications facility will not affect public safety as it relates to evacuation or accessibility during an emergency. It will have no effect on potential surveillance or expose residents to criminal acts.

Verizon Wireless is in compliance with federal and state regulations to ensure that its wireless telecommunications facilities are operating in compliance with all applicable standards and mandates.

Verizon Wireless operates in compliance with all of the rules and regulations promulgated by the Federal Communications Commission as required by its licensing.

7.3.8.9 Heritage. With respect to the Town's heritage, removal or disruption of historic, traditional or significant uses, structures or architectural elements shall be minimized insofar as practicable, whether these exist on the site or on adjacent properties.

The existing structure is not historic and the installation of the concealed antennas does not impact any historic structures. The existing structure currently includes the wireless telecommunications equipment of the competitor of the Applicant.

7.3.8.10 Microclimate. With respect to the localized climatic characteristics of a given area, any development which proposes new structures, new hard-surface ground coverage or the installation of machinery which emits heat, vapor or fumes, shall endeavor to minimize, insofar as practicable, any adverse impact on light, air and water resources or on noise and temperature levels of the immediate environment.

Other than a backup natural gas generator on a 10' x 4' concrete pad next to the existing air conditioning condensing units, Verizon Wireless is not proposing any new structures, new hard-surfaces ground coverage, or the installation of machinery which emits heat, vapor, or fumes. Verizon Wireless' backup generator will be operated in compliance with all applicable rules and regulations governing the operation of generators.

7.3.8.11 Energy Efficiency. To the maximum extent reasonably practicable, proposals shall utilize energy-efficient technology and renewable energy resources and shall adhere to the principles of energy-conscious design with regard to orientation, building materials, shading, landscaping and other elements. Efforts shall be made to harmonize energy-related components with the character of the building and its surroundings and to prevent adverse effects on the energy consumption of neighboring structures and on the environment.

The utilities will be obtained from existing service in a manner consistent with current power, gas and telephone services at the building.

7.3.8.12 Detrimental Effects. No proposed facility shall be detrimental to the health, safety or welfare of persons working or living in the neighborhood, or by reason of danger of fire or explosion, environmental pollution, corrosion, toxic or noxious fumes, gas, smoke, soot, dust, odors, noise or vibrations or other hazards.

The major wireless communications facility will be operated in compliance with all applicable federal and state regulations, including regulations governing radio frequency emissions. The facility will be constructed in full compliance with Federal Aviation Administration ("FAA") and Federal Communications Commission ("FCC") regulations and all other applicable state and local regulations. Verizon Wireless operates in compliance with all of the rules and regulations promulgated by the Federal Communications Commission as required by its licensing.

7.3.8.13 Nearby Properties. Nearby properties shall be protected against detrimental uses on the site.

The proposed installation of concealed antennas will not be a detriment to the public, and in fact, will benefit the public by lessening the visual impact by installing a wireless communications facility on an existing building that currently contains a wireless communications facility, decreasing the need for additional new wireless facilities in the community, and increasing Verizon Wireless' service coverage in the Town of Westwood and the surrounding community. By allowing the proposed concealed antennas at this existing building utilizing mounts consistent with competitor's facility, the intent of the Bylaw will be met. The proposed installation is designed to be

unobtrusive and sited to minimize visibility from nearby properties as well as reasonably possible, and will reduce any alleged adverse visual impacts by placing antennas inside of stealth canister mounts.

7.3.8.14 Specific Standards for High and Washington Street. Where the nature of the following design features is considered significant to the preservation or enhancement of the desirable visual quality and property values of a particular part of High Street or Washington Street, any new structure or alteration shall be harmoniously related to nearby pre-existing structures and the street facade in terms of color, texture, materials, scale, height, setbacks, roof and cornice lines, signs and design elements such as door and window size and location and door and window detailing, including materials for sills, lintels, frames and thresholds and any other major design elements.

This design standard is not applicable. The proposed facility is not on or in proximity to High or Washington Streets.

7.3.8.15 Air Quality. Any use whose emissions are such as to cause it to be classified as a major new stationary source of air pollution, as defined by the Environmental Protection Agency (EPA) under the Clean Air Act, and any use required to apply to the Massachusetts Department of Environmental Protection under 310 CMR 7.00 or to EPA under Section 112 of the Clean Air Act for permission to emit asbestos, benzene, beryllium, mercury, vinyl chloride, or radionuclides shall be permitted only upon determination by the Planning Board that compliance with the requirements of those agencies is assured, and that health and safety are adequately protected.

The proposed major wireless communications will comply with all applicable laws, regulations and rules governing its installation and operation at the building.

7.3.8.16 Plants and Animals. Location and design shall not cause avoidable damage to wildlife habitats or corridors, or to any plant species listed as endangered, threatened or of special concern by the Massachusetts Natural Heritage Program, or to any tree with more than a twenty-four (24) inch trunk diameter one (1) foot above grade. An application for a MBD special permit must include documentation to the Planning Board of having consulted with the Conservation Commission and the Massachusetts Natural Heritage Program regarding these considerations, and that the proposed site either contains no such habitats or materials, or that all feasible efforts to avoid, minimize or compensate for damage have been reflected in the development proposal.

There are no known wildlife habitats or corridors, or any plant species listed as endangered, threatened or/of special concern on the property.

7.3.8.17 Vibration. Except for blasting and other activities within the jurisdiction of the Board of Fire Prevention Regulations, no use shall be allowed which produces vibration at or beyond the boundaries of the premises exceeding two-thirds (2/3) the frequency/amplitude limitations established by the Board of Fire Prevention Regulations at 527 CMR 13.11 (18) for three (3) minutes or more in any hour

between 7:00 am and 9:00 pm or for thirty (30) seconds or more in any hour between 9:00 pm and 7:00 am.

The concealed major wireless communications facility will not generate any perceptible vibration during installation or operation.

7.3.8.18 Electrical Disturbances. No EMF emission shall be permitted which adversely affects the operation of any equipment on other properties.

The facility will be constructed in full compliance with Federal Communications Commission ("FCC") regulations and all other applicable state and local regulations. Verizon Wireless operates in compliance with all of the rules and regulations promulgated by the Federal Communications Commission as required by its licensing.

7.3.8.19 Historic and Archaeological Sites. Location and design shall not cause avoidable damage or impairment to the historic or archaeological value of buildings on sites recorded on the Massachusetts Register of Historic Places. An application for a MBD special permit shall submit documentation that either the site does not contain or impact such buildings or sites, or that any potential damage or impairment has been effectively mitigated.

The building at 20 East Street is not recorded as having historic or archaeological value on the Massachusetts Register of Historic Places.

7.3.8.20 Solid Waste. Each development must document arrangements for satisfactory disposal of tree stumps and debris resulting from construction, and must make permanent arrangement for satisfactory on-site storage of refuse pending its removal, such storage to be screened from public view, secure from vermin, birds or other animals, and located to present minimal hazard in the event of fire and minimal threat to water quality in the event of container failure.

The major wireless communications facility does not generate any solid waste.

7.3.8.21 Water Quality. Any development subject to review pursuant to this Section which involves a use prohibited or requiring a special permit in a Water Resource Protection Overlay District pursuant to Section 9.3 may be allowed if such development is located outside of the Water Resource Protection Overlay District and if the material regulated is less than twenty (20) gallons liquid or less than one hundred fifty (150) pounds dry weight. If exceeding those limits the use shall be allowed only if the Planning Board, in its review of the application pursuant to this Section, determines that the Applicant has documented that adequate safeguards for protecting the integrity of groundwater quality have been assured. Any development subject to review pursuant to this Section which involves a use prohibited or requiring a special permit under Section 9.3 and is located within a Water Resource Protection Overlay District may be allowed if such development has been granted a special permit pursuant to the provisions of Section 9.3.

The design standard is not applicable to the installation of a major wireless communications facility on the rooftop of a building.

V. COMPLIANCE WITH TELECOMMUNICATIONS ACT OF 1996

Because Verizon Wireless is applying for zoning approval for the installation of equipment that provides wireless services, the application is subject to §704 of the federal Telecommunications Act of 1996 ("TCA"), codified at 47 U.S.C. §332(c)(7)(B). By way of background, the TCA is a federal law enacted in 1996 whose purpose is "[t]o promote competition and reduce regulation in order to secure lower prices and higher quality services for American telecommunications consumers and encourage the rapid deployment of new telecommunications technologies."[1] To further this purpose, the TCA established national standards that apply to zoning applications for wireless facilities. These standards preempt inconsistent state and local laws, so they must be considered by zoning boards in making decisions on applications for wireless facilities.

On February 22, 2012, President Obama signed into law H.R. 3630, known as the "Middle Class Tax Relief and Job Creation Act of 2012," which then became Public Law 112-96 ("P.L. 112-96"). Section 6409(a) of P.L. 112-96 adds new language to the existing body of laws, regulations, and decisions pertaining to wireless facility zoning

Middle Class Tax Relief and Job Creation Act of 2012, Pub L. No. 112-96, 126 Stat. 156 (2012).

Section 6409(a) states:

(a) FACILITY MODIFICATIONS.—

> (1) IN GENERAL.—Notwithstanding section 704 of the Telecommunications Act of 1996 (Public Law 104–104) or any other provision of law, a State or local government may not deny, and shall approve, any eligible facilities request for a modification of an existing wireless tower or base station that does not substantially change the physical dimensions of such tower or base station.
>
> (2) ELIGIBLE FACILITIES REQUEST.—For purposes of this subsection, the term ''eligible facilities request'' means any request for modification of an existing wireless tower or base station that involves—
>
> (A) collocation of new transmission equipment;
>
> (B) removal of transmission equipment; or
>
> (C) replacement of transmission equipment.

Section 6409(a) of P.L. 112-96 builds on this existing legal framework by requiring zoning authorities to approve most applications for the collocation of wireless equipment. As stated by the Hon. Fred Upton, the Chairman of the Committee on Energy and Commerce for the U.S. House of Representatives, the purpose of the law is to streamline "the process for siting of wireless facility by preempting the ability of State and local authorities to delay collocation of, removal of, and replacement of wireless transmission equipment."

[1] *Telecommunications Act of 1996*, Pub. L. No. 104-104, 110 Stat. 56 (1996).

VI. CONCLUSION

Verizon Wireless major wireless communications facility improves service and enhances access to emergency services. The proposed concealed facility will have a no additional impact on the surrounding neighborhood. Furthermore, the TCA supports the granting of the application in light of its goal to promote the rapid expansion of new technologies. For these reasons, Verizon Wireless respectfully requests that the Board grant its application with all requested waivers.

TOWN OF WESTWOOD

TABLE OF CONTENTS –EXHIBITS

December 28, 2016

Town of Westwood
Carby Street Municipal Office Building
50 Carby Street
Westwood, Massachusetts 02090

Re: Letter of Authorization
Zoning Applications and/or Building Permit

Applicant: Cellco Partnership d/b/a Verizon Wireless

Site Address: 20 East Street, Westwood, Massachusetts
(Assessors Tax I.D.: Map 18, Lot 54)

To Whom It May Concern:

I, as the duly authorized representative of Westwood East Property Acquisition, LLC, owner of the property at 20 East Street in Westwood, Massachusetts, do hereby give full and complete authorization to Cellco Partnership d/b/a Verizon Wireless and their representatives and successors in interest to apply for any necessary zoning petitions, permits or any other approvals, including but not limited to the filing of a building permit application, which is necessary for the installation of their wireless telecommunications facility at the above referenced property.

A copy of this letter shall be regarded as having the same effect as the original.

Thank you for your attention to this matter.

Sincerely,

Westwood East Property Acquisition, LLC
a Delaware limited liability company

BY: Public Storage,
a Maryland real estate investment trust
Its: Member

Lori Kind

Name: Lori Kind
Title: Wireless Department

Public Storage

ACKNOWLEDGMENT OF SIGNATURE AUTHORIZATION

This will confirm that as Wireless Leasing Manager for Public Storage, Lori Kind is authorized to execute and take any necessary action on behalf of Public Storage and its related entities in connection with planning, zoning and development of wireless lease agreements. Specifically, Letters of Authorization (LOA's), Owners Authorization agreements, Access agreements, standard site walk and testing permissions, various city permits for wireless use such as CUP's, modifications to wireless sites, building permits, design review and wireless / telecom applications and applications for development reviews process.

Acknowledged this 30th day of January, 2015

Public Storage

By: David F. Doll
Senior Vice President and
President, Real Estate Group
Public Storage

A notary public or other officer completing this certificate verifies only the identity of the individual who signed the document to which this certificate is attached, and not the truthfulness, accuracy, or validity of that document.

State of California
County of Los Angeles

On January 30, 2015 before me, Meredith A. Allen, Notary Public, personally appeared David F. Doll who proved to me on the basis of satisfactory evidence to be the person whose name is subscribed to the within instrument and acknowledged to me that he executed the same in his authorized capacity, and that by his signature on the instrument the person, or the entity upon behalf of which the person acted, executed the instrument.

I certify under PENALTY OF PERJURY under the laws of the State of California that the foregoing paragraph is true and correct.

WITNESS my hand and official seal.

Signature of Notary Public

MEREDITH A. ALLEN
Commission # 2062662
Notary Public - California
Los Angeles County
My Comm. Expires Apr 18, 2018

Seal

My Commission Expires: April 18, 2018

PUBLIC STORAGE - Real Estate Group
701 Western Ave., Glendale, CA 91201
Tel: (818) 244-8080, Fax: (818) 543-7341
www.publicstorage.com

19

25/20

DEED

Arro East Street LLC, a Delaware limited liability company qualified to do business in Massachusetts, in consideration of Two Million Seven Hundred Sixty-Two Thousand Five Hundred and 00/100 ($2,762,500.00), hereby grants to Westwood - East Property Acquisition, LLC, a Delaware limited liability company with an address at c/o Public Storage, Inc., 701 Western Avenue, 2nd Floor, Glendale, California 91201-2397 with quitclaim covenants the land, with the improvements thereon and rights appurtenant thereto, located in Westwood, Norfolk County, Massachusetts described as follows:

Lot 2 as shown on a plan of land entitled "Approval Not Required Plan, Plan of Lot 1 and Lot 2, Westwood Terrace, Westwood, Massachusetts", prepared by Cubellis Saivetz Associates and dated November 20, 2001, recorded herewith, and being bounded and described as follows:

Beginning at a point on the Southerly side of East Street, said point being the Northeasterly corner of the herein described premises.

Thence turning and running S 27°58'43" E a distance of 272.38 feet to a point;
Thence turning and running S 76°16'17" W a distance of 100.00 feet to a point;
Thence turning and running S 13°43'43" E a distance of 100.71 feet to a point;
Thence turning and running N 76°16'17" E a distance of 4.97 feet to a point;
Thence turning and running S 13°43'43" E a distance of 80.90 feet to a point;
Thence turning and running N 76°16'17" E a distance of 111.78 feet to a point;
Thence turning and running S 26°02'40" W a distance of 40.21 feet to a point;
Thence turning and running S 25°35'35" W a distance of 4.93 feet to a point;
Thence turning and running S 74°38'03" W a distance of 40.50 feet to a point;
Thence turning and running S 26°37'07" W a distance of 50.00 feet to a point;
Thence turning and running N 59°47'01" W a distance of 296.26 feet to a point;
Thence turning and running N 33°25'12" W a distance of 148.55 feet to a point;
Thence turning and running N 16°51'00" W a distance of 65.00 feet to a point;
Thence turning and running by a non-tangent curve to the right having a length of 268.90 feet and a radius of 160.00 feet to a point;
Thence turning and running S 89°07'09"E a distance of 89.04 feet to the point of beginning.

The described premises contains 117,723 sq. ft. or 2.7026 acres of land.

Subject to and with the benefit of all easements, agreements, restrictions, covenants and other matters of record, in so far as the same are in force and applicable.

For title reference, see deeds of the (i) Town of Westwood, Massachusetts, (ii) David Hodgdon and Jean Hudson, (iii) Paul F. Donovan, Trustee of Thomas Columbo Revocable Trust – 1994 and (iv) Pasqualina Columbo, Joseph J. Columbo, Mary J. Grella and Dolores Whitehead, each of which deeds is recorded herewith.

RECEIVED AND RECORDED
NORFOLK COUNTY
REGISTRY OF DEEDS
DEDHAM, MA
CERTIFY

PAUL D. HAROLD, REGISTER

112752

02 JUL -1 PM 12:43

WESTWOOD TERR. WESTWOOD, MASS.

Executed under seal this 25th day of June, 2002.

ARRO EAST STREET LLC

By: _____
Stephen G. Mack, Manager

COMMONWEALTH OF MASSACHUSETTS

COUNTY OF SUFFOLK JUNE 25, 2002

Then personally appeared before me Stephen G. Mack, a Manager of Arro East Street LLC, a limited liability company, and he acknowledged the foregoing to be the free act and deed of Arro East Street LLC,

_____
A. Miriam Jaffe, Notary Public
My commission expires:

A. MIRIAM JAFFE
My Commission Expires Jan. 15, 2004

verizon

118 FLANDERS ROAD, WESTBOROUGH, MA 01581

EAST STREET

20 EAST STREET
WESTWOOD, MA 02090

SITE TYPE: WIRELESS TELECOMMUNICATIONS COLLOCATION ON ROOFTOP OF EXISTING SELF-STORAGE BUILDING

SITE INFORMATION:

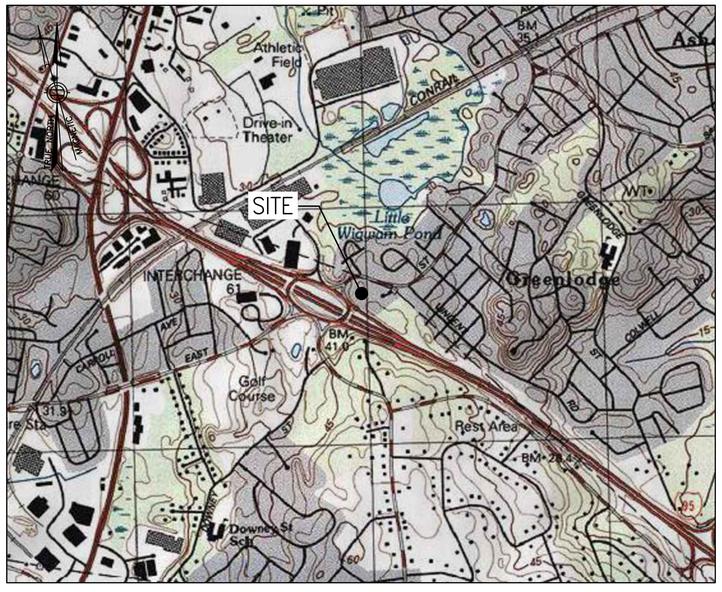
PROPERTY OWNER:	WESTWOOD-EAST PROP AQUIS LLC DEPT PT-MA-29184 GLENDALE, CA 91201
APPLICANT:	VERIZON WIRELESS 118 FLANDERS ROAD WESTBOROUGH, MA 01581
SITE ADDRESS:	20 EAST STREET WESTWOOD, MA 02090
COUNTY:	NORFOLK
LATITUDE (NW CORNER OF BUILDING):	N 42°-13'-24.93"
LONGITUDE (NW CORNER OF BUILDING):	W 71°-10'-09.56"
ZONING CLASSIFICATION:	"HB" (HIGHWAY BUSINESS) DISTRICT IN "WCOD" (WIRELESS COMMUNICATIONS OVERLAY) AND "FMUOD 5" (FLEXIBLE MULTIPLE USE OVERLAY) DISTRICTS
ZONING JURISDICTION:	TOWN OF WESTWOOD, MA
TOWN OF WESTWOOD PARCEL ID:	TAX MAP - 18 PARCEL - 54
DEED REFERENCE:	BOOK: 16813 PAGE: 45
ARCHITECT / ENGINEER:	CHAPPELL ENGINEERING ASSOCIATES, LLC 201 BOSTON POST ROAD WEST, SUITE 101 MARLBOROUGH, MA 01752
POWER COMPANY:	NSTAR ELECTRIC ONE NSTAR WAY WESTWOOD, MA 02090-9230 (888) 633-3797
TELEPHONE COMPANY:	VERIZON 185 FRANKLIN STREET BOSTON, MA 02107 (800) 941-9900

ZONING DRAWINGS

(NOT FOR CONSTRUCTION)

VICINITY MAP

SCALE: 1"=1000'



DRIVING DIRECTIONS

TAKE I-495 SOUTH TOWARD CAPE COD. TAKE EXIT 22 TOWARDS I-90/MASSACHUSETTS TURNPIKE. BEAR RIGHT AFTER TOLL BOOTH TO MERGE ONTO I-90 MASSACHUSETTS TURNPIKE EAST TOWARDS FRAMINGHAM/BOSTON (FOLLOW FOR APPROXIMATELY 16 MILES). TAKE EXIT 14 TO MERGE ONTO I-95 SOUTH TOWARDS SOUTH SHORE/CAPE COD (FOLLOW FOR APPROXIMATELY 11 MILES). TAKE EXIT 14 TOWARDS CANTON STREET. ENTER THE ROUNDABOUT AND TAKE THE 4TH EXIT ONTO EAST STREET. ENTRANCE TO THE SITE WILL BE LOCATED IMMEDIATELY ON THE RIGHT HAND SIDE OF EAST STREET.

SHEET INDEX

DWG.	DESCRIPTION	REV.
T01	TITLE SHEET	2
C01	PROPERTY PLAN	2
C02	SITE PLAN	2
A01	ROOF PLAN AND SOUTHEAST BUILDING ELEVATION	2
A02	SITE DETAILS	2

PROJECT DESCRIPTION

1. THIS IS UNMANNED AND RESTRICTED ACCESS EQUIPMENT AND WILL BE USED FOR THE TRANSMISSION OF RADIO SIGNAL FOR THE PURPOSE OF PROVIDING PUBLIC WIRELESS TELECOMMUNICATIONS SERVICE.
2. THIS FACILITY WILL CONSUME NO UNRECOVERABLE ENERGY.
3. NO POTABLE WATER SUPPLY IS TO BE PROVIDED AT THIS LOCATION.
4. NO WASTE WATER WILL BE GENERATED AT THIS LOCATION.
5. NO SOLID WASTE WILL BE GENERATED AT THIS LOCATION.

DO NOT SCALE DRAWINGS

CONTRACTOR SHALL VERIFY ALL PLANS AND EXISTING DIMENSIONS AND CONDITIONS ON THE JOB SITE AND SHALL IMMEDIATELY NOTIFY THE PROJECT OWNER'S REPRESENTATIVE IN WRITING OF DISCREPANCIES BEFORE PROCEEDING WITH THE WORK OR BE RESPONSIBLE FOR SAME.

verizon

" Because Better Matters "

CHAPPELL ENGINEERING ASSOCIATES, LLC
Civil · Structural · Land Surveying

R.K. EXECUTIVE CENTRE
201 BOSTON POST ROAD WEST, SUITE 101
MARLBOROUGH, MA 01752
(508) 481-7400
www.chappellengineering.com

COMMONWEALTH OF MASSACHUSETTS
DAVID J. CHAPPELL
CIVIL
No. 34706
REGISTERED PROFESSIONAL ENGINEER

ENGINEER/LAND SURVEYOR DATE

REVISIONS

NO.	DESCRIPTION	DATE
0	ISSUED FOR REVIEW	11/18/16
1	REVISED PER COMMENTS AND 2C	12/8/16
2	REVISED GENERATOR	1/20/17

PROJECT NAME:

EAST STREET

20 EAST STREET
WESTWOOD, MA 02090

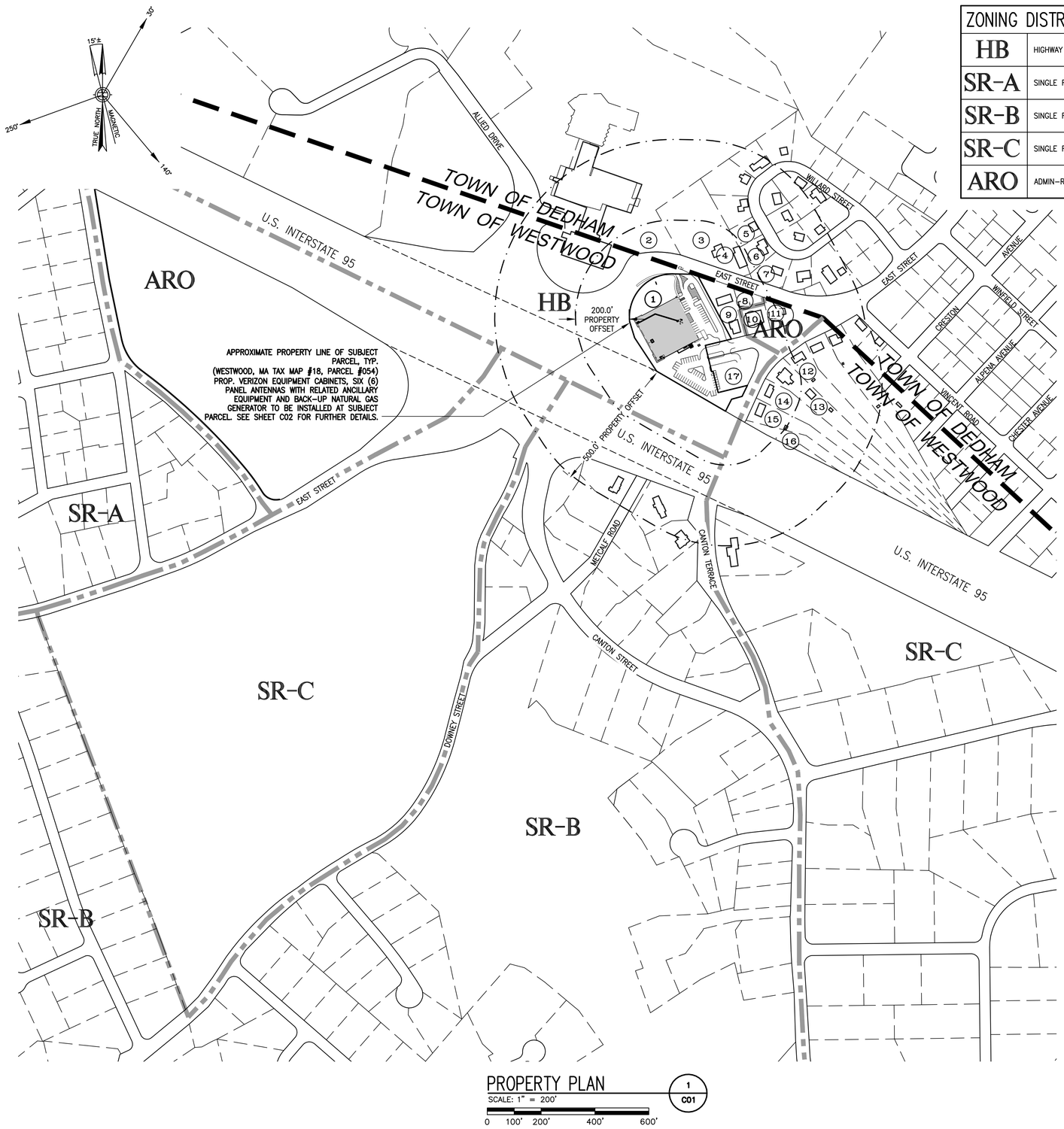
DRAWING TITLE:

TITLE SHEET

DRAWING NO:

T01

SCALE: AS SHOWN	DESIGNED BY: GRS	LOCATION CODE
	DRAWN BY: GRS	272647
	CHECK'D BY: CJS	
PROJECT NO. 96210.340	ORIGINAL ISSUE DATE: 11/18/16	



PROPERTY PLAN
SCALE: 1" = 200'
0 100' 200' 400' 600'
1 / C01

ZONING DISTRICT LEGEND	
HB	HIGHWAY BUSINESS
SR-A	SINGLE RESIDENCE A
SR-B	SINGLE RESIDENCE B
SR-C	SINGLE RESIDENCE C
ARO	ADMIN-RESEARCH-OFFICE

GENERAL NOTES:

1. FIELD SURVEY DATES: 7/6/16 & 12/6/16
2. VERTICAL DATUM: NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88)
3. HORIZONTAL DATUM: NORTH AMERICAN DATUM OF 1983 (NAD83)
4. SITE CONTROL POINT: NORTHWEST CORNER OF EXISTING BUILDING LATITUDE: N. 42°-13'-24.93" (NAD 83) LONGITUDE: W. 71°-10'-09.56" (NAD 83)
5. PROPERTY OWNER: WESTWOOD-EAST PROP AQUIS LLC DEPT PT-MA-29184 GLENDALE, CA 91201
6. SITE ADDRESS: 20 EAST STREET WESTWOOD, MA 02090
7. APPLICANT: VERIZON WIRELESS 118 FLANDERS ROAD WESTBOROUGH, MA 01581
8. JURISDICTION: TOWN OF WESTWOOD, MA
9. TOWN OF WESTWOOD PARCEL ID: TAX MAP - 18 PARCEL - 54
10. DEED REFERENCE: BK. 16813 PG. 45
11. PLAN REFERENCES: TOWN OF WESTWOOD ASSESSOR/GIS MAPS
12. ZONING JURISDICTION: "HB" (HIGHWAY BUSINESS) DISTRICT IN "FMUOD 5" OVERLAY DISTRICT
13. ANY UNDERGROUND UTILITY INFORMATION PRESENTED HEREON WAS DETERMINED FROM SURFACE EVIDENCE AND PLANS OF RECORD. ALL UNDERGROUND UTILITIES SHOULD BE LOCATED IN THE FIELD PRIOR TO THE COMMENCEMENT OF ANY SITE WORK. CALL DIGSAFE 1-888-344-7233 A MINIMUM OF 72 HOURS PRIOR TO PLANNED ACTIVITY.
14. THE PROPERTY LINES SHOWN WERE COMPILED UTILIZING TOWN OF WESTWOOD ASSESSOR'S PLANS, GIS, RECORDED DEEDS, PLANS OF REFERENCE AND AN ON THE GROUND SURVEY PERFORMED BY CHAPPELL ENGINEERING ASSOCIATES ON 12/6/16.
15. THE SITE IS LOCATED IN FLOOD HAZARD ZONE X (AREA DETERMINED TO BE OUTSIDE THE 0.2% ANNUAL CHANCE FLOODPLAIN) AS SHOWN ON FLOOD INSURANCE RATE MAP FOR THE TOWN OF WESTWOOD, MA (MAP NUMBER 25021C0181E) EFFECTIVE 7/17/12.
16. BEARING SYSTEM OF THIS PLAN IS BASED ON MASSACHUSETTS STATE PLANE GRID. TRUE NORTH WAS ESTABLISHED FROM GPS PERFORMED BY CHAPPELL ENGINEERING ASSOCIATES ON 12/6/16.

LEGEND

- PROPERTY LINE
- ABUTTING PROPERTY LINE
- PROPERTY OFFSET
- EXIST. EASEMENT
- EXIST. CHAIN LINK FENCE
- EXIST. STOCKADE FENCE
- EXIST. EDGE OF PAVEMENT
- EXIST. OVERHEAD UTILITIES
- EXIST. TREELINE
- PROP. TREELINE
- PROP. OVERHEAD UTILITIES
- PROP. UTILITIES
- EXIST. UTILITY POLE
- EXIST. STONE WALL
- ZONING BOUNDARY
- TOWN BOUNDARY

#	PARCEL ID	OWNER	MAILING ADDRESS	BK/PG
1	**MAP 18 LOT 54**	**WESTWOOD-EAST PROP AQUIS LLC**	**DEPT PT-MA-29184 GLENDALE, CA 91201**	**16813/45**
2	MAP 17 LOT 171	DEDHAM PLACE EQUITY PARTNERS LLC	150 EAST 58TH STREET NEW YORK, NY 10155	32596/533
3	MAP 177 LOT 5	WILLARD FAMILY REALTY TRUST	P.O. BOX 890 DEDHAM, MA 02027	8895/81
4	MAP 177 LOT 6A	PREVETT REALTY TRUST	21 WESTWOOD TERRACE WESTWOOD, MA 02092	5452/63
5	MAP 177 LOT 8	RICHARD A. HAWKINS ETUX	69 WILLARD STREET DEDHAM, MA 02026	27086/482
6	MAP 177 LOT 7	SALLY A. SPIEGEL 1/2 INT ETAL	75 WILLARD STREET DEDHAM, MA 02026	15485/363
7	MAP 177 LOT 6	1197 EAST STREET REALTY TRUST	1197 EAST STREET DEDHAM, MA 02026	16685/469
8	MAP 18 LOT 56	PREVETT REALTY TRUST	1198 EAST STREET WESTWOOD, MA 02090	23425/168
9	MAP 18 LOT 55	PREVETT REALTY TRUST	1200 EAST STREET WESTWOOD, MA 02090	23425/185
10	MAP 18 LOT 57	WW REALTY TRUST	21 WESTWOOD TERRACE WESTWOOD, MA 02090	23425/215
11	MAP 18 LOT 58	MICHAEL F. WALSH	9 WESTWOOD TERRACE WESTWOOD, MA 02090	27260/184
12	MAP 18 LOT 47	PAUL SHARPE	20 WESTWOOD TERRACE WESTWOOD, MA 02090	10016/391
13	MAP 18 LOT 48	SUSAN YERARDI HOUGH	26 WESTWOOD TERRACE WESTWOOD, MA 02090	21283/498
14	MAP 18 LOT 49	TIMOTHY J. VOGEL	32 WESTWOOD TERRACE WESTWOOD, MA 02090	31692/047
15	MAP 18 LOT 50	SEAN GALLAGHER	32 WESTWOOD TERRACE WESTWOOD, MA 02090	16743/199
16	MAP 18 LOT 51	SEAN GALLAGHER	38 WESTWOOD TERRACE WESTWOOD, MA 02090	16743/199
17	MAP 18 LOT 53	WESTWOOD TERRACE PROP. ACC. LLC	DEPT PT-MA-29184 GLENDALE, CA 91201	16813/43

REFERENCE:
PROPERTY INFORMATION SHOWN IN THE ABOVE TABLE WAS TAKEN FROM THE GIS VIEWER MADE AVAILABLE THROUGH THE MASS GIS WEBSITE AND FROM THE TOWN OF DEDHAM, MA WEBSITE.

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DAVID A. CHAPPELL
CIVIL
No. 34706
REGISTERED PROFESSIONAL ENGINEER

ENGINEER/LAND SURVEYOR DATE

REVISIONS

NO.	DESCRIPTION	DATE
0	ISSUED FOR REVIEW	11/18/16
1	REVISED PER COMMENTS AND 2C	12/8/16
2	REVISED GENERATOR	1/20/17

PROJECT NAME:

EAST STREET

20 EAST STREET
WESTWOOD, MA 02090

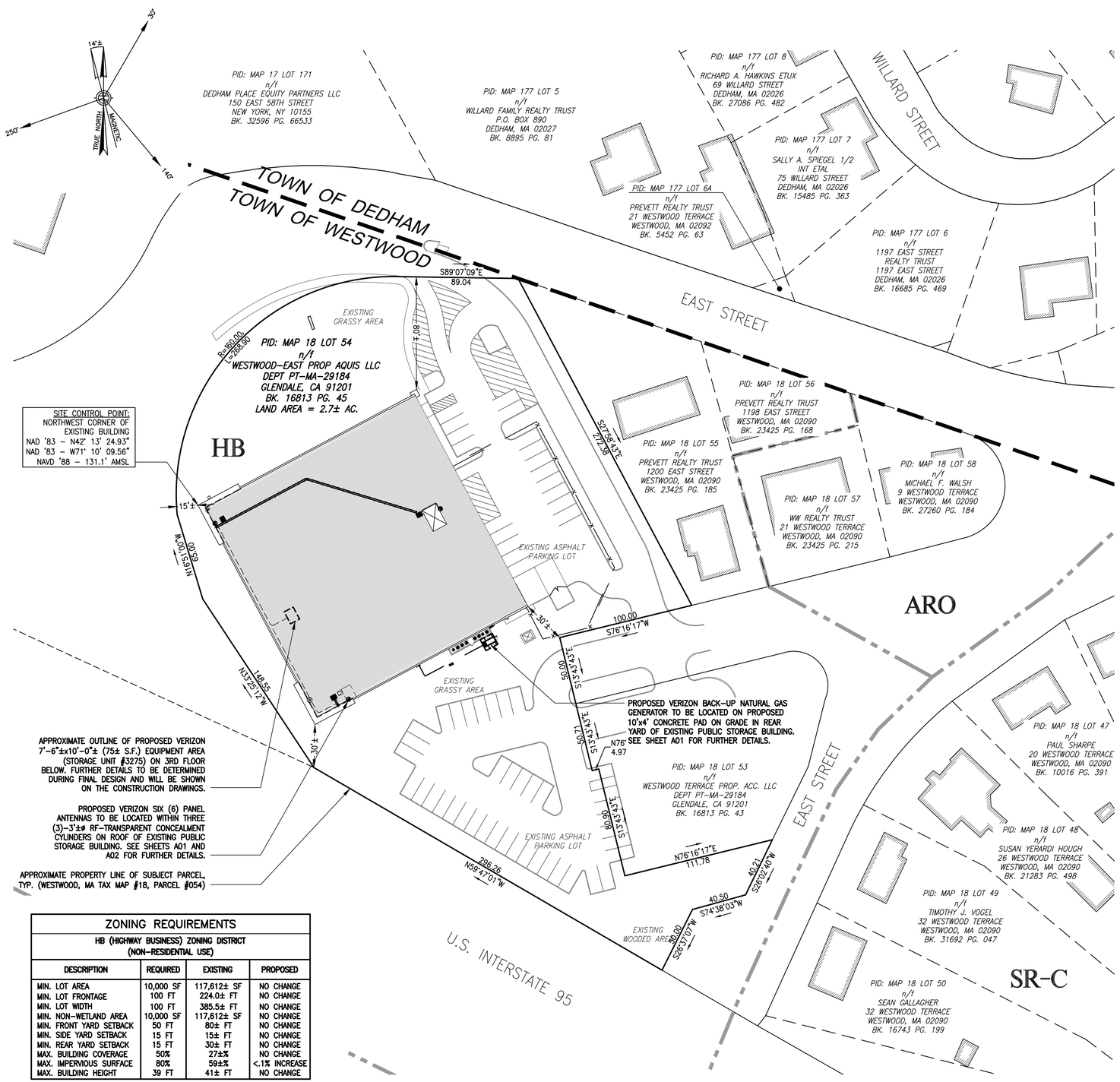
DRAWING TITLE:

PROPERTY PLAN

DRAWING NO:

C01

SCALE:	DESIGNED BY: GRS	LOCATION CODE
1" = 200'	DRAWN BY: GRS	
	CHECK'D BY: CJS	272647
PROJECT NO.	ORIGINAL ISSUE DATE:	
96210.340	11/18/16	



ZONING REQUIREMENTS

HB (HIGHWAY BUSINESS) ZONING DISTRICT (NON-RESIDENTIAL USE)

DESCRIPTION	REQUIRED	EXISTING	PROPOSED
MIN. LOT AREA	10,000 SF	117,612± SF	NO CHANGE
MIN. LOT FRONTAGE	100 FT	224.0± FT	NO CHANGE
MIN. LOT WIDTH	100 FT	385.5± FT	NO CHANGE
MIN. NON-WETLAND AREA	10,000 SF	117,612± SF	NO CHANGE
MIN. FRONT YARD SETBACK	50 FT	80± FT	NO CHANGE
MIN. SIDE YARD SETBACK	15 FT	15± FT	NO CHANGE
MIN. REAR YARD SETBACK	15 FT	30± FT	NO CHANGE
MAX. BUILDING COVERAGE	50%	27±%	NO CHANGE
MAX. IMPERVIOUS SURFACE	80%	59±%	<.1% INCREASE
MAX. BUILDING HEIGHT	39 FT	41± FT	NO CHANGE

NOTES:
1. SITE PLAN BASED ON TOWN OF WESTWOOD ASSESSORS MAPS AND FIELD VISITS BY CHAPPELL ENGINEERING ASSOCIATES, LLC. ON 7/6/16 AND 12/6/16.

2. PROPOSED SETBACKS ARE TAKEN FROM THE CLOSEST POINT FROM EXISTING BUILDING TO PROPERTY LINES. THE EXISTING BUILDING ENVELOPE/BULK IS NOT TO BE EXCEEDED AS A RESULT OF PROPOSED INSTALLATION.

SITE PLAN

SCALE: 1" = 40'

0 20' 40' 80' 120'

1 / C02

NOTES:

1. THE CONTRACTOR IS RESPONSIBLE FOR PROVIDING ALL NECESSARY CONSTRUCTION CONTROL SURVEYS AND MAINTAINING ALL LINES AND GRADES REQUIRED TO CONSTRUCT ALL IMPROVEMENTS SHOWN HEREIN.
2. ALL DIMENSIONS SHOWN THUS ± ARE APPROXIMATE. THE CONTRACTOR SHALL VERIFY ALL DIMENSIONS AND ELEVATIONS WHICH EFFECT THE CONTRACTORS WORK. CONTRACTOR TO VERIFY ALL DIMENSIONS WITH PROJECT OWNER PRIOR TO CONSTRUCTION.
3. NORTH ARROW SHOWN ON PLANS REFERS TO APPROXIMATE TRUE NORTH. PRIOR TO THE START OF CONSTRUCTION, ORDERING OR FABRICATING OF ANTENNA MOUNTS, CONTRACTOR SHALL CONSULT WITH PROJECT OWNER'S RF ENGINEER AND FIELD VERIFY ALL ANTENNA SECTOR LOCATIONS AND ANTENNA AZIMUTHS.
4. THE CONTRACTOR AND OR HIS SUB CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL PERMITS AND INSPECTIONS WHICH MAY BE REQUIRED FOR THE WORK BY THE ARCHITECT/ENGINEER, THE STATE, COUNTY OR LOCAL GOVERNMENT AUTHORITY.
5. ANTENNA INSTALLATION SHALL BE CONDUCTED BY FIELD CREWS EXPERIENCED IN THE ASSEMBLY AND ERECTION OF RADIO ANTENNAS, TRANSMISSION LINES AND SUPPORT STRUCTURES.
6. COAXIAL CABLE CONNECTORS AND TRANSMITTER EQUIPMENT SHALL BE PROVIDED BY THE PROJECT OWNER AND IS NOT INCLUDED IN THESE CONSTRUCTION DOCUMENTS. A SCHEDULE OF PROJECT OWNER SUPPLIED MATERIALS IS ATTACHED TO THE BID DOCUMENTS (SEE EXHIBIT 3). ALL OTHER HARDWARE TO BE PROVIDED BY THE CONTRACTOR. CONNECTION HARDWARE SHALL BE STAINLESS STEEL.
7. WHEN "PAINT TO MATCH" IS SPECIFIED FOR ANTENNA CONCEALMENT, PAINT PRODUCT FOR ANTENNA RADOME SHALL BE SHERWIN WILLIAMS COROTHANE II. SURFACE PREPARATION AND APPLICATION SHALL BE IN ACCORDANCE WITH THE MANUFACTURER'S SPECIFICATIONS AND PROJECT OWNER'S GUIDELINE'S.
8. COORDINATION, LAYOUT, AND FURNISHING OF CONDUIT, CABLE AND ALL APPURTENANCES REQUIRED FOR PROPER INSTALLATION OF ELECTRICAL AND TELECOMMUNICATION SERVICE SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR.
9. ALL UTILITY WORK SHALL BE IN ACCORDANCE WITH LOCAL UTILITY COMPANY REQUIREMENTS AND SPECIFICATIONS.
10. ALL (E)ACTIVE SEWER, WATER, GAS, ELECTRIC, AND OTHER UTILITIES WHERE ENCOUNTERED IN THE WORK, SHALL BE PROTECTED AT ALL TIMES, AND WHERE REQUIRED FOR THE PROPER EXECUTION OF THE WORK, SHALL BE RELOCATED AS DIRECTED BY ENGINEERS. EXTREME CAUTION SHOULD BE USED BY THE CONTRACTOR WHEN EXCAVATING OR PIER DRILLING AROUND OR NEAR UTILITIES. CONTRACTOR SHALL PROVIDE SAFETY TRAINING FOR THE WORKING CREW.
11. ALL (E)INACTIVE SEWER, WATER, GAS, ELECTRIC AND OTHER UTILITIES, WHICH INTERFERE WITH THE EXECUTION OF THE WORK, SHALL BE REMOVED AND/OR CAPPED, PLUGGED OR OTHERWISE DISCONTINUED AT POINTS WHICH WILL NOT INTERFERE WITH THE EXECUTION OF THE WORK, SUBJECT TO THE APPROVAL OF UTILITY COMPANY ENGINEERING.
12. THE AREAS OF THE PROPERTY DISTURBED BY THE WORK AND NOT COVERED BY THE EQUIPMENT, DRIVEWAY OR GRAVEL, SHALL BE GRADED TO A UNIFORM SLOPE, FERTILIZED, SEEDED AND COVERED WITH MULCH UNLESS OTHERWISE NOTED.
13. THE CONTRACTOR SHALL ESTABLISH AND MAINTAIN SOIL EROSION AND SEDIMENTATION CONTROLS AT ALL TIMES DURING CONSTRUCTION.
14. PER FCC MANDATE, ENHANCED EMERGENCY (E911) SERVICE IS REQUIRED TO MEET NATIONWIDE STANDARDS FOR WIRELESS COMMUNICATIONS SYSTEMS. PROJECT OWNER'S IMPLEMENTATION REQUIRES DEPLOYMENT OF EQUIPMENT AND ANTENNAS GENERALLY DEPICTED ON THIS PLAN, ATTACHED TO OR MOUNTED IN CLOSE PROX. TO THE BTS RADIO CABINETS. PROJECT OWNER RESERVES THE RIGHT TO MAKE REASONABLE MODIFICATIONS TO E911 EQUIPMENT AND LOCATION AS TECHNOLOGY EVOLVES TO MEET REQUIRED SPECIFICATIONS.
15. THE TOTAL IMPACT AREA OF THE DISTURBED CONSTRUCTION SITE IS BOUNDED BY THE "LIMIT OF WORK" AS SHOWN HEREON. THE PROJECT IMPACT AREA IS BELOW THE EXEMPTION THRESHOLD OF 43,560 SQUARE FEET IN 40 CFR PARTS 9, 122-124 AND THEREFORE IS NOT SUBJECT TO REGULATION UNDER THE EPA OR STATE-MANAGED NPDES GENERAL CONSTRUCTION PERMIT PROGRAM. THE PROJECT OWNER'S GENERAL CONTRACTOR SHALL CONDUCT ALL SITE DEVELOPMENT WORK IN A MANNER THAT DOES NOT EXCEED THE LIMITS OF WORK SHOWN ON THE PLANS. ADDITIONALLY, THE PROJECT OWNER'S GENERAL CONTRACTOR SHALL CONDUCT ALL CONSTRUCTION ACTIVITIES IN A MANNER THAT DOES NOT RESULT IN STORM WATER DISCHARGES WITH AN ADVERSE IMPACT ON ANY STORM WATER COLLECTION/CONVEYANCE SYSTEM, WETLAND, WATER BODY, OR OTHER WATER RESOURCE AREAS.

LEGEND

- EXISTING ROW/EASEMENT
- PROPERTY LINE
- ABUTTING PROPERTY LINE
- EXIST. EASEMENT
- PROPERTY OFFSET LINE
- EXIST. CHAIN LINK FENCE
- EXIST. STOCKADE FENCE
- EXIST. TREELINE
- PROP. TREELINE
- ZONING BOUNDARY
- TOWN LINE
- EXIST. EDGE OF PAVEMENT
- EXIST. OVERHEAD UTILITIES
- PROP. OVERHEAD UTILITIES
- PROP. UTILITIES
- EXIST. STONE WALL
- EXIST. UTILITY POLE
- HYDRANT
- DRILL HOLE
- STONE/CONC. BOUND
- TELCO MANHOLE
- SEWER MANHOLE
- WATER MANHOLE
- DRAINAGE MANHOLE
- CATCH BASIN
- GAS VALVE
- WATER VALVE

SITE CONTROL POINT

NORTHWEST CORNER OF EXISTING BUILDING
NAD '83 LATITUDE: N.42°-13'-24.93"
NAD '83 LONGITUDE: W.71°-10'-09.56"
NAVD '88 GROUND ELEVATION: 131.1'

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2	REVISED GENERATOR	1/20/17

PROJECT NAME:

EAST STREET

20 EAST STREET
WESTWOOD, MA 02090

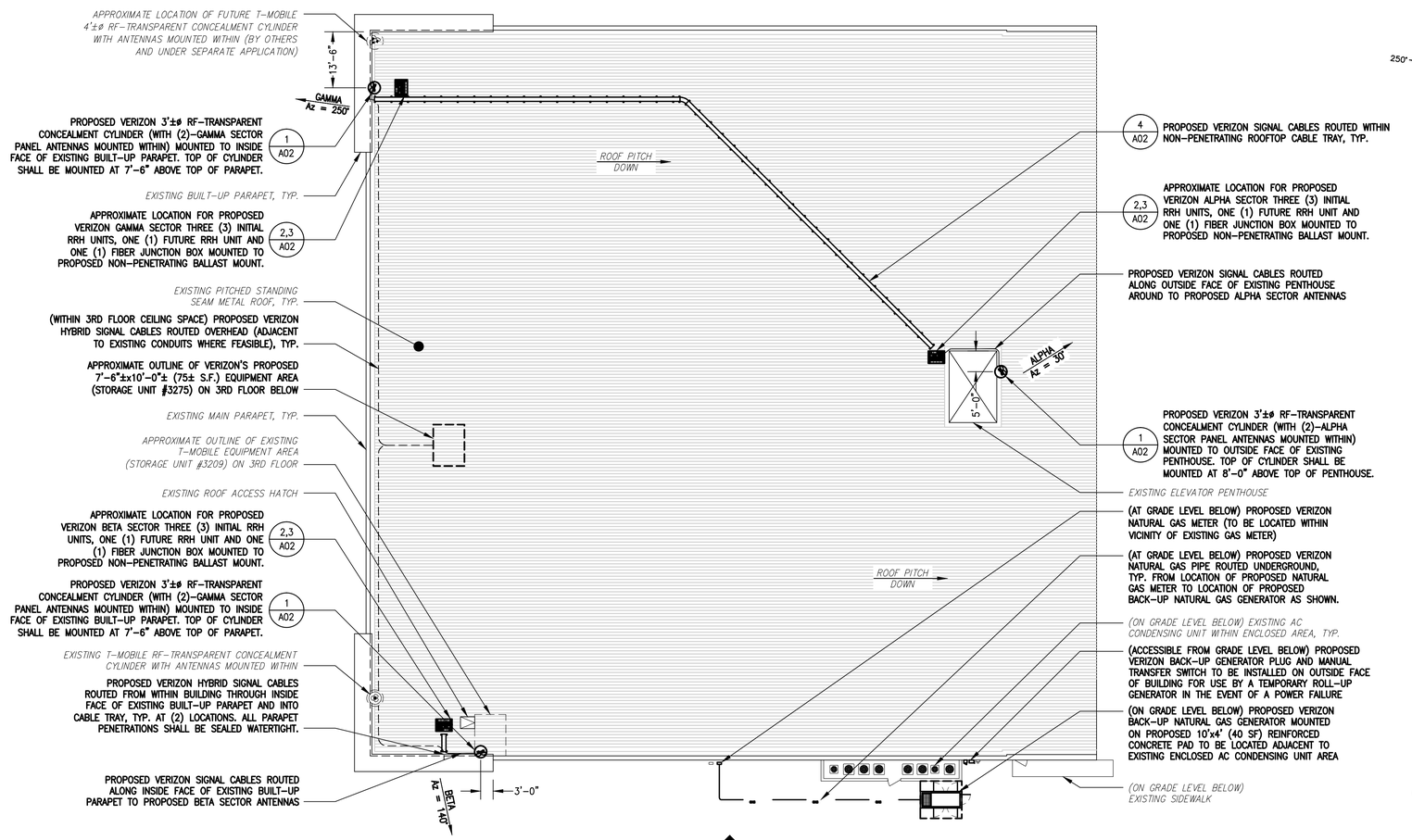
DRAWING TITLE:

SITE PLAN

DRAWING NO:

C02

SCALE: 1" = 40'	DESIGNED BY: GRS	LOCATION CODE
	DRAWN BY: GRS	272647
	CHECK'D BY: CJS	
PROJECT NO. 96210.340	ORIGINAL ISSUE DATE: 11/18/16	



ROOF PLAN (LEFT)

SCALE: 1/16" = 1'-0"

1 A01

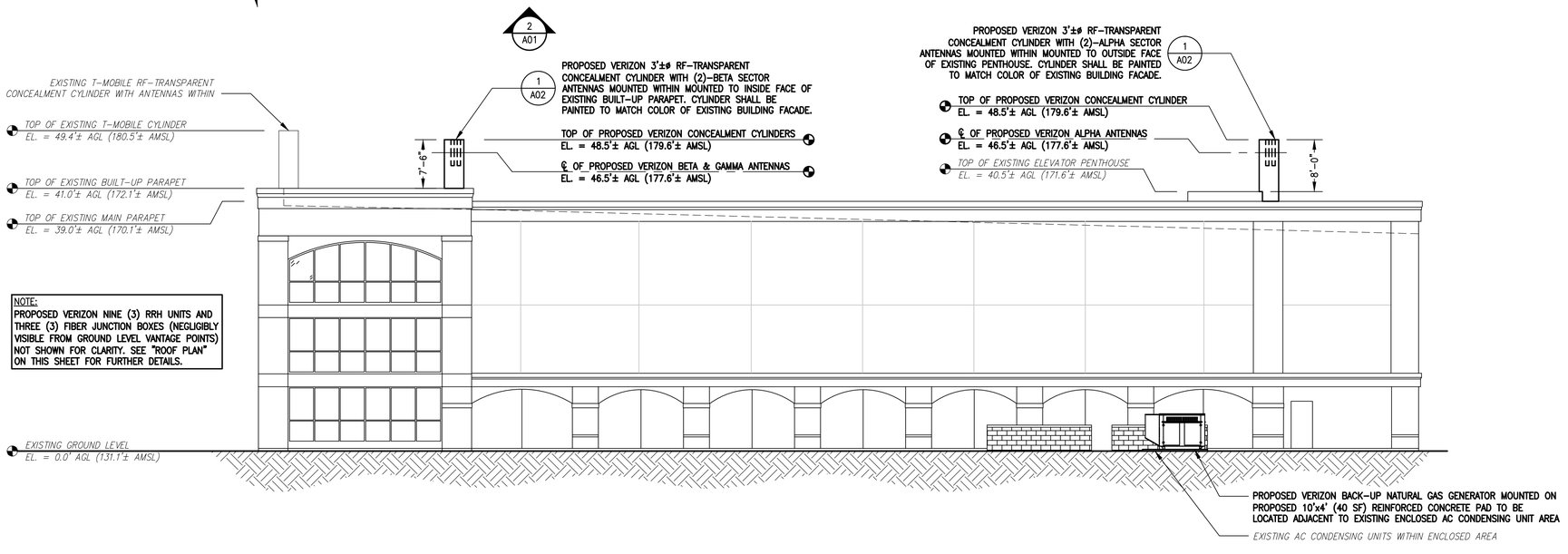
0 16'-0" 32'-0" 48'-0"

SOUTHEAST BUILDING ELEVATION (BELOW)

SCALE: 1" = 10'

2 A01

0 5' 10' 20' 30'



NOTE:
PROPOSED VERIZON NINE (3) RRH UNITS AND THREE (3) FIBER JUNCTION BOXES (NEGLIGIBLY VISIBLE FROM GROUND LEVEL VANTAGE POINTS) NOT SHOWN FOR CLARITY. SEE "ROOF PLAN" ON THIS SHEET FOR FURTHER DETAILS.

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PROJECT NAME:

EAST STREET

20 EAST STREET
WESTWOOD, MA 02090

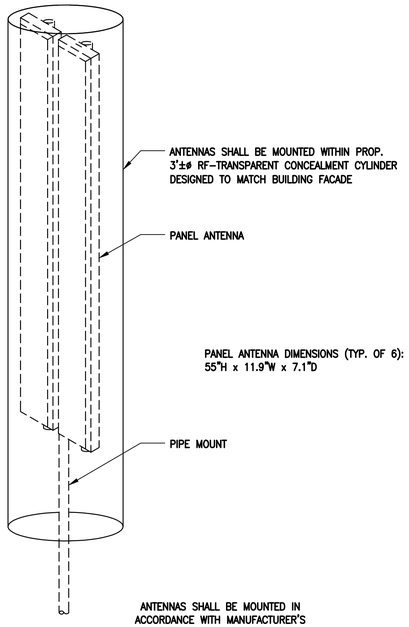
DRAWING TITLE:

ROOF PLAN AND SOUTHEAST BUILDING ELEVATION

DRAWING NO:

A01

SCALE: AS SHOWN	DESIGNED BY: GRS DRAWN BY: GRS CHECK'D BY: CJS	LOCATION CODE: 272647
PROJECT NO.: 96210.340	ORIGINAL ISSUE DATE: 11/18/16	



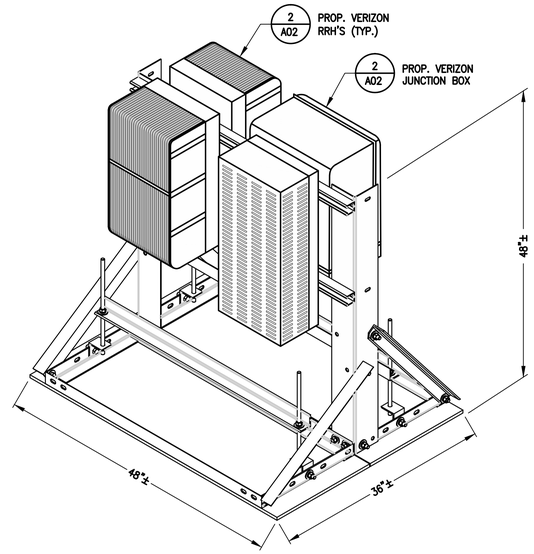
ANTENNA WITH DOWN-TILT (1 / A02)
SCALE: NONE

ALCATEL-LUCENT B25 RRH4x30-4R

ALCATEL-LUCENT B66a RRH4x45

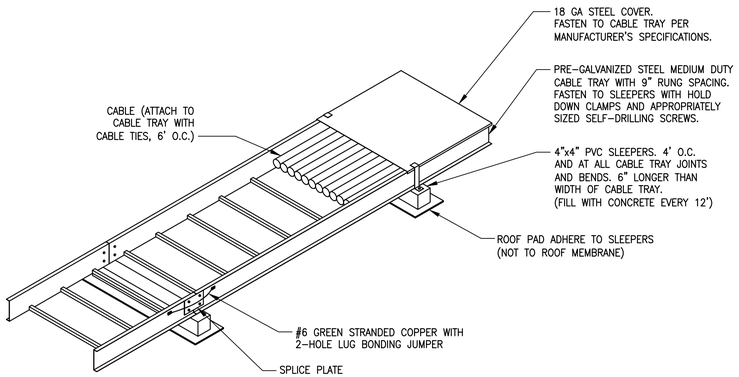
RAYCAP DB-B1-6C-12AB-0Z

RRH & JUNCTION BOX DETAIL (2 / A02)
SCALE: NONE



COMMSCOPE PN: RR-TFS

RRH MOUNTING DETAIL (3 / A02)
SCALE: N.T.S.



CABLE TRAY DETAIL (4 / A02)
SCALE: NOT TO SCALE

CABLE TRAY NOTES:

1.) THE ANTENNA CONTRACTOR IS RESPONSIBLE FOR PROVIDING A COMPLETE CABLE TRAY SYSTEM. PROVIDE ALL HARDWARE AND ATTACHMENTS AS INDICATED ON THE DRAWINGS AND AS REQUIRED FOR A COMPLETE INSTALLATION. ALL CABLE TRAY SYSTEM COMPONENTS SHALL BE PRE-GALVANIZED STEEL UNLESS OTHERWISE NOTED. THE CONTRACTOR MAY SUBSTITUTE SPECIFIED CABLE TRAY WITH PERMISSION OF THE ENGINEER.

2.) CABLE TRAY: 6" DEEP (5" LOADING DEPTH), SERIES 464 PRE-GALVANIZED STEEL, VENTED BOTTOM TYPE AS MANUFACTURED BY B-LINE SYSTEMS, INC. REFER TO THE ROOF PLAN AND CABLE TRAY LEGEND FOR CABLE TRAY LOCATIONS, WIDTHS AND REQUIRED FITTINGS.

3.) PROVIDE PRE-GALVANIZED STEEL SOLID FLAT FLANGED CABLE TRAY COVERS, B-LINE CAT. #802P20, LENGTHS AND WIDTHS AS REQUIRED TO FIT CABLE TRAY STRAIGHT SECTIONS AND FITTINGS, AND HEAVY DUTY COVER CLAMPS AS REQUIRED, B-LINE CAT. #9P-W-9064.

4.) PROVIDE TROUGH/LADDER DROP-OUT SECTIONS AT BEGINNING AND END OF CABLE TRAY RUNS AS NECESSARY TO PREVENT MECHANICAL DAMAGE TO THE CABLES. PROVIDE DROP-OUT BUSHINGS WHERE SIGNAL CABLES AND/OR GROUND WIRES EXIT CABLE TRAY.

5.) PROVIDE ALL REQUIRED HARDWARE FOR MOUNTING AND SUPPORTING CABLE TRAY INCLUDING, BUT NOT LIMITED TO LAG BOLTS, EXPANSION ANCHORS, UNISTRUT SUPPORTS, THREADED RODS, BOLTS, WASHERS, TYWRAPS, HOISTING GRIPS, ETC. USE STAINLESS STEEL HARDWARE WHERE ALUMINUM IS IN CONTACT WITH GALVANIZED STEEL.

6.) PROVIDE HOT-DIP GALVANIZED STEEL SECTIONS AS INDICATED FOR SUPPORTING CABLE ON ROOF AND SECURE CABLE TRAY TO SECTIONS AS REQUIRED. USE PLASTIC SPACERS WHERE DISSIMILAR METALS COME IN CONTACT.

7.) FOR ALL CABLE TRAY RUNS ON THE ROOF, STENCIL A LABEL EVERY 20'-0" ON THE CABLE TRAY COVERS WHICH READS "DO NOT STAND – ANTENNA SIGNAL CABLES".

8.) ALL CABLE TRAY MOUNTED TO EXTERIOR WALLS SHALL BE PAINTED TO MATCH COLOR OF EXISTING WALL.

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EAST STREET

20 EAST STREET
WESTWOOD, MA 02090

DRAWING TITLE:

SITE DETAILS

DRAWING NO:

A02

SCALE:	DESIGNED BY: GRS	LOCATION CODE
AS SHOWN	DRAWN BY: GRS	272647
	CHECK'D BY: CJS	
PROJECT NO.	ORIGINAL ISSUE DATE:	
96210.340	11/18/16	

Prepared For:

Verizon Wireless

Site Name:

East Street

Site Address:

20 East Street

Westwood, MA 02090

Prepared By:

Caron & Associates Design

Benjamin E. Caron

301 Concord Street

Haverhill, MA 01830

(978) 360-3671

ben@cadsims.com

For visual reference only. Actual visibility is dependent upon weather conditions, season, sunlight, and viewer location.

Based upon Rev. 2 Zoning Dwgs by Chappell Eng. dated: 1/20/2017 (Revised Generator)

East Street ~ (1/23/2017)

Photographic Renderings

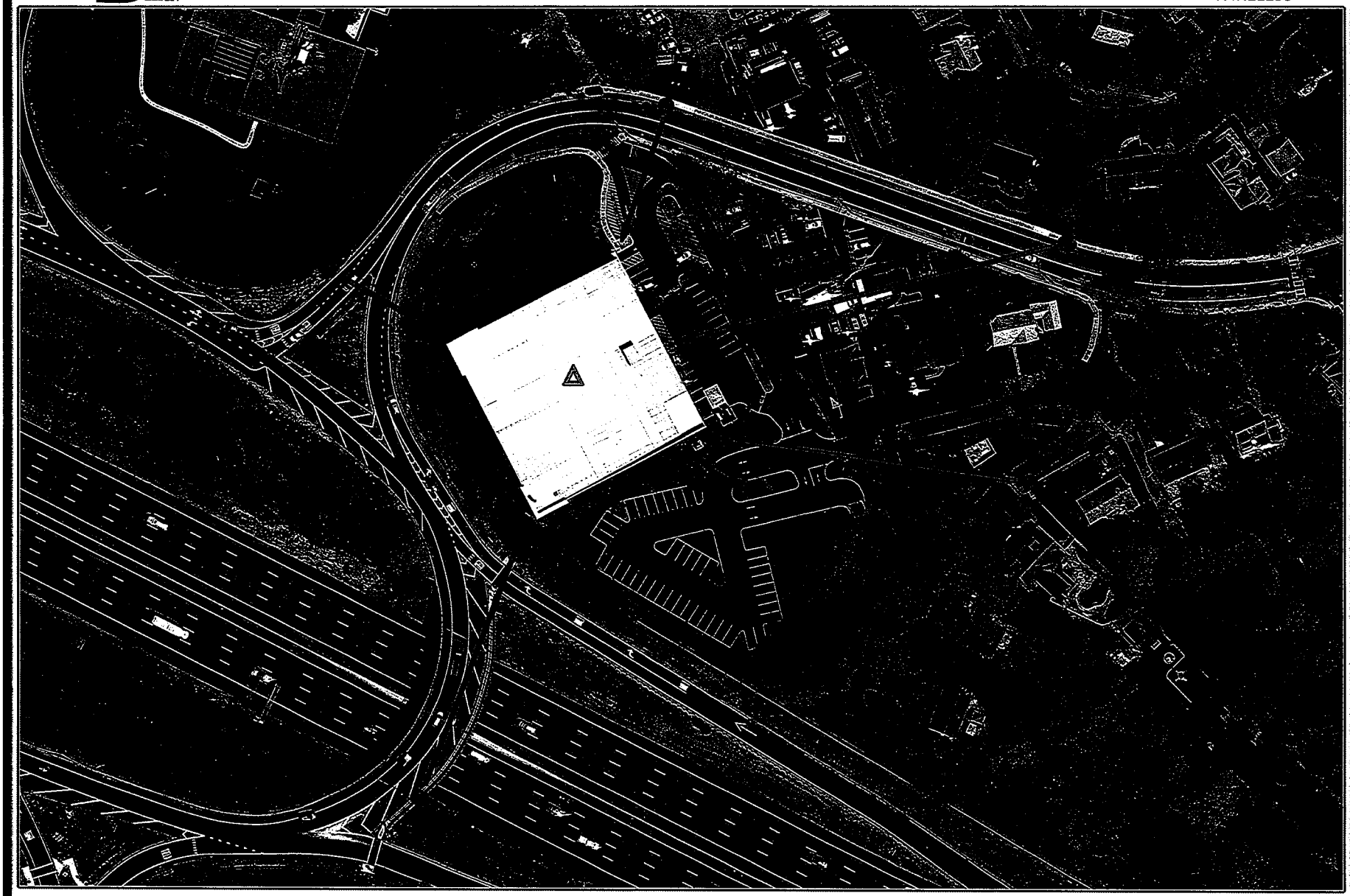
Created By: Ben Caron & Mike Barreiros

Caron & Associates Design

(978) 360-3671 info@cadsims.com

CARON ASSOC. CAD DESIGN

verizon WIRELESS



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Based upon Rev. 2 Zoning Dwgs by Chappell Eng. dated: 1/20/2017 (Revised Generator)

East Street ~ (1/23/2017)

Photo Location Map

Created By: Ben Caron & Mike Barreiros

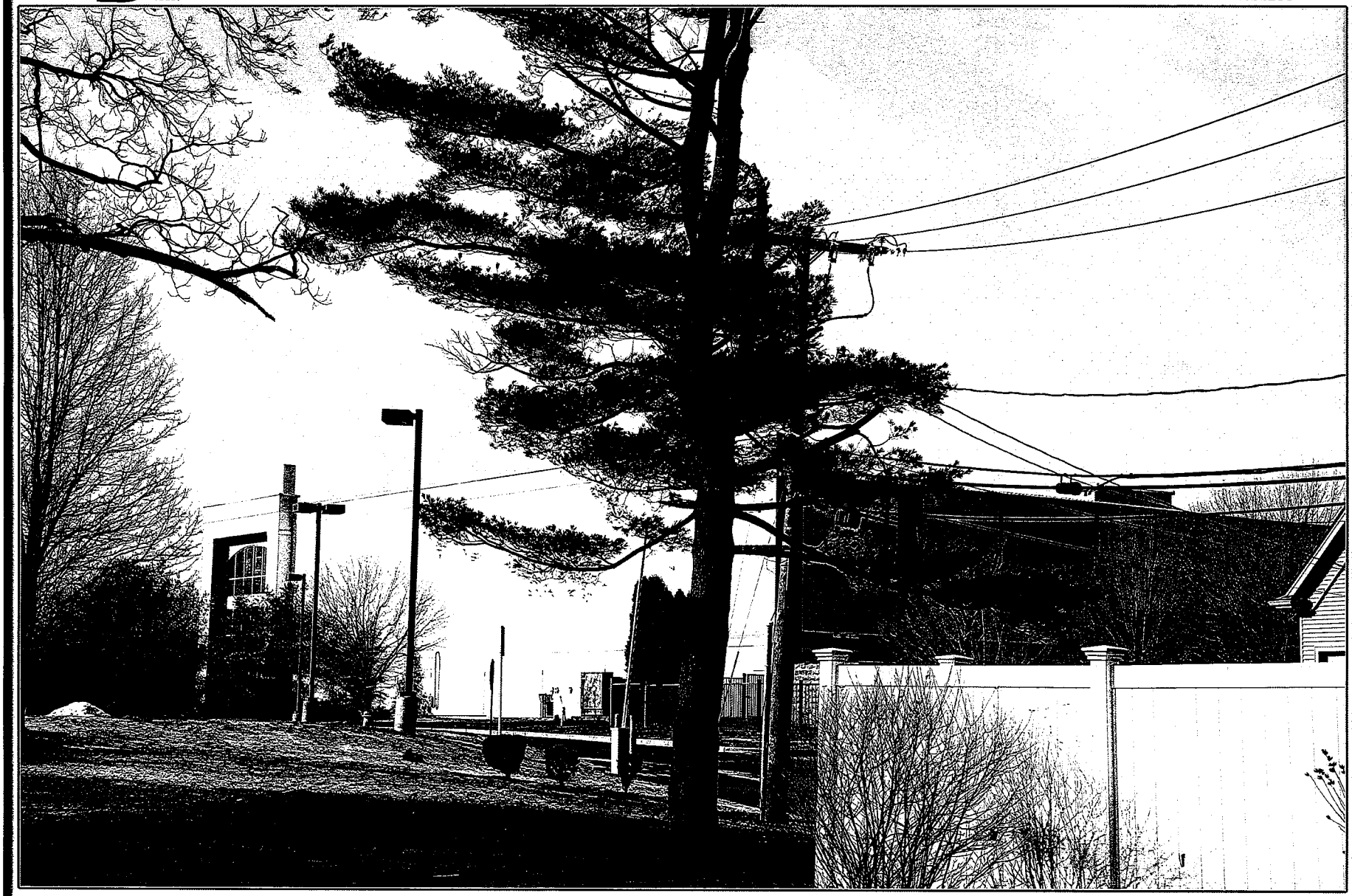
Caron & Associates Design

(978) 360-3671 info@cadsims.com

CARON ASSOC. CAD DESIGN

Existing Conditions

verizon WIRELESS



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Based upon Rev. 2 Zoning Dwgs by Chappell Eng. dated: 1/20/2017 (Revised Generator)

East Street ~ (1/23/2017)

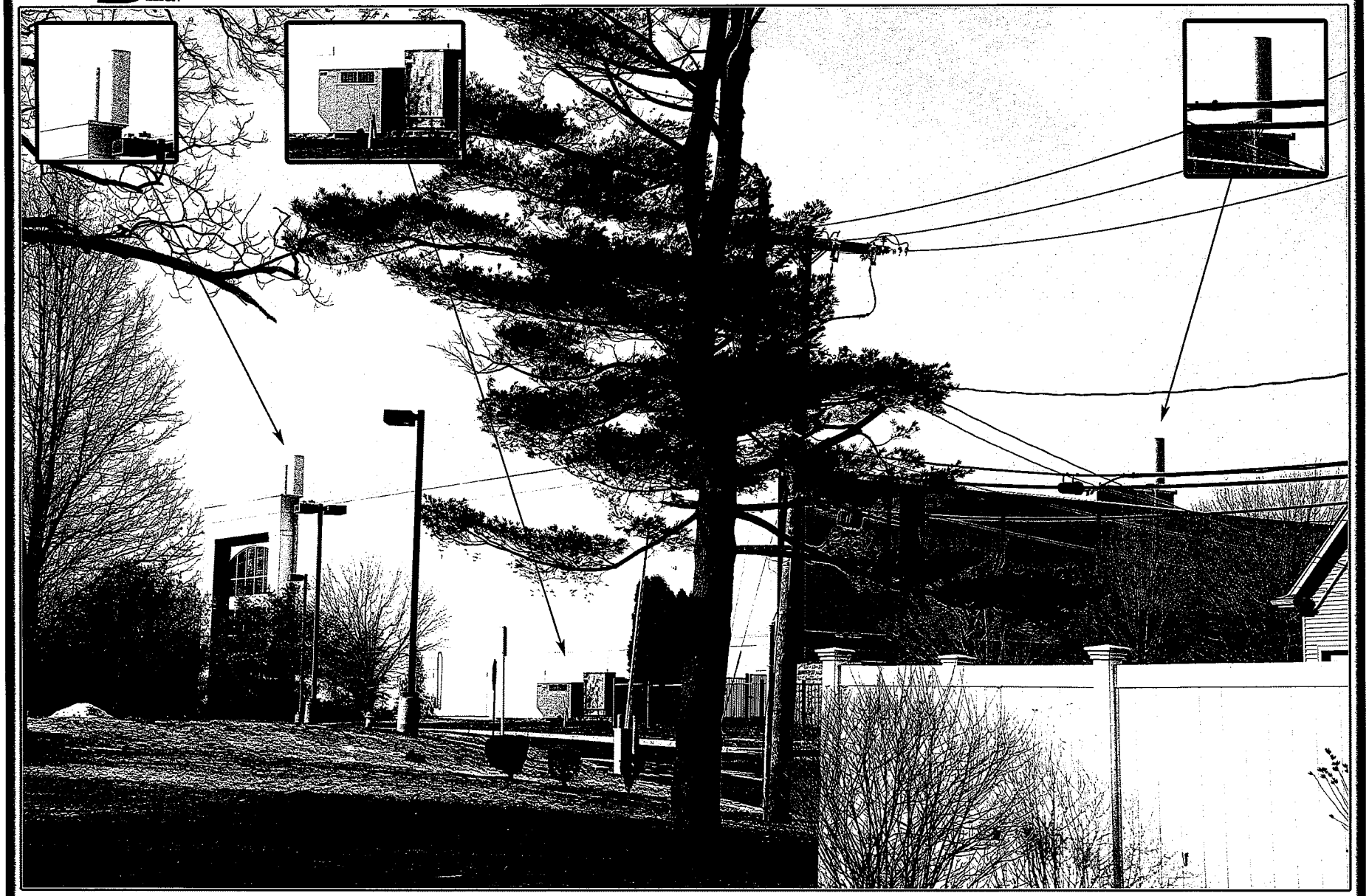
Photo Location 1 ~ 65mm ~ 314'+/- Away
From Westwood Terrace

Created By: Ben Caron & Mike Barreiros
Caron & Associates Design
(978) 360-3671 info@cadsims.com

CARON ASSOC. CAD DESIGN

Proposed Conditions

verizon WIRELESS



For visual reference only. Actual visibility is dependent upon weather conditions, season, sunlight, and viewer location.

Based upon Rev. 2 Zoning Dwgs by Chappell Eng. dated: 1/20/2017 (Revised Generator)

East Street ~ (1/23/2017)

Photo Location 1 ~ 65mm ~ 314'+/- Away From Westwood Terrace

Created By: Ben Caron & Mike Barreiros

Caron & Associates Design

(978) 360-3671 info@cadsims.com

CARON ASSOC. CAD DESIGN

Existing Conditions

verizon WIRELESS

For visual reference only. Actual visibility is dependent upon weather conditions, season, sunlight, and viewer location.

Based upon Rev. 2 Zoning Dwgs by Chappell Eng. dated: 1/20/2017 (Revised Generator)

East Street ~ (1/23/2017)

Photo Location 2 ~ 65mm ~ 383'+/- Away From East Street

Created By: Ben Caron & Mike Barreiros

Caron & Associates Design

(978) 360-3671 info@cadsims.com

CARON ASSOC. CAD DESIGN

Proposed Conditions

verizon WIRELESS

For visual reference only. Actual visibility is dependent upon weather conditions, season, sunlight, and viewer location.

Based upon Rev. 2 Zoning Dwgs by Chappell Eng. dated: 1/20/2017 (Revised Generator)

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Based upon Rev. 2 Zoning Dwgs by Chappell Eng. dated: 1/20/2017 (Revised Generator)

East Street ~ (1/23/2017)

Photo Location 3 ~ 35mm ~ 152'+/- Away
Near Boston Lightning Rod Co.

Created By: Ben Caron & Mike Barreiros
Caron & Associates Design
(978) 360-3671 info@cadsims.com

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Proposed Conditions

verizon WIRELESS

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Based upon Rev. 2 Zoning Dwgs by Chappell Eng. dated: 1/20/2017 (Revised Generator)

East Street ~ (1/23/2017)

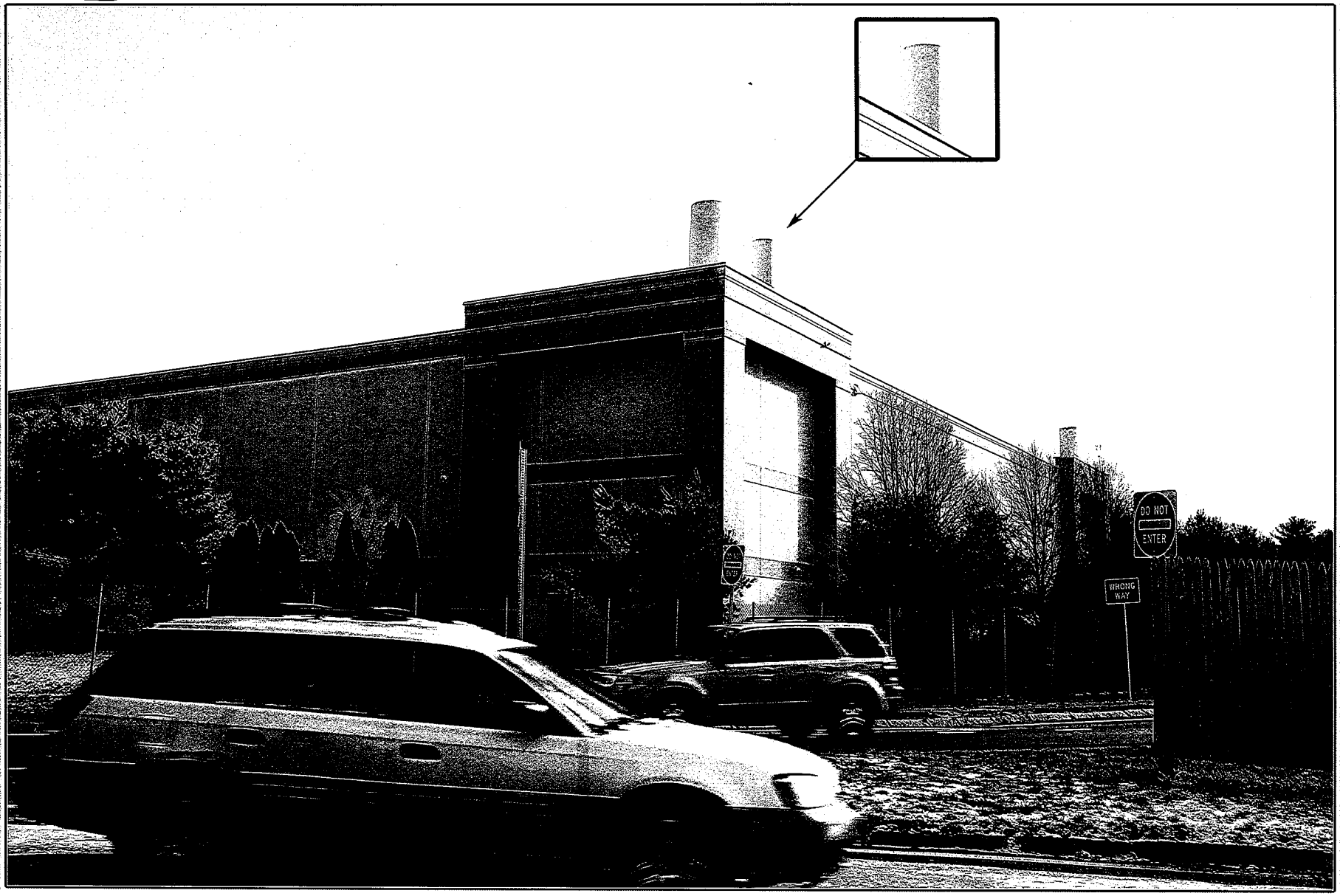
Photo Location 4 ~ 35mm ~ 123'+/- Away
Near I-95 Onramp

Created By: Ben Caron & Mike Barreiros
Caron & Associates Design
(978) 360-3671 info@cadsims.com

CARON ASSOC. CAD DESIGN

Proposed Conditions

verizon WIRELESS



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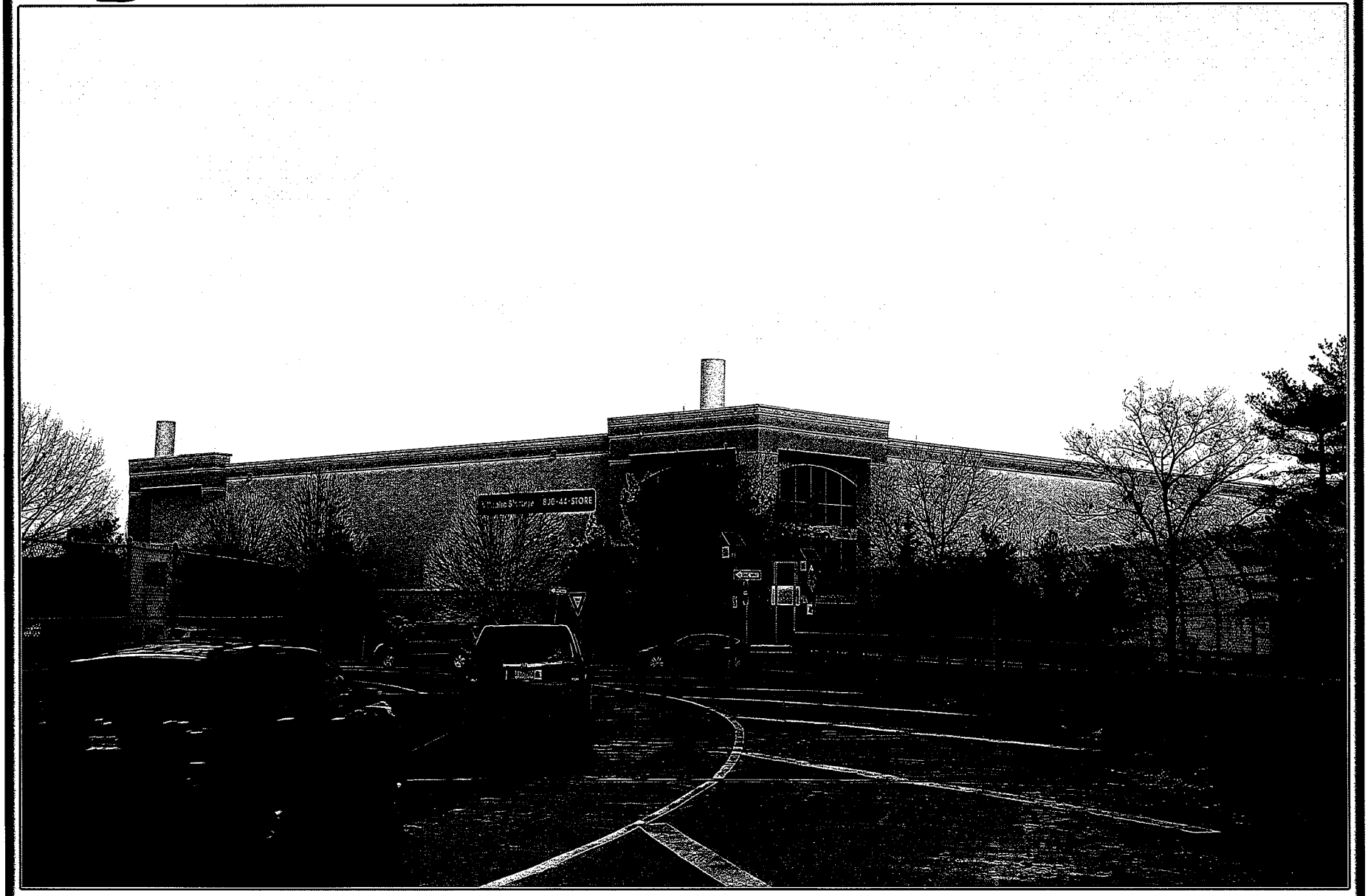

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Based upon Rev. 2 Zoning Dwgs by Chappell Eng. dated: 1/20/2017 (Revised Generator)

East Street ~ (1/23/2017)

Photo Location 5 ~ 50mm ~ 279'+/- Away From I-95 Offramp

Created By: Ben Caron & Mike Barreiros
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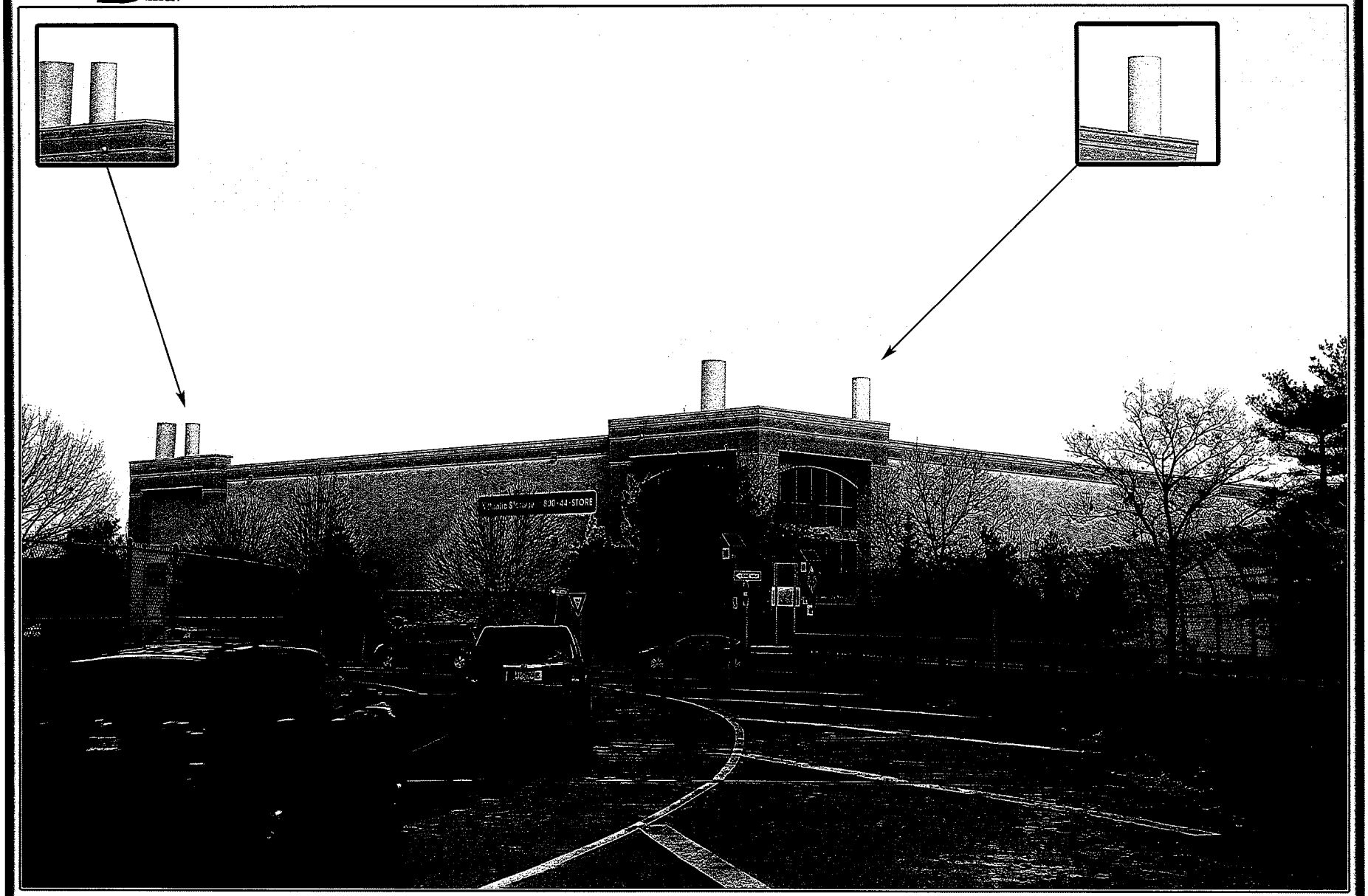
Proposed Conditions



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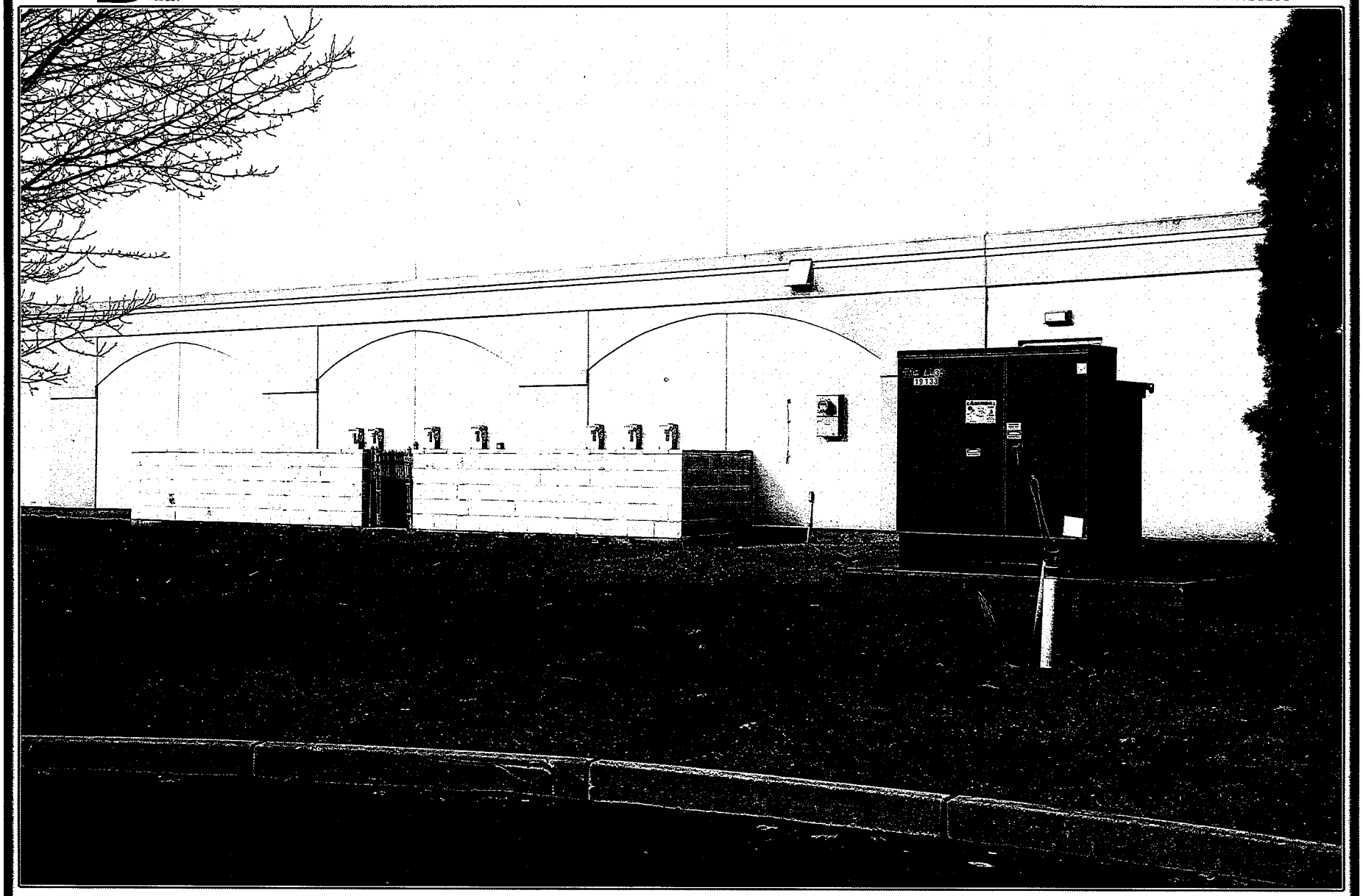
Existing Conditions

verizon WIRELESS



For visual reference only. Actual visibility is dependent upon weather conditions, season, sunlight, and viewer location.

Based upon Rev. 2 Zoning Dwgs by Chappell Eng. dated: 1/20/2017 (Revised Generator)

East Street ~ (1/23/2017)

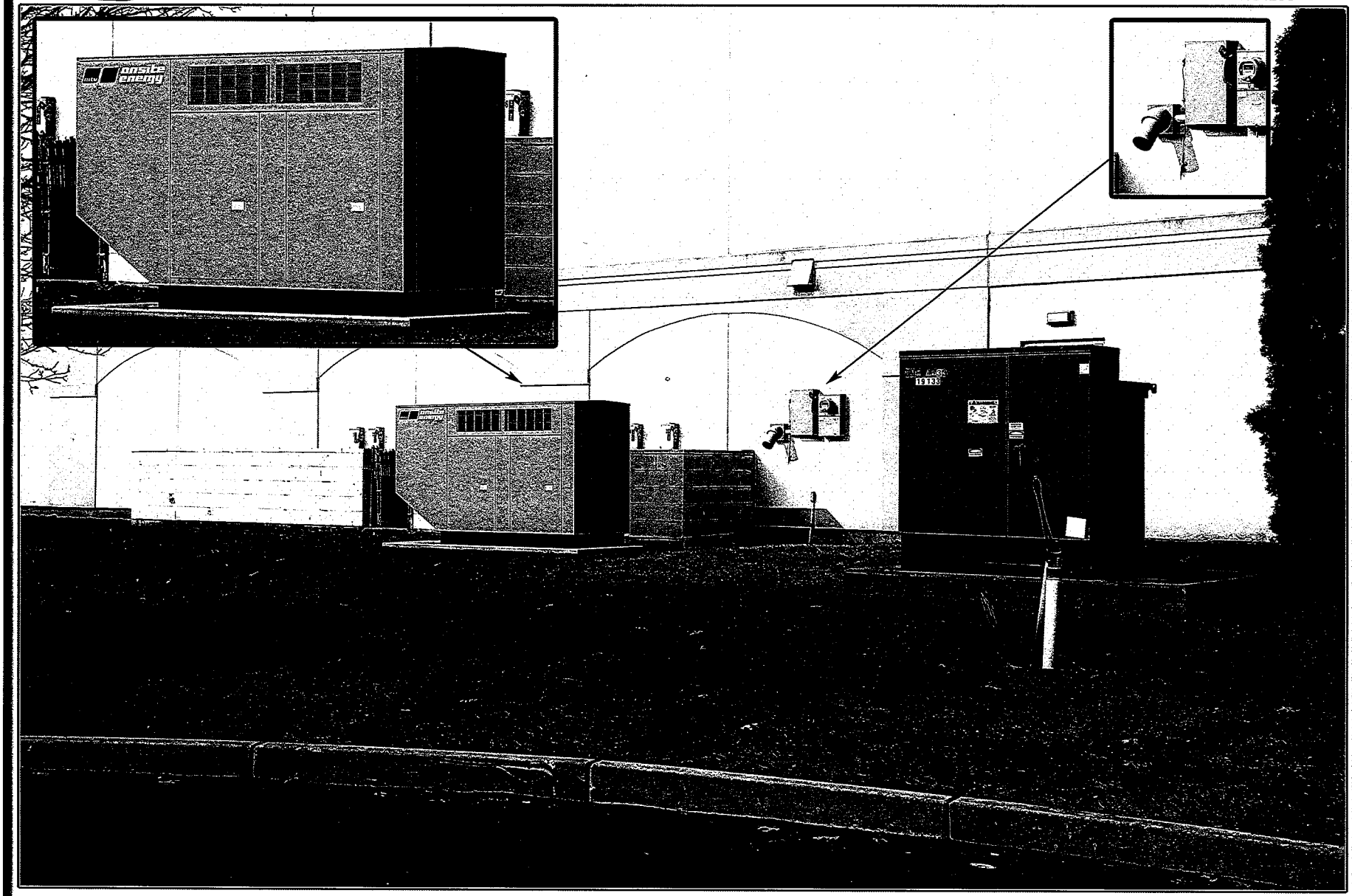
Photo Location 6 ~ 50mm ~ 72'+/- Away
From parking behind site

Created By: Ben Caron & Mike Barreiros
Caron & Associates Design
(978) 360-3671 info@cadsims.com

CARON ASSOC. CAD DESIGN

Proposed Conditions

verizon WIRELESS



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Product Specifications

COMMSCOPE®

POWERED BY ANDREW®

SBNHH-1D65A

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

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

Electrical Specifications

Frequency Band, MHz	698–806	806–896	1695–1880	1850–1990	1920–2200	2300–2360
Gain, dBi	13.4	13.5	16.5	16.7	17.2	17.5
Beamwidth, Horizontal, degrees	66	61	70	65	62	61
Beamwidth, Vertical, degrees	17.6	15.9	7.1	6.6	6.2	5.5
Beam Tilt, degrees	0–18	0–18	0–10	0–10	0–10	0–10
USLS, dB	16	13	13	13	12	12
Front-to-Back Ratio at 180°, dB	25	27	28	28	27	29
CPR at Boresight, dB	20	16	20	23	17	20
CPR at Sector, dB	10	5	11	6	1	4
Isolation, dB	25	25	25	25	25	25
Isolation, Intersystem, dB	30	30	30	30	30	30
VSWR | Return Loss, dB	1.5 | 14.0	1.5 | 14.0	1.5 | 14.0	1.5 | 14.0	1.5 | 14.0	1.5 | 14.0
PIM, 3rd Order, 2 x 20 W, dBc	-153	-153	-153	-153	-153	-153
Input Power per Port, maximum, watts	350	350	350	350	350	300
Polarization	±45°	±45°	±45°	±45°	±45°	±45°
Impedance	50 ohm	50 ohm	50 ohm	50 ohm	50 ohm	50 ohm

Electrical Specifications, BASTA*

Frequency Band, MHz	698–806	806–896	1695–1880	1850–1990	1920–2200	2300–2360
Gain by all Beam Tilts, average, dBi	13.1	13.1	16.1	16.5	16.7	17.2
Gain by all Beam Tilts Tolerance, dB	±0.5	±0.5	±0.5	±0.3	±0.5	±0.4
Gain by Beam Tilt, average, dBi	0 ° | 13.4	0 ° | 13.4	0 ° | 16.0	0 ° | 16.3	0 ° | 16.5	0 ° | 17.0
	9 ° | 13.1	9 ° | 13.1	5 ° | 16.2	5 ° | 16.5	5 ° | 16.8	5 ° | 17.3
	18 ° | 12.7	18 ° | 12.7	10 ° | 16.1	10 ° | 16.5	10 ° | 16.6	10 ° | 16.9
Beamwidth, Horizontal Tolerance, degrees	±3.1	±5.4	±2.8	±4	±6.6	±4.6
Beamwidth, Vertical Tolerance, degrees	±1.8	±1.4	±0.3	±0.4	±0.5	±0.3
USLS, dB	15	14	15	15	15	14
Front-to-Back Total Power at 180° ± 30°, dB	22	21	26	26	24	25
CPR at Boresight, dB	22	16	22	25	21	22
CPR at Sector, dB	10	6	12	8	5	4

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

General Specifications

Antenna Brand	Andrew®
Antenna Type	DualPol® multiband with internal RET
Band	Multiband
Brand	DualPol® | Teletilt®
Operating Frequency Band	1695 – 2360 MHz | 698 – 896 MHz
Performance Note	Outdoor usage

Product Specifications

SBNHH-1D65A

Mechanical Specifications

Color	Light gray
Lightning Protection	dc Ground
Radiator Material	Aluminum | Low loss circuit board
Radome Material	Fiberglass, UV resistant
RF Connector Interface	7-16 DIN Female
RF Connector Location	Bottom
RF Connector Quantity, total	6
Wind Loading, maximum	445.0 N @ 150 km/h 100.0 lbf @ 150 km/h
Wind Speed, maximum	241 km/h | 150 mph

Dimensions

Depth	180.0 mm | 7.1 in
Length	1413.0 mm | 55.6 in
Width	301.0 mm | 11.9 in
Net Weight	15.2 kg | 33.5 lb

Remote Electrical Tilt (RET) Information

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

Packed Dimensions

Depth	299.0 mm | 11.8 in
Length	1532.0 mm | 60.3 in
Width	409.0 mm | 16.1 in
Shipping Weight	26.1 kg | 57.5 lb

Regulatory Compliance/Certifications

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

Included Products

Product Specifications

SBNHH-1D65A

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

* Footnotes

Performance Note	Severe environmental conditions may degrade optimum performance

PCS RRH

PCS B25 RRH2X60/4X30

- **Flexible 4Tx or 2Tx Operating Modes** with the same HW by configuring via SW.
  - Supporting 4Tx (4x30) or 2Tx (2x60) modes of operation allows early deployment for current networks with LTE MIMO 2x2 support and transmitter diversity, and then later upgrade to MIMO 4x2 or MIMO 4x4 when UEs become available.
- **Designed to meet VzW's specific Needs**
  - Annual Return rate <2%
  - Connectors at the bottom, to achieve a better "real life" resiliency against water ingress
  - No cooling fans / Outdoor compliant IP65
  - Extended temperature range up to +55°C
  - Tx & Rx monitor ports (x4)
- **Small Size & Weight**

	Product Characteristics
RF Output Power (SW selectable)	4x30W 2x60W
Instantaneous Bandwidth	Up to 65MHz
Receiver	4 Branch Rx
Power	-48VDC

PCS RRH Specs

PCS B25 RRH4x30 (LR14.3) – Program Status

Release: LR14.3

Characteristic	Spec
RF Output Power	2x60W (4x30W HW Ready)
Instantaneous Bandwidth	65MHz
Target Reliability (Annual Return Rate)	<2%
Receiver	4 Branch Rx
Features	AISG 2.0 for RET/TMA
	Internal Smart Bias-T
Power	-48VDC
CPRI Ports	2 (HW ready rate 7)
External Alarms	4 External User Alarms
Monitor Ports	Tx (x4), Rx (x4)
Environmental	GR487 Compliance
RF Connectors	7/16 DIN (bottom)

B25 RRH4x30 is focused on Reliability & RF configuration Flexibility

PCS RRH Dimensions

- All dimensions are subject to change, but latest from ALU (3 Feb 2014) is:
  - 22” x 12” x 9.5” or 560 mm x 305 mm x 240 mm (LXWXH)
  - Base weight 55 pounds, plus additional 6 pounds for tower mounting brackets or 7.5 pounds for wall mounting brackets.

GAS GENERATOR SET
MTU 6V0072 GS30

30 kWe / 60 Hz / Standby
208 - 240V

SYSTEM RATINGS

Standby

Voltage (L-L)	240V**	208V**
Phase	1	3
PF	1	0.8
Hz	60	60
Natural Gas Ratings: Amps	125	104
Natural Gas Ratings: kW/kVA	30/30	30/37.5
LP Gas Ratings: Amps	125	104
LP Gas Ratings: kW/kVA	30/30	30/37.5
skVA@30% Voltage Dip	52	105
Generator Model*	361CSL1600	361CSL1600
Temp Rise	130 °C/40 °C	130 °C/40 °C
Connection	12 LEAD ZIG-ZAG	12 LEAD LOW WYE

* Consult the factory for alternate configuration.
** UL 2200 Offered

CERTIFICATIONS AND STANDARDS

// **Generator set is designed and manufactured in facilities certified to standards ISO 9001:2008 and ISO 14001:2004**

// **UL 2200 / CSA – Optional**
- UL 2200 Listed
- CSA Certified

// **Performance Assurance Certification (PAC)**
- Generator Set Tested to ISO 8528-5 for Transient Response
- Verified product design, quality and performance integrity
- All engine systems are prototype and factory tested

// **Power Rating**
- Accepts Rated Load in One Step Per NFPA 110

STANDARD FEATURES*

// MTU Onsite Energy is a single source supplier
// Global Product Support
// 2 Year Standard Warranty
// 4.3 L Engine
- 4.3 Liter Displacement
- 4-Cycle
// Engine-generator resilient mounted
// Complete Range of Accessories
// Generator
- Brushless, Rotating Field Generator
- 2/3 Pitch Windings
- 300% Short Circuit Capability with Optional PMG
// Digital Control Panel(s)
- UL Recognized, CSA Certified, NFPA 110
- Complete System Metering
- LCD Display
// Cooling System
- Integral Set-Mounted
- Engine Driven Fan

STANDARD EQUIPMENT*

// Engine

Air Cleaner
Oil Pump
Oil Drain Extension & S/O Valve
Full Flow Oil Filter
Jacket Water Pump
Thermostat
Blower Fan & Fan Drive
Radiator - Unit Mounted
Electric Starting Motor - 12V
Governor – Electronic Isochronous
Base - Formed Steel
SAE Flywheel & Bell Housing
Charging Alternator - 12V
Battery Box & Cables
Flexible Fuel Connectors
Flexible Exhaust Connection
EPA Certified Engine

// Generator

NEMA MG1, IEEE and ANSI standards compliance for temperature rise and motor starting
Self-Ventilated and Drip-Proof
Superior Voltage Waveform
Solid State, Volts-per-Hertz Regulator
±1% Voltage Regulation No Load to Full Load
Brushless Alternator with Brushless Pilot Exciter
4 Pole, Rotating Field
130 °C Maximum Standby Temperature Rise
1 Bearing, Sealed
Flexible Coupling
Full Amortisseur Windings
125% Rotor Balancing
3-Phase Voltage Sensing
100% of Rated Load - One Step
5% Maximum Total Harmonic Distortion

// Digital Control Panel(s)

Digital Metering
Engine Parameters
Generator Protection Functions
Engine Protection
SAE J1939 Engine ECU Communications
Windows®-Based Software
Multilingual Capability
Remote Communications to RDP-110 Remote Annunciator
Programmable Input and Output Contacts
UL Recognized, CSA Certified, CE Approved
Event Recording
IP 54 Front Panel Rating with Integrated Gasket
NFPA110 Compatible

* Represents standard product only. Consult Factory/MTU Onsite Energy Distributor for additional configurations.

APPLICATION DATA

// Engine

Manufacturer	GM
Model	4.3L
Type	4-Cycle
Arrangement	6-V
Displacement: L (in^3)	4.3 (262)
Bore: cm (in)	10.2 (4)
Stroke: cm (in)	8.8 (3.5)
Compression Ratio	9.4:1
Rated RPM	1,800
Engine Governor	Bosch
Maximum Power (NG): kWm (bhp)	49.6 (66.5)
Maximum Power (LP): kWm (bhp)	53.2 (71.4)
Speed Regulation	C/F
Air Cleaner	Dry

// Liquid Capacity (Lubrication)

Total Oil System: L (gal)	4.2 (1.1)
Engine Jacket Water Capacity: L (gal)	7.2 (1.9)
System Coolant Capacity: L (gal)	21.6 (5.7)

// Electrical

Electric Volts DC	12
Cold Cranking Amps Under -17.8 °C (0 °F)	925

// Fuel Inlet

Fuel Supply Connection Size	3/4" NPT
Fuel Supply Pressure: mm H_20 (in. H_20)	178–279 (7–11)

// Fuel Consumption (NG-1000 BTU/ft^3 / LP-2500 BTU/ft^3)

	NG	LPG
At 100% of Power Rating: m^3/hr (ft^3/hr)	13.9 (489)	6.1 (216)
At 75% of Power Rating: m^3/hr (ft^3/hr)	10.4 (368)	4.6 (163)
At 50% of Power Rating: m^3/hr (ft^3/hr)	7.3 (256)	3.2 (113)

// Cooling - Radiator System

	NG and LPG
Ambient Capacity of Radiator: °C (°F)	50 (122)
Maximum Restriction of Cooling Air, Intake, and Discharge Side of Rad.: kPa (in. H_20)	0.12 (0.5)
Water Pump Capacity: L/min (gpm)	117.3 (31)
Heat Rejection to Coolant: kW (BTUM)	39 (2,220)
Heat Radiated to Ambient: kW (BTUM)	16.5 (938)
Fan Power: kW (hp)	3.4 (4.5)

// Air Requirements

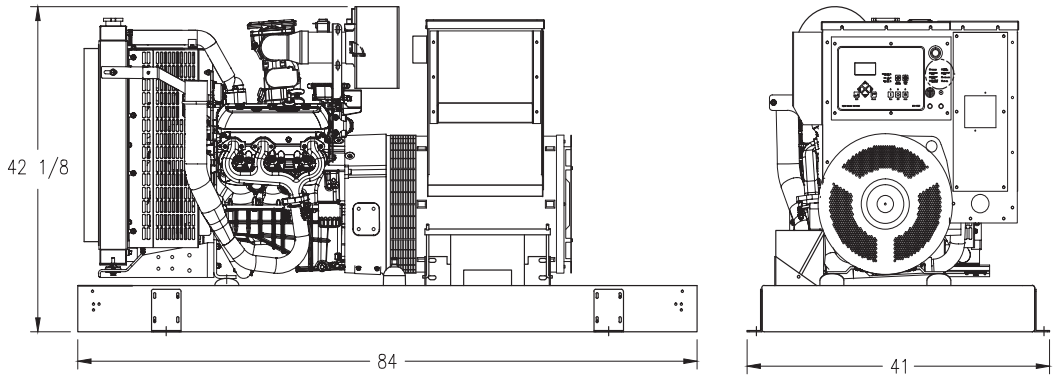
	NG and LPG
Aspirating: *m^3/min (SCFM)	3.9 (136.5)
Air Flow Required for Rad. Cooled Unit: *m^3/min (SCFM)	211.4 (7,464)
Remote Cooled Applications; Air Flow Required for Dissipation of Radiated Gen-set Heat For a Max of 25 °F Rise: *m^3/min (SCFM)	59.9 (2,114)

* Air density = 1.184 kg/m^3 (0.0739 lbm/ft^3)

// Exhaust System

	NG and LPG
Gas Temp. (Stack): °C (°F)	704.4 (1,300)
Gas Volume at Stack Temp: m^3/min (CFM)	12.5 (440.8)
Maximum Allowable Back Pressure: kPa (in. H_20)	10 (40)

WEIGHTS AND DIMENSIONS



Drawing above for illustration purposes only, based on standard open power 240 volt generator set. Lengths may vary with other voltages. Do not use for installation design.

System	Dimensions (L x W x H)	Weight (dry)
Open Power Unit (OPU)	2,134 x 1,041 x 1,070 mm (84 x 41 x.42.13 in)	646 kg (1,425 lb)

Weights and dimensions are based on open power units and are estimates only. Consult the factory for accurate weights and dimensions for your specific generator set.

SOUND DATA

Unit Type	Standby Full Load
Level 0: Open Power Unit dB(A)	C/F
WPE - No Sound Attenuation dB(A)	C/F
CQE dB(A)	C/F

Sound data is provided at 7 m (23 ft). Generator set tested in accordance with ISO 8528-10 and with infinite exhaust.

EMISSIONS DATA

Fuel Type	THC + NO_x	CO
Natural Gas	5.24	16.38
Liquid Propane	6.09	23.89

All units are in g/hp-hr and are EPA weighted cycle values. Emission levels of the engine may vary with ambient temperature, barometric pressure, humidity, fuel type and quality, installation parameters, measuring instrumentation, etc. The data was obtained in compliance with US EPA regulations.

RATING DEFINITIONS AND CONDITIONS

// Standby ratings apply to installations served by a reliable utility source. The standby rating is applicable to varying loads for the duration of a power outage. No overload capability for this rating. Ratings are in accordance with ISO 3046-1, BS 5514, and AS 2789. Average load factor: ≤ 85%.

// Deration Factor:
Altitude: Consult your local MTU Onsite Energy Power Generation Distributor for altitude derations.
Temperature: Consult your local MTU Onsite Energy Power Generation Distributor for temperature derations.

C/F = Consult Factory/MTU Onsite Energy Distributor
N/A = Not Available

C Squared Systems, LLC
65 Dartmouth Drive
Auburn, NH 03032
Phone: (603) 644 2800
support@csquaredsystems.com

RF Report

Proposed Wireless Facility
20 East Street
Westwood, MA 02090

January 16, 2017

TABLE OF CONTENTS

LIST OF TABLES

ATTACHMENTS

1. Overview

This RF Report has been prepared on behalf of Verizon Wireless in support of its application to the Town of Westwood for the installation and operation of a wireless facility located at 20 East Street in Westwood, MA. Verizon Wireless' proposed facility consists of an equipment room on the third floor of the building, and equipment mounted on the rooftop of the building.

This report concludes that the proposed site is needed to provide additional capacity and enhanced coverage to sections of Westwood in order to improve deficient service areas along I-95, East Street, the East Street/Canton Street Rotary, and the surrounding roads, neighborhoods, and business/retail areas within 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 predicted 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 in the midst of deploying advanced 4th Generation (4G) voice and data services over LTE technology in the 700 MHz, 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 Westwood area to improve capacity and coverage to a gap in service that now exists in northeast Westwood, 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 (49% in 2015-2016, 42% CAGR 2015-2020 in North America)[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 the overloaded sites.

We have concluded that by utilizing the proposed wireless communication facility at 20 East Street at an antenna centerline height of 46.5' AGL (above ground level), Verizon Wireless will be able to provide improved capacity and coverage to residents, businesses, and traffic corridors within sections of Westwood that are currently located within deficient service areas of Verizon Wireless' network.

[1] "Cisco Visual Networking Index: Global Mobile Data Traffic Forecast Update, 2015-2020", February 3, 2016, Cisco Systems, Inc. http://www.cisco.com/c/en/us/solutions/collateral/service-provider/visual-networking-index-vni/mobile-white-paper-c11-520862.html

3. The Proposed Facility

As shown on the plans submitted with the application, Verizon Wireless' proposal consists principally of the following elements:

1) A 7'-6" x 10'-0" telecommunications equipment room with telco/power/fiber connections, located within an existing storage unit on the 3rd floor of the building;
2) Six (6) panel antennas (two per sector) mounted within three (3) RF-transparent concealment cylinders (one per sector), at an antenna centerline height of 46.5' AGL;
3) Remote Radio Heads (RRH) with accessory junction boxes and surge suppressors located on non-penetrating ballast mounts near the antennas;
4) Power and fiber cables routed from the equipment room on the 3rd floor, through two roof penetrations, and along rooftop mounted cables trays to the proposed RRHs;
5) A natural gas back-up power generator, located at ground level on the southeastern side of the building on a proposed 6'-0" x 4'-0" concrete pad.

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, 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 insufficient network capacity and significant coverage gaps exist throughout much of Westwood, MA, as described further below.

Verizon Wireless currently operates wireless facilities, similar to the proposed facility, within Westwood and the surrounding cities/towns in the vicinity. Due in large part to the distances between the existing sites, the intervening topography, and volume of user traffic in the area, these existing facilities do not provide sufficient coverage and capacity to portions of Westwood. Specifically, Verizon Wireless determined that much of northeast Westwood and southern Dedham is without reliable service in the following areas and roads, without limitation to:

- I-95, between Exit 13 and Exit 15;
  - Serves ~ 149,500 vehicles per day, as measured south of Route 1 (2015) [2];
- East Street;
- The East Street/Canton Street Rotary;
- The surrounding roads, neighborhoods, and business/retail areas within the proximity of the proposed site.

The proposed site located at 20 East Street ("East Street") is needed to fill in these targeted capacity and coverage gaps, in order to improve network quality and reliability for Verizon Wireless subscribers traveling along these roads, as well as to the numerous residences, businesses, and visitors in this area.

[2] Traffic counts are sourced from the Massachusetts Department of Transportation, Transportation Data Management System.

5. Site Search and Selection Process

To find a site that provides acceptable service, provides adequate capacity relief, and fills the gaps in coverage, computer modeling software is used to define a search area. The search ring identifies the area within which a site could be located (assuming that sufficient height is used) that would have a high probability of addressing the significant coverage gap and 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 defined 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 towers throughout the towns being serviced.

After the search of the area had been completed, Verizon Wireless determined that collocating on the existing building rooftop at 20 East Street would be the best solution to address the targeted capacity and coverage objectives with respect to its network requirements.

6. Pertinent Site Data

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

Site Name	Address	City/State	Location		Structure Type	Antenna Height (ft. AGL)	Status
			Latitude	Longitude			
Hyde Park	1605 Hyde Park Avenue	Boston, MA	42.2442	-71.1306	Monopole	100	On-Air
Hyde Park 2	139 Providence Street	Boston, MA	42.2667	-71.1222	Monopole	87	On-Air
W Rox Georgetown	5050 Washington Street	Boston, MA	42.2655	-71.1520	Rooftop	46	On-Air
W Roxbury 2	225 Rivermoor Street	Boston, MA	42.2791	-71.1822	Monopole	75	On-Air
W Roxbury Msc	4620 Washington Street	Boston, MA	42.2751	-71.1392	Lattice	150	On-Air
Canton 2	95 Shawmut Road	Canton, MA	42.1867	-71.1552	Monopole	58	On-Air
Canton 5	120 Royall Street	Canton, MA	42.2042	-71.1293	Rooftop	54/57	On-Air
Canton North	2438 Washington Street	Canton, MA	42.1987	-71.1197	Water Tank	75	On-Air
Dedham	55 Ariadne Road	Dedham, MA	42.2313	-71.1830	Rooftop	88	On-Air
Dedham 2	200 West Street	Dedham, MA	42.2550	-71.2094	Monopole	42	On-Air
Dedham 3	5 Incinerator Road	Dedham, MA	42.2559	-71.1667	Smokestack	105	On-Air
Dedham Oakdale	8 Industrial Drive	Dedham, MA	42.2372	-71.1431	Smokestack	109	On-Air
Canton Ponkapoag	Off Blue Hill River Road	Milton, MA	42.2036	-71.1010	Monopole	107	On-Air
Milton 2	1071 Blue Hill Avenue	Milton, MA	42.2347	-71.1136	Rooftop	54	On-Air
Canton 3	346 Vanderbilt Avenue	Norwood, MA	42.1703	-71.1868	Monopole	114	On-Air
Norwood	661 Washington Street	Norwood, MA	42.1933	-71.2018	Rooftop	48.5	On-Air
Westwood	690 Canton Street	Westwood, MA	42.2018	-71.1609	Rooftop	40	On-Air
Westwood 3	213 Fox Hill Street	Westwood, MA	42.2289	-71.2155	Water Tank	76	On-Air
Westwood 5	90 Glacier Drive	Westwood, MA	42.2167	-71.1872	Stealth Monopole	95	Approved
Westwood 7	248 Nahatan Street	Westwood, MA	42.2144	-71.2127	Steeple	54.8	On-Air
East Street	20 East Street	Westwood, MA	42.2236	-71.1693	Rooftop	46.5	Proposed

Table 1: Verizon Wireless Site Information Used in Coverage Analysis[3]

[3] 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 frequency range and were produced using deciBel Planner™, a Windows-based RF propagation computer modeling program and network planning tool. The software takes into account the geographical 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 plots included as attachments show coverage based on RSRP signal strengths of -85 dBm, -90 dBm, and -95 dBm. 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 "East Street – Existing/Approved 700 MHz LTE Coverage" shows the coverage provided to areas of Westwood from the "On-Air" and "Approved" sites listed in Table 1. "On-Air" sites are existing Verizon Wireless facilities, and "Approved" sites are defined as those that are in the final stages of permitting or construction and are expected to be turned on-air in the near future. The green shaded areas represent the strongest level of coverage shown and is necessary to cover into the denser building makeups of the business and retail areas, whereas the orange represents the minimum level of coverage for reliable service in the more residential areas. The deficient areas of coverage are defined by the unshaded areas, and to a lesser degree, the yellow shaded areas. As shown in this plot and described in the Coverage and Capacity Objectives section of this report, portions of northeastern Westwood and southern Dedham are in areas of deficient coverage.

Attachment B titled "East Street - 700 MHz LTE Coverage with Proposed Site" shows the composite coverage with the proposed "East Street" facility. As shown by the additional areas of coverage, the proposed facility will provide coverage improvement to approximately 1,030 new residents[4] within the proximity of the proposed facility, and improve coverage along I-95, East Street, and the surrounding roads, neighborhoods, and business/retail areas.

Attachment C titled "East Street – Existing/Approved 700 MHz LTE Sector Footprints" depicts the areas primarily served by the sectors (a.k.a. signal "footprints") of the "On-Air" and "Approved" Verizon Wireless 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 is also needed to 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 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 is capable of

[4] Residential population counts are based upon the 2010 U.S. Census data. Please note that this does not include employees, visitors, or vehicular counts in the area.

reaching these areas does not mean that these areas experience adequate coverage. These unreliable areas of low signal level impose a significant capacity burden on the sites primarily serving the area.

Attachment D titled "East Street - 700 MHz LTE Sector Footprints with Proposed Site" shows the composite coverage with the overall footprint of the proposed facility in dark green. As shown in this map, the proposed "East Street" facility is an effective solution to provide capacity relief to the area, particularly to the "Dedham" beta (red) sector. The proposed facility is centrally located in the area of deficient service, making it particularly suited to provide a dominant server to this area, thereby offloading the sector of the surrounding site primarily serving this area. Table 2 below details the capacity relief based on the sector footprints shown in Attachments C and D.

Sector	Current		With "East Street"		Offload Summary	
	Residental Pops	Area (mi^2)	Residental Pops	Area (mi^2)	Total Residential Pops Offloaded	Area Offloaded (mi^2/%)
Dedham Beta	4535	1.75	2798	1.09	**1737 (38.3%)**	**0.66 (37.7%)**

Table 2: Capacity Offload Summary[5]

Attachment E titled "East Street – Area Terrain Map" details the terrain features around the proposed "East Street" 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 darker blue and green shades correspond to lower elevations, whereas the orange, red, and grey shades indicate higher elevations.

[5] Residential population counts are based upon the 2010 U.S. Census data. Please note that this does not include employee, visitor, or vehicular counts in the area.

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 F, C3, and C4 Blocks of the PCS (1900 MHz) band, and the A and 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 Norfolk County, Verizon Wireless has determined that an additional facility is needed to provide reliable service and adequate capacity throughout areas of Westwood, MA. Verizon Wireless determined that collocating on the building rooftop at 20 East Street in Westwood will provide the additional capacity and coverage improvement to the targeted areas including key roadways such as I-95, East Street, the East Street/Canton Street Rotary, and the surrounding roads, neighborhoods, and business/retail areas within 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 Westwood; therefore, Verizon Wireless respectfully requests that the Town of Westwood 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.

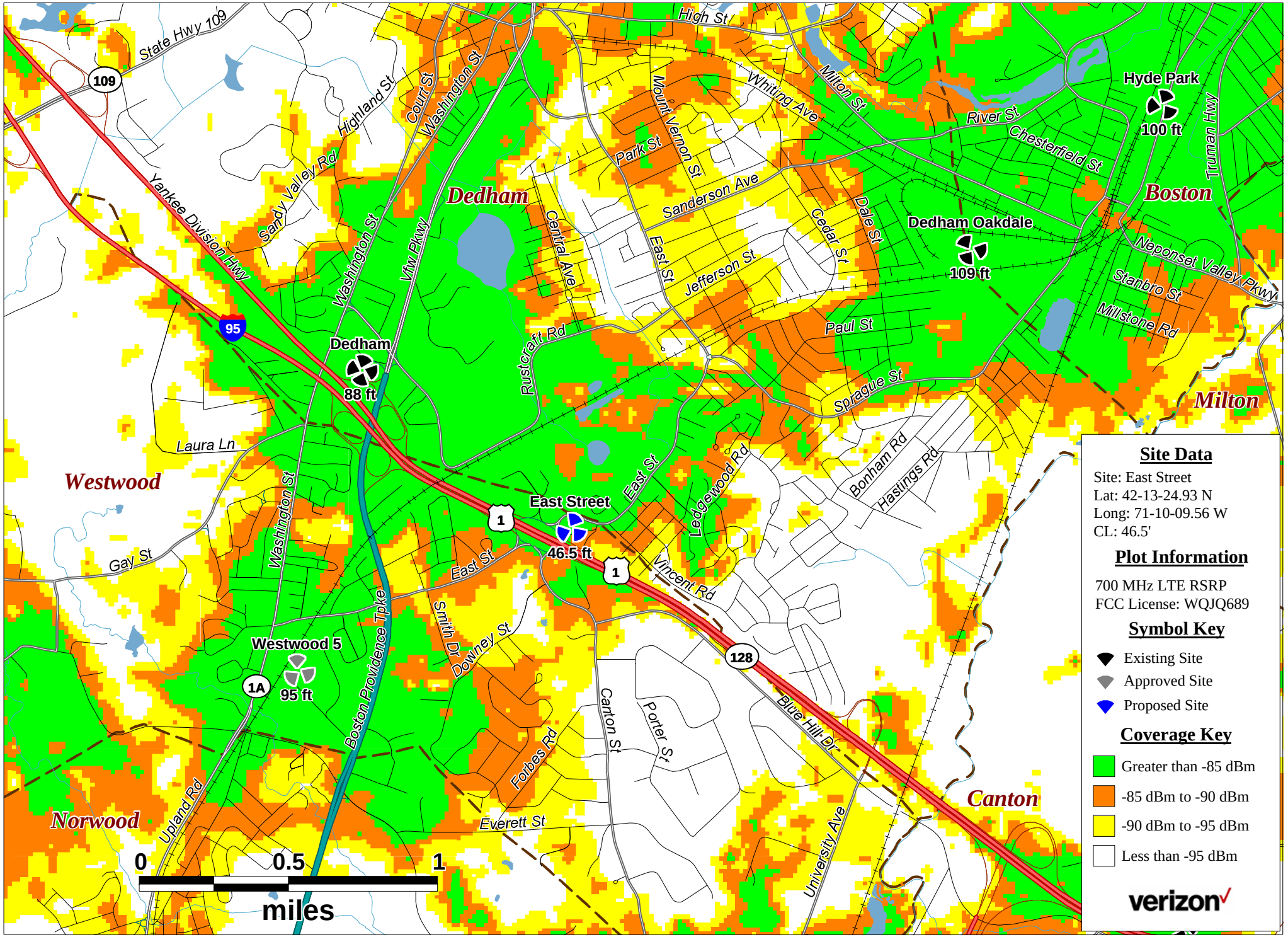
Keith Vellante

Keith Vellante
RF Engineer
C Squared Systems, LLC

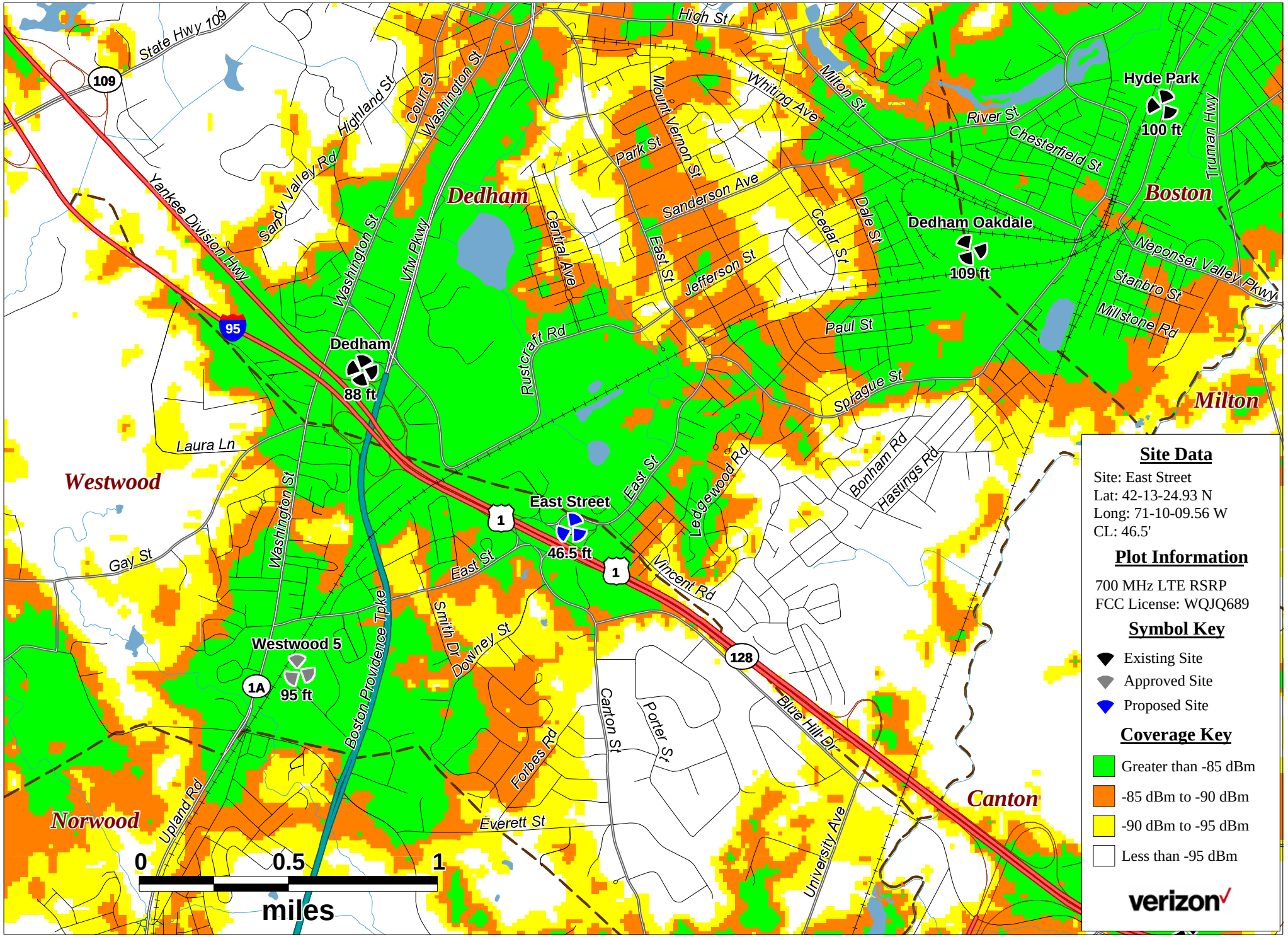
January 16, 2017
Date

11. Attachments

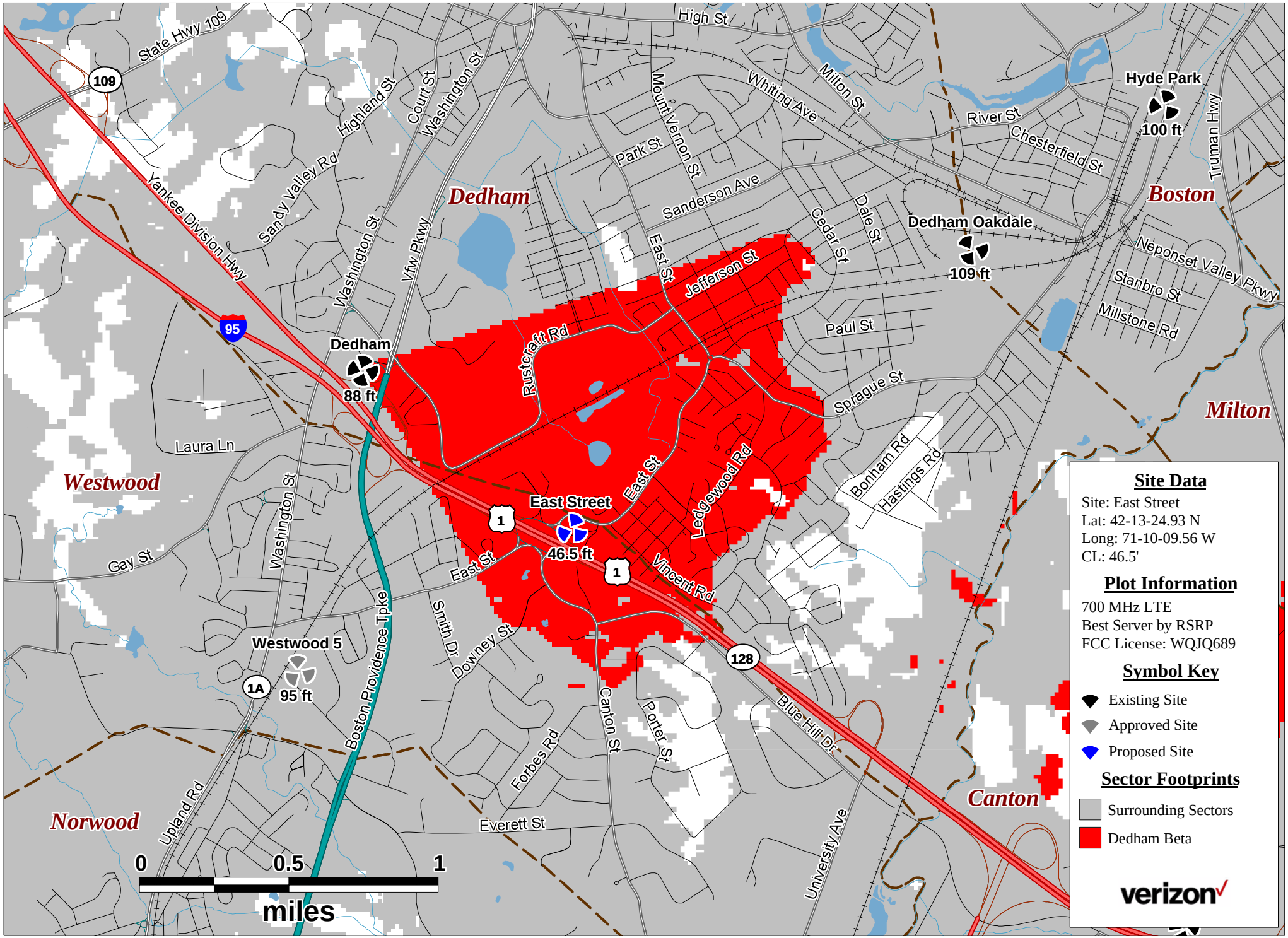
Attachment A:
East Street - Existing/Approved 700 MHz LTE Coverage



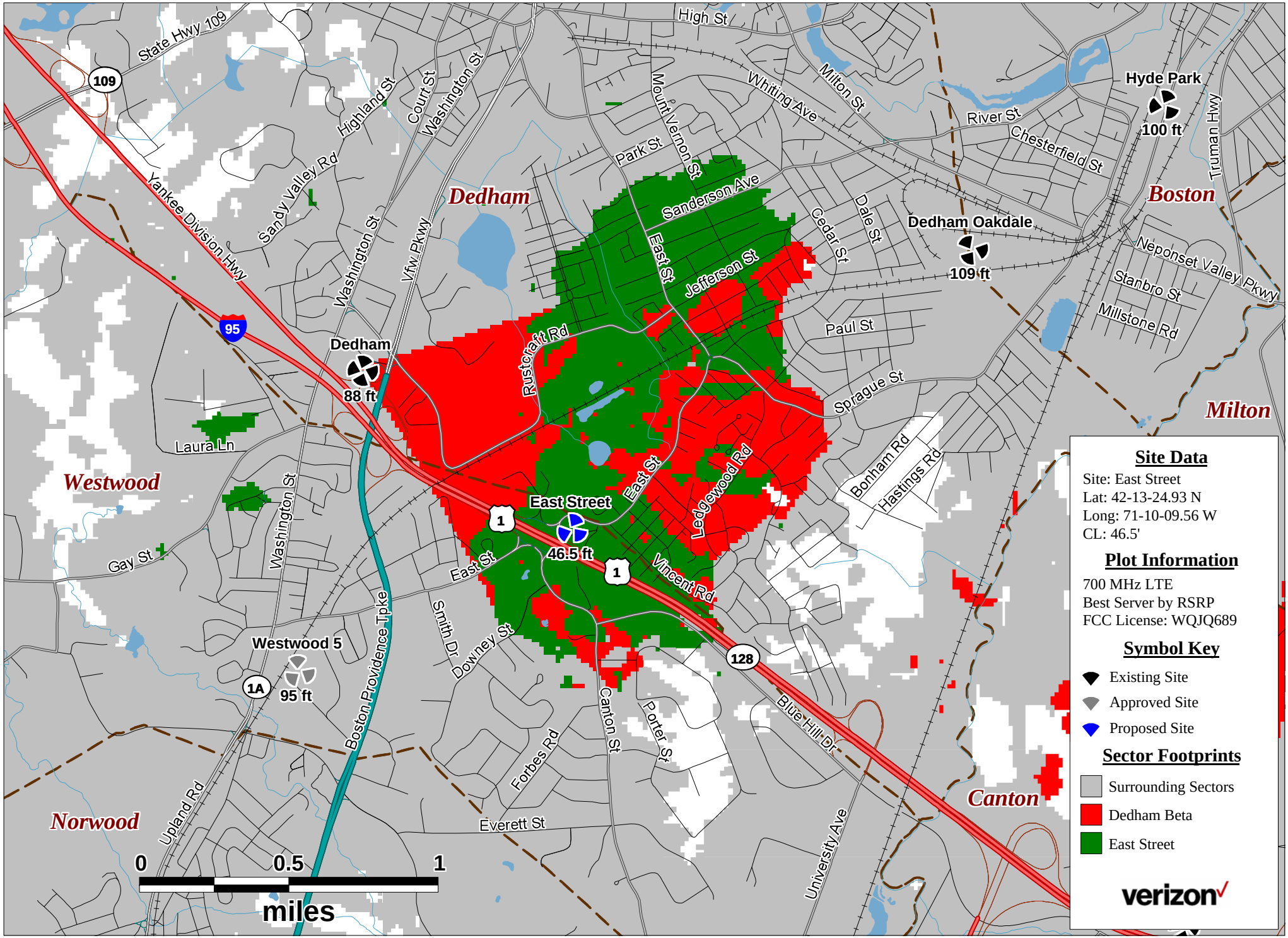
Attachment B:
East Street - 700 MHz LTE Coverage with Proposed Site



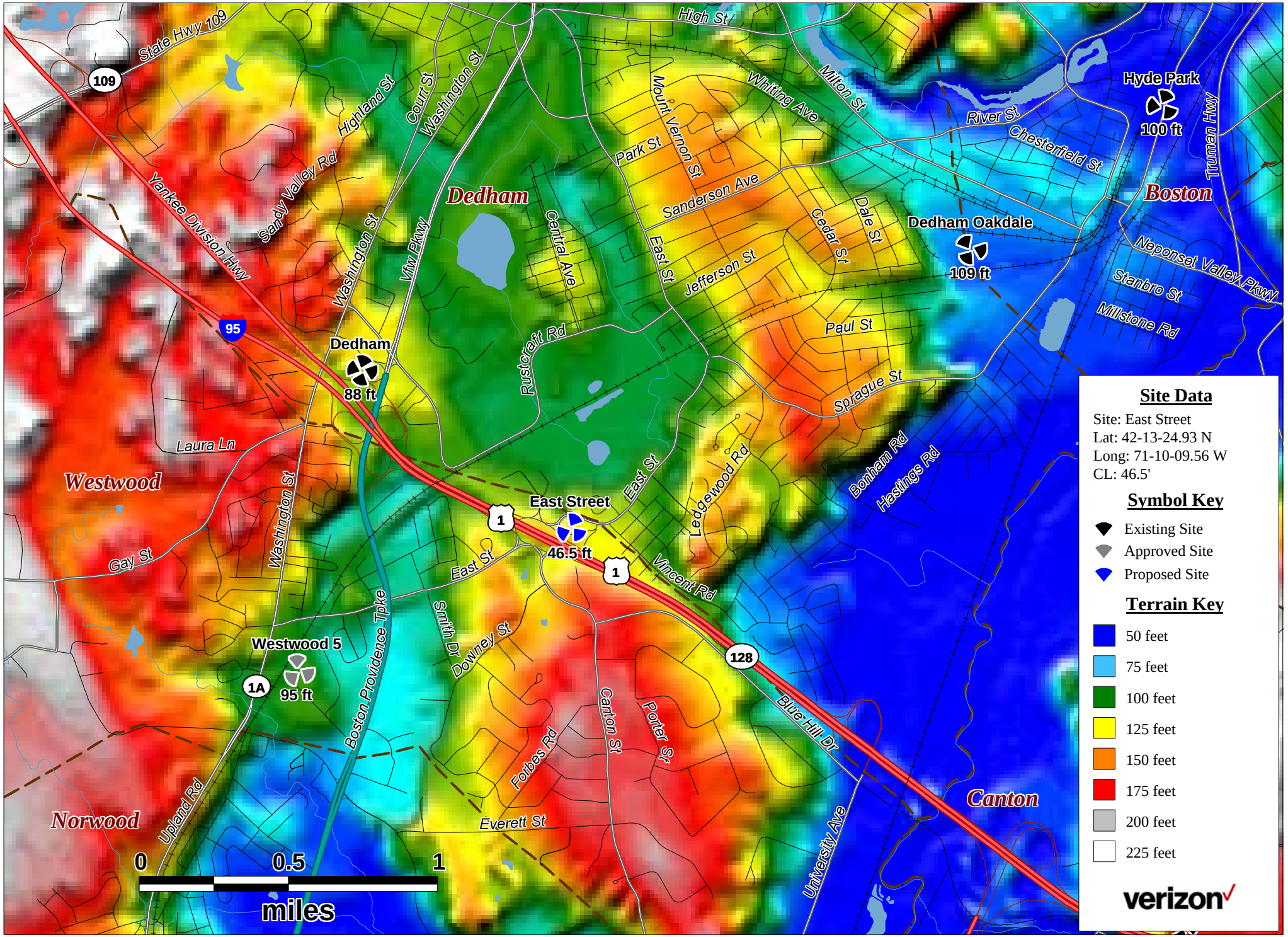
Attachment C:
East Street - Existing/Approved 700 MHz LTE Sector Footprints



Attachment D:
East Street - 700 MHz LTE Sector Footprints with Proposed Site



Attachment E:
East Street - Area Terrain Map



Environmental

Sound Assessment

Wireless Communications Facility

20 East Street,
Westwood, Massachusetts 02090

January 24, 2017

Prepared For:

Verizon Wireless
118 Flanders Road
Westborough, MA 01581

Prepared By:

Modeling Specialties
30 Maple Road
Westford, MA 01886

ENVIRONMENTAL SOUND ASSESSMENT

Verizon Wireless proposes to collocate a Wireless Telecommunications Facility in Westwood, Massachusetts to support personal wireless communication in the area. The proposed Verizon Wireless facility will include antennas in concealment cylinders on the roof of an existing self-storage facility. The electronic support equipment will be located in one of the third-floor storage units. Only one piece of outdoor equipment will have the potential to contribute sound to the existing environment - a natural gas emergency generator on a concrete pad adjacent to the existing bank of HVAC condensers. This generator will operate only during emergencies and for routine daytime testing of about one half hour a week.

This report addresses the existing sound levels, sensitive land uses in the area, sources of sound expected from this installation and an evaluation of its potential to affect the neighboring land uses. The design, configuration and siting of the equipment was proposed specifically to minimize these effects. And while no significant impact is expected, a full analysis of the sound was designed around the Westwood standards.

Overview of Project and Site Vicinity

The project site is located at an existing commercial building in Westwood, MA adjacent to Interstate 95. The entrance to the facility is from East Street. The adjacent parcels to the east are in a Highway Business Commercial zone. The other two lots on the north side of Westwood Terrace are zoned Administrative, Research, Office, but have a residential character. The performance goals at other residences along Westwood Terrace depends on their distance from the state numbered highway. It is the nearest potentially sensitive land use. Both the daytime and nighttime sound levels were dominated by traffic on the adjacent I-95. Measurements were made at about 5 feet from the ground. Because the roadway is slightly depressed in elevation, neither of the measurements had visual exposure to the traffic. Figure 1 is annotated on a backdrop of a Google Earth aerial photograph to show the site, surrounding area and nearby receptor locations designated by their orientation and distance from the generator. The ambient sound measurement locations were in the rear site parking lot. They were selected to have a similar exposure to the highway sound as the nearby residences.

The sound resulting from operation of the proposed generator was estimated using vendor data and measurements made at similar installations. The corresponding levels expected at the nearby sensitive locations were estimated using noise modeling techniques prescribed in acoustical literature. Daytime and nighttime field measurements were made to represent existing conditions at the receptors. Plans and equipment details were provided by Verizon Wireless to support this evaluation of sounds. This conservative study is based on the highest sound levels that the equipment is expected to make during its daytime tests, even though it infrequently makes any sound at all.

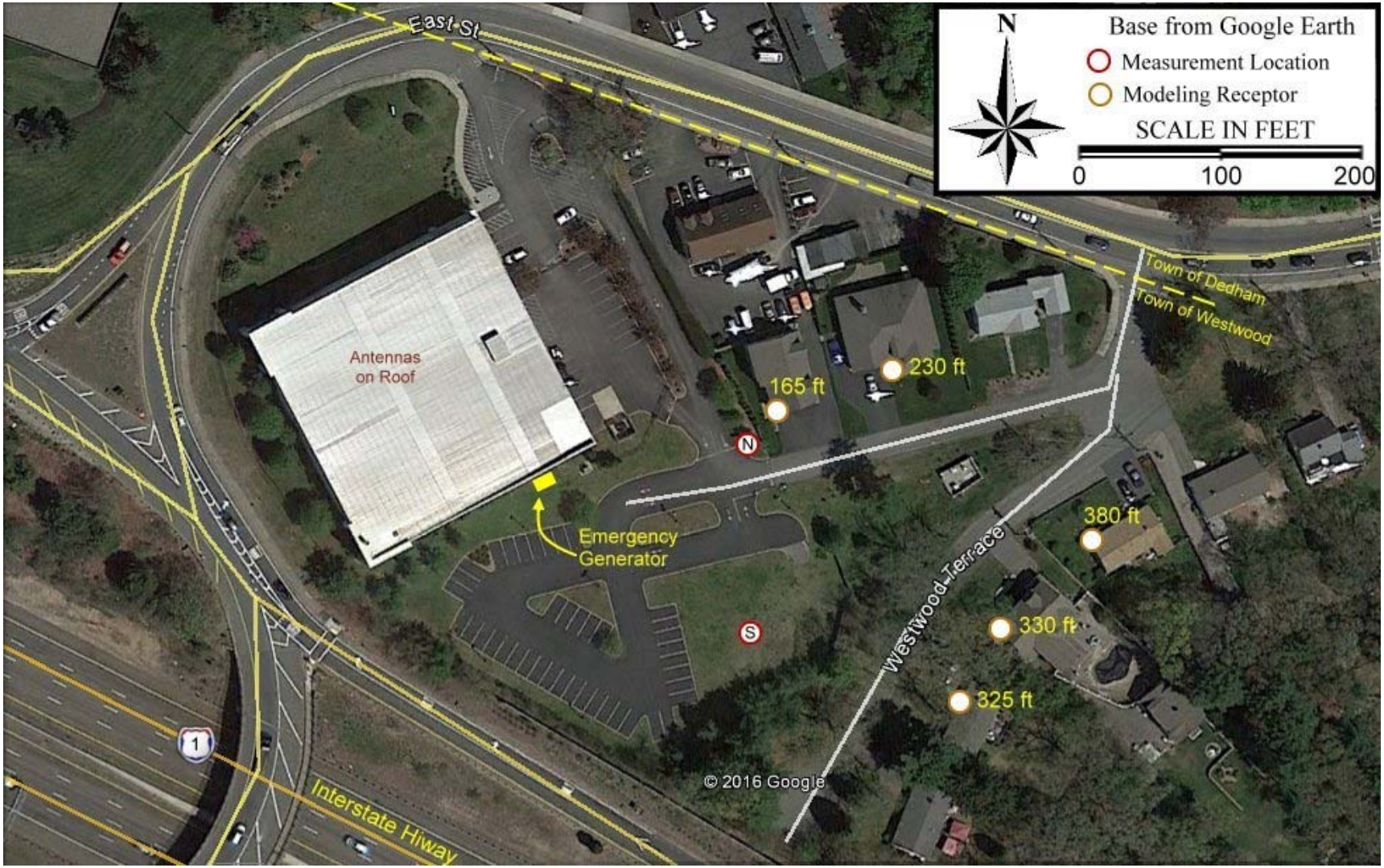


Figure 1: Project Area Showing the Proposed Generator and Nearby Community Receptors

Discussion of General Noise Analysis Methods

There are a number of ways in which sound (noise) levels are measured and quantified. All of them use the logarithmic decibel (dB) scale. Following is a brief introduction to the noise measurement terminology used in this assessment.

2.1 Noise Metrics

The Sound Level Meter used to measure noise is a standardized instrument.[1] It contains "weighting networks" to adjust the frequency response of the instrument to approximate that of the human ear under various circumstances. One of these is the *A-weighting* network. A-weighted sound levels emphasize the middle frequency sounds and de-emphasize lower and higher frequency sounds; they are reported in decibels designated as "dBA." All broadband levels represented in this study are weighted using the A-weighting scale. Figure 2 illustrates typical sound levels produced by sources that are familiar to most people.

The sounds in our environment usually vary with time so they cannot always be described with a single number. Two methods are used for describing variable sounds. These are *exceedance levels* and *equivalent level.* Both are derived from a large number of moment-to-moment A-weighted sound level measurements. Exceedance levels are designated L_n, where "n" can have any value from 0 to 100 percent. For example:

- L_{90} is the sound level in dBA exceeded 90 percent of the time during the measurement period. The L_{90} is close to the lowest sound level observed. It is essentially the same as the *residual* sound level, which is the sound level observed when there are no loud, transient noises.

- L_{50} is the median sound level: the sound level in dBA exceeded 50 percent of the time during the measurement period.

- L_{10} is the sound level in dBA exceeded only 10 percent of the time. It is close to the maximum level observed during the measurement period. The L_{10} is sometimes called the *intrusive* sound level because it is caused by occasional louder noises like those from passing motor vehicles.

[1] *American National Standard Specification for Sound Level Meters*, ANSI S1.4-1983, published by the Standards Secretariat of the Acoustical Society of America, NY.

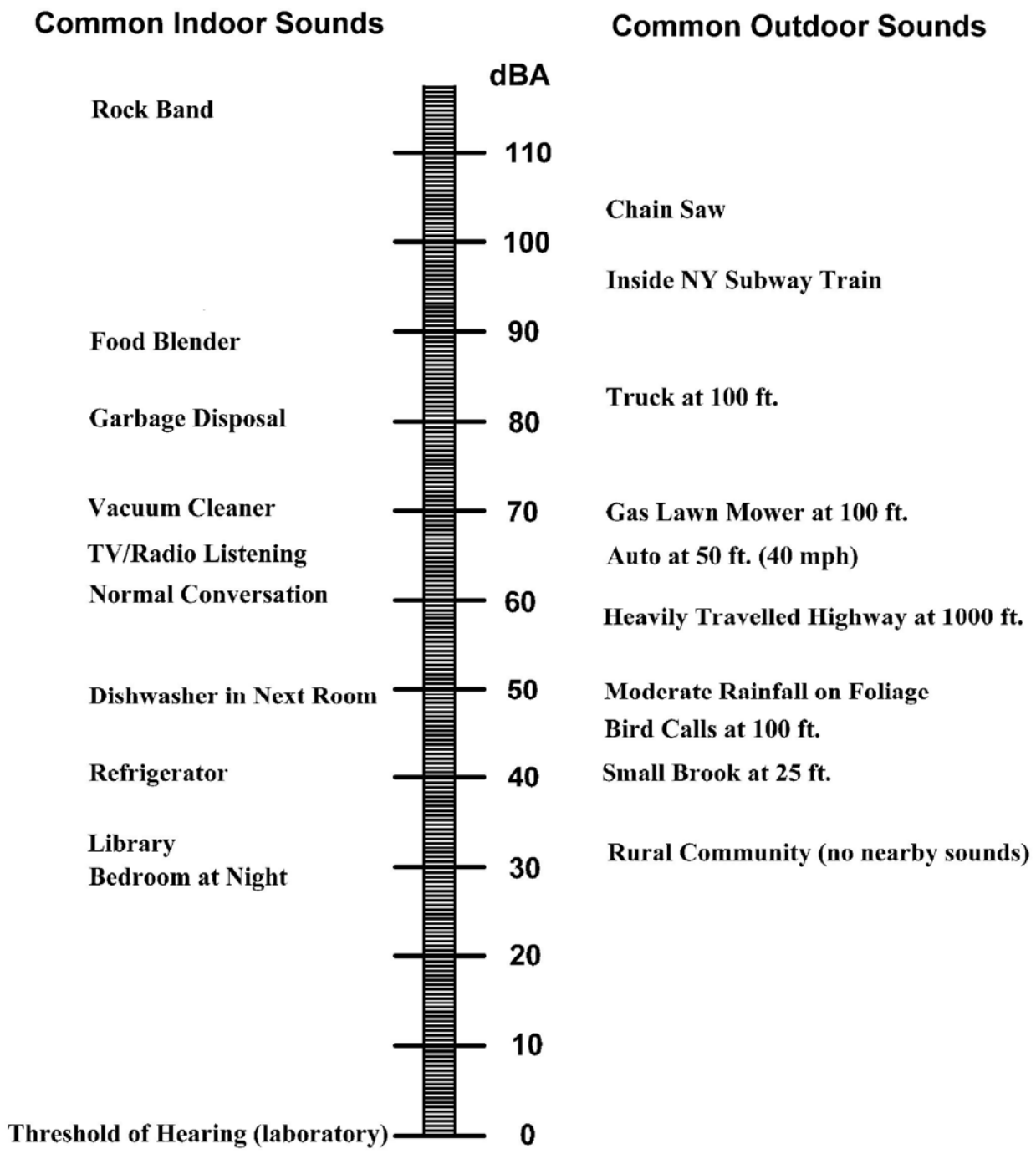


Figure 2:
Typical Sound Levels from Everyday Experience

By using exceedance levels it is possible to separate prevailing, steady sounds (L_{90}) from occasional, louder sounds (L_{10}) in the environment.

The *equivalent level* is the level of a hypothetical steady sound that has the same energy as the actual fluctuating sound observed. The equivalent level is designated L_{eq}, and is also A-weighted. The equivalent level is strongly influenced by occasional loud, intrusive noises. When a steady sound is observed, all of the L_n and L_{eq} are equal.

In the design of noise control treatments, it is essential to know something about the frequency spectrum of the sound of interest. Noise control treatments do not function like the human ear, so simple A-weighted levels are not useful for noise-control design or the identification of tones. The spectra of sounds are usually stated in terms of *octave band sound pressure levels*, in dB, with the octave frequency bands being those established by standard.[2] The sounds at the proposed site have been evaluated with respect to the octave band sound pressure levels, as well as the A-weighted equivalent sound level. Only the A-weighted values are presented here, since they represent the more easily recognized sound scale that is relevant to the MDEP standard.

Noise Regulations and Criteria

Sound compliance is judged on two bases: the extent to which governmental regulations or guidelines are met, and the extent to which it is estimated that the community is protected from the excessive sound levels. The governmental regulations that may be applicable to sound produced by activities at the project site are summarized below.

Federal

- Occupational noise exposure standards: 29 CFR 1910.95. This regulation restricts the noise exposure of employees at the workplace as referred to in OSHA requirements. Workers will not routinely attend this facility. Furthermore, the facility will emit only occasional sounds of modest levels, as demonstrated by this study.

State

- 310 CMR §7.10 U qualitatively prohibits "unnecessary emissions from [a] source of sound that may cause noise". This is interpreted quantitatively by MDEP's Form BWP AQ SFP3 and their DAQC Policy 90-001.

  In Massachusetts, noise is regulated as an air pollutant. The MDEP's Noise Policy states that a new noise intrusion may not increase the broadband sound level by more than 10 dBA over the pre-existing L_{90} ambient level. Tonal sounds, defined as any octave band level that exceeds the levels in adjacent octave bands by 3 dB or

[2] *American National Standard Specification for Octave, Half-octave and Third-octave Band Filter Sets*, ANSI S1.11-1966(R1975).

more, are also prohibited. The MDEP usually defers to applicable quantitative local ordinances when available.

Local

- The Town of Westwood Zoning Bylaws contain quantitative noise requirements in Section 6.6 Noise. Because the section is relatively small and complex, it is referenced below in full form:

6.6 **NOISE**

6.6.1 **Applicability**. The following noise standards, unless otherwise specifically indicated, shall apply to noise as heard at any location off the premises within a designated noise zone, except for that produced by warning devices, agricultural activity, temporary construction or maintenance work, yard maintenance, public events or other special circumstances, but specifically not excluding recurrent vehicle noise associated with fixed points, such as that of refrigerator trucks at loading areas.

6.6.2 **Noise Zones**. The following noise zones are hereby created:

NOISE ZONE A: Nonresidential Districts.

NOISE ZONE B: Locations in any Residential District, but within two hundred (200) feet of a state-numbered highway.

NOISE ZONE C: All other locations.

6.6.3 **Limitations**. No development shall be allowed which would result in the following standards being exceeded by more than twenty (20) decibels at any time, or by more than ten (10) decibels for more than ten (10) minutes in an hour, or at all for more than thirty (30) minutes in an hour, measured at any point off-site. If the generated noise has a single dominant frequency above four thousand eight hundred (4,800) cycles per second, these standards shall be reduced by five (5) decibels.

Table 1: Westwood Allowable Exterior Noise levels

Noise Zone	7am to 9pm	7am to 9pm
A (Non-Residential Districts)	65	60
B (Residential District: W/in 200ft of state highway)	60	55
C (Any other locations)	55	50

*Based on the structure of the noise criteria, it is assumed in this study that the right-hand column (containing the lower criteria) refers to a nighttime period.

Existing Community Sound Levels

A site survey and noise measurement study was conducted at the site on August 11 & 12, 2016 to establish the existing sound levels at and around the site. The measured levels included occasional intrusive sound from sources such as trucks, birds and aircraft. But the background sound metric (L90) was used, which statistically excludes

all non-steady sources. The L90 metric gives the lowest ten percent of the many measurements gathered during the 20 minute samples taken in the rear parking lot.

Measurement Methodology

Since sound impacts are greatest when existing noise levels are lowest, this study was designed to measure community sound levels under conditions typical of a "quiet period" for the area. The highway dominates the sound field under all observed conditions, but peak morning and evening periods were avoided. Meteorological conditions during the daytime included clear skies, a temperature of 55º F, with 5 mph winds from the south. Nighttime conditions were overcast skies, a temperature of 45º F with light wind from generally south. The meteorological conditions during the measurements were noted from field observations but are similar to those officially reported at the Norwood Memorial airport. Since the airport has an elevated anemometer and wide open space, its winds are higher than were observed at the site. A light rain started immediately following the survey, which was reported an hour earlier in Norwood.

Attended sound level measurements were made with a Rion NA-28 sound level meter. It meets the requirements of ANSI S1.4 Type 1 – Precision specification for sound level meters. The meter was mounted at approximately 5 feet above the ground. The microphone was fitted with factory recommended foam windscreen. The meter was used to sample the environmental sound and to process the sound into various statistical metrics for use in this analysis. The L90 sound level is used in this study to represent the ambient background sound levels. The meter is equipped with a real time octave band filter set, which allowed it to process sound levels into 1/3 octave bands. While frequency specific data were collected, the survey results are reported only in combined A-weighted levels for simplicity. The filter complies with the requirements of the ANSI S1-11 for octave band filter sets. The meter was calibrated in the field using a Larsen Davis Cal-200 sound level calibrator before and after the measurement sessions. The results of the field calibration indicated that the meters did not drift during the study.

The results of the survey allow both quantitative and qualitative analyses of the acoustical environment surrounding the proposed equipment. The characterization of ambient sound levels reflects the variations caused by volume of roadway traffic (I-95), occasional aircraft passes, building mechanical and commercial activities.

Measurement Results

The measured background levels in the project area ranged from 57 dBA during the daytime to 46 dBA in the late night. The results are summarized in Table 1.

Table 1: Measured Background Sound Levels at the Project Site

Measurement	Time	L90 dBA	Leq dBA
Daytime, North	2:16 PM	55	59

Daytime, South	2:48 PM	57	60
Nighttime, North	1:53 AM	46	47
Nighttime, South	12:06 AM	50	54

Sounds from the Proposed Installation

Verizon Wireless proposes an indoor equipment room in the third floor of the facility. The antennas, cabling and radio equipment have no potential to emit sound. There are no routine sources of sound proposed for this wireless facility. An emergency generator is proposed on a new pad adjacent to the existing bank of HVAC condensers in the rear of the building. It represents an infrequent source that is described below. Five representative receptors were analyzed in detail. Sound levels decrease with distance, so will have even less affect on more distant locations. Figure 3 shows the layout of the equipment proposed at the existing self-storage facility. Figure 4 is an elevation sketch of the existing building with the proposed generator shown.

The generator specified for this facility is an MTU 30 kW natural gas fired generator shown above. It will be installed at ground level behind the building. Approximately one half hour every week, the emergency generator will be tested during the daytime. It will also operate when utility power is lost. The generator set will be installed in an enclosure that is specifically designed to reduce its operating sound. A similarly installed unit is shown in the field image below. During the test, the mitigated sound from the emergency generator is rated at 63 dBA at the standard distance of 23 feet (7 meters). The building will block any sound to the north and west, but will also reflect some sound in other exposed directions. The sound level estimates account for the reflection.

A field image of an MTU 30 kW generator proposed for the East Street site.

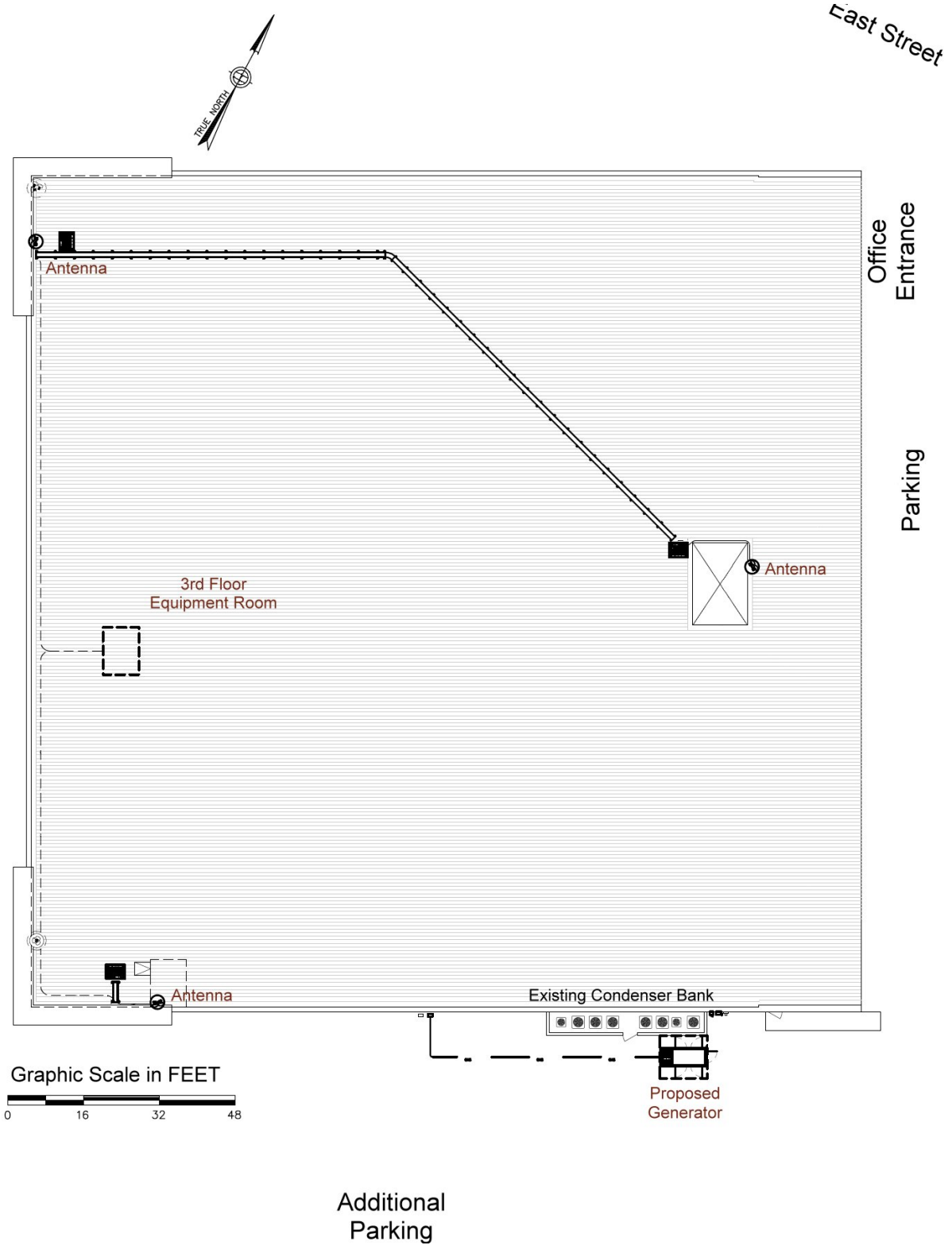


Figure 3: Plan Showing the Roof Layout and Generator on the Ground Level

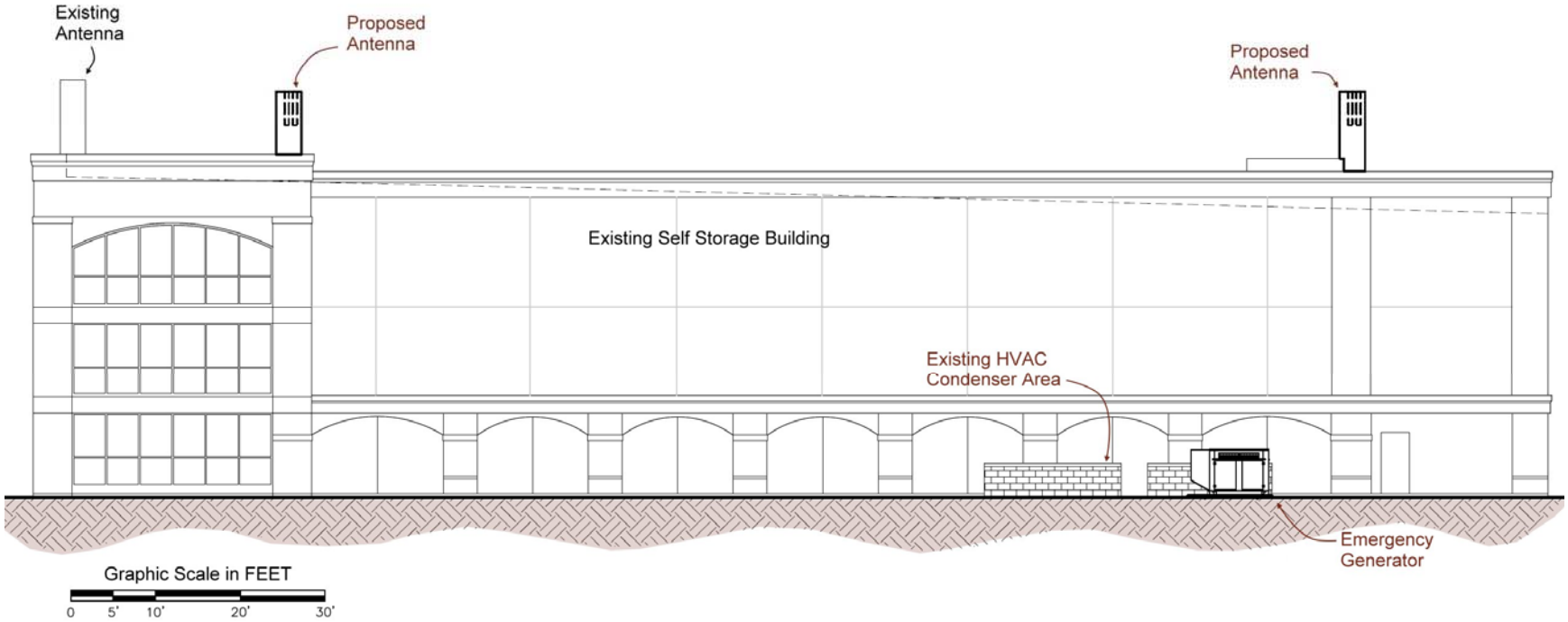


Figure 4: Elevation Plan Showing the Generator and Ground Level on the Southeast Side of the Building

Sound Level Modeling

A computer model was developed for the project sounds based on conservative sound propagation principles prescribed in acoustics literature. The noise modeling accounts for specific source and propagation path assumptions for each modeled receiver location. The ground level between the equipment and the receptors is reasonably flat so no terrain shielding was included in this model. Noise prediction modeling was performed using CADNA software under downwind weather conditions as assumed in the standard ISO 9613-2. Table 2 summarizes the modeling input parameters.

Table 2: Modeling Input Parameters

Item	Modeling Input and Description
Terrain	Flat Terrain assumed
Temperature	10ºC
Relative Humidity	70%
Weather Condition	6.5 mph, directly from facility to receptor*
Ground Attenuation	0.2, hard surface (0.5 = soft ground, 0.0 = pure reflection)
Atmospheric Inversion	CONCAWE – Category F**
# of Sound Reflections	2
Receptor Height	1.5 meter above ground level

** Propagation calculations incorporate the adverse effects of certain atmospheric and meteorological conditions on sound propagation, such as gentle breeze of 1 to 5 m/s (ISO 1996-2: 1987) from source to receiver.*
***CONCAWE – Category F indicates the presence of stable atmosphere that promotes noise propagation.*

Sound Level Modeling Results

Table 3 provides a summary of the modeling results at the selected receptors. The "Goal" column reflects the varied zoning of the receptors and their corresponding sound criteria. The table reflects sound levels far less than the applicable criteria.

The worst case equipment levels will be 39 dBA or less at nearby residences, well below the daytime ambient levels when the generator will be tested. Sounds that are less than the ambient level are not noticed in a typical community. The equipment sound is also below the lowest nighttime ambient level of 46 dBA. For this reason, it is expected to go unnoticed even in the event of a power outage in the quiet of the night. A graphical summary of the modeling results is also provided in Figure 5 which shows contours (lines of equal sound level) along with discrete receiver levels.

Table 3: Summary of Modeling Results of Expected Sound Levels

Receptor Location	Distance (Ft)	Goal (dBA)	VZW Sound Level (dBA)	Compliance?
Commercial NE	165	ByLaw A - 60	43	Yes
Residential NE	230	ByLaw A - 60	39	Yes
Residential East	380	ByLaw C - 50	36	Yes
Residential SE	330	ByLaw C - 50	37	Yes
Residential SE	325	ByLaw B - 55	37	Yes

Conclusions

The potential sound of the proposed Wireless Telecommunications Facility was evaluated using measured field data and numerical modeling methods. Ambient sound levels were established by field measurements using equipment that is standardized to the current ANSI standards. Equipment operating sound level was quantified using vendor estimates confirmed by representative field measurement at other installations. Most of the time, the proposed facility will produce no sound. During a half-hour test per week, the mitigated sound from the generator will be added to the ambient field. During that daytime test, the generator sound is expected to be 39 dBA or less at the nearest residences. This worst-case sound emission meets the performance goal with a huge margin and is far below the daytime ambient level of 55 dBA so is not expected to be noticed. Even in the event of a nighttime loss of utility power during the late night, the sound will be less than the existing nighttime ambient sound levels, so are not expected to be noticed.

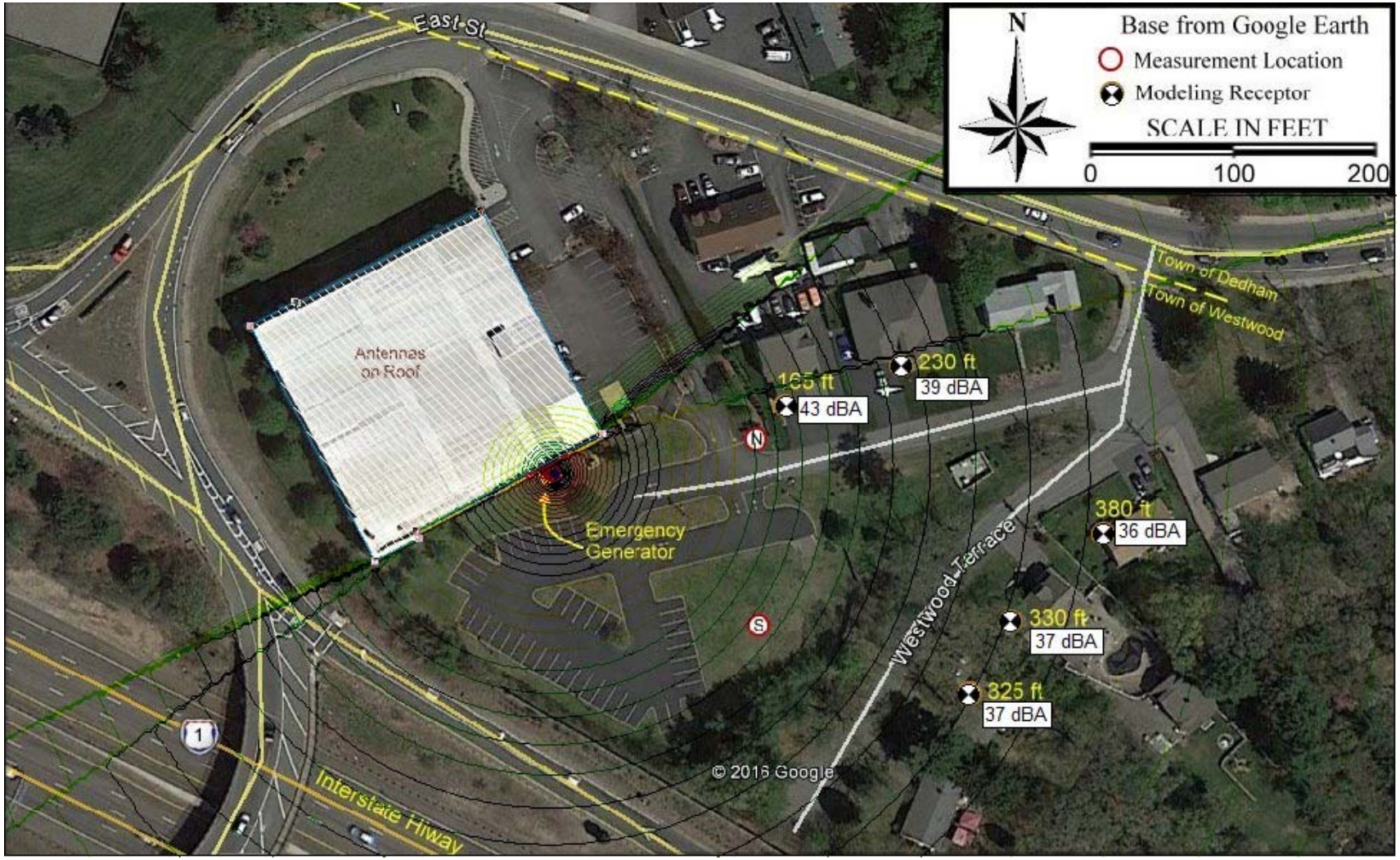


Figure 5: Graphical Summary of the Facility Sound Modeling Results

Federal Communications Commission

Wireless Telecommunications Bureau

RADIO STATION AUTHORIZATION

LICENSEE: VERIZON WIRELESS TELECOM INC.

ATTN: REGULATORY
VERIZON WIRELESS TELECOM INC.
1120 SANCTUARY PKWY, #150 GASA5REG
ALPHARETTA, GA 30009-7630

Call Sign	File Number
KNLF646	
Radio Service CW - PCS Broadband	

FCC Registration Number (FRN): 0005798061

Grant Date	Effective Date	Expiration Date	Print Date
02-28-2007	01-29-2011	01-03-2017	

Market Number	Channel Block	Sub-Market Designator
BTA051	C	1

Market Name
Boston, MA

1st Build-out Date	2nd Build-out Date	3rd Build-out Date	4th Build-out Date
12-07-2003	01-03-2007		

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.

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.

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	File Number
KNLH242	
Radio Service CW - PCS Broadband	

FCC Registration Number (FRN): 0003290673

Grant Date	Effective Date	Expiration Date	Print Date
07-23-2007	12-16-2010	06-27-2017	

Market Number	Channel Block	Sub-Market Designator
BTA051	F	0

Market Name
Boston, MA

1st Build-out Date	2nd Build-out Date	3rd Build-out Date	4th Build-out Date
06-27-2002			

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.

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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

Call Sign	File Number
WQGA900	0006150134
Radio Service	
AW - AWS (1710-1755 MHz and 2110-2155 MHz)	

FCC Registration Number (FRN): 0003290673

Grant Date	Effective Date	Expiration Date	Print Date
11-29-2006	12-28-2013	11-29-2021	02-14-2014

Market Number	Channel Block	Sub-Market Designator
BEA003	B	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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Federal Communications Commission

Wireless Telecommunications Bureau

RADIO STATION AUTHORIZATION

LICENSEE: CELLCO PARTNERSHIP

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

Call Sign	File Number
WQGA900	0006150134
Radio Service	
AW - AWS, 1710-1755/2110-2155 MHz bands	

FCC Registration Number (FRN): 0003290673

Grant Date	Effective Date	Expiration Date	Print Date
11-29-2006	12-28-2013	11-29-2021	02-14-2014

Market Number	Channel Block	Sub-Market Designator
BEA003	B	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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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	File Number
WQGB266	0006150458
Radio Service	
AW - AWS, 1710-1755/2110-2155 MHz bands	

FCC Registration Number (FRN): 0003290673

Grant Date	Effective Date	Expiration Date	Print Date
11-29-2006	01-04-2014	11-29-2021	02-14-2014

Market Number	Channel Block	Sub-Market Designator
CMA006	A	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.

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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 lawor 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).

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

FCC Registration Number (FRN): 0003290673

Grant Date	Effective Date	Expiration Date	Print Date
11-26-2008	01-13-2015	06-13-2019	

Market Number	Channel Block	Sub-Market Designator
REA001	C	0

Market Name
Northeast

1st Build-out Date	2nd Build-out Date	3rd Build-out Date	4th Build-out Date
06-13-2013	06-13-2019		

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).

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.

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	File Number
WQJX455	0006166659
Radio Service	
AW - AWS (1710-1755 MHz and 2110-2155 MHz)	

FCC Registration Number (FRN): 0003290673

Grant Date	Effective Date	Expiration Date	Print Date
01-12-2009	01-04-2014	11-29-2021	02-22-2014

Market Number	Channel Block	Sub-Market Designator
BEA003	B	2

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.

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.

DONALD L. HAES, JR., PH.D., CHP

Radiation Safety Specialist

MA Radiation Control Program Health Physics Services Provider Registration #65-0017

PO Box 198, Hampstead, NH 03841 603-303-9959 Email: donald_haes_chp@comcast.net

December 24, 2016

RE: Installation of radio base station antennas and associated equipment for the Verizon Wireless Personal Wireless Services facility to be located on the building at 20 East Street, Westwood, 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 mount their personal wireless services (PWS) directional panel antennas (installed in three "arrays" aimed about 120° apart) on the existing building within "stealth" RF transparent enclosures. PWS provider T-Mobile has similar antennas mounted on the building. The proposed installation will allow Verizon Wireless to continue deployment of their voice/data and Advanced Wireless Services (AWS) systems.

This report considers the contributions of all the existing and proposed 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 existing PWS and proposed Verizon Wireless PWS RF contributions would be within the established RF exposure guidelines; see Figure 4. This includes all publicly accessible areas, and the surrounding neighborhood in general. The results support compliance with the pertinent sections of the Massachusetts Department of Public Health regulations regarding PWS facilities.

Based on the results of the theoretical RF fields I have calculated, it is my expert opinion that this facility would continue to comply with all regulatory guidelines for RF exposure with the installation of the proposed Verizon Wireless antenna and transmitter installations.

Note: The analyses, conclusions and professional opinions are based upon the precise parameters and conditions of this particular site; Building at 20 East Street, Westwood, 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.

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

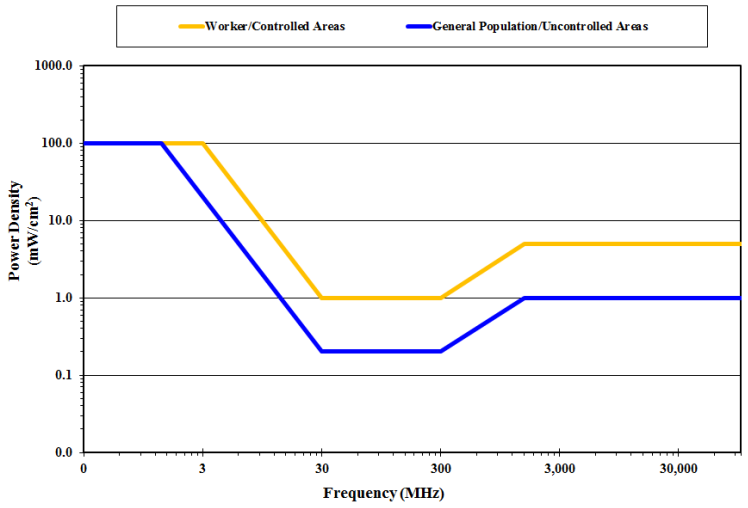


Figure 1: FCC Limits for Maximum Permissible Exposure (MPE)

NOTE: FCC 5% Rule – At multiple transmitter sites, actions necessary to bring the area into compliance with the RF exposure guidelines are the shared responsibility of all licensees whose transmitters produce RF field levels in excess of 5% of the applicable FCC MPEs.

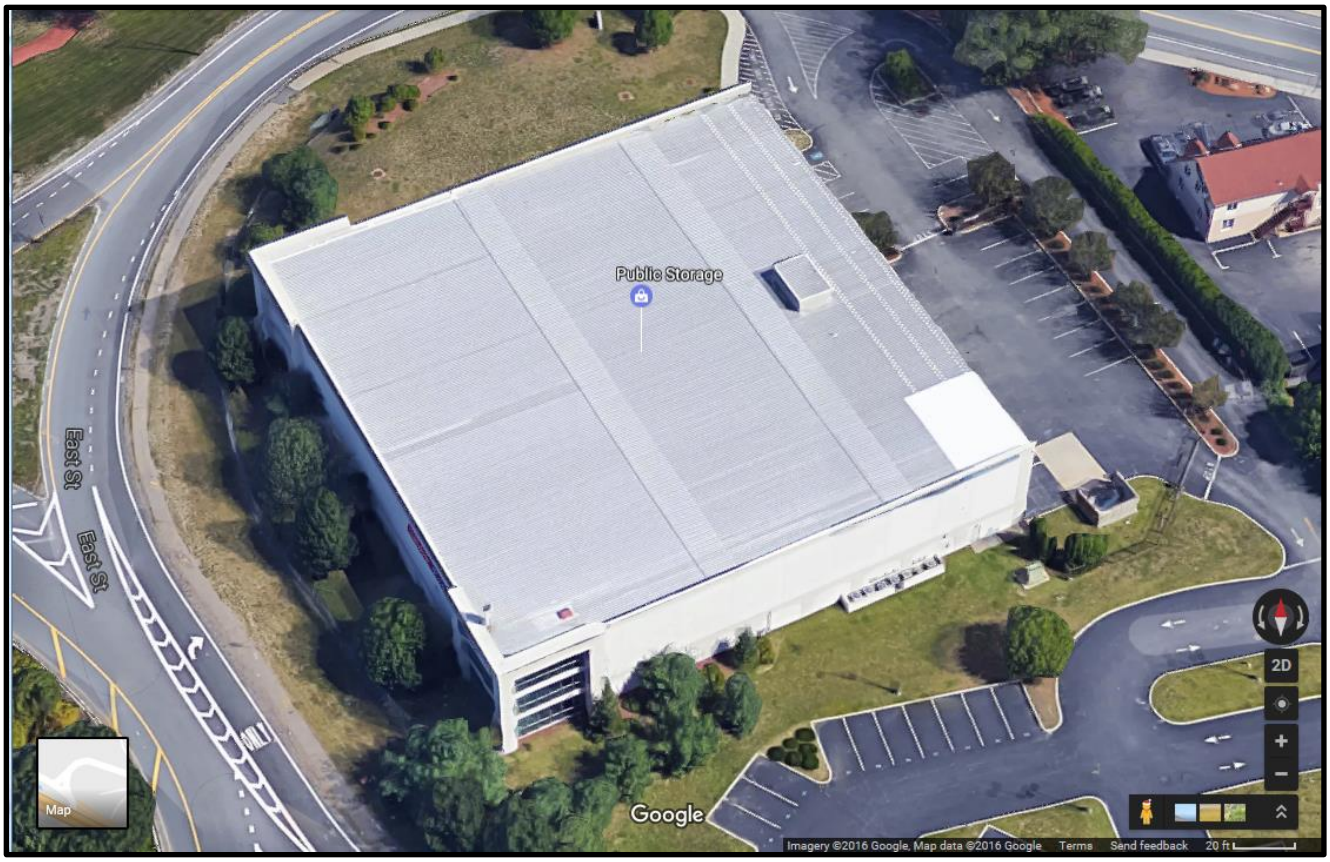


Figure 2: Public Storage Building; 20 East Street, Westwood, MA
(Picture courtesy Google Earth©2016 and may not represent current conditions)

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 and/or stand in front of a directional antenna? **NO;** access to the building rooftop is restricted, and the site will continue to adhere to established RF safety guidelines regarding the PWS antennas, including appropriate signage.

THEORETICAL RF FIELD CALCULATIONS - GROUND LEVELS

METHODOLOGY

These calculations are based on what are called "worst-case" estimates. That is, the estimates assume 100% use of all transmitters simultaneously. Additionally, the calculations make the assumption that the surrounding area is a flat plane. The resultant values are thus conservative in that they over predict actual resultant power densities.

The calculations are based on the information contained in the Table 2 inventory:

- Effective Radiated Power (ERP).
- Antenna height (centerline).
- Antenna vertical radiation patterns; 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. These patterns (attached **APPENDIX A**) display the loss of signal strength relative to the direction of propagation due to elevation angle changes. The gain is 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) = $10^{(3/10)} = 2$.

For an antenna *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 FCC's OET Bulletin 65, Edition 97-01: [vi]

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

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 · G = EIRP (Effective Isotropic Radiated Power) for broadcast antennas, the equation can be presented in the following form:

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

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:

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

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 readily 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:

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

To calculate the % MPE, use the formula:

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

The results of the calculations for the potential RF emissions resulting from the ***existing* PWS** (T-Mobile) antennas are depicted in Figure 3 as plotted against linear distance from the base of the building in any direction. The results of the calculations for the potential RF emissions resulting from the summation of the ***existing PWS and proposed* Verizon Wireless PWS** are similarly depicted in Figure 4. Note that the values have been calculated for a height of 6' AGL in accordance with regulatory rationale. Also depicted on the graphs are values for a height of 16' AGL (height of a typical 2nd story). A logarithmic scale was used to plot the calculated theoretical %MPE values in order to compare with the MPE values of 100% (Public) and 500% (Worker), which are so much larger that they would be off the page in a linear plot. The curves are variable due to the application of the vertical radiation patterns.

ANTENNA INVENTORY

Table 2: *Proposed and Existing* Antenna Inventory
20 East Street, Westwood, MA

Antenna Centerline (≈ AGL)	Sector	Typical Parameters: ERP & Tx Frequencies†	Typical Use ‡
VERIZON WIRELESS			
46' 5"	*ALPHA @ 30°*	*3035 watts @ 700 MHz*	LTE
		7573 watts @ 2150 MHz	*AWS*
46' 5"	*BETA @ 140°*	*3035 watts @ 700 MHz*	LTE
		7573 watts @ 2150 MHz	*AWS*
46' 5"	*GAMMA @ 250°*	*3035 watts @ 700 MHz*	LTE
		7573 watts @ 2150 MHz	*AWS*
T-MOBILE			
47' 4"	*EXISTING*	*4357 watts @ 1865-1870, 1970-1975 MHz*	*PCS - LTE*
		5049 watts @ 2150 MHz	*AWS*

Table Notes:

† Central frequencies –vs. – exact Tx frequencies used to account for multiple channels.
‡ Tx use (i.e. "duty cycle") assumed to be 100%; even for 2-way radio

Abbreviations:
AWS: Advanced Wireless Services
LTE : Long Term Evolution (aka "4G")
PCS: Personal Communication System

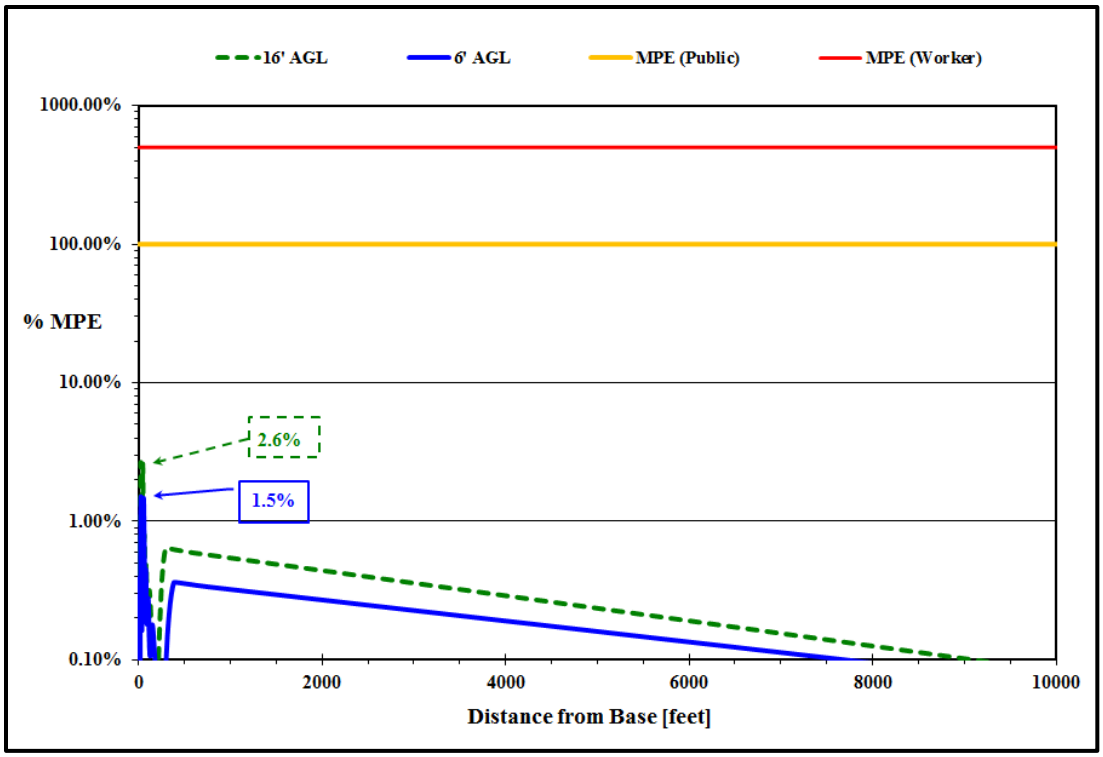


Figure 3: Theoretical Cumulative Maximum Percent MPE - vs. – Distance (*Existing* RF Contributions)

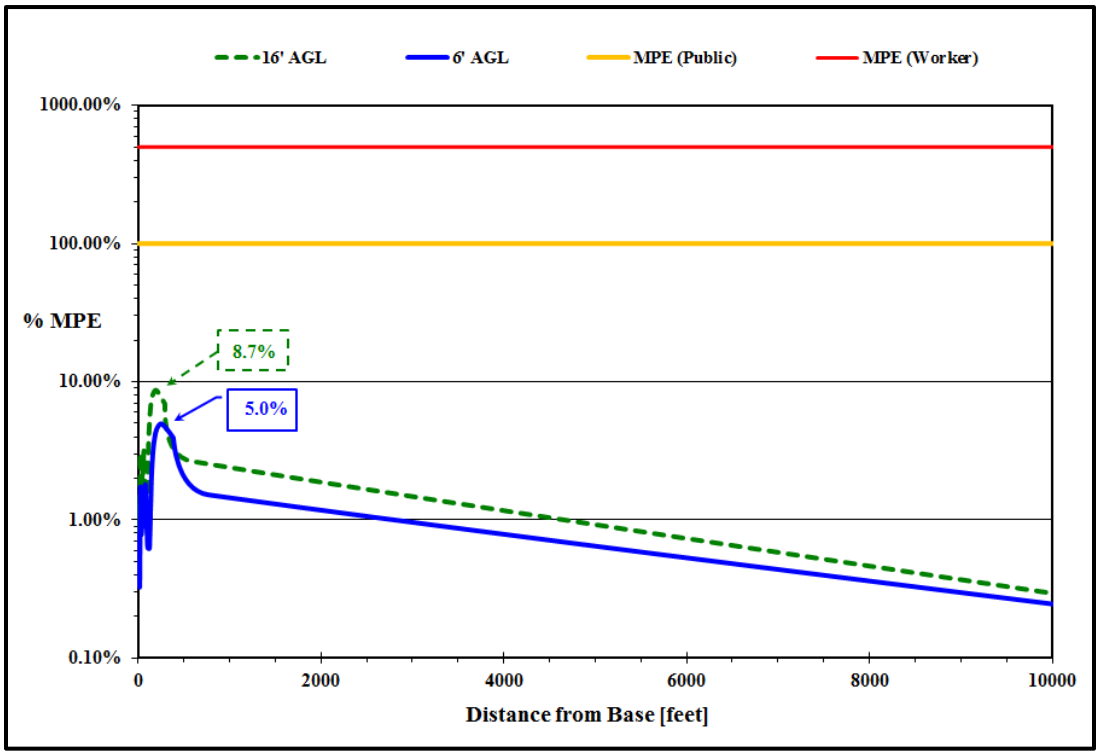


Figure 4: Theoretical Cumulative Maximum Percent MPE - vs. – Distance (*Proposed* RF Contributions)

THEORETICAL RF FIELD CALCULATIONS - WITHIN THE BUILDING

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 a factor of 1/10 ($10^{(-10/10)} = 0.1$). Thus, a modified equation to use for the area below the antennas is as follows:

$$S = \frac{4 \cdot [ERP \cdot 1.64] \cdot G^{(\text{antenna loss})} \cdot G^{(\text{building materials loss})}}{4 \cdot \pi \cdot R^2}$$

For the Verizon Wireless "LTE" antennas:
746-757, 776-787 MHz

$$S = \frac{4 \cdot 1.64 \cdot [3035 \text{ X } 2 \text{ watts} \cdot 10^{(-57.45/10)}] \cdot 10^6 \text{ µW/W}) \cdot 10^{(-10/10)}}{4 \cdot \pi \cdot [(15 \text{ ft}) \cdot (30.48 \text{ cm/ft})]^2}$$

For the Verizon Wireless "AWS" antennas:
1710-1720, 2110-2120 MHz

$$S = \frac{4 \cdot 1.64 \cdot [5049 \text{ watts} \cdot 10^{(-42.99/10)}] \cdot 10^6 \text{ µW/W}) \cdot 10^{(-10/10)}}{4 \cdot \pi \cdot [(15 \text{ ft}) \cdot (30.48 \text{ cm/ft})]^2}$$

The total is about 0.2% MPE or about 600 times below the FCC exposure guidelines.

CONCLUSION

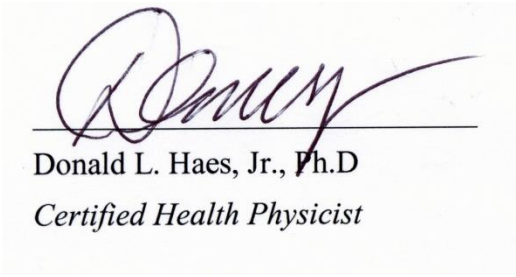
Theoretical RF field calculations data indicate the summation of the existing PWS and proposed Verizon Wireless PWS RF contributions would be within the established RF exposure guidelines; see Figure 4. This includes all publicly accessible areas, and the surrounding neighborhood in general. The results support compliance with the pertinent sections of the Massachusetts Department of Public Health regulations regarding PWS facilities.

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 results of the theoretical RF fields I have calculated, it is my expert opinion that this facility would continue to comply with all regulatory guidelines for RF exposure with the installation of the proposed Verizon Wireless antenna and transmitter installations.

Feel free to contact me if you have any questions.

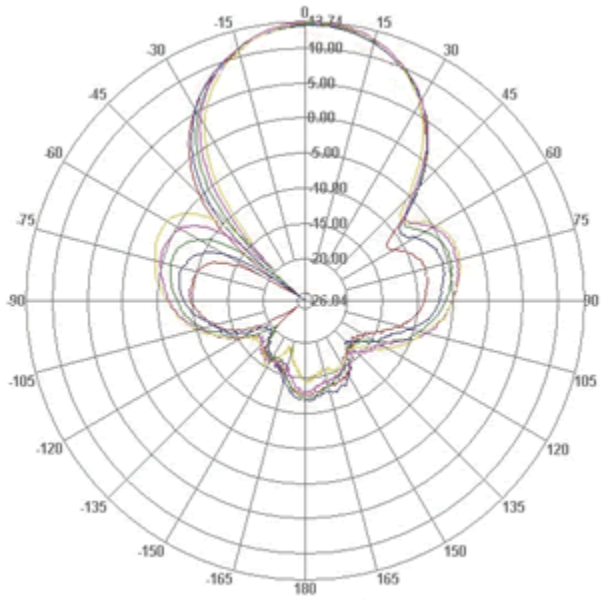
Sincerely,



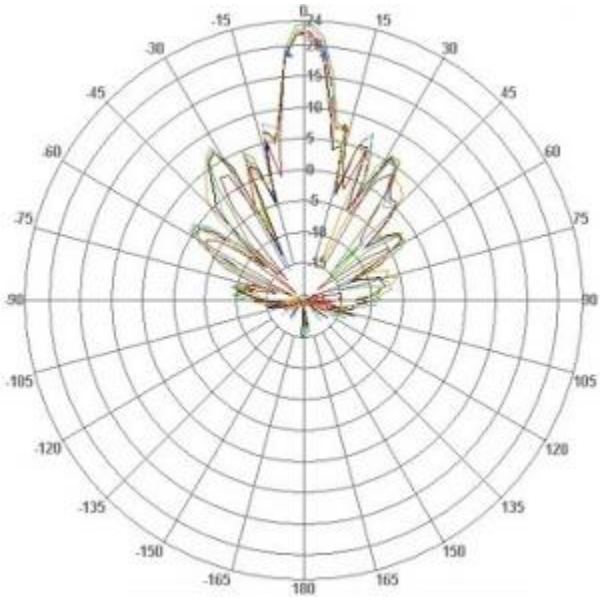
Donald L. Haes, Jr., Ph.D
Certified Health Physicist

Note: The analyses, conclusions and professional opinions are based upon the precise parameters and conditions of this particular site**; Building at 20 East Street, Westwood, 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.

APPENDIX A



Horizontal plane radiation pattern



Vertical plane radiation pattern

DONALD L. HAES, JR., PH.D., CHP

Radiation Safety Specialist

MA Radiation Control Program Health Physics Services Provider Registration #65-0017

PO Box 198, Hampstead, NH 03841 603-303-9959 Email: donald_haes_chp@comcast.net

STATEMENT OF CERTIFICATION

1. I certify to the best of my knowledge and beliefs, 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.

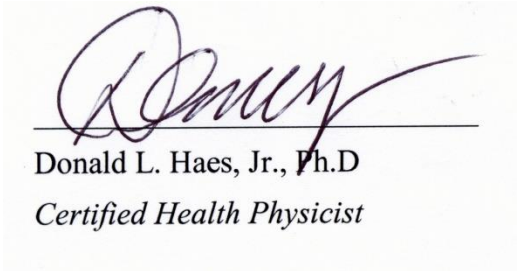
5. This assignment was not based on a requested minimum environmental energy level or specific power density.

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: December 24, 2016



Donald L. Haes, Jr., Ph.D

Certified Health Physicist

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 2010)**.

[v]. National Council on Radiation Protection and Measurements (NCRP); *Biological Effects and Exposure Criteria for Radiofrequency Electromagnetic Fields*, NCRP Report 86, 1986.

[vi]. 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.

CHAPPELL ENGINEERING ASSOCIATES, LLC
Civil • Structural • Land Surveying

January 25, 2017

Daniel D. Klasnick, Esq.
Duval & Klasnick LLC
10 Cedar Street #17
Woburn, MA 01801

Reference: Removal Bond: East Street
20 East Street, Westwood, MA 02090

To Whom It May Concern:

As requested, Chappell Engineering Associates has prepared an estimate for the removal costs at the above mentioned site. The estimated cost to remove the installation and associated costs to restore the site to its original condition has been prepared using data from the Building Construction Cost Data, by R.S. Means and from standard industry data.

Description	Unit	Quantity	Unit Cost	Total Cost
Mobilization and demobilization	Ea	1	$750.00	$750.00
Dumpster Rental	Per wk.	2	$800.00	$1,600.00
Remove Antennas and Mounts	Ea.	3	$500.00	$1,500.00
Remove RRH units and ballast frames	Ea.	3	$500.00	$1,500.00
Remove Cable Lines	L.F.	400	$5.00	$2,000.00
Remove Cable Trays	L.F.	170	$10.00	$1,700.00
Crane Rental (truck mounted, hydraulic, 55 ton)	Per Week	1	$3,000.00	$3,000.00
Remove Radio Equipment, etc.	Ea.	1	$1,000.00	$1,000.00
Repair/Patch roof/parapet walls	All	1	$2,500.00	$2,500.00
Remove Generator Pad/re-seed area	Ea.	1	$1,200.00	$1,200.00
Remove underground gas piping	L.F.	60	$7.50	$450
Remove Utility Conduits	L.F.	400	$3.00	$1,200.00
Remove Electric Meter	Ea.	1	$75.00	$75.00
Final Site Cleanup	Ea.	1	$1,000.00	$1,000.00
Transport Salvage to Warehouse	Ea.	1	$2,500.00	$2,500.00
Subtotal	Ea.			$21,975.00
Contingencies			5%	$1,098.75
Regional Adjustment (Boston, MA)			+17.2%	$3,968.69

Present Value Total (P): $27,042.44

If you have any questions regarding this matter, please do not hesitate to call.

Very truly yours,

Chappell Engineering Associates, LLC

David A. Chappell

David A. Chappell, P.E.