PLAPC

PARISI LAW ASSOCIATES, P.C.

APPLICATION FOR REVIEW OF
DEVELOPMENT OF REGIONAL IMPACT
(Cape Cod Commission)
FOR WIRELESS COMMUNICATIONS FACILTY

Applicant:	**Vertex Towers, LLC**
Site Id:	**VT-MA-0503**
Property Address:	**206 Route 28, Harwich, MA 02671**
Tax Assessor:	**11-17-0**
Property Owner:	**G. Rockwood Clark, Trustee of the 206 Route 28 Revocable Living Trust u/d/t dated May 22, 2023**
Date:	**October 16, 2026**

1. Application for Development of Regional Impact
2. Filing Fees
3. Abutters List
4. Memorandum of Lease
5. Letter of Authorization
6. Project Narrative
7. TOWAIR (FAA Analysis re No Hazard to Air Navigation)
8. Report of Site Acquisition Specialist
9. Report of (Verizon) RF Engineer and RF Coverage Maps
10. Supplemental Plot of (Vertex) RF Engineer (Height Analysis)
11. Calculated Radio Frequency Emissions Report
12. Wetlands Investigation Report
13. Invasive Species Report
14. Equipment Specifications showing Noise Emissions.
15. Letters to Other Wireless Carriers
16. Photos from Visibility Demonstration and Photo Simulations
17. Site Plans

Respectfully submitted,

Francis D. Parisi, Esq.
Parisi Law Associates, P.C.
225 Dyer Street
Providence, RI 02903
(401) 447-8500 cell
fparisi@plapc.com

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Application Cover Sheet

Cape Cod Commission
3225 Main Street, PO Box 226
Barnstable, MA 02630
Tel: (508) 362-3828 • Fax: (508) 362-3136

For Commission Use Only

Date Received:
Fee ($):
Check No:
File No:

A Type of Application (check all that apply)

- ☑ Development of Regional Impact (DRI)
- ☐ DRI Scoping
- ☐ DRI Exemption
- ☐ Hardship Exemption
- ☐ Jurisdictional Determination
- ☐ Request for Joint MEPA/DRI Review
- ☐ Decision Extension
- ☐ Decision Modification

B Project Information

Project Name: Vertex Harwick WCT

Total Site Acreage: 6.03 acres

Project/Property Location: 206 Route 28, Harwich, MA 02671

Zoning: Rural-Residential Estate

Brief Project Description:

Include total square footage of proposed and existing development, gross floor area, number of lots existing or to be created, specific uses, description of existing conditions, as applicable (attach additional sheets if necessary).

Construction of a wireless communications facility consisting of a 120' tall monopole style tower on which Verizon WIreless and other wirelless communications carriers will place antennas and necessary electronics, inside a 35' x 70'cfended in compound which will contain ground based telecommunications equipment, on a large 1.02 acre previously disturbed parcel and previously used for light industrial, utilizing a previously existing access driveway, and with a substantial vegetative buffer on all sides.

C Owner(s) of Record

List the following information for all involved parcels. Provide copies of each Deed and Purchase and Sale Agreement and/or evidence of leasehold interest, if applicable, for all involved parcels. Proof of ownership/legal rights for Applicant(s) to proceed with the proposed development must be documented prior to the Commission deeming any application complete. List the local, state, or federal agencies from which permits or other actions have been/will be filed (attach additional sheets if necessary).

Map/Parcel	Owner's Name	Lot & Plan	Land Court Certificate of Title #	Registry of Deeds Book/Page #
Map 11 Lot 17-0	G. Rockwood Clark, Trustee of the 206 Route 28 Revocable Living Trust u/d/t dated May 22, 2023		Registry of Deeds Bk 35803 Pg 5	

There **ARE** / **ARE NOT** (circle one) court claims, pending or completed, involving this property (if yes, please attach relevant information).

Is there an existing CCC Decision for the Property? ☐ yes ☑ no (if so, recording information for decision, please attach relevant information).

D Certification

I hereby certify that all information provided on this application form and in the required attachments is true and accurate to the best of my knowledge. I agree to notify the Cape Cod Commission of any changes on the information provided in this application, in writing, as soon as is practicable. I understand failure to provide the required information and any fees may result in a procedural denial of my project.
NOTE: For wireless communication facilities, a licensed carrier should be either an applicant or a co-applicant.

APPLICANT

Applicant(s) Name: Vertex Towers, LLC Tel: 401-447-8500 Fax: 781-735-6192

Address: c/o Parisi Law Associates, P.C. 225 Dyer Street, Providence, RI 02903

Signature: Francis D. Parisi Digitally signed by Francis D. Parisi Date: 2024.12.04 13:44:19 -05'00' Date: 10/16/26

CO-APPLICANT

Co-Applicant(s) Name: Tel: Fax:

Address:

Signature: Date:

CONTACT

Contact: Francis D. Parisi, Esq. Tel: 401-447-8500 Fax: 781-735-6192

Address: Parisi Law Associates, P.C. 225 Dyer Street, Providence, RI 02903

Signature: Francis D. Parisi Digitally signed by Francis D. Parisi Date: 2024.12.04 13:44:44 -05'00' Date: 10/16/26

PROPERTY OWNER

Property Owner: G. Rockwood Clark, Trustee of the 206 Route 28 Revocable Living Trust u/d/t dated May 22, 2023 Tel: 401-447-8500 Fax: 781-735-6192

Address: c/o Parisi Law Associates, P.C. 225 Dyer Street, Providence, RI 02903

Signature: Francis D. Parisi Digitally signed by Francis D. Parisi Date: 2024.12.04 13:45:20 -05'00' Date: 10/16/26

BILLABLE ENTITY

Name: Vertex Towers, LLC Tel: 401-447-8500 Fax: 781-735-6192

Address: c/o Parisi Law Associates, P.C. 225 Dyer Street, Providence, RI 02903

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195 ROUTE 28 REALTY LLC
PO BOX 305
HARWICH PORT, MA 02646

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PO BOX 305
HARWICHPORT, MA 02646

203 NARROW LANDS LLC
766 FALMOUTH RD UNIT B12
MASHPEE, MA 02649

212 MAIN LLC
PO BOX 422
HARWICH PORT, MA 02646

ALL CAPE PROPETY LLC
PO BOX 614
HYANNIS PORT, MA 02647

AMZEEN EDWARD S &
AMAZEEN REBECCA
236 ROUTE 28 UNIT 1
W HARWICH, MA 02671

ARCTIC HOLDING LLC
198 ROUTE 28
W HARWICH, MA 02671

BENNETT DAVID M TRS ET AL
BENNETT MARY REGINA TRS
5 DONNY DR
FRANKLIN, MA 02058

BOYLE JOHN F III &
BOYLE PAMELA D
194 CHURCH ST
E HARWICH, MA 02645

BROWN MARCELLUS J &
BROWN CYNTHIA A
29 AVEBURY LN
MARLBOROUGH, MA 01752

BURKE SEAN
6 BISHOPS LN
HARWICH, MA 02645

CAPTAIN JOHN WILLIAMS CON
MARENGHI PAMELA J TRS
PO BOX 34
W HARWICH, MA 02671

CHAPLIC KYLE
231 ROUTE 28 UNIT 18
W HARWICH, MA 02671

CHO YONG K
96 BIRCH AVE
E LONGMEADOW, MA 01028

Contact Town For Info

COPITHORNE DEBORAH J TR
DEBORAH J COPITHORNE NOMI
642 MAIN ST
MEDFIELD, MA 02052

CRONIN TY ET AL
DOHERTY JOHN
PO BOX 178
W HARWICH, MA 02671

FITZPATRICK STEPHEN A TR
DENNIS JAMES TRUST
PO BOX 576
W HARWICH, MA 02671

FLETCHER CHRISTINE N TRS
PETRONI VINCENT F TRS
C/O DAY PITNEY LLP
1 FEDERAL ST 29TH FLOOR
BOSTON, MA 02110

GROOM ALBERT P &
GROOM JULIE K
231 ROUTE 28 UNIT 17
W HARWICH, MA 02671

HARWICH CONSERVATION TRUS
PO BOX 101
S HARWICH, MA 02661

HENDERSON RICHARD CHARLES
HENDERSON PAMELA ELIZABET
59 LAKE SHORE DR
CENTER BARNSTEAD, NH 03225

HUMPHREY ELIZABETH A
231 ROUTE 28 UNIT 6
W HARWICH, MA 02671

HYDE DANIEL
8 RADCLIFFE RD
MASHPEE, MA 02649

KEHOE DONALD J
231 ROUTE 28 UNIT 1
W HARWICH, MA 02671

KELLEY JOSEPH LEO LIFE ES
KELLEY STARR LIFE ESTATE
236 ROUTE 28 UNIT 2
W HARWICH, MA 02645

KENDALL ELIZA J
90 OLD CHATHAM RD
HARWICH, MA 02645

KILCOYNE THOMAS J &
KILCOYNE ANNE M
231 ROUTE 28 UNIT 24
W HARWICH, MA 02671

KING JEFFREY A TRS ET AL
KELLY JAMES M TRS
PO BOX 81
W DENNIS, MA 02670

LUKE ARTHUR J TR
ARTSON NOMINEE TRUST
22 SPRINGER LN
W YARMOUTH, MA 02673

MABB LORI V TR
GAIL F MCKAY REVOCABLE TR
73 COTTAGE LN
WEYMOUTH, MA 02188

MATEEV MATEEV KRASIMIR
236 ROUTE 28 UNIT 4
W HARWICH, MA 02671

MCINNIS MICHAEL DARIN TRS
MCINNIS DEBBIE J MELANSON
19 SAWIN DR
WESTMINSTER, MA 01473

MORAES CLAUDSON S JR &
MORAES JESSICA A
231 ROUTE 28 UNIT 2
W HARWICH, MA 02671

MORGAN JUDITH M TR
JUDITH M MORGAN REV TRUST
231 ROUTE 28 UNIT 11
W HARWICH, MA 02671

MURPHY JOHN PAUL &
MURPHY MARY ALICE
56 EXETER ST
QUINCY, MA 02170

NATIONSTAR MORTGAGE LLC
8950 CYPRESS WATERS BLVD
COPPELL, TX 75019

OSEV SVETOSLAV N
PO BOX 777
W DENNIS, MA 02670

PECK MORGAN A
161 ROUTE 28 UNIT 6
W HARWICH, MA 02671

QUICK-STOWE CHRISTIAN
231 ROUTE 28 UNIT 7
W HARWICH, MA 02671

QUIGLEY ANGELA M TRS ET A
ERASMI TIMOTHY J TRS
231 ROUTE 28 APT 26
W HARWICH, MA 02671

REDFIELD RONALD H
24020 TIMBERLAWN CT
LUTZ, FL 33549

ROMAN CATHOLIC BISHOP OF
MICHAEL K MCMANUS CHANCEL
450 HIGHLAND AVE
FALL RIVER, MA 02720-3701

ROUILLARD JONATHAN W &
ROUILLARD LARA
231 ROUTE 28 UNIT 23
W HARWICH, MA 02671

RYAN JOAN TRS ET AL
RYAN PETER TRS
231 ROUTE 28 UNIT 12
W HARWICH, MA 02671

SEASCAPE VILLAGE CONDOMIN
C/O JAMES REDFIELD CHAIRM
231 ROUTE 28 UNIT 13
W HARWICH, MA 02671

SEELEY NICHOLAS C &
SEELEY KATERI G
231 ROUTE 28 UNIT 9
W HARWICH, MA 02671

UNCHAINED LLC
C/O ALLEN HARBOR MARINE
SERVIC
335 LOWER COUNTY RD
HARWICH PORT, MA 02646

WALENTA ROBERT S TR
ROBERT S WALENTA IRREV TR
229 SKYVIEW DR
GREENVILLE, NY 12083

WEST JOHN P &
WEST LINDSAY A
231 ROUTE 28 UNIT 20
W HARWICH, MA 02671

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Bk 34981 Pg218 #14130
03-17-2022 @ 01:28p

Record and Return to:
Vertex Towers, LLC
155 South Street, Suite 102
Wrentham, MA 02093

MEMORANDUM OF LEASE

This Memorandum of Lease evidences a Lease Agreement ("Agreement") by and between Vertex Towers, LLC a Massachusetts limited liability company with a mailing address of 155 South Street, Suite 102, Wrentham, MA 02093 (the "TENANT") and G. Rockwood Clark with a mailing address of P.O. Box 11, West Harwich, MA 02671 (the "LANDLORD"), which Agreement contains, among other things, the following terms:

1. LANDLORD owns certain real property located at 206 Route 28 in the Town of Harwich, Barnstable County, Commonwealth of Massachusetts, which is depicted as Lot T7, on Assessor's Map 11, and being further described as the same real property conveyed by that certain deed recorded in Deed Book 7519 at Page 232 of the Barnstable County Registry of Deeds, (the "Subject Property") Subject to the terms of the Agreement, LANDLORD has granted to TENANT an option to lease a portion of the Subject Property and to acquire certain easements for ingress, egress and utilities collectively known as the "Leased Premises".
2. The Agreement will constitute a lease of the Leased Premises. The Agreement is for an initial term of ten (10) years commencing on the date that TENANT exercises its option as defined in agreement, along with five (5) additional five (5) year renewal terms, unless earlier terminated by TENANT.
3. The Leased Premises may be used exclusively by TENANT for the Permitted Use outlined in the Agreement which includes (i) erecting, installing, operating and maintaining a communications tower, Communications Facility and related improvements and equipment, (ii) the transmission and reception of communications signals and data and (iii) no other purpose; TENANT is entitled to sublease and/or sublicense use of the Leased Premises, including any communications tower located thereon.
4. By this Memorandum, the parties hereto intend to record a reference to the Agreement and do hereby ratify and confirm all of the terms and conditions of the Agreement and declare that the Leased Premises are subject to all of the applicable provisions of the Agreement. In the event of a conflict between this Memorandum and the Agreement, the Agreement will control.

[THE REMAINDER OF THIS PAGE IS INTENTIONALLY LEFT BLANK, SIGNATURES BEGIN ON NEXT PAGE]

IN WITNESS WHEREOF, the parties hereto have fully executed this Agreement as of the date last signed by a Party hereto.

TENANT:
VERTEX TOWERS, LLC

By: _____
Name: Stephen Kelleher
Title: Manager
Date: 1-13-2022

LANDLORD:

By: _____
Name: G. Rockwood Clark
Title: Owner
Date: 1/14/2022

TENANT ACKNOWLEDGEMENT
COMMONWEALTH OF MASSACHUSETTS
COUNTY OF NORFOLK:

On the date below, before me personally appeared Stephen Kelleher, Manager of Vertex Towers, LLC, to me known (or proved to me on the basis of satisfactory evidence) to be the individual who executed the foregoing instrument, and he acknowledged said instrument by him executed to be his free act and deed.

Date: 01/13/2022

Notary Public Signature: _____

ERIN E VOZZELLA
Notary Public, Commonwealth of Massachusetts
My Commission Expires APRIL 15, 2022

Notary Stamp or Seal

LANDLORD ACKNOWLEDGEMENT
COMMONWEALTH OF MASSACHUSETTS:
COUNTY OF BARNSTABLE:

On the date below, before me personally appeared G. Rockwood Clark, to me known (or proved to me on the basis of satisfactory evidence) to be the individual who executed the foregoing instrument, and he acknowledged said instrument by him executed to be his free act and deed.

Date: Jan 14, 2022

Notary Public Signature: _____

JODY LEWIS
Notary Public
Commonwealth of Massachusetts
My Commission Expires Aug. 30, 2024

Notary Stamp or Seal

BARNSTABLE REGISTRY OF DEEDS
John F. Meade, Register

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LETTER OF AUTHORIZATION

I, G. Rockwood Clark, am owner of a certain parcel of land located at 206 Route 28 in the Town of Harwich, Barnstable County, Commonwealth of Massachusetts, which is depicted as Lot T7, on Assessor's Map 11, and being further described as the same real property conveyed by that certain deed recorded in Deed Book 7519 at Page 232 of the Barnstable County Registry of Deeds (the "Property").

As owner of the above-referenced Property, I hereby authorize Vertex Towers, LLC and any of its designated agents or assigns, to apply for all necessary municipal, state, federal and other permits necessary to accommodate the installation of a wireless telecommunication facility on the Property.

Sign: _____
G. Rockwood Clark

Date: 1/14/2022

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PARISI LAW ASSOCIATES, P.C.

APPLICATION FOR REVIEW OF
DEVELOPMENT OF REGIONAL IMPACT
(Cape Cod Commission)
FOR WIRELESS COMMUNICATIONS FACILTY

Applicant:	**Vertex Towers, LLC**
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Tax Assessor:	**11-17-0**
Property Owner:	**G. Rockwood Clark, Trustee of the 206 Route 28 Revocable Living Trust u/d/t dated May 22, 2023**
Date:	**October 16, 2026**

PROJECT NARRATIVE

INTRODUCTION

The Applicant Vertex Towers, LLC, a Massachusetts limited liability company ("Vertex") is a telecommunications infrastructure developer. Vertex develops, manages and owns telecommunications facilities in strategic locations across the country. The Vertex team has been working in the industry since the industry was founded and has the experience and expertise to navigate the challenges of the most complex markets.

Vertex is sometimes herein referred to as the "Applicant".

The Applicant's proposed Wireless Telecommunications Facility is shown on plans submitted with this Application (the "Plans"). The Applicant proposes to construct a 100' tall monopole-style tower (104' to top of lightning rod) at 206 Route 28, Harwich, MA 02671, Tax Assessors Parcel 11-17-0 (the "Property") that will structurally accommodate at least 4 wireless broadband telecommunications carriers and associated antennas, electronic equipment and cabling; and fence in the base of the tower to accommodate ground based telecommunications equipment. As shown on the Plans that accompany this Application, Verizon Wireless will place panel style antennas and required electronic equipment at a height of approximately 95' (centerline) on the tower, it is anticipated that various telecommunications companies, including AT&T Wireless, T-Mobile, and other wireless communications companies will place panel style antennas and required electronic equipment at heights of approximately 85', 75' and 65' (centerline) on the tower, and each will place telecommunications equipment and backup batteries inside equipment shelter(s) and/or weatherproof cabinets to be located immediately adjacent to the base of the tower. Power/telephone cabinets will be installed just outside the fenced-in compound. Applicant's Wireless Communications Facility is similar to the other telecommunication facilities already located in the Town and the surrounding area and has been designed in accordance with the Town's Zoning Bylaw as much as possible.

The Property is a large, approximately 6.03 acre parcel partially in the Rural-Residential Estate (with frontage in the Commercial Highway 1 Zoning District) which is substantially undeveloped but with a previously existing commercial mixed use on the property. §325-59 of the Town's Zoning Bylaw provides that:

> A personal wireless service facility, after Planning Board review and approval, shall require a building permit in all cases and may be permitted as provided in Article **V**, Use Regulations, and as follows …:
>
> > (2) All new or expanded personal wireless service facilities involving construction of one or more ground or building (roof or side) mounts, or expansion of an existing facility, shall require a site plan review and approval as outlined in § **325-55** and the issuance of a special permit pursuant to Article **V**, Use Regulations, except that no special permit shall be required for such facilities when located on land owned by the Town of Harwich. Such facilities may be established by special permit in all zoning districts within the Town, provided that the proposed use complies with the height and setback requirements of Subsection **C** hereunder and Article **VI**, Area, Height and Bulk Regulations, of this bylaw and all of the special permit requirements set forth in § **325-60** of this bylaw.

On August 17, 2026, the Applicant applied to the Town of Harwich Planning Board for a ts a SPECIAL PERMIT and SITE PLAN REVIEW from the PLANNING BOARD to permit construction and operation of the proposed facility, which was referred to the Cape Cod Commission as a Development of Regional Impact. The Applicant hereby requests APPROVAL from the CAPE COD COMMISSION for a DEVELOPMENT OF REGIOAL IMPACT to permit construction and operation of the Facility as proposed.

Upon completion of the Cape Cod Commission process, the Applicant also intends to apply for a Building Permit and the Harwich Zoning Board of Appeals for any required Variances as determined by the Harwich Building Inspector and/or Zoning Enforcement Officer. The Applicant also intends to file a Notice of Intent with the Harwich Conservation Commission.

THE PROJECT

Wireless telecommunications carriers are in the process of independently designing, constructing and upgrading wireless telecommunications networks to serve areas in and around the Town of Harwich. Such a network requires a grid of radio transmitting and receiving cell sites located at varying distances depending on the location of existing and proposed installations in relation to the surrounding topography. The radio transmitting and receiving facilities require a path from the facility to the user on the ground. This requires the antennas to be located in a location above the tree line where the signal is not obstructed or degraded by buildings or topographical features.

Once constructed, the Facility will be unmanned and will involve only periodic maintenance visits. The only utilities required to operate the facility are electrical power as well as telephone service which are currently available at the property. The traffic generated by the facility will be one or two vehicle trips per month by maintenance and technical personnel to ensure the telecommunications site remains in good working order. These visits will not result in any material increase in traffic or disruption to patterns of access or egress that will cause congestion hazards or cause a substantial change in the established neighborhood character. The Applicant's and its tenant's maintenance personnel will make use of the existing access driveway off Quaker Road to the base of the proposed Facility. The proposed Facility will not obstruct existing rights-of-way or pedestrian access and will not change the daily conditions of access, egress, traffic, congestion hazard, or character of the neighborhood. The installation will not require the addition of any new parking or loading spaces.

The construction of the Applicant's Facility will enhance service coverage in the Town of Harwich and surrounding communities. The enhancement of service coverage in the Town of Harwich is desirable to the public convenience for personal use of wireless services and for community safety in times of public crisis and natural disaster. Wireless communications service also provides a convenience to residents and is an attractive feature and service to businesses. In addition, the requested use at this location will not result in a change in the appearance of the surrounding neighborhoods. The use is passive in nature and will not generate any traffic, smoke, dust, heat, glare, discharge of noxious substances, nor will it pollute waterways or groundwater. Once constructed, the facility will comply with all applicable local, state and federal safety regulations.

Moreover and most importantly:

1. The proposed Facility will promote and conserve the convenience and general welfare of the inhabitants of the Town by enhancing telecommunications services within the Town.

2. The proposed Facility will lessen the danger from fire and natural disasters by providing emergency communications in the event of such fires and natural disasters.

3. The proposed Facility will preserve and increase the amenities of the Town by enhancing telecommunications services.

4. The proposed Facility will facilitate the adequate provision of transportation by improving mobile telecommunications for business, personal and emergency uses.

Wireless service is important to public safety and convenience. As of the end of 2023 there were an estimated 457 million mobile wireless subscribers in the United States. See FCC's 2024 Communications Marketplace Report, p. 56 (December 31, 2024). There are now more wireless subscriptions than landline telephone subscriptions in the United States, and the number of landline telephone subscribers across the nation is declining each year while the number of wireless users increases. Moreover, it is forecasted that wireless connections will become more significant as network service providers facilitate increase connectivity directly between devices, sensors, monitors, etc., and their networks. Id. at 56-57.

For many Americans, wireless devices have become an indispensable replacement for traditional landline telephones. Even when Americans maintain both types of telephone service, Americans are opting increasingly to use wireless devices over their landline telephones. For Americans living in "wireless-only" homes and for those others while away from their homes, cell phones are often their only lifeline in emergencies. Approximately 98% of Americans now own a cellphone of some kind and more than 91% own smartphones; more importantly, more than 50 percent of American households are now wireless only for voice connectivity, and 15% of adults are “smartphone-only” internet users – meaning they own a smartphone, but do not have traditional home broadband service. http://www.pewinternet.org/fact-sheet/mobile/ Approximately 80% of the millions of 911 calls made daily are placed from cell phones, and that percentage is growing. https://www.ctia.org/the-wireless-industry/infographics-library. The FCC’s Phase II E911 rules require wireless service providers to transmit the location of a wireless 911 call, within certain parameters for accuracy. Under the FCC’s rules, wireless providers are subject to increasingly stringent 911 location accuracy requirements. See http://www.fcc.gov/guides/wireless-911-services

COMPLIANCE WITH TECHNICAL BULLETIN 97-001
GUIDELINES FOR DRI REVIEW
OF WIRELESS COMMUNICATIONS TOWERS

Technical Bulletin 97-001 Guidelines for DRI Review of Wireless Communication Towers sets forth the criteria for personal wireless service facilities subject to review as a Development of Regional Impact. Each section of the relevant criteria under Bulletin 97-001 will be produced below in *italics*, with the explanation or referenced exhibit to follow in **bold**.

I. Background

The Applicant acknowledges the information in Section I of the Technical Bulletin.

II Purpose and Intent

The Regional Policy Plan (RPP) sets forth the Minimum Performance Standards for all Developments of Regional Impact, including some specific performance standards and development review policies for wireless communication towers. The purpose of this Technical Bulletin is to provide general guidelines for DRI applicants regarding application requirements and conformance with the Regional Policy Plan. In reviewing proposed wireless communication towers, the Commission may waive application of the RPP's Minimum Performance Standards provided that it finds that such standards are outside the scope of the proposed project. It is the express purpose of these Guidelines to minimize the visual and environmental impacts of wireless facilities. The Commission will review proposals for wireless facilities in keeping with the Regional Policy Plan and each town's existing bylaws and historic development patterns, including the size and spacing of structures and open spaces.

The Applicant acknowledges the information in Section II of the Technical Bulletin. The proposed Facility has been designed to satisfy the purpose of the Guidelines in all respects. The Property is a large, approximately 6.03 acre parcel partially in the Rural-Residential Estate (with frontage in the Commercial Highway 1 Zoning District) which is substantially undeveloped but with a previously existing commercial mixed use on the property. The proposed Facility will be a 100' tall monopole style tower with internal cables with a non-reflective galvanized finish and located on a property with substantial vegetative buffer, which will minimize the visual impact of the Facility. The Facility has been designed to not have impact on wetlands buffers and other environmentally sensitive areas.

IV. Location

Applicants seeking Development of Regional Impact (DRI) approval for personal wireless service facilities should comply with the following:

A. If feasible, personal wireless service facilities should be located on existing structures, including but not limited to buildings, water towers, existing telecommunications facilities, utility poles and towers, and related facilities, provided that such installation preserves the character and integrity of those structures. In particular, Applicants are urged to consider use of existing telephone and electric utility structures as sites for one or more personal wireless service facilities. The Applicant shall have the burden of proving that there are no feasible existing structures upon which to locate.

Verizon Wireless has identified a significant gap in wireless coverage and a significant need for capacity relief in this area of Harwich. After a thorough analysis of all existing structures, Verizon Wireless and the Applicant determined that there are no existing structures which would be sufficient to close the significant coverage gap. Every effort was made to identify an existing structure prior to pursuing a raw land site. The Applicant has identified the proposed site as the only feasible location to close this significant gap.

B. If the Applicant demonstrates that it is not feasible to locate on an existing structure, personal wireless service facilities should be designed so as to be camouflaged to the greatest extent possible, including but not limited to use of compatible building materials and colors, screening, landscaping and placement within trees.

Verizon Wireless and the Applicant have determined that it is not feasible to locate on an existing structure. As such, the Applicant proposes to color the facility to blend in with the natural environment to the greatest extent possible with the use of natural buffer, compatible building materials and colors, screening, and landscaping, all as detailed herein.

C. The Applicant shall submit documentation of the legal right to install and use the proposed facility mount at the time of application for a Development of Regional Impact approval.

As part of this Application, the Applicant submits a Memorandum of Lease executed by the owner of the Property as well as a letter of authorization from the owner of the Property to apply for all necessary approvals for a personal wireless service facility at this location.

V. Dimensional Requirements

Personal wireless service facilities should comply with the following requirements:

A. Height, General. Personal wireless service facilities should be no higher than ten feet above the average height of buildings within 300 feet of the proposed facility. However, the height of a personal wireless service facility should not exceed the height limits of the zoning district in which the facility is proposed to be located, unless the facility is completely camouflaged such as within a flagpole, steeple, chimney, or similar structure.

The proposed Facility will be 100' tall, the minimum height necessary to close the significant gap in wireless coverage and also allow for collocation. The Property is a large, approximately 6.03 acre parcel partially in the Rural-Residential Estate (with frontage in the Commercial Highway 1 Zoning District) which is substantially undeveloped but with a previously existing commercial mixed use on the property. Given the height and density of the area tree canopy and the area terrain and topography relative to the location of proposed Facility and the distance to existing wireless telecommunications infrastructure and as well at the technical requirements and limitations of wireless carriers, the Facility represents the only technically viable alternative to achieve the coverage objectives and satisfy all of the other requirements of the Bylaw and the Cape Cod Commission regulations, including facilitating co-location. Because the Facility will be more than 45' tall, the Applicant intends to respectfully request a VARIANCE from this provision from the ZONING BOARD OF APPEALS.

Applicant has requested a Special Permit from the Harwich Planning Board.

B. Height, Ground-Mounted Facilities. Ground-mounted personal wireless service facilities (i.e. wireless communication towers) should not project higher than ten feet above the average building height or, if there are no buildings within 300 feet, these facilities should not project higher than ten feet above the average tree canopy height, measured from ground level (AGL). If there are no buildings within 300 feet of the proposed site of the facility, all ground-mounted personal wireless service facilities should be surrounded by dense tree growth to screen views of the facility in all directions. These trees may be existing on the subject property or proposed to be planted as part of the application.

The average tree canopy height in this area is approximately 45 - 55 feet. A personal wireless service facility of 55 feet would not close a significant gap in wireless coverage or cure capacity demand in this area of Harwich. There is ample tree

growth on the Property to screen the base of the Facility in all directions.

C. Height, Wireless Facility Overlay Districts. If a town has established a wireless facility overlay district (as designated on the town zoning map) where taller facilities are permitted, personal wireless service facilities of up to 150 feet in height may be allowed. Monopoles are the preferred type of mount for such taller structures.

The proposed Facility will not be in the Town of Harwich's Personal Wireless Service Facility Overlay District.

D. Setbacks. All personal wireless service facilities and their equipment shelters should comply with the building setback provisions of the zoning district in which the facility is located. In addition, the following setbacks should be observed:

1. In order to ensure public safety, the minimum distance from the base of any ground-mounted personal wireless service facility to any property line, road, habitable dwelling, business or institutional use, or public recreational area should be the height of the facility/mount, including any antennas or other appurtenances. This setback is considered a "fall zone." The Applicant shall provide proof of a legal interest in the fall zone, including but not limited to proof of fee ownership, an easement, or a leasehold sufficient to meet the requirements of this section.

In reviewing an application for a personal wireless service facility, the Commission may reduce the required fall zone by as much as 50% of the recommended distance, if it finds that a substantially better design will result from such reduction. In making such a finding, the Commission should consider both the visual and safety impacts of the proposed facility.

The proposed Facility will be 100' tall and will be setback substantially from the nearest property line, road, habitable dwelling and public recreational area. However, the Facility will less than 100' away from the nearest property line (and undevelopable property). Because the proposed location of the Facility results in a better design, and especially in light of the lack of viable alternatives, the Applicant respectfully requests a reduction and/or Waiver of the setback guideline to permit construction of the Facility as proposed.

VI. Special Regulations. Personal wireless service facilities should comply with the Performance Standards set forth in this section.

A. Design Standards 1. Camouflage. Personal wireless service facilities should be camouflaged or hidden from public view wherever possible by incorporating them into an existing or

proposed structure, by using fiberglass to replace building elements, and/or through careful selection of construction materials and/or color.

The proposed personal wireless service facility will be camouflaged to the greatest extent possible through the use of the natural landscape, construction materials and color as detailed herein and on the Site Plans and photo simulations,

2. Buffers. If personal wireless service facilities are not camouflaged from public viewing areas by existing buildings or structures, they should be surrounded by buffers of dense tree growth and understory vegetation in all directions to create an effective year-round visual buffer. Ground- mounted personal wireless service facilities should provide a vegetated buffer of sufficient height and depth to effectively screen the facility. Trees and vegetation may be existing on the subject property or installed as part of the proposed facility or a combination of both. The Commission will work with the Applicant to determine the types and sizes of trees and plant materials and depth of the needed buffer based on site conditions.

The Property is surrounded by a year-round vegetative buffer which will effectively screen the Facility and, the base of the Facility will be setback substantially from all from the nearest property line, road, habitable dwelling and public recreational area. Because the base of the Facility will not be visible from nearest property line, road, habitable dwelling and public recreational area, the Applicant has not proposed any additional landscaping.

3. *Color. To the extent that any personal wireless service facility extends above the height of the vegetation immediately surrounding it, it should be painted in a light grey or light blue hue which blends with sky and clouds.*

The proposed Facility will be neutral, non-reflective galvanized gray which weathers over time, typical of similar facilities, which will blend in with the sky and clouds as much as possible.

4. Equipment Shelters. Equipment shelters for personal wireless service facilities should be designed consistent with one of the following design standards:

a. Equipment shelters should be located in underground vaults; or

b. Equipment shelters should be designed consistent with traditional Cape Cod architectural styles and materials, with a roof pitch of at least 10/12 and wood clapboard or shingle siding; or

c. All ground-mounted personal wireless service facilities should be surrounded by a security barrier. Equipment shelters should be camouflaged behind an effective year-round landscape buffer, equal to the height of the proposed building, and/or wooden fence. The Commission, in consultation with local officials will determine the style of fencing and/or landscape buffer that is compatible with the neighborhood.

The proposed compound area will be surrounded by a 6' tall stockade fence to prevent unauthorized access. The Property is surrounded by a year-round vegetative buffer which will effectively screen the Facility and the Facility will be setback substantially from the nearest property line, road, habitable dwelling and public recreational area. Because the base of the Facility will not be visible from nearest property line, road, habitable dwelling and public recreational area, the Applicant has not proposed any additional landscaping.

5. Lighting and Signage

a. Personal wireless service facility mounts should be lighted only if required by the Federal Aviation Administration (FAA). Lighting of equipment shelters and any other facilities on the ground should be designed in accordance with Technical Bulletin #95-001, Development of Regional Impact Guidelines for Exterior Lighting.

The proposed Facility will not require lighting under current FAA regulations. No ground exterior lighting is proposed.

b. All signs should comply with the FCC and applicable requirements of the town's sign regulations.

All signs proposed as part of the proposed Facility will comply with all requirements of the FCC and the Town of Harwich sign regulations. There shall be no signs except a sign identifying the facility and a telephone number where the owner and operator can be reached on a twenty-four hour basis; a no trespassing sign; and any applicable safety warning signs.

6. Historic Districts Personal wireless service facilities should not be located within an historic district unless they are completely camouflaged.

The proposed Facility is not located within a historic district.

7. Scenic Landscapes and Vistas

a. Personal wireless service facilities should not be located within open areas that are visible from public roads, recreational areas or residential development. All ground-mounted personal wireless service facilities which are not camouflaged by existing buildings or structures should be surrounded by a buffer of dense tree growth.

The proposed Facility is sited in the only feasible location to close a significant gap in wireless coverage for Verizon Wireless. While the top portion of the Facility will be visible from certain public roads, the Property is surrounded by a year-round vegetative buffer which will effectively screen the base of the Facility. Because the base of the Facility will not be visible from nearest property line, road, habitable dwelling and public recreational area, the Applicant has not proposed any additional landscaping.

b. Any personal wireless service facility that is located within the viewshed of a scenic vista, scenic landscape or scenic road as designated by a town should not exceed the height of vegetation at the proposed location.

The proposed Facility will not be located within the viewshed of a scenic vista, scenic landscape or scenic road as designated by the Town of Harwich.

B. Noise Standards

Ground-mounted personal wireless service facilities should not generate noise from equipment and/or wind in excess of 50 db at the property line.

The only noise generating equipment at the proposed Facility will be a generator utilized by Verizon Wireless as a third-tier back up power source (behind primary power and back-up batteries) in the event of a long term power outage and will cycle on periodically for routine testing. Included with this Application are the noise specifications for the proposed generator, indicating compliance with this standard.

C. Radiofrequency Radiation (RFR) Standards All equipment proposed for a personal wireless service facility should be authorized per the FCC Guidelines for Evaluating the Environmental Effects of Radiofrequency Radiation (FCC Guidelines).

Included with the Application is a Calculated Radio Frequency Emissions Report

showing compliance by Verizon Wireless with applicable FCC standards for radio frequency exposure limits.

D. Hazardous Materials Standards

Under the Regional Policy Plan, a wireless facility in a Wellhead Protection District is limited to household quantities of hazardous materials/waste. The Commission may require provisions for full containment of any hazardous materials used on-site, including an enclosed containment area with a sealed floor, designed to contain 110% of the total volume of all hazardous materials used, handled or stored on the site and a prohibition on floor drains. No hazardous waste should be discharged on the site of any personal wireless service facility.

There will be no hazardous materials or waste generated used or stored at the proposed Facility.

VII. Co-location

A. Licensed carriers should share personal wireless service facilities and sites where feasible and appropriate, thereby reducing the number of personal wireless service facilities that are stand- alone facilities. All Applicants for a personal wireless service facility should demonstrate a good faith effort to co-locate with other carriers. Such good faith effort includes:

1. A survey of all existing structures that may be feasible sites for co-locating personal wireless service facilities;

As demonstrated by the reports that accompany this Application, Verizon Wireless and the Applicant have surveyed all existing structures and determined that there are no existing structures upon which to co-locate to close the significant gap in wireless coverage in this area of Harwich.

2. Contact with all the other licensed carriers for commercial mobile radio services operating in the County; and

As a wireless infrastructure developer, the Applicant encourages co-location and has relationships with all of the existing wireless telecommunications carriers licensed in this market and intends to provide space on the proposed Facility at commercially reasonable rates, which will minimize the total number of towers in the community. The Applicant has already secured a commitment from Verizon Wireless to co-locate on the Facility, and included with this Application are notices sent to all other

licensed carriers for commercial mobile radio services operating in Barnstable County.

3. Sharing information necessary to determine if co-location is feasible under the design configuration most accommodating to co-location.

As a wireless infrastructure developer, the Applicant encourages co-location and has relationships with all of the existing wireless telecommunications carriers licensed in this market and has designed the Facility with the height and structural integrity to accommodate at least 4 carriers. The Applicant intends to provide space on the proposed Facility at commercially reasonable rates, which will minimize the total number of towers in the community, and will share all necessary information with interested parties to determine whether co-location is feasible under the design configuration and will use best efforts to ensure that the design configuration accommodates maximum co-location.

B. In the event that co-location is found to be not feasible, a written statement of the reasons for the infeasibility should be submitted to the Commission. The Commission may retain a technical expert in the field of RF engineering to verify if co-location at the site is not feasible or is feasible given the design configuration most accommodating to co-location. If the Executive Director of the Commission or his/her designee determines it will require the services of an outside consultant / technical expert to assist in the project evaluation, the project Applicant will deposit with the Commission an amount of money estimated to cover 100% of these services. If this initial estimate is insufficient to adequately review the project proposal, the Applicant will provide the additional funds necessary. Any funds not expended at the conclusion of the review will be returned to the Applicant. The Commission may deny a permit to an Applicant that has not demonstrated a good faith effort to provide for co-location.

The Applicant has used best efforts to ensure that the design configuration accommodates maximum co-location.

C. If the Applicant does intend to co-locate or to permit co-location, the Commission may request drawings and studies which show the ultimate appearance and operation of the personal wireless service facility at full build-out.

The Applicant has provided photo simulations of the Facility from several vantage points at full build-out.

D. If the Commission approves co-location for a personal wireless service facility site, the

permit should indicate how many facilities of what type shall be permitted on that site, including the type, size and location of storage cabinets or buildings. Facilities specified in the Development of Regional Impact (DRI) approval should require no further Commission review. Estimates of RFR emissions will be required for all facilities, including proposed and future facilities.

The proposed Facility can accommodate at least 4 wireless service providers and their equipment on the monopole and within the fenced compound at the base of the Facility. Estimated RFR emissions for Verizon Wireless have been provided, and estimated RFR emissions will be provided to the Commission showing compliance with applicable FCC regulations as and when such additional carriers co-locate on the Facility. The Applicant requests that the Commission approve the Facility for up to 4 wireless service providers as shown on the attached Site Plans.

IX. Monitoring and Maintenance

A. After the personal wireless service facility is operational, the Applicant should submit, within 90 days of beginning operations, and at annual intervals from the date of issuance of the DRI Certificate of Compliance, existing measurements of RFR from the personal wireless service facility. Such measurements should be signed and certified by a RF engineer, stating that RFR measurements are accurate and meet FCC Guidelines as specified in the Radiofrequency Standards (sub-section VI C) of these Guidelines.

The Applicant will comply with the requirements for submission within 90 days of operations and annual submission of RFR compliance.

B. After the personal wireless service facility is operational, the Applicant should submit, within 90 days of the issuance of the DRI Certificate of Compliance, and at annual intervals from the date of issuance of the DRI Certificate of Compliance, existing measurements of noise from the personal wireless service facility. Such measurements should be signed by an acoustical engineer, stating that noise measurements are accurate and meet the Noise Standards (sub-section VI.B.) of these Guidelines.

The Applicant agrees to maintain the Facility in compliance with the Noise Standards (sub-section VI.B.) of these Guidelines. Given the substantial setbacks, existing vegetative buffer and minimal noise emissions as demonstrated, as well as the unnecessary and substantial expense of this requirement, the Applicant respectfully requests a WAIVER of this requirement.

C. The Applicant and co-Applicant should maintain the personal wireless service facility in good condition. Such maintenance includes, but is not be limited to, painting, structural integrity of the mount and security barrier, and maintenance of the buffer areas and landscaping.

The Applicant agrees to maintain the Facility in good condition.

X. Abandonment

A. At such time that the owner plans to abandon a personal wireless service facility, such owner should notify the Commission and the Town by certified U.S. mail of the proposed date of abandonment. Such notice should be given no less than 30 days prior to abandonment. In the event that an owner fails to give such notice, the personal wireless service facility shall be considered abandoned if it is not used for a period of six (6) months.

In the unlikely event that the Applicant intends to abandon the Facility, the Applicant will notify the Commission and the Town by certified U.S. mail of the proposed date of abandonment.

B. Upon abandonment of the facility, the owner should physically remove the personal wireless service facility within 90 days from the date of abandonment. "Physically remove" includes, but is not limited to:

1. Removal of antennas, mount, equipment shelters and security barriers from the subject property.

2. Proper disposal of the waste materials from the site in accordance with local and state solid waste disposal regulations.

3. Restoring the location of the personal wireless service facility to its natural condition, except that any landscaping and grading should remain after removal of the personal wireless service facility.

Within 90 days of the date of abandonment, the Applicant will remove all above-ground portions the Facility.

C. If a carrier fails to remove a personal wireless service facility in accordance with this section of these Guidelines, the town shall have the authority to enter the subject property and physically remove the facility. The Commission should consider requiring the Applicant to post a bond at the time of construction to cover costs for the removal of the personal wireless service facility in the event the town must remove the facility.

No response required.

XI. General Criteria for Documenting Need for a Proposed Wireless Facility

A. Introduction

The Cape Cod Commission has an established hierarchy of preference with regard to locating personal wireless service facilities. Regional Policy Plan Minimum Performance Standard 4.3.2.1 states that "Whenever feasible, new telecommunications facilities shall be required to co-locate with existing facilities in order to minimize their visual impacts." The Commission's policy thus encourages locating on existing buildings and structures rather than permitting the construction of new towers or monopoles. Commission review is not required for facilities located on existing buildings or structures. In addition, Commission review is not required for the reinforcement, reconstruction or replacement of an existing wireless communication tower on the same site with

an addition of up to 20 feet in height. The Commission's DRI review for wireless facilities first focuses on alternatives to proposed new towers or monopoles and looks very closely at existing buildings and structures in the vicinity of the proposed tower as possible alternative locations. Applicants are expected to have pursued these locations prior to application to the Commission and the Town, and must adequately document why these sites have proven to be unsatisfactory to the carrier(s). The Commission's engineering consultants will assist in reviewing technical data provided by the primary carrier and all co-locating carriers to assess the feasibility of alternatives. For new towers or monopoles, the Commission seeks sites with limited impact on significant scenic and historic resources, and seeks proposals with siting and design features which successfully camouflage the facility. The Commission also seeks proposals with at least three committed carriers. Although the Commission has reviewed facilities with fewer co-locators than three, it requires documentation that the proposing carrier has contacted in writing all other carriers licensed for Cape Cod regarding the proposed facility. Co-location for new towers or monopoles is stressed and single-carrier facilities are not encouraged. Single-carrier facilities should incorporate creative solutions which are effectively camouflaged.

Verizon Wireless and the Applicant have reviewed all existing buildings and structures prior to proposing a personal wireless service facility at the present location. Verizon Wireless and the Applicant determined that a new monopole of 130 feet above ground level at the proposed location is the only feasible location to place a personal wireless service facility to close a significant gap in wireless coverage for Verizon Wireless.

The proposed Facility is at the least intrusive location available and at the minimal height necessary in an effort to minimize impact on scenic and historic resources.

In an effort to abide by the Commission's preference for co-location, the current application is for a monopole which can accommodate up to 4 wireless service providers. The Applicant has and intends to continue actively market this site to the other carriers and make space available at reasonable market rates to encourage co-location.

The Applicant has provided documentation that it has contacted in writing all other carriers licensed for Cape Cod regarding the proposed Facility.

It is important to point out that courts in the 1st Circuit do not take into account coverage of other providers when determining whether there is a significant gap. *Second Generation Prop. v. Town of Pelham*, 313 F.3d 620, 633-34 (1st Cir. 2002). Courts look at coverage gaps from the perspective of the individual provider. In

this case, where there is a significant gap in coverage for Verizon Wireless in this area, the inability to close that gap in coverage could be considered an effective prohibition of wireless services regardless of whether it is a gap in coverage being requested to be fulfilled for one or multiple carriers.

B. Application Requirements

The following documentation is required to justify need and must be submitted as part of the DRI application. If the need for a new facility is justified, the Applicant must also demonstrate that the proposed location will have the least possible impact on surrounding scenic and historic resources, and that the proposed facility design will have the least possible impact on community character. Other information may be requested during the DRI review process.

1. Demonstration of a coverage and/or capacity problem requiring a solution.

a) Drive test data showing clear failure points in critical locations.

b) Dropped call statistics and/or capacity statistics (if RF coverage appears sufficient)

c) Zoning or assessors or USGS map (11" x 17" or smaller) showing the location of all existing and proposed personal wireless service facilities for that carrier in the town and in adjacent towns, and showing the area of the coverage or capacity problem.

The attached RF Report demonstrates that there is a significant coverage gap and insufficient network capacity in and around the area of Harwich surrounding the proposed Facility, including the roads, residences, businesses, and community and recreational areas. The RF Report clearly demonstrates with industry standard methods of computer modeling and drive test data the clear failure points in critical locations.

The RF Report shows the location of all of the existing, approved and proposed sites used to perform the coverage analysis and generate the coverage plots provided herein. The location of the existing and proposed sites are clearly labeled on the maps provided in the Report.

The RF Report includes existing and proposed coverage maps, overloaded sectors, coverage offload with the proposed site, empirical drive test data and an area terrain map which demonstrates the manner in which the topographic features shape the evaluation of this site and determine the need.

2. Demonstration that all existing structures have been identified and fairly rejected.

a) Provide results from tower databases, town records, Cape Cod Commission maps, and other reasonably available resources to identify potential sites on existing structures.

b) Provide aerial photographs of sufficient resolution and coverage to identify significant features such as utility rights of way, towers, steeples, tanks, and other existing tall structures.

c) For a) and b), consider area greater than the typical "search ring." Extend search for existing structures to the acceptable coverage contours of adjacent sites.

d) Provide propagation plots to demonstrate anticipated coverage from rejected sites or structures.

e) Identify whether a combination of the existing structures considered in a. and b. could address the coverage and/or capacity problem defined in item 1).

f) Provide documentation that demonstrates that sites with potentially good coverage are not available or otherwise unusable.

As indicated in the documentation provided with the Application, representatives of Verizon Wireless and the Applicant have investigated the area and utilized all databases and records available and identified no structure of sufficient height and structural integrity in the area on which it might be able to locate to close the significant gap in wireless coverage.

3. Demonstration that proposed location and height will solve problem

a) Drive test data showing:
i. Performance of proposed facility

ii. Composite performance of proposed facility and intersecting facilities

b) Propagation plots in sufficiently enlarged scale to show local terrain effects:

i. Propagation plot of proposed facility alone

ii. Propagation of each adjacent facility, separately (Identify whether each facility is complete, under construction or proposed)

iii. Composite propagation plot (See Presentation Guidelines below for details)
See Exhibit 12, Radio Frequency Report for Verizon Wireless Prepared by C Squared Systems, LLC

4. Demonstration that proposed height is minimum necessary to achieve coverage of target area.

a) Provide propagation plots at incrementally lower elevations until reaching an elevation that clearly is not sufficient. Use increments of ten percent of proposed antenna elevation above ground, or ten feet, whichever is greater.

b) Measure and provide data on height of surrounding tree, vegetation, and/or building cover. Supply photographs to corroborate. In complex environments, a plan view is recommended.

c) Provide a propagation plot with top of antenna placed ten feet above average surrounding cover line.

See RF Report and RF Coverage Maps and Supplemental Reports which accompany this Application.

5. Demonstration of visual impact of proposed new structure. A balloon test or, preferably and where appropriate, a crane at the proposed site is required. The date, time and location of the test must be advertised in a newspaper of general circulation in the town at least 14 days, but not more than 21 days, prior to the test, and the Commission and the town must be notified in writing at least 14 days prior to the test.

a) During crane/balloon test, map locations along local public ways where facility is visible above visual horizon. In addition to mapping local visibility, anticipate roads where distant views are possible. Use of line-of-sight (also called terrain shadowing) mapping software is encouraged to identify areas to send mapping personnel. However, final map must be the result of personal observation.

b) Map visibility of a lower tower height for comparison. Select height in coordination with Commission staff. Height could be half of the proposed structure's height or 10 feet above the height of local tree, vegetation or building cover. Mark balloon or crane in visible fashion at the alternate height. Visibility of lower elevation can be mapped at the same time by mapping personnel.

c) Field verify actual elevations above ground of test crane or balloon.

d) Provide map that indicates visibility of both elevations from public ways. See Presentation Guidelines below for details.

e) Confer with Commission and town staff to identify points of view of particular interest or concern to be documented at the time of the crane/balloon test.

g) Provide photographs of the proposed site during the crane/balloon test from all representative visibility locations identified in 5.a) and 5.d) and from all points identified in 5.e).

NOTE: If the visibility map and accompanying photographs demonstrate that the height and location of the proposed new structure will have significant visual impacts on surrounding scenic and historic resources, the Applicant must provide documentation described in items 3) and 4) for alternative locations outside of such resource areas.

On Monday, October 5, 2026, after notice to the Town of Harwich and the Cape Cod Commission, the Applicant performed a visibility demonstration by floating a large red balloon at 100' with ribbons on the tether spaced 10' apart. The date and location of the balloon test was noticed in the Cape Cod Chronicle and sent to abutters.

At the conclusion of the test, photos and photographic simulations were rendered for the communication structure at the proposed height of 100' and are included herewith.

6. Demonstration of Camouflaged Siting and Design Features

a) 1"= 40' vicinity plan to demonstrate how the proposed siting will limit visibility of the personal wireless service facility, showing the following:

i. Property lines for the subject property and adjacent properties within 300 feet of the project property.
ii. Existing tree cover on the subject property and adjacent properties within 300 feet, by dominant species and average height, as measured by or available from a verifiable source.
iii. Outline of all existing buildings, including purpose, on subject property and adjacent properties within 300 feet.
iv. Location of all roads, public and private, on the subject property and adjacent properties within 300 feet including driveways proposed to serve the personal wireless service facility.
v. Proposed location of antenna, mount, equipment shelter(s), and security barrier.
vi. Distances, at grade, from the proposed personal wireless service facility to each building on the vicinity plan.
vii. Contours at each two feet AMSL for the subject property and adjacent properties

within 300 feet.

viii. *All proposed changes to the existing property, including grading, vegetation removal, parking and temporary or permanent roads and driveways.*

See the detailed Site Plans included herewith.

b) Cross-sections of the proposed antennas, mounts, equipment shelter(s) and security barrier, showing dimensions of all features, to demonstrate how the design of the facility will be streamlined to limit visibility. The Commission seeks a clean architectural appearance that limits visually cluttered equipment such as mounting hardware, pipes, bolts, and cables.

c) Color and materials of the proposed personal wireless service facility, represented by a color board showing actual colors proposed for antennas, mounts, equipment shelters, cable runs and security barrier, if any.

d) Existing vegetation and proposed landscaping, identified by size and species, shown both in plan and cross- section to demonstrate how vegetation will limit the visibility of the proposed facility.

e) If lighting of the site is proposed, a manufacturer's computer-generated point-to-point printout, indicating the horizontal footcandle levels at grade within the site and 25 feet beyond the property lines. Any FAA lighting requirements and information on the types of luminaires proposed.

See the detailed Site Plans included herewith as well as the photo simulations of the Proposed Facility

7. Demonstration of Co-Location Capability

a) Documentation in writing that the proposing carrier has contacted all other carriers licensed for Cape Cod regarding the proposed facility.

See Letters to Other Wireless Carriers included herewith.

b) Information showing the proposed structure fully populated with wireless facilities, showing all positions and types of facilities which can be accommodated on the proposed facility.

See Photos from Visibility Demonstration and Photo Simulations included herewith.

8. Radiofrequency Radiation (RFR) Filing Requirements The Applicant should provide a statement listing the existing and maximum future projected measurements of RFR from the proposed personal wireless service facility, for the following situations:

a) Existing, or ambient: the measurements of existing RFR.

b) Existing plus proposed personal wireless service facilities: maximum estimate of RFR from the proposed personal wireless service facility plus the existing RFR environment.

b) Certification, signed by a RF engineer, stating that RFR measurements are accurate and meet FCC Guidelines as specified in the Radiofrequency Radiation Standards (sub-section VI.C.) of these Guidelines.

See Calculated Radio Frequency Emissions Report included herewith.

9. Hazardous Materials Filing Requirements The Applicant should provide a written description of the type(s) and quantities of any hazardous waste and/or hazardous materials to be used, stored or generated for each wireless carrier proposed to be located on the project site, as well as provide a written description and plans for containment of any hazardous materials/waste.

There will be no hazardous materials or waste generated, stored or used at the proposed personal wireless service facility.

Noise Filing Requirements The Applicant should provide a statement listing the existing and maximum future projected measurements of noise from the proposed personal wireless service facilities, measured in decibels Ldn (logarithmic scale, accounting for greater sensitivity at night), for the following:

a) Existing, or ambient: the measurements of existing noise.

b) Existing plus proposed personal wireless service facilities: maximum estimate of noise from the proposed personal wireless service facility plus the existing noise environment. Such statement should be certified and signed by an acoustical engineer, stating that noise measurements are accurate and meet the Noise Standards (subsection VI.B.) of these Guidelines.

See Equipment Specifications showing Noise Emissions and compliance with

applicable noise standards. The Applicant respectfully requests a WAIVER of the requirements to provide the measurements of existing noise and existing plus proposed noise emissions certified and signed by an acoustical engineer as such information is not needed for a thorough review of a proposed Facility.

C. The Commission may waive one or more of the application filing requirements of this section if it finds that such information is not needed for a thorough review of a proposed personal wireless service facility.

The Applicant has read and acknowledges this Section.

D. Presentation Guidelines

The Applicant has read and acknowledges the Presentation Guidelines.

COMPLIANCE WITH ENABLING REGULATIONS

Section 6(c)(viii) Findings for Approval. The Commission shall review proposed DRis for their consistency with the Act, the RPP, Districts of Critical Planning Concern (DCPC), municipal development bylaws and Local Comprehensive Plans. The Commission shall approve, or approve with conditions, a DRI and shall permit a Municipal Agency to grant a development permit for a proposed DRI if the Commission finds after a public hearing that:

[1] the probable benefit from the proposed development is greater than the probable detriment;

The construction of the Applicant's Facility will enhance service coverage in the Town of Harwich and surrounding communities. The enhancement of service coverage in the Town of Harwich is desirable to the public convenience for personal use of wireless services and for community safety in times of public crisis and natural disaster. Wireless communications service also provides a convenience to residents and is an attractive feature and service to businesses. In addition, the requested use at this location will not result in a change in the appearance of the surrounding neighborhoods. The use is passive in nature and will not generate any traffic, smoke, dust, heat, glare, discharge of noxious substances, nor will it pollute waterways or groundwater. Once constructed, the facility will comply with all applicable local, state and federal safety regulations. See also above, pp. 3- 4, for the substantial benefit

[2] the proposed development is consistent with the RPP and the Local Comprehensive Plan of the Municipality(ies) in which the proposed development is located if the municipality has adopted an LCP which has been certified by the Cape Cod Commission as consistent with the RPP.

As set forth below, the proposed development is consistent with the Regional Policy Plan, and also consistent with the LCP. The Town of Harwich has approved several similar facilities throughout Harwich, recognizing the need for enhanced wireless communications as a means of improving public safety.

[3] the proposed development is consistent with municipal development bylaws, or, if it is inconsistent, the inconsistency is necessary to enable a substantial segment of the population to secure adequate opportunities for housing, conservation, environmental protection, education, recreation or balanced economic growth.

The proposed Facility will be 100' tall, the minimum height necessary to close the significant gap in wireless coverage and also allow for collocation. Given the height and density of the area tree canopy and the area terrain and topography relative to the location of proposed Facility and the distance to existing wireless telecommunications infrastructure and as well at the technical requirements and limitations of wireless carriers, the Facility represents the only technically viable alternative to achieve the coverage objectives and satisfy all of the other requirements of the Bylaw and the Cape Cod Commission regulations, including facilitating co-location. Because the Facility will be more than 45' tall, the Applicant intends to respectfully request a VARIANCE from this provision from the ZONING BOARD OF APPEALS.

We note that the Town of Harwich has approved several similar facilities throughout Harwich, recognizing the need for enhanced wireless communications as a means of improving public safety

[4] if the proposed development is located in whole or in part within a designated DCPC, it is consistent with the regulations approved or adopted by the Commission pursuant to Section 11 of the Act.

The Site is not located within a designated DCPC.

COMPLIANCE WITH REGIONAL POLICY PLAN

WATER RESOURCES

Goal: To maintain a sustainable supply of high quality untreated drinking water and protect, preserve, or restore the ecological integrity of Cape Cod's fresh and marine surface water resources

The proposed Facility will not adversely impact any water resources and will not introduce any nitrogen loading. The Applicant respectfully asserts that this section of the Regional Policy Plan is not applicable in this instance.

OCEAN RESOURCES

Goal: To protect, preserve, or restore the quality and natural values and functions of ocean resources.

The proposed Facility will not have any adverse impact on ocean resources and the Applicant respectfully asserts that this section of the Regional Policy Plan is not applicable in this instance.

WETLAND RESOURCES

Goal: To protect, preserve, or restore the quality and natural values and functions of inland and coastal wetlands and their buffers.

The proposed Facility will not have any adverse impact on inland or coastal resources and the Applicant respectfully asserts that this section of the Regional Policy Plan is not applicable in this instance.

WILDLIFE AND PLANT HABITAT

Goal: To protect, preserve, or restore wildlife and plant habitat to maintain the region's natural diversity.

The proposed Facility will have a minimal impact upon existing vegetation on the Site. The Facility will only impact previously disturbed land adjacent to a light industrial building, and none of which is in a Biomap Core Habitat. The proposed Facility will not have any adverse impact upon wildlife, and will not produce smoke, odor, waste, unreasonable noise or vibrations.

OPEN SPACE

Goal: To conserve, preserve, or enhance a network of open space that contributes to the region's natural and community resources and systems

The installation of the proposed Facility requires minimal disturbance of the land and adds very little impervious surface to the Site, other than the concrete pads for the carriers' equipment.

The Property is a large, approximately 1.02 acre parcel in the R-40 Residential Single Zoning District with a light industrial building on the property, moreover, the Facility will only impact previously disturbed land. As such, the proposed Facility will not involve the development of open space that contributes to the region's natural resources, but does in fact improve community resources through enhanced wireless communications. There is no nearby open space on which the land underneath the proposed Facility could be connected, nor will the proposed Facility have any impact on nearby open space. It is unlikely that a conservation agency would be interested in a donation, restriction or restoration of such a small equivalent of open space on-site, especially given the proximity to the existing light industrial building immediately surrounded by previously disturbed land, nor would they be interested in in a donation or restoration of such a small equivalent of open space off-site.

Given that the land on which the Facility will be located has been previously disturbed, the lack of impact on open space and the fulfillment of the goal to promote economic development providing employment opportunities to a diverse workforce, the Applicant respectfully requests a WAIVER of the requirement to contribute a payment in lieu to meet the open space objective.

COMMUNITY DESIGN

Goal: To protect and enhance the unique character of the region's built and natural environment based on the local context.

The Property is a large, approximately 6.03 acre parcel partially in the Rural-Residential Estate (with frontage in the Commercial Highway 1 Zoning District) which is substantially undeveloped but with a previously existing commercial mixed use on the property. The Facility will be screened by existing trees and vegetation on the Property.

COASTAL RESILIENCY

Goal: To prevent or minimize human suffering and loss of life and property or environmental damage resulting from storms, flooding, erosion, and relative sea level rise.

The installation of the proposed Facility will not be a threat to public health, safety and welfare. Rather, the proposed Facility will aid in public safety by maintaining wireless communication services to the residents, businesses, commuters, and emergency personnel utilizing wireless communications in the immediate vicinity and along the nearby roads. These services further the public interest of health and safety as they provide wireless 911 services to the community and communication services for the public. According to published reports, approximately 80% of all 911 calls are made from wireless devices. The proposed Facility will allow for improved access to these reliable and robust networks in this area of the Town of Harwich. Today, wireless infrastructure is required to assist with public safety needs. The proposed Facility will not result in, or cause any, flooding or erosion.

CAPITAL FACILITIES AND INFRASTRUCTURE

Goal: To guide the development of capital facilities and infrastructure necessary to meet the region's needs while protecting regional resources.

Development of the proposed Facility will allow Verizon Wireless and other wireless communication services providers to improve wireless communication services coverage to this area of the Town of Harwich.

TRANSPORTATION

Goal: To provide and promote a safe, reliable, and multi-modal transportation system.

The Facility will not have any adverse impact on transportation systems. The proposed Facility will generate insignificant traffic to and from the Site. On average, only one or two visits per month will be required for maintenance purposes. Access to the Facility will be via the existing access way.

ENERGY

Goal: To provide an adequate, reliable, and diverse supply of energy to serve the communities and economies of Cape Cod.

The proposed Facility will not have any adverse impact on energy supplies and the Applicant respectfully asserts that this section of the Regional Policy Plan is not applicable in this instance. The Facility will function using standard telephone and electric services.

WASTE MANAGEMENT

Goal: To promote a sustainable solid waste management system for the region that protects public health, safety, and the environment and supports the economy.

There will be no hazardous materials introduced or discharged at the proposed Facility. All construction waste will be transported off site and disposed of in compliance with applicable regulations. Once constructed, the proposed Facility will not generate any solid waste.

CULTURAL HERITAGE

Goal: To protect and preserve the significant cultural, historic, and archeological values and resources of Cape Cod.

The Applicant will not demolish or impact any cultural, historic or archeological resources as a part of this Facility.

ECONOMY

Goal: To promote a sustainable regional economy comprised of a broad range of businesses providing employment opportunities to a diverse workforce.

The proposed Facility will enable Verizon Wireless and other wireless carriers to provide improved w communications services to the residents, businesses, public safety personnel and travelers in this area of Harwich, supporting a broad range of economic development. Likewise, other wireless carriers will be able to collocate at the proposed Facility, fostering competition and economic development.

HOUSING

Goal: To promote the production of an adequate supply of ownership and rental housing that is safe, healthy, and attainable for people with different income levels and diverse needs.

The Facility will not have any adverse impact on housing and the Applicant respectfully asserts that this section of the Regional Policy Plan is not applicable in this instance.

THE TELECOMMUNICATIONS ACT OF 1996

In 1996, the U.S. Congress enacted the Telecommunications Act of 1996, Pub. L. No. 104-104, § 704; 110 Stat. 56 (1996) (the "TCA"). The TCA provides that: no laws or actions by any local government or planning or zoning board may prohibit, or have the effect of prohibiting, the placement, construction, or modification of communications towers, antennas, or other wireless facilities in any particular geographic area, see 47 U.S.C. §332(c)(7)(B)(i); local government or planning or zoning boards may not unreasonably discriminate among providers of functionally equivalent services, see 47. U.S.C. §332(c)(7)(B)(i);

Moreover, the TCA provides that health concerns may not be considered so long as the emissions comply with the applicable standards of the FCC, see 47 U.S.C. §332(c)(7)(B)(iv); and, decisions must be rendered within a reasonable period of time, see 47 U.S.C. §332(c)(7)(B)(ii) and the FCC's Declaratory Ruling commonly referred to as the "Shot Clock", in this instance 150 days.

THE TELECOMMUNICATIONS ACT OF 1996

In 1996, the U.S. Congress enacted the Telecommunications Act of 1996, Pub. L. No. 104-104, § 704; 110 Stat. 56 (1996) (the "TCA" or the "Telecommunications Act'). The intent of the TCA as enacted by Congress was to institute a framework to promote competition and innovation within the telecommunications industry. Although this law specifically preserves local zoning authority with respect to the siting of wireless service facilities, it clarifies when the exercise of local zoning authority may be preempted by federal law. Section 704 of the TCA provides, in pertinent part, that

(7) PRESERVATION OF LOCAL ZONING AUTHORITY-

(A) GENERAL AUTHORITY- Except as provided in this paragraph, nothing in this Act shall limit or affect the authority of a State or local government or instrumentality thereof over decisions regarding the placement, construction, and modification of personal wireless service facilities.

(B) LIMITATIONS-

(i) The regulation of the placement, construction, and modification of personal wireless service facilities by any State or local government or instrumentality thereof--

> **(I) shall not unreasonably discriminate among providers of functionally equivalent services; and**
>
> **(II) shall not prohibit or have the effect of prohibiting the provision of personal wireless services.**

Moreover, the TCA provides that health concerns may not be considered so long as the emissions comply with the applicable standards of the FCC, see 47 U.S.C. §332(c)(7)(B)(iv); and, decisions must be rendered within a reasonable period of time, see 47 U.S.C. §332(c)(7)(B)(ii) and the FCC's Declaratory Ruling commonly referred to as the "Shot Clock", in this instance 150 days.

The intent of the TCA enacted by the U.S. Congress was to institute a framework to promote competition and innovation within this telecommunications industry. Under its respective licenses from the FCC, wireless telecommunications carriers are obligated to provide a reliable "product" [i.e. telecommunications service] to the population in western Massachusetts, which includes the Town of Harwich. Likewise, consumer expectations for increasingly robust and reliable service requires competing service providers to identify and remedy existing gaps in reliable network coverage, or gaps that result from increasing subscriber voice and data traffic beyond the limits of existing network infrastructure. A carrier's failure to remedy network gaps in a timely fashion can result in a significant loss of subscribers to competing telecommunications carriers. As demonstrated in the Application and supplemental materials provided by the Applicant, the proposed Facility and corresponding relief requested are necessary to remedy a gap in reliable service coverage within the existing network infrastructure.

The TCA "is an exercise in cooperative federalism" that "attempts, subject to five limitations, to preserve state and local authority over the placement and construction of facilities." Nat'l Tower, LLC v. Plainville Zoning Bd. of Appeals, 297 F.3d 14, 19 (1st Cir. 2002) (citing 47 U.S.C. § 332(c)). "Under the TCA, state and local governments and instrumentalities may regulate the placement of wireless service facilities, provided they (1) act on requests to authorize the placement, construction, or modification of such facilities within a reasonable time, (2) do not give consideration to any environmental effects of radio frequency emissions that comply with FCC regulations, (3) do not unreasonably discriminate among providers of functionally equivalent services, (4) make all decisions in writing and support those decisions with substantial evidence contained in a written record, and (5) do not make decisions that prohibit or have the effect of prohibiting the provision of personal wireless services." Cellco P'ship v. Town of Leicester, No. 16-cv-10693-MGM, 2017 WL 4381673, *2 (D. Mass. September 29, 2017) (citing 47 U.S.C. § 332(c)(7)(B)) (internal quotation marks omitted). The provisions of the TCA preempt state and local laws to the extent that they conflict. Eco-Site, Inc. v. Town of Wilmington, No. 17-cv-10304-MBB, 2019 WL 1332621, at *9 (D. Mass. Mar. 25, 2019).

In a growing number of cases, federal courts have found that permit denials violate the TCA, even if such denials would be valid under state law. For example, in Omnipoint Communications v. Town of Lincoln, 107 F. Supp. 2d 108 (D. Mass. 2000), the court found that denial of a variance for a location outside of the town's wireless overlay district violated the TCA and ordered the variance to issue despite an Ordinance provision prohibiting use variances. The court in Nextel Communications v. Town of Wayland, 231 F. Supp. 2d 396 (D. Mass 2002) reached the same result. In that case, the court stated: "Although the Board's statement [regarding its lack of authority to issue a use variance] may be correct statement in Massachusetts regarding

variances, it is not controlling in the special case of Telecommunications facilities…Under the Telecommunications Act, the Board cannot deny the variance if in so doing it would have the effect of prohibiting wireless services." Wayland at 406-407. Most notably, in Omnipoint Holdings. Inc. v. Town of Cranston, No. 08-2491 (1st Cir. Nov. 3, 2009), the United States Court of Appeals for the First Circuit affirmed a judgment of the United States District Court for the District of Rhode Island, which found that the Cranston Zoning Board of Review violated the TCA by effectively prohibiting the provision of wireless services in Cranston when it denied an application for a special use permit and variance to construct a wireless facility in a residential area. The Court noted that "[t]he effective prohibition clause does not stand alone; it is also part of the TCA's larger goal of encouraging competition to provide consumers with cheaper, higher-quality wireless technology…. As cell phone use increases, carriers need to build more facilities, especially in populated areas, to continue providing reliable coverage, and local regulations can present serious obstacles." *Cranston*, p. 25. In New Cingular Wireless, LLC v. Town of Manchester, Case No. 11-cv-334-SM (USDC D. NH Feb. 28, 2014), the United States District Court for the District of New Hampshire indicated that the Town of Manchester impermissibly denied a variance to construct a telecommunications tower in a (non-permitted) residential zone, in that the tower addressed significant coverage gaps and provided competitive and reliable wireless services and there was no feasible alternative. The Court noted that the Town must consider the public benefits of wireless services in determining whether to grant a zoning variance for a tower. Id.

The Applicant has investigated alternative sites in and around the defined geographic area within which its engineers determined that a facility must be located to fill the gap in service coverage and to function effectively within the wireless network of existing and planned facilities. No existing structure or property in or near the vicinity of the proposed Facility is feasible to accommodate the wireless network requirements. The proposed Facility is on large substantially undeveloped parcel and provides a substantial vegetative buffer. The wireless communications systems being developed by the various telecommunications carriers operating in the Harwich area have been designed employing the most sophisticated radio frequency engineering methods available. Radio frequency engineers determine the placement of network points-of-presence using computer engineering models that simultaneously evaluate are topography and population patterns to identify specific geographic areas to be serviced by each antenna facility in the network. As a result of this modeling, combined with actual coverage data provided by existing "on air" facilities, the carriers' radio frequency engineers have identified a limited geographic area as a necessary location for a communications facility to remedy an existing gap in reliable service coverage in the general vicinity of the Property. Without the requested relief, there would remain a substantial "gap" in reliable service coverage in the carriers' respective networks. Radio frequency coverage maps confirm that a telecommunications facility located at the Property is required to remedy the existing gap in the wireless network coverage in the area. The requested height has been determined by engineers to be the minimum height necessary to connect coverage from the proposed Facility with coverage from adjacent cell sites in the carriers' respective networks (i.e. to remedy the existing "gap" in service and to effect reliable handoffs between adjacent cell sites as a subscriber travels through the area).

Accordingly, denial of permits to construct the Facility would prevent the Applicant from eliminating an existing gap in reliable service coverage, resulting in a potential loss of subscribers for the carriers and the inability to effectively compete for subscribers with other FCC licensed competitors in the market, contrary to the intent of the U.S. Congress in enacting the TCA.

CONCLUSION

As evidenced by the materials submitted with the Application and as will be further demonstrated by the Applicant through any additional evidence submitted and testimony at public hearing(s), the Facility satisfies the intent and objectives of the Technical Bulletin, the RPP and applicable regulations. The Facility will not be dangerous to the public health or safety as it is designed to comply with all applicable FCC requirements relating to radio frequency emissions and will comply with all applicable requirements of the Massachusetts building code. Indeed, the maximum radio frequency output per channel for the wireless communications facilities collocating on the proposed Facility will be well below the maximum radio frequency exposure levels established by the FCC. The proposed Facility is a passive use and will not cause any nuisance such as unreasonable noise, vibration, smoke, odor or dust. Further, the proposed Facility will maintain wireless communication coverage to residents, businesses, commercial establishments, public safety personnel and travelers through this area of the Town of Harwich. Police and fire personnel often utilize commercial wireless services, and the proposed Facility will reduce the number and frequency of dropped and incomplete calls due to weak signals and add an additional layer of communication to traditional landlines. In fact, published reports have highlighted the fact that during and after adverse major weather events, including ice storms, wireless telecommunications have been the only form of reliable communication.

Based upon the limited impacts and review of specific findings required, and where the proposed Facility is the minimum height necessary to close a significant gap in wireless coverage at this location, the Applicant hereby requests that the Commission finds that the proposed Facility satisfies the criteria for approval by the Commission as a Development of Regional Impact. The Applicant respectfully requests that the DRI be approved so that the Applicant may seek local approval to install and operate the Facility as well as to satisfy the mandate of the federal government to facilitate competition in the telecommunications industry as set forth in the TCA. We respectfully submit that the standards for review must be interpreted and applied such that the decision issued by the Commission is in conformance with the TCA.

Respectfully submitted,



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Providence, RI 02903
(401) 447-8500 cell
fparisi@plapc.com

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TOWAIR Determination Results

*** NOTICE ***

TOWAIR's findings are not definitive or binding, and we cannot guarantee that the data in TOWAIR are fully current and accurate. In some instances, TOWAIR may yield results that differ from application of the criteria set out in 47 C.F.R. Section 17.7 and 14 C.F.R. Section 77.13. A positive finding by TOWAIR recommending notification should be given considerable weight. On the other hand, a finding by TOWAIR recommending either for or against notification is not conclusive. It is the responsibility of each ASR participant to exercise due diligence to determine if it must coordinate its structure with the FAA. TOWAIR is only one tool designed to assist ASR participants in exercising this due diligence, and further investigation may be necessary to determine if FAA coordination is appropriate.

DETERMINATION Results

Structure does not require registration. There are no airports within 8 kilometers (5 miles) of the coordinates you provided.

Your Specifications

NAD83 Coordinates	
Latitude	41-40-14.9 north
Longitude	070-06-11.1 west
Measurements (Meters)	
Overall Structure Height (AGL)	32
Support Structure Height (AGL)	30.5
Site Elevation (AMSL)	1.5
Structure Type	
MTOWER - Monopole	

Tower Construction Notifications
Notify Tribes and Historic Preservation Officers of your plans to build a tower.

CLOSE WINDOW

8

STATEMENT OF BRENDAN M. GILL
Vertex Towers, LLC

I, Brendan M. Gill, hereby state the following in support of the application submitted by Vertex Towers, LLC for a multi-user Personal Wireless Service Facility ("PWSF") to be located at 206 Route 28 (Map 11, Lot T7), Harwich, MA (the "Property"), consisting of a 100' Monopole Tower and related ground equipment contained within a fenced compound (the "Site")

1. My name is Brendan M. Gill and I am the Director of Site Acquisition and Leasing for Vertex Towers, LLC.

2. I have worked in the telecommunications industry for over 10 years overseeing and assisting in the leasing, zoning, permitting and construction of wireless communications facilities and specifically in the investigation of all feasible alternatives and options locating a wireless communications facility within a search ring which would fill a significant gap in wireless coverage.

3. I have participated directly through my present and past employment in the development and analysis of hundreds of such facilities, including wireless communication facilities similar to the proposed Site.

4. I have personally visited the Property, and the areas surrounding the Property, on numerous occasions. I submit this affidavit based on my personal knowledge of the Property and the surrounding areas, while also working together with the experience and documentation provided by civil and radio frequency engineers, environmental consultants and based on my professional experience in the development of wireless communication facilities.

5. Part of my site acquisition and development duties include identifying potential candidates within an area identified as having a significant gap in coverage. The candidate identification process includes reviewing the applicable zoning ordinance with legal counsel, engineers, wetland scientists, and other professionals to identify areas where the proposed Site is allowed and feasible. First, I explore the area to determine whether there are any existing structures of sufficient height and structural capacity from which an antenna installation on such a structure would provide sufficient coverage. If there are no such existing structures, I identify properties, located within the narrowly defined search area, that appear to be suitable for the installation of a communications facility, while also eliminating certain properties that would not be suitable due various limitations or concerns related but not limited to, parcel size, access issues, landlocked parcels, conservation restrictions, wetlands, visibility, elevation, terrain and constructability. In order to be viable, a candidate must (i) provide adequate coverage to the identified significant gap in coverage and (ii) have a willing landowner with whom commercially reasonable lease terms may be negotiated. Preference is given to locations that closely comply with local zoning ordinances, or in the event no viable candidates are found within the search area, I attempt to identify other potentially suitable properties, with preference always given to existing structures.

6. In connection with this site, I have provided site acquisition services, including researching the area, and identifying potential alternative candidates to the leased ground space on the Property.

7. I have personally reviewed the Town of Harwich Personal Wireless Service Facilities Overlay District Map. I've concluded that the Overlay District was established in 1998 and does not provide a viable way to solve the coverage objectives. Please see Town of Harwich Personal Wireless Service Facilities Overlay District Map attached as Exhibit 1.

8. Based on my personal knowledge of the proposed Site and the and the surrounding area, there are no potential alternative candidates located within this geographically driven search ring that would be considered superior to the proposed Site. All possible locations fail to provide the coverage needed, due to lot size, availability, or conservation restrictions. In addition, based on my experience, in my professional opinion, the proposed PWSF to be located at 206 Route 28 is the least intrusive and only available and viable alternative to adequate meet the coverage objective to fill this significant gap in coverage. Executed this 5th of March 2026.

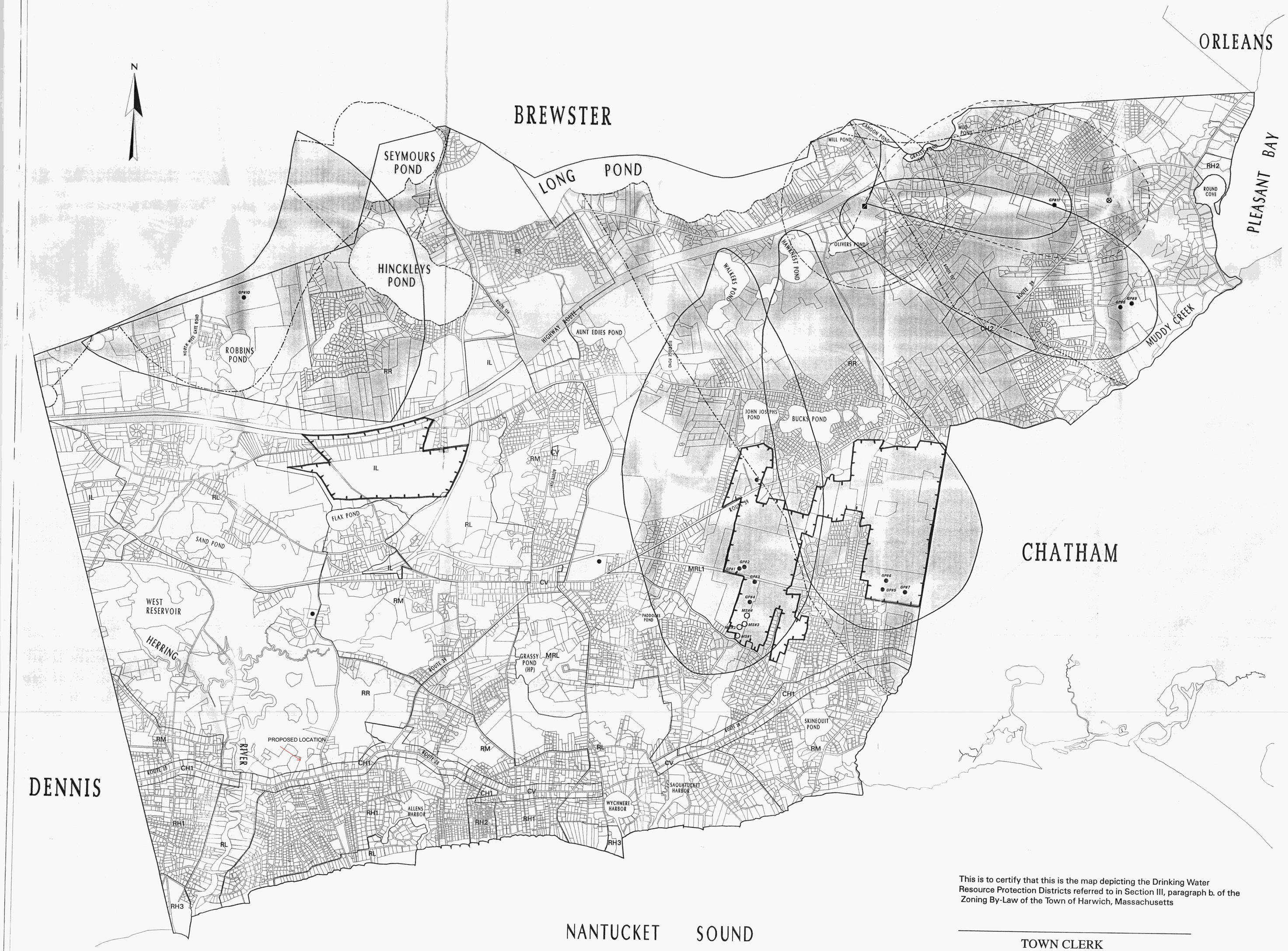
_____

Brendan M. Gill
Vertex Towers, LLC

Exhibit 1

Town of Harwich Personal Wireless Service Facilities Overlay District Map

TOWN OF HARWICH PERSONAL WIRELESS SERVICE FACILITIES OVERLAY DISTRICT MAP



SCALE 1:12000

2000 1000 0 1000 2000 3000

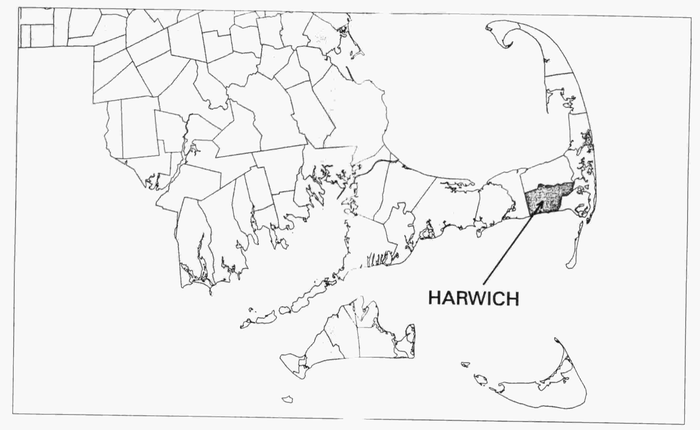
FEET

LEGEND

- DEP Approved Zone II Boundary, Harwich
- Preliminary Zone II Boundary, Harwich
- DEP Approved Zone II Boundary, Brewster, Chatham, Dennis
- Potential Source Interim Wellhead Protection Area (1/2 Mile Radius)
- Zoning Boundary
- Harwich Town Boundary
- Existing Municipal Gravel Packed Well, Harwich
- Existing Municipal Main Station Wellfield, Harwich
- Proposed or Future Well, Harwich
- Future Potential Well Site
- Water Storage Tanks
- Water Bodies
- Drinking Water Resource Protection Districts
- Personal Wireless Service Facilities Overlay Districts

Harwich Zoning

CH1	Commercial Highway 1
CH2	Commercial Highway 2
CV	Commercial Village
IL	Industrial Limited
MRL	Multi-Family Residential
MRL1	Multi-Family Residential 1
RH1	High Density Residential 1
RH2	High Density Residential 2
RH3	High Density Residential 3
RL	Low Density Residential
RM	Medium Density Residential
RR	Rural Residential Estates

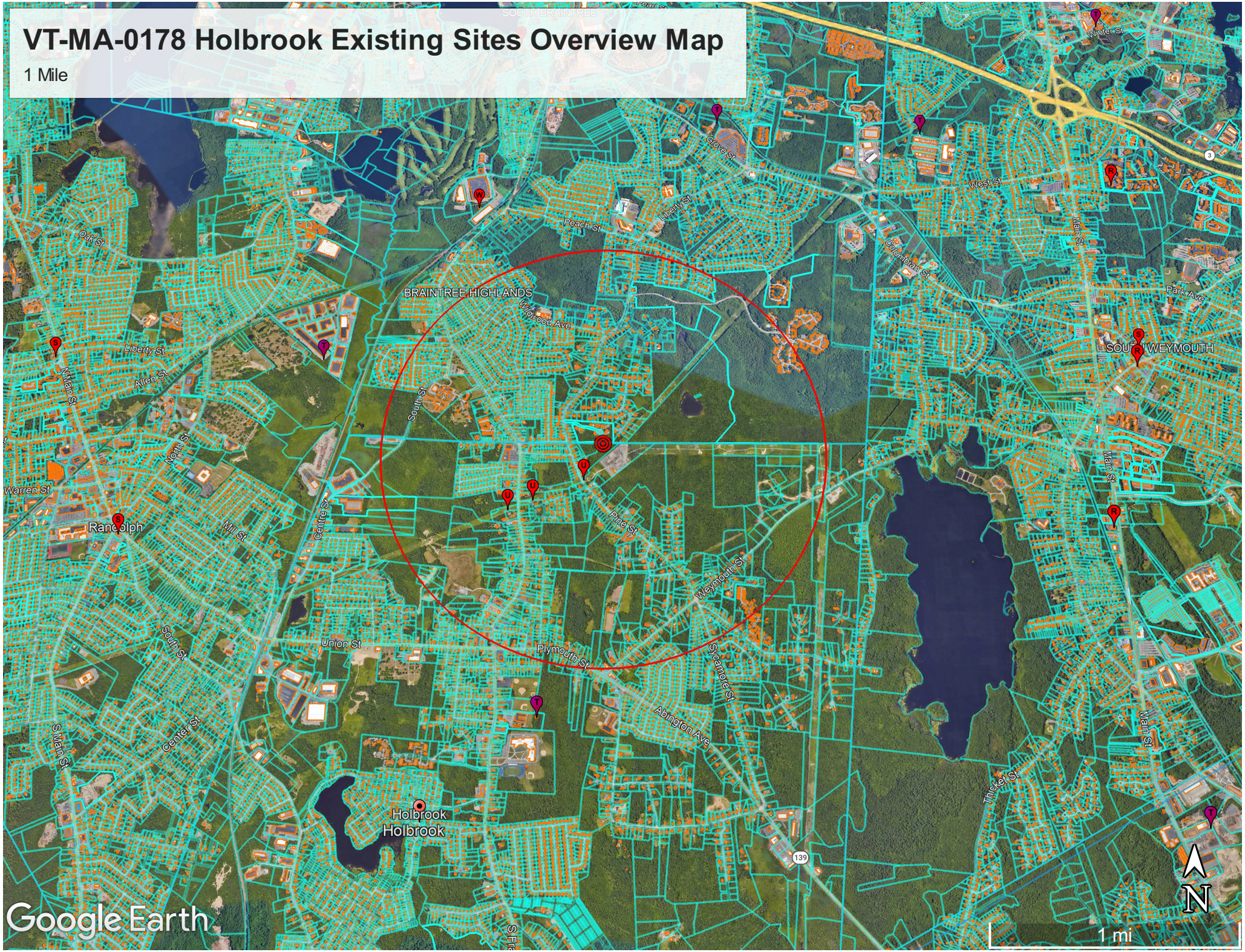


This is to certify that this is the map depicting the Drinking Water Resource Protection Districts referred to in Section III, paragraph b. of the Zoning By-Law of the Town of Harwich, Massachusetts

TOWN CLERK

DATE January 13, 1998

EARTH TECH


VT-MA-0178 Holbrook Existing Sites Overview Map
1 Mile
BRAINTREE HIGHLANDS
SOUTH WEYMOUTH
Randolph
Holbrook
Holbrook
Warren St
Union St
Plymouth St
Weymouth St
Sycamore St
Abington Ave
Pine St
South St
Center St
Main St
Liberty St
Peach St
Grove St
West St
Water St
Park Ave
Columbian St
Thicket St
Oak St
Allen St
North St
Mill St
Elm St
Winwood Ave
139
Google Earth
1 mi
N

VT-MA-0503 ASA Overview Map - Topo

1 Mile Radius

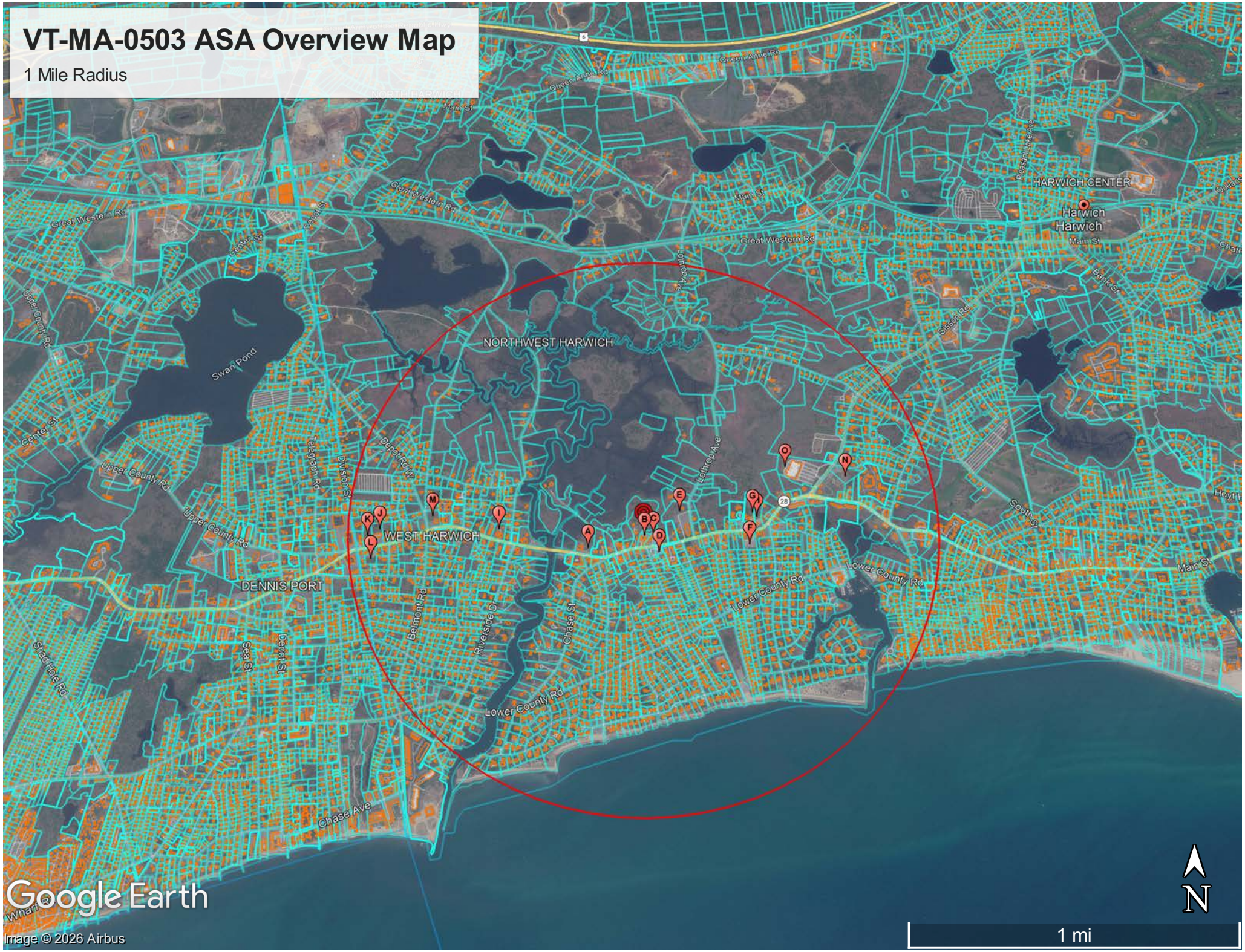


Alternative Site Analysis
for Proposed Tower at

ID	Address	Map	Lot	Block	ACRES	Latitude	Longitude	Distance from Proposed Location	Comments
A	168 Route 28	11	T3-A	0	6.33	41.668948	-70.106928	0.22	Unable to find a buildable location on the property.
B	212 Route 28	11	M1	0	0.89	41.669576	-70.103253	0.07	Landowner not intersted in leasing space for a communication facility
C	216 Route 28	11	M2	0	1.04	41.669623	-70.102682	0.08	Unable to find a buildable location on the property.
D	225 Route 28	11	W3-2	0	0.43	41.668726	-70.102307	0.14	Unable to find a buildable location on the property.
E	240 Route 28	12	B3	0	5.85	41.670860°	-70.100947	0.12	Landowner not intersted in leasing space for a communication facility
F	287 Route 28	12	S5	0	1.79	41.669134	-70.096408	0.38	Landowner not intersted in leasing space for a communication facility
G	292-5 Route 28	12	G3-B	5	2.56	41.670798	-70.096143	0.38	Unable to find a buildable location on the property.
H	296 Route 28	12	H1	0	1.66	41.670581	-70.095878	0.39	Landowner not intersted in leasing space for a communication facility
I	108 Route 28	10	L6	0	1.46	41.669914	-70.112766	0.49	Unable to find a buildable location on the property.
J	16 Route 28	10	C5	0	1.78	41.669893	-70.120554	0.88	Landowner not intersted in leasing space for a communication facility
K	10 Route 28	10	C4	0	1.56	41.669567	-70.121325	0.92	Landowner not intersted in leasing space for a communication facility
L	11 Route 28	10	N3	0	1.3	41.668366	-70.121003	0.9	Landowner not intersted in leasing space for a communication facility
M	62 Route 28	10	G2	0	1.58	41.67059	-70.117155	0.72	Landowner not intersted in leasing space for a communication
N	0 Sisson Road	21	N2	0	2.28	41.672711	-70.089891	0.72	Landowner not intersted in leasing space for a communication facility
O	16 Sisson Road	21	P1	0	9.27	41.673236	-70.093858	0.52	Landowner not intersted in leasing space for a communication facility

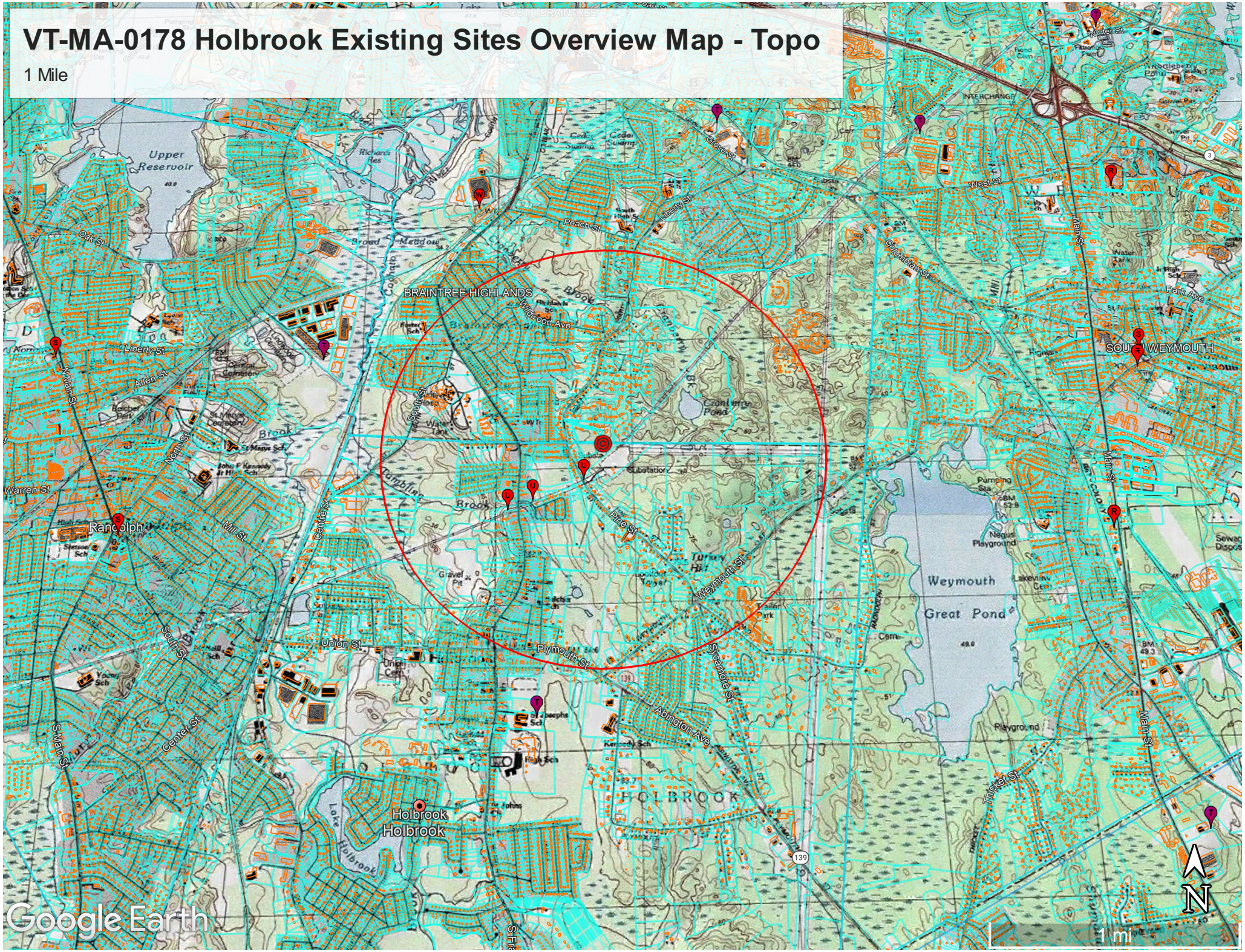
VT-MA-0503 ASA Overview Map

1 Mile Radius



VT-MA-0178 Holbrook Existing Sites Overview Map - Topo

1 Mile



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

RF Report

Proposed Wireless Facility
206 Route 28
West Harwich, MA 02671

May 5, 2026

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ATTACHMENTS

Att. A: Harwich 7 MA – Existing 700 MHz LTE Coverage
Att. B: Harwich 7 MA –700 MHz LTE Coverage with Proposed Site
Att. C: Harwich 7 MA –Existing 2100 MHz LTE Coverage
Att. D: Harwich 7 MA – 2100 MHz LTE Coverage with Proposed Site
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Att. G: Harwich 7 MA – Area Topography Map
Att. H: Harwich 7 MA – 700 MHz LTE RSRP Drive Data (3/25/2026)
Att. I: Harwich 7 MA – 2100 MHz LTE RSRP Drive Data (3/25/2026)

1. Overview

This RF Report has been prepared on behalf of Verizon in support of the Vertex Tower LLC ("Vertex Tower") application to the Town of Harwich for the installation and operation of a wireless facility at 206 Route 28 in West Harwich, MA. Verizon's component of the proposed facility consists of ground-based equipment cabinets along with antennas and associated equipment mounted on the proposed 100' monopole tower.

This report concludes that the proposed site will provide improved coverage and additional capacity to deficient service areas in Harwich along Route 28, Lower County Road, and the surrounding roads and neighborhoods in proximity to the proposed site.

Included in this report is: a brief summary of the site's objectives, maps showing Verizon's current network plan, and modeled radio frequency (RF) coverage of the subject site and the surrounding sites in Verizon's network.

2. Introduction

Verizon provides digital voice and data communications services using 4th Generation (4G) voice and data services over LTE technology in the 700 MHz, Cellular (800 MHz), PCS (1900 MHz), and AWS (2100 MHz) frequency bands as allocated by the FCC, along with the CBRS band (3.5-3.7 GHz). It is also deploying advanced 5th generation (5G) NR services in its cellular, C-band (3.7-3.98 GHz) and 28 GHz licensed frequency bands. These 4G and 5G networks are used to provide high-speed wireless connections used by mobile devices for fast web browsing, media streaming, video conferencing, and other applications that require broadband connections. The mobile devices that benefit from these advanced networks include typical smartphones, tablets, laptops, and Wi-Fi hotspots. With the continual advancement of its networks, Verizon customers will enjoy even faster connections to people, information, and entertainment in a day and age when reliable wireless connectivity is an indispensable part of daily personal and business life.

As explained within this report, Verizon has identified the need to add a new facility to its existing network of sites to improve coverage and capacity to a gap in service that now exists in Harwich, 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 deploys a network of cell sites (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 fiber optic cables (or other means of high-speed data transport) and routed to their destinations by sophisticated electronic equipment. In order for Verizon's 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's 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 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 wireless data consumption (nearly doubled from 2022-2024 for wireless data use in the U.S.[1]), instances arise where the usage demand can no longer be supported by the site(s) serving an area, and new facilities must be integrated to provide capacity relief to the overloaded sites.

We have concluded that the proposed wireless communication facility at 206 Route 28 at an antenna centerline height of 95' AGL (above ground level) will enable Verizon to provide substantially improved coverage and additional capacity to areas of Harwich that are currently located within gaps in service of Verizon's network.

[1] "2025 Annual Survey Highlights", September 8, 2025, CTIA.
https://www.ctia.org/news/2025-annual-survey-highlights

3. The Proposed Facility

Verizon's component of the proposed facility consists principally of the following elements:

1) Telecommunications equipment cabinets and telco/power/fiber connections, and a backup generator mounted on a steel platform within Vertex Tower's proposed 60' x 40' fenced compound.
2) Initially, up to nine (9) panel antennas (three sectors, three antennas per sector) mounted on the proposed monopole tower at a centerline elevation of 95' above ground level.
3) Remote Radio Heads (RRH) with accessory junction boxes and surge suppressors mounted alongside the antennas.
4) An ice canopy above equipment cabinets and a cable bridge from Verizon's equipment pad to the proposed tower to protect cabling between Verizon's equipment and the cable entry port located near the base of the tower.

4. Coverage and Capacity Objectives

As mentioned above, Verizon is in the process of advancing its 4G LTE high-speed wireless broadband system in the 700 MHz, Cellular, PCS, AWS and CBRS frequency bands, in accordance with its applicable licenses from the FCC. Verizon is also deploying a 5G NR system in its licensed cellular, C-Band, and 28 GHz frequency bands. In order to expand and enhance its wireless services throughout New England, Verizon must fill in existing coverage gaps and address capacity, interference, and high-speed broadband issues. As part of this effort, Verizon has determined that significant gaps in service exist in and around sections of Harwich as described further below.

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

- Route 28 (Main Street)
    - Serves ~ 8,100 vehicles per day, as measured east of Sisson Road (2025).
- Lower County Road
    - Serves ~ 1,800 vehicles per day, as measured west of Earle Road (2025).
- Chase Street
- The surrounding roads, neighborhoods, and recreational/nature areas in the proximity of the proposed site.

The proposed site located at 206 Route 28 ("Harwich 7") is needed to fill in these targeted gaps in service, in order to improve network quality and reliability for Verizon subscribers traveling along these roads, as well as to the residences, businesses, and visitors in this area.

5. Site Search and Selection Process

To find a site that provides acceptable service, adequate capacity, and fills the gaps in service, 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/or meeting the capacity objectives established by the Verizon RF (Radio Frequency) engineers.

Once a search ring is determined, Verizon's 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.

Since no suitable existing structures in the area have been identified that could host a macro-site facility, Verizon concluded that collocating on the proposed Vertex Tower facility at 206 Route 28 is necessary to address its targeted coverage and capacity objectives.

6. Pertinent Site Data

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

Site Name	Address	City/Town	Latitude	Longitude	Structure Type	Antenna Height (ft AGL)	Status
Dennis Repl	105 Hokum Rock RD	East Dennis	41.7326	-70.1774	Water Tank	115	On-Air
Dennis S SC05	100 Old Wharf Road	Dennis	41.6513	-70.1473	Utility Pole	36.3	On-Air
Dennis SC06	95 Chase Ave	Dennis Port	41.6566	-70.1179	Utility Pole	37.58	On-Air
Dennis SC13	40 Harbor Road	Harwich	41.6669	-70.0639	Utility Pole	36.4	On-Air
Dennis South	57 Theophilus F Smith Road	Dennis	41.6918	-70.1466	Self-Support	140	On-Air
Dennisport	20 Candlewood Lane	Dennis Port	41.6681	-70.1315	Flagpole	87	On-Air
Harwich	190 Queen Anne Road	Harwich	41.6984	-70.0978	Self-Support	139/140	On-Air
Harwich 3	61 Forest	Harwich	41.6738	-70.0765	Monopole	128	On-Air
Harwich 4	1200 Oak Street	Harwich	41.7101	-70.0718	Water Tank	141	On-Air
Harwich 5	1046 Orleans Road	Harwich	41.6949	-70.0498	Water Tank	110	On-Air
Harwich SC10	29 Patricia Lane	Harwich	41.6626	-70.0969	Utility Pole	30.8	On-Air
Harwich SC14	Unde Venies Road Pole No. 9-33	Harwich	41.6680	-70.0431	Utility Pole	35	On-Air
South Chatham	146 Commerce Park	South Chatham	41.6868	-70.0152	Stealth	111	On-Air
West Dennis	875 Main Street	West Dennis	41.6670	-70.1507	Water Tank	180	On-Air
Harwich 7	**206 Route 28**	**West Harwich**	**41.6707**	**-70.1031**	**Monopole**	**95**	**Proposed**

Table 1: Verizon Site Information Used in Coverage Analysis[2]

[2] 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 were produced using deciBel Planner™, a Windows-based RF propagation computer modeling program and network planning tool. The software considers the topographical features of an area, land cover, antenna models, antenna heights, RF transmitting power and receiver thresholds to predict coverage and other related RF parameters used in site design and network expansion.

The coverage plots included as attachments show coverage based on RSRP signal strengths of -105 dBm and above. All other areas (depicted in white) are characterized by poor service quality, low data throughput, and the substantial likelihood of unreliable service. The shaded areas are categorized by the following thresholds: green indicates coverage greater than -85 dBm, yellow represents coverage between -85 dBm and -95 dBm, gray indicates coverage from -95 dBm to -105 dBm, and areas with coverage less than -105 dBm are shown in white.

Attachments A - I are discussed below:

Attachment A titled "*Harwich 7 MA – Existing 700 MHz LTE Coverage*" illustrates the current 700 MHz LTE coverage provided by the existing "On-Air" sites listed in Table 1. As depicted in this plot and described in the Coverage and Capacity Objectives section of this report, portions of southwestern Harwich are in areas of deficient coverage. These deficient areas, particularly in the gray and white areas, and to a lesser extent in the yellow areas, highlight where improved coverage is needed to ensure reliable service.

Attachment B titled "*Harwich 7 MA - 700 MHz LTE Coverage with Proposed Site*" shows the composite 700 MHz LTE coverage with the proposed "Harwich 7" facility. As shown by the additional areas of coverage, the proposed facility will provide coverage to:

Incremental Coverage from Proposed Site (700 MHz)		
Category	**(≥ -85 dBm)**	**(≥ -95 dBm)**
Population:	~760	~50
Business Pops:	~70	~10
Structures:	~1,180	~35
Roadways (mi):		
Route 28	1.0	-
Lower County Road	0.9	-
Riverside Drive	0.7	-
Chase Street	0.6	-

Table 2: Incremental Coverage (700 MHz)[3] [4]

[3] Residential population counts referenced here and elsewhere within this report are based upon the 2020 U.S. Census data.

[4] Employee population counts referenced here and elsewhere within this report are based upon the 2020 U.S. Census Bureau LEHD database.

Attachment C titled "*Harwich 7 MA – Existing 2100 MHz LTE Coverage*" illustrates the 2100 MHz coverage provided by the existing "On-Air" sites listed in Table 1. Because of the inferior propagation characteristics of 2100 MHz relative to 700 MHz, the extent of the coverage gaps shown here impact a much larger area than depicted in Attachment A. This 2100 MHz coverage layer (along with the other frequency bands in use by Verizon for its LTE network) is critical to managing network capacity demands and for providing a hardened, robust overall network to its customers.

Attachment D titled "*Harwich 7 MA – 2100 MHz LTE Coverage with Proposed Site*" shows the composite 2100 MHz coverage with the proposed "Harwich 7" facility. As shown by the additional areas of coverage in this map, the proposed facility will provide coverage to:

Incremental Coverage from Proposed Site (2100 MHz)		
Category	**(≥ -85 dBm)**	**(≥ -95 dBm)**
Population:	~140	~450
Business Pops:	~20	~50
Structures:	~210	~780
Roadways (mi):		
Route 28	0.6	0.4
Lower County Road	-	0.7
Riverside Drive	-	0.4
Chase Street	0.1	0.5

Table 3: Incremental Coverage (2100 MHz)

Attachment E titled "*Harwich 7 MA – Existing 700 MHz LTE Sector Footprints"* depicts the areas primarily served by the sectors (a.k.a. signal "footprints") of the surrounding Verizon macro sites in the area, which are shown by the unique color for each particular sector of interest. For clarity, all other sectors of less interest with respect to the proposed site are shown in grey. As demand for wireless voice and data services continues to grow, Verizon manages the footprint of each sector so that it can support the demand within the area it is primarily serving. In addition to improving coverage to the area, the proposed site will also serve existing and anticipated demand in the vicinity and thereby offload some of the burden experienced by the surrounding sites. In that way, those sites will be able to more adequately serve the demand for service in the areas nearer to those surrounding sites. Please note that the outer parts of each sector footprint may include areas that presently have signal strength below the targeted value required for reliable service to Verizon's customers. The fact that low-level signal may reach these areas does not mean that these areas experience adequate coverage. These unreliable areas of low signal level can impose a significant capacity burden on the sites primarily serving the area.

Attachment F titled "*Harwich 7 MA – 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 "Harwich 7" facility is an effective solution to provide additional capacity offload to the surrounding Verizon sites, particularly to the "Harwich 3" gamma sector (purple), the "Harwich" beta sector (yellow), and the "Dennisport" alpha/beta sectors (red). The proposed facility is centrally located in the targeted area of deficient coverage, making it particularly suited to improve coverage, distribute the traffic load across multiple sectors, and provide a dominant server to this section of the town. Table 4 below details the capacity relief based on the sector footprints shown in Attachments E and F.

Sector	Current			With "Harwich 7 MA"			Offload Summary		
	Residental Pops	Employee Pops	Structures	Residental Pops	Employee Pops	Structures	Total Residential Pops Offloaded	Total Employee Pops Offloaded	Structures Offloaded
Harwich 3 Gamma	1297	350	1954	728	277	970	569 (43.9%)	73 (20.9%)	984 (50.4%)
Harwich Beta	916	228	719	613	188	404	303 (33.1%)	40 (17.5%)	315 (43.8%)
Dennisport Beta	1317	153	1742	1160	145	1490	157 (11.9%)	8 (5.2%)	252 (14.5%)

Table 4: Capacity Offload Summary

Attachment G titled "*Harwich 7 MA – Area Topography Map*" details the topographical features around the proposed "Harwich 7" site. These terrain features play a key role in dictating both the unique coverage areas served from a given location, and the coverage gaps within the network. This map is included to provide a visual representation of the terrain variations that must be considered when determining the appropriate location and design of a proposed wireless facility. The blue and green shades correspond to lower elevations, whereas the red, grey and white shades indicate higher elevations.

Attachment H titled *"Harwich 7 MA - 700 MHz LTE RSRP Drive Data (3/25/2026)"* presents drive test data of Verizon's existing network, which was collected March 25, 2026. Drive testing consists of traveling along the area roadways in a vehicle equipped with a sophisticated test setup configured to collect a variety of system performance metrics on a specific operator's network. The measurement displayed is RSRP of Verizon's 700 MHz LTE network, and is the same parameter reflected in the radio frequency propagation maps presented in Attachments A & B. This data was collected with a calibrated LTE scanning receiver configured to specifically scan Verizon's 700 MHz LTE channel. The empirical drive data is an "apples-to-apples" comparison to the existing coverage modeling depicted by the green areas in Attachment A.

Attachment I titled "*Harwich 7 MA - 2100 MHz LTE RSRP Drive Data (3/25/2026)"* presents drive test data of Verizon's existing 2100 MHz LTE channel, also collected March 25, 2026 in the same manner as explained above. As noted earlier, the higher 2100 MHz frequencies generally have inferior propagation characteristics and overall range compared to the 700 MHz channel. Therefore, the gap in service at 2100 MHz is much more pronounced and impacts a significantly larger area in southwestern Harwich including along Route 28, Lower County Road, Riverside Drive, and the nearby roads, neighborhoods, and businesses in the area.

8. Certification of Non-Interference

Verizon 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 to transmit and receive in specific frequency blocks of the 700 MHz band, the Cellular band, the PCS band, the AWS band, the CBRS band, the C-band, and 28 GHz band of the RF spectrum. As a condition of the FCC licenses, Verizon 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 and 5G NR service in Barnstable County, Verizon has determined that an additional facility is needed to provide reliable service and adequate capacity throughout areas of southwestern Harwich, MA. The proposed wireless communications facility located at 206 Route 28 will provide the additional coverage and capacity needed in the targeted coverage areas including key roadways such as Route 28, Lower County Road, and the surrounding roads and neighborhoods in proximity to the proposed site. Without the installation of the proposed site, Verizon will be unable to improve and expand their wireless communication services in this area of town; therefore, Verizon respectfully requests that the Town of Harwich and the Cape Cod Commission 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

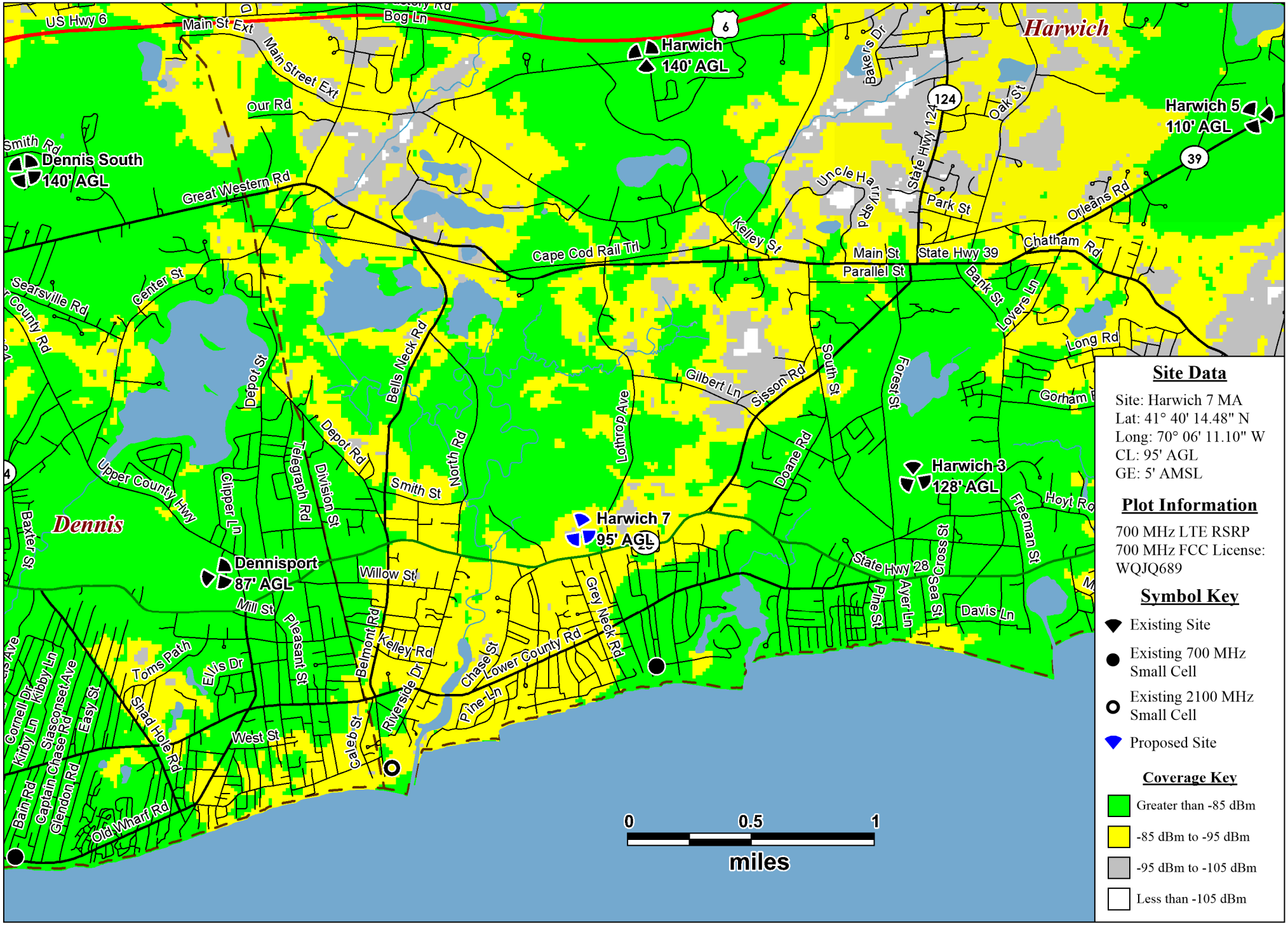
Keith Vellante
RF Engineer
C Squared Systems, LLC

May 5, 2026
Date

11. Attachments

Attachment A:
Harwich 7 MA - Existing 700 MHz LTE Coverage

verizon



Site Data

Site: Harwich 7 MA
Lat: 41° 40' 14.48" N
Long: 70° 06' 11.10" W
CL: 95' AGL
GE: 5' AMSL

Plot Information

700 MHz LTE RSRP
700 MHz FCC License: WQJQ689

Symbol Key

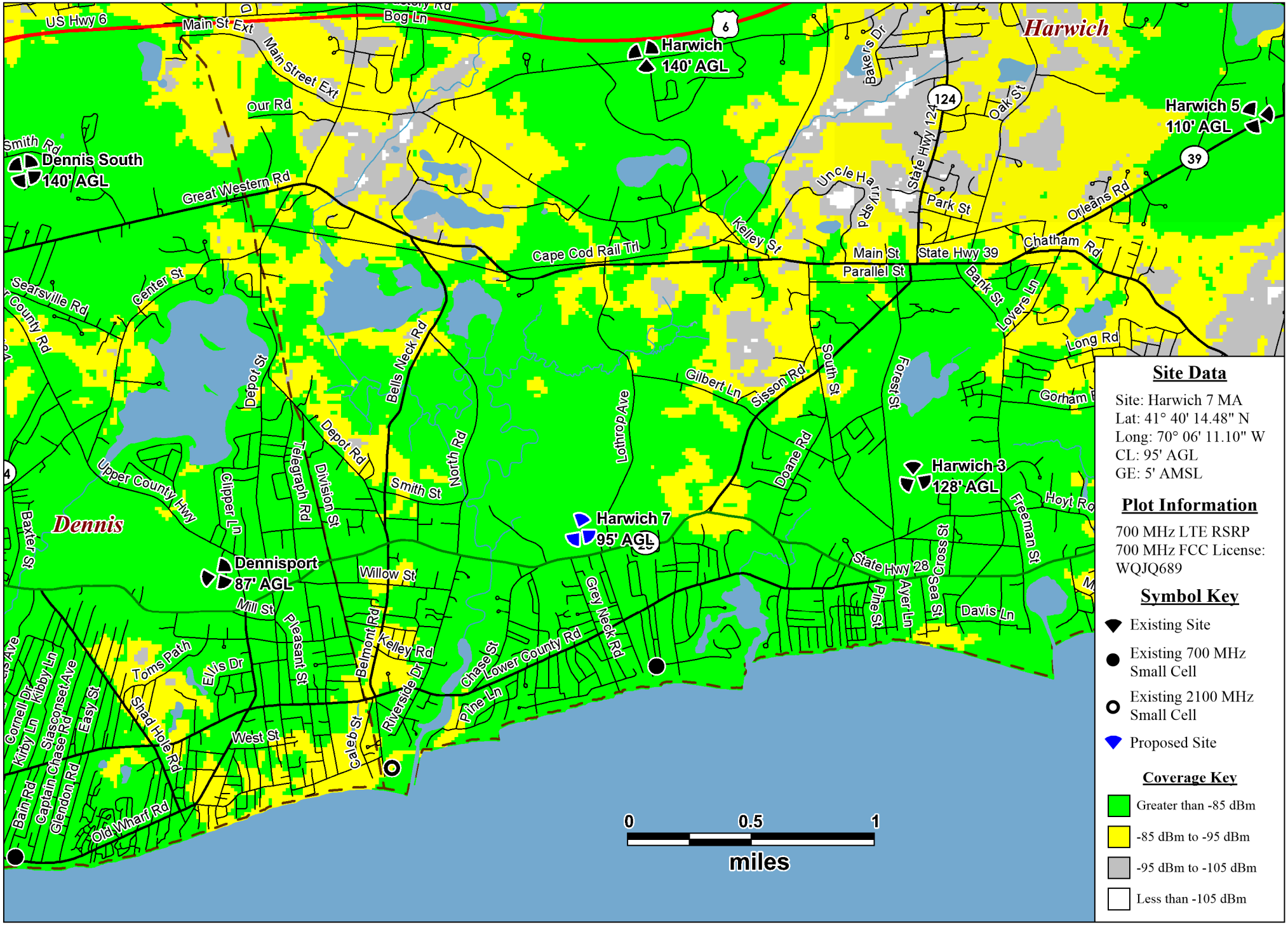
- Existing Site
- Existing 700 MHz Small Cell
- Existing 2100 MHz Small Cell
- Proposed Site

Coverage Key

- Greater than -85 dBm
- -85 dBm to -95 dBm
- -95 dBm to -105 dBm
- Less than -105 dBm

Attachment B:
Harwich 7 MA - 700 MHz LTE Coverage with Proposed Site

verizon



Site Data

Site: Harwich 7 MA
Lat: 41° 40' 14.48" N
Long: 70° 06' 11.10" W
CL: 95' AGL
GE: 5' AMSL

Plot Information

700 MHz LTE RSRP
700 MHz FCC License: WQJQ689

Symbol Key

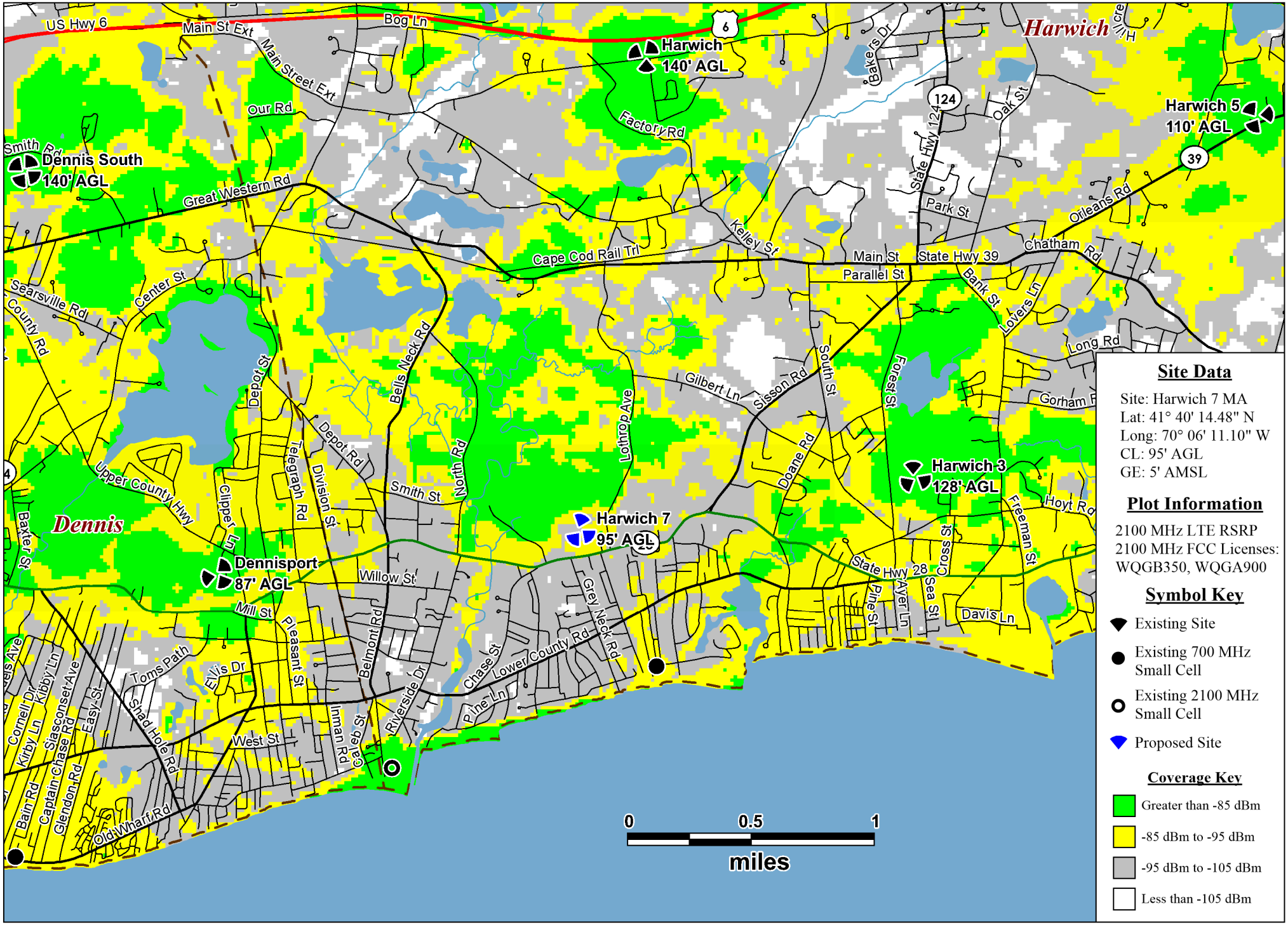
- Existing Site
- Existing 700 MHz Small Cell
- Existing 2100 MHz Small Cell
- Proposed Site

Coverage Key

- Greater than -85 dBm
- -85 dBm to -95 dBm
- -95 dBm to -105 dBm
- Less than -105 dBm

Attachment C:
Harwich 7 MA - Existing 2100 MHz LTE Coverage

verizon



Site Data

Site: Harwich 7 MA
Lat: 41° 40' 14.48" N
Long: 70° 06' 11.10" W
CL: 95' AGL
GE: 5' AMSL

Plot Information

2100 MHz LTE RSRP
2100 MHz FCC Licenses:
WQGB350, WQGA900

Symbol Key

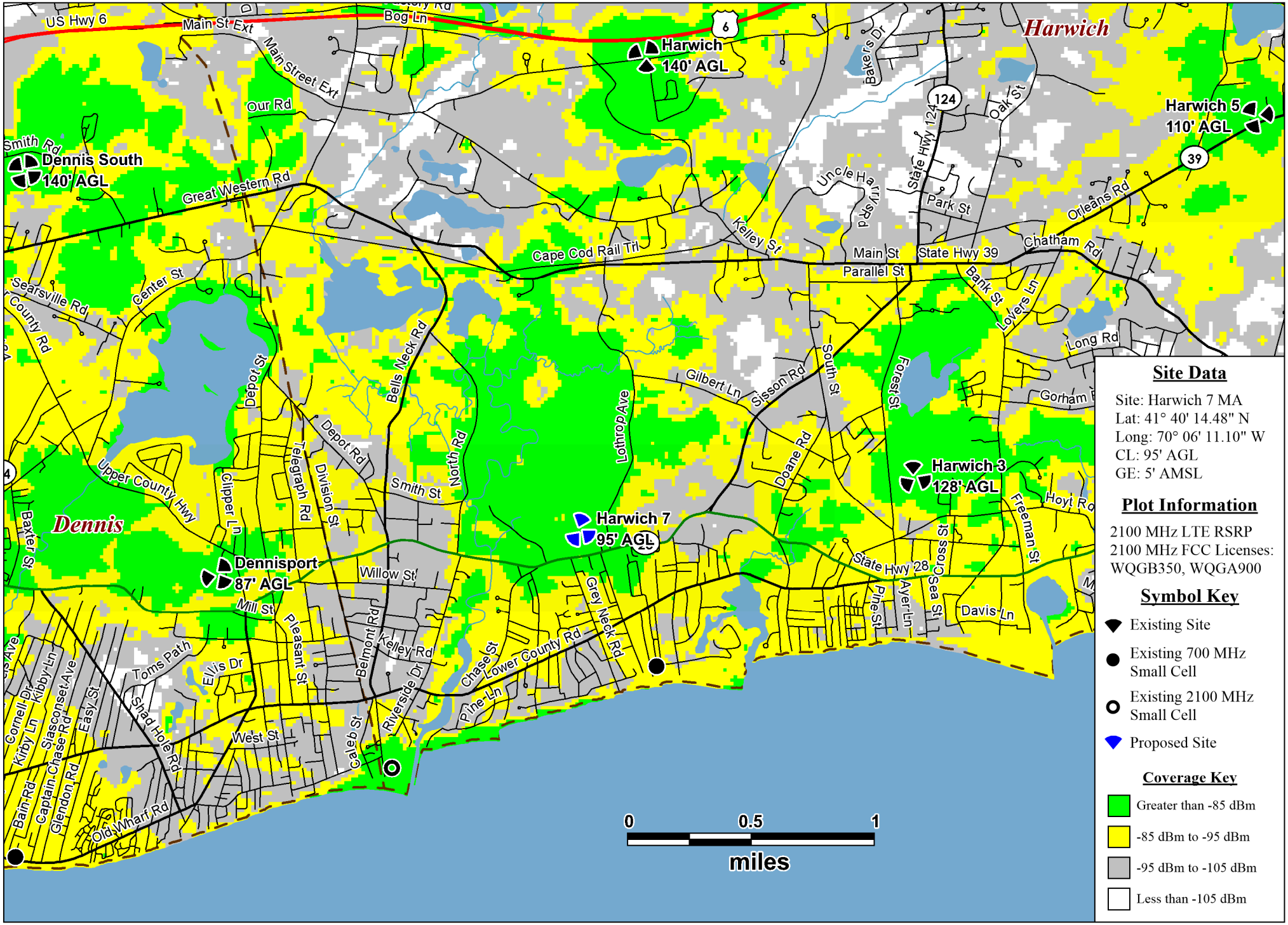
- Existing Site
- Existing 700 MHz Small Cell
- Existing 2100 MHz Small Cell
- Proposed Site

Coverage Key

- Greater than -85 dBm
- -85 dBm to -95 dBm
- -95 dBm to -105 dBm
- Less than -105 dBm

Attachment D:
Harwich 7 MA - 2100 MHz LTE Coverage with Proposed Site

verizon



Site Data

Site: Harwich 7 MA
Lat: 41° 40' 14.48" N
Long: 70° 06' 11.10" W
CL: 95' AGL
GE: 5' AMSL

Plot Information

2100 MHz LTE RSRP
2100 MHz FCC Licenses:
WQGB350, WQGA900

Symbol Key

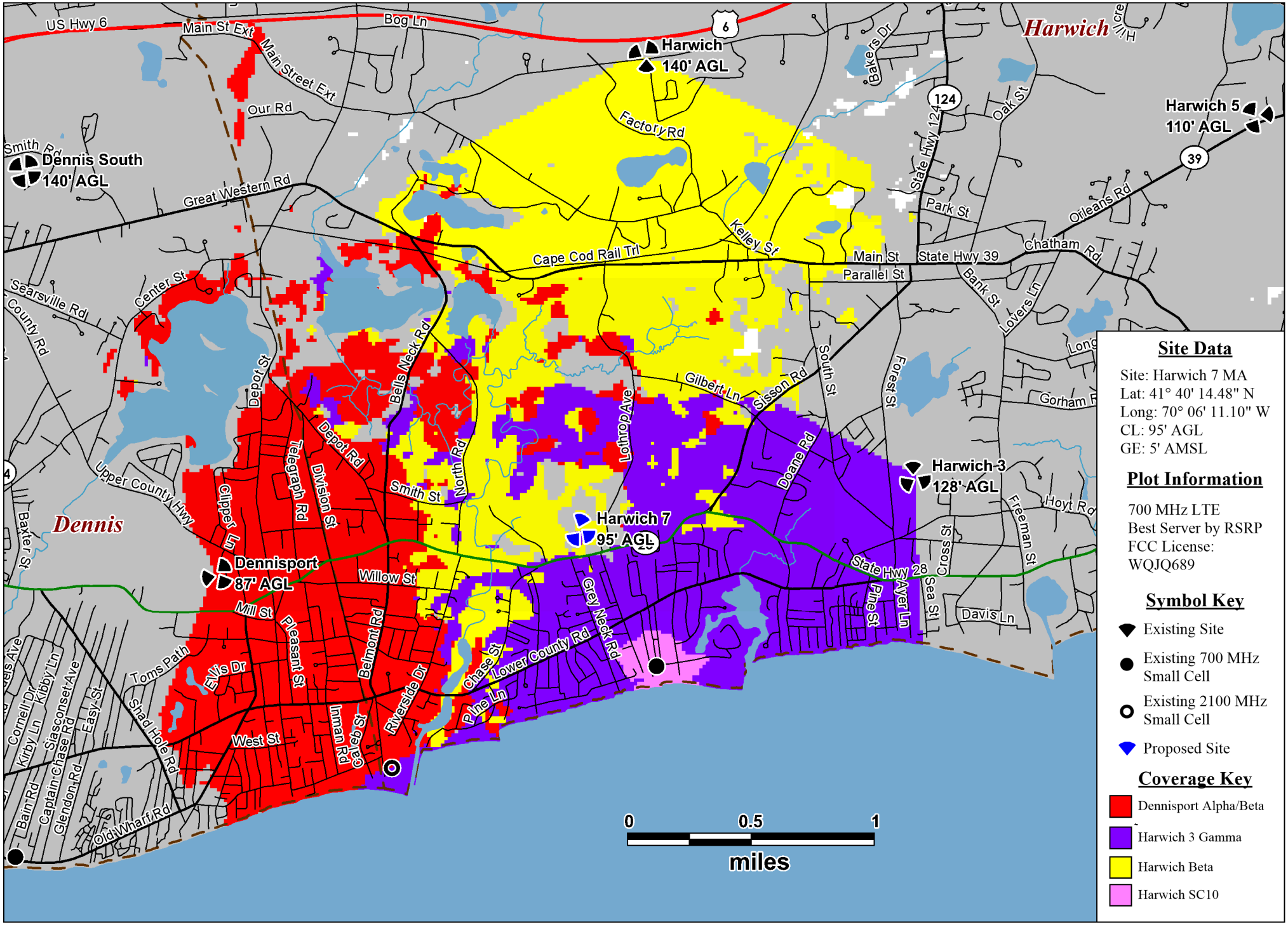
- Existing Site
- Existing 700 MHz Small Cell
- Existing 2100 MHz Small Cell
- Proposed Site

Coverage Key

- Greater than -85 dBm
- -85 dBm to -95 dBm
- -95 dBm to -105 dBm
- Less than -105 dBm

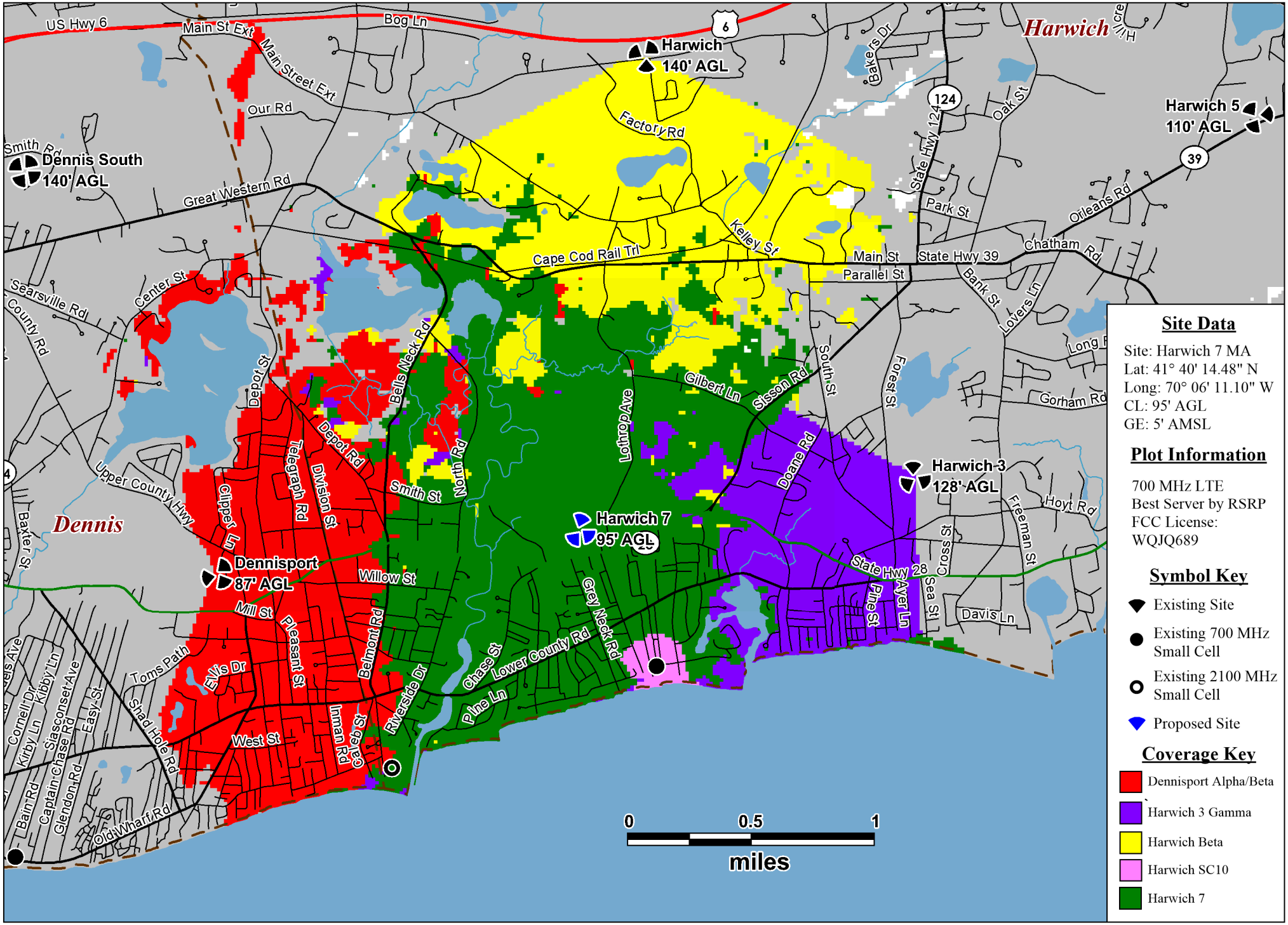
Attachment E:
Harwich 7 MA - Existing 700 MHz LTE Sector Footprints

verizon



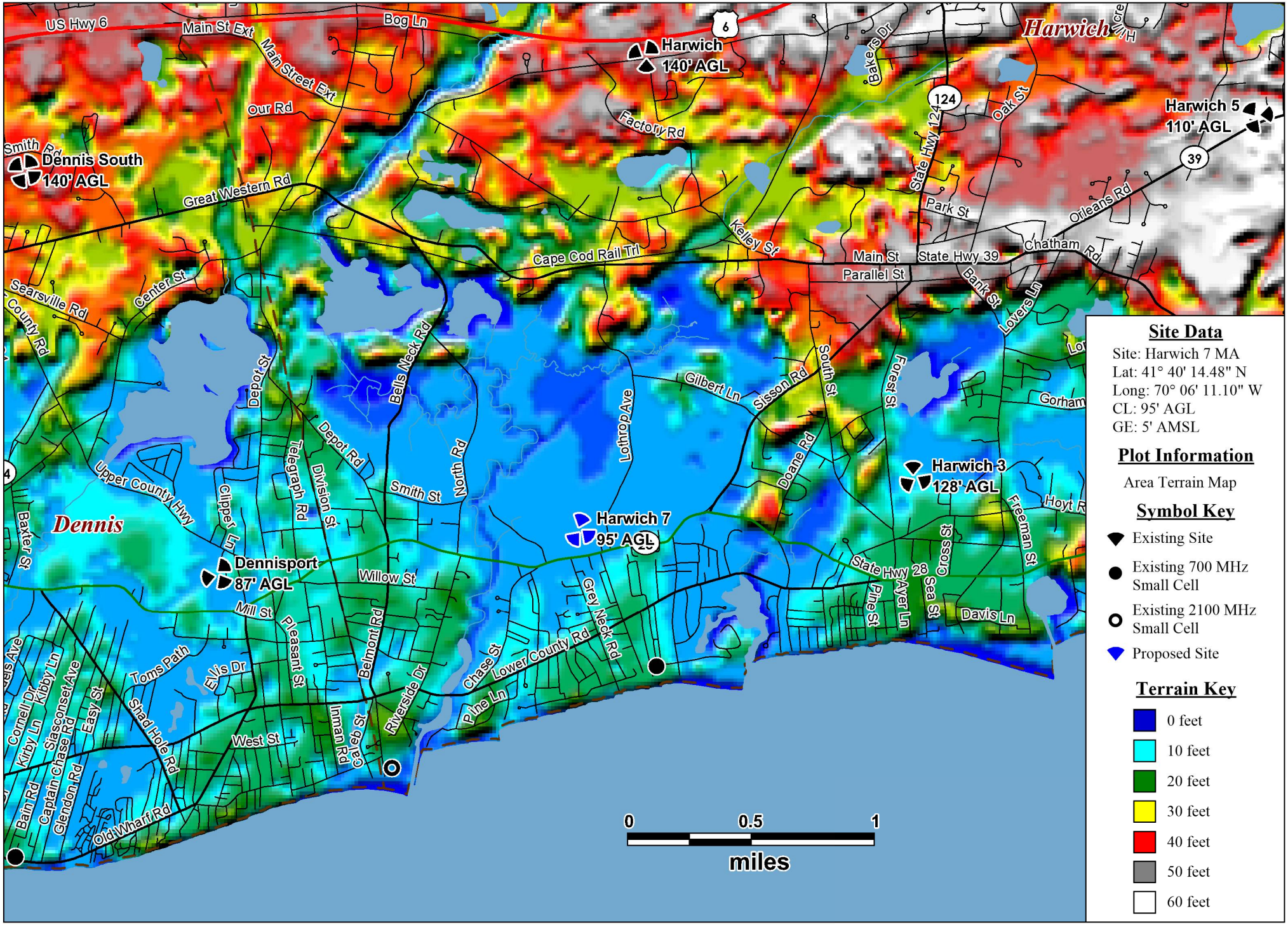
Attachment F:
Harwich 7 MA - 700 MHz LTE Sector Footprints with Proposed Site

verizon



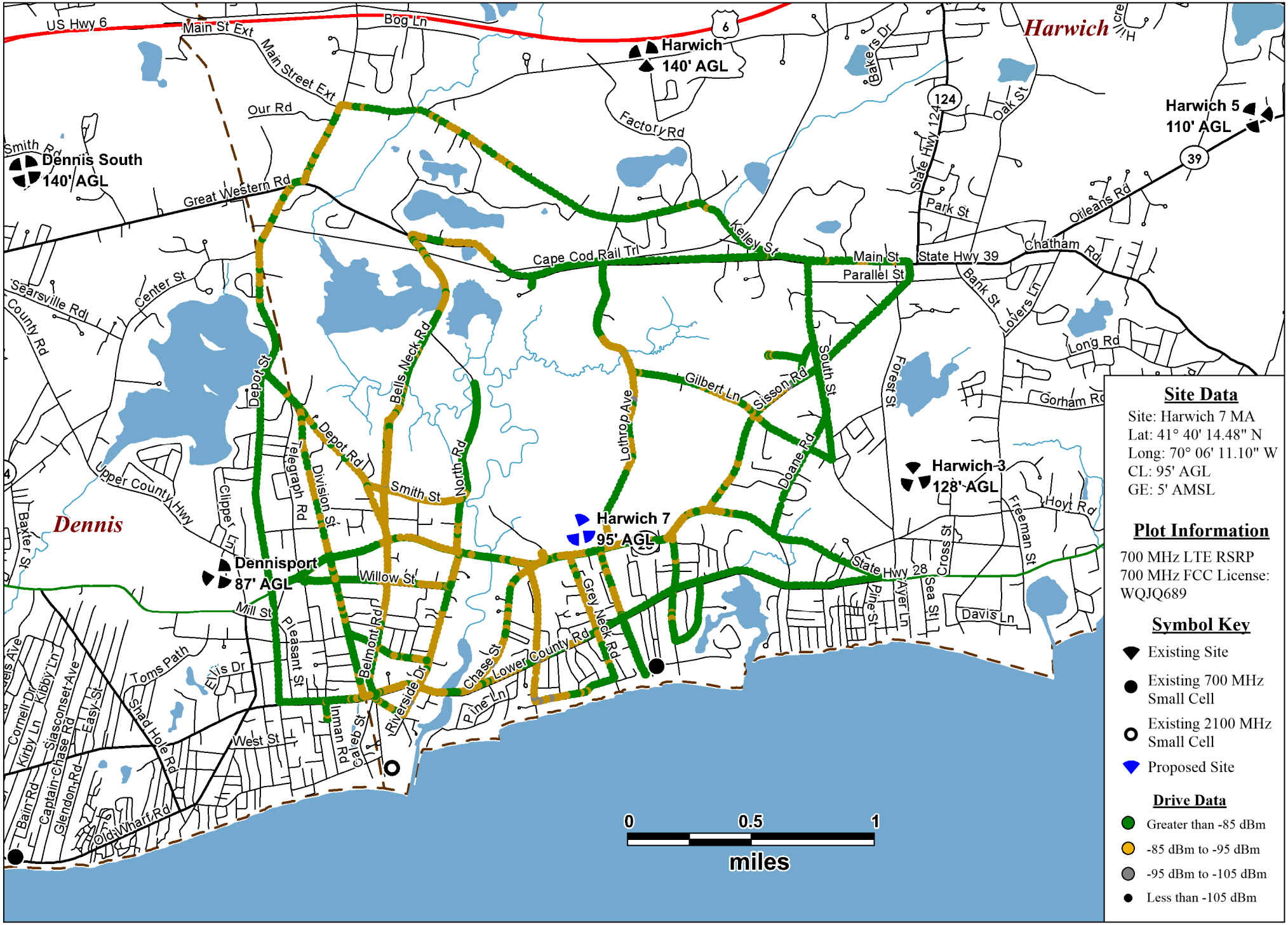
Attachment G:
Harwich 7 MA - Area Topography Map

verizon



Attachment H:
Harwich 7 MA - 700 MHz LTE RSRP Drive Data (3/25/2026)

verizon



Site Data

Site: Harwich 7 MA
Lat: 41° 40' 14.48" N
Long: 70° 06' 11.10" W
CL: 95' AGL
GE: 5' AMSL

Plot Information

700 MHz LTE RSRP
700 MHz FCC License: WQJQ689

Symbol Key

- Existing Site
- Existing 700 MHz Small Cell
- Existing 2100 MHz Small Cell
- Proposed Site

Drive Data

- Greater than -85 dBm
- -85 dBm to -95 dBm
- -95 dBm to -105 dBm
- Less than -105 dBm

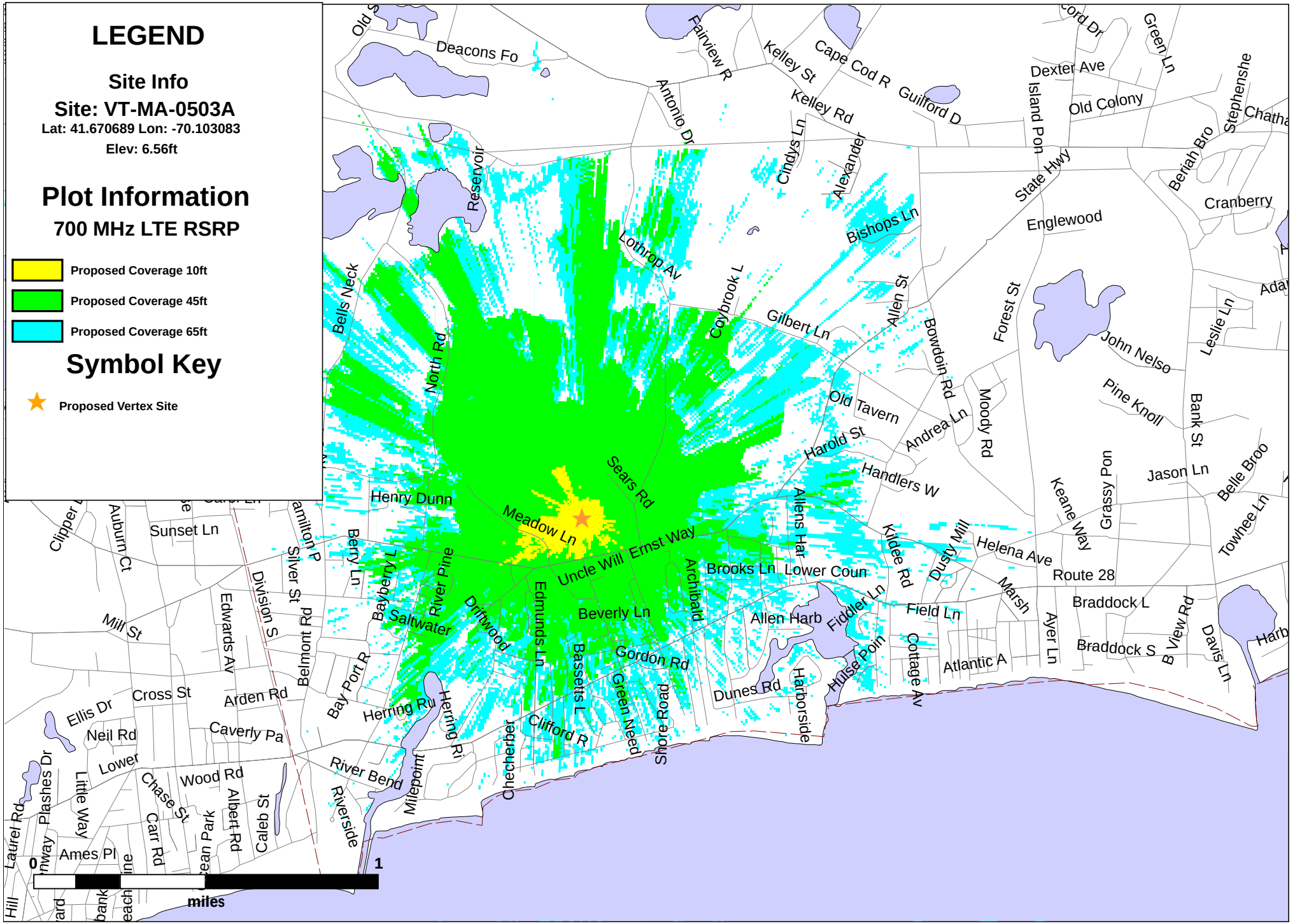
Attachment I:
Harwich 7 MA - 2100 MHz LTE RSRP Drive Data (3/25/2026)

verizon



10

RF Height Analysis For VT-MA-0503A@-95dBm



11

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Calculated Radio Frequency Emissions Report

Harwich 7 MA

206 Route 28

West Harwich, MA 02671

May 5, 2026

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1. Introduction

The purpose of this report is to investigate compliance with applicable FCC regulations for the installation of Verizon's antenna arrays to be mounted at 95' above ground level (AGL) on Vertex Towers, LLC proposed monopole located at 206 Route 28, West Harwich, MA. The coordinates[1] of the proposed facility are 41° 40' 14.48" N, 70° 06' 11.10" W.

Verizon is proposing to initially install nine (9) directional antennas (three sectors, three antennas per sector) to support its 4G LTE and 5G NR networks.

This report considers the proposed antenna configuration for Verizon to calculate the resulting percentage Maximum Permissible Exposure (% MPE) at ground level around the proposed facility.

2. FCC Guidelines for Evaluating RF Radiation Exposure Limits

In 1985, the FCC established rules to regulate radio frequency (RF) exposure from FCC licensed antenna facilities. In 1996, the FCC updated these rules, which were further amended in August 1997 by OET Bulletin 65 Edition 97-01. These new rules include Maximum Permissible Exposure (MPE) limits for transmitters operating between 300 kHz and 100 GHz. The FCC MPE limits are based upon those recommended by the National Council on Radiation Protection and Measurements (NCRP), developed by the Institute of Electrical and Electronics Engineers, Inc., (IEEE) and adopted by the American National Standards Institute (ANSI).

The FCC general population/uncontrolled limits set the maximum exposure to which most people may be subjected. General population/uncontrolled exposures apply in situations in which the general public may be exposed, or in which persons that are exposed as a consequence of their employment may not be fully aware of the potential for exposure or cannot exercise control over their exposure.

Public exposure to radio frequencies is regulated and enforced in units of milliwatts per square centimeter (mW/cm^2). The general population exposure limits for the various frequency ranges are defined in the documents referenced in Attachment A of this report.

Higher exposure limits are permitted under the occupational/controlled exposure category, but only for persons who are exposed as a consequence of their employment and who have been made fully aware of the potential for exposure, and they must be able to exercise control over their exposure. General population/uncontrolled limits are five times more stringent than the levels that are acceptable for occupational, or radio frequency trained individuals. Attachment B contains excerpts from OET Bulletin 65 and defines the Maximum Exposure Limit.

Finally, it should be noted that the MPE limits adopted by the FCC for both general population/uncontrolled exposure and for occupational/controlled exposure incorporate a substantial margin of safety and have been established to be well below levels generally accepted as having the potential to cause adverse health effects.

[1] As defined in Zoning Drawings prepared by Advanced Engineering Group, P.C., and dated 11/06/2025 (Rev. 4) for the subject location.

3. RF Exposure Calculation Methods

The results displayed in the following figures were generated using the following formula as outlined in FCC bulletin OET 65:

$$\text{Power Density} = \left(\frac{GRF^2 \times \text{EIRP}}{4\pi \times R^2}\right) \text{X Off Beam Loss}$$

Where:

EIRP = Effective Isotropic Radiated Power

R = Radial Distance = $\sqrt{\left(H^2 + V^2\right)}$

H = Horizontal Distance from antenna

V = Vertical Distance from center of antenna

Off Beam Loss is determined by the selected antenna patterns

GRF = Ground reflection factor of 2.0

These calculations assume that the antennas are operating at full power and 100 percent capacity, and that all antenna channels are transmitting simultaneously. Obstructions (trees, buildings, etc.) that would normally attenuate the signal are not considered. As a result, the calculated power density and corresponding % MPE levels reported below are more conservative (higher) than the actual signal levels will be from the final installation.

The percentage of MPE values presented in this report reflect levels that one may encounter from one sector of a carrier's antennas. Most carriers use 3 or 4 sectors per site with azimuths approximately 90 or 120 degrees apart, respectively; therefore, one could not be standing in the main beam of multiple sectors at the same time. In cases where antenna models are not uniform across all sectors, the antenna model with the highest gain and/or electrical down-tilt was used in the calculations. This results in a conservative or "worst case" assumption for percent of MPE calculations.

4. Antenna Inventory

Table 1 below outlines the proposed antenna configurations for Verizon. The associated data model and antenna patterns for these specific antenna models are included in Attachment C.

Operator	Sector / Azimuth	TX Freq (MHz)	Power at Antenna (Watts)	Ant Gain (dBi)	Power EIRP (Watts)	Antenna Model	Beam Width	Mech. / Elec. Tilt	Length (ft)	Antenna Centerline Height (ft)
Verizon	Alpha / 20°	750	160	15.5	5677	NN-65B-HG-R1B	73	0/2	6	95
		850	160	15.8	6083		68	0/2		
		1900	160	23.7	37508	MF3208d-25A	-	0/0	3.3	95
		2100	160	23.2	33429		-	0/0		
		3700	320	25.5	113540	MT6433-77A	-	0/1	3	95
	Beta / 130°	750	160	15.5	5677	NN-65B-HG-R1B	73	0/2	6	95
		850	160	15.8	6083		68	0/2		
		1900	160	23.7	37508	MF3208d-25A	-	0/0	3.3	95
		2100	160	23.2	33429		-	0/0		
		3700	320	25.5	113540	MT6433-77A	-	0/1	3	95
	Gamma / 220°	750	160	15.5	5677	NN-65B-HG-R1B	73	0/2	6	95
		850	160	15.8	6083		68	0/2		
		1900	160	23.7	37508	MF3208d-25A	-	0/0	3.3	95
		2100	160	23.2	33429		-	0/0		
		3700	320	25.5	113540	MT6433-77A	-	0/1	3	95

Table 1: Proposed Antenna Inventory [2, 3]

[2] Antenna configuration is in reference to Verizon's Radio Frequency Design Sheet dated 03/14/2026 and the Zoning Drawings prepared by Advanced Engineering Group, P.C., and dated 11/06/2025 (Rev. 4).

[3] Transmit power assumes 0 dB of cable loss.

5. Calculated % MPE Results

The calculated % MPE results for the proposed antenna configuration are shown in Figure 1 below. Each frequency band and technology is calculated as well as the resulting cumulative percent of MPE. For completeness, the calculations for this analysis range from 0 feet horizontal distance (directly below the antennas) to a value of 3,000 feet horizontal distance from the site. In addition to the other worst-case scenario considerations that were previously mentioned, the power density calculations to each horizontal distance point away from the antennas was completed using a local maximum off beam antenna gain (within ± 3 degrees of the true mathematical angle) to incorporate a realistic worst-case scenario.

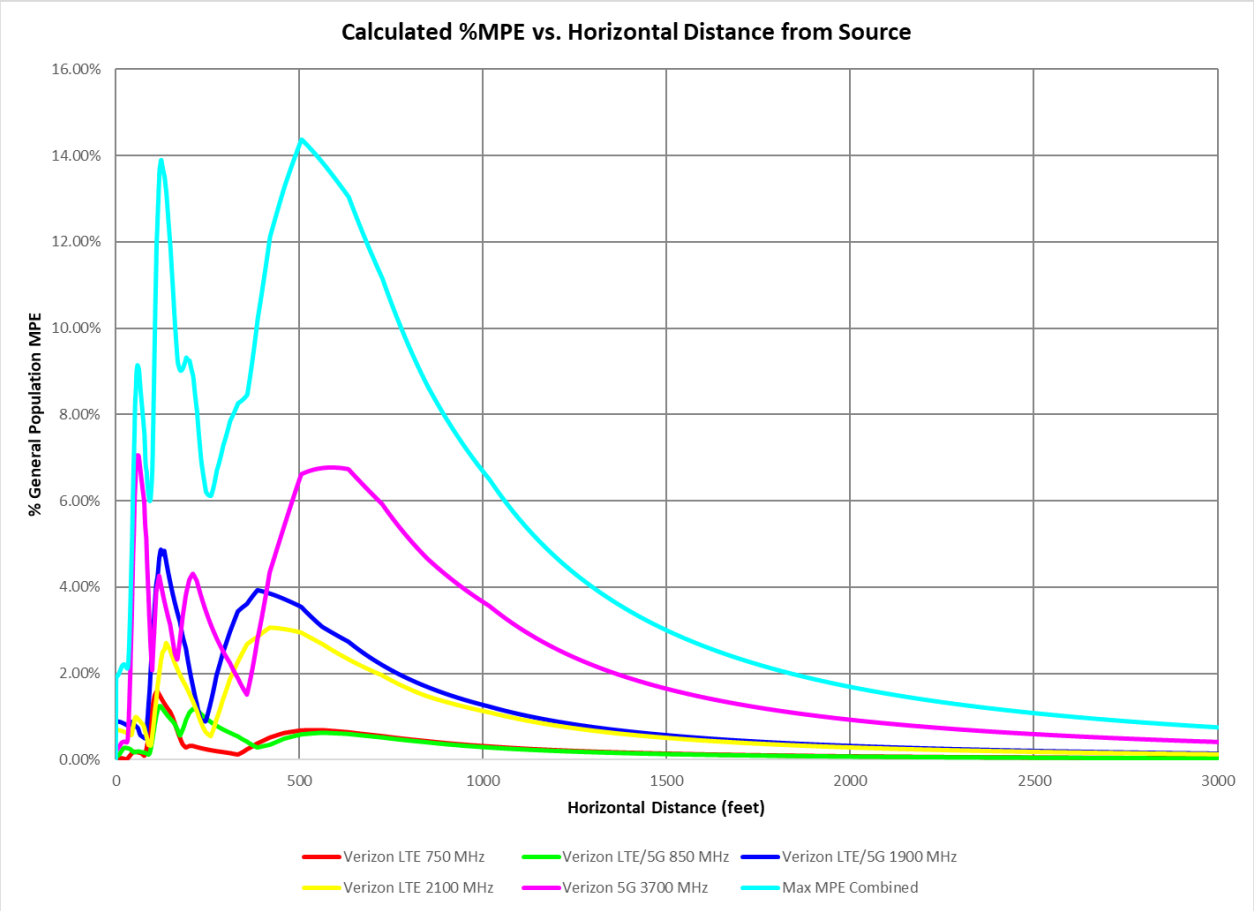


Figure 1: Graph of General Population % MPE vs. Distance

The highest percentage of MPE (**14.37%** of the General Population limit) is calculated to occur at a horizontal distance of 505 feet away from the site. Please note that the percentage of MPE calculations close to the site consider off beam loss, which is determined from the vertical pattern of the antennas used. Therefore, RF power density levels may increase as the distance from the site increases. At distances of approximately 650 feet and beyond, one would now be in the main beam of the antenna pattern and off beam loss is no longer considered. Beyond this point, power density levels vary based on distance from the site and the percentage of MPE decreases significantly as distance from the site increases.

Table 2 below lists percentage of MPE values as well as the associated parameters that were included in the calculations. As stated in Section 3, all calculations assume that the antennas are operating at 100 percent capacity, and that all antenna channels are transmitting simultaneously. Obstructions (trees, buildings etc.) that would normally attenuate the signal are not taken into account. Additionally, a six-foot height offset was considered in this analysis to account for the height of a person standing at ground level. As a result, the calculated % MPE levels are more conservative (higher) than the actual signal levels will be from the final installation. The results presented in Figure 1 and Table 2 assume level ground elevation from the base of the site out to the horizontal distances calculated.

Carrier	Number of Transmitters	Power out of Base Station Per Transmitter (Watts)	Antenna Height (Feet)	Distance to the Base of Antennas (Feet)	Power Density (mW/cm^2)	Limit (mW/cm^2)	% MPE
Verizon 5G 3700 MHz	1	320.0	95.0	505	0.066161	1.000	6.62%
Verizon LTE 2100 MHz	1	160.0	95.0	505	0.029466	1.000	2.95%
Verizon LTE 750 MHz	1	160.0	95.0	505	0.003401	0.500	0.68%
Verizon LTE/5G 1900 MHz	1	160.0	95.0	505	0.035418	1.000	3.54%
Verizon LTE/5G 850 MHz	1	160.0	95.0	505	0.003332	0.567	0.59%
						Total	**14.37%**

Table 2: Maximum Percent of General Population Exposure Values [4, 5, 6]

[4] Frequencies listed are representative of the operating band and are not the specific operating frequency.

[5] The total % MPE listed is a summation of each unrounded contribution. Therefore, summing each rounded value may not reflect the total value listed in the table.

[6] In cases where specific antenna pattern is not available, similar antenna pattern was used based on frequency, beamwidth and gain of the antenna.

6. Conclusion

The above analysis concludes that RF exposure levels from the proposed site will be well below the maximum permissible levels as outlined by the FCC in the OET Bulletin 65 Ed. 97-01. Using the conservative calculation methods and parameters detailed above, the maximum cumulative percent of MPE at ground level in consideration of Verizon's antenna configuration is calculated to be **14.37% of the FCC limit (General Population/Uncontrolled)**. This maximum cumulative percent of MPE value is calculated to occur 505 feet away from the site.

7. Statement of Certification

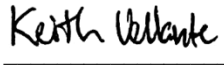
I certify to the best of my knowledge that the statements in this report are true and accurate. The calculations follow guidelines set forth in ANSI/IEEE Std. C95.1, ANSI/IEEE Std. C95.3, and FCC OET Bulletin 65 Edition 97-01.



May 5, 2026

Report Prepared By: Evelio Sotolongo
Senior RF Engineer
C Squared Systems, LLC

Date



May 5, 2026

Reviewed/Approved By: Keith Vellante
Director – RF Services
C Squared Systems, LLC

Date

Attachment A: References

OET Bulletin 65 - Edition 97-01 - August 1997 Federal Communications Commission Office of Engineering & Technology

IEEE C95.1-2019, IEEE Standard Safety Levels With Respect to Human Exposure to Electric, Magnetic, and Electromagnetic Fields, 0 Hz to 300 GHz IEEE-SA Standards Board

IEEE C95.3-2021, IEEE Recommended Practice for Measurements and Computations of Electric, Magnetic, and Electromagnetic Fields With Respect to Human Exposure to Such Fields, 0 Hz to 300 GHz IEEE-SA Standards Board

Attachment B: FCC Limits for Maximum Permissible Exposure (MPE)

(A) Limits for Occupational/Controlled Exposure[7]

Frequency Range (MHz)	Electric Field Strength (E) (V/m)	Magnetic Field Strength (E) (A/m)	Power Density (S) (mW/cm^2)	Averaging Time $\|E\|^2$, $\|H\|^2$ or S (minutes)
0.3-3.0	614	1.63	(100)*	6
3.0-30	1842/f	4.89/f	($900/f^2$)*	6
30-300	61.4	0.163	1.0	6
300-1500	-	-	f/300	6
1500-100,000	-	-	5	6

(B) Limits for General Population/Uncontrolled Exposure[8]

Frequency Range (MHz)	Electric Field Strength (E) (V/m)	Magnetic Field Strength (E) (A/m)	Power Density (S) (mW/cm^2)	Averaging Time $\|E\|^2$, $\|H\|^2$ or S (minutes)
0.3-1.34	614	1.63	(100)*	30
1.34-30	824/f	2.19/f	($180/f^2$)*	30
30-300	27.5	0.073	0.2	30
300-1500	-	-	f/1500	30
1500-100,000	-	-	1.0	30

f = frequency in MHz * Plane-wave equivalent power density

Table 3: FCC Limits for Maximum Permissible Exposure

[7] Occupational/controlled limits apply in situations in which persons are exposed as a consequence of their employment provided those persons are fully aware of the potential for exposure and can exercise control over their exposure. Limits for occupational/controlled exposure also apply in situations when an individual is transient through a location where occupational/controlled limits apply provided he or she is made aware of the potential for exposure.

[8] General population/uncontrolled exposures apply in situations in which the general public may be exposed, or in which persons that are exposed as a consequence of their employment may not be fully aware of the potential for exposure or cannot exercise control over their exposure.

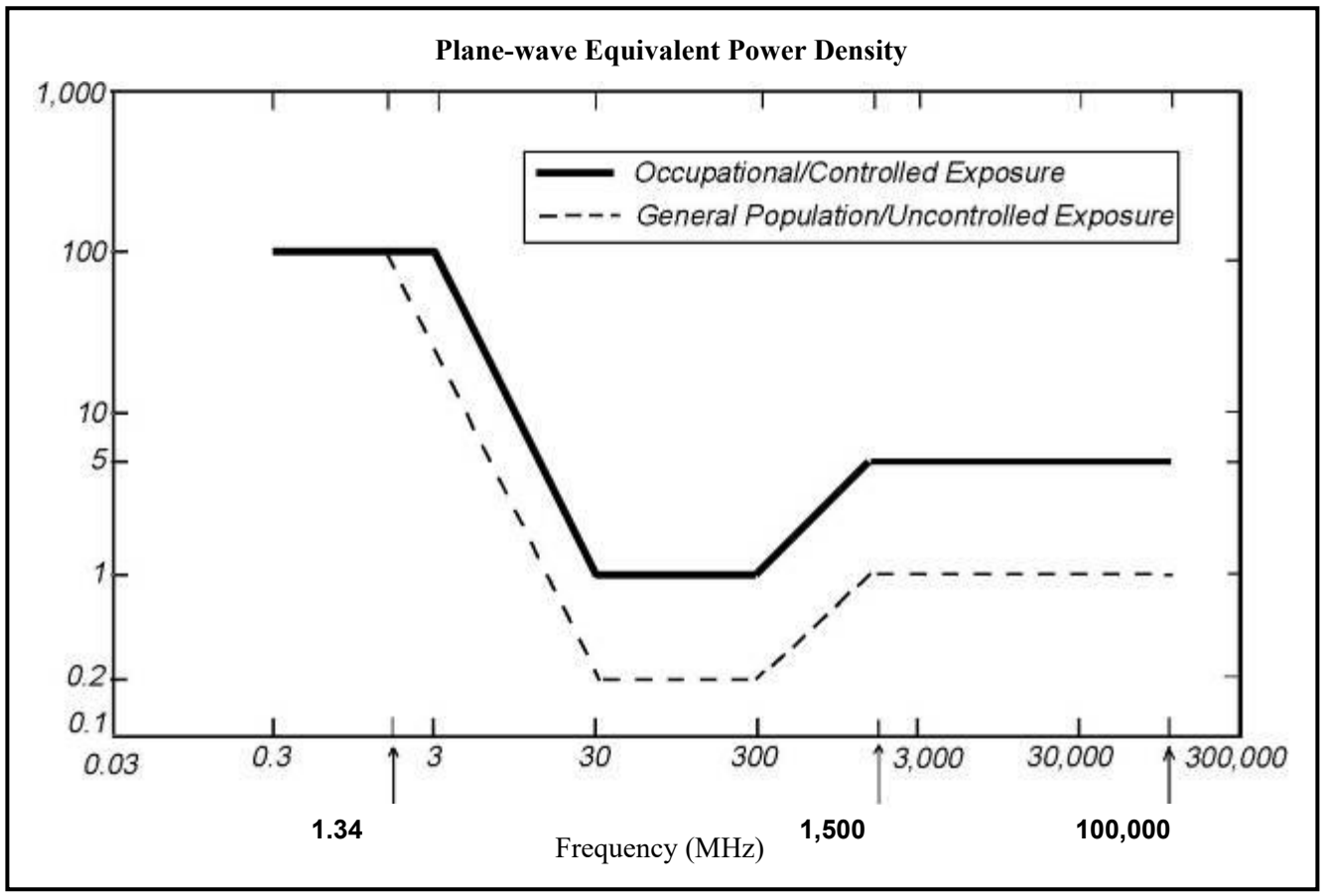
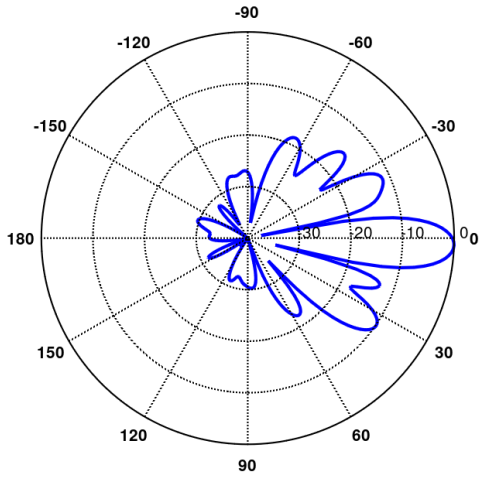


Figure 2: Graph of FCC Limits for Maximum Permissible Exposure (MPE)

Attachment C: Verizon Antenna[9] Model Data Sheets and Electrical Patterns

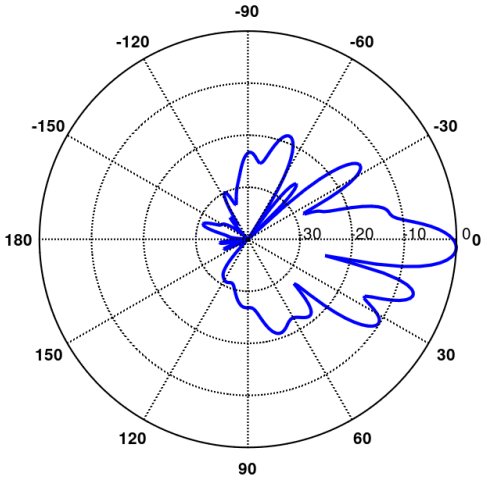
750 MHz

Manufacturer:	Andrew
Model #:	NN-65B-HG-R1B
Frequency Band:	698-806 MHz
Gain:	15.5 dBi
Electrical Down-Tilt:	2°
Vertical Beamwidth:	11.3°
Horizontal Beamwidth:	73°
Polarization:	±45°
Dimensions (L x W x D):	72.8” x 19.6” x 7.8”



850 MHz

Manufacturer:	Andrew
Model #:	NN-65B-HG-R1B
Frequency Band:	806 - 896 MHz
Gain:	15.8 dBi
Electrical Down-Tilt:	2°
Vertical Beamwidth:	9.8°
Horizontal Beamwidth:	68°
Polarization:	±45°
Dimensions (L x W x D):	72.8” x 19.6” x 7.8”



1900 MHz

Manufacturer:	Samsung
Model #:	MF3208d-25A
Frequency Band:	1930-1995 MHz
Gain:	23.7 dBi
Electrical Down-Tilt:	0°
Vertical Beamwidth:	-°
Horizontal Beamwidth:	-°
Polarization:	-°
Dimensions (L x W x D):	39.0” x 25.5” x 8.5”

N/A

[9] In the case where pattern data was unavailable from the manufacturer, vertical pattern shown are for antennas with similar specifications.

2100 MHz Manufacturer: Samsung Model #: MF3208d-25A Frequency Band: 1930-1995 MHz Gain: 23.2 dBi Electrical Down-Tilt: 0° Vertical Beamwidth: -° Horizontal Beamwidth: -° Polarization: -° Dimensions (L x W x D): 39.0” x 25.5” x 8.5”	N/A
3700 MHz Manufacturer: SAMSUNG Model #: MT6413-77A Frequency Band: 3700-3980 MHz Gain: 25.5 dBi Electrical Down-Tilt: 1° Vertical Beamwidth: N/A° Horizontal Beamwidth: N/A° Polarization: N/A° Dimensions (L x W x D): 29.53” x 15.75” x 5.51”	N/A

12

ECOSYSTEM SOLUTIONS INC

Where environmental science meets practical solutions

April 23, 2026

Project No.: W25-2100

Scott Adams, P.E.
Advanced Engineering Group, P.C.
179 Swansea Mall Drive, Suite 1
Swansea, MA 02777

RE: Vernal Pool Investigation
206 Route 28 / Map 11, Lot T7
Harwich, Massachusetts 02671

Mr. Adams,

At your request, Ecosystem Solutions, Inc. (ESI) conducted a site investigation on April 10, 2026, at the above referenced property ("Property") to evaluate the presence of vernal pool habitat in accordance with the Massachusetts Wetlands Protection Act (M.G.L. c.131, §40), its implementing regulations (310 CMR 10.00), and the Town of Harwich Wetlands Protection Bylaw (Chapter 310) and its implementing regulations. Initial wetland delineation and resource area assessments were completed on May 13th and May 21st, 2025.

As documented in the Wetland Findings Report dated June 22nd, 2025, Bordering Vegetated Wetlands (BVW) are present throughout the northern and eastern portions of the Property. Within the BVW, a ponded area was identified and flagged in the field as a potential vernal pool ("PVP"). However, further investigation of this area revealed that it is likely man made in origin, has permanent or semi-permanent water retention, and lacks biological and physical criteria required in the Massachusetts Division of Fisheries and Wildlife "Guidelines for the Certification of Vernal Pool Habitat, March 2009" to be considered a vernal pool. The ponded feature exists directly adjacent to an altered portion of the Property historically used for landscape material storage and deposition. Historic aerial photography reveals that the Property has existed in its current configuration since at least the early 1990's.

A review of MassMapper's Massachusetts Natural Heritage and Endangered Species Program (NHESP) mapping layers confirms that the ponded feature has not been identified as a potential or certified vernal pool, and no Priority Habitat or Estimated Habitat constraints are associated with the area. As stated above, the vernal pool investigation conducted on April 10, 2026, concluded that although the area meets the physical criteria (pool with no permanently flowing outlet), the subject area did not meet the remaining qualifications/certification criteria to be considered a vernal pool.

Specifically:

- No evidence of obligate amphibian breeding activity (egg masses, larvae, or adults) was observed;
- No Fairy Shrimp *(Anostraca eubranchipus)* were observed;
- No obligate or facultative species associated with vernal pool habitat were documented;
- Hydrologic conditions observed are consistent with a permanently or semi-permanently ponded feature within BVW, rather than a seasonally ponded depression.



Picture 1. Looking west at the ponded area included in this investigation. Ponded area contains duckweed *(Lemna minor)*, common reed *(Phragmites australis)*, and other herbaceous obligate vegetation.

Further, the ponded area on site does not meet the definition of a vernal pool under §310-2 of the Town of Harwich Wetlands Protection Bylaw which reads, *"a seasonal freshwater body contained in a confined basin depression that holds water for a minimum of two consecutive months in most years, is free of adult fish populations, and provides breeding habitat for amphibians and invertebrates. The boundary of vernal pool habitat shall extend outward 100 feet from the mean annual high-water mark of such a depression. Vernal pools include those areas mapped and certified by the Massachusetts Natural Heritage and Endangered Species Program as well as those areas identified in the field as eligible for certification by a professional wildlife biologist or other expert."*

Based on the on-site investigation and supporting documentation outlined in this letter, it is the professional opinion of ESI that the ponded area originally identified as a potential vernal pool **does not meet the criteria set forth in the Massachusetts Division of Fisheries and Wildlife "Guidelines for the Certification of Vernal Pool Habitat, March 2009" to be considered certifiable vernal pool habitat, and is not eligible for certification under Massachusetts guidelines.**

Should you have any questions or require additional information, please do not hesitate to contact our office at 401-741-3263.

Sincerely,

Ecosystem Solutions, Inc.
Brandon B. Faneuf
PWS, RPSS, CWB, CPESC
BF/sc
attachments

SWS PCP EDUCATION EXPERIENCE ETHICS PWS BRANDON B. FANEUF 001614 PROFESSIONAL WETLAND SCIENTIST

Samantha Carew, WPIT

Est. 2003

ECOSYSTEM SOLUTIONS INC

RI: 401.741.3263
MA: 508.997.0268
www.ecosystem-solutions.com

June 22, 2025

Project no. W25-2100

Scott Adams, P.E.
Advanced Engineering Group, P.C.
179 Swansea Mall Drive, Suite 1
Swansea, Massachusetts 02777

RE: WETLANDS FINDINGS REPORT
206 Route 28 / Map 11, Lot T7
Harwich, Massachusetts 02671

Mr. Adams,

Ecosystem Solutions, Inc. (ESI) submits this report of findings regarding the presence of wetland resource areas under the Massachusetts Wetlands Protection Act (WPA) (MGL c.131, §40) and its Regulations (310 CMR 10.00) and the Harwich Wetlands Protection Bylaw & its Regulations. The delineation was performed on May 13th & May 21st, 2025, in accordance with the WPA, 310 CMR 10.00, the Department of Environmental Protection (DEP) Policy 95-1, as well as the U.S. Army Corps of Engineers (ACOE) 1987 Wetland Delineation Manual, including its 2009 Supplement for the Northeast Region, as amended in 2012. Policy 95-1 specifically outlines the current DEP criteria and methodology for defining Bordering Vegetated Wetlands (BVW's) in Massachusetts, as outlined in the September 2022 document entitled "Massachusetts Handbook for the Delineation of Bordering Vegetated Wetlands." Both the ACOE Manual and Policy 95-1 allow for the use of the environmental characteristics of hydrophytic vegetation, hydric soils and hydrology in order to identify wetland areas.

Property Description & Background

The property ("Property") is located north of Route 28, approximately 470 linear feet east of the intersection of Route 28 and Chase Street. The lot ("Lot") contains a shared dirt driveway/road running in a north/south direction called "Sears Road" on MassMapper, which splits off to the west, allowing the public access to the "Herring River Marsh View Conservation Area" parking lot located along the Property line to the west. The Herring River Conservation Area surrounds the Property entirely, apart from the southwest and southeast corners of the Lot closest to Route 28. According to the Town of Harwich property card, the Lot is 3 acres in size and currently exists as a mostly developed Lot containing a single-family "Ranch" style house built in 1926, 600sf "detached" building built in 1991, barn/garage, greenhouse, chicken coup, and several sheds. It is worthy to note that the Property acts as the home base for "Gardens by the Sea" (a landscaping/gardening

business) which has used the northern portion of the Property to dispose of grass clippings and leaves for decades.

Wetlands are found throughout the north and northeast portions of the Lot and contain a man-made pond (Historic aerial photography shows this pond present in the 1990's and it is unclear when it was created). Additional wetlands are found on the Herring River Conservation Area property, west of the dirt parking lot located on the Property line. With exception to the north and northeast portions of the Lot, and off site to the west, the remainder of the parcel exists as upland forest and previously developed areas.

Findings

Bordering Vegetated Wetlands (BVW) were found throughout the north and northeast portions of the Property and were flagged and labeled in the field using pink flagging tape. Salt Marsh was found off site to the west of the Property and was also labeled in the field using pink flagging tape. Lastly, there is a potential vernal pool (man-made) located throughout the northern portion of the Lot (MassMapper has not mapped it as a potential or certified vernal pool) within the BVW which was flagged in the field using blue flagging tape. See attached wetland delineation sketch for approximate locations.

Topography on site is relatively flat, with slopes ranging from 0-3%.

Soils on site are mapped as 252A-Carver coarse sand, 0 to 3 percent slopes throughout the upland areas and 256A-Deerfield loamy fine sand, 0 to 3 percent slopes and 66A-Ipswich-Pawcatuck-Matunuck complex, 0 to 2 percent slopes, very frequently flooded throughout the wetland areas.

Vegetation on site includes but is certainly not limited to red maple *(Acer rubrum)*, pitch pine *(Pinus rigida)*, white oak *(Quercus alba)*, inkberry *(Ilex glabra)*, starflower *(Lysimachia borealis)*, and highbush blueberry *(Vaccinium corymbosum).* Please refer to the attached DEP delineation data forms for more details.



Picture 1. Typical view of the A-series wetland on site.



Picture 2. Looking northeast at the potential vernal pool on site.



Picture 3. Looking west toward the B-series off-site salt marsh.



Picture 4. Looking north at a developed portion of the site.



Picture 5. Showing the landscape pile near the rear of the site. It is surrounded by Japanese knotweed.

Table 1. Wetland Delineation Description

Flag series	Wetland type	Jurisdiction	Location
A1-A34 (pink flags)	Bordering Vegetated Wetland w/ 100' Buffer Zone	Protected under 310 CMR 10.55 and the Town of Harwich Wetlands Protection Bylaw & its Regulations	Flags begin along the eastern Property line, follow to edge of historic fill to the north, turn west, wrap around the potential vernal pool and head north again where the flags end at the northern Property line.
B1-B21 (pink flags)	Salt Marsh w/ 100' Buffer Zone	Protected under 310 CMR 10.32 and the Town of Harwich Wetlands Protection Bylaw & its Regulations	Flags begin off-site to the northwest, travelling south along the edge of the salt marsh. The entire B-series is located off-site to the west.
PVP1-PVP14 (blue flags)	Potential vernal pool w/100' vernal pool habitat[1]	Protected under the Town of Harwich Wetlands Protection Bylaw & its Regulations	Located within the A-series BVW, travelling around the ponded area on site.

1- According to the "Vernal Pool" definition under the Harwich Wetlands Protection Bylaw, vernal pools include those areas mapped and certified by the Massachusetts Natural Heritage and Endangered Species program as well as those areas identified in the field as eligible for certification by a professional wildlife biologist or other expert. Under the bylaw, potential vernal pools have a vernal pool habitat which extends 100' from the mean high-water mark of such depression. This 100' vernal pool habitat is protected under the Bylaw, but there is no additional Buffer Zone beyond that.

A review of GIS overlays was performed in order to determine if any critical environmental resources exist on-site. Please see Table 2 below for a summary:

Table 2. Critical Areas

Mapped Resource On or Within Proximity to Site	Yes	No
Area of Critical Environmental Concern		✓
NHESP Certified Vernal Pool		✓
NHESP Potential Vernal Pool		✓
NHESP Estimated Habitat of Rare Wildlife (2021)		✓
NHESP Priority Habitat of Rare species (2021)		✓
DFW Cold Water Fisheries Resources		✓
Outstanding Resource Waters		✓
FEMA Flood Zones	✓[1]	
Surface Water Protection Area		✓
Interim Wellhead Protection Area		✓
Zone I Wellhead Protection Area		✓
Zone II Wellhead Protection Area		✓

1- The Property is located within FEMA Flood Zone AE El 11

Jurisdiction

310 CMR 10.00

Bordering Vegetated Wetlands are specifically listed in 310 CMR 10.55, along with the performance standards for construction. Most work or activities within 100' of a BVW require preconstruction review by the local Conservation Commission. There are no specific performance standards for work and activities in the Buffer Zone under 310 CMR 10.00 (specifically, 10.53(1)). However, if you work within 50' of a BVW, you will, more likely than not, be required to submit a Notice of Intent (NOI). New septic system leach fields are not allowed within 50' of a BVW, per 310 CMR 10.03(3).

Salt Marshes are specifically listed in 310 CMR 10.32, along with performance standards for construction. Most work or activities within 100' of a Salt Marsh require preconstruction review by the local Conservation Commission. A proposed project in a salt marsh, on lands within 100 feet of a salt marsh, or a body of water adjacent to a salt marsh shall not destroy any portion of the salt marsh and shall not have an adverse effect on the productivity of the salt marsh. There are no specific performance standards for work and activities in the Buffer Zone under 310 CMR 10.00 (specifically, 10.53(1)). However, if you work within 50' of a salt marsh, you will, more likely than not, be required to submit a Notice of Intent (NOI).

Town of Harwich

Under the Bylaw, Harwich has a 100' Buffer Zone for BVWs, Salt Marshes and Vernal Pools (certified or not) and requires the maintenance of a 50' "No Disturb Zone" landward from the edge of any protected resource. Vernal Pool habitats (100' from the mean high water of the pool) are also protected under the Bylaw, but do not receive an additional Buffer Zone.

In certain instances, the Commission may also require the establishment of a "vegetated buffer strip", of a minimum of 5' in width in addition to the 50' No Disturb Zone. The vegetated strip shall consist of native plant material approved by the Commission.

Should you have any questions regarding this letter, please do not hesitate to call at (401) 741-3263 or by using the other contact information above.

Sincerely,

Ecosystem Solutions, Inc.

Brandon B. Faneuf, MSc
PWS, RPSS, CWB, CPESC

BF/sc

enclosures



Samantha Carew, WPIT

National Flood Hazard Layer FIRMette

FEMA

70°6'33"W 41°40'22"N



0 250 500 1,000 1,500 2,000 Feet

1:6,000

70°5'56"W 41°39'55"N

Basemap Imagery Source: USGS National Map 2023

Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

SPECIAL FLOOD HAZARD AREAS
- Without Base Flood Elevation (BFE) *Zone A, V, A99*
- With BFE or Depth *Zone AE, AO, AH, VE, AR*
- Regulatory Floodway

OTHER AREAS OF FLOOD HAZARD
- 0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile *Zone X*
- Future Conditions 1% Annual Chance Flood Hazard *Zone X*
- Area with Reduced Flood Risk due to Levee. See Notes. *Zone X*
- Area with Flood Risk due to Levee *Zone D*

OTHER AREAS
- NO SCREEN Area of Minimal Flood Hazard *Zone X*
- Effective LOMRs
- Area of Undetermined Flood Hazard *Zone D*

GENERAL STRUCTURES
- Channel, Culvert, or Storm Sewer
- Levee, Dike, or Floodwall

OTHER FEATURES
- 20.2 / 17.5 Cross Sections with 1% Annual Chance / Water Surface Elevation
- Coastal Transect
- Base Flood Elevation Line (BFE)
- Limit of Study
- Jurisdiction Boundary
- Coastal Transect Baseline
- Profile Baseline
- Hydrographic Feature

MAP PANELS
- Digital Data Available
- No Digital Data Available
- Unmapped

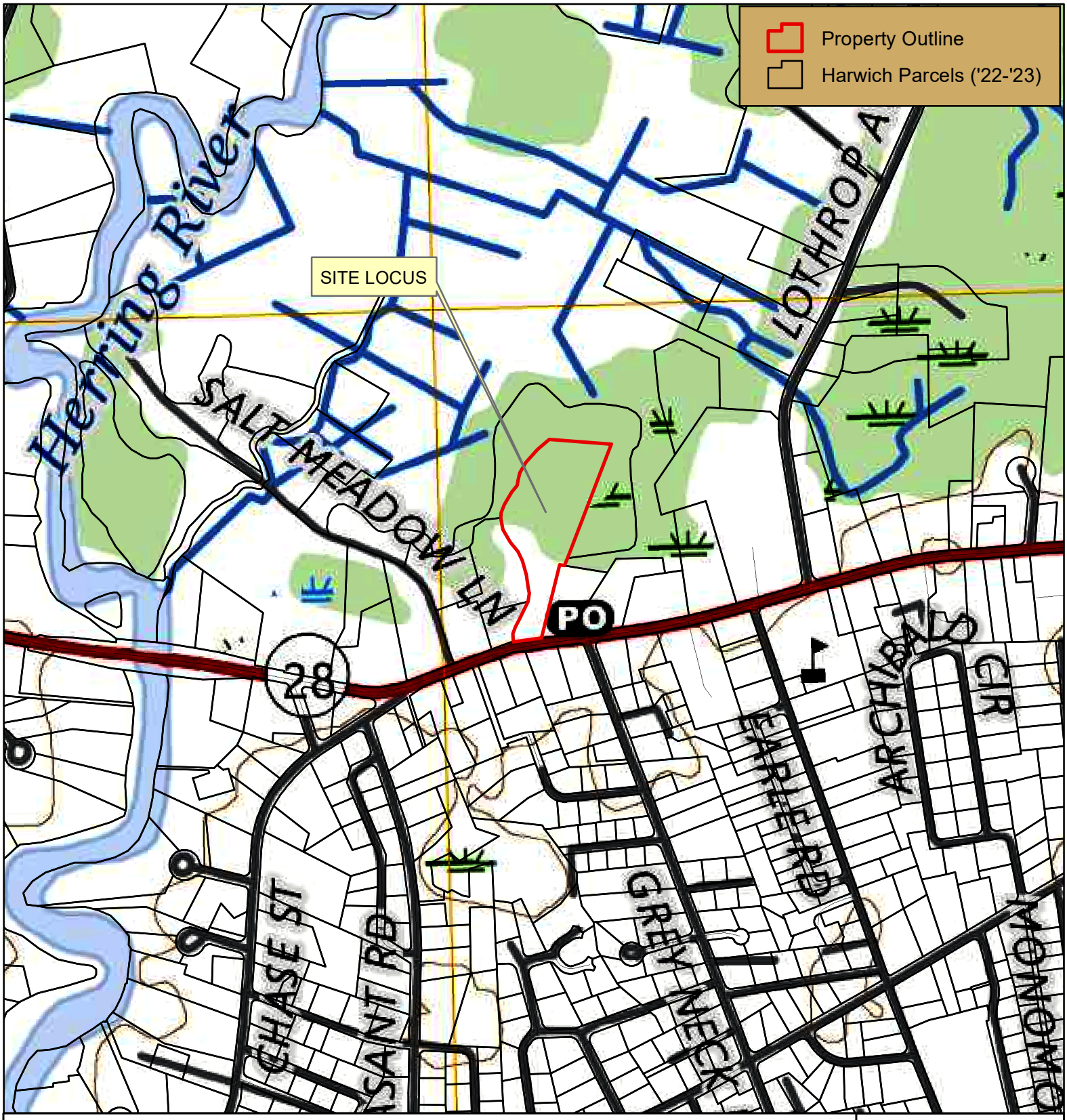
N

The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.

This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 6/12/2025 at 1:03 PM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

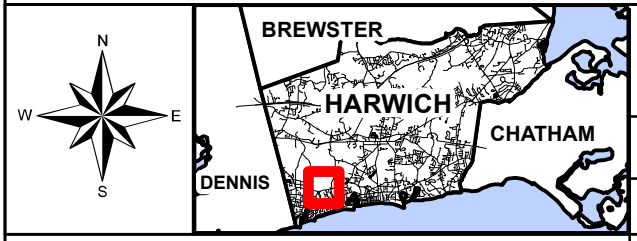
This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.



ECOSYSTEM SOLUTIONS LLC

100 Jefferson Blvd. Suite 225
Warwick, RI 02888

FIGURE 1



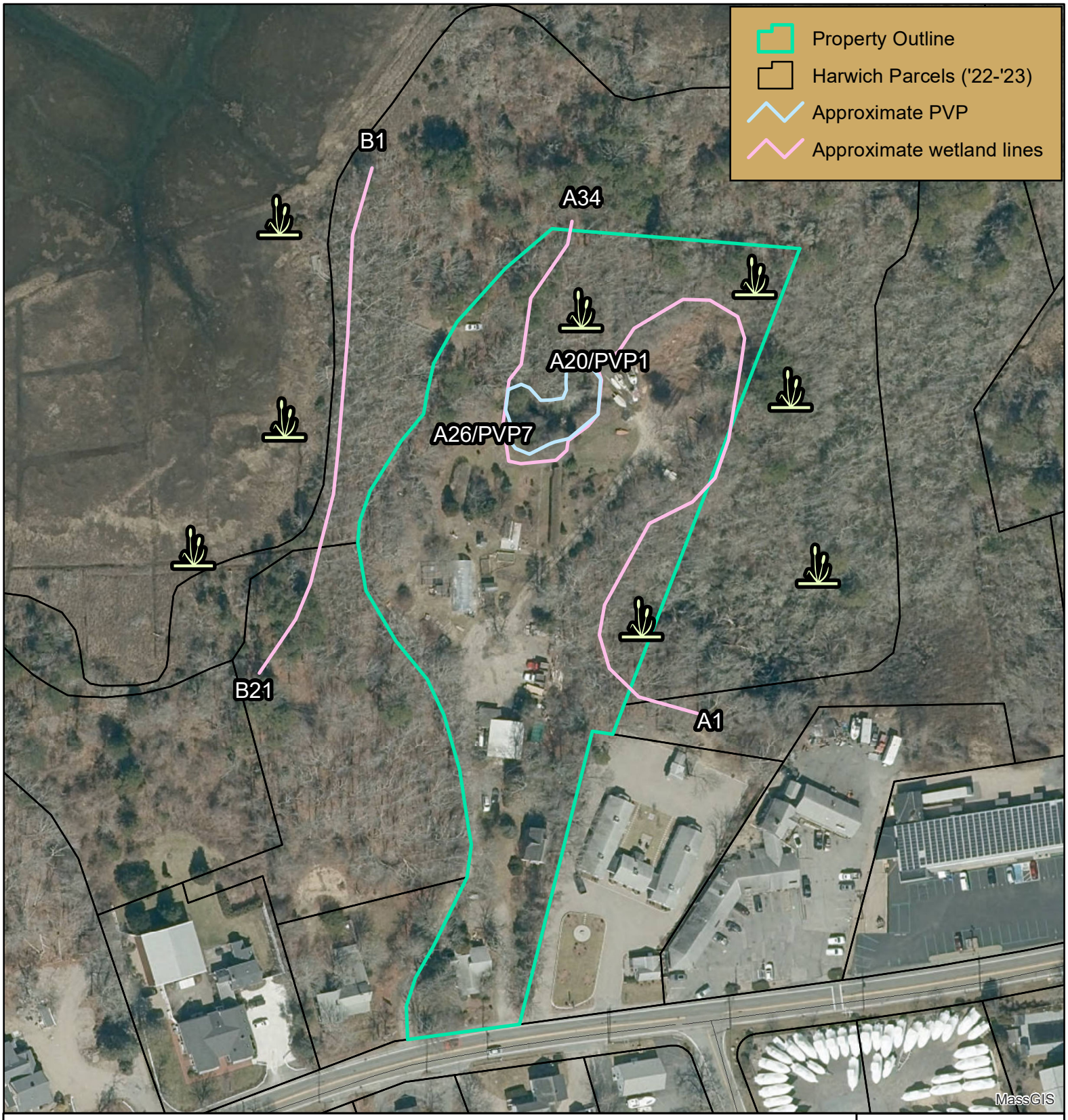
USGS Map
206 Route 28 / Map 11, Parcel T7
Harwich, Massachusetts

DATE:	06-12-2025	PROJECT #:	W25-2100
CREATED BY:	SC	SCALE:	1 inch = 500 feet

Newest USGS

MASS GIS

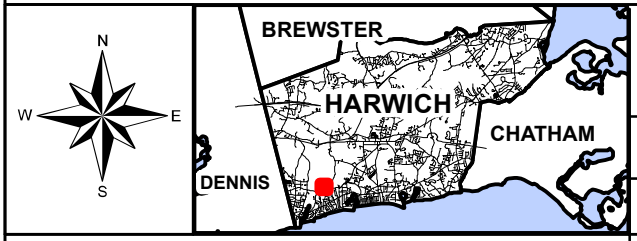
0 250 500 1,000 1,500 Feet



ECOSYSTEM SOLUTIONS LLC

100 Jefferson Blvd. Suite 225
Warwick, RI 02888

FIGURE 2



Approximate Delineation Sketch
206 Route 28 / Map 11, Parcel T7
Harwich, Massachusetts

DATE:	06-12-2025	PROJECT #:	W25-2100
CREATED BY:	SC	SCALE:	1 inch = 125 feet

Massachusetts 2023 Aerial Imagery

MASS GIS

Feet
0 62.5 125 250 375

Bordering Vegetated Wetland Determination Form

Project Site: 206 Route 28 City/Town: Harwich Sampling Date: 5/13/2025

Applicant/Owner: Sampling Point or Zone: A13

Invesigators: Samantha Carew Lat/Long: 41.66909,-70.10395

Soil Map Unit Name 252A-Carver coarse sand, 0 to 3 percent slopes NWI/DEP Classification: WS3

Are climatic/hydrologic conditions on the site typical for this time of year? NO (If no, explain in Remarks)

Are vegetation ☐ Soil ☐ or Hydrology ☐ significantly disturbed? (If yes, explain in Remarks)

Are vegetation ☐ Soil ☐ or Hydrology ☐ naturally problematic? (If yes, explain in Remarks)

SUMMARY OF FINDINGS - Attach site map and photograph log showing sampling locations, transects, etc.

Wetland vegetation criterion met? **YES** ***Is the Sampled Area within a wetland?*** **NO**

Hydric Soils criterion met? **NO**

Wetlands hydrology present? **""**

Remarks, Photo Details, Flagging, etc.:
Massachusetts Cape Cod Region is currently experiencing a Level 2- Significant Drought. Effective May 1, 2025.

HYDROLOGY

Field Observation:

Surface Water Present? NO Depth (inches):

Water Table Present? NO Depth (inches):

Saturation Present (including capillary fringe)? YES Depth (inches): 18

Wetland Hydrology Indicators (Enter x for all that apply)

Reliable Indicators of Wetlands Hydrology	Indicators that can be Reliable with Proper Interpretation	Indicators of the Influence of Water
☐ Water-stained Leaves	☐ Hydrological records	☐ Direct observation of inundation
☐ Evidence of aquatic fauna	☐ Free water in a soil test hole	☐ Drainage patterns
☐ Iron deposits	☐ Saturated soil	☐ Drift lines
☐ Algal mats or crusts	☐ Water marks	☐ Scoured areas
☐ Oxidized rhizospheres/pore linings	☐ Moss trim lines	☐ Sediment deposits
☐ Thin muck surfaces	☐ Presence of reduced iron	☐ Surface soil cracks
☐ Plants with air-filled tissue(aerenchyma)	☐ Woody plants w/ adventitious roots	☐ Sparsely vegetated concave surface
☐ Plants with polymorphic leaves	☐ Trees with shallow root systems	☐ Microtopographic relief
☐ Plants with floating leaves	☐ Woody plants with enlarged lenticels	☐ Geographic position (depression, toe of slope, fringing lowland)
☐ Hydrogen sulfide odor		

Remarks (describe recorded data from stream gauge, monitoring well, aerial photos, previous inspections, if available):

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Sampling Point: A13

VEGETATION - Use both common and scientific names of plants.

Tree Stratum Plot size: 30' radius

Common Name	**Scientific Name**	***Indicator Status***	**Absolute % Cover**	***Dominant?***	***Wetland Indicator?***
Pitch Pine	Pinus rigida	FACU	98	YES	NO

98 = *Total Cover*

Shrub/Sapling Stratum Plot size: 15' radius

Common Name	**Scientific Name**	***Indicator Status***	**Absolute % Cover**	***Dominant?***	***Wetland Indicator?***
Red Maple	Acer rubrum	FAC	63	YES	YES
Highbush Blueberry	Vaccinium corymbosum	FACW	38	YES	YES
Inkberry	Ilex glabra	FACW	38	YES	YES

139 = *Total Cover*

Herb Stratum Plot size: 5' radius

Common Name	**Scientific Name**	***Indicator Status***	**Absolute % Cover**	***Dominant?***	***Wetland Indicator?***
Inkberry	Ilex glabra	FACW	63	YES	YES
Maystar	Trientalis borealis	FAC	63	YES	YES

126 = *Total Cover*

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Italics denote auto caluclated field.

BVW Determination Form

Sampling Point: A13

Woody Vine Stratum Plot size: 30' radius

Common Name	**Scientific Name**	***Indicator Status***	**Absolute % Cover**	***Dominant?***	***Wetland Indicator?***
			0	*= Total Cover*	
Rapid Test : Do all dominant species have an indicator status of OBL or FACW?			**NO**		
Dominance Test: Number of dominant species	Number of dominant species that are wetland indicator plants	*Do wetland indicator plants make up ≥ 50% of dominant species?*			
		YES			
Prevalence Index:	Total % Cover (all strata)		Result		
OBL species	0	1	0		
FACW species	139	2	278		
FAC species	126	3	378		
FACU species	98	4	392		
UPL species	0	5	0		
Column Totals	363		1048		
Prevalence Index:	7.3		*Is the Prevalence Index ≤ 3.0?*		
			NO		
Wetland vegetation criterion met?	**YES**				

Definitions of Vegetation Strata

Tree - Woody plants 3in. (7.62 cm) or more in diameter at breast height (DBH), regardless of height

Shrub / Sapling - Woody plants less than 3 in. (7.62 cm) DBH and greater than or equal to 3.3 fs (1 m) tall

Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.3 ft. (1 m) tall

Woody vines - All woody vines greater than 3.3 ft. (1 m) in height

Cover Ranges

Range	Midpoint
1-5 %	3.0%
6-15 %	10.5%
15-25 %	20.5%
26-50%	38.0%
51-75 %	63.0%
76-95 %	85.5%
96-100 %	98.0%

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Italics denote auto caluclated field.

BVW Determination Form

Sampling Point: A13

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type1	Location2		
0-4	5YR 2.5/2	100	-	-	-	-	-	Oi
4-8	5YR 2/5/1	100	-	-	-	-	fsl	A
8-12	10YR 4/1	100	-	-	-	-	s	E
12-20	10YR 4/3	100	-	-	-	-	lcos	Bw

1Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains 2Location: PL=Pore Lining, M=Matrix

Hydric Soil Indicators (Enter **x** for all that apply)

- [ ] Histosol (A1)
- [ ] Histic Epipedon (A2)
- [ ] Black Histic (A3)
- [ ] Hydrogen Sulfide (A4)
- [ ] Stratisfied Layers (A5)
- [ ] Depleted Below Dark Surface (A11)
- [ ] Thick Dark Surface (A12)
- [ ] Sandy Mucky Mineral (S1)
- [ ] Sandy Gleyed Matrix (S4)
- [ ] Sandy Redox (S5)
- [ ] Stripped Matrix (S6)
- [ ] Dark Surface (S7)
- [ ] Polyvalue Below Surface (S8)
- [ ] Thin Dark Surface (S9)
- [ ] Loamy Mucky Mineral (F1)
- [ ] Depleted Matrix (F3)
- [ ] Redox Dark Surface (F7)
- [ ] Depleted Dark Surface (F8)

Indicators for Problematic Hydric Soils

- [ ] 2 cm Muck (A10)
- [ ] 5 cm Mucky Peat or Peat (S3)
- [ ] Dark Surface (S7)
- [ ] Polyvalue Below Surface (S8)
- [ ] Thin Dark Surface (S9)
- [ ] Iron-Manganese Masses (F12)
- [ ] Mesic Spodic (A17)
- [ ] Red Parent Material (F21)
- [ ] Very Shallow Dark Surface (TF12)
- [ ] Other (Include Explanation in Remarks)

Restrictive Layer if observed) Type: Depth (inches):

Remarks:

Hydric Soils criterion met? **NO**

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Bordering Vegetated Wetland Determination Form

Project Site: 206 Route 28 City/Town: Harwich Sampling Date: 5/13/2025

Applicant/Owner: 0 Sampling Point or Zone: A13

Invesigators: Samantha Carew Lat/Long: 41.66909,-70.10395

Soil Map Unit Name 252A-Carver coarse sand, 0 to 3 percent slopes NWI/DEP Classification: WS3

Are climatic/hydrologic conditions on the site typical for this time of year? NO (If no, explain in Remarks)

Are vegetation [ ] Soil [ ] or Hydrology [ ] significantly disturbed? (If yes, explain in Remarks)

Are vegetation [ ] Soil [ ] or Hydrology [ ] naturally problematic? (If yes, explain in Remarks)

SUMMARY OF FINDINGS - Attach site map and photograph log showing sampling locations, transects, etc.

Wetland vegetation criterion met? **YES** ***Is the Sampled Area within a wetland?*** **YES**

Hydric Soils criterion met? **YES**

Wetlands hydrology present? **""**

Remarks, Photo Details, Flagging, etc.:

Massachusetts Cape Cod Region is currently experiencing a Level 2- Significant Drought. Effective May 1, 2025.

HYDROLOGY

Field Observation:

Surface Water Present?	NO	Depth (inches):	
Water Table Present?	YES	Depth (inches):	20
Saturation Present (including capillary fringe)?	YES	Depth (inches):	10

Wetland Hydrology Indicators (Enter x for all that apply)

Reliable Indicators of Wetlands Hydrology		Indicators that can be Reliable with Proper Interpretation		Indicators of the Influence of Water	
[ ]	Water-stained Leaves	[ ]	Hydrological records	[ ]	Direct observation of inundation
[ ]	Evidence of aquatic fauna	[x]	Free water in a soil test hole	[ ]	Drainage patterns
[ ]	Iron deposits	[x]	Saturated soil	[ ]	Drift lines
[ ]	Algal mats or crusts	[ ]	Water marks	[ ]	Scoured areas
[ ]	Oxidized rhizospheres/pore linings	[ ]	Moss trim lines	[ ]	Sediment deposits
[ ]	Thin muck surfaces	[ ]	Presence of reduced iron	[ ]	Surface soil cracks
[ ]	Plants with air-filled tissue(aerenchyma)	[ ]	Woody plants w/ adventitious roots	[ ]	Sparsely vegetated concave surface
[ ]	Plants with polymorphic leaves	[ ]	Trees with shallow root systems	[ ]	Microtopographic relief
[ ]	Plants with floating leaves	[ ]	Woody plants with enlarged lenticels	[ ]	Geographic position (depression, toe of slope, fringing lowland)
[ ]	Hydrogen sulfide odor				

Remarks (describe recorded data from stream gauge, monitoring well, aerial photos, previous inspections, if available):

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Sampling Point: A13

VEGETATION - Use both common and scientific names of plants.

Tree Stratum Plot size: 30' radius

Common Name	**Scientific Name**	***Indicator Status***	**Absolute % Cover**	***Dominant?***	***Wetland Indicator?***
Black Tupelo	Nyssa sylvatica	FAC	98	YES	YES
Northern White Oak	Quercus alba	FACU	10.5	NO	NO

108.5 *= Total Cover*

Shrub/Sapling Stratum Plot size: 15' radius

Common Name	**Scientific Name**	***Indicator Status***	**Absolute % Cover**	***Dominant?***	***Wetland Indicator?***
Inkberry	Ilex glabra	FACW	85.5	YES	YES
Highbush Blueberry	Vaccinium corymbosum	FACW	38	YES	YES

123.5 *= Total Cover*

Herb Stratum Plot size: 5' radius

Common Name	**Scientific Name**	***Indicator Status***	**Absolute % Cover**	***Dominant?***	***Wetland Indicator?***
Inkberry	Ilex glabra	FACW	38	YES	YES
Maystar	Trientalis borealis	FAC	38	YES	YES

76 *= Total Cover*

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Italics denote auto caluclated field.

BVW Determination Form

Sampling Point: A13

Woody Vine Stratum Plot size: 30' radius

Common Name	**Scientific Name**	***Indicator Status***	**Absolute % Cover**	***Dominant?***	***Wetland Indicator?***
			0	*= Total Cover*	
Rapid Test : Do all dominant species have an indicator status of OBL or FACW?			**NO**		
Dominance Test: Number of dominant species	Number of dominant species that are wetland indicator plants	*Do wetland indicator plants make up ≥ 50% of dominant species?*			
		YES			
Prevalence Index:	Total % Cover (all strata)		Result		
OBL species	0	1	0		
FACW species	161.5	2	323		
FAC species	136	3	408		
FACU species	10.5	4	42		
UPL species	0	5	0		
Column Totals	308		773		
Prevalence Index:	6.2		*Is the Prevalence Index ≤ 3.0?*		
			NO		
Wetland vegetation criterion met?	**YES**				

Definitions of Vegetation Strata

Tree - Woody plants 3in. (7.62 cm) or more in diameter at breast height (DBH), regardless of height

Shrub / Sapling - Woody plants less than 3 in. (7.62 cm) DBH and greater than or equal to 3.3 fs (1 m) tall

Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.3 ft. (1 m) tall

Woody vines - All woody vines greater than 3.3 ft. (1 m) in height

Cover Ranges

Range	Midpoint
1-5 %	3.0%
6-15 %	10.5%
15-25 %	20.5%
26-50%	38.0%
51-75 %	63.0%
76-95 %	85.5%
96-100 %	98.0%

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Italics denote auto caluclated field.

BVW Determination Form

Sampling Point: A13

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type1	Location2		
0-4	5YR 2.5/2	100	-	-	-	-	-	Oi
4-10	10YR 2/2	90	7.5YR 3/4	10	c	m	sl	A
10-12	10YR 4/4	90	5YR 3/4	10	c	m	sl	Bw
12-20	10YR 5/2	90	5YR 3/4	10	c	m	ls	Bg

1Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains 2Location: PL=Pore Lining, M=Matrix

Hydric Soil Indicators (Enter **x** for all that apply)

- [ ] Histosol (A1)
- [ ] Histic Epipedon (A2)
- [ ] Black Histic (A3)
- [ ] Hydrogen Sulfide (A4)
- [ ] Stratisfied Layers (A5)
- [ ] Depleted Below Dark Surface (A11)
- [ ] Thick Dark Surface (A12)
- [ ] Sandy Mucky Mineral (S1)
- [ ] Sandy Gleyed Matrix (S4)
- [ ] Sandy Redox (S5)
- [ ] Stripped Matrix (S6)
- [ ] Dark Surface (S7)
- [ ] Polyvalue Below Surface (S8)
- [ ] Thin Dark Surface (S9)
- [ ] Loamy Mucky Mineral (F1)
- [ ] Depleted Matrix (F3)
- [ ] Redox Dark Surface (F7)
- [ ] Depleted Dark Surface (F8)

Indicators for Problematic Hydric Soils

- [ ] 2 cm Muck (A10)
- [ ] 5 cm Mucky Peat or Peat (S3)
- [ ] Dark Surface (S7)
- [ ] Polyvalue Below Surface (S8)
- [ ] Thin Dark Surface (S9)
- [ ] Iron-Manganese Masses (F12)
- [ ] Mesic Spodic (A17)
- [ ] Red Parent Material (F21)
- [ ] Very Shallow Dark Surface (TF12)
- [ ] Other (Include Explanation in Remarks)

Restrictive Layer if observed) Type: Depth (inches):

Remarks:

Hydric Soils criterion met? **YES**

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Italics denote auto caluclated field.

Bordering Vegetated Wetland Determination Form

Project Site: 206 Route 28 City/Town: Harwich Sampling Date: 5/20/2025

Applicant/Owner: Sampling Point or Zone: B16

Invesigators: Brandon Faneuf Lat/Long: 41.669093,-70.103950

Soil Map Unit Name 256A- Deerfield Loamy fine sand 0 to 3% slope NWI/DEP Classification: SM

Are climatic/hydrologic conditions on the site typical for this time of year? NO (If no, explain in Remarks)

Are vegetation ☐ Soil ☐ or Hydrology ☐ significantly disturbed? (If yes, explain in Remarks)

Are vegetation ☐ Soil ☐ or Hydrology ☐ naturally problematic? (If yes, explain in Remarks)

SUMMARY OF FINDINGS - Attach site map and photograph log showing sampling locations, transects, etc.

Wetland vegetation criterion met? **YES** ***Is the Sampled Area within a wetland?*** **NO**

Hydric Soils criterion met? **NO**

Wetlands hydrology present? **""**

Remarks, Photo Details, Flagging, etc.:
Massachusetts Cape Cod Region is currently experiencing a Level 2- Significant Drought. Effective May 1, 2025.

HYDROLOGY

Field Observation:

Surface Water Present? NO Depth (inches):

Water Table Present? NO Depth (inches):

Saturation Present (including capillary fringe)? NO Depth (inches):

Wetland Hydrology Indicators **(Enter x for all that apply)**

Reliable Indicators of Wetlands Hydrology	Indicators that can be Reliable with Proper Interpretation	Indicators of the Influence of Water
☐ Water-stained Leaves	☐ Hydrological records	☐ Direct observation of inundation
☐ Evidence of aquatic fauna	☐ Free water in a soil test hole	☐ Drainage patterns
☐ Iron deposits	☐ Saturated soil	☐ Drift lines
☐ Algal mats or crusts	☐ Water marks	☐ Scoured areas
☐ Oxidized rhizospheres/pore linings	☐ Moss trim lines	☐ Sediment deposits
☐ Thin muck surfaces	☐ Presence of reduced iron	☐ Surface soil cracks
☐ Plants with air-filled tissue(aerenchyma)	☐ Woody plants w/ adventitious roots	☐ Sparsely vegetated concave surface
☐ Plants with polymorphic leaves	☐ Trees with shallow root systems	☐ Microtopographic relief
☐ Plants with floating leaves	☐ Woody plants with enlarged lenticels	☐ Geographic position (depression, toe of slope, fringing lowland)
☐ Hydrogen sulfide odor		

Remarks (describe recorded data from stream gauge, monitoring well, aerial photos, previous inspections, if available):

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Sampling Point: B16

VEGETATION - Use both common and scientific names of plants.

Tree Stratum Plot size: 30' radius

Common Name	**Scientific Name**	***Indicator Status***	**Absolute % Cover**	***Dominant?***	***Wetland Indicator?***
White Oak	Quercus alba	FACU	38	YES	NO
Scarlet Oak	Quercus coccinea	NI	38	YES	NO
Red Maple	Acer rubrum	FAC	10.5	NO	YES

86.5 *= Total Cover*

Shrub/Sapling Stratum Plot size: 15' radius

Common Name	**Scientific Name**	***Indicator Status***	**Absolute % Cover**	***Dominant?***	***Wetland Indicator?***
Red Chokeberry	Aronia arbutifolia	FACW	10.5	NO	YES
Sweetgale	Myrica gale	OBL	38	YES	YES
Highbush Blueberry	Vaccinium corymbosum	FACW	20.5	YES	YES
Inkberry	Ilex glabra	FACW	20.5	YES	YES

89.5 *= Total Cover*

Herb Stratum Plot size: 5' radius

Common Name	**Scientific Name**	***Indicator Status***	**Absolute % Cover**	***Dominant?***	***Wetland Indicator?***
Eastern Teaberry	Gaultheria procumbens	FACU	38	YES	NO
Maystar	Trientalis borealis	FAC	3	NO	YES

41 *= Total Cover*

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Italics denote auto caluclated field.

BVW Determination Form

Sampling Point: B16

Woody Vine Stratum Plot size: 30' radius

Common Name	**Scientific Name**	***Indicator Status***	**Absolute % Cover**	***Dominant?***	***Wetland Indicator?***
			0	*= Total Cover*	
Rapid Test : Do all dominant species have an indicator status of OBL or FACW?			**NO**		
Dominance Test: Number of dominant species	Number of dominant species that are wetland indicator plants	*Do wetland indicator plants make up ≥ 50% of dominant species?*			
		YES			
Prevalence Index:	Total % Cover (all strata)		Result		
OBL species	38	1	38		
FACW species	51.5	2	103		
FAC species	13.5	3	40.5		
FACU species	76	4	304		
UPL species	0	5	0		
Column Totals	179		485.5		
Prevalence Index:	3.6		*Is the Prevalence Index ≤ 3.0?*		
			NO		
Wetland vegetation criterion met?	**YES**				

Definitions of Vegetation Strata

Tree - Woody plants 3in. (7.62 cm) or more in diameter at breast height (DBH), regardless of height

Shrub / Sapling - Woody plants less than 3 in. (7.62 cm) DBH and greater than or equal to 3.3 fs (1 m) tall

Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.3 ft. (1 m) tall

Woody vines - All woody vines greater than 3.3 ft. (1 m) in height

Cover Ranges

Range	Midpoint
1-5 %	3.0%
6-15 %	10.5%
15-25 %	20.5%
26-50%	38.0%
51-75 %	63.0%
76-95 %	85.5%
96-100 %	98.0%

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Italics denote auto caluclated field.

BVW Determination Form

Sampling Point: B16

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type1	Location2		
0-3	10YR 2/1	100	-	-	-	-	ls	A
3-10	5Y 6/1	100	-	-	-	-	s	E
10-20	7.5YR 4/6	100	-	-	-	-	ls	Bw

1Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains 2Location: PL=Pore Lining, M=Matrix

Hydric Soil Indicators (Enter **x** for all that apply)

- [ ] Histosol (A1)
- [ ] Histic Epipedon (A2)
- [ ] Black Histic (A3)
- [ ] Hydrogen Sulfide (A4)
- [ ] Stratisfied Layers (A5)
- [ ] Depleted Below Dark Surface (A11)
- [ ] Thick Dark Surface (A12)
- [ ] Sandy Mucky Mineral (S1)
- [ ] Sandy Gleyed Matrix (S4)
- [ ] Sandy Redox (S5)
- [ ] Stripped Matrix (S6)
- [ ] Dark Surface (S7)
- [ ] Polyvalue Below Surface (S8)
- [ ] Thin Dark Surface (S9)
- [ ] Loamy Mucky Mineral (F1)
- [ ] Depleted Matrix (F3)
- [ ] Redox Dark Surface (F7)
- [ ] Depleted Dark Surface (F8)

Indicators for Problematic Hydric Soils

- [ ] 2 cm Muck (A10)
- [ ] 5 cm Mucky Peat or Peat (S3)
- [ ] Dark Surface (S7)
- [ ] Polyvalue Below Surface (S8)
- [ ] Thin Dark Surface (S9)
- [ ] Iron-Manganese Masses (F12)
- [ ] Mesic Spodic (A17)
- [ ] Red Parent Material (F21)
- [ ] Very Shallow Dark Surface (TF12)
- [ ] Other (Include Explanation in Remarks)

Restrictive Layer if observed) Type: Depth (inches):

Remarks:

Hydric Soils criterion met? **NO**

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Italics denote auto caluclated field.

Bordering Vegetated Wetland Determination Form

Project Site: 206 Route 28 City/Town: Harwich Sampling Date: 5/20/2025

Applicant/Owner: 0 Sampling Point or Zone: B16

Invesigators: Brandon Faneuf Lat/Long: 41.669093,-70.103950

Soil Map Unit Name 66A- Ipswich-Pawcqtuk-Matunuck complex 0-2% slopes NWI/DEP Classification: SM

Are climatic/hydrologic conditions on the site typical for this time of year? NO (If no, explain in Remarks)

Are vegetation [ ] Soil [ ] or Hydrology [ ] significantly disturbed? (If yes, explain in Remarks)

Are vegetation [ ] Soil [ ] or Hydrology [ ] naturally problematic? (If yes, explain in Remarks)

SUMMARY OF FINDINGS - Attach site map and photograph log showing sampling locations, transects, etc.

Wetland vegetation criterion met? **YES** ***Is the Sampled Area within a wetland?*** **YES**

Hydric Soils criterion met? **NO**

Wetlands hydrology present? **""**

Remarks, Photo Details, Flagging, etc.:

Massachusetts Cape Cod Region is currently experiencing a Level 2- Significant Drought. Effective May 1, 2025.

HYDROLOGY

Field Observation:

Surface Water Present?	NO	Depth (inches):	
Water Table Present?	YES	Depth (inches):	0
Saturation Present (including capillary fringe)?	YES	Depth (inches):	0

Wetland Hydrology Indicators (Enter x for all that apply)

Reliable Indicators of Wetlands Hydrology		Indicators that can be Reliable with Proper Interpretation		Indicators of the Influence of Water	
[ ]	Water-stained Leaves	[ ]	Hydrological records	[ ]	Direct observation of inundation
[ ]	Evidence of aquatic fauna	[X]	Free water in a soil test hole	[ ]	Drainage patterns
[ ]	Iron deposits	[X]	Saturated soil	[ ]	Drift lines
[ ]	Algal mats or crusts	[ ]	Water marks	[ ]	Scoured areas
[ ]	Oxidized rhizospheres/pore linings	[ ]	Moss trim lines	[ ]	Sediment deposits
[ ]	Thin muck surfaces	[ ]	Presence of reduced iron	[ ]	Surface soil cracks
[ ]	Plants with air-filled tissue(aerenchyma)	[ ]	Woody plants w/ adventitious roots	[ ]	Sparsely vegetated concave surface
[ ]	Plants with polymorphic leaves	[ ]	Trees with shallow root systems	[ ]	Microtopographic relief
[ ]	Plants with floating leaves	[ ]	Woody plants with enlarged lenticels	[ ]	Geographic position (depression, toe of slope, fringing lowland)
[ ]	Hydrogen sulfide odor				

Remarks (describe recorded data from stream gauge, monitoring well, aerial photos, previous inspections, if available):

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Sampling Point: B16

VEGETATION - Use both common and scientific names of plants.

Tree Stratum Plot size: 30' radius

Common Name	**Scientific Name**	***Indicator Status***	**Absolute % Cover**	***Dominant?***	***Wetland Indicator?***
Red Maple	Acer rubrum	FAC	10.5	NO	YES
Pitch Pine	Pinus rigida	FACU	3	NO	NO

13.5 *= Total Cover*

Shrub/Sapling Stratum Plot size: 15' radius

Common Name	**Scientific Name**	***Indicator Status***	**Absolute % Cover**	***Dominant?***	***Wetland Indicator?***
Highbush Blueberry	Vaccinium corymbosum	FACW	20.5	YES	YES
Sweetgale	Myrica gale	OBL	20.5	YES	YES
Jesuit's-Bark	Iva frutescens	FACW	10.5	NO	YES

51.5 *= Total Cover*

Herb Stratum Plot size: 5' radius

Common Name	**Scientific Name**	***Indicator Status***	**Absolute % Cover**	***Dominant?***	***Wetland Indicator?***
Bluejoint	Calamagrostis canadensis	OBL	10.5	NO	YES
Salt-Meadow Cord Grass	Spartina patens	FACW	63	YES	YES
Eastern Poison Ivy	Toxicodendron radicans	FAC	10.5	NO	YES

84 *= Total Cover*

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Italics denote auto caluclated field.

BVW Determination Form

Sampling Point: B16

Woody Vine Stratum Plot size: 30' radius

Common Name	**Scientific Name**	***Indicator Status***	**Absolute % Cover**	***Dominant?***	***Wetland Indicator?***
			0	*= Total Cover*	
Rapid Test : Do all dominant species have an indicator status of OBL or FACW?			**YES**		
Dominance Test: Number of dominant species	Number of dominant species that are wetland indicator plants	*Do wetland indicator plants make up ≥ 50% of dominant species?*			
		YES			
Prevalence Index:	Total % Cover (all strata)		Result		
OBL species	31	1	31		
FACW species	94	2	188		
FAC species	21	3	63		
FACU species	3	4	12		
UPL species	0	5	0		
Column Totals	149		294		
Prevalence Index:	3.0		*Is the Prevalence Index ≤ 3.0?*		
			YES		
Wetland vegetation criterion met?	**YES**				

Definitions of Vegetation Strata

Tree - Woody plants 3in. (7.62 cm) or more in diameter at breast height (DBH), regardless of height

Shrub / Sapling - Woody plants less than 3 in. (7.62 cm) DBH and greater than or equal to 3.3 fs (1 m) tall

Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.3 ft. (1 m) tall

Woody vines - All woody vines greater than 3.3 ft. (1 m) in height

Cover Ranges

Range	Midpoint
1-5 %	3.0%
6-15 %	10.5%
15-25 %	20.5%
26-50%	38.0%
51-75 %	63.0%
76-95 %	85.5%
96-100 %	98.0%

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Italics denote auto caluclated field.

BVW Determination Form

Sampling Point: B16

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type1	Location2		
0-3	10YR 2/1	100	-	-	-	-	fsl	A
3-16	7.5YR 4/6	100	-	-	-	-	s	Bw1
16-20	10YR 5/6	100	-	-	-	-	s	Bw2

1Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains 2Location: PL=Pore Lining, M=Matrix

Hydric Soil Indicators (Enter **x** for all that apply)

- [ ] Histosol (A1)
- [ ] Histic Epipedon (A2)
- [ ] Black Histic (A3)
- [ ] Hydrogen Sulfide (A4)
- [ ] Stratisfied Layers (A5)
- [ ] Depleted Below Dark Surface (A11)
- [ ] Thick Dark Surface (A12)
- [ ] Sandy Mucky Mineral (S1)
- [ ] Sandy Gleyed Matrix (S4)
- [ ] Sandy Redox (S5)
- [ ] Stripped Matrix (S6)
- [ ] Dark Surface (S7)
- [ ] Polyvalue Below Surface (S8)
- [ ] Thin Dark Surface (S9)
- [ ] Loamy Mucky Mineral (F1)
- [ ] Depleted Matrix (F3)
- [ ] Redox Dark Surface (F7)
- [ ] Depleted Dark Surface (F8)

Indicators for Problematic Hydric Soils

- [ ] 2 cm Muck (A10)
- [ ] 5 cm Mucky Peat or Peat (S3)
- [ ] Dark Surface (S7)
- [ ] Polyvalue Below Surface (S8)
- [ ] Thin Dark Surface (S9)
- [ ] Iron-Manganese Masses (F12)
- [ ] Mesic Spodic (A17)
- [ ] Red Parent Material (F21)
- [ ] Very Shallow Dark Surface (TF12)
- [ ] Other (Include Explanation in Remarks)

Restrictive Layer if observed) Type: Depth (inches):

Remarks:
Drainage Canal with standing water within 20 ft of flags.

Hydric Soils criterion met? **NO**

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Italics denote auto caluclated field.


ECOSYSTEM
SOLUTIONS INC

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ADAM W. LATHAM
Landscape Architect

136 Metropolitan Park Drive
Barrington, RI 02806
(508) 252-1033

September 8, 2025

Mr. Scott N. Adams, P.E.
Advanced Engineering Group, P.C.
179 Swansea Mall Drive, Suite 1
Swansea, Massachusetts 02777

Re: Site Visit/Existing Plant Material – 206 Route 28, West Harwich, MA

Dear Scott,

On September 6, 2025, I visited the subject site to observe and take notes on the existing plant material in the vicinity of the proposed compound/fill area.

Notes:

1. The plant material at this location consists of native plant species with some non-native invasive species.

2. Existing native vegetation adjacent to the existing fill pile/proposed compound work area includes but is not limited to the following trees: Black Gum/Tupelo, Red Oak, White Oak, Red Maple, Pitch Pine and Sassafras. Shrubs and vines include northern bayberry, inkberry, highbush blueberry, Virginia creeper, fox grape, arrowwood viburnum, swamp azalea, pussy willow, and serviceberry.

3. Invasive plant species observed along the edge of the fill pile include Japanese knotweed, sycamore maple, multiflora rose, porcelain-berry, and Asiatic bittersweet. Note that Japanese knotweed is also growing throughout the fill pile.

4. There were no significant trees of merit identified for protection adjacent to the fill pile/compound area.

Please contact me if you have questions regarding these observations.

Sincerely,

Adam W. Latham, RLA
Landscape Architect
MA #1085, RI#307


project area



Japanese knotweed



porcelain-berry vine

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KOHLER®

Model: KG50

190- 600 V **Gas**

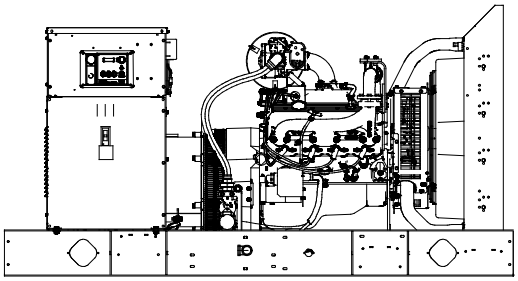
ISO 9001 KOHLER® NATIONALLY REGISTERED

EPA-Certified for 60 Hz Stationary Emergency Applications

EPA certification not applicable at 50 Hz

Ratings Range

		60 Hz	50 Hz
Standby:	**kW**	53	44
	kVA	53- 66	44- 55



Standard Features

- Kohler Co. provides one-source responsibility for the generating system and accessories.
- The generator set and its components are prototype-tested, factory-built, and production-tested.
- The 60 Hz generator set offers a cULus listing.
- The generator set accepts rated load in one step.
- The 60 Hz generator set meets NFPA 110, Level 1, when equipped with the necessary accessories and installed per NFPA standards.
- A one-year limited warranty covers all generator set systems and components. Two- and five-year extended limited warranties are also available.
- Alternator features:
  - The unique Fast-Response® X excitation system delivers excellent voltage response and short-circuit capability using a rare-earth, permanent magnet (PM)-excited alternator.
  - The brushless, rotating-field alternator has broadrange reconnectability.
- Automatic dual- fuel NG/LP system with reset box is available.

Generator Set Ratings

				Natural Gas 130°C Rise Standby Rating		LP Gas 130°C Rise Standby Rating	
Alternator	**Voltage**	**Ph**	**Hz**	**kW/kVA**	**Amps**	**kW/kVA**	**Amps**
4P8X	120/208	3	60	53/66	184	53/66	184
	127/220	3	60	53/66	174	53/66	174
	120/240	3	60	53/66	159	53/66	159
	120/240	1	60	53/53	221	53/53	221
	139/240	3	60	53/66	159	53/66	159
	220/380	3	60	53/66	101	53/66	101
	277/480	3	60	53/66	80	53/66	80
	347/600	3	60	53/66	64	53/66	64
	110/190	3	50	44/55	168	44/55	168
	115/200	3	50	44/55	159	44/55	159
	120/208	3	50	44/55	153	44/55	153
	110/220	3	50	44/55	145	44/55	145
	110/220	1	50	44/44	200	44/44	200
	220/380	3	50	44/55	84	44/55	84
	230/400	3	50	44/55	80	44/55	80
	240/415	3	50	44/55	77	44/55	77
4P10X	120/208	3	60	53/66	184	53/66	184
	127/220	3	60	53/66	174	53/66	174
	120/240	3	60	53/66	159	53/66	159
	120/240	1	60	53/53	221	53/53	221
	139/240	3	60	53/66	159	53/66	159
	220/380	3	60	53/66	101	53/66	101
	277/480	3	60	53/66	80	53/66	80
	347/600	3	60	53/66	64	53/66	64
	110/190	3	50	44/55	168	44/55	168
	115/200	3	50	44/55	159	44/55	159
	120/208	3	50	44/55	153	44/55	153
	110/220	3	50	44/55	145	44/55	145
	110/220	1	50	44/44	200	44/44	200
	220/380	3	50	44/55	84	44/55	84
	230/400	3	50	44/55	80	44/55	80
	240/415	3	50	44/55	77	44/55	77
4Q8X	120/240	1	60	53/53	221	53/53	221
	110/220	1	50	44/44	200	44/44	200
4Q10X	120/240	1	60	53/53	221	53/53	221
	110/220	1	50	44/44	200	44/44	200

RATINGS: All three-phase units are rated at 0.8 power factor. All single-phase units are rated at 1.0 power factor. *Standby Ratings:* The standby rating is applicable to varying loads for the duration of a power outage. There is no overload capability for this rating. Ratings are in accordance with ISO-8528-1 and ISO-3046-1. For limited running time and continuous ratings, consult the factory. Obtain technical information bulletin (TIB-101) for ratings guidelines, complete ratings definitions, and site condition derates. The generator set manufacturer reserves the right to change the design or specifications without notice and without any obligation or liability whatsoever. For dual fuel engines, use the natural gas ratings for both the primary and secondary fuels.

Alternator Specifications

Specifications	Alternator
Manufacturer	Kohler
Type	4-Pole, Rotating-Field
Exciter type	Brushless, Rare- Earth Permanent Magnet
Leads: quantity, type	
4P8X, 4P10X	12, Reconnectable
4Q8X, 4Q10X	4, 110- 120/220- 240 V
Voltage regulator	Solid State, Volts/Hz
Insulation:	NEMA MG1
Material	Class H
Temperature rise	130°C, Standby
Bearing: quantity, type	1, Sealed
Coupling	Flexible Disc
Amortisseur windings	Full
Voltage regulation, no-load to full-load	Controller Dependent
One-step load acceptance	100% of Rating
Unbalanced load capability	100% of Rated Standby Current
Peak motor starting kVA:	(35% dip for voltages below)
480 V, 400 V 4P8X (12 lead)	255 (60 Hz), 215 (50 Hz)
480 V, 400 V 4P10X (12 lead)	275 (60 Hz), 220 (50 Hz)
240 V, 220 V 4Q8X (4 lead)	120 (60 Hz), 96 (50 Hz)
240 V, 220 V 4Q10X (4 lead)	144 (60 Hz), 121 (50 Hz)

- The unique Fast-Response® X excitation system delivers excellent voltage response and short-circuit capability using a rare-earth, permanent magnet (PM)-excited alternator.
- The brushless, rotating-field alternator has broadrange reconnectability.
- NEMA MG1, IEEE, and ANSI standards compliance for temperature rise and motor starting.
- Sustained short-circuit current of up to 300% of the rated current for up to 10 seconds.
- Sustained short-circuit current enabling downstream circuit breakers to trip without collapsing the alternator field.
- Self-ventilated and dripproof construction.

Application Data

Engine

Engine Specifications	60 Hz	50 Hz
Manufacturer	Kohler	
Engine: model, type	KG6208 6.2 L Natural Aspiration	
Cylinder arrangement	V-8	
Displacement, L (cu. in.)	6.2 (378)	
Bore and stroke, mm (in.)	101.6 x 95.25 (4.00 x 3.75)	
Compression ratio	10.5:1	
Rated rpm	1800	1500
Max. power at rated rpm, kW (HP)	77.0 (103)	64.3 (86)
Cylinder head material	Cast Aluminum	
Piston type and material	High Silicon Aluminum	
Crankshaft material	Cast Iron	
Valve (exhaust) material	Forged Steel	
Governor type	Electronic	
Frequency regulation, no-load to full-load	Isochronous	
Frequency regulation, steady state	±1.0%	
Frequency	Fixed	
Air cleaner type, all models	Dry	

Exhaust

Exhaust System	60 Hz	50 Hz
Exhaust manifold type	Dry	
Exhaust flow at rated kW, m^3/min. (cfm)	11.7 (414)	9.8 (345)
Exhaust temperature at rated kW, dry exhaust, °C (°F)	677 (1250)	
Maximum allowable back pressure, kPa (in. Hg)	10.2 (3.0)	
Exhaust outlet size at engine hookup, mm (in.)	76 (3.0) OD	

Engine Electrical

Engine Electrical System	60 Hz	50 Hz
Ignition system	Electronic, Distributor	
Ignition system	Electronic	
Battery charging alternator:		
Ground (negative/positive)	Negative	
Volts (DC)	12	
Ampere rating	130	
Starter motor rated voltage (DC)	12	
Battery, recommended cold cranking amps (CCA):		
Qty., rating for - 18°C (0°F)	One, 630	
Battery voltage (DC)	12	

Fuel

Fuel System	60 Hz	50 Hz
Fuel type	Natural Gas, LP Gas, or Dual Fuel	
Fuel supply line inlet	1 NPTF	
Natural gas fuel supply pressure, kPa (in. H_2O)	1.24- 2.74 (5-11)	
LPG vapor withdrawal fuel supply pressure, kPa (in. H_2O)	1.24- 2.74 (5-11)	
Dual fuel engine, LPG vapor withdrawal fuel supply pressure, kPa (in. H_2O)	1.24 (5)	

Fuel Composition Limits *	Nat. Gas	LP Gas
Methane, % by volume	90 min.	—
Ethane, % by volume	4.0 max.	—
Propane, % by volume	1.0 max.	85 min.
Propene, % by volume	0.1 max.	5.0 max.
C_4 and higher, % by volume	0.3 max.	2.5 max.
Sulfur, ppm mass	25 max.	
Lower heating value, MJ/m^3 (Btu/ft^3), min.	33.2 (890)	84.2 (2260)

* Fuels with other compositions may be acceptable. If your fuel is outside the listed specifications, contact your local distributor for further analysis and advice.

Lubrication

Lubricating System	60 Hz	50 Hz
Type	Full Pressure	
Oil pan capacity, L (qt.) §	5.7 (6.0)	
Oil pan capacity with filter, L (qt.) §	7.1 (7.5)	
Oil filter: quantity, type §	1, Cartridge	

§ Kohler recommends the use of Kohler Genuine oil and filters.

Cooling

Radiator System	60 Hz	50 Hz
Ambient temperature, °C (°F) *	50 (122)	
Engine jacket water capacity, L (gal.)	7.3 (1.93)	
Radiator system capacity, including engine, L (gal.)	20.8 (5.5)	
Engine jacket water flow, Lpm (gpm)	129 (34.1)	108 (28.5)
Heat rejected to cooling water at rated kW, dry exhaust, kW (Btu/min.)	61.7 (3510)	53.3 (3030)
Water pump type	Centrifugal	
Fan diameter, including blades, mm (in.)	533 (21)	
Fan, kWm (HP)	2.2 (2.9)	1.3 (1.7)
Max. restriction of cooling air, intake and discharge side of radiator, kPa (in. H_2O)	0.125 (0.5)	

* Enclosure with enclosed silencer reduces ambient temperature capability by 5°C (9°F).

Operation Requirements

Air Requirements	60 Hz	50 Hz
Radiator-cooled cooling air, m^3/min. (scfm) †	136 (4800)	113 (4000)
Combustion air, m^3/min. (cfm)	4.6 (163)	3.9 (136)
Heat rejected to ambient air:		
Engine, kW (Btu/min.)	30.9 (1760)	26.5 (1510)
Alternator, kW (Btu/min.)	7.7 (440)	6.9 (390)

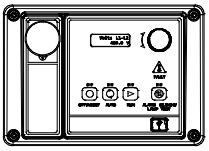
† Air density = 1.20 kg/m^3 (0.075 lbm/ft^3)

Fuel Consumption ‡	60 Hz	50 Hz
Natural Gas, m^3/hr. (cfh) at % load	**Standby Ratings**	
100%	24.9 (879)	20.4 (721)
75%	19.7 (696)	14.8 (524)
50%	13.9 (490)	9.8 (345)
25%	7.9 (277)	5.8 (204)
LP Gas, m^3/hr. (cfh) at % load	**Standby Ratings**	
100%	9.5 (337)	8.5 (300)
75%	7.6 (267)	5.7 (199)
50%	5.1 (178)	4.2 (146)
25%	3.2 (113)	2.7 (96)

‡ Nominal fuel rating: Natural gas, 37 MJ/m^3 (1000 Btu/$ft.^3$)
LP vapor, 93 MJ/m^3 (2500 Btu/$ft.^3$)

LP vapor conversion factors:
8.58 $ft.^3$ = 1 lb.
0.535 m^3 = 1 kg.
36.39 $ft.^3$ = 1 gal.

Controllers



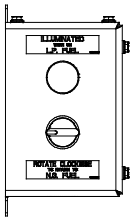
APM402 Controller
Provides advanced control, system monitoring, and system diagnostics for optimum performance and compatibility.

- Digital display and menu control provide easy local data access
- Measurements are selectable in metric or English units
- Remote communication thru a PC via network or serial configuration
- Controller supports Modbus® protocol
- Integrated hybrid voltage regulator with ±0.5% regulation
- Built-in alternator thermal overload protection
- NFPA 110 Level 1 capability

Refer to G6-161 for additional controller features and accessories.

Dual Fuel Model Features

- Natural gas is the primary fuel. Automatically transfers back to primary fuel when LPG fuel becomes low or generator stops and restarts.
- The patented reset box on the generator provides the ability to manually transfer back to natural gas.



Dual Fuel Reset Box

KOHLER

KOHLER CO., Kohler, Wisconsin 53044 USA
Phone 920-457-4441, Fax 920-459-1646
For the nearest sales and service outlet in the US and Canada, phone 1-800-544-2444
KOHLERPower.com

Standard Features

- Alternator Protection
- Battery Rack and Cables
- Electronic, Isochronous Governor
- Gas Fuel System (includes fuel mixer, electronic secondary gas regulator, gas solenoid valve, and flexible fuel line between the engine and the skid-mounted fuel system components)
- Integral Vibration Isolation
- Local Emergency Stop Switch
- Oil Drain Extension
- Operation and Installation Literature

Available Options

Approvals and Listings

- ❑ cULus (UL 2200 and CSA)
- ❑ Hurricane Rated Enclosure
- ❑ IBC Seismic Certification

Enclosed Unit

- ❑ Sound Enclosure (with enclosed critical silencer)
- ❑ Weather Enclosure (with enclosed critical silencer)

Open Unit

- ❑ Exhaust Silencer, Critical (kit: PA-352663)
- ❑ Flexible Exhaust Connector, Stainless Steel

Fuel System

- ❑ Dual Fuel NG/LPG (automatic changeover)
- ❑ Flexible Fuel Line
  (required when the generator set skid is spring mounted)
- ❑ Fuel Filter Kit

Controller

- ❑ Common Fault Relay
- ❑ Two Input/Five Output Module
- ❑ Remote Annunciator Panel
- ❑ Remote Emergency Stop
- ❑ Run Relay
- ❑ Manual Speed Adjust

Cooling System

- ❑ Block Heater, 1500 W, 110- 120 V
  Required for ambient temperatures below 10°C (50°F)
- ❑ Radiator Duct Flange

Electrical System

- ❑ Alternator Strip Heater
- ❑ Battery
- ❑ Battery Charger
- ❑ Battery Charger Temperature Compensation
- ❑ Battery Heater
- ❑ Line Circuit Breaker (NEMA1 enclosure)
- ❑ Line Circuit Breaker with Shunt Trip (NEMA1 enclosure)

Miscellaneous

- ❑ Air Cleaner Restrictor Indicator
- ❑ Certified Test Report
- ❑ Engine Fluids (oil and coolant) Added
- ❑ Rated Power Factor Testing
- ❑ Rodent Guards
- ❑ Open Unit Accessory Kit
  (stone guards, radiator duct flange, flexible exhaust)

Literature

- ❑ General Maintenance
- ❑ NFPA 110
- ❑ Overhaul
- ❑ Production

Warranty

- ❑ 2-Year Basic Limited Warranty
- ❑ 5-Year Basic Limited Warranty
- ❑ 5-Year Comprehensive Limited Warranty

Other Options

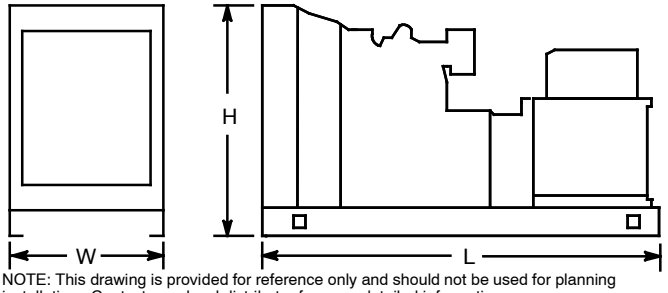
- ❑ _____
- ❑ _____
- ❑ _____
- ❑ _____
- ❑ _____
- ❑ _____

Dimensions and Weights

Overall Size, L x W x H, mm (in.):

Wide Skid	2200 x 1040 x 1170 (86.6 x 40.9 x 46.1)
Narrow Skid	2200 x 864 x 1170 (86.6 x 34.0 x 46.1)

Weight (radiator model), wet, kg (lb.): 862 (1900)



NOTE: This drawing is provided for reference only and should not be used for planning installation. Contact your local distributor for more detailed information.

DISTRIBUTED BY:

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TECHNICAL INFORMATION BULLETIN

Generator Set Sound Data Sheet

			Sound Pressure Data in dB(A)			
Generator Set Model	**Hz**	**Load**	**Raw Exhaust**	**Open Unit, Isolated Exhaust**	**Weather Enclosure**	**Sound Enclosure**
KG50	60	100% Load	110.3	80.9	79.0	67.5
		No Load	101.0	80.4	78.5	66.1
Note: Sound pressure data is the logarithmic average of eight perimeter measurement points at a distance of 7 m (23 ft.), except Raw Exhaust data which is a single measurement point at 1 m (3.3 ft.) from the mouth of a straight pipe exhaust.						

KG50	**60 Hz**

				Sound Pressure Levels dB(A)								
				Octave Band Center Frequency (Hz)								Overall Level
Load	Distance, m (ft.)	Enclosure	Measurement Clock Position	63	125	250	500	1000	2000	4000	8000	
100% Load	7 (23)	Sound	3:00	40.8	53.4	56.8	61.1	62.2	59.4	54.5	49.0	66.9
			1:30	41.5	47.1	55.7	64.1	62.2	60.3	53.8	48.7	67.8
			12:00-Engine	45.8	52.1	56.1	64.9	65.3	61.8	56.1	50.0	69.6
			10:30	43.4	53.8	57.3	61.8	64.7	59.4	54.4	47.8	68.1
			9:00	41.1	54.6	56.3	60.8	60.4	56.5	50.3	44.4	65.6
			7:30	41.3	53.1	57.8	62.5	62.6	57.5	52.8	44.3	67.2
			6:00-Alternator	42.9	55.3	57.0	62.3	61.8	57.3	52.2	43.6	66.8
			4:30	41.2	51.1	56.4	62.6	62.6	57.7	54.3	47.7	67.1
			8-pos. log avg.	42.6	53.1	56.7	62.7	63.0	59.1	53.8	47.5	67.5

				Sound Pressure Levels dB(A)								
Load	Distance, m (ft.)	Enclosure	Measurement Clock Position	3:00	1:30	12:00 Eng.	10:30	9:00	7:30	6:00 Alt.	4:30	8-pos. log avg.
100% Load	7 (23)	Weather	Overall Levels	78.6	78.2	80.5	81.7	78.9	78.3	73.5	78.2	79.0

				Sound Pressure Levels dB(A)								
				Octave Band Center Frequency (Hz)								Overall Level
Load	Distance, m (ft.)		Measurement Clock Position	63	125	250	500	1000	2000	4000	8000	
100% Load	7 (23)	Open Unit, Isolated Exhaust	3:00	41.3	55.1	68.6	73.2	75.8	75.3	70.5	61.3	80.5
			1:30	40.3	54.6	67.2	70.2	76.0	74.5	71.6	65.1	80.1
			12:00-Engine	46.9	60.6	69.6	75.6	76.6	77.2	73.9	65.8	82.4
			10:30	43.9	59.5	68.9	74.2	77.5	79.9	75.3	66.7	83.6
			9:00	42.0	54.2	69.8	73.8	74.5	76.3	71.5	62.7	80.8
			7:30	44.0	56.5	66.8	72.0	74.7	76.1	70.6	60.7	80.2
			6:00-Alternator	44.0	57.0	67.1	71.0	69.8	67.3	61.2	51.8	75.4
			4:30	43.9	57.4	66.3	72.7	74.8	75.8	70.0	60.0	80.1
			8-pos. log avg.	43.7	57.4	68.2	73.1	75.4	76.3	71.8	63.3	80.9

			Sound Pressure Levels dB(A)								
			Octave Band Center Frequency (Hz)								Overall Level
Load	Distance, m (ft.)	Exhaust	63	125	250	500	1000	2000	4000	8000	
100% Load	1 (3.3)	Raw Exhaust (No Silencer)	74.4	90.4	101.4	103.1	103.7	105.2	101.5	82.3	110.3

KG50	60 Hz

Load	Distance, m (ft.)	Enclosure	Measurement Clock Position	Sound Pressure Levels dB(A)								
				Octave Band Center Frequency (Hz)								Overall Level
				63	125	250	500	1000	2000	4000	8000	
No Load	7 (23)	Sound	3:00	40.6	51.1	54.5	60.1	59.2	54.7	46.2	39.0	64.2
			1:30	37.6	45.3	54.5	64.7	60.2	54.5	48.9	36.0	66.7
			12:00-Engine	43.1	51.3	55.2	65.2	63.3	60.1	52.8	43.9	68.6
			10:30	42.8	49.3	55.4	62.0	63.4	56.8	50.4	41.4	66.9
			9:00	41.6	50.0	53.3	59.5	58.6	54.5	46.7	39.0	63.6
			7:30	40.6	49.3	56.6	61.7	60.6	55.1	49.5	37.6	65.6
			6:00-Alternator	42.5	50.8	54.9	61.7	60.0	55.3	49.8	36.9	65.3
			4:30	40.9	48.5	55.7	62.4	60.3	55.2	48.1	37.6	65.6
			8-pos. log avg.	41.5	49.8	55.1	62.6	61.0	56.2	49.5	39.7	66.1

Load	Distance, m (ft.)	Enclosure	Measurement Clock Position	Sound Pressure Levels dB(A)								
				3:00	1:30	12:00 Eng.	10:30	9:00	7:30	6:00 Alt.	4:30	8-pos. log avg.
No Load	7 (23)	Weather	Overall Levels	78.2	77.8	79.3	81.3	78.2	78.1	72.8	78.1	78.5

Load	Distance, m (ft.)		Measurement Clock Position	Sound Pressure Levels dB(A)								
				Octave Band Center Frequency (Hz)								Overall Level
				63	125	250	500	1000	2000	4000	8000	
No Load	7 (23)	Open Unit, Isolated Exhaust	3:00	39.9	52.9	66.8	72.5	75.7	75.1	69.8	60.8	80.1
			1:30	37.3	51.3	65.6	69.8	75.7	74.2	71.4	64.7	79.7
			12:00-Engine	42.4	53.4	68.7	75.7	75.5	75.4	71.3	63.2	81.2
			10:30	41.5	53.2	66.1	73.9	77.3	79.6	74.7	65.8	83.2
			9:00	40.3	51.5	66.9	73.1	73.8	76.0	71.0	62.0	80.1
			7:30	39.8	51.6	65.3	72.0	74.6	76.0	70.0	60.1	80.0
			6:00-Alternator	40.4	54.3	65.5	70.5	69.0	67.4	60.2	49.6	74.7
			4:40	40.9	52.8	66.0	72.4	74.7	75.9	69.9	60.0	80.0
			8-pos. log avg.	40.5	52.7	66.5	72.8	75.0	75.9	71.0	62.4	80.4

Load	Distance, m (ft.)	Exhaust	Sound Pressure Levels dB(A)								
			Octave Band Center Frequency (Hz)								Overall Level
			63	125	250	500	1000	2000	4000	8000	
No Load	1 (3.3)	Raw Exhaust (No Silencer)	63.8	74.8	92.5	95.5	94.3	95.4	90.0	81.0	101.0

15

FedEx Tracking # 877867625016

September 28, 2026

AT&T Mobility
Attn: Rachelle M. Lewis
Associate Director, Network Design Engineering
84 Deerfield Lane, Floor 2
Meriden, CT 06450

Dear Rachelle,

Vertex Towers, LLC appreciates the opportunity to work with you on the development of wireless sites throughout New England. In an effort to keep you apprised of our development efforts in this region, we wanted to inform you of a proposed new tower build in the town of Harwich, Massachusetts on Cape Cod. The proposed tower will be 100-foot monopole facility located at 206 Route 28, West Harwich, MA 02671.

If a facility at this location is of interest to you as a candidate within your current or future network design, or, if you are interested in learning more about this facility, please feel free to contact me at the number listed below. We would be more than happy to offer you space on this tower, in an effort to assist in the development of your network.

Sincerely,

Vertex Towers, LLC

_____

By: Stephen Kelleher

Mobile : 617.817.8564
E-mail : stephen@vertextowers.com
www.vertextowers.com

FedEx Tracking # 877867772356

September 28, 2026

T-Mobile Northeast LLC
Attn: Steven Andrade
Senior Director of Network Operations and Engineering
15 Commerce Way, Suite B
Norton, MA 02766

Dear Steven,

Vertex Towers, LLC appreciates the opportunity to work with you on the development of wireless sites throughout New England. In an effort to keep you apprised of our development efforts in this region, we wanted to inform you of a proposed new tower build in the town of Harwich, Massachusetts on Cape Cod. The proposed tower will be 100-foot monopole facility located at 206 Route 28, West Harwich, MA 02671.

If a facility at this location is of interest to you as a candidate within your current or future network design, or, if you are interested in learning more about this facility, please feel free to contact me at the number listed below. We would be more than happy to offer you space on this tower, in an effort to assist in the development of your network.

Sincerely,

Vertex Towers, LLC

_____

By: Stephen Kelleher

Mobile : 617.817.8564
E-mail : stephen@vertextowers.com
www.vertextowers.com

16

MAP SYMBOL LEGEND

- SUBJECT TOWER SITE LOCATION
- PHOTO LOCATION (VISIBLE)
- PHOTO LOCATION (OBSCURED)
- PHOTO LOCATION (NOT VISIBLE)



APPROX. TRUE NORTH

PREPARED FOR:

Vertex Towers LLC

VERTEX TOWERS LLC
P.O. BOX 680
MEDFIELD, MA 02052

PREPARED BY:

AEG ADVANCED ENGINEERING GROUP

- Civil Engineering
- Site Development
- Surveying
- Telecommunications

179 Swansea Mall Drive
Swansea, MA 02777
Phone: (508) 343-1414
Fax: (401) 633-6354

SITE NUMBER: VT-MA-0503

SITE NAME: HARWICH

ADDRESS: 206 MA-ROUTE 28
HARWICH, MA 02671

KEY MAP OF PHOTOS

PAGE: MAP1

DATE: 10/06/2026

DRAWN BY: MR

REVISION: 0



PREPARED FOR:

Vertex Towers LLC

VERTEX TOWERS LLC
P.O. BOX 680
MEDFIELD, MA 02052

PREPARED BY:

AEG ADVANCED ENGINEERING GROUP

- Civil Engineering
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Phone: (508) 343-1414
Fax: (401) 633-6354

SITE NUMBER: VT-MA-0503

SITE NAME: HARWICH

ADDRESS: 206 MA-ROUTE 28
HARWICH, MA 02671

VIEW #1
EXISTING VIEW FROM THE SOUTH,
ON MA-ROUTE 28

PAGE: V-1E

DATE: 10/06/2026

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REVISION: 0



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Vertex Towers LLC

VERTEX TOWERS LLC
P.O. BOX 680
MEDFIELD, MA 02052

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- Civil Engineering
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SITE NUMBER: VT-MA-0503

SITE NAME: HARWICH

ADDRESS: 206 MA-ROUTE 28
HARWICH, MA 02671

VIEW #1
PROPOSED VIEW FROM THE SOUTH,
ON MA-ROUTE 28

PAGE: V-1P

DATE: 10/06/2026

DRAWN BY: MR

REVISION: 0



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Vertex Towers LLC

VERTEX TOWERS LLC
P.O. BOX 680
MEDFIELD, MA 02052

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Fax: (401) 633-6354

SITE NUMBER: VT-MA-0503

SITE NAME: HARWICH

ADDRESS: 206 MA-ROUTE 28
HARWICH, MA 02671

VIEW #2
EXISTING VIEW FROM THE EAST ON LOTHROP AVENUE

PAGE: V-2E

DATE: 10/06/2026

DRAWN BY: MR

REVISION: 0



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Vertex Towers LLC

VERTEX TOWERS LLC
P.O. BOX 680
MEDFIELD, MA 02052

PREPARED BY:

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Swansea, MA 02777

-Surveying
-Telecommunications
Phone: (508) 343-1414
Fax: (401) 633-6354

SITE NUMBER: VT-MA-0503

SITE NAME: HARWICH

ADDRESS: 206 MA-ROUTE 28
HARWICH, MA 02671

VIEW #2
PROPOSED VIEW FROM THE EAST ON LOTHROP AVENUE

PAGE: V-2P

DATE: 10/06/2026

DRAWN BY: MR

REVISION: 0



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Vertex Towers LLC

VERTEX TOWERS LLC
P.O. BOX 680
MEDFIELD, MA 02052

PREPARED BY:

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Swansea, MA 02777

-Surveying
-Telecommunications
Phone: (508) 343-1414
Fax: (401) 633-6354

SITE NUMBER: VT-MA-0503

SITE NAME: HARWICH

ADDRESS: 206 MA-ROUTE 28
HARWICH, MA 02671

VIEW #3
EXISTING VIEW FROM THE SOUTHWEST,
ON MA-ROUTE 28

PAGE: V-3E

DATE: 10/06/2026

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Vertex Towers LLC

VERTEX TOWERS LLC
P.O. BOX 680
MEDFIELD, MA 02052

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SITE NUMBER: VT-MA-0503

SITE NAME: HARWICH

ADDRESS: 206 MA-ROUTE 28
HARWICH, MA 02671

VIEW #3
PROPOSED VIEW FROM THE SOUTHWEST,
ON MA-ROUTE 28

PAGE: V-3P

DATE: 10/06/2026

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Vertex Towers LLC

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P.O. BOX 680
MEDFIELD, MA 02052

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- Civil Engineering
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Phone: (508) 343-1414
Fax: (401) 633-6354

SITE NUMBER: VT-MA-0503

SITE NAME: HARWICH

ADDRESS: 206 MA-ROUTE 28
HARWICH, MA 02671

VIEW #4

EXISTING VIEW FROM THE SOUTHWEST,
@ BRIDGE ON MAIN STREET /
MA-ROUTE 28

PAGE: V-4E

DATE: 10/06/2026

DRAWN BY: MR

REVISION: 0



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Vertex Towers LLC

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P.O. BOX 680
MEDFIELD, MA 02052

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- Site Development
179 Swansea Mall Drive
Swansea, MA 02777

-Surveying
-Telecommunications
Phone: (508) 343-1414
Fax: (401) 633-6354

SITE NUMBER: VT-MA-0503

SITE NAME: HARWICH

ADDRESS: 206 MA-ROUTE 28
HARWICH, MA 02671

VIEW #4

EXISTING VIEW FROM THE SOUTHWEST,
@ BRIDGE ON MAIN STREET /
MA-ROUTE 28

PAGE: V-4P

DATE: 10/06/2026

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REVISION: 0



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P.O. BOX 680
MEDFIELD, MA 02052

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- Site Development
179 Swansea Mall Drive
Swansea, MA 02777

-Surveying
-Telecommunications
Phone: (508) 343-1414
Fax: (401) 633-6354

SITE NUMBER: VT-MA-0503

SITE NAME: HARWICH

ADDRESS: 206 MA-ROUTE 28
HARWICH, MA 02671

VIEW #5
EXISTING VIEW FROM THE
NORTHWEST, ON N ROAD

PAGE: V-5E

DATE: 10/06/2026

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P.O. BOX 680
MEDFIELD, MA 02052

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- Site Development
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Swansea, MA 02777

-Surveying
-Telecommunications
Phone: (508) 343-1414
Fax: (401) 633-6354

SITE NUMBER: VT-MA-0503

SITE NAME: HARWICH

ADDRESS: 206 MA-ROUTE 28
HARWICH, MA 02671

VIEW #6
EXISTING VIEW FROM THE NORTHEAST,
ON LOTHROP AVENUE

PAGE: V-6E

DATE: 10/06/2026

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REVISION: 0



TEST BALLOON WAS NOT VISIBLE FROM THIS LOCATION

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Vertex Towers LLC

VERTEX TOWERS LLC
P.O. BOX 680
MEDFIELD, MA 02052

PREPARED BY:

AEG ADVANCED ENGINEERING GROUP

- Civil Engineering
- Site Development
179 Swansea Mall Drive
Swansea, MA 02777

-Surveying
-Telecommunications
Phone: (508) 343-1414
Fax: (401) 633-6354

SITE NUMBER: VT-MA-0503

SITE NAME: HARWICH

ADDRESS: 206 MA-ROUTE 28
HARWICH, MA 02671

VIEW #7
EXISTING VIEW FROM THE SOUTH,
ON MA-ROUTE 28

PAGE: V-7E

DATE: 10/06/2026

DRAWN BY: MR

REVISION: 0



TEST BALLOON WAS NOT VISIBLE FROM THIS LOCATION

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Vertex Towers LLC

VERTEX TOWERS LLC
P.O. BOX 680
MEDFIELD, MA 02052

PREPARED BY:

ADVANCED ENGINEERING GROUP

- Civil Engineering
- Site Development
179 Swansea Mall Drive
Swansea, MA 02777

-Surveying
-Telecommunications
Phone: (508) 343-1414
Fax: (401) 633-6354

SITE NUMBER: VT-MA-0503

SITE NAME: HARWICH

ADDRESS: 206 MA-ROUTE 28
HARWICH, MA 02671

VIEW #8
EXISTING VIEW FROM THE WEST,
ON N ROAD

PAGE: V-8E

DATE: 10/06/2026

DRAWN BY: MR

REVISION: 0

17

CO-APPLICANTS:

VERTEX TOWERS LLC
P.O. BOX 680
MEDFIELD, MA 02052

VERIZON WIRELESS
51 ALDER STREET
MEDWAY, MA 02053

PROJECT:

VT-MA-0503

HARWICH

206 ROUTE 28
WEST HARWICH, MA 02671
BARNSTABLE COUNTY

GENERAL NOTES

1. THE CONTRACTOR SHALL GIVE ALL NOTICES AND COMPLY WITH ALL LAWS, ORDINANCES, RULES, REGULATIONS AND LAWFUL ORDERS OF ANY PUBLIC AUTHORITY, MUNICIPAL AND UTILITY COMPANY SPECIFICATIONS, AND LOCAL AND STATE JURISDICTIONAL CODES BEARING ON THE PERFORMANCE OF THE WORK. THE WORK PERFORMED ON THE PROJECT AND THE MATERIALS INSTALLED SHALL BE IN STRICT ACCORDANCE WITH ALL APPLICABLE CODES, REGULATIONS, AND ORDINANCES.

2. THE ARCHITECT/ENGINEER HAVE MADE EVERY EFFORT TO SET FORTH IN THE CONSTRUCTION AND CONTRACT DOCUMENTS THE COMPLETE SCOPE OF WORK. THE CONTRACTOR BIDDING THE JOB IS NEVERTHELESS CAUTIONED THAT MINOR OMISSIONS OR ERRORS IN THE DRAWINGS AND OR SPECIFICATIONS SHALL NOT EXCUSE SAID CONTRACTOR FROM COMPLETING THE PROJECT AND IMPROVEMENTS IN ACCORDANCE WITH THE INTENT OF THESE DOCUMENTS.

3. THE CONTRACTOR OR BIDDER SHALL BEAR THE RESPONSIBILITY OF NOTIFYING (IN WRITING) THE LESEE/LICENSEE REPRESENTATIVE OF ANY CONFLICTS, ERRORS, OR OMISSIONS PRIOR TO THE SUBMISSION OF CONTRACTOR'S PROPOSAL OR PERFORMANCE OF WORK. IN THE EVENT OF DISCREPANCIES THE CONTRACTOR SHALL PRICE THE MORE COSTLY OR EXTENSIVE WORK, UNLESS DIRECTED IN WRITING OTHERWISE.

4. THE SCOPE OF WORK SHALL INCLUDE FURNISHING ALL MATERIALS, EQUIPMENT, LABOR AND ALL OTHER MATERIALS AND LABOR DEEMED NECESSARY TO COMPLETE THE WORK/PROJECT AS DESCRIBED HEREIN.

5. THE CONTRACTOR SHALL VISIT THE JOB SITE PRIOR TO THE SUBMISSION OF BIDS OR PERFORMING WORK TO FAMILIARIZE HIMSELF WITH THE FIELD CONDITIONS AND TO VERIFY THAT THE PROJECT CAN BE CONSTRUCTED IN ACCORDANCE WITH THE CONTRACT DOCUMENTS.

6. THE CONTRACTOR SHALL OBTAIN AUTHORIZATION TO PROCEED WITH CONSTRUCTION PRIOR TO STARTING WORK ON ANY ITEM NOT CLEARLY DEFINED BY THE CONSTRUCTION DRAWINGS / CONTRACT DOCUMENTS.

7. THE CONTRACTOR SHALL INSTALL ALL EQUIPMENT AND MATERIALS ACCORDING TO THE MANUFACTURER'S / VENDOR'S SPECIFICATIONS UNLESS NOTED OTHERWISE OR WHERE LOCAL CODES OR ORDINANCES TAKE PRECEDENCE.

8. THE CONTRACTOR SHALL PROVIDE A FULL SET OF CONSTRUCTION DOCUMENTS AT THE SITE UPDATED WITH THE LATEST REVISIONS AND ADDENDUMS OR CLARIFICATIONS AVAILABLE FOR THE USE BY ALL PERSONNEL INVOLVED WITH THE PROJECT.

9. THE CONTRACTOR SHALL SUPERVISE AND DIRECT THE PROJECT DESCRIBED HEREIN. THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR ALL CONSTRUCTION MEANS, METHODS, TECHNIQUES, SEQUENCES AND PROCEDURES AND FOR COORDINATING ALL PORTIONS OF THE WORK UNDER THE CONTRACT.

10. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING ALL NECESSARY CONSTRUCTION CONTROL SURVEYS, ESTABLISHING AND MAINTAINING ALL LINES AND GRADES REQUIRED TO CONSTRUCT ALL IMPROVEMENTS AS SHOWN HEREIN.

11. THE 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.

12. THE CONTRACTOR SHALL MAKE NECESSARY PROVISIONS TO PROTECT EXISTING IMPROVEMENTS, EASEMENTS, PAVING, CURBING, ETCETERA DURING CONSTRUCTION. UPON COMPLETION OF WORK, THE CONTRACTOR SHALL REPAIR ANY DAMAGE THAT MAY HAVE OCCURRED DUE TO CONSTRUCTION ON OR ABOUT THE PROPERTY.

13. THE CONTRACTOR SHALL KEEP THE GENERAL WORK AREA CLEAN AND HAZARD FREE DURING CONSTRUCTION AND DISPOSE OF ALL DIRT, DEBRIS, RUBBISH AND REMOVE EQUIPMENT NOT SPECIFIED AS REMAINING ON THE PROPERTY. PREMISES SHALL BE LEFT IN CLEAN CONDITION AND FREE FROM PAINT SPOTS, DUST, OR SMUDGES OF ANY NATURE.

14. THE CONTRACTOR SHALL COMPLY WITH ALL OSHA REQUIREMENTS AS THEY APPLY TO THIS PROJECT.

15. THE CONTRACTOR SHALL NOTIFY THE LESSEE/LICENSEE REPRESENTATIVE WHERE A CONFLICT OCCURS ON ANY OF THE CONTRACT DOCUMENTS. THE CONTRACTOR IS NOT TO ORDER MATERIAL OR CONSTRUCT ANY PORTION OF THE WORK THAT IS IN CONFLICT UNTIL CONFLICT IS RESOLVED BY THE LESEE/LICENSEE REPRESENTATIVE.

16. THE CONTRACTOR SHALL VERIFY ALL DIMENSIONS, ELEVATIONS, PROPERTY LINES, ETC. ON THE JOB.

17. ALL UNDERGROUND UTILITY INFORMATION WAS DETERMINED FROM SURFACE INVESTIGATIONS AND EXISTING PLANS OF RECORD. THE CONTRACTOR SHALL LOCATE ALL UNDERGROUND UTILITIES IN THE FIELD PRIOR TO ANY SITE WORK. CALL THE FOLLOWING FOR ALL PRE-CONSTRUCTION NOTIFICATION 72-HOURS PRIOR TO ANY EXCAVATION ACTIVITY: DIG SAFE SYSTEM (MA, ME, NH, RI, VT): 1-888-344-7233 CALL BEFORE YOU DIG (CT): 1-800-922-4455

18. 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.

19. 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.

20. 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.

21. ANTENNA INSTALLATION SHALL BE CONDUCTED BY FIELD CREWS EXPERIENCED IN THE ASSEMBLY AND ERECTION OF RADIO ANTENNAS, TRANSMISSION LINES AND SUPPORT STRUCTURES.

22. 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.

23. 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 GUIDELINES.

24. 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.

25. ALL UTILITY WORK SHALL BE IN ACCORDANCE WITH LOCAL UTILITY COMPANY REQUIREMENTS AND SPECIFICATIONS.

26. ALL EXISTING 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.

27. ALL EXISTING 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. THE AREAS OF THE PROPERTY DISTURBED BY THE WORK AND NOT COVERED BY THE EQUIPMENT, DRIVEWAY OR LEASE AREA SHALL BE RESTORED TO ORIGINAL CONDITION.

28. GRAVEL, SHALL BE GRADED TO A UNIFORM SLOPE, FERTILIZED, SEEDED AND COVERED WITH MULCH UNLESS OTHERWISE NOTED. THE CONTRACTOR SHALL ESTABLISH AND MAINTAIN SOIL EROSION AND SEDIMENTATION CONTROLS AT ALL TIMES.

29. DURING CONSTRUCTION, PER FCC MANDATE, ENHANCED EMERGENCY (E911) SERVICE IS REQUIRED TO MEET NATIONWIDE STANDARDS.

30. 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 PROXIMITY 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.

31. SUBCONTRACTOR'S WORK SHALL COMPLY WITH THE LATEST EDITION OF THE FOLLOWING STANDARDS:

AMERICAN CONCRETE INSTITUTE (ACI) 318; BUILDING CODE REQUIREMENTS FOR STRUCTURAL CONCRETE;

AMERICAN INSTITUTE OF STEEL CONSTRUCTION (AISC) 14TH EDITION

MANUAL OF STEEL CONSTRUCTION, ASD, NINTH EDITION;

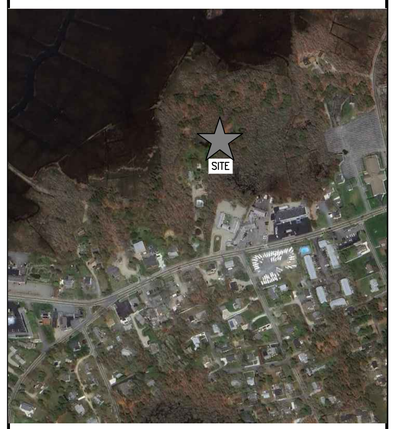
TELECOMMUNICATIONS INDUSTRY ASSOCIATION (TIA) 222-H, STRUCTURAL STANDARDS FOR STEEL

ANTENNA TOWER AND ANTENNA SUPPORTING STRUCTURES; REFER TO ELECTRICAL DRAWINGS FOR SPECIFIC ELECTRICAL STANDARDS.

FOR ANY CONFLICTS BETWEEN SECTIONS OF LISTED CODES AND STANDARDS REGARDING MATERIAL, METHODS OF CONSTRUCTION, OR OTHER REQUIREMENTS, THE MOST RESTRICTIVE REQUIREMENT SHALL GOVERN. WHERE THERE IS CONFLICT BETWEEN A GENERAL REQUIREMENT AND A SPECIFIC REQUIREMENT, THE SPECIFIC REQUIREMENT SHALL GOVERN.

APPLICABLE BUILDING CODES:
SUBCONTRACTOR'S WORK SHALL COMPLY WITH ALL APPLICABLE NATIONAL, STATE, AND LOCAL CODES AS ADOPTED BY THE LOCAL AUTHORITY HAVING JURISDICTION (AHJ) FOR THE LOCATION. THE EDITION OF THE AHJ ADOPTED CODES AND STANDARDS IN EFFECT ON THE DATE OF CONTRACT AWARD SHALL GOVERN THE DESIGN.

VICINITY MAP



NORTH

VICINITY MAP

SCALE: NTS

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.

SHEET INDEX

SHT. NO.	DESCRIPTION	REV. NO.
T-1	TITLE SHEET	8
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PROJECT SUMMARY

SITE NAME:	HARWICH
SITE ADDRESS:	206 ROUTE 28 WEST HARWICH, MA 02671
PROPERTY ID:	11-17-0
TOWER INFO:	
TOWER TYPE:	MONOPOLE
LATITUDE:	41° 40' 14.48" / 41.670689° N
LONGITUDE:	70° 06' 11.10" / 70.103083° W
GROUND ELEV:	5'± A.M.S.L.
TOWER HEIGHT:	100'± A.G.L.
TOWER TOP ELEV:	105± A.M.S.L.
CO-APPLICANT/LICENSEE:	VERTEX TOWERS LLC P.O. BOX 680 MEDFIELD, MA 02052 VERIZON WIRELESS 51 ALDER STREET MEDWAY, MA 02053
ENGINEER:	ADVANCED ENGINEERING GROUP, P.C. 179 SWANSEA MALL DRIVE SWANSEA, MA 02777 PHONE: (508) 343-1414
PROPERTY OWNER:	HCLARK ROCKWOOD G TR. 206 ROUTE 28 HARWICH, MA 02671

VERTEX TOWERS LLC
P.O. BOX 680
MEDFIELD, MA 02052

VERIZON WIRELESS
51 ALDER STREET
MEDWAY, MA 02053

ADVANCED ENGINEERING GROUP
- Civil Engineering
- Site Development
179 Swansea Mall Drive
Swansea, MA 02777
-Surveying
-Telecommunications
Phone: (508) 343-1414
Fax: (401) 633-6354

COMMONWEALTH OF MASSACHUSETTS
SCOTT N. ADAMS
CIVIL
No. 46006
REGISTERED PROFESSIONAL ENGINEER

AEG PROJECT #: 2025-0041

DRAWN BY: MFR

CHECKED BY: SNA

SUBMITTALS

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3	08/26/25	ISSUED FOR REVIEW
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7	08/17/26	REVISED
8	09/22/26	REVISED

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VT-MA-0503

HARWICH

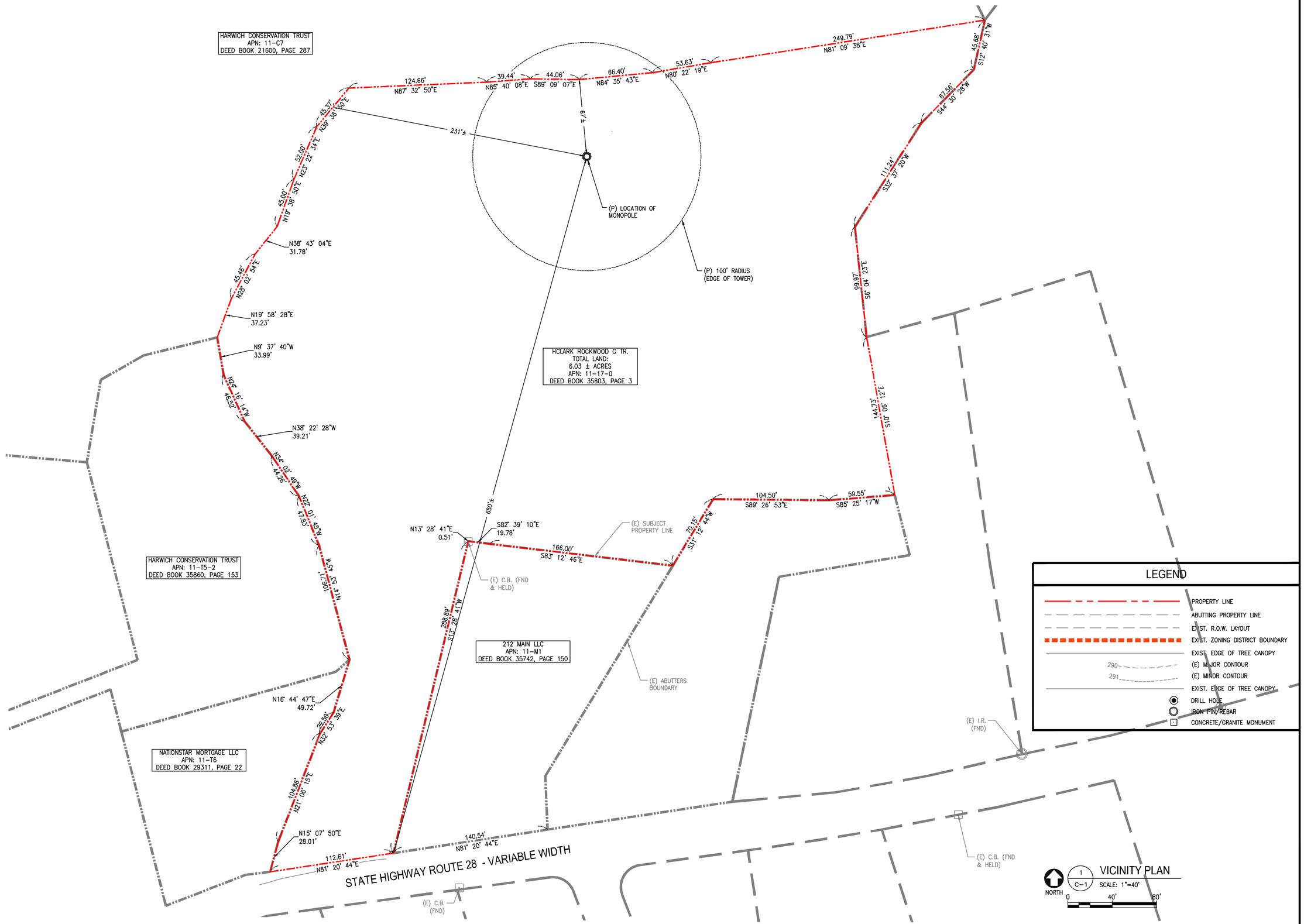
206 ROUTE 28
WEST HARWICH, MA 02671
BARNSTABLE COUNTY

SHEET TITLE

TITLE SHEET

SHEET NUMBER

T-1



LEGEND

- PROPERTY LINE
- ABUTTING PROPERTY LINE
- EXIST. R.O.W. LAYOUT
- EXIST. ZONING DISTRICT BOUNDARY
- EXIST. EDGE OF TREE CANOPY
- 290 (E) MAJOR CONTOUR
- 291 (E) MINOR CONTOUR
- EXIST. EDGE OF TREE CANOPY
- DRILL HOLE
- IRON PIN/REBAR
- CONCRETE/GRANITE MONUMENT

Vertex Towers LLC
VERTEX TOWERS LLC
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MEDFIELD, MA 02052

verizon
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VT-MA-0503

HARWICH

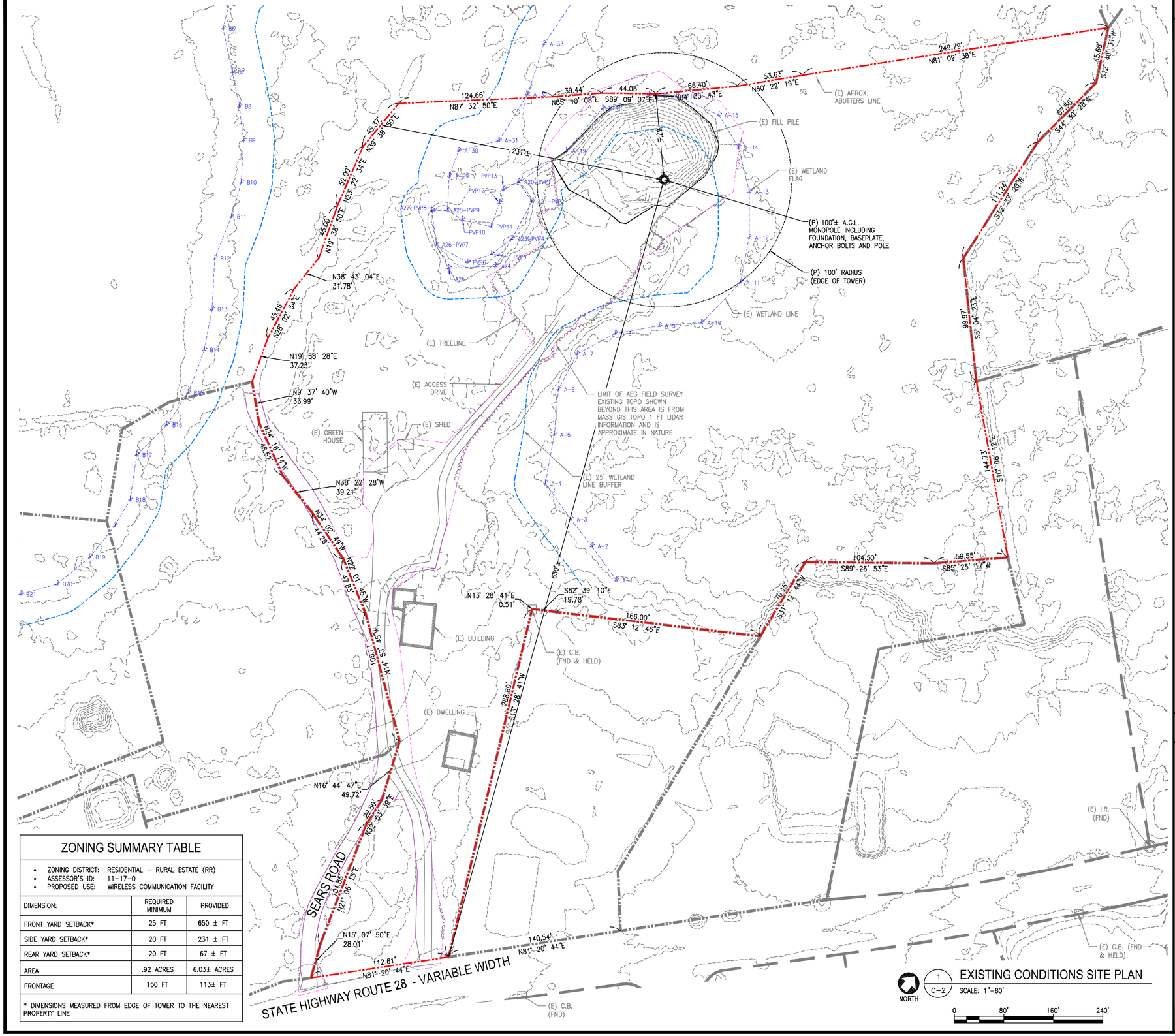
206 ROUTE 28
WEST HARWICH, MA 02671
BARNSTABLE COUNTY

SHEET TITLE

VICINITY PLAN

SHEET NUMBER

C-1



ZONING SUMMARY TABLE

- ZONING DISTRICT: RESIDENTIAL – RURAL ESTATE (RR)
- ASSESSOR'S ID: 11–17–0
- PROPOSED USE: WIRELESS COMMUNICATION FACILITY

DIMENSION:	REQUIRED MINIMUM	PROVIDED
FRONT YARD SETBACK*	25 FT	650 ± FT
SIDE YARD SETBACK*	20 FT	231 ± FT
REAR YARD SETBACK*	20 FT	67 ± FT
AREA	.92 ACRES	6.03± ACRES
FRONTAGE	150 FT	113± FT

* DIMENSIONS MEASURED FROM EDGE OF TOWER TO THE NEAREST PROPERTY LINE

NORTH

1 / C–2 EXISTING CONDITIONS SITE PLAN

SCALE: 1"=80'

0 80' 160' 240'

SURVEY NOTES

1. FIELD SURVEY DATE: SINCE 05/07/2024 TO
2. VERTICAL DATUM: NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88)
3. HORIZONTAL DATUM: NORTH AMERICAN DATUM OF 1983 (NAD83)
4. CENTER OF (P) TOWER 11.10" / 70.103083° W: LAT: 41° 40' 14.48" / 41.670689° N LONG: 70° 06' ELEV.: 5'± A.M.S.L.
5. PROPERTY OWNER: HCLARK ROCKWOOD G TR. 206 ROUTE 28 HARWICH, MA 02671
6. SITE ADDRESS: 206 ROUTE 28 WEST HARWICH, MA 02671
7. APPLICANT: VERTEX TOWER LLC P.O. BOX 680 MEDFIELD, MA 02052
8. JURISDICTION: TOWN OF WEST HARWICH
9. TAX ID: 11–17–0
10. DEED REFERENCE: BOOK 35803, PAGE 3 BOOK 1816, PAGE 114 BOOK 14952, PAGE 192
11. ZONING JURISDICTION: RESIDENTIAL – RURAL ESTATE (RR)
12. TOTAL LAND AREA 6.03 ± ACRES

13. ALL UNDERGROUND UTILITY INFORMATION WAS DETERMINED FROM SURFACE INVESTIGATIONS AND EXISTING PLANS OF RECORD. THE CONTRACTOR SHALL LOCATE ALL UNDERGROUND UTILITIES IN THE FIELD PRIOR TO ANY SITE WORK. CALL THE FOLLOWING FOR ALL PRE–CONSTRUCTION NOTIFICATION 72–HOURS PRIOR TO ANY EXCAVATION ACTIVITY:
DIG SAFE SYSTEM (MA, ME, NH, RI, VT): 1–888–344–7233
CALL BEFORE YOU DIG (CT): 1–800–922–4455

14. PROPERTY LINE, TOPOGRAPHY, AND EXISTING FEATURES INFORMATION HAS BEEN COMPILED FROM "NH GRANIT" AND TOWN OF WEST HARWICH GIS SYSTEMS. 2. A METES AND BOUNDS SURVEY WAS NOT CONDUCTED BY ADVANCED ENGINEERING GROUP, PC.

15. THE PURPOSE OF THIS SURVEY IS TO SUPPORT THE DESIGN AND CONSTRUCTION OF A TELECOMMUNICATION FACILITY. USE OF THIS SURVEY BY ANYONE OTHER THAN VERTEX TOWER ASSETS, LLC AND USE OF THIS SURVEY FOR ANY PURPOSE NOT RELATED TO THE DESIGN OF THE INTENDED FACILITY IS STRICTLY PROHIBITED.

16. BEARING SYSTEM OF THIS PLAN IS BASED ON TRUE NORTH. TRUE NORTH WAS ESTABLISHED FROM GPS READINGS ON 05/07/24.

17. A WETLANDS SURVEY HAS BEEN COMPLETED BY ECOSYSTEM SOLUTION INC. WITH A WETLANDS FINDINGS REPORT DATED ON JUNE 22, 2025.

18. IN THE EVENT THAT BENCHMARKS (TBM'S), ESTABLISHED FOR THIS PROJECT AND PUBLISHED ON THIS SURVEY, ARE DESTROYED, NOT RECOVERABLE OR A DISCREPANCY IS FOUND, THE USER SHOULD NOTIFY THIS FIRM IN WRITING PRIOR TO COMMENCING OR CONTINUING ANY WORK.

19. THE PROPERTY LINES SHOWN ON THIS PLAN ARE THE LINES DIVIDING EXISTING OWNERSHIPS, AND THE LINES OF STREETS AND WAYS SHOWN ARE THOSE OF PUBLIC OR PRIVATE STREETS OR WAYS ALREADY ESTABLISHED, AND NO NEW LINES FOR DIVISION OF EXISTING OWNERSHIP OR FOR NEW WAYS ARE SHOWN.

20. PLAN REFERENCES:

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PLAN FOR: C. ROCKWOOD CLARK
PREPARED BY: MORAN ENGINEERING INC.,
DATED: 01/09/1992
PLAN BOOK 485 PG 64

"PLAN OF LAND IN W. HARWICH, MASS"
OWNED BY: KURT BARTELS & ALICE
PREPARED BY: WM.M. WARWICK & ASSOCIATES.
DATED: 12/10/1986
PLAN BOOK 430 PG 51

"PLAN OF LAND IN W. HARWICH, MASS"
PLAN FOR: EUGENE J. J. DEFULVIO
PREPARED BY: MORAN ENGINEERING INC.,
DATED: 09/18/1989
PLAN BOOK 463 PG 84

"PLAN OF LAND IN W. HARWICH, MASS"
PLAN FOR: SEBASTION E. & DIANA E. GINER
PREPARED BY: MORAN ENGINEERING INC.,
DATED: 04/12/2004
PLAN BOOK 591 PG 12

"PLAN OF LAND IN W. HARWICH, MASS"
PLAN FOR: GRELDA B. HARDIE
PREPARED BY: JOHN E. WHITE,
DATED: 04/27/1965
PLAN BOOK 192 PG 147

"PLAN OF LAND IN HARWICH, MASS"
PLAN FOR: LIONEL E & LISA ANN LAROCHELLE
PREPARED BY: DEMAREST–MCLELLAN
ENGINEERING, DATED: 03/301995
PLAN BOOK 524 PG 16

LEGEND

- PROPERTY LINE
- ABUTTING PROPERTY LINE
- EXIST. R.O.W. LAYOUT
- PROP. EASEMENT/LEASE AREA
- WETLAND LINE
- WETLAND 25' BUFFER
- WETLAND 100' BUFFER
- WETLAND BOUNDARY & FLAG
- (E) MAJOR CONTOUR (290)
- (E) MINOR CONTOUR (291)
- EXIST. EDGE OF TREE CANOPY

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COMMONWEALTH OF MASSACHUSETTS
STEPHEN T. ROY
36866
PROFESSIONAL LAND SURVEYOR

AEG PROJECT #: 2025–0041

DRAWN BY: MFR

CHECKED BY: SNA

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VT–MA–0503

HARWICH

206 ROUTE 28
WEST HARWICH, MA 02671
BARNSTABLE COUNTY

SHEET TITLE

EXISTING CONDITIONS SITE PLAN

SHEET NUMBER

C-2



ZONING SUMMARY TABLE

- ZONING DISTRICT: RESIDENTIAL – RURAL ESTATE (RR)
- ASSESSOR'S ID: 11-17-0
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SIDE YARD SETBACK*	20 FT	231 ± FT
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AREA	.92 ACRES	6.03± ACRES
FRONTAGE	150 FT	113± FT

* DIMENSIONS MEASURED FROM EDGE OF TOWER TO THE NEAREST PROPERTY LINE

NORTH

1 / C-3 EXISTING CONDITIONS SITE PLAN

SCALE: 1"=80'

0 80' 160' 240'

SURVEY NOTES

1. FIELD SURVEY DATE: SINCE 05/07/2024 TO
2. VERTICAL DATUM: NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88)
3. HORIZONTAL DATUM: NORTH AMERICAN DATUM OF 1983 (NAD83)
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   ELEV.: 5'± A.M.S.L.
5. PROPERTY OWNER: HCLARK ROCKWOOD G TR. 206 ROUTE 28 HARWICH, MA 02671
6. SITE ADDRESS: 206 ROUTE 28 WEST HARWICH, MA 02671
7. APPLICANT: VERTEX TOWER LLC P.O. BOX 680 MEDFIELD, MA 02052
8. JURISDICTION: TOWN OF WEST HARWICH
9. TAX ID: 11-17-0
10. DEED REFERENCE: BOOK 35803, PAGE 3 BOOK 1816, PAGE 114 BOOK 14952, PAGE 192
11. ZONING JURISDICTION: RESIDENTIAL – RURAL ESTATE (RR)
12. TOTAL LAND AREA: 6.03 ± ACRES
13. ALL UNDERGROUND UTILITY INFORMATION WAS DETERMINED FROM SURFACE INVESTIGATIONS AND EXISTING PLANS OF RECORD. THE CONTRACTOR SHALL LOCATE ALL UNDERGROUND UTILITIES IN THE FIELD PRIOR TO ANY SITE WORK. CALL THE FOLLOWING FOR ALL PRE-CONSTRUCTION NOTIFICATION 72-HOURS PRIOR TO ANY EXCAVATION ACTIVITY:
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PLAN BOOK 591 PG 12

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DATED: 04/27/1965
PLAN BOOK 192 PG 147

"PLAN OF LAND IN HARWICH, MASS"
PLAN FOR: LIONEL E & LISA ANN LAROCHELLE
PREPARED BY: DEMAREST-MCLELLAN
ENGINEERING, DATED: 03/301995
PLAN BOOK 524 PG 16

LEGEND

- PROPERTY LINE
- ABUTTING PROPERTY LINE
- EXIST. R.O.W. LAYOUT
- PROP. EASEMENT/LEASE AREA
- WETLAND LINE
- WETLAND 25' BUFFER
- WETLAND 100' BUFFER
- WETLAND BOUNDARY & FLAG
- (E) MAJOR CONTOUR (290)
- (E) MINOR CONTOUR (291)
- EXIST. EDGE OF TREE CANOPY

Vertex Towers LLC
VERTEX TOWERS LLC
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MEDFIELD, MA 02052

verizon
VERIZON WIRELESS
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COMMONWEALTH OF MASSACHUSETTS
STEPHEN T. ROY
36866
PROFESSIONAL LAND SURVEYOR

AEG PROJECT #: 2025-0041

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VT-MA-0503

HARWICH

206 ROUTE 28
WEST HARWICH, MA 02671
BARNSTABLE COUNTY

SHEET TITLE

ORTHO SITE PLAN

SHEET NUMBER

C-3

(P) LEASE AREA (2,500 SFT)

(P) 60'x40' WOOD STOCKADE FENCE (6' TALL)

(E) FILL PILE

(P) VERIZON LEASE AREA (SEE SHEET Z-3)

(E) WETLAND FLAG

(P) 100'± A.G.L. MONOPOLE INCLUDING FOUNDATION, BASEPLATE, ANCHOR BOLTS AND POLE

(P) 100' RADIUS (EDGE OF TOWER)

(E) TREELINE

(E) WETLAND LINE

(P) UNDERGROUND ELECTRIC AND TELCO SERVICE LINES FROM (E) UTILITY POLE TO (P) UTILITY POLE

(P) 12' WIDE ACCESS PATH

(E) ACCESS DRIVE

LIMIT OF AEG FIELD SURVEY EXISTING TOPO SHOWN BEYOND THIS AREA IS FROM MASS GIS TOPO 1 FT LIDAR INFORMATION AND IS APPROXIMATE IN NATURE

(E) SHED

(E) GREEN HOUSE

(E) 25' WETLAND LINE BUFFER

(E) ACCESS DRIVE TO BE FOLLOWED AND IMPROVE AS REQUIRED

(P) 25' WIDE ACCESS & UTILITY EASEMENT FROM (P) COMPOUND TO PUBLIC R.O.W.

(E) SUBJECT PROPERTY LINE

(E) BUILDING

(E) C.B. (FND & HELD)

(E) DWELLING

(E) ABUTTERS BOUNDARY

(E) I.R. (FND)

(E) C.B. (FND & HELD)

(E) C.B. (FND)

SEARS ROAD

STATE HIGHWAY ROUTE 28 - VARIABLE WIDTH

124.66' N87° 32' 50"E

45.37' N39° 35' 50"E

52.00' N23° 22' 34"E

45.00' N19° 38' 50"E

45.16' N28° 02' 54"E

N19° 58' 28"E 37.23'

N9° 37' 40"W 33.99'

N24° 16' 14"W 46.52'

N38° 22' 28"W 39.21'

N34° 02' 49"W 41.26'

N27° 01' 47"W 45.83'

N13° 28' 41"E 0.51'

S82° 39' 10"E 19.78'

166.00' S83° 12' 46"E

208.89' S13° 28' 41"W

N16° 44' 47"E 49.72'

N21° 06' 15"E 104.86'

N15° 07' 50"E 28.01'

112.61' N81° 20' 44"E

140.54' N81° 20' 44"E

39.44' N85° 40' 08"E

44.00' S89° 09' 07"E

6.40' N84° 35' 43"E

53.63' N80° 22' 19"E

249.79' N81° 09' 38"E

45.68' S12° 40' 31"W

67.56' S44° 30' 28"W

111.24' S32° 37' 20"W

99.97' S6° 04' 23"E

147.47' S10° 39' 32"E

104.50' S89° 26' 53"E

59.55' S85° 25' 17"W

70.15' S21° 12' 44"W

FLOOD ZONE NOTE:

LEASE AREA (AS WELL AS ENTIRE PARCEL) LIES WITHIN FLOOD ZONE AE, BASE FLOOD ELEVATION DETERMINED (ELV 11') AS SHOWN ON FLOOD INSURANCE RATE MAP – BARNSTABLE COUNTY, MA – COMMUNITY PANEL NUMBER: 25001C0611J, MAP REVISED JULY 16, 2014.

LEGEND

- PROPERTY LINE
- ABUTTING PROPERTY LINE
- EXIST. R.O.W. LAYOUT
- EXIST. ZONING DISTRICT BOUNDARY
- EXIST. EDGE OF TREE CANOPY
- 290 (E) MAJOR CONTOUR
- 291 (E) MINOR CONTOUR
- EXIST. EDGE OF TREE CANOPY

NORTH

1 / Z-1 PROPOSED SITE PLAN

SCALE: 1"=80'

0 80' 160'

Vertex Towers LLC
VERTEX TOWERS LLC
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MEDFIELD, MA 02052

verizon
VERIZON WIRELESS
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COMMONWEALTH OF MASSACHUSETTS
SCOTT N. ADAMS
CIVIL
No. 46006
REGISTERED PROFESSIONAL ENGINEER

AEG PROJECT #: 2025-0041

DRAWN BY: MFR

CHECKED BY: SNA

SUBMITTALS

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VT-MA-0503

HARWICH

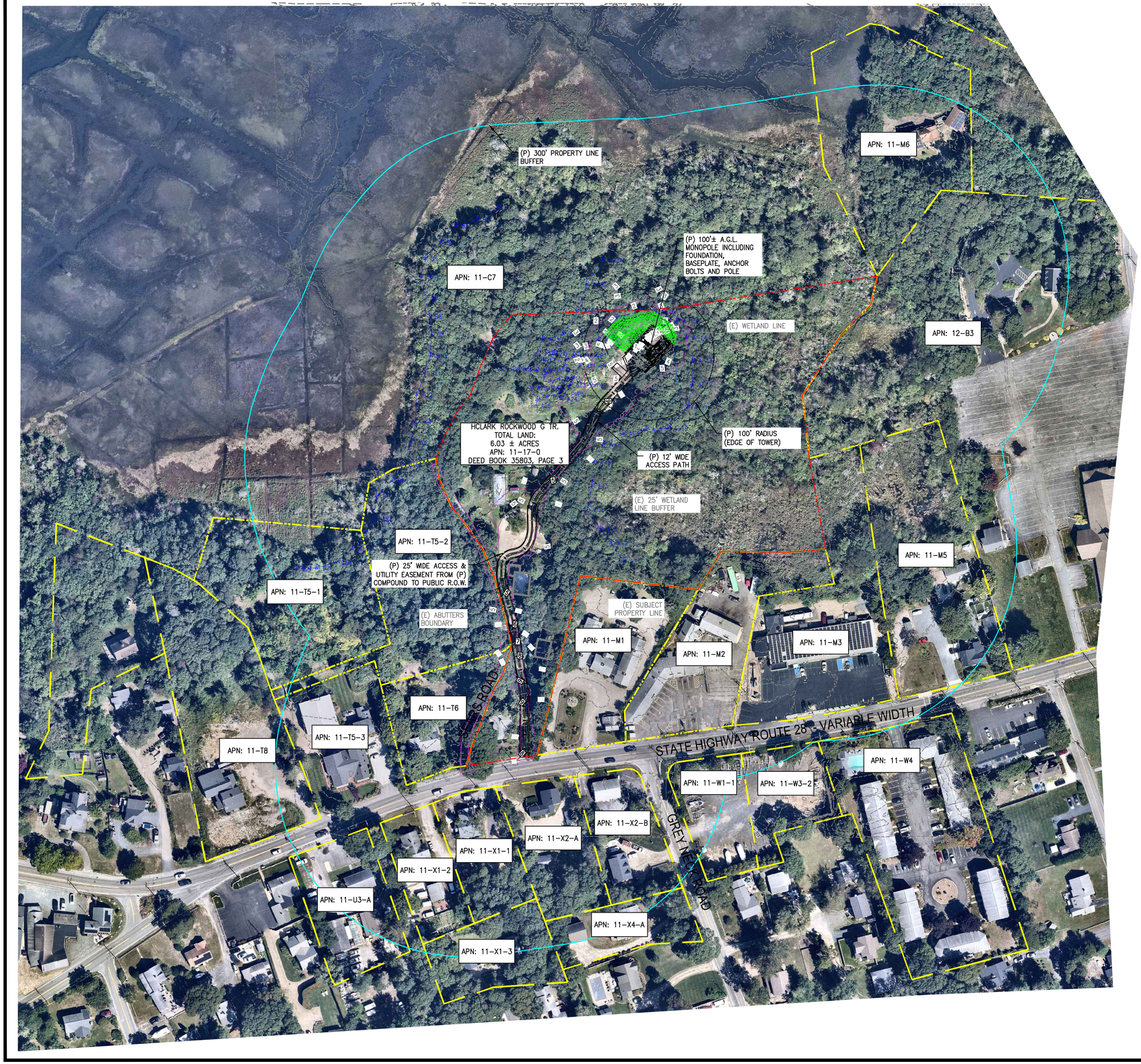
206 ROUTE 28
WEST HARWICH, MA 02671
BARNSTABLE COUNTY

SHEET TITLE

PROPOSED SITE PLAN

SHEET NUMBER

Z-1



FLOOD ZONE NOTE:

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LEGEND

- PROPERTY LINE
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- EXIST. EDGE OF TREE CANOPY

NORTH

1 / Z-2 300' BUFFER ABUTTERS PLAN

SCALE: 1"=80'

0 80' 160'

Vertex Towers LLC
VERTEX TOWERS LLC
P.O. BOX 680
MEDFIELD, MA 02052

verizon
VERIZON WIRELESS
51 ALDER STREET
MEDWAY, MA 02053

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- Site Development
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179 Swansea Mall Drive
Phone: (508) 343-1414
Swansea, MA 02777
Fax: (401) 633-6554

COMMONWEALTH OF MASSACHUSETTS
SCOTT N. ADAMS
CIVIL
No. 46006
REGISTERED PROFESSIONAL ENGINEER

AEG PROJECT #: 2025-0041

DRAWN BY: MFR

CHECKED BY: SNA

SUBMITTALS

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2	08/20/25	REVISED
3	08/26/25	ISSUED FOR REVIEW
4	11/06/25	REVISED
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7	08/17/26	REVISED
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HARWICH

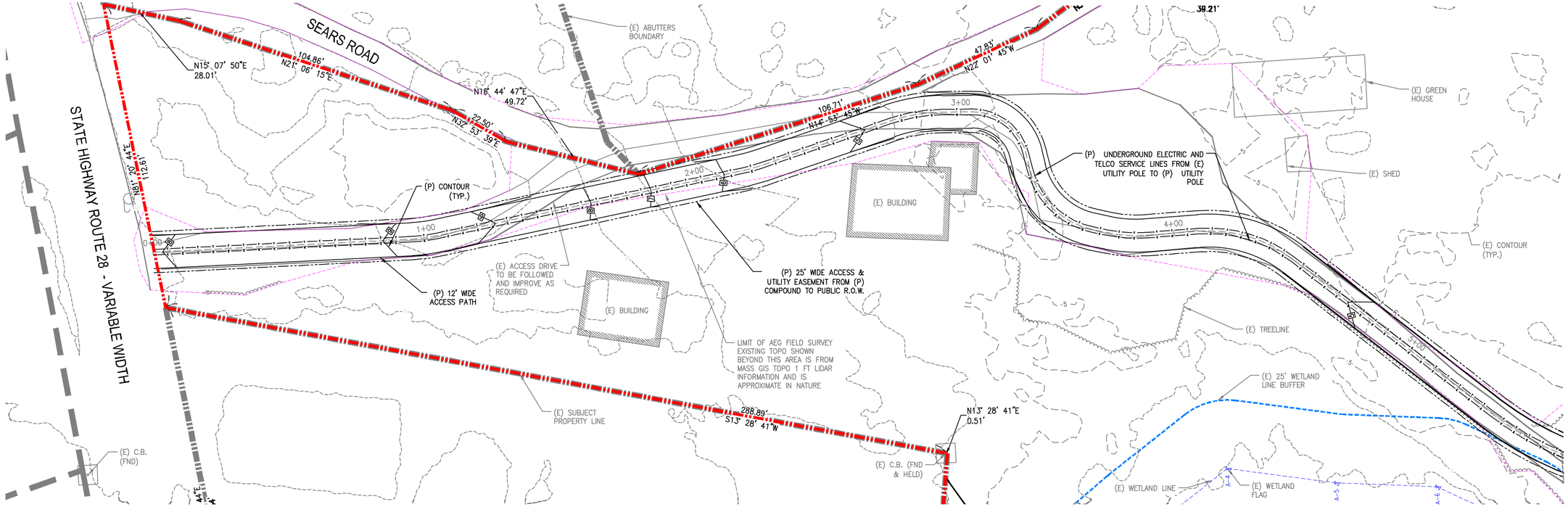
206 ROUTE 28
WEST HARWICH, MA 02671
BARNSTABLE COUNTY

SHEET TITLE

300' BUFFER ABUTTERS PLAN

SHEET NUMBER

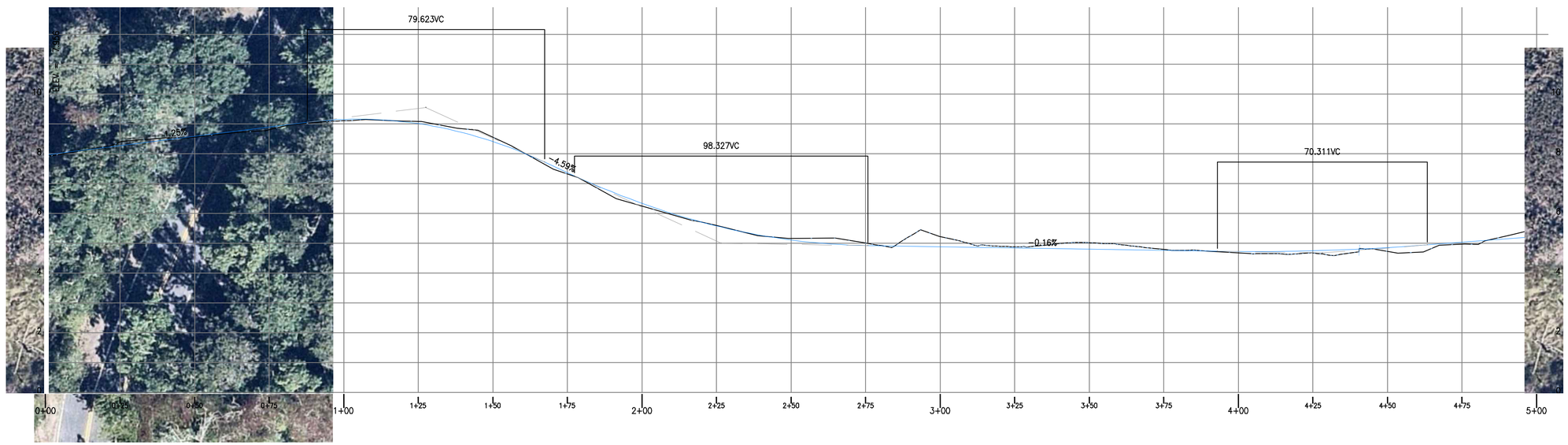
Z-2



1 / Z-2.1 NORTH — ACCESS PATH GRADING PLAN (0+00 - 5+00)

SCALE: 1"=20'-0"

0 20' 40' 60'



2 / Z-2.1 — ACCESS PATH PROFILE (0+00 - 5+00)

SCALE: 1"=20'-0" HORIZONTAL

0' 20' 40' 60'

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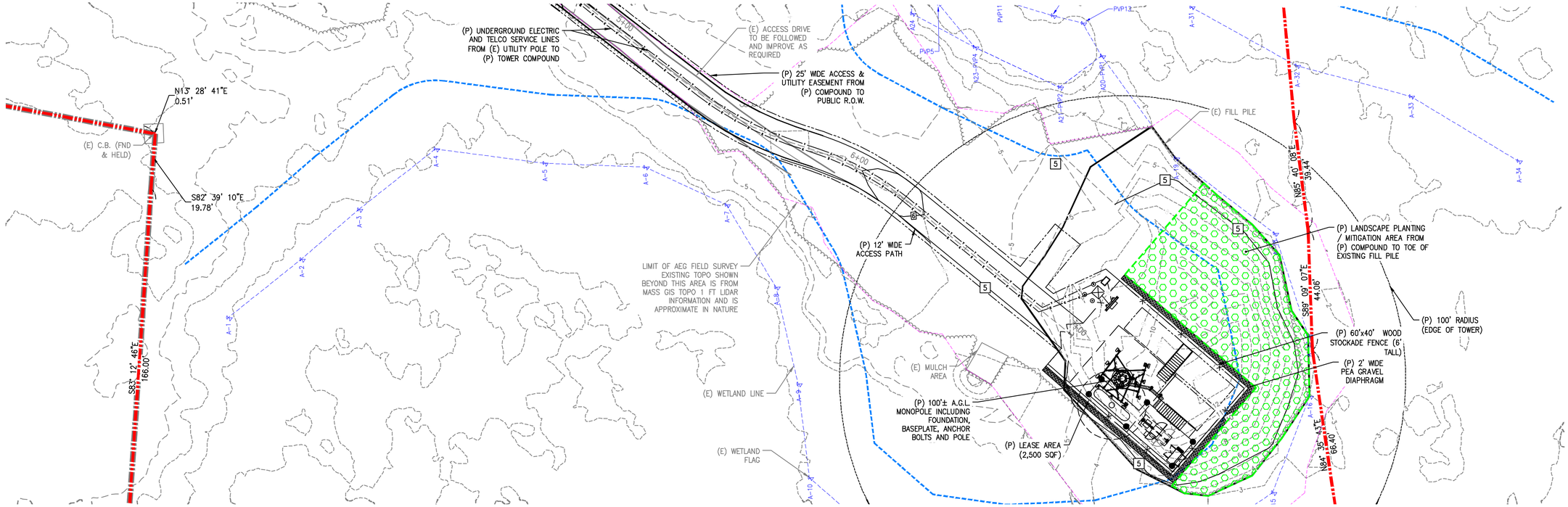
206 ROUTE 28
WEST HARWICH, MA 02671
BARNSTABLE COUNTY

SHEET TITLE

ENLARGED GRADING PLAN & PROFILE

SHEET NUMBER

Z-2.1



NORTH

1 / Z-2.2 ACCESS PATH GRADING PLAN (5+00 - 6+58)

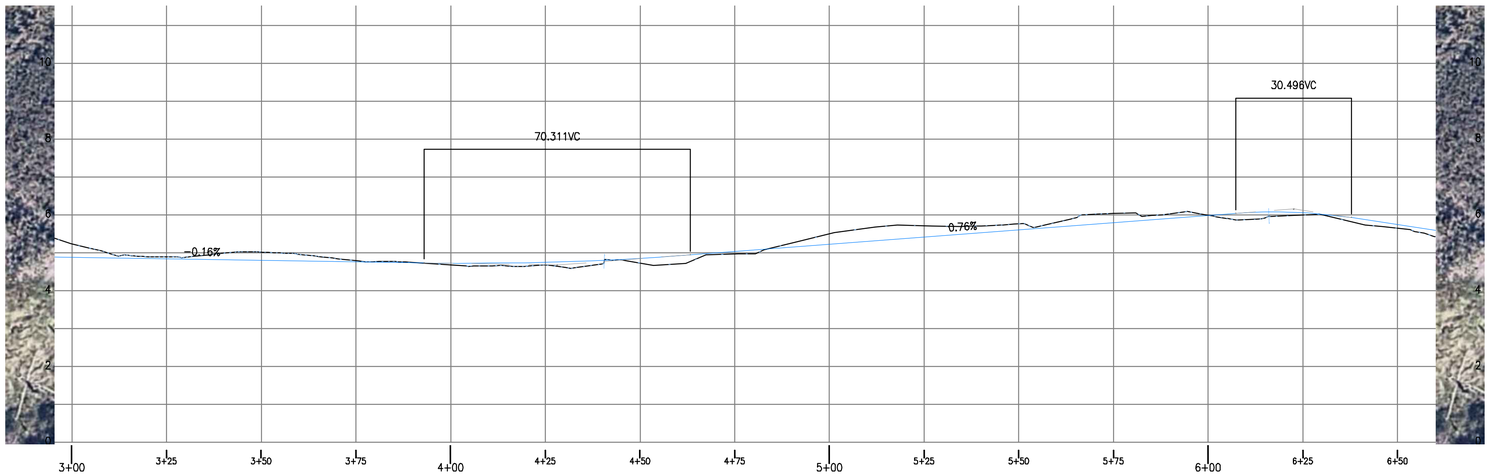
SCALE: 1"=20'-0"

0 20' 40' 60'

FLOOD ZONE NOTE:

LEASE AREA (AS WELL AS ENTIRE PARCEL) LIES WITHIN FLOOD ZONE AE, BASE FLOOD ELEVATION DETERMINED (ELV 11') AS SHOWN ON FLOOD INSURANCE RATE MAP – BARNSTABLE COUNTY, MA – COMMUNITY PANEL NUMBER: 25001C0611J, MAP REVISED JULY 16, 2014.

DISTURBANCE AREA COMPENSATION	
TOTAL COMPOUND AREA	2,500 Sq. Ft.
PROPOSE LANDSCAPE ZONE	3,600 Sq. Ft



2 / Z-2.2 ACCESS PATH PROFILE (5+00 - 6+58)

SCALE: 1"=20'-0" HORIZONTAL

0' 20' 40' 60'

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HARWICH

206 ROUTE 28
WEST HARWICH, MA 02671
BARNSTABLE COUNTY

SHEET TITLE

ENLARGED GRADING PLAN & PROFILE

SHEET NUMBER

Z-2.2

(P) HAND HOLE FOR TELCO/FIBER

(P) 800A 4 SLOT MULTI GANG METER BANK ON FRONT OF (P) H-FRAME

(P) HOFFMAN BOX ON REAR OF METER BOARD FOR TELCO/FIBER

(P) UTILITY H-FRAME

(P) TRANSFORMER (AS REQUIRED)

(P) BOLLARD (AS REQUIRED)

(P) 2' WIDE PEA GRAVEL DIAPHRAGM

(F) STEEL STAIRS UP FROM GRADE TO STEEL PLATFORM (TO BE SHARED W/ ADJACENT LEASE AREA TENANT)

10'x20' LEASE AREA (200 SQ FT FOR (F) CARRIER ON (F) ELEVATED STEEL PLATFORM

10'x20' LEASE AREA (200 SQ FT FOR (F) CARRIER ON (F) ELEVATED STEEL PLATFORM

(P) 100'± A.G.L. MONOPOLE INCLUDING FOUNDATION, BASEPLATE, ANCHOR BOLTS AND POLE

(P) VERIZON CABLE BRIDGE

(P) VERIZON/SHARED STEEL STAIRS UP FROM GRADE TO STEEL PLATFORM (TO BE SHARED W/ ADJACENT LEASE AREA TENANT)

10'x20' LEASE AREA (200 SQ FT FOR (F) CARRIER ON (F) ELEVATED STEEL PLATFORM

(P) VERIZON ANTENNAS (3 PER SECTOR, 9 TOTAL) ON MONOPOLE (SEE SHEET Z-4 FOR MORE INFORMATION)

(P) 12' DOUBLE SWING FENCE GATE

(P) 60'x40' WOOD STOCKADE FENCE (6' TALL)

(E) 25' WETLAND LINE BUFFER

(E) WETLAND FLAG

(E) WETLAND LINE

(E) FILL PILE

(P) 12' WIDE ACCESS PATH

(P) UNDERGROUND ELECTRIC AND TELCO SERVICE LINES FROM (E) UTILITY POLE TO (P) TOWER COMPOUND

(P) 25' WIDE ACCESS & UTILITY EASEMENT FROM (P) COMPOUND TO PUBLIC R.O.W.

(P) LEASE AREA (2,490 SQF)

12.5' RADIUS

(P) VERIZON 1000 GAL. PROPANE TANK ON STEEL PLATFORM TO BE EQUIPPED W/ MANUAL SHUTOFF

(P) VERIZON 12'x20' ELEVATED STEEL PLATFORM (ABOVE FLOOD LINE)

(P) CONTOUR (TYP.)

(E) CONTOUR (TYP.)

(P) VERIZON GENERATOR ON STEEL PLATFORM

(P) VERIZON EQUIPMENT ON STEEL PLATFORM

(P) VERIZON DOUBLE ICE BRIDGE COVER OVER EQUIPMENT ON STEEL PLATFORM

1 / Z-3 COMPOUND PLAN

SCALE: 22x34: 1"= 5'
11x17: 1" = 10'

0 5' 10' 15'

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VT-MA-0503

HARWICH

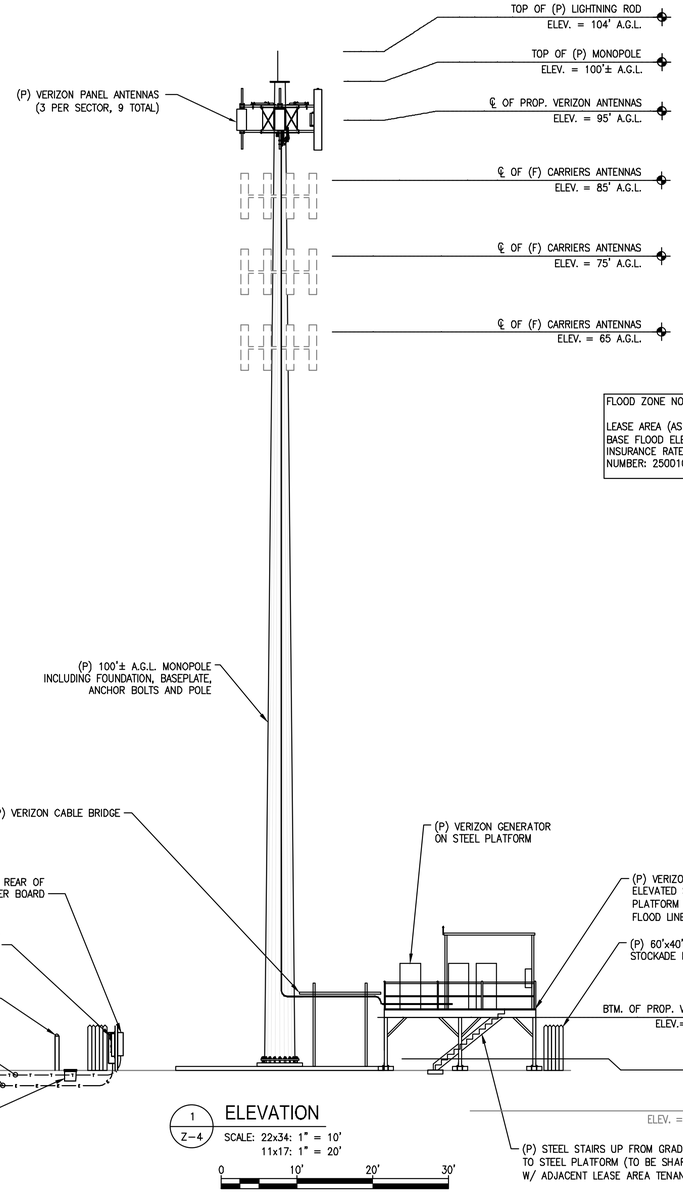
206 ROUTE 28
WEST HARWICH, MA 02671
BARNSTABLE COUNTY

SHEET TITLE

COMPOUND PLAN

SHEET NUMBER

Z-3

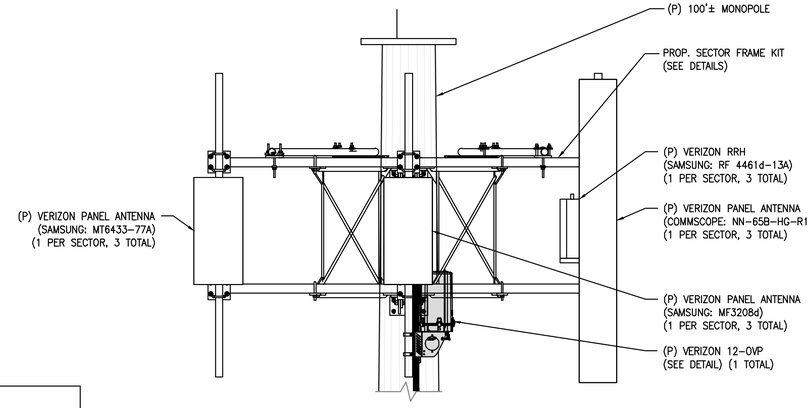


1 / Z-4 ELEVATION

SCALE: 22x34: 1" = 10'
11x17: 1" = 20'

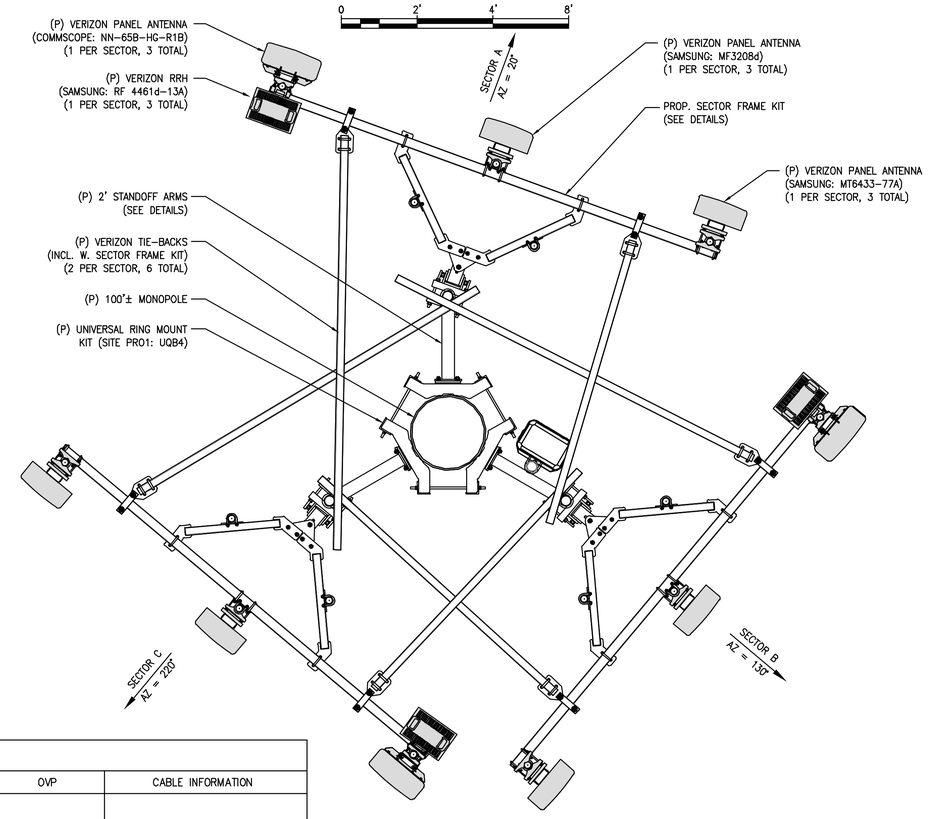
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2 / Z-4 ENLARGED TOWER ELEVATION

SCALE: 22x34: 1"=2'
11x17: 1"=4'



3 / Z-4 PROPOSED ANTENNA PLAN

NORTH

SCALE: 22x34: 1"=2'
11x17: 1"=4'

0 2' 4' 6'

RF SYSTEM SCHEDULE

SECTOR	POSITION	STATUS	ANTENNA MANUFACTURER	ANTENNA MODEL	AZIMUTH	RAD CENTER	MECH. DOWN-TILT	RRH QUANTITY/MODEL	TECHNOLOGY	1/2" COAX	1X2 HYBRID	FIBER	OVP	CABLE INFORMATION
ALPHA	A-1	PROPOSED	COMMSCOPE	NN-65B-HG-R1B	20°	95'	0°	B5/B13 RF4461D-13A	1900, AWS	4	–	–	(1) PROP. 12-OVP	(3) PROP. 3x6 HYBRID CABLES (125'±)
	A-2	PROPOSED	SAMSUNG	MF3208d-25A	20°	95'	0°		L-SUB6	–	–	1		
	A-3	PROPOSED	SAMSUNG	MT6433-77A	20°	95'	0°		700, 850	–	–	1		
	A-4													
BETA	B-1	PROPOSED	COMMSCOPE	NN-65B-HG-R1B	130°	95'	0°	B5/B13 RF4461D-13A	1900, AWS	4	–	–		
	B-2	PROPOSED	SAMSUNG	MF3208d-25A	130°	95'	0°		L-SUB6	–	–	1		
	B-3	PROPOSED	SAMSUNG	MT6433-77A	130°	95'	0°		700, 850	–	–	1		
	B-4													
GAMMA	C-1	PROPOSED	COMMSCOPE	NN-65B-HG-R1B	220°	95'	0°	B5/B13 RF4461D-13A	1900, AWS	4	–	–		
	C-2	PROPOSED	SAMSUNG	MF3208d-25A	220°	95'	0°		L-SUB6	–	–	1		
	C-3	PROPOSED	SAMSUNG	MT6433-77A	220°	95'	0°		700, 850	–	–	1		
	C-4													
										12 TOTAL	8 TOTAL	4 TOTAL		

CONTRACTOR TO VERIFY FINAL RFDS PRIOR TO CONSTRUCTION
CONTRACTOR TO FIELD VERIFY HYBRID LENGTHS PRIOR TO CONSTRUCTION. LENGTH IS ESTIMATED FROM THE BASE EQUIPMENT OVP TO SECTOR OVP WITH 15% BUFFER

CONFIRM JUMPER QUANTITIES WITH CURRENT RFDS & PLUMBING DIAGRAMS

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HARWICH

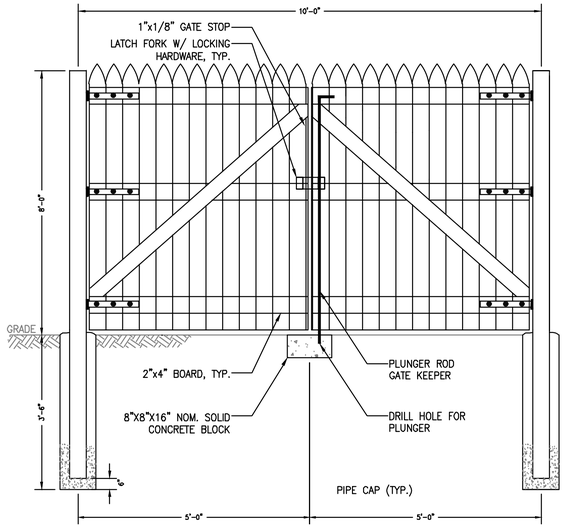
206 ROUTE 28
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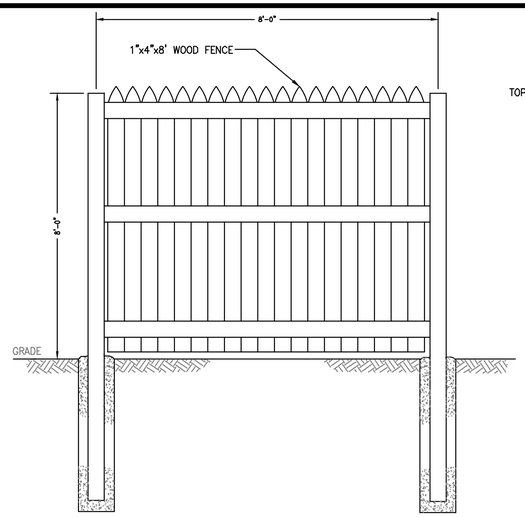
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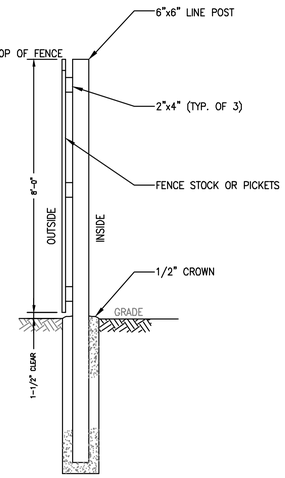
ELEVATION

SHEET NUMBER

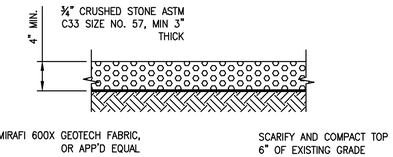
Z-4



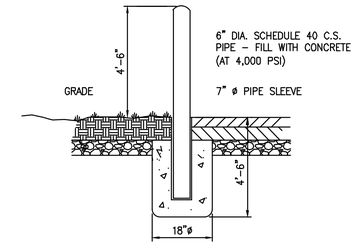




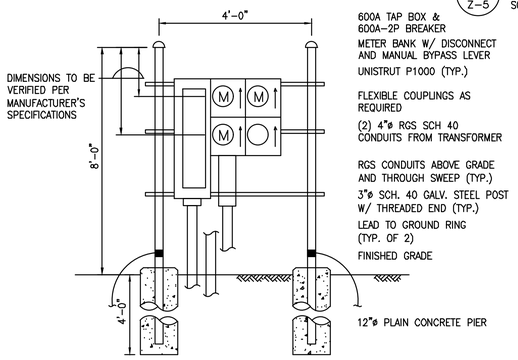
1 Z–5 **FENCE DETAILS**
SCALE: N.T.S.



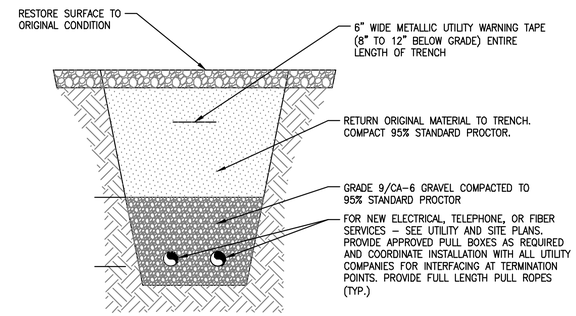
2 Z–5 **GRAVEL COMPOUND DETAIL**
SCALE: N.T.S.



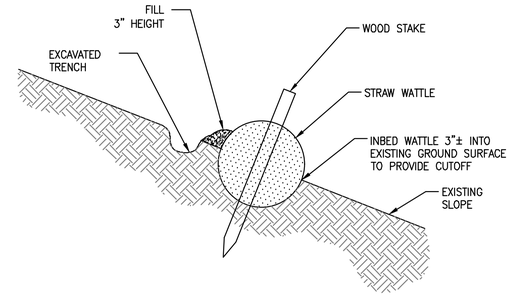
3 Z–5 **BOLLARD DETAIL**
SCALE: N.T.S.



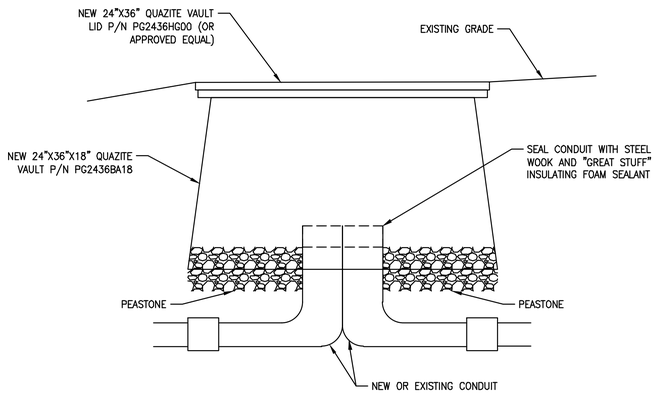
4 Z–5 **METER BOARD DETAIL**
SCALE: N.T.S.



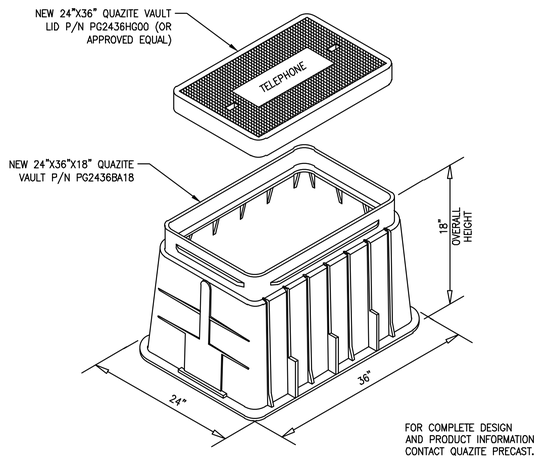
5 Z–5 **TRENCH DETAIL AT ACCESS CROSSING**
SCALE: N.T.S.



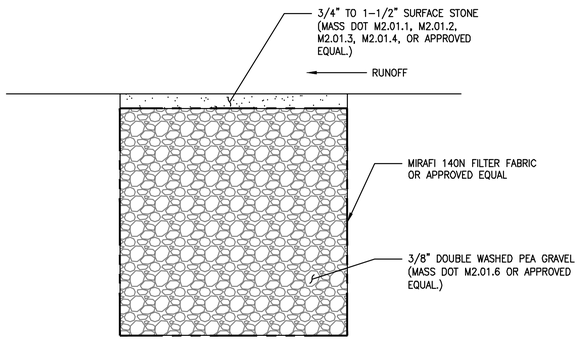
6 Z–5 **EROSION CONTROL BARRIER DETAIL**
SCALE: NTS



7 Z–5 **TELCO HANDHOLE WITH LID DETAIL**
SCALE: N.T.S.



8 Z–5 **TELCO HANDHOLE ISOMETRIC**
SCALE: N.T.S.



NOTE:
PEA GRAVEL DIAPHRAGM SHALL BE INSTALLED AROUND DOWNHILL SIDE OF FENCED COMPOUND.

9 Z–5 **PEA GRAVEL DIAPHRAGM DETAIL**
SCALE: N.T.S.

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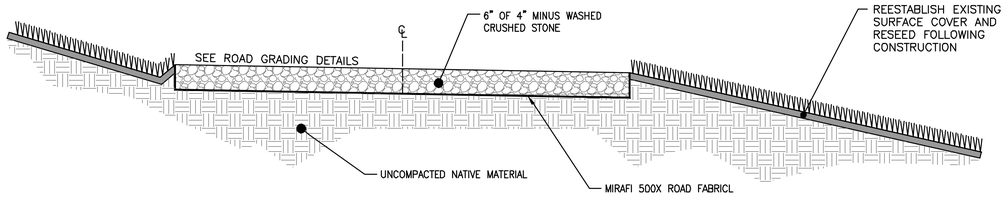
206 ROUTE 28
WEST HARWICH, MA 02671
BARNSTABLE COUNTY

SHEET TITLE

SITE DETAILS

SHEET NUMBER

Z-5

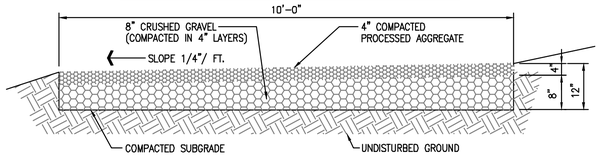


1 / Z-6 **PERMEABLE ACCESS PATH DETAIL**

SCALE: N.T.S.

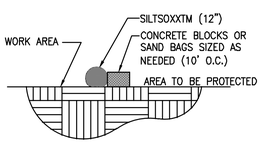
CRUSHED GRAVEL	
SIEVE	% PASSING BY WEIGHT
5"	100
3 1/2"	90–100
1 1/2"	55–95
1/4"	25–60
#10	15–45
#40	5–25
#100	0–10
#200	0–5

PROCESSED AGGREGATE	
SIEVE	% PASSING BY WEIGHT
2 1/4"	100
2"	95–100
3/4"	50–75
1/4"	25–45
#40	5–20
#100	2–12

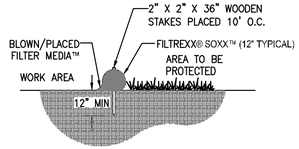


3 / Z-6 **GRAVEL ACCESS CROSS SECTION**

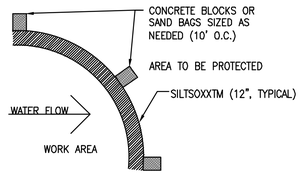
SCALE: NTS



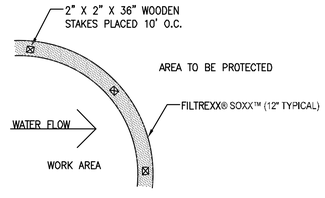
SECTION NTS



SECTION NTS



PAVEMENT OR IMPERVIOUS SURFACE

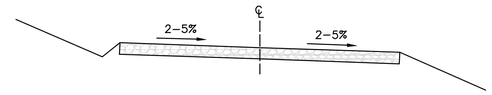


PERVIOUS AREA

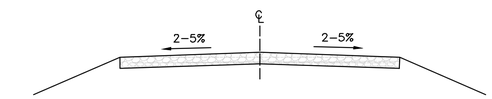
NOTES:
1. ALL MATERIAL TO MEET SPECIFICATIONS.
2. FILTER MEDIA TO MEET APPLICATION REQUIREMENTS.
3. FILTER MEDIA TO BE DISPERSED ON SITE, AS DETERMINED BY ADVANCED ENGINEERING GROUP PC

4 / Z-6 **FILTREXX BIOSOXX DETAIL**

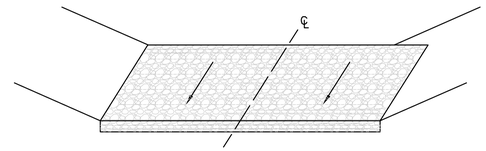
SCALE: NTS



SCENARIO 1: ROAD ACROSS HILL
GRADED WITH CONTINUOUS CROSS-SLOPE



SCENARIO 2: RAISED ROADWAY
GRADED WITH CROWN

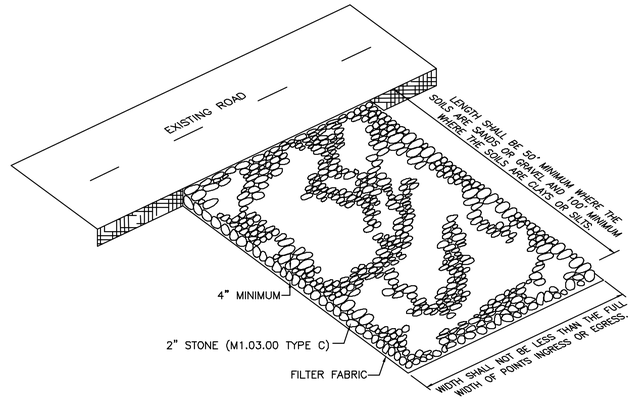


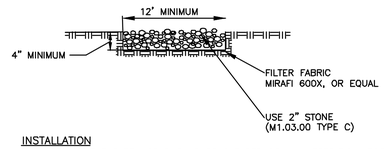
SCENARIO 3: ROAD IN VALLEY
GRADED TO DRAIN LONGITUDINALLY, NO CROSS-SLOPE

NOTE:
LIMIT SCENARIO 3 FLOW LENGTH TO 100'
MAXIMUM, AND INSTALL A WATERBAR EVERY 50'.

2 / Z-6 **ROAD GRADING DETAILS**

SCALE: NTS





INSTALLATION
THE AREA OF THE ENTRANCE SHOULD BE CLEARED OF ALL VEGETATION, ROOTS, AND OTHER OBJECTIONABLE MATERIAL, THE STONE SHALL BE PLACED TO THE SPECIFIED DIMENSIONS, AS NOTED ABOVE.

MAINTENANCE
THE ENTRANCE SHALL BE MAINTAINED IN A CONDITION WHICH WILL PREVENT TRACKING OR FLOWING OF SEDIMENTS ONTO PUBLIC RIGHT-OF-WAYS THIS WILL REQUIRE PERIODIC TOP DRESSING WITH ADDITIONAL STONE, OR ADDITIONAL LENGTH, AS CONDITIONS DEMAND, AND REPAIR, AND / OR CLEANOUT OF ANY MEASURES USED TO TRAP SEDIMENT. ALL SEDIMENT SPILLED, DROPPED, WASHED OR TRACKED ONTO PUBLIC RIGHT-OF-WAYS MUST BE REMOVED IMMEDIATELY.

LOCATION
SEE GENERAL & LOCATION PLAN FOR LOCATION OF CONSTRUCTION ENTRANCE.

5 / Z-6 **EROSION CONTROL ENTRANCE PAD DETAIL**

SCALE: NTS

Vertex Towers LLC
VERTEX TOWERS LLC
P.O. BOX 680
MEDFIELD, MA 02052

verizon
VERIZON WIRELESS
51 ALDER STREET
MEDWAY, MA 02053

AEG ADVANCED ENGINEERING GROUP
- Civil Engineering
- Site Development
179 Swansea Mall Drive
Swansea, MA 02777
-Surveying
-Telecommunications
Phone: (508) 343-1414
Fax: (401) 633-6354

COMMONWEALTH OF MASSACHUSETTS
SCOTT N. ADAMS
CIVIL
No. 46006
REGISTERED PROFESSIONAL ENGINEER

AEG PROJECT #: 2025-0041

DRAWN BY: MFR

CHECKED BY: SNA

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7	08/17/26	REVISED
8	09/22/26	REVISED

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VT-MA-0503

HARWICH

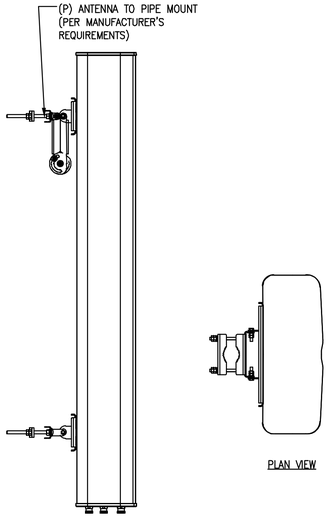
206 ROUTE 28
WEST HARWICH, MA 02671
BARNSTABLE COUNTY

SHEET TITLE

SITE DETAILS

SHEET NUMBER

Z-6

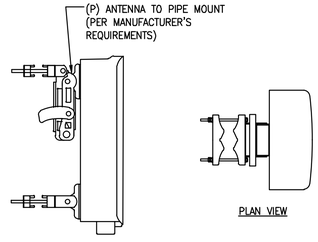


ELEVATION VIEW

PLAN VIEW

MANUFACTURER: ANDREW-COMMSCOPE
DIMENSIONS: (HxWxD) 95.9"x18.0"x7.0"
WEIGHT: 79.3 LBS. (WITHOUT MOUNTING HARDWARE)
DIMENSIONS AND WEIGHT ARE APPROXIMATE
CONFIRM W/ MANUFACTURER'S SPECIFICATIONS

1 / Z-7 ANTENNA DETAIL
SCALE: NOT TO SCALE

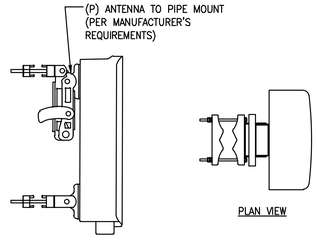


ELEVATION VIEW

PLAN VIEW

MANUFACTURER: SAMSUNG
MODEL: MT6433-77A
DIMENSIONS: (HxWxD) 36"x16"x6"±
WEIGHT: 64 LBS.
DIMENSIONS AND WEIGHT ARE APPROXIMATE
CONFIRM W/ MANUFACTURER'S SPECIFICATIONS

2 / Z-7 ANTENNA DETAIL
SCALE: NOT TO SCALE

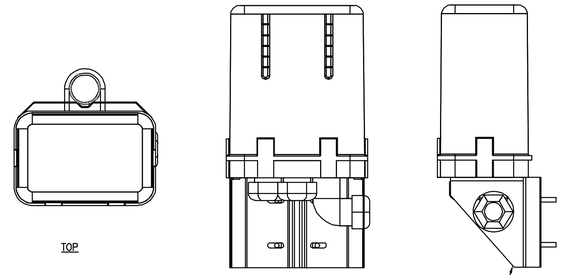


ELEVATION VIEW

PLAN VIEW

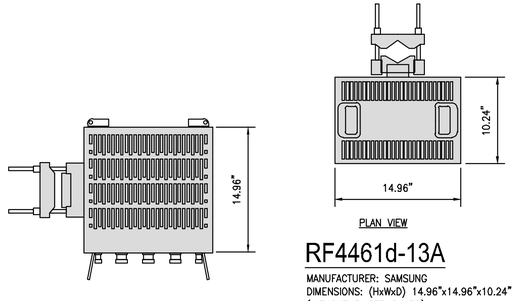
MANUFACTURER: SAMSUNG
MODEL: MF3208D
DIMENSIONS: (HxWxD) 40"x20"x9"±
WEIGHT: 65± LBS.
DIMENSIONS AND WEIGHT ARE APPROXIMATE
CONFIRM W/ MANUFACTURER'S SPECIFICATIONS

3 / Z-7 ANTENNA DETAIL
SCALE: NOT TO SCALE



"12-OVP" DC SURGE PROTECTION FOR RRH/
INTEGRATED ANTENNA RADIO HEAD
MANUFACTURER: RAYCAP
MODEL: RVZDC-6627-PF-48
DIMENSIONS: 12.6" x 16.5" x 29.5"
WEIGHT: 32 LBS.

4 / Z-7 SURGE PROTECTOR (OVP) DETAILS
SCALE: SCALE: N.T.S.



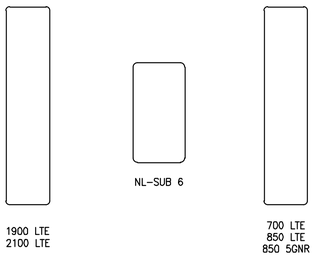
ELEVATION VIEW

PLAN VIEW

RF4461d-13A

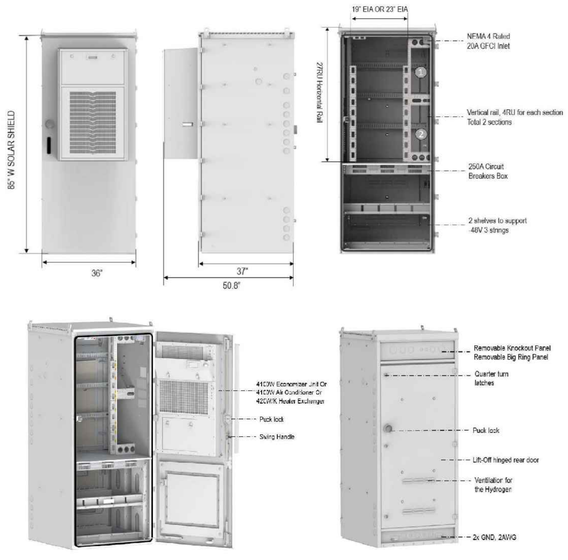
MANUFACTURER: SAMSUNG
DIMENSIONS: (HxWxD) 14.96"x14.96"x10.24"
(WITHOUT FINGER GUARD)
WEIGHT: 79 LBS. (WITHOUT FINGER GUARDS)

5 / Z-7 RRU DETAILS
SCALE: NOT TO SCALE



ANTENNAS SHOWN FROM BACKSIDE OF SECTOR

6 / Z-7 PROPOSED ANTENNA CONFIG
SCALE: N.T.S.



DIMENSIONS: (HxWxD) 74"x36"x37"
WEIGHT: 741 LBS.

7 / Z-7 EQUIPMENT CABINET DETAIL
SCALE: N.T.S.

Vertex Towers LLC
VERTEX TOWERS LLC
P.O. BOX 680
MEDFIELD, MA 02052

verizon
VERIZON WIRELESS
51 ALDER STREET
MEDWAY, MA 02053

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- Civil Engineering -Surveying
- Site Development -Telecommunications
179 Swansea Mall Drive Phone: (508) 343-1414
Swansea, MA 02777 Fax: (401) 633-6554

COMMONWEALTH OF MASSACHUSETTS
SCOTT N. ADAMS
CIVIL
No. 46006
REGISTERED PROFESSIONAL ENGINEER

AEG PROJECT #: 2025-0041

DRAWN BY: MFR

CHECKED BY: SNA

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VT-MA-0503

HARWICH

206 ROUTE 28
WEST HARWICH, MA 02671
BARNSTABLE COUNTY

SHEET TITLE

VERIZON EQUIPMENT
DETAILS

SHEET NUMBER

Z-7

NO MODEL NUMBER PROVIDED



MANUFACTURER: ILC
DIMENSIONS: (HxWxD) --"x--"x--"
WEIGHT: --- LBS.

1 Z-8 **POWER PROTECTION CABINET DETAIL**
SCALE: N.T.S.

DIMENSIONS: (HxWxD) 59"x24"x20"

2 Z-8 **FIBER CABINET DETAIL**
SCALE: N.T.S.



MANUFACTURER: RAB LIGHTING
MODEL: FFLED18
DIMENSIONS: (HxWxD) 7"x8.7"x5"
LUMENS: 2,429 lm
WEIGHT: 5.7 LBS.

4 Z-8 **FLOOD LIGHT DETAIL**
SCALE: N.T.S.

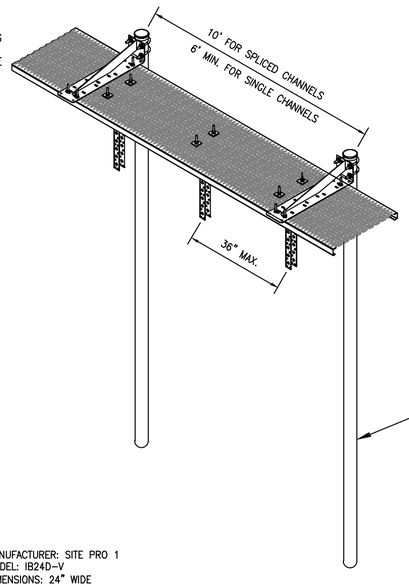


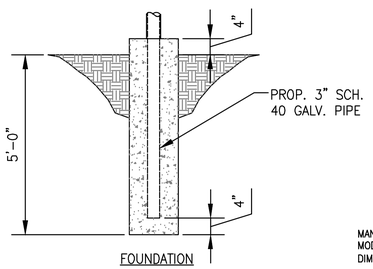
PROPOSED GENERATOR:
POWER RATING: 50 KW
FUEL: PROPANE
EXACT MAKE AND MODEL MAY VARY.
CONTRACTOR TO VERIFY.

5 Z-8 **GENERATOR DETAIL**
SCALE: N.T.S.

ICE BRIDGE NOTES:

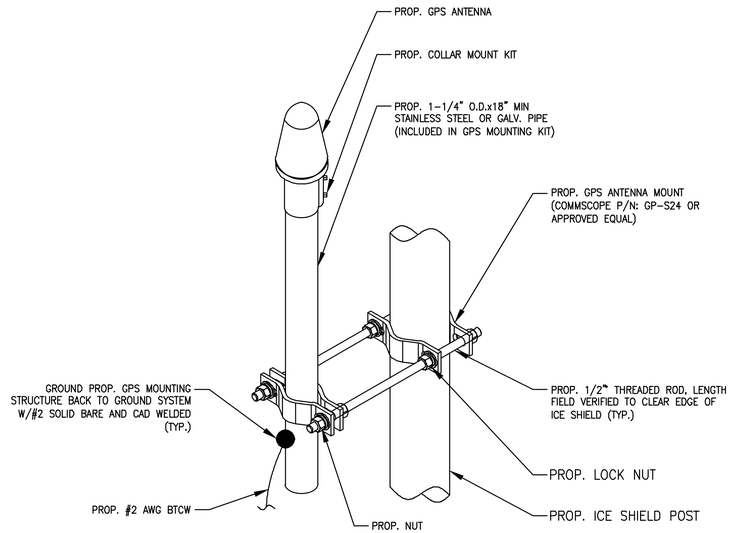
1. INCLUDES (3) UNIVERSAL VERTICAL TRAPEZE KITS PER 10' SPAN.
2. ALL COMPONENTS SHALL BE INSTALLED ACCORDING TO MANUFACTURERS SPECIFICATIONS.
3. CONTRACTOR SHALL DETERMINE REQUIRED QUANTITY OF ALL ICE BRIDGE COMPONENTS.
4. SNAP-IN HANGERS, SPLICE KITS, HINGE KITS, EXTENSION KITS, STIFFENERS AND OTHER MISCELLANEOUS HARDWARE SHALL BE PROVIDED BY THE CONTRACTOR AS REQUIRED.
5. ICE BRIDGE SHALL BE ROUTED TO ACCOMMODATE THE MINIMUM BENDING RADIUS OF THE HYBRID/COAX CABLES.
6. ICE BRIDGE COMPONENTS SHOWN ARE SCHEMATIC, CONSULT MANUFACTURER FOR EXACT AND CURRENT SPECIFICATIONS.
7. USE BASE SHOE FOR ANCHORING TO CONCRETE PAD.





MANUFACTURER: SITE PRO 1
MODEL: IB24D-V
DIMENSIONS: 24" WIDE

6 Z-8 **ICE BRIDGE DETAIL**
SCALE: N.T.S.



7 Z-8 **GPS ANTENNA MOUNT DETAIL**
SCALE: N.T.S.

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