MAYFLOWER WIND

Rhode Island Energy Facility Siting Board

Volume 1- Mayflower Wind Energy LLC – Application for License to Construct Major Energy Facilities

Volume 2 - Siting Report and Redacted Attachments

MAYFLOWER WIND

Rhode Island Energy Facility Siting Board

Volume 1- Mayflower Wind Energy LLC – Application for License to Construct Major Energy Facilities

STATE OF RHODE ISLAND
ENERGY FACILITY SITING BOARD

IN RE: MAYFLOWER WIND ENERGY LLC APPLICATION TO CONSTRUCT MAJOR ENERGY FACILITY	)))))	Docket No. SB-2022-_____

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PARTRIDGE SNOW & HAHN LLP

May 31, 2022

***VIA HAND DELIVERY & EMAIL** (emma.rodvien@puc.ri.gov)*

Ms. Emma Rodvien
Coordinator
Rhode Island Energy Facility Siting Board
89 Jefferson Boulevard
Warwick, RI 02888

Re: Mayflower Wind Energy LLC - Project Application for a License to Construct Major Energy Facilities

Dear Ms. Rodvien,

Mayflower Wind Energy LLC (Mayflower Wind) is pleased to submit this application to the Rhode Island Energy Facility Siting Board (Board or EFSB) for a license to construct major energy facilities within the State of Rhode Island, pursuant to the applicable provisions of Rhode Island General Laws (R.I.G.L.) §§ 42-98-1, *et seq*. and the EFSB Rules of Practice and Procedure 445-RICR-00-00-1, as amended (EFSB Rules). This filing includes:

1. The Application, including a Siting Report with attachments;

2. A Motion for Protective Treatment of Confidential Information to be excluded from the public record and maintained as confidential; and

3. Rhode Island Supreme Court Order, No. 2022-108-M.P. granting Eric K. Runge, Esq., Day Pitney, LLP, admission pro hac vice, to represent Mayflower Wind LLC, dated April 22, 2022.

Mayflower Wind, would like to thank the Board for their thorough review and consideration and respectfully requests that the Board grant a license to construct the Mayflower Wind transmission connector project (the Project, as described herein), pursuant to R.I.G.L. § 42-98-1, et seq.

Please feel free to contact me if you have any questions or require additional information.

Respectfully,

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STATE OF RHODE ISLAND
ENERGY FACILITY SITING BOARD

IN RE: MAYFLOWER WIND ENERGY LLC APPLICATION TO CONSTRUCT MAJOR ENERGY FACILITIES	)))))	Docket No. SB-2022-_____

MOTION OF MAYFLOWER WIND ENERGY LLC
FOR PROTECTIVE TREATMENT OF CONFIDENTIAL INFORMATION

Mayflower Wind Energy LLC ("Mayflower Wind") hereby requests that the Energy Facility Siting Board (the "Board") grant protection from public disclosure to certain confidential information submitted in support of Mayflower Wind's Application for License To Construct Major Energy Facilities dated May 31, 2022 (the "Application"). Specifically, Mayflower Wind seeks an order from the Board to protect the following information contained in the Siting Report (the "Report") submitted with the Application:

(1) confidential and competitively sensitive project cost information.

Mayflower Wind requests a determination that this information is not a public record and is protected from disclosure pursuant to the Rhode Island Access to Public Records Act, R.I. Gen. Laws §§ 38-2-1 *et seq*.

Mayflower Wind further requests that the Board preliminarily order confidential treatment of the information specified herein pending a final ruling on this motion. Pursuant to the Board's rules of practice, redacted versions of portions of the Report containing confidential information are being submitted with Mayflower Wind's public filing.

I. LEGAL STANDARD

The Rhode Island Access to Public Records Act ("APRA") establishes a balance between "public access to public records" and protection "from disclosure [of] information about particular individuals maintained in the files of public bodies when disclosure would constitute an unwarranted invasion of personal privacy." R.I. Gen. Laws § 38-2-1. In general, "all records maintained or kept on file by any public body" are "public records," unless a statutory exception applies. *Id.* § 38-2-2. When documents fall within an exception, they "are not subject to public disclosure." *Providence Journal Co. v. Convention Center Auth.*, 774 A.2d 40, 47 (R.I. 2001). *See also Providence Journal Co. v. Kane*, 577 A.2d 661, 663 (R.I. 1990) (when documents fall within a specific APRA exemption, they "are not considered to be public records," and "the act does not apply to them").

The definition of "public record" under APRA specifically excludes "trade secrets and commercial or financial information obtained from a person, firm, or corporation that is of a privileged or confidential nature." *Id.* § 38-2-2(4)(B). The Rhode Island Supreme Court has held that protected commercial or financial information under APRA includes information "whose disclosure would be likely . . . to cause substantial harm to the competitive position of the person from whom the information was obtained." *Providence Journal Co.*, 774 A.2d at 47.

Further, APRA also excludes "[s]cientific and technological secrets . . . the disclosure of which would endanger the public welfare and safety" from the definition of "public records." *Id.* § 38-2-2(4)(F).

Lastly, APRA excludes from the definition of public record "[r]ecords, reports, opinions, information, and statements required to be kept confidential by federal law or state law or rule of court." *Id.* § 38-2-2(4)(S).

II. DISCUSSION

A. Confidential Project Cost Information Is Not A Public Record

Mayflower Wind respectfully requests that protective treatment be granted for the confidential project cost information ("Cost Information") contained in Attachment H of the

Report. The Cost Information is confidential, competitively sensitive and proprietary. Public disclosure of the Cost Information would be damaging to Mayflower Wind's competitive position, would harm competition in the renewable energy industry to the detriment of Rhode Island ratepayers, and would undermine the State of Rhode Island's renewable energy policy. The limited information for which Mayflower Wind is requesting protective treatment is squarely within the APRA exemption for "commercial or financial information obtained from a person, firm, or corporation that is of a privileged or confidential nature." R.I. Gen. Laws § 38-2-2(4)(B).

Offshore wind development and the bidding processes involved in developing large offshore projects are highly competitive. Public disclosure of the Cost Information would provide direct competitors of Mayflower Wind with highly sensitive proprietary information developed at Mayflower Wind's cost and expense and would materially harm Mayflower Wind's ability to compete effectively in future solicitations. Large scale offshore wind developers participate in competitive processes with relatively few other competitors. If the Cost Information were publicly disclosed, Mayflower Wind's competitors could use that information to gain an unfair advantage in competitive solicitations. Allowing competing developers to access Mayflower Winds' Cost Information would harm competition in the industry, to the detriment of the State of Rhode Island and its ratepayers.

Public disclosure would also disadvantage Mayflower in future procurements of goods and services for the facilities that are the subject of the Application. Mayflower Wind is and/or will in the future negotiate and contract for equipment, goods and services that underlie the cost estimates provided in the Cost Information. Public disclosure of the Cost Information would allow potential bidders for contracts associated with the project to gain an advantage in the bidding and negotiation process by having knowledge of Mayflower Wind's cost estimates for the project. If Mayflower Wind is required to publicly disclose the Cost Information, it would undermine its competitive position and would frustrate its efforts to keep costs of the project as low as possible by obtaining the lowest possible price through competitive procurements. Mayflower's competitive business position, the interest of the State of Rhode Island in promoting the development of affordable alternative energy, and the interests of ratepayers would all be harmed. costs

Mayflower Wind treats the Cost Information as highly confidential; does not publicly disclose this information in the normal course of conducting its business; and takes steps to protect this information from unauthorized or accidental disclosure. To the best of Mayflower Wind's knowledge, information, and belief, the Cost Information is not otherwise available in the public domain. Accordingly, the Cost Information is exempt from disclosure under APRA because disclosure "would be likely . . . to cause substantial harm to the competitive position" of Mayflower Wind. *Providence Journal Co. v. Convention Ctr. Auth.*, 774 A.2d 40, 47 (R.I. 2001).

III. CONCLUSION

For all of the foregoing reasons, Mayflower Wind respectfully requests that the Board grant its Motion for Protective Treatment, and take the following actions to preserve the confidentiality of these documents and information: (1) maintain the unredacted versions of Attachment H of the Report as confidential, non-public records; and (2) disclose the unredacted versions of Attachment H of the Report only to the Board, its attorneys, and staff as necessary to review Mayflower Wind's Application.

Dated: May 31, 2022

Respectfully submitted,

MAYFLOWER WIND ENERGY LLC

By its Attorneys,

Christian F. Capizzo
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Application for a Major Energy Facilities
Mayflower Wind Energy LLC

MW Exhibit 1

Mayflower Wind Exhibit 1

Application

STATE OF RHODE ISLAND

ENERGY FACILITY SITING BOARD

In re: Mayflower Wind Energy LLC
(Mayflower Wind) Docket No. SB-2022-______

APPLICATION OF
MAYFLOWER WIND ENERGY LLC
FOR LICENSE TO CONSTRUCT
MAJOR ENERGY FACILITIES

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May 31, 2022

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INTRODUCTION

Mayflower Wind Energy LLC (Mayflower Wind or Applicant) submits this application to the Energy Facility Siting Board (the Board or EFSB) for a license to construct major energy facilities within the State of Rhode Island, pursuant to the applicable provisions of Rhode Island General Laws (R.I.G.L.) §§ 42-98-1, *et seq*. and the EFSB Rules of Practice and Procedure, as amended (EFSB Rules) (Application). These energy facilities are transmission connector facilities that will connect Mayflower Wind's offshore wind generation ultimately to the regional transmission system to carry out public policy requirements and bring clean energy to the region.

Mayflower Wind plans to construct and operate an offshore wind generation facility (the Clean Energy Resource) capable of generating an estimated 2,400 megawatts (MW) of renewable clean energy from federal waters on the Outer Continental Shelf (OCS) in the designated Bureau of Ocean Energy Management (BOEM) Renewable Energy Lease Area OCS-A 0521 (Lease Area). The Lease Area at its closest edge, is approximately 51 nautical miles (94 kilometers, km) southeast of the Rhode Island coast. Mayflower Wind's Clean Energy Resource encompasses all wind turbine generators (WTGs), offshore substation platforms (OSPs), and inter-array cables in federal waters. The transmission connector facilities in Rhode Island that will connect the Clean Energy Resource to the regional transmission system are referred to herein as the "Project."

The Project will traverse Rhode Island state waters making intermediate landfall on Aquidneck Island in Portsmouth, Rhode Island, crossing underground across Portsmouth, exiting into Mount Hope Bay, ultimately making landfall at Brayton Point in the Town of Somerset, Massachusetts. The Project will enable the delivery of renewable clean energy from up to 1,200 MW from the Clean Energy Resource to a point of interconnection at Brayton Point for the benefit of the region. The Project will add a major new source of renewable clean energy to the region, thereby substantially contributing to meeting the regional need for reduced greenhouse gas (GHG) emissions, increased supply of renewable clean energy from offshore wind generation and development of the offshore wind industry, while providing significant economic and societal benefits to the region. The Project is discussed in detail in the Siting Report that accompanies this Application and is incorporated herein by reference.

The Project will provide renewable clean energy benefits to Rhode Island and contribute to mitigating the impact of climate change. The Project will also provide economic benefits to Rhode Island, including, among others, jobs, spending, submerged lands lease fees for the offshore route in state waters, and tax revenues from the new onshore underground transmission assets of the Project in the Town of Portsmouth. Mayflower Wind has and will continue to work directly with the Town of Portsmouth to identify other initiatives that could support the Town's Economic Development Plan.

The Clean Energy Resource will be constructed in federal waters 51 nautical miles southeast of the Rhode Island coast, 26 nautical miles south of Martha's Vineyard and 20 nautical miles south of Nantucket, Massachusetts. The power generated by the Clean Energy Resource will be brought to shore and interconnected to the ISO-New England Inc. (ISO-NE) regional transmission system at the Brayton Point Substation, owned by New England Power Company d/b/a "National Grid." Brayton Point is the site of a decommissioned fossil fuel (coal/oil) fired 1,600-MW base load power station located on an approximately 300-acre brownfields site in the Town of Somerset on Mount Hope Bay and the Taunton River. Brayton Point is an ideal site for the interconnection of offshore wind such as the Clean Energy Resource for several reasons, including, among others: (i) the robust 345 kilovolt (kV) regional transmission infrastructure available there, (ii) the brownfields legacy of the site, which both reduces impacts to the natural environment and provides an opportunity to revitalize it for clean energy uses and for the benefit of the community, and (iii) its waterfront location.

The offshore export cable corridor (ECC) will include two (2) high-voltage, direct current (HVDC) offshore export power cables operating at +/-320 kV, plus associated communications cabling. The ECC will run from the Lease Area in federal waters through Rhode Island state waters via the Sakonnet River, making intermediate landfall on Aquidneck Island in Portsmouth, Rhode Island. The underground onshore export cables will traverse across Portsmouth and exit into Mount Hope Bay, exiting Rhode Island state waters and ultimately making landfall at Brayton Point in Massachusetts. At Brayton Point, the export cables will transmit energy to a new Mayflower Wind-developed HVDC converter station, where the power will be converted to +/-345 kV high-voltage, alternating current (HVAC). From the converter station, Mayflower Wind's 345 kV underground HVAC transmission lines will interconnect to the National Grid 345 kV Brayton Point Substation, which is the point of interconnection (POI) with the ISO-NE administered regional transmission system.

This application seeks approval from the EFSB for the specific Project facilities located within the State of Rhode Island. The Applicant requests that the Board issue a license to construct the following facilities of the Project located in Rhode Island, as further described in the Siting Report:

- Offshore export cables, consisting of two (2) HVDC submarine power cables with a nominal voltage of +/-320 kV plus associated communications cabling, installed in an ECC of length approximately 20 miles (32 km) within Rhode Island state waters. The cables will be installed in a bundled configuration where practicable. The offshore export cables will be generally co-located within a single ECC through the Sakonnet River, make intermediate landfall on Aquidneck Island in the Town of Portsmouth, Rhode Island, traverse Portsmouth underground, and transition back to offshore in Mount Hope Bay, with both landfall and exit from the Town of Portsmouth using a horizontal directional drilling (HDD) to minimize impacts.
- Two landfall work areas on Aquidneck Island for HDD activities.[1]
    - One landfall work area on the northeast side of Portsmouth will occupy portions of multiple parcels including 0 Boyd's Lane (corner of Boyd's Lane and Park Avenue), 0 Park Avenue, and public road ROW.
    - One landfall work area on the northwest side of Portsmouth (multiple locations are under consideration).

[1] Capitalized terms in this Application not otherwise defined herein are as defined in the Mayflower Wind Siting Report (May 31, 2022) (the Siting Report).

- Onshore export cables, consisting of two (2) HVDC power cables with a nominal voltage of +/-320 kV plus associated communications cabling, co-located within a single onshore export cable route of approximately 2 miles (3.2 km) across the Town of Portsmouth.

- Mayflower Wind also offers for the Siting Board's consideration a design variation to the Project, which is referred to herein as the "Noticed Variation." The Noticed Variation is intended to minimize impacts to the residents of Aquidneck Island and the environment and provide flexibility for the future expansion of the electric system in the Brayton Point area to accommodate the likely need to connect additional new renewable energy generation. This Noticed Variation would facilitate the delivery of up to an additional 1,200 MW of renewable clean energy by "right-sizing" certain facilities (primarily trenching and conduits for onshore underground transmission cables) while minimizing overall impacts to the community and environment. Developing the Project in this way would mean only one disturbance, minimizing impact to the natural and developed environment for trenching and HDD, rather than a second disturbance when a second 1,200 MW connector project might be needed in the future for additional export cables. To the extent that Mayflower Wind seeks to use this additional infrastructure for additional export cables, Mayflower Wind would return to the EFSB for a license to do so.

As noted above, Applicant is filing herewith and herein the Siting Report for the Project entitled Rhode Island Energy Facility Siting Board Siting Report - Mayflower Wind Project, dated May 31, 2022 (Siting Report), in accordance with the procedures established by the Board.[2] This application addresses each of the required elements set forth in § 1.6(B) of the EFSB Rules.

1. The exact legal name of the applicant, if the applicant is a corporation, trust, association or other organized group, the State or territory under the laws of which the applicant was created or organized, the location of applicant's principal place of business, and the names of all states where the applicant is authorized to do business.

The Applicant is:

Mayflower Wind Energy LLC, a joint venture of Shell New Energies LLC (Shell New Energies) and OW North America LLC (Ocean Winds). Mayflower Wind Energy LLC is organized under the laws of the State of Delaware.

Principal place of business: 101 Federal Street, Suite 1900, Boston, MA 02110.

Mayflower Wind is registered to do business in Rhode Island.

[2] *See In re AES/Riverside, Inc.*, Docket No. SB-88-1, Preliminary Decision and Order, pp. 12-14 (Order No.8, March 13, 1989).

2. The name, title and post office address of one person to whom correspondence or communication in regard to the application is to be addressed.

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with a copy to:

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3. Identification of the proposed owner(s) of the facility, including identification of all affiliates of such proposed owners, as such term is defined in R.I.G.L. §39-3-27.

Mayflower Wind Energy LLC is the proposed owner of the Project.

As defined in R.I. Gen. Laws §39-3-27, the affiliates of Mayflower Wind Energy LLC are:

- Shell New Energies US LLC (Shell, Shell New Energies, Shell Renewables and Energy Solutions);
- OW North America LLC (Ocean Winds), a joint venture of EDP Renewables and ENGIE;
- Somerset Windlink LLC.

4. A detailed description of the proposed facility, including its function and operating characteristics, and complete plans as to all structures, including where applicable, underground construction, transmission facilities, cooling systems, pollution control systems and fuel storage facilities associated with the proposed facility.

The Project is described in detail in §§ 2 and 4 of the Siting Report.

5. Site plan for each proposed location for the facility.

Preliminary engineering drawings are contained in Volume 2, Attachment B of the Siting Report.

6. Total land area involved.

The Project area in Rhode Island consists of a total of 138.9 acres (ac), including approximately 135.4 ac of offshore, undersea land area, and approximately 3.5 ac of onshore land area.[3]

The Project will traverse approximately 20 miles (32 km) of undersea land area in Rhode Island state waters within an approximately 1,640 ft (500 m) – 2,300 ft (700 m) wide targeted submarine Right-Of-Way (ROW). The impacted seabed area within the submarine ROW resulting from offshore export cable installation and HDD construction will be significantly smaller, but the ROW is maintained to allow flexibility and sufficient space to avoid obstacles, anomalies and sensitive benthic resources. Micro-routing of offshore export cables may be feasible in some instances to ensure sufficient burial can be achieved, and hazards and sensitive areas can be avoided, to the extent practicable.

The Project area within the offshore, submarine ROW will be approximately 135.4 ac (54.3 ha), inclusive of the 1.2 ac (0.5 ha) work area offshore at landfalls.

The undersea portion of the Project will make landfall from the Sakonnet River to Island Park Beach and Boyd's Lane, on Aquidneck Island in Portsmouth, Rhode Island. The Project will require a second landfall on the northwest side of Portsmouth where the export cable system will continue offshore into Mount Hope Bay. Both landfalls will utilize HDD to minimize impacts. Construction operations at each onshore landfall work area will require approximately 0.6 – 1.0 ac., depending on the configuration of available land and the final trajectories of the borings.

The Project will traverse approximately 2 miles (3.2 km) of underground land area between the two landfall locations, requiring linear trench excavation approximately 5 – 6 ft. (2 m) wide along most of the route, with larger areas of excavation at vault locations where segments of cable are spliced together. Splice vault installation is expected to require approximately 500 sq. ft. (50 sq. m.) of excavation approximately every 0.3 mi (0.5 km).

Noticed Variation

The Noticed Variation includes construction of two additional (spare) HDD conduits at each landfall site. Onshore installation activities for the additional HDD conduits are expected to fit within the landfall work area discussed previously. Along the approximately 2-mile (3.2 km) onshore route, linear trench excavation is expected to remain approximately the same width, with the depth of excavation increasing by approximately 1 ft. (0.3 m).

[3] Additional onshore area will be required for construction activities including equipment operations and staging alongside linear trench excavation.

Offshore installation activities for the additional HDD conduits would fit within the submarine ROW described above. The work area offshore at landfalls for the Noticed Variation would approximately double the area described above (1.2 ac).

The Noticed Variation for onshore installation activities would require installation of an additional vault at each cable splicing location (approximately every 0.3 mi [0.5 km]), roughly doubling the onshore land area required for splice vault installation.

Cumulatively, the total additional onshore land area for the Noticed Variation would be approximately 0.1 ac. Cumulatively, the total additional offshore, submarine land area for the Noticed Variation would be approximately 1.2 ac.

7. Project cost.

Due to the competitive nature of offshore wind solicitations, the Project costs are confidential and commercially sensitive information. Mayflower Wind has included them in § 4.7.6 and Attachment H of the Siting Report.[4]

8. Proposed dates for beginning of construction. completion of construction and commencement of service.

The Project construction schedule is contained in § 4.8 of the Siting Report. Mayflower Wind anticipates commencing construction in 2024 and having the facilities in service by as early as 2027.

9. Where applicable, estimated number of facility employees.

According to BVG Associates, 2021 technical report on the economic development benefits of the 1,275 MW buildout, Mayflower Wind will generate a total of 14,790 full time equivalent direct, indirect and induced jobs in the region, across all phases of the Project over the life of the Project, including in Rhode Island. The Project is expected to create a total expenditure of $2.109 billion in the region.

The Project will create positive economic development in the region, including in Rhode Island, with jobs and training opportunities in a range of fields. Mayflower Wind will encourage the hiring of personnel from the Project region to fill the required positions. Mayflower Wind has committed to make at least 75% of operations and maintenance local. Mayflower Wind has committed to supporting offshore wind education and supply chain and workforce development for the growing offshore wind industry in the region. The Project will support the state's efforts to stimulate regional growth and economic activity while meeting the renewable energy goals in New England. In addition to the revenues Mayflower Wind will pay to the State of Rhode Island for the submerged lands lease fees for the offshore route in Rhode Island state waters, the Town of Portsmouth will directly

[4] Mayflower Wind seeks confidential treatment of this cost information and requests that the Board exclude this information from the public docket. Accordingly, Mayflower Wind is providing both a confidential version of Attachment H - Project Cost Tables to the Project Siting Report, to be disclosed only to the Board, and a redacted public version. Mayflower Wind has filed for Protective Treatment of Confidential Information seeking this protection contemporaneous with this Application.

benefit through tax revenues from the new onshore transmission assets of the Project. Mayflower Wind has and will continue to work directly with the Town of Portsmouth to identify initiatives that could support the Town's Economic Development Plan.

Mayflower Wind intends to engage in programs that support workers in the transition to and the development of programs to recruit, train, and retain women, people of color, indigenous people, veterans, formerly incarcerated people, and people living with disabilities in jobs related to a cleaner energy economy.

The Project will have a positive effect on employment in the region, including in Rhode Island through: workforce hiring; procurement of materials; equipment, and services, including port use and vessel charters, and indirect economic effects to local businesses such as restaurants and hotels to support workforce needs. Mayflower Wind will prioritize hiring locally including coordination with unions, training facilities and schools in the region, and has committed to make at least 75% of operations and maintenance jobs local. Mayflower Wind has also been working closely with the Rhode Island Commerce and the Supply Rhode Island Initiative to find ways to connect with Rhode Island businesses, in particular minority and women-owned business enterprises.

Mayflower Wind recognizes that the Project is within close proximity of leading institutions and data experts offering regional competitive advantage for technological growth. Mayflower Wind is an active supporter and contributor to Southern New England Blue Economy Initiatives. Investing in areas of overlap in the Blue Economy supports economic development while also ensuring a diverse set of industries provide resilience to Rhode Island and the broader region's economy. For example, Mayflower Wind has provided a letter of support for the University of Rhode Island Research Foundation's proposal for the development of the Rhode Island Blue Economy Technology Cluster (RI BETC). Mayflower Wind will continue to work with the University of Rhode Island Research Foundation team to identify project needs and leverage the RI BETC, as well as other institutions in the state focused on Blue Economy initiatives.

A more detailed discussion of the economic impact of the Project is set forth in §§ 2.7, 7.3 and 8.1.2.2 of the Siting Report.

10. Proposed financing for construction and operation of the facility.

Mayflower Wind intends to finance the project via a combination of sponsor equity, non-recourse project finance, and tax equity.

11. Where applicable, required support facilities, e.g., road, gas, electric, water, telephone and an analysis of the availability of the facilities and/or resources to the project.

Mayflower Wind plans to provide most of the resources necessary for construction of the Project; however, a need for some local support facilities, such as the use of roads and water, is anticipated. During operation of the Project, Mayflower Wind does not anticipate the need for support facilities. Occasional access to vaults and communications handholes may be required for maintenance activities. The full description of these impacts is set forth in the Siting Report at §§ 4.5.1, 8 and 9, respectively. The Project also will involve the use of public road rights-of-way, a local university (Roger Williams University), and Montaup Country Club properties for support, and Mayflower Wind's collaboration with those entities is discussed in §§ 4.7.1 and 7.4.4 of the Siting Report.

12. A detailed description and analysis of the impact, including cumulative impact for facilities other than transmission lines, of the proposed facility on the physical and social environment on and off site, together with a detailed description of all environmental characteristics of the proposed site and a summary of all studies prepared and relied upon in connection therewith. In the case of transmission facilities, such description and analysis shall include a review of the current independent scientific research pertaining to electromagnetic fields (EMF) and shall provide data on the anticipated levels of EMF exposure and potential health risks associated with this exposure.

The environmental characteristics of the Project are described in §§ 6 (Affected Natural Environment) and 7 (Affected Social Environment) of the Siting Report, and the impacts of the Project on these environments are described in § 8 (Impact Analysis) of the Siting Report. Data regarding the current and anticipated levels of EMF are presented in § 2.6.7 (Electric and Magnetic Fields in the Marine Environment), § 2.7.8 (Electric and Magnetic Fields Onshore), § 6.11 (Affected Natural Environment), § 7.10 (Affected Social Environment), § 8.1.2.14 (Electric and Magnetic Fields) and Attachment D (Magnetic Field Modeling Report) of the Siting Report. A review of current independent scientific research pertaining to electromagnetic fields is contained in the *Magnetic Field Analysis for Rhode Island (RI) Energy Facility Siting Board (EFSB) Application Submittal* prepared by Gradient, an environmental and risk sciences consulting firm renowned for its expertise in EMF health and safety assessment. The Gradient report is accompanied by the *Brayton Point Project Cable Systems Magnetic Field Analysis* prepared by POWER Engineers, Inc. The studies relied upon for analysis of the impact, in addition to the Siting Report, are cited within the individual sections of the Siting Report. Section 9 of the Siting Report describes Mayflower Wind's planned mitigation for impacts.

The Project, together with the Clean Energy Resource, will have overall long-lasting beneficial impacts on the environment by delivering renewable clean energy and reducing GHG emissions by over 4 million metric tons annually (based on the estimated 2,400 MW capacity of the Clean Energy Resource).

13. All studies and forecasts on which the applicant intends to rely regarding the need for the proposed facility, under the statewide master construction plan submitted annually including all information, data, methodology and assumptions on which such studies and forecasts are based.

The Purpose and Need for the Project is detailed in § 3 of the Siting Report.

Mayflower Wind is developing the Project to meet the regional need for renewable clean energy from offshore wind generation. That need is driven by the strong public policies and legislative directives of the various New England states, including Rhode Island and its neighboring coastal states, Massachusetts, and Connecticut. Those policies and legislative requirements require substantial reductions of GHG emissions and substantial increase of clean energy in the supply mix, including specifically from offshore wind.

Among those policies, the Project will significantly advance Rhode Island's policies set forth in the State energy plan, Energy 2035, which calls for Rhode Island to *"increase sector fuel diversity, produce net economic benefits, and reduce greenhouse gas emissions by 45 percent by the year 2035"* in part "through support for state and federal offshore wind projects."[5] Rhode Island's Office of Energy Resources set the goal of converting Rhode Island to one hundred percent renewable by 2030. The Project substantially contributes to the transformation of the New England energy system to a carbon-free renewable energy system. With a regional system more heavily supplied by renewable clean energy resources, Rhode Island will be better able to attain its ambitious renewable clean energy goals.

The Project also directly advances the vision outlined by Governor McKee in the Rhode Island 2030 Vision Plan "Rhode Island 2030: Charting a Course for the Future of the Ocean State."[6] The vision plan focuses on harnessing the State's "Blue Economy" as well as the "Green Economy." The Project will bring offshore wind to the regional grid and contribute to the innovation, enhancement and evolution of both the Blue Economy and the Green Economy. As an Infrastructure and Transportation Objective, Rhode Island 2030 states that it is an objective to develop "infrastructure that supports the Blue Economy and life sciences, including ports that support offshore wind activity and site readiness work that enables future industrial and commercial development."[7] The vision plan notes that the State will continue to invest in needed infrastructure for offshore wind in pursuit of Rhode Island's renewable energy goals.[8]

The Project will also help Rhode Island to meet its climate goals as set forth in the General Assembly's passage of the 2021 Act on Climate with the intent of increasing Rhode Island's efficiency and effectiveness in responding to climate change.[9] The 2021 Act sets mandatory and enforceable targets for reducing greenhouse-gas emissions and transitioning to a low carbon economy. The 2021 Act on Climate requires that the Rhode Island Executive Climate Change Coordinating Council update the Greenhouse Gas Emissions Reduction Plan to develop a plan to reduce climate emissions to net zero by 2050.

In addition to the environmental benefit of delivering large amounts of renewable clean energy into the regional electricity supply mix, the Project will also improve energy system reliability and state and regional energy security. Specifically, the Project will enhance the

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[5] Rhode Island Division of Planning, *Energy 2035: Rhode Island State Energy Plan* (2015) http://www.planning.ri.gov/documents/LU/energy/energy15.pdf.

[6] Rhode Island 2030: Charting a Course for the Future of the Ocean State, Working Document (2021) https://www.ri2030.com/_files/public/RI%202030_final.pdf.

[7] *Id.* at 50.

[8] As recently as March, 2022, the McKee Administration introduced legislation at the Rhode Island General Assembly that would call for an additional 600 MW of offshore wind procured in the summer of 2022. *See* R.I. General Assembly Senate Bill No. 2583.

[9] R.I. Gen. Laws §§ 42-6.2-1 *et seq*.

energy supply and fuel diversity and improve the ability of the New England region to serve load during the winter peak demand period. With the several thousand megawatts of generation that is currently at risk for retirement in New England, the Project and the Clean Energy Resource will help fill the gap left by this generation and will be located relatively near load centers such as Providence and Boston. Further, the Project will enhance the economic competitiveness of the region by reducing energy costs through reduction of wholesale power prices, which will attract additional investment in the region, and by helping to advance the offshore wind industry in New England. Finally, by accelerating the transition to a renewable clean energy future, the Project will support the sustainability of the natural environment and improve quality of life in the region. For all these reasons, as more fully explained below, the Project satisfies the requirement that "construction of the proposed facility is necessary to meet the needs of the state and/or the region for energy of the type to be produced by the proposed facility."[10]

Massachusetts has awarded Mayflower Wind two Power Purchase Agreements (PPAs) to date, totaling approximately 1,200 MW of generation capacity. These PPAs help meet the region's expressed need and demand for additional renewable clean energy resources, and specifically offshore wind generation. The Project will fulfill Mayflower Wind's obligations to Massachusetts in accordance with the PPAs and provide substantial environmental and economic benefits to the New England region.

Additional detail on how the Project meets the need for Rhode Island and the region is set forth in § 3 of the Siting Report.

14. Complete detail as to the estimated construction costs of the proposed facility,the projected maintenance and operation costs, the estimated unit cost of energy to be produced by the proposed facility, where applicable, and the expected methods of financing the facility. For transmission lines, the applicant shall also provide estimated costs to the community such as safety and public health issues, storm damage and power outages, and estimated costs to businesses and homeowners due to power outages.

The estimated construction cost of the Project and the projected operation and maintenance costs are discussed in § 4.7.6 entitled Estimated Project Costs and Attachment H of the Siting Report. The Project cost information is commercially sensitive and confidential information to Mayflower Wind and will be provided to the EFSB under seal and accompanied by a motion for protective treatment.

Financing methods are discussed in item 10, above.

Safety and public health issues are discussed in §§ 2.7.7 and 4.6 of the Siting Report.

The effect of the Project on service and the costs to the community are discussed in § 8 of the Siting Report.

The unit cost of the energy the Project will generate is established by the PPAs approved

[10] R.I. Gen. Laws § 42-98-11(b)(1).

by the Massachusetts Department of Public Utilities which are identified more specifically in §§ 3.3.3 and 3.4.2 of the Siting Report.[11]

15. A complete life cycle management plan for the proposed facility, including measures for protecting the public health and safety and the environment during the facility's operations and plans for the handling and disposal of wastes from the facility, at the end of its useful life.

Measures for protecting the public health, safety and the environment during operation of the facilities are discussed in §§ 2.7.7 and 4.6 of the Siting Report.

Plans for the handling and disposal of wastes during construction of the facilities are discussed in §§ 4.5, 4.6.1 and 9 of the Siting Report.

At the end of the Project's operational life, it is anticipated that the Project will be decommissioned in accordance with a detailed decommissioning plan that will be developed in compliance with applicable laws, regulations, and Best Management Practices at that time. Care will be taken to handle waste in a hierarchy that prefers re-use or recycling and leaves waste disposal as the last option.

Mayflower Wind will develop a final decommissioning and removal plan for the Project that complies with all relevant permitting requirements. This plan will account for changing circumstances during the operational phase of the Project and will reflect new discoveries, particularly in the areas of marine environment, technological change, and any relevant amended legislation.

16. A study of alternatives to the proposed facility, including alternatives as to energy sources, methods of energy production and transmission and sites for the facility, together with reasons for the applicant's rejection of such alternatives. The study shall include estimates of facility costs and unit energy costs of each alternative considered.

Alternatives to the proposed facilities in this application are discussed in § 5 of the Siting Report, together with reasons for down-selecting the alternatives considered.

Cost estimates are not provided for alternatives down-selected/eliminated for non-economic reasons.

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[11] On February 10, 2020, NSTAR Electric Company d/b/a Eversource Energy (Eversource), Massachusetts Electric Company and Nantucket Electric Company, each d/b/a National Grid (National Grid), and Fitchburg Gas and Electric Light Company d/b/a Unitil (Unitil) (collectively, Companies) each filed a petition with the Department of Public Utilities (Department), pursuant to the Green Communities Act, St. 2008, c. 169, § 83C (Section 83C)1 and 220 CMR 23.00, for approval of two long-term PPAs to purchase offshore wind energy generation and associated renewable energy certificates (RECs). The Department docketed the Eversource petition as D.P.U. 20-16, the National Grid petition as D.P.U. 20-17, and the Unitil petition as D.P.U. 20-18. The DPU issued an order on November 5, 2020 approving the contracts between Mayflower Wind and National Grid, Eversource and Unitil. Mayflower Wind was also selected as a winning bid of the 83CIII solicitation conducted by Massachusetts in December, 2021.

17. Identification of Federal agencies which may exercise licensing authority over any aspect of the facility.

As outlined in § 10 of the Siting Report, the federal agencies that have,or may have, licensing authority over the Project include:

- BOEM
- U.S. Army Corps of Engineers
- U.S. Environmental Protection Agency
- U.S. Coast Guard
- Federal Aviation Administration
- National Oceanic and Atmospheric Administration, National Marine Fisheries Service
- U.S. Fish and Wildlife Service

Please also see the response to item 20, below.

18. Identification of state and local governmental agencies which may exercise licensing authority over any aspect of the facility or which could exercise licensing authority over any aspect of the facility absent the Act.

As outlined in § 10 of the Siting Report, the state and local agencies that have, or may have, licensing authority over the Project include:

- Energy Facility Siting Board
- Rhode Island Coastal Resources Management Council
- Rhode Island Department of Environmental Management
- Rhode Island Historical Preservation and Heritage Commission
- Rhode Island Department of Transportation
- Town of Portsmouth Planning and Zoning
- Portsmouth Town Council

The portion of the Project in Massachusetts is subject to the authority of the Massachusetts Energy Facilities Siting Board and the Department of Public Utilities.

Please also see the response to item 20, below.

19. Identification of foreign governmental agencies which must issue licenses that may affect any aspect of the facility.

There are no foreign licenses required for the Project.

20. All pertinent information regarding filings for licenses made with federal, state, local and foreign governmental agencies including the nature of the license sought, copies of the applicable statutes or regulations and copies of all documents filed in compliance with the National Environmental Policy Act, the date of filing and the expected date of decision.

Mayflower Wind has prepared and submitted a Construction and Operations Plan (COP) to BOEM for review.[12] The COP sets forth the detailed descriptions for the construction and operation of all proposed offshore and onshore facilities and the detailed analyses of potential environmental and socio-economic impacts that will support BOEM's review of the Project under the National Environmental Policy Act (NEPA). The applicable statutes and regulations, and the COP, are voluminous and will be provided to the EFSB upon request.[13]

Additionally, Mayflower Wind will make the following applications for licensing and permitting for the Project, as described in § 10 of the Siting Report, each of which Mayflower Wind expects to file in the timeframes indicated below.

Agency	Permit/Approval	Status
Rhode Island State Permits and Approvals		
Rhode Island Coastal Resources Management Council (CRMC)	Consistency Determination under the Federal Coastal Zone Management Act (16 United States Code [U.S.C.] §§ 1451-1464) and in accordance with the Rhode Island Coastal Resources Management Program and Special Area Management Plans. Category B Assent and Submerged Lands License pursuant to R.I.G.L. § 46-23 and 650-RICR-20-00-1 and 650-RICR-20-00-2. Letters of Authorization (LOA)/Survey Permit, if	Filed March 15, 2022. Filing planned for Q3 2022. Approved July 7, 2021 for Summer 2021 benthic surveys;

[12] Mayflower Wind made its initial submission to BOEM in February, 2021.

[13] BOEM's review of the Project's COP is currently in progress and is available for review by the public and other agencies at the following links: https://www.boem.gov/renewable-energy/state-activities/mayflower-wind; https://mayflowerwind.com/documents/. On or about November 1, 2021, BOEM issued its Notice of Intent to prepare an Environmental Impact Statement (EIS and review the Project under NEPA (NOI) See: https://www.boem.gov/sites/default/files/documents/about-boem/regulations-guidance/86-FR-60270.pdf. The publication in the Federal Register opened a 30-day comment period during which the public was allowed to identify information that the Environmental Impact Statement should consider. This comment period concluded on December 1, 2021; Mayflower Wind is awaiting BOEM's draft EIS. Once completed, BOEM will publish a Notice of Availability and request public comments on the Draft EIS. BOEM currently expects to issue the NOA in January 2023. Mayflower Wind will update the EFSB once it receives further information from BOEM.

Agency	Permit/Approval	Status
	needed, in accordance with the R.I.G.L. § 46-23 and 650-RICR-20-00-1. Freshwater Wetlands Permit pursuant to the Rules and Regulations Governing the Protection and Management of Freshwater Wetlands in the Vicinity of the Coast (650-RICR-20-00-2.1 *et seq.*) (R.I.G.L. § 46-23-6).	Approved February 4, 2022 for Spring 2022 benthic surveys; Filing planned for Q3 2022.
Rhode Island Historical Preservation and Heritage Commission (RIHPHC)	Permission to conduct archaeological field investigations (pursuant to the Antiquities Act of Rhode Island, G.L. § 42-45 and the Rhode Island Procedures for Registration and Protection of Historic Properties).	Marine Survey approved on July 2, 2021. Phase 1 Permit (No. 21-32) issued on December 17, 2021; Terrestrial Archaeological Resources Assessment (Phase 1 Report) filed March 14, 2022.
Rhode Island Department of EnvironmentalManagement (RIDEM)	Consultation with the Rhode Island Natural Heritage Program and Division of Fish & Wildlife. Water Quality Certification pursuant to Section 401 of the Clean Water Act, 33 U.S.C. §§ 1251 *et seq*. and R.I.G.L. § 46-12-3 and Dredging Permit pursuant to the Marine Infrastructure Maintenance Act of 1996 and RI Rules and Regulations for Dredging and the Management of Dredged Materials (R.I.G.L. §§ 46-6-6.1 *et seq.*) and Rhode Island Water Quality Regulations (R.I.G.L. §§ 46.12 *et seq.*).	Information provided by RIDEM on June 24, 2021; Updated information provided by RIDEM on April 11, 2022. Filing planned for Q3 2022.

Agency	Permit/Approval	Status
	Rhode Island Pollution Discharge Elimination System General Permit for Stormwater Discharge Associated with Construction Activity pursuant to R.I.G.L. § 42-12.	Filing planned for Q3 2022.
RIDEM Division of Fish & Wildlife	Letter of Authorization and/or Scientific Collector's Permit (for surveys and pre-lay grapnel run) if needed.	TBD based on consultations with RIDEM Division of Fish & Wildlife.
Rhode Island Department of Transportation (RIDOT)	Utility Permit/Physical Alteration Permit pursuant to R.I.G.L. § 24-8.	Filing planned for Q4 2023 (if applicable).
Town of Portsmouth	Zoning review, Planning review, Building permits, Street opening permits, Easements.	TBD
Federal Permits, Approvals and Consultations		
BOEM	Site Assessment Plan (SAP). Certified Verification Agent (CVA) Nomination. COP Approval/Record of Decision (ROD). Departure request for early fabrication of Mayflower Wind's OSP and inter-array cables.	Approved by BOEM May 26, 2020. Approved by BOEM November 4, 2020. Filed February 15, 2021; BOEM published Notice of Intent to Prepare Environmental Impact Statement for review of the COP on November 1, 2021; Draft EIS projected for January 2023. Approved by BOEM December 1, 2020.

Agency	Permit/Approval	Status
	Departure request for deferral of Lease Area geotechnical data. National Environmental Policy Act (NEPA) Review. Facilities Design Report and Fabrication & Installation Report.	Approved by BOEM October 5, 2021. Initiated by BOEM November 1, 2021. Filing planned for Q1 2024.
U.S. Department of Defense Clearing House	Informal Project Notification Report.	Submitted May 11, 2020.
United States Coast Guard	Private Aids to Navigation Permit. Local Notice to Mariners.	To be filed 3-6 months prior to offshore construction. To be filed prior to offshore construction.
United States Environmental Protection Agency	National Pollutant Discharge Elimination System (NPDES) General Permit for Construction Activities. Outer Continental Shelf (OCS) Permit Clean Air Act.	Filing planned for Q2/Q3 2022. Filing planned for Q4 2022.
United States Army Corps of Engineers	Individual Clean Water Act (CWA) Section 404 Permit Rivers and Harbors Act of 1899 Section 10 Permit.	Filing planned for Q4 2022.
US Fish and Wildlife Service	Endangered Species Act (ESA) Section 7 consultation. Bald and Golden Eagle Act and Migratory Bird Treaty Act compliance.	No take authorization is expected to be requested and coordination with USFWS has been initiated and will continue. Basic site evaluation and characterization studies completed and detailed studies ongoing.

Agency	Permit/Approval	Status
Federal Aviation Administration	Determination of No Hazard to AirNavigation.	It is not currently anticipated that a Determination of No Hazard will be required for offshore structures in the Lease Area due to their location outside of 12 nm (22 km); nor will this be required for the onshore substation or converter station due to the maximum height of these structures. Mayflower Wind continues to engage with the Federal Aviation Administration with regards to whether any review and/or authorization is required for offshore equipment deployed to support HDD installation of the export cables.
National Oceanic and Atmospheric Administration U.S. National Marine Fisheries Service	Marine Mammal Protection Act Incidental Harassment Authorization (IHA) or Letter of Authorization (LOA).	Pre-construction: concurrence for 2019 Geophysical and Geotechnical (G&G) surveys was issued on July 26, 2019. IHA for 2020 G&G surveys issued on July 23, 2020. IHA for 2021 G&G surveys issued on July 1, 2021. LOA Application for offshore construction and operation filed March 18, 2022.
Massachusetts State Permits and Approvals		
Massachusetts Executive Office of Energy and Environmental Affairs (EEA)	Massachusetts Environmental Policy Act (MEPA) Environmental Notification Form (ENF) and Environmental Impact Report (EIR) Certificate of EEA Secretary.	ENF filed anticipated to be filed in or about July, 2022. Brayton Point Draft EIR in Q4 2022 and Final EIR in Q2 2023.

Agency	Permit/Approval	Status
Massachusetts Energy Facilities Siting Board	Approval to construct the proposed Project, pursuant to G.L. c. 164, § 69J (Siting Petition).	Petition filed May 27, 2022.
Massachusetts Department of Public Utilities	Approval to construct and use proposed Project pursuant to G.L. c. 164 § 72 (Section 72 Petition) (consolidated with MA EFSB proceeding). Individual and comprehensive zoning exemptions from the zoning bylaws of Somerset for the proposed Project pursuant to G.L. c. 40A § 3 (Zoning Petition) (consolidated with MA EFSB proceeding).	Filed concurrently with MA EFSB Petition and Analysis.
Massachusetts Department of Environmental Protection	Chapter 91 Waterways License/Permit for dredge, fill, or structures in waterways or tidelands. Section 401 Water Quality Certification.	Joint application filing planned for Q2 2023.
Massachusetts Office of Coastal Zone Management (CZM)	CZM Consistency Determination.	Filed with COP on February 15, 2021; Revised version filed January 13, 2022; Executed one-year stay with CZM beginning on December 30, 2021, with CZM's review re-starting on December 30, 2022 and anticipated completion by May 31, 2023.
Massachusetts Department of Transportation	State Highways Access Permit(s) (if required).	Filing planned for Q3 2023, if required.
Massachusetts Board of Underwater Archaeological Resources (MA BUAR)	Special Use Permit (SUP).	Provisional SUP issued on June 25, 2021; Filed MA BUAR SUP application on August 26, 2021. SUP approved on September 30, 2021; Renewal in Q3 2022.

Agency	Permit/Approval	Status
Massachusetts Historical Commission	Project Notification Form/Field Investigation Permits (980 C.M.R. § 70.00). Section 106 consultation.	Project Notification Form submitted July 26, 2021; Terrestrial Archaeological Resources Assessment (Brayton Point Phase 1A Report) filed on March 15, 2022.
Massachusetts Fisheries and Wildlife – Natural Heritage and Endangered Species Program (NHESP)	MA Endangered Species Act Checklist. Conservation and Management Permit (if needed) or No-Take Determination.	Submitted Information Request for state-listed rare species on June 17, 2021. NHESP issued a letter identifying state-listed protected species on July 23, 2021. Request for updated list filed with NHESP on March 31, 2022; NHESP responded on April 28, 2022 – no mapped rare species habitat for MA-jurisdictional project area. Endangered Species Act Checklist filing planned for Q3 2022 (upon Final Environmental Impact Report certificate).
Massachusetts Division of Marine Fisheries (DMF)	Letter of Authorization and/or Scientific Permit (for surveys and pre-lay grapnel run).	To be determined based on consultations with DMF.

For the state filings, the CRMC submissions, the RIDOT and RIDEM authorizations, as well as the street opening permits and easements to be obtained from the Town of Portsmouth are outside EFSB jurisdiction and will be obtained separately. The other Town of Portsmouth permissions are pre-empted by the EFSB and subsumed by the EFSB's licensing authority. The applicable statutes or regulations for each of these agencies are voluminous. At the request of the EFSB, Mayflower Wind will provide copies of any particular statutes and regulations.

CONCLUSION

Mayflower Wind's application and the Siting Report, filed herewith and incorporated herein, demonstrate that the Project meets the requirements set forth in the EFSA, R.I.G.L. § 42-98-11(b) for approval of its proposal to construct major energy facilities. Specifically, the construction of the Project:

1. Is necessary to meet the needs of the state and/or region for the renewable offshore wind energy that it will produce;

2. Is cost justified in consideration of the needs it will fulfill and can be expected to transmit energy at the lowest reasonable cost to the consumer consistent with the objective of ensuring construction and operation of the Project in compliance with applicable laws and regulations; and

3. Will not cause unacceptable harm to the environment and will enhance the socio-economic fabric of the State.

For the reasons stated herein, Mayflower Wind Energy LLC, respectfully requests that the Energy Facility Siting Board grant to it, pursuant to R.I.G.L. §§ 42-98-1, *et seq.*, a license to construct the Project.

Respectfully submitted,
Mayflower Wind Energy LLC

By its attorneys,

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Supreme Court

No. 2022-108-M.P.

In re Eric K. Runge, Esq. :

O R D E R

The petition of Rhode Island attorney, Christian F. Capizzo, Esq., for admission *pro hac vice* of out-of-state attorney, Eric K. Runge, Esq. to represent Mayflower Wind Energy, LLC is granted.

Chief Justice Suttell did not participate.

Entered as an Order of this Court this ***22nd*** day of ***April 2022.***

By Order,

/s/ *Debra A. Saunders*
Clerk

MAYFLOWER WIND

MW Exhibit 2

Rhode Island Energy Facility Siting Board

Volume 2 - Siting Report

SITING REPORT

MW Exhibit 2

TABLE OF CONTENTS

TABLES

FIGURES

FIGURES (Located in Volume 2, Attachment A)

LIST OF ATTACHMENTS

Abbreviation	Definition
ac	acre
ACI	American Concrete Institute
AIS	air-insulated switchgear
ANSI	American National Standards Institute
APE	Area of Potential Effect
ASCE	American Society of Civil Engineers
ASSF	Areas Subject to Storm Flowage
BGEPA	Bald and Golden Eagle Protection Act
BMP	Best Management Practice
Board	Rhode Island Energy Facilities Siting Board
BOEM	Bureau of Ocean Energy Management
°C	degrees Celsius
CBG	Census Block Group
CEQ	Council on Environmental Quality
CFCRI	Commercial Fisheries Center of Rhode Island
C.F.R.	Code of Federal Regulations
Clean Energy Resource	Offshore wind renewable energy generation facility
CMR	Code of Massachusetts Regulations
CO	Carbon monoxide
CO_2	Carbon Dioxide
COP	Construction and Operations Plan
CRMP	Coastal Resources Management Plan
CTV	crew transfer vessels
CWA	Clean Water Act
dB	decibels
dBA	a-weighted decibels
DC	Direct Current
RIDFW	RIDEM Division of Fish and Wildlife
DOER	Massachusetts Department of Energy Resources
DP	Dynamic Positioning
DPU	Department of Public Utilities
ECC	Export Cable Corridor
EDC	electric distribution companies
EEA	Executive Office of Environmental Affairs
EFSA	Energy Facility Siting Act
EFH	Essential Fish Habitat
EIS	Environmental Impact Statement
EJ	Environmental Justice
EMF	Electric and magnetic field
ESA	Endangered Species Act
ETU	elective transmission upgrade
°F	degrees Fahrenheit

Abbreviation	Definition
FAA	Federal Aviation Administration
FEMA	Federal Emergency Management Agency
FLO	Fisheries Liaison Officer
FR	Fishery Representative
ft	feet
GDP	gross domestic product
G&G	Geophysical & Geotechnical
GHG	Greenhouse Gas
GIS	Geographic Information System
GW	gigawatt
GWSA	Global Warming Solutions Act
ha	hectare
HAPC	Habitat Areas of Particular Concern
HDD	Horizontal Directional Drilling
HVAC	High-Voltage Alternating Current
HVDC	High-Voltage Direct Current
IAC	Inter-array cable
IEEE	Institute of Electrical and Electronic Engineers
IPaC	Information for Planning and Consultation
ISO	Independent Service Operator
ISO-NE	Independent System Operator New England
K	Erodibility factor
km	kilometer
kV	kilovolt
kn	knots
Lease Area	127,388-ac (51,552-ha) Lease Area OCS-A 0521
LNM	Local Notice to Mariners
m	meter
mm	millimeter
MA CZM	Massachusetts Coastal Zone Management
MA DMF	Massachusetts Division of Marine Fisheries
MA/RI WEA	Massachusetts/Rhode Island Wind Energy Area
MassCEC	Massachusetts Clean Energy Center
MassDEP	Massachusetts Department of Environmental Protection
Mayflower Wind	Mayflower Wind Energy LLC
MF	magnetic field
mG	milligauss
mg/L	milligram per liter
MHC	Massachusetts Historical Commission
mi	mile
MLA	Massachusetts Lobstermen's Association

Abbreviation	Definition
MW	megawatt
NAAQS	National Ambient Air Quality Standards
NAD	North American Datum
National Grid	New England Power Company d/b/a National Grid
NBPA	New Bedford Port Authority
NEFSC	Northeast Fisheries Science Center
NEPA	National Environmental Policy Act
NESC	National Electrical Safety Code
NHPA	National Historic Preservation Act
nm	nautical mile
NMFS	National Marine Fisheries Service
NOAA	National Oceanographic and Atmospheric Administration
NOI	Notice of Intent
NO_x	Nitrogen oxide
NO_2	Nitrogen dioxide
NRCS	Natural Resources Conservation Service
NSRA	Navigation Safety Risk Assessment
O_3	Ozone
O&M	Operations and Maintenance
Ocean Winds	OW North America LLC
OCS	Outer Continental Shelf
OSAMP	Rhode Island Ocean Special Area Management Plan
OSHA	Occupational Safety and Health Administration
OSP	Offshore Substation Platform
PAL	Public Archaeology Laboratory, Inc.
Pb	lead
PM	Particulate Matter
POI	Point of Interconnection
POWER	POWER Engineers, Inc./POWER Engineers Consulting
PPA	Power Purchase Agreements
ppm	parts per million
PSO	protected species observers
QP	queue positions
RFP	Request for Proposals
RHA	Rivers and Harbors Appropriation Act of 1899
RICR	Rhode Island Code of Regulations
RI CRMC	Rhode Island Coastal Resources Management Council
RIDEM	Rhode Island Department of Environmental Management
RIDFW	IDEM Division of Fish and Wildlife
RI DMF	Rhode Island Division of Marine Fisheries
RIDOT	Rhode Island Department of Transportation

Abbreviation	Definition
RIEC4	Rhode Island Executive Climate Change Coordinating Council
RI EFSB	Rhode Island Energy Facilities Siting Board
RIGIS	Rhode Island Geographic Information System
RIGL	Rhode Island General Laws
RIHPHC	Rhode Island Historical Preservation and Heritage Commission
RI NHP	Rhode Island Natural Heritage Program
RIPDES	Rhode Island Pollutant Discharge Elimination System
ROD	Record of Decision
RODA	Responsible Offshore Development Alliance
ROV	Remote Operated Vehicle
ROW	Right-of-Way
RWU	Roger Williams University
SAP	Site Assessment Plan
SAV	Submerged aquatic vegetation
SESC	Soil Erosion and Sediment Control
Shell New Energies	Shell New Energies US LLC
Siting Board	Rhode Island Energy Facilities Siting Board
SO_2	Sulfur dioxide
SOV	Service Operations Vessel
SP-PVI	sediment profile and plan view imaging
TARA	Terrestrial Archaeological Assessment
TJB	Transition Joint Bays
TMDL	total maximum daily load
TSS	Total suspended solids
ULSD	ultra-low sulfur diesel fuel
U.S.	United States
USACE	United States Army Corps of Engineers
U.S.C.	United States Code
USCG	United States Coast Guard
USDA	United States Department of Agriculture
USEPA	United States Environmental Protection Agency
USFWS	United States Fish and Wildlife Service
µg/L	micrograms per liter
UXO	Unexploded ordnance
VOC	volatile organic compounds
WTG	Wind Turbine Generator
XLPE	Cross-linked polyethylene

EXECUTIVE SUMMARY

Mayflower Wind Energy LLC (Mayflower Wind), a joint venture of Shell New Energies US LLC (Shell New Energies) and OW North America LLC (Ocean Winds), is in the process of permitting the development of an offshore wind renewable energy generation facility (Clean Energy Resource). The Project, which is the subject of this Application to the Rhode Island Energy Facility Siting Board (Board or EFSB), includes all Rhode Island-jurisdictional transmission connector elements to ultimately deliver up to 1,200 megawatts (MW) of renewable clean energy to a point of interconnection (POI) with the regional transmission system at Brayton Point in the Town of Somerset, Massachusetts. The Project will affect this delivery via high-voltage direct current (HVDC) transmission crossing through Rhode Island, including the offshore submarine export cables in Rhode Island state waters traversing north up the Sakonnet River and an intermediate onshore landfall and underground export cable crossing of Aquidneck Island in Portsmouth with an exit into Mount Hope Bay, on route to the POI at Brayton Point.

The Clean Energy Resource proposed by Mayflower Wind would be capable of generating an estimated 2,400 MW of renewable clean energy from federal waters on the Outer Continental Shelf (OCS) in the designated Bureau of Ocean Energy Management (BOEM) Renewable Energy Lease Area OCS-A 0521 (Lease Area). The Lease Area at its closest edge, is approximately 51 nautical miles (94 km) southeast of the Rhode Island coast. Mayflower Wind's Clean Energy Resource encompasses all wind turbine generators, offshore substation platforms, and inter-array cables in federal waters. The Clean Energy Resource, together with its transmission connector projects, including the connector facilities that are the subject of this Application, will substantially contribute to meeting the regional need for reduced greenhouse gas (GHG) emissions and increased supply of renewable clean energy from offshore wind generation.

The components of the Project within the jurisdiction of the EFSB include approximately 17 nautical miles (31 kilometers [km]) of offshore export cables (subsea cables), approximately 2.0 miles (3.2 km) of onshore underground export cables, and two onshore landfall work areas for staging horizontal directional drilling (HDD) operations. This connector system is necessary to deliver the renewable clean energy generated by Mayflower Wind's Clean Energy Resource to Massachusetts and the region via the ISO New England Inc. administered regional transmission system. Mayflower Wind also offers, for the EFSB's consideration, a design variation option to the Project (referred to herein as the "Noticed Variation") to minimize future impacts to the residents of the community and to the environment and prudently provide flexibility, as Mayflower Wind considers planning for the future expansion of the electric system in the Brayton Point area to accommodate the likely need to connect additional new renewable energy generation.

This Noticed Variation would facilitate the delivery of an additional estimated 1,200 MW of renewable clean energy by "right-sizing" certain facilities (primarily trenching and underground conduits for onshore underground transmission cables) while minimizing overall impacts to the community and environment. The Noticed Variation would involve sizing underground infrastructure on Aquidneck Island for the HVDC export cables to include spare underground conduits at landfall and onshore locations that would be capable of accommodating an additional 1,200-MW HVDC circuit. Developing the Project in this way would mean only one disturbance of the natural and developed environment for trenching and HDD, rather than a second time when a second 1,200-MW connector project might be needed in the future for additional export cables. To the extent that Mayflower Wind seeks to use this additional infrastructure for additional export cables, Mayflower Wind would return to the EFSB for a license to do so.

The Noticed Variation is described in further detail in this Siting Report in Sections 2 and 4 to provide a comprehensive description of the overall Project and an assessment of potential impacts leading up to the identification of the Project and Noticed Variation.

Mayflower Wind is developing the Project to meet the regional need for renewable clean energy from offshore wind generation. That need is driven by the strong public policies and legislative directives of the various New England states, including Rhode Island and its neighboring coastal states, Massachusetts, and Connecticut. Those policies and legislative requirements require substantial reductions of GHG emissions and substantial increase of renewable clean energy into the regional electricity supply mix, including specifically from offshore wind.

Among those policies, the Project will significantly advance Rhode Island's policies set forth in the state energy plan, Energy 2035, which calls for Rhode Island to "increase sector fuel diversity, produce net economic benefits, and reduce greenhouse gas emissions by 45 percent by the year 2035" in part "through support for state and federal offshore wind projects."[1] Rhode Island's Office of Energy Resources set the goal of converting Rhode Island to one hundred percent renewable by 2030. The Project substantially contributes to the transformation of the New England energy system to a carbon-free renewable energy system. With a regional system more heavily dominated by renewables, Rhode Island will be better able to attain its ambitious renewable clean energy goals.

In 2021, the General Assembly amended the *Rhode Island Resilient Act* through the passage of the *2021 Act on Climate* with the intent of increasing Rhode Island's efficiency and effectiveness in responding to climate change. The *2021 Act on Climate* sets mandatory and enforceable targets for reducing greenhouse-gas emissions and transitioning to a low carbon economy.[2] The *2021 Act on Climate* requires that the Rhode Island Executive Climate Change Coordinating Council update the GHG Emissions Reduction Plan to develop a plan to reduce climate emissions to net zero by 2050.

In addition to the environmental benefit of delivering large amounts of renewable clean energy into the regional electricity supply mix, the Project will also improve energy system reliability and state and regional energy security. Specifically, the Project will enhance the energy supply and fuel diversity and improve the ability of the New England region to serve load during the winter peak demand period. With the several thousand megawatts of generation that is currently at risk for retirement in New England, the Project and the Clean Energy Resource will help fill the gap left by this generation and will be located relatively near load centers such as Providence and Boston. Further, the Project will enhance the economic competitiveness of the region by reducing energy costs through reduction of wholesale power prices, which will attract additional investment in the region, and by helping to advance the offshore wind industry in New England. Finally, by accelerating the transition to a renewable clean energy future, the Project will support the sustainability of the natural environment and improve quality of life in the region. For all these reasons, as more fully explained below, the Project satisfies the requirement that "construction of the proposed facility is necessary to meet the needs of the state and/or the region for energy of the type to be produced by the proposed facility."[3]

Massachusetts has awarded Mayflower Wind two Power Purchase Agreements (PPAs) to-date, totaling approximately 1,200 MW of generation capacity. These PPAs help meet the region's expressed need and demand for additional renewable clean energy resources, and specifically offshore wind generation. The

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[1] Rhode Island Division of Planning, *Energy 2035: Rhode Island State Energy Plan* (2015) http://www.planning.ri.gov/documents/LU/energy/energy15.pdf ("Energy 2035").
[2] R.I. Gen. Laws § 42-6.2 et seq.
[3] R.I. Gen. Laws § 42-98-11(b)(1).

Project will fulfill Mayflower Wind's obligations to Massachusetts in accordance with the PPAs and provide substantial environmental and economic benefits to the New England region.

Mayflower Wind is committed to supporting offshore wind education and supply chain and workforce development for the growing offshore wind industry in the South Coast of the New England region. The Project will support the state's efforts to stimulate regional growth and economic activity while meeting the renewable energy goals in New England. In addition to the revenues Mayflower Wind will pay to the State of Rhode Island for the submerged lands lease for the offshore route in state waters, the Town of Portsmouth will directly benefit through tax revenues from the new onshore transmission assets of the Project. Mayflower Wind has and will continue to work directly with the Town of Portsmouth to identify initiatives that could support the Town's Economic Development Plan.

Mayflower Wind evaluated multiple alternatives for both the offshore and onshore components of the Project based on selection criteria including, but not limited to, system operability and reliability, engineering feasibility, construction feasibility, commercial feasibility, conflicts with existing onshore and offshore utility infrastructure, length of route, onshore traffic congestion, offshore navigational risks, impacts to the natural environment both onshore and offshore, impacts to the social/built environment both onshore and offshore, and overall costs.

The Brayton Point POI was selected for the Project due to its robust capacity for energy injection into the existing electrical grid and the opportunity to redevelop the previously disturbed area of the former coal-fired power station property. Mayflower Wind performed a routing analysis to determine the best route to connect the Clean Energy Resource to the Brayton Point POI. Longer onshore crossings of Rhode Island through Middletown, Portsmouth, Little Compton and Tiverton, and longer offshore routes through the East Passage and West Passage of Narragansett Bay and through the northern passage of the Sakonnet River with no intermediate crossing were carefully considered. Mayflower Wind also evaluated an offshore export cable route through Buzzards Bay in Massachusetts, with a landfall at Horseneck Beach and an onshore export cable route through Westport and Fall River, Massachusetts. These route alternatives were later dismissed due to a variety of engineering, construction, environmental, and other stakeholder concerns. Mayflower Wind also considered four onshore route variants in the town of Portsmouth that all share a "common route" that follows the southern end of Boyds Lane in Portsmouth. Mayflower Wind selected the proposed route for the Project, up the Sakonnet River, making intermediate landfall underground across Aquidneck Island in Portsmouth, using one of the onshore route variants, to Mount Hope Bay and then to Brayton Point. This route was selected because it is a technically and commercially feasible route that would avoid or minimize adverse impacts relative to other routes considered to reach the POI and deliver energy to the regional transmission system.

The Project balances each of the three components required for consideration by the EFSB; specifically, the need for the Project in Rhode Island and across the region, cost, and potential environmental and socio-economic factors.

Accordingly, Mayflower Wind seeks a license from the EFSB to construct and operate the Project to ensure the safe and reliable transmission of renewable clean power to customers in New England. As described in greater detail in the remaining sections of this Siting Report, as well as Mayflower Wind's Application, the Project satisfies the EFSB's standards on need, cost justification, the absence of unacceptable harm to the environment, and enhancement to the socio-economic fabric of the State, as set forth in Rhode Island General Law § 42-98-11. Mayflower Wind respectfully requests that the EFSB grant the license for the Project.

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1 STANDARDS

1.1 INTRODUCTION

This Application is being submitted by Mayflower Wind Energy LLC (Mayflower Wind) to satisfy the applicable requirements of Rhode Island General Laws (RIGL) 42-98-1 et seq., the *Energy Facility Siting Act*. Section 4 of the *Energy Facility Siting Act* states that "No person shall site, construct, or alter a major energy facility within the state without first obtaining a license from the siting board pursuant to this chapter." Transmission lines with a design rating of greater than or equal to 69 kilovolts (kV) are classified as major energy facilities. The Rhode Island Energy Facility Siting Board (EFSB or Board) application filing requirements and associated procedures for a major generating facility are established in the *State of Rhode Island and Providence Plantations Energy Facility Siting Board Rules of Practice and Procedure, April 11, 1996* (the RI EFSB Rules).

1.2 PROJECT TEAM

This Project Siting Report has been prepared by Mayflower Wind employees and consultants retained by Mayflower Wind. The description of the affected natural and social environments and impact analyses were prepared by POWER Engineers, Inc. (POWER) and other consultants to Mayflower Wind including:

- Partridge Snow & Hahn, LLP in Providence, Rhode Island for compliance with EFSB policies and requirements.
- Day Pitney LLP for energy regulatory, environmental, property, and permitting support.
- Tetra Tech for impact assessments for various resources, including aquatic and terrestrial wildlife, wetlands/water bodies, threatened and endangered species, marine mammals and sea turtles, scenic resources, land use, and visual.
- Swanson Environmental Associates, LLC for hydrodynamic and sediment dispersion modeling to support analysis of hydrodynamic conditions and sediment dispersion related to offshore construction of export cable and Horizontal Directional Drilling (HDD) installation.
- Innovative Environmental Science for numerical model development and application, hydrodynamics, hydraulics, water quality, waves, meteorology and sediment, pollutant, thermal, oil and chemical spill transport and fates.
- The Public Archaeology Laboratory, Inc. (PAL) for terrestrial archaeological/cultural resources assessment.
- R. Christopher Goodwin & Associates, Inc. for marine archaeological resources assessment.
- AECOM for impact assessments for various resources including air quality and emissions and benthic habitats.
- Gradient, Inc. for electric and magnetic fields (EMF) assessment and analysis of health effects of EMF.
- LGL Ecological Research Associates for analysis of potential impacts to marine mammals and sea turtles.
- DNV GL for avian exposure risk assessment.
- Fugro USA Marine Inc. for benthic habitat surveys.
- Integral Consulting, Inc. for benthic habitat surveys.
- BVG Associates for economic development benefits.

1.2.1 Mayflower Wind

Mayflower Wind is a limited liability company organized under the laws of the state of Delaware on June 7, 2018, upon filing its Certificate of Formation. Mayflower Wind is a 50:50 joint venture between Shell New Energies US LLC (Shell New Energies) and OW North America LLC (Ocean Winds). The combined experience brings a depth of real-world experience in designing, permitting, financing, constructing, and operating wind projects. Mayflower Wind is registered to do business in Rhode Island.

Mayflower Wind's Massachusetts based team includes scientists, engineers, and managers with domestic offshore wind energy expertise and a strong knowledge of the local grid, infrastructure and coastline, and the ocean waters south of Brayton Point.

Mayflower Wind holds the lease for the approximately 127,388-acre (ac) (51,552-hectare [ha]) Lease Area OCS-A 0521 (Lease Area) and is focused on developing and building a state-of-the-industry offshore wind energy facility. The privately financed Project will provide "zero carbon" electrical power to the New England electrical grid and help make the Southeast New England coast region an important hub of the growing Atlantic Coast wind energy industry.

1.2.2 POWER (Lead Environmental and Engineering Design Support)

POWER Engineers Consulting, PC, a professional services corporation, is an affiliate of POWER Engineers, Inc., and is registered as a foreign corporation in New York, Massachusetts, North Carolina, and Michigan, in order to satisfy engineering licensing requirements in those states. POWER is registered to do business in Rhode Island as POWER Engineers, Inc. POWER is a global consulting firm specializing in the delivery of integrated solutions for its clients in power delivery, generation, renewables, storage, and campus energy, among others. POWER offers complete multidisciplinary engineering, including environmental and program management services. Founded in 1976 by professional engineers with experience in high and medium voltage electric utility systems, it is a 100 percent employee-owned company with more than 2,700 employees and 45 offices throughout the United State (U.S.) and abroad. Its professional services business has revenues of $500 million to $1 billion U.S. dollars.

POWER is a leading environmental consultant for state, regional, and local permitting, as well as performing studies that include, but are not limited to biological resources, physical resources, cultural resources, and visual resources. Regarding the Mayflower Wind projects, POWER Environmental is responsible for evaluation of environmental impacts and providing environmental support for the routing analysis. It is also performing conceptual and preliminary engineering services for the onshore transmission cables and HDD aspects of the project as well as providing technical support of the federal and state permitting processes. POWER's work for the Mayflower Wind project is managed out of its Foxborough, Massachusetts office.

1.2.3 Partridge Snow & Hahn LLP, Counsel

Partridge Snow & Hahn, LLP is a law firm with offices in Providence, Rhode Island and New Bedford and Boston, Massachusetts. Their services include a diverse range of complex environmental matters including enforcement, regulatory and compliance issues, renewable energy projects including large scale solar and offshore wind projects, real estate development, environmental remediation including brownfields, coastal/waterfront violations, permitting and waterfront property rights. They have experience representing clients before the Rhode Island Coastal Resources Management Council, the Rhode Island Department of Environmental Management, the Rhode Island Public Utilities Commission, the EFSB, as well as before the zoning boards, planning boards and conservation commissions in towns and municipalities across New England.

1.2.4 Day Pitney LLP, Counsel

Day Pitney, LLP is a full-service law firm with offices in multiple cities, including Providence, Washington D.C., New York City, Miami, and Boston. Among its services most relevant to the Project, Day Pitney has a national energy practice, including ISO New England Inc. (ISO-NE), transmission, interconnection and market rules expertise, and a Massachusetts regulatory, environmental, property and permitting practice, including before state and local authorities and agencies. The firm is providing counsel on all of these matters to Mayflower Wind with respect to the Project and will participate in representing Mayflower Wind before the Rhode Island and Massachusetts Siting Boards.

1.2.5 Tetra Tech

Tetra Tech is a U.S.-based consulting, engineering, program management, construction management, and technical services firm with extensive experience in terrestrial and marine renewable energy projects. As an industry leader in wind energy consulting, Tetra Tech has conducted work on more than 500 wind projects across North America, totaling 25,000 megawatts (MW) of wind generation in operation or under construction. Tetra Tech has acted as the Principal Consultant on the development of more than 50 offshore facilities, including deep water ports, oil and gas platforms, subsea pipelines, subsea transmission cables, and renewable energy projects: including wind, wave, and hydrokinetic projects.

In support of these projects, Tetra Tech has conducted detailed impact assessments for various resources, including aquatic and terrestrial wildlife, wetlands/water bodies, threatened and endangered species, archaeological/historic resources, scenic resources, and land use. Tetra Tech has also led the design and execution of complex offshore marine studies (e.g., geophysical, geotechnical, marine cultural, offshore avian and bat, and marine species and habitat evaluations) and completed hundreds of National Environmental Policy Act-compliant environmental impact assessment reports.

1.2.6 Swanson Environmental Associates, LLC

Swanson Environmental Associates, LLC was founded by J. Craig Swanson in 2015 to continue his professional interests and service to clients in marine and freshwater environmental analyses. Dr. Swanson was formerly a senior associate of RPS ASA, and a cofounder and principal of Applied Science Associates. He holds a Ph.D. in Ocean Engineering from the University of Rhode Island. This firm is providing hydrodynamic and sediment dispersion modeling to support analysis of hydrodynamic conditions and sediment dispersion related to offshore construction including offshore export cable and HDD installation along the Project's entire export cable route from the Lease Area to the landfall at Brayton Point in Somerset.

1.2.7 Innovative Environmental Science

Daniel L. Mendelsohn possesses extensive experience in environmental engineering applications with a focus on numerical model development and application, hydrodynamics, hydraulics, water quality, waves, meteorology and sediment, pollutant, thermal, oil and chemical spill transport and fates. His experience is in the implementation and management of engineering analyses, modeling studies, metocean observations and assessment, environmental impact assessments, permitting support, site assessments, water quality and total maximum daily load (TMDL) analyses, dredging impacts assessment, resource assessment, feasibility studies, field monitoring programs and data analysis, providing support to the public and private sector for engineering, environmental and permitting issues. Mr. Mendelsohn holds an M.S. and B.S. in Mechanical Engineering and Applied Mechanics.

1.2.8 The Public Archaeological Laboratory

The PAL is a leading authority in cultural resource management and specializes in archaeology, architectural history, research and documentation, and preservation planning throughout New England and the Mid-Atlantic. Established in 1982, PAL has steadily grown to become the largest private cultural resource management firm in New England with a staff of more than 50 people. An independent, non-profit corporation located in Pawtucket, Rhode Island, PAL has successfully completed more than 4,200 projects in the areas of cultural resource management, historic preservation planning, regulatory consultation, compliance with Section 106 of the National Historic Preservation Act, and state and federal historic tax credit projects. The principal investigators for archaeology are Registered Professional Archaeologists. All staff meet the professional criteria for their respective disciplines established by the National Park Service (36 Code of Federal Regulations [C.F.R.] 61). PAL's clients include federal and state agencies, municipalities, utility companies, engineering firms, private corporations, non-profit organizations, individual property owners, and Native American Tribes. PAL is responsible for preparing the Terrestrial Archaeological Resources Assessment (TARA) for the Project.

1.3 Compliance With EFSB Requirements

Compliance with the requirements of Rule 1.6 of the EFSB Rules of Practice and Procedure (445-Rhode Island Code of Regulations [RICR]-00-00-1) (the RI EFSB Rules) is addressed in the Project Application which is filed with the EFSB under separate cover herewith.

2 PROJECT SUMMARY

2.1 INTRODUCTION

This Siting Report has been prepared in support of an Application to the EFSB for construction of jurisdictional facilities and for submission with other state and local applications required for the Project. The Siting Report has been prepared in accordance with the RI EFSB Rules to provide information on the potential impacts of the offshore wind energy Project and onshore point of interconnection (POI) proposed by the Applicant, Mayflower Wind. The Siting Report describes the Project and explains the need for the Project. The Siting Report also discusses the alternatives to the Project that were considered and analyzed, describes the specific natural and social features that have been assessed for the evaluation of impacts, discusses potential impacts, presents a mitigation plan for potential impacts associated with the construction of the Project, and describes permit requirements.

The Purpose and Need for the Project is detailed in Section 3 of this Siting Report. Section 3 summarizes the studies and forecasts completed by the independent system operator for the ISO-NE and Mayflower Wind that demonstrate the interconnection queue positions for the Brayton Point POI and support the need for the Clean Energy Resource and the Project. Section 4 provides a detailed description of each of the components of the Project, and also discusses construction practices, offshore and onshore installations, EMF, safety and public health considerations, estimated costs for the Project, and an anticipated Project schedule. An analysis of alternatives to the Project, together with reasons for the dismissal of certain alternatives, is presented in Section 5 of this report. Detailed descriptions of the characteristics of the natural and social/developed environments within and immediately surrounding the Project location are included as Sections 6 and 7, respectively. Section 8 of this report identifies the potential impacts of the Project on the natural and social environments. Section 9 summarizes proposed mitigation measures which are intended to avoid or minimize the potential impacts associated with the Project. Finally, Section 10 lists the federal, state, and local government agencies that may exercise licensing authority and from which the Applicant may be required to obtain approvals prior to constructing the Project. Volume 2 of this Siting Report contains supporting mapping and figures (Attachment A) and other attachments in support of this Siting Report.

2.2 PROJECT DESCRIPTION AND PROPOSED ACTION

Mayflower Wind is in the process of permitting the development of an offshore wind renewable energy generation facility (Clean Energy Resource) capable of generating an estimated 2,400 MW of renewable clean energy from federal waters on the Outer Continental Shelf (OCS) in the designated Bureau of Ocean Energy Management (BOEM) Renewable Energy Lease Area OCS-A 0521 (Lease Area). The Lease Area at its closest edge, is approximately 51 nautical miles (nm) (94 kilometers [km]) southeast of the Rhode Island coast. Mayflower Wind’s Clean Energy Resource encompasses all wind turbine generators (WTGs), offshore substation platforms (OSPs), and inter-array cables in federal waters. The Clean Energy Resource, together with its transmission connector projects, including the connector facilities that are the subject of this Analysis, will substantially contribute to meeting the regional need for reduced greenhouse gas (GHG) emissions and increased supply of renewable clean energy from offshore wind generation, thereby carrying out important public policy requirements of the State of Rhode Island, the Commonwealth of Massachusetts, and the New England region.

Renewable clean energy from the Clean Energy Resource will be delivered to the regional transmission system by means of connector facilities comprised of submarine offshore export cable(s) from one or more OSPs within the Lease Area that will run through federal waters and Rhode Island Sound to the Sakonnet River, making intermediate landfall on Aquidneck Island in Portsmouth, Rhode Island, then into Mount Hope Bay where the cables enter Massachusetts state waters and make landfall at Brayton Point in Somerset, Massachusetts. Brayton Point is an ideal site for the interconnection of offshore wind such as the Clean Energy Resource for several reasons, including, among others: (i) the robust 345 kV regional transmission infrastructure available there, (ii) the brownfields legacy of the site, which both reduces impacts to the natural environment and provides an opportunity to revitalize the site for clean energy uses, (iii) its waterfront location, and (iv) its lack of direct residential abutters.

For the purposes of this Analysis the "Project" includes a new Rhode Island-jurisdictional offshore and onshore transmission system necessary to deliver the renewable clean energy generated by Mayflower Wind's Clean Energy Resource to the regional transmission system. The Project is defined as the export cables in Rhode Island waters, which run through Rhode Island Sound, north up the Sakonnet River, making intermediate landfall underground across Aquidneck Island in Portsmouth, Rhode Island for approximately 2.0 miles (mi) (3.2 km) before exiting into Mount Hope Bay (Figure 2-1). The Project's onshore features and intermediate underground crossing of Aquidneck Island in Portsmouth are shown in Figure 2-2. Additional information about the planned Project design and construction layouts can be found in Attachment B – Preliminary Engineering Drawings. These export cables will help connect the Clean Energy Resource to the POI at the existing New England Power Company d/b/a "National Grid." The Project also includes a design variation (Noticed Variation) that would apply to the landfall and onshore export cable portions of the Project. The Noticed Variation would prudently and efficiently provide for potential future increased delivery of energy by authorizing increased trenching and conduits at the site to support additional power flows above 1,200 MW if needed in the future.

The Clean Energy Resource, together with additional federal-jurisdictional facilities, the Project (Rhode Island-jurisdictional), and the Massachusetts-jurisdictional facilities are shown in the Project Overview Map (Figure 2-3) and include the following components:

Clean Energy Resource

- Up to 149 WTG/OSP positions (up to 147 WTGs) conforming to a 1.0 nm x 1.0 nm (1.9 km x 1.9 km) grid layout across the entire Massachusetts/Rhode Island Wind Energy Area (MA/RI WEA), as agreed upon by Mayflower Wind and the other MA/RI WEA leaseholders.
- Up to five OSPs to be connected to the WTGs via inter-array cables within the Lease Area.

Additional Federal-jurisdictional Facilities

- Two High-Voltage Direct Current (HVDC) submarine power cables and associated submarine communications cabling. The cables will be installed in a bundled configuration where practicable.

Project (Rhode Island-jurisdictional)

- Two HVDC submarine power cables and associated communications cabling. The cables will be installed in a bundled configuration where practicable.
- The cables will be generally co-located within a single corridor through the Sakonnet River, make intermediate landfall on Aquidneck Island in Portsmouth, Rhode Island, traverse underground through the Town of Portsmouth for up to approximately 2.0 mi (3.2 km), and return to the water in Mount Hope Bay, with both landfall and exit from Aquidneck Island using HDD to minimize impacts.

- Two landfall work areas on Aquidneck Island in Portsmouth, Rhode Island for HDD construction activities.
    - One landfall work area on the northeast side of Portsmouth will occupy portions of multiple parcels including 0 Boyd's Lane (corner of Boyd's Lane and Park Avenue), 0 Park Avenue, and public road ROW.
    - One landfall work area on the northwest side of Portsmouth (multiple locations are under consideration).
- Two new underground onshore HVDC export power cables and associated communications cabling co-located within a single corridor across the Town of Portsmouth.

Massachusetts-jurisdictional Facilities

- The HVDC export cables will continue into Massachusetts state waters in Mount Hope Bay and make landfall at Brayton Point using HDD.
- After making landfall, two new underground HVDC onshore export power cables will transmit the Project's HVDC electric generation to a new, Mayflower Wind-developed onshore HVDC converter station. Associated communications cabling will be installed underground with the power cables.
- The onshore converter station is a specialized electrical substation designed to convert the HVDC power from the export cables to HVAC power to enable interconnection to the existing transmission infrastructure.
- Underground HVAC transmission lines will connect the converter station to the existing National Grid 345-kV substation at the Brayton Point POI.

Mayflower Wind evaluated multiple siting alternatives for both the offshore and onshore components of the Project based on several selection criteria including, but not limited to, system operability and reliability, engineering feasibility, construction feasibility, conflicts with existing onshore and offshore utility infrastructure, length of route, onshore traffic congestion, offshore navigational risks, impacts to the natural environment both onshore and offshore, impacts to the social/built environment both onshore and offshore, and overall costs.

As described below, Mayflower Wind considered the need for the Project in Rhode Island and across the region, the cost, and the potential environmental and socio-economic benefits and impacts. The Project balances each of these components required for consideration by the EFSB.

The Project concept schematic below illustrates the offshore and onshore components of the Project in a cross-sectional view. Additional representative diagrams and photographs can be found in Attachment C – Photo Array.

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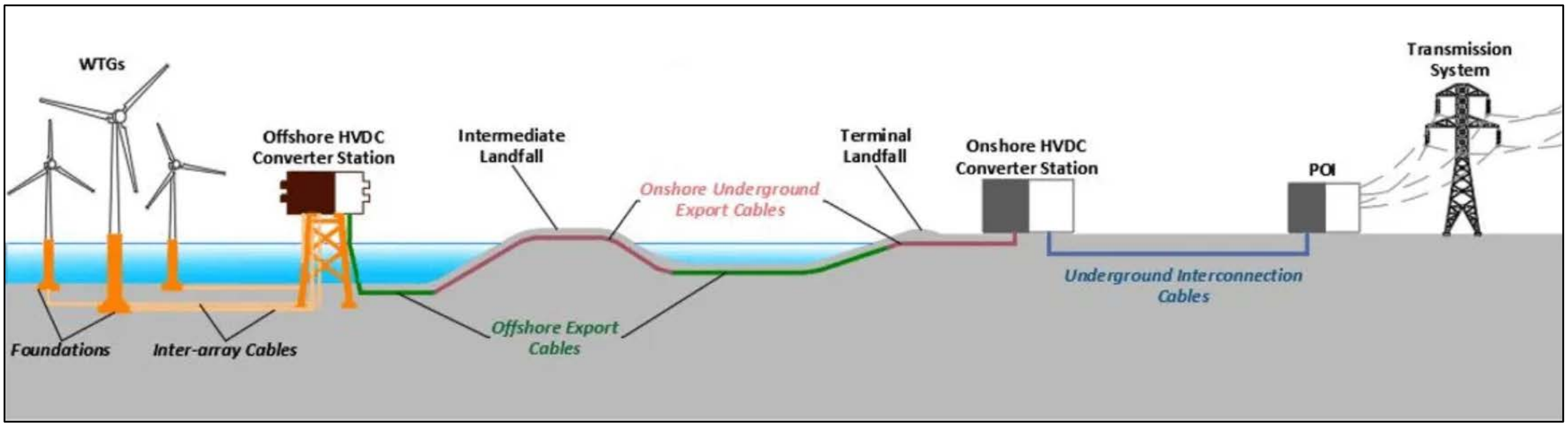

PROJECT CONCEPT SCHEMATIC

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2.3 PURPOSE AND NEED

The purpose of the Project is to deliver up to 1,200 MW of renewable clean energy from Mayflower Wind's offshore Clean Energy Resource to the New England region. Mayflower Wind's Project is necessary to meet the needs of the state and/or region for substantial reductions in GHG emissions and substantial increase to the renewable clean energy supply, delivered safely and reliably to the mainland from offshore wind at the lowest reasonable cost to the consumer to meet the need. The policies and legislative directives of the New England states, including Rhode Island and Massachusetts, express a clear need for additional renewable clean energy generation from offshore wind.

2.4 ALTERNATIVES

In accordance with the requirements of the EFSB, Mayflower Wind evaluated alternatives to the Project. An important goal in the planning and development of the Clean Energy Resource and the transmission connector facilities, including the offshore components within state waters and onshore components in Rhode Island, was to ensure that the selected routes, landfalls and POI, are the most appropriate in terms of cost and reliability, and that environmental impacts are avoided, minimized and mitigated to the fullest extent practicable. Mayflower Wind undertook analyses to evaluate the feasibility of alternatives to the Project to ensure these objectives were met.

The alternatives that Mayflower Wind considered and evaluated included: non-transmission alternatives; transmission technologies; potential POIs; onshore HVDC converter station site options; offshore export cable corridors; offshore export cable design and installation options; offshore export cable landfall site alternatives; onshore export cable routes; and underground cable design options and installation configurations. Some of these alternatives were eliminated based on feasibility assessments, or the inability of the alternative to address the identified interconnection need. Other alternatives that were found to be feasible and capable of addressing the identified need were further examined on the basis of estimated costs, constructability, operability, environmental impact assessments and reliability assessments. Based on this analysis, Mayflower Wind concluded that the proposed Project would best satisfy the EFSB's standards on need, cost justification, the absence of unacceptable harm to the environment, and enhancement to the socio-economic fabric of the State, as set forth RIGL § 42-98-11.

2.5 SUMMARY OF ENVIRONMENTAL IMPACTS AND MITIGATION

The Project design will continue to be refined and the Project will be constructed in a manner that avoids or minimizes the potential for environmental impacts. Each Project component, such as the offshore export cables, HDD landfalls, and onshore export cables, was evaluated for potential impacts to natural and social environment, as detailed in Sections 6 and 7, respectively. Overall, industry standard construction techniques, both offshore and onshore, and best management practices (BMPs) have been incorporated into the design. The installation of the offshore export cables will be performed in accordance with the Construction and Operations Plan (COP) filed with BOEM, in addition to the Army Corps of Engineers - New England District (USACE-NED or USACE) Section 10 Permit, the Rhode Island Coastal Resources Management Council (RI CRMC) Category B Assent, and the Rhode Island Department of Environmental Management (RIDEM) Section 401 Water Quality Certification and Dredge Permit, all of which are to be applied for by Mayflower Wind in 2022. Construction activities for the onshore export cables will be completed in compliance with the Rhode Island Pollutant Discharge Elimination System (RIPDES) General Permit, which will include a site-specific Soil Erosion and Sediment Control (SESC) Plan and weekly monitoring until construction sites are stabilized and restored.[1] Mayflower Wind will retain the services of construction and environmental compliance monitors throughout the offshore and

[1] 250-RICR-150-10-1.1 et seq.

onshore construction phases, respectively, of the Project. More detailed information is presented in Sections 4, 6, 8, and 9. Mayflower Wind will coordinate with Town of Portsmouth officials to determine the need for such monitoring.

2.6 Summary of Natural Environmental Impacts and Mitigation

2.6.1 Geology and Soils

Mayflower Wind anticipates that impacts to geological resources during offshore construction resulting from seafloor disturbance and sediment suspension and deposition during the installation of the offshore export cables will occur in the immediate area of installation and will be temporal and spatially limited to the approximate footprint of the cable-lay equipment or side-cast within or near the Project corridor on like substrate to the maximum extent practicable.

A hydrodynamic and sediment transport modeling assessment was completed to evaluate sediment dispersion during installation of the offshore export cables within the export cable corridor (ECC). Scour was evaluated based on data collected during the geological and geophysical surveys, available hydrodynamic modelling results, as well as literature data. Despite conservative model assumptions applied during the assessment, water column TSS concentrations and seabed deposition sediment thickness and extent as a result of the cable installation/burial operations and HDD exit pit dredging remain generally localized and of short duration. In all areas excluding Mount Hope Bay and a portion of the offshore export cables in Rhode Island Sound, the TSS concentration fell below the 100 milligrams per liter (mg/L) threshold in less than 20 minutes. The resettlement times for Mount Hope Bay and a portion of Rhode Island Sound were 4.6 hours and 2.9 hours, respectively. These results indicate that the water column TSS concentration impacts from the export cable installation activities were contained to within or near the ECC and were short lived.

Once the offshore export cables are buried, the area above the cables is anticipated to recover as part of ongoing coastal/tidal processes associated with dynamic marine sediments. Similarly, direct, temporary impacts to geologic resources and soils are anticipated for the HDD operations and onshore export cables. Should secondary cable protection be required along sections of the buried offshore export cables, Mayflower Wind would select the appropriate type of protection to limit adverse environmental impacts.

Construction activities for the onshore Project components will have little to no impacts to surficial geology because the Project has been designed to be compatible with local geologic conditions and the majority of construction will occur in developed areas where geology is already disturbed (e.g., public road right-of-way, parking lot). Detailed geotechnical evaluations will be performed prior to construction to further determine the subsurface conditions and the necessary design criteria. In addition, to protect resource areas throughout construction all earth disturbances will be conducted in compliance with the RIPDES General Permit, which will include a site-specific SESC Plan and weekly monitoring until disturbed areas are stabilized and restored after construction. The SESC Plan will specify BMPs including erosion and sediment controls and spill protection measures that will be implemented by Mayflower Wind. Any off-site disposal of excavated materials will be in accordance with applicable regulations and guidance.

2.6.2 Surface Water and Groundwater

Surface waters within Rhode Island Sound, the Sakonnet River, and Mount Hope Bay will be directly and temporarily disturbed from seafloor disturbance and sediment suspension and redeposition during the installation of the offshore export cables. All vessels and barges will be required to comply with all regulatory requirements, including those of the United States Coast Guard (USCG), for management of onboard oil and hazardous materials including fuels, and will be equipped with emergency spill response kits and cleanup materials to respond to and contain an any accidental spill or release. During the HDD operations to complete the sea-to-shore landfalls for the offshore export cables, an HDD contingency/response plan will be implemented in the event of an inadvertent release of drilling muds/fluids. Installation of the offshore export cables is not anticipated to impact groundwater resources. Segments of the HDD staging areas and onshore route for the intermediate onshore export cables across Portsmouth occur within the 200-foot (ft) contiguous area to coastal features regulated by RI CRMC. The preliminary onshore route selected by Mayflower Wind is not located within any surface water but is located within 100 to 200 ft (31 to 61 meters [m]) of surface waters including salt marsh inundated by the tidal cycle, tidal creeks, and freshwater surface waters including Founders Brook. During earth disturbances and trenching for the onshore export cables, Mayflower Wind and its contractors will comply with the SESC Plan and BMPs to prevent sediment-laden water from entering surface waters. Proper soil handling and management practices will be followed to prevent soil erosion into nearby surface waters. Dewatering during onshore excavation is anticipated, and the dewatering methods will adhere to the requirements outlined in the Rhode Island Soil Erosion and Sediment Control Handbook, the Rhode Island Stormwater Design and Installation Standards Manual, and the Wetland BMP Manual. Equipment refueling and equipment/materials storage will not be permitted within 100 ft of a regulated freshwater or coastal wetland, to the extent feasible. Secondary containment and emergency spill kits will be used at refueling locations to protect surface water and groundwater resources.

2.6.3 Vegetation

The Project onshore export cable routes contain intermittent areas of vegetation and wooded areas. Limited vegetation clearing to facilitate construction along the Project route will impact some vegetated areas and involve removal of select trees and some vegetation. The HDD staging area proposed at the corner of Boyds Lane and Park Avenue may likely require clearing and removal of vegetation to expand the cleared area to be temporarily occupied by the HDD equipment, vehicles and materials. Mayflower Wind will make landfall at developed land. The landfall work area and onshore cable route will not require vegetative management and will be restored once complete. Mayflower Wind will consult with the Portsmouth Department of Public Works to appropriately restore disturbed areas.

2.6.4 Coastal and Freshwater Wetlands

Portions of the onshore export cable route are located within the RI CRMC regulated 200-ft contiguous area to coastal wetlands, 100-ft contiguous area to freshwater wetlands, and 200-ft contiguous area from streams; however, the onshore route selected by Mayflower Wind will not directly impact any biological wetlands or streams. Estuarine emergent habitats (salt marsh) and freshwater wetlands are located proximate to the onshore route, and Mayflower Wind and its contractors will implement the SESC Plan and BMPs to contain the limit of disturbance, thereby protecting coastal and freshwater wetlands.

2.6.5 Wildlife, Fisheries and Marine Mammals

During construction, temporary displacement of terrestrial wildlife and marine species may occur due to the presence of cable-lay vessels and barges, onshore vehicles and equipment, and construction crews and personnel. Mayflower Wind will assign PSOs and environmental monitors, as required by permits issued by the National Marine Fisheries Service (NMFS) and BOEM, to monitor for marine protected species (e.g., North Atlantic right whale, humpback whale), other marine mammals, and sea turtles. Mayflower Wind will implement the Project Marine Mammal and Sea Turtle Monitoring and Mitigation

Plan during offshore Project operations.[2] Potential impacts to commercial and recreational fisheries and any mitigation will be addressed through BOEM and RI CRMC review processes.

Mayflower Wind consulted with the Rhode Island Natural Heritage Program (RI NHP), RIDEM, and the United States Fish and Wildlife Service (USFWS) to determine the presence of any state-listed and federal-listed rare, threatened, and endangered species. According to the RIDEM Division of Fish and Wildlife (DFW) there are no known northern long-eared bat hibernaculum or maternity roosts located within 5.0 mi (8.0 km) of the Project Area. The RI NHP provided a listing of state-listed rare species including ten avian species and one insect species – the salt marsh tiger beetle. The USWFS provided an official list of federal-listed rare species which included the northern long-eared bat (threatened), the roseate tern (endangered species of bird), and the monarch butterfly (candidate species).

The export cable landfalls will be installed using HDD technology and no open cutting or excavation for trenches in coastal habitats, including on beaches, will occur. No direct impact is anticipated to nesting, foraging or perching habitat for birds, and no impact to salt marsh that would adversely affect salt marsh habitat of the salt marsh beetle. Construction operations including noise, dust, and vibration may temporarily displace certain species along the onshore routes.

2.6.6 Air Quality

Offshore Air Quality

Air emissions during the construction phase of the proposed Project will be mostly influenced by fuel combustion from engines and auxiliary equipment. The primary sources of offshore air emissions for the construction phase in state waters and onshore include crew transfer/service vessels, heavy lift crane vessels, heavy cargo vessels, cable installation vessels, multi-purpose support vessels, tugboats, anchor handling tug and supply vessels, jack-up vessels, dredging vessels, survey vessels, air compressors, and temporary diesel generators. All vessels utilized for installation within the Lease Area and subject to the OCS Air Permit will use the jurisdictionally required compliant fuel, e.g., ultra-low sulfur diesel fuel (ULSD) or a less carbon intense fuel.

According to the United States Environmental Protection Agency (USEPA)'s Green Book[3] (current as of March 31, 2020), which provides the National Ambient Air Quality Standards (NAAQS) attainment status for each state and/or county in the country, all of Rhode Island is an attainment area (i.e., meets or exceeds primary standards) for all NAAQS criteria pollutants. Attainment areas are not subject to General Conformity; therefore, emissions that occur within 25 mi from shore (General Conformity Area) but are nearest to an onshore attainment area are subject to the National Environmental Policy Act (NEPA). Because Rhode Island is an attainment area, or unclassifiable, with all criteria pollutants the General Conformity Rule does not apply, and the Project's air emissions are subject to NEPA review. Potential impacts to air quality from the Project air emissions occurring outside (or landward) of the OCS Permit area are considered direct and short-term.

The Project's emissions on the OCS (i.e., federal waters) are regulated through the USEPA's OCS Air Permit process under the Outer Continental Shelf Air Regulations (40 C.F.R. 55). Additionally, through the OCS Air Permit Process, and with Massachusetts designated as the Corresponding Onshore Area per Appendix B of 310 Code of Massachusetts Regulations (CMR) 7.00, the Project will offset applicable

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[2] Mayflower Wind Energy LLC, LGL - Ecological Research Associates, Ltd, and AECOM. 2021. Marine Mammal and Sea Turtle Monitoring and Mitigation Plan *(Mayflower Wind Construction and Operations Plan Appendix O - Docket No. BOEM-2021-0062).* August 2021.

[3] https://www.epa.gov/criteria-air-pollutants/naaqs-table

nitrogen oxides (NO_x) and volatile organic compounds (VOCs) emissions by acquiring emissions offsets in compliance with the Nonattainment New Source Review program, if required.

As the proposed Project will not inherently add to pollution during operation, the use of power generated will avoid, minimize, and mitigate emissions in New England of carbon dioxide (CO_2), NO_x, and Sulfur dioxide (SO_2) associated with conventional power generation.

Onshore Air Quality

Onshore air emissions during construction are mostly tied to stationary construction equipment including cranes, on-road and off-road transport vehicles, and generators. Vessels in or near port may also contribute to onshore air emissions during construction. During the construction-phase of the onshore components of the Project, there are two potential sources of air quality impacts associated with the Project, dust and vehicle emissions, neither of which are expected to be significant. During earth disturbing activities, the contractor will deploy dust mitigation measures, if needed, to reduce fugitive dust. Exposed soils will be wetted and stabilized as necessary to suppress dust generation.

Mayflower Wind will require the use of ULSD fuel in its contractors' diesel-powered construction equipment. Vehicle idling is to be minimized during the construction phase of the Project, in compliance with the Rhode Island Diesel Engine Anti-Idling Program, Air Pollution Control Regulation No. 45.[4] Vehicle idling for diesel and non-diesel-powered vehicles is limited to five minutes except for powering auxiliary equipment, for heating/defrosting purposes in cold weather, and for cooling purposes in hot weather. The contractors are responsible for complying with the state regulatory requirements.

2.6.7 Electric and Magnetic Fields in the Marine Environment

EMFs are created anywhere there is a flow of electricity, and their strength diminishes within a short distance from the source. The strength of electric fields depends on voltage, which is the pressure behind the flow of electricity. The electric fields arising from the voltage on the offshore export cables will be completely shielded by cable materials.

Magnetic fields are produced by current, which is the flow of electricity. A magnetic field analysis study was conducted to model the magnetic fields produced by typical onshore and offshore cable configurations for the Project and contextualize them to the latest research and guidelines for public health and the marine environment. A discussion on the predicted effects of EMF in the marine environment is discussed in Section 6.11 and Attachment D – Magnetic Field Analysis Report.

2.7 SUMMARY OF SOCIAL ENVIRONMENTAL IMPACTS AND MITIGATION

2.7.1 Social and Economic

The construction phase will require amenities and services for workers, including lodging, restaurants, banks, shops, medical services, entertainment, parks, tourism, recreation, and gas stations. Project expenditures will support existing employment in these economic sectors, which may include increased hours and overtime opportunities for existing workers, as well as potentially creating new employment opportunities as affected businesses hire more workers. Mayflower Wind is committed to encouraging the hiring of skilled and un-skilled labor from the Project region. Mayflower Wind is committed to the hiring of personnel from the Project region to fill the positions required for the various preparation and construction activities. Furthermore, Mayflower Wind is committed to working upstream to aid in the development of a trained workforce for future construction of the proposed Project. The training and

[4] See RIGLs § 31-16.1 and § 23-23-29

use of local and regional resources would be prioritized so that the populations concerned by the proposed Project can benefit as much as possible from the direct and indirect economic benefits.

Mayflower Wind has further committed to make at least 75 percent of operations and maintenance local. Mayflower Wind is committed to supporting offshore wind education and supply chain and workforce development for the growing offshore wind industry in the SouthCoast region. The Project will support the state's efforts to stimulate regional growth and economic activity while meeting the renewable energy goals in New England. In addition to the revenues Mayflower Wind will pay to the state of Rhode Island for the submerged lands lease for the offshore route in state waters, the Town of Portsmouth will directly benefit through tax revenues from the new onshore transmission assets of the Project. In addition to the submerged lands lease for the offshore route in state waters, the Town of Portsmouth will directly benefit through the easement agreements and tax revenues from the new onshore transmission assets of the Project. Mayflower Wind has and will continue to work directly with the Town of Portsmouth to identify initiatives that could support the Town's Economic Development Plan.

Installation activities associated with the offshore export cables are generally expected to have short-term, localized effects on fishing grounds because of potential navigation safety measures (such as a small safety zone around the cable installation vessel[s]). During operations and maintenance, commercial and recreational fisheries are expected to experience no effects from the presence of the offshore export cables because it will be buried beneath the seabed. The USCG stated policy is that "in the United States vessels will have the freedom to navigate through [wind farms], including export cable routes."[5] Therefore, commercial fishermen will be able to continue to fish along the offshore export cable corridor and co-exist with the Project. Commercial and recreational fisheries will be addressed through the BOEM and RI CRMC review process.

2.7.2 Land Use

The Project will be constructed underground primarily within public road right-of-way (ROW); therefore, it will not displace existing land uses, nor will it affect any future development proposals that meet local road zoning requirements. Short-term land use impacts may occur during the construction phase of the Project. Detours and other accommodation will be made to provide alternative access around the construction work site. The Project will not displace any existing residential, recreational, or other uses. Short-term land use and traffic disturbances may occur during the construction phase of the Project.

Mayflower Wind will develop an onshore construction schedule to minimize effects to residents, members of the public, recreational uses and tourism-related activities to the extent feasible, such as scheduling nearshore construction activities to avoid the height of the summer tourist season. Mayflower Wind will work and coordinate with stakeholders and visitors' bureaus to schedule outside of major events taking place onshore. Mayflower Wind will also develop and implement an onshore traffic management plan prior to construction to address vehicular, bicycle, and pedestrian safety.

Construction of the onshore export cables is expected to have short-term land use impacts, particularly to the privately-owned properties for which easements would be required. Existing land uses and related activities would fully resume following construction. The onshore export cables are not expected to result in long-term impacts, except for displacing some underground utility real estate.

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[5] United States Coast Guard. 2019. *Coast Guard Navigation and Vessel Inspection Circular.* August 1, 2019.

2.7.3 Visual Resources

There will be no aboveground facilities associated with the Project in Portsmouth. Visual and aesthetic impacts from installation of the underground duct bank will not substantially alter the overall visual setting of the existing landscape. The majority of the underground cable route will be completed using the existing public road ROW and will not show additional visual changes other than manhole covers and handhole covers installed flush with the ground surface.

2.7.4 Historic and Archaeologic Resources

No adverse impacts to historic or archaeologic resources are anticipated from construction of the onshore or offshore components of the Project. Phase I subsurface archaeological testing performed by PAL identified two sites along one of the route variants, both of which have received site designations from the Rhode Island Historical Preservation and Heritage Commission (RIHPHC). RIHPHC concurred with PAL's recommendation that if these sites cannot be avoided during construction, then on-site archaeological monitoring should occur during the cable duct bank trench excavation in the vicinity of the two sites. Mayflower Wind is actively consulting with RIHPHC and BOEM in terms of potential submerged archaeological resources and the implementation of avoidance measures.

2.7.5 Noise

The Project onshore export cable route options are located primarily along previously disturbed public road ROW. Within the Project Area, ambient sound levels are influenced by diverse factors including vehicular noise, highway noise, commercial activities, and outdoor activities. Temporary construction noise will be generated by the Project. The generation of noise will result from the operation of construction equipment and vehicles such as trucks with diesel engines, excavators, jackhammers, drilling equipment, and cable installation rigs.

During construction, Mayflower Wind will require that construction comply with the Portsmouth noise ordinance. In some instances, and as dictated by state or the local authority, construction may need to be performed at night to minimize daytime impacts to commuters and local and state roadways. Construction-related activities such as the HDD drilling, installation of the high-density polyethylene conduit and cable-pulling operations may need to be continuous efforts that occur throughout the day and night. To the extent practicable, these operations will be maximized during daytime hours.

Mayflower Wind will mitigate construction noise levels to the extent practicable by requiring the construction contractor to implement the below mitigation measures, as appropriate:

- Comply with the Portsmouth noise ordinance Chapter 257.
- Implement temporary noise barriers at HDD locations where practicable and safe.
- Maintain equipment with functioning mufflers.
- Require continuous noise sources such as generators and compressors will be located away from residential properties to the best of their ability and have enclosed mufflers.
- Use a low-noise generator to reduce noise impacts.
- Require compliance with the Rhode Island Anti-Idling Laws.

2.7.6 Traffic and Transportation

Mayflower Wind will develop an onshore construction schedule to minimize effects to local traffic patterns; access to the Mount Hope Bridge; access to and egress from State Route 24 and State Route

138; and to reduce overall traffic disruptions to the extent feasible. The construction-related traffic increase will be minor relative to total traffic volume on public streets in the area. Temporary detours, lane closures and road restrictions may occur to facilitate the Project's onshore construction. Mayflower Wind will coordinate closely with the town of Portsmouth, including the Portsmouth Department of Public Works, the Rhode Island Department of Transportation (RIDOT), and other affected stakeholders to develop acceptable temporary traffic controls and traffic management plans for work within town and state streets and highways to minimize disruptions to residents and local commuters. No long-term impacts to traffic flow or roadways are expected. Once construction begins, Mayflower Wind will have a construction schedule webpage to alert abutters, residents and other stakeholders of construction locations, dates, activities and traffic control measures.

2.7.7 Safety and Public Health

Mayflower Wind will design, install, and maintain the Project so that the health and safety of the public are protected. This will be accomplished through adherence to applicable regulations, and industry standards and guidelines established for the protection of the public. Specifically, the Project will be designed, built, and maintained in accordance with the National Electrical Safety Code (NESC). The facilities will be designed in accordance with sound engineering practices using established design codes and guidelines published by, among others, the Institute of Electrical and Electronic Engineers (IEEE), the American Society of Civil Engineers (ASCE), the American Concrete Institute (ACI), and the American National Standards Institute (ANSI). Practices that will be used to protect the public during construction will include, but not be limited to, establishing traffic control plans for construction traffic on busy streets to maintain safe driving conditions, restricting public access to potentially hazardous work areas, noise and dust control management, and coordination with the Town of Portsmouth and RIDOT during installation.

Project-related vessels will be required to follow the appropriate (existing) transit lanes and fairways, navigational routes (where appropriate, during transit) and other USCG requirements and communicate to other mariners via Local Notice to Mariners (LNMs) and/or radio communications to minimize risks to the commercial and recreational fishing industries, as well as other mariners. The appropriate harbormasters will be kept apprised of the schedule of offshore construction activities within state waters. Mayflower Wind's Fisheries Liaison Officer (FLO) will communicate regularly with the commercial and recreational fishing communities, so they are kept up-to-date on the status and locations of ongoing cable-lay operations in the Sakonnet River and Mount Hope Bay, in addition to the LNMs.

Because the proposed electrical facilities will be designed, built and maintained in accordance with the standards and codes as discussed above, public health and safety will be protected.

2.7.8 Electric and Magnetic Fields Onshore

Mayflower Wind understands that EMFs produced by the transmission of electricity can be a concern to communities where transmission infrastructure is sited. Mayflower Wind has studied predicted EMF from the Project and continues to engage stakeholders on this topic through direct outreach and the publication of EMF materials on a dedicated web page for the local community.[6]

Electric fields are not an applicable concern for the proposed cables, and predicted HVDC magnetic fields are well below health-based exposure guidelines. A further detailed discussion on the predicted onshore EMF levels is discussed in Section 7.9 and Attachment D.

[6] https://mayflowerwind.com/southcoast/

2.8 CONCLUSION

Completion of the Project will substantially contribute to meeting the needs of the region for renewable clean energy from offshore wind by connecting Mayflower Wind's Clean Energy Resource to the regional transmission system in a cost-effective manner that minimizes environmental and social impacts. Impacts to rare, threatened, or endangered species will be avoided and/or minimized through appropriate avoidance or minimization techniques. Similarly, impacts to cultural resources will be avoided or minimized. The potential for impacts to other environmental or social receptors in the Project vicinity is anticipated to be minimal using the work practices and mitigation proposed for the Project. Regarding EMF, electric fields are not an applicable concern for the proposed cables, and predicted HVDC magnetic fields are well below health-based exposure guidelines.

To the extent that impacts cannot be avoided, they will be addressed through appropriate minimization and mitigation measures as discussed in Section 9 of this report.

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3 PROJECT NEED

3.1 STATEMENT OF NEED

The purpose of the Project is to deliver approximately 1,200 MW of renewable clean energy from Mayflower Wind's Clean Energy Resource to the New England regional electric grid. This section addresses the statutory requirement that a proposed energy facility "is necessary to meet the needs of the state and/or region for energy of the type to be produced by the proposed facility."[1]

Mayflower Wind is developing the Project to meet the regional need for renewable clean energy from offshore wind generation. That need is driven by the public policies and legislative directives of the various New England states, including Rhode Island and its neighboring coastal states, Massachusetts and Connecticut. Those policies and legislative requirements call for the reduction of GHG and the increase of renewable clean energy in the supply mix, including specifically from offshore wind.

Among those policies, the Project will significantly advance Rhode Island's policies set forth in the State energy plan, Energy 2035, which calls for Rhode Island to "increase sector fuel diversity, produce net economic benefits, and reduce greenhouse gas emissions by 45 percent by the year 2035" in part "through support for state and federal offshore wind projects."[2] Rhode Island's Office of Energy Resources set the goal of converting Rhode Island to one hundred percent renewable by 2030. The Project substantially contributes to the transformation of the New England energy system to a carbon-free renewable energy system. With a regional system more heavily supplied by renewables, Rhode Island will be better able to attain its ambitious renewable clean energy goals.

In addition to the environmental benefit of delivering large amounts of renewable clean energy into the regional electricity supply mix, the Project will also improve energy system reliability and state and regional energy security. Specifically, the Project will enhance the energy supply and fuel diversity and improve the ability of the New England region to serve load during the winter peak demand period. With the several thousand megawatts of generation that is currently at risk for retirement in New England, the Project and the Clean Energy Resource will help fill the gap left by this generation and will be located relatively near load centers such as Providence and Boston. Further, the Project will enhance the economic competitiveness of the region by reducing energy costs through reduction of wholesale power prices, which will attract additional investment in the region, and by helping to advance the offshore wind industry in New England. Finally, by accelerating the transition to a renewable clean energy future, the Project will support the sustainability of the natural environment and improve quality of life in the region. For all these reasons, as more fully explained below, the Project satisfies the requirement that "construction of the proposed facility is necessary to meet the needs of the state and/or the region for energy of the type to be produced by the proposed facility."[3]

As described in detail in Section 2 of the Project Siting Report, the Project is comprised of a new Rhode Island-jurisdictional major energy facility and offshore and onshore transmission lines with a capacity of 69-kV or more and greater than 6,000 ft (1,829 m) in length.

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[1] RIGL § 42-98-11(b)(1). This "need" assessment is one of the three findings necessary for a license. The other two are that "the proposed facility is cost-justified" and "will not cause unacceptable harm to the environment and will enhance the socio-economic fabric of the state." RIGL § 42-98-11(b)(2) and (3).
[2] Rhode Island Division of Planning, Energy 2035: Rhode Island State Energy Plan (2015) http://www.planning.ri.gov/documents/LU/energy/energy15.pdf ("Energy 2035").
[3] RIGL § 42-98-11(b)(1).

3.1.1 Statement of Need Standard

The *Energy Facility Siting Act* (EFSA), RIGL § 42-98-1 *et seq*., requires an applicant to make a three-part showing to the EFSB before a license is granted for the proposed facility:[4]

1) Construction of the proposed facility is necessary to meet the needs of the state and/or region for energy of the type to be produced by the proposed facility.
2) The proposed facility is cost-justified, and can be expected to produce energy at the lowest reasonable cost to the consumer consistent with the objective of ensuring that the construction and operation of the proposed facility will be accomplished in compliance with all of the requirements of the laws, rules, regulations, and ordinances, under which, absent this chapter, a permit, license, variance, or assent would be required, or that consideration of the public health, safety, welfare, security, and need for the proposed facility justifies a waiver of some part of the requirements when compliance cannot be assured.
3) The proposed facility will not cause unacceptable harm to the environment and will enhance the socio-economic fabric of the state.

This section of the Siting Report addresses the first part of this three-part showing – whether the Project, together with the Clean Energy Resource, proposed by Mayflower Wind meets the needs of the State of Rhode Island and/or region for the renewable clean energy from offshore wind it will deliver to the regional transmission system.

As part of the determination as to whether a facility meets the “need” requirement under RIGL § 42-98-11(b)(1), the EFSA directs that a proposed energy facility must be “justified by long term state and/or regional energy need forecasts.”[5] The EFSA also provides that a proposed facility “shall be consistent with the state’s established energy plans, goals, and policy.”[6] As part of its analysis, the EFSB analyzes whether the proposed facility is consistent with Energy 2035 and other energy plans and goals for Rhode Island, Massachusetts, and the region set forth in energy policy documents as a factor in determining whether a proposed facility is needed.[7]

3.2 INTRODUCTION AND PURPOSE

The purpose of the Project is to deliver an estimated 1,200 MW of renewable clean energy from Mayflower Wind’s Clean Energy Resource to the New England region. Mayflower Wind is developing the Project in accordance with the need for GHG reductions, and increased clean energy and offshore wind, as established under the public policies and legislative directives of several New England states, including Rhode Island and Massachusetts. The Project is necessary to serve the express needs of the region for more renewable clean energy by enabling the delivery of energy from the Clean Energy

[4] These criteria are codified at RIGL § 42-98-11(b). The Siting Board regulations at 445-RICR-00-00-1.13(C) require that the Board make the same findings, but breaks the findings into five requirements: (1) Construction of the proposed facility is necessary to meet the needs of the state and/or region for energy of the type to be produced by the produced[sic] facility, (2) the proposed facility is cost-justified, (3) the proposed facility can be expected to produce energy at the lowest reasonable cost to the consumer consistent with the objective of ensuring that the construction and operation of the proposed facility will be accomplished in compliance with all of the requirements of the laws, rules, regulations, and ordinances, under which, absent the Act, a license would be required, or that consideration of the public health, safety, welfare, security and need for the proposed facility justifies a waiver or some part of such requirements when compliance therewith cannot be assured, (4) the proposed facility will not cause unacceptable harm to the environment, and (5) the proposed facility will enhance the socioeconomic fabric of the state.

[5] RIGL § 42-98-2(2).

[6] RIGL § 42-98-2(6).

[7] RIGL § 42-98-9(e); *see also In Re Invenergy Thermal Development LLC Application to Construct and Operate the Clear River Energy Center, Burrillville, Rhode Island (Docket No. SB-2015-06),* RI EFSB Decision and Order No. 140, at 17 (2019).

Resource to the regional transmission system. Mayflower Wind also offers, for the Siting Board's consideration, a proposed design variation to the Project (referred to herein as the Noticed Variation), described in Sections 4 through 9 of this Siting Report, that would minimize future impacts to the residents of the community and to the environment while prudently and efficiently planning for future need to deliver additional energy to a point of interconnection at or near Brayton Point. The Noticed Variation would facilitate the delivery of energy from an additional 1,200 MW from the Clean Energy Resource by "right-sizing" certain facilities (primarily trenches and conduit for the onshore export cables).

If the proposed Noticed Variation is used, then it will facilitate the delivery of the full energy output of the Clean Energy Resource (an estimated 2,400 MW) to the regional transmission system, and thereby help meet Rhode Island's and the region's need for renewable clean energy in an efficient and lower impact and lower cost way. The proposed Noticed Variation seeks to prudently and efficiently develop the transmission connector facilities necessary to deliver the energy from the fully developed Clean Energy Resource to meet public policy requirements in a timely way. This plan attempts to avoid unnecessary impacts to the community and the environment from a potential second construction project for the export cables. Developing the Project in this way would mean only one disturbance of the natural and developed environment, rather than a second time when a second 1,200-MW connector project might be needed in the future for the export cables. Right-sizing certain transmission facilities would meet the needs of the Project as well as contribute to the needed capacity for wind interconnections to the New England energy grid in order to achieve mandatory and enforceable targets for reducing GHG emissions to net zero by 2050 set by Rhode Island and its neighboring coastal states and transitioning to a low carbon economy. Finally, this plan is consistent with emerging policies at the state and federal level to "right-size" transmission; specifically, to design transmission upgrades to anticipate future needs, especially those needs of the clean energy grid.

The need for the Project is driven by the laws and policies of Rhode Island, Massachusetts, and the New England region. Mayflower Wind's efforts to meet that need are demonstrated by the indicators of development progress described further below.

3.3 Supporting State Legislation and Policies

Below Mayflower Wind highlights some of the key public policy requirements in Rhode Island and the region that drive the need for the Project.

3.3.1 Rhode Island Climate Change Legislation and Policies

- Energy 2035: The EFSB directs that any project must be consistent with Energy 2035. Energy 2035 identified offshore wind as Rhode Island's "most significant renewable energy resource."[8] Significantly, Energy 2035 established the goals to "increase sector fuel diversity, produce net economic benefits, and reduce greenhouse gas emissions by 45 percent by the year 2035."[9] To achieve these goals, Energy 2035 recommended numerous policy actions, including the promotion of local and regional renewable energy.[10] To achieve this goal, Energy 2035 specifically prescribed procuring additional renewable energy "through support for state and federal offshore wind projects."[11]

[8] Energy 2035 at 15.
[9] *Id.* at 34.
[10] *Id.* at 62-63.
[11] *Id.* at 63.

Rhode Island 2030 Vision Plan: While only 19 percent of the state's electricity consumption currently comes from renewable resources, Rhode Island has a roadmap to source 100 percent of its electricity from renewable resources by 2030. In October 2021, Governor Dan McKee released a working draft of a vision plan for the next decade in Rhode Island, "Rhode Island 2030: Charting a Course for the Future of the Ocean State" (Rhode Island 2030).[12] Rhode Island 2030 focuses on harnessing the State's "Blue Economy" as well as the "Green Economy." An industry that perfectly fits in both of these categories is the offshore wind industry. As an Infrastructure and Transportation Objective, Rhode Island 2030 states, "Infrastructure that supports the Blue Economy and life sciences, including ports that support offshore wind activity and site readiness work that enables future industrial and commercial development."[13] The plan notes that the State will continue to invest in needed infrastructure for offshore wind in pursuit of the State's renewable energy goals.

- Executive Order No. 20-01, Advancing a 100% Renewable Energy Future for Rhode Island by 2030: In January 2020, then Governor Gina Raimondo issued an Executive Order committing Rhode Island to be powered by 100 percent renewable electricity by 2030.[14] This Executive Order committed Rhode Island "to mitigating economy-wide greenhouse gas emissions and their effect on climate change, while spurring new and innovative opportunities for investment and job growth throughout the state's clean energy economy."[15] The Executive Order further found that "a clean and affordable future electric grid will require a diverse combination of responsibly- developed resources to power our economy while maintaining reliability, including, but not limited to, offshore wind, solar, on-shore wind, and storage."[16]
- Resilient Rhode Island Act and Rhode Island Greenhouse Gas Emissions Reduction Plan: In 2014, the General Assembly passed the *Resilient Rhode Island Act*. That act created the Rhode Island Executive Climate Change Coordinating Council (RIEC4), which is charged with working to achieve GHG reduction targets: 10 percent by 2020, 45 percent by 2035, and 80 percent by 2050.[17] In 2016, RIEC4 released the Rhode Island Greenhouse Gas Emissions Reduction Plan, which identified strategies and actions to meet the GHG reduction targets.[18] The 2016 Plan specifically emphasized the importance of renewable and clean energy, specifically offshore wind, to aid Rhode Island in meeting its GHG reduction goals.[19]
- 2021 Act on Climate: In 2021, the General Assembly amended the *Resilient Rhode Island Act* through the passage of the *2021 Act on Climate* with the intent of increasing Rhode Island's efficiency and effectiveness in responding to climate change. The *2021 Act on Climate* sets mandatory and enforceable targets for reducing greenhouse-gas emissions and transitioning to a low carbon economy.[20] The *2021 Act on Climate* requires that the RIEC4 update the Greenhouse Gas Emissions Reduction Plan to develop a plan to reduce climate emissions to net zero by 2050. This plan is required to be delivered to the General Assembly by December 31, 2025.

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[12] Rhode Island 2030: Charting a Course for the Future of the Ocean State, Working Document (2021) https://www.ri2030.com/_files/public/RI%202030_final.pdf.
[13] *Id.* at 50.
[14] Rhode Island Executive Order No. 20-01, Advancing a 100% Renewable Energy Future for Rhode Island by 2030 (Jan. 17, 2020) https://governor.ri.gov/executive-orders/executive-order-20-01 .
[15] *Id.*
[16] *Id.*
[17] RIGL § 42-6.2 et seq.
[18] RIEC4, Rhode Island Greenhouse Gas Emissions Reduction Plan (December 2016). http://climatechange.ri.gov/documents/ec4-ghg-emissions-reduction-plan-final-draft-2016-12-29-clean.pdf.
[19] *Id.* at 18, 27, 30, 36.
[20] RIGL § 42-6.2 et seq.

- Proposed Affordable Clean Energy and Security Act: As recently as March 2022, the McKee Administration has introduced legislation at the General Assembly that would require a market-competitive procurement for 600 MW of new offshore wind capacity in Rhode Island. In issuing the legislation, Governor McKee stated: "Offshore wind represents one of the best opportunities for Rhode Island to scale up its clean energy resources in order to meet our greenhouse gas emissions reduction goals. Expanding our offshore wind resources will further our state's position as the North American hub for industry activity, attracting new investment and job growth opportunities across the green economy."[21]

3.3.2 Massachusetts and Connecticut Climate Change Legislation and Policies

Rhode Island's neighboring coastal states of Massachusetts and Connecticut also have strong public policies and legislative requirements to address climate change by reducing GHG emissions and increasing clean energy in the supply mix, including from offshore wind generation. The Project is both consistent with and advances these policies. These key policies of neighboring states are highlighted below:

Massachusetts

- Global Warming Solutions Act: The *Massachusetts Global Warming Solutions Act* (GWSA), enacted in 2008, established aggressive GHG emission reduction targets mandating that the Commonwealth reduce its GHG emissions between 10 percent to 25 percent from 1990 levels by 2020 and by at least 80 percent from 1990 levels by 2050.[22] Among other provisions, the GWSA obligates administrative agencies such as the Massachusetts EFSB to consider reasonably foreseeable climate change impacts (e.g., additional GHG emissions) and related effects (e.g., sea level rise) in evaluating and issuing permits.
- An Act Creating a Next-Generation Roadmap for Massachusetts Climate Policy (2021 Climate Act): The *2021 Climate Act* further commits and moves Massachusetts forward to a clean energy future.[23] It builds on the GWSA and sets an ultimate emissions goal of "at least net zero statewide greenhouse gas emissions" by 2050. The *2021 Climate Act* directs the Secretary of the Executive Office of Environmental Affairs (EEA), in consultation with the Massachusetts Department of Energy Resources (DOER), to set greenhouse gas emissions limits for 2025, 2030, 2035, 2040, 2045 and 2050. The Act also increases the offshore wind procurement authorization under Section 83C to 5,600 MW, to be procured no later than June 30, 2027.[24]

  The Project satisfies the legislative directives of the *2021 Climate Act* by providing for the delivery of energy from an estimated 1,200 MW of offshore wind energy from the Clean Energy Resource into the Commonwealth and regional electric grid that can serve commitments under

[21] *See* R.I. General Assembly Bill S. 2583; Rhode Island General Assembly Press Release, Sen. Euer, Rep. Handy, Gov. McKee Announce Plans for new 600 MW Procurement of Offshore Wind. (March 23, 2022) https://www.rilegislature.gov/pressrelease/_layouts/RIL.PressRelease.ListStructure/Forms/DisplayForm.aspx?List=c8baae31%2D3c10%2D431c%2D8dcd%2D9dbbe21ce3e9&ID=372453&Web=2bab1515%2D0dcc%2D4176%2Da2f8%2D8d4beebdf488.

[22] *An Act Establishing the Global Warming Solutions Act*, c. 298 of the Acts of 2008 https://malegislature.gov/laws/sessionlaws/acts/2008/chapter298.

[23] *An Act Creating a Next-Generation Roadmap for Massachusetts Climate Policy*, c. 8 of the Acts of 2021 https://malegislature.gov/Laws/SessionLaws/Acts/2021/Chapter8.

[24] When submitting amendments on the bill before signing it into law, Governor Baker stated in a letter to the legislature, "significant amounts of offshore wind, as much as 15 GW, will be necessary to reach the Commonwealth's net zero limit. We recognize that more work is needed to ramp up offshore wind development in Massachusetts and to provide clean, affordable power to residents." Letter from Massachusetts Governor Charles D. Baker to the Senate and House of Representatives (Feb. 7, 2021) https://d279m997dpfwgl.cloudfront.net/wp/2021/02/S9-Time-Stamped-Amendment-Letter.pdf.

existing Mayflower Wind Section 83C II and III Power Purchase Agreements (PPAs) and future procurements.

- As of May 24, 2022, there is legislation pending in the Massachusetts legislature that would further support the need for the Project, and for offshore wind development in general. See H.4524, *An Act Advancing Offshore Wind and Clean Energy.*
- "Net Zero Policy": On January 21, 2020, Governor Baker, in his State of the Commonwealth address, announced a goal of net-zero GHG emissions by 2050. On February 26, 2020, the EEA released a Draft Letter of Determination with proposed language to set a 2050 GHG limit designed to achieve net-zero GHG emissions. Extensive comments were received from interested stakeholders on the draft.[25] On Earth Day, April 22, 2020, EEA Secretary Theoharides signed the Letter of Determination, setting the 2050 emissions limit as follows: "A level of statewide greenhouse gas emissions that is equal in quantity to the amount of carbon dioxide or its equivalent that is removed from the atmosphere and stored annually by, or attributable to, the Commonwealth; provided, however, that in no event shall the level of emissions be greater than a level that is 85 percent below the 1990 level."[26]
- 2050 Roadmap: Offshore wind is poised to play a major role in Massachusetts' efforts to address climate change and protect the Massachusetts economy. On December 30, 2020, the EEA released its 2050 Decarbonization Roadmap that laid out pathways towards the Commonwealth's target of Net Zero GHG emissions by 2050 (2050 Roadmap).[27] EEA Secretary Katie Theoharides stated in this 2050 Roadmap:

  > To achieve this [net-zero] target in a cost-effective and equitable manner, the Baker-Polito Administration launched a comprehensive process to chart pathways and strategies to meet this ambitious commitment. The resulting process, culminating in the 2050 Decarbonization Roadmap, included significant stakeholder engagement, science-based analysis, and a focus on reducing costs for residents and businesses while maintaining a healthy, thriving economy.

  Addressing climate change will also benefit the regional economy, as analysis from the USEPA in 2015 found that reducing emissions will save the Northeast region at least $3 billion per year by 2050 and $42 billion per year by 2090. The 2050 Decarbonization Roadmap also makes clear that achieving Net Zero emissions will lead to the creation of thousands of local jobs while dramatically improving air quality and public health.[28]

  The 2050 Roadmap emphasizes that the "deployment of renewable energy resources is the foundational step in developing a low-cost and largely decarbonized energy supply for Massachusetts."[29] The development of offshore wind not only provides an affordable, clean energy resource for the Commonwealth, but also the region more broadly.[30] Offshore wind

[25] EEA, Request for Comments (Feb. 26, 2020) https://www.mass.gov/doc/draft-letter-of-determination-on-the-2050-emissions-limit-revised-342020/download.
[26] EEA, Determination of Statewide Emissions Limit for 2050, at 1 (Apr. 22, 2020) https://www.mass.gov/doc/final-signed-letter-of-determination-for-2050-emissions-limit/download.
[27] EEA, Massachusetts 2050 Decarbonization Roadmap, at 4 (Dec. 2020) https://www.mass.gov/doc/ma-2050-decarbonization-roadmap/download.
[28] *Id*.
[29] *Id*. at 65.
[30] *Id*. at 65.

must be deployed at scale (at least 15 to 20 gigawatts [GW] installed) in the Commonwealth over the next 30 years.[31]

Connecticut

- 2021 Act Concerning Climate Change: In July 2021, Governor Ned Lamont signed into law Public Act 21-115, which aims to increase local climate change resilience planning options, legal authorities and financing for climate resilience projects.
- Connecticut Global Warming Solutions Act: Enacted in 2008, the Connecticut GWSA established a requirement for the state to reduce the level of economy-wide GHG emissions to 10 percent below the 1990 levels by 2020, 80 percent below 2001 levels by 2050. The GWSA was amended in 2018 to add a mid-term target of 45 percent below 2001 levels by 2030.
- Governor's Council on Climate Change: Through Executive Order 3, Governor Ned Lamont re-established the Governor's Council on Climate Change, which releases periodic reports on the state's progress towards climate goals and pathways that can be pursued to reduce GHG emissions in the state. The most recent Governor's Council on Climate Change reports have mentioned how the use of zero carbon resources, such as offshore wind, will be necessary in order to meet the goals set by the Connecticut GWSA.[32]
- 2018 Connecticut Greenhouse Gas Inventory (GHG Inventory): Connecticut's Department of Energy and Environmental Protection uses the GHG Inventory to track the state's progress towards meeting economy-wide greenhouse gas emissions reductions targets established by the Connecticut GWSA.[33] The GHG Inventory released in late 2021 indicated that Connecticut is currently not on track to meet its statutory emissions targets, demonstrating that urgent action to increase the proliferation of renewable energy is necessary.
- Connecticut Integrated Resource Plan: The state's plan released by Connecticut's Department of Energy and Environmental Protection in October 2021 described several pathways for lowering greenhouse gas emissions, including increasing reliance on offshore wind.[34] The Connecticut Integrated Resource Plan also focused on leveraging regional planning of offshore wind projects among New England states in order to allow for the region as a whole to benefit from the clean energy generated from offshore wind.[35]

3.3.3 Offshore Wind Procurement Legislation, Policies, and Solicitations

States in the New England region have conducted procurements of offshore wind energy through competitive solicitations.[36] Mayflower Wind has participated in some of these and has been awarded two PPAs. Mayflower Wind plans to develop the full capacity of the Lease Area (an estimated 2,400 MW) and obtain power purchase commitments for the full output of its Clean Energy Resource. To the

[31] EEA Secretary Katie Theoharides stated, "Offshore wind is an absolutely critical part of a low-cost strategy to achieve net-zero emissions. By 2050, we're looking at something on the order of 25 [gigawatts] of offshore permitted and operating off of our coasts. We look forward to efforts to work with the incoming administration to ensure the two projects -- the Vineyard Wind project and the Mayflower Wind project -- that we have in the pipeline get permitted and built expeditiously, and that we can work with the administration on the siting of new lease areas that balance environmental impacts with this great energy resource we have off our coasts." Colin A. Young, Baker Emissions Roadmap Envisions "Decade for Action", *State House News Service* (Dec. 30, 2020) https://www.statehousenews.com/email/a/20202700?key=534135e.
[32] For reports from the Governor's Council on Climate Change, *see*: https://portal.ct.gov/DEEP/Climate-Change/GC3/Governors-Council-on-Climate-Change.
[33] Connecticut Department of Energy and Environmental Protection, 2018 Connecticut Greenhouse Gas Emissions inventory (2021) https://portal.ct.gov/-/media/DEEP/climatechange/GHG_Emissions_Inventory_2018.pdf.
[34] The Integrated Resource Plan is mandated by Conn. Gen. Stat § 16a-3a. The most recent plan can be found at: https://portal.ct.gov/DEEP/Energy/Integrated-Resource-Planning/Integrated-Resource-Planning.
[35] Connecticut Department of Energy and Environmental Protection, 2020 Final Integrated Resource Plan, at 188 (October 7, 2021) https://portal.ct.gov/-/media/DEEP/energy/IRP/2020-IRP/2020-Connecticut-Integrated-Resources-Plan-10-7-2021.pdf.
[36] *See* CT Public Act 19-71 (directing DEEP to procure 2,000 MW of offshore wind energy).

extent that Rhode Island offers future competitive solicitations for offshore wind procurement, Mayflower Wind currently intends to participate. In Massachusetts, Mayflower Wind has participated in two offshore wind procurements conducted pursuant to legislation, as described briefly below.

- Offshore Wind Procurement Legislation: In connection with its clean energy and climate change policies, in 2016, the Commonwealth enacted a legislative mandate, Section 83C of the *Green Communities Act* (c. 169 of the Acts of 2008), as amended by *An Act to Promote Energy Diversity* (c. 188 of the Acts of 2016) (*Energy Diversity Act*) that distribution companies jointly and competitively solicit proposals for offshore wind energy generation for an initial aggregate nameplate capacity of 1,600 MW. In addition, in 2018, *An Act to Advance Clean Energy* (c. 227 of the Acts of 2018, § 21), authorized the DOER to solicit another 1,600 MW for a total of 3,200 MW of offshore wind procurement, pending a DOER study about the "necessity, benefits and costs" of doing so. The DOER's study showed that, among other findings, an additional procurement for 1,600 MW of offshore wind energy has "a likelihood of cost-effectiveness that justifies additional solicitations," and the DOER has now required the Massachusetts electric distribution companies (EDCs) to solicit an additional 1,600 MW of offshore wind energy.[37] The *Energy Diversity Act* and its Section 83C solicitations recognize the necessity of the Commonwealth achieving the goals established pursuant to the GWSA. The *2021 Climate Act* provides a boost to offshore wind. It requires that utilities secure an additional 2,400 MW of wind power, raising the state's total procurement target to 5,600 MW.
- 2019 Offshore Wind Solicitation: In accordance with Section 83C II of the *Massachusetts Energy Diversity Act of 2018*, which amended the *Green Communities Act* (Section 83C), EDC's serving Massachusetts customers issued in 2019 an Offshore Wind Energy Generation request for proposals (Section 83C II Request for Proposals [RFP]). Mayflower Wind submitted bids in response to the Section 83C II RFP and was selected as the winning bidder in October 2019. Mayflower Wind executed PPAs with the EDCs in December 2019 and the EDCs submitted those PPAs for approval with the Department of Public Utilities (DPU) in January 2020. By order dated November 5, 2020, the DPU approved the PPAs.
- 2021 Offshore Wind Solicitation: The EDCs issued a third offshore wind solicitation (Section 83C III) on May 7, 2021 (Section 83C III RFP). The EDCs did so in accordance with the authority granted to the DOER under the 2018 Act to require the EDCs to jointly and competitively conduct additional offshore wind generation solicitations and procurements, subject to the required solicitation and procurement process of said Section 83C, to ensure that the EDCs enter into cost-effective contracts for Offshore Wind Energy Generation equal to an additional approximately 1,600 MW of aggregate nameplate capacity not later than December 31, 2035. On September 16, 2021, Mayflower Wind submitted a confidential bid in response to the 2021 Offshore Wind RFP and followed with submission of a public bid on September 23, 2021. In December 2021, Mayflower Wind was awarded an additional 400 MW in Massachusetts' Offshore Wind Energy Procurement for the POI at Brayton Point in Somerset, Massachusetts, bringing the total PPAs for the Project to 1,204 MW from the Clean Energy Resource. Mayflower Wind expects to participate in other future offshore wind solicitations, which will provide further impetus for Mayflower Wind's development of its Clean Energy Resource.

[37] *See* Mass. DOER, Offshore Wind Study, at 5-6 (May 2019) https://www.mass.gov/doc/offshore-wind-study.

In announcing the 83C III winning bidders, EEA Secretary Katie Theoharides told the News Service on December 17, 2021:

"These projects [Mayflower Wind and Vineyard Wind] will double the size of our current offshore wind procurements, they will deliver significant economic benefits to a number of coastal communities across the commonwealth, they include important provisions for diversity, equity and inclusion as well as benefits to environmental justice communities, and they invest significantly in the state while balancing protections with environmental resources including fisheries."

The Project will enable delivery of energy under the PPAs to the POI at Brayton Point.

3.4 THE PROJECT IS NECESSARY TO MEET THE NEEDS OF THE STATE AND/OR REGION FOR OFFSHORE WIND ENERGY AND REDUCTION OF GHG EMISSIONS

3.4.1 The Existing Transmission System Is Inadequate to Deliver Energy from the Clean Energy Resource

Mayflower Wind's Clean Energy Resource is approximately 51 nm (94 km) southeast of the coast of Rhode Island. There is no existing electric infrastructure serving this area, and no transmission to which the Clean Energy Resource can interconnect without new transmission being built. Both the offshore and the onshore Project components are integral to the Project being able to deliver its energy to the New England grid and to facilitate a safe and reliable interconnection.[38]

Therefore, the existing transmission system is inadequate to interconnect Mayflower Wind's Clean Energy Resource and the proposed new transmission is needed to interconnect it to the regional electrical grid safely and reliably.

In developing this new transmission in the Project, and as described in Section 5 of this Siting Report, Mayflower Wind has engaged in an extensive analysis of offshore and onshore routing alternatives to avoid, minimize and/or mitigate impacts in the Town of Portsmouth, Rhode Island and surrounding communities including those on the Sakonnet River and Mount Hope Bay.

As further described in Section 5 of this Siting Report, Mayflower Wind's proposed POI at Brayton Point will provide the Clean Energy Resource with a strong interconnection to the regional transmission system for the reliable delivery of renewable clean energy to the system an interconnection with the Mayflower Wind Clean Energy Resource.

3.4.2 Regional Energy Supply Contribution

The Project is necessary to connect the Mayflower Wind Clean Energy Resource, and the offshore wind generation from the Clean Energy Resource will help meet the need for GHG emissions reductions and increase in clean energy supply, including from offshore wind, in the region, as expressed in the state policies and legislative directives listed above in this section.

[38] *See In re: the Issuance of an Advisory Opinion to the Energy Facility Siting Board Regarding Revolution Wind, LLC's Application to Construct and Alter Major Energy Facilities*, RI EFSB Docket No. 5151 (August 26, 2021) http://www.ripuc.ri.gov/efsb/2021_SB-01/PUC%20Advisory%20Opinion%20-%20Revolution%20Wind%20(8-26-2021).pdf.

Additionally, the Clean Energy Resource is likely to be available to contribute to the regional energy supply to meet the needs expressed in those state policies and legislative directives, as demonstrated by numerous Mayflower Wind development efforts and commitment, including the following:

- On December 13-14, 2018, the federal Bureau of Ocean Energy Management (BOEM) held a competitive lease sale for Wind Energy Areas offshore Massachusetts. Mayflower Wind Energy LLC was identified as the winner of Lease Area OCS-A 0521 (127,388 ac [51,552 ha]), which is located 26 nm (49 km) south of Martha's Vineyard and 20 nm (37 km) south of Nantucket and was awarded a lease. The lease area has the potential to generate an estimated 2,400 MW of low-cost clean energy, or enough to power nearly 800,000 homes. The commercial wind energy lease OCS-A 0521 issued by BOEM on March 26, 2019, took effect on April 1, 2019.
- Mayflower Wind has taken multiple steps and made multiple commitments to interconnect the full capacity (an estimated 2,400 MW) from its Clean Energy Resource. On April 13, 2021, and April 16, 2021, Mayflower Wind filed two interconnection requests for queue positions (QP) to ISO-NE. The new queue positions, QP 1116 and QP 1121 connect into the National Grid Brayton Point 345-kV substation. Each Queue Position is for 1,200 MW. In addition, on May 27, 2021, Mayflower Wind acquired an existing QP 837. QP 837 is an elective transmission upgrade (ETU) which will bring approximately 1,200 MW of capacity from the Clean Energy Resource to the Brayton Point substation through the use of HVDC technology. Mayflower Wind's generator interconnection request, QP 1116, will utilize QP 837 to connect to the ISO-NE system. QP 837's ISO-NE studies established that 1,200 MWs of offshore wind could safely and reliably connect to the transmission system. Related to all of these interconnection requests, Mayflower Wind has made financial deposits/payments of over $9.2 million and committed significant time and resources to facilitating the associated ISO-NE studies. ISO-NE has completed Feasibility Studies for QP 829, 830, 922, 837, and 1116. ISO-NE has completed the System Impact Study and Facilities Study for QP 837.
- Currently the QP 837-related Interconnection Agreement is undergoing negotiations between ISO-NE, National Grid and Somerset WindLink LLC, a wholly owned subsidiary of Mayflower Wind. A few issues remain which are progressing to resolution allowing the agreement to be executed sometime in June 2022.
- In October 2019, Mayflower Wind was selected as the winning bidder in the Section 83C II offshore wind solicitation with its 804 MW proposal. In December 2019, Mayflower Wind successfully completed negotiations of and entered into long-term PPAs between the EDCs and Mayflower Wind for 804 MW from the Clean Energy Resource. On November 5, 2020, the MA DPU approved the PPAs, and in so doing it stated that the EDCs "have adequately demonstrated Project viability in a commercially reasonable timeframe."
- On September 16, 2021, Mayflower Wind submitted an additional bid in response to the Section 83C III RFP offshore wind solicitation to sell additional capacity from its Clean Energy Resource thereby providing additional revenue assurance for and financial obligations on Mayflower Wind for the development of the Clean Energy Resource.
- On December 17, 2021, it was announced that Mayflower Wind's 400 MW proposal was selected as a winning bid in the 83C III solicitation. On April 15, 2022, Mayflower Wind and the EDCs executed PPAs for the 400 MW 83C III award. Mayflower Wind currently has 1,200 MW of executed PPAs to support the need for the Project. This offshore wind energy solicitation, and others that are likely to follow, provide further strong impetus for Mayflower Wind's development of its Clean Energy Resource.

- As part of the successful Section 83C II and III bids, Mayflower Wind has committed to invest approximately $115 million in initiatives that will help make the SouthCoast region a hub for offshore wind. This total investment is based on commitments made under the Massachusetts offshore wind procurement awards:
  - $42.4 million, offered under the Section 83C III solicitation, with a focus on education, training, and workforce development; diversity, equity and inclusion; and low-income ratepayer support.
  - $77.5 million, offered under the Section 83C II solicitation, that set a framework towards ports and infrastructure improvements; workforce training and development; applied research and innovation; marine science; and low-income ratepayer support.
  - In its role as donor-designee, Mayflower Wind will encourage partnerships between Rhode Island and Massachusetts institutions and organizations to leverage these financial commitments for the greatest benefit to the SouthCoast region.
- Mayflower Wind has leased office space at 99 South Main Street in downtown Fall River, a short walk to the Fall River waterfront and a convenient drive to New Bedford and Rhode Island.
- Mayflower Wind has committed that at least 75% of O&M jobs will be hired locally, all based at the Fall River facility, with the majority traveling out to the offshore wind Lease Area regularly, either on the Fall River based service operations vessel (SOVs), on which workers live on-board for weeks at a time, or the New Bedford based crew transfer vessels (CTVs) that will shuttle back and forth on a daily basis.
- Mayflower Wind has executed a lease option with the Massachusetts Clean Energy Center (MassCEC) for the use of the New Bedford Marine Commerce Terminal as a staging and deployment base during construction.
- Mayflower Wind has conducted and continues to conduct extensive geophysical, geotechnical, and benthic surveys of the Lease Area and export cable routes in both federal and state waters. These campaigns conducted in 2019, 2020, 2021, and 2022 are in support of state and federal permitting requirements, including characterization of sensitive habitat, and are intended to support design efforts and provide data in support of archeological clearance.
- On February 15, 2021, Mayflower Wind filed its Construction and Operations Plan (COP) with BOEM, the lead federal permitting agency and the agency responsible for completing the *National Environmental Policy Act* (NEPA) review process. On August 30, October 28, 2021, and March 16, 2022, Mayflower Wind filed revisions and updates to its COP and responded to BOEM environmental and engineering comments. On November 1, 2021, BOEM published a Notice of Intent (NOI) to Prepare an Environmental Impact Statement (EIS) for the review of the Mayflower Wind COP.[39] The COP, if approved, would allow for the development of an estimated 2,400 MW in the Mayflower Wind Lease Area.

As stated above, Mayflower Wind received a NOI from BOEM on November 1, 2021, commencing the EIS scoping process for the Mayflower Wind COP. The BOEM Record of Decision (ROD) will provide further assurance that Mayflower Wind's Clean Energy Resource is likely to become available to contribute to the regional energy supply. Mayflower Wind commits to submitting to the Siting Board, prior to commencing construction, a copy of the BOEM ROD approving the Mayflower Wind Clean

[39] 86 Fed. Reg. 60,270 (Nov. 1, 2021) https://www.boem.gov/sites/default/files/documents/about-boem/regulations-guidance/86-FR-60270.pdf.

Energy Resource and related facilities. Prior to issuance of the ROD, Mayflower Wind will provide to the Siting Board information regarding the EIS as it becomes available.

Other significant indicators that progress has already been achieved, and will continue to be achieved during the review of this Petition demonstrating that Mayflower Wind's Clean Energy Resource is "likely to be available" to contribute to the regional energy supply include:

- BOEM vetted and pre-authorized offshore areas as suitable and desirable for offshore wind development and provided information demonstrating that the subject areas have characteristics that make them desirable for the development of offshore wind generation. Specifically, Lease Area OCS-A 0521, in which the offshore wind energy generation facility for Mayflower Wind will be built, was delineated through a robust review process involving significant public input over several years, a process intended to select an area that addressed concerns and was appropriate for offshore wind generation. That process culminated in the award of Lease Area OCS-A 0521 to Mayflower Wind.
- On May 26, 2020, BOEM approved the Project Site Assessment Plan (SAP),[40] and Mayflower Wind installed a meteorological-oceanographic buoy (metocean buoy) that has provided data used to inform the design and permitting strategy for Mayflower Wind.
- There has been early and extensive outreach conducted by Mayflower Wind with stakeholders throughout the planning stages of Project development. For example, Mayflower Wind has met with numerous fishing groups and/or individuals in Rhode Island and Massachusetts, and has participated in ongoing working groups for fisheries and habitat concerns. Mayflower Wind has a full time Fisheries Liaison Officer (FLO) on its team and three Fisheries Representatives including the Commercial Fisheries Center of Rhode Island, Massachusetts Lobstermen's Association, and the New Bedford Port Authority.
- Mayflower Wind has met with the local federally-recognized Native American Tribes numerous times and conducted regular outreach to local municipalities, groups, and individuals on the South Coast, Massachusetts, and in Rhode Island including staff at the Coastal Resources Management Council, representatives from the Town of Portsmouth including the Town Administrator, Town Council, Harbormaster, Department of Public Works, Planning Department, Zoning Department, Conservation Commission, Economic Development Committee, and Police Department and State Senators and Representatives representing Portsmouth's Districts. In advance of ongoing nearshore surveys, Mayflower Wind informs the harbormasters and operators of marinas, boatyards, yacht clubs, and other boating centers in Little Compton, Tiverton, Middletown, Portsmouth, Bristol, and Warren. Mayflower Wind has also met and conducted outreach with stakeholders and staff at the Rhode Island Coastal Resources Management Council, the EFSB, the Rhode Island Department of Environmental Management, the Rhode Island Historical Preservation and Heritage Commission, and the Narragansett Indian Tribe. Section 4 provides information about Mayflower Wind's ongoing outreach efforts. A list of meetings conducted to date with agencies, municipalities, and tribes is provided in Attachment E.
- A third-party EIS contractor has been selected to support BOEM in reviewing the COP and producing the NEPA documents. As mentioned, BOEM issued an NOI to conduct an EIS for the Mayflower Wind Project on November 1, 2021. BOEM has indicated that they plan to issue a ROD within several months after the issuance of a Final EIS under NEPA. Additional permitting

[40] BOEM, Commercial Wind Lease Issuance and Site Assessment Activities on the Atlantic Outer Continental Shelf Offshore Massachusetts Revised Environmental Assessment, at 674 (2014). https://www.boem.gov/Revised-MA-EA-2014/.

with the USEPA, the USACE, the USCG, the NMFS, and USFWS has been initiated to facilitate approvals either prior to, or in the same time frame, as the state permitting is expected to be completed.

- As of the time of the filing of this Petition with the Siting Board Mayflower Wind plans to participate in the ISO-NE Forward Capacity Market by bidding into and clearing in future Forward Capacity Auctions, thereby providing additional financial incentives and obligations for the development of the Clean Energy Resource.
- Mayflower Wind is a Covered Project under Title 41 of the *Fixing America's Surface Transportation Act* (FAST-41). FAST-41 maintains a permitting dashboard to keep regulators and stakeholders up to date on federal, state, and local permitting milestones and timelines associated with the Mayflower Wind Project.[41]

3.5 CONCLUSION

Based on the reasons set forth above, Mayflower Wind has demonstrated that the Project is necessary to meet the needs of the state and/or region for reduced GHG emissions and increased renewable clean energy supply, delivered safely and reliably to the mainland from offshore wind at the lowest reasonable cost to the consumer in order to meet the need. The policies and legislative directives of the New England states, including Rhode Island and Massachusetts, express a clear need for additional renewable clean energy generation from offshore wind. The Project, together with the Clean Energy Resource, are critical components of fulfilling those policy goals and legislative mandates. Furthermore, there is a need for the proposed facilities for the specific purpose of connecting the Clean Energy Resource to the regional electric transmission system. Therefore, Mayflower Wind has met the standard for demonstration of need in accordance with RIGL § 42-98-2(2) and Siting Board precedent.

[41] The Mayflower Wind permitting dashboard is located at: https://www.permits.performance.gov/permitting-project/mayflower-wind-energy-project.

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4 PROJECT DESCRIPTION AND PROPOSED ACTION

4.1 INTRODUCTION

The Project, which is the subject of this Application, includes offshore and onshore transmission connector facilities traversing through Rhode Island necessary to deliver the renewable clean energy generated by Mayflower Wind's Clean Energy Resource to Massachusetts and the ISO-NE administered regional transmission system.

4.1.1 Project Facilities

The Project is defined as the offshore export cables in Rhode Island state waters and onshore underground export cables making intermediate landfall and crossing Aquidneck Island underground in the Town of Portsmouth, Rhode Island before exiting into Mount Hope Bay (Figures 2-1 and 2-2). The Project will help deliver 1,200 MW of energy from the estimated 2,400 MW generated from Clean Energy Resource to the POI to the regional transmission system at Brayton Point in the Town of Somerset, Massachusetts. The Project is necessary to meet the state and/or regional need for reduced GHG emissions, increased clean energy supply and development of the offshore wind industry in New England.

The Clean Energy Resource, together with additional federal-jurisdictional facilities, the Rhode Island-jurisdictional Project, and the Massachusetts-jurisdictional transmission connector facilities are shown in the Project Overview Map (Figure 2-3) and include the following components:

Clean Energy Resource

- Up to 149 WTG/OSP positions (up to 147 WTGs) conforming to a 1.0 nm x 1.0 nm (1.9 km x 1.9 km) grid layout across the entire MA/RI WEA, as agreed upon by Mayflower Wind and the other MA/RI WEA leaseholders.
- Up to five OSPs to be connected to the WTGs via inter-array cables within the Lease Area.

Additional Federal-jurisdictional Facilities

- Two HVDC submarine power cables and associated communications cabling. The cables will be installed in a bundled configuration where practicable.

Project (Rhode Island-jurisdictional)

- Two HVDC submarine power cables and associated communications cabling. The cables will be installed in a bundled configuration where practicable.
- The cables will be generally co-located within a single corridor through the Sakonnet River, make intermediate landfall on Aquidneck Island in Portsmouth, Rhode Island, traverse the Town of Portsmouth underground for approximately 2.0 mi (3.2 km), and return to the water in Mount Hope Bay, with both landfall and exit from Aquidneck Island using HDD to minimize impacts.
- Two landfall work areas on Aquidneck Island in Portsmouth, Rhode Island for HDD construction activities
    - One landfall work area on the northeast side of Portsmouth will occupy portions of multiple parcels including 0 Boyd's Lane (corner of Boyd's Lane and Park Avenue), 0 Park Avenue, and public road ROW.

    - One landfall work area on the northwest side of Portsmouth (multiple locations are under consideration).
- Two new underground onshore HVDC export power cables and associated communications cabling co-located within a single corridor across the Town of Portsmouth (Figure 2-2).

Massachusetts-jurisdictional Facilities

- The HVDC export cables will continue into Massachusetts state waters in Mount Hope Bay and make landfall at Brayton Point using HDD.
- After making landfall, two new underground HVDC onshore export power cables will transmit the Project's HVDC electric generation to a new, Mayflower Wind-developed onshore HVDC converter station. Associated communications cabling will be installed underground with the power cables.
- The onshore converter station is a specialized electrical substation designed to convert the HVDC power from the export cables to high-voltage alternating-current (HVAC) power to enable interconnection to the existing transmission infrastructure.
- Underground HVAC 345-kV transmission lines will connect the converter station to the existing National Grid 345-kV Substation at the Brayton Point POI.

In this section of the Siting Report, the overall scope of the Project within the Board's jurisdiction is identified and the individual components are described. This section also details Mayflower Wind's construction and maintenance practices, safety and public health considerations, community outreach practices, estimated costs, and the anticipated schedule for the Project.

4.1.2 Noticed Variation

Mayflower Wind also offers, for the Board's consideration, a design variation to the Project (referred to as the Noticed Variation) that would minimize future impacts to the residents of the community and to the environment while prudently and efficiently planning for the future need to deliver additional renewable clean energy from the Clean Energy Resource to the point of interconnection at or near Brayton Point. The Noticed Variation would minimize future community and environmental impacts by conducting earthwork and civil construction onshore in the Town of Portsmouth in a single undertaking. The Noticed Variation is described further in Sections 2 and 8 of this Siting Report. For the remainder of this Siting Report, the Noticed Variation will only be discussed when it is different from the Project.

This Noticed Variation would facilitate the potential delivery of an additional estimated 1,200 MW of renewable clean energy by "right-sizing" certain facilities. The Noticed Variation would consist primarily of increased trenching and additional underground conduits for the onshore export cables and additional conduits for landfall HDD. Importantly, the Notice Variation would not include increased HVDC export cables themselves. See the preliminary engineering plans included in Attachment B for more information about the Noticed Variation design.

Mayflower Wind's intent with the Noticed Variation is to be prudent and efficient and to avoid or minimize adverse impacts to the natural and developed environment. To the extent that Mayflower Wind seeks to fully develop a second 1,200 MW connector facility interconnecting at or near Brayton Point, and make use of increased trenching and underground conduits, Mayflower Wind would file a separate petition with the EFSB for approval to do so. The Noticed Variation proposed here will simply allow for some increased landfall and onshore trenching and conduits in the Town of Portsmouth to enable a second transmission connector to be developed, if needed, more efficiently while minimizing adverse future impacts. Developing the Project in this way would mean that the natural and developed environment on Aquidneck Island would only be disturbed once for trenching and underground conduits, rather than a second time when a second 1,200 MW connector project could be needed.

The Noticed Variation is consistent with emerging policies at the state and federal level to "right-size" transmission; specifically, to design transmission upgrades to anticipate future needs, especially the public policy needs for a clean energy grid.

4.2 OFFSHORE EXPORT CABLES

For the offshore export cable corridor (ECC), two HVDC offshore export power cables and associated communications cabling will connect the OSPs to the landfall site at Brayton Point. The selected export cable route includes an intermediate landfall on Aquidneck Island in Portsmouth, including an approximately 2.0 mi (3.2 km) underground onshore export cable route. A nominal voltage of +/-320 kV direct current (DC) has been identified as most suitable for transmission of power via the offshore and onshore export cables. The Project's onshore and offshore export cable routes are shown in Figure 2-1.

The offshore export cables will traverse federal, Rhode Island, and Massachusetts state waters. The portion of the export cable system that is within Rhode Island state waters, together with the underground onshore export cables across the Town of Portsmouth, is the focus of this EFSB filing. The offshore export power cables will deliver energy from the OSP and will be spliced with the onshore export cables within transition joint bays (TJBs) installed underground at landfall locations in Portsmouth.

The following subsections describe the design and construction of the Mayflower Wind offshore export cables. From a construction perspective, installation techniques will vary by segment of the export cable. Therefore, there are separate subsections describing construction of the export cables at the landfall location and more generally in the offshore environment.

4.2.1 Summary of Design Specifications

HVDC is an electric power transmission technology that uses direct current instead of alternating current waveform for bulk transmission of power. The subset of HVDC technology suitable for offshore wind generation application is Voltage Source Converter modular multilevel converter technology.

Within the ECC to Brayton Point, two HVDC offshore export power cables at a nominal voltage of +/ 320 kV, plus associated communications cabling, will be utilized. The cables will be installed in a bundled configuration where practicable. Unlike HVAC technology, the voltage of the cables remains constant at these magnitudes. HVDC systems require converters at each end of the HVDC transmission circuit. An offshore converter station will be located on a platform within the Lease Area. The offshore converter station collects the power from the WTGs and converts it to DC for transmission to shore. The onshore converter station converts from DC to +/- 345-kV HVAC for injection to the existing ISO-NE administered electrical grid.

Each HVDC offshore export power cable will be a single-core (one power core) armored submarine cable, as depicted in the cross-section of a typical subsea cable schematic (as depicted in Attachment C)). The power core will be either aluminum or copper stranded conductor, with cross-linked polyethylene insulation, a lead sheath, and a polyethylene oversheath. The cable will be covered with galvanized, stainless-steel wire armor, and an outer serving of polypropylene yarns soaked in bitumen. The layers of protective armoring and sheathing are to protect the cable from external damage and keep it watertight. Fiber optic wires may be embedded within the armor layer of the cable. The HVDC cables will be installed in a bundled configuration where practicable, with each cable bundle consisting of two offshore export power cables and associated communications cabling.

The design parameters for the offshore export cable is provided in Table 4-1.

TABLE 4-1. OFFSHORE EXPORT CABLE DESIGN PARAMETERS

Cable Characteristics	Design Parameters
Number of Cables	Two offshore export power cables plus associated communications cabling [a]
Cable Diameter (per cable)	6.9 in (175.0 mm)
Nominal Cable Voltage	±320 kV
Length of Cable Corridor (RI State Waters)	20.4 mi (32.8 km)
Cable Corridor Width	1,640 ft to 2,300 ft (500 m to 700 m)
Number of Cable / Pipeline Crossings Anticipated	3 pipeline crossings
Anticipated Cable Burial Depth (below level seabed) (Target Burial Depth = 6 ft (1.8 m))	3.2 to 13.1 ft (1.0 to 4.0 m)
Approximate Cable Load Current	2,000 A

Notes:
[a] The cables will be installed in a bundled configuration, consisting of two power cables plus associated communications cabling installed together, where practicable, in order to minimize seabed impacts from installation. Maximum cable bundle width is twice the maximum cable diameter.

4.2.2 Cable Route Alignment

The ECC starts from the OSPs within the Lease Area and extends from federal waters northwest through Rhode Island Sound to the Sakonnet River. The ECC then extends northward until making intermediate landfall on Aquidneck Island in Portsmouth, Rhode Island for up to an approximately 2.0-mi (3.2 km) underground onshore export cable route section, then into Mount Hope Bay and to Brayton Point. The ECC is shown in Figure 2-3.

Mayflower Wind intends to maintain an ECC width between 1,640 ft (500 m) to 2,300 ft (700 m) for the ECC, to allow for maneuverability during installation and maintenance. The ECC may be locally narrower or wider to accommodate sensitive locations and to provide sufficient area at landfall locations, at crossing locations, or for anchoring.

Pipeline crossings are expected to be required. At each crossing location, one or more pipelines may be crossed by the Project's offshore export cables, for an anticipated total of three pipelines to be crossed within the ECC in Rhode Island state waters, as explained in Table 4-2 and shown in Figure 4-1. Two charted pipeline areas have been identified within the Sakonnet River. Mayflower Wind will coordinate with the owners of the pipelines listed below, and any other unanticipated cable or pipeline crossings not identified, to agree on detailed cable crossing design, installation, and maintenance requirements. Crossing design will be determined by the crossing's proximity to shore and the third-party crossing agreement requirements. Minimum separation distances will be determined so that both assets can be safely operated with risk of damage to either asset mitigated to the extent practicable.

TABLE 4-2. PROPOSED CABLE/PIPELINE CROSSINGS

Cable Description	Number of Cables / Pipelines to be Crossed	Location
Potential Crossing Area 1	1 existing pipeline [a]	Sakonnet River (charted Pipeline Area)
Potential Crossing Area 2	2 existing pipelines [b]	Sakonnet River (charted Pipeline Area)

[a] Gas pipeline owned by Enbridge as part of the Algonquin Gas Transmission system.
[b] Water pipelines (20-inch and 24-inch) owned by the City of Newport Department of Utilities.

4.2.3 Submarine Cable Installation Preparation

Cable Installation Survey Prior to installation of the offshore export cables, surveys will be conducted utilizing a range of sensors ranging from sonar, sub-bottom profiler, echo-sounder, and magnetometer. Some surveys will take place years in advance of the cable installation campaign to determine the optimal installation method. Additional survey data will likely be collected immediately before installation to identify any anomalies or changes from prior surveys (such as fishing gear, boulders, or mobile sand waves) for the vessels and installation team. These surveys assist in building a framework for the seafloor and subsurface along the export cable route and highlight areas requiring pre-lay route preparation.

Seafloor Preparation Any boulders discovered in the cable route in pre-installation surveys that cannot be easily avoided by micro-routing could be removed with a grab lift or plow as necessary. If deemed necessary, a pre-lay grapnel run will be conducted to clear the cable route of buried hazards along the installation route to remove obstacles that could impact cable installation, such as abandoned mooring lines, wires, or fishing equipment. Mayflower Wind may utilize equipment, as detailed in Table 4-3, to level the seabed locally in order to use seabed-operated cable burial tools and ensure consistent burial is achieved.

The typical maximum size boulder that can be removed by the proposed methods is 9.8 ft (3.0 m) in diameter. The actual boulder size that can be removed will depend on specifics of the boulder, including shape, weight, embedment, and surrounding seabed conditions. Site-specific conditions will be assessed prior to any boulder removal to ensure that the boulder removal can safely proceed.

TABLE 4-3. SEABED PREPARATION EQUIPMENT

Equipment	Use
Grapnel plow	Pre-lay grapnel run
Orange peel grabber	Localized boulder removal
Boulder clearance plow	Boulder field clearance

4.2.4 Submarine Cable Transportation, Installation, and Burial

Transportation of the export cables will occur via carousel-equipped cable-lay vessel (as depicted in Attachment C), cable-lay barge, dedicated cable transportation vessel, or a combination of these options. The number of campaigns will depend on vessel size, type, and capacity, and the cable type, length, and number of cable joints required. It is anticipated that one or more cable joints will be required, likely in the Sakonnet River, due to the overall export cable route length.

Depending on the survey findings and seabed conditions encountered, several preparation and installation methods may be utilized. These methods are listed in Table 4-4 and described below. These cable laying techniques can involve cable pre-installation followed by burial and/or simultaneous cable installation and burial (representative photographs and construction schematics are provided in Attachment C).

TABLE 4-4. OFFSHORE EXPORT CABLE INSTALLATION AND BURIAL EQUIPMENT

Equipment	Use
Jetting sled / plow	Shallow water uses for deeper trench depths (surface fed water supply) in areas of prepared/benign seabed surfaces.
Jetting Remote Operated Vehicle (ROV)	Typically used in deeper water and can be used for unconsolidated soft beds.
Pre-cut plow	Any depth and can be used for hard bottoms (plows can be used for a wide range of soils from unconsolidated sands to stiff clays).
Mechanical plowing	Any depth and can be used for hard bottoms (plows can be used for a wide range of soils from unconsolidated sands to stiff clays).
Mechanical cutting ROV system	Any depth, used for hard, consolidated substrate.
Vertical injector	Vessel mounted burial solution for shallow water use that allows deep burial and does not require seabed/sand wave sea leveling.

Jetting Sled / Plow A jetting sled / plow is towed from a vessel and can be launched either during post-lay trench mode or fitted with the cable to simultaneously create a trench through soft seabed material and lay the cable. The trench is created by water jetting through unconsolidated, softer seabed material. As such, jetting is optimal in unconsolidated soils and sands with low shear strengths. The trenching systems offers sufficient maneuverability for any curves that the proposed offshore export cables may be laid in.

Jetting Remote Operated Vehicle (ROV) This jet trencher is an ROV based system that can be launched from cable installation vessels or from a dedicated support vessel. This self-propelled jetting method is capable of lowering the cable to depths of up to approximately 9.8 ft (3.0 m). This method is typically used in non-consolidated soils. An example of a jetting ROV is shown in Attachment C.

Pre-Cut Plow This method is deployed when surface and sub-surface boulders are present. A basic mechanical plow will pre-cut a V-shaped trench ahead of cable installation. This allows for the boulders and soils to be lifted to the edges of the trenches for backfill purposes later. Once the cable is laid into the trench, the plow is re-configured into backfill mode where the boulders and soils that were previously relocated are then re-deposited. An example of a boulder clearance plow is shown in Attachment C.

Mechanical Plowing A mechanical plow is towed from the back of a vessel and simultaneously cuts a narrow trench in the seafloor, while also simultaneously laying and burying cable. Plowing capability can increase from firm unconsolidated soils/sands to more consolidated soils and clays with medium shear strengths.

Mechanical Cutting ROV System A mechanical cutting ROV cable burial system is a self-propelled system most suitable for soil with increased strength. This system can be utilized at any water depth. The mechanical cutting ROV system utilizes a cutting wheel or chain to break up and excavate any material. Used only in hard, consolidated soils, a rotating chain or cutting wheel with dedicated teeth will excavate the soil from beneath the cable and various systems will be required to displace this soil away for the trench allowing the cable to be lowered to depth.

Vertical Injector A vertical injector is a deep burial jetting tool used for cable installation and burial. The vertical injector uses water propelled from jet nozzles to fluidize the seabed material to allow for lowering of the cable. This tool is towed along the back of a vessel and acts as a trowel creating a space for the cable to be installed and subsequently buried. This burial solution does not generally require seabed leveling in areas of sand waves or similar mobile sediment features. Hanging from the cable installation vessel or barge, this trenching system is one of the few options that does not require a level seabed and is therefore capable of trenching in areas of large sand waves.

Anchoring It is expected that a combination of a moored vessel solution and a Dynamic Positioning (DP) vessel solution will be used for the offshore export cable installation. The split between vessels will be determined based on the water depth profile along the route and the route length compared to cable-carrying capacity. A DP vessel maintains its position and heading by utilizing its own propellers and thrusters. For water depths greater than 49.2 ft (15.0 m), it is expected that a DP vessel can be used. Nearshore areas and areas with shallow water less than 49.2 ft (15.0 m) may necessitate a moored vessel solution, as operation of vessel thrusters is typically not realistic in these water depths. See Figure 4-2 for potential anchoring areas along the ECC. The maximum anchor radius from the cable installation barge will be approximately 2,625 to 3,281 ft (800 to 1,000 m) based on the anchor line length. This maximum radius will be forward and aft of the barge and will not extend outside of the width of the ECC.

Cable Protection The primary objective is to achieve a suitable target burial depth of the offshore export cables in the seabed along the entire cable route, by micro-routing the cables within the ECC and by assessing and selecting suitable installation/burial tooling for the seabed conditions. Cable protection is typically required at any existing cable crossing locations and for areas where cable burial cannot be achieved. For cable protection, methods will be determined based on the location, length, and extent of the non-burial, and when all remedial burial solutions have been ruled out. Remedial burial techniques may include jet trenching or controlled flow excavation that fluidizes the surrounding sand to allow the cable to further settle into the trench. These secondary cable protection methods may include the creation of a rock berm, concrete mattress placement, rock placement, and fronded mattresses. Half shells may be used as well, and they are typically used to protect cable ends at pull-in areas and where trenching is not possible.

Based on preliminary understanding of site conditions from geophysical and geotechnical surveys completed in 2019, 2020, and 2021, Mayflower Wind estimates up to 15 percent of the ECC will require secondary cable protection.

Any required crossings of other Project cables or existing third-party cables by the offshore export cables will utilize mutually agreeable crossing designs consistent with typical industry practices, which typically employ use of concrete mattresses (though other crossing methods may be assessed for use). Minimum separation distances will be determined so that both cables can be safely operated with risk of damage to either cable mitigated to the extent practicable. An example of a concrete cable protection mattress and an example of cable protection rock bags are provided in Attachment C.

Bundling and Cable Separation For the ECC, the offshore export cables will be installed in a bundled configuration where practicable, though the cables may be unbundled and installed separately for part of the cable route. The cables will be transported separately (on the same installation vessel) and assembled into a bundle during the process of cable laying. Because the HVDC offshore export cables will be installed in a single bundle where possible, there will typically be no horizontal separation between cables within a bundle as installed along the route. If the cables are installed separately, the target horizontal separation between each proposed Project cable will be approximately 164 ft (50 m). Final cable spacing will depend on bathymetry and other detailed seabed characteristics and may be wider or narrower. Risk factors that will be considered and mitigated when considering cable spacing will include:

- Installation impacts (risk to adjacent cables)
- O&M (including cable repair if needed)
- Thermal impacts to adjacent cables

4.2.5 Operations and Maintenance

The offshore export cables will be buried and are not expected to require regular maintenance, except for manufacturer-recommended cable testing. Periodic visual inspections and preventative maintenance of the offshore export cables will be planned based on survey data and manufacturer recommendations based on the as-built drawings. Planned outages are not expected for the periodic inspections. Burial inspection visuals will occur periodically to be determined after final design and route are selected.

4.2.6 Decommissioning

Offshore export cables may be retired in place or removed, as per 30 C.F.R. 585.909. Cable protection measures, such as concrete mattresses or rocks, could be removed before any cable recovery activities. Dredging vessels may be used to unearth the cables before the cable may be reeled onto barges or other transport vessels. At landfall, if the cables are removed, the ducts will remain in place.

4.3 CABLE LANDFALL

4.3.1 Landfall Approach

The ECC will make intermediate landfall on Aquidneck Island in Portsmouth, Rhode Island in order to avoid a narrow and highly constrained area of the Sakonnet River at the old Stone Bridge and Sakonnet River Bridge (an area referred to as “The Hummocks”). This reach of the Sakonnet River poses a significant risk and challenge to (i) maneuvering survey vessels and cable-lay vessels, (ii) achieving target burial depth of the cables, and (iii) minimizing impacts to the marine environment, as further outlined in Section 5. Intermediate landfall on Aquidneck Island will require sea-to-shore transitions via HDD at two locations, one entering and one exiting Aquidneck Island in Portsmouth. Five potential landfall locations on Aquidneck Island in Portsmouth are under consideration after extensive evaluation of site feasibility and potential environmental and social impacts. The routing and HDD options are depicted in Figure 2-2 and further outlined in Section 5. For the entry HDD to Aquidneck Island, one location is being considered at the intersection of Boyd’s Lane and Park Avenue in Portsmouth. For the exit HDD into Mount Hope Bay, four locations are under consideration in Portsmouth: one location in the existing parking lot of the Roger Williams University Baypoint Residence Hall, one location along an existing overhead utility line corridor within the RIDEM/Aquidneck Land Trust, one location from the parking lot on the northeastern side of the Montaup Country Club golf course, and one location in the vicinity of Mouth Hope Bridge. At all potential landfall locations, Mayflower Wind will utilize HDD to transition between the ocean and the land, as depicted in Attachment B.

4.3.2 Trenchless Technology

Installation of the landfall facilities will include the use of onshore excavation and construction equipment, HDD equipment, and offshore cable handling vessels and equipment. HDD is a “trenchless” process for installing underground cables or pipes which enables the cables to remain buried below the beach and intertidal zone while limiting environmental impacts during installation.

Construction related to the landfall site is expected to include the following:

- Construction of a temporary approach pit at a previously disturbed site at each onshore HDD entry point.
- Drilling of a pilot hole along each planned HDD trajectory, below the beach and intertidal zone, and reaming of the bore hole to the necessary diameter.

- Construction of a temporary approach pit or structure (e.g., cofferdam, gravity cell) at the offshore HDD exit point may be required to support HDD construction.
- Insertion of conduit, made of high-density polyethylene or similar material, into each bore hole.
- Installation of the offshore export cable through the conduit, below the beach and intertidal zone.
- Construction of concrete TJBs underground onshore.
  - For the HVDC export cables, splicing of offshore export cable (single-core submarine cable) to onshore export cable (single-core underground cable).
- Site restoration of disturbed onshore areas.

For the Aquidneck Island intermediate landfall location in Portsmouth, the proposed HDD trajectory is anticipated to be approximately 0.3 – 0.6 mi (0.4 – 1.0 km) in length with a cable burial depth of up to approximately 40 ft (12.2 m) below the seabed. HDD bores will be separated by a distance of approximately 10 ft to 33 ft (3.0 m to 10 m). It is anticipated the HVDC cables will be unbundled at landfall. Each HVDC power cable is planned to require a separate HDD, with an individual bore and conduit for each power cable. Each dedicated communications cable may be installed within the same bore as a power cable, likely within a separate conduit.

HDD can be undertaken from either the onshore entry point, from the offshore exit point, or (likeliest) from a combination of the two. If the HDD is undertaken from the onshore entry point, the HDD rig will be positioned in a previously disturbed area within the landfall site. See the preliminary engineering plans included in Attachment B for more information about the planned HDD construction layouts.

The Project includes installation of two conduits via HDD at each end of the intermediate onshore crossing of Portsmouth, associated power, and communications cabling for delivery of approximately 1,200 MW. The Noticed Variation includes the installation of an additional two spare underground conduits via HDD for an additional estimated 1,200 MW circuit.

4.3.3 Transition Joint Bays

The offshore export HVDC power cables will deliver energy from the OSPs and will be spliced with the onshore export cables within TJBs installed underground at landfall locations in Portsmouth.

TJBs are cast-in-place or precast concrete underground vaults estimated to be 30 L x 10 W x 8 H ft (9.0 x 3.0 x 2.4 m). The purpose of a TJB is to provide a clean, dry environment for the splicing of the offshore export cables to the onshore export cables, as well as to protect the completed splice. The sheaths from the offshore export power cable and the onshore export power cable will be terminated into the link box in the TJBs. Access to the TJBs is obtained via manhole covers installed at grade. The fiber optic communications cable will be joined inside the communications handhole installed adjacent to the TJB with its own access cover.

Each TJB can accommodate splicing for one to two power cables, which is driven by site-specific considerations with respect to how the vaults and cables can be configured spatially. The Project includes one to two TJBs at each end of the intermediate onshore crossing of Portsmouth. The Noticed Variation includes an additional one to two TJBs as spare vaults for an additional circuit.

4.3.4 Operations and Maintenance

The landfall facilities will be buried and not expected to require regular maintenance. The onshore TJBs can be accessed for planned inspections or maintenance, and for unplanned maintenance on an as-needed basis. Periodic visual inspections of the joints may be planned based on contractor and manufacturer recommendations.

4.3.5 Decommissioning

The decommissioning of the TJBs and underground duct banks will be coordinated closely with the host town of Portsmouth, Rhode Island to ensure that decommissioning activities meet the town's energy infrastructure needs and have the fewest impacts to the public and the environment. Subject to those future discussions, it is envisioned that the TJBs, underground duct banks, and likely the buried cables will be retired in place for possible future reuse. Mayflower Wind is required to submit a decommissioning plan to BOEM for review and acceptance.

4.4 Onshore Export Cable

4.4.1 Design Specifications

The intermediate landfall will occur on Aquidneck Island in Portsmouth, Rhode Island and will include an approximately 2.0 mi (3.2 km) underground onshore export cable route. The onshore underground export cable system will consist of two power cables, plus associated communications cabling. Table 4-5 presents the onshore export cable parameters for the Project. From the landfall site located at the intersection of Boyd's Lane and Park Avenue, the underground onshore export cables will be routed to one of the four HDD landfall sites in Portsmouth for routing off Aquidneck Island into Mount Hope Bay. An analysis comparing the HDD exit locations on Aquidneck Island is provided in Section 5.

The onshore export cables will be spliced with the offshore export cables within TJBs, as described in Section 4.3.3.

TABLE 4-5. ONSHORE EXPORT CABLE DESIGN PARAMETERS

Cable Characteristics	Design Parameters
Number of Cables	Two onshore export power cables plus associated communications cabling
Approximate Length of Onshore Export Cable Route	2 mi (3.2 km)
Approximate Cable Diameter	5.9 in (150 mm)
Nominal Cable Voltage	+/-320 kV
Approximate Cable Load Current	2,000 A

4.4.2 Construction and Installation

Similar to offshore cables, onshore cables can be manufactured and transported to site from various factory locations depending on availability, proximity to site, and available transportation. The onshore export cables will be installed within existing public road ROW. A pre-engineering survey will be performed to identify underground utility obstructions or potential crossings including other high-voltage cables or pipelines. Preliminary analyses have determined potential water line crossings by the onshore export cable route in Portsmouth.

Mayflower Wind anticipates installing onshore cables in an underground concrete-encased duct bank, as shown in the preliminary engineering plans provided in Attachment B. Alternatively, the underground conduits may be installed by directly burying them along or within public road ROW without the concrete encasement, where suitable.

Installation of the onshore underground conduit system will use open-cut trenching methods where practicable. An excavator or backhoe will excavate a trench along the proposed duct bank alignment. Trench boxes or other typical safety measures will be used to shore up the excavation while conduits are laid, and concrete is poured and cured. In areas without subsurface obstructions such as existing utilities, it may be feasible to install stretches of pre-cast concrete duct bank instead of a cast-in-place system.

Duct bank construction is expected to progress at a rate of 50 to 100 ft (15.2 to 30.5 m) per day, with the rate of progress depending on a variety of factors including the density of existing underground utilities. Trench excavation is anticipated to be approximately 5.0 to 6.0 ft (1.5 to 1.8 m) wide with the use of trench boxes. The target excavation depth will be approximately 6.0 ft (1.8 m) deep but could be deeper depending on survey results and potential utility crossings. Splice vaults or direct buried splice pits will be placed at the required location along the route, per the final design. The approximate spacing of splice vaults will be every 0.2 to 0.4 mi (0.3 to 0.6 km) based on the geometry of the route and the physical properties of the cables. Like TJBs, splice vaults provide a clean, dry environment for the jointing of segments of onshore export cable. The fiber optic communications cables will be joined inside the communications handhole installed adjacent to the splice vaults with its own access cover. After completion of trenches, duct banks, and vaults or pits, cable installation and pulling operations will be performed.

The equipment used will be typical for any high-voltage open-cut trench installation and may include equipment such as excavators, front-end loaders, dump trucks, concrete trucks, skid steers, flat bed trailers, shoring systems, padding machines, compaction equipment and trench boxes. Typical equipment used for cable installation includes a winch, cable reel cart, box trucks, splicing and terminating tools, and other miscellaneous tools. Cable pulling technicians will maintain cable pulling speed and monitor the tension of the pull.

The Project includes installation of underground conduits that can accommodate two power cables and associated communication cabling in a single trench. At each location requiring the jointing of onshore power cables, one splice vault and one communications handhole would be required.

The Noticed Variation includes the installation of underground conduits that can accommodate four power cables and associated communications cabling in a single trench. Along the approximately 2.0-mi (3.2-km) onshore route, linear trench excavation is expected to remain approximately the same width (approximately 5.0 to 6.0 ft wide), with the depth of excavation increasing by approximately 1.0 ft (0.3 m). At each location requiring the splicing of onshore power cables, two splice vaults and two communications handholes would be installed. Along the duct bank route, the excavated trench area would have similar dimensions to what is required for the Project (i.e., without the spare conduits). The work area at cable jointing locations would be increased to accommodate the installation of the additional splice vault and communications handhole. Construction of the Noticed Variation would have much smaller impacts to the Portsmouth community than construction of an entirely separate second connector Project.

4.4.3 Operations And Maintenance

The onshore export cables will be buried and are not expected to require regular maintenance, except for manufacturer-recommended cable testing as an asset condition assessment strategy. Onshore splice pits or vaults may be subject to periodic visual inspection based on manufacturers recommendations. Planned outages are not expected for the periodic inspections.

4.4.4 Decommissioning

Decommissioning of onshore facilities will be coordinated closely with the EFSB to ensure that decommissioning activities meet state needs and have the fewest environmental impacts. Subject to those future discussions, it is envisioned that the onshore cables, the duct bank itself, and vaults will be left in place for possible future reuse.

If the onshore export cable removal is determined to be required, cables will be pulled out of the transition vault and duct banks and sent to repurposing or recycling facilities. The duct bank itself would remain in place. Removal of cables from the duct bank would be done using one of the following methods: truck mounted winches, cable reels, cable reel transport truck, or simply chopped to trailer length as they are pulled out and loaded straight onto a truck (representative photographs and construction schematics can be found in Attachment C).

Reusing and/or recycling the Project components for scrap metal or other materials will be the preferred method of decommissioning. Generally, decommissioning activities will have similar environmental impacts to construction and installation.

4.5 CONSTRUCTION AND MAINTENANCE PLAN OVERVIEW

4.5.1 Cable Installation Construction Sequence

Mayflower Wind will develop an onshore construction schedule to minimize effects, both time and impact, to the daily uses of residents and the public, recreational uses and tourism-related activities to the extent feasible, such as scheduling nearshore construction activities to avoid the height of the summer tourist season. Mayflower Wind will work and coordinate with stakeholders/visitors' bureaus to schedule outside of major events taking place onshore, to the extent practicable. Mayflower Wind will complete surveys, assessments, and modelling before construction begins to ensure Project components are compatible with site-specific conditions. The general sequence of construction activities related to the onshore export cable and the offshore export cable are listed in Table 4-6 and Table 4-7, respectively. The exact sequence of construction activities will be governed by the needs of the Project, with input from the Town and members of the public, but it is generally expected that many of the onshore construction activities will be conducted simultaneously.

Mayflower Wind will acquire all necessary permits and authorizations before construction begins. The selection and contracting of fabrication contractors, installation contractors, port facilities, and deployment vessels/vehicles for the proposed Project will be finalized prior to construction. Civil construction is estimated to occur within a four to eight-month time frame and electrical installation is estimated to occur within a two- to three-month time frame. Mayflower Wind's lease term for the operational phase is 33 years.[1]

[1] Extensions are permissible as indicated in 30 C.F.R. 585.235 (a)(4).

TABLE 4-6. TYPICAL ONSHORE EXPORT CABLE CONSTRUCTION SEQUENCE

Construction Activity	Construction Summary
Civil Construction/Site Work	
Site Preparation	Site preparation involves the surveying and staking the onshore export cable corridor alignments, implementation of the specified traffic control measures required to perform the work, and soil erosion control methods to prevent runoff into the existing infrastructure. This stage of construction will also include identification of any existing underground utilities along the proposed alignment.
Clearing and Grading	The work area for the cable route will be cleared of vegetation, and temporary environmental erosion controls such as swales and erosion control socks will be installed in accordance with Best Management Practices. These controls will be maintained until the site is restored and stabilized. Portions of the work area may also require grading.
Vault and Duct Bank Installation	The conduits will be encased in an approved concrete duct bank design installed via open trench for the majority of the Project. Once excavated, the open trench will be supported by a shoring system, if necessary. The conduits will be arranged per the design drawings and held in place using conduit spacers to allow the concrete to be poured and set between each duct without allowing the formation of any air pockets or voids. Once the concrete has been poured, it will be allowed to set up to a specific strength before the trench is backfilled. This operation will be repeated until all conduit and concrete has been installed to the specified jointing locations (e.g., manholes, termination structures). At the completion of the installation, all conduits will be proofed and mandreled[a] to verify continuity of the raceway for cable installation.
Restoration Activities	Once the duct bank has been installed, restoration as required by the governing authority will be completed. For roadway installations, this will include the installation of the road subbase and base layers followed by the surface layer (i.e., concrete or asphalt). For installations outside of roadways, such as greenbelt areas, restoration typically involves backfilling to the original grade elevation and hydroseeding to prevent soil erosion.
Electrical Installation	
Cable Installation	Upon completion of the proofing and mandrel of the conduits, cable pulling operations can begin. The cable will be pulled through the duct bank to the vault and/or terminal structure and is cut leaving a sufficient amount of slack to perform the jointing operations. Once pulling has been completed, the cables will be tested for jacket integrity to ensure no damage incurred during pulling. The cables will then be sealed to prevent moisture ingress until splicing/jointing operations can be performed.
Cable Splicing/Jointing	Cable jointing refers to the splicing and/or terminating of the cables. Splicing and terminating is performed once all the cables for the specific section have been successfully pulled into the jointing bay/vault or termination structure. Once splicing and terminating is complete, the cables and accessories will be secured to the associated racking systems with the use of cable clamps. This mitigates lateral movements experienced by the cable during operation.

Notes:
[a] Mandrels are used to test the integrity of the conduit runs and remove small amounts of debris.

TABLE 4-7. TYPICAL OFFSHORE EXPORT CABLE CONSTRUCTION SEQUENCE

Construction Activity	Construction Summary
Pre-lay Cable Surveys	Prior to installation, geophysical surveys will be performed to check for debris and obstructions that may affect cable installation.
Seabed Preparation	Seabed preparation may include debris and boulder clearance, identification of obstructions, identification of moorings, relocation of moorings and if necessary, removal of any other obstructions. Boulder clearance trials may be performed prior to wide-scale seabed preparation activities to evaluate efficacy of boulder clearing techniques.
Pre-lay Grapnel Runs	Pre-lay grapnel runs will be undertaken to remove any seabed debris along the export cable route. A specialized vessel will tow a grapnel rig along the centerline of each cable to recover any debris to the deck for appropriate licensed disposal ashore.
Cable Installation	The offshore cable installation vessel will move along the pre-determined route. Cable laying and burial may occur simultaneously using a lay and bury tool, or the cable may be laid on the seabed and then buried post-lay. Alternatively, a trench may be pre-cut prior to cable installation. Cable lay and burial trials within the disturbance corridor may be performed prior to main cable installation activities to test equipment.
Cable Installation Surveys	Cable installation surveys will be required, including pre- and post-installation surveys, to determine the cable burial depth. Depending on the instruments selected, type of survey, length of cable, etc., the survey will be completed by equipment mounted to a vessel and/or remote operated vehicle.
Cable Protection	Secondary cable protection in the form of rock berms, rock bags, and/or mattresses will be installed as determined necessary, pre- and post-installation at pipeline crossing locations and post-installation in areas where sufficient cable burial cannot be achieved. Cable protection will be installed from an anchored or DP support vessel that will place the protection material over the designated area(s).

4.5.2 Offshore Vessel Traffic

Mayflower Wind will utilize a number of different vessels for the transportation, installation, and operation of Project components.

There will be an increase in vessel traffic density as a direct result of the construction phase of the proposed Project. Vessels utilized will include construction vessels, support vessels, and crew transfer vessels. The indicative offshore construction schedule is described above in Table 4-7. Indicative types of offshore vessels expected to be utilized during the Project include cable-lay barges, cable transport and lay vessels, anchor handling tugs, multipurpose support vessels, and survey vessels. Vessel transit routes are likely to navigate around construction activity and vessels. This effect to normal vessel transit routes will occur between ports and the construction activity. Mayflower Wind will implement construction safety zones in consultation with the USCG and communicate to local mariners and the local Harbor Master regarding upcoming and ongoing construction activities.

Mayflower Wind also conducted a detailed Navigation Safety Risk Assessment (NSRA) for the Project. The NSRA, that is publicly available on the BOEM website, conforms to the USCG *Guidance for Offshore Renewable Energy Installations* contained in *Navigation Vessel Inspection Circular 01-19* (NVIC 01-19) and incorporates information gained through consultation with the USCG and maritime transportation stakeholders.

Port approaches for fishing and recreational vessels transiting within the vicinity of the ECC could also be affected by the construction phase of the proposed Project. Port approaches in proximity to the ECC are detailed in the NSRA. Pleasure and local passenger vessels transiting within Rhode Island state waters may experience changes to port access from a higher volume of vessels, increased transit times due to offshore construction areas, including the ECC, and changes in vessel traffic during the construction phase of the proposed Project. Implementation of possible construction safety zones may be advised by USCG to protect marine vessel traffic. Mayflower Wind will determine designated port facilities to be used by the proposed Project during the construction and O&M phases.

4.5.3 Onshore Vehicular Traffic

A variety of vehicles standard for civil construction work are expected to be utilized for the onshore construction of the Project, as described below in Table 4-8. The onshore construction along public road ROW will require that Mayflower Wind's construction contractor submit a traffic management plan and traffic control plans for acceptance to maintain safe passage through the construction site(s) by emergency vehicles and other motorized vehicles, bicyclists, and pedestrians. Mayflower Wind will develop an onshore construction schedule to minimize effects to residents, members of the public, recreational uses and tourism-related activities to the extent feasible, such as scheduling nearshore construction activities to avoid the height of the summer tourist season. Mayflower Wind will work and coordinate with stakeholders and visitors' bureaus to schedule outside of major events taking place onshore. Mayflower Wind will also develop and implement an onshore traffic management plan prior to construction to address vehicular, bicycle, and pedestrian safety. Traffic management details can be found in Attachment F.

TABLE 4-8. INDICATIVE ONSHORE PROJECT VEHICLES

Vehicle	Activity
Backhoe	Foundation and duct bank installation
Box truck	Delivery of equipment and cable pulling
Bulldozer	Level site
Concrete truck	Installation of concrete
Crane	Installation of concrete structures and large equipment
Drill rig	Foundation installation
Dump truck	Soil and rock movement
Excavator	Excavate project sites
Forklift	Lift and transfer parts, tools, and/or equipment to staging area and/or Project site
Front-end loader	Soil and rock movement
HDD rig	Bore underneath shore to transition vault
Heavy duty truck	Equipment and component deliveries, miscellaneous
Manlift	Elevate workers
Tractor Trailer/flat bed	Miscellaneous
Paver	Paving of disturbed roads and new roads in the substation
Pickup truck	Crew transport, small supplies delivery, miscellaneous
Piling driving rig	Foundation installation
Skid steer	Soil and rock movement
Wheeled compactor	Foundation installation and installation of duct bank

4.5.4 Construction Best Management Practices

BMPs are structural or non-structural measures, practices, techniques, or devices employed to avoid or minimize impact to sensitive resources. This section describes BMPs that Mayflower Wind will employ during construction and include:

- Construction work hours
- Installation of erosion and sediment controls
- Dewatering methods
- Environmental compliance and monitoring
- Restoration and site stabilization

4.5.5 Project Construction Work Hours

Consistent with the Town of Portsmouth, Rhode Island noise ordinance, typical construction work hours for the Project will be within the hours of 7:00 a.m. and 9:00 p.m. each day.[2] Mayflower Wind will generally comply with these standard hours except as described below. Some construction activities, such as HDD activity, cable pull-through operations, and concrete pours, once started, generally continue uninterrupted, meaning night-time work will occur for certain aspects of the offshore and onshore construction. Other construction activities, such as crossing of an onramp or offramp of a state highway may need to be performed on a limited basis outside of normal work hours, including Sundays and holidays. RI DOT and local permits and approvals will be acquired for all planned construction activities prior to commencing.

4.5.6 Installation of Erosion and Sediment Controls

Following vegetation clearing and at the initiation of site preparation activities outside of vegetated areas, appropriate erosion control devices such as straw bales, straw wattle, compost mulch tubes, and siltation fencing will be installed using the procedures identified in the Rhode Island Soil Erosion and Sediment Control Handbook, and in accordance with approved plans and permit requirements. The installation of these erosion control devices will be supervised by an environmental monitor. The devices will function to mitigate construction-related soil erosion and sedimentation and will also serve as a physical boundary to separate construction activities from resource areas.

Mayflower Wind will prepare a Soil Erosion and Sediment Control (SESC) Plan to protect adjacent wetland and water resources during construction. The SESC Plan will specify BMPs including erosion and sediment controls and spill protection measures that will be implemented by Mayflower Wind.

4.5.7 Dewatering Methods

Excavation activities during onshore construction may require dewatering. Dewatering is required when it is necessary to remove water from an excavation during construction and is driven by field conditions. Several methods can be used to temporarily divert and dewater from areas of excavation, including:

- Filter bags and straw bale containment areas may be used when there is a potential for discharged water to flow overland into wetlands or waterbodies. These containment areas will be located in well-vegetated areas outside of wetlands and more than 100 ft from a waterbody or stream bank.

[2] Portsmouth General Legislation Chapter 257 Section 13.

- Discharge hose filter socks may be used when there is not enough space to construct sediment basins or enough suitable uplands for overland flow and infiltration. Filter “socks” or bags may be attached to the end for the discharge hose of the pump and used for dewatering. Additional measures such as straw bales may be installed around the filter device for added protection.

If dewatering is required during excavation, one of the abovementioned methods will be used and the SESC Plan will be implemented to avoid adverse impacts to surface and groundwater. If contaminated groundwater is encountered during dewatering, it will be managed in accordance with the RIDEM Remediation General Permit.

4.5.8 Environmental Compliance and Monitoring

Throughout the construction process, Mayflower Wind will authorize or retain the services of one or more independent construction and environmental monitors to ensure compliance with the Project’s traffic management plan and other environmental plans. Mayflower Wind will coordinate with Town of Portsmouth officials to determine the need for such monitoring. The primary responsibility of the monitor will be to confirm compliance with federal, state, and local environmental permit requirements and Mayflower Wind Project policies. At least weekly and following precipitation events of 0.25-inch of rain in 24 hours, the monitor will inspect all locations to determine that the environmental controls are functioning properly and to make recommendations for correction or maintenance, as necessary. In addition to retaining the services of an environmental monitor, the construction contractor will be required to designate an individual to be responsible for the daily inspection and upkeep of environmental controls. This person will also be responsible for providing direction to the other members of the construction crew regarding matters such as wetland access and appropriate work methods. Installation and repair of BMPs and other compliance issues are tracked on an inspection form or action log that is updated and distributed weekly to appropriate personnel. Additionally, all construction personnel will be briefed on Project environmental issues and obligations prior to the start of construction. Regular construction progress meetings will reinforce the construction contractor’s awareness of these issues.

4.5.9 Restoration and Site Stabilization

Restoration efforts, including final grading, pavement restoration and installation of permanent erosion control devices, will be completed following Project construction. All construction debris will be removed from the Project site and properly disposed. Paved areas will be restored in accordance with Town of Portsmouth specifications for pavement construction. All disturbed areas outside of roadways will be seeded with an appropriate conservation seed mixture and/or mulched to stabilize the soils in accordance with applicable regulations. Temporary erosion control devices will be removed following the stabilization of disturbed areas. Pre-existing drainage patterns, ditches, roads, walls, and fences will be restored to their pre-construction condition. Additional landscaping may be provided in some areas based on landowner agreements or permit conditions.

4.6 Safety and Public Health Considerations

Mayflower Wind will design, build, and maintain the Project so that the health and safety of the public are protected. This will be accomplished through adherence to all applicable federal, state, and local regulations, and industry standards and guidelines established for protection of the public. More specifically, all design, construction and operation activities will be in accordance with applicable government and industry standards such as the NESC and Occupational Safety and Health Administration (OSHA) regulations. The facilities will be designed in accordance with sound engineering practices using established design codes and guides published by, among others, the IEEE, the ASCE, the ACI, and the ANSI.

The construction contractors will be required to comply with all dig-safe regulations and protocols. Mayflower Wind will also ensure their construction contractors are in strict compliance with the local town road opening requirements and work closely with the applicable department of public works, police and fire departments and local utilities. Practices which will be used to protect the public during construction will include, but not be limited to, establishing traffic control plans for construction traffic on local streets to maintain safe driving conditions, restricting public access to potentially hazardous work areas, and use of temporary guard structures at road and electric line crossings. See Attachment F for more details.

4.6.1 Health and Safety

Mayflower Wind is committed to treating people, community, and the environment with utmost care and respect. As such, Mayflower Wind believes that all safety and environmental incidents can be prevented; and is the foundation of the Mayflower Wind Health Safety, Security, and Environment Policy to ensure risk is managed effectively and to uphold corporate values of honesty, integrity, and respect. Mayflower Wind has developed a Safety Management System which defines a comprehensive safety system that will govern all future construction and operation activities. The Safety Management System also includes Mayflower Wind’s Emergency Response Plan. The Emergency Response Plan will outline how Mayflower Wind will address preparedness and respond to emergency situations; and to identify the responsibilities of all parties in the event of an emergency.

Pursuant to 30 C.F.R. § 585.627(c), Mayflower Wind’s Oil Spill Response Plan has been developed to follow all federal, state, and local regulations pertaining to chemical and oil transfers to site, storage, removal from site, disposal, and accidental releases. Mayflower Wind will implement a construction-phase Oil Spill Response Plan to provide procedures for containing, cleaning, and reporting any accidental spills of oil fuel or other hazardous materials.

A review of potential environmentally affected sites along the route was conducted and included a search of various governmental databases by Environmental Data Resources, Inc. This review indicated that all the reported releases had been closed out by the state. Although most of these sites are closed, there may be institutional controls associated with the properties and residual affected soil and/or groundwater may still be present at concentrations below regulatory standards at closed sites. In addition, incidental spills and/or releases resulting in less than reportable quantities may have occurred and not been reported.

Vessels could experience unplanned releases of oil, solid waste, or other materials during the construction phase of the proposed Project. Increased vessel traffic in the area of construction and at nearby ports may affect the likelihood of unplanned releases. Vessels and the construction activities offshore will comply with the regulatory requirements related to the prevention and control of discharges and the prevention and control of accidental spills as documented in the proposed Project’s Oil Spill Response Plan.

Mayflower Wind will employ effective construction management contingency plan procedures during HDD operations to minimize construction-period disturbances for nearby land uses and minimize the potential for seafloor disturbance through drilling fluid seepage. Mayflower Wind plans to use a drilling fluid composed of bentonite clay or mud that will pose little to no threat to water quality or ecological resources should seepage occur, which is an HDD construction industry BMP. Mayflower Wind will adhere to operational standards that minimize the potential for drilling fluid seepage.

Project-related construction activities will be designed to avoid, minimize, or mitigate potential effects to local groundwater and surface water resources that may occur due to soil erosion or stormwater discharge into waterbodies or contact with groundwater resources. The proposed Project does not anticipate encountering significant areas with contaminated soil and groundwater.

4.7 PROJECT COMMUNITY OUTREACH

4.7.1 Agency and Stakeholder Engagement

Mayflower Wind understands the importance of engagement with government agencies and community stakeholders. Prior to the Lease auction in December 2018, Mayflower Wind began an outreach effort with key groups, including fishing organizations, local community leaders, and appropriate government regulatory agencies (refer to Table 4-9). Mayflower Wind initiated this early engagement to understand stakeholder and agency concerns, specifically the scientific, socio-economic, and environmental issues. Mayflower Wind has reviewed the best available science and appropriate BMPs and has identified possible solutions to these concerns. Mayflower Wind has consulted with the fishing industry, Native American Tribes, landowners, environmental groups, higher-education institutions, municipal government officials, state legislators, trade associations, regional science organizations, harbormasters and port managers, and Rhode Island state agencies. These stakeholder engagements will, where appropriate, continue throughout the lifetime of the proposed Project. Mayflower Wind's engagement has included or will include at least the following entities and may include others:

TABLE 4-9. AGENCY AND STAKEHOLDER ENGAGEMENT

Agency and Stakeholder Engagement	
Education	
Brown University	Roger Williams University
Institute of Electrical and Electronics Engineers (IEEE) Providence Chapter	University of Rhode Island
Environmental Groups	
Aquidneck Land Trust	Environment RI
Clean Ocean Access	Island Park Preservation Society
Climate Action Rhode Island	
Local Officials	
Harbormasters of Bristol, Little Compton, Middletown, Portsmouth, Tiverton, Warren	Towns of Bristol, Little Compton, Middletown, Tiverton, Warren
Portsmouth Economic Development Committee	Town of Portsmouth Officials: Town Council, Planning Board, Zoning Board, Conservation Commission
Marine Trades	
401 Techbridge	Seafarer's International Union
Piledrivers Local #56	SeaFreeze Ltd.
North Atlantic States Regional Council of Carpenters	Standish Boat Yard
SeaAhead Bluetech Innovation	
Local Mariners	
Bristol Marine	Safe Harbor Sakonnet
Bristol Yacht Club	Safe Harbor Island Park
Port of Galilee	Sakonnet Yacht Club
Richard Bready Mount Hope Bay Sailing and Education Center	The Town Dock
Riverside Marine	Tiverton Yacht Club

Agency and Stakeholder Engagement	
Local Businesses	
Montaup Country Club	Mello's Farm and Flower Center
Flo's Drive-In	Portsmouth Business Association
Graziano's 501 Cafe	Schultzy's Snack Shack
Regional Entities	
Fisheries Technical Working Group (New York State Energy & Research Development Authority)	New England Fishery Management Council
Fleet Forces Atlantic Exercise Coordination Center	New York State Energy Research and Development Fisheries Working Group
MA/RI Joint Developer Marine Affairs Working group	National Oceanic and Atmospheric Administration (NOAA) National Marine Fisheries Service
Marine Recreational Fisheries Development Panel members and their respective affiliations	Northeast Science Center
National Grid	NOAA, National Marine Fisheries Service, Protected Resources Division
Naval Seafloor Cable Protection Office	NMFS, Protected Resources Division
Navy Fleet Command	Northeastern Regional Association of Coastal and Ocean Observing Systems
New England Aquarium Anderson Cabot Center for Ocean Life	Responsible Offshore Development Alliance /Special Initiatives for Offshore Wind
State Agencies & Officials	
Commercial Fisheries Center of Rhode Island	Rhode Island Department of Transportation
Environmental Business Council of Rhode Island	Rhode Island Energy Facility Siting Board
Rhode Island Coastal Resources Management Council	Rhode Island Public Utilities Commission
Rhode Island Commerce Corporation	Rhode Island Historical Preservation & Heritage Commission
Rhode Island Department of Environmental Management	State Representative Michelle McGraw
Tribal Nations	
Tribal Historic Preservation Officers • Narragansett Indian Tribe • Mashpee Wampanoag Tribe • Wampanoag Gay Head (Aquinnah) Tribe • Shinnecock Indian Nation • Delaware Indian Tribe • Mashantucket Pequot Tribal Nation • Mohegan Tribe of Connecticut	

4.7.2 Fisheries Liaison Outreach

Mayflower Wind is actively engaged in outreach and two-way communication with the fishing community and with organizations that work on the overlap of fishing and the offshore wind industry. Those in the fishing community that Mayflower Wind has communicated with range from individuals to fishing captains to large businesses. The organizations with whom Mayflower Wind has communicated range from federal agencies to non-profits to task forces. Mayflower Wind is currently working with three Fishery Representatives (FR), including the Commercial Fisheries Center of Rhode Island (CFCRI), the Massachusetts Lobstermen's Association (MLA), and the New Bedford Port Authority (NBPA).

Mayflower Wind's FLO and other members of the team talk directly with fishermen, sit on boards and working groups of organizations alongside fishermen, and engage directly with fishermen in scientific research and other efforts. Project development has been and will continue to incorporate input from stakeholders in the fishing industry in a way that allows it to minimize interference with fishermen that have been fishing (finfishing, fish traps, shellfishing, lobstering, crabbing, aquaculture) in the regional area for hundreds of years. Mayflower Wind will continue to strengthen existing and build new relationships with fishing organizations throughout Project development, construction, and operations. A list of selected outreach engagements with entities involved in the overlap of fisheries and offshore wind to date is provided in Table 4-10.

Mayflower Wind's three FRs, the CFCRI, the MLA, and the NBPA, collaborate on initiatives that minimize impacts to fisheries in the offshore Project area, provide information to Mayflower Wind from the fishing industry, and disseminate information from Mayflower Wind to the fishing industry.

The MLA is a member-driven organization that accepts and supports the interdependence of species conservation and the members' collective economic interests.[3] Mayflower Wind and the MLA will work together to identify potential impacts to the lobstering community in the offshore Project area and collaborate on science initiatives that will help to better understand natural impacts to lobster in the region and to investigate potential impacts or changes to lobster populations with the introduction of offshore Project infrastructure.

The CFCRI was founded to preserve commercial fishing as a profession, culture, and way of life through promoting the sustainability of the resource. The CFCRI brings fishermen, scientists, managers, and elected officials together in a collaborative effort to improve fisheries and the understanding of the marine environment.[4]

The NBPA focuses on industry outreach and collaboration by implementing the best management practices over port resources and developing economic growth strategies for New Bedford.[5] Mayflower Wind's relationship with the Port and its vessels is critical to collaboratively minimizing potential impacts to fishermen.

In addition to the CFCRI, the MLA, and the NBPA, Mayflower Wind has engaged with the following organizations, including:

- The Responsible Offshore Science Alliance
- Commonwealth of Massachusetts Fisheries and Habitat Working Groups on Offshore Wind Energy
- New York State Renewable Energy Development Authority's Fisheries Technical Working Group
- The American Clean Power Association Fisheries Working Group

This list does not include federal (BOEM, NMFS, USCG) or Commonwealth of Massachusetts Division of Marine Fisheries (MA DMF), Massachusetts Coastal Zone Management (MA CZM), RI CRMC, and Rhode Island Division of Marine Fisheries (RI DMF) agencies that Mayflower Wind has engaged with specific to the COP or other specific Project permit meetings or individual fishermen/fishing companies Mayflower Wind has engaged with to coordinate geophysical and geotechnical surveys and other activities.

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[3] Massachusetts Lobstermen's Association. 2020. "Mission Statement." January 8, 2020. https://lobstermen.com/about/mission-statement/. Accessed April 15, 2022.

[4] Commercial Fisheries Center of Rhode Island (CFCRI). n.d. "About." https://www.cfcri.org/about.html. Accessed April 15, 2022.

[5] Port of New Bedford. 2019. "The New Bedford Port Authority." March 4, 2019. https://portofnewbedford.org/the-new-bedford-port-authority/. Accessed April 15, 2022.

TABLE 4-10. SELECTED MAYFLOWER WIND OUTREACH TO ENTITIES INVOLVED IN THE OVERLAP OF FISHERIES AND OFFSHORE WIND TO DATE

Entity	Regional	Massachusetts	Rhode Island
Anderson Cabot Center for Ocean Life at the New England Aquarium	√		
Atlantic Offshore Lobstermen's Association	√		
Cape Cod Commercial Fisherman's Alliance		√	
CFCRI			√
Commercial Fisheries Research Foundation			√
Coonamessett Farm Foundation	√		
Fisheries Survival Fund	√		
Massachusetts EEA Fisheries Working Group on Offshore Wind Energy		√	
MLA		√	
Mid-Atlantic Fishery Management Council	√		
NBPA		√	
New England Fishery Management Council (NEFMC)	√		
New York State Renewable Energy Development Authority's Fisheries Technical Working Group	√		
Patriot Party Boats		√	
Recreational Fishers Association	√		
Responsible Offshore Development Alliance	√		
Responsible Offshore Science Alliance	√		
Rhode Island Commercial Fishermen's Association			√
Rhode Island Lobstermen's Association			√
Seafreeze Ltd. and Seafreeze Shoreside			√
The Town Dock			√
University of Massachusetts Dartmouth School for Marine Science and Technology	√		

Mayflower Wind has conducted and continues to conduct stakeholder outreach in advance of and during geophysical and geotechnical surveys to further understand the multifaceted components that make up the regional fishing industry. This has involved the Mayflower Wind FLO communicating directly with the fishing industry, including with individual fishing vessels in and around survey areas, to gather area and vessel-specific information to design surveys in a way that understands and incorporates fishing activity and to coordinate survey activities with fishing activities. Additionally, Mayflower Wind has hired local fishermen to conduct pre-survey scouting to inform Project survey activities. This includes both the identification of fixed fishing gear and also provides local knowledge of fishing activity. When practicable, Mayflower Wind has also added fishermen with local experience as Fisheries Onboard Representatives on survey vessels to coordinate survey activities with fishing activities. Fisheries Onboard Representatives communicate directly with fishing vessels in real time, providing input to the Mayflower Wind FLO and the survey vessel based on their experience as commercial fishermen in the area, and recording the presence of fishing vessels and activity.

Work completed by Fisheries Onboard Representatives during geophysical and geotechnical surveys has provided very useful information to survey vessels to deconflict surveying and fishing activities, confirming generally known information about fishing activity in the area, and providing Mayflower Wind with significant additional knowledge of fishing activity in the area. This real-time coordination supplements the advance coordination outreach efforts made by the Mayflower Wind FLO. A more complete discussion of this and other Mayflower Wind outreach to the fishing community is provided in Attachment G, Fisheries Communication Plan.

The Mayflower Wind FLO also conducts at least monthly port hours with other offshore wind developers at fishing ports in the region, including Point Judith. The Mayflower Wind FLO's contact information is posted on the Mayflower Wind website which further facilitates regular communication with the fishing community.

4.7.3 Open Houses

Mayflower Wind is committed to robust, inclusive, and transparent public involvement. The Project's approach to public engagement includes: 1) stakeholder identification in the area of the proposed Project; 2) public understanding of and education about the Project; 3) public input collection; and 4) information dissemination to the general public and stakeholders that are directly affected by the Project.

Mayflower Wind has hosted four virtual Open Houses for the local communities as part of the series *The Future of Clean Energy is Here*. Two of these virtual Open Houses were curated for the communities impacted by the SouthCoast project in particular. The first was held on January 27, 2022 and was focused on Mayflower Wind's SouthCoast economic development initiatives. The second was held on May 4, 2022, and gave a virtual 3D tour of the SouthCoast project including all offshore and onshore components for the Portsmouth, Rhode Island and Somerset, Massachusetts communities. Mayflower Wind representatives executed door-to-door outreach in the Portsmouth community prior to the May 4, 2022 virtual Open House. The virtual Open House recordings are available on Mayflower Wind's events page and YouTube channel: https://mayflowerwind.com/events/. Mayflower Wind has also held two in person office hour events focused on supply chain and workforce development in our Fall River office in November and December 2021.

Importantly, extensive outreach has occurred over the months leading up to the Project's EFSB filing and will continue. Since 2019, Mayflower Wind has been engaged in extensive Project outreach with federal and state agencies, federally recognized Native American tribes, local agencies in Rhode Island, stakeholders representing a broad range of perspectives, and the general public.

4.7.4 Project Website

Project information and updates can be found online at: https://mayflowerwind.com/ .

The overall objective of the Project website is to serve as a central information hub. It is a primary line of information distribution and is referenced in all educational materials. The website contains general information on the Project and the partnership, as well as resources such as Project factsheets, FAQs, relevant news updates, and upcoming event information. The website's SouthCoast page includes information specifically for Rhode Island stakeholders, including project technical details, next steps in the permitting process, and how to contact Mayflower Wind's SouthCoast Community Liaison Officer: https://mayflowerwind.com/southcoast/.

A registration form is also available on the website for those who are interested in participating in the offshore wind supply chain. The site also features a section dedicated to public meetings and informational opportunities such as webinars or open houses, announcements for upcoming meetings, and an archive of previous materials and presentations including recent virtual open houses.

Visitors can also contact the Mayflower Wind team members directly using a comments and questions portal on the website or by calling 508-589-3557.

The website will continue to evolve to meet the needs of the Project and continually updated to adapt to each Project phase for the purposes of providing the most current information to the public. Those interested can also subscribe to receive Project Newsletters.

4.7.5 Project Hotline

A toll-free hotline (508-589-3557) has been established for the Project and is available for use.

The hotline allows individuals to contact the Mayflower Wind team for more information or to have specific questions or concerns answered. This number will be provided on all materials developed to support field activities.

All calls placed into the Project hotline will go to a recorded voicemail, as it is a non-manned number. Voicemails are then documented and logged by Project team members and forwarded to the appropriate team member or subject matter expert. The Project team will respond to all inquiries within 48 hours. Interested parties can also contact the Mayflower Wind team members directly using a comments and questions portal to send a message through the Mayflower Wind website as described above.

4.7.6 Estimated Project Costs

Mayflower Wind developed a comparative analysis of the costs of the offshore and onshore routes considered as part of its route evaluation effort. Due to the confidential and commercially sensitive nature of this cost information, Mayflower Wind has filed it under seal with the Board and has filed a motion for protective treatment of the information (Attachment H).

4.8 Project Schedule

The Project will require both onshore and offshore construction activities. Offshore activities within state waters are limited to the installation of the offshore export cable including the sea-to-shore transition via HDD. Onshore construction activities in Rhode Island will include installation of the onshore underground export cable across Portsmouth between TJBs at the onshore side of the sea-to-shore transitions.

An indicative baseline construction schedule is provided below with commentary that schedules may be moved year to year and timelines may be longer or shorter depending on the selection of final technologies and installation methodologies, and receipt of all federal, state, and local permits. Mayflower Wind will acquire all necessary permits and authorizations before construction begins, which is currently anticipated to occur in 2024. The selection and contracting of fabrication contractors, installation contractors, port facilities, and deployment vessels/vehicles for the proposed Project will be finalized prior to construction. Construction is expected to take up to three years. Mayflower Wind's lease term for the operational phase is 33 years.

The first offshore operation will be to perform a cable installation survey, including conducting supplemental geophysical and geotechnical marine survey to confirm the framework of the seafloor and subsurface conditions along the export cable route, such as deployed fishing gear, etc. Pre-lay route and seabed preparations will be the second offshore activity to take place. A pre-lay grapnel run will be performed to clear the offshore export cable route to dislodge obstacles that could affect the cable-lay and burial. A carousel-equipped cable-lay vessel would arrive onsite with the export cable loaded onto the vessel ready for the cable installation. The primary cable burial method is to use jet-plow or similar jet-sled technology which is designed to simultaneously lay and bury the cable along the seafloor. The et-plow is equipped with a heavy stinger ("blade") that creates a path in the seafloor for the cable, while the high-pressure jets of the jet-plow inject high-pressure water to fluidize the bottom sediments to facilitate burial of the cable to the target burial depth below the seafloor. Depending on the seabed conditions, Mayflower Wind's construction contractor may need to employ multiple cable burial tools to achieve cable burial.

During marine operations, other vessels will be routinely assisting the cable-lay vessel, including a crew transfer vessel, materials barge and tugboat to accompany the marine operations. Once the cable is laid and buried along the seafloor, a determination will be made about where secondary cable protection is required. Cable protection is typically installed at any existing submarine cable or pipeline crossings and for areas where the minimum target burial depth cannot be achieved. Secondary cable protection methods will be based upon site specific conditions, and would include the creation of a rock berm, concrete mattress placement, rock placement, and fronded mattresses. Half shells may be used as well, and they are typically used to protect cables ends at pull-in areas and where trenching is not possible (representative photographs and construction schematics can be found in Attachment C). The offshore export cable installation process will include a post-installation cable survey or "as-built" survey and the preparation of a route position list to define the final alignment of the buried cables.

Onshore construction and installation activities will commence following receipt of required state and local permits, approvals and authorizations. The exact sequence of construction activities will be governed by the needs of the Project, but it is generally expected that many of the onshore construction activities will be conducted simultaneously. The onshore construction phase involves excavation and installation of the TJBs at the HDD cable landfalls. Trenching and excavation along the onshore export cable route (i.e., along public roadway ROW) is performed in preparation of the duct bank installation. Once a safe trench is excavated, the conduits and spacers are installed, and then the underground concrete duct bank is formed in-place. The construction of the duct bank requires the continuous delivery of concrete trucks to form and build the duct bank. Additional excavation is performed to accommodate space for additional manholes and splice boxes along the onshore export cable route. When the duct bank is complete, the trench will be backfilled and the disturbed areas will be stabilized and restored, including repaving of affected roadways. Cable-pulling equipment, winch trucks and cable spools are then delivered to the site to perform the cable installation where the cables are "pulled through" the underground conduit system. Similar to the offshore procedures, an as-built survey will be performed to document the locations of the underground onshore export cable system.

A general construction schedule for the Mayflower Wind Project is presented below in Table 4-11. Construction activities are presented in an indicative sequence that could change based on installation methods, vessel and/or vehicle and equipment availability, weather, and other unforeseen events like the COVID- 19 pandemic that affected work activities in 2020-2021.

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TABLE 4-11. INDICATIVE CONSTRUCTION SCHEDULE FOR BRAYTON POINT PROJECT

Mayflower Wind Indicative Project Construction Schedule																				
Focus	2023				2024				2025				2026				2027			
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Onshore Components																				
Onshore Export Cable- Construction, Installation & Testing (Aquidneck Island)																				
Onshore Export Cable- Construction, Installation & Testing (Brayton Point)																				
Onshore Substation- Construction & Commissioning																				
HDD Construction																				
HDD Construction (Aquidneck Island)																				
HDD Construction (Brayton Point)																				
Offshore Export Cable - Installation and Termination																				
Offshore Export Cables - Installation & Termination																				

POI at Brayton Point

**Note - the construction windows are depicted above; actual construction durations within these windows may (are likely to be) shorter.*

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5 PROJECT ALTERNATIVES

5.1 INTRODUCTION

Transmission and interconnection facilities are necessary to deliver electricity generated by the Clean Energy Resource to the regional electric grid. This section of the Siting Report describes the siting process and development of alternative routes in the State of Rhode Island, including Rhode Island state waters, for the Project. The Project, which is the subject of this Application, includes new Rhode Island-jurisdictional offshore and onshore transmission facilities necessary to deliver the renewable clean energy generated by Mayflower Wind's Clean Energy Resource to the regional electric power grid at the POI at Brayton Point in Somerset, Massachusetts. Specifically, this includes the offshore and onshore export cables in Rhode Island, including an intermediate onshore underground crossing of Aquidneck Island in the Town of Portsmouth, Rhode Island as further described in the Executive Summary and Section 2 of this Siting Report.

The EFSB Rules of Practice and Procedure §1.6(b)(16) require applicants to include a study of alternatives of the proposed facility, including alternatives as to energy sources, methods of energy production and transmission and sites for the facility. Section 5 of this Siting Report serves to address the alternatives considered by Mayflower Wind for the Project.

Mayflower Wind considered and evaluated alternative potential POIs, offshore ECCs, landfall site alternatives, onshore export cable routes, transmission technologies, and construction methodologies. Some of these alternatives were eliminated based on technical or commercial feasibility assessments, or the inability of the alternative to address the identified interconnection need. Other alternatives that were found to be feasible and capable of addressing the identified need were further examined on the basis of estimated costs, constructability, operability, environmental impact assessments and reliability assessments.

5.2 POINT OF INTERCONNECTION ALTERNATIVES

When fully built out, and with continuing advancements in wind technology, Mayflower Wind's Clean Energy Resource will supply an estimated 2,400 MW of offshore wind energy, enough to power nearly a million homes. Delivery of this amount of clean power will necessitate multiple POIs, for several reasons, most notably that individual connections to the regional transmission system are limited by ISO-NE to 1,200 MW maximum for reliability reasons.

Mayflower Wind considered multiple coastal interconnection points with suitable electrical characteristics, accessibility, as well as the potential for nearby land for the required substation/ converter station facilities. Mayflower Wind has invested considerable effort and funds into maturing several key POIs on Cape Cod and importantly made an investment in the Brayton Point POI as a secure and mature asset with ample injection capacity. The need for transmission infrastructure to enable delivery from remote geographic renewable energy development zones, such as the offshore wind Lease Area, remains a significant topic in transmission planning and transition to a renewable clean energy grid. Key attributes of several of the POIs Mayflower Wind considered are summarized in Section 5.2.2.

5.2.1 Brayton Point (Selected POI)

Brayton Point is the site of a recently decommissioned fossil fuel (coal/oil) fired 1,600-MW base load power station located on an approximately 300-ac (121-ha) brownfields site on a peninsula of land surrounded by Mount Hope Bay to the south, the Lee River to the west, the Taunton River to the east, and Interstate Route 195 to the north.

The existing Brayton Point 345 kV substation, which served the former Brayton Point Power Station, is owned and operated by National Grid. The substation is connected to the bulk power grid by two 345-kV lines which run north to Medway as well as several 115-kV lines running north, east, south, and west. Brayton Point's existing, robust grid infrastructure and waterfront location make it an ideal interconnection location for offshore wind.

In 2021, Mayflower Wind established ISO-NE interconnection queue positions with a POI at Brayton Point that will be used for development of this separate 1,200 MW connector project to optimize and deliver the full Clean Energy Resource potential output (an estimated 2,400 MW) from the Lease Area. Brayton Point was identified as a feasible POI (considering the use of HVDC transmission technology) during the analysis of potential POIs for the Falmouth connector project. The establishment of a favorable ISO-NE queue position for the POI at Brayton Point combined with the feasibility of the POI resulted in the determination of Brayton Point as the selected POI for the Brayton Point Project. The Brayton Point site (Figure 5-1) has been used for decades as a hub for regional energy generation and has a strong 345 kV transmission connection to the regional transmission system. Mayflower Wind's favorable queue position plus the robust transmission network at Brayton Point means reduced cost, time and interconnection difficulties for the Project. Its shorefront location on Mount Hope Bay makes it an ideal location for redevelopment of a brownfields site and POI to the regional transmission system for the Clean Energy Resource.

Mayflower Wind selected the Brayton Point POI because it offers significant injection capacity and multiple positive attributes for interconnection. The Brayton Point POI meets the site selection criteria listed above, as well as: (i) the existing 345-kV transmission infrastructure there will allow for a robust interconnection to the regional transmission system; (ii) the site is a brownfields site at the coast used for decades for the operation of a coal/oil-fired power station; (iii) it is the shortest and least expensive onshore option; and (iv) Mayflower Wind was able to acquire an established and partly developed interconnection queue position at Brayton Point that will enable Mayflower Wind to interconnect in a quicker and less costly way. Additionally, there is a lack of direct abutters at Brayton Point.

Mayflower Wind will develop a new HVDC converter station to convert the Project's HVDC power to 345-kV HVAC for interconnection with the Brayton Point POI. The HVDC converter station will be located on the central portion of the Brayton Point site immediately north of the location of the two former 500 ft tall concrete cooling towers that were razed in 2017 when the former Brayton Point Power Station coal-fired plant was decommissioned. The onshore export cables will enter the converter station site from the northwest or from the southeast corner, depending on which onshore export cable route is chosen. From the converter station, the 345-kV HVAC underground transmission lines will exit the converter station and travel south for interconnection at the existing National Grid substation.

5.2.2 Other POIs Considered

Mayflower Wind has assessed multiple possible interconnections at substations located in southeastern Massachusetts and Rhode Island for the interconnection of the Project (see Figure 5-1 and Table 5-1). POIs at Bourne, West Barnstable, Falmouth Bulk, Falmouth Tap, Brayton Point, and others were thoroughly vetted for the Mayflower Wind Falmouth Connector Project and eventually deselected or dismissed, while Falmouth Tap was retained. Although Brayton Point was not carried forward for the Falmouth Connector Project, it remained a desirable POI for this Project and separate Mayflower Wind interconnection (i.e., Brayton Point) and, therefore, it is discussed herein.

TABLE 5-1. UNIVERSE OF POINTS OF INTERCONNECTION CONSIDERED (ALL LENGTHS APPROXIMATE)

Route #	Interconnection Point	Cable Route Length - mi (km)		
		Offshore	Landfall to POI	Total
1	Brayton Point	113 (182)	0.8 (1.3)	114 (183)
2	Kent County Substation, RI	106 (170)	2.5 (4.0)	109 (174)
3	Canal/Carver/Pilgrim	163 (262)	3.0 (4.9)	166 (267)
4	Mystic	224 (360)	6.0 (9.7)	230 (370)
5	K Street	231 (372)	0.8 (1.3)	232 (373)

5.2.2.1 Kent County

Kent County substation is a 345-kV substation located in Kent County, Rhode Island. The offshore and onshore routes to access the Kent County 345-kV substation have feasibility challenges. The onshore route would encounter dense congestion of underground utilities in the roadway, and the offshore route would have to avoid other proposed projects, limiting the available area for installation activities. For these reasons, this location was not pursued at this time.

5.2.2.2 Carver, Canal, and Pilgrim

Carver substation meets basic electrical criteria for a POI, but the required onshore route to access the substation would be substantial—more than double the distance of onshore relative to other POIs considered. Accessing Canal substation would require passing the new Bourne substation, resulting in no advantage to interconnecting at Canal rather than Bourne. The Canal substation would be difficult to connect to because the equipment is aged and may require a complete rebuild. Interconnection to Pilgrim station would encounter many of the same electrical challenges as other POIs on or near Cape Cod, and accessing the POI would likely require a long marine route around Cape Cod, because the USACE has resisted cable access along the Cape Cod Canal. For these reasons, these locations were eliminated from further consideration.

5.2.2.3 Mystic

Mystic substation is the site of an existing power plant that is in the process of being retired. The retirement of the plant provides electrical capacity to interconnect to this site. However, this POI is the greatest distance from the Clean Energy Resource of any of the options considered. While the plant is sited adjacent to the Mystic River, the ability to route offshore cable from the Clean Energy Resource has multiple obstacles, with the only viable route avoiding Boston Harbor. For these reasons, this location was not pursued at this time.

5.2.2.4 K Street

The K Street substation is similar to the Mystic substation in that it would require a long marine route around Cape Cod. The K Street substation lacks the electrical capacity found at Mystic substation. In addition, the K Street substation site is small and would be difficult to expand since the area is an active industrial site. For these reasons, this location was not pursued at this time.

5.3 Route Siting Alternatives

Mayflower Wind's routing analysis, environmental assessment of alternatives, and identification of a selected alternative route involved significant efforts to evaluate a wide range of alternatives to achieve the Project objective of connecting the Clean Energy Resource to the regional electric grid. This included the evaluation of export cable corridors (ECCs) offshore, landfall locations, and onshore export cable routes.

The following steps were taken during the route selection process:

- Identify potential suitable POIs with electric grid capacity and select POI.
- Identify potential land parcels capable of HVDC converter station development.
- Identify potential landfall locations capable of providing suitable areas for HDD and TJB installation.
- Identify a geographic area that incorporates the offshore route(s), the potential onshore route(s), the landfall location(s) the HVDC converter station location, and the POI with the regional transmission system.
- Assess potential routing options within the geographic area that would best connect these routing elements.
- Evaluate each routing option for fatal flaws and only move forward with feasible options.
- Inventory and evaluate each route option based on engineering, environmental impact, constructability, permitting, reliability, and cost criteria.

5.3.1 Siting Factors Offshore and at Landfall

Identifying ECCs requires careful planning and route optimization with considerations including offshore physical hazards, existing submarine cables, economic and recreational use areas, protected marine areas, and the interconnection points. Physical hazards may include shipwrecks, unexploded ordnance, other existing (and planned) cables, and sea floor and subsurface obstructions. Economic or recreational uses may include commercial or recreational fishing, recreational boating and tourism, and anchoring. Protected areas may include areas protected for biological, cultural, or historical purposes.

Many factors were evaluated when selecting landfall locations. Physical space availability was evaluated primarily for construction and installation such as adequate space to accommodate an onshore HDD staging area. Mayflower Wind assessed land-uses adjacent to potential landfall locations to inventory and avoid/minimize adverse environmental effects, identify potential for use of existing infrastructure, minimize disturbances to residential areas, avoid protected lands, and avoid adverse effects to historic districts, conservation districts, and businesses that could be impacted including nearby marine uses (i.e., fisheries, shellfish beds, marinas, beaches).

Water depth at the landfall approach was also an important factor because the drafts of the vessels to be used to support the HDD operations need to be considered as well as the effects from sea-state conditions, wave action, and surf zone on the vessels and cable assets. At the HDD punchout ("entry" and "exit") locations, where the offshore export cables will begin the approach to shore, the HDD offshore exit locations are likely to be on the order of 6.6 to 32.8 ft (2.0 to 10.0 m) in depth below mean sea level. The selected landfall location needs to balance avoidance of marine and coastal resources such as submerged aquatic vegetation and coastal wetlands, avoid risk of cable exposure due to wave action and sediment migration, and consider sea-to-shore HDD installation operations.

5.3.2 Siting Factors Onshore

The evaluation of route alternatives requires a holistic approach to link the offshore components of the Project within the onshore components of the Project to connect to the POI and to interconnect the offshore wind energy into the existing electric grid. Onshore export cable routes considered by Mayflower Wind would be constructed underground, primarily along existing public road ROW. No overhead transmission lines are currently envisioned for the Project. Considerations for siting onshore export cables include the following:

- System operability and reliability – access for future inspection, operation, and maintenance.
- Engineering feasibility – route length, route bends and hard angles, adequate space to accommodate underground duct bank, manholes and TJBs.
- Construction feasibility – congestion with existing utility infrastructure, complex and trenchless crossings.
- Impacts to the human/built environment – residential units, densely developed areas, sensitive receptors, traffic congestion, historic and archaeologic resources, potential to encounter subsurface contamination.
- Impacts to the natural environment – flood hazard areas, freshwater and coastal wetlands and waters, state-listed rare species, public water supplies, conservation and public lands, tree removal.
- Costs per mile onshore underground cable supply and installation per mile costs are substantially higher than offshore cable supply and installation costs, as referenced in Attachment H (redacted).

5.3.3 Universe of Routes Considered

A summary of fourteen onshore and offshore export cable route combinations considered by Mayflower Wind is presented below in Table 5-2 and shown on the Universe of Routes Figure 5-2. The list captures a representative array of route segment combinations considered by Mayflower Wind for a POI at Brayton Point. Most of the routes were down selected. The term “Selected Alternative and associated variants” refers to the routes through the Sakonnet River with intermediate onshore crossing at Portsmouth (Route IDs 1-5 in Table 5-2).

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TABLE 5-2. OFFSHORE AND ONSHORE EXPORT CABLE ROUTES CONSIDERED [a]

Route Category	Route ID	Route Description	1st Intermediate Landfall	2nd Intermediate Landfall	Brayton Point Landfall	Length mi (km)							
						Offshore				Onshore			Total
						Federal waters [b]	RI state waters	MA state waters	Total	RI jurisdiction	MA jurisdiction	Total	
Sakonnet River with intermediate onshore crossing at Portsmouth (Selected Alternative and associated variants)	1	Sakonnet River to Boyds Ln. to RWU	Boyds Ln. (Portsmouth, RI)	RWU (Portsmouth, RI)	Lee River	90.1 (145.0)	20.9 (33.7)	2.1 (3.4)	**113.2 (182.1)**	1.0 (1.6)	0.6 (0.9)	**1.5 (2.4)**	**114.7 (184.5)**
	2	Sakonnet River to Boyds Ln. to Montaup Country Club	Boyds Ln. (Portsmouth, RI)	Montaup Country Club (Portsmouth, RI)	Lee River	90.1 (145.0)	20.6 (33.2)	2.1 (3.4)	**112.9 (181.6)**	1.7 (2.7)	0.6 (0.9)	**2.2 (3.6)**	**115.1 (185.2)**
	3	Sakonnet River to Boyds Ln. to RIDEM/ Aquidneck Land Trust	Boyds Ln. (Portsmouth, RI)	DEM/Aquidneck Land Trust (Portsmouth, RI)	Lee River	90.1 (145.0)	20.8 (33.5)	2.1 (3.4)	**113.0 (181.9)**	1.0 (1.7)	0.6 (0.9)	**1.6 (2.6)**	**114.6 (184.5)**
	4	Sakonnet River to Boyds Ln. to Mt. Hope Bridge	Boyds Ln. (Portsmouth, RI)	Mt. Hope Bridge (Portsmouth, RI)	Lee River	90.1 (145.0)	21.2 (34.0)	2.1 (3.4)	**113.4 (182.5)**	1.2 (2)	0.6 (0.9)	**1.8 (2.9)**	**115.2 (185.3)**
	5	Sakonnet River to Boyds Ln. to RWU	Boyds Ln. (Portsmouth, RI)	RWU (Portsmouth, RI)	Taunton River	90.1 (145.0)	20.9 (33.7)	2.4 (3.9)	**113.5 (182.6)**	1.0 (1.6)	0.4 (0.7)	**1.4 (2.3)**	**114.9 (184.8)**
Offshore routes to Brayton Point	6	Sakonnet River north	--	--	Lee River	90.1 (145.0)	20.7 (33.3)	2.4 (3.9)	**113.2 (182.2)**	0	0.6 (0.9)	**0.6 (0.9)**	**113.8 (183.1)**
	7	Narragansett Bay East Passage	--	--	Lee River	90.4 (145.4)	30.4 (48.9)	2.1 (3.4)	**122.9 (197.7)**	0	0.6 (0.9)	**0.6 (0.9)**	**123.4 (198.6)**
	8	Narragansett Bay West Passage	--	--	Lee River	90.4 (145.4)	41.9 (67.4)	2.1 (3.4)	**134.4 (216.2)**	0	0.6 (0.9)	**0.6 (0.9)**	**134.9 (217.1)**
Routes with intermediate RI onshore crossing bypassing the Sakonnet River	9	Second Beach, Paradise Ave., & Rte. 138 to RWU	Second Beach (Middletown, RI)	RWU (Portsmouth, RI)	Lee River	90.1 (145.0)	11.8 (18.9)	2.1 (3.4)	**104.0 (167.3)**	11.0 (17.7)	0.6 (0.9)	**11.6 (18.6)**	**115.6 (185.9)**
	10	Second Beach, Paradise Ave., & Rte. 138 to Mt. Hope Bridge	Second Beach (Middletown, RI)	Mt. Hope Bridge (Portsmouth, RI)	Lee River	90.1 (145.0)	12.0 (19.3)	2.1 (3.4)	**104.2 (167.7)**	10.9 (17.6)	0.6 (0.9)	**11.5 (18.5)**	**115.7 (186.2)**
	11	Second Beach, Mitchell's Ln., & Rte. 138 to RWU	Second Beach (Middletown, RI)	RWU (Portsmouth, RI)	Lee River	90.1 (145.0)	11.8 (18.9)	2.1 (3.4)	**104.0 (167.3)**	11 (17.7)	0.6 (0.9)	**11.5 (18.5)**	**115.5 (185.9)**
	12	Rte. 77, Rte. 177, Fish Rd., & Souza Rd. to Schooner Dr.	Breakwater Point (Little Compton, RI)	Schooner Dr. (Tiverton, RI)	Lee River	90.1 (145.0)	8.7 (14.1)	2.4 (3.9)	**101.3 (163)**	15.8 (25.4)	0.6 (0.9)	**16.3 (26.3)**	**117.6 (189.3)**
	13	South Shore Beach, Rte. 81, Rte. 177, Fish Rd., & Souza Rd. to Schooner Dr.	South Shore Beach (Little Compton, RI)	Schooner Dr. (Tiverton, RI)	Lee River	86.1 (138.5)	2.7 (4.4)	7.1 (11.4)	**95.9 (154.3)**	16.3 (26.3)	0.6 (0.9)	**16.9 (27.2)**	**112.8 (181.5)**
Massachusetts-only route	14	Horseneck Beach, Rte. 88, Rte. 6, Brayton Ave., & S. Main St. to Ferry St.	Horseneck Beach (Westport, MA)	Ferry St. (Fall River, MA)	Taunton River	83.8 (134.8)	0	7.6 (12.3)	**91.4 (147.1)**	0	17.3 (27.9)	**17.3 (27.9)**	**108.7 (174.9)**

Notes: Abbreviations are defined on the Abbreviation Table at the beginning of this document. Numbers may not compute precisely due to rounding.

[a] This table summarizes 14 export cable routes considered, many of which were down selected. The list captures a representative array of route segment combinations considered by Mayflower Wind.

[b] Offshore export cable route length in federal waters is subject to adjustment based on selection of final OSP location(s) from the defined WTG/OSP positions in the Lease Area in federal waters. This will not impact the cable route lengths in RI state waters or MA state waters or any route comparisons presented here.

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5.3.4 Export Cable Corridor Alternatives (Not Selected)

Mayflower Wind considered three route alternatives that proceed offshore from the Clean Energy Resource to Brayton Point, and which would omit any intermediate onshore crossing. A summary of the route alternatives evaluated by Mayflower Wind (and corresponding Route ID) is presented in Table 5-2 and the Universe of Routes considered is shown on Figure 5-2.

5.3.4.1.1 Sakonnet River North Route (Route ID 6)

Route ID 6 is an all-offshore/nearshore route from the Lease Area to Brayton Point through the Sakonnet River, omitting any intermediate onshore crossings (refer to Figure 5-2), and proceeding north up the Sakonnet River through an area referred to as "The Hummocks." The Hummocks consists of a ridge on the northeastern shore of Portsmouth between the Sakonnet River Bridge and the former Escape Road Bridge between Portsmouth and Tiverton.

The approximate length of Route ID 6 would be 113.2 mi (182.2 km) offshore and 0.6 mi (1.0 km) onshore. Of the offshore length, 20.7 mi (33.3 km) would be in Rhode Island state waters.

There would be significant constraints and physical obstacles posed by this northern Sakonnet River route option. These include a narrow river channel with strong and swift currents and submerged obstacles and debris; the Stone Bridge located between Teddy's Beach in Portsmouth and Grinnell's Beach in Tiverton; a high volume of recreational moorings; two charted submarine cable/pipeline crossing areas; crossing under the Sakonnet River Bridge (Routes 138 and 24); traversing around the concrete abutments which supported the former Sakonnet River Bridge; and maneuvering through the ruins charted on the NOAA nautical chart which are remnants from the removal of the Sakonnet River rail swing bridge last owned and operated by the Providence and Worcester Railroad.

This highly constrained portion of Route ID 6 contains rock and debris, including remains of the aforementioned former railroad bridge of Route ID 6. This area of the route also features heavily scoured seabed and strong currents. In addition to posing a risk to safe installation (which would likely also be disruptive to marine stakeholders detailed above), these characteristics are not suitable for burying cables to suitable depth and maintaining that burial depth, or for maintaining secondary cable protection on top of the cables (which may include placement of rock and/or mattresses). The strong and concentrated tidal currents within The Hummocks area of the Sakonnet River could potentially expose the buried cables by eroding away the sediment cover over the cables, undermining the cables and creating a section of cable that is "suspended" above the seabed, and/or displacing secondary cable protection material. As a result, the cables would be at risk of becoming exposed and may require regular and disruptive maintenance to re-establish cable cover and protection over the operational life of the cables.

Route ID 6 was deselected from further consideration as a route for the offshore export cables due to the technical complexity, potential marine stakeholder interactions (e.g., recreational moorings; this area of the route experiences significant transit and mooring by recreational vessels), and hazards to safe, practical, and long-term cable installation, maintenance, and operation associated with routing the cables through the constricted area as described above.

5.3.4.1.2 Narragansett Bay East Passage Route (Route ID 7)

Route ID 7 would travel from the Lease Area through the East Passage of Narragansett Bay and into Mount Hope Bay to reach Brayton Point (refer to Figure 5-2). The export cable corridor in the East Passage would be aligned to the west of Rose Island, Gould Island and Dyer Island, and to the east of Spar Island. Other constraints and physical obstacles that would be encountered would include traversing ten charted submarine cable/pipeline crossings and crossing through a portion of a designated offshore disposal area before crossing under the Mount Hope Bridge (Route 114) into Mount Hope Bay, as depicted on the NOAA Nautical Chart.[1]

The approximate length of Route ID 7 would be 122.9 mi (197.8 km) offshore and 0.6 mi (1.0 km) onshore. Of the offshore length, 30.4 mi (48.9 km) would be in Rhode Island state waters. Route ID 7 was deselected due primarily to the potential conflicts with other marine stakeholders, including the United States (U.S.) Navy, which has a significant presence (U.S. Naval Station, U.S. Naval War College, Surface Warfare Officer School) and operations within the waters surrounding Newport (which would be traversed by this export cable route alternative), and are designated as restricted areas, regulated navigation areas, and naval anchorage. Mayflower Wind engaged with the U.S. Navy during route planning stages to discuss route options under consideration. During this meeting, Mayflower Wind was advised that the U.S. Navy would have conflicts with a route traversing the East Passage of Narragansett Bay (such as the Narragansett Bay East Passage Route [Route ID 7]) but would not have conflicts with the Selected Alternative.

Additionally, the area traversed by Route ID 7 is a commonly used navigational route that passes under the Claiborne Pell/Newport Bridge (Route 138) to Rhode Island Sound and contains numerous charted anchorages. The East Passage channel has a depth of approximately 60 ft and is used by all deep draft vessels and most tug and barge traffic entering and departing Narragansett Bay.[2] Newport Harbor and the federally established and maintained anchorage area nearby also receive significant marine traffic.[3] Because of these conflicts with navigation and other maritime uses, Mayflower Wind deselected the East Passage as a feasible alternative for routing an ECC.

5.3.4.1.3 Narragansett Bay West Passage Route (Route ID 8)

Route ID 8 would travel from the Lease Area through the West Passage of Narragansett Bay, then head east near Patience Island, ultimately reaching Brayton Point through Mount Hope Bay (refer to Figure 5-2). The approximate length of Route ID 8 would be 134.4 mi (216.3 km) offshore and 0.6 mi (1.0 km) onshore. Of the offshore length, 41.9 mi (67.4 km) would be in Rhode Island state waters. An ECC in the West Passage would be aligned to the west of Dutch Island, cross under the Jamestown Verrazzano Bridge (Route 138), to the east of the Plum Beach Light House, travel west of Hope Island, proceed to the north of Patience Island and Prudence Island, and then head southwesterly around Hog Island to the Mount Hope Bridge.

Route ID 8 was dismissed from further consideration due to a number of factors including its longer route length, the crossing of the federally maintained 40-ft (12 m) navigation channel to Providence, regulated navigation areas, challenging seabed conditions and submerged glacial moraine amounting to a high level of technical risk, and the potential for impacting other marine stakeholders.

The route length of Route ID 8 would be significantly longer than the Selected Alternative, resulting in greater seabed impacts and other impacts from cable installation.

Route ID 8 would involve crossing of several more existing cables / pipelines than the Selected Alternative. Route ID 8 would require crossing of six charted cable areas and one charted cable and pipeline area, while the Selected Alternative only crosses two charted pipeline areas (three crossings;

[1] NOAA National Ocean Service Coast Survey. 2019. Chart 13221 Narragansett Bay, 63rd edition. https://charts.noaa.gov/PDFs/13221.pdf. June 2019.
[2] Rhode Island Coastal Resources Management Council (RI CRMC). 2010. Ocean Special Area Management Plan Chapter 7 Marine Transportation, Navigation and Infrastructure. July 23, 2010. http://www.crmc.ri.gov/samp_ocean/archive/700_marinetrans__7_23_fullsamp.pdf.
[3] RI CRMC. n.d. "*Maps of Water Use Categories*." http://www.crmc.ri.gov/maps/maps_wateruse.html. Accessed April 23, 2022.

see Table 4-2). At each cable crossing, secondary cable protection (in the form of mattresses and/or rock placement) is required, so the Roue ID 8 results in greater permanent seabed impacts in this way.

Route ID 8 would involve routing cables under multiple bridges, including the Jamestown Verrazzano Bridge which the proposed/planned Revolution Wind export cables are also planned to traverse beneath. In addition to proposing general cable routing hazards (i.e., due to scour, seabed debris, and old foundations), the Jamestown Verrazzano Bridge specifically would present a significant cable spacing bottleneck if multiple sets of planned cables were to be installed, resulting in challenges (including risk of cable damage) during cable installation and operations.

Other key constraints and physical obstacles that would be encountered by the route up the West Passage include the risks associated with burying and maintaining the offshore export cables within regulated navigation areas and anchorage areas, installing the cables within multiple shellfish management areas, and the requirement to cross through the Narragansett Bay National Estuarine Research Reserve surrounding Patience Island.

For these reasons, including feedback received from key stakeholders, conflicts with navigation and sensitive marine habitats, Mayflower Wind deselected the West Passage as a feasible alternative for routing an ECC.

5.3.5 Onshore Underground Export Cable Route Alternatives (Bypassing the Sakonnet River)

Mayflower Wind evaluated onshore route segments that would serve as an intermediate route used to bypass cable installation within the Sakonnet River, since entering the West and East Passages of Narragansett Bay were determined to present significant constraints and potential fatal flaws. The onshore underground route alternatives are discussed below. Any onshore export cable route selected by Mayflower Wind will be constructed underground along existing public road ROW, and no overhead transmission lines are currently envisioned for the Project.

Three onshore routes for the export cable beginning in Middletown, Rhode Island and two onshore routes beginning in Little Compton, Rhode Island (refer to Figure 5-2) were evaluated by Mayflower Wind as potential options to avoid the Sakonnet River. These longer onshore routes pass through sensitive resources (multiple residential areas and conservation areas), would increase traffic congestion over a greater length of onshore routing, and cost significantly more than equivalent distances of offshore cabling. There are also significant engineering and construction constraints that would be encountered along these routes, as described below.

Constructing an onshore underground route would encounter culverted streams along the roadways in Middletown requiring deeper trenching or trenchless technologies to install the cables beneath the existing infrastructure. Several narrow roads along these routes would also require full-lane road closures during the installation phase, causing traffic congestion impacting multiple residential areas throughout the route. Winding and narrow roadways may also present engineering constraints for the cable design due to the severe turns and angles in portions of the route. The coastal beach area landfalls corresponding to the Middletown and Little Compton routes are also tourist attractions and off-season work would likely be required, which would severely limit the timeframe for successfully completing the sea-to-shore transition for the export cable. Several historic candidate sites and historic cemeteries are located throughout the routes in Middletown and Little Compton, in addition two specific historic properties are called out below. For these reasons, onshore Route IDs 9-11 were dismissed from further consideration as impractical route alternatives.

These onshore export cable route alternatives are described in more detail below.

5.3.5.1.1 Middletown Second Beach, Paradise Ave., Rte. 138, Turnpike Ave, Rte. 114 (Route ID 9)

Route ID 9 would make landfall at the parking lot for Second Beach in Middletown via HDD under the municipal public beach from Sachuest Bay. From the landfall, the onshore route would proceed inland through Middletown via Paradise Avenue and Route 138, crossing into Portsmouth to rejoin the Selected Alternative and associated variants (refer to Figure 5-2). This onshore route would be approximately 11.0 mi (17.7 km) long and passes through multiple residential areas throughout the route. In addition, this route passes through High Value / High Vulnerability Habitat and Natural Heritage Areas 216 and 209 according to RIDEM and RIGIS mapping. Paradise School, a historic property, is located along the route. Additional sensitive receptors abut Route ID 9 including wetlands, parks, reserves, emergency and rescue services facilities, schools, and government facilities, including but not limited to:

- Paradise Valley Park
- Middletown Historical Society
- Portsmouth Free Public Library
- Middletown Public Works
- Middletown Fire Department
- Beth Olam Cemetery
- Calvary United Methodist Church and Calvary Christian School
- Middletown Cemetery
- JH Gaudet Middle School and JH Gaudet Field
- Aquidneck Land Trust's Spruce Acres Farm
- Bloom Preschool
- The Island Child Care Center and Day School
- St. Mary's Rectory, St Mary's Episcopal Church
- Sea Rose Montessori School
- Aquidneck Island Christian Academy
- Portsmouth Historical Society
- Countryside Children's Center
- St. Barnabas Church
- Portsmouth Water and Fire District
- Portsmouth Town Hall
- Portsmouth Police Department
- Portsmouth Fire Department
- Paradise Ave, which runs parallel to the Maidford River
- St. Paul's Episcopal Church
- Portsmouth Nursery School
- Bradley School
- St. Anthony's Church
- Heritage Baptist Church
- U.S. Postal Service Post Office
- RIDOT Portsmouth Maintenance Facility
- Aquidneck Island Land Trust Town Pond Trail

Based on a preliminary engineering review of the routes, the roadways along Paradise Avenue and Berkely Avenue do not appear to have many underground utilities. They are predominantly local, two-lane roads without a paved shoulder that passes through multiple residential areas along this route. The roads are frequently abutted by old stone walls, large trees with canopies overhanging the road, and overhead utility poles.

Route 138 is a busy four-lane road without a paved shoulder, abutted by commercial properties and some residences. It is important to note that Newport is a popular year-round tourist destination on the southwest corner of Aquidneck Island, and with the tourism comes accompanying traffic congestion.

There are limited roads traversing Aquidneck Island, with Route 138 and Route 114 as the only major north-south routes. Installation of cables along one side of Aquidneck Island would likely impact traffic across the island.

Route ID 9 would include approximately 11 miles of intermediate onshore routing across Aquidneck Island through Middletown and Portsmouth. The southern route segments would be the most challenging to site and construct given the narrow roads and high prevalence of natural and historical resource areas.

5.3.5.1.2 Middletown Second Beach, Paradise Ave., Rte. 138 (Route ID 10)

Route ID 10 would make landfall at the parking lot for Second Beach in Middletown via HDD under the municipal public beach from Sachuest Bay. From the landfall, the onshore route would proceed inland through Middletown via Paradise Avenue until joining Route 138. The route then heads north on Route 114, finally reaching the Mount Hope Bridge HDD staging area (refer to Figure 5-2). This onshore route would be approximately 10.9 mi (17.6 km) long and passes through multiple residential areas along this route. In addition, this route passes through High Value / High Vulnerability Habitat and Natural Heritage Areas 216, 209, and 149 according to RIDEM and RIGIS mapping. Paradise School and Mount Hope Bridge, historic properties, are located on the route, which also passes through the Revolutionary War Battle for Rhode Island Historic District. Additional sensitive receptors abut Route ID 10 including wetlands, parks, reserves, emergency and rescue services facilities, schools, and government facilities, such as:

- Paradise Valley Park
- Middletown Historical Society
- Maidford River
- Middletown Public Works
- Middletown Fire Department
- Beth Olam Cemetery
- Calvary United Methodist Church and Calvary Christian School
- Middletown Cemetery
- JH Gaudet Middle School and JH Gaudet Field
- Aquidneck Land Trust’s Spruce Acres Farm
- Bloom Preschool
- The Island Child Care Center and Day School
- Tripp Property Historical Landmark
- Sea Rose Montessori School
- Portsmouth Water and Fire District
- Portsmouth Historical Society
- Countryside Children’s Center
- St. Barnabas Church
- Aquidneck Island Christian Academy
- Portsmouth Town Hall
- Portsmouth Police Department
- Portsmouth Fire Department
- Turnpike Avenue Playground
- St. Mary’s Rectory, St Mary’s Episcopal Church

Turnpike Avenue and Bristol Ferry Road are busy, wide roadways with two to three travel lanes, paved shoulders, and sidewalks. The intersection at the approach to Mount Hope Bridge is also heavily used and construction activity would likely lead to significant traffic congestion near the HDD staging area. Route ID 10 would include approximately 11 mi of intermediate onshore routing across Aquidneck Island through Middletown and Portsmouth. The southern route segments would be the most challenging to site and construct given the narrow roads and high prevalence of natural and historical resource areas.

5.3.5.1.3 Middletown Second Beach, Mitchell’s Ln., Rte. 138 (Route ID 11)

Route ID 11 would make landfall at the parking lot for Second Beach in Middletown via HDD under the municipal public beach from Sachuest Bay. From the landfall, the onshore route would head east along

Hanging Rock Road, then travel via Mitchell's Lane to Route 138, rejoining the Selected Alternative and associated variants (refer to Figure 5-2). This onshore route would be 11.0 mi (17.7 km) long and passes through multiple residential areas along this route. In addition, this route passes through High Value / High Vulnerability Habitat and Natural Heritage Areas 237, 216, and 209 according to RIDEM and RIGIS mapping. This route also passes Gardiner Pond, a City of Newport drinking water supply area, and Paradise Brook. Historic properties along the route include Gardiner Pond Shell Midden and Union Church and Southernmost Schoolhouse. Additional sensitive receptors abut Route ID 11 including wetlands, parks, reserves, emergency and rescue services facilities, schools, and government facilities, such as:

- Norman Bird Sanctuary
- Newport Equestrian Academy
- Howland Park
- Sakonnet Greenway Trail and Trailhead
- Newport National Golf Club
- Little Creek Preserve
- Albro Woods Trailhead
- Bloom Preschool
- Aquidneck Land Trust's Spruce Acres Farm
- The Island Child Care Center and Day School
- St. Mary's Rectory, St Mary's Episcopal Church
- Sea Rose Montessori School
- Aquidneck Island Christian Academy
- Portsmouth Historical Society
- Countryside Children's Center
- St. Barnabas Church
- Portsmouth Water and Fire District
- Portsmouth Town Hall
- Portsmouth Police Department
- Portsmouth Fire Department
- Portsmouth Free Public Library
- St. Paul's Episcopal Church
- Portsmouth Nursery School
- Bradley School
- St. Anthony's Church
- Heritage Baptist Church
- U.S. Postal Service Post Office
- RIDOT Portsmouth Maintenance Facility
- Aquidneck Island Land Trust Town Pond Trai

Based on a preliminary engineering review of the routes, the Route ID 11 roadways (i.e., Mitchell's Lane) do not appear to have many underground utilities. They are predominantly local, two-lane roads without a paved shoulder. The roads are frequently abutted by old stone walls, large trees with canopies overhanging the road, and overhead utility poles. The Mitchell's Lane route seems to have slightly narrower road widths and less developed surroundings, passing by more nature reserves and natural heritage areas.

5.3.5.1.4 Little Compton Breakwater Point, Rte. 77 (Route ID 12)

Route ID 12 would make landfall at Breakwater Point in Little Compton then travel via Route 77 to reach Schooner Drive in Tiverton to an HDD staging area (refer to Figure 5-2). This onshore route would be 15.8 mi (25.4 km) long and pass through multiple residential areas along this route. In addition, this route passes through Natural Heritage Areas 245, 219, 174, and 151 according to RIDEM and RIGIS mapping. Tiverton Four Corners Historic District is located along this route. Additional sensitive receptors abut Route ID 12 including wetlands, parks, reserves, emergency and rescue services facilities, schools, and government facilities, such as:

- Sakonnet Point Marina
- Sakonnet Harbor Put In
- Pardon Gray Preserve and Trailhead
- West Place Animal Sanctuary

- Town Landing Hiking Area
- Sakonnet Yacht Club
- Sakonnet Golf Course
- Wilbor House Museum
- John C Whitehead Preserve – Hope's Path
- Donovan Marsh
- Pachet Brook
- Borden Brook
- Amicable Church
- Audubon Emilie Ruecker Wildlife Reserve
- Tiverton Town Farm Recreation Area
- Quaket Creek
- Pocasset Ridge Conservation Area
- Nanaquaket Pond
- White Wine Brook
- The Gathering Place Church
- Sin and Flesh Brook
- Tiverton Police Department
- Tiverton Public Works Department
- Fish Road Park and Ride Bus Station
- Village at Mount Hope Bay - Housing Development

The routes identified through Little Compton and Tiverton represent longer intermediate onshore crossings with lower feasibility than those through Middletown and Portsmouth. A desktop review of the southeastern, ocean-facing coast of Little Compton found limited sites suitable for cable landfall. The coastline alternates between residential properties along steep, rocky shoreline and uninhabited marsh and mudflats. There are very few public beaches with nearby parking areas and public roads large enough to support onshore HDD activities and underground cabling.

Route ID 12 makes landfall on the ocean-facing side of Breakwater Point, in the parking lot across from the Sakonnet Harbor. The parking area covers approximately 0.9 ac and appears to be used for boat storage. The area is constrained, with the parking lot separated from water by only a narrow strip of riprap coast. The surface grades may not allow for sufficient HDD burial depth in the approach to the onshore entry pit. Due to proximity to the marina and harbor, vessel traffic in this area is expected to be high.

From the Breakwater Point landfall, the route heads east and turns north, following Route 77 along the Sakonnet River coast through Little Compton and into Tiverton. Once in Tiverton, the route turns east onto Route 177. Both Route 77 and Route 177 are busy two-lane roads with minimal paved shoulders.

The route heads north on Fish Road and then turns northwest on Souza Road. North of the Route 177 and Fish Road intersection, there is only one route option considered through Tiverton to the HDD site where cables could re-enter the Sakonnet River/Mount Hope Bay north of the State Route 24 Bridge. Both Fish Road and Souza Road are narrow two-lane roads without paved shoulders. Souza Road turns into Schooner Drive, which is an access road to the residential Village at Mount Hope Bay and Boat House Waterfront Dining Restaurant. There are no other access roads to the restaurant, meaning that construction activities would impact not only the commercial operations at the Boat House but the residential Village at Mount Hope Bay, particularly if there is a road closure. Schooner Drive includes a bridge over an abandoned railroad ROW, which would require a trenchless installation method.

5.3.5.1.5 Little Compton South Shore Beach, Rte. 81 (Route ID 13)

Route ID 13 would make landfall at the parking lot at South Shore Beach in Little Compton then travel via Route 81 to reach Schooner Drive in Tiverton, Rhode Island for HDD exit (refer to Figure 5-2). This route would be 16.3 mi (26.3 km) long and pass through multiple residential areas along this route. In addition, this route passes through Natural Heritage Areas 226, 183, and 151 according to RIDEM and

RIGIS mapping. Additional sensitive receptors abut Route ID 13 including wetlands, parks, reserves, emergency and rescue services facilities, schools, and government facilities, such as:

- Round Meadows Campground
- Tunipus Pond
- P. T. Marvell Preserve
- Goosewing Beach Preserve
- Henry Head Cemetery
- Sisson Brook
- Simmons Mill Management Area
- Little Compton Assistance Association – Food Distribution Center
- National Forest
- Victory Church RI, Inc
- Tiverton Public Library
- Community of Christ
- Town Farm Recreational Park
- Sin and Flesh Brook
- Tiverton Police Department
- Tiverton Public Works Department
- Fish Road Park and Ride Bus Station
- Sakonnet Early Learning Center
- Village at Mount Hope Bay Housing Development

The routes identified through Little Compton and Tiverton, Rhode Island represent longer intermediate onshore crossings with lower feasibility than those through Middletown and Portsmouth. A desktop review of the southeastern, ocean-facing coast of Little Compton found limited sites suitable for cable landfall. The coastline alternates between residential properties along steep, rocky shoreline and uninhabited marsh and mudflats. There are very few public beaches with nearby parking areas and public roads large enough to support onshore HDD activities and underground cabling.

Route ID 13 makes landfall in the parking area for South Shore Beach. This is a low-lying area adjacent to Tunipus Pond and the P.T. Marvell Preserve, which is an ecosystem conservation area with walking trails for birding and wildlife observation. From landfall, the route heads west then northwest along South Shore Road. This landfall and onshore route combination are not an ideal option for project siting due to the proximity to conservation land and the narrow corridor of previously disturbed area. Project installation activities would necessitate full closure of South Shore Road and could bleed into shoulder areas. Road shoulders are narrow and often closely abutted by wetland vegetation or stone walls.

From South Shore Road, the route heads north, crossing into Tiverton and periodically turning east toward Route 81. The roads through Little Compton and southern Tiverton are narrow, local two-lane roads without a paved shoulder that pass through multiple residential areas along this route. These local roads are frequently abutted by old stone walls, large trees with canopies overhanging the road, and overhead utility poles. The route turns north onto Route 81 then west onto Route 177. Both Route 81 and Route 177 are busy two-lane roads. Route 81 has a wide paved shoulder. The route heads north on Fish Road and then turns northwest on Souza Road toward the Schooner Drive HDD site described with Route ID 12.

5.3.6 Massachusetts-Only Route Alternative (Route ID 14)

Mayflower Wind evaluated an ECC through Buzzards Bay in Massachusetts for a distance of approximately 7.6 mi (12.3 km), with a landfall at Horseneck Beach and an onshore export cable route through Westport and Fall River, Massachusetts (Route ID 14, refer to the Universe of Routes, Figure 5-

2). Overall, Buzzards Bay is a net depositional area[4]; local areas of higher tidal current energy, however, result in some areas of sand and gravel. Fine-grained sediments occur throughout the deeper basins and troughs where the bottom sediments will tend to shift, while sands are found in the shallow, higher kinetic energy sites[5,6]. Buzzards Bay provides spawning habitat fisheries. The marine resources and shifting bottom types made this offshore route less desirable. Contributing to the flaws of this route is the landfall at the Horseneck Beach State Reservation and barrier beach system, which do not offer a suitable location for an onshore HDD staging area. The ECC would diverge from the ECC in federal waters into Massachusetts state waters and continue northerly in Buzzards Bay to an HDD transition located off Horseneck Beach in Westport, Massachusetts.

The Westport onshore route alternative would commence with the offshore export cables making landfall at the Horseneck Beach parking lot in Westport via HDD. There are several restrictions to landing the export cables at the Horseneck Beach parking lot. Horseneck Beach is a barrier beach constricted to the north and south by coastal wetland resources that are to be avoided during cable installation. Although the parking lot would serve as an adequate HDD staging area, there is a lack of available space for all of the HDD activities specifically the process of fusing the conduit prior to installation, unless the conduit were temporarily strung on Horseneck Beach or strung along the side of John Reed Road, neither of which are preferred by Mayflower Wind.

Once the export cables make landfall, the onshore export cables would continue underground onto John Reed Road, heading northwest onto Route 88 crossing the Norman Edward Fontaine Bridge over Horseneck Channel. The areas bordering Horseneck Channel consist of salt marsh with some perimeter bordering vegetated wetlands and forested land alongside Route 88 before transitioning to predominantly dense residential development.

The Norman Edward Fontaine Bridge is a bascule bridge (also referred to as a drawbridge or a lifting bridge). The bridge, whose channel spans 75 ft (23 m), crosses the East Branch of the Westport River. Two preliminary installation methods considered for the cables to cross the East Branch of the Westport River and continue north on Route 88 include: 1) suspend the cable from the bridge using a bridge hanger system within a utility cavity; and 2) an HDD beneath the river channel. Suspending the cables system to a bascule bridge is a fatal flaw and would instead require some method of trenchless technology such as an HDD to cross under the river to exit the Horseneck Beach State Reservation. HDD is infeasible because there is no suitable place to land the cables north of the East Branch of the Westport River crossing without impacting regulated wetlands.

Once on Route 88, the onshore export cable route would head north along Route 88 for approximately 12 mi (19 km) through Westport to the intersection with State Route 6. From Westport, Route 88 is a two-lane highway that eventually turns into four lanes as it approaches State Route 6. Large mature trees hang over the highway, and there would be a potential need for tree trimming or tree removal along the highway to accommodate construction. The onshore export cable route would then head in a westerly direction following State Route 6 for 1.2 mi (1.9 km) into the City of Fall River, where it would continue for 0.6 mi (1.0 km) to Brayton Avenue. At approximately 0.5 mi (0.8 km), the route would either continue along the southern shoulder of State Route 6 or diverge onto the rails-to-trails bike path located along the northern border of South Watuppa Pond. The route would then merge onto Brayton Avenue in Fall River and continue west for approximately 1.5 mi (2.4 km). There are on- and off-ramps for State Route 24 located along Brayton Avenue, with high volumes of traffic that would require

[4] CDM (Camp, Dresser, and McKee, Inc.). 1990. Phase 2 effluent outfall facilities plan for the City of New Bedford, Massachusetts. Boston, MA, pp. 1-280

[5] Moore, J.R. III. 1963. Bottom studies, Buzzards Bay, Massachusetts. J. Sed. Pet. 33(3): 511- 558.

[6] Howes and Goehringer 1996) Howes, B.L. and D.D. Goehringer. 1996. Ecology of Buzzards Bay: An estuarine profile. US Department of the Interior, National Biological Service Biological Report 31, 141 p.

significant traffic management planning. The route would then head in a northwesterly direction following a network of Fall River municipal roadways including 0.3 mi (0.5 km) along Stafford Road, approximately 0.1 mi (0.2 km) along Plymouth Avenue, approximately 0.2 mi (0.3 km) along Second Street, approximately 0.3 mi (0.5 km) along Middle Street, 0.1 mi (0.2 km) along South Main Street, continue for 0.3 mi (0.5 km) following Bradford Avenue, merge onto Almond Street for 0.2 mi (0.3 km), and then ending at the Ferry Street parcel located one street crossing from the Taunton River.

Limiting the onshore routing to a minimal distance is preferred, as underground construction within public roadways can be disruptive and underground construction and materials are very costly. This 17-mi (27-km) onshore alternative would incur substantial additional cost to the Project and is viewed by Mayflower Wind as cost prohibitive.

The potential intermediate site for the onshore export cable would be located at the intersection of Almond Street and Ferry Street in Fall River, Massachusetts. This segment of the route would require routing through densely populated city neighborhoods identified as environmental justice populations. This segment also passes by other sensitive receptors including Saint Anne's Hospital, St. Anne's Shrine and a large recreational field at Kennedy Park, among others. The Ferry Street parcel would ultimately connect to the Brayton Point POI and could serve as either an alternative location for the proposed HVDC converter station before interconnecting with Brayton Point or could serve as a potential HDD staging area to cross the Taunton River to make landfall at Brayton Point. The cables would need to pass from Fall River to Brayton Point via submarine cabling across the mouth of the Taunton River south of the Interstate Route 195 Braga Bridge. Routing north and east to transition to Braga Bridge (Massachusetts Department of Transportation, dense population, bridge loading, lack of adequate space underneath the bridge, etc.). Braga Bridge crossing is not technically feasible.[7] Mayflower Wind determined that installing the cable system on the underside of the Braga Bridge to cross the Taunton River was infeasible.

The submarine route under the Taunton River, crossing a federal shipping/navigation channel and extending a distance approximately 1.3 mi (2.1 km), which would likely overextend the length for a single continuous HDD. This would result in Mayflower Wind implementing supplementary offshore cable installation techniques to bury the remainder of the export cable within the Taunton River, which would result in cable installation disturbance to the riverbed of the Taunton River.

This route alternative was later dismissed due to a variety of engineering, construction, environmental, and other stakeholder concerns.

5.3.7 Sakonnet River with Intermediate Onshore Crossing at Portsmouth (Selected Alternative)

The Brayton Point POI was selected for the Project due to its robust capacity for energy injection into the existing electrical grid and the opportunity to redevelop the previously disturbed area of the former coal-fired power station property. Mayflower Wind then selected the proposed route for the Project, north up the Sakonnet River, making intermediate landfall underground across Aquidneck Island in Rhode Island, to Mount Hope Bay, then northwest up the Lee River and into Brayton Point (Figures 5-2 and 2-1), because it is a technically and commercially feasible route that would avoid or minimize adverse impacts relative to other routes considered to reach the POI and deliver energy to the regional transmission system.

[7] According to the MassDOT Utility Accommodation Policy on State Highway ROW states, high-voltage electric power transmission line installations on bridge structures shall generally not be permitted except in extraordinary circumstances. Link Volume (mass.gov).

The Selected Alternative avoids the constricted area in the Sakonnet River at The Hummocks near the Stone Bridge, the former Sakonnet River Bridge, and the former railroad swing bridge. This route is the shortest overland route over Aquidneck Island that allows siting primarily along developed public ways and minimization of routing through residential areas. The approximate length of the selected route would be 113.0 mi (181.9 km) offshore and between 1.4 to 2.2 mi (2.3 to 3.5 km) onshore, depending on the onshore variant selected. Of the offshore route length, approximately 21 mi (34 km) would be in Rhode Island state waters, depending on the onshore variant selected.

5.3.7.1 Export Cable Corridor

The Selected Alternative was chosen by Mayflower Wind because it has a shorter route length relative to the other routes and avoids or minimizes potential conflicts with other marine stakeholders including recreational vessel users, federally maintained shipping channels, and the U.S. Navy.

Related to the Selected Alternative, Mayflower Wind submitted a supplement to its Federal Consistency Statement to the RI CRMC on March 17, 2022. Mayflower Wind will also be preparing and filing an application for a RI CRMC Category B Assent. Both documents will address Mayflower Wind's plans to successfully route the export cables to avoid, minimize and/or mitigate adverse effects to the mapped Habitat Areas of Particular Concern (HAPC) including submerged glacial moraines which provide juvenile cod habitat and Essential Fish Habitat (EFH). As indicated in the Federal Consistency Statement submitted to the RI CRMC, Mayflower Wind collected and analyzed benthic and geophysical data to characterize habitat and support efforts to place the cables to avoid, minimize and/or mitigate adverse effects to mapped HAPC including submerged glacial moraines. Mayflower Wind will provide further information in the RI CRMC Category B Assent application.

This selected alternative includes an intermediate, onshore underground crossing of Aquidneck Island, through Portsmouth, continuing offshore through Mount Hope Bay. The offshore export cables would make landfall from the Sakonnet River to Portsmouth at the far western end of Island Park Beach. Landfall would be accomplished using HDD technology to drill below the beach, seawall, and Park Avenue. The offshore export cables would come ashore from the Sakonnet River to Portsmouth at the northeast corner of Boyd's Lane and Park Avenue (refer to Figures 5-2 and 2-3 and Attachment B - Preliminary Engineering Drawings).

It is anticipated the HVDC cables will be installed unbundled at landfall. Each HVDC power cable is planned to require a separate HDD, with an individual bore and conduit for each power cable. Associated communications cabling will be installed within the same bore as a power cable, likely within a separate conduit.

5.3.7.2 Onshore Export Cable Route Variants

Mayflower Wind evaluated onshore routes to safely and feasibly cross Portsmouth underground, with minimal impact to the community and the natural and social environments. Mayflower Wind considered four onshore route variants primarily within existing public road ROW. The four onshore route variants are captured with Route IDs 1-5 in Table 5-2. Within Rhode Island jurisdiction, Route ID 5 is an exact duplicate of Route ID 1, therefore Route ID 5 is not discussed further.

All four of the onshore route variants share a common route, which follows Boyd's Lane for approximately 0.7 mi (1.1 km) from the intersection with Park Avenue northerly to the intersection with Anthony Road (north of State Route 24). Preliminary engineering drawings depicting HDD and the onshore underground export cables system have been developed for Route Variants 1 through 3 and are included as Attachment B.

5.3.7.2.1 Common Onshore Route

The "common route" is defined as the 0.7 mi (1.1 km) route segment that starts at the landfall of Boyd's Lane (a state road) and Park Avenue and travels north along Boyd's Lane to its intersection with Anthony Road (part is a state road and part is a town road) (refer to Figure 2-2 and Attachment B, Preliminary Engineering Drawings). Mayflower Wind anticipates siting the onshore export cables along the east side of Boyd's Lane. The common route passes across the Route 24 onramp, under the Route 24 overpass, and across the Route 24 offramp before intersecting with Anthony Road. Anthony Road generally parallels Route 24 to the north. The common route segment is shared by all the Portsmouth onshore route variants described in the sections below.

One entry location is under consideration for the intermediate onshore crossing of Portsmouth via HDD under Island Park Beach, located south of the intersection of Boyd's Land and Park Avenue. Island Park Beach includes coastal beach, coastal dune, and manmade shoreline features. Use of HDD Installation beneath Island Park Beach will avoid these shoreline features. Boyd's Lane from Island Park north to Norseman Drive is an artificially filled causeway across a saltwater tidal marsh, resulting in two coastal wetlands that border the common route along Boyd's Lane to the east and west. Most of these wetland boundaries lie on private property adjacent to Boyd's Lane. Three additional freshwater wetlands in the vicinity of the coast are located around Boyd's Lane near the State Route 24 interchange area. These freshwater wetlands consist of palustrine emergent marsh dominated by common reed. Assuming the underground onshore export cable route is located within the roadway or roadway shoulder, no wetland impacts are anticipated.

A residential neighborhood is on the west side of Boyd's Lane between Norseman Drive and Chase Road, while the east side of the road is characterized by areas of cutting and filling and a moderate to severe downward slope to the coastal wetland. North of Chase Road to Route 24, Boyd's Lane has been disturbed by construction of State Route 24 and associated onramps and off ramps, construction of the new RIDOT Portsmouth maintenance facility, subsurface utilities installation, roadway maintenance and upgrades, and re-engineering of the Boyd's Lane/Route 138 intersection.

Based on the Phase 1A Archaeological Assessment, RI-153 Founder's Memorial Grove Burial Site is located adjacent to Boyd's Lane between the State Route 24 overpass and the State Route 24 offramp.

5.3.7.2.2 Onshore Route Variant 1 [Route ID 1]

Onshore Route Variant 1 (refer to Figure 2-2), and Attachment B, Preliminary Engineering Drawings) follows the common route along Boyd's Lane, then travels down the south shoulder of Anthony Road, reaching the Roger Williams University (RWU) properties, Baypoint Residence Hall and associated parcel which would serve as HDD staging areas. The RWU Baypoint Residence Hall is located between Anthony Road to the north and the Route 24 offramp to the south. No additional historic or archaeological sites are located along this route.

A freshwater wetland in the vicinity of the coast bounded by the State Route 24 offramp, Boyd's Lane, and Anthony Road sits adjacent to Route Variant 1 to the south and west of the residence hall. This wetland system includes a palustrine emergent marsh dominated by common reed >1 acre in size and a shallow palustrine unconsolidated bottom pond (Town Pond). Founders Brook drains the system to the north via an approximately 5-ft-diameter concrete culvert under Anthony Road.

There are two osprey nests, protected under the *Migratory Bird Treaty Act* (16 U.S.C. 703-712), near the route. One nest is on a nesting platform located near the Aquidneck Land Trust path on the north side of Anthony Road. The other nest is located on top of a distribution line structure running parallel to Anthony Road to the north. There is some low-density residential development along Onshore Route

Variant 1 and some commercial uses including Jay's 4WD Auto Shop and the RIDOT garage. Notably, Onshore Route Variant 1 has lower density of residential development along the route compared to Onshore Route Variant 4.

5.3.7.2.3 Onshore Route Variant 2 [Route ID 2]

Onshore Route Variant 2 (refer to Figure 2-2), and Attachment B, Preliminary Engineering Drawings) follows the common route along Boyd's Lane, then travels east down the south shoulder of Anthony Road. This route parallels Montaup Country Club golf course for approximately 0.5 mi (0.8 km) along Anthony Road before entering the parking lot of the Montaup Country Club where the HDD staging area would be located. There are low overhead distribution lines at the Montaup Country Club parking lot that may pose an engineering constraint for HDD staging. There is some low-density residential development along Onshore Route Variant 2 and some commercial uses including Jay's 4WD Auto Shop and the RIDOT garage. Notably, Onshore Route Variant 2 has lower density of residential development along the route compared to Onshore Route Variant 4.

Based on desktop and field surveys of natural resources, this route option does not appear to cross additional wetland areas, aside from the coastal beach area on the common route. There are two osprey nests, described above, near the route.

Two sites were identified during the Phase 1 Archaeological Assessment along Route Variant 2 and are potentially eligible for listing in the National Register of Historic Places.

5.3.7.2.4 Onshore Route Variant 3 [Route ID 3]

Onshore Route Variant 3 (refer to Figure 2-2), and Attachment B, Preliminary Engineering Drawings) follows the common route along Boyd's Lane, then travels east along the south shoulder of Anthony Road, finally turning north and following an access road to the existing Narragansett Electric Company/National Grid overhead electric transmission line ROW, finally reaching an upland area adjacent to Town Pond sited as a potential HDD staging area. The transmission line ROW contains two separate overhead 115-kV transmission lines supported on H-frame structures with an established access route within the ROW. The transmission lines occupy an easement held by Narragansett Electric Company, property owned by Aquidneck Land Trust and RIDEM.

This route variant would be in an area formerly modified to create an upland ROW for the overhead transmission lines. The HDD staging area would be located in an upland area near a coastal wetland, Town Pond. Based on review of aerial photography, National Wetlands Inventory, and Rhode Island wetlands mapping, a significant portion of Route Variant 3 is located in close proximity to estuarine and/or palustrine wetlands. Based on Federal Emergency Management Agency (FEMA) Flood Mapping, the majority of Route Variant 3 is within a Special Flood Hazard Area with an elevation of 13 ft (4 m).

As referenced above, there are two osprey nests near the route. The Aquidneck Land Trust conservation easement occupies 45.6 ac centered at Town Pond and the area offers a short, publicly accessible walking path and parking lot. The entrance to the Narragansett Electric Company access road is approximately 0.1 mi (0.1 km) from the parking lot entrance on Anthony Road.

5.3.7.2.5 Onshore Route Variant 4 [Route ID 4]

Onshore Route Variant 4 follows the common route along Boyd's Lane, continues northwest on Boyd's Lane, finally reaching an area just northeast of the approach to the Mount Hope Bridge for the HDD staging area (refer to Figure 2-2). This route travels through Natural Heritage Area 149 according to RIGIS mapping. Mount Hope Bridge is on the National Register of Historic Places and RI-1632. The William Anthony Historical Burial Site is also located adjacent to Route Variant 4, east of Boyd's Lane.

This route variant has a higher density of residential development and passes a well-travelled intersection at the approach to the Mount Hope Bridge at the intersection of Boyd's Lane, Bristol Ferry Road, and Route 114, which may result in significant traffic congestion during construction for local residents, and tourists entering Portsmouth from the Mount Hope Bridge. Advancing an HDD to the northeast side of the bridge introduces additional complexities and potential conflicts by drilling adjacent to the bridge footings and crossing under the navigation channel that passes under the Mount Hope Bridge. Additional wetland resources identified by desktop and field surveys include a perennial stream near the railroad tracks, two freshwater wetlands in the vicinity of the coast <1 acre in size flanking the railroad tracks under the Mount Hope Bridge, and Mount Hope Bridge Beach. Shoreline features in the area of Mount Hope Bridge Beach include coastal beach, coastal wetland, coastal dune, coastal bluff, and manmade shoreline.

The Mount Hope Bridge onshore route variant was considered by Mayflower Wind and analyzed for the purposes of this Siting Report. Because of the route constraints noted above in this section, preliminary engineering drawings were not completed for Onshore Route Variant 4.

5.3.7.2.6 Summary

Table 5-3 provides a comparison of the intermediate onshore underground export cable routes across Aquidneck Island. The four onshore route variants would all share the "common route" along the southern half of Boyd's Lane. Mayflower Wind is further exploring Onshore Route Variants 1 through 3.

As detailed in Section 5.3.7.2 above, Mayflower Wind evaluated the environmental impacts, reliability and costs of the intermediate onshore export cable routes across Portsmouth to make the connection between the Sakonnet River and Mount Hope Bay to the north. Mayflower Wind evaluated a common route and four onshore route variants. Mayflower Wind continues to advance all variants described above and has selected the common route and identified Onshore Route Variant 2 [Route ID 2] as the "Preferred Route", subject to the commercial feasibility of obtaining the necessary easements.

Mayflower Wind identified the Preferred Route based on the multiple considerations described above which indicate that the selected route is the most feasible onshore route in terms of constructability, reliability, costs and minimizing impacts to the environment. Mayflower Wind will continue to pursue this onshore route as the Preferred Route, subject to the commercial feasibility of obtaining the necessary easements, while keeping the other onshore route variants open for future consideration, if needed.

The common route located along the southern end of Boyd's Lane plus the Montaup Country Club route variant, Onshore Route Variant 2 [Route ID 2], offer the following benefits over the other onshore route variants considered by Mayflower Wind: (i) the Preferred Route is the most feasible onshore route in terms of technical feasibility, reliability, cost and minimizing impacts to the environment; and (ii) the Preferred Route avoids denser residential areas.

TABLE 5-3. ONSHORE UNDERGROUND EXPORT CABLE ROUTES COMPARISON TABLE

Onshore Route Variant	Common Route	Variant 1 RWU Baypoint Residence Hall	Variant 2 Montaup Country Club	Variant 3 RIDEM/Aquidneck Land Trust	Variant 4 Mount Hope Bridge
Length of route onshore (mi)	0.72	0.25	0.94	0.52	1.8
Soil Conditions[1]	Udorthents-Urban land complex Matunuck mucky peat, 0 to 2 percent slopes, very frequently flooded Newport silt loam, 3 to 8 percent slopes	Udorthents-Urban land complex Sandyhook mucky fine sand, 0 to 2 percent slopes, very frequently flooded Merrimac fine sandy loam, 0 to 3 percent slopes	Udorthents-Urban land complex Quonset gravelly sandy loam, rolling Merrimac fine sandy loam, 0 to 3 percent slopes	Udorthents-Urban land complex Matunuck mucky peat, 0 to 2 percent slopes, very frequently flooded	Pittstown silt loam, 3 to 8 percent slopes Newport silt loam, 0 to 8 percent slopes
Wetland Impact[2]	2	2	2	2	2
Abutting Properties	AP Enterprises LLC, RIDOT Maintenance Facility	RWU, RIDOT Garage, Jay's 4WD Auto Repair Shop, Aquidneck Land Trust	Rail Explorers, Aquidneck Land Trust, Jay's 4WD, DOT Garage	Aquidneck Land Trust, TNEC, Montaup Country Club, Jay's 4WD Auto Repair Shop, Rail Explorers	Residences, Mello's Farm, Mount Hope Animal Hospital
Rare Species[3]	None	None	None	None	Natural Heritage Area 149
Tree Clearing	Minimal	Minimal	Minimal	Moderate: Some vegetation clearing along the access road	Moderate: Some vegetation clearing along the roadway and at the HDD location northeast of the bridge
Cultural Resources[4]	2	1	2	0	3

[1] Soil Survey Staff, NRCS, USDA. Web Soil Survey. Available online at the following link: http://websoilsurvey.sc.egov.usda.gov/. Accessed [month/day/year].
[2] Wetland impact is presented here using a ranking system where 1=no impact to wetlands or wetland buffers, 2=potential impact to wetland buffers, and 3=potential impact to wetlands.
[3] Rare species are identified here by the presence of a Natural Heritage area, based on the RIGIS Natural Heritage Feature Layer accessed April 23, 2022. Additional information about rare species in the Project Area can be found in Section 6.9.5.
[4] Cultural Resources are defined here as a count of moderate and high sensitivity areas encountered along each variant. Additional information can be found in Section 7.6.

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5.4 TRANSMISSION TECHNOLOGIES

Mayflower Wind considered two electric power transmission technologies for the proposed Project, HVAC and HVDC. These technologies were evaluated in terms of their practical aspects as well as reliability, cost, and/or potential environmental impact as described below. The choice between HVAC or HVDC technology for the export system is highly Project specific.

For the reasons explained below, Mayflower Wind determined that HVDC is the more appropriate technology for use for this Project, as it is better suited to the relatively moderate to long length of the export cables to shore.[8]

5.4.1 Export Cable Technology Alternatives

Submarine and land HVDC cables have been in use for decades. HVDC cable capacities have increased over time. As evidenced by their wide use, submarine and land cables are considered reliable and are widely used for transmitting energy to remote loads, ensuring reliability across bodies of water, and delivering power to or from offshore locations.

5.4.2 HVAC Transmission Technology

HVAC transmission technology uses alternating current waveform for bulk transmission of power. An HVAC system for offshore wind transmission requires a transformation of voltage at the offshore end of the export cable circuits. The offshore substation platforms in the Lease Area would step up the voltage from the WTG array to a higher nominal export cable voltage, up to 345 kV, which is more suitable for long distance transmission.

5.4.3 HVDC Transmission Technology

HVDC uses direct current waveform for the bulk transmission of power. The most common HVDC technology employed for offshore wind export systems is Voltage Source Converter modularmultilevel converter technology, which is proposed by Mayflower Wind for the Project.

HVDC systems require converters at each end of the HVDC transmission circuit. An offshore converter station will be located on a platform within the Lease Area. The offshore converter station collects the power from the WTGs and converts it to DC for transmission to shore. The onshore converter station that will be located at Brayton Point will convert from DC to 345-kV HVAC for injection to the existing ISO-NE electrical grid.

To deliver power from the Clean Energy Resource to Brayton Point, HVDC is the preferred transmission technology for the export power cable system. HVDC is being used for long-distance power transmission in overseas markets and has been proposed for some long-distance projects in the Northeast. HVDC technology offers several advantages over HVAC for this Project. For example, (i) HVDC allows more efficient bulk power transfer over long distances, (ii) HVDC can expand the energy network making it more stable, with lower power losses, and (iii) HVDC allows for an increase in system reliability, by preventing cascading failures from propagating from one part of a wider power transmission grid to another.

[8] *Offshore Wind Transmission Study Comparison of Options*, NJ Board of Public Utilities, pp. 71 - 73 (Dec. 29, 2020); https://www.nj.gov/bpu/pdf/publicnotice/Transmission%20Study%20Report%2029Dec2020%202nd%20FINAL.pdf

5.4.4 Export Cable Transmission Technology Voltage

Under an HVDC transmission scenario, a nominal system operating voltage of +/- 320 kV would be utilized. The cables would be installed in a bundled configuration where practicable, or individually installed, if required. Unlike HVAC technology, the voltage of each cable maintains constant polarity and the direction of the current is constant.

Higher voltages would not significantly change the size of the export cable or result in material reductions in the area of potential impact to the seafloor associated with installation. Voltages lower than the proposed +/- 320 kV HVDC would require more cables to be placed along the seafloor, which would enlarge the impact area in the offshore environment and may increase the overall energy loss through transmission.

5.4.5 Cable Type

Cross-linked polyethylene (XLPE) insulation would be used for the Project's offshore and onshore cables. This cable type is considered state-of-the-art technology for offshore transmission worldwide. XLPE cables have proven to be more reliable with greater ease of handling than high-pressure fluid filled and oil impregnated cables. XLPE also allows for standard and quicker jointing and termination.

5.5 Construction Methodologies

5.5.1 Offshore Cable Installation and Burial Methods

The disturbance to the sea bottom from export cable installation will include the trench footprint, the area surrounding the trench where sediment suspended during installation will settle, and the footprint of any cable protection, such as mattresses or rock placement. The seafloor may require preparation, including debris and boulder removal, prior to installing cables. Additionally, for areas where anchoring may be required, anchor impacts have been considered.

The offshore export cable burial and installation methods that Mayflower Wind is considering are listed in Table 5-4 and described below. These cable installation techniques can involve cable laying followed by burial and/or simultaneous cable laying and burial.

TABLE 5-4. OFFSHORE EXPORT CABLE INSTALLATION AND BURIAL EQUIPMENT OPTIONS

Equipment	Use
Vertical injector	Vessel mounted burial solution for shallower-water use that does not require seabed/sand wave sea leveling
Jetting sled	Shallow-to-moderate water depth uses (surface fed water supply) in areas of prepared/benign seabed surfaces
Jetting Remotely Operated Vessel (ROV)	Typically used in deeper water and can be used for unconsolidated soft beds
Pre-cut plow	Any depth and can be used for hard bottoms (plows can be used for a wide range of soils from unconsolidated sands to stiff clays)
Mechanical plowing	Any depth and can be used for hard bottoms (plows can be used fora wide range of soils from unconsolidated ands to stiff clays)
Mechanical cutting ROV system	Any depth, used for hard, consolidated substrate

Depending on the installation survey findings and seabed conditions encountered, several seabed preparation and cable installation tools may be utilized to install and bury the offshore export cables. These methods include vertical injector; jetting sled; jetting ROV; pre-cut plow; mechanical plowing; and mechanical cutting ROV system. These cable installation techniques can involve cable laying followed by burial and/or simultaneous cable laying and burial.

Seafloor Preparation

The seafloor may require preparation, including debris and boulder removal, prior to installing cables, if these are not avoidable by micro-routing within the ECC. An orange peel grabber may be used for localized boulder removal and a plow may be used for boulder field removal. A grapnel tool may be used for debris removal.

Vertical Injector

A vertical injector is a deep-burial jetting tool used for cable installation and burial. The vertical injector uses water propelled from jet nozzles to fluidize the seabed material to allow for lowering of the cable. This tool is towed along the back of a vessel and acts as a trowel creating a space for the cable to be installed and subsequently buried. This burial solution does not generally require seabed leveling in areas of sand waves or similar mobile sediment features. Hanging from the cable installation barge, this trenching system is one of the few options that does not require a level seabed and is therefore capable of trenching in areas of uneven relief along the seafloor.

Jetting Sled

A jetting sled is towed from a vessel and can be launched either during post-lay trench mode or fitted with the cable to simultaneously create a trench through soft seabed material and lay the cable. The trench is created by water jetting through unconsolidated, softer seabed material. As such, jetting is optimal in unconsolidated soils and sands with low shear strengths. This type of trenching system suffices for any curves that an offshore export cable may be laid in.

Jetting Remotely Operated Vehicle

This jet trencher is an ROV based system that can be launched from cable installation vessels or from a dedicated support vessel. This technology is often referred to as Controlled Flow Excavation, which is a method of mass flow excavation that works by directing a high-volume flow of water, under low pressure, towards the seabed to temporarily displace seabed sediment.

Pre-Cut Plow

This method is deployed when surface and sub-surface boulders are present. A basic mechanical plow will pre-cut a V-shaped trench ahead of cable installation. This allows for the boulders and soils to be lifted to the edges of the trenches for backfill purposes later. Once the cable is laid into the trench, the plow is re-configured into backfill mode where the boulders and sediments that were previously relocated are then re-deposited.

Mechanical Plowing

A mechanical plow is towed from the back of a vessel and simultaneously cuts a narrow trench in the seafloor, while also simultaneously laying and burying cable. Plowing capability can increase from firm unconsolidated sediments/sands to more consolidated sediments and clays with medium shear strengths.

Mechanical Cutting ROV System

A mechanical cutting ROV cable burial system is a self-propelled system most suitable for soil with increased strength. This system can be utilized at any water depth. The mechanical cutting ROV system utilizes a cutting wheel or chain to break up and excavate any material. Used only in hard, consolidated sediments; a rotating chain or cutting wheel with dedicated teeth will excavate the soil from beneath the cable and various systems will be required to displace this sediment away for the trench allowing the cable to be lowered to depth.

Anchoring

It is expected that a combination of a moored vessel solution and a DP vessel solution will be used for the offshore export cable installation in Rhode Island state waters. Nearshore areas and areas with shallow water less than 49.2 ft (15.0 m) typically necessitate a moored vessel solution, as operation of DP vessel thrusters is typically not realistic in these water depths.

The maximum anchor radius from the cable installation barge will be approximately 2,625 to 3,281 ft (800 to 1,000 m) based on the anchor line length. This maximum radius will be forward and aft of the barge and will not extend outside of the width of the ECC.

Cable Protection

The primary objective is to achieve a suitable target burial depth of the offshore export cables in the seabed along the entire cable route, by micro-routing the cables within the ECC and by assessing and selecting suitable installation/burial tooling for the seabed conditions. Cable protection is typically required at any existing cable crossing locations and for areas where cable burial cannot be achieved. For cable protection, methods will be determined based on the location, length, and extent of the non-burial, and when all remedial burial techniques not involving addition of secondary cable protection material have been ruled out. Remedial burial techniques may include jet trenching or controlled flow excavation that fluidizes the surrounding seabed to allow the cable to further settle into the trench. Secondary cable protection methods may include the creation of a rock berm, concrete mattress placement, rock placement, and fronded mattresses. Half shells may be used as well.

Based on Mayflower Wind's preliminary interpretation of the geophysical and geotechnical marine surveys, Mayflower Wind estimates that approximately 15 percent of the ECC will require secondary cable protection, because of seafloor conditions, physical obstacles on the seafloor and crossing of existing submarine pipelines.

Though not currently anticipated, any required crossings of existing or planned third-party cables by the offshore export cables will utilize mutually agreeable crossing designs consistent with typical industry practices, which typically employ use of concrete mattresses (though other crossing methods may be assessed for use). Minimum separation distances will be determined so that both cables can be safely operated with risk of damage to either cable mitigated to the extent practicable.

5.5.2 Cable Landfall Methods

Mayflower Wind considered two techniques to bring the export cables ashore, HDD and open-cut trenching. Potential environmental impacts were the primary factor in Mayflower Wind's analysis of the export cable transition installation.

Open-cut trenching would involve excavating the export cable's sea-to-shore transition to the desired depth, placing the cable inside this newly created trench, and refilling the trench to the appropriate level. This option was deselected because of the added, undue risk of potential impacts to nearshore resources, including tidal zones, eelgrass zones, public beaches, and coastal dune areas. Additionally, open-cut trenching increases the risk of un-burial of the cable in nearshore and inter-tidal zones relative to the HDD method for the sea-to-shore transition.

HDD is a “trenchless” process for installing cables or pipes which enables the cables to remain buried below the beach and intertidal zone while limiting environmental impact during installation. HDD would enable cable installation to pass beneath the nearshore area, intertidal zone, coastal beach, seawall and adjoining coastal dune areas while minimizing impact to these marine resources. Thus, Mayflower Wind has chosen to use an HDD methodology to bring the offshore export cables to the transition joint bay onshore.

HDD can be undertaken from either the onshore entry point, from the offshore exit point, or from a combination of the two. If the HDD will be undertaken from the onshore entry point, the HDD rig will be positioned in a previously disturbed area within the landfall site or within an area that will minimize land disturbance.

5.5.3 Underground Cable Construction

Mayflower Wind anticipates installing onshore export cables in an underground concrete-encased duct bank, as shown in the preliminary engineering plans provided in Attachment B. The cable trench is likely to consist of a single trench where the cables will be pulled through ducts in a duct bank. Alternatively, the cables may be installed by directly burying them in the road and backfilling without the concrete encasement, where suitable. Multiple smaller trenches may be necessary depending on available space along the cable route.

Installation of the onshore underground conduit system will use open-cut trenching methods where practicable. An excavator or backhoe will excavate a trench along the proposed duct bank alignment. Trench boxes or other typical safety measures will be used to shore up the excavation while conduits are laid, and concrete is poured and cured. In areas without subsurface obstructions such as existing utilities, it may be feasible to install stretches of pre-cast concrete duct bank instead of a cast-in-place system.

Duct bank construction is expected to progress at a rate of 50 to 100 ft (15.2 to 30.5 m) per day, with the rate of progress depending on a variety of factors including the density of existing underground utilities. Trench excavation is anticipated to be approximately 5.0 to 6.0 ft (1.5 to1.8 m) wide with the use of trench boxes. The target excavation depth will be approximately 6.0 ft (1.8 m) deep but could be deeper depending on survey results and potential utility crossings. Splice vaults or direct buried splice pits will be placed at the required location along the route, per the final design. The approximate spacing of splice vaults will be every 0.2 to 0.4 mi (0.3 to 0.6 km) based on the geometry of the route and the physical properties of the cables. Like TJBs, splice vaults provide a clean, dry environment for the jointing of segments of onshore export cable. The fiber optic communications cables will be joined inside the communications handhole installed adjacent to the splice vaults with its own access cover. After completion of trenches, duct banks, and vaults or pits, cable installation and pulling operations will be performed.

The equipment used will be typical for any high-voltage open-cut trench installation and may include equipment such as excavators, front-end loaders, dump trucks, concrete trucks, skid steers, flat bed trailers, shoring systems, padding machines, compaction equipment and trench boxes. Typical equipment used for cable installation includes a winch, cable reel cart, box trucks, splicing and terminating tools, and other miscellaneous tools. Cable pulling technicians will maintain cable pulling speed and monitor the tension of the pull.

5.6 ENVIRONMENTAL AND OTHER CONSIDERATIONS

For construction of the underground onshore export cables, Mayflower Wind will use construction techniques that minimize impacts on the natural environment. The onshore export cables will be installed within existing public road ROW, where feasible. A pre-engineering survey will be performed to identify and confirm the locations of existing underground and overhead utility obstructions or potential crossings including other high-voltage cables or pipelines. Natural resources in proximity to the underground route will be demarcated, as well as marking of any other natural or social resources that are to be avoided and/or protected. Disturbed areas will be allowed to re-vegetate similar to existing vegetation within the cleared portions of the roadway shoulders.

Mayflower Wind intends to use an onshore export cable route consisting of an underground duct bank and manhole system for the Project. Based on an underground route in public road ROW, environmental impacts would be to the manmade environment and would primarily occur only during the temporary construction phase of the Project. These would include temporary impacts on traffic during conduit and cable installation. The majority of the underground onshore export cable system would be installed utilizing cut and cover techniques, where the roadway is excavated, the conduit and manhole system are installed, the trench is backfilled, and roadway is repaved. For much of the route, the roadway is two lanes wide. Partial or full lane closures with alternating traffic patterns may be required during construction. There would also be temporary noise impacts to the homes and businesses located along the roadway route from construction equipment and vehicles, which Mayflower Wind will seek to minimize. The underground route in public road ROW would cross Founders Brook and areas where streams have been culverted by the bisecting roadway. Where the underground onshore export cables would pass through buffer areas adjacent to wetlands, proper construction techniques and BMPs, such as the use of staked bales or other sedimentation barriers, would be employed to protect these areas.

5.7 SUMMARY OF SELECTED ALTERNATIVES AND CONCLUSIONS

Mayflower Wind evaluated multiple alternatives for both offshore and onshore components of the Project. Mayflower Wind selected HVDC as the appropriate transmission technology. The Brayton Point POI was selected for the Project due to its robust capacity for energy injection into the existing electrical grid and the opportunity to revitalize the brownfield site and use it for clean energy purposes. Mayflower Wind performed a routing analysis to best connect the Clean Energy Resource to the Brayton Point POI. Longer onshore crossings of Rhode Island through Middletown, Portsmouth, Little Compton and Tiverton, and offshore routes through the East Passage and West Passage of Narragansett Bay and through the Sakonnet River with no intermediate crossing were down selected and later dismissed due to a variety of engineering, construction, environmental, and other concerns and impacts. Based on the routing analysis, Mayflower Wind is focused on routing for the Project with the following features, though some of the onshore variants on Aquidneck Island are still being considered:

- ECC routed north up the Sakonnet River with an intermediate onshore landfall and underground crossing of Portsmouth.
- A combination of several seabed preparation and cable installation methods based on marine geophysical and geotechnical survey findings and seabed conditions.
- Landfall in Portsmouth for the intermediate underground crossing of Aquidneck Island using HDD installation methods.

- Approximately 2.0 mi (3.4 km) of onshore, underground export cable route in Portsmouth from the intersection of Boyd's Lane and Park Avenue running north on the east side of Boyd's Lane. From here, four onshore route variants are being considered:
  - Route Variant 1 – East onto Anthony Road and onto RWU property, with HDD conducted in a northeasterly direction.
  - Route Variant 2 – East onto Anthony Road to the entrance of Montaup Country Club, with HDD conducted from the Montaup Country Club parking area.
  - Route Variant 3 – East onto Anthony Road, turning north onto RIDEM/Aquidneck Land Trust, with HDD conducted in a northeasterly direction.
  - Route Variant 4 – Continue north on Boyd's Lane to the roundabout, with HDD conducted on the east side of the Mount Hope Bridge into Mount Hope Bay.
- ECC routed through Mount Hope Bay from Rhode Island State waters to Massachusetts State waters.
- Final landfall from Mount Hope Bay to Brayton Point (via the Lee River or Taunton River) and interconnection to the POI at Brayton Point in Somerset, Massachusetts.
- POI at the existing Brayton Point onshore 345-kV substation, and new HVDC converter station to be constructed at Brayton Point.

5.7.1 Conclusion

Based on the analysis performed, Mayflower Wind undertook a thorough route selection process for both offshore and onshore components of the Project addressing the Board's Standards applicable to jurisdictional energy facilities. Mayflower Wind identified various routes and installation techniques as potential alternatives to satisfy the state and/or regional need for the Project to provide renewable clean energy from offshore wind generation. Mayflower Wind compared possible routes and route variants based upon reasonable criteria to evaluate the environmental impacts, social impacts, costs, and long-term maintainability to deliver energy from the Clean Energy Resource to the regional transmission system at Brayton Point.

The proposed route and onshore route variants would enable Mayflower Wind to achieve the best balance between reasonable cost, not causing unacceptable harm to the environment, and reliability in accordance with the Board's standards and precedent. Based on the foregoing analysis, Mayflower Wind has determined the proposed route, including the onshore route variants on Aquidneck Island, would result in the least impacts and would allow for safe, practical, and long-term cable installation, maintenance, and operation as compared to the alternatives considered. Construction of the Project, as proposed, will provide access to a major renewable clean energy resource and will not cause unacceptable harm to the environment.

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6 DESCRIPTION OF AFFECTED NATURAL ENVIRONMENT

This section of the Siting Report describes the existing natural environment that may be affected by the Project.[1] As required by the Rules and Regulations of the EFSB, this section includes a detailed description of all environmental characteristics within and immediately surrounding the Project. The following section describes the specific natural features which have been assessed for the evaluation of impacts and the preparation of a mitigation plan. Information pertaining to existing site conditions has been obtained through available published resource information, the Rhode Island Geographic Information System (RIGIS) database, various state and local agencies, and field investigations of the Project study area. The Rhode Island Ocean Special Area Management Plan (OSAMP) (650- RICR-20-05) and the Massachusetts Ocean Management Plan provided important insight into environmental conditions and existing human activities in and near the Mayflower Wind Project. The resource characterizations also relied on the material published in BOEM NEPA documents, such as the *Final Programmatic Environmental Impact Statement for Alternative Energy Development and Production and Alternate Use of Facilities on the Outer Continental Shelf*.[2]

6.1 PROJECT STUDY AREA

The Onshore Study Area for the onshore facilities is defined as a 500-ft (152 m) radius from the onshore export cable routes (including the common route and onshore Route Variants 1 through 4) and the landfall work areas. These onshore route variants are described in Section 5.4.1. The Offshore Study Area for the offshore components of the Project is defined as the export cable corridor (ECC). The ECC is variable, approximately 10,500 ft at its widest point and 1,300 ft at its narrowest. See Figures 6-1A and 6-1B, which show an overview of the Onshore Study Area and the ECC.

6.2 CLIMATE AND WEATHER

According to RIDEM, Rhode Island's climate may be summarized as follows: (1) equitable distribution of precipitation among the four seasons; (2) large ranges of temperature both daily and annually; (3) great differences in the same season of different years; and (4) considerable diversity of the weather over short time periods. These characteristics are modified by nearness to the Bay or ocean, elevation, and nature of the terrain.[3]

According to NOAA National Centers for Environmental Information:[4]

- Temperatures in Rhode Island have risen almost 4 degrees Fahrenheit (°F) since the beginning of the twentieth century. Under a higher emissions pathway, historically unprecedented warming is projected to continue through this century. Increased intensity of heat waves is also projected, while cold waves are projected to decrease in intensity.
- Annual precipitation in Rhode Island has increased since 1895. Extreme precipitation has increased since 1950, with the highest number of extreme events occurring during the 2005–

[1] The Project is as described in Sections 2 and 4 of the Project Siting Report and includes all transmission connector facilities in Rhode Island, both offshore in state waters and onshore on Aquidneck Island in Portsmouth, Rhode Island. The Project is also defined as the "Selected Alternative and associated variants" in the context of routing in Section 5.

[2] Minerals Management Service. 2007. Final Programmatic Environmental Impact Statement for Alternative Energy Development and Production and Alternate Use of Facilities on the Outer Continental Shelf. US Department of the Interior. OCS EIS/EA MMS 2007-046. October 1, 2007.

[3] Rhode Island Department of Environmental Management (RIDEM). n.d. Overview of Climate in Rhode Island. http://www.dem.ri.gov/climate/climate-overview-ri.php. Accessed April 23, 2022.

[4] NOAA National Centers for Environmental Information. 2022. State Climate Summaries 2022 150-RI. https://statesummaries.ncics.org/chapter/ri/. Accessed May 16, 2022.

2014 interval. Continued increases in frequency and intensity of extreme precipitation events are projected.

- Since 1930, sea level has risen more than nine inches at Newport, faster than the global average. The global average sea level is projected to rise 1 to 4 feet by 2100. Increases in sea level will likely increase coastal flooding and erosion during winter storms (nor'easters) and hurricanes.

Rhode Island's weather is tempered by sea winds, particularly in the Seaboard Lowland, which has a more moderate climate than the rest of New England. Portsmouth enjoys a moderate climate due to its proximity to Narragansett Bay which helps to minimize extreme temperatures. Although the water surrounding Portsmouth has a moderating effect, temperatures in Rhode Island tend to fluctuate by large ranges both daily and annually.[5] The mean annual temperature of Rhode Island's coastal areas along Narragansett Bay, such as Aquidneck Island, is 51°F. Rhode Island's annual precipitation averages 42 to 46 inches over most of the state, with approximately 20 inches of that total attributed to snowfall in the coastal Narragansett Bay regions.[6] Due to its proximity to the belt of generally eastward air movement which interacts to produce storm systems, Rhode Island experiences a considerable diversity of weather over the short term and long-term scale.[7] Rhode Island is geographically situated so that in winter, the contrast between cold air masses of the continental interior and the relatively warm Atlantic Ocean provides the energy for occasional intense Nor'easter storms.[8]

The effects of climate change in Rhode Island are quantifiable and will continue to influence Rhode Island. The surface temperature in Narragansett Bay has risen by nearly 3°F since the 1960s with the most rapid warming occurring in the winter.[9] Climate projections suggest that average air temperatures will increase up to approximately 10°F by 2100 depending on the greenhouse gas emission rate.[10]

Extreme weather events common to Rhode Island include severe storms (coastal, winter, and thunderstorms), often accompanied by flooding, and on occasion, tropical storms and hurricanes. The state's coastline is highly vulnerable to flood damage from winter and hurricane events. The state of Rhode Island sought Federal Emergency Management Agency disaster declarations six out of the last 10 years. Rhode Island experienced hurricane-force winds onshore in Rhode Island six times from 1900 to 2019. The Great New England Hurricane (Category 3) of 1938 was one of the most destructive and powerful storms ever to impact southern New England. Storm tides of 12 to 15 ft were recorded for Narragansett Bay, and downtown Providence was submerged under a storm tide of 20 ft. In October 2012, Superstorm Sandy (a post-tropical storm) caused a storm surge 9.4 feet above normal high tide in Providence, resulting in extensive coastal flooding. One year earlier, Hurricane Irene brought heavy rainfall and strong southeast winds of up to 70 mi per hour, knocking down power lines and leaving half of Rhode Island's one million residents without power. Both hurricanes demonstrated the region's vulnerability to extreme weather events.[11]

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[5] NOAA National Centers for Environmental Information. 2022. State Climate Summaries 2022 150-RI. https://statesummaries.ncics.org/chapter/ri/. Accessed May 16, 2022.
[6] Rhode Island Department of Environmental Management (RIDEM). n.d. *Overview of Climate in Rhode Island.* http://www.dem.ri.gov/climate/climate-overview-ri.php. Accessed April 23, 2022.
[7] Rhode Island Department of Environmental Management (RIDEM). n.d. *Overview of Climate in Rhode Island.* http://www.dem.ri.gov/climate/climate-overview-ri.php. Accessed April 23, 2022.
[8] Runkle, J.K., D. Easterling, B. Stewart, S. Champion, L. Stevens, R. Frankson, and W. Sweet. 2017. *2017: Rhode Island State Climate Summary*. NOAA Technical Report NESDIS 149-RI.
[9] Fulweiler, R.W., A.J. Oczkowski, K.M. Miller, C.A. Oviatt, and M.E.Q. Pilson. 2015. *Whole Truths vs. Half Truths – and a Search for Clarity in Long-Term Water Temperature Records*. Estuarine, Coastal and Shelf Science 157 (2015): A1–A6. https://doi.org/10.1016/j.ecss.2015.01.021.
[10] Narragansett Bay Estuary Program. 2017. *State of Narragansett Bay and Its Watershed*.
[11] NOAA National Centers for Environmental Information. 2022. State Climate Summaries 2022 150-RI. https://statesummaries.ncics.org/chapter/ri/. Accessed May 16, 2022.

Climate change has also resulted in a higher intensity of rainfall events that lead to flooding. Rhode Island's average annual precipitation has gone up by more than 10 inches since 1903[12]; the amount of annual precipitation falling during intense storms has increased 71 percent since 1965.[13] It is projected that precipitation will be concentrated into fewer, more extreme events which may lead to more frequent extreme dry periods throughout the state. These drier periods of drought are expected to occur in the warmer summer months.[14]

Tide gauge recordings in Newport between 1930 and 2020 show an average rate of sea level rise of 0.11 inches (2.83 millimeters) per year. Global average sea level is projected to rise another 1 to 8 feet, with a likely range of 1 to 4 feet, by 2100 as a result of both past and future emissions from human activities and will be accompanied by large increases in tidal flood events with nuisance-level impacts. Nuisance floods are events in which water levels exceed the local threshold (set by NOAA's National Weather Service) for minor impacts. These events can damage infrastructure, cause road closures, and overwhelm storm drains. As sea level has risen along the Rhode Island coastline, the number of tidal flood days (all days exceeding the nuisance level threshold) has also increased, with the greatest number occurring in 2017.[15]

6.3 GEOLOGY

This section includes a general summary of geological conditions from various researchers for the Onshore Study Area and the ECC, as well as extensive geophysical and geotechnical (G&G) surveys completed by Fugro in 2020 and 2021[16] to more precisely characterize geological conditions within the ECC.[17]

6.3.1 Regional Geology

The Narragansett basin occupies the area of Narragansett Bay, trending northward in eastern Rhode Island and extending north-eastward into Massachusetts. The basin is a complex synclinal mass of clastic sedimentary rocks.[18] It is almost 55 mi (89 km) long and about 15 to 25 mi (24 to 40 km) wide. The Narragansett basin contains a large mass of Pennsylvanian deposits (Pennsylvanian rocks), which is the most prominent geologic feature in eastern Rhode Island and adjacent Massachusetts. These Pennsylvanian rocks are marked in contrast to the adjacent older rocks; they lie unconformably on the older rocks; trend in different directions; include many layers of fossiliferous rocks and some un-metamorphosed rocks, and are generally lithologically dissimilar.[19]

The Pennsylvanian deposits are covered with glacial outwash deposits. Outwash plains formed through several mechanisms including: continuously, when fed by ice-melt; episodically, in the case of glacial lake dam bursts; or erosional, as the glacial ice drained to the south of the moraines, leaving finer

[12] State of Rhode Island. 2018. *Resilient Rhody - An Actionable Vision for Addressing the Impacts of Climate Change in Rhode Island*. http://climatechange.ri.gov/documents/resilientrhody18.pdf. Accessed April 23, 2022.
[13] Narragansett Bay Estuary Program. 2017. *State of Narragansett Bay and Its Watershed*.
[14] State of Rhode Island. 2018. *Resilient Rhody - An Actionable Vision for Addressing the Impacts of Climate Change in Rhode Island*. http://climatechange.ri.gov/documents/resilientrhody18.pdf. Accessed April 23, 2022.
[15] NOAA National Centers for Environmental Information. 2022. State Climate Summaries 2022 150-RI. https://statesummaries.ncics.org/chapter/ri/. Accessed May 16, 2022.
[16] Mayflower Wind Energy LLC and Fugro USA Marine, Inc. 2022. *Geohazard Report for the Brayton Point Export Cable Corridor* (*Mayflower Wind Construction and Operations Plan Appendix E.2 (Confidential) - Docket No. BOEM-2021-0062).* February 25, 2022.
[17] The site-specific geophysical and geotechnical surveys were completed in accordance with 30 CFR 585 and BOEM guidelines for the Construction and Operations Plan approval.
[18] Quinn, A.W. 1971. *Bedrock Geology of Rhode Island*. United States Geological Survey (USGS). 1971. https://pubs.usgs.gov/bul/1295/report.pdf.
[19] Quinn, A.W. 1971. *Bedrock Geology of Rhode Island*. United States Geological Survey (USGS). 1971. https://pubs.usgs.gov/bul/1295/report.pdf.

grained glaciofluvial and glacio-lacustrine deposits.[20] These outwash deposits shallowly underlie marine sediments throughout much of the ECC. Additionally, the portion of the ECC within the Sakonnet River and Mount Hope Bay generally consists of river/estuary surficial sediments overlying older sediments, glacial tills, outwash deposits, and bedrock. Riverine inputs and tidal flows contribute to the reworking of the seabed, with finer-grained sediment being more prevalent within Mount Hope Bay and other areas with less energetic circulation.

These deposits infilled the glacial outwash drainage systems with estuarine deposits present in the deeper, southern areas of the shelf. Geologically, modern reworking and additional deposition of marine sediments over the most recent transgressive ravinement surface have shaped the present seabed, but in many places the older, underlying sediments and morphology are exposed or still detectable under more recent sediments.

6.3.2 Export Cable Corridor

6.3.2.1 Surficial Conditions

The ECC was evaluated by Fugro in their geohazard survey report.[21] The site-specific data collected by Fugro during the 2020-2021 G&G surveys are being used to characterize the geologic conditions along the ECC and identify potential geologic and anthropogenic hazards that could affect the design, installation, and operation of the offshore export cables.

Water depths along the entire ECC range from approximately 0 to 136 ft (0 to 41.5 m) Mean Lower Low Water. Water depths increase from shore to the Lease Area, with several shallow water traverses due to the crossing of Aquidneck Island. The northern portion of the ECC in the Sakonnet River and Mount Hope Bay are representative of river/estuary surficial conditions of Narraganset Bay, and primarily comprise muddy to sandy sediments in the lower portions of the Sakonnet River, and gravelly mud in the upper portions of Mount Hope Bay. Isolated bedrock outcrops are mapped within the Sakonnet River and lower Mount Hope Bay, along with one distinct mounded feature exhibiting shell-dominated substrate identified as *Crepidula* (commonly known as slipper shell) accumulations. The seabed varies between smooth and minor bedforms with isolated areas of rock dump or backfill over known pipelines.

In Rhode Island Sound, water depths vary between approximately 66 ft (20 m) and 131 ft (40 m) Mean Lower Low Water. Seabed irregularity arises from the presence of erosion resistant glacial till/moraine at or just below the seafloor, corresponding to the named Buzzards Bay moraine and Martha's Vineyard moraine that are crossed by the ECC.

6.3.2.2 Shallow Geology

The subsurface geology of the northern portion of the ECC was mapped over several quadrangles as defined by the Geological Survey Bulletin in 1971, including the Tiverton, Sakonnet Point, and Fall River quadrangles.[22] Known stratigraphic layers underlying the Tiverton quadrangle, which is the central portion of the Sakonnet River, include rocks of the Precambrian, Devonian, and Pennsylvanian ages.[23] In Rhode Island Sound glacial till/moraine deposits outcrop and subcrop within the anticipated cable burial depth at several locations.

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[20] Oldale, R.N. 1992. *Cape Cod and the Islands: The Geological Story*. Parnassus Imprints.

[21] Mayflower Wind Energy LLC and Fugro USA Marine, Inc. 2022. *Geohazard Report for the Brayton Point Export Cable Corridor* (*Mayflower Wind Construction and Operations Plan Appendix E.2 (Confidential) - Docket No. BOEM-2021-0062).* February 25, 2022.

[22] Quinn, A.W. 1971. *Bedrock Geology of Rhode Island*. United States Geological Survey (USGS). 1971. https://pubs.usgs.gov/bul/1295/report.pdf.

[23] Pollock, S.J. 1964. *Bedrock Geology of the Tiverton Quadrangle*. USGS. 1964. https://pubs.usgs.gov/bul/1158d/report.pdf.

6.3.3 Geological Hazards

Based on the geotechnical and geohazard report prepared by Fugro, the following geohazards listed in Table 6-1 are not anticipated to be present in the ECC.

TABLE 6-1. GEOHAZARDS NOT ANTICIPATED TO BE PRESENT WITHIN THE ECC

Geohazard Not Present	Comment
Shallow faults, fault zones, fault activity, sediment deformation	Area is tectonically quiescent and sedimentation rate is low; no active shallow faults are expected, and none were interpreted in the seismic data.
Seismic activity, liquefaction, surface rupture, tsunamis	Based on USGS National Seismic Hazard Maps, the Project Area is located in a low seismic hazard area. The potential for a damaging earthquake to occur within the life of the Project is low.
Gas seeps, pockmarks and/or depressions	None expected and no evidence of fluid flow seen in the seismic data or in the form of seabed pockmarks and/or depressions. Shallow buried gas has been interpreted in the ECC.
Slump blocks, slump sediments, sliding, slope instability, submarine canyons	The ECC is on the shallow continental shelf; none of these features are expected and none are present in the data analyzed to date.
Gas hydrates, ice scour, subsea permafrost layers	The ECC is in a shallow water, temperate environment and not affected by such geohazards. Although ice has formed in Nantucket Sound, the Sakonnet River, and Mount Hope Bay in the past, it has been relatively thin, short lived, and not deemed to present a hazard to the planned ECC.
Subsidence, settlement and displacement, liquefaction, sediment reactions	For a cable installation, reduction of sediment strength through dynamic loading, plastic deformation, and formation collapse, etc., are not expected to be an issue.
River channels, other seabed channels, shallow water flow, karst areas	No evidence of such features or activity. While the ECC traverses the geographic feature known as the Sakonnet River, the Sakonnet would be more accurately described as a tidal strait. Risks from current-related processes are described further in the geohazards section below.
Mobile bedforms (megaripples and sandwaves) and seabed scour	There are no megaripples or sandwaves within the ECC, only small scale bedforms such as ripples, sand ribbons, and lineations. There are no existing seabed features that would suggest that scour may be a problem for the Project.

A geohazard can be defined as any unusual characteristic of the seabed environment that could affect cable routing, installation, and/or long-term integrity if not considered and accounted for. Table 6-2 is a list of geohazards anticipated to be present along the ECC.

TABLE 6-2. POTENTIAL GEOHAZARDS WITHIN THE ECC

Potential Geohazard	Comment
Shallow water	Encompasses portions of the Sakonnet River and Mount Hope Bay.
Scarps, ridges, and steep seabed slopes	Only minor scarps and ridges with total elevation change less than a few meters are present. A few localized areas of steep slope (i.e., greater than 10°) are associated with exposed rocky areas and/or hard ground, undulating seafloor topography within Mount Hope Bay and the Sakonnet River, and from human activity such as dredging and anchoring.
Exposed rocky areas (hard bottom)	Glacial till may be considered to represent rocky or hardground areas due to entrained cobbles and boulders. Only two areas of crystalline bedrock were identified along the ECC but should be mitigable through routing. Rocky areas could prevent cable burial to target depth.
Biogenic mounds	Two types of biogenic mound could represent a constraint along the ECC.
Submerged aquatic vegetation (SAV)	Potential areas of SAV growth in nearshore zones could represent a constraint on cable routing if not already bypassed by horizontal directional drilling.[1]
Surface boulders	A relatively small number of surface boulders are found within Mount Hope Bay and the Sakonnet River.
Shallow buried channels	Paleochannels filled with coarse and fine-grained sediments are seen at various locations along the ECC. Several generations of channels (older and younger) can be seen.
Buried boulders and hard ground	Localized crystalline bedrock outcrops are found at only two points within the ECC and can be easily avoided. Outcrops of glacial till/moraine may also be considered to represent rocky areas due to entrained cobbles and boulders. Glacial till/moraine within the cable depth of burial interval is more extensive. Rocky areas could prevent cable burial to target depth if not planned for.
Shallow gas accumulation	Interpreted shallow gas and blanking has been identified by survey within Mount Hope Bay and the Sakonnet River.
Sediments with low thermal conductivity	Fine-grained deposits that contained organic material were found in several vibracores within Mount Hope Bay and the Sakonnet River. Such types of sediments may have low thermal conductivity properties and lead to reduced power transmission or overheating of cables
Unexploded ordnance (UXO)/Discarded military munitions (DMM)	Mayflower Wind is commissioning an evaluation of UXO/DMM in the Offshore Project Area; this information can be provided when the study is completed.

[1] SAV may be found within the nearshore zone at the southern Aquidneck Island cable landfall based on geophysical survey data. There is no SAV mapped within the Sakonnet River by RI state agencies (as available online). The potential SAV mapped by this survey extends approximately 300 m (984 ft) offshore from the Aquidneck Island shoreline. Its appearance is not distinctive and may be misinterpreted from boulders, or boulders with encrusted macroalgae, for example.

6.3.4 Benthic Composition

Two benthic surveys and a geophysical survey have been conducted along the ECC. The following section describes the overall substrate, habitat and fauna noted from these surveys.

Rhode Island Waters in Mount Hope Bay to Aquidneck Island

The seafloor morphology in Mount Hope Bay is broadly smooth, with visible indications of relict and active trawl and dredge fisheries creating surface furrowing. Outcropping bedrock and boulders are present near the Mount Hope Bay Aquidneck Island ECC landing. A small number of bedforms are present in the southern portion of this area where Mount Hope Bay constricts and focuses tidal currents and likely supports the formation and preservation of the observed bedforms.

Epifauna and infauna biotic groups observed in grab, video, and sediment profile and plan view imaging (SP-PVI) samples collected in this portion of the route are characterized by large tube-building fauna and isolated gastropod reefs (*Crepidula*).[24] Isolated occurrences of algae, sessile gastropods, large deep-burrowing fauna are also seen here.

Sakonnet River to State/Federal Water Boundary of Rhode Island Sound

The substrates along the mapped section of the Sakonnet River are mostly soft sediments (mud, gravelly mud, muddy sand, and sand). Some gravelly sand and isolated gravel mixes (muddy sandy gravel and sandy gravels) are intermittently encountered from the mouth of the Sakonnet River, across the Rhode Island Sound to the state water boundary. Offshore, the route crosses isolated patches of outcropping glacial till/moraine interspersed with gravels.

Sakonnet River morphology is largely smooth, with interspersed rippled bedforms related to tidal currents and isolated mounds associated with gastropod reefs (*Crepidula*). There is also evidence of anthropogenic debris such as rock and backfill over pipelines. Geophysical data indicate a small area of potential SAV on the edge of the ECC in the Sakonnet River near landfall; based on current understanding, this SAV area can be avoided easily by micro-routing of export cables within the ECC and/or by siting HDD exit points offshore.

Epifauna and infauna biotic groups found in grab, video, and SP-PVI samples taken along this section of the route are characterized by large deep burrowing fauna, gastropod reefs (*Crepidula*), soft sediment surfaces covered with tracks and trails, mobile mollusks and mobile crustaceans on soft sediments, and small surface-burrowing fauna.[25]

6.4 SOILS

Detailed information concerning the physical properties, classification, agricultural suitability, and erodibility of soils within the Onshore Study Area are presented in this section. Descriptions of soil types were obtained from the United States Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS) Web Soil Survey.[26] The Soil Survey of Rhode Island prepared by the USDA Soil Conservation Service[27] was also reviewed to confirm the soils mapping. The most common soil series encountered along the route variants include Matunuck (organic deposits in brackish habitats), Merrimack glaciofluvial deposits, Newport lodgement till, Quonset glaciofluvial deposits, and udorthents (soils affected by anthropomorphic changes). In addition to the named series, map units include specific phase information that describes the texture and stoniness of the soil surface and the slope class. Table 6-3 lists the characteristics of the 18 soil map units found within the Onshore Study Areas.

[24] The epifauna and infauna biotic groupings are based on the Coastal and Marine Ecological Classification Standard.
[25] The epifauna and infauna biotic groupings are based on the Coastal and Marine Ecological Classification Standard.
[26] United States Department of Agriculture's Natural Resources Conservation Service. 2022. *Web Soil Survey*. https://websoilsurvey.sc.egov.usda.gov/App/WebSoilSurvey.aspx. Accessed April 23, 2022.
[27] United States Department of Agriculture's Natural Resources Conservation Service. 1981. Soil Survey of Rhode Island. https://www.nrcs.usda.gov/Internet/FSE_MANUSCRIPTS/rhode_island/RI600/0/rhode_island.pdf.

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TABLE 6-3. SOIL PHASES WITHIN THE ONSHORE STUDY AREAS (PER VARIANT)

Soil Map Unit Symbol	Soil Phase	Drainage Class	Percent Slope	Area within the Onshore Study Areas in acres (hectares)				
				Common Route	Variant 1 RWU Baypoint Residence Hall	Variant 2 Montaup Country Club	Variant 3 RIDEM/Aquidneck Land Trust	Variant 4 Mount Hope Bridge
Ba	Beaches, sandy Surface	VARIABLE	0 to 8	2.1 (0.8)	0	0	0	1.1 (0.4)
Baz	Beaches, cobbly surface	VARIABLE	0 to 8	0	1.7 (0.7)	2.5 (1.0)	2.2 (0.9)	0
Bc	Birchwood sandy loam	MWD	0 to 3	3.3 (1.3)	3.6 (1.5)	3.6 (1.5)	3.6 (1.5)	5.0 (2.0)
Du	Dumps	VARIABLE		4.2 (1.7)	0	0	0	0
Mk	Matunuck mucky peat	VPD	0 to 1	21.3 (8.6)	20.4 (8.3)	6.5 (2.6)	25.7 (10.4)	2.0 (0.8)
MmA	Merrimac sandy loam	SED	0 to 3	5.1 (2.1)	23.6 (9.5)	24.6 (10.0)	11.3 (4.6)	5.3 (2.2)
NeA	Newport silt loam	WD	0 to 3	0	0	0	0	17.8 (7.2)
NeB	Newport silt loam	WD	3 to 8	10.2 (4.1)	0	0	0	17.8 (7.2)
NeC	Newport silt loam	WD	8 to 15	0	0	0	0	7.6 (3.1)
NP	Newport-Urban land complex	WD	1 to 15 (mostly 6%)	11.8 (4.8)	0	0	0	15.4 (6.2)
PmB	Pittstown silt loam	MWD	3 to 8	8.1 (3.3)	1.6 (0.6)	1.6 (0.6)	1.6 (0.6)	12.2 (4.9)
QoC	Quonset gravelly sandy loam, rolling	ED	3 to 15	0	1.7 (0.7)	29.5 (12.0)	0	0
Sa	Sandyhook mucky peat	VPD	0 to 3	5.3 (2.2)	6.5 (2.6)	8.3 (3.4)	6.5 (2.6)	3.6 (1.4)
Ss	Sudbury sandy loam	MWD	0 to 3	0	1.8 (0.7)	0.1 (0.0)	0	0
UD	Udorthents-Urban land complex	VARIABLE	N/A	25.5 (10.3)	31.5 (12.8)	59.0 (23.9)	13.2 (5.3)	2.5 (1.0)
W	Water	SUBAQUIC	N/A	0.9 (0.4)	1.3 (0.5)	1.3 (0.5)	1.8 (0.7)	1.0 (0.4)
Wa	Walpole sandy loam	PD	0 to 1	5.1 (2.1)	0.2 (0.1)	0.2 (0.1)	4.5 (1.8)	0.2 (0.1)
Ws	Water, saline	SUBAQUIC	N/A	7.8 (3.1)	10.3 (4.2)	13.4 (5.4)	26.4 (10.7)	2.0 (0.8)

Source: USDA NRCS. 2022. Web soil survey. Https://websoilsurvey.Sc.Egov.Usda.Gov/app/websoilsurvey.Aspx. Accessed May 19, 2022.

Notes: VPD- very poorly drained; PD- poorly drained; MWD- moderately well drained; SED- somewhat excessively drained; ED- excessively drained; WD- well drained.

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6.4.1 Soil Series

The soil series detailed in the following subsections have been identified within the Onshore Study Areas. The classification follows the USDA NRCS Soil Series Descriptions.[28]

6.4.1.1 Beach Series

The Beach series consists of loamy-skeletal, mixed, superactive, calcareous, thermic Lithic Ustic Torriorthents. The soils are very shallow and shallow, well drained, moderately permeable soils that formed in residuum from hard, very fine grained, metamorphic sandstone. These sloping to steep soils are on sandstone hills and in valleys. The Beach soils are hard, very fine-grained sandstone and siltstone of the Precambrian Age.

Sandy beach series soil is found within the Onshore Study Areas of the common route and Route Variant 4. Cobble beach series soil is found within the Onshore Study Areas of Route Variants 1, 2, and 3.

6.4.1.2 Birchwood Series

The Birchwood series consists of mixed, mesic Aquic Udipsamments. The soils are very deep, moderately well drained soils formed in a mantle of sandy material overlying dense till on uplands. They are nearly level to strongly sloping soils on till plains that typically border outwash terraces and are on the landscape with sandy-skeletal and lack a dense substratum action soil, better drained Merrimack soils and loamy Newport soils.

Birchwood series soil is found within the Onshore Study Areas of the common route and all four route variants.

6.4.1.3 Dumps

This unit consists of areas used for trash disposal. The areas are throughout Rhode Island, and most are on outwash terraces. Many of the dumps are adjacent to streams. Dumps are commonly called landfills or sanitary landfills. They consist mostly of trash from residential and commercial areas. The trash is largely composed of paper, cans, plastic, and bottles and is covered daily with soil material. The older parts of some dumps were commonly burned but not covered with soil material. A few dumps include industrial waste, tree stumps, car bodies, concrete, and debris from demolished buildings.

The dump soil unit is present within the Onshore Study Area for the common route at the location of the former Portsmouth Town Dump, which is now capped.

6.4.1.4 Quonset Series

The Quonset series consists of sandy-skeletal, mixed, mesic Typic Udorthents. The soils are excessively drained and formed in glaciofluvial deposits derived from phyllite, shale, schist, and gneiss. They are on terraces and outwash plains and are on the landscape with excessively drained Hinckley and Windsor soils, somewhat excessively drained Merrimac soils, wells drained Agawam soils, and moderately well drained Sudbury soils. Quonset soils are darker than Hinckley or Windsor soils.

Quonset series soil is found within Onshore Study Areas of Route Variants 1 and 2.

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[28] United States Department of Agriculture's NRCS. Official Soil Series Descriptions. https://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/survey/class/data/?cid=nrcs142p2. Accessed April 23, 2022.

6.4.1.5 Matunuck

The Matunuck series consists of sandy, mixed, mesic Histic Sulfaquents. The soils are very deep, very poorly drained soils formed in shallow herbaceous organic material underlain by sandy marine or glaciofluvial deposits. They are in tidal marshes subject to tidal flooding by salt water twice daily and are on the landscape with Hooksan soils on nearby dunes and beaches, Ipswich soils with thicker organic materials, subaqueous soils mapped in shallow water areas include the Nagunt and Pishagqua soils.

Matunuck series soil is found within the Onshore Study Areas of the common route and all four route variants.

6.4.1.6 Merrimac Series

The Merrimac series consists of sandy, mixed, mesic Typic Dystrochrepts. The soils are somewhat excessively drained and formed in outwash deposits derived from schist, gneiss, and phyllite. They are on outwash plains and terraces and are on the landscape with excessively drained Hinckley and Windsor soils, well drained Agawam and Enfield soils, moderately well drained Sudbury soils, and poorly drained Walpole soils.

Merrimac series soil is found within the Onshore Study Areas of the common route and all four route variants.

6.4.1.7 Newport Series

The Newport series consists of coarse-loamy, mixed, mesic Typic Fragiochrepts. The soils are well drained and formed in compact glacial till derived from dark sandstone, conglomerate, argillite, and phyllite. They are on crests of drumlins and glacial till plains and are on the landscape with well drained Poquonock soils, moderately well drained Birchwood and Pittstown soils, poorly drained Stissing soils, and very poorly drained Mansfield soils.

Newport series soil is found within the Onshore Study Areas of the common route and Route Variant 4.

6.4.1.8 Newport-Urban Land Complex

The Newport-Urban land complex consists of well drained Newport soils and areas of Urban land. The complex is on drumlins and glacial till plains of densely populated areas mainly in southeastern Rhode Island.

Newport-Urban land complex soil is found within the Onshore Study Areas of the common route and Route Variant 4.

6.4.1.9 Pittstown Series

The Pittstown series consists of moderately well drained soils formed in lodgement till derived mainly from slate, phyllite, shale, and schist. These soils are very deep to bedrock and moderately deep to a densic contact. They are nearly level through moderately steep soils on uplands. They are on the landscape with well drained Bernardston, poorly drained Stissing, and very poorly drained Mansfield soils.

Pittstown series soil is found within the Onshore Study Areas of the common route and all four route variants.

6.4.1.10 Sandyhook Series

The Sandyhook series consists of sandy, mixed, mesic Haplic Sulfaquents. The soils are very deep, very poorly drained soils formed in thick sandy marine deposits along the Atlantic coast that are subject to daily tide flooding. Some pedons may contain sea shells and are on nearly level to gently sloping back-barrier flats and back-barrier beaches near tidal marshes along the Atlantic coast. They are on the landscape with the Barren, Hooksan, Ipswich, Matunuck, Pawcatuck, and Succotash soils that have free water just below the soil surface.

Sandyhook series soil is found within the Onshore Study Areas of the common route and all four route variants.

6.4.1.11 Sudbury Series

The Pittstown series consists of moderately well drained soils formed in lodgement till derived mainly from slate, phyllite, shale, and schist. These soils are very deep to bedrock and moderately deep to a densic contact. They are nearly level through moderately steep soils on uplands. Saturated hydraulic conductivity is moderately high or high in the mineral solum and moderately low or moderately high in the substratum. Nearby landscapes include the Hinckley and Windsor which are loamy sand and coarser in texture.

Sudbury series soil is found within the Onshore Study Areas of Route Variants 1 and 2.

6.4.1.12 Urban Land and Udorthents Series

Urban land consists mostly of sites for buildings, paved roads and parking lots. The areas are mostly rectangular and range from 5 to 100 ac. Soils included in this unit are small intermingled areas of Udorthents, somewhat excessively drained Merrimac soil, well drained Canton, Charlton, and Newport soils; moderately well drained Pittstown, Sudbury and Sutton soils.

Udorthents are moderately well drained to excessively drained soils that have been cut, filled, or eroded, typically by anthropogenic processes. The areas have had more than two feet of the upper part of the original soil removed or have more than two feet of fill on top of the original soil. Udorthents are extremely variable in texture. They are on glacial till plains and gravelly outwash terraces.

Urban land and udorthents series soil are found within the Onshore Study Areas of the common route and all four route variants.

6.4.1.13 Walpole Series

The walpole series consists of sandy, mixed, mesic aeric-halpquepts. The soils are poorly drained and formed in glaciofluvial deposits derived from schist, gneiss, and granite. They are in depressions and drainageways and are on the landscape with excessively drained hinckley soils, somewhat excessively drained merrimac soils, well drained agawam soils, moderately well drained sudbury, ninigret, and deerfield soils, and very poorly drained sarboro soil. The walpole series is nearly level, poorly drained soil and is found in depressions and small drainageways of terraces and outwash plains. Available water capacity is moderate, and runoff is slow. This soil has a seasonal high water table at a depth of about six inches from late fall through midspring. The soil is very strongly acid through medium acid. Most areas of this soil are in woodland. Some small areas are cleared and used for pasture or wildlife habitat. The seasonal high-water table makes the soil poorly suited to community development.

Walpole series soil is found within the Onshore Study Areas of the common route and all four route variants.

6.4.2 Prime Farmland Soils

Prime Farmland, as defined by the USDA, is the land that is best suited to producing food, feed, forage, fiber, and oilseed crops.[29] It has the soil quality, growing season, and moisture supply needed to economically produce a sustained high yield of crops when it is treated and managed using acceptable farming methods. Rhode Island has 35 prime farmland soils within the state.[30] Prime farmland soils can be used for various activities including cropland, pastureland, rangeland, forestland and other land. There are no USDA Prime Farmland Soils within the Study Areas for the HDD locations, any of the variants or along the common route.

6.4.3 Farmland of Statewide Importance

Farmland of statewide importance is land that is designated by the Rhode Island Department of Administration's Division of Planning and the USDA NRCS to be of statewide importance for the production of food, feed, fiber, forage, and oilseed crops.[31] Generally, farmlands of statewide importance include those lands that do not meet the requirements to be considered prime farmland, but that economically produce high crop yields when treated and managed with modern farming methods. Some may produce as high a yield as prime farmland if conditions are favorable.

To extend the additional protection of state regulation to prime farmland, the State of Rhode Island has expanded its definition of farmland of statewide importance to include all prime farmland areas. For Rhode Island, all USDA designated prime farmland soils are also farmland of statewide importance. The Onshore Study Areas for the common route and onshore Route Variant 3 each cross one soil phase associated with farmland of statewide importance. The Onshore Study Areas for onshore Route Variants 1, 2, and 4 each cross two soil phases associated with farmland of statewide importance. The areas of farmland soils of statewide importance within the Onshore Study Areas are presented in Table 6-4 below and shown in Figure 6-2. The calculations of estimated farmland soils of statewide importance are based on the buffered Onshore Study Areas, but soil disturbance related to the Project will be located within previously disturbed lands, namely public roadway ROWs.

[29] USDA NRCS. 2013. RI Soil Survey – Prime and Important Farmland – November 2013. https://www.nrcs.usda.gov/wps/portal/nrcs/detail/ri/soils.
[30] USDA NRCS. 2012. Prime and Other Important Farmlands State of Rhode Island: Bristol, Kent, Newport, Providence, and Washington Counties. November 2012.
[31] USDA NRCS. 2013. RI Soil Survey - Prime and Important Farmland - November 2013. https://www.nrcs.usda.gov/wps/portal/nrcs/detail/ri/soils/?cid=nrcs144p2_016661.

TABLE 6-4. FARMLAND SOILS OF STATEWIDE IMPORTANCE WITHIN THE STUDY AREAS

Soil Map Unit	Phase	Slope	Area within the Onshore Study Areas ac (ha)				
			Common Route	Route Variant 1 RWU Baypoint Residence Hall	Route Variant 2 Montaup Country Club	Route Variant 3 RIDEM/Aquidneck Land Trust	Route Variant 4 Mount Hope Bridge
QoC	Quonset gravelly sandy loam	3 to 15	0	1.7 (0.7)	29.5 (11.9)	0	0
Wa	Walpole sandy loam	0 to 1	5.1 (2.1)	0.2 (0.1)	0.2 (0.1)	4.5 (1.8)	0.2 (0.1)
NeC	Newport silt loam	8 to 15	0	0	0	0	7.6 (3.1)

6.4.4 Potentially Erosive Soils

The erodibility of a soil is dependent upon the slope of the land occupied by the soil and the texture of the soil. NRCS has characterized soil map units as highly erodible, potentially highly erodible, or not highly erodible due to sheet and rill erosion.[32] This determination is done by using the Universal Soil Loss Equation. The Universal Soil Loss Equation relates the effects of rainfall, soil characteristics, and the length and steepness of slope to the soil's tolerable sheet and rill erosion rate.

Soils are given an erodibility factor (K), which is a measure of the susceptibility of the soil to erosion by water. Soils having the highest K values are the most erodible. K values in Rhode Island range from 0.10 to 0.64, with the erodibility factor increasing as the K value increases and vary throughout the depth of the soil profile with changes in soil texture. Very poorly drained soils and certain floodplain soils usually occupy areas with little or no slope. Therefore, these soils are not subject to erosion under normal conditions and are not given an erodibility factor. See Table 6-5 below and Figure 6-2 for classified as a potentially erosive soil within the Onshore Study Areas.[33]

[32] Code of Federal Regulations (7 C.F.R. 12) - Highly Erodible Land Conservation and Wetland Conservation.
[33] USDA NRCS. 1993. Highly Erodible Soil Map Units of Rhode Island - Rhode Island Field office Technical Guide Section II D. https://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/nrcs144p2_016397.pdf. January 1993.

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TABLE 6-5. POTENTIALLY EROSIVE SOILS WITHIN THE STUDY AREAS

Soil Map Unit Symbol	Soil Phase	Percent Slope	Surface K Value	Area within the Onshore Study Areas ac (ha)				
				Common Route	Variant 1 RWU Baypoint Residence Hall	Variant 2 Montaup Country Club	Variant 3 RIDEM/Aquidneck Land Trust	Variant 4 Mount Hope Bridge
NeB	Newport silt loam	3 to 8	0.24	10.2 (4.1)	0	0	0	17.8 (7.2)
NeC	Newport silt loam	8 to 15	0.28	0	0	0	0	7.6 (3.1)
PmB	Pittstown silt loam	3 to 8	0.28	8.1 (3.3)	1.6 (0.6)	1.6 (0.6)	1.6 (0.6)	12.2 (4.9)
QoC	Quonset gravelly sandy loam, rolling	3 to 15	0.17	0	1.7 (0.7)	29.5 (12.0)	0	0
MmA	Merrimac sandy loam	0 to 3	0.24	5.1 (2.1)	23.6 (9.5)	24.6 (10.0)	11.3 (4.6)	5.3 (2.2)

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6.4.5 Marine Sediments

The sediment characteristics along the ECC were assessed with sediment surface grab samples taken along the ECC. The samples were obtained as part of site investigation field studies performed for the Project.[34] A total of 36 samples were taken of which 23 were within the ECC and were used to characterize the sediments for sediment transport modeling. The remaining samples were taken as controls for use in the lab analysis. The samples were processed to determine the grain size distribution from both sieve and hydrometer and to provide the moisture content and specific gravity.

The sediment grain size distribution was characterized along the ECC within Rhode Island state waters. In Mount Hope Bay the sediments are primarily fine silts and clays with varying amounts of sand. Sediments in the Sakonnet River ranged from fine silts to sands with varying amounts of gravel. At the mouth of the Sakonnet River (southern end) and moving into Rhode Island Sound the predominant sediment fraction is fine sand mixed with coarse and medium sand.

6.5 Surface Waters

This section discusses existing water quality conditions in the Onshore Study Area and the ECC. As shown in Figure 6-1B, the ECC extends from the Lease Area through Rhode Island Sound, the Sakonnet River, and makes an intermediate landfall on Aquidneck Island in Portsmouth, Rhode Island before entering Mount Hope Bay to make landfall at Brayton Point, in Somerset, Massachusetts. The portion of the ECC within Rhode Island jurisdiction is the subject of this Siting Report.

Available water quality data was obtained from within coastal and offshore marine waters in the vicinity of the proposed Project which have been collected by government and private entities, including the Center for Coastal Studies, the Northeast Fisheries Science Center (NEFSC), NOAA, USEPA, USGS, RIDEM, RI CRMC, and Massachusetts Department of Environmental Protection.

6.5.1 ECC within Sakonnet River and Mount Hope Bay

This section discusses available water quality data available for the Sakonnet River and Mount Hope Bay. The water quality parameters discussed include water temperature, salinity, chlorophyll *a*, nutrients, dissolved oxygen, and turbidity in the offshore locations and coastal ponds.

Available surface water quality data were also reviewed with available RIGIS data and the RIDEM Water Quality Regulations. Most of the ECC in Rhode Island is mapped as Class SA (see Figure 6-3), which are waters designated for shellfish harvesting for direct human consumption, primary and secondary contact recreational activities, and fish and wildlife habitat. A small portion is mapped as Class SB, which are waters designated for primary and secondary contact recreational activities, shellfish harvesting for controlled relay and depuration, and fish and wildlife habitat. Another small portion is mapped as Class SB1 which are waters designated for primary and secondary contact recreational activities and fish and wildlife habitat. They shall be suitable for aquacultural uses, navigation and industrial cooling. Primary contact recreational activities may be impacted due to pathogens from approved wastewater discharges however, all Class SB criteria must be met. Class SA, SB and SB1 waters have good aesthetic value.

6.5.2 ECC within Narragansett Bay Basin

The Rhode Island Project components are located within the Narragansett Bay Basin. Narragansett Bay extends approximately 30 mi (45 km) from north to south and 11 mi (18 km) at its widest point from

[34] Mayflower Wind Energy LLC, D.L. Mendelsohn, and J.C. Swanson. 2022. *Brayton Point Export Cable Hydrodynamic and Sediment Dispersion Model Report* (*Mayflower Wind Construction and Operations Plan Appendix F3 - Docket No. BOEM-2021-0062)*. March 1, 2022.

west to east.[35] The Narragansett Bay watershed is composed of nine subwatersheds and those that are located within the study areas are the Upper East Passage, Lower East Passage, and the Sakonnet River subwatersheds.[36] The bodies of water that are located within these watersheds are Saint Mary's Pond, Lawton Valley Reservoir, Sisson Pond, Barker Brook, Bloody Brook, an unnamed tributary to Lawton Valley Reservoir, Sisson Pond Brook, an unnamed tributary to Sisson Pond, Mother of Hope Brook, and Bailey's Brook. The Narragansett Bay Basin flows south into Rhode Island and Block Island sounds, and ultimately the Atlantic Ocean.

The major waterbodies within the ECC and/or receiving waters include the Sakonnet River, The Cove (Island Park), Founders Brook, tributaries to Founders Brook and Mount Hope Bay, as shown in Figure 6-4.

Water Use Categories

RI CRMC assigns water use categories for marine and coastal waters in accordance with the State or Rhode Island Coastal Resources Management Program as amended (aka, The Redbook) Section 2.00 Tidal and Coastal Pond Waters A.[37] There are six water use categories defined by this Program and the assigned categories are directly linked to the characteristics of the shoreline. The six categories include the following:

- Type 1 – Waters abutting the shoreline in a natural undisturbed condition.
- Type 2 – Waters that are adjacent to predominantly residential areas.
- Type 3 – Waters that are dominated by commercial facilities that support recreational boating.
- Type 4 – Waters include open waters of the Bay and the Sounds.
- Type 5 – Waters in ports with a mix of commercial and recreational activities
- Type 6 – Waters with water-dependent industrial and commercial activities that take precedence.

The Sakonnet River is designated as a Type 2 water. Type 2 waters are defined by the RI CRMC as having high scenic qualities, high value for fish and wildlife habitat, and with some exceptions, good water quality. Densely developed residential areas abut much of the waters in this category, and here docks and the activities and small-scale alterations associated with residential waterfronts may be suitable.

The Cove, which will not be crossed by the Project but is located within the study area, is designated as a Type 2 water, low-intensity use.

Mount Hope Bay, in the vicinity of the Project, is designated as Type 2 waters along the Portsmouth shoreline. Further offshore Mount Hope Bay is designated as Type 4 waters. Type 4 waters are categorized by (1) large expanses of open water in Narragansett Bay and the Sounds which support a variety of commercial and recreational activities while maintaining good value as fish and wildlife habitat, and (2) open waters adjacent to shorelines that could support water-dependent commercial, industrial, and/or high-intensity recreational activities. The shipping channel within Mount Hope Bay is designated as Type 6 waters. Type 6 waters are extensively altered in order to accommodate commercial and industrial water-dependent and water-enhanced activities. It is noted in the RI CRMC

[35] Chinman, R.A. and S.W. Nixon. 1985. *Depth-Area-Volume Relationships in Narragansett Bay.* The University of Rhode Island Marine Technical Report 87, U.R.I. Sea Grant, Graduate School of Oceanography, Narragansett, RI. 64 pp. 1985.
[36] Raposa, K.B., and M.L. Schwartz. 2009. *An Ecological Profile of the Narragansett Bay National Estuarine Research Reserve*. 2009.
[37] 650-RICR-20-00-1

"Redbook" that nearly all of Rhode Island's boating and shipping facilities require periodic dredging to maintain adequate water depths in channels and turning basins and berths.

Water Quality Classifications

The RIDEM Surface Water Quality Standards and Section 401 Water Quality Certification Regulations further categorize water quality standards for each waterbody. The waters of the State of Rhode Island (meaning all surface water and groundwater of the State) are assigned a Use Classification which is defined by the most sensitive uses which it is intended to protect. Waters are classified according to specific physical, chemical, and biological criteria which establish parameters of minimum water quality necessary to support the water Use Classification. The water quality classifications found within the Onshore Study Area and the ECC include the following, water quality criteria is defined per 250-RICR-150-05-1:

- Freshwater classifications
    - **Class AA:** These waters are designated as a source of public drinking water supply or as tributary waters within a public drinking water supply watershed (the terminal reservoir of the public drinking water supply are identified in § 1.25 of this Part), for primary and secondary contact recreational activities and for fish and wildlife habitat. These waters shall have excellent aesthetic value. Class AA waters used for public drinking water supply may be subject to restricted recreational use by State and local authorities.
    - **Class A:** These waters are designated for primary and secondary contact recreational activities and for fish and wildlife habitat. They shall be suitable for compatible industrial processes and cooling, hydropower, aquacultural uses, navigation, and irrigation and other agricultural uses. These waters shall have excellent aesthetic value.
    - **Class B:** These waters are designated for fish and wildlife habitat and primary and secondary contact recreational activities. They shall be suitable for compatible industrial processes and cooling, hydropower, aquacultural uses, navigation, and irrigation and other agricultural uses. These waters shall have good aesthetic value.
    - **Class B1:** These waters are designated for primary and secondary contact recreational activities and fish and wildlife habitat. They shall be suitable for compatible industrial processes and cooling, hydropower, aquacultural uses, navigation, and irrigation and other agricultural uses. These waters shall have good aesthetic value. Primary contact recreational activities may be impacted due to pathogens from approved wastewater discharges. However, all Class B criteria must be met.
    - **Class C:** These waters are designated for secondary contact recreational activities and fish and wildlife habitat. They shall be suitable for compatible industrial processes and cooling, hydropower, aquacultural uses, navigation, and irrigation and other agricultural uses. These waters shall have good aesthetic value.
- Saltwater classifications
    - **Class SA:** These waters are designated for shellfish harvesting for direct human consumption, primary and secondary contact recreational activities, and fish and wildlife habitat. They shall be suitable for aquacultural uses, navigation and industrial cooling. These waters shall have good aesthetic value.
    - **Class SB:** These waters are designated for primary and secondary contact recreational activities; shellfish harvesting for controlled relay and depuration; and fish and wildlife habitat. They shall be suitable for aquacultural uses (other than shellfish for direct

human consumption), navigation, and industrial cooling. These waters shall have good aesthetic value.

  - **Class SB1:** These waters are designated for primary and secondary contact recreational activities and fish and wildlife habitat. They shall be suitable for aquacultural uses (other than shellfish for direct human consumption), navigation, and industrial cooling. These waters shall have good aesthetic value. Primary contact recreational activities may be impacted due to pathogens from approved wastewater discharges. However, all Class SB criteria must be met.
  - **Class SC:** These waters are designated for secondary contact recreational activities, and fish and wildlife habitat. They shall be suitable for aquacultural uses, navigation, and industrial cooling. These waters shall have good aesthetic value.

Pursuant to the requirements of Section 305(b) of the federal Clean Water Act (CWA), water bodies that are determined to be not supporting their designated uses in whole or in part are considered impaired and scheduled for restoration. The federal CWA, under Section 305(b) requires states to assess and report on the overall quality of waters in their state including the 303(d) List of Impaired Waters. RIDEM prepared an Integrated Water Quality Monitoring and Assessment Report (Integrated Report) consisting of water quality assessment documentation previously reported in the 305(b) State of the State's Waters Report and the Integrated Lists, including the 303(d) List of Impaired Waters. The causes of impairment are those pollutants or other stressors that contribute to the actual chemical contaminants, physical parameters, and biological parameters. Sources of impairment are not determined until a TMDL assessment is conducted on a water body.

The State of Rhode Island Impaired Waters Report[38] provides an Integrated List consisting of five categories of water quality assessment information, with the fifth category being the list of impaired waters needing a TMDL. The Integrated Report Categories are presented below with a description of how the results of the individual assessments for each designated use on a waterbody are integrated to determine the final Integrated Report Category for each waterbody. In general, the integration of assessment determinations follows a hierarchical approach where a determination of impairment for any cause for any of the waterbody's designated uses will result in placement of the waterbody in Category 5. Similarly, there is a hierarchical approach to placement of a waterbody into Category 4A over 4B over 4C. Based on the state's Consolidated Assessment and Listing Methodology, the Integrated List is generated by placing each surface waterbody of the state into one of the following five assessment categories:

- **Category 1:** Attaining all designated uses.
- **Category 2:** Attaining some of the designated uses; and insufficient or no data and information is available to determine if the remaining uses are attained.
- **Category 3:** Insufficient or no data and information are available to determine if any designated use is attained or impaired.
- **Category 4:** Impaired or threatened for one or more designated uses but does not require development of a TMDL.
- **Subcategory 4A:** TMDL has been completed and approved by the USEPA.
- **Subcategory 4B:** Other pollution control requirements are reasonably expected to result in attainment of the water quality standard in the near future.

[38] RIDEM Office of Water Resources. 2021. State of Rhode Island 2018-2020 Impaired Waters Report. February 2021.

- **Subcategory 4C:** Impairment is not caused by a pollutant.
- **Category 5:** Impaired or threatened for one or more designated uses by a pollutant(s) and requires a TMDL.

Table 6-6 identifies the waterbodies, water use categories and types, water quality standards and impairment status designated by the RI CRMC and RIDEM.

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TABLE 6-6. SURFACE WATER CATEGORIES AND CLASSIFICATIONS

Waterbody	Water Use Category[a]	Water Quality[b]	TMDL[c]	Impairment Category[d]	Special Resource	Other
Sakonnet River (offshore)	2	SA	No	No	Recreation, ecological habitat, federal park, critical habitat (rare & endangered species)	Type 1 waters surround Gould Island
Sakonnet River (nearshore)	2	SA	Fecal Coliform	4A	No	X
The Cove (Island Park)	2	SA	No	2	No	X
Founders Brook	X (freshwater)	A	No	5 Enterococcus bacteria	Warm water fishery	Stream Order 1 (dissolved oxygen content of not less than 60% saturation
Mount Hope Bay	2	SA	Fecal Coliform	5 Fecal Coliform Dissolved Oxygen Total Nitrogen	No	X

Notes:
[a] Water use categories are defined in accordance with the RI CRMC "Red Book" (650-RICR-20-00-1). The definitions of the water use categories can be found above at the beginning of Section 7.5.2.
[b] Water quality classifications are defined in accordance with 250-RICR-150-05-1. The definitions can be found above in Section 7.5.2.
[c] TMDL is defined in accordance with 73 C.F.R. 41069 - Clean Water Act Section 303(d).
[d] The impairment categories for waterbodies in Rhode Island were identified in the State of Rhode Island 2018-2020 Impaired Waters Report.

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6.5.2.1 Sakonnet River

The Sakonnet River is a tidal straight flowing from Mount Hope Bay to Rhode Island Sound and located east of Narragansett Bay in Rhode Island. Physical and chemical data were collected from the Sakonnet River to characterize its water quality conditions in 2018 and 2019. The data was collected by the USGS at Buoy monitoring station 413642071125701 located in the Sakonnet River near Gould Island, Rhode Island (USGS Sakonnet River Station Buoy).[39] Data collected for water temperature, salinity, dissolved oxygen, chlorophyll a, turbidity, total nitrogen, and total phosphorus are provided in Table 6-7.

The Sakonnet River remains saline throughout the year due to tidal influence. Reaching peak temperatures in the summer months, the river also reaches its lowest dissolved oxygen levels (Table 6-7). Seasonal algal growth, seen as increased Chlorophyll a, as well as low dissolved oxygen levels have raised concern for the ecological health of the river. The primary causes of the observed water-quality impairments are the inputs of nutrients from wastewater management and stormwater runoff from the surrounding developed areas.[40]

The Sakonnet River is listed in the State of Rhode Island 2018-2020 Impaired Waters Report.[41] The waterbody is identified as Category 4A – Waterbodies for which a TMDL has been developed. The TMDL for fecal coliform was published in September 2011.[42] The TMDL indicates the impaired reach of the Sakonnet River includes waters north of a line extending from the southwestern-most corner of the stone bridge in Tiverton to the eastern-most extension of Morningside Lane in Portsmouth. The landfall for the offshore export cable on Aquidneck Island is within this reach. The 180-ac (73-ha) area is closed to shellfishing due to the presence of fecal coliform.

TABLE 6-7. WATER QUALITY PARAMETERS MEASURED IN THE SAKONNET RIVER NEAR GOULD ISLAND BY USGS (2018-2019)

Season	Water Temp. (°C) [1]	Salinity (psu) [1,2]	Dissolved Oxygen (mg/L) [1]	Chlorophyll *a* (µg/L) [1]	Turbidity (NTU) [1,2]	Total Nitrogen (mg/L) [1]	Total Phosphorus (mg/L) [1]
Spring (n=8)[3]	15.9 ± 2.4	29 ± 0.8	7.3 ± 0.4	5.9 ± 3.1	1.7 ± 0.7	0.23 ± 0.04	0.04 ± 0.01
Summer (n=28)[3]	22.9 ± 1.7	30.9 ±0.3	5.9 ± 0.8	6.5 ± 5.5	2.2 ± 0.5	0.29 ± 0.07	0.07 ±0.01
Fall (n=14)[3]	15 ± 4.4	29.3 ± 1.1	7.4 ± 0.9	2.7 ± 0.7	2.5 ± 0.7	0.34 ± 0.08	0.08 ± 0.01

Notes:

[1] Results show mean ± 1 standard deviation. psu = Practical Salinity Units; mg/L = milligrams per liter; µg/L = micrograms per liter; NTU = Nephelometric Turbidity Units; °C = degrees Celsius.

[2] Values for turbidity and salinity were only measured in 2018

[3] n= number of samples (not all samples were analyzed for all parameters).

Source: USGS. 2019. Water Quality Samples for USA: Sample Data. https://nwis.waterdata.usgs.gov/nwis/qwdata.

6.5.2.2 Mount Hope Bay

The Narragansett Bay Fixed-Site Monitoring Network is a network of 15 fixed-site monitoring stations that collect data to assess water quality throughout Narragansett Bay on a continuous basis. The Narragansett Bay Fixed-Site Monitoring Network is a collaboration between eight agencies, coordinated

[39] USGS. 2019. *Water Quality Samples for USA: Sample Data*. https://nwis.waterdata.usgs.gov/nwis/qwdata.

[40] USGS. 2019. *Water Quality Samples for USA: Sample Data*. https://nwis.waterdata.usgs.gov/nwis/qwdata.

[41] RIDEM Office of Water Resources. 2021. State of Rhode Island 2018-2020 Impaired Waters Report. February 2021.

[42] RIDEM. 2011. *Rhode Island Statewide Total Maximum Daily Load (TMDL) for Bacteria Impaired Waters*. http://www.dem.ri.gov/programs/benviron/water/quality/swbpdf/coretmdl.pdf

in lead by the RIDEM Office of Water Resources.[43] There are two fixed-location buoys in Mount Hope Bay maintained by the University of Rhode Island Graduate School of Oceanography and Massachusetts Department of Environmental Protection. The Cole River and Taunton River buoys collect data during the summer and early fall between May and November. Data collected from these stations are available for the 2017 and 2018 seasons.[44] The Mount Hope Bay water quality assessment included water temperature, salinity, dissolved oxygen, chlorophyll *a*, and total nitrogen measurements. Water quality results for the Mount Hope Bay data set are provided in Table 6-8.

Mount Hope Bay is not listed as an impaired waterbody in the State of Rhode Island 2018-2020 Impaired Waters Report.[45] Current monitoring data from this waterbody indicates that water quality standards for the once impaired Bay are now being met. In 1996 RIDEM included Mount Hope Bay on its impaired waters list due to the sharp decline in the number and diversity of fish associated with operations of the Brayton Point Power Station in Somerset.[46] It was once identified as Impairment Category 2 - impaired or threatened for one or more designated uses by a pollutant(s) and requires a TMDL. The TMDL for fecal coliform was published January 14, 2010.[47] Mount Hope Bay was delisted as an impaired waterbody in 2021 because TMDL for the impairment has been completed and approved by EPA and other pollution control requirements are reasonably expected to result in attainment of the water quality standard associated with the impairment.[48]

TABLE 6-8. MEAN AND STANDARD DEVIATION FOR WATER QUALITY PARAMETERS MEASURED IN MOUNT HOPE BAY (2017-2018)

Year	Site	Water Temp. (°C)[1]	Salinity (psu)[1]	Dissolved Oxygen (mg/L)[1]	Chlorophyll (RFU)[1]	Nitrate-N (mg/L)[1]
2017	Taunton River	20.3 ± 3.2	27.4 ± 1.2	7.4 ± 1.3	2.5 ± 2.2	0.12 ± 0.06
	Cole River	20.5 ± 3.3	27.9 ± 1.9	7.9 ± 1.3	4.3 ± 3.7	0.13 ± 0.06
2018	Taunton River	21.3 ± 4.3	27.2 ± 2.6	7.1 ± 1.2	2.7 ± 2.2	0.18 ± 0.08
	Cole River	21.4 ± 4.4	27.5 ± 2.1	7.5 ±1.2	2.7 ± 2.0	0.16 ± 0.06

Note:
[1] Results show mean ± 1 standard deviation. psu = Practical Salinity Units; mg/L = milligrams per liter; RFU = relative fluorescence units; °C = degrees Celsius.
Source: Narragansett Bay Fixed-Site Monitoring Network. 2018. Mount Hope Bay Marine Buoys [Water Quality Continuous Multiprobe Data Files]. https://www.mass.gov/info-details/mount-hope-bay-marine-buoy-continuous-probe-data#data-files-for-mount-hope-bay-marine-buoys-.

6.5.2.3 Offshore and Coastal Existing Conditions

This section provides a discussion of the water quality data available from the sources identified in the sections above. The water quality parameters discussed in this section include water temperature, salinity, chlorophyll a, nutrients, dissolved oxygen, and turbidity in the offshore locations and coastal ponds. This section discusses available water quality data available for Sakonnet River and Mount Hope Bay.

[43] RIDEM. n.d. Fixed-Site Monitoring Stations and Data in Narragansett Bay. http://www.dem.ri.gov/programs/emergencyresponse/bart/stations.php. Accessed May 19, 2022.
[44] Narragansett Bay Fixed-Site Monitoring Network. 2018. *Mount Hope Bay Marine Buoys [Water Quality Continuous Multiprobe Data Files].* https://www.mass.gov/info-details/mount-hope-bay-marine-buoy-continuous-probe-data#data-files-for-mount-hope-bay-marine-buoys-.
[45] RIDEM Office of Water Resources. 2021. State of Rhode Island 2018-2020 Impaired Waters Report. February 2021.
[46] State of Rhode Island. 2021. Press Release: RI's List of Impaired Waters Approved by USEPA. February 26, 2021.
[47] RIDEM Office of Water Resources Surface Water Protection Section. 2010. Total Maximum Daily Load Study for Bacteria - Mount Hope Bay and the Kickemuit Estuary. January 2010.
[48] RIDEM Office of Water Resources. 2021. Final 2018-2020 Delisting Document - Waterbody Impairments Removed from the Impaired Waters Lists. January 2021.

Temperature

Offshore water temperatures are influenced by seasonal mixing of water masses, estuarine outflows, and air-sea interactions. Water temperatures vary on a seasonal basis, warming in the spring, peaking in late summer, and cooling in the fall and into the winter. Narragansett Bay Fixed-Site Monitoring Network buoy data from its Cole River and Taunton River buoys in Mount Hope Bay show mean temperatures from May to November of 2017 and 2018 (Table 6-8). Temperatures at each location were relatively the same each year during the monitoring season, averaging between 68°F and 70°F (20 and 21 degrees Celsius [°C]).[49]

Salinity

Like temperature, salinity may vary based on seasonal changes and currents, but the changes are more minimal than for temperature. The USGS data for the Sakonnet River (Table 6-7) shows a mean salinity of approximately 30 practical salinity units in the spring, summer and fall.[50] The Sakonnet River is a tidal straight with most influence coming from the Rhode Island Sound and Atlantic Ocean. Further upstream in Mount Hope Bay, mean salinity (Table 6-8) is slightly lower due to the freshwater influence from the Taunton and Cole rivers as well as the surrounding Narragansett watershed.[51]

Chlorophyll *a*

Chlorophyll *a* is a photosynthetic green pigment found in most phytoplankton and plant cells. Measuring chlorophyll *a* in the surface water is an indication of how much primary production is occurring in the surface of the ocean. Chlorophyll *a* is used as an indicator for eutrophication and levels will increase with increased phytoplankton production, which is often related to increased nutrient inputs.

The USGS reported Chlorophyll *a* in the Sakonnet River in 2018 and 2019 and there was some seasonal variability (Table 6-7).[52] During the summer, median concentrations of Chlorophyll *a* were 6.5 micrograms per liter (µg/L) while during the fall median concentrations were 2.7 µg/L. Upstream in Mount Hope Bay, the Chlorophyll *a* concentrations were slightly lower (Table 6-8).[53]

Nutrients

Nitrogen and phosphorus are two of the primary nutrients measured in coastal and marine waters. These nutrients are required for the growth of algae and phytoplankton, but excessive levels of these nutrients can lead to eutrophication, reduced water clarity, and lower levels of dissolved oxygen.

The USGS reported total nitrogen and total phosphorus concentrations for the Sakonnet River (Table 6-7), and the Narragansett Bay Fixed-Site Monitoring Network reported nitrate-N concentrations for Mount Hope Bay were much higher than in the Rhode Island Sound (Table 6-8). While both studies reported nutrients differently than the Center for Coastal Studies and USEPA National Coastal Condition Assessment studies, they indicated that nutrients were higher in the Sakonnet River and Mount Hope Bay. The Sakonnet River experienced its highest amount of nutrients, both nitrogen and phosphorus, in the fall season. Nutrient inputs are expected to come from the surrounding Narragansett Bay watershed, consisting of mostly developed land.

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[49] Narragansett Bay Fixed-Site Monitoring Network. 2018. Mount Hope Bay Marine Buoys [Water Quality Continuous Multiprobe Data Files]. https://www.mass.gov/info-details/mount-hope-bay-marine-buoy-continuous-probe-data#data-files-for-mount-hope-bay-marine-buoys-.
[50] USGS. 2019. *Water Quality Samples for USA: Sample Data*. https://nwis.waterdata.usgs.gov/nwis/qwdata.
[51] Narragansett Bay Fixed-Site Monitoring Network. 2018. Mount Hope Bay Marine Buoys [Water Quality Continuous Multiprobe Data Files]. https://www.mass.gov/info-details/mount-hope-bay-marine-buoy-continuous-probe-data#data-files-for-mount-hope-bay-marine-buoys-.
[52] USGS. 2019. *Water Quality Samples for USA: Sample Data*. https://nwis.waterdata.usgs.gov/nwis/qwdata.
[53] Narragansett Bay Fixed-Site Monitoring Network. 2018. Mount Hope Bay Marine Buoys [Water Quality Continuous Multiprobe Data Files]. https://www.mass.gov/info-details/mount-hope-bay-marine-buoy-continuous-probe-data#data-files-for-mount-hope-bay-marine-buoys-.

Dissolved Oxygen

Dissolved oxygen is essential for maintaining present conditions for aquatic life. Concentrations below 2.0 mg/L can lead to hypoxia, which is detrimental to most organisms. Dissolved oxygen level can be influenced by physical factors (e.g., water temperature) and biological factors (e.g., respiration, photosynthesis, and bacterial decomposition).

In the USGS data, the Sakonnet River dissolved oxygen levels were lowest in the summer months. During the summer the mean dissolved oxygen is about 5.9 mg/L (Table 6-7).[54] The Cole River and Taunton River buoys report healthy mean dissolved oxygen levels for Mount Hope Bay of around 7.5 mg/L (Table 6-8).[55]

Turbidity

Turbidity is a measure of water clarity or how much the material suspended in the water column decreases light penetration. Excessively turbid water can be detrimental to water quality if suspended sediments settle out and bury benthic communities, adversely affect filter feeders, or block sunlight needed by submerged vegetation.

Turbidity in the Sakonnet River reported by USGS (Table 6-7) was highest in the summer and fall seasons but overall, relatively low (less than 10 Nephelometric Turbidity Units).[56]

Turbidity was not reported by the Narragansett Bay Fixed-Site Monitoring Network for Mount Hope Bay.[57]

6.5.3 Onshore Freshwater Resources

There are several freshwater streams and ponds present in the vicinity of the onshore export cable route variants. The four proposed route variants and the common route pass near Founders Brook, a 1.2-mi (1.9-km)-long stream. It is categorized as Water Quality Standard A (designated for primary and secondary contact recreational activities and for fish and wildlife habitat, suitable for compatible industrial processes and cooling, hydropower, aquacultural uses, navigation, and irrigation and other agricultural uses, excellent aesthetic value).[58,59] The ponds located along the three route variants and common route are small, unnamed and do not have water quality data available. Along the shoreline, closest to route Variant 2, there are some shallow coastal bays in the vicinity of the onshore export cable route that make up Island Park Cove. No other surface waters are present within the Onshore Study Areas.

6.5.4 Floodplain

Special Flood Hazard Areas are areas that are subject to inundation by the 1 percent annual-chance flood, including areas with the 2 percent wave runup, elevation less than 3 feet above the ground, and areas with wave heights of less than e percent, or greater. Available studies and backup data provided by the Federal Emergency Management Agency for Washington County, Rhode Island were reviewed, including Flood Insurance Rate Map Panels 44005C0038J and 44005C0101J effective October 16, 2013.

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[54] USGS. 2019. *Water Quality Samples for USA: Sample Data*. https://nwis.waterdata.usgs.gov/nwis/qwdata.
[55] Narragansett Bay Fixed-Site Monitoring Network. 2018. Mount Hope Bay Marine Buoys [Water Quality Continuous Multiprobe Data Files]. https://www.mass.gov/info-details/mount-hope-bay-marine-buoy-continuous-probe-data#data-files-for-mount-hope-bay-marine-buoys-.
[56] USGS. 2019. *Water Quality Samples for USA: Sample Data*. https://nwis.waterdata.usgs.gov/nwis/qwdata.
[57] Narragansett Bay Fixed-Site Monitoring Network. 2018. Mount Hope Bay Marine Buoys [Water Quality Continuous Multiprobe Data Files]. https://www.mass.gov/info-details/mount-hope-bay-marine-buoy-continuous-probe-data#data-files-for-mount-hope-bay-marine-buoys-.
[58] RIDEM Office of Water Resources. 2021. State of Rhode Island 2018-2020 Impaired Waters Report. February 2021.
[59] RIDEM. 2014. *Consolidated Assessment and Listing Methodology for the Preparation of the Integrated Water Quality Monitoring and Assessment Report.* http://www.dem.ri.gov/programs/benviron/water/quality/pdf/calm14.pdf

Based on available Flood Insurance Rate Map Panels, a portion of the Onshore Study Areas is in a coastal Zone AE with a base flood elevation of 13 ft (4.0 m), a portion of the Study Area in Zone AE with a base flood elevation of 15 ft. The other portions are within coastal Zone VE with base flood elevations of 15 ft, 17 ft, and 20 ft. Portions of the Study Area are also located within areas mapped as Zone X or unmapped areas.[60]

6.6 Groundwater Resources

The Onshore Study Areas for the onshore export cables are not within a community wellhead protection area, groundwater recharge area, or sole source aquifer.[61] RIDEM established groundwater quality standards and preventative action limits by classes to protect public health. The Onshore Study Area is mapped as both Class GA for groundwater classification. Class GA waters are presumed to be suitable for drinking without treatment, but it is not considered a priority area for groundwater resources (see Figure 6-5). There are no mapped drinking water protection areas along the export cable route in Rhode Island.

6.7 Land Cover Types and Vegetation

This section discusses vegetation and mapped key habitat types and ecological communities for the Onshore Study Areas. Vegetated areas within the Onshore Study Areas were classified using RIGIS data and the Rhode Island Ecological Communities Classification System.[62] Tidal habitats were identified in accordance with the Coastal Resources Management Plan (CRMP; 650-RICR-20-00-1) classifications and are discussed within Section 6.8. Upland vegetation habitat types are listed in Table 6-9 and are discussed below.

TABLE 6-9. PORTSMOUTH, RI STUDY AREA UPLAND HABITAT TYPES

Habitat Type	Area with the Onshore Study Areas ac (ha)				
	Common Route	Variant 1 RWU Residence Hall	Variant 2 Montaup Country Club	Variant 3 RIDEM/Aquidneck Land Trust	Variant 4 Mount Hope Bridge
Cropland	5.7 (2.3)	4.1 (1.6)	4.1 (1.6)	4.1 (1.6)	8.1 (3.3)
Oak Forest	3.3 (1.3)	0.9 (0.4)	7.0 (2.8)	0	0
Ruderal Forest	1.2 (0.5)	2.0 (0.8)	2.4 (1.0)	2.1 (0.8)	4.5 (1.8)
Ruderal Grassland/Shrubland	24.4 (9.9)	19.4 (7.8)	16.3 (6.6)	18.1 (7.3)	12.3 (5.0)
Urban/Recreational Grasses	1.4 (0.6)	27.0 (10.9)	56.5 (22.9)	4.5 (1.8)	0.2 (0.1)
Urban/Suburban Built	42.3 (17.1)	18.9 (7.6)	35.5 (14.4)	12.0 (4.9)	60.9 (24.6)

[60] Federal Emergency Management Agency (FEMA). 2015. *Flood Hazard Areas*. October 26, 2015. https://www.arcgis.com/sharing/rest/content/items/a32aa537323f4132a767b10a4eda4fd2/info/metadata/metadata.xml?format=default&output=html.

[61] RIDEM. 2021. *RI_Drinking_Water_Supplies GIS Feature Layer.* October 12, 2021. https://ridemgis.maps.arcgis.com/home/item.html?id=d695d418523c46e7a280bd35e29776c9. Accessed April 15, 2022.

[62] Enser, R., D. Gregg, C. Sparks, P. August, P. Jordan, J. Coit, C. Raithel, B. Tefft, B. Payton, C. Brown, C. LaBash, S. Comings, and K. Ruddock. 2011. Rhode Island Ecological Communities Classification. Technical Report. Rhode Island Natural History Survey. https://www.rigis.org/documents/edc::ri-ecological-communities-classification-report/explore. October 4, 2011.

6.7.1 Cropland

Cropland is land used for the production of annual-cycle crops including (corn, potatoes, small grains, vegetables, flowers, etc.), and perennial crops associated with orchards, vineyards, nurseries, sod farms, and Christmas tree farms. Plant cover may vary by season or from time to time depending on farm activities but in Rhode Island types that can commonly be described include: vegetables, turf, orchard, vineyard, and Christmas trees

6.7.2 Oak Forest

Oak Forests are forest communities dominated by oaks (*Quercus*). Species composition are generally dependent on site conditions, especially soil type and hydrology. Variants include: Black Oak/Scarlet Oak – Heath Forest, White Oak – Mountain Laurel Forest, Chestnut Oak Forest, Mixed Oak – American Holly Forest, and Mixed Oak/Hickory Forest. According to the RI WAP, deciduous forest dominated by oaks is the most widely distributed habitat type in Rhode Island.[63]

6.7.3 Ruderal Forest

Ruderal Forests are undifferentiated upland forests, typically even-aged, resulting from succession following removal of native woody cover for agriculture or logging. Soil alteration from agriculture tends to lead to low-diversity forests, often with exotic species in the understory, that do not resemble natural forest systems. Generally, a ruderal forest is characterized by a combination of early-successional trees that cannot be identified as natural ecological systems even in an incipient state. (If a forest has sufficient cover of indicator trees for a particular “natural” community, even with a presence of early-successional trees, it is classed as that forest system.) These forests often contain substantial amounts of red maple (*Acer*), white pine (*Pinus*), red cedar (*Juniperus*), aspen (*Populus*), and gray birch (*Betula*), with associates of sassafras (*Sassafras*), black locust (*Robinia*), hawthorn (*Crateagus*), apple (*Pyrus*), pin cherry (*Prunus*), and sometimes walnut (*Juglans*). Where soil disturbance has not been severe, many sites will follow a trajectory towards one of the later successional and more natural forest communities.

6.7.4 Urban/Recreational Grasses

Urban and Recreational Grasses are managed grasslands planted in developed settings for recreation, erosion control, aesthetic, or other purposes. Examples of types that may be distinguished include lawns, parks, golf courses, highway medians, and cemeteries. Managed/maintained lawn provides limited utility to some species of wildlife, such as passerines and rodents, in an otherwise heavily developed industrial and commercial area.

6.7.5 Urban/Suburban

Urban and Suburban Land is comprised of areas of intensive use with much of the land covered by structures. Included in this category are cities, towns, villages, strip developments along highways, paved highway and roadway surfaces, transportation, power, and communications facilities, and areas such as those occupied by mills, shopping centers, industrial and commercial complexes.

6.7.6 Ruderal Grassland/Shrubland

Ruderal Grassland and Shrubland are anthropogenic communities of herbaceous or mixed herb/shrub vegetation resulting from succession following complete removal of native woody cover. Ruderal Grassland and Shrubland may include old field, clear-cut, hedgerow, or utility rights-of-way ecological

[63] RIDEM. 2015. *Rhode Island Wildlife Action Plan*. http://www.dem.ri.gov/programs/fish-wildlife/wildlifehuntered/swap15.php. Accessed April 15, 2022.

communities. Within the Onshore Study Areas there are noted ruderal grassland/shrubland that consist of herbaceous and woody species. Ruderal grasslands and shrublands constitute early successional habitats, defined by Anderson et al. (1976) as uplands where the potential natural vegetation is predominantly grasses, grass-like plants, forbs or shrubs.[64] Such habitats are typically anthropogenically created or maintained due to management strategies.

6.8 COASTAL AND FRESHWATER WETLANDS

Wetlands have been identified as resources potentially providing ecological functions and societal values. Wetlands are characterized by three criteria including the (i) presence of undrained hydric soils, (ii) a prevalence (>50%) of hydrophytic vegetation, and (iii) wetland hydrology, soils that are saturated near the surface or flooded by shallow water during at least a portion of the growing season.

6.8.1 Freshwater Wetlands and Waterbodies

State-regulated freshwater wetlands, coastal/tidal wetlands, and streams within 500 ft of the underground export cable routes on Aquidneck Island were mapped using the wetlands shapefile accessed via the RIGIS website.[65] Mapped resources were reviewed and ground-truthed in the field in the winter within the public road ROWs in December of 2021. Figure 6-6 depicts both the field delineated and GIS mapped wetlands within the Study Area and Table 6-10 details the delineated and approximated wetlands using survey data and available GIS data from the RIGIS website.

TABLE 6-10. FRESHWATER WETLANDS WITHIN THE ONSHORE STUDY AREAS

Wetland Type	Area of Wetlands within the Onshore Study Areas ac (ha)				
	Common Route	Variant 1 RWU Baypoint Residence Hall	Variant 2 Montaup Country Club	Variant 3 RIDEM/Aquidneck Land Trust	Variant 4 Mount Hope Bridge
Field Delineated Wetlands[1] in ac (ha)	1.7 (0.68)	1.9 (0.76)	4.16 (1.69)	1.9 (0.76)	1.9 (0.75)
Field Delineated Wetlands[1] in ft (m)	6,461 (1,969)	2,539 (774)	2,654 (809)	2,539 (774)	3,262 (994)
Approximated Wetlands in ac (ha)	23 (9)	32 (13)	17 (7)	58 (23.6)	6.2 (2.2)

[1]Resource areas included here refer to delineated wetland resources ground-truthed during field surveys in 2021. Field surveys were limited to within public road ROWs. Some wetland field data is available as complete polygons presented in terms of area and some field data is available as boundary lines presented in linear feet. Wetlands on private land have not yet been field delineated.

Field methodology for the delineation of State-regulated resource areas was based upon vegetative composition, presence of hydric soils, and evidence of wetland hydrology. Based on the Rhode Island Freshwater Wetlands Act and the CRMC Freshwater Wetland Rules, State-regulated freshwater wetlands include swamps, marshes, bogs, forested or shrub wetlands, emergent plant communities and other areas dominated by wetland vegetation with evidence of wetland hydrology. Swamps are defined as wetlands dominated by woody species and are three acres in size, or greater. Marshes are wetlands dominated by emergent species and are one acre or greater in size. Emergent wetlands communities are

[64] Anderson, J.R., E.E. Hardy, J.T. Roach, and R.E. Witmer. 1976. *A Land Use and Land Cover Classification System for Use with Remote Sensor Data*. Geological Survey Professional Paper 964, A revision of the land use classification system as presented in U.S. Geological Survey Circular 671.

[65] RIGIS. 1993. *Wetlands; s44wwt93*. https://www.rigis.org/datasets/edc::wetlands-1993/about. Accessed April 15, 2022.

areas similar to marshes in vegetation composition; however, they are less than one acre in size. Forested and shrub wetlands are also dominated by woody species, similar to swamps, but do not meet the three-acre size criteria.

The upland area within 50 feet of the edge of a swamp, marsh, or bog is regulated as the Wetland Buffer under the Freshwater Wetland Rules. Emergent wetland communities, forested wetlands, and shrub wetlands do not merit a 50-foot Wetland Buffer. In addition to these vegetated wetland communities, Rhode Island also regulates activities in and around streams and open water bodies, which include Rivers, Ponds, and Areas Subject to Storm Flowage (ASSF). A River is any perennial stream indicated as a blue line on a USGS 7.5-minute series topographic map. If the River or stream is less than 10 ft wide, the area within 100 ft of each bank is regulated as 100-ft Riverbank Wetland. If the River or stream is greater than 10 ft wide, the area within 200 ft of each bank is regulated as 200-ft Riverbank Wetland. A Pond is an area of open standing or slow-moving water present for six or more months during the year and at least one-quarter acre in size. Ponds have a 50-ft Wetland Buffer associated with the boundary. An ASSF is defined as any body of flowing water defined by a scoured channel or change in vegetative composition or density that conveys storm runoff into or out of a wetland.

Updated RI CRMC regulations relating to "Freshwater Wetlands in the Vicinity of the Coast" (650-RICR-20-00-9) go into effect on July 1, 2022. Under these new regulations, RI CRMC will no longer regulate "Riverbank Area" and "Perimeter Wetland" portions of freshwater wetlands in the vicinity of the coast. Under the new regulations, RI CRMC will regulate a Jurisdictional Area which includes the resource (i.e., wetland or stream) and a contiguous area extending 200 ft outward from a stream and 100 ft outward from a freshwater wetland. The contiguous area includes the resource's buffer zone, and buffer.

Project wetland community type(s) assigned to wetlands as mapped by the National Wetland Inventory per the wetlands and deepwater classification system located within the Study Area are listed in Table 6-11 and are described below.[66]

TABLE 6-11. WETLAND TYPES WITHIN THE STUDY AREA

Wetland Type	Area within the Study Area ac (ha)				
		Variant 1	Variant 2	Variant 3	Variant 4
	Common Route	RWU Baypoint Residence Hall	Montaup Country Club	RIDEM/Aquidneck Land Trust	Mount Hope Bridge
Estuarine Emergent Wetland	14.7 (5.9)	24.5 (9.9)	8.9 (3.6)	47.7 (19.3)	0.7 (0.3)
Emergent Wetland: Marsh/Wet Meadow	3.6 (1.5)	1.8 (0.7)	1.8 (0.7)	1.8 (0.7)	1.6 (0.7)
Marine/Estuarine Unconsolidated Shore	0	2.0 (0.8)	2.5 (1.0)	2.5 (1.0)	1.0 (0.4)
Forested Wetland: Deciduous	0.6 (0.2)	0.1 (0.0)	0.1 (0.0)	0.1 (0.0)	0.1 (0.0)
Palustrine Open Water	1.6 (0.6)	1.9 (0.8)	1.9 (0.8)	1.5 (0.6)	1.3 (0.5)
Riverine Nontidal Open Water	0.8 (0.3)	1.2 (0.5)	1.2 (0.5)	2.4 (1.0)	0.9 (0.4)
Scrub-Shrub Swamp	1.2 (0.5)	0.8 (0.3)	0.8 (0.3)	2.2 (0.9)	0.5 (0.2)
Total	**22.5 (9.1)**	**32.4 (13.1)**	**17.2 (7.0)**	**58.3 (23.6)**	**6.2 (2.5)**

[66] Federal Geographic Data Committee. 2013. *Classification of Wetlands and Deepwater Habitats of the United States.* August 2013.

To minimize impacts on the offshore and nearshore environments, HDD "trenchless" technology will be used for the landfall operations to avoid impact to intertidal, coastal and freshwater systems. The HDD will be advanced well below the surface of coastal resources avoiding impacts to coastal beach and dune, coastal shrubland and grassland, brackish marsh, and tidal salt marsh.[67]

6.8.1.1 Estuarine Emergent Wetland

Estuarine emergent wetland is a salt marsh dominated by persistent salt marsh grasses in an intertidal wetland system.

6.8.1.2 Emergent Wetland: Marsh/ Wet Meadow

Marshes and wet meadows are freshwater wetlands dominated by a persistent emergent (non-woody) vegetation. Persistent vegetation is described as having stems and leaves evident all year above the surface of the water or above the soil surface, if water is absent. Within the Study Area this habitat type was present in the form of Freshwater Wetlands in the Vicinity of the Coast dominated by *Phragmites australis.*

6.8.1.3 Marine and Estuarine Unconsolidated Shore

Marine and estuarine unconsolidated shores are beach systems. An unconsolidated shore has less than 75 percent cover of stones, boulders, or bedrock and has less than 30 percent areal cover of vegetation, other than pioneering plants, and has a tidal water regime. Island Park Beach, located along the common route at the south end of Boyd's Lane, is a marine unconsolidated shore within the study area.

6.8.1.4 Forested Wetland: Deciduous

Forested deciduous wetlands are freshwater wetlands dominated by broad-leaved deciduous trees with at least 30 percent areal cover. Trees are defined as woody plants at least 6.0 m (20 ft) in height.

6.8.1.5 Palustrine Open Water

Palustrine open water is a freshwater pond with less than 30 percent vegetation cover.

6.8.1.6 Riverine Nontidal Open Water

Riverine Nontidal Open Water is a river system. A river system is contained within a channel and has water containing less than 0.5 part per thousand of ocean-derived salts. River systems also include smaller channels of water that some would colloquially refer to as a stream or brook, such as Founders Brook in Portsmouth, Rhode Island.

6.8.1.7 Scrub-Shrub Swamp

Scrub-Shrub Swamp is freshwater wetland dominated by shrubs with at least 30 percent areal cover. Shrubs are defined as being woody plants less than 6.0 m (20 ft tall).

6.8.2 Coastal Wetlands and Waterbodies

The CRMC regulates freshwater wetlands through the CRMP and Freshwater Wetland Rules.[68] Definitions of the wetlands and waterways under CRMC jurisdiction fall into two categories: regulated

[67] RIDEM. 2015. *Rhode Island Wildlife Action Plan*. http://www.dem.ri.gov/programs/fish-wildlife/wildlifehuntered/swap15.php. Accessed April 15, 2022.
[68] 650-RICR-20-00-1.1.2.A.

shoreline features as defined in in § 1.2.2 (A) through 1.2.2 (G) in the CRMP and freshwater wetlands as defined in §2.4 of Freshwater Wetland Rules. Freshwater wetlands are discussed within Section 6.7.1. Regulated shoreline features include:

- Coastal Beaches
- Coastal Wetlands
- Coastal Headlands, Bluffs, and Cliffs
- Manmade Shorelines
- Dunes
- Freshwater Wetlands in the Vicinity of the Coast

Mayflower Wind identified and mapped one coastal beach system and 10 wetlands within the review area.

6.8.2.1 Coastal Beaches

Island Park Beach is located south of the intersection of Boyds Land and Park Avenue and includes coastal beach, dune, and manmade shoreline features. The beach consists of unconsolidated medium grained sand and rounded gravel from the low tide line to foredune. Dune habitat is comprised of wind- and/or wave-deposited sand with a vegetative community dominated by American beach grass (*Ammophila breviligulata*) and rugosa rose (*Rosa rugosa*). The upper limit of the dune abuts an approximately 36-inch-high concrete seawall parallel with Park Avenue. Mapped soils underlying the area include Beaches, sand (Ba), and Udorthents-Urban land complex (UD), a non-hydric soil.

Coastal Wetlands

Wetland W1 is a Freshwater Wetland in the vicinity of the coast located at the toe of embankment slope within a depression between Route 24 southbound, the Route 24 southbound Exit 2 ramp, and the eastern side of Boyds Lane. This wetland consists of a palustrine emergent marsh dominated by common reed and is <1.0 ac in size. The wetland appears to be anthropogenic in nature and may be a component of the highway stormwater treatment system. No defined outlet or inlets other than highway stormwater outfalls were observed. The wetland extends beyond the review area to the northeast. Soils underlying the wetland are mapped as Walpole sandy loam (Wa), a hydric soil.

Wetland W2 is a Freshwater Wetland in the vicinity of the coast located between Old Boyds Lane and the southwestern side of Boyds Lane north of Route 24. This wetland is a palustrine emergent marsh dominated by common reed and appears to be >1.0 ac in size. National Hydrography Dataset mapping indicates Founders Brook flows through this wetland and discharges into Wetland W6 on the north side of Boyds Lane. The wetland extends beyond the review area to the southwest. Soils underlying the wetland are mapped as Wa and UD.

Wetland W3 is a Freshwater Wetland in the vicinity of the coast located north of the intersection of Boyds Lane and Anthony Road. This wetland system contains Founders Brook and is classified as a riverine perennial unconsolidated bottom channel of unknown depth bordered by a palustrine emergent marsh dominated by common reed. The wetland appears to be >1.0 ac in size and separated from an adjacent coastal wetland by a linear upland berm. Soils underlying the wetland are mapped as Matanuck mucky peat (Mk), a hydric soil, a hydric soil and Water (W) (Founders Brook).

Wetland W4 is a Freshwater Wetland in the vicinity of the coast bounded by the Route 24 southbound Exit 2 ramp, Boyds Lane, and Anthony Road. This wetland system includes a palustrine emergent marsh dominated by common reed >1.0 ac in size and a shallow palustrine unconsolidated bottom pond (Town

Pond). Founders Brook drains the system to the north via an approximately 5-foot-diameter concrete culvert under Anthony Road. Soils underlying the wetland are mapped as Sandyhook mucky fine sand (Sa), a hydric soil.

Wetland W5 is a Freshwater Wetland in the vicinity of the coast that occupies a small depression northeast of the eastern limit of Wetland W5 and north of Anthony Road. This wetland is a small (<1.0 ac) seasonally saturated palustrine forested wetland that appears to be confined to a low area between Anthony Road, an upland berm parallel with Founders Brook on the west, and an elevated trail to the north. Dominant vegetation includes red maple (*Acer rubrum*) and eastern cottonwood (*Populus deltoides*) trees with an understory of multiflora rose (*Rosa multiflora*) and highbush blueberry (*Vaccinium corymbosum*). The wetland extends off the review area to the north and it is unknown if there is a hydrological connection to Founders Brook or other wetland system. Soils underlying the wetland within the review area are mapped as UD.

Wetland W6 is a Coastal Wetland located north of Anthony Road and east of the Aquidneck Land Trust Town Pond parking area. This wetland complex consists of estuarine emergent and palustrine emergent marshes dominated by common reed that cover >1.0 ac and a palustrine scrub-shrub swamp dominated by coastal sweet pepperbush (Cle*thra alnifolia*), dogwood (*Cornus* sp.), and highbush blueberry. The wetland extends north and west of the review area along Anthony Road and includes an embayment fed by the tidal portion of Founders Brook. Due to limited access, the inner portion of the wetland was not field verified but review of aerial photography shows an existing 115 kV overhead transmission line traversing the wetland, with access to individual structures via a narrow elevated gravel access road. The tidally-influenced portion of the wetland appears to have zones of intertidal unconsolidated shore, and intertidal persistent emergent marsh dominated by smooth cordgrass and common reed. Soils underlying the wetland are mapped as Sa and Mk, which are both hydric soils.

Wetland W7 is a Freshwater Wetland in the vicinity of the coast located on an undeveloped lot on the north side of Boyds Lane between Anthony Road and Maple Drive. This wetland is a palustrine emergent marsh dominated by common reed and extends beyond the review area to the northeast. The wetland appears to be <1.0 ac in size. Soils underlying the wetland are mapped as PmB.

Wetland W8 is a Coastal Wetland located on the east side of Boyds Lane north of Park Avenue. This estuarine system consists of an intertidal persistent emergent marsh dominated by common reed and salt hay grass (*Spartina patens*), intertidal unconsolidated shore, and subtidal unconsolidated bottom tidal pools and channels. Most of the wetland boundary lies on private property adjacent to Boyds Lane. Soils underlying the wetland are mapped as Mk.

Wetland W9 is a Coastal Wetland located on the west side of Boyds Lane north of Park Avenue. This estuarine emergent wetland is a remnant salt marsh, as evidenced by presence of salt hay grass. Full tidal exchange is restricted due to an elevated 18-inch diameter culvert under Boyds Lane. Limited tidal exchange may occur during exceptional high tides or during storm surges. Despite the tidal restriction, this wetland is considered an estuarine emergent marsh dominated by common reed and salt hay grass and an unconsolidated bottom open water pond. Review of historic aerial photography indicates the pond is permanently flooded. Most of the wetland boundary is located on private property adjacent to Boyds Lane. Soils underlying the wetland are mapped as Mk, a hydric soil.

Wetland W10 is a Freshwater Wetland in the vicinity of the coast located on the north side of Anthony Road on the Montaup Country Club property. This small wetland system (<1.0 ac) consists of a small pond with a palustrine emergent marsh fringe and appears to be anthropogenic in nature (i.e., golf course water feature). The wetland receives direct stormwater flow from a culvert along Anthony Road. No defined outlet was observed. Soils underlying this wetland are mapped as Quonset gravelly sandy loam, a non-hydric soil.

6.8.3 Wetland Habitat Types within the Study Area

Wetland vegetation community types within the Onshore Study Areas were classified using RIGIS data and the Rhode Island Ecological Communities Classification System.[69] The wetland ecological communities and their dominant plant species located within the Onshore Study Areas are listed in Table 6-12 and described below.

TABLE 6-12. WETLAND HABITAT TYPES WITHIN THE STUDY AREA

System	Community Type	Area within the Study Area ac (ha)				
		Common Route	Variant 1 RWU Residence Hall	Variant 2 Montaup Country Club	Variant 3 RIDEM/ Aquidneck Land Trust	Variant 4 Mount Hope Bridge
Estuarine System	Intertidal Shore	1.4 (0.6)	0.7 (0.3)	1.0 (0.4)	1.3 (0.5)	0.2 (0.1)
	Mud Flat	7.8 (3.2)	2.4 (1.0)	4.1 (1.7)	14.6 (5.9)	0
	Salt Marsh	14.6 (5.9)	17.6 (7.1)	7.5 (3.0)	29.5 (11.9)	0.4 (0.1)
	Tidal River/Stream	0	0	0	0.2 (0.1)	0
Palustrine System	Emergent Marsh	4.7 (1.9)	3.6 (1.4)	3.6 (1.4)	3.6 (1.4)	2.4 (1.0)
	Forested Swamp	0.3 (0.1)	0.3 (0.1)	0.3 (0.1)	0.3 (0.1)	0.3 (0.1)
	Fresh Water	1.3 (0.5)	2.4 (1.0)	1.8 (0.7)	1.7 (0.7)	1.3 (0.5)

6.8.3.1 Intertidal Shores and Mud Flats

Intertidal habitats include areas between the highest and lowest tide levels where the substrate is regularly exposed and flooded by semi-diurnal tides. Unlike tidal marshes which are densely vegetated, intertidal shores are mostly devoid of vascular plants. Mud flats are comprised of a mixture of sand, silt and clay that are usually located in quiet pockets of bays and protected by headlands. Other flats made up primarily of sand are found in embayed areas where rocky or sandy barriers help create protected sounds and lagoons. Rocky shores are composed of bedrock and subject to both daily inundation by salt water and constant pounding by waves. Tide pools are biologically diverse features of the rocky shore. All intertidal shores support abundant and diverse invertebrate populations and are valued feeding sites for a variety of shorebirds, especially those that rely on these areas during spring and fall migration periods.

6.8.3.2 Salt Marsh

The broadly-named tidal salt marsh type actually consists of several clearly delineated communities that develop according to elevation and consequent level of salinity. The typical salt marsh profile, from heaviest to lightest exposure to saline water, features a low-lying, regularly-flooded low marsh that is dominated by salt marsh cordgrass; an irregularly flooded high marsh of saltmeadow cordgrass; salt panes that form in depressions where salt accumulates and are characterized by saltworts; and a salt scrub-shrub margin between the marsh edge and upland with marsh elder and groundsel-tree. Salt marshes occur on the bay side of barrier beaches and the outer portions of tidal rivers where salinity is not diluted by freshwater input. Salt marshes have long been valued as wildlife habitat, providing

[69] Enser, R., D. Gregg, C. Sparks, P. August, P. Jordan, J. Coit, C. Raithel, B. Tefft, B. Payton, C. Brown, C. LaBash, S. Comings, and K. Ruddock. 2011. Rhode Island Ecological Communities Classification. Technical Report. Rhode Island Natural History Survey. https://www.rigis.org/documents/edc::ri-ecological-communities-classification-report/explore. October 4, 2011.

opportunities for the shellfisher, waterfowl hunter, naturalist, and birder. Salt marshes provide a unique habitat for specialized flora and fauna. Breeding birds found exclusively in these habitats include clapper rail (and occasionally the conspecific king rail), willet, and seaside sparrow. In 2007, the Important Bird Areas program of the National Audubon Society identified many of the largest salt marsh complexes in Rhode Island as Important Bird and Biodiversity Areas based on the importance of these habitats to the saltmarsh sparrow which has been identified as the species of greatest conservation importance in southern New England by the Partners In Flight program.[70] These communities are also important feeding areas for nesting waders and shorebirds, as stopover and feeding areas for migrant shorebirds, and also wintering areas for American black duck and other waterfowl.

6.8.3.3 Tidal River/Stream

A tidal river or stream is defined as an aquatic community of a continuously flooded creek that drains the tidal waters of a coastal salt marsh. Water levels fluctuate with the tides; the creek bottom is permanently flooded, but the banks are exposed at low tide. Characteristic plants include eelgrass *(Zostera marina*), widgeon grass (*Ruppia maritima*) and several cyanophyta. Abundant food and protection from predators make tidal creeks and rivers ideal nursery grounds for marine invertebrates and finfish. As a result, larvae and juveniles dominate the marsh creek fauna, as much as 80 percent of the animas sampled in Rhode Island studies.

6.8.3.4 Freshwater Emergent Marsh

Emergent freshwater marshes are composed of primarily herbaceous vegetation occurring in flat-bottomed shallow basins, or on the periphery of deeper basins. These open wetlands develop in the ponds created by the damming of larger rivers, and are also scattered throughout the Rhode Island landscape on the margins of lakes, ponds, slow-moving streams, and ditches. Vegetation does not persist through the winter. Scattered shrubs may be present and trees are generally absent.

6.8.3.5 Forested Swamp

The overwhelming majority of forested swamps are dominated by red maple. Associated trees include black gum, yellow birch, white ash, and American elm, and in nutrient-rich areas black ash may be a co-dominant, but this type is fairly uncommon in Rhode Island. Red maple swamps typically support a dense understory shrub layer of highbush blueberry, spicebush, sweet pepperbush, winterberry, swamp azalea, and fetterbush. Ground layers are characterized by skunk cabbage, cinnamon fern, jewelweed, and other herbs. An uncommon subtype found in southern Rhode Island contains a dense understory of great rhododendron.

6.8.3.6 Fresh Water

Freshwater habitat related to the Onshore Study Area includes the sparsely vegetated, exposed shorelines of freshwater lakes, ponds, or larger rivers. Substrates are generally sandy to gravelly and muddy patches may also be present, and the habitat appears as narrow zones of sparse vegetation on sandy beaches or sand bars (in rivers). The amount and composition of vegetation is dependent on the degree of exposure as these habitats are ephemeral, usually present during periods of low water, but otherwise inundated. Upper zones that are exposed for longer periods may be vegetated with shrubs, including sweet gale, willows, huckleberry, and chokecherry, with lower less frequently exposed zones with scattered patches of herbaceous plants including various grasses, sedges, and forbs.

[70] Dettmers, R. and K.V. Rosenberg. 2000. *Partners in Flight bird conservation plan for southern New England (physiographic area 9) - Version 1.0.* American Bird Conservancy. October 2000.

6.8.4 Submerged Aquatic Vegetation

SAV may be found within the nearshore zone at the southern Aquidneck Island cable landfall. There is no SAV mapped within the Sakonnet River by Rhode Island State agencies (as available online).[71] The potential SAV mapped by the seafloor survey conducted by Fugro extends approximately 984 ft (300 m) offshore from the Aquidneck Island shoreline in a portion of the ECC. Its appearance is not distinctive and may be misinterpreted from boulders, or boulders with encrusted macroalgae, for example. SAV will be avoided either by micro-routing of the offshore export cable or through HDD installation beneath them.

6.8.5 Areas Subject to Storm Flowage

ASSF are channel areas and water courses which carry storm, surface, groundwater discharge or drainage waters out of, into, and/or connect freshwater wetlands or coastal wetlands. ASSF are recognized by evidence of scouring and/or a marked change in vegetative density and/or composition. No ASSF are documented in the Onshore Study Areas.

6.8.6 Special Aquatic Site - Vernal Pool

Vernal pools are shallow bodies of water that fill in spring or fall with rain or snowmelt. Some vernal pools are isolated woodland depressions, while others may be found within wetlands such as red maple swamps. Vernal pools often dry up by mid-summer because they do not have a permanent source of water.

As a result of their seasonal dryness, vernal pools cannot support a fish population. These characteristics create a unique environment and provide a valuable breeding habitat for wildlife. In Rhode Island, spotted salamanders (*Ambystoma maculatum*), marbled salamanders *(Ambystoma opacum*), and wood frogs (*Rana sylvatica*) are all dependent on vernal pools for breeding habitat and survival.[72]

No vernal pools have been identified through mapping or field surveys within the Onshore Study Areas.

6.9 WILDLIFE

The wildlife species present within the Study Area vary according to the habitat resources present. Habitat is a place where an animal normally lives, often characterized by a dominant plant form or physical characteristic (e.g., a stream or a deciduous forest). In addition to the type of vegetative cover, habitat also includes the resources, such as food and water, and conditions present in an area that produces occupancy – including survival and reproduction – by a given organism.[73] A species may utilize one or several resource areas or vegetation cover types for its habitat. Rhode Island's varied bedrock and surficial geology, soils, topography, and hydrology support a range of plant communities that supports a complex ecological framework for Rhode Island's fish and wildlife diversity. Results of inquiries to the RIDEM Natural Heritage Program and the USFWS for the Mayflower Wind Project in Rhode Island are presented below.

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[71] University of Rhode Island Environmental Data Center and RIGIS. 2016. Submerged Aquatic Vegetation (SAV) in RI Coastal Waters (2012), Feature Layer. August 3, 2016.

[72] RIDEM. 2022. *Wetlands: Vernal Pools Description*. http://www.dem.ri.gov/programs/water/wetlands/vernal-pools.php. Accessed April 15 2022.

[73] Hall, L.S., P.R. Krausman, and M.L. Morrison. 1997. *The Habitat Concept and a Plea for Standard Terminology*. Wildlife Society Bulletin (1973-2006), *25*(1), 173–182.

6.9.1 Birds

Table 6-13 provides a representative list of avian species documented to occur within the nearshore and onshore portions of the Project. Specifically, the list includes federal-listed avian species and avian species identified through the Project's Information for Planning and Consultation (IPaC) report, state-listed avian species identified through consultation with the Rhode Island Natural Heritage Program and Massachusetts Natural Heritage and Endangered Species Program, and other species which may reasonably be expected to occur within the onshore and immediately adjacent shoreline habitats of the Onshore Project Area.

The Audubon Society of Rhode Island has recently stated, on its website, that it believes that the rational development of renewable energy is necessary to meet the State's GHG reduction goals and to mitigate climate change, adding that renewable energy projects should be sited on brownfields and other developed areas.[74] The Project is largely sited within developed areas and the onshore Massachusetts-jurisdictional facilities will be sited on a brownfields site.

TABLE 6-13. REPRESENTATIVE LISTED AVIAN SPECIES

Common Name	Scientific Name
Black-billed cuckoo	*Coccyzus erythrophalmus*
Gadwall	*Anas strepera*
Great egret	*Ardea alba*
Cattle egret	*Bubulcus ibis*
Little blue heron	*Egretta caerulea*
Snowy egret	*Egretta thula*
Least bittern	*Ixobrychus exilis*
Great blue heron	*Ardea herodias*
Black-crowned night heron	*Nycticorax mycticorax*
Glossy ibis	*Plegadis falcinellus*
Barn owl	*Tyto alba*
Eastern whip-poor-will	*Antrostomus vociferus*
American oystercatcher	*Haemotopus pallatus*
Piping plover	*Charadrius melodus*
Whimbrel	*Numenius phaeopus*
Ruddy turnstone	*Arenaria interpres*
Dunlin	*Calidris alpina*
Purple sandpiper	*Calidris maritima*
Semipalmated sandpiper	*Calidris pusilla*
Short-billed dowitcher	*Limnodromus griseus*
Lesser yellowlegs	*Tringa flavipes*
Willet	*Tringa semipalmata*
Bonaparte's gull	*Chroicocephalus philadelphia*
Ring-billed gull	*Larus delawarensis*
Herring gull	*Larus argentatus*
Greater black-backed gull	*Larus marinus*
Roseate tern	*Sterna dougallii*

[74] Audubon Society of Rhode Island. n.d. Renewable Energy. https://asri.org/lead/issues/renewable-energy-siting/. Accessed May 24, 2022.

Common Name	Scientific Name
Least tern	*Sternula antillarum*
Common tern	*Sterna hirundo*
Arctic tern	*Sterna paradisaea*
Royal tern	*Thalasseus maximus*
Osprey	*Pandion haliaetus*
Golden eagle	*Aquila chrysaetos*
Northern harrier	*Circus cyaneus*
Peregrine falcon	*Ardea herodias*
Sharp-shinned hawk	*Accipiter striatus*
Cooper's hawk	*Accipiter cooperii*
Northern goshawk	*Accipiter gentilis*
Bald eagle	*Haliaeetus leucocephalus*
Red-shouldered hawk	*Buteo lineatus*
Broad-winged hawk	*Buteo platypterus*
Red-tailed hawk	*Buteo jamaicensis*
Rough-legged hawk	*Buteo lagopus*
Snowy owl	*Bubo scandiaca*
American kestrel	*Falco sparverius*
Merlin	*Falco columbarius*
Peregrine falcon	*Falco peregrinus*
Wood thrush	*Hylocichla mustelina*
Evening grosbeak	*Coccothraustes vespertinus*
Seaside sparrow	*Ammospiza maritima*
Nelson's sparrow	*Ammodramus nelsoni*
Bobolink	*Dolichonyx oryzivorus*
Rusty blackbird	*Euphagus carolinus*
Prothonotary warbler	*Protonotaria citrea*
Kentucky warbler	*Geothlypis formosa*
Prairie warbler	*Setophaga discolor*
Canada warbler	*Cardellina canadensis*
White-breasted nuthatch	*Sitta carolinensis*
White-crowned sparrow	*Zonotrichia albicollis*
White-throated sparrow	*Zonotrichia albicollis*
White-winged scoter	*Melanitta fusca*
Wild turkey	*Meleagris gallopavo*
Wilson's snipe	*Gallinago delicata*
Winter wren	*Troglodytes hiemalis*
Yellow-bellied sapsucker	*Sphyrapicus varius*
Yellow-breasted chat	*Icteria virens*
Yellow-rumped warbler (myrtle)	*Setophaga coronata coronata*

Source: National Audubon Society. Historical Results by Count. https://netapp.audubon.org/cbcobservation/historical/resultsbycount.aspx. Accessed May 21, 2022.

6.9.2 Finfish

The Northeastern United States (U.S.) is one of the nation's most historic fishing regions – commercial fishing is one of the oldest industries in the region and recreational fishing is a vital part of the cultural fabric. Fisheries resources are targeted by both the commercial fleet and the recreational fishing community and fishing effort is characterized by highly variable gear types and vessel sizes and is dictated by seasons, quotas, environmental factors, market forces, and the federal, state, and local regulations that manage these fisheries resources. Species comprising this fisheries resource are similarly diverse, ranging from highly migratory, pelagic species such as bluefin tuna (*Thunnus thynnus*) to species highly associated with structure such as black sea bass (*Centropristis striata*) to demersal species such as winter flounder (*Pseudopleuronectes americanus*) to molluscs such as longfin squid (*Doryteuthis pealeii*) to shellfish such as channeled whelk (*Busycotypus canaliculatus*). The fisheries resource and the fishing industry and community that targets that resource are highly valuable to the region.

Mayflower Wind completed an Essential Fish Habitat (EFH) and Protected Fish Species Assessment which includes discussions specifically tailored to the ECC.[75] Mayflower Wind has already collected extensive site characterization data via benthic and geophysical surveys and is currently analyzing that data to understand and map benthic conditions and habitat and to evaluate EFH and cod and summer flounder Habitat Areas of Particular Concern within the ECC. Based on the results of this evaluation, potential impacts will be fully assessed through consultation with BOEM and NMFS.

6.9.3 Shellfish

According to the Rhode Island Shellfish Management Plan, the Sakonnet River portion of the ECC is home to several commercially valuable shellfish, including the bay scallop (*Agropected irradians*), ocean quahog (*Arctica islandica)*, and soft-shelled clam (*Mya arenaria).*[76] Ocean quahogs have also been observed in Mount Hope Bay, alongside channeled and knobbed whelks. Historic abundances of these species have been reduced by water quality degradation and habitat loss. Currently, the Sakonnet River is protected as a Shellfish Management Area by RIDEM (RIGL § 20-3-4) for the purposes of shellfish conservation and stock rebuilding. Management strategies employed by RIDEM to achieve these goals include reduced daily harvest limits, no harvest, limited access time, and rotational harvest.[77]

The EFH and Protected Fish Species Assessment[78] considered shellfish resources within the ECC. The portion of the ECC that is in Rhode Island waters contains shellfish harvest areas approved based on Rhode Island Shellfish Harvest Restrictions. Essential shellfish habitat for the following species are likely present in the Project's ECC: Atlantic sea scallop (*Placopecten magellanicus*), Atlantic surfclam (*Spisula solidissima*), and Ocean quahog (*Arctica islandica*).

There are several approved aquaculture areas within The Cove on Aquidneck Island and adjacent to Hog Island, both areas are located with the town of Portsmouth. The aquaculture areas within The Cove and along the east and west banks of the Sakonnet River primarily culture Eastern oysters (*Crassostrea virginica*) and soft-shelled clams (*Mya arenaria*). The summary of essential fish habitat for the Sakonnet River and Mount Hope Bay inventoried the following finfish species: Atlantic cod, Atlantic mackerel, bluefish, ocean pout, Atlantic pollock, scup, silver hake, longfin inshore squid, albacore tuna, bluefin tuna, skipjack tuna, and smoothhound shark. The RI CRMC Ocean SAMP §11.10.2(C)(3) identifies glacial moraines as important habitat areas for a diversity of fish and other marine life due to the unique

[75] Final Essential Fish Habitat and Protected Fish Species Assessment Prepared by: AECOM 9 Jonathan Bourne Drive Pocasset, MA 02559 August 2021
[76] (URI Coastal Resources Center 2014)
[77] (URI Coastal Resources Center 2014)
[78] (AECOM 2021)

bottom topography is these submerged moraines. The glacial moraine habitat within the Sakonnet River has been designated as a Habitat Area of Particular Concern for its importance to juvenile cod preferred habitat.

6.9.4 Marine Mammals

Marine mammals that may be present within the Offshore Project Area within the Sakonnet River and Mount Hope Bay include the harbor seal (*Phoca vitulina),* gray seal (*Halichoerus grypus*), harp seal (*Pagophilus groenlandicus*), and hooded seal (*Crysophora cristata*). Marine Mammals with the exception of seals, are rarely found within the Sakonnet River and Mount Hope Bay. Marine Mammals can be found in the Rhode Island Sound, as listed in Table 6-14. The marine mammal species listed in Table 6-14 have been previously observed and/or recorded during surveys specific to offshore wind development for BOEM-specific assessments, surveys conducted in and around the MA/RI WEA and Project Area as part of long-term population assessments, and in NOAA Marine Mammal Stock Assessment reports of the MA/RI WEA.

There have only been a few reported sightings of marine mammal species, besides seals, within Narragansett Bay.[79] Additional marine mammal species are present in Rhode Island Sound. Since the majority of the ECC is within the Sakonnet River and Mount Hope Bay, the risk of impact to marine mammals in Rhode Island waters is very low given the low overall densities of animals and the avoidance and mitigation measures that Mayflower Wind vessels are required to implement.

TABLE 6-14. MARINE MAMMAL SPECIES WITH THE POTENTIAL TO OCCUR IN RHODE ISLAND SOUND

Common Name	Scientific Name	Stock	RI SGCN [a]	Likely Occurrence within Project Area
Baleen whales				
Blue whale	*Balaenoptera musculus*	Western North Atlantic	-	Rare
Fin whale	*Balaenoptera physalus*	Western North Atlantic	SGCN	Common
Humpback whale	*Megaptera novaeangliae*	Gulf of Maine	SGCN	Common
Minke whale	*Balaenoptera acutorostrata*	Canadian East Coast	-	Common
North Atlantic right whale	*Eubalaena glacialis*	Western North Atlantic	SGCN	Common
Sei whale	*Balaenoptera borealis*	Nova Scotia	-	Common
Toothed whales				
Atlantic white-sided dolphin	*Lagenohynchus acutus*	Western North Atlantic	-	Common
Atlantic spotted dolphin	*Stenella frontalis*	Western North Atlantic	-	Rare
Blainville's beaked whale	*Mesoplodon densirostris*	Western North Atlantic	-	Rare
Common bottlenose dolphin[b]	*Tursiops truncatus*	Western North Atlantic	-	Common
Cuvier's beaked whale	*Ziphius cavirostris*	Western North Atlantic	-	Rare
Dwarf sperm whale	*Kogia sima*	Western North	-	Rare

[79] (Raposa 2009).

Common Name	Scientific Name	Stock	RI SGCN [a]	Likely Occurrence within Project Area
		Atlantic		
Gervais' beaked whale	*Mesoplodon europaeus*	Western North Atlantic	-	Rare
Killer whale	*Orcinus orca*	Western North Atlantic	-	Rare
Long-finned pilot whale	*Globicephala melas*	Western North Atlantic	-	Uncommon
Pantropical spotted dolphin	*Stenella attenuata*	Western North Atlantic	-	Rare
Pygmy sperm whale	*Kogia breviceps*	Western North Atlantic	-	Rare
Risso's dolphin	*Grampus griseus*	Western North Atlantic	-	Uncommon
Short-beaked common dolphin	*Delphinus delphis*	Western North Atlantic	-	Common
Short-finned pilot whale	*Globicephala macrorhynchus*	Western North Atlantic	-	Rare
Sowerby's beaked whale	*Mesoplodon bidens*	Western North Atlantic	-	Rare
Sperm whale	*Physeter macrocephalus*	North Atlantic	-	Uncommon
Striped dolphin	*Stenella coeruleoalba*	Western North Atlantic	-	Rare
True's beaked whale	*Mesoplodon mirus*	Western North Atlantic	-	Rare
White-beaked dolphin	*Lagenorhynchus albirostris*	Western North Atlantic	-	Rare
Porpoises				
Harbor porpoise	*Phocoena phocoena*	Gulf of Maine/Bay of Fundy Stock	SGCN	Common
Pinnipeds				
Gray seal	*Halichoerus grypus*	Western North Atlantic	-	Common
Harp seal	*Pagophilus groenlandicus*	Western North Atlantic	-	Uncommon
Harbor seal	*Phoca vitulina*	Western North Atlantic	SGCN	Common
Hooded seal	*Crysophora cristata*	Western North Atlantic	-	Rare
West Indian Manatee	*Trichechus manatus*	Florida	-	Rare

Notes:
[a] SGCN species are identified by RIDEM and the Rhode Island Chapter of The Nature Conservancy in the Rhode Island Wildlife Action Plan.
[b] Rhode Island Wildlife Action Plan Species Profiles, Species of Greatest Conservation Need (SGCN).

6.9.5 Rare, Threatened and Endangered Species

To assess whether any federal or state listed rare, threatened, or endangered species or species of greatest concern were present within the Project Study Area, Mayflower Wind evaluated information from the USFWS IPaC tool and the Rhode Island Natural Heritage Program. The onshore Project components are planned to be installed primarily within public road ROW to mitigate impacts to rare species.

Several species of sea turtles are known to occur, at least seasonally within Rhode Island Sound. These species and their occurrence include the following: leatherback sea turtle (*Dermochelys coriacea*) – common; northern loggerhead sea turtle (*Caretta caretta*) – common; Kemp's ridley sea turtle (*Lepidochelys kempii*) – regular; and green sea turtle (*Chelonia mydas*) - rare.

6.9.5.1 USFWS IPaC Consultation

Mayflower Wind generated an official species list from the USFWS using the IPaC tool on March 30, 2022 regarding the Project's Study Area including the ECC, landfall locations, and onshore underground export cables. An official species list is an official letter from the local USFWS office containing information to assist in evaluating the potential impacts of a project. It includes a list of species and critical habitat that should be considered under Section 7 of the Endangered Species Act (ESA), as well as a project tracking number and other pertinent information from the local field office.

The official species list generated by IPaC on March 30, 2022 indicated that the federally designated and threatened northern long-eared bat (*Myotis septentrionalis*) and federally endangered roseate tern (*Sterna dougallii dougallii*) have the potential to occur within the Study Area. The IPaC list also indicated that there are no Critical Habitats within the Study Area.

The northern long-eared bat is listed as a species of greatest conservation need in the 2015 Rhode Island Wildlife Action Plan.[80] Northern long-eared bats utilize maternity roost sites during the summer and hibernacula sites during the winter, and the loss of these habitat features is a threat to northern long-eared bats. On April 8, 2022, Mayflower Wind contacted Jennifer Brooks, Bat Biologist at RIDEM Division of Fish and Wildlife, for information on northern long-eared bat maternity roosts and hibernacula in the vicinity of the Project. According to her response, dated April 12, 2022, there are no known northern long-eared bat maternity roosts or hibernacula in or near (within five miles) the Project Area. Conversion of foraging and roosting habitats is also expected to be minimal for the Project as the onshore Project components are planned to be installed primarily within roadways and roadway shoulders to mitigate impacts to rare species and tree clearing will be avoided.

The roseate tern is a medium-sized gull-like tern that is approximately 15 inches (38 centimeters) long and prefers shoreline habitat.[81] The roseate tern is a specialist feeder, eating fish almost exclusively, and feeding by plunge diving. Habitat for the roseate tern includes nesting habitat along sandy shores and barrier islands and under hollows or dense vegetation. Roseate tern is identified in the 2015 Rhode Island Wildlife Action Plan as a species of greatest conservation need.[82] No more than five pairs of roseate terns have nested in Rhode Island since the 1950s. The last breeding record is of two individuals in 1984, although immature and summer roseate terns continue to be observed in Rhode Island, indicating that the species may still nest in small numbers. Roseate terns are seasonally common in Rhode Island as a migrant, typically during post-breeding dispersal, and have been consistently recorded staging at a few coastal sites including Trustom Pond, Charlestown Breachway, Great Salt Pond on Block Island, and at Napatree Point.[83]

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[80] RIDEM. 2015. *Rhode Island Wildlife Action Plan*. http://www.dem.ri.gov/programs/fish-wildlife/wildlifehuntered/swap15.php. Accessed April 15, 2022.

[81] USFWS. 2022. *Environmental Conservation Online System: Roseate tern (Sterna dougalli dougalli).* https://ecos.fws.gov/ecp/species/B07O. Accessed April 15, 2022.

[82] RIDEM. 2015. *Rhode Island Wildlife Action Plan*. http://www.dem.ri.gov/programs/fish-wildlife/wildlifehuntered/swap15.php. Accessed April 15, 2022.

[83] RIDEM. 2015. *Rhode Island Wildlife Action Plan*. http://www.dem.ri.gov/programs/fish-wildlife/wildlifehuntered/swap15.php. Accessed April 15, 2022.

6.9.5.2 RIDEM Natural Heritage Area Review

Pursuant to the Rhode Island Endangered Species Act, Mayflower Wind has consulted with the Rhode Island Natural Heritage Program. Mayflower Wind reviewed the RIDEM Natural Heritage Area overlays available on the RIDEM Environmental Resource Mapping website and determined that there are three natural heritage areas that overlap the Project Study Area, indicating potential state-listed species.[84] Mayflower Wind contacted RIDEM on April 8, 2022 to inquire about the species listing for these areas. RIDEM responded on April 11, 2022 with the following list of species of concern that have been identified near the Project Area (see Table 6-15). Nearly all of the species are birds, with the exception of salt marsh tiger beetle.

TABLE 6-15. RHODE ISLAND SPECIES OF CONCERN IDENTIFIED NEAR THE PROJECT AREA

Scientific Name	Common Name	RI* Status
Ardea alba	Great egret	SC
Ardea herodias	Great Blue Heron	SC
Bubulcus ibis	Cattle egret	SC
Egretta caerulea	Little blue heron	SC
Egretta thula	Snowy egret	SC
Ellipsoptera marginate	Salt marsh tiger beetle	ST
Falco peregrinus	Peregrine falcon	SE
Haematopus palliates	American oystercatcher	SC
Nycticorax nycticorax	Black-crowned night heron	SC
Plegadis falcinellus	Glossy ibis	SC
Sterna antillarum	Least tern	ST

Notes:
**Rhode Island Status Codes (under RIDEM): SE= State Endangered; ST= Sate Threatened, SC= Special Concern*
Source: RIDEM. 2022. Natural Heritage Screening. Natural Heritage Consultation Email. April 11, 2022.

6.10 AIR QUALITY

Importantly, Rhode Island does not have any air quality nonattainment counties under the standards of the USEPA.

The USEPA, under the Clean Air Act of 1970, 42 U.S.C. §§ 7401 *et seq.*, amended in 1977 and 1990, developed NAAQS that include primary standards to protect human health and the health of sensitive subpopulations, including children, elderly, and those with chronic respiratory problems. NAAQS also contain secondary standards designed to protect public welfare, including economic interests, visibility, vegetation, animal species, and other concerns not related to human health. Standards developed by the USEPA for the NAAQS involving carbon monoxide (CO), lead (Pb), nitrogen dioxide (NO_2), ozone (O_3), particulate matter (PM), and sulfur dioxide (SO_2) are listed with their specific standard, timing, level, and form in Table 6-16.

The USEPA has classified all regions of the U.S. into attainment, nonattainment, or unclassified for the pollutants listed in Table 6-16.[85] Attainment areas comply with NAAQS, nonattainment areas do not meet NAAQS for one or more pollutants, and unclassified areas are treated as attainment areas but lack data for official classification. Designations of air quality status for defined geographic areas are

[84] RhodeMap, RIGIS, and RIDEM. "Layer: Natural Heritage Area (ID: 7)." https://risegis.ri.gov/hosting/rest/services/RIDEM/Conservation_Opportunity_Areas/MapServer/7. Accessed April 23, 2022.
[85] (USEPA 2021)

promulgated at 40 C.F.R. 81. Several counties containing port cities and other coastal counties near the MA/RI WEA are designated as nonattainment areas. Dukes County, Massachusetts is a nonattainment county for ozone.

TABLE 6-16. USEPA NATIONAL AMBIENT AIR QUALITY STANDARDS (NAAQS)

Pollutant	Standard	Timing	Level	Form
Carbon Monoxide (CO)	Primary	8 hours	9 parts per million (ppm)	Not to be exceeded more than once per year
	1 hour	35 ppm		
Lead (Pb)	Primary and Secondary	Rolling 3-month average	0.15 micrograms per cubic meter (µg/m^3)	Not to be exceeded
Nitrogen Dioxide (NO_2)	Primary	1 hour	100 parts per billion (ppb)	98th percentile of 1-hour daily maximum concentrations, averaged over 3 years
	Primary and Secondary	1 year	53 ppb	Annual mean
Ozone (O_3)	Primary and Secondary	8 hours	0.070 ppm	Annual fourth-highest daily maximum 8-hour concentration, averaged over 3 years
Particulate Matter ($PM_{2.5}$)	Primary	1 year	12.0 µg/m^3	Annual mean, averaged over 3 years
	Secondary	1 year	15.0 µg/m^3	Annual mean, averaged over 3 years
	Primary and Secondary	24 hours	35 µg/m^3	98th percentile, averaged over 3 years
Particulate Matter (PM_{10})	Primary and Secondary	24 hours	150 µg/m^3	Not to be exceeded more than once per year on an average over 3 years
Sulfur Dioxide (SO_2)	Primary	1 hour	75 ppb	99th percentile of 1-hour daily maximum concentrations, averaged over 3 years
	Secondary	3 hours	0.5 ppm	Not to be exceeded more than once per year

Source: USEPA n.d.

The discussion of air quality related to Project activities for Rhode Island applies to the Rhode Island territorial waters and the onshore underground export cable routes in Portsmouth. Although air quality data are not available specifically for Rhode Island State waters, the RIDEM in conjunction with the Rhode Island Department of Health, operates a network of eight air monitoring stations throughout the state that measure ambient concentrations of criteria pollutants; hazardous air pollutants; and ozone precursors, which are substances that react in the atmosphere to form ground-level ozone. The discussion of baseline air quality conditions specific to onshore facilities applies to the onshore segment of the Project.

According to the USEPA's Green Book, which provides the NAAQS attainment status for each state and/or county in the country, all of Rhode Island is an attainment area (i.e., meets or exceeds primary standards) for all NAAQS criteria pollutants.[86] Air quality analyses for projects that may impact motor vehicular traffic are required to evaluate their impact on ozone and CO.

The *2021 Act on Climate* sets mandatory, enforceable climate emissions reduction goals to guide Rhode Island to achieve net-zero emissions by 2050.[87] In 2021, the General Assembly amended the *Rhode Island Resilient Act* through the passage of the *2021 Act on Climate* with the intent of increasing Rhode Island's efficiency and effectiveness in responding to climate change. The *2021 Act on Climate* sets mandatory and enforceable targets for reducing greenhouse-gas emissions and transitioning to a low carbon economy.[88] The *2021 Act on Climate* requires that the RIEC4 update the Greenhouse Gas Emissions Reduction Plan to develop a plan to reduce climate emissions to net zero by 2050. This plan is required to be delivered to the General Assembly by December 31, 2025.

6.11 ELECTRIC AND MAGNETIC FIELDS IN THE MARINE ENVIRONMENT

EMFs are created anywhere there is a flow of electricity, and their strength diminishes within a short distance from the source. The strength of electric fields depends on voltage, which is the pressure behind the flow of electricity. Magnetic fields are produced by current, which is the flow of electricity. A Magnetic Field Analysis study was conducted to model the magnetic fields produced by typical onshore and offshore cable configurations for the Project and contextualize them to the latest research and guidelines for public health and the marine environment (see Attachment D). The modeling analysis focuses on magnetic fields because the electric fields arising from the voltage on the export cables will be shielded by cable materials.

Three configurations of offshore HVDC cables were modeled, including the typical installation case where the two DC conductors are bundled together as well as two atypical, worst-case installation scenarios.[89] Only for the two atypical installation cases will magnetic field levels above the offshore export cables appreciably differ from the earth's steady (DC) geomagnetic field, and only within short distances from the cables.

No regulatory thresholds or guidelines for allowable EMF levels in marine environments have been established for either HVDC or HVAC transmission. Overall, although knowledge gaps remain and there is a need for continued research, the weight of the currently available evidence does not provide support for concluding there would be population-level harms to marine species from EMF associated with HVDC submarine transmission. This conclusion regarding a lack of evidence of population-level harm to marine species from HVDC-related EMFs is supported by findings from recent governmental reports and expert state of the science reviews.

[86] USEPA. 2021. *Nonattainment areas for criteria pollutants (Green Book).* https://www.epa.gov/green-book.

[87] RIGL § 42-6.2-9

[88] RIGL § 42-6.2 et seq.

[89] One worst-case installation case assumes the bundled conductors are laid directly on the seafloor surface and covered by a concrete mattress, such as at a cable crossing location. The other is an unbundled installation case where the two DC conductors are separately buried approximately 164 ft (50 m) apart at a target depth of 2.0 m to be used as needed to ensure safe installation and repair of the separate cables, as well as to minimize risk of damage to both cables from threats such as anchor strike.

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7 DESCRIPTION OF AFFECTED SOCIAL ENVIRONMENT

Mayflower Wind will develop the Project in a way that seeks to avoid or minimize impacts to the social environment along its route. Moreover, development of the Project will tend to beneficially affect the social environment in various ways along that route and beyond in the long-term.

The ECC traverses the Sakonnet River, which is bordered by the Towns of Middletown and Portsmouth, in Newport County, to make intermediate landfall on Aquidneck Island in Portsmouth. There the route will traverse underground, across Aquidneck Island for 2.0 to 3.0 mi (3.2 to 4.8 km) before exiting into Mount Hope Bay, to make final landfall at the point of interconnection to the regional transmission system at Brayton Point, in the Town of Somerset, Massachusetts.

This section discusses different aspects of the affected social environment for the Project.

7.1 ENVIRONMENTAL JUSTICE

Mayflower Wind will comply with all applicable environmental justice (EJ) requirements including, but not limited to, the recently enacted Rhode Island *2021 Act on Climate*, which calls for the transition to a cleaner energy future to be just and equitable. Under the *2021 Act on Climate*, a just and equitable transition to a cleaner energy future includes:

- Replacing fossil-fuel-based jobs with renewable-energy jobs that pay prevailing wage.
- Delivering renewable energy at lower cost to families and businesses.

The *2021 Act on Climate* calls for the inclusion of EJ populations and a process for them to provide input on concrete plans such as:

- Plans that identify support for workers in the transition and the development of programs to recruit, train, and retain women, people of color, indigenous people, veterans, formerly incarcerated people, and people living with disabilities in jobs related to a cleaner energy economy.

The Project will provide EJ-related benefits by advancing the transition to a just and equitable cleaner energy future, creating renewable-energy jobs that pay prevailing wage, and by delivering renewable energy at a low-cost to residences and businesses. Mayflower Wind intends to engage in programs that support workers in the transition to and the development of programs to recruit, train, and retain women, people of color, indigenous people, veterans, formerly incarcerated people, and people living with disabilities in jobs related to a cleaner energy economy. For example, Mayflower Wind and RPS are working together to sponsor and provide local Native American communities with cost-free training and all certifications required to work as a protected species observer (PSO). Mayflower Wind employs PSOs on all geophysical survey vessels, who are responsible for keeping watch over a monitoring zone around the vessel to identify protected species including marine mammals and sea turtles, and to initiate measures to avoid negative impacts. PSOs will also be needed to monitor construction activities. Upon successful completion of the program, opportunities for employment as a PSO will be offered through RPS Group. The first program cohort will be trained in June 2022.

As defined by the USEPA,[1] EJ is the fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income, with respect to the development, implementation, and

[1] https://www.epa.gov/environmentaljustice

enforcement of environmental laws, regulations, and policies. This goal will be achieved when everyone enjoys:

- The same degree of protection from environmental and health hazards.
- Equal access to the decision-making process to have a healthy environment in which to live, learn, and work.

RIDEM's current EJ policy is based on the brownfields regulations. Under RIDEM's Standard Operating Procedures Number BEP-AWC-1, effective June 26, 2009 and titled, *Policy for Considering Environmental Justice in the Review of Investigation and Remediation of Contaminated Properties,*[2] EJ focus areas have been identified by census block groups (CBGs). In Rhode Island, minority and low-income census blocks that rank in the top 15 percent of the state are designated environmental justice focus areas. This is slightly different from the USEPA designation using a regional rather than statewide ranking. The result is a slightly larger and more inclusive area than the USEPA's classification.

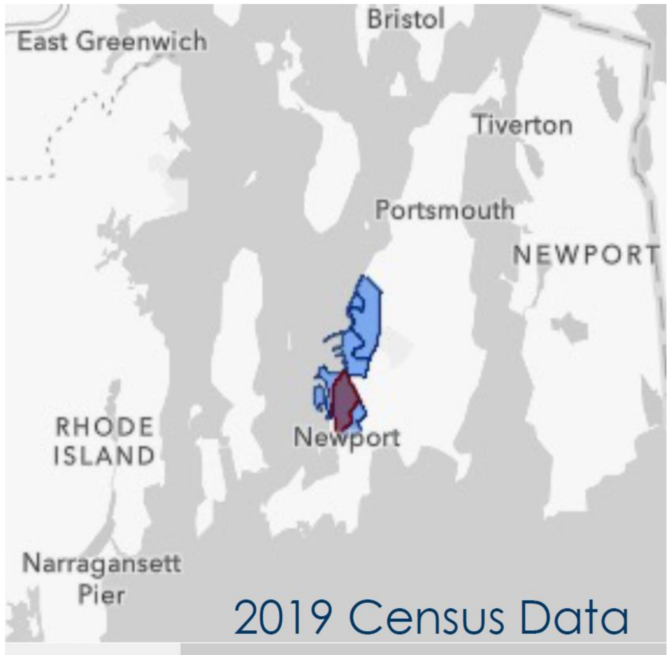
There are several EJ screening tools available to study the Project's impact on low-income populations or communities of color and the environment. They include:

- RIDEM Environmental Resource GIS Map[3]
- USEPA's EJScreen 2.0[4]
- Council on Environmental Quality (CEQ) Climate and Economic Justice Screening Tool.[5] The CEQ is a division within the Executive Office of the President.

RIDEM is in the process of building an EJ Policy using the definition of EJ focus areas in 2022 proposed environmental justice legislation, S-2087. The figure below shows the EJ focus areas near the Project using the S-2087 criteria. Under S 2087, the criteria for EJ focus areas are:

- Limited English proficiency greater than 25 percent OR
- Median income $\leq$ 65 percent Statewide Median OR
- Minority population percent $\geq$ 25 percent OR
- Minority population percent $\geq$ 25 percent AND Town median income $\leq$ 150 percent Statewide median.

[2] http://www.dem.ri.gov/envequity/pdf/ejfinal.pdf
[3] https://ridemgis.maps.arcgis.com/apps/webappviewer/index.html?id=87e104c8adb449eb9f905e5f18020de5
[4] https://ejscreen.epa.gov/mapper/
[5] https://screeningtool.geoplatform.gov/en/cejst#10.95/41.582/-71.2582



S-2087 INDICATIVE EJ FOCUS AREAS IN THE VICINITY OF THE PROJECT

Source: Environmental Business Center of New England and RIDEM. 2022. EBC Rhode Island Webinar – Environmental Justice at RIDEM: How EJ Initiatives are Promoting Equity and Belonging in Regulations and Agency Actions (Slide 19). March 28, 2022.

RIDEM Environmental Resource GIS Map

Using the RIDEM Environmental Resource Map, there are no EJ populations within 1.0 mi (1.6 km) of the Project (Figure 7-1).

However, there are two EJ populations located in the City of Newport, Newport County, which are farther than 1.0-mi from the Project (see Table 7-1). These communities have been identified for their minority and low-income populations. Note, the distance from these EJ populations to the edge of the ECC is 4.3 mi and approximately 8.0 mi to the HDD landing in Portsmouth.

A third EJ population is across Mount Hope Bay, in the Town of Bristol, Bristol County. This EJ population is approximately 1.5 miles from the edge of the ECC and 2.9 miles from the closest point of the underground onshore export cable routes in Portsmouth.

TABLE 7-1. ENVIRONMENTAL JUSTICE AREA (BETWEEN 1-5 MILES OF THE PREFERRED CORRIDOR)

	Census Block Group	Total Population	Total Housing Units	% Minorities	EJ Status
Town of Newport	440050412009	1,505	228	49.8	Minority Population and Low Income
Town of Newport	440050405001	2,285	1,023	53.8	Minority Population and Low Income
Town of Bristol	440010307001	1,251	505	4.6	Low Income

Source: RIDEM Environmental Resource Map 2022.

Since all three identified EJ areas are over a mile from the Project and not crossed by the onshore Project facilities, these EJ populations are not reasonably likely to be impacted by the Project.

USEPA's EJ Screen 2.0

The USEPA has developed and updated their EJ mapping and screening tool which combines both environmental and demographic indicators using 2015-2019 ACS 5-year summary file data to examine how much the local demographics are above the national average. The reported EJ Index uses a formula to combine a single environmental factor with the demographic indicator while accounting for the population size of the block group. It signifies a community's overall social and environmental vulnerability. Table 7-2 presents the results of the EJ screen report for the Town of Portsmouth within 1.0-mi of the proposed onshore alternatives, showing a comparison between the local demographics and national average.

TABLE 7-2. EJ SCREEN REPORT – PORTSMOUTH (VERSION 2.0)

Category	Environmental Indicators	Percentile in State	Percentile in EPA USEPA Region	Percentile in U.S.
EJ Index	EJ Index for Particulate Matter 2.5	15	15	15
EJ Index	EJ Index for Ozone	14	12	10
EJ Index	EJ Index for 2017 Diesel Particulate Matter	17	21	18
EJ Index	EJ Index for 2017 Air Toxics Cancer Risk	16	18	16
EJ Index	EJ Index for 2017 Air Toxics Respiratory Hazard Index (HI)	21	26	22
EJ Index	EJ Index for Traffic Proximity	5	14	5
EJ Index	EJ Index for Lead Paint	21	20	5
EJ Index	EJ Index for Superfund Proximity	19	13	5
EJ Index	EJ Index for RMP Facility Proximity	38	26	20
EJ Index	EJ Index for Hazardous Waste Proximity	40	28	10
EJ Index	EJ Index for Underground Storage Tanks	11	7	5
EJ Index	EJ Index for Wastewater Discharge	15	15	15

Source: USEPA 2022.
CBGs in the Town of Portsmouth, within 1.0-mi of the proposed onshore alternatives.
Blockgroup: 440050401013, 440050401035, 440050401011, 440050401023, 440050401012
USEPA Region 1 (New England)
Approximate Population: 8,919
Input Area (square miles): 9.49

It is prudent to conclude these communities in the Town of Portsmouth, where the onshore alternatives have been proposed, is not disproportionately impacted by the 12 USEPA environmental indicators.

Table 7-3 presents the results of the EJ screen report for the Town of Middletown, showing a comparison between the local demographics and national average.

TABLE 7-3. EJ SCREEN REPORT – MIDDLETOWN (VERSION 2.0)

Category	Environmental Indicators	Percentile in State	Percentile in USEPA Region	Percentile in U.S.
EJ Index	EJ Index for Particulate Matter 2.5	19	20	18
EJ Index	EJ Index for Ozone	16	16	11
EJ Index	EJ Index for 2017 Diesel Particulate Matter	18	21	19
EJ Index	EJ Index for 2017 Air Toxics Cancer Risk	18	22	18
EJ Index	EJ Index for 2017 Air Toxics Respiratory Hazard Index (HI)	23	30	24

Category	Environmental Indicators	Percentile in State	Percentile in USEPA Region	Percentile in U.S.
EJ Index	EJ Index for Traffic Proximity	55	52	30
EJ Index	EJ Index for Lead Paint	35	36	10
EJ Index	EJ Index for Superfund Proximity	16	11	4
EJ Index	EJ Index for RMP Facility Proximity	30	18	14
EJ Index	EJ Index for Hazardous Waste Proximity	45	33	13
EJ Index	EJ Index for Underground Storage Tanks	55	47	32
EJ Index	EJ Index for Wastewater Discharge	19	20	18

CBGs in the Town of Middletown, west of the 1.0-mi corridor of the proposed offshore alternative Blockgroup: 440050404001, 440050401022, 440050401021
USEPA Region 1 (New England)
Approximate Population: 1,852
Input Area (square miles): 6.05

Table 7-4 presents the results of the EJ screen report for the Towns of Little Compton and Tiverton, showing a comparison between the local demographics and national average. Table 7-4. EJ Screen Report – Little Compton and Tiverton (Version 2.0)

TABLE 7-4. EJ SCREEN REPORT – LITTLE COMPTON AND TIVERTON (VERSION 2.0)

Category	Environmental Indicators	Percentile in State	Percentile in USEPA Region	Percentile in U.S.
EJ Index	EJ Index for Particulate Matter 2.5	7	6	9
EJ Index	EJ Index for Ozone	5	4	5
EJ Index	EJ Index for 2017 Diesel Particulate Matter	10	14	14
EJ Index	EJ Index for 2017 Air Toxics Cancer Risk	6	8	10
EJ Index	EJ Index for 2017 Air Toxics Respiratory Hazard Index (HI)	10	15	14
EJ Index	EJ Index for Traffic Proximity	24	27	13
EJ Index	EJ Index for Lead Paint	9	9	2
EJ Index	EJ Index for Superfund Proximity	23	17	7
EJ Index	EJ Index for RMP Facility Proximity	41	30	23
EJ Index	EJ Index for Hazardous Waste Proximity	38	25	9
EJ Index	EJ Index for Underground Storage Tanks	53	43	30
EJ Index	EJ Index for Wastewater Discharge	65	74	58

CBGs in the Towns of Little Compton and Tiverton, east of the 1.0-mile corridor of the proposed offshore alternative; and the Town of Bristol, north of the 1.0-mile corridor of the proposed offshore alternative.
Blockgroup: 440050417023, 440050414002, 440010308004
USEPA Region 1 (New England)
Approximate Population: 6,823
Input Area (square miles): 25.56

Council on Environmental Quality's Climate and Economic Justice Screening Tool

The CEQ employs a broader definition of disadvantaged communities resulting in more communities identified as disadvantaged as compared to the USEPA. Under the current CEQ formula, a census tract will be identified as disadvantaged in one or more of the following criteria categories.

If the census tract is above the threshold for one or more environmental or climate indicators:

- Climate change
- Clean energy and energy efficiency
- Clean transit
- Affordable and sustainable housing
- Reduction and remediation of legacy pollution
- Critical clean water and waste infrastructure
- Health burdens
- Training and workforce development

And the census tract is above the threshold for the socioeconomic indicators:

- Is above the 65th percentile for low income
- 80% or more of individuals 15 or older are not enrolled in higher education.
- Even with this wider scope, there are no EJ populations within the 1.0-mi vicinity of the onshore alternatives and the ECC.

7.2 POPULATION TRENDS

The Town of Portsmouth accounts for 1.6 percent of the Rhode Island population. Over half the population 25 years old and older has at least a bachelor's degree. This is much higher than the state average of 34.2 percent. Existing demographic data is summarized in Table 7-5 below.

TABLE 7-5. POPULATION CHARACTERISTICS, 2010-2020

	2010 Population (Decennial Census)	2020 Population (Decennial Census)	Population Change (2010-2020)	Median Age	Median Household Income (5-Year Estimate)	2019 Educational Attainment - Bachelor's degree or higher, Population 25 years and older
State of Rhode Island	1,052,567	1,097,379	4.3%	39.9	$ 67,167	34.2%
Town of Portsmouth	17,389	17,871	2.8%	45.8	$ 79,454	52.3%
Newport County (includes the Town of Portsmouth and Middletown)	82,888	85,643	3.3%	45.2	$ 81,652	48.1%
Bristol County (includes the Town of Bristol)	49,875	50,793	1.8%	43.3	$ 83,092	49.0%
Host Community as a % of State	1.7%	1.6%			118.3%	

Source: U.S. Census Bureau 2020; ACS 2019.

The population in Rhode Island has grown by 4.3 percent over the last decade, faster than in Newport and Bristol Counties. Growth in the Town of Portsmouth was 2.8 percent, with a median age almost six years older than the statewide average (see Table 7-5).

Median household income in both counties was higher than the state median. The 2019 ACS estimate for the Town of Portsmouth was $79,454, 18 percent higher than the statewide average.

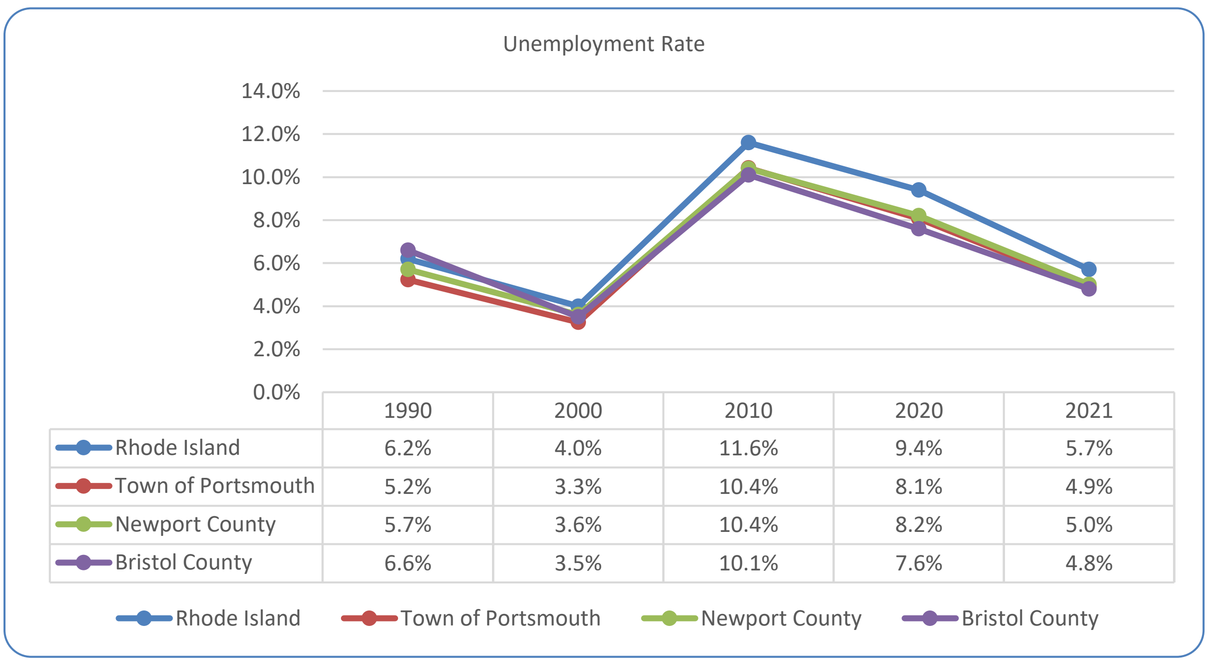
7.3 EMPLOYMENT OVERVIEW AND LABOR FORCE

The labor force and employment statistics for the Town of Portsmouth follows the general trend for Rhode Island and the nation as a whole (see Table 7-6 and the following graph) The unemployment rate rose during the 2008 recession, recovered, and dipped again in 2020 due to the global pandemic. The 2021 unemployment rate for the town fell to 4.9 percent, lower than the state average of 5.7 percent.

TABLE 7-6. TOWN OF PORTSMOUTH, RHODE ISLAND. LABOR FORCE AND EMPLOYMENT ESTIMATES, ANNUAL AVERAGE (1990-2021)

	1990	2000	2010	2020	2021
Labor Force	8,832	9,200	9,041	8,456	8,554
Resident Employment	8,370	8,901	8,099	7,774	8,134
Resident Unemployment	462	299	942	682	420
Unemployment Rate	5.2%	3.3%	10.4%	8.1%	4.9%

Source: Rhode Island Department of Labor and Training, Labor Force Statistics, Not Seasonally Adjusted, 1990-2021
https://dlt.ri.gov/labor-market-information/data-center/unemployment-ratelabor-force-statistics-laus



Source: Rhode Island Department of Labor and Training, Labor Force Statistics, Not Seasonally Adjusted, 1990-2021
https://dlt.ri.gov/labor-market-information/data-center/unemployment-ratelabor-force-statistics-laus.

UNEMPLOYMENT RATE (1990 – 2021)

Average employment by industry is shown in Table 7-7. In 2020, the top private industries in the Town of Portsmouth (manufacturing, healthcare and social assistance, and retail) accounted for close to half of its average employment.

Between 2010 and 2020, finance and insurance saw the most rapid growth in the Town of Portsmouth. The top industries in the state in 2020 were management of companies and enterprises; agriculture, forestry, fishing and hunting; and transportation and warehousing. The Rhode Island Department of

Labor and Training occupational projections for 2018 - 2028 predicted professional and technical services would experience the largest growth statewide (12.1 percent). The statewide projections are based on historical trends and precedes the impact of the pandemic.

TABLE 7-7 AVERAGE EMPLOYMENT BY INDUSTRY, 2010 - 2028

	2020				% Change (2010 - 2020)				RI Statewide Projections (2018 – 2028)
	Rhode Island	Town of Portsmouth	Newport County	Bristol County	Rhode Island	Town of Portsmouth	Newport County	Bristol County	
Total Private & Government	**444,633**	**5,796**	**37,182**	**12,664**	**-0.6%**	**4.0%**	**-3.5%**	**-1.7%**	**3.9%**
Total Private Only	**385,120**	**5,105**	**28,985**	**10,740**	**-0.5%**	**3.2%**	**-6.1%**	**-8.1%**	**3.4%**
Agriculture, Forestry, Fishing & Hunting	945	43	229	13	31.4%	2.4%	-	62.5%	9.1%
Mining	183	-	*	-	5.8%	-	-	-	2.7%
Utilities	1,101	*	43	-	-2.7%	-	-10.4%	-	0.9%
Construction	18,928	392	1,567	615	18.7%	45.7%	8.7%	-2.4%	10.9%
Manufacturing	37,414	1,425	2,131	1,586	-7.2%	-23.0%		-8.2%	-4.0%
Wholesale Trade	14,918	117	533	332	-5.7%	10.4%	-12.0%	20.7%	2.9%
Retail Trade	44,167	556	3,776	1,103	-5.8%	12.6%	-6.3%	-10.6%	0.8%
Transportation & Warehousing	10,693	68	402	*	22.8%	-9.3%	-31.6%	-	10.3%
Information	5,241	*	276	78	-47.5%	-	-	-	-4.3%
Finance & Insurance	25,629	209	1,046	369	9.5%	254.2%	-	-10.4%	3.6%
Real Estate & Rental & Leasing	5,675	30	484	122	0.8%	-74.6%	-25.5%	67.1%	7.3%
Professional & Technical Services	25,606	153	3,563	485	22.6%	-5.6%	14.0%	49.7%	12.1%
Management of Companies & Enterprises	12,620	*	520	67	35.3%	-	1.8%	67.5%	5.0%
Administrative Support & Waste Management	26,988	230	1,065	436	16.4%	21.1%	7.3%	4.3%	6.5%
Educational Services	19,629	255	1,144	1,457	2.2%	-4.5%	-3.5%	-	1.6%
Health Care & Social Assistance	75,452	863	4,019	1,646	-3.5%	71.2%	-	-18.5%	3.3%
Arts, Entertainment, & Recreation	5,720	160	1,089	367	-24.2%	63.3%	-23.0%	6.4%	5.8%

	2020				% Change (2010 - 2020)				RI Statewide Projections (2018 – 2028)
	Rhode Island	Town of Portsmouth	Newport County	Bristol County	Rhode Island	Town of Portsmouth	Newport County	Bristol County	
Accommodation & Food Services	38,939	386	5,664	1,389	-7.2%	-11.1%	-8.6%	-7.6%	8.6%
Other services (except Public Admin.)	15,205	167	1,433	614	-15.3%	-8.7%	-14.7%	-9.0%	4.9%
Unclassified Establishments	73	-	*	*	421.4%	-	-	-	-
Government	59,514	691	8,198	1,925	-1.2%	9.9%	7.2%	61.0%	1.2%

Source: Rhode Island Department of Labor and Training: Employment & Wages by Industry – NAICS.
https://dlt.ri.gov/labor-market-information/data-center/employment-wages-industry-qcew
RI Employment Projections: https://dlt.ri.gov/sites/g/files/xkgbur571/files/documents/pdf/lmi/occoutlook.pdf
(*) Represents information not shown due to the possibility of data being identified with an individual employer.
(Note: Projections are based on historical trends. 2028 data precedes the pandemic.)

7.4 LAND USE

The proposed Project may affect the zoning of land parcels hosting the Project's physical footprint, infrastructure, and related uses. Land use can also be directly and indirectly affected during the construction and decommissioning of the onshore infrastructure located in Portsmouth, Rhode Island: the landfall sites, the onshore export cable routes, and underground export cables. Once the proposed onshore underground portion of the Project is constructed, onshore and nearshore Project activities will have no impact on zoning and land use.

The zoning and land use information provided in this section is based on current zoning bylaws and maps for the Town of Portsmouth, Rhode Island.[6] It includes a mix of wetlands, recreational, agriculture, high and medium low density residential and commercial land (Figure 7-2).

In addition to the Common Route from the Sakonnet River landfall location, there are four variants under consideration for the onshore export cable route in the Town of Portsmouth. The data in Table 7-8 shows the land use type for the proportion of the route segment. The Onshore Study Area includes parcels within a 500-ft (152.4 m) radius from the onshore export cable routes (including the common route and onshore Route Variants 1 through 4), the landfall work areas, and the HDD routes to the estimated mean low water line. The total area studied for each route variant falls between 91 and 140 ac (approximately 36 to 56 ha).

TABLE 7-8. LAND USE IN THE ONSHORE STUDY AREA

Type	Description	% of Common Route	% of Route Variant 1	% of Route Variant 2	% of Route Variant 3	% of Route Variant 4
Agricultural	Cropland (tillable)	3.1%	3.4%	2.4%	3.7%	8.2%
Agricultural	Orchards, Groves, Nurseries	4.5%	2.7%	1.9%	2.9%	0.0%
Business	Commercial (sale of products and services)	2.8%	9.4%	7.0%	7.7%	0.9%
Business	Industrial (manufacturing, design, assembly, etc.)	0.0%	1.1%	0.6%	0.0%	0.0%
Forest	Brushland (shrub and brush areas, reforestation)	8.3%	4.1%	1.2%	3.7%	0.5%
Forest	Deciduous Forest (>80% hardwood)	0.0%	5.6%	8.4%	3.9%	6.0%
Forest	Mixed Forest	6.9%	6.2%	5.4%	7.6%	0.0%
Institutions	Institutional (schools, hospitals, places of worship, etc.)	1.5%	0.0%	0.0%	0.0%	0.0%
Recreational Resources	Beaches	1.1%	1.0%	0.3%	1.4%	0.2%
Recreational Resources	Developed Recreation (all recreation)	0.0%	25.4%	42.7%	2.9%	0.0%
Residential	High Density Residential (<1/8 acre lots)	3.7%	0.0%	0.0%	0.0%	0.0%

[6] https://www.rigis.org/datasets/edc::land-use-and-land-cover-2011/about

Type	Description	% of Common Route	% of Route Variant 1	% of Route Variant 2	% of Route Variant 3	% of Route Variant 4
Residential	Medium Density Residential (1 to 1/4 acre lots)	0.0%	0.2%	0.1%	0.21%	49.3%
Residential	Medium High Density Residential (1/4 to 1/8 acre lots)	13.7%	0.0%	0.0%	0.0%	7.7%
Residential	Medium Low Density Residential (1 to 2 acre lots)	1.3%	1.4%	1.0%	1.5%	3.7%
Residential	Low Density Residential (>2 acre lots)	0.0%	0.0%	0.0%	0.0%	0.1%
Transportation	Railroads (and associated facilities)	0.0%	0.8%	0.6%	0.8%	0.8%
Transportation	Roads (divided highways >200 ft plus related facilities)	10.1%	3.6%	8.4%	0.0%	0.0%
Other	Sandy Areas (not beaches)	0.5%	0.0%	4.6%	0.0%	0.0%
Other	Transitional Areas (urban open)	3.8%	0.0%	0.0%	0.0%	0.0%
Other	Vacant Land	6.0%	0.6%	0.4%	0.2%	0.2%
Other	Water	9.4%	3.2%	3.6%	3.3%	2.0%
Other	Wetland	23.4%	31.4%	11.3%	60.2%	3.9%
	Grand Total	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**
	Total Land Area (acres)	**108.55**	**96.3**	**139.89**	**91.83**	**90.42**

Source: RIGIS 2011.

7.4.1 Residential

According to the 2020 Decennial Census, there are a total of 8,610 housing units in the Town of Portsmouth. This is just under 20 percent of the housing units recorded in Newport County. Approximately 16 percent of these homes are vacant and furthermore, the area of landfall and crossing, in the northeast end of Portsmouth, is sparsely populated.

Zoning for the Common Route includes 18.7 percent for residential use; 13.7 percent or close to 15 ac of Medium High Density Residential parcels (0.25- to 0.125-ac lots); and an additional 3.7 percent is High Density Residential parcels where the lot size is under 0.125 ac. Just over an acre of the Common Route Study Area consists of Medium Low Density Residential parcels where lots are between 1.0 and 2.0 ac. There is minimal land zoned for residential development in the four onshore route variants. Just over 1.0 percent of the Study Area for each of the four route variants considered are Medium Low Density Residential lots.

7.4.2 Agricultural

Agricultural land includes land use designations for tillable cropland as well as orchards, groves and nurseries. Within the Study Area of the Common Route, on Chase Road, 8.0 percent or 8.2 ac is used for agriculture. Additionally, 6.0 ac of Mello’s Farm & Flower Center on Boyds Lane falls within the Study Area of all four route variants. Agriculture represents 6.0 percent of the Study Area.

7.4.3 Business

As a result of historically higher concentration in neighboring towns, Portsmouth does not have a lot of retail and commercial development. Three percent of the Common Route Study Area is designated for Commercial (sale of products and services) and Industrial (manufacturing, design, assembly, etc.) purposes.

Between 8 and 11 percent of the Study Area for each of the variants is zoned for commercial use. Businesses in the Route Variant 1 Study Area include Jay's 4WD Auto Shop and the RIDOT Garage; an Auto Shop and the RIDOT garage are in Route Variant 2 Study Area.

The RWU Baypoint Residence Hall included in this commercial zone is located at 144 Anthony Road. Both Route Variants 1 and 2 will occur within Anthony Road and hence pass this facility. Additionally, the proposed staging area for Route Variant 1 will occur within the parking lot of the RWU Baypoint Residence and Conference Center and the western edge of this staging area will abut the building.

7.4.4 Institutions

Based on RIGIS mapping of the Town's Comprehensive Plan, there is one 1.6 ac (0.6 ha) parcel zoned for institutions near the RIDOT Garage on Boyds Lane, within the Common Route Study Area. The majority of the onshore export cable route is sparsely populated, however there are residential neighborhoods and commercial developments in the vicinity. The Roger Williams University Baypoint Residence Hall, located at 144 Anthony Road, includes housing facilities and a conference center for its students. Mayflower Wind is in consultation with RWU representatives.

7.4.5 Tourism

Newport County is home to six municipalities including the City of Newport, Jamestown, Little Compton, Middletown, Portsmouth, and Tiverton. Newport County is home to many popular tourism activities and was once termed America's First Resort.[7] Much of the tourism in Newport County is dominated by activity within the City of Newport. Recreational activities in Newport are a combination of outdoor recreational activities (sailing, swimming, surfing, etc.), as well as indoor recreational activities (museum and mansion tours).[8] A popular tourist destination within the City of Newport is the Cliff Walk, a 3.5-mi public access walk that traverses the eastern shore of the city. The City of Newport is along the ECC.

According to Tourism Economics' Study on the Economic Impact of Tourism in the City of Newport and Aquidneck Island, 2018 (August 2019),[9] direct visitor spending in the City of Newport was $633 million, compared to $954 million for all of Aquidneck Island. This includes only the spending of visitors who spent the night or traveled at least 50 mi for a day trip. All impacts (direct, indirect, and induced) of all travelers, including non-commuters from within 50 mi as well as the impact of tourism-related construction, and industries providing services to resident travelers resulted in $919 million in direct visitor spending in the City of Newport and $1.4 billion in Aquidneck Island.

Mayflower Wind will work with the Town of Portsmouth to develop a traffic management plan that minimizes the disruptions to residences and commercial establishments in the vicinity of construction

[7] Tourism Economics. 2019. "Economic Impact of Tourism in the City of Newport and Aquidneck Island, 2018." https://assets.simpleviewinc.com/simpleview/image/upload/v1/clients/newportri/2018_Economic_Impact_2018_9ab62c13-709f-4662-ad87-e0ec2a62a17a.pdf. Accessed March 18, 2022.

[8] Tourism Economics. 2019. "Economic Impact of Tourism in the City of Newport and Aquidneck Island, 2018." https://assets.simpleviewinc.com/simpleview/image/upload/v1/clients/newportri/2018_Economic_Impact_2018_9ab62c13-709f-4662-ad87-e0ec2a62a17a.pdf. Accessed March 18, 2022.

[9] https://assets.simpleviewinc.com/simpleview/image/upload/v1/clients/newportri/2018_Economic_Impact_2018_9ab62c13-709f-4662-ad87-e0ec2a62a17a.pdf.

and installation activities. All areas temporarily affected by installation and construction activities, including roads, beaches, parking areas, green spaces, etc., will be restored to an equal or better condition, as appropriate for the existing land use.

7.4.6 Open Space

Open space includes state and local conservation areas permanently protected from future development or deed restrictions. The open space area of note for the Project is Town Pond, state-owned and managed by the Aquidneck Island Land Trust. This wetland system is within the Onshore Study Area for Route Variants 1 and 3 (see Figure 7-2). Restoration of this 23-ac pond was completed in 2008 and has become a popular birding spot.

7.4.7 Recreational Resources

The Common Route makes landfall at Island Park Beach in Portsmouth which includes coastal beach, coastal dune, and manmade shoreline features.

Onshore Route Variants 1 and 3 cross the state-owned Bertha K. Russel Preserve, overlooking Mount Hope Bay. This tidal marsh is managed by the Aquidneck Land Trust. Hikers and birders follow an out and back trail on the shore of the wetland system of Town Pond.

Onshore Route Variant 2 runs along Anthony Road, parallel to Montaup Country Club golf course for approximately 0.54 mi (0.87 km) and then into the parking lot of the Montaup Country Club where the HDD staging area would be located. Route Variant 2 would cross under Montaup Country Club golf course using HDD. A total of 43 percent of the Route Variant 2 Study Area is zoned for recreational use. A portion of the Montaup Country Club falls within the Onshore Route Variant 1 Study Area so that recreational land constitutes 25 percent of this Study Area.

7.5 AQUACULTURE

Mayflower Wind will avoid or minimize adverse impact to aquaculture in Rhode Island and will work with the RI CRMC, other relevant agencies and the fishery community to achieve that end. The RI CRMC is the regulatory body that has as its primary responsibility the preservation, protection, development and where possible the restoration of the coastal areas of the state via the implementation of its integrated and comprehensive coastal management plans and the issuance of permits for work with the coastal zone of the state.

Part of the RI CRMC's mission is to protect state aquaculture. Much of the Rhode Island aquaculture activities occur within the State's several inland salt ponds, but aquaculture is also scattered nearshore in Narragansett Bay.[10] Although there are several approved aquaculture areas within The Cove on Aquidneck Island and adjacent to Hog Island, the export cable route is not directly adjacent or collocated with any of these sites. There are no aquaculture lease sites within the ECC within Rhode Island state waters, based on the aquaculture lease areas noted in RIDEM Marine Fisheries 2021 (Figure 7-3). Mayflower Wind is continuing their routing assessment to minimize impacts on recreation boating with the intention to avoid moorings. In the event that some moorings in the Sakonnet River and Mount Hope Bay are temporarily displaced, Mayflower Wind will coordinate with the applicable Harbor Master and owner of the mooring. Figure 7-3 shows floating fish traps and aquaculture leases (RIDEM Marine Fisheries 2020) and registered moorings in Portsmouth (Town of Portsmouth 2022).

[10] Rhode Island Department of Environmental Management. n.d. "ArcGIS Web Application." Ridemgis.maps.arcgis.com. Accessed March 18, 2022. https://ridemgis.maps.arcgis.com/apps/webappviewer/index.html?id=87e104c8adb449eb9f905e5f18020de5.Accessed March 18, 2022.

7.5.1 Fish Traps

Regarding fishery impact, Mayflower Wind has identified floating fish trap fishery as a potential impact and is taking steps to avoid that impact. The floating fish trap fishery in Rhode Island is a fishery and gear type unique to Rhode Island. Essentially a hybrid of a fishing weir and a fish trap, this gear is predominantly fished in shallower, inshore areas close to shore. While this is a wild capture fishery, it is in some ways permitted and operated as an aquaculture activity. Permits to operate fish traps are tied to specific, permanent locations which offer certainty in the spatial extent of fishing effort, unlike other wild capture fisheries. However, while fish trap locations offer spatial certainty, the issuance of a permit or appearance of a fish trap on the RIDEM Marine Fisheries Map does not necessarily mean that that fish trap is being actively fished. Fish traps may become actively fished at any time, although there are requirements for the fisherman to provide the necessary notifications (J. Livermore, RIDEM Division of Marine Fisheries [COP], personal communication, July 22, 2021). Mayflower Wind has conducted outreach, including to the Rhode Island Division of Marine Fisheries, and performed scouting in advance of geophysical and geotechnical surveys to gain temporal knowledge of the location of fish traps in addition to the spatial certainty offered by permit location information. There are currently no licenses in Mount Hope Bay and several at the mouth of the Sakonnet River (Figure 7-3).

7.5.2 Navigation and Shipping

The sources employed to identify vessel traffic patterns include Automatic Identification System data from 2019,[11] Nationwide Automatic Identification System data for 2019, 2016 VMS data from NMFS, VTR data from 2011 to 2015, the 2020 MARIPARS,[12] and interactions with recreational boating, fishing, and towing industry organizations, agencies, and other stakeholders. Figure 7-4 presents density of vessel tracks based on 2019 AIS data.

Vessel traffic in the Sakonnet River and Mount Hope Bay consists mostly of smaller vessels with a high seasonal influence on the level of traffic. Pleasure vessels transit primarily in the Sakonnet River, and Mount Hope Bay. There is minimal cargo and tanker activity within the Sakonnet River and Rhode Island Sound with slightly higher activity within Mount Hope Bay. Commercial fishing occurs in Rhode Island Sound with limited activity within Mount Hope Bay and the Sakonnet River.

Mayflower Wind does not anticipate any impacts to navigation and shipping in Rhode Island from the Project. Mayflower Wind will require the marine contractor to post LNMs on the Mayflower Wind website. Mayflower Wind will submit LNMs to the USCG and Fleet Command prior to the commencement of offshore construction activities. Mayflower Wind will utilize on-scene safety vessel(s) and/or personnel to advise mariners of construction activity, as necessary.

7.5.3 Recreational Boating

A 2012 survey of boating patterns and economic activity of 373,766 qualified registered boaters from Massachusetts, Maine, New Hampshire, Rhode Island, Connecticut, and New York found that the majority of recreational boating occurs within 3.0 nm (5.5 km) of shore and within state waters.[13] The

[11] Mayflower Wind Energy LLC and DNV Energy USA Inc. 2021. *Navigation Safety Risk Assessment (Mayflower Wind Construction and Operations Plan Appendix X - Docket No. BOEM-2021-0062).* August 27, 2021

[12] USCG. (2020). *Massachusetts and Rhode Island Port Access Route Study. Final Report. USCG-2019-0131.* https://www.federalregister.gov/documents/2020/05/27/2020-11262/port-access-route-study-the-areas-offshore-of-massachusetts-and-rhode-island

[13] Starbuck K, Lipsky A. SeaPlan. 2012 Northeast Recreational Boater Survey: A Socioeconomic and Spatial Characterization of Recreational Boating in Coastal and Ocean Waters of the Northeast United States. Technical Report Oct 2013. Boston (MA): Doc #121.13.10, p.101

survey identified 5,114 boating routes and 4,635 activity points.[14] Figure 7-5 shows the results of this recreational boater survey.

In Mount Hope Bay and the Sakonnet River, boating density was relatively even across the bay with less density towards the northern terminus (Figure 7-5. Of the estimated 907,400 boating trips in ocean and coastal areas during 2012, 7.0 percent (65,042 trips) were attributed to vessels registered in Rhode Island. Most boating trips occur between May and October, with a peak in July and August. The survey estimated that boaters with vessels registered in the study region (Massachusetts, Maine, New Hampshire, Rhode Island, Connecticut, and New York) spent almost $2 billion on recreational boating and related activities in 2012, of which $134 million occurred in Rhode Island. Mayflower Wind does not anticipate any impacts to local marinas within the Sakonnet River and Mount Hope Bay. The ECC does not directly disturb marinas within the Sakonnet River and Mount Hope Bay.

Mayflower Wind’s intends to maintain access for recreation boating while maintaining safe separation distances from construction vessels. Project construction may result in temporary but unlikely effects to recreational boating activities. Temporary effects may arise from the presence of Project-related vessels stationed at the work locations along the ECC. Mayflower Wind will implement construction safety zones in consultation with the USCG and communicate to local mariners regarding upcoming and ongoing construction activities within the ECC.

7.5.4 Commercial and Recreational Fishing

A diverse array of commercial fishing activity occurs in the region. Fisheries resources are targeted in the region and within the ECC by vessels of different sizes using different gear types and are dictated by seasons, quotas, environmental factors, market forces, and federal and state-led regulations.

Table 7-9 shows the landings for Rhode Island ports in 2019 and 2020. Point Judith on the coast of Narragansett is the highest valued port in Rhode Island. In 2019, it was the 12th highest valued in the U.S., and the 18th highest valued in 2020.

TABLE 7-9. LANDINGS BY PORTS IN RHODE ISLAND

	2019		2020	
Port	Millions of Pounds	Millions of Dollars	Millions of Pounds	Millions of Dollars
Point Judith, RI	48.1	$65.9	42.6	$46.7
North Kingstown, RI	19.2	$14.1	19.6	$14.4
Newport, RI	4.9	$7.8	5.2	$7.0
Little Compton, RI	3.9	$3.4	4.7	$2.8
Total	**76.1**	**$91.2**	**72.1**	**$70.9**

Source: NOAA 2021.

In 2019, all four ports in Rhode Island landed 76.1 million pounds of fish valued at $91.2 million. The most commonly landed species in Rhode Island by weight were shortfin squid, longfin squid, and butterfish. The highest landed species by value were sea scallops, longfin squid, and American lobster.

In 2020, the ports in Rhode Island landed 72.1 million pounds of fish valued at $70.9 million. The most commonly landed species in Rhode Island by weight were shortfin squid, longfin squid, and skate. The highest landed species by value were longfin squid, sea scallops, and shortfin squid.

[14] Starbuck K, Lipsky A. SeaPlan. 2012 Northeast Recreational Boater Survey: A Socioeconomic and Spatial Characterization of Recreational Boating in Coastal and Ocean Waters of the Northeast United States. Technical Report Oct 2013. Boston (MA): Doc #121.13.10, p.101

While the fishing activity in the ECC is relatively lower than in other areas of the region, there are commercial fishing vessels from Massachusetts, Rhode Island, and other states that fish in the ECC. Fish caught in the ECC may be landed in other states besides Massachusetts and Rhode Island. The top 10 ports with the highest annual average landings based on annual totals from 2008 to 2018 in the ECC are presented in Table 7-10.

TABLE 7-10. ANNUAL AVERAGE LANDINGS AND VALUE FOR TOP 10 PORTS IN THE ECC

Port Landed	Average Yearly Landings (lbs.)	Average Yearly Value (dollars)
New Bedford, MA	575,459	$265,404
Point Judith, RI	264,544	$248,449
Newport, RI	114,982	$37,928
Little Compton, RI	91,258	$120,977
All Others	85,044	$40,282
Fall River, MA	56,161	$13,358
Gloucester, MA	28,054	$4,226
Montauk, NY	21,992	$24,981
Boston, MA	19,966	$3,646
Barnstable, MA	2,609	$2,458
Total for All Ports	**1,331,827**	**$910,751**

Source: NOAA 2021.

The intensity and locations of recreational fishing within Rhode Island state waters are not expected to be affected. In fact, the proposed Project may provide some positive effects to recreational fisheries by creating new fish-friendly habitats for certain species.[15] It has been recognized that the Project infrastructure may function as fish aggregating devices[16] and provide additional habitat for certain species.

7.5.5 Future Land Use

The 2020 Portsmouth Comprehensive Community Plan is under public review, and yet to be approved by the Town Council. The Comprehensive Community Plan was last approved in 2002. According to the Future Land Use Map,[17] the 2025 plan for the majority of the Onshore Study Area is not significantly different.

7.6 VISUAL RESOURCES

Visual resources include elements of the surrounding area that may be sensitive to changes to their visual setting; including historic sites, scenic landscapes, lighthouses, state parks/beaches, wildlife refuges, designated scenic areas, and other recreation and tourism areas. Effects to visual resources can be perceived by both residents (year-round and seasonal) and tourists. Mayflower Wind retained the services of Tetra Tech, Inc. to perform a Visual Impact Assessment of the Project.

[15] Kirkpatrick, A.J., S. Benjamin, G.S. DePiper, T. Murphy, S. Steinback, and C. Demarest. 2017. SocioEconomic Impact of Outer Continental Shelf Wind Energy Development on Fisheries in the U.S. Atlantic. Volume II—Appendices. U.S. Dept. of the Interior, Bureau of Ocean Energy Management, Atlantic OCS Region, Washington, D.C. OCS Study BOEM 2017-012. 191 pp)

[16] McCann (2012). Developing Environmental Protocols and Modeling Tools to Support Ocean Renewable Energy and Stewardship. U.S. Dept. of the Interior, Bureau of Ocean Energy Management, Office of Renewable Energy Programs, Herndon, VA., OCS Study BOEM 2012-082, 626 pp

[17] Town of Portsmouth (2002). Comprehensive Community Plan, A cooperative effort of the Town Council, Portsmouth Citizen Advisory Committee, Planning Board, Comprehensive Plan Committee and Town Planner

The Project will introduce no permanent above-ground structures into the Town of Portsmouth, Rhode Island, and therefore photo-simulations to depict long-term impacts to visual receptors such as residences, parks, public open spaces, etc., is not warranted. There will be only temporary visual effects impacts during the construction-phase of the Project, such as construction-related equipment and vehicles. There will be no long-term visual impacts from the Project, which will be underground.

7.7 NOISE

The state of Rhode Island does not have regulations that set community noise exposure criteria or abatement measurements. Instead, noise abatement criteria are instituted by municipalities of Rhode Island. Temporary noise impacts will occur during construction of the Project. During construction, Mayflower Wind will require that construction comply with the Portsmouth noise ordinance. In some instances, and as dictated by state or the local authority, construction may need to be performed at night to minimize daytime impacts to commuters and local and state roadways. Construction-related activities such as the HDD drilling, installation of the high-density polyethylene conduit and cable-pulling operations may need to be continuous efforts that occur throughout the day and night. To the extent practicable, these operations will be maximized during daytime hours. During the operation of the Project, there will be no noise impacts.

Mayflower Wind requested that POWER estimate the expected noise from the construction of the offshore export cables and onshore export cables in Portsmouth, Rhode Island. This study evaluates the potential for noise impacts associated with the construction and includes existing audible noise measurements taken in the vicinity of the Project. The construction noise report can be found in Attachment I.

Ambient noise is the total noise in an environment and usually comprises sounds from many sources. In typical environments, changes in noise levels of 1 to 2 decibels (dB) are generally not perceptible. However, it is widely accepted that people, in general, are able to begin to detect sound level increases of 3 dB in typical environments. Further, a 5 dB increase is generally perceived as a distinctly noticeable increase, and a 10 dB increase is generally perceived as a doubling of loudness. Typical ranges of audible sound levels for some common sources of noise are presented in Table 7-11. The following sections of this report present the basic parameters used to describe the environmental sound levels evaluated in this analysis.

TABLE 7-11. TYPICAL RANGE OF AUDIBLE NOISE FROM VARIOUS SOURCES

Source	Measured Sound Level
Loud Automobile Horn	110 to 120 dBA
Inside Motor Bus	80 to 90 dBA
Average Traffic on Street Corner	70 to 80 dBA
Conversational Speech	60 to 70 dBA
Typical Business Office	50 to 60 dBA
Living Room, Suburban Area	40 to 50 dBA
Library	30 to 40 dBA
Bedroom at Night	20 to 30 dBA

Source: USEPA 1974. Information on Levels of Environmental Noise Requisite to Protect the Public Health and Welfare with an Adequate Margin of Safety

Audible noise decreases with distance from the source. Overall, the attenuation of noise from the source is approximately 3 to 6 dB per doubling of the distance from a location. An individual's perception of a sound pressure level has been documented to estimate an individual's reaction to a change in noise. Table 7-12 provides a means for criteria for predicting this reaction.

TABLE 7-12. PERCEPTION OF SOUND LEVEL CHANGE

Change dB(A)	Human Perception of Sound
2-3	Barely perceptible
5	Readily noticeable
10	Doubling or halving of the loudness of sound
20	Dramatic Change
40	Difference between a faintly audible sound and a very loud sound

Source: Bolt, Beranek and Newman, Inc., Fundamentals and Abatement of Highway Traffic Noise, Report No, PB-222-703, June 1973.

Table 7-13 identifies the types of equipment to be used for each activity during the construction sequence and provides a range of typical sound levels from the equipment. The typical sound levels were calculated at a distance of 50 ft (15.24 m) from the source and have also been calculated for noise levels at the nearest residential building to provide a conservative estimate of the typical distance from work areas to residences. See Attachment I for more information.

TABLE 7-13. CONSTRUCTION SOUND LEVELS BEFORE MITIGATION [a]

Description of Activity	Type of Equipment	Typical Sound Levels at 50 Feet for a Single Piece of Equipment (dBA)	Estimated Sound Levels (dBA) at Closest Residence[b]
HDD Process at Mount Hope Bridge	• Generator • Power Plant • Drill Rig • Trash Pump • Excavator • Crane	93 to 135	91 to 133
HDD Process at Golf Course Parking Lot	• Generator • Power Plant • Drill Rig • Trash Pump • Excavator • Crane	93 to 135	67 to 109
HDD Process at Boyds Ln.	• Generator • Power Plant • Drill Rig • Trash Pump • Excavator • Crane	93 to 135	70 to 112
HDD Process at Baypoint Residence Hall	• Generator • Power Plant • Drill Rig • Trash Pump • Excavator • Crane	93 to 135	84 to 126

Description of Activity	Type of Equipment	Typical Sound Levels at 50 Feet for a Single Piece of Equipment (dBA)	Estimated Sound Levels (dBA) at Closest Residence[b]
HDD Process at Anthony Ln. Peninsula	• Dump trucks • Bulldozers, excavators, backhoes • Graders • Forwarders • 10-wheel trucks with grapples • Cranes	93 to 135	67 to 109
Vegetation Removal	• Grapple trucks • Bulldozers • Track-mounted mowers • Motorized tree shears • Log forwarders • Chippers • Chain saws • Box trailers	70 to 95	78 to 103
Erosion/Sediment Controls and Road Improvements and Maintenance	• Dump trucks • Bulldozers, excavators, backhoes • Graders • Forwarders • 10-wheel trucks with grapples • Cranes	70 to 98	78 to 106
Installation of Foundations and Structures	• Backhoes and excavators • Rock drills mounted on excavators • Cluster drills with truck mounted compressors • Concrete trucks • Cranes • Aerial lift equipment • Tractor trailers	70 to 94	78 to 102
Underground Wire Installation	• Puller-tensioners • Conductor reel stands • Cranes • Bucket trucks • Flatbed trucks • Drill rig trucks • Rock drill • Jackhammer	70 to 94	78 to 102

Description of Activity	Type of Equipment	Typical Sound Levels at 50 Feet for a Single Piece of Equipment (dBA)	Estimated Sound Levels (dBA) at Closest Residence[b]
Underground Wire Installation	• Puller-tensioners • Conductor reel stands • Cranes • Bucket trucks • Flatbed trucks • Drill rig trucks • Rock drill • Jackhammer	70 to 94	78 to 102
Site Restoration	• Bulldozers • Excavators • Tractor-mounted York rakes • Straw blowers • Hydro-seeders • Vibratory Concrete Mixer	70 to 95	78 to 103

[a] *Values above 130 dBA exceed the threshold of discomfort.*
Source: https://www.fhwa.dot.gov/environment/noise/construction_noise/handbook/handbook09.cfm
HDD noise levels provided by Mayflower Wind
[b] *Estimated sound levels calculated at an attenuation rate of 6 dB per doubling of distance.*

The potential noise impact of this Project is largely dependent on the final HDD location. The proposed drill location at the Mount Hope Bridge will produce a maximum estimated noise level of 133 dBA at the nearest residence assuming the HDD equipment is operated at continuous full load. The proposed drill location at the Montaup Country Club parking lot will produce a maximum estimated noise level of 109 dBA at the nearest residence assuming the HDD equipment is operated at continuous full load. The proposed drill location at the intersection of Boyd's Lane and Park Avenue will produce a maximum estimated noise level of 112 dBA at the nearest residence assuming the HDD equipment is operated at continuous full load. The proposed drill location at RWU Baypoint Residence Hall will produce a maximum estimated noise level of 126 dBA at the nearest residence assuming the HDD equipment is operated at continuous full load. The proposed drill location at RIDEM/Aquidneck Land Trust (electric transmission ROW) will produce a maximum estimated noise level of 109 dBA at the nearest residence assuming the HDD equipment is operated at continuous full load. Permit applications will need to be filed with the Town of Portsmouth to perform construction work overnight. To the extent it is necessary and required, a request for a sound variance will be filed with the Town of Portsmouth. Mayflower Wind will address noise impacts through mitigation measures, as described further in Section 9 of this Siting Report.

7.8 Historic and Archaeologic Resources

BOEM is the responsible regulator for renewable energy projects on the OCS per the Outer Continental Shelf Lands Act (43 U.S.C. § 1337) and the Energy Policy Act of 2005 (PL 109-58). Mayflower Wind was issued an OCS lease under these regulations (titled Commercial Lease of Submerged Lands for Renewable Energy Development of the OCS, Number OCS-A 0521), which constitutes a federal undertaking subject to Section 106 of the National Historic Preservation Act. Section 106 (36 C.F.R. 800) defines an undertaking as a project, activity, or program funded in whole or in part under the direct or indirect jurisdiction of a federal agency, including those carried out by or on behalf of a federal agency;

those carried out with federal financial assistance; and those requiring a federal permit, license or approval (36 C.F.R. 800.16[y]). The Section 106 process requires federal agencies to take into account the effects of their undertakings on historic properties and afford the [Advisory Council on Historic Preservation] a reasonable opportunity to comment on such undertakings (36 C.F.R. 800.1[a]). Accomplished through the Section 106 process, BOEM will consult with relevant stakeholders including SHPOs and Native American Tribes, including the Tribal Historic Preservation Officers.

Additionally, Rhode Island state agency permits, and approvals will be required for the Project under the Antiquities Act of Rhode Island (Antiquities Act, RIGL 42-45 *et seq.*), which requires all state agencies, departments, institutions, commissions, and all Rhode Island municipalities to cooperate with the RIHPHC in the preservation, protection, excavation, and evaluation of specimens and sites. The RIHPHC has promulgated regulations implementing the Antiquities Act, which, in part, establish an advisory process to review state supported undertakings for potential effects to archaeological or cultural resources (530-RICR-10-00-1). Undertakings that are subject to compliance with Section 106 of the National Historic Preservation Act, such as the Project, satisfy the requirements the Antiquities Act by adhering to the federal 36 C.F.R. 800 regulations (530-RICR-10-00-1.14I).

7.8.1 Terrestrial Archaeological Resources

Mayflower Wind's contractor, PAL, conducted a terrestrial archaeological resources assessment for the Project in Portsmouth, including Phase I site identification archaeological testing. The purpose of the archaeological resources assessment was to determine if areas of anticipated ground disturbance from Project construction, operation, and decommissioning in the Project area of potential effect (APE) contain recorded archaeological sites, and to evaluate the potential for undiscovered archaeological sites to be present. The archaeological investigation included archival research, development of environmental and cultural contexts for the Aquidneck Island components of the Project, review of studies of previous land uses that may have affected archaeological resources, and field review, and archaeological hand testing.

Mayflower Wind has identified a preliminary APE to assist this process; it encompasses a larger area than required for onshore construction activities to accommodate the full range of siting and design options being considered. Ongoing design efforts may result in further refinement of Project components, and the final APE may therefore encompass a smaller geographic footprint. For purposes of this terrestrial archaeological resources assessment, Mayflower Wind has defined the Aquidneck Island preliminary Project APE as the site of the proposed open trench installation on Anthony Road and Boyd's Lane and the HDD staging areas at RWU Baypoint Residence Hall, RIDEM/Aquidneck Land Trust, Montaup Country Club, and Mount Hope Bridge HDD sites in Portsmouth.

PAL's inventory of reported archaeological sites in northeastern Portsmouth indicate periodic Native American settlement and resource exploitation around the margins of Portsmouth's The Cove. The area is also near the seventeenth century Founder's Brook settlement, which included early settlers such as Anne Hutchinson and John Clarke, and the Revolutionary War Battle of Rhode Island Historic District. Archival research and a walkover of the Portsmouth Onshore Route Variants 1, 2, 3 and 4 was performed by PAL to prepare an archaeologic sensitivity assessment and to identify above ground historic features, buildings, and districts.

PAL identified two archaeological sites in the Project area in the Town of Portsmouth. The RIHPHC recently assigned site numbers to the two sites. The sites have the potential to contribute new information about Native American resource use and settlement during the Transitional Archaic and Middle Woodland periods around Portsmouth's The Cove. These sites are recommended as potentially eligible for listing in the National Register of Historic Places under Criteria A and D. The RIHPHC has concurred with PAL's recommendation to perform archaeological monitoring during trenching and excavation in these areas.

7.8.2 Marine Archaeological Resources Assessment

A Marine Archaeological Resources Assessment, consistent with BOEM's Guidelines for Providing Archaeological and Historic Property Information Pursuant to 30 C.F.R. 585[18], was completed for the Project by R. Christopher Goodwin & Associates, Inc., who is serving as the Qualified Marine Archaeologists for Mayflower Wind. Along with Mayflower Wind-collected survey data, the Qualified Marine Archaeologist reviewed extant public and proprietary databases containing information on shipwrecks, downed aircraft, or other potentially significant marine archaeological resources within the Project and surrounding areas. Ecological, geological, and cultural contexts were also developed to assist in the identification of potential submerged pre-contact Native American cultural resources. R. Christopher Goodwin & Associates, Inc. reviewed multibeam echosounder, multibeam bathymetry, magnetometer, side scan sonar, sub-bottom profiler, single channel and multichannel ultrahigh resolution seismic data collected during the 2019, 2020, and 2021 survey campaigns to assess the presence or absence of potential submerged cultural resources and paleolandscapes within the APE offshore. Furgo USA Marine, Inc. collected data to support the Marine Archaeological Resources Assessment and characterize archaeological and paleolandform features within the ECC.

7.9 TRANSPORTATION

The Project assessed existing transportation infrastructure within the Study Area, both onshore and offshore. A summary of existing conditions is presented below.

7.9.1 Marine Navigation

Mayflower Wind anticipates that the Project will not adversely impact marine navigation.

During the construction of the offshore export cables, including the landfall, Project construction vessels and support craft will transit to the construction site from nearby ports and be stationed along the ECC carrying out construction activities during the anticipated construction duration. A detailed NSRA prepared for the Project assessed existing vessel operational data including Automatic Identification System data, Vessel Monitoring System data, USCG data and ongoing dialogue with recreational and fishing industry organizations, pilot organizations, commercial maritime industry representatives, port authorities, state advisory groups and the USCG.

The NSRA Study Area experiences a wide range of vessel traffic density, vessel types, and vessel sizes. Vessel traffic in the northern portions of the NSRA Study Area (the Sakonnet River and Mount Hope Bay) consists mostly of smaller vessels with a high seasonal influence on the level of traffic. Relatively few vessels transit between the northern portion of the NSRA Study Area and the southern portion (towards the Lease Area). Vessel traffic in the southern portion of the NSRA Study Area is more complex due to the mixture of deep draft vessels and commercial fishing vessels engaged in fishing or transiting to fishing locations. The NSRA concluded that given the nature and frequency of marine traffic in the ECC area, navigation safety will not be adversely impacted.

Additionally, the Project frequently meets with the USCG to discuss the planned export cables and identify any issues of concern, especially to ensure they do not interfere with the agency's efforts.

[18] United States Department of the Interior Bureau of Ocean Energy Management Office of Renewable Energy Programs (2020). Guidelines for Providing Archaeological and Historic Property Information Pursuant to 30 CFR Part 585

7.9.2 Onshore Traffic

Mayflower Wind will work to minimize onshore traffic impacts. Project construction is anticipated to result in a temporary increase in construction, support, and workforce vehicle traffic along and to and from the onshore Project components, as well as to and from the ports. Nearby communities will experience an increase in construction-related activities, including a short-term increase in construction-related noise and equipment emissions. The Project would use existing roads, ROWs, and infrastructure where possible; therefore, new impacts resulting from construction activities would be minimized to the extent practicable and are anticipated to be similar in nature to other utility or road improvement works carried out in these locations.

The construction related traffic increase will be small relative to total traffic volume on public roads in the area. In addition, it will be intermittent, temporary, and will cease once construction of the Project is completed. The addition of this traffic for the limited periods of time is not expected to result in any additional congestion or change in operating conditions along any of the roadways along the ROW.

Mayflower Wind will work with the Town of Portsmouth to develop a traffic management plan to minimize disruptions to residences and commercial establishments in the vicinity of construction and installation activities. Construction monitoring would ensure compliance with the traffic management plan by construction contractors.

Temporary blockage of some roads during installation activities may restrict access to some local areas, although it is unlikely that access to specific establishments will be completely inhibited. As detailed in the Project construction schedule (Section 4, Description of Proposed Activities), the disruptions in access will occur for a short period at any given location as installation of equipment progresses along the underground onshore export cables. Mayflower Wind will develop an onshore construction schedule to minimize effects to recreational uses and tourism-related activities to the extent feasible, such as scheduling nearshore construction activities to avoid the height of the summer tourist season. Mayflower Wind will work with and coordinate with stakeholders/visitors' bureaus to schedule construction activities outside of major events taking place onshore. To keep stakeholders informed, Mayflower Wind will have a construction schedule webpage that will alert abutters, residents and visitors of construction locations, dates, activities, and traffic control measures.

7.10 Electric and Magnetic Fields Onshore

Mayflower Wind understands that EMF produced by the transmission of electricity can be a concern to communities where transmission infrastructure is sited. Mayflower Wind has studied predicted EMF from the Project and continues to engage stakeholders on this topic through direct outreach and the publication of EMF materials on a dedicated web page for the local community.[19]

EMFs are created anywhere there is a flow of electricity, and their strength diminishes within a short distance from the source. The strength of electric fields depends on voltage, which is the pressure behind the flow of electricity. Magnetic fields are produced by current, which is the flow of electricity. A Magnetic Field Analysis study was conducted to model the magnetic fields produced by typical onshore and offshore cable configurations for the Project and contextualize them to the latest research and guidelines for public health and the marine environment (see Attachment D). The modeling analysis focuses on magnetic fields because the electric fields arising from the voltage on the export cables will be shielded by cable materials.

[19] https://mayflowerwind.com/southcoast/

For the three representative HVDC onshore duct bank configurations that were modeled, peak maximum DC MF levels ranging from 181 to 433 milligauss (mG) were obtained at 1.0 m above the ground surface, which is far below health-based exposure guidelines for DC magnetic fields. For each duct bank configuration, the magnetic field levels drop off very rapidly with increasing lateral distance from the cables, for example, ranging from 3.5 to 30.5 mG at 25 ft (7.6 m) from the duct bank centerlines.

The state of Rhode Island has not adopted standards for EMFs from HVDC transmission lines or other sources that can be compared to the model-predicted DC magnetic fields. Scientists have not reported any confirmable chronic health risks for the weak steady EMFs associated with HVDC power transmission; this is consistent with the fact that humans have lived for tens of thousands of years in the presence of the earth's DC geomagnetic field, which is not known to adversely interact with biological processes or directly affect human health.

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8 IMPACT ANALYSIS

This section presents an analysis of the potential impacts of the Project on the existing natural environment and socioeconomic resources within the Project Area.[1] As with any construction project, potential impacts can be associated with construction, operations and/or maintenance. These impacts have been avoided or minimized by the careful design of the ECC and onshore export cable routes and landfall locations and by the adoption of numerous avoidance, minimization, and mitigation practices.

Mayflower Wind will design and construct the Project in a manner that avoids or minimizes the potential for environmental impacts. Mayflower Wind's design and construction avoidance, minimization, and mitigation measures are discussed in Section 9 of this Siting Report. Mayflower Wind will also develop a monitoring program to be implemented during construction of the Project to ensure that it is constructed in compliance with all relevant licenses and permits and applicable federal, state, and local laws and regulations. The following sections discuss potential impacts associated with the construction and O&M of the Project within various environmental and socioeconomic resources.

8.1 IMPACT ANALYSIS

Sections 6 and 7 of this Siting Report inventory the natural and social/development environments, respectively, that are located within the offshore and onshore Portsmouth area of the Project. The following subsections identify the anticipated impacts to the natural and social environments within the context of the Project activities located offshore in the Sakonnet River, onshore in Portsmouth and offshore in Mount Hope Bay.

8.1.1 Analysis of Impacts to the Natural Environment

8.1.1.1 Climate and Weather

The Project will have a positive impact on climate change by substantially reducing GHG emissions and substantially increasing clean energy supply from offshore wind generation.

As further described in Section 3 of this Siting Report, the Project need is driven by the strong public policies and legislative directives of the various New England states, including Rhode Island to reduce GHG emissions and increase clean energy in the supply mix, including specifically from offshore wind.

8.1.1.2 Geology and Surficial Geology

Offshore Export Cables

The routing of the ECC has been designed to avoid or minimize impacts to geologic resources in the marine environment. The G&G marine surveys completed by Mayflower Wind are guiding the refinement of the ECC to avoid or minimize impacts in the marine environment.

The offshore export cables will be buried to a depth range from 3.2 to 13.1 ft (1.0 to 4.0 m) below the seabed. The primary cable burial objective will be to achieve a suitable target burial depth of the

[1] The Onshore Study Area for the onshore facilities is a 1,000 ft (305 m) corridor measured 500 ft (152 m) from the centerline of the onshore export cable routes (including the common route and onshore Route Variants 1 through 4) and the landfall work areas. The Offshore Study Area for the offshore components of the Project is defined as the ECC, approximately 10,500 ft at its widest point and 1,300 ft at its narrowest. The Onshore Study Area and the ECC were established to inventory and evaluate the natural resources, landscape context, land use, and socioeconomic attributes that could be affected by the Project.

offshore export cables in the seabed along the entire ECC (where possible), by micro-routing the cables to avoid surficial geologic features by routing around anomalies detected by the G&G surveys.

The cable burial methods are not expected to cause permanent seafloor, and the shallow trench left after the cable-lay and burial is expected to naturally backfill with sediment. The sea-to-shore landfalls will be completed using HDD technology and will avoid disturbance of the nearshore areas of the Sakonnet River and Mount Hope Bay. Once the cable is buried, the area above the cable, except for those areas with secondary cable protection, will recover through the natural and dynamic migration and deposition of marine sediments.

Onshore Export Cables

The onshore excavation and trenching for the onshore export cables will occur predominantly within previously disturbed areas located within public road ROW. The existing surficial deposits have been altered through past practices of filling, grading and construction of the roads and roadway shoulders, and as such, no significant or long-term impact is expected on geology or surficial geology.

8.1.1.3 Geologic Hazards

The suite of geophysical and geotechnical surveys completed by Mayflower Wind has provided data to identify potential geologic hazards and other anomalies on and beneath the seafloor, along the ECC. Mayflower Wind has used this geophysical and geotechnical data to proactively route the export cables to avoid subsea hazards to the extent practicable, including micro-routing to detour around potential hazards or establish buffers to avoid conflicts during cable installation. The Project is not expected to encounter geologic hazards along the offshore and onshore export cable route.

8.1.1.4 Marine Sediments and Soils

Offshore Export Cables

The offshore export cable installation and burial methods proposed by Mayflower Wind will cause temporary disturbances to the seafloor within the ECC as outlined in Table 8-1 below. The offshore export cable burial techniques will temporarily displace sediments that may result in resuspension within the water column (refer to Section 8.1.1.5 below for a discussion on suspended sediments).

Based on currently available information on the ECC, the percentage of the ECC that may require each type of seabed preparation method, cable installation method, and cable protection was estimated on a preliminary basis. This percentage was then used to estimate the total potential area of temporary seafloor disturbance during offshore export cable construction. These estimates are summarized in Table 8-1 with area of disturbance measured in acres and hectares.

TABLE 8-1. ESTIMATED TEMPORARY SEABED DISTURBANCE AREAS IN RHODE ISLAND

Seabed Disturbance	Area [ac] (ha)[d]
Selected Alternative ECC	
Offshore Export Cables	
Seabed Preparation [a]	25.3 (10.2)
Cable Installation [b]	93.7 (37.9)
Cable Protection [c]	15.2 (6.2)
Total Seabed Disturbance Area (Temporary)	**134.2 (54.3)**
Noticed Variation	
Incremental Impacts for Four Additional HDD Offshore Exit Pits	**1.2 (0.5)**

Notes:
[a] Seabed preparation includes boulder field clearance over up to approximately 10 percent of the ECC in RI state waters, as well as local boulder removal via boulder grabs in other locations. It is also assumed that a grapnel run will be performed along the entire length of the ECC in RI state waters.
[b] Cable installation assumes cable burial along the ECC via one of the several methods under consideration, and conservatively assumes a width of surface impact of 19.7 ft (6.0 m) around each cable. Anchor impacts are considered as well—it is conservatively assumed that an anchored vessel will be used along the entire ECC in RI state waters. The area of impact due to anchoring assumes that an 8-point mooring spread is used, with an estimated impact diameter of 16.4 ft (5.0 m) per anchor. Where practical and safe, Mayflower Wind will utilize dynamically positioned vessels, which will reduce anchoring impacts.
[c] The primary objective is to achieve a suitable target burial depth of the offshore export cables in the seabed along the entire cable route, by micro-routing the cables within the ECC and by assessing and selecting suitable installation/burial tooling for the seabed conditions. Cable protection impact areas assume mattresses and/or rock placement will be used at cable/pipeline crossings (where burial in the seabed is not possible) and for additional cable protection along the ECC if needed. Based on preliminary understanding of site conditions from desktop studies of the offshore export route, Mayflower Wind estimates that up to 15 percent of the ECC in RI state waters will require additional cable protection, including material used at cable/pipeline crossings. It is assumed that a 19.7 ft (6.0 m) wide rock berm will be constructed if required. At each of the three third-party pipelines expected to be crossed, rock berms and/or a number of 9.8 ft (3 m) width x 19.7 ft (6.0 m) length mattresses are assumed to be used for cable separation and protection.
[d] Seabed disturbance calculations conservatively assume that the cables are un-bundled along the entire ECC in RI state waters, so the impact numbers presented assume two separately installed submarine power cables (with one dedicated communications cable installed along with one of the power cables). Where practicable, Mayflower Wind will install the offshore export cables in a bundled configuration, which will significantly reduce seabed disturbance impacts (seabed disturbance areas will be reduced by approximately half where cables are bundled offshore).

Onshore Export Cables

The installation of the onshore export cables will have very limited impacts to soils due to the previously disturbed roadway setting in Portsmouth. Construction of the onshore export cables will involve trenching and other excavation activities, which will result in the displacement of soils along the terrestrial alignment of the onshore export cable route. The excavated soils will either be side-cast along the trench or loaded into trucks for offsite removal. Temporarily stockpiled soils will be backfilled over the newly installed duct bank, stabilized and restored.

As described in Section 4.4.2, the installation of the onshore export cables will require the excavation of trenches along the approximately 2.0 mile (3.2 km) onshore route. The target excavation depth will be approximately 6.0 ft (1.8 m) deep but could be deeper depending on survey results and potential utility crossings. This excavation will result in the mixing of soil materials during backfill, impacting any natural soil development that may be present, which is expected to be limited since the soil survey maps a predominance of the route as udorthents or soil areas altered by human activity.

8.1.1.5 Surface Waters (Marine, Estuarine and Freshwater)

Offshore Export Cables

Installation of the offshore export cables within the surface sediments of the Sakonnet River and Mount Hope Bay will result in sediment suspension and deposition during the marine activities. Mayflower Wind will obtain a Coastal Resources Management Council Assent, RIDEM Section 401 Water Quality Certificate and RIDEM Dredge Permit authorizing these temporary disturbances.

Mayflower Wind completed a hydrodynamic and sediment transport modeling study of the Brayton Point Project. The area surrounding the offshore export cables that could be affected by re-sedimentation of sediment suspended during installation was estimated using a model described in. A summary of the findings of the report are provided herein. The model evaluated the ECC within Mount Hope Bay based on physical characteristics that influence sediment suspension and dispersion (primarily grain size and localized current velocity).

Results of the sediment dispersion modeling for the ECC segments analyzed are summarized in Tables 8-2 through 8-4 below. The modeling indicated that TSS concentrations above 100 mg/L will become suspended in the vicinity of the cable installation during construction around the cable route center line in Mount Hope Bay. Where suspended sediments are the most widespread, TSS concentrations of 100 mg/L are predicted to extend to a maximum of 3,800 ft (1.16 km) from the cable installation center lines in Mount Hope Bay. TSS dissipates upon cessation of construction activities and is expected to fall below 100 mg/L after approximately 280 minutes in Mount Hope Bay. Turbidity levels associated with HDD dredging are much lower than those associated with cable trenching. TSS levels exceeding 100 mg/L are predicted at a maximum distance less than 820 ft (250 m) at the Brayton Point preferred landfall HDD Pit Area. TSS is expected to fall below 100 mg/L after approximately 100 minutes after construction activity.

Through Mount Hope Bay, accretion greater than 0.02 inch (0.5 mm) deep may occur within 876 ft (267 m) of the disturbance; the majority of accretion is less than 0.02 inch (0.5 mm) deep. Deposition exceeding 0.04 inch (1.0 mm) may cover a maximum area of 104 acres (42 ha) in Mount Hope Bay. The sediment deposition at HDD exit pit dredging is anticipated to be completely contained within the footprint of the ECC. Sediment deposition of 0.04 inches (1.0 mm) may occur up to 312 ft (95 m) from any of the HDD exit pits. The areas potentially covered by sediment up to 0.04 inches (1.0 mm) are small; up to 1.2 ac (0.5 ha) at any of the HDD exit pits.

Potential impacts of the modeled sediment dispersion were described in the Mayflower Wind Benthic Shellfish Resources Characterization Report. Increased sediment suspension and deposition could result in mortality of benthic organisms through smothering, irritation to respiratory structures, and reduction in feeding success. In all simulated scenarios the maximum TSS level dropped below 10 mg/L within two hours and below 1.0 mg/L after less than four hours. These effects are expected to be temporary, short-term, and localized.

TABLE 8-2. AREA COVERAGE AND TIME FOR TSS CONCENTRATIONS TO DROP BELOW SELECTED LEVELS AFTER THE END OF CABLE INSTALLATION ACTIVITIES FOR SELECTED TSS CONCENTRATION THRESHOLDS IN MOUNT HOPE BAY

TSS Threshold (mg/L)	Mount Hope Bay Area Coverage (ha)	Maximum Distance from Indicative ECC Centerline (km)	Time for TSS to Dissipate (min)
10	3625	4.40	2980
50	1015	1.83	860
100	542	1.16	280
150	402	0.99	160
200	334	0.74	140
250	293	0.57	120
500	184	0.32	100
>1,000	101	0.15	60

Source: Hydrodynamic and Sediment Transport Modeling for the Brayton Point Export Cable Burial Assessment, Mayflower Wind Energy LLC | USA, 01 March 2022 - Final Report, Daniel L. Mendelsohn, Innovative Environmental Science and J. Craig Swanson, Swanson Environmental

TABLE 8-3. AREA COVERAGE FOR SELECTED TSS CONCENTRATION THRESHOLDS FOR HDD PIT EXCAVATION ACTIVITIES AND TIME FOR TSS TO DROP BELOW SELECTED LEVELS AT THE HDD SITES AFTER THE END OF THE RELEASE

TSS Threshold (mg/L)	Brayton Point HDD Pit Area Coverage (ha)	Maximum Distance from Release (km)	Brayton Point HDD Duration (min)
10	18.5	0.53	280
50	7.1	0.38	140
100	5.2	0.32	100
150	4.4	0.29	80
200	3.8	0.27	80
250	3.3	0.25	60
500	2.4	0.21	40
>1,000	1.4	0.17	20

Source: Hydrodynamic and Sediment Transport Modeling for the Brayton Point Export Cable Burial Assessment, Mayflower Wind Energy LLC | USA, 01 March 2022 - Final Report, Daniel L. Mendelsohn, Innovative Environmental Science and J. Craig Swanson, Swanson Environmental

TABLE 8-4. AREA COVERAGE FOR SEABED SEDIMENTATION THICKNESS THRESHOLDS IN MOUNT HOPE BAY

Thickness Threshold (mm)	Mount Hope Bay Area Coverage (ha)	Maximum observed distance from installation (m)
0.5	91	267
1	42	124
1.5	28	85
2	22	64
5	12	15
>10	1	<10

Source: Hydrodynamic and Sediment Transport Modeling for the Brayton Point Export Cable Burial Assessment, Mayflower Wind Energy LLC | USA, 01 March 2022 - Final Report, Daniel L. Mendelsohn, Innovative Environmental Science and J. Craig Swanson, Swanson Environmental

Mayflower Wind will use a number of different vessels for the transportation, installation, and operation of Project components. The Project's vessel deployment plan will be finalized in coordination with selected contractors. A number of support vessels will also be used during all Project phases for support tasks. Vessels used in construction will require refueling, Mayflower Wind anticipates that smaller vessels will refuel in port, however, larger installation vessels may require offshore refueling. Mayflower Wind will use a Jones Act-compliant bunker barge or vessel for offshore refueling. The offshore refueling process includes three primary activities including (1) mooring of the fueling vessel to the installation vessel, (2) transfer of fuel from the fueling vessel to the installation vessel, and (3) de-mooring from the installation vessel. In some cases, it may be necessary to relocate the installation vessel to a sheltered location for refueling. The ECC locations in the Sakonnet River and Mount Hope Bay are sheltered and near port facilities.

Consistency with OSAMP

The Project will be sited, licensed and constructed in accordance with the standards outlined in the Rhode Island Coastal Resources Management Program, OSAMP, Chapter 8 – Renewable Energy and Other Offshore Development (650-RICR-20-05-8). Mayflower Wind will be filing an application with the RI CRMC to obtain an Assent for the Project and Mayflower Wind will be required to demonstrate consistency with the RI CRMC polices, regulations and the OSAMP.

Onshore Export Cables

Estuarine (e.g., salt marsh) and freshwater systems that are located within 100 – 200 ft (30 – 61 m) of the onshore export cable route are prone to potential erosion and resultant sedimentation or siltation or surface waters, including tidal creeks and freshwater streams (e.g., Founders Brook). Proper handling and management of open excavations and soil stockpiles will significantly reduce the potential to impact surface waters. Mayflower Wind's construction contractor will be required to implement a soil erosion and sediment control plan, including construction best management practices, to contain the Project's limits of disturbance to avoid impacts to offsite surface waters.

Other potential sources of impacts to water quality are accidental spills of fuel or other chemicals from construction or operations and maintenance activities. Mayflower Wind will require its construction contractor to ensure that all vehicles and equipment are in proper working condition prior to arriving onsite. The construction contractor will implement a spill control, containment and countermeasures plan to respond to any inadvertent spills or releases, including adhering to the RIDEM spill notification requirements. Refueling of equipment and storage of fuels and other lubricants and fluids may impact surface waters, if a release were to occur. Proper storage of fuels and other lubricants, as well as the use of secondary containment during refueling will reduce the chances of inadvertent releases to the environment.

8.1.1.6 Freshwater Resources

Similar to effects on surface waters, freshwater resources can be prone to the effects from the discharge of sediment-laden water that can be generated during construction, and erosion of disturbed soil areas. Mayflower Wind's construction contractor will implement a soil erosion and sediment control plan to address erosion-prone areas within the work zones.

8.1.1.7 Groundwater Resources

The Project is not within a community wellhead protection area, groundwater recharge area, or sole source aquifer.[2] There are no mapped drinking water protection areas along the onshore export cable routes. Mayflower Wind will require the construction contractor to be prepared to implement a SESC. The SESC Plan will specify BMPs including erosion and sediment controls and spill protection measures that will be implemented should there be an inadvertent spill or release. Additionally, Mayflower Wind will require the construction contractor to supply an adequate number of emergency spill kits onsite. Mayflower Wind does not anticipate any impacts to groundwater resources.

8.1.1.8 Land Cover Types and Vegetation

The Project will result in limited mowing and removal of vegetation, including select tree removal to establish safe workspaces for the HDD staging areas and to prepare the underground onshore export cable route. The HDD staging area proposed at the corner of the intersection of Park Avenue and Boyd's Lane will require removal of vegetation to accommodate a clear and safe work zone for personnel and equipment. The proposed limits of disturbance will be clearly marked prior to construction to define the areas requiring some form of vegetation management. Vegetated areas will be restored, to the maximum extent feasible, after construction. Other HDD staging areas in Portsmouth will require minimal vegetation removal. In all cases Mayflower Wind will consult with Town officials during detailed design and construction.

8.1.1.9 Coastal and Freshwater Wetlands

Landfall via HDD

Mayflower Wind intends to utilize HDD for the nearshore landfalls onto Portsmouth. HDD enables the cables to remain buried below the beach and intertidal zone while avoiding or minimizing impacts to coastal and freshwater wetlands. During HDDs, there is a risk of the drilling muds entering into a fracture zone in the subsurface rock or void in the sediment deposit that results in an inadvertent release of drilling muds into the marine or nearby freshwater environment. Mayflower Wind's marine contractor will be required to implement an effective contingency plan during HDD operations to reduce the probability for drilling fluid seepage or an inadvertent release of drilling muds. The marine contractor will use a closed system where the drilling muds are recirculated through the system, and constantly monitor the pressures during the boring operations. Mayflower Wind plans to use a drilling fluid composed of bentonite clay or mud that will pose little to no threat to water quality or ecological resources should seepage occur. Mayflower Wind will adhere to operational standards that minimize the potential for drilling fluid seepage.

The HDD contingency planning referenced above will reduce the likelihood of encountering drilling fluid seepage or an inadvertent release of drilling muds, and the measures will protect freshwater wetlands that are bordering the coastal wetlands along the export cable route.

Onshore Export Cables

Improper dewatering techniques or the lack of pre-planned dewatering methods can result in impacts to freshwater wetlands. Mayflower Wind will require the construction contractor to implement industry standard dewatering methods to include, but not be limited to, the use of temporary settling basins, dewatering filter bags, or temporary holding or frac tanks. The dewatering wastewaters will be directed

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[2] RIDEM. 2021. *RI_Drinking_Water_Supplies GIS Feature Layer.* October 12, 2021. https://ridemgis.maps.arcgis.com/home/item.html?id=d695d418523c46e7a280bd35e29776c9. Accessed April 15, 2022.

to well-vegetated uplands away from wetlands or other water resources to allow for infiltration to the soil of the discharged water.

Mayflower Wind's construction contractor will be required to store petroleum products in upland areas more than 100 ft (30.5 m) from wetlands and waterbodies. Temporary containment will be required for equipment that cannot be practically moved and must be parked overnight within 100 ft (30.5 m) of a wetland or other water resources. Mayflower Wind will use a secondary containment system for refueling that needs to occur within 100 ft (30.5 m) of wetlands to contain any minor amounts of fuel inadvertently dripped or released during refueling.

8.1.1.10 Wildlife

Construction activities and land disturbances can disrupt wildlife behavior and may displace wildlife during the construction phase of the Project. The onshore export cable route is bordered by habitats that contain and assemblage of coastal, aquatic, and terrestrial wildlife species, such as nearshore estuarine habitat, salt marsh communities, freshwater wetlands, upland scrub-shrub habitat and forested fringes. Wildlife currently utilizing the habitat edges may be affected by the construction of the Project. Larger, more mobile species, such as eastern white-tailed deer, eastern coyote and red fox, will leave the construction area. Individuals of some bird species will also be temporarily displaced. Depending on the time of year of these operations, this displacement could impact breeding and nesting activities. Smaller and less mobile animals such as small mammals, reptiles, and amphibians may be affected during the more intense construction activities such as the trenching, excavation and drilling.

Since the onshore export cable route is located along existing public road ROW, including highways in some instances, the species affected are expected to be limited in number. Effects will be localized to the immediate area of construction, however these impacts are anticipated to be a temporary impact as it is anticipated that existing wildlife utilization patterns and behaviors will resume and population sizes recover.

8.1.1.11 Birds

Offshore Export Cables

Most birds within the ECC are likely habituated to vessel traffic. Although unlikely, there is a small potential for avian collision with vessels during low-visibility conditions. Most avian species (excluding gulls) are not likely be attracted to vessels during fair weather conditions. Therefore, because of the limited exposure to construction vessels, short term duration of construction and further behavioral limitation of proximity during fair weather conditions, no population level effects are expected for marine and coastal birds. Potential for collision risk will be further reduced with the use of down-shielding of lighting to the extent practicable to limit bird attraction and disorientation. Temporary displacement from forage areas associated with the construction activities will be of short duration. No long-term impacts to avian populations are anticipated.

Onshore Export Cables

As discussed in Section 8.1.1.10 above, temporary construction disturbances, including land disturbance, removal of vegetation, noise, and lighting may impact wildlife species including birds. Noise generated during construction can impact wildlife, such as avian species, including their behavior. Potential direct impacts on avian species may include collisions with construction equipment. Indirect impacts on avian species may include temporary avoidance of work zones. However, both the direct and indirect occurrences are expected to be rare and are therefore also direct and short-term.

Lighting that may be temporarily installed to support the construction activities, can influence how wildlife, including avian, interacts within their habitats. Lighting is not expected to result in injury or mortality nor result in the alteration of habitat. Potential indirect impacts may include temporary displacement of wildlife individuals or disruption of normal wildlife behavior (e.g., nesting, foraging, breeding). Indirect impacts from lighting on wildlife and birds will be short-term.

Mayflower Wind's onshore surveys have identified the presence of at least two osprey nests in close proximity to the onshore export cable route variants. Mayflower Wind does not anticipate any impacts to the nesting pairs of ospreys observed in the field by POWER. Should an unforeseen conflict arise, Mayflower Wind would consult with the RIDEM Division of Fish and Wildlife (RIDFW) and RI CRMC to determine next steps to continue the construction without affecting the osprey.

8.1.1.12 Finfish

The U.S. Northeast is one of the nation's most historic fishing regions – commercial fishing is one of the oldest industries in the region and recreational fishing is a vital part of the cultural fabric. Fisheries resources are targeted by both the commercial fleet and the recreational fishing community and fishing effort is characterized by highly variable gear types and vessel sizes and is dictated by seasons, quotas, environmental factors, market forces, and the federal, state, and local regulations that manage these fisheries resources. Species comprising this fisheries resource are similarly diverse, ranging from highly migratory, pelagic species such as bluefin tuna (*Thunnus thynnus*) to species highly associated with structure such as black sea bass (*Centropristis striata*) to demersal species such as winter flounder (*Pseudopleuronectes americanus*) to molluscs such as longfin squid (*Doryteuthis pealeii*) to shellfish such as channeled whelk (*Busycotypus canaliculatus*). The fisheries resource and the fishing industry and community that targets that resource are highly valuable to the region and Mayflower Wind has and will continue to develop the Project in a way that ensures the coexistence between the two uses of offshore wind development and fishing. From the earliest stages of design through the final stages of decommissioning, the Project considers and incorporates other users and stakeholders while maintaining constant communication through all Project phases.

Potential impacts to fishery resources associated with Project construction, O&M, and decommissioning within the ECC are expected to be short-term and will primarily occur during construction. Construction activities within the ECC are generally expected to have short-term, localized impacts on access to fishing grounds due to temporary safety zones immediately surrounding construction vessels. Seafloor disturbance during O&M that could potentially impact marine species would only occur if non-routine maintenance required uncovering and reburying the cable. Decommissioning impacts will be similar to those during the construction phase depending on the decommissioning strategy employed.

Essential Fish Habitat

As explained in Section 6.9.2, Mayflower Wind is completing an EFH and Protected Fish Species Assessment which includes discussions specifically tailored to the ECC.[3] Mayflower Wind has already collected extensive site characterization data via benthic and geophysical surveys and is currently analyzing that data to understand and map benthic conditions and habitat and to evaluate EFH and cod and summer flounder HAPC within the ECC. Based on the results of this evaluation, potential impacts will be fully assessed.

Benthic habitat will be impacted by the suspension of sediments in the water column during cable and HDD installation, and redeposition of that sediment on the seabed. According to a

[3] Final Essential Fish Habitat and Protected Fish Species Assessment Prepared by: AECOM 9 Jonathan Bourne Drive Pocasset, MA 02559 August 2021

hydrodynamic/sediment dispersion modelling assessment being conducted by Mayflower Wind, the sediment deposition footprint resulting from cable installation was localized along the ECC where the mass settles out quickly. Deposition thicknesses of 1.0 mm (0.04 inch) and greater are generally limited to a corridor with a maximum width of 30 - 35 m (100 – 115 ft) around the cable centerline. In the areas where there are finer grain sediments, the 1.0 mm (0.04 inch) thickness contour distance can increase locally to 165 m (540 ft) from the ECC indicative centerline.

The sedimentation footprint for HDD sites was very small with a maximum coverage of the 1.0 mm (0.04 inch) thickness contour of only 0.5 ha (1.2 ac), extending a maximum distance of 95 m (312 ft) and 1 ha (2.5 ac) for the 0.5 mm (0.02 inch) thickness contour, extending a maximum distance of 158 m (518 ft) from the HDD site. Deposition thicknesses are greater if the location of the release is fixed. Cable burial operations are mobile, and thus will produce smaller maximum deposit thicknesses. The total coverage of the 1.0 mm (0.04 inch) and 0.5 mm (0.02 inch) thickness levels along the entire ECC was 361 ha (892 ac) and 531 ha (1,312 ac), respectively.

Some benthic species exhibit mechanical and possibly physiological adaptations that allow them to survive deposition events of the magnitude commonly encountered in estuarine environments,[4] similar to sediment deposition caused by cable installation. Burrowing bivalve clams, burrow-forming amphipods, and juvenile oysters were highly tolerant, while a tube-dwelling (*Stresblospio benedict*i) was relatively unsuccessful at moving through the sediment to regain the sediment-water interface.[5] Benthic substrates that shift constantly due to waves and currents could experience lower potential burial effects.

The benthic habitat will also be impacted by short-term displacement during cable installation. Benthic communities are expected to recolonize the impact area following construction activities. Recolonization rates of benthic habitats are driven by the benthic communities inhabiting the area surrounding the impacted region. Habitats that can be easily colonized from neighboring areas and communities well adapted to disturbance within their habitats (e.g., sand sheets) are expected to recover quickly. For communities not well adapted to frequent disturbance (e.g., deep boulder communities), recovery depends on a range of factors, such as seasonal larval abundance, and are assumed to generally take longer to become established - upwards of a year to begin recolonization.

It is expected that most resident fish and mobile invertebrates would leave the immediate area of disturbance at the start of construction and would remain displaced during much of the construction period. Transient species would also be expected to avoid the area during construction. Benthic foraging species such as flounders, scup, red hake, pollock and skates would be displaced from the excavated and side casted areas until they recover, but would find suitable foraging habitat in adjacent areas, as only a portion of the seafloor in the Offshore Project Area will be disturbed. Suspended sediment levels would return to background levels within hours.

Given the abundance of suitable habitat, the temporary short-term displacement is not expected to affect EFH and associated fish populations. Benthic infauna and epifauna displacement within the ECC would be temporary, and recolonization in some areas would begin soon after construction ends (e.g., Dernie et al., 2003; Lindeboom et al., 2011; Coates et al., 2014). Longer recovery times are expected for the more complex habitats.

[4] (Hinchey et al., 2006)
[5] (Hinchey et al., 2006)

8.1.1.13 Shellfish

Shellfish resources within the ECC and HDD pits will be disturbed during cable installation. Mayflower Wind will use HDD at landings to avoid disturbance to nearshore productive shellfish beds to the extent practicable. Mayflower Wind will select lower impact construction methods where possible, and will micro-route cables within the selected ECC to avoid complex habitats to the extent practicable. To further decrease impacts, Mayflower Wind's ECC was selected with consideration to minimize the length of cable needed.

The short-term effects of sediment dispersion during construction are described in Section 8.1.1.5. Mayflower Wind will, in all locations practicable, bury cables to a target burial depth and use proper burial methods to allow for benthic recolonization after construction is complete. Benthic communities well adapted to disturbance within their habitats are expected to recolonize quickly and it is anticipated that recolonization of homogenous benthic habitat in the ECC will occur relatively quickly following construction disturbances.[6] Communities not well adapted to frequent disturbance (e.g., deep-boulder, hard-bottom epifaunal communities) may take longer than a year (1 to 3 years) to recolonize after Project disturbance.

8.1.1.14 Marine Mammals and Sea Turtles

As noted in Section 6, there have only been a few reported sightings of marine mammal species, besides seals, within Narragansett Bay.[7] Additional marine mammal species are present in Rhode Island Sound. Since the majority of the ECC is within the Sakonnet River and Mount Hope Bay, the risk of impact to marine mammals in Rhode Island waters is very low given the low overall densities of animals and the avoidance and mitigation measures that Mayflower Wind vessels are required to implement. Also, pile driving is not planned within Rhode Island waters, and sound sources will be non-impulsive, which is less of a concern than impulsive noise sources for marine mammals.

Vessel strikes are a potential impact to marine mammals and sea turtles. However, the Mayflower Wind Lease OCS-A 0521 requires environmental monitoring, reporting, and vessel strike avoidance during in-water activities. Given these strike avoidance measures and the lack of marine mammal (with the exception of seals) occurrence in the Sakonnet River and Mount Hope Bay, risk of potential vessel strikes is low in Rhode Island waters.

Pinnipeds that may be present along the ECC could also be susceptible to in-air noise disturbance at haul out sites or pupping grounds, and in-air thresholds have been established by NMFS. However, in-air noise producing activities are anticipated to produce relatively low levels of in-air noise compared to activities such as impact pile driving underwater and are expected to be short in duration.

Artificial lighting during installation and removal of the ECC will be associated with navigational and deck lighting on vessels from dusk to dawn. Only a limited area would be associated with the artificial lighting used on Project vessels relative to the surrounding unlit areas and the linear installation of the ECC will cause the lit area to constantly move along the cable route. Because of the relatively short duration of installation activities, impacts are considered short-term for marine mammals.

[6] (Hutchison, 2020b; Grabowski et al., 2014)
[7] (Raposa 2009)

8.1.1.15 Rare, Threatened and Endangered Species

As explained in Section 6.9.5, Mayflower Wind has consulted with both RIDFW and USFWS to ensure that impacts to rare species are avoided or mitigated to the greatest extent practicable.

Mayflower Wind updated its consultation (April 2022) with the RIDFW, and according to the RIDFW, at this time, there are no known northern long-eared bat maternity roosts or hibernaculum in or near five miles of the Mayflower Wind onshore export cable routes.

Mayflower Wind updated its consultation with the RI NHP. The RI NHP database hosted on the RIDEM Environmental Resource Mapping website identified three natural heritage areas near the Onshore Study Area. Mayflower Wind reached out to RIDEM to confirm the species potentially occurring in these natural heritage areas on April 8, 2022. RIDEM responded on April 11, 2022 with the list of state-listed species occurring near the Onshore Study Area, including multiple species of birds and one insect, all of which could fly over the ECC or onshore export cable routes and the wading birds could intermittently occur within state waters within the ECC. One macroinvertebrate, the salt marsh tiger beetle's habitat preference is salt marsh communities. The state-listed species include the following: (birds) great egret, great blue heron cattle egret, little blue heron, snowy egret, peregrine falcon, American oystercatcher, black-crowned heron, glossy ibis, and least tern; and (insect) salt marsh tiger beetle.

Mayflower Wind also completed a Bat Risk Assessment for the proposed Project to identify and mitigate potential risks to bats.[8] The Bat Risk Assessment relies on desktop resources, including scientific research, nearby offshore acoustic survey results, and behavioral studies regarding bats' reactions to various conditions and stimuli that may be similar to those presented by various stages of the Project. The Bat Risk Assessment determined that potential Project impacts (e.g., discharges and releases, trash and debris) would not affect bats. Mayflower Wind has not conducted any bat surveys at the onshore facilities.

Roseate tern may also occur in the ocean facing coastline of the Project Area. The onshore Project activities are not likely to affect the roseate tern due to the minimal anticipated shoreline disturbance from the HDD installation of the export cable landfall.

8.1.1.16 Air Quality

Offshore Export Cables

The primary sources of offshore air emissions for the offshore construction phase include crew transfer/service vessels, cable installation vessels, cable installation barges, multi-purpose support vessels, tugboats, anchor handling tug and supply vessels, jack-up vessels, dredging vessels, survey vessels, air compressors, temporary diesel generators, and fugitive dust. Vessels in or near port may also contribute to onshore air emissions during construction.

Mayflower Wind will require that vessels used for construction will use the jurisdictionally required compliant fuel, e.g., ultra-low sulfur diesel or a fuel with less emissions. Fuels used for construction equipment will need to comply with USEPA or equivalent emissions standards. The marine contractor will be required to use low-NOx engines when possible. Mayflower Wind will engage with USEPA on how to satisfy Best Available Control Technology.

[8] Bat Risk Assessment, Mayflower Wind Energy, LLC, October 2021

Onshore Export Cables

Onshore air emissions during construction are mostly tied to stationary construction equipment including cranes, on-road and off-road transport vehicles, and generators. There are two potential sources of air quality impacts associated with the Project – dust and vehicle emissions – neither of which are expected to be significant. During earth disturbing activities, Mayflower Wind will require the construction contractor to deploy dust mitigation measures to reduce fugitive dust. Exposed soils will be wetted and stabilized as necessary to suppress dust generation. During trenching for the duct bank and excavation for the manholes, the excavated soils and materials will be live-loaded directly into dump trucks that will be queued along the Project route. This method of construction will allow for a clean trench which will significantly reduce any temporary stockpiling of material and minimize the potential for the inadvertent discharge of soil onto the street or adjacent areas. These measures will be designed to keep fugitive dust emissions low.

Emissions generated by the operation of construction machinery are short in duration and generally not considered significant. Mayflower Wind will require the use of ultra-low sulfur diesel fuel exclusively in its contractor's diesel-powered construction equipment. Vehicle idling is to be minimized during the construction phase of the Project, in compliance with the Rhode Island Diesel Engine Anti-Idling Program, Air Pollution Control Regulation No. 45, authorized pursuant to RIGL § 31-16.1 and § 23-23-29. The contractor is responsible for complying with these state regulatory requirements.

Upon completion of the installation of the proposed underground cables, the Project will not generate air emissions. Daily vehicle traffic patterns, characteristics, and volumes will not be permanently affected; therefore, no additional vehicular air emissions will be generated.

8.1.2 Avoidance, Minimization and Mitigation of Social Resource Impacts

8.1.2.1 Population Trends

The major industries on Aquidneck Island include advanced thermoplastic composites, information technology, oceanography and underwater systems development.[9] The town is home to more highly skilled labor: over 52 percent of the population has at least a bachelor's degree. The rate of homeownership is 77.4 percent.[10] The homeownership rate in Newport County is 65.3 percent and the state average is 61.7 percent.

Based on the most recent, 2020 census, over 80 percent of the population in the Town of Portsmouth is at least 18 years old and the median age is 47.7 years. The Town of Portsmouth has a predominantly white community, higher than the average in both Newport and Bristol Counties and the state average (Table 8-5).

[9] Source: Town of Portsmouth, https://www.portsmouthri.com/146/Why-Portsmouth
[10] (ACS, 2019)

TABLE 8-5. RACE AND ETHNICITY

Geographic Area	Total Pop	White	Black or African American	American Indian and Alaska Native	Asian alone	Native Hawaiian and Pacific Islander	Hispanic or Latino	Some Other Race	Two or More Races
Rhode Island	1,097,379	71%	6%	1%	4%	0%	17%	9%	9%
Town of Portsmouth	17,871	89%	2%	0%	2%	0%	0%	1%	6%
Newport County	85,643	84%	3%	0%	2%	0%	0%	3%	7%
Bristol County	50,793	85%	2%	0%	3%	0%	0%	1%	5%

Source: U.S. Census Bureau, 2020 Census of Population and Housing

8.1.2.2 Employment and Labor Force

Economic benefits will mostly accrue to Massachusetts and Rhode Island during all phases of the Project.

According to the BVG Associates, 2021 technical report on the economic development benefits of the 1,275 MW buildout, Mayflower Wind will generate a total of 14,790 full time direct, indirect and induced jobs in the region, across all phases of the project. The Project will create a total expenditure of $2.109 billion in the region. Table 8-6 presents the full-time employment and expenditure created in the region by Mayflower Wind per supply chain category and impact type.

TABLE 8-6. FULL-TIME EMPLOYMENT AND EXPENDITURE CREATED IN THE REGION

Supply Chain Category and Impact Type	FTE years created		Total Expenditure Created ($)
	Total	Peak	
Development	280	50	37
Project Management	1,620	310	211
Turbine	0	0	0
Balance of plant	170	100	19
Installation and Commissioning	1,280	550	147
Total Construction	3,070	960	377
Operations, maintenance, and service	11,280	380	1,678
Decommissioning	160	80	18
Direct	8,110	510	N/A
Indirect	2,410	380	N/A
Induced	4,270	310	N/A
Total	14,790	1,200	2,109

Source: BVG Associates, Economic Development Benefits, August 2021

Real gross domestic product (GDP) is the inflation adjusted value of the goods and services produced by labor and property located in the United States. Changes in GDP are a strong indicator for the overall health of an economy. See Table 8-7 for Real GDP for Rhode Island growth over the last 15 years. 2019 to 2020 saw a dip in Real GDP, likely due to the global pandemic. Newport County contributes over 10 percent to the state's GDP.

TABLE 8-7. STATE AND COUNTY REAL GDP (BILLIONS OF CHAINED 2012 DOLLARS)

Year	State of Rhode Island	Newport County	Bristol County	Host Community % of State
2007	$51.47	$5.16	$1.63	10.0%
2008	$50.58	$5.36	$1.69	10.6%
2009	$50.00	$5.24	$1.63	10.5%
2010	$51.33	$5.36	$1.71	10.5%
2011	$51.28	$5.27	$1.65	10.3%
2012	$51.58	$5.27	$1.61	10.2%
2013	$51.91	$5.49	$1.67	10.6%
2014	$52.29	$5.37	$1.68	10.3%
2015	$52.82	$5.21	$1.67	9.9%
2016	$52.90	$5.31	$1.68	10.0%
2017	$52.61	$5.42	$1.68	10.3%
2018	$52.49	$5.39	$1.67	10.3%
2019	$53.23	$5.61	$1.68	10.5%
2020	$51.42	$5.51	$1.63	10.7%

Source: Bureau of Economic Analysis (BEA). 2019. Gross domestic product (GDP) by county. Last updated: December 8, 2021 -- new statistics for 2020, revised statistics for 2001-2019. https://apps.bea.gov/itable/iTable.cfm?ReqID=70&step=1

The real GDP in Rhode Island in 2020 was $51.42 billion. The major sectors of employment were education, health care, and social assistance, government, retail trade and manufacturing. Newport County accounted for just under 11 percent. Manufacturing was the largest employment sector in Newport County.

In addition to the rapidly growing offshore wind workforce, supply chain contractors are actively seeking opportunities to enter the United States market or expand existing United States operations into offshore wind services. While Mayflower Wind is committed to local sourcing as much as possible, the Project and the Clean Energy Resource are designed within the limits of the current domestic supply chain and the respective roles of market participants, including original equipment manufacturers and engineering, procurement, construction, and installation service firm. The opportunity for suppliers to enter the United States offshore wind market is highest in foundations/substructures, towers, blade materials, and power converters and transformers. Potential areas for local contractors could include surveys, vessel operators, safety and training, blade repair, foundation and cable inspection and repair, among others. Mayflower Wind has been and will continue to work closely with the Rhode Island Commerce and the Supply Rhode Island Initiative to find ways to connect with Rhode Island businesses, in particular minority and women-owned business enterprises.

Mayflower Wind will support the state’s efforts to reduce greenhouse gas emissions while stimulating regional growth and economic activity.

Commercial Fishing Landings

In 2019, ports in Rhode Island landed 78.8 million pounds of fish valued at $109.25 million (B. Galuardi, personal communication, 2 July 2021). The most commonly landed species in Rhode Island by weight were shortfin squid, longfin squid, and butterfish. The highest landed species by value were sea scallops, longfin squid, and American lobster (B. Galuardi, personal communication, 2 July 2021). Point Judith is the highest valued port in Rhode Island (and the twelfth highest valued in the U.S. in 2019) with a value of $66 million in 2019, roughly 60 percent of the state's total landings.[11]

Based on the exposed fisheries within the Kirkpatrick Study Area and the Offshore Project Area (Mayflower Wind, COP, Volume II, Section 11, March 2022)[12] trawling, midwater trawling, gillnetting, and pots and traps are the most prominent gear types utilized in the area. Bottom trawlers in the Kirkpatrick Study Area target species within the Small Mesh Multispecies FMP (silver hake, red hake, offshore hake) as well as Squid, Mackerel, Butterfish FMP (Atlantic mackerel, chub mackerel, longfin squid, shortfin squid, and butterfish).[13] Gillnetters in the Kirkpatrick Study Area primarily target monkfish, skates, and spiny dogfish, as well as summer flounder, scup, and black sea bass.[14] Pots and traps catch species in the Offshore Project Area including Jonah crab, American lobster,[15] whelks,[16] rock crabs,[17] and black sea bass.[18]

Vessel intensity for the Atlantic herring, pelagic species (herring, mackerel, squid), monkfish, and squid fisheries are medium-high to very high along portions of the ECC; therefore, these fisheries are most likely to be affected during installation of the ECC. During O&M, commercial and recreational fisheries are expected to experience none to limited effects from the presence of the offshore export cable because it will be buried beneath the seabed. Mayflower Wind has and will continue to work to limit the amount of protection associated with cable crossings and areas in which target burial depth is infeasible. Cable crossings are coordinated with pre-existing cable owners and areas in which target burial depth is infeasible are typically areas of hard bottom so any added cable protection closely resembles the existing bottom type. Mayflower Wind will make available the locations of cable protection and use design and installation methods for protection that minimize impacts to both fisheries resources and fishing activity.

The USCG's stated policy is that [in the United States vessels will have the freedom to navigate through [wind farms], including export cable routes.][19] Commercial and recreational fishermen will have the ability to continue to fish along the ECC. Impacts to commercial and recreational fisheries and any mitigation will be fully addressed through the RI CRMC review process.

There are four onshore underground export cable route options under consideration in the Town of Portsmouth. These alternatives cross developed land, developed recreation, impervious surfaces and wetland buffers. The Project will be located within existing ROWs. To further reduce or eliminate potential impact, HDD will be used for construction of the landfalls on Aquidneck Island. Mayflower Wind will take measures to avoid and/or minimize potential impacts to both the social and natural environment while serving the public interest by initially delivering up to approximately 1,200 MW of power to the New England energy grid.

Mayflower Wind recognizes that the Project is within close proximity of leading institutions and data experts offering regional competitive advantage for technological growth. Mayflower Wind is an active supporter and contributor to Southern New England Blue Economy Initiatives. Investing in areas of overlap in the Blue Economy supports economic development while also ensuring a diverse set of

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[11] (NMFS, 2021b)
[12] (Kirkpatrick et al., 2017) A report to BOEM, *Socio-Economic Impact of Outer Continental Shelf Wind Energy Development on Fisheries in the U.S. Atlantic*
[13] Kirkpatrick et al., 2017; NEFMC, 2021; MAFMC, 2021a)
[14] (Kirkpatrick et al., 2017)
[15] (ASFMC, 2019a, 2021a)
[16] (MA DMF, 2021a)
[17] (Maine Sea Grant, n.d.)
[18] (ASFMC, 2021b)
[19] See Coast Guard Navigation and Vessel Inspection Circular 01-19 dated 1 August 2019

industries provide resilience to Rhode Island and the broader region's economy. For example, Mayflower Wind has provided a letter of support for the University of Rhode Island Research Foundation's proposal for the development of the Rhode Island Blue Economy Technology Cluster. Mayflower Wind will continue to work with the University of Rhode Island Research Foundation team to identify project needs and leverage the Rhode Island Blue Economy Technology Cluster, as well as other institutions in the state focused on Blue Economy initiatives.

Mayflower Wind has engaged in outreach with the local community, as described in Section 4.7, in order to minimize social impacts.

Additional Construction-related Benefits

The construction phase will require amenities and services for workers, including lodging, restaurants, banks, shops, medical services, entertainment, parks, tourism, sports, and gas stations. Project expenditures will support existing employment in these economic sectors, which may include increased hours and overtime opportunities for existing workers, as well as potentially creating new employment opportunities as affected businesses hire more workers. Mayflower Wind is committed to encouraging the hiring of skilled and un-skilled labor from the Project region. Mayflower Wind is committed to the hiring of personnel from the Project region to fill the positions required for the various preparation and construction activities. Furthermore, Mayflower Wind is committed to working upstream to aid in the development of a trained workforce for future construction of the proposed Project. The training and use of local and regional resources would be prioritized so that the populations concerned by the proposed Project can benefit as much as possible from the direct and indirect economic benefits.

Mayflower Wind has further committed to make at least 75 percent of operations and maintenance jobs to be local. Mayflower Wind is committed to supporting offshore wind education and supply chain and workforce development for the growing offshore wind industry in the South Coast region. The Project will support the state's efforts to stimulate regional growth and economic activity while meeting the renewable energy goals in New England. In addition to the revenues Mayflower Wind will pay to the state of Rhode Island for the submerged lands lease for the offshore route in state waters, the Town of Portsmouth will directly benefit through tax revenues from the new onshore transmission assets of the Project. Mayflower Wind has and will continue to work directly with the Town of Portsmouth to identify initiatives that could support the Town's Economic Development Plan.

While the proposed Project is expected to benefit local economies and industries during the operations and maintenance phase, the extent of the effect will be lower than during the construction or decommissioning phases.

8.1.2.3 Land Use

The Project will be constructed underground, primarily in public road ROW; therefore, it will not displace existing land uses, nor will it affect any future development proposals that meet local roadway zoning requirements. Short-term land use impacts may occur during the construction phase of the Project. See Attachment B Preliminary Engineering Drawings for more information about the planned cable route and construction staging areas. Detours and other accommodations will be made to provide alternative access around the construction work site. Impacts associated with the construction phase of the Project will be temporary, and present land uses within the Project Area can continue during and following construction. Mayflower Wind will provide notification of the intended construction plan and schedule to affected businesses and other landowners so that the effect of any temporary disruptions may be minimized.

The Project will not displace any existing residential or other uses. Short-term land use impacts may occur during the construction phase of the Project. Impacts associated with the construction phase of the Project will be temporary and will not present long-term land use impacts along the existing public road ROW. Mayflower will provide notification of the intended construction plan and schedule to affected landowners and abutters so that the effect of any temporary disruptions may be minimized and those affected by the construction-phase of the Project may plan ahead.

8.1.2.4 Tourism

Project effects to recreation and tourism resources will largely be associated with the installation and construction of the onshore components,mostly in the Town of Portsmouth.

Mayflower Wind will develop a construction schedule to minimize the effects on recreational use and tourism-related activities to the extent feasible, such as scheduling construction activities to avoid the height of the summer tourist season. Mayflower Wind will work with and coordinate with stakeholders/visitors' bureaus to schedule construction activities outside of major events taking place in the Town of Portsmouth. Mayflower Wind will have a construction schedule webpage to alert abutters, residents and other stakeholders of construction locations, dates, activities and traffic control measures.

There may be a marginal increase in demand for short-term lodging during the construction of the export cables. However, it is unlikely the proposed Project will affect the availability of lodging for recreationists and tourists.

Mayflower Wind will work with the Town of Portsmouth to develop a traffic management plan to minimize disruptions to residences and commercial establishments in the vicinity of construction and installation activities. Construction monitoring will ensure compliance with the traffic management plan.

During the operations and maintenence phase, activities will largely consist of equipment and infrastructure maintenance. Periodic maintenance and repairs could have temporary effects on recreation and tourism similar to work on any other utility infrastructure, including short-term effects due to traffic.

8.1.2.5 Open Space and Recreation

No existing recreational uses, open space or conservation areas will be displaced long-term by the Project. Mayflower will continue consultations with the Town of Portsmouth to inform them of the construction-related disturbances that will occur within their community. Since the Project is located within and along existing public streets and ROW, potential long-term impacts will be avoided.

8.1.2.6 Aquaculture

Although there are several approved aquaculture areas within The Cove on Aquidneck Island and adjacent to Hog Island, the export cable route is not directly adjacent or co-located with any of these sites (Figure 7-3).

The floating fish trap fishery in Rhode Island is a fishery and gear type unique to Rhode Island. Essentially a hybrid of a fishing weir and a fish trap, this gear is predominantly fished in shallower, inshore areas close to shore. While this is a wild capture fishery, it is in some ways permitted and operated as an aquaculture activity. Permits to operate fish traps are tied to specific, permanent locations which offer certainty in the spatial extent of fishing effort, unlike other wild capture fisheries. However, while fish trap locations offer spatial certainty, the issuance of a permit or appearance of a fish trap on the RIDEM Marine Fisheries Map does not necessarily mean that that fish trap is being actively fished. Fish traps may become actively fished at any time, although there are requirements for the fisherman to provide the necessary notifications. Mayflower Wind has conducted outreach, including to the Rhode Island Division of Marine Fisheries, and performed scouting in advance of geophysical and geotechnical surveys to gain temporal knowledge of the location of fish traps in addition to the spatial certainty offered by permit location information, and will continue these communications up to and through construction.

8.1.2.7 Navigation and Shipping

Marine construction can conflict with existing maritime uses, including cargo shipping, planned dredge navigation projects and maritime transportation, such as ferry routes. Conflicts at sea can be avoided if advance planning and notification is conducted.

Mayflower Wind will require the marine contractor to post LNMs on the Mayflower Wind website. Mayflower Wind will submit LNMs to the USCG and separately notify Fleet Command prior to the commencement of offshore construction activities. Mayflower Wind will utilize on-scene safety vessel(s) and/or personnel to advise mariners of construction activity, as necessary. Mayflower Wind will investigate means to update navigation charts with NOAA to improve communications for on-water activities.

8.1.2.8 Recreational Boating

Project construction may result in temporary but unlikely effects on recreational boating activities, mostly in the northern portions of the ECC. Temporary effects may arise from the presence of Project-related vessels stationed at the work locations along the ECC. Mayflower Wind will implement construction safety zones in consultation with the USCG and communicate to local mariners regarding upcoming and ongoing construction activities within the ECC.

8.1.2.9 Commercial and Recreational Fishing

The major direct impacts to commercial and recreational fishing can be: (i) construction vessel activity and presence within known fishing grounds; (ii) construction vessel interactions with deployed fishing gear; and (iii) increased collision risk. Commercial and recreational fishermen may be temporarily excluded from actively fishing within or transiting through the localized construction areas and safety exclusion zones during construction of the Project. This may result in a temporary loss of access to fishing grounds.

Construction activities will cover discrete and localized portions of the offshore Project area on a temporary basis, relative to the available open water to navigate through, or grounds to fish within. Once construction activities are completed within safety exclusion zones, marine activities, including commercial and recreational fishing, will be allowed to continue as they were prior to construction.

As construction begins, commercial and recreational fishermen may find their route extended at times to accommodate certain construction activities, which could temporarily increase their steam times to access fishing grounds.

Mayflower Wind will coordinate with fishermen and the USCG ahead of marine construction operations to review operational planning and schedules to identify areas where fishing operations may be temporarily displaced. These strategies include broad communication strategies (e.g., LNMs) and also targeted, direct outreach to coordinate construction and fishing activities in order to minimize risks to the commercial and recreational fishing industries, as well as other mariners.

8.1.2.10 Visual Resources

There will be no aboveground facilities associated with the Project. Visual and aesthetic impacts from installation of the underground duct bank will not substantially alter the overall visual setting of the existing landscape setting. The underground onshore export cables will be installed primarily within existing public road ROW and will not show additional visual changes other than manhole covers and handhole covers installed flush with the ground surface. No long-term impacts to visual resources are anticipated as a result of the Project.

8.1.2.11 Noise

The Project onshore export cable route options are located primarily along previously disturbed public road ROW. Within the Project Area, ambient sound levels are influenced by diverse factors including vehicular noise, highway noise, commercial activities, and outdoor activities. Temporary construction noise will be generated by the Project. The generation of noise will result from the operation of construction equipment and vehicles such as trucks with diesel engines, excavators, jackhammers, drilling equipment, and cable installation rigs.

Mayflower Wind will mitigate construction noise by requiring the construction contractor: (i) implement temporary noise barriers at HDD locations where practicable and safe; (ii) maintain equipment with functioning mufflers; (iii) require continuous noise sources such as generators and compressors will be located away from residential properties to the best of their ability and have enclosed mufflers; (iv) use a low-noise generator to reduce noise impacts; and (v) require compliance with the Rhode Island Anti-Idling Laws.

8.1.2.12 Historic and Archaeologic Resources

No adverse impacts to historic or archaeologic resources are anticipated from construction of the onshore components of the Project. Phase I subsurface archaeological testing performed by PAL identified two archaeological sites. PAL recommends that these sites are potentially eligible for listing in the National Register under Criteria A and D.

Based upon the archaeological field investigations performed by PAL, PAL recommends archaeological monitoring of cable duct trench excavation near the sites to document any archaeological materials that may be identified during construction. PAL further recommended archaeological monitoring of HDD Options 1 and 3 to document any pre- or post-Contact archaeological features or deposits that may be encountered during boring for the HDDs.

Additionally, PAL recommended a Phase I site identification archaeological testing of underground export cable routes that may approach the Mount Hoppe Bridge area.

8.1.2.13 Transportation and Traffic

The construction-related traffic increase will be small relative to total traffic volume on public roads in the area. However, the construction contractor’s occupation of segments of the public road ROW could disrupt and/or slow down traffic. The traffic disruption may involve temporary, partial lane closures or temporary detours, which will be intermittent, temporary, and will cease once construction of the Project is completed. The addition of this traffic for limited periods of time is not expected to result in significant congestion or a change in operating conditions along any of the roadways along the ROW. However, during construction within and adjacent to the roadways, traffic patterns and behaviors will be affected, but will cease after construction.

Mayflower Wind will work with the Town of Portsmouth and the RIDOT to develop a traffic management plan to minimize disruptions to residences, commercial establishments, and highway access, in the vicinity of construction and installation activities. The construction spreads along the public road ROW will be established with consideration to maintaining open and safe access and egress for local residents to local roads, Route 24 and the Mount Hope Bridge. Construction monitoring will ensure compliance with the traffic management plan by construction contractors. Mayflower Wind will have a construction schedule webpage to alert abutters, residents and other stakeholders of construction locations, dates, activities and traffic control measures.

8.1.2.14 Electric and Magnetic Fields

Mayflower Wind understands that EMF produced by the transmission of electricity can be a concern to communities where transmission infrastructure is sited. Mayflower Wind has studied predicted EMF from the Project and continues to engage stakeholders on this topic through direct outreach and the publication of EMF materials on a dedicated web page for the local community.[20] Predicted HVDC magnetic fields are well below health-based exposure guidelines.

Electric and magnetic fields are created anywhere there is a flow of electricity, and their strength diminishes within a short distance from the source. The strength of electric fields depends on voltage, which is the pressure behind the flow of electricity. The electric fields arising from the voltage on the export cables will be completely shielded by cable materials and, therefore, will have no impact. Magnetic fields are produced by current, which is the flow of electricity.

A Magnetic Field Analysis study was conducted by POWER Engineers Consulting and Gradient, Inc. to model the Magnetic fields produced by typical onshore and offshore cable configurations for the Project and contextualize them to the latest research and guidelines for public health and the marine environment (see Attachment D). Gradient is an environmental and risk sciences consulting firm renowned for its expertise in EMF health and safety assessment.

Seven of magnetic field model cases apply to cable configurations proposed for Portsmouth and Rhode Island waters, and those results are summarized in Table 8-8.

TABLE 8-8. MAGNETIC FIELD STUDY RESULTS

Case		Magnetic Field [a] (mG [b])			
		Max	10 ft	25 ft	50 ft
1	HVDC offshore, bundled, 6.6 ft burial depth. [c]	123	38.7	8.4	2.2
2	HVDC offshore, bundled, on seafloor under a 1.0 ft concrete mattress. [d]	3785	55.7	9.0	2.2
3	HVDC offshore, non-bundled, 164 ft cable separation, 6.6 ft burial depth. [c]	1909	1120	579	360
4	HVDC landfall HDD, beach case, 25 ft, and 40 ft burial depths. [e]	261	250	174	79.0
5	HVDC onshore, single circuit duct bank, 3.2 ft burial depth. [f]	433	140	30.5	8.0
6	HVDC onshore, double circuit duct bank, 3.3 ft burial depth. [f]	252 (181) [g]	101 (37.4)	20.6 (3.9)	5.2 (0.53)

[20] https://mayflowerwind.com/southcoast/

Case		Magnetic Field [a] (mG [b])			
		Max	10 ft	25 ft	50 ft
7	HVDC onshore, alternate double circuit duct bank, 3.4 ft burial depth. [f]	259 (188) [g]	95.8 (34.9)	18.9 (3.5)	4.7 (0.47)

[a] *Magnetic field results at maximum and at varying distances from the centerline (or from cable in separated offshore case).*
[b] *Milligauss is a unit of magnetic flux density; however, the generic term "magnetic field" is used throughout this document.*
[c] *Results are reported at the sea floor.*
[d] *Results are reported at the surface of the concrete mattress.*
[e] *Results are reported at the ground surface to reflect the potential for individuals to lie flat on the beach.*
[f] *Results are reported at a height of 1 meter above the ground surface in accordance with industry standard practice.*
[g] *The double circuit duct bank configurations correspond to the Noticed Variation. Although the Noticed Variation does not include a request for approval of additional export cables at this time, for informational purposes only, results are also presented in parenthesis for an indicative future scenario with a second 1200 MW circuit installed. The reduction in magnetic fields associated with the future scenario is due to field cancelling effects introduced by the second circuit.*

Three configurations of offshore HVDC cables were modeled, including the typical installation case where the two DC conductors are bundled together as well as two atypical, worst-case installation scenarios.[21] Only for the two atypical installation cases will magnetic fields above the offshore export cables appreciably differ from the earth's steady (DC) geomagnetic field, and only within short distances from the cables. In addition, magnetic field modeling for the offshore export cables showed that DC magnetic field levels will be increased only for small areas along the seafloor around certain localized cable locations where conservative (and atypical) installation conditions are present, contributing to highly localized deviations from the earth's DC geomagnetic field.

A BOEM sponsored study in 2019 concluded, based on its review of the state of the knowledge regarding potential EMF-related impacts on marine life, "The operation of offshore wind energy projects is not expected to negatively affect commercial and recreational fishes within the southern New England area. Negligible effects, if any, on bottom-dwelling species are anticipated. No negative effects on pelagic [*i.e*., in upper layers of the open sea] species are expected due to their distance from the power cables buried in the seafloor." Additional information on magnetic fields can be found in Attachment D.

For the three representative HVDC onshore duct bank configurations that were modeled, peak maximum DC magnetic field levels ranging from 181 to 433 mG were obtained at 1.0 m above the ground surface, which is far below health-based exposure guidelines for DC magnetic fields. For each duct bank configuration, the magnetic field levels drop off very rapidly with increasing lateral distance from the cables, for example, ranging from 3.5 to 30.5 mG at 25 ft (7.6 m) from the duct bank centerlines. Along the proposed underground onshore export cable route across Portsmouth, the earth's steady (DC) geomagnetic field has a magnitude of approximately 512 mG, meaning that only magnetic field levels in the immediate vicinity of the onshore underground duct banks will appreciably differ from the earth's DC geomagnetic field.

For a conservative modeling analysis that assumed cable currents based on maximum (100 percent capacity) wind farm output,[22] modeled DC magnetic fields predicted for the ground surface at the Island Park Beach (Boyd's Lane) landfall site and at a height of 1 meter along Boyd's Lane in Portsmouth are

[21] Case 2 assumes the bundled conductors are laid directly on the seafloor surface and covered by a concrete mattress, such as at a cable crossing location. Case 3 is an unbundled installation case where the two DC conductors are separately buried approximately 50 meters (164 feet) apart at a target depth of 2 meters to be used as needed to ensure safe installation and repair of the separate cables, as well as to minimize risk of damage to both cables from threats such as anchor strike.
[22] The wind farm is expected to operate at an annual-average capacity factor of around 50 percent; thus, much of the time, the actual output and MF attributable to the Project export cables will be correspondingly lower than the values presented in **Error! Reference source not found.**, which are for maximum output.

well-below health-based exposure guidelines for DC magnetic fields. The State of Rhode Island has not adopted standards for EMFs from HVDC transmission lines or other sources that can be compared to the model-predicted direct current magnetic fields. Scientists have not reported any confirmable chronic health risks for the weak steady EMFs associated with HVDC power transmission; this is consistent with the fact that humans have lived for tens of thousands of years in the presence of the earth's direct current geomagnetic field, which is not known to adversely interact with biological processes or directly affect human health.

8.1.2.15 Environmental Justice Populations

EJ populations can be unfairly and unjustly treated particularly if they have no means or lack of means to be involved in the public process and to voice any concerns they have about the Project. Using the RIDEM Environmental Resource Map, there are no EJ populations within 1.0 mi (1.6 km) of the ECC or onshore export cable route and associated variants. There are, however, two EJ populations located in the City of Newport, which are farther than 1.0 mi (1.6 km) from the Project. These populations have been identified for their minority and low-income populations. Note, the distance from these EJ populations to the edge of the ECC is approximately 4.3 mi (7 km) and approximately 8 mi (12.8 km) to the HDD landing in Portsmouth.

A third EJ population is across Mount Hope Bay, in the Town of Bristol. This EJ population is approximately 1.5 mi (2.4 km) from the edge of the ECC and 2.9 mi (4.6 km) from the closest point of the onshore export cable route in Portsmouth.

Mayflower Wind's community liaison officer has developed an EJ outreach and engagement program that is facilitating meaningful opportunity for all interest parties, including proximate EJ residents, to participate in the Project. Mayflower Wind's stakeholder outreach includes actively engaging the Native American Tribes. Mayflower Wind is currently engaged with RPS Group in training Tribal members to learn how to qualify as a PSO and proving a career opportunity.

8.1.3 Conclusion

The preceding sections have reviewed the potential for impacts from development of the Project in Rhode Island. Mayflower Wind will avoid or minimize impacts, as practicable.

Mayflower Wind's design and construction avoidance, minimization, and mitigation measures are discussed in Section 9 of this Siting Report.

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9 MITIGATION MEASURES

Mayflower Wind has sited, planned, and designed the proposed Project to avoid and minimize potential impacts on physical, biological, cultural, and socioeconomic resources. Avoidance, minimization, and mitigation measures designed for each phase of construction will effectively minimize Project impacts on the natural and social/developed environment. The resource characterizations and impact assessments presented in Sections 6, 7, and 8 are based upon, and compliant with, the requirements of Rule 1.6 of the RI EFSB Rules of Practice and Procedure (445-RICR-00-00-1) and guided by input from appropriate federal and state agencies, municipal input and numerous stakeholders (public and private) in the region.

To the extent there are potential impacts from the Project that cannot be avoided, Mayflower Wind will seek to avoid or minimize such impacts. Potential impacts to resources from the offshore export cables, onshore export cables, and landfalls are expected to be limited in scope temporally and/or spatially. Post-construction monitoring plans will be developed, as needed, in coordination with the relevant agencies prior to construction.

Table 9-1 below summarizes the various avoidance, minimization, and mitigation measures that Mayflower Wind intends to implement, as appropriate to avoid, minimize or mitigate impacts on the natural and social/developed environments.

TABLE 9-1. AVOIDANCE, MINIMIZATION AND MITIGATION MEASURES – NATURAL AND SOCIAL ENVIRONMENTS

Resource	Project Phase	Avoidance, Minimization, and Mitigation Measures
Natural Environment		
Climate and Weather	Post-Construction	• Reduce greenhouse gas (GHG) emissions. • Increase supply of renewable, clean energy. • Supply alternative clean energy supply.
Geology and Surficial Geology	Construction	• Mayflower Wind will use best management practices (BMPs) to minimize sediment mobilization during offshore export cable installation. • Mayflower Wind, when feasible, will use technologies that minimize sediment mobilization and seabed sediment alteration for cable burial operations. • Mayflower Wind, where practical and safe, will utilize dynamic positioning vessels. • Mayflower Wind will utilize horizontal directional drilling (HDD) for sea-to-shore transition. • The offshore export cables will be installed in a bundled configuration where practicable, to reduce installation impact area and post-installation occupied area. • The primary cable burial objective will be to achieve a suitable target burial depth of the offshore export cables in the seabed along the entire offshore export cable corridor (ECC) (where possible), by micro-routing the cables within the ECC and by assessing and selecting suitable installation/burial tooling for the seabed conditions. • Use of secondary cable protection (rock and/or mattresses) will be limited to the extent practicable.
Geologic Hazards	Design and Construction	• Mayflower Wind performed geophysical and geotechnical surveys as part of the planning phase of the project to identify geologic

Resource	Project Phase	Avoidance, Minimization, and Mitigation Measures
		hazards and anomalies. • Mayflower Wind is proactively routing the cables to avoid hazards, to the extent practicable. • Mayflower Wind will establish buffers, as necessary, to avoid anomalies during construction.
Marine Sediments and Soils	Construction	• Mayflower Wind will select and use BMPs including the use of a soil erosion and sediment control (SESC) plan to minimize sediment mobilization during offshore construction and HDD operations. • Mayflower Wind, when feasible, will use technologies that minimize sediment mobilization and seabed sediment alteration for cable burial operations. • Project vessels will follow United States Coast Guard (USCG) requirements at 33 Code of Federal Regulations (C.F.R.) 151 and 46 C.F.R. 162 regarding bilge and ballast water. • All Project vessels are to comply with regulatory requirements related to the prevention and control of discharges and accidental spills including United States Environmental Protection Agency (USEPA) requirements under the USEPA 2013 Vessel General Permit and state and local government requirements. • Mayflower Wind will comply with the regulatory requirements related to the prevention and control of discharges and accidental spills as documented in the proposed Project's Oil Spill Response Plan (OSRP). • Mayflower Wind will have an HDD Contingency Plan in place to mitigate, control, and avoid unplanned discharges related to HDD activities. • Mayflower Wind will implement an SESC plan during trenching and excavation activities, in accordance with the Rhode Island Soil Erosion and Sediment Control Handbook, and in accordance with approved plans and permit requirements. • The erosion control devices will function to mitigate construction-related soil erosion and sedimentation and will also serve as a physical boundary to separate construction activities from resource areas.
Surface Waters	Construction	• Mayflower Wind will select and use BMPs including the use of an SESC plan to minimize sediment mobilization during offshore construction and HDD operations. • Mayflower Wind, when feasible, will use technologies that minimize sediment mobilization and seabed sediment alteration for cable burial operations. • Project vessels will follow USCG requirements at 33 C.F.R. 151 and 46 C.F.R. 162 regarding bilge and ballast water. • All Project vessels are to comply with regulatory requirements related to the prevention and control of discharges and accidental spills including USEPA requirements under the USEPA 2013 Vessel General Permit and state and local government requirements. • Mayflower Wind will comply with the regulatory requirements related to the prevention and control of discharges and accidental spills as documented in the proposed Project's OSRP. • Mayflower Wind will have an HDD Contingency Plan in place to mitigate, control, and avoid unplanned discharges related to HDD activities.

Resource	Project Phase	Avoidance, Minimization, and Mitigation Measures
Freshwater Resources	Construction	• Mayflower Wind will select and use BMPs including the use of an SESC plan to minimize sediment mobilization during offshore construction and HDD operations.
Groundwater Resources	Construction	• Mayflower Wind will comply with the regulatory requirements related to the prevention and control of discharges and accidental spills as documented in the proposed Project's OSRP.
Land Cover Types and Vegetation	Construction and Post-Construction	• Mayflower Wind will clearly mark the proposed limits of disturbance prior to construction to define the areas requiring some form of vegetation management. • Mayflower Wind will restore vegetated areas, to the maximum extent feasible, after construction.
Coastal and Freshwater Wetlands	Construction	• Mayflower Wind will select sites for construction that avoid areas of sensitive seafloor and benthic habitat to the extent practicable. • Mayflower Wind will utilize HDD for export cable installation at landfalls. HDD is a "trenchless" process used for installing cables or pipes which enables the cables to remain buried below the beach and intertidal zone while avoiding or limiting environmental impact during installation. • Mayflower Wind will minimize trench and side-casting widths for export cable installation and place anchors outside of eelgrass beds where possible. • Mayflower Wind will employ micro-routing and HDD offshore exit point siting to avoid known or suspected submerged aquatic vegetation. • Mayflower Wind will clearly mark the proposed limits of disturbance prior to construction to avoid encroachment into Rhode Island Coastal Resources Management Council (RI CRMC) and/or federal wetlands. • Mayflower Wind will implement erosion and sediment control measures in accordance with Rhode Island regulations and industry BMPs throughout the onshore Project area to abate technical and biological erosion. • If groundwater is encountered, Mayflower Wind will perform dewatering measures using standard construction BMPs for dewatering, including, but not limited to, use of temporary settling basins, dewatering filter bags, or temporary holding or frac tanks. • The dewatering wastewaters will be directed to well-vegetated uplands away from wetlands or other water resources to allow for infiltration to the soil of the discharged water. Mayflower Wind will place construction mats to minimize soil disturbance in any wetland areas that cannot be avoided or are required to be temporarily crossed, such as accessing portions of The Narragansett Electric Company right-of-way (ROW). • Mayflower Wind will require the construction contractor to have spill control and containment kits on site to allow for immediate response and cleanup in the event of an accidental release of fuel, oils, or other hazardous materials. • Mayflower Wind and their construction contractor will store petroleum products in upland areas more than 100 feet (ft) (30.5 meters [m]) from wetlands and waterbodies. • Temporary containment will be required for equipment that cannot be practically moved and must be parked overnight within

Resource	Project Phase	Avoidance, Minimization, and Mitigation Measures
		100 ft (30.5 m) of a wetland or other water resources. • Mayflower Wind will use a secondary containment system for refueling that needs to occur within 100 ft (30.5 m) of wetlands to contain any minor amounts of fuel inadvertently dripped or released during refueling. • Mayflower Wind and their construction contractor will store petroleum products in upland areas more than 100 ft (30.5 m) from wetlands and waterbodies. • Mayflower Wind will set up cement cleanout tubs in areas at least 100 ft (30.5 m) from wetlands or other water resources to contain and hold any residual cement and washout from cement trucks prior to their departure from the site. • Discharges as a result of dewatering will be managed in accordance with the requirements for applicable Rhode Island Department of Environmental Management (RIDEM) and RI CRMC regulations pertaining to dewatering.
Wildlife	Construction	• Mayflower Wind will site Project components to avoid locating onshore facilities and landfall sites in or near significant fish and wildlife habitats to the greatest extent practicable. • Mayflower Wind will train construction staff on biodiversity management and environmental compliance requirements. • Mayflower Wind will bury the onshore export cables underground beneath local roadways or public road ROW.
Birds	Construction	• Mayflower Wind will site the proposed Project to avoid locating Project components in or near areas of known important or high bird use (e.g., nesting, foraging and overwintering areas, migratory staging or resting areas). • Mayflower Wind will incorporate use of HDD at landfall locations, to avoid disturbance to shorelines and coastal habitats to the extent practicable. • Mayflower Wind will coordinate with RIDEM Division of Fish and Wildlife (RIDFW), RI CRMC, RIDEM, and United States Fish and Wildlife Service (USFWS) to identify appropriate mitigation measures, if required.
Finfish	Construction	• Mayflower Wind will design the scour protection system to reduce and minimize scour and sedimentation. • Mayflower Wind will design the sea-to-shore transition to reduce the dredging footprint and effects to benthic organisms (e.g., offshore cofferdam and/or gravity cell). • Mayflower Wind will incorporate use of HDD at landing(s) and avoid disturbance to finfish and invertebrate Essential Fish Habitat (EFH) to the extent practicable. • The Project will incorporate use of HDD at landfall locations, as appropriate, to minimize spatial and temporal effects to benthic organisms. • Mayflower Wind will incorporate use of HDD at landfall locations and avoid disturbance to finfish and invertebrate EFH to the extent practicable.
Shellfish	Construction	• Mayflower Wind will use HDD at landfall locations to avoid disturbance to nearshore productive shellfish beds to the extent practicable. • Mayflower Wind will select lower impact construction methods,

Resource	Project Phase	Avoidance, Minimization, and Mitigation Measures
		where possible. • Mayflower Wind has designed the ECC, and will micro-route cables within the ECC, to avoid complex habitats, where possible. • The ECC was designed to minimize length of cable (and associated seabed impacts) needed. Mayflower Wind will bury cables, where possible, to allow for benthic recolonization after construction is complete. Use of secondary cable protection (rock and/or mattresses) will be limited to the extent practicable. • The offshore export cables will be installed in a bundled configuration where practicable, to reduce installation impact area and post-installation occupied area.
Marine Mammals and Sea Turtles	Construction	• Protected species observers will be employed, if required by National Marine Fisheries Service (NMFS), to monitor for whales, other marine mammals and sea turtles. • Mayflower Wind will employ shut-down procedure when protected species are detected in their respective clearance zones in the Project area. • Mayflower Wind will implement measures as identified in the Project Marine Mammal and Sea Turtle Monitoring and Mitigation Plan, as needed. • All vessel operators will be required to reduce vessel speed to 10 knots or less when large assemblages of marine mammals are observed near an underway vessel.
Rare, Threatened and Endangered Species	Construction	• Mayflower Wind will continue to consult with the Rhode Island Natural Heritage Program, RIDEM, and USFWS. • Mayflower Wind will site Project components to avoid locating onshore facilities and landfall sites in or near significant fish and wildlife habitats to the greatest extent practicable. • Mayflower Wind will train construction staff on biodiversity management and environmental compliance requirements.
Air Quality	Construction	• Mayflower Wind will ensure that vessels used for construction will use the jurisdictionally required compliant fuel, e.g., ultra-low sulfur diesel or a fuel with less emissions. • Mayflower Wind will ensure fuels used for construction equipment comply with USEPA or equivalent emissions standards. • Mayflower Wind will use low-NO_X engines when possible. • Mayflower Wind will engage with USEPA on how to satisfy Best Available Control Technology. • Mayflower Wind will require strict compliance with the RIDEM Diesel Engine Anti-Idling Program[1] and other Rhode Island anti-idling laws[2] to prevent equipment from idling and producing unnecessary noise while not in productive use.
Social/ Developed Environment		
Population Trends	Construction	• Mayflower Wind, where possible, is encouraging local workers to be hired to meet construction labor needs associated with the Project. • Mayflower Wind will design the construction schedule to minimize

[1] 250-Rhode Island Code of Regulations-120-05-45 Title 250 Part 45 - Rhode Island Diesel Engine Anti-Idling Program

[2] Rhode Island General Law (RIGL)§ 23-23-29.2. (Diesel motor vehicle engine idling), RIGL § 23-23-29.3. (Non-road diesel engine idling), and RIGL § 31-16.1-3. (Restrictions on idling for diesel engines)

Resource	Project Phase	Avoidance, Minimization, and Mitigation Measures
		and mitigate population and business-related impacts to the local community.
Employment and Labor Force	Construction and Post-Construction	• Mayflower Wind will maintain a stakeholder engagement plan with outreach and communications mechanisms to share information and gather input from external stakeholders, including potential supply chain partners, educational institutions, and workforce training providers. • The construction phase will require amenities and services for workers, including lodging, restaurants, banks, shops, medical services, entertainment, parks, tourism, sports, and gas stations. • Project expenditures will support existing employment in these economic sectors, which may include increased hours and overtime opportunities for existing workers, as well as potentially creating new employment opportunities as affected businesses hire more workers. • Mayflower Wind will encourage the hiring of skilled and unskilled labor from the Project region. Partnerships between Rhode Island and Massachusetts organizations are encouraged to leverage Mayflower Wind's investments.
Land Use	Construction and Post-Construction	• Mayflower Wind will work with the Town of Portsmouth and residents abutting the Project route to minimize the length of disruption. • Mayflower Wind will develop and implement a traffic management plan prior to construction to minimize disruptions to residences and commercial establishments in the vicinity of onshore construction activities; pedestrian and bicycle safety and movement would also be addressed to minimize effects of construction.
Tourism	Construction	• Mayflower Wind will work with the Town of Portsmouth to develop a traffic management plan that minimizes the disruptions to tourists, residents and commercial establishments in the vicinity of construction and installation activities. • Mayflower Wind will develop and implement an onshore construction schedule to minimize effects to recreational uses and tourism-related activities to the extent practicable. • Mayflower Wind will have a construction schedule webpage to alert abutters, residents and other stakeholders of construction locations, dates, activities and traffic control measures.
Open Space and Recreation	Construction and Post-Construction	• Mayflower Wind will work with the Town of Portsmouth and affected stakeholders to maintain access to local recreational lands and vistas. • Open access to the Montaup Country Club on Anthony Road will be maintained by the construction contractor, to the greatest extent practicable, during construction. • Areas temporarily affected by installation and construction activities, including roads, beaches, parking areas, green spaces, etc., will be restored to an equal or better condition, as appropriate for the existing land use.
Aquaculture	Construction	• Mayflower Wind will work with municipal shellfish constables to coordinate shellfish seeding with planned activities prior to construction activities.

Resource	Project Phase	Avoidance, Minimization, and Mitigation Measures
		• Mayflower Wind is currently working with commercial and recreational fishermen as well as fisheries representatives to determine construction timing and locations with fishing vessels to anticipate and avoid/minimize/mitigate gear interactions that may occur during construction.
Navigation and Shipping	Construction	• Mayflower Wind will post Local Notice to Mariners (LNMs) on the Mayflower Wind website. Mayflower Wind will submit LNMs to the USCG and Fleet Command prior to the commencement of offshore construction activities. • Mayflower Wind will implement construction safety zones in consultation with USCG and communicate to local mariners regarding upcoming and ongoing construction activities. • Mayflower Wind will utilize on-scene safety vessel(s) and/or personnel to advise mariners of construction activity, as necessary. • Mayflower Wind will investigate means to update navigation charts with the National Oceanic and Atmospheric Administration (NOAA) to improve communications for on-water activities. Mayflower Wind will utilize on-scene safety vessel(s) and/or personnel to advise mariners of construction activity, as necessary.
Recreational Boating	Construction	• Mayflower Wind will post LNMs on the Mayflower Wind website. • Mayflower Wind will implement construction safety zones in consultation with USCG and communicate to local mariners regarding upcoming and ongoing construction activities.
Commercial and Recreational Fishing	Construction	• Mayflower Wind is currently working with commercial and recreational fishermen as well as fisheries representatives to determine construction timing and locations with fishing vessels to anticipate and avoid/minimize/mitigate gear interactions that may occur during construction. • Temporary safety zone restrictions associated with construction activities will limit direct access to areas with construction activity for the safety of mariners and Project employees, but these areas will be limited spatially and temporally. • Mayflower Wind will implement construction safety zones around active construction areas in consultation with USCG. • Mayflower Wind will notify mariners via LNMs of the presence and location of partially installed structures. • The Mayflower Wind Fisheries Liaison Officer proactively contacts fishermen if their gear is entangled during construction. • Mayflower Wind will consider the use of fixed mooring buoys at various strategic locations in the Project area to avoid the need for anchoring. • Mayflower Wind will continue to ensure that all Project-related vessels follow appropriate navigational routes and other USCG requirements, communicate via USCG LNMs, issue regular mariner updates and/or direct offshore radio communications to help mitigate risks to the commercial and recreational fishing industries, as well as other mariners.
Visual Resources	Construction and Post-Construction	• Mayflower Wind will locate onshore infrastructure in previously disturbed sites to the extent feasible to reduce the risk of affected undiscovered archaeological resources. • No permanent above-ground structures proposed within the town of Portsmouth.

Resource	Project Phase	Avoidance, Minimization, and Mitigation Measures
Noise	Construction	• To reduce noise generated during onshore construction, Mayflower Wind will require that its construction contractor arrive onsite and use well-maintained equipment with functioning mufflers. • Mayflower Wind will require the construction contractor to ensure that muffling enclosures are equipped on continuously operating equipment such as air compressors and welding generators. • Mayflower Wind will coordinate with the construction contractor to minimize the amount of work conducted outside of typical construction hours. • Mayflower Wind will require strict compliance with the RIDEM Diesel Engine Anti-Idling Program[3] and other Rhode Island anti-idling laws[4] to prevent equipment from idling and producing unnecessary noise while not in productive use. • As applicable, Mayflower Wind will require the construction contractor to mitigate the impact of noisy equipment on sensitive locations by using shielding, installing sound walls or buffering distance to the extent practicable.
Historic and Archaeologic Resources	Construction	• Mayflower Wind will determine avoidance, minimization, and mitigation measures for terrestrial and submarine historical and archaeological resources within the Project Area in consultation with the Tribes, Bureau of Ocean Energy Management (BOEM), Rhode Island Historical Preservation and Heritage Commission (RIHPHC), and the Bureau of Underwater Archaeological Resources through the Section 106 process. • Mayflower Wind is actively consulting with RIHPHC and BOEM in terms of potential submerged archaeological resources and the implementation of avoidance measures. • Mayflower Wind will engage on-site archaeological monitoring during the onshore export cable trench excavation, in the vicinity of two identified archaeological sites, if the identified sites cannot be avoided.
Transportation and Traffic	Construction	• Mayflower Wind will work with the Town of Portsmouth and the Rhode Island Department of Transportation (RIDOT) to develop a traffic management plan to minimize disruptions to residences, commercial establishments, and highway access, in the vicinity of construction and installation activities. • Construction monitoring will ensure compliance with the traffic management plan by construction contractors. • Mayflower Wind will have a construction schedule webpage to alert abutters, residents and other stakeholders of construction locations, dates, activities, and traffic control measures.
Electric and Magnetic Fields (onshore export cables)	Post-Construction	• The electric fields (EF) arising from the voltage on the export cables will be completely shielded by cable materials. • Predicted high-voltage direct current (HVDC) magnetic fields are well below health-based exposure guidelines. • The state of Rhode Island has not adopted standards for electric

[3] 250-Rhode Island Code of Regulations-120-05-45 Title 250 Part 45 - Rhode Island Diesel Engine Anti-Idling Program
[4] Rhode Island General Law (RIGL)§ 23-23-29.2. (Diesel motor vehicle engine idling), RIGL § 23-23-29.3. (Non-road diesel engine idling), and RIGL § 31-16.1-3. (Restrictions on idling for diesel engines)

Resource	Project Phase	Avoidance, Minimization, and Mitigation Measures
		and magnetic fields (EMFs) from HVDC transmission lines or other sources that can be compared to the model-predicted direct current (DC) magnetic fields (MFs). • Scientists have not reported any confirmable chronic health risks for the weak steady EMFs associated with HVDC power transmission.
Electric and Magnetic Fields (offshore export cables)	Post-Construction	• The EF arising from the voltage on the export cables will be completely shielded by cable materials. • MF modeling for the offshore export cables showed that DC MF levels will be increased only for small areas along the seafloor around certain localized cable locations where conservative (and atypical) installation conditions are present, contributing to highly localized deviations from the earth's DC geomagnetic field. • The weight of the currently available scientific evidence does not provide support for concluding there would be population-level harm to marine species from EMFs associated with HVDC submarine transmission. • A BOEM sponsored study in 2019 concluded, based on its review of the state of the knowledge regarding potential EMF-related impacts on marine life, "The operation of offshore wind energy projects is not expected to negatively affect commercial and recreational fishes within the southern New England area. Negligible effects, if any, on bottom-dwelling species are anticipated. No negative effects on pelagic [*i.e.*, in upper layers of the open sea] species are expected due to their distance from the power cables buried in the seafloor."
Environmental Justice Populations	Construction	• Mayflower Wind has, and will maintain, a stakeholder engagement plan with outreach and communications mechanisms to share information and gather input from external stakeholders, including Environmental Justice (EJ) populations. • The Project will provide EJ-related benefits by advancing the transition to a just and equitable cleaner energy future, creating renewable-energy jobs that pay prevailing wage, and by delivering renewable energy at a low-cost to residences and businesses. • Mayflower Wind intends to engage in programs that support workers in the transition to and the development of programs to recruit, train, and retain women, people of color, indigenous people, veterans, formerly incarcerated people, and people living with disabilities in jobs related to a cleaner energy economy.

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9.1 Avoidance, Minimization, and Mitigation of Natural Resource Impact

As detailed in Sections 6 and 8, the Project has the potential to impact the natural environment. Mayflower Wind will implement the following mitigation measures to avoid, minimize or mitigate impacts to physical and biological resources, both offshore and onshore. The following sections detail the various measures that will be implemented for the Project to reduce impacts to the natural and social/developed environments.

9.1.1 Avoidance, Minimization, and Mitigation of Natural Resource Impacts

9.1.1.1 Climate and Weather

The Project will substantially contribute to meeting the regional need for reduced GHG emissions and an increased supply of renewable clean energy from offshore wind generation. The Project need is driven by the strong public policies and legislative directives of the various New England states, including Rhode Island. The policies and legislative requirements require substantial reductions of GHG emissions and substantial increase of clean energy in the supply mix, including specifically from offshore wind. The Project will have a positive impact in offering an alternative clean energy supply.

9.1.1.2 Geology and Surficial Geology

9.1.1.3 Offshore Export Cables

The ECC has been sited and designed, and the offshore export cables will be further micro-sited within the ECC, to avoid and minimize impacts to marine resources.

The offshore export cables will be buried to a target depth from 3.2 to 13.1 ft (1.0 to 4.0 m) below the seabed to avoid and minimize impacts to commercial and recreational fisheries and allow recolonization of benthic habitat disturbed during cable installation. The primary cable burial objective will be to achieve a suitable target burial depth of the offshore export cables in the seabed along the entire ECC (where possible), by micro-routing the cables within the ECC and by assessing and selecting suitable installation/burial tooling for the seabed conditions. Use of secondary cable protection (rock and/or mattresses) will be limited to the extent practicable.

Mayflower Wind will use BMPs to minimize sediment mobilization during offshore component installation. Mayflower Wind, when feasible, will use technologies and equipment that minimize sediment mobilization and seabed sediment alteration for cable burial operations. Mayflower Wind, where practical and safe, will utilize dynamic positioning vessels. Mayflower Wind will utilize HDD for sea-to-shore transitions. Additionally, the offshore export cables will be installed in a bundled configuration where practicable, which will reduce installation impact area and post-installation occupied area.

Onshore Export Cables

The onshore excavation and trenching for the onshore export cables are not expected to significantly affect geology or surficial geology.

9.1.1.4 Geologic Hazards

Mayflower Wind has completed a suite of geophysical and geotechnical surveys to identify potential geologic hazards and other anomalies on and beneath the seafloor, along the ECC. Mayflower Wind has used this geophysical and geotechnical data to proactively route the export cable to avoid subsea hazards to the extent practicable, including micro-routing to detour around potential hazards or establish buffers to avoid conflicts during cable installation.

9.1.1.5 Marine Sediments and Soils

Offshore Export Cables

Mayflower Wind will bury submarine cables at depths to guard against exposure from seabed mobility. Mayflower Wind will use BMPs to minimize sediment mobilization during installation. Mayflower Wind will install temporary containment at the offshore HDD location to contain sediments and drilling muds during offshore HDD and cable-pull-through operations.

Onshore Export Cables

Mayflower Wind will implement a SESC plan during trenching and excavation activities, in accordance with the Rhode Island Soil Erosion and Sediment Control Handbook, and in accordance with approved plans and permit requirements. The erosion control devices will function to mitigate construction-related soil erosion and sedimentation and will also serve as a physical boundary to separate construction activities from resource areas. A majority of the onshore construction will occur within previously disturbed areas such as public road ROW. Soils and ground surfaces disturbed during construction will be stabilized and re-vegetated with native plant species.

9.1.1.6 Surface Waters (Marine, Estuarine and Freshwater)

Offshore Export Cables

Mayflower Wind will select and use BMPs including the use of a SESC plan to minimize sediment mobilization during offshore construction and HDD operations. Mayflower Wind, when feasible, will use technologies that minimize sediment mobilization and seabed sediment alteration for cable burial operations. Project vessels will follow USCG requirements at 33 C.F.R. 151 and 46 C.F.R. 162 regarding bilge and ballast water. All Project vessels are to comply with regulatory requirements related to the prevention and control of discharges and accidental spills including USEPA requirements under the USEPA 2013 Vessel General Permit and state and local government requirements. Mayflower Wind will comply with the regulatory requirements related to the prevention and control of discharges and accidental spills as documented in the Project's OSRP. The Project SESC plan will include Project-specific spill control, spill prevention, control and countermeasures to prevent inadvertent releases of oils and other hazardous materials to the environment to the extent practicable. Mayflower Wind will have an HDD Contingency Plan in place to mitigate, control, and avoid unplanned discharges related to HDD activities.

Onshore Export Cables

Mayflower Wind will follow BMPs, including the use of a SESC plan, during onshore construction activities to control sedimentation and erosion. Mayflower Wind will comply with the regulatory requirements related to the prevention and control of discharges and accidental spills as documented in the proposed Project's OSRP. The Project SESC plan will include Project-specific spill control, spill prevention, control and countermeasures to prevent inadvertent releases of oils and other hazardous materials to the environment to the extent practicable.

9.1.1.7 Freshwater Resources

Mayflower Wind intends to implement the minimization and mitigation measures outlined in Section 9.1.1.5 to protect freshwater resources, such as Founders Brook.

Construction activities that occur within the boundaries of the coastal zone 100-year floodplain will not affect storm damage prevention or flood control. The landfall approach will be accomplished through HDD and avoid direct impacts to coastal resources.

Onshore construction within the floodplain will not permanently displace storm water flood volumes.

9.1.1.8 Groundwater Resources

There are no mapped drinking water protection areas along the ECC or onshore export cable route in Rhode Island and therefore Mayflower Wind does not anticipate any impacts to groundwater resources. Spill prevention, control and countermeasures will be implemented should there be an inadvertent spill or release.

9.1.1.9 Land Cover Types and Vegetation

The Project will result in limited mowing and removal of vegetation, including select tree removal to establish safe workspaces for the HDD staging areas and to prepare the underground onshore export cable route. The proposed limits of disturbance will be clearly marked prior to construction to define the areas requiring some form of vegetation management. Vegetated areas will be restored, to the maximum extent feasible, after construction.

9.1.1.10 Coastal and Freshwater Wetlands

Offshore Export Cables

Mayflower Wind will select sites for construction that avoid areas of sensitive seafloor and benthic habitat to the extent practicable. Mayflower Wind will utilize HDD for export cable installation at landfalls. HDD is a “trenchless” process used for installing cables or pipes which enables the cables to remain buried below the beach and intertidal zone while avoiding or limiting environmental impact during installation. Mayflower Wind has elected to use HDD technology to complete the sea-to-shore export cable landfalls. Mayflower Wind will minimize trench and side-casting widths for export cable installation and anchor outside of eelgrass beds where possible. Mayflower Wind will employ micro-routing techniques and will site offshore HDD exit points to avoid known or suspected submerged aquatic vegetation.

Onshore Export Cables

Mayflower Wind will clearly mark the proposed limits of disturbance prior to construction to avoid encroachment into RI CRMC and/or federal wetlands. Mayflower Wind will implement erosion and sediment control measures in accordance with Rhode Island regulations and industry BMPs throughout the onshore Project area to abate technical and biological erosion. If groundwater is encountered, Mayflower Wind will perform dewatering measures using standard construction BMPs for dewatering, including, but not limited to, use of temporary settling basins, dewatering filter bags, or temporary holding or frac tanks. The dewatering wastewaters will be directed to well-vegetated uplands away from wetlands or other water resources to allow for infiltration to the soil of the discharged water. Mayflower Wind will place construction mats to minimize soil disturbance in any wetland areas that cannot be avoided or are required to be temporarily crossed, such as accessing portions of The Narragansett Electric Company ROW.

Mayflower Wind will require the construction contractor to have spill control and containment kits on site to allow for immediate response and cleanup in the event of an accidental release of fuel, oils, or other hazardous materials Mayflower Wind and their construction contractor will store petroleum products in upland areas more than 100 ft (30.5 m) from wetlands and waterbodies. Temporary containment will be required for equipment that cannot be practically moved and must be parked overnight within 100 ft (30.5 m) of a wetland or other water resources. Mayflower Wind will use a secondary containment system for refueling that needs to occur within 100 ft (30.5 m) of wetlands to contain any minor amounts of fuel inadvertently dripped or released during refueling. Mayflower Wind and their construction contractor will store petroleum products in upland areas more than 100 ft (30.5 m) from wetlands and waterbodies. Mayflower Wind will set up cement cleanout tubs in areas at least 100 ft (30.5 m) from wetlands or other water resources to contain and hold any residual cement and washout from cement trucks prior to their departure from the site. Discharges as a result of dewatering will be managed in accordance with the requirements for applicable RIDEM and RI CRMC regulations pertaining to dewatering.

9.1.1.11 Wildlife

Mayflower Wind will site Project components to avoid locating onshore facilities and landfall sites in or near significant fish and wildlife habitats to the greatest extent practicable. Mayflower Wind will train construction staff on biodiversity management and environmental compliance requirements. Mayflower Wind will bury the onshore export cables underground beneath public road ROW.

The construction phase of the Project may result in temporary disruption and displacement of resident wildlife along the Project route. No long-term loss or displacement of species is expected.

9.1.1.12 Birds

Mayflower Wind will site the proposed Project to avoid locating Project components in or near areas of known important or high bird use (e.g., nesting, foraging and overwintering areas, migratory staging or resting areas). Mayflower Wind will incorporate use of HDD at landfall locations to avoid disturbance to shorelines and coastal habitats to the extent practicable. Mayflower Wind will coordinate with RIDEM DFW, RI CRMC, RIDEM, and USFWS to identify appropriate mitigation measures, if required.

Mayflower Wind's onshore surveys have identified the presence of at least two osprey nests in close proximity to the onshore export cable route variants. Mayflower Wind does not anticipate any impacts to the nesting pairs of ospreys. Should an unforeseen conflict arise, Mayflower Wind would consult with the RIDEM DFW and RI CRMC to determine next steps.

9.1.1.13 Finfish

Mayflower Wind will design the sea-to-shore transition to reduce the dredging footprint and effects to benthic organisms (e.g., offshore cofferdam and/or gravity cell). Mayflower Wind will incorporate use of HDD at landing(s) and avoid disturbance to finfish and invertebrate EFH to the extent practicable. The Project will incorporate use of HDD at landfall areas, as appropriate, to minimize spatial and temporal effects to benthic organisms. Mayflower Wind will incorporate use of HDD at landfall areas and avoid disturbance to finfish and invertebrate EFH to the extent practicable.

9.1.1.14 Shellfish

Mayflower Wind will use HDD at landfall areas to avoid disturbance to nearshore productive shellfish beds to the extent practicable. Mayflower Wind will select lower impact construction methods, where possible. Mayflower Wind will select corridor and micro-route cables within selected corridor to avoid complex habitats, where possible. The ECC was designed to minimize length of cable (and associated seabed impacts) needed.

The offshore export cables will be buried to a depth range from 3.2 to 13.1 ft (1.0 to 4.0 m) below the seabed to avoid and minimize impacts to commercial and recreational fisheries and allow recolonization of benthic habitat disturbed during cable installation. The primary cable burial objective will be to achieve a suitable target burial depth of the offshore export cables in the seabed along the entire ECC (where possible), by micro-routing the cables within the ECC and by assessing and selecting suitable installation/burial tooling for the seabed conditions. Use of secondary cable protection (rock and/or mattresses) will be limited to the extent practicable.

Additionally, the offshore export cables will be installed in a bundled configuration where practicable, which will reduce installation impact area and post-installation occupied area.

9.1.1.15 Marine Mammals and Sea Turtles

Protected species observers will be employed, if required by NMFS, to monitor for whales, other marine mammals and sea turtles. Mayflower Wind will employ shut-down procedure when protected species are detected in their respective clearance zones in the offshore Project area. Mayflower Wind will implement measures as identified in the Project Marine Mammal and Sea Turtle Monitoring and Mitigation Plan, as needed.

9.1.1.16 Rare, Threatened and Endangered Species

Based on recent (April 2022) consultations with the Rhode Island Natural Heritage Program, Mayflower Wind does not expect impacts to state-listed rare species in Rhode Island state waters or onshore. Mayflower Wind proposes to avoid work in salt marsh habitat and therefore does not foresee any impacts to the salt marsh tiger beetle. There are no known northern long-eared bat hibernacula or roosting documented within the Project Area and therefore no impact is anticipated.

9.1.1.17 Air Quality

Mayflower Wind's construction contractor will be required to apply dust suppression measures during the onshore construction to prevent or minimize particulate matter from disturbing nearby residents, as well as to keep the public roadways free of sediment. Mayflower Wind's construction contractor will be required to comply with the RIDEM Diesel Engine Anti-Idling Program and other Rhode Island anti-idling laws regarding the operation of diesel motor vehicle engine idling (RIGL §23-23-29.2.), the operation of non-road diesel engine idling (RIGL §23-23-29.3.), and restrictions on idling for diesel engines (RIGL §31-16.1-3).

Mayflower Wind will ensure that vessels used for construction will use the jurisdictionally required compliant fuel, (e.g., ultra-low sulfur diesel) or a fuel with less emissions. Mayflower Wind will ensure fuels used for construction equipment comply with USEPA or equivalent emissions standards. Mayflower Wind will use low-NO_x engines when possible. Mayflower Wind will engage with USEPA on how to satisfy Best Available Control Technology.

9.1.1.18 Electric and Magnetic Fields in the Marine Environment

The electric fields arising from the voltage on the offshore export cables will be completely shielded by cable materials.

Magnetic field modeling for the offshore export cables showed that DC magnetic field levels will be increased only for small areas along the seafloor around certain localized cable locations where conservative (and atypical) installation conditions are present, contributing to highly localized deviations from the earth's DC geomagnetic field.

The weight of the currently available scientific evidence does not provide support for concluding there would be population-level harm to marine species from EMFs associated with HVDC submarine transmission. A BOEM sponsored study in 2019 concluded, based on its review of the state of the knowledge regarding potential EMF-related impacts on marine life, "The operation of offshore wind energy projects is not expected to negatively affect commercial and recreational fishes within the southern New England area. Negligible effects, if any, on bottom-dwelling species are anticipated. No negative effects on pelagic [i.e., in upper layers of the open sea] species are expected due to their distance from the power cables buried in the seafloor."

9.1.2 Avoidance, Minimization and Mitigation of Social Resource Impacts

9.1.2.1 Population Trends

Project construction is not expected to result in impacts to local populations. The Town of Portsmouth may see a slight increase in the local population with contractors and personnel seeking lodging and/or rental units during the construction phase of the Project. Where possible, local workers will be hired to meet construction labor needs associated with the Project. Mayflower Wind will maintain a stakeholder engagement plan with outreach and communications mechanisms to share information and gather input from external stakeholders, including potential supply chain partners, educational institutions, and workforce training providers.

9.1.2.2 Employment and Labor Force

Mayflower Wind will maintain a stakeholder engagement plan with outreach and communications mechanisms to share information and gather input from external stakeholders, including potential supply chain partners, educational institutions, and workforce training providers. Mayflower Wind will encourage the hiring of skilled and unskilled labor from the Project region. Partnerships between Rhode Island and Massachusetts organizations are encouraged to leverage Mayflower Wind's investments.

Mayflower Wind will design a construction schedule to minimize and mitigate population and business-related impacts to the local community, as well as coordinate with local authorities and abutters during construction to minimize local traffic impacts. Further, these Project components will be constructed in compliance with applicable regulations related to environmental and community concerns.

The construction phase will require amenities and services for workers, including lodging, restaurants, banks, shops, medical services, entertainment, parks, tourism, sports, and gas stations. Project expenditures will support existing employment in these economic sectors, which may include increased hours and overtime opportunities for existing workers, as well as potentially creating new employment opportunities as affected businesses hire more workers.

9.1.2.3 Land Use

Once the Project is constructed, onshore and nearshore Project activities will have no impact on land use, and there will be no long-term impact on the viewshed of the local residents. Mayflower Wind does not expect to change or displace any existing land use in the Town of Portsmouth. The majority of the intermediate onshore export cable route is located within previously disturbed areas including public road ROW. Therefore, Mayflower Wind does not expect long-term impacts to land uses.

During the construction phase of the Project, some land uses may be temporarily disrupted or displaced to facilitate the cable installation. These Project-related disruptions are considered to be temporary and localized. Mayflower Wind will work with the Town of Portsmouth and residents abutting the Project route to minimize the length of disruption. Mayflower Wind will develop and implement a traffic management plan prior to construction to minimize disruptions to residences and commercial establishments in the vicinity of onshore construction activities; pedestrian and bicycle safety and movement would also be addressed to minimize effects of construction.

Mayflower Wind will develop an onshore construction schedule to minimize effects to residents, members of the public, recreational uses and tourism-related activities to the extent feasible, such as scheduling nearshore construction activities to avoid the height of the summer tourist season. Mayflower Wind will work and coordinate with stakeholders and visitors' bureaus to schedule outside of major events taking place onshore. Mayflower Wind will also develop and implement an onshore traffic management plan prior to construction to address vehicular, bicycle, and pedestrian safety.

9.1.2.4 Tourism

Mayflower Wind will work with the Town of Portsmouth to develop a traffic management plan that minimizes the disruptions to tourists, residents and commercial establishments in the vicinity of construction and installation activities. Mayflower Wind will develop and implement an onshore construction schedule to minimize effects to recreational uses and tourism-related activities to the extent practicable. Mayflower Wind will have a construction schedule webpage to alert abutters, residents and other stakeholders of construction locations, dates, activities and traffic control measures.

9.1.2.5 Open Space and Recreation

Mayflower Wind will work with the Town of Portsmouth and affected stakeholders to maintain access to local recreational lands and vistas. Access and parking will be maintained for residents to access such areas as Island Park Beach, Founders Brook Park, and Aquidneck Land Trust property and trails. Open access to the Montaup Country Club on Anthony Road will be maintained by the construction contractor, to the greatest extent practicable, during construction. Areas temporarily affected by installation and construction activities, including roads, beaches, parking areas, green spaces, etc., will be restored to an equal or better condition, as appropriate for the existing land use.

9.1.2.6 Aquaculture

Mayflower Wind will work with municipal shellfish constables to coordinate shellfish seeding with planned activities prior to construction activities. Mayflower Wind is currently working with commercial and recreational fishermen as well as fisheries representatives to determine construction timing and locations with fishing vessels to anticipate and avoid/minimize/mitigate gear interactions that may occur during construction. Mayflower Wind is currently not aware of any aquaculture lease sites that would be directly affected by the ECC, but will continue to coordinate with the RI CRMC, the Habitat Advisory Board, and the Fisheries Advisory Board.

9.1.2.7 Navigation and Shipping

Mayflower Wind will post LNMs on the Mayflower Wind website. Mayflower Wind will submit LNMs to the USCG and Fleet Command prior to the commencement of offshore construction activities. Mayflower Wind will implement construction safety zones in consultation with USCG and communicate to local mariners regarding upcoming and ongoing construction activities. Mayflower Wind will utilize on-scene safety vessel(s) and/or personnel to advise mariners of construction activity, as necessary. Mayflower Wind will investigate means to update navigation charts with NOAA to improve communications for on-water activities. Mayflower Wind will utilize on-scene safety vessel(s) and/or personnel to advise mariners of construction activity, as necessary.

9.1.2.8 Recreational Boating

As indicated in Section 9.1.2.7, Mayflower Wind will post LNMs on the Mayflower Wind website. Mayflower Wind will implement construction safety zones in consultation with USCG and communicate to local mariners regarding upcoming and ongoing construction activities.

9.1.2.9 Commercial and Recreational Fishing

Mayflower Wind is currently working with commercial and recreational fishermen as well as fisheries representatives to determine construction timing and locations with fishing vessels to anticipate and avoid/minimize/mitigate gear interactions that may occur during construction. Temporary safety zone restrictions associated with construction activities will limit direct access to areas with construction activity for the safety of mariners and Project employees, but these areas will be limited spatially and temporally. Mayflower Wind will implement construction safety zones around active construction areas in consultation with USCG. Mayflower Wind will notify mariners via LNMs of the presence and location of partially installed structures. The Mayflower Wind Fisheries Liaison Officer proactively contacts fishermen if their gear is entangled during construction. Mayflower Wind will consider the use of fixed mooring buoys at various strategic locations in the Project Area to avoid the need for anchoring.

Mayflower Wind will continue to ensure that all Project-related vessels follow appropriate navigational routes and other USCG requirements, communicate via USCG LNMs, issue regular mariner updates and/or direct offshore radio communications to help mitigate risks to the commercial and recreational fishing industries, as well as other mariners.

9.1.2.10 Visual Resources

The post-construction phase of the Project will not result in impacts to visual resources in Rhode Island. Mayflower Wind will locate onshore infrastructure in previously disturbed sites to the extent feasible to reduce the risk of affected undiscovered archaeological resources. No permanent above-ground structures are proposed within the Town of Portsmouth. No permanent impact to visual resources or viewsheds is expected by Mayflower Wind.

Temporary impacts to the viewshed may be realized during the construction phase of the Project, with views of onshore construction equipment and vehicles, and offshore by cable-lay vessels and barges. Temporary safety lighting may be installed by the construction contractor onshore to maintain a safe and visible work zone along the public road ROW. The vessels and barges supporting the HDD and cable pull-through marine operations will be required by USCG to maintain safety lighting for other boaters, and depending on the height of the offshore crane, maintain Federal Aviation Administration safety lighting.

9.1.2.11 Noise

During construction, Mayflower Wind will require that construction comply with the Portsmouth noise ordinance. In some instances, and as dictated by state or the local authority, construction may need to be performed at night to minimize daytime impacts to commuters and local and state roadways. Construction-related activities such as the HDD drilling, installation of the high-density polyethylene conduit and cable-pulling operations may need to be continuous efforts that occur throughout the day and night. To the extent practicable, these operations will be maximized during daytime hours. Mayflower Wind will mitigate construction noise by requiring the construction contractor: (i) implement temporary noise barriers at HDD locations where practicable and safe; (ii) maintain equipment with functioning mufflers; (iii) require continuous noise sources such as generators and compressors will be located away from residential properties to the best of their ability and have enclosed mufflers; (iv) use a low-noise generator to reduce noise impacts; and (v) require compliance with the all Rhode Island anti-idling laws and programs. As applicable, Mayflower Wind will require the construction contractor to mitigate the impact of noisy equipment on sensitive locations by using shielding, installing sound walls or buffering distance to the extent practicable.

9.1.2.12 Historic and Archaeologic Resources

Mayflower Wind will determine avoidance, minimization, and mitigation measures for terrestrial and submarine historical and archaeological resources within the Project Area in consultation with the Tribes, BOEM, RIHPHC, and the Bureau of Underwater Archaeological Resources through the Section 106 process.

The RIHPHC has concurred with Mayflower Wind's archaeological recommendation that if identified sites cannot be avoided during construction, then on-site archaeological monitoring will occur during the onshore export cable trench excavation, in the vicinity of the two identified sites. Mayflower Wind is actively consulting with RIHPHC and BOEM in terms of potential submerged archaeological resources and the implementation of avoidance measures. No impacts to historic or archaeologic resources are anticipated from construction of the onshore or offshore components of the Project.

Communications and consultation with the affected Tribes, RIHPHC, and BOEM are ongoing. Mayflower Wind will locate onshore infrastructure in previously disturbed areas to the extent feasible to reduce the risk of affected undiscovered cultural resources.

9.1.2.13 Transportation and Traffic

Mayflower Wind will work with the Town of Portsmouth and the RIDOT to develop a traffic management plan to minimize disruptions to residences, commercial establishments, and highway access, in the vicinity of construction and installation activities. The construction spreads along the public road ROW will be establish with consideration to maintain open and safe access and egress for local residents to local roads, Route 24 and the Mount Hope Bridge. Construction monitoring will ensure compliance with a traffic management plan by construction contractors. Mayflower Wind will have a construction schedule webpage to alert abutters, residents and other stakeholders of construction locations, dates, activities and traffic control measures.

9.1.2.14 Electric and Magnetic Fields Onshore

The electric fields arising from the voltage on the onshore export cables will be completely shielded by cable materials. As shown in the POWER and Gradient Magnetic Field Analysis Report (Attachment D), predicted HVDC magnetic fields are well below health-based exposure guidelines. The state of Rhode Island has not adopted standards for EMF from HVDC transmission lines or other sources that can be compared to the model-predicted DC magnetic fields.

Scientists have not reported any confirmable chronic health risks for the weak steady EMF associated with HVDC power transmission; this is consistent with the fact that humans have lived for tens of thousands of years in the presence of the earth's DC geomagnetic field, which is not known to adversely interact with biological processes or directly affect human health.

9.1.2.15 Environmental Justice Populations

Mayflower Wind has, and will maintain, a stakeholder engagement plan with outreach and communications mechanisms to share information and gather input from external stakeholders, including EJ populations. The Project will provide EJ-related benefits by advancing the transition to a just and equitable cleaner energy future, creating renewable-energy jobs that pay prevailing wage, and by delivering renewable energy at a low-cost to residences and businesses. Mayflower Wind intends to engage in programs that support workers in the transition to and the development of programs to recruit, train, and retain women, people of color, indigenous people, veterans, formerly incarcerated people, and people living with disabilities in jobs related to a cleaner energy economy.

9.1.3 Conclusion

Mayflower Wind has sited, planned, and designed the proposed Project to avoid and minimize potential impacts on physical, biological, cultural, and socioeconomic resources. The impact evaluation includes consideration of additional environmental protection measures. The above-referenced measures demonstrate Mayflower Wind's commitment to perform the proposed Project activities in a manner that includes the application of BMPs and other necessary steps to avoid, minimize, and/or mitigate impacts on the natural and social/developed environments.

10 PERMIT REQUIREMENTS

As described below, Mayflower Wind must obtain permits from federal, Rhode Island, and Massachusetts agencies, as well as some local permits for the construction of the Project and the associated transmission connector facilities and the Clean Energy Resource.

Mayflower Wind is in the process of permitting the development of an offshore wind renewable clean energy generation facility (Clean Energy Resource) capable of generating an estimated 2,400 MW of renewable clean energy from federal waters on the Outer Continental Shelf (OCS) in the designated BOEM Renewable Energy Lease Area OCS-A 0521 (Lease Area). The Lease Area at its closest edge, is approximately 51 nm (94 km) southeast of the Rhode Island coast. Mayflower Wind's Clean Energy Resource encompasses all WTGs, OSPs, and inter-array cables. Other related federal-jurisdictional components include the offshore export cable corridor (ECC) and the transmission connector facilities in federal waters.

For purposes of this Petition the "Project" includes all Rhode Island state jurisdictional transmission connector elements, including the offshore export cables in Rhode Island state waters and an intermediate onshore landfall and underground export cable crossing of Aquidneck Island in the Town of Portsmouth before exiting into Mount Hope Bay on route to Massachusetts waters and a point of interconnection with the regional transmission system at Brayton Point in the Town of Somerset, Massachusetts. The components of the Project within the jurisdiction of the EFSB include offshore export cables installed within an ECC of approximately 20.4 mi (32.8 km) length in Rhode Island state waters and onshore export cables installed along an onshore, underground export cable route of approximately 2.0 mi (3.2 km) length in the Town of Portsmouth.

10.1 FEDERAL PERMITS

10.1.1 Bureau of Ocean Energy Management (BOEM)

Under the *Outer Continental Shelf Lands Act* (OCS Lands Act), 43 U.S.C. § 1337, BOEM has the authority to regulate activities associated with the production, transportation, or transmission of renewable clean energy resources on the OCS. Pursuant to this authority, BOEM must ensure that any approved activities are safe, conserve natural resources on the OCS, are undertaken in coordination with relevant federal agencies, provide a fair return to the United States, and are compliant with all applicable laws and regulations, including the NEPA.[1]

BOEM issued the commercial wind energy lease for the Lease Area to Mayflower Wind on April 1, 2019, for development of a renewable clean energy facility, Clean Energy Resource. The construction and operation of the Clean Energy Resource, together with its transmission connector facilities (offshore and onshore), requires prior BOEM approval of a Construction and Operations Plan (COP) that is compliant with BOEM regulations.[2] Additionally, Mayflower Wind will request an easement from BOEM for the portion of the export cables that traverses federal waters. Mayflower Wind submitted its COP to BOEM on February 15, 2021.

10.1.2 National Environmental Policy Act (NEPA)

BOEM will lead the preparation of an Environmental Impact Statement (EIS) to evaluate potential impacts associated with implementation of the Clean Energy Resource and federal- and state-

[1] *See* 30 C.F.R. § 585.102 (describing BOEM's responsibilities under the OCS Lands Act).
[2] 30 C.F.R. 585.

jurisdictional transmission connector components offshore and onshore. BOEM published a Notice of Intent (NOI) to prepare an EIS for Mayflower Wind on November 1, 2021. Federal agencies, identifying as cooperating agencies in the NEPA process, are responsible for reviewing the impacts of the Clean Energy Resource and federal- and state-jurisdictional connector components to protected resources under their jurisdiction and evaluating the need for mitigation measures. These agencies will have the opportunity to comment through interagency consultations required for federal permitting. In addition, through the NEPA process, BOEM will be required to satisfy Section 106 of the *National Historic Preservation Act*, which requires consideration of historic properties.[3]

10.1.3 United States Coast Guard (USCG)

The USCG will issue a Private Aids to Navigation Permit approval for installation of the wind turbine generators and offshore substation platforms. A request for a Local Notice to Mariners (LNM) will be submitted to the USCG prior to on-scene construction activities to enable USCG to issue the LNM. An LNM is a weekly notification published by the USCG to disseminate information to mariners concerning aids to navigation, hazards to navigation, and other items of interest to marine users and marine transportation.

10.1.4 United States Army Corps of Engineers (USACE)

The Clean Energy Resource and federal- and state-juristictional connector components will require a USACE Section 10 Individual Permit and Section 404 Permit for structures within navigable waters and the filling of wetlands and deepwater habitats in connection with the construction of the structures in wetlands, clearing in wetlands, and the construction of certain temporary access roads. Mayflower Wind will be applying for a USACE Section 408 permit for crossing and dredging of federal navigation channels and project areas, in accordance with Section 14 of the Rivers and Harbors Act of 1899 and codified at 33 U.S.C. 408 (Section 408).

The USACE has jurisdiction over the Clean Energy Resource and Project pursuant to Section 10 of the *Rivers and Harbors Appropriation Act of 1899* (RHA),[4] and Section 404 of the *Clean Water Act* (CWA) due to the Project's location within navigable waters, federally maintained navigation channels and waters of the United States.[5]

Section 10 of the RHA requires authorization from the USACE for the construction of any structure in or over any navigable water of the United States. USACE Section 10 review of the Project will occur concurrently with the Section 404 review. Section 404 of the CWA establishes federal regulatory authority over the discharge of dredged or fill material into waters of the United States, including wetlands. USACE will review the Project as an Individual Permit. The Individual Permit process includes an application sufficiency review, review of proposed Project impacts on the environment, public notice and may involve a public hearing.

The USACE New England District will be a cooperating agency under BOEM's NEPA process to satisfy the NEPA requirements for these authorizations. The USACE reviews under RHA Section 10, CWA Section 404 and Section 408 of the RHA will be processed concurrently with BOEM's NEPA review.

[3] 54 U.S.C. § 306.101.
[4] 33 U.S.C. § 403.
[5] 33 U.S.C. § 1344.

10.1.5 National Marine Fisheries Service (NMFS)

Pursuant to the *Marine Mammal Protection Act*,[6] certain species and population stocks of marine mammals that are, or may be, in danger of extinction or depletion as a result of human activities should be protected and encouraged to develop to the greatest extent feasible commensurate with sound policies of resource management, and the primary objective of their management should be to maintain the health and stability of the marine ecosystem. The *Marine Mammal Protection Act* designated NMFS as the primary agency responsible for the protection of whales, dolphins, porpoises, seals, and sea lions.

Construction and operation of the Clean Energy Resource and the Project requires consultation with NMFS and will require an Incidental Harrassment Authorization or a Letter of Authorization under the *Marine Mammal Protection Act* and in accordance with the federal ESA.

NMFS will also be responsible for review and comment on the Project proponent-prepared Essential Fish Habitat (EFH) assessment, which was prepared to describe how the actions of the Project may affect EFH designated by NMFS and the New England Fishery Management Council, in the area disturbed by the Project installation and operation.

10.1.6 United States Fish and Wildlife Service (USFWS)

Under Section 7 of the federal *Endangered Species Act* (ESA), federal agencies must consult with the USFWS when any action the agency carries out, funds, or authorizes may affect a listed endangered or threatened species or designated critical habitat. Coordination with USFWS has been initiated and a no take authorization is expected to be requested.

Basic site evaluation and characterization studies have been completed, and detailed studies are ongoing to ensure compliance with the *Bald and Golden Eagle Act*[7] and the *Migratory Bird Treaty Act*.[8]

10.1.7 Advisory Council on Historic Preservation

Consultation with the Rhode Island Historic Preservation and Heritage Commission (RIHPHC), which serves as the State Historic Preservation Office and the Tribal Historic Preservation Office is ongoing and will be completed as required by Section 106 of the *National Historic Preservation Act* (NHPA).

The issuance to Mayflower Wind of an OCS lease[9] under BOEM regulations[10] constitutes a federal undertaking subject to Section 106 of the NHPA. The Section 106 implementing regulations[11] define an undertaking as a project, activity, or program funded in whole or in part under the direct or indirect jurisdiction of a federal agency, including those carried out by or on behalf of a federal agency; those carried out with federal financial assistance; and those requiring a federal permit, license, or approval.[12] The Section 106 process requires Federal agencies to take into account the effects of their undertakings on historic properties and afford the Advisory Council on Historic Preservation a reasonable opportunity to comment on such undertakings.[13] Through the Section 106 process, BOEM will consult with relevant stakeholders including State Historic Preservation Officers and federally-recognized Native American tribes.

[6] 16 U.S.C. § 1361 *et seq.*
[7] 16 U.S.C. § 668-668c
[8] 16 U.S.C. §§ 703-712.
[9] *Commercial Lease of Submerged Lands for Renewable Energy Development on the Outer Continental Shelf,* Lease No. OCS-A-0521.
[10] 30 C.F.R. 585.
[11] 36 C.F.R. 800.
[12] 36 C.F.R. § 800.16(y).
[13] 36 C.F.R. § 800.1(a).

Mayflower Wind has submitted to BOEM technical studies that evaluate potential impacts to terrestrial and marine archaeological and historical resources to support BOEM's Section 106 consultations. Mayflower Wind submitted its Terrestrial Archaeological Resources Assessment (TARA) to BOEM, the RIHPHC and the Native American tribes in March 2022. Mayflower Wind's COP filing with BOEM included COP Appendix Q, Marine Archaeological Resources Assessment, COP Appendix R, Terrestrial Archaeological Resources Assessment, and COP Appendix S, Analysis of Visual Effects to Historic Properties.

10.1.8 United States Environmental Protection Agency (USEPA)

The USEPA regulates air quality on the OCS, including emissions from all phases of Project implementation, pursuant to the *Clean Air Act* Outer Continental Shelf Air Permit.[14] The USEPA's jurisdiction includes vessels when they are permanently or temporarily attached to the seabed (40 C.F.R. 55.2), as well as vessels associated with the Clean Energy Resource and Project while operating within the Lease Area or within 25 nm (46.3 km) of the center of the Lease Area.

OCS sources[15] located within 25 nm (46 km) of a states' seaward boundary are subject to the requirements of the Corresponding Onshore Area outlined in 40 C.F.R. §§ 55.13 and 55.14. After an NOI is submitted to the USEPA for the proposed Clean Energy Resource and associated federal- and state-juristictional connector components, 40 C.F.R. § 55.5 requires the USEPA to designate the Corresponding Onshore Area. Mayflower Wind is submitting an NOI for the proposed Clean Energy Resource and associated transmission connector components to the USEPA Regional Office, Massachusetts Department of Environmental Protection, RIDEM Office of Air Resources, and New Hampshire Department of Environmental Services Air Resources Division in Q2 2022. It is anticipated that the USEPA will designate Massachusetts as the Corresponding Onshore Area. If so, the proposed Project's OCS sources will be required to comply with the applicable Massachusetts air quality regulations, which include Best Available Control Technology and Lowest Achievable Emission Rate under 310 CMR § 7.00.

A National Pollution Discharge Elimination System (NPDES) General Permit for Construction Activities may be required for sections of the onshore and offshore construction. RIDEM has been delegated by the USEPA to issue individual and general permits under the RIPDES Permits Program.

10.1.9 Federal Aviation Administration (FAA)

The Federal Aviation Administration (FAA) has jurisdiction over structures greater than 200 ft (61 m) above ground level within 12 nm (22 km) of shore. Although FAA's jurisdiction is limited to 12 nm (22 km), FAA airspace may extend beyond this distance requiring coordination between BOEM and the FAA to mitigate any impacts. Additionally, BOEM may require compliance with the marking and/or lighting recommendations specified in BOEM's Guidelines for Lighting and Marking of Structures Supporting Renewable Energy Development, dated April 28, 2021.

Mayflower Wind will submit a notice to the FAA for any cranes that require a temporary notice during the construction of the Project.

[14] 42 U.S.C. § 7627; 40 C.F.R. 55, 60
[15] Defined as any equipment, activity, or facility which: (1) Emits or has the potential to emit any air pollutant;
(2) Is regulated or authorized under the Outer Continental Shelf Lands Act (OCSLA) (43 U.S.C. § 1331 et seq.); and
(3) Is located on the OCS or in or on waters above the OCS. 40 C.F.R. § 55.2.

10.2 STATE OF RHODE ISLAND PERMITS

10.2.1 Energy Facility Siting Board License

The Project will require a license to construct a major energy facility from the EFSB pursuant to the Energy Facility Siting Act, RIGL Section 42-98-1 *et seq*.

10.2.2 Rhode Island Coastal Resources Management Council

The RI CRMC has jurisdiction over several permits or approvals. The RI CRMC retains the authority to issue assents and licenses under the EFSA pursuant to RIGL §42-98-7(a)(3). The Project will require a Catergory B Assent pursuant to RI CRMC Management Procedures (the Red Book) codified at 650-RICR-20-00-1.1 *et seq*.

The Project will require a Freshwater Wetlands Permit from the RI CRMC for work activities located within the 200-ft contінguous area to a coastal wetland pursuant to the Rules and Regulations Governing the Protection and Management of Freshwater Wetlands in the Vicinity of the Coast.[16] Updated RI CRMC regulations relating to Freshwater Wetlands in the Vicinity of the Coast (650-RICR-20-00-9 *et seq.*) go into effect on July 1, 2022. Under these new regulations, RI CRMC will no longer regulate "Riverbank Area" and "Perimeter Wetland" portions of freshwater wetlands in the vicinity of the coast. Under the new regulations, RI CRMC will regulate a Jurisdictional Area which includes the resource (i.e., wetland or stream) and a contiguous area extending 200 ft outward from a stream and 100 ft outward from a freshwater wetland. The contiguous area includes the resource's Buffer Zone and Buffer. The Project will require a Submerged Lands License from the RI CRMC for the proposed export cables located within Rhode Island state waters pursuant to the Red Book[17] .

The Project will require concurrence from RI CRMC with Mayflower Wind's Federal Consistency Certification pursuant to Section 307 of the *Coastal Zone Management Act*,[18] *Coastal Zone Management Act* regulations[19] and § 11.10 of Rhode Island Ocean Special Area Management Plan.[20] Mayflower Wind filed the Rhode Island *Coastal Zone Management Act* Consistency Certification with the RI CRMC in March 2022.

10.2.3 Rhode Island Department of Environmental Management

RIDEM has been delegated federal authority to enforce Sections 401 and 402 of the CWA, which regulate discharges into waters of the United States, including dredging of the seafloor within Rhode Island state waters. RIDEM's review is therefore not pre-empted by the EFSB. The RIDEM Office of Water Resources implements the RIPDES program. The purpose of this program is to restore, preserve, and enhance the quality of the surface waters and to protect the waters from discharges of pollutants so that the waters will remain available for all beneficial uses and thus protect the public health, welfare, and the environment. A General Permit for Stormwater Discharge Associated with Construction Activity will be required to authorize discharges pursuant to RIGL § 46-12.[21]

Consequently, any development that potentially affects the water quality of waters of the State must apply for authorization from RIDEM under the Water Quality Regulations,[22] the Rules and Regulations

[16] 650-RICR-20-00-2.*1 et seq*.
[17] 650-RICR-20-00-1.1 *et seq.*
[18] 16 U.S.C. § 1456
[19] 15 C.F.R. 930, subpart E
[20] 650-RICR-20-05-11.10
[21] 250-RICR-150-10-1.1 *et seq*.
[22] 250- RICR-150-05-1.1 *et seq*.

for Dredging and the Management of Dredged Materials,[23] and/or the RIPDES Regulations,[24] and the General Permit for Stormwater Discharge Associated with Construction Activity. The RIDEM is also responsible for administering and enforcing the Fresh Water Wetlands Act including the issuance of Insignificant and/or Significant wetlands permits (250-RICR-150-15-1) unless the freshwater wetlands is located in the vicinity of the coast, which falls under the exclusive jurisdiction of RI CRMC pursuant to RIGL §46-23-6. The RIDEM has promulgated new Freshwater Wetland rules (250-RICR-150-15-3) that will be implemented and effective on July 1, 2022.

The RIDEM Division of Marine Fisheries must be consulted as part of RIDEM's Section 401 application review process.

RIDEM may also declare animals and plants endangered under the *Rhode Island Endangered Species Act*),[25] which prohibits the importation, sale, transportation, storage, traffic, ownership, or other possession or use of any animal or plant listed under the federal ESA. While an independent permitting process does not exist for *Rhode Island Endangered Species Act* review, RIDEM offices/divisions having permitting authority are required to consult with the RINHP, which implements the *Rhode Island Endangered Species Act*. The Rhode Island Natural Heritage Program (RINHP) database is hosted on the RIDEM Environmental Resource Mapping website. Pursuant to RIGL § 42-98.7(2), the EFSB may request an advisory opinion with respect to these matters.

10.2.4 Rhode Island Historical Preservation and Heritage Commission

Rhode Island state agency permits and authorizations will be required for the Project and the *Antiquities Act of Rhode Island* (*Antiquities Act*).[26] The *Antiquities Act* requires all state agencies, departments, institutions, commissions, and all Rhode Island municipalities to cooperate with the RIHPHC in the preservation, protection, excavation, and evaluation of specimens and sites. RIHPHC has promulgated regulations implementing the *Antiquities Act*, which, in part, establish.[27] Undertakings that are subject to compliance with Section 106 of the NHPA, such as the Project, satisfy the requirements of the Antiquities Act by adhering to the federal 36 CFR 800 regulations.[28,29]

Permission to conduct archaeological field investigations in the Town of Portsmouth was approved by the RIHPHC in December 2021 (pursuant to the *Antiquities Act of Rhode Island*, RIGL 42-45 and the Rhode Island Procedures for Registration and Protection of Historic Properties).

Consultation of Section 106 of the NHPA was initiated in Q4 of 2021 with the issuance of the NOI by BOEM in the Federal Register to prepare an EIS under NEPA.

10.2.5 Rhode Island Department of Transportation

A Utility Permit and a Physical Alteration Permit will be required from the RIDOT for construction within the state highway ROW in accordance with RIGL Chapter 24-8. Construction is anticipated on the following state-maintained roads in the Town of Portsmouth: Park Avenue, Boyd's Lane, Route 114, Anthony Road, and the interchanges with State Route 24.

[23] 250-RICR-150-05-2.1 *et seq.*
[24] 250-RICR-150-10-1.1 *et seq.*
[25] RIGL §§ 20-37-1 *et seq.*
[26] RIGL 42-45 *et seq.*
[27] 530-RICR-10-00-1
[28] 530-RICR-10-00-1.14I
[29] 530-RICR-10-00-1.14I

10.3 LOCAL PERMITS AND APPROVALS

10.3.1 Town of Portsmouth

At the municipal level, onshore facilities for the Project are proposed in the Town of Portsmouth, Rhode Island. Town Council Review, Zoning Review, and Planning Board Review are pre-empted by the authority of the EFSB, and consequently the Town Council, Zoning Board, and Planning Board will issue advisory opinions to the EFSB on these topics. Local building permits/approvals, street opening permits, sound variances, soil erosion and sediment control plan and/or easements are not pre-empted by the authority of the EFSB and may be required. These permits, approvals and easements will be obtained prior to construction, after engagement with the local regulatory officials and the community, and once the design of the onshore export cable corridor is finalized.

10.4 MASSACHUSETTS PERMITS AND APPROVALS

The Project will deliver energy to a point of interconnection at Brayton Point in Somerset, Massachusetts and, therefore, has major offshore and onshore facilities in Massachusetts, including offshore and onshore export cables, a high-voltage direct current converter station, and high-voltage alternating current interconnection facilities from the converter station to the point of interconnection. These Massachusetts facilities are subject to the jurisdiction of the Massachusetts Energy Facilities Siting Board and the Department of Public Utilities. Approval from these regulatory agencies, in a consolidated proceeding, will be required for Mayflower Wind to construct and operate the transmission connector facilities in Massachusetts. The Massachusetts facilities will require review by the Massachusetts Executive Office of Energy and Environmental Affairs. The Project will also need to obtain a license and permits from the Massachusetts Department of Environmental Protection and Massachusetts Coastal Zone Management to install the offshore export cables in Massachusetts waterways and tidelands. The Project will also undergo environmental review through the *Massachusetts Environmental Policy Act* review and input process and will have other ancillary state and local permitting and/or approval requirements in the Commonwealth of Massachusetts.

MAYFLOWER WIND

MW Exhibit 2

Rhode Island Energy Facility Siting Board

Volume 2 - Attachments - Redacted

MW Exhibit 2

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LIST OF FIGURES (Attachment A)

LIST OF ATTACHMENTS

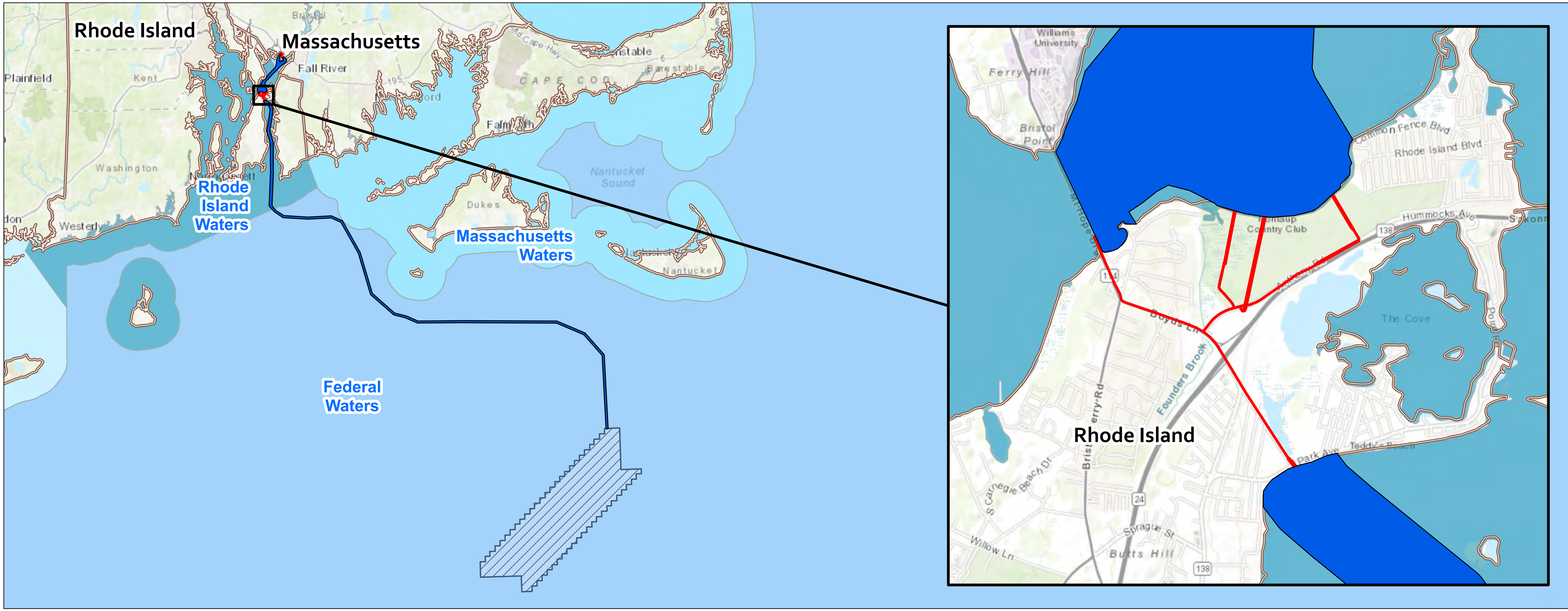
ATTACHMENT A – FIGURES

Mayflower Wind Brayton Point Project

PORTSMOUTH, RI

Rhode Island Energy Facility Siting Board

Date: May 2022



Onshore Export Cable Route Variants

Brayton Point Offshore Export Cable Corridor

Mayflower Wind Lease Area OCS A-0521

Massachusetts Waters

Rhode Island Waters

Federal Waters

State Boundary

PREPARED FOR:

MAYFLOWER WIND

101 Federal Street
Boston, MA 02110

0 10 20
Miles

INDEX

Siting Report Project Figures

PREPARED BY:

POWER ENGINEERS

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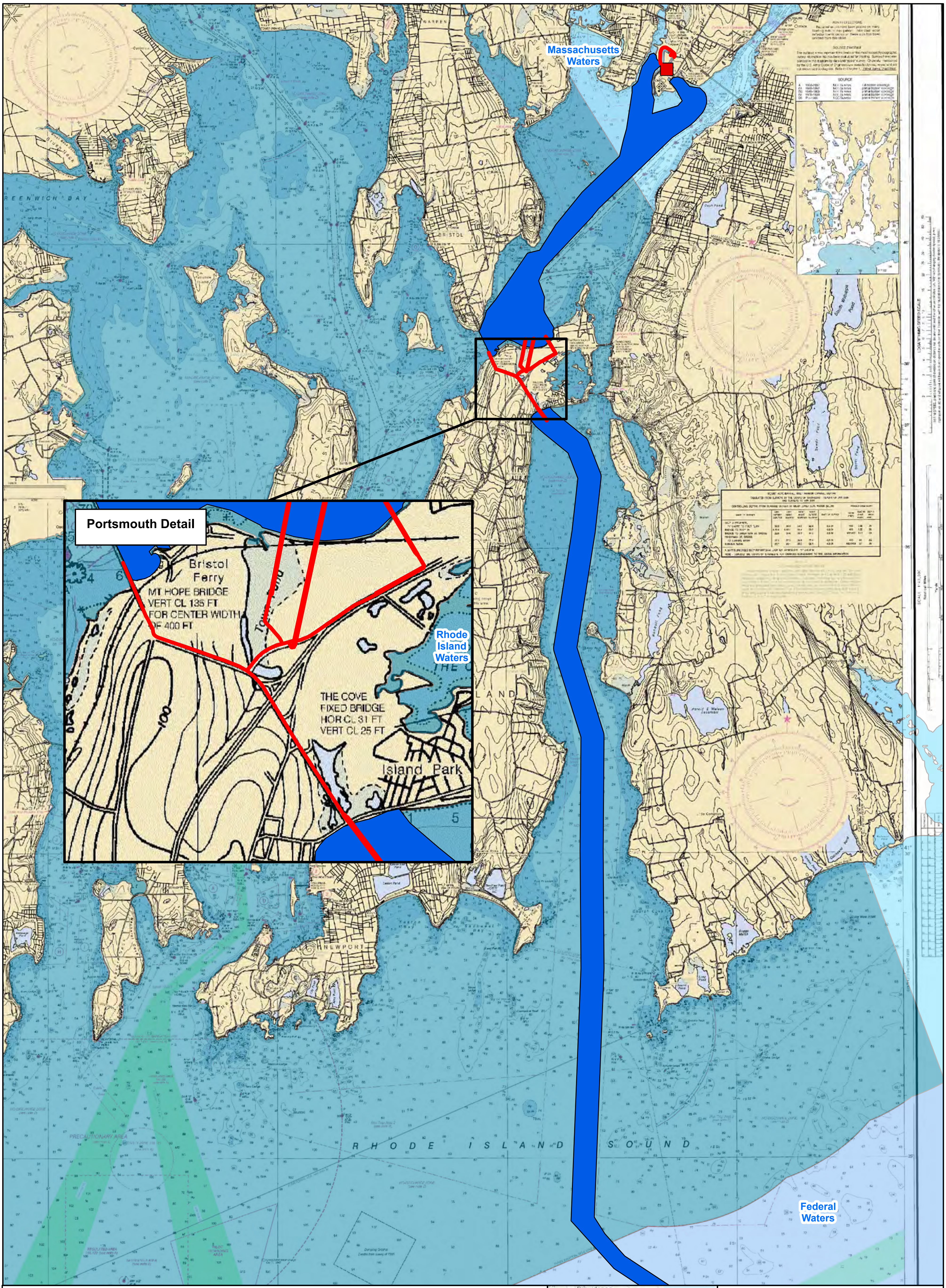


Brayton Point POI

Brayton Point Offshore Export Cable Corridor (Selected)

Onshore Export Cable Route Variants

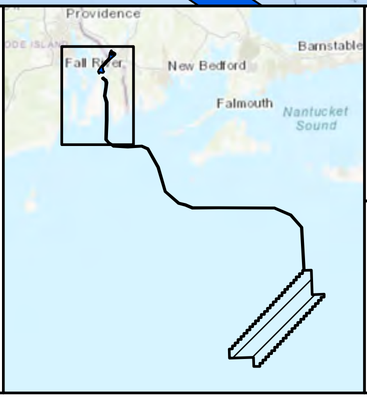
Mayflower Wind Lease Area OCS A-0521

Federal Waters

Massachusetts Waters

Rhode Island Waters

NOAA Navigational Chart for Narragansett Bay (2006)



MAYFLOWER WIND
OFFSHORE WIND PROJECT
SOMERSET, MA AND PORTSMOUTH, RI

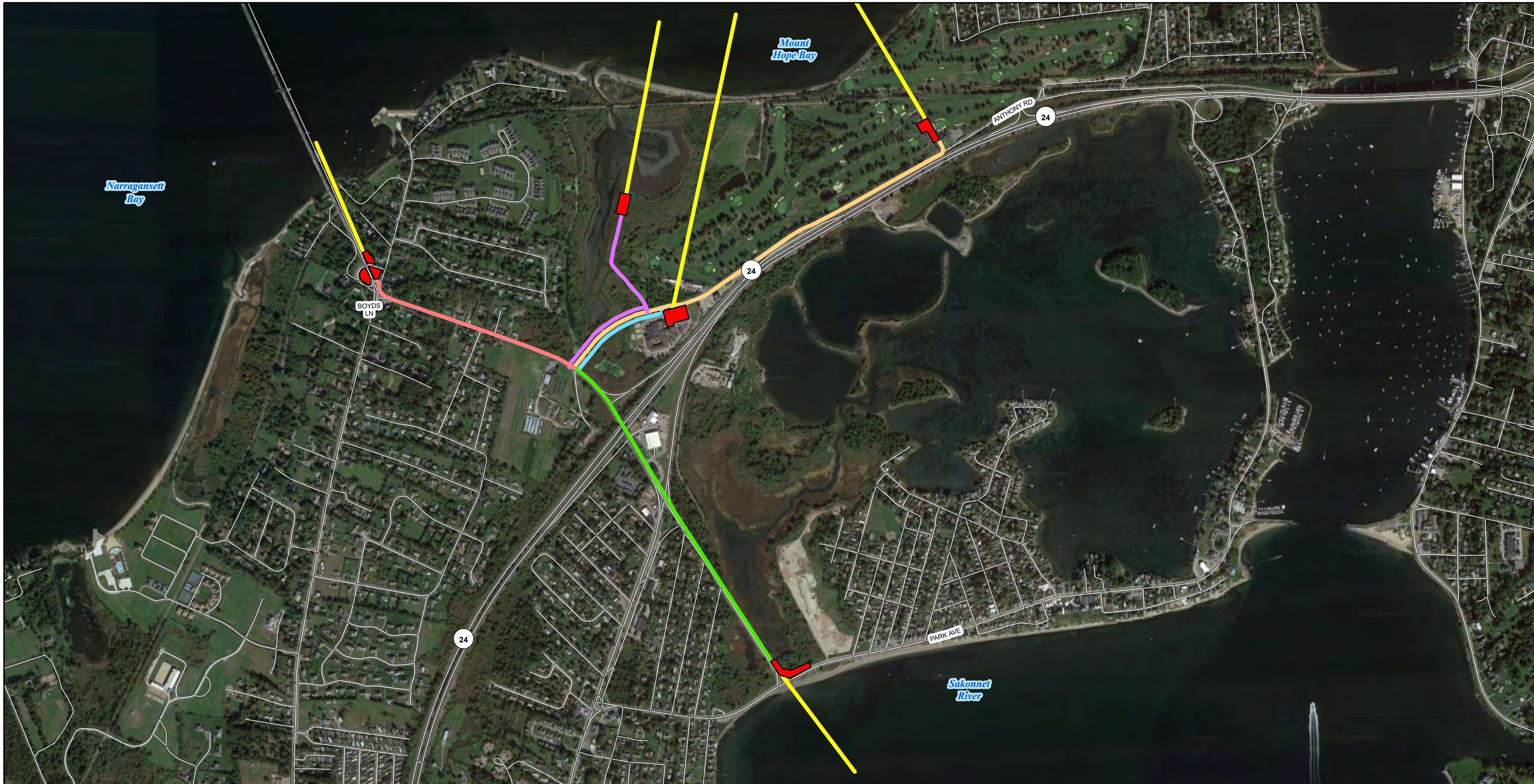
FIGURE 2-1
PROJECT LOCATION, RI WATERS

0 1 2
Miles

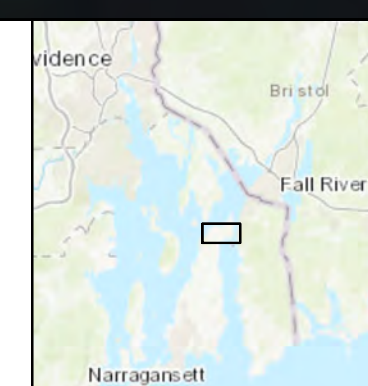
MAYFLOWER WIND

POWER ENGINEERS

Date: 5/25/2022



- Common Underground Route
- Selected Onshore Route Variant 1
- Selected Onshore Route Variant 2
- Selected Onshore Route Variant 3
- Selected Onshore Route Variant 4
- Horizontal Directional Drill Trajectory
- Horizontal Directional Drill Staging Area
- Road



MAYFLOWER WIND
OFFSHORE WIND PROJECT
PORTSMOUTH, RI

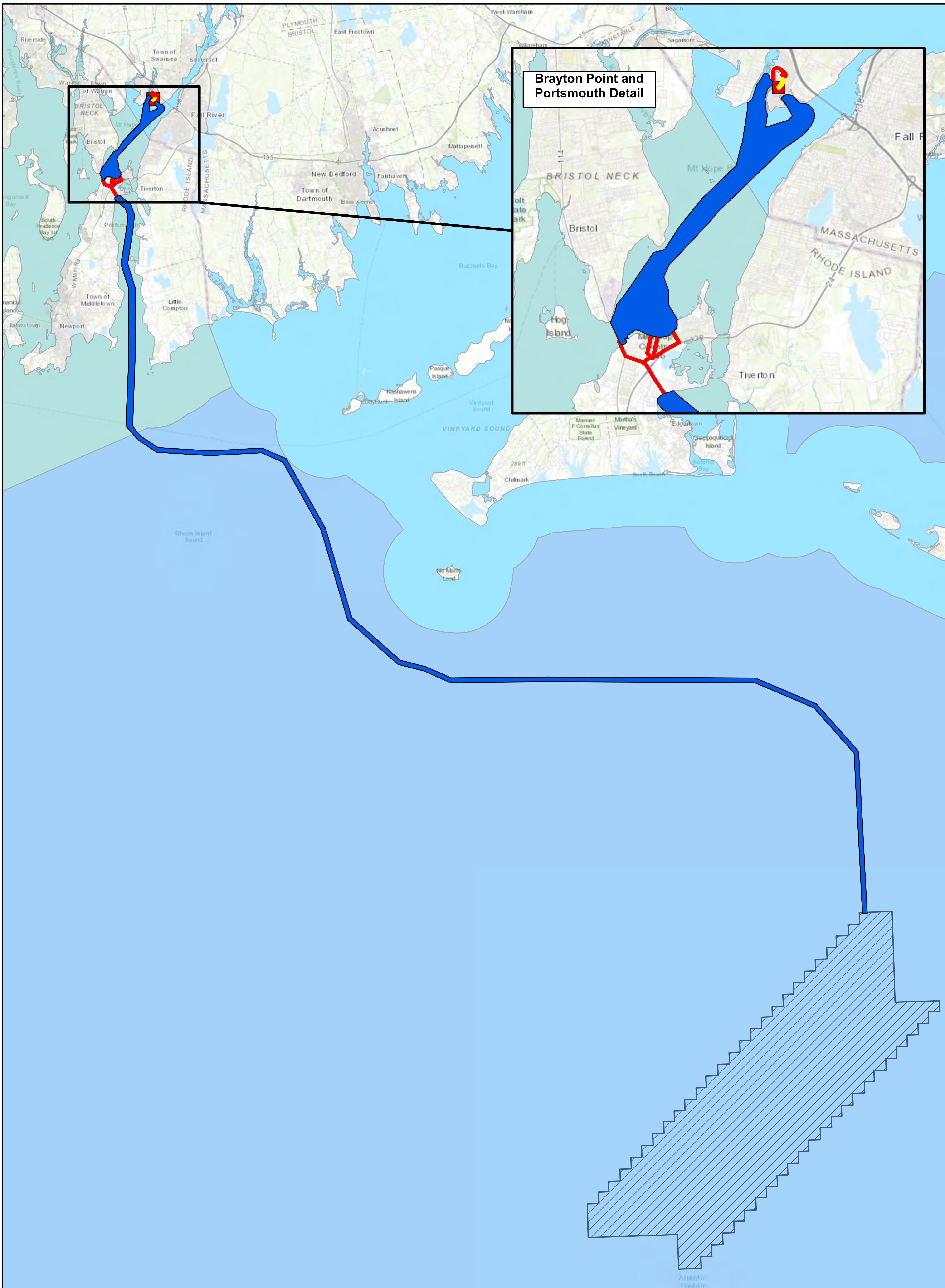
FIGURE 2-2
ONSHORE PROJECT LOCATION

0 500 1,000
Feet

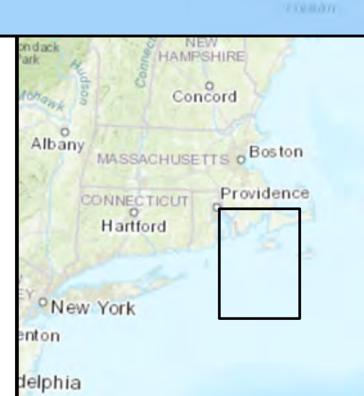
MAYFLOWER WIND

POWER ENGINEERS

Date: 5/25/2022



■	Brayton Point POI	—	Onshore 345kV Transmission Route		Federal Waters
	Brayton Point Offshore Export Cable Corridor (Selected)	—	Onshore Export Cable Route Variants		Massachusetts Waters
		▨	Mayflower Wind Lease Area OCS A-0521		Rhode Island Waters



MAYFLOWER WIND
OFFSHORE WIND PROJECT
SOMERSET, MA AND PORTSMOUTH, RI

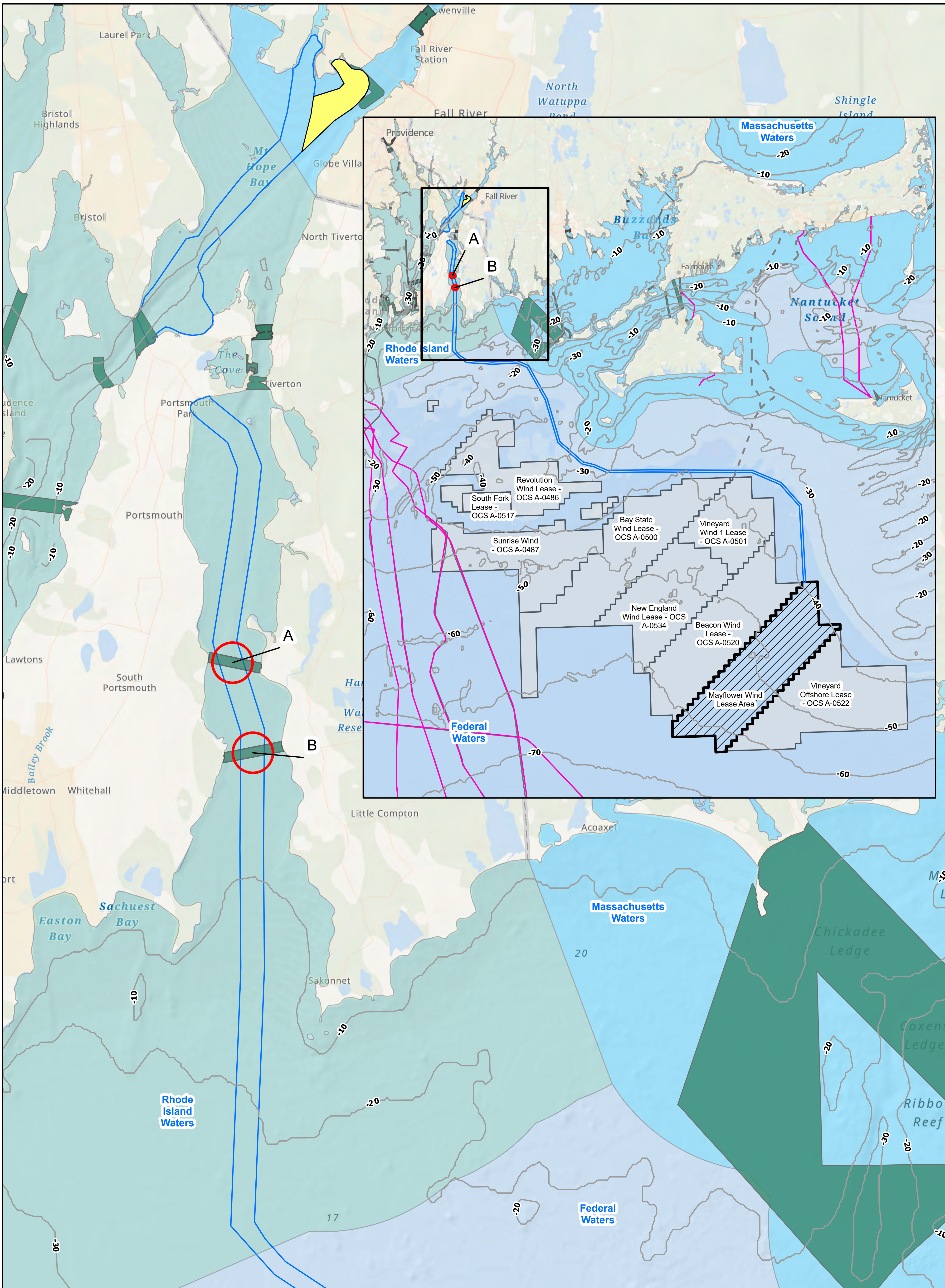
FIGURE 2-3
PROJECT LOCATION

0 5 10
Miles

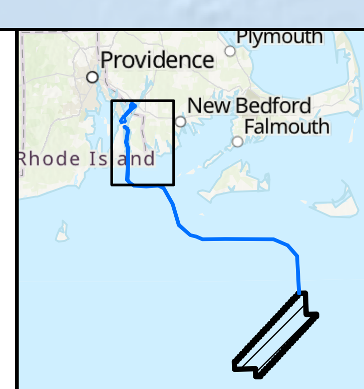
MAYFLOWER WIND

POWER ENGINEERS

Date: 5/25/2022



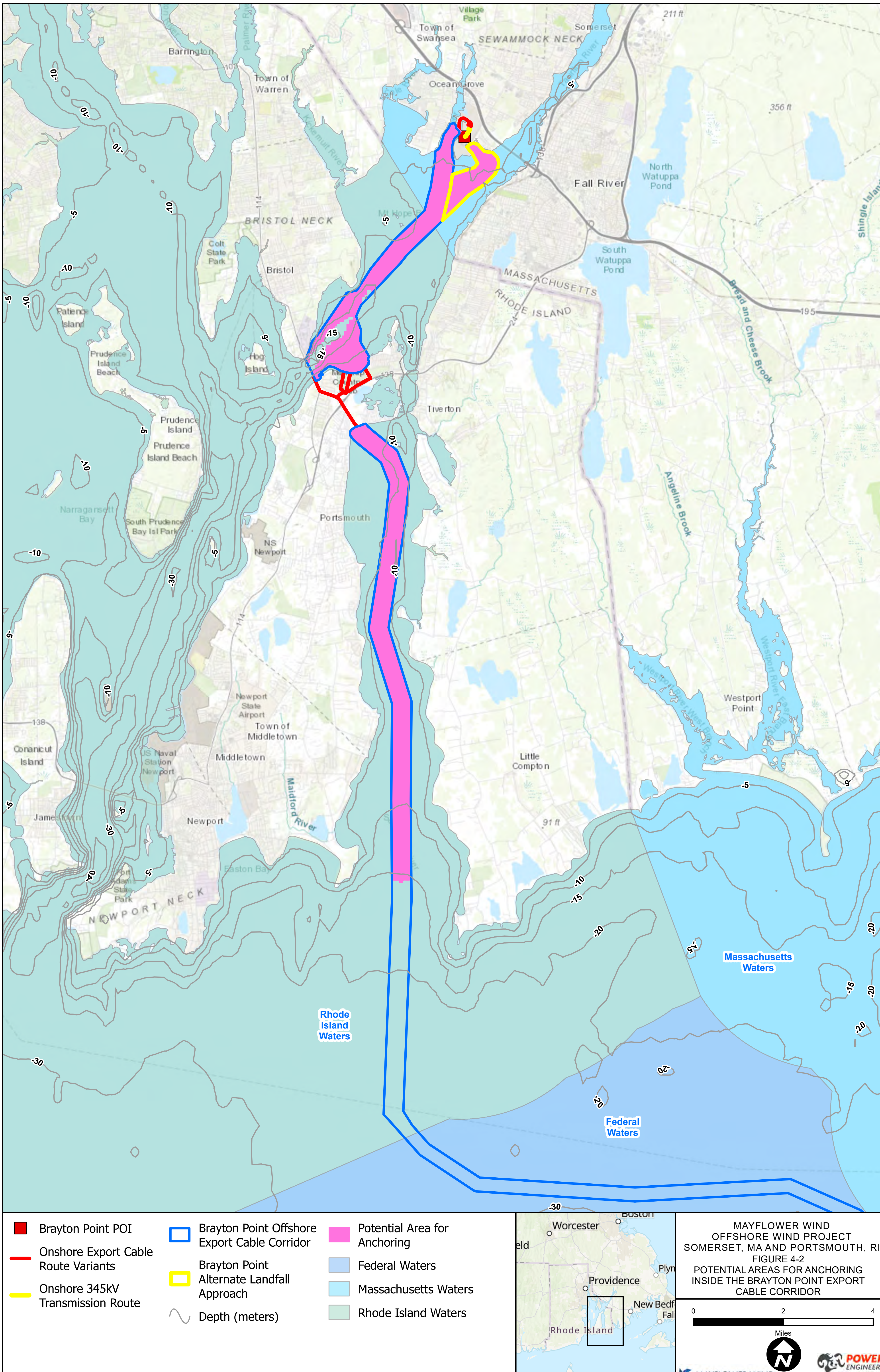
Brayton Point Offshore Export Cable Corridor	Depth (meters)	Cable/Pipeline Areas (NOAA 2020)
Landfall Approach (Noticed Alternative)	Submarine Cable (NOAA 2009)	Federal Waters
Mayflower Wind Lease Area OCS A-0521	Vineyard Wind 1/New England Wind Proposed Cable Route	Massachusetts Waters
Neighboring Lease	Potential Crossings	Rhode Island Waters

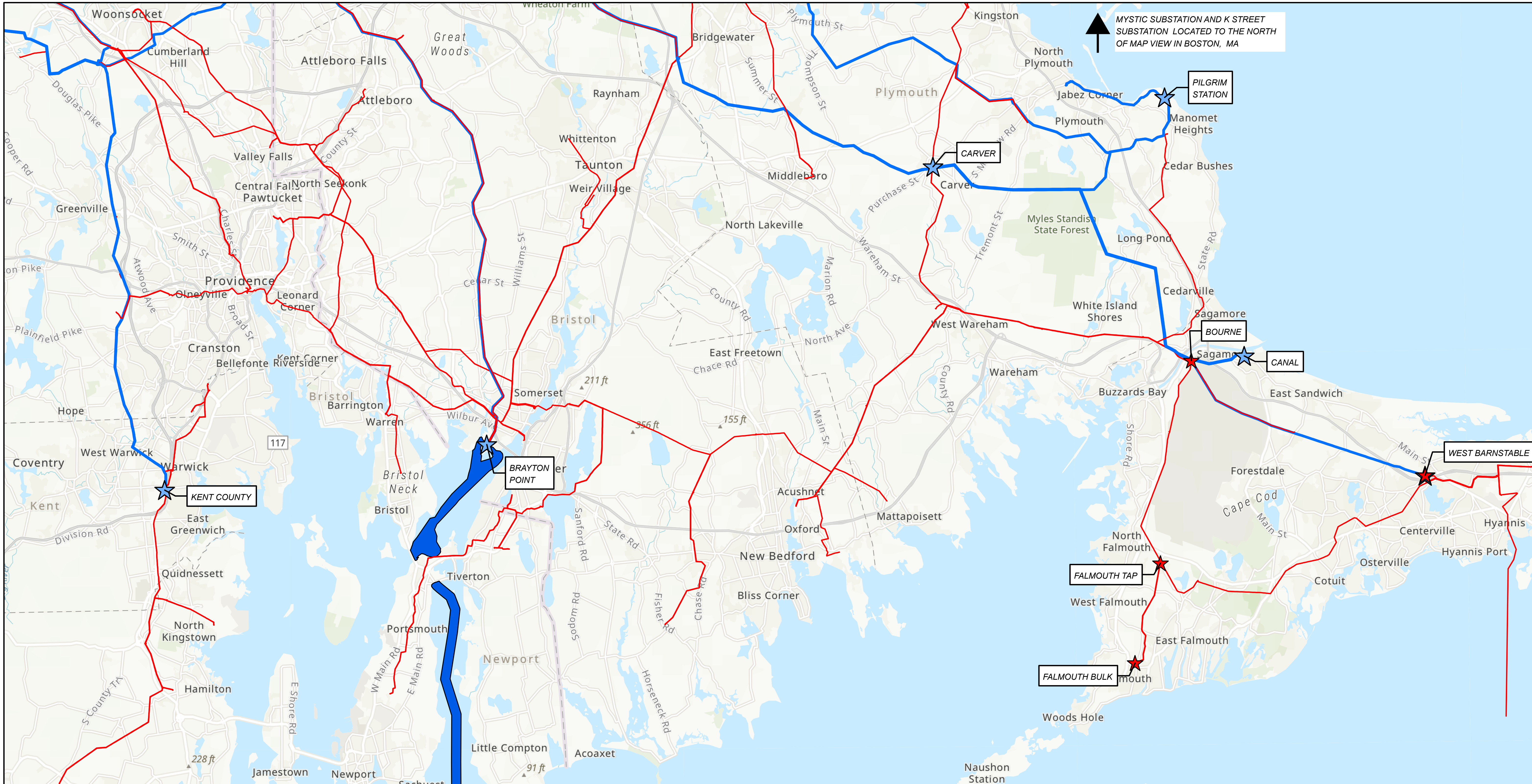


MAYFLOWER WIND
OFFSHORE WIND PROJECT
SOMERSET, MA AND PORTSMOUTH, RI
FIGURE 4-1
POTENTIAL CABLE AND PIPELINE CROSSINGS

0 1.5 3
Miles

MAYFLOWER WIND
POWER ENGINEERS
5/26/2022


Brayton Point POI
Onshore Export Cable Route Variants
Onshore 345kV Transmission Route
Brayton Point Offshore Export Cable Corridor
Brayton Point Alternate Landfall Approach
Depth (meters)
Potential Area for Anchoring
Federal Waters
Massachusetts Waters
Rhode Island Waters
MAYFLOWER WIND
OFFSHORE WIND PROJECT
SOMERSET, MA AND PORTSMOUTH, RI
FIGURE 4-2
POTENTIAL AREAS FOR ANCHORING INSIDE THE BRAYTON POINT EXPORT CABLE CORRIDOR
0
2
4
Miles
MAYFLOWER WIND
POWER ENGINEERS
5/26/2022
Rhode Island Waters
Massachusetts Waters
Federal Waters
Fall River
Somerset
Town of Swansea
Ocean Grove
Barrington
Town of Warren
Bristol
BRISTOL NECK
Tiverton
Portsmouth
Town of Middletown
Middletown
Newport
Jamestown
Little Compton
Westport Point
MASSACHUSETTS
RHODE ISLAND
North Watuppa Pond
South Watuppa Pond
Prudence Island
Conanicut Island
Narragansett Bay
NEWPORT NECK
Worcester
Boston
Providence
New Bedford
Rhode Island



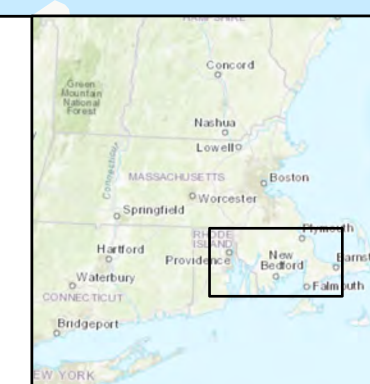
345 kV Substation

115 kV Substation

345 kV Transmission Line

115 kV Transmission Line

Brayton Point Offshore Export Cable Corridor



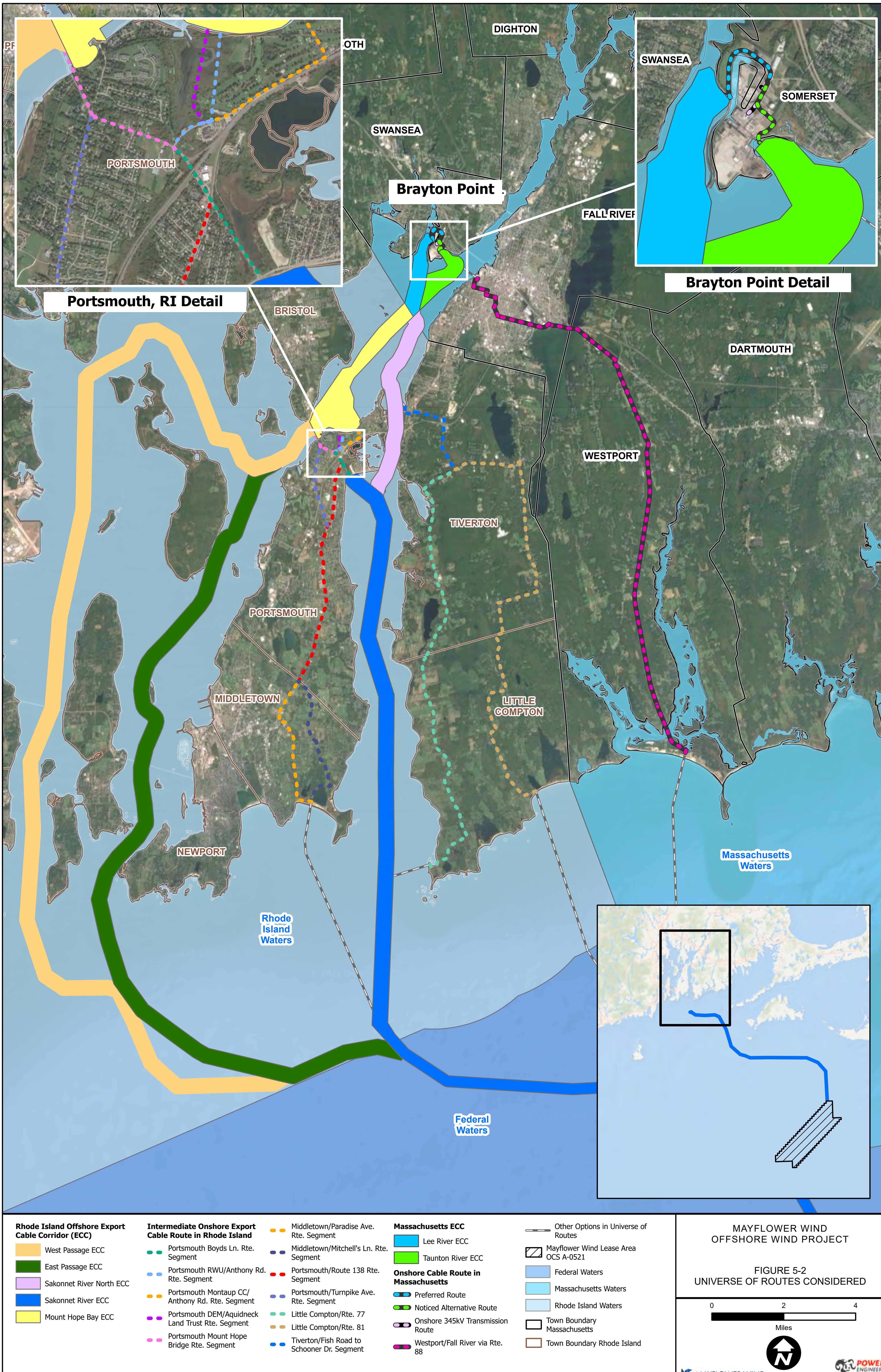
MAYFLOWER WIND
OFFSHORE WIND PROJECT
SOMERSET, MA AND PORTSMOUTH, RI

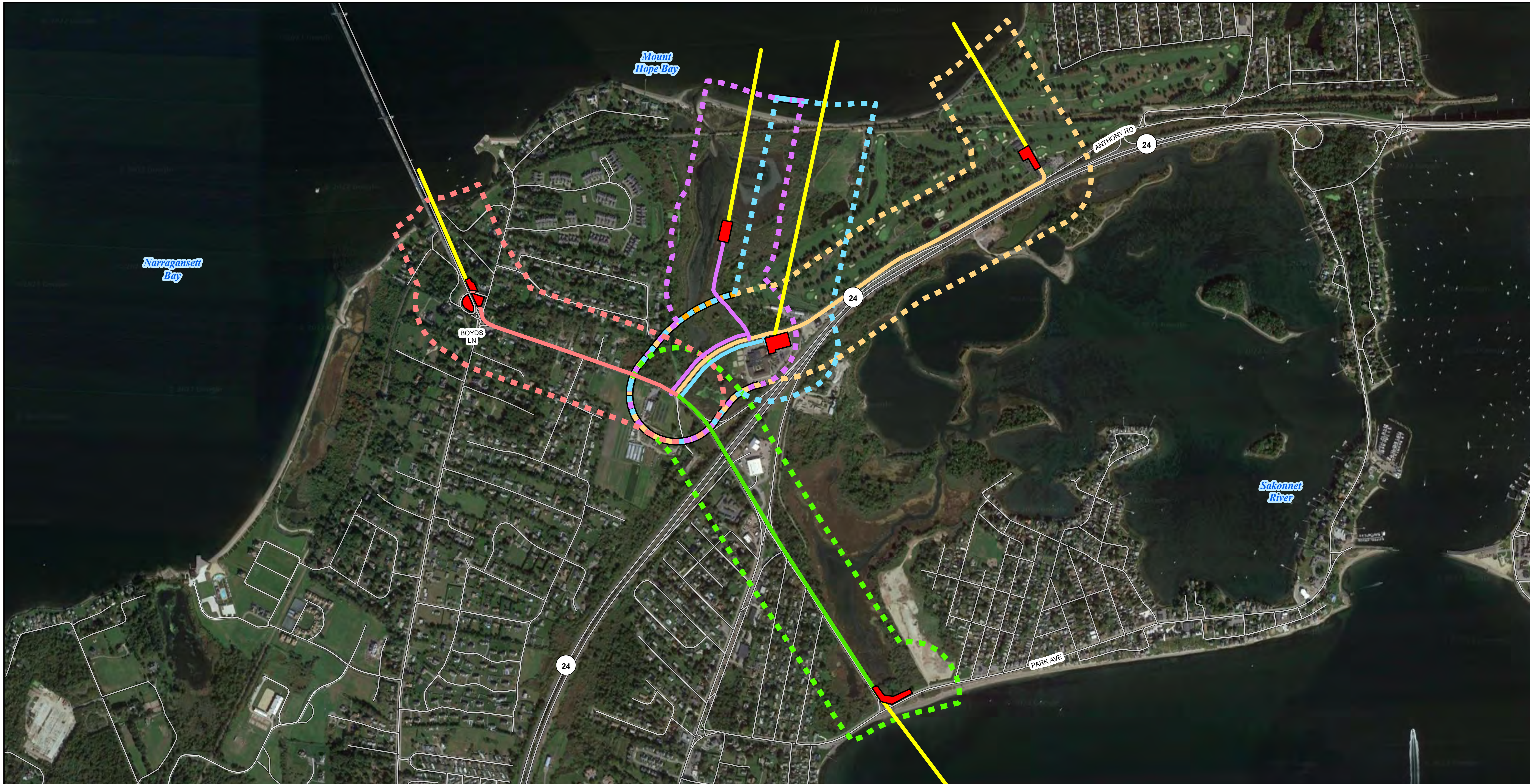
FIGURE 5-1
ROUTING UNIVERSE OF POTENTIAL
POINTS OF INTERCONNECTION

0 5 10
Miles

MAYFLOWER WIND

POWER ENGINEERS
Date: 5/26/2022


DIGHTON
SWANSEA
Brayton Point
FALL RIVER
BRISTOL
PORTSMOUTH
Portsmouth, RI Detail
SWANSEA
SOMERSET
Brayton Point Detail
DARTMOUTH
WESTPORT
TIVERTON
PORTSMOUTH
MIDDLETOWN
LITTLE COMPTON
NEWPORT
Rhode Island Waters
Massachusetts Waters
Federal Waters
Rhode Island Offshore Export Cable Corridor (ECC)
West Passage ECC
East Passage ECC
Sakonnet River North ECC
Sakonnet River ECC
Mount Hope Bay ECC
Intermediate Onshore Export Cable Route in Rhode Island
Portsmouth Boyds Ln. Rte. Segment
Portsmouth RWU/Anthony Rd. Rte. Segment
Portsmouth Montaup CC/ Anthony Rd. Rte. Segment
Portsmouth DEM/Aquidneck Land Trust Rte. Segment
Portsmouth Mount Hope Bridge Rte. Segment
Middletown/Paradise Ave. Rte. Segment
Middletown/Mitchell's Ln. Rte. Segment
Portsmouth/Route 138 Rte. Segment
Portsmouth/Turnpike Ave. Rte. Segment
Little Compton/Rte. 77
Little Compton/Rte. 81
Tiverton/Fish Road to Schooner Dr. Segment
Massachusetts ECC
Lee River ECC
Taunton River ECC
Onshore Cable Route in Massachusetts
Preferred Route
Noticed Alternative Route
Onshore 345kV Transmission Route
Westport/Fall River via Rte. 88
Other Options in Universe of Routes
Mayflower Wind Lease Area OCS A-0521
Federal Waters
Massachusetts Waters
Rhode Island Waters
Town Boundary Massachusetts
Town Boundary Rhode Island
MAYFLOWER WIND
OFFSHORE WIND PROJECT
FIGURE 5-2
UNIVERSE OF ROUTES CONSIDERED
0
2
4
Miles
N
MAYFLOWER WIND
POWER ENGINEERS
Date: 5/26/2022



Common Underground Route

Selected Onshore Route Variant 1

Selected Onshore Route Variant 2

Selected Onshore Route Variant 3

Selected Onshore Route Variant 4

Horizontal Directional Drill Trajectory

Horizontal Directional Drill Staging Area

Road

Study Area Boundary (500-foot radius)

Common Route

Selected Onshore Route Variant 1

Selected Onshore Route Variant 2

Selected Onshore Route Variant 3

Selected Onshore Route Variant 4

MAYFLOWER WIND OFFSHORE WIND PROJECT
PORTSMOUTH, RI

FIGURE 6-1A
BASE MAP OF PROJECT STUDY AREA (ONSHORE)

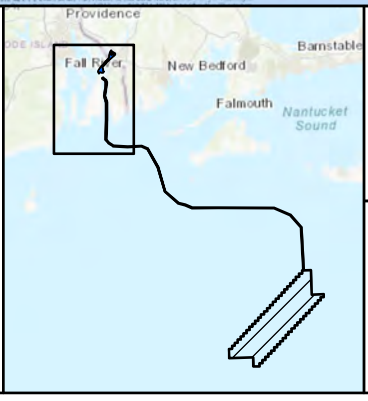
0 500 1,000
Feet

MAYFLOWER WIND

POWER ENGINEERS

Date: 5/25/2022

	Brayton Point POI
	Brayton Point Offshore Export Cable Corridor (Selected)
	Mayflower Wind Lease Area OCS A-0521
	Federal Waters
	Massachusetts Waters
	Rhode Island Waters



MAYFLOWER WIND
OFFSHORE WIND PROJECT
PORTSMOUTH, RI

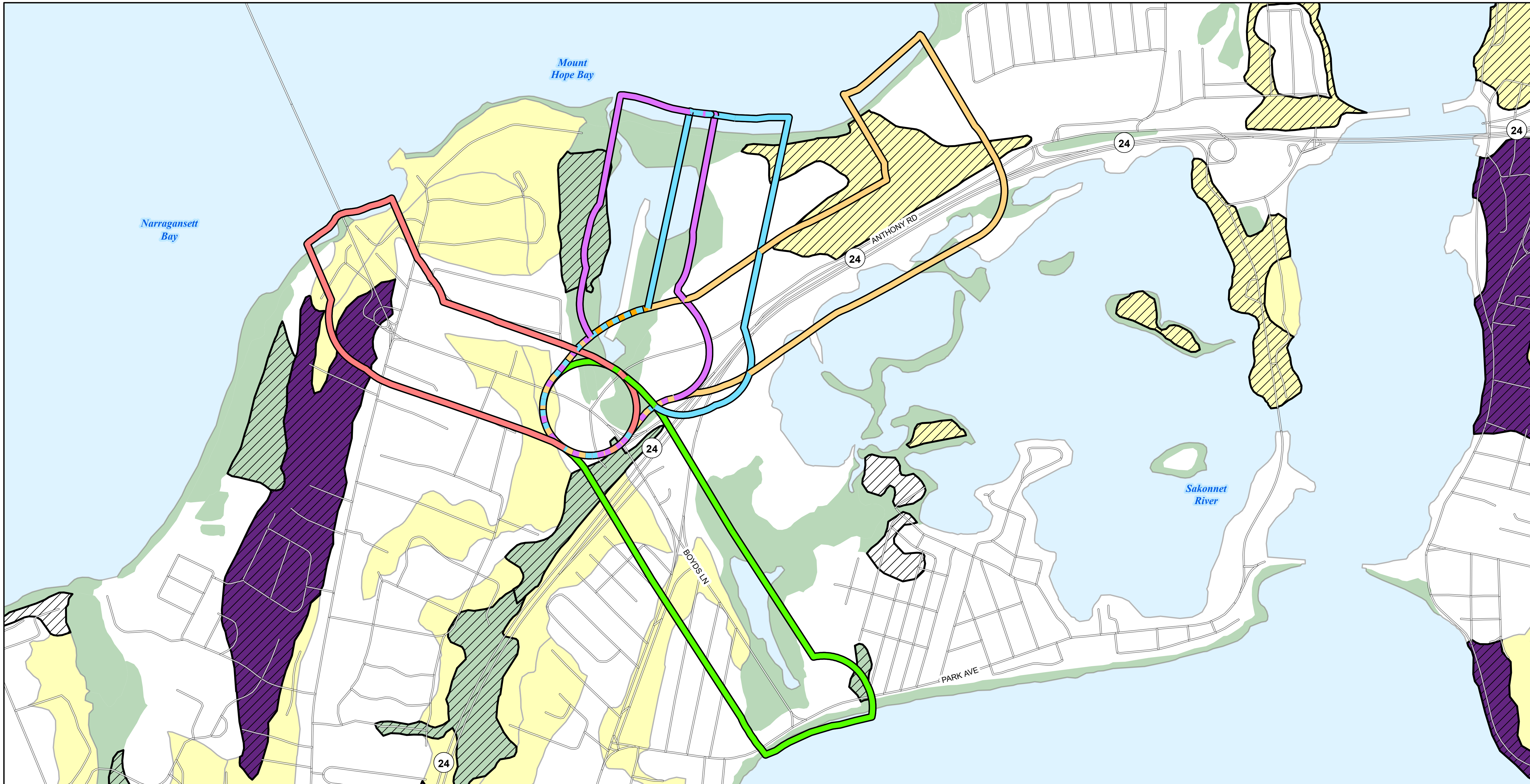
FIGURE 6-1B
BASE MAP OF PROJECT
OFFSHORE EXPORT CABLE CORRIDOR

0 1 2
Miles

MAYFLOWER WIND

POWER ENGINEERS

Date: 5/26/2022



Study Area Boundary (500-foot radius)

Common Route

Selected Onshore Route Variant 1

Selected Onshore Route Variant 2

Selected Onshore Route Variant 3

Selected Onshore Route Variant 4

Road

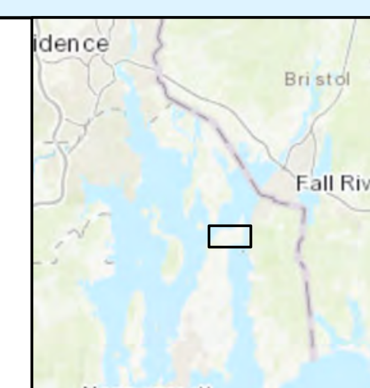
Farmland Soil of Statewide Importance (USDA-NRCS 2012)

Hydric Soils (USDA-NRCS 2020)

Highly Erodible Soils (USDA-NRCS 1993)

Potentially High Erodible Soils (USDA-NRCS 1993)

Water



MAYFLOWER WIND
OFFSHORE WIND PROJECT
PORTSMOUTH, RI

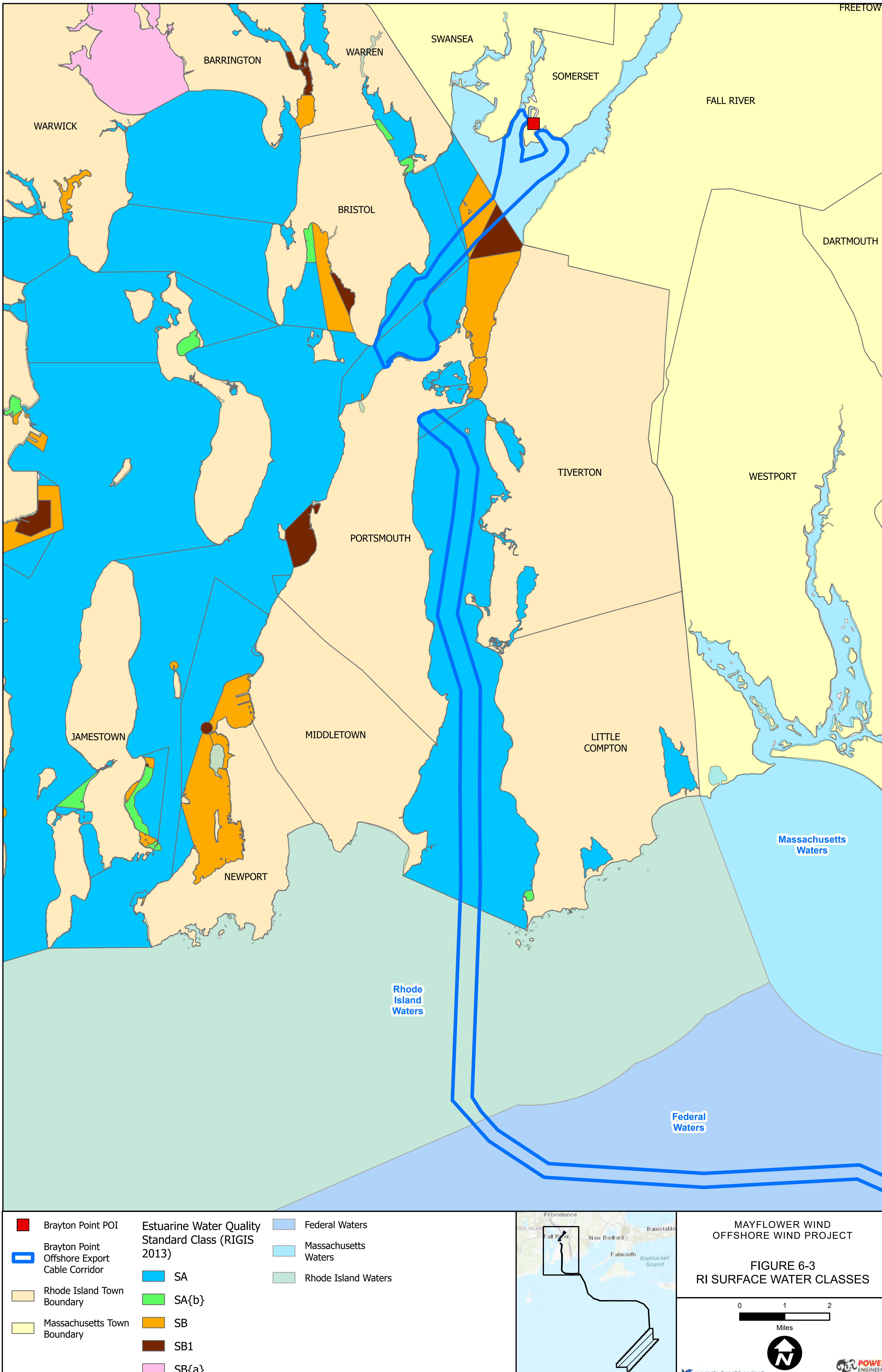
FIGURE 6-2
SOIL MAP

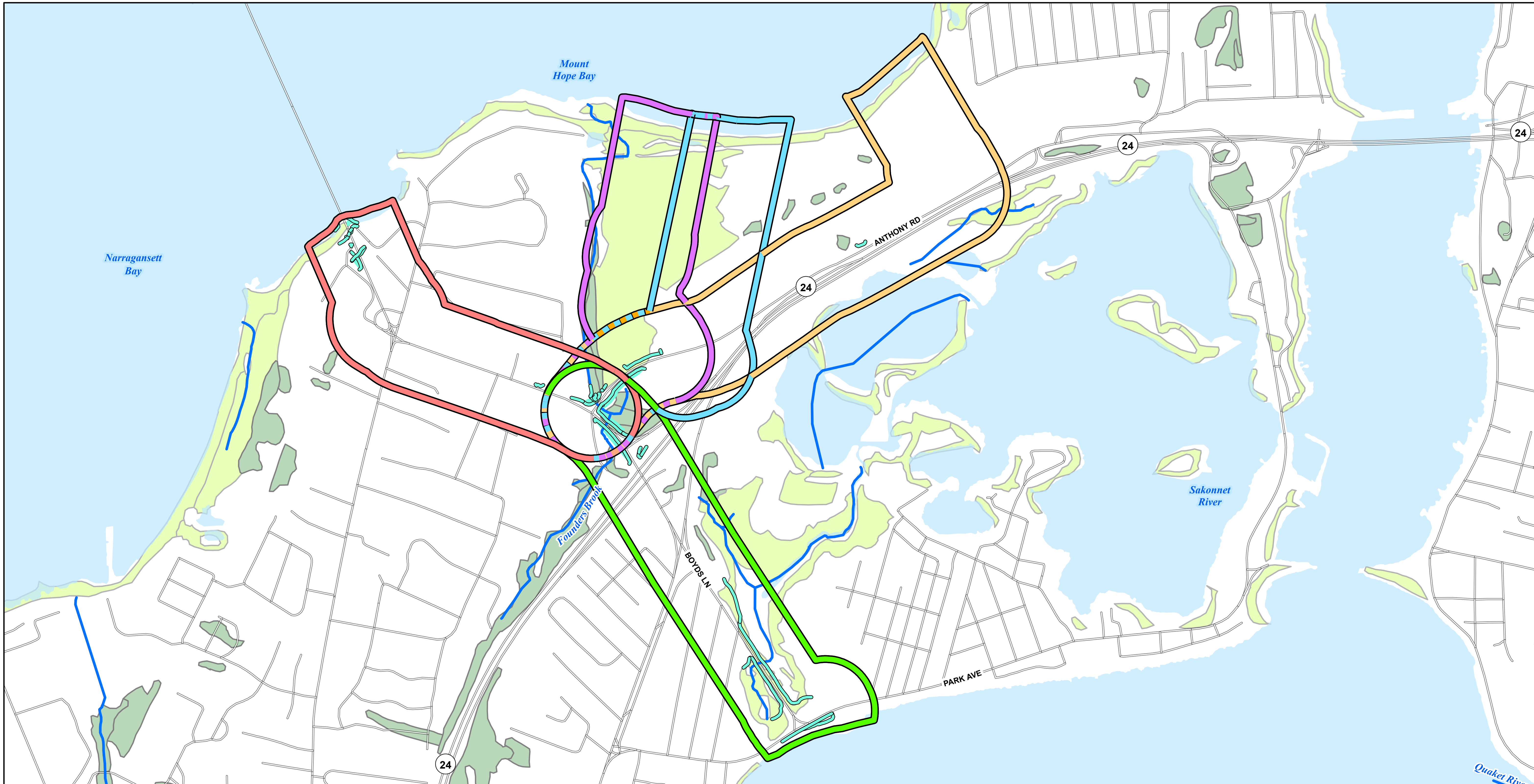
0 500 1,000
Feet

MAYFLOWER WIND

POWER ENGINEERS

Date: 5/26/2022


FREETOWN
SWANSEA
SOMERSET
FALL RIVER
BARRINGTON
WARREN
WARWICK
BRISTOL
DARTMOUTH
TIVERTON
WESTPORT
PORTSMOUTH
JAMESTOWN
MIDDLETOWN
LITTLE COMPTON
NEWPORT
Massachusetts Waters
Rhode Island Waters
Federal Waters
Brayton Point POI
Brayton Point Offshore Export Cable Corridor
Rhode Island Town Boundary
Massachusetts Town Boundary
Estuarine Water Quality Standard Class (RIGIS 2013)
SA
SA{b}
SB
SB1
SB{a}
Federal Waters
Massachusetts Waters
Rhode Island Waters
Providence
Fall River
New Bedford
Barnstable
Falmouth
Nantucket Sound
MAYFLOWER WIND
OFFSHORE WIND PROJECT
FIGURE 6-3
RI SURFACE WATER CLASSES
0
1
2
Miles
MAYFLOWER WIND
POWER ENGINEERS
Date: 5/26/2022



Study Area Boundary (500-foot radius)

- Common Route
- Selected Onshore Route Variant 1
- Selected Onshore Route Variant 2
- Selected Onshore Route Variant 3
- Selected Onshore Route Variant 4

Stream (National Hydrography Dataset) (USGS 2011)

Road

Field Delineated Wetland Resource Area (POWER 2021)

Field Delineated Wetland (POWER 2021)

RIDEM Wetland (1993)

RIDEM Coastal Wetland

RIDEM Inland Wetland

MAYFLOWER WIND
OFFSHORE WIND PROJECT
PORTSMOUTH, RI

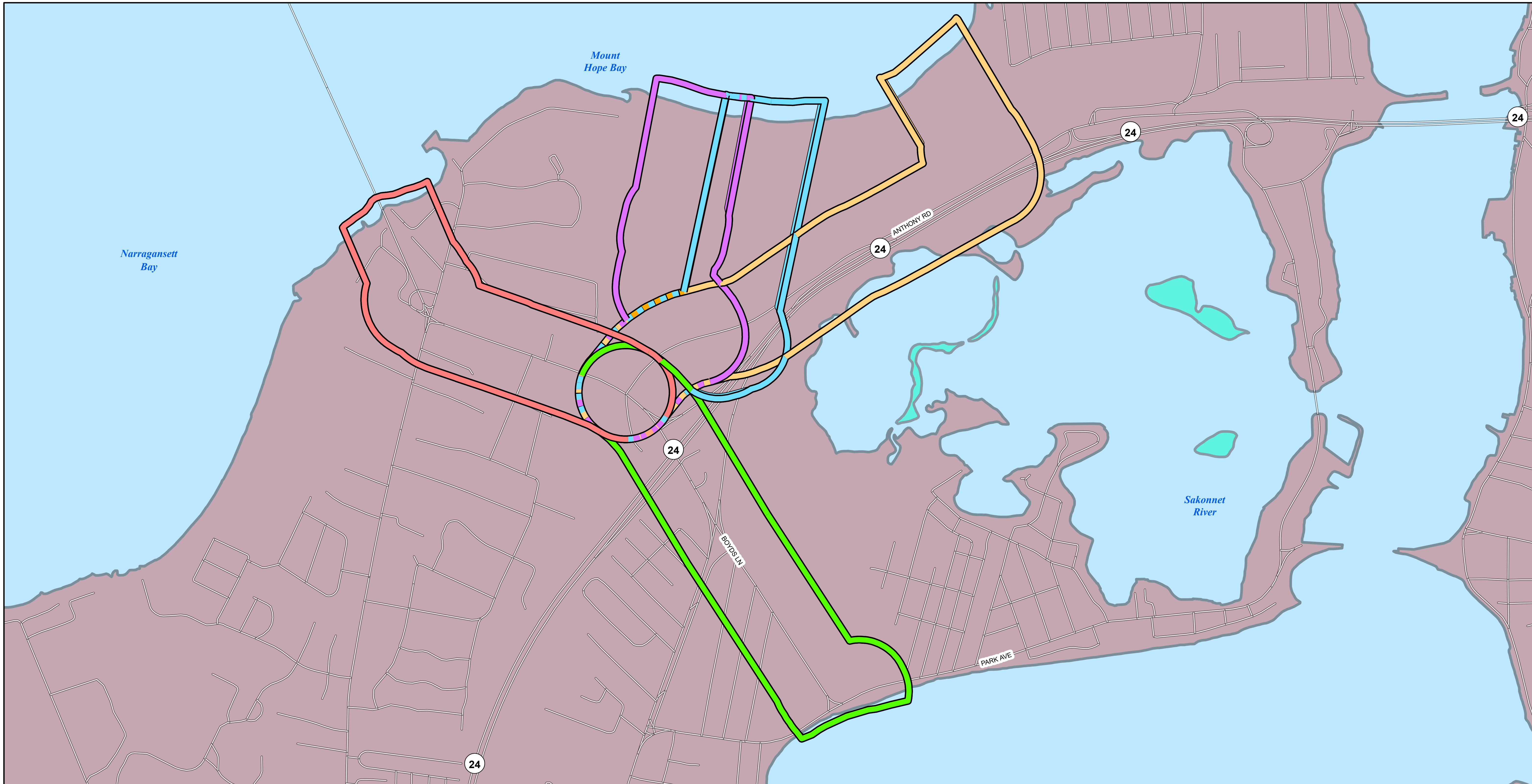
FIGURE 6-4
WETLANDS

0 500 1,000
Feet

MAYFLOWER WIND

POWER ENGINEERS

Date: 5/26/2022



Study Area Boundary (500-foot radius)

- Common Route
- Selected Onshore Route Variant 1
- Selected Onshore Route Variant 2
- Selected Onshore Route Variant 3
- Selected Onshore Route Variant 4

Groundwater Types (URI EDC and RIGIS 2019)

- GA: Suitable for drinking water use without treatment
- GB: May not be suitable for drinking water use without treatment due to known or presumed degradation

MAYFLOWER WIND
OFFSHORE WIND PROJECT
PORTSMOUTH, RI

FIGURE 6-5
GROUNDWATER RESOURCES

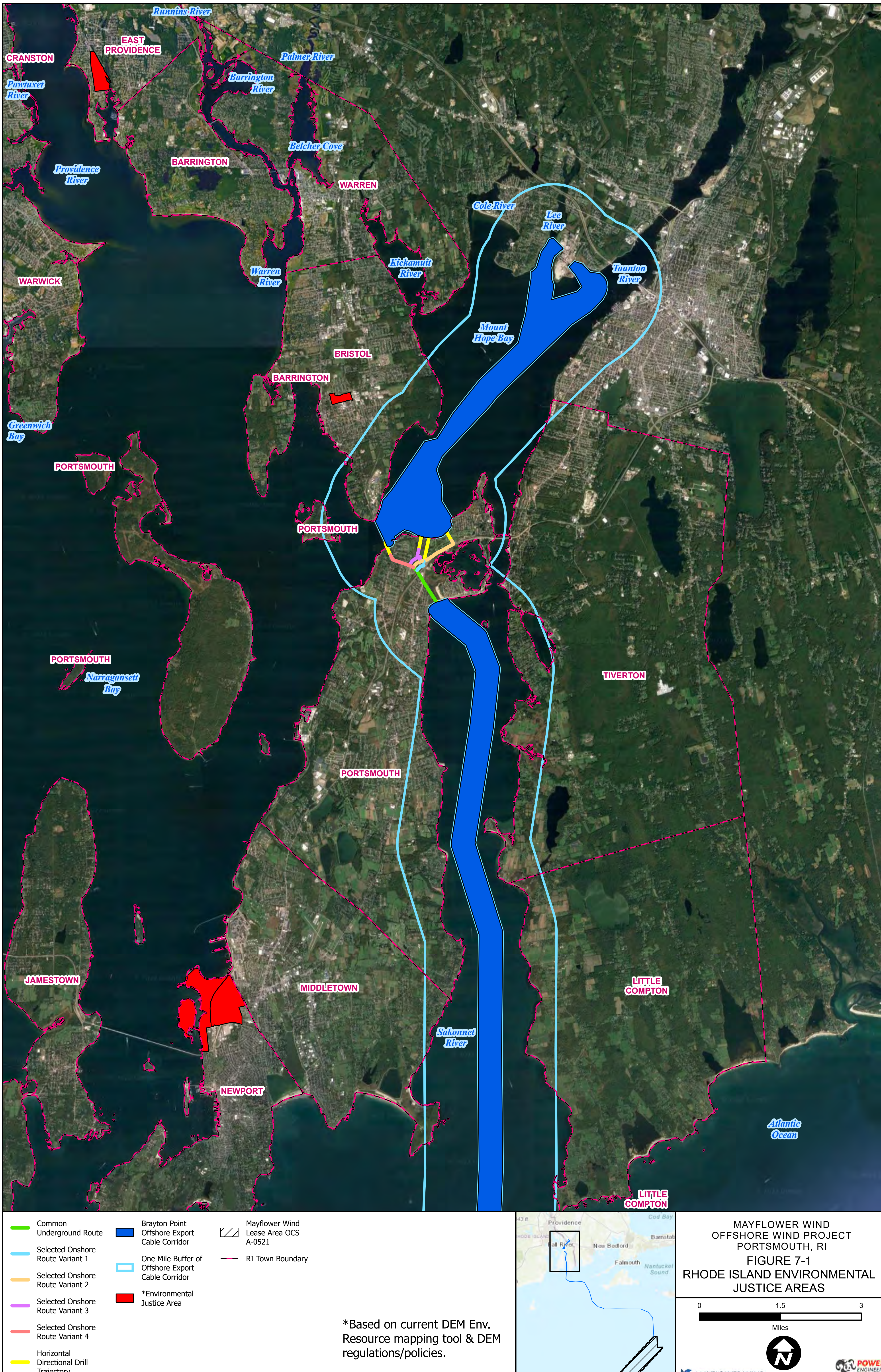
0 500 1,000
Feet

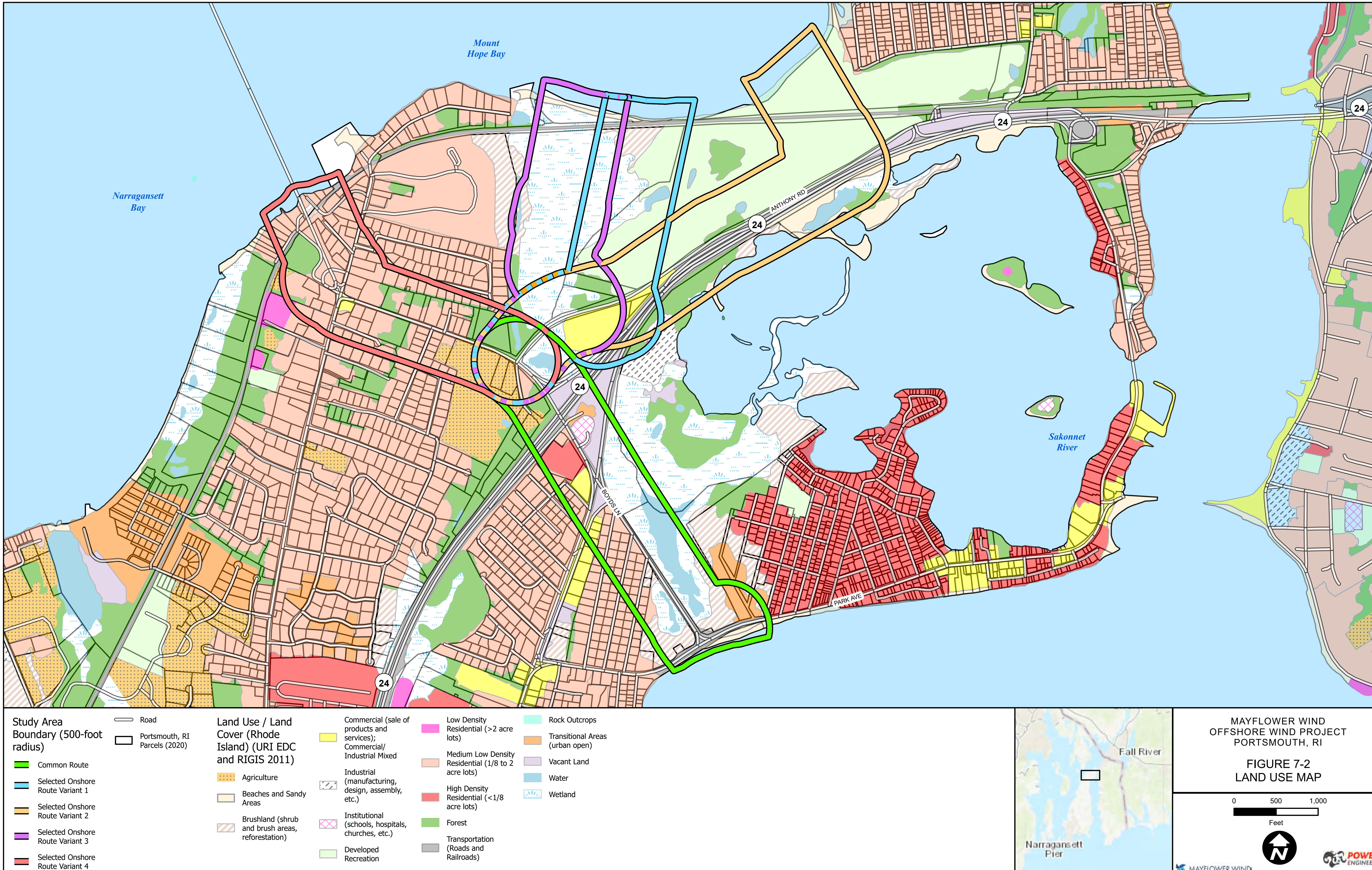
MAYFLOWER WIND

POWER ENGINEERS

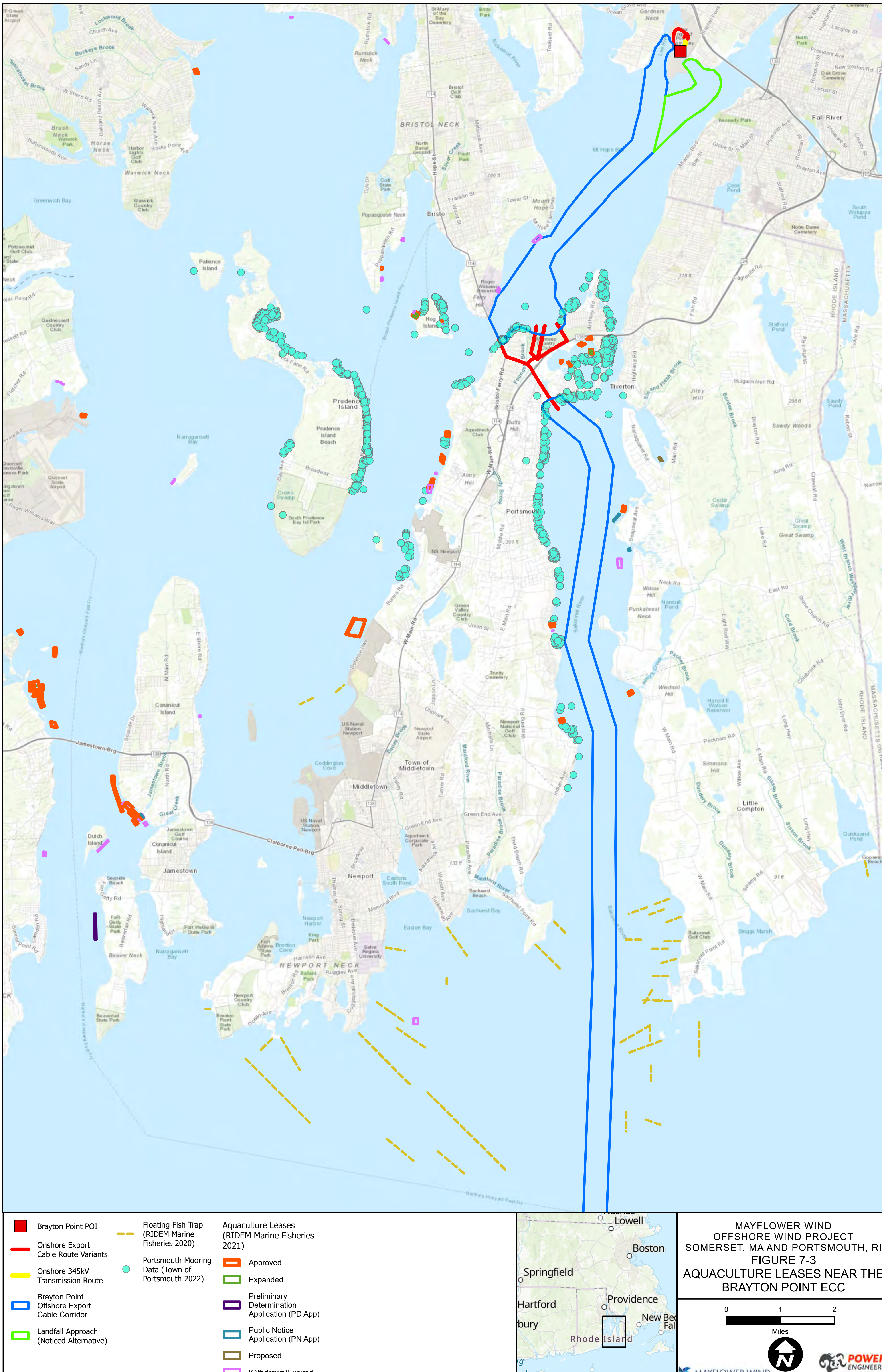
Date: 5/26/2022

ANTHONY RD
BOYDS LN
24
PARK AVE
Common Underground Route
Selected Onshore Route Variant 1
Selected Onshore Route Variant 2
Selected Onshore Route Variant 3
Selected Onshore Route Variant 4
Wetland Resource Area (POWER 2021)
Coastal Dune
Coastal Headlands, Bluffs, Cliffs
Coastal Wetland
Coastal Wetland (Approximate)
Freshwater Wetland in the Vicinity of the Coast
Freshwater Wetland in the Vicinity of the Coast (Approximate)
Perennial Stream (Centerline)
Streambank
Streambank (Approximate)
Man-made Shoreline
MLW/Seaward Edge Coastal Beach (Approximate)
Field Delineated Wetland (POWER 2021)
Coastal Wetland
Freshwater Wetland in the Vicinity of the Coast
RIDEM Wetland (1993)
RIDEM Coastal Wetland
RIDEM Inland Wetland
Contiguous Area Boundary
Stream (National Hydrography Dataset) (USGS 2011)
Road
Bristol
Fall River
Narragansett Pier
MAYFLOWER WIND
OFFSHORE WIND PROJECT
PORTSMOUTH, RI
FIGURE 6-6
FIELD DELINEATED WETLANDS
0
500
1,000
Feet
MAYFLOWER WIND
POWER ENGINEERS
Date: 5/26/2022


Runnins River
EAST PROVIDENCE
CRANSTON
Palmer River
Pawtuxet River
Barrington River
Belcher Cove
BARRINGTON
Providence River
WARREN
Cole River
Lee River
Taunton River
Kickamuit River
Warren River
WARWICK
Mount Hope Bay
BRISTOL
BARRINGTON
Greenwich Bay
PORTSMOUTH
PORTSMOUTH
PORTSMOUTH
Narragansett Bay
TIVERTON
PORTSMOUTH
JAMESTOWN
MIDDLETOWN
LITTLE COMPTON
Sakonnet River
NEWPORT
Atlantic Ocean
LITTLE COMPTON
Common Underground Route
Selected Onshore Route Variant 1
Selected Onshore Route Variant 2
Selected Onshore Route Variant 3
Selected Onshore Route Variant 4
Horizontal Directional Drill Trajectory
Brayton Point Offshore Export Cable Corridor
One Mile Buffer of Offshore Export Cable Corridor
*Environmental Justice Area
Mayflower Wind Lease Area OCS A-0521
RI Town Boundary
*Based on current DEM Env. Resource mapping tool & DEM regulations/policies.
Providence
Fall River
New Bedford
Barnstable
Falmouth
Nantucket Sound
Cod Bay
MAYFLOWER WIND
OFFSHORE WIND PROJECT
PORTSMOUTH, RI
FIGURE 7-1
RHODE ISLAND ENVIRONMENTAL JUSTICE AREAS
0
1.5
3
Miles
N
MAYFLOWER WIND
POWER ENGINEERS
Date: 5/21/2022

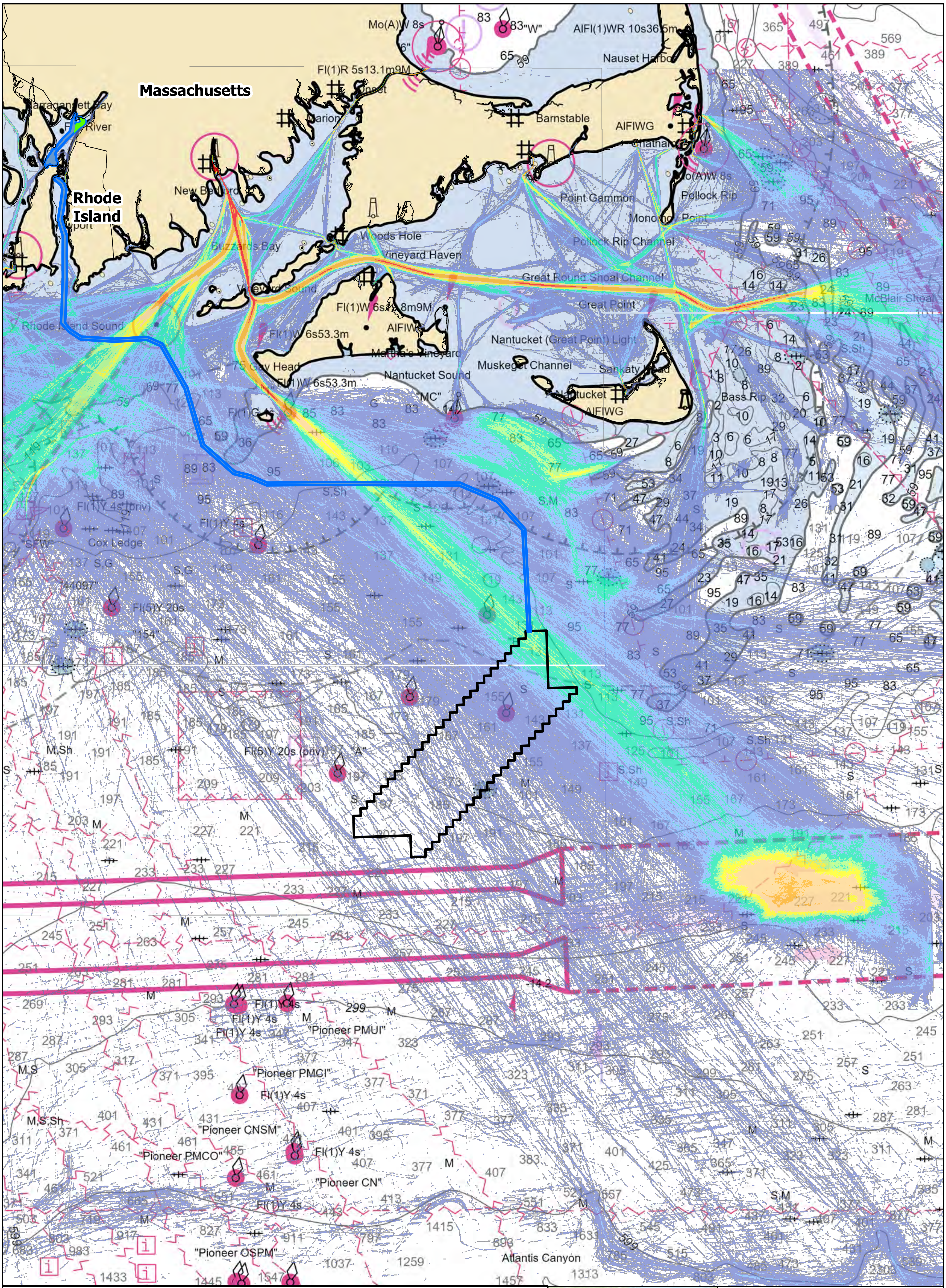


Mount Hope Bay
Narragansett Bay
Sakonnet River
ANTHONY RD
BOYDS LN
PARK AVE
24
Study Area Boundary (500-foot radius)
Common Route
Selected Onshore Route Variant 1
Selected Onshore Route Variant 2
Selected Onshore Route Variant 3
Selected Onshore Route Variant 4
Road
Portsmouth, RI Parcels (2020)
Land Use / Land Cover (Rhode Island) (URI EDC and RIGIS 2011)
Agriculture
Beaches and Sandy Areas
Brushland (shrub and brush areas, reforestation)
Commercial (sale of products and services); Commercial/ Industrial Mixed
Industrial (manufacturing, design, assembly, etc.)
Institutional (schools, hospitals, churches, etc.)
Developed Recreation
Low Density Residential (>2 acre lots)
Medium Low Density Residential (1/8 to 2 acre lots)
High Density Residential (<1/8 acre lots)
Forest
Transportation (Roads and Railroads)
Rock Outcrops
Transitional Areas (urban open)
Vacant Land
Water
Wetland
Fall River
Narragansett Pier
MAYFLOWER WIND OFFSHORE WIND PROJECT PORTSMOUTH, RI
FIGURE 7-2 LAND USE MAP
0 500 1,000
Feet
MAYFLOWER WIND
POWER ENGINEERS
Date: 5/25/2022



MAYFLOWER WIND
OFFSHORE WIND PROJECT
SOMERSET, MA AND PORTSMOUTH, RI

FIGURE 7-3
AQUACULTURE LEASES NEAR THE BRAYTON POINT ECC



Brayton Point Offshore Export Cable Corridor

Landfall Approach (Noticed Alternative)

Mayflower Wind Lease Area OCS A-0521

Vessel Track Density*

- 0-1
- 2-10
- 11-20
- 21-40
- 41-60
- 61-100
- 101-200
- 201-500
- >500

* Number of transit counts within 100 x 100 meter grid cells. AIS Data obtained from Marine Traffic for the period of 1/1/2019 to 12/31/2019.

MAYFLOWER WIND
OFFSHORE WIND PROJECT
SOMERSET, MA AND PORTSMOUTH, RI

FIGURE 7-4
VESSEL TRACK DENSITY
FISHING VESSELS

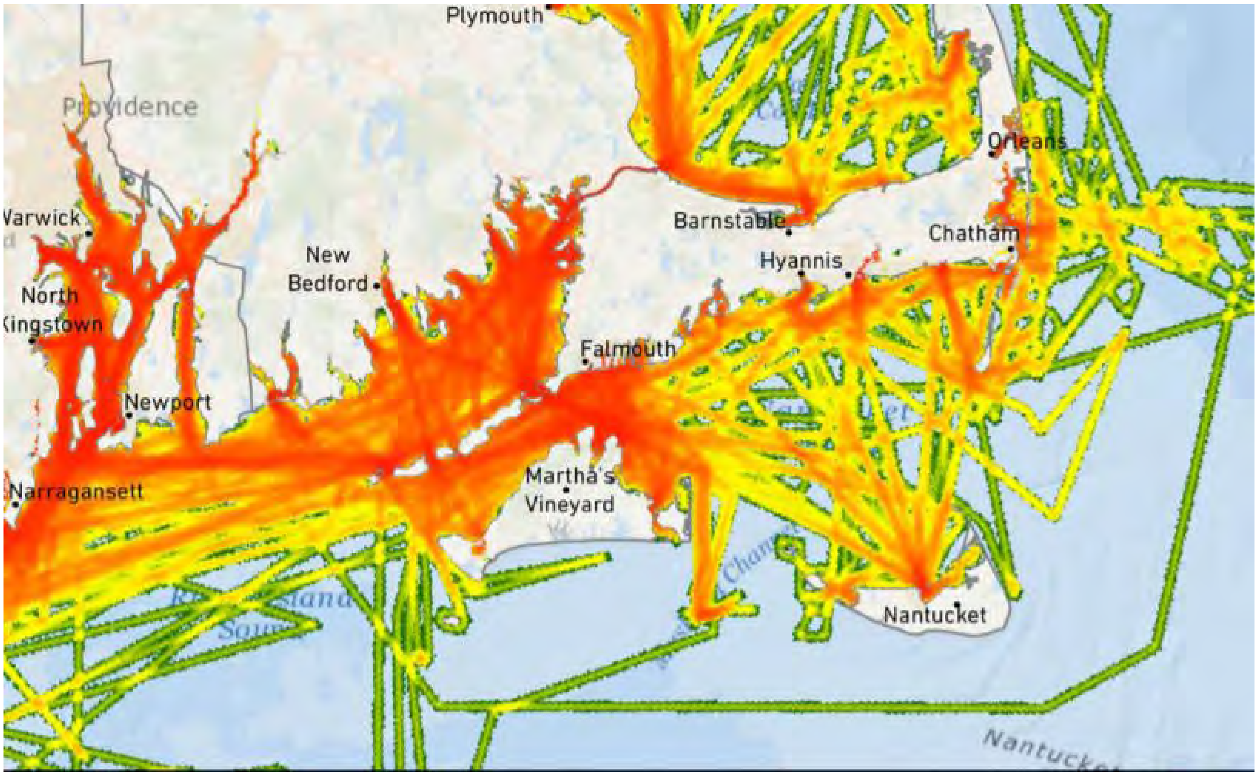
0 10 20
Miles

MAYFLOWER WIND

POWER ENGINEERS

Date: 5/26/2022

Starbuck K, & A. Lipsky. (2013). ***2012 Northeast Recreational Boater Survey: A Socioeconomic and Spatial Characterization of Recreational Boating in Coastal and Ocean Waters of the Northeast United States.*** **Technical Report Dec 2013. Boston (MA): Doc #121.13.10, p.105**



Source: Adapted from Starbuck and Lipsky, 2013

Boater Route Density

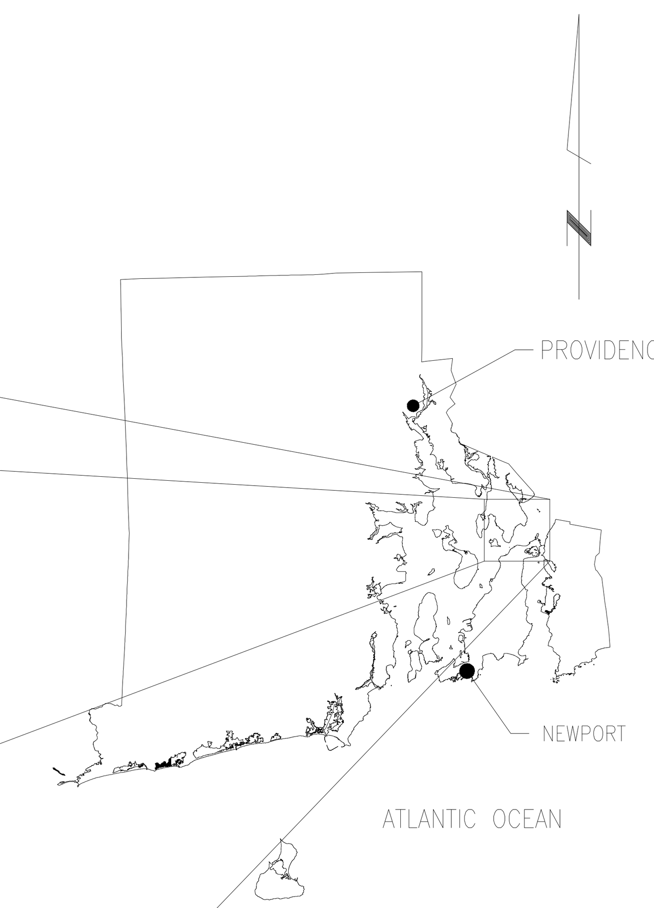
High Low

FIGURE 7-5. BOATER ROUTE DENSITY IN THE AREA OF INTEREST

ATTACHMENT B – PRELIMINARY ENGINEERING DRAWINGS

MAYFLOWER WIND
30% HORIZONTAL DIRECTIONAL DRILL DESIGN
OFFSHORE EXPORT CABLE LANDFALL - BOYDS LANE

VICINITY MAP
N.T.S.



AREA MAP RHODE ISLAND
N.T.S.

Know what's below.
Call before you dig.

POWER ENGINEERS
PROJECT ENGINEER: TODD GOYETTE

POWER ENGINEERS
PROJECT NUMBER: 172033

ATTENTION: FOR CLEANER TEXT AND LINE FEATURES WHEN USING ADOBE TO VIEW THESE PDFS, TURN OFF THE "SMOOTH LINE ART" AND "ENHANCE THIN LINES" OPTIONS UNDER EDIT–PREFERENCES–PAGE DISPLAY

REV	REVISIONS	DATE	DRN	DSGN	CKD	APPD	REFERENCE DRAWINGS
F	INCORPORATED MAYFLOWER COMMENTS	05/11/2022	ASW	TSG	TSG		
E	INCOPRORATED MAYFLOWER COMMENTS	04/29/2022	ASW	TSG	TSG		
D	INCORPORATED MAYFLOWER COMMENTS	04/01/2022	ASW	TSG	TSG		
C	ADDED SECOND HDD	02/28/2022	ASW	TSG	TSG		
B	ISSUED FOR REVIEW	10/06/2021	ASW	TSG	TSG		

DSGN	TSG	08/10/2021
DRN	ASW	08/10/2021
CKD	TSG	08/10/2021
SCALE:	AS SHOWN	

FOR 24x36 DWG ONLY

POWER ENGINEERS

MAYFLOWER WIND
AQUIDNECK ISLAND HDD
BOYDS LN
COVER

JOB NUMBER: 172033
REV: F
DRAWING NUMBER: G0-1

172033 - Aquidneck Island Boyds LN HDD.dwg

DRAWING MANIFEST			
DRAWING NO.	TITLE/DESCRIPTION	REVISION	DATE
G0-1	COVER	F	05/11/22
G1-1	GENERAL NOTES & MANIFEST	F	05/11/22
P1-1	PLAN - STA. 00+00 TO 13+50	F	05/11/22
U1-1	HDD LAYOUTS	F	05/11/22
U1-2	HDD LAYOUTS	F	05/11/22

LEGEND

HDD START/END

SOIL BORE

W — EXISTING WATER LINE

G — EXISTING GAS LINE

D — EXISTING STORM DRAINAGE LINE

S — EXISTING SANITARY SEWER LINE

E — EXISTING UNDERGROUND ELECTRIC LINE

PSCL PERENIAL STREAM CENTER LINE

FWVC FRESH WATER WETLANDS IN THE VICINITY OF THE COAST

GENERAL NOTES

1. THE UTILITIES AND NATURAL FEATURES SHOWN HEREON ARE BASED ON:
   - LEVEL D SURVEY PERFORMED BY DIPRETE ENGINEERING, 01/19/2022
   - GOOGLE EARTH 2020
   - OTHER FACILITIES MAY EXIST NOT DISCOVERED THROUGH THE RECORD CHECK. THE CONTRACTOR SHALL VERIFY THE EXACT LOCATION, BOTH HORIZONTAL AND VERTICAL, OF ALL UTILITIES THROUGH THE APPROPRIATE UTILITY COMPANIES. CALL BEFORE YOU DIG, 811 OR 1-888-344-7233.
2. STATE PLANE COORDINATE (HORIZONTAL DATUM): REFERENCES RHODE ISLAND PLAN COORDINATE SYSTEM - NAD83 1983, US FOOT.
3. STATE PLANE COORDINATE (VERTICAL DATUM): NAVD 1988. THE COORDINATE SYSTEM THAT THIS SURVEY WAS BASED UPON IS STATE PLANE NAD 88, US FOOT.
4. ALL VERTICAL RADII ARE 400', AND HORIZONTAL RADII ARE 50' UNLESS OTHERWISE NOTED.

ENVIRONMENTAL LEGEND:

RI_FEMA FLOODZONE

WETLAND

PSCL PERENIAL STREAM CENTER LINE

FWVC FRESH WATER WETLANDS IN THE VICINITY OF THE COAST

MOORING FIELDS

ATTENTION: FOR CLEANER TEXT AND LINE FEATURES WHEN USING ADOBE TO VIEW THESE PDFS, TURN OFF THE "SMOOTH LINE ART" AND "ENHANCE THIN LINES" OPTIONS UNDER EDIT-PREFERENCES-PAGE DISPLAY

REV	REVISIONS	DATE	DRN	DSGN	CKD	APPD	REFERENCE DRAWINGS
F	INCORPORATED MAYFLOWER COMMENTS	05/11/2022	ASW	TSG	TSG		
E	INCOPRORATED MAYFLOWER COMMENTS	04/29/2022	ASW	TSG	TSG		
D	INCORPORATED MAYFLOWER COMMENTS	04/01/2022	ASW	TSG	TSG		
C	ADDED SECOND HDD	02/28/2022	ASW	TSG	TSG		
B	ISSUED FOR REVIEW	10/06/2021	ASW	TSG	TSG		

DSGN	TSG	08/10/2021
DRN	ASW	08/10/2021
CKD	TSG	08/10/2021

SCALE: AS SHOWN

FOR 24x36 DWG ONLY

POWER ENGINEERS

MAYFLOWER WIND

AQUIDNECK ISLAND HDD

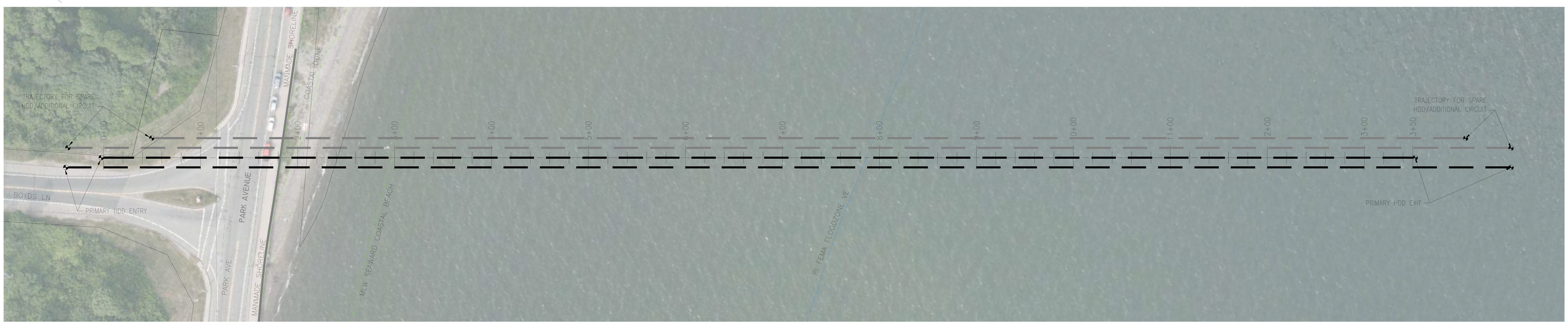
BOYDS LN
GENERAL NOTES & MANIFEST

JOB NUMBER 172033

REV F

DRAWING NUMBER G1-1

172033 - Aquidneck Island Boyds Ln HDD.dwg



PLAN VIEW

PROFILE VIEW

811 Know what's below. Call before you dig.

NOTES:

1. THE UTILITIES AND NATURAL FEATURES SHOWN HEREON ARE BASED ON FIELD SURVEYS, AERIAL PHOTOGRAPHY AND RECORD DOCUMENTS. OTHER FACILITIES MAY EXIST NOT DISCOVERED THROUGH THE RECORD CHECK. THE CONTRACTOR SHALL VERIFY THE EXACT LOCATION, BOTH HORIZONTAL AND VERTICAL, OF ALL UTILITIES THROUGH THE APPROPRIATE UTILITY COMPANIES. CALL BEFORE YOU DIG, 811 OR 1-800-344-7233.

2. PLAN AND PROFILE ALIGNMENT IS CONCEPTUAL AND NOT BASED ON PROJECT SPECIFIC FIELD SURVEY OR GEOTECHNICAL INVESTIGATION.

3. THE UTILITIES AND NATURAL FEAUTRES SHOWN HEREON ARE BASED ON:
   - GOOGLE EARTH 2020
   - TOWN OF PORTSMOUTH WEB GIS MAPS AND ONLINE PROPERTY INFORMATION

4. PROPERTY LINES ARE APPROXIMATE FOR DISCUSSION PURPOSES.

0 50 100 150 FEET
HORIZONTAL SCALE 1"= 50'

0 10 20 30 FEET
VERTICAL SCALE 1"= 10'

ATTENTION: FOR CLEANER TEXT AND LINE FEATURES WHEN USING ADOBE TO VIEW THESE PDFS, TURN OFF THE "SMOOTH LINE ART" AND "ENHANCE THIN LINES" OPTIONS UNDER EDIT-PREFERENCES-PAGE DISPLAY

REV	REVISIONS	DATE	DRN	DSGN	CKD	APPD	REFERENCE DRAWINGS
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D	INCORPORATED MAYFLOWER COMMENTS	04/01/2022	ASW	TSG	TSG		
C	ADDED SECOND HDD	02/28/2022	ASW	TSG	TSG		
B	ISSUED FOR REVIEW	10/06/2021	ASW	TSG	TSG		

DSGN	TSG	08/10/2021
DRN	ASW	08/10/2021
CKD	TSG	08/10/2021

SCALE: AS SHOWN

FOR 24x36 DWG ONLY

POWER ENGINEERS

MAYFLOWER WIND

AQUIDNECK ISLAND HDD

BOYDS LN
PLAN AND PROFILE

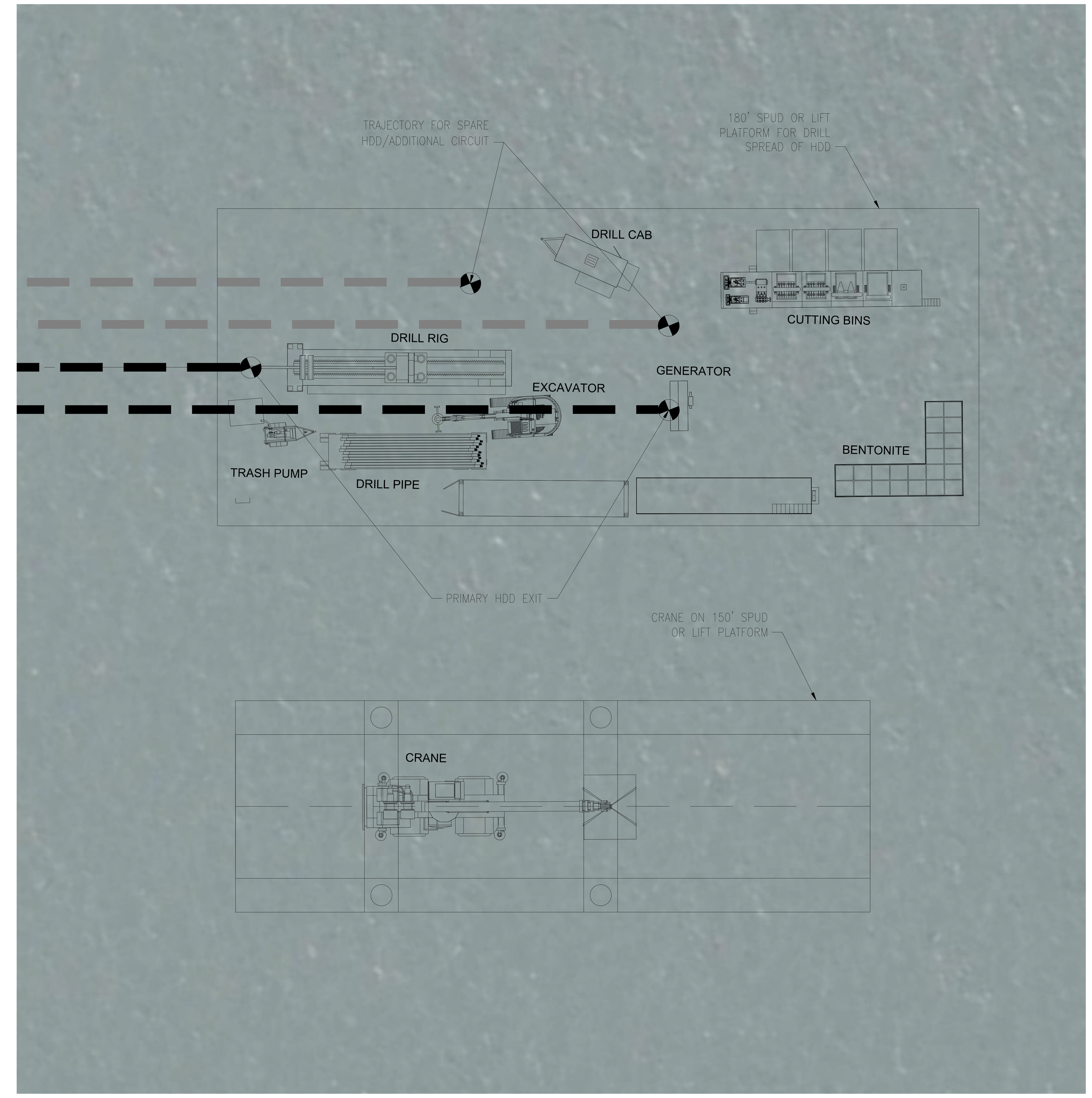
JOB NUMBER 172033

REV F

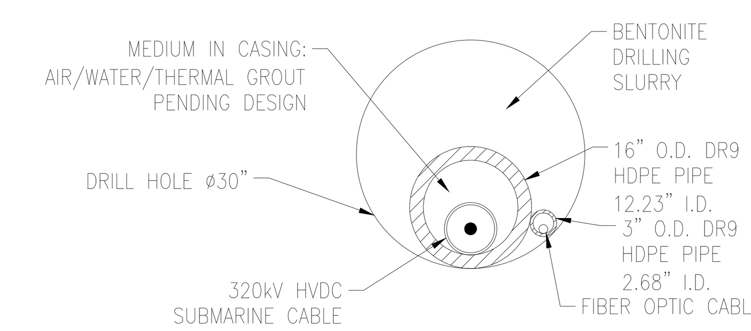
DRAWING NUMBER P1-1

172033 - Aquidneck Island Boyds Ln HDD.dwg

HDD ENTRY - OPTION 1



HDD EXIT - OPTION 1 &2



PROPOSED BORE DETAIL - OPTION 1 &2
N.T.S.

Know what's below. Call before you dig.

NOTES:

1. THE UTILITIES AND NATURAL FEATURES SHOWN HEREON ARE BASED ON FIELD SURVEYS, AERIAL PHOTOGRAPHY AND RECORD DOCUMENTS. OTHER FACILITIES MAY EXIST NOT DISCOVERED THROUGH THE RECORD CHECK. THE CONTRACTOR SHALL VERIFY THE EXACT LOCATION, BOTH HORIZONTAL AND VERTICAL, OF ALL UTILITIES THROUGH THE APPROPRIATE UTILITY COMPANIES. CALL BEFORE YOU DIG, 811 OR 1-800-344-7233.
2. PLAN AND PROFILE ALIGNMENT IS CONCEPTUAL AND NOT BASED ON PROJECT SPECIFIC FIELD SURVEY OR GEOTECHNICAL INVESTIGATION.
3. THE UTILITIES AND NATURAL FEAUTRES SHOWN HEREON ARE BASED ON:
   - GOOGLE EARTH 2020
   - TOWN OF PORTSMOUTH WEB GIS MAPS AND ONLINE PROPERTY INFORMATION
4. PROPERTY LINES ARE APPROXIMATE FOR DISCUSSION PURPOSES.

0 20 40 60 FEET
HORIZONTAL SCALE 1"= 20'

ATTENTION: FOR CLEANER TEXT AND LINE FEATURES WHEN USING ADOBE TO VIEW THESE PDFS, TURN OFF THE "SMOOTH LINE ART" AND "ENHANCE THIN LINES" OPTIONS UNDER EDIT-PREFERENCES-PAGE DISPLAY

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DSGN	TSG	08/10/2021
DRN	ASW	08/10/2021
CKD	TSG	08/10/2021
SCALE:	AS SHOWN	

FOR 24x36 DWG ONLY

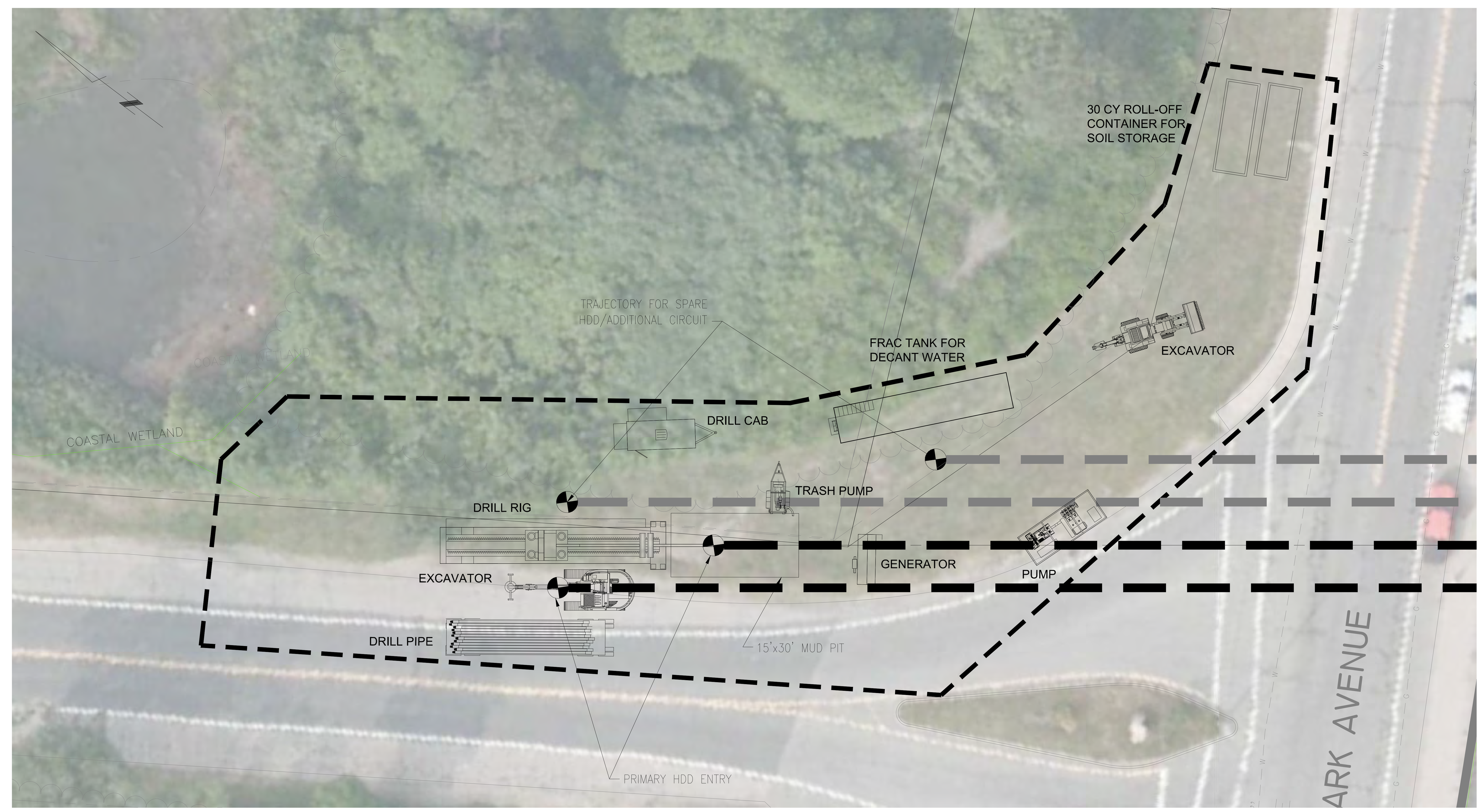
POWER ENGINEERS

MAYFLOWER WIND
AQUIDNECK ISLAND HDD
BOYDS LN
HDD LAYOUTS

JOB NUMBER: 172033
REV: F
DRAWING NUMBER: U1-1

172033 - Aquidneck Island Boyds Ln HDD.dwg

HDD STAGING AREA



HDD ENTRY

NOTES:

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2. PLAN AND PROFILE ALIGNMENT IS CONCEPTUAL AND NOT BASED ON PROJECT SPECIFIC FIELD SURVEY OR GEOTECHNICAL INVESTIGATION.
3. THE UTILITIES AND NATURAL FEAUTRES SHOWN HEREON ARE BASED ON:
   - GOOGLE EARTH 2020
   - TOWN OF PORTSMOUTH WEB GIS MAPS AND ONLINE PROPERTY INFORMATION
4. PROPERTY LINES ARE APPROXIMATE FOR DISCUSSION PURPOSES.

811 Know what's below. Call before you dig.

0 20 40 60 FEET
HORIZONTAL SCALE 1"= 20'

ATTENTION: FOR CLEANER TEXT AND LINE FEATURES WHEN USING ADOBE TO VIEW THESE PDFS, TURN OFF THE "SMOOTH LINE ART" AND "ENHANCE THIN LINES" OPTIONS UNDER EDIT-PREFERENCES-PAGE DISPLAY

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DSGN	TSG	08/10/2021
DRN	ASW	08/10/2021
CKD	TSG	08/10/2021

SCALE: AS SHOWN
FOR 24x36 DWG ONLY

POWER ENGINEERS

MAYFLOWER WIND
AQUIDNECK ISLAND HDD
BOYDS LN
HDD LAYOUTS - OPTION 2

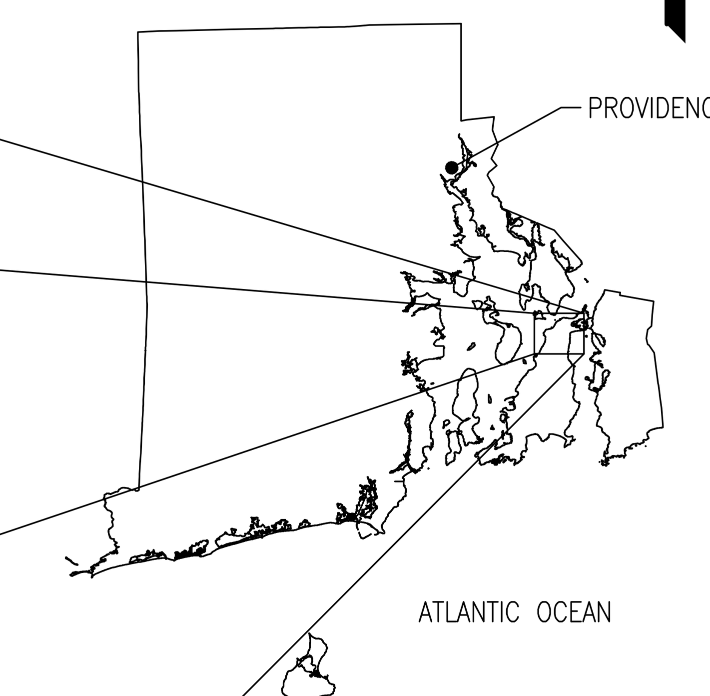
JOB NUMBER 172033
REV F
DRAWING NUMBER U1-2

172033 - Aquidneck Island Boyds Ln HDD.dwg

MAYFLOWER WIND
30% UNDERGROUND EXPORT CABLE SYSTEM DESIGN
BOYDS LANE TO ROGER WILLIAMS UNIVERSITY

VICINITY MAP

0 400 800 1200FEET
HORIZONTAL SCALE 1"= 400'



AREA MAP RHODE ISLAND
N.T.S.

Know what's **below.** **Call** before you dig.

POWER ENGINEERS
PROJECT ENGINEER: TODD GOYETTE

POWER ENGINEERS
PROJECT NUMBER: 172033

ATTENTION: FOR CLEANER TEXT AND LINE FEATURES WHEN USING ADOBE TO VIEW THESE PDFS, TURN OFF THE "SMOOTH LINE ART" AND "ENHANCE THIN LINES" OPTIONS UNDER EDIT–PREFERENCES–PAGE DISPLAY

THIS DRAWING WAS PREPARED BY POWER ENGINEERS, INC. FOR A SPECIFIC PROJECT, TAKING INTO CONSIDERATION THE SPECIFIC AND UNIQUE REQUIREMENTS OF THE PROJECT. REUSE OF THIS DRAWING OR ANY INFORMATION CONTAINED IN THIS DRAWING FOR ANY PURPOSE IS PROHIBITED UNLESS WRITTEN PERMISSION FROM BOTH POWER AND POWER'S CLIENT IS GRANTED.

REV	REVISIONS	DATE	DRN	DSGN	CKD	APPD
C	REVISED PER CLIENT COMMENTS	05/11/22	RRT	TSG	TSG	
B	ISSUED FOR REVIEW	05/03/22	RRT	TSG	TSG	
A	ISSUED FOR REVIEW	03/02/2022	BAJ	TSG	TSG	

REFERENCE DRAWINGS

DSGN	TSG	03/02/22
DRN	BAJ	03/02/22
CKD	TSG	03/02/22
SCALE:	AS SHOWN	

FOR 22x34 DWG ONLY

POWER ENGINEERS

MAYFLOWER WIND
AQUIDNECK ISLAND DUCT BANK
COVER SHEET

JOB NUMBER: 172033
REV: C
DRAWING NUMBER: G0–1

172033 – Mayflower Cover And Manifest Option 1.dwg

LEGEND

HDD START/END

SOIL BORE

— W — EXISTING WATER LINE

— G — EXISTING GAS LINE

— D — EXISTING STORM DRAINAGE LINE

— S — EXISTING SANITARY SEWER LINE

— E — EXISTING UNDERGROUND ELECTRIC LINE

GENERAL NOTES

1. THE UTILITIES AND NATURAL FEATURES SHOWN HEREON ARE BASED ON:
   - LEVEL D SURVEY PERFORMED BY DIPRETE ENGINEERING, 01/19/2022
   - GOOGLE EARTH 2020
   - OTHER FACILITIES MAY EXIST NOT DISCOVERED THROUGH THE RECORD CHECK. THE CONTRACTOR SHALL VERIFY THE EXACT LOCATION, BOTH HORIZONTAL AND VERTICAL, OF ALL UTILITIES THROUGH THE APPROPRIATE UTILITY COMPANIES. CALL BEFORE YOU DIG, 811 OR 1-888-344-7233.
2. STATE PLANE COORDINATE (HORIZONTAL DATUM): REFERENCES RHODE ISLAND PLAN COORDINATE SYSTEM – NAD83 1983, US FOOT.
3. STATE PLANE COORDINATE (VERTICAL DATUM): NAVD 1988. THE COORDINATE SYSTEM THAT THIS SURVEY WAS BASED UPON IS STATE PLANE NAD 88, US FOOT.
4. ALL VERTICAL RADII ARE 400', AND HORIZONTAL RADII ARE 50' UNLESS OTHERWISE NOTED.

ENVIRONMENTAL LEGEND:

RI_FEMA FLOODZONE

WETLAND

PSCL PERENIAL STREAM CENTER LINE

FWVC FRESH WATER WETLANDS IN THE VICINITY OF THE COAST

+ + MOORING FIELDS

DRAWING MANIFEST

DRAWING NO.	TITLE/DESCRIPTION	REVISION	DATE
G0-1	COVER	C	05/11/22
G1-1	GENERAL NOTES & MANIFEST	C	05/11/22
P2-1	PLAN – STA. 00+00 TO 8+00	C	05/11/22
P2-2	PLAN – STA. 8+00 TO 18+00	C	05/11/22
P2-3	PLAN – STA. 18+00 TO 28+00	C	05/11/22
P2-4	PLAN – STA. 28+00 TO 38+00	C	05/11/22
P2-5	PLAN – STA. 38+00 TO 48+00	C	05/11/22
P2-6	PLAN – STA. 48+00 TO 52+18	C	05/11/22
U0-1	CONFIGURATION WITH NOTICED VARIATION	C	05/11/22
U0-2	CONFIGURATION WITHOUT NOTICED VARIATION	C	05/11/22
U0-3	30'X10' SPLICE VAULT DETAILS	C	05/11/22

811 Know what's below. Call before you dig.

ATTENTION: FOR CLEANER TEXT AND LINE FEATURES WHEN USING ADOBE TO VIEW THESE PDFS, TURN OFF THE "SMOOTH LINE ART" AND "ENHANCE THIN LINES" OPTIONS UNDER EDIT–PREFERENCES–PAGE DISPLAY

172033 – Mayflower Cover And Manifest Option 1.dwg

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C	REVISED PER CLIENT COMMENTS	05/11/22	RRT	TSG	TSG	
B	ISSUED FOR REVIEW	05/03/22	RRT	TSG	TSG	
A	ISSUED FOR REVIEW	03/02/2022	BAJ	TSG	TSG	

REFERENCE DRAWINGS

DSGN	TSG	03/02/22
DRN	BAJ	03/02/22
CKD	TSG	03/02/22

SCALE: AS SHOWN

FOR 22x34 DWG ONLY

POWER ENGINEERS

MAYFLOWER WIND

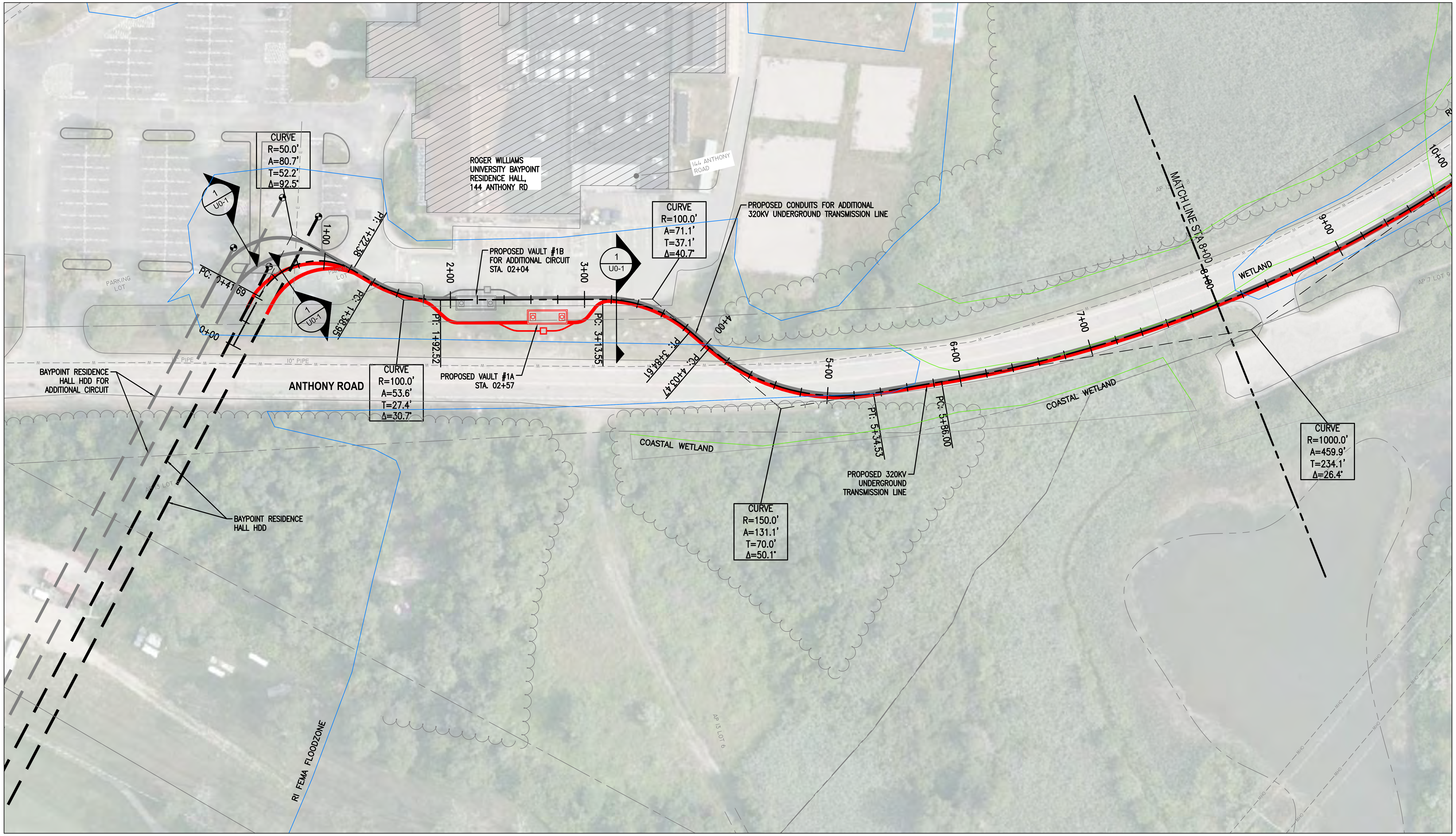
AQUIDNECK ISLAND DUCT BANK

GENERAL NOTES & MANIFEST

JOB NUMBER 172033

REV C

DRAWING NUMBER G1-1



← TO ROGER WILLIAMS UNIVERSITY HDD

PLAN VIEW

TO BOYDS LANE HDD →

NOTES

1. THE UTILITIES AND NATURAL FEATURES SHOWN HEREON ARE BASED ON FIELD SURVEYS, AERIAL PHOTOGRAPHY AND RECORD DOCUMENTS. OTHER FACILITIES MAY EXIST NOT DISCOVERED THROUGH THE RECORD CHECK. THE CONTRACTOR SHALL VERIFY THE EXACT LOCATION, BOTH HORIZONTAL AND VERTICAL, OF ALL UTILITIES THROUGH THE APPROPRIATE UTILITY COMPANIES. 811 OR 1-888-344-7233.

0 20 40 80 120 FEET

HORIZONTAL SCALE: 1"= 40'

811 Know what's below. Call before you dig.

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A	ISSUED FOR REVIEW	03/02/2022	BAJ	TSG	TSG	

REFERENCE DRAWINGS

DSGN	TSG	03/02/22
DRN	BAJ	03/02/22
CKD	TSG	03/02/22

SCALE: HORIZ: 1" = 40'

FOR 22x34 DWG ONLY

POWER ENGINEERS

MAYFLOWER WIND

AQUIDNECK ISLAND DUCT BANK

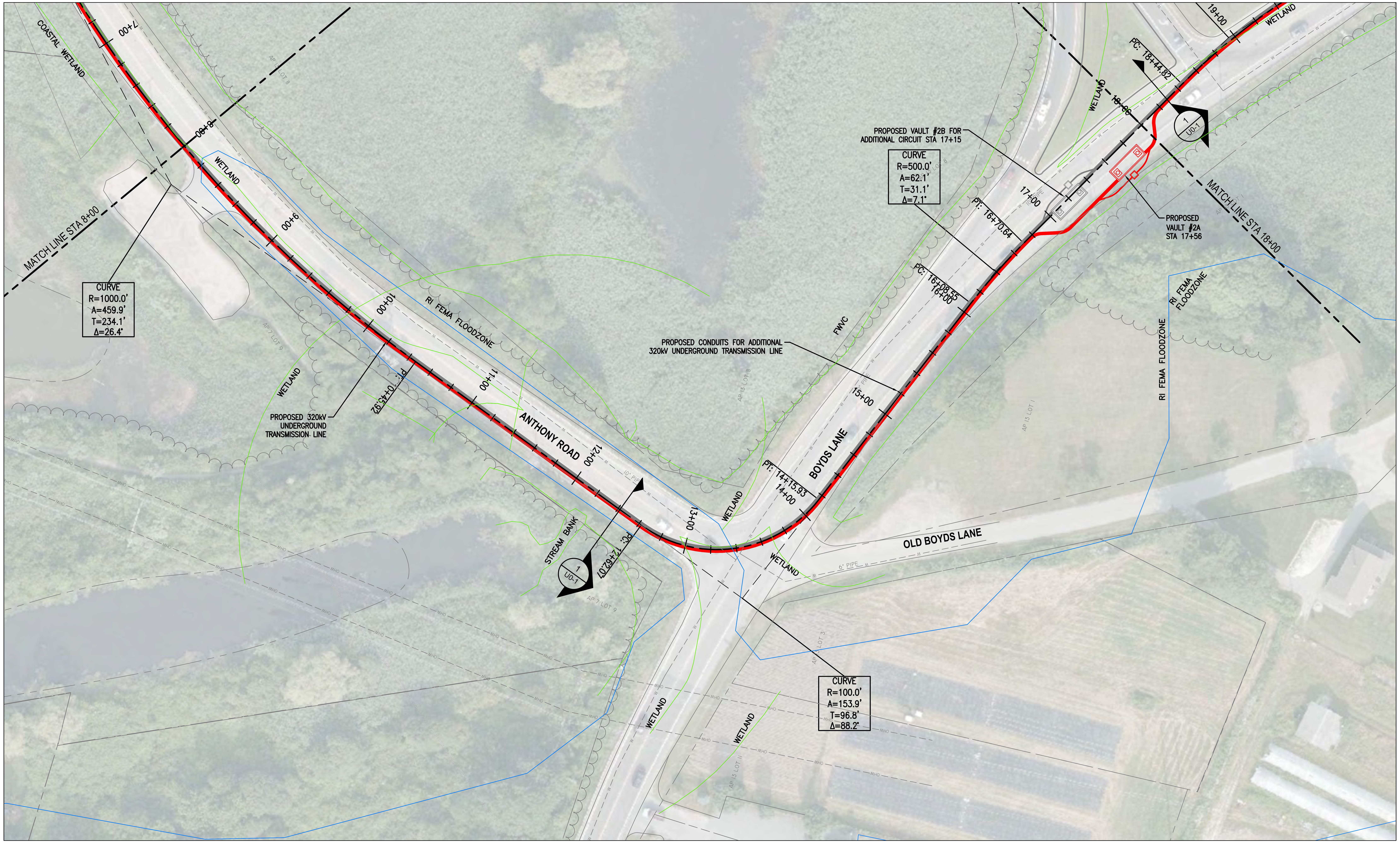
PLAN
STA 00+00 TO 08+00

JOB NUMBER 172033

REV C

DRAWING NUMBER P2–1

172033 – PLAN & PROFILE – OPTION 1.dwg



TO ROGER WILLIAMS UNIVERSITY HDD

PLAN VIEW

TO BOYDS LANE HDD

Know what's **below.**
Call before you dig.

NOTES

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0 20 40 80 120 FEET
HORIZONTAL SCALE: 1"= 40'

ATTENTION: FOR CLEANER TEXT AND LINE FEATURES WHEN USING ADOBE TO VIEW THESE PDFS, TURN OFF THE "SMOOTH LINE ART" AND "ENHANCE THIN LINES" OPTIONS UNDER EDIT-PREFERENCES-PAGE DISPLAY

REV	REVISIONS	DATE	DRN	DSGN	CKD	APPD
C	REVISED PER CLIENT COMMENTS	05/11/22	RRT	TSG	TSG	
B	ISSUED FOR REVIEW	05/03/22	RRT	TSG	TSG	
A	ISSUED FOR REVIEW	03/02/2022	BAJ	TSG	TSG	

REFERENCE DRAWINGS

DSGN	TSG	03/02/22
DRN	BAJ	03/02/22
CKD	TSG	03/02/22

SCALE: **HORIZ: 1" = 40'**

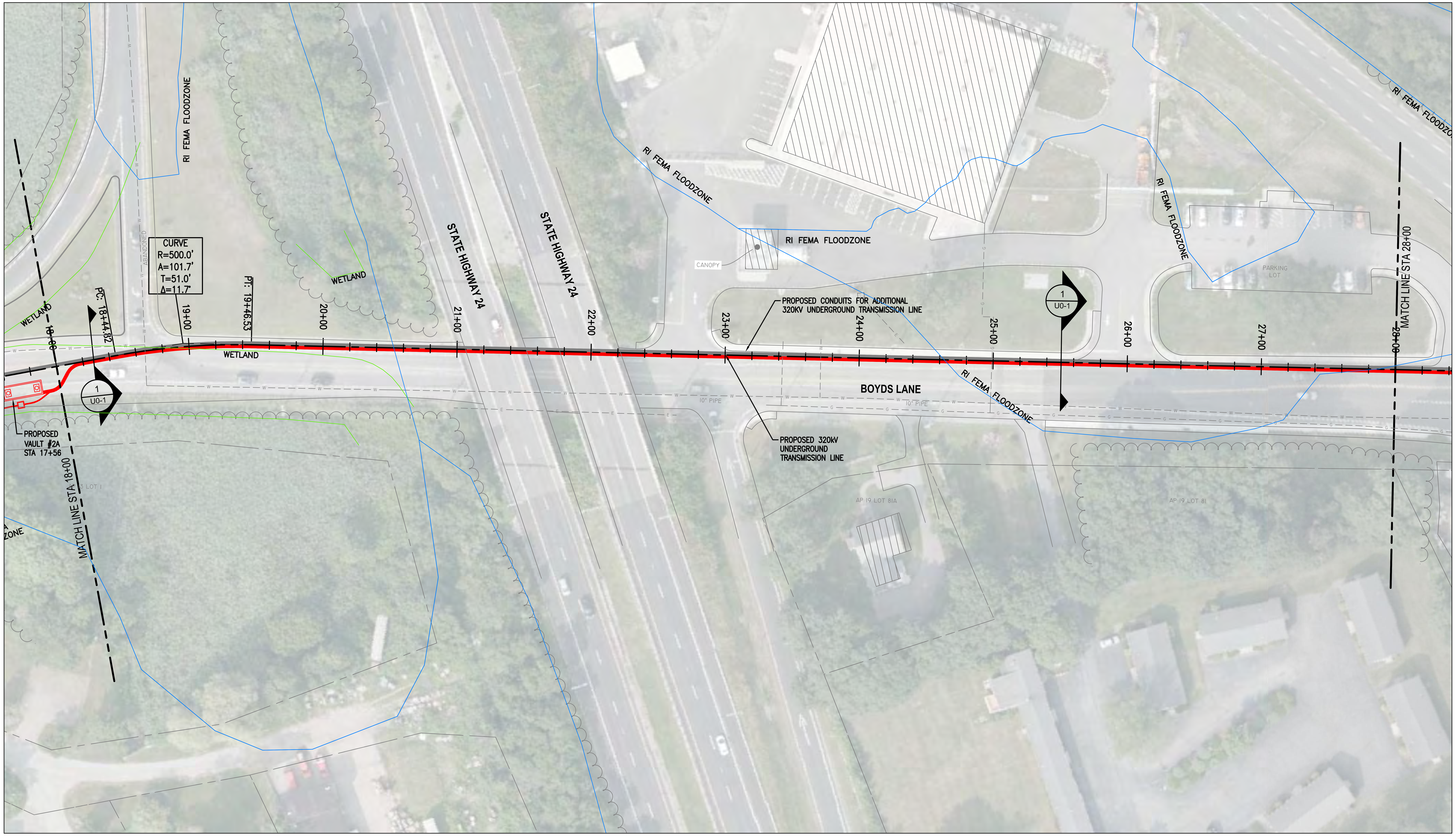
FOR 22x34 DWG ONLY

POWER ENGINEERS

MAYFLOWER WIND
AQUIDNECK ISLAND DUCT BANK
PLAN
STA 08+00 TO 18+00

JOB NUMBER: 172033
REV: C
DRAWING NUMBER: P2-2

172033 - PLAN & PROFILE - OPTION 1.dwg



⬅ TO ROGER WILLIAMS UNIVERSITY HDD

PLAN VIEW

TO BOYDS LANE HDD ➡

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NOTES

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0 20 40 80 120 FEET

HORIZONTAL SCALE: 1"= 40'

ATTENTION: FOR CLEANER TEXT AND LINE FEATURES WHEN USING ADOBE TO VIEW THESE PDFS, TURN OFF THE "SMOOTH LINE ART" AND "ENHANCE THIN LINES" OPTIONS UNDER EDIT-PREFERENCES-PAGE DISPLAY

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REFERENCE DRAWINGS

DSGN	TSG	03/02/22
DRN	BAJ	03/02/22
CKD	TSG	03/02/22

SCALE: **HORIZ: 1" = 40'**

FOR 22x34 DWG ONLY

POWER ENGINEERS

MAYFLOWER WIND

AQUIDNECK ISLAND DUCT BANK

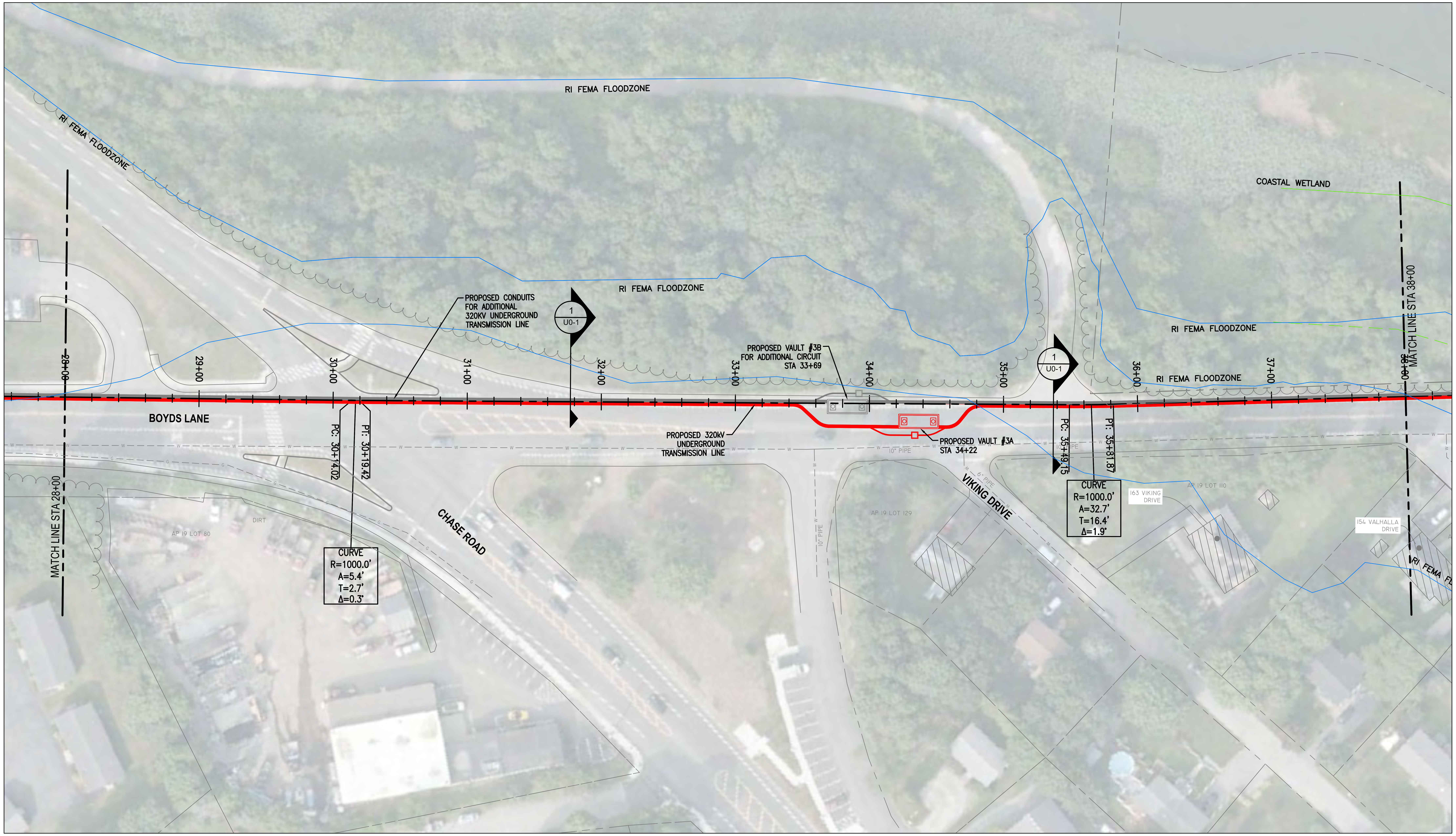
PLAN
STA 18+00 TO 28+00

JOB NUMBER 172033

REV C

DRAWING NUMBER P2-3

172033 - PLAN & PROFILE - OPTION 1.dwg



TO ROGER WILLIAMS UNIVERSITY HDD

PLAN VIEW

TO BOYDS LANE HDD

Know what's below. Call before you dig.

NOTES

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0 20 40 80 120 FEET

HORIZONTAL SCALE: 1"= 40'

ATTENTION: FOR CLEANER TEXT AND LINE FEATURES WHEN USING ADOBE TO VIEW THESE PDFS, TURN OFF THE "SMOOTH LINE ART" AND "ENHANCE THIN LINES" OPTIONS UNDER EDIT-PREFERENCES-PAGE DISPLAY

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B	ISSUED FOR REVIEW	05/03/22	RRT	TSG	TSG	
A	ISSUED FOR REVIEW	03/02/2022	BAJ	TSG	TSG	

REFERENCE DRAWINGS

DSGN	TSG	03/02/22
DRN	BAJ	03/02/22
CKD	TSG	03/02/22

SCALE: HORIZ: 1" = 40'

FOR 22x34 DWG ONLY

POWER ENGINEERS

MAYFLOWER WIND

AQUIDNECK ISLAND DUCT BANK

PLAN
STA 28+00 TO 38+00

JOB NUMBER 172033

REV C

DRAWING NUMBER P2-4

172033 – PLAN & PROFILE – OPTION 1.dwg

TO ROGER WILLIAMS UNIVERSITY HDD

PLAN VIEW

TO BOYDS LANE HDD

NOTES

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0 20 40 80 120 FEET

HORIZONTAL SCALE: 1"= 40'

811 Know what's below. Call before you dig.

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B	ISSUED FOR REVIEW	05/03/22	RRT	TSG	TSG	
A	ISSUED FOR REVIEW	03/02/2022	BAJ	TSG	TSG	

REFERENCE DRAWINGS

DSGN	TSG	03/02/22
DRN	BAJ	03/02/22
CKD	TSG	03/02/22

SCALE: HORIZ: 1" = 40'

FOR 22x34 DWG ONLY

POWER ENGINEERS

MAYFLOWER WIND

AQUIDNECK ISLAND DUCT BANK

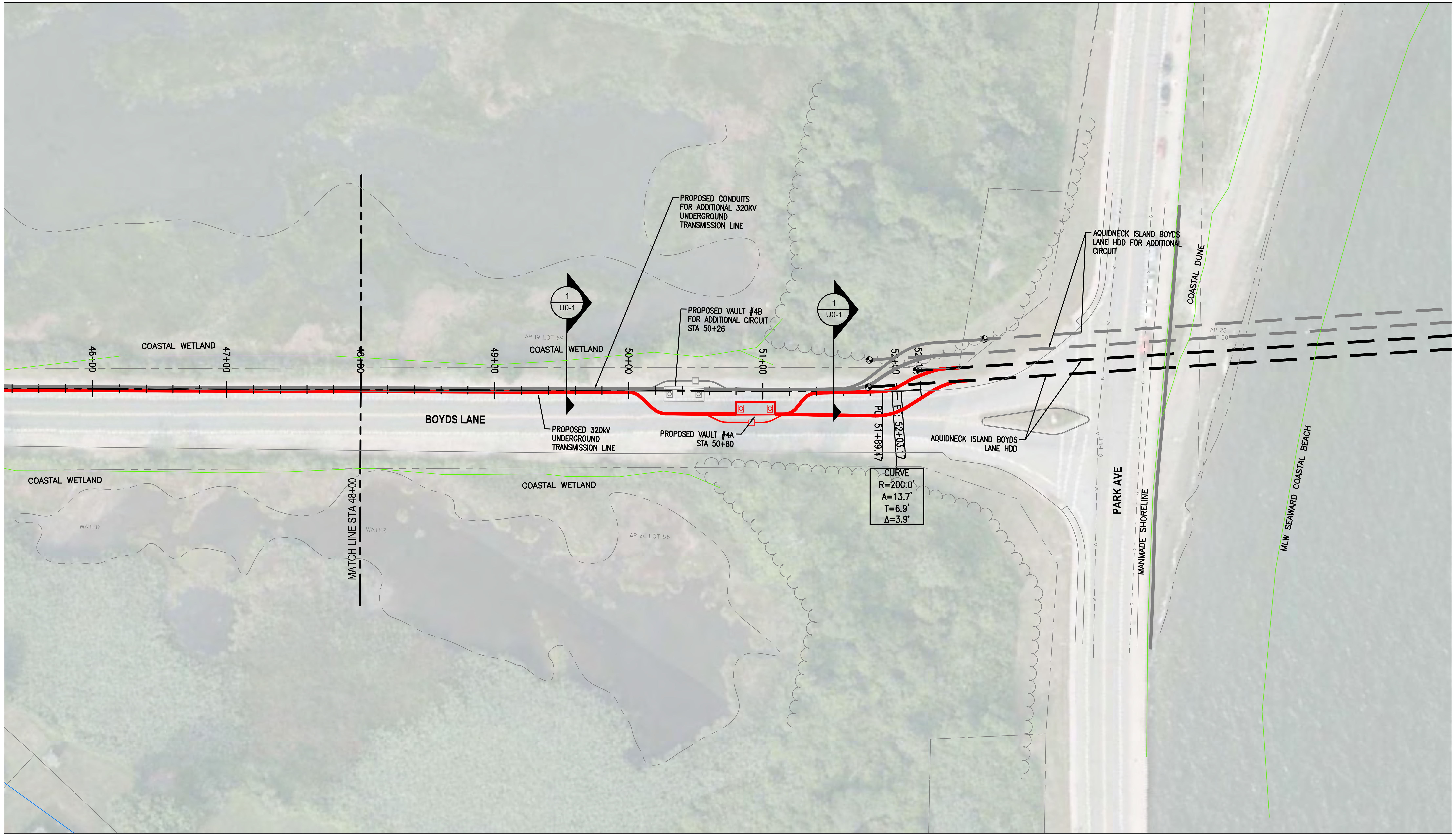
PLAN
STA 38+00 TO 48+00

JOB NUMBER 172033

REV C

DRAWING NUMBER P2-5

172033 - PLAN & PROFILE - OPTION 1.dwg



TO ROGER WILLIAMS UNIVERSITY HDD

PLAN VIEW

TO BOYDS LANE HDD

NOTES

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0 20 40 80 120 FEET

HORIZONTAL SCALE: 1"= 40'

811 Know what's below. Call before you dig.

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C	REVISED PER CLIENT COMMENTS	05/11/22	RRT	TSG	TSG	
B	ISSUED FOR REVIEW	05/03/22	RRT	TSG	TSG	
A	ISSUED FOR REVIEW	03/02/2022	BAJ	TSG	TSG	

REFERENCE DRAWINGS

DSGN	TSG	03/02/22
DRN	BAJ	03/02/22
CKD	TSG	03/02/22

SCALE: HORIZ: 1" = 40'

FOR 22x34 DWG ONLY

POWER ENGINEERS

MAYFLOWER WIND

AQUIDNECK ISLAND DUCT BANK

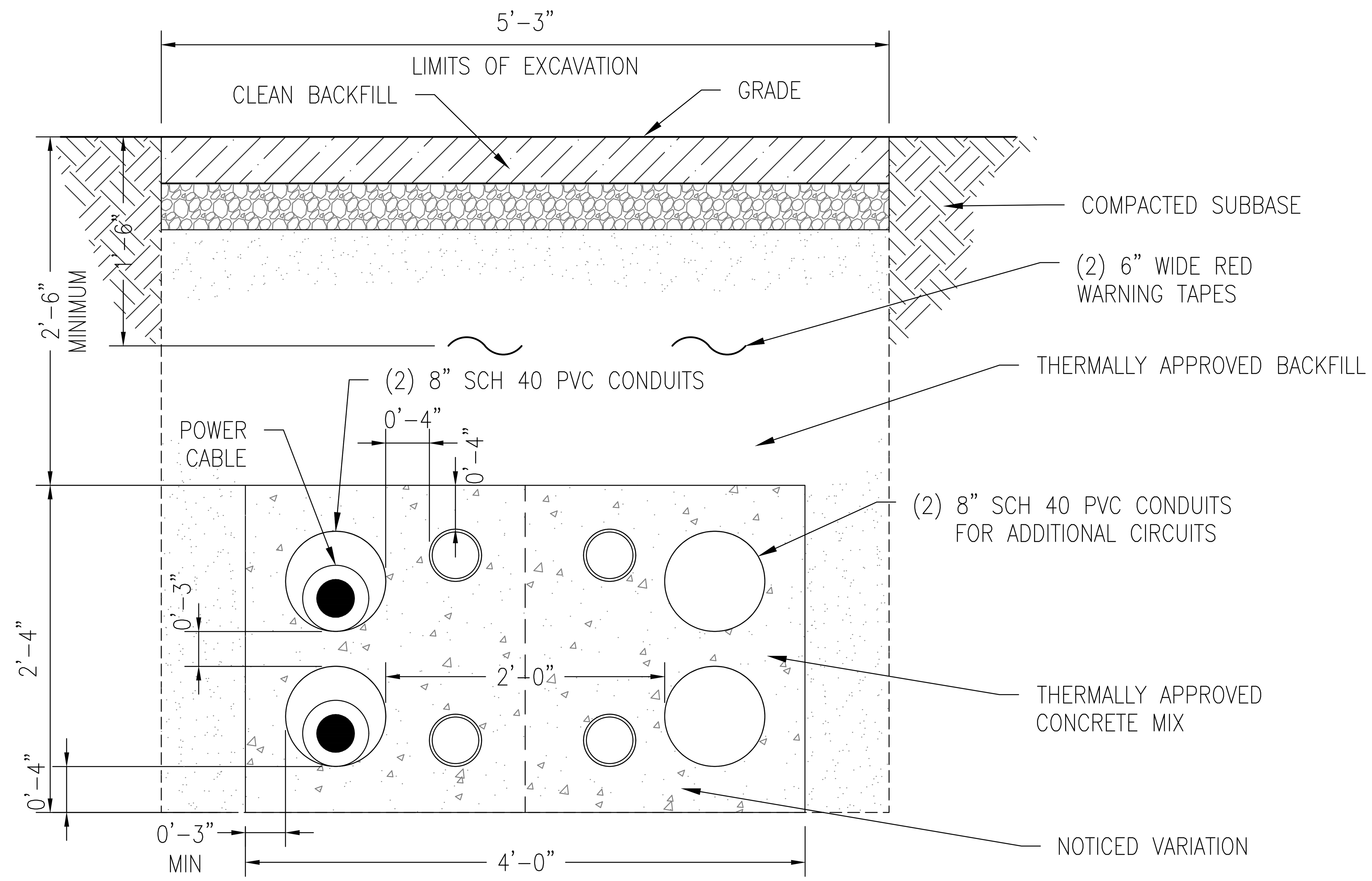
PLAN
STA 48+00 TO 52+18

JOB NUMBER 172033

REV C

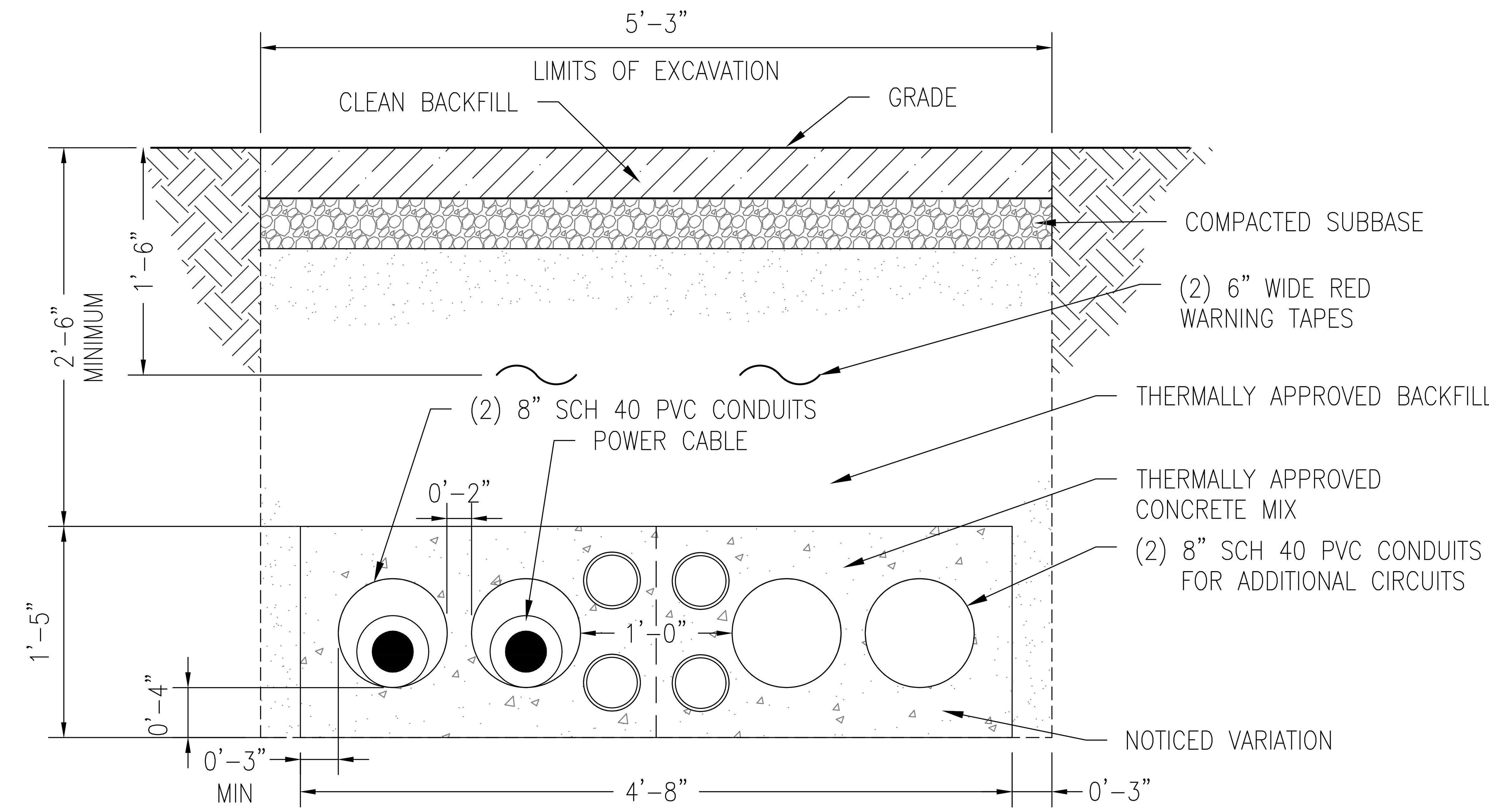
DRAWING NUMBER P2-6

172033 - PLAN & PROFILE - OPTION 1.dwg



DOUBLE CIRCUIT DUCT BANK OPTION 1

SECTION 1 / U0-1
N.T.S.



DOUBLE CIRCUIT DUCT BANK OPTION 2

SECTION 2 / U0-1
N.T.S.

ATTENTION: FOR CLEANER TEXT AND LINE FEATURES WHEN USING ADOBE TO VIEW THESE PDFS, TURN OFF THE "SMOOTH LINE ART" AND "ENHANCE THIN LINES" OPTIONS UNDER EDIT-PREFERENCES-PAGE DISPLAY

REV	REVISIONS	DATE	DRN	DSGN	CKD	APPD
C	REVISED PER CLIENT COMMENTS	05/11/22	RRT	TSG	TSG	
B	ISSUED FOR REVIEW	05/06/22	RRT	TSG	TSG	
A	ISSUED FOR REVIEW	03/02/2022	BAJ	TSG	TSG	

REFERENCE DRAWINGS

DSGN	TSG	03/02/22
DRN	BAJ	03/02/22
CKD	TSG	03/02/22

SCALE: AS SHOWN

FOR 22x34 DWG ONLY

POWER ENGINEERS

MAYFLOWER WIND

AQUIDNECK ISLAND DUCT BANK

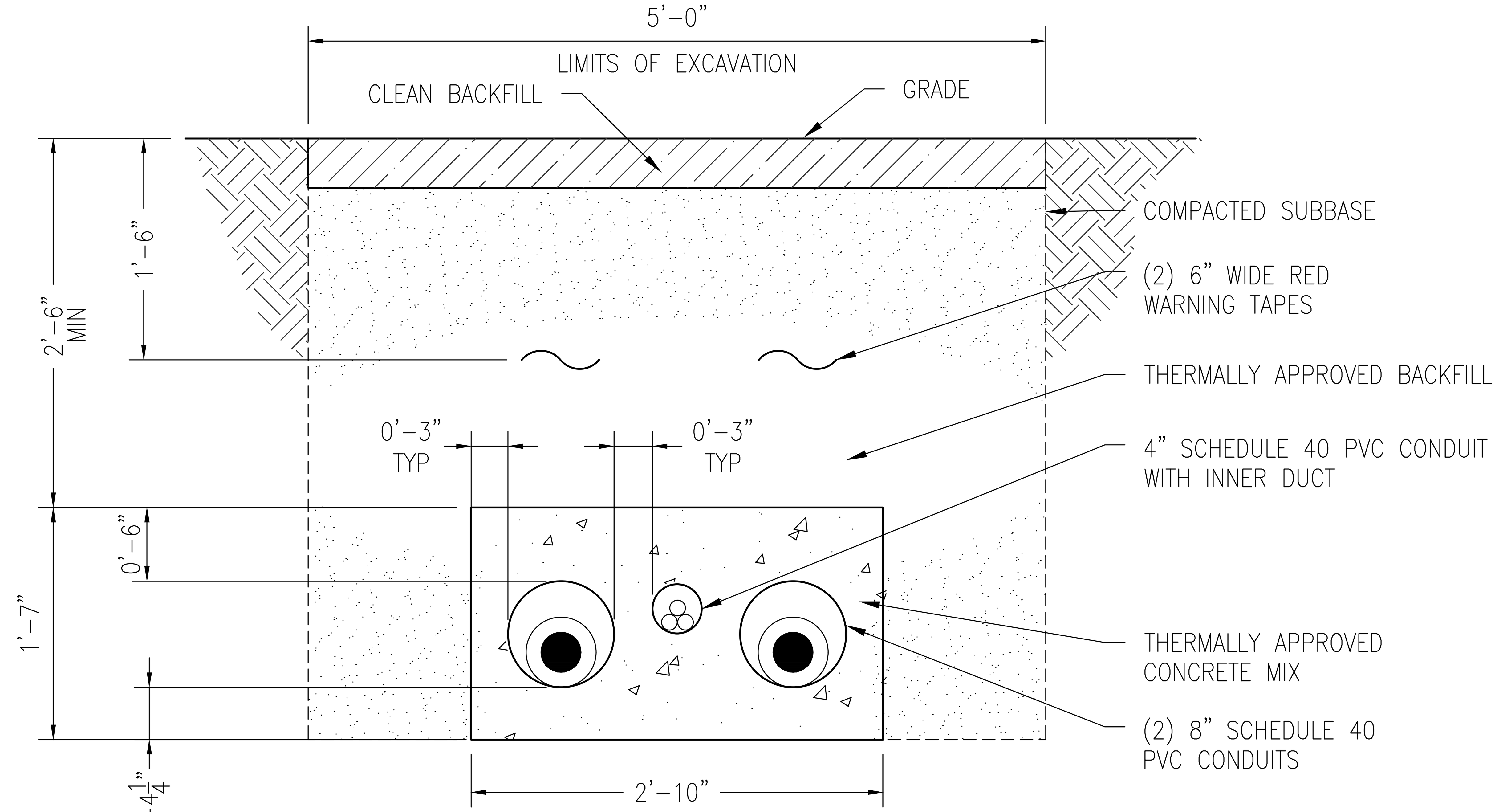
CONFIGURATION WITH NOTICED VARIATION

JOB NUMBER 172033

REV C

DRAWING NUMBER U0-1

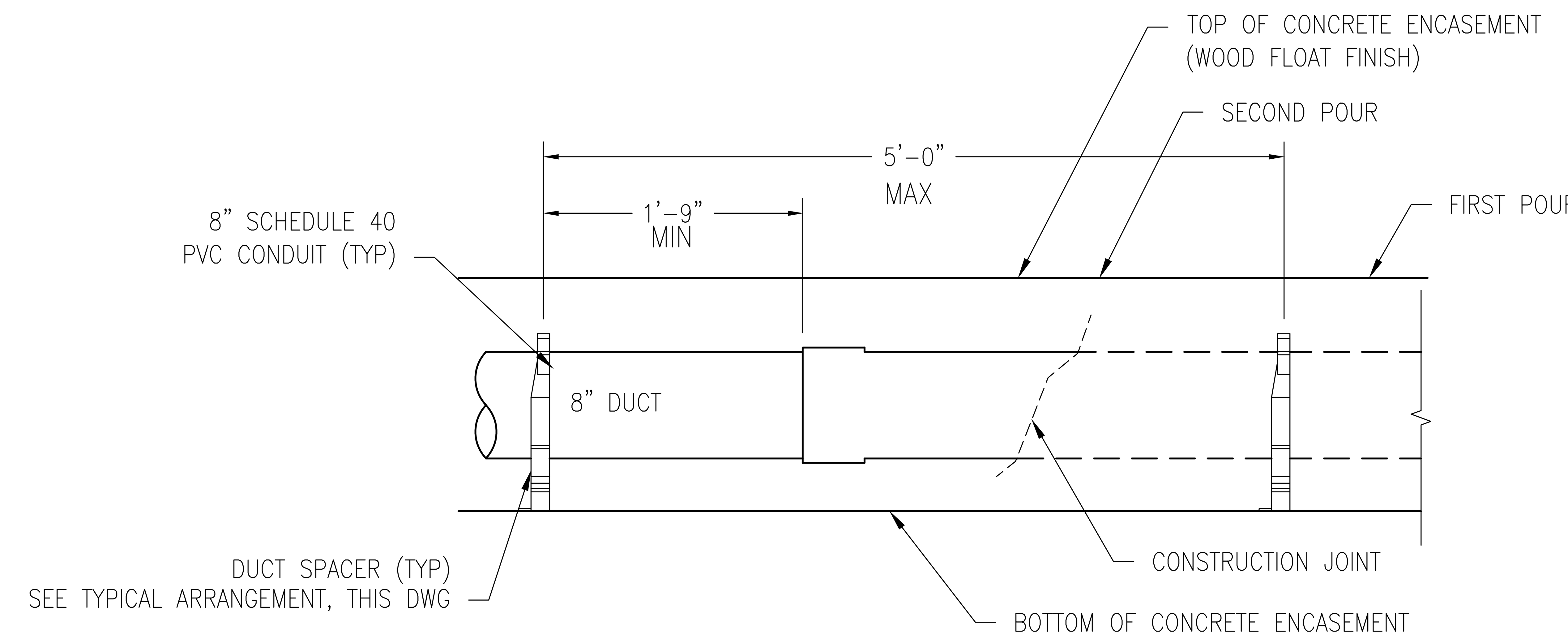
172033 - Mayflower Details.dwg



TYPICAL TRENCH RIGHT OF WAY APPLICATION

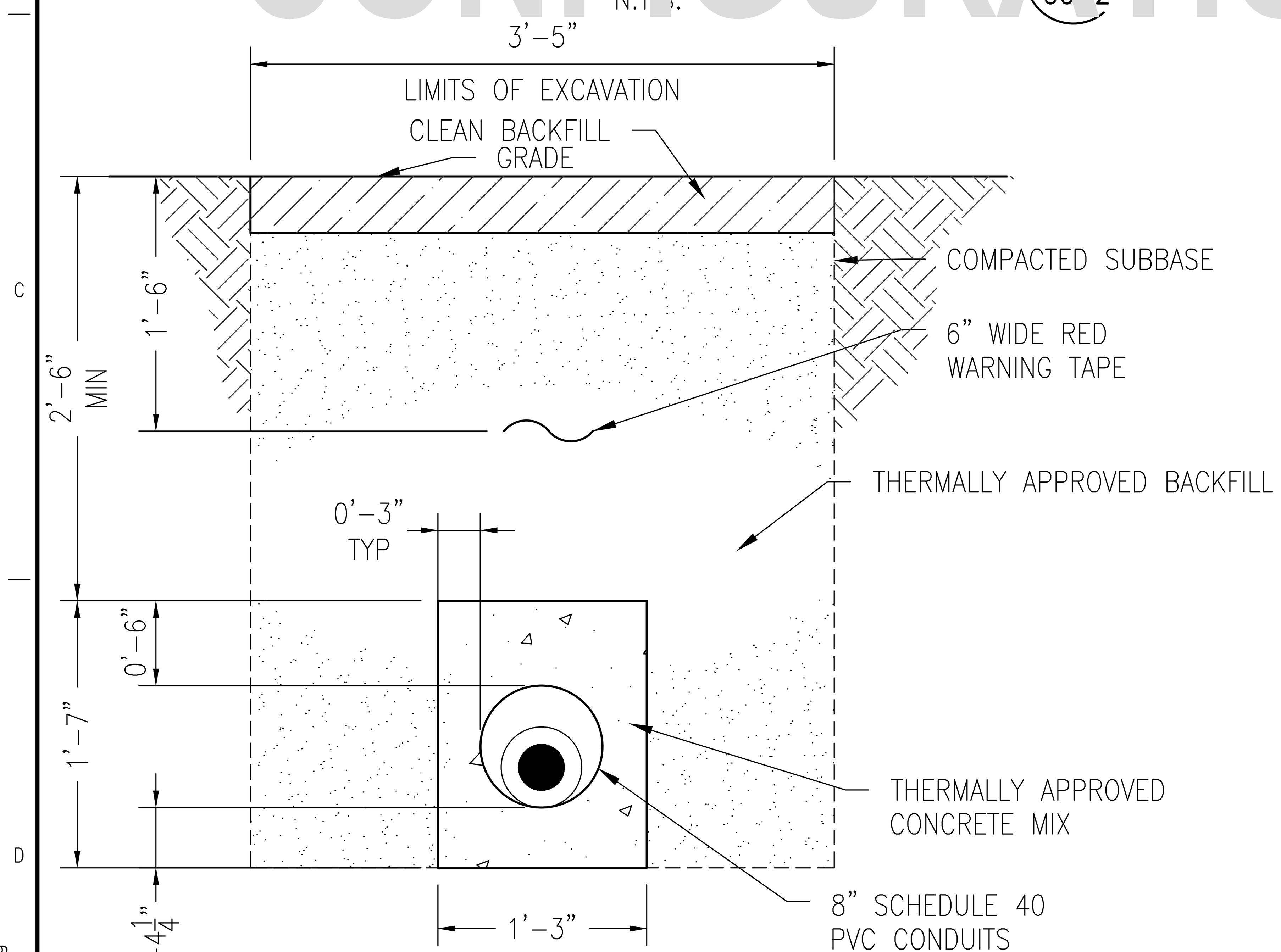
SECTION 1/U0-2

N.T.S.



TYPICAL 1x2 DUCT ELEVATION

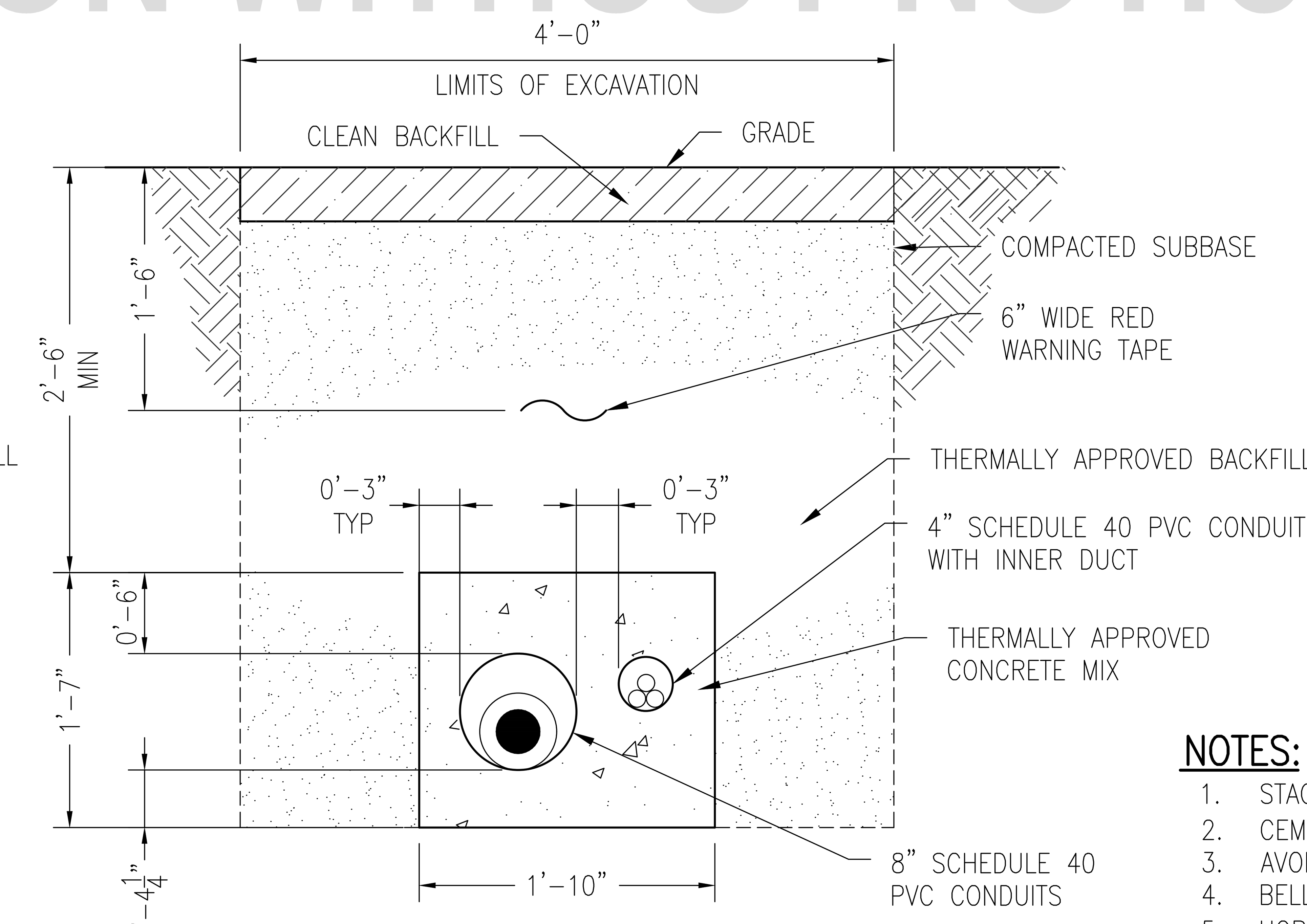
N.T.S.



TYPICAL 1X1 DUCT

SECTION 2/U0-2

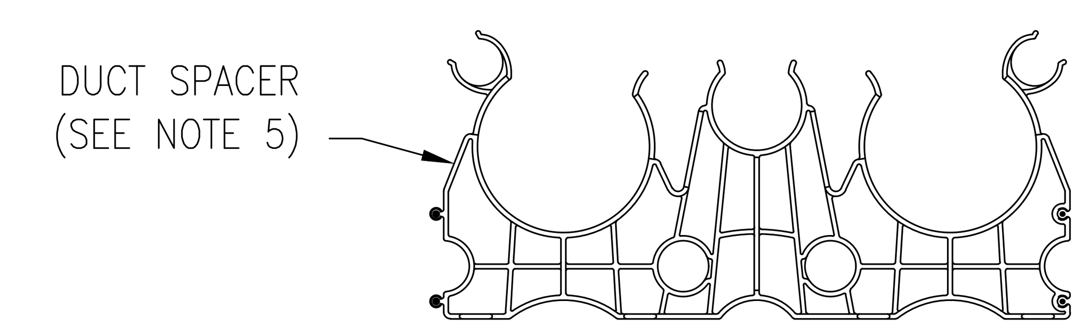
N.T.S.



TYPICAL 1X1 DUCT WITH FIBER OPTIC CABLE

SECTION 3/U0-2

N.T.S.



TYPICAL DUCT SPACER ARRANGEMENT

N.T.S.

NOTES:

1. STAGGER BELL ENDS.
2. CEMENT ALL JOINTS IN ACCORDANCE WITH CONDUIT MANUFACTURER'S SPECIFICATIONS.
3. AVOID STANDING ON CONDUIT.
4. BELL ENDS SHALL BE INSTALLED ALL IN THE SAME DIRECTION BETWEEN MANHOLES.
5. HORIZONTAL AND VERTICAL BEND RADIUS 400' UNLESS NOTED WITH A MINIMUM BEND RADIUS OF 50', EXCEPT RISER SWEEPS.

ATTENTION: FOR CLEANER TEXT AND LINE FEATURES WHEN USING ADOBE TO VIEW THESE PDFS, TURN OFF THE "SMOOTH LINE ART" AND "ENHANCE THIN LINES" OPTIONS UNDER EDIT–PREFERENCES–PAGE DISPLAY

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A	ISSUED FOR REVIEW	03/02/2022	BAJ	TSG	TSG	

REFERENCE DRAWINGS

DSGN	TSG	03/02/22
DRN	BAJ	03/02/22
CKD	TSG	03/02/22

SCALE: AS SHOWN

FOR 22x34 DWG ONLY

POWER ENGINEERS

MAYFLOWER WIND

AQUIDNECK ISLAND DUCT BANK

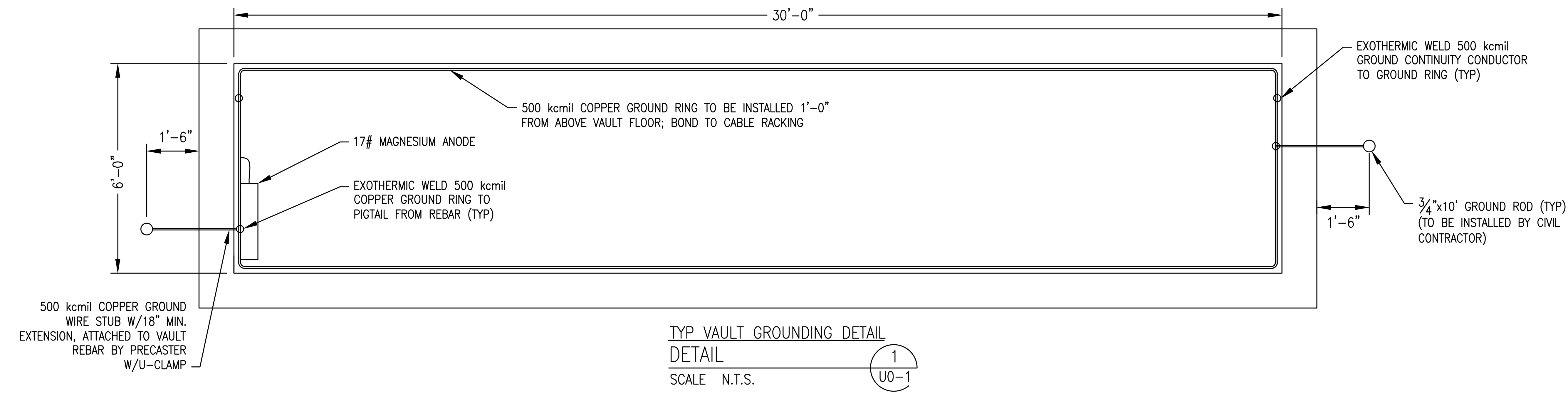
CONFIGURATION WITHOUT NOTICED VARIATION

JOB NUMBER: 172033

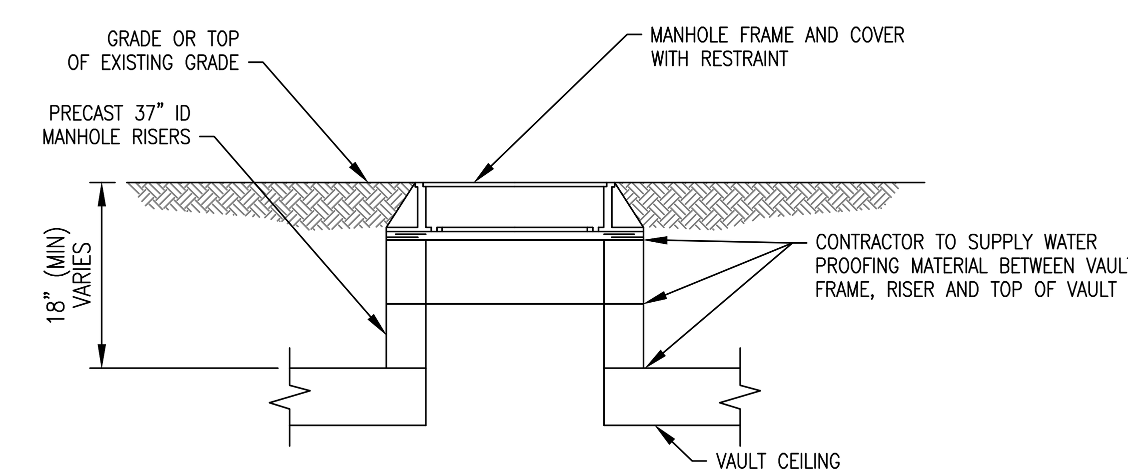
REV: C

DRAWING NUMBER: U0–2

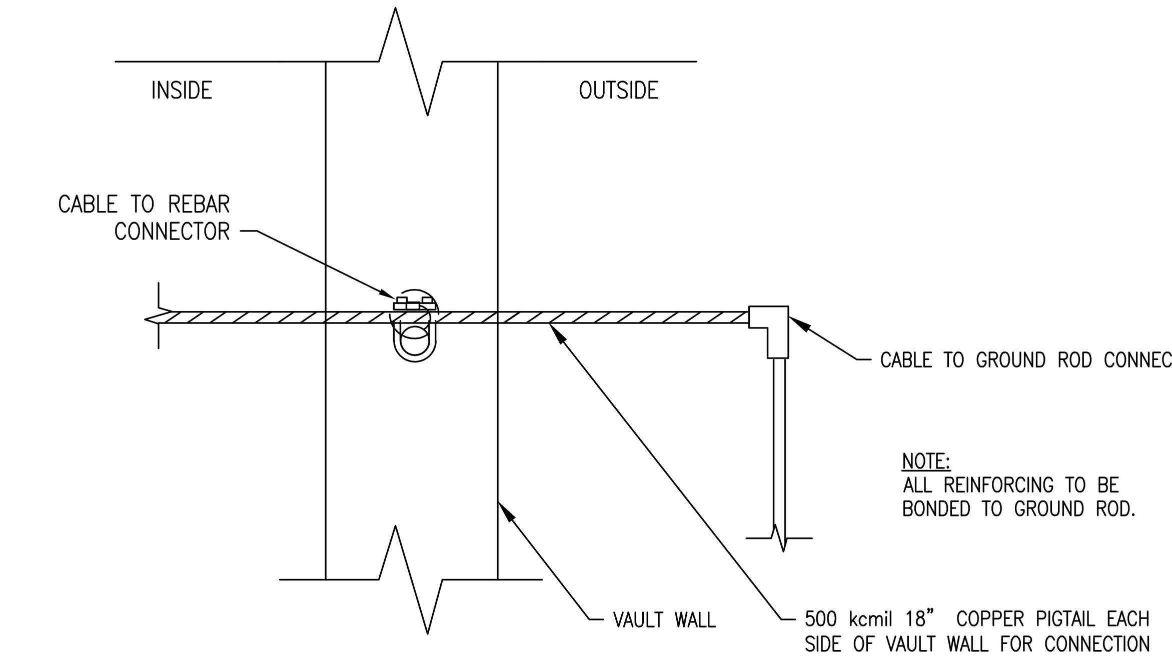
172033 – Mayflower Details.dwg



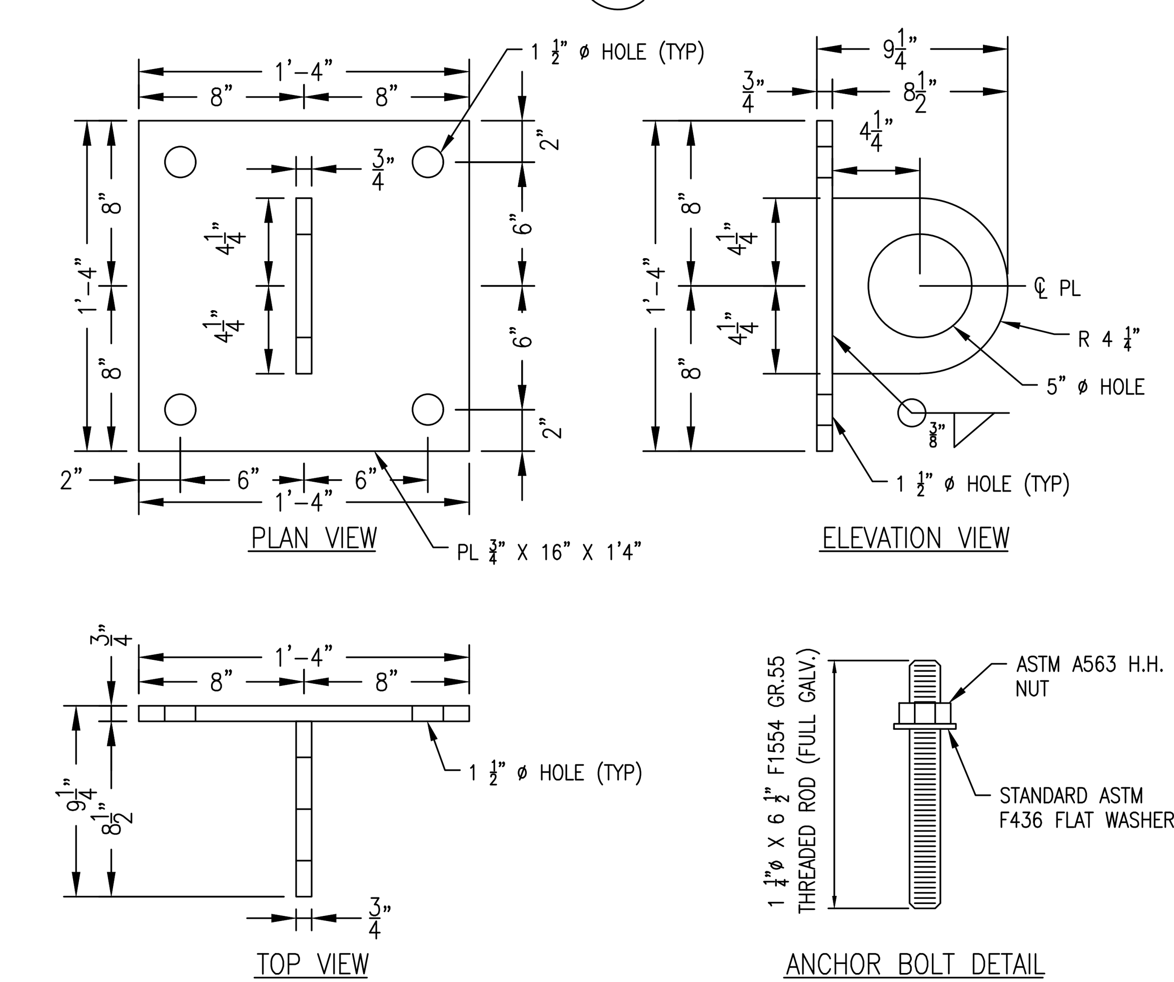
TYP VAULT GROUNDING DETAIL
DETAIL 1 / U0-1
SCALE N.T.S.



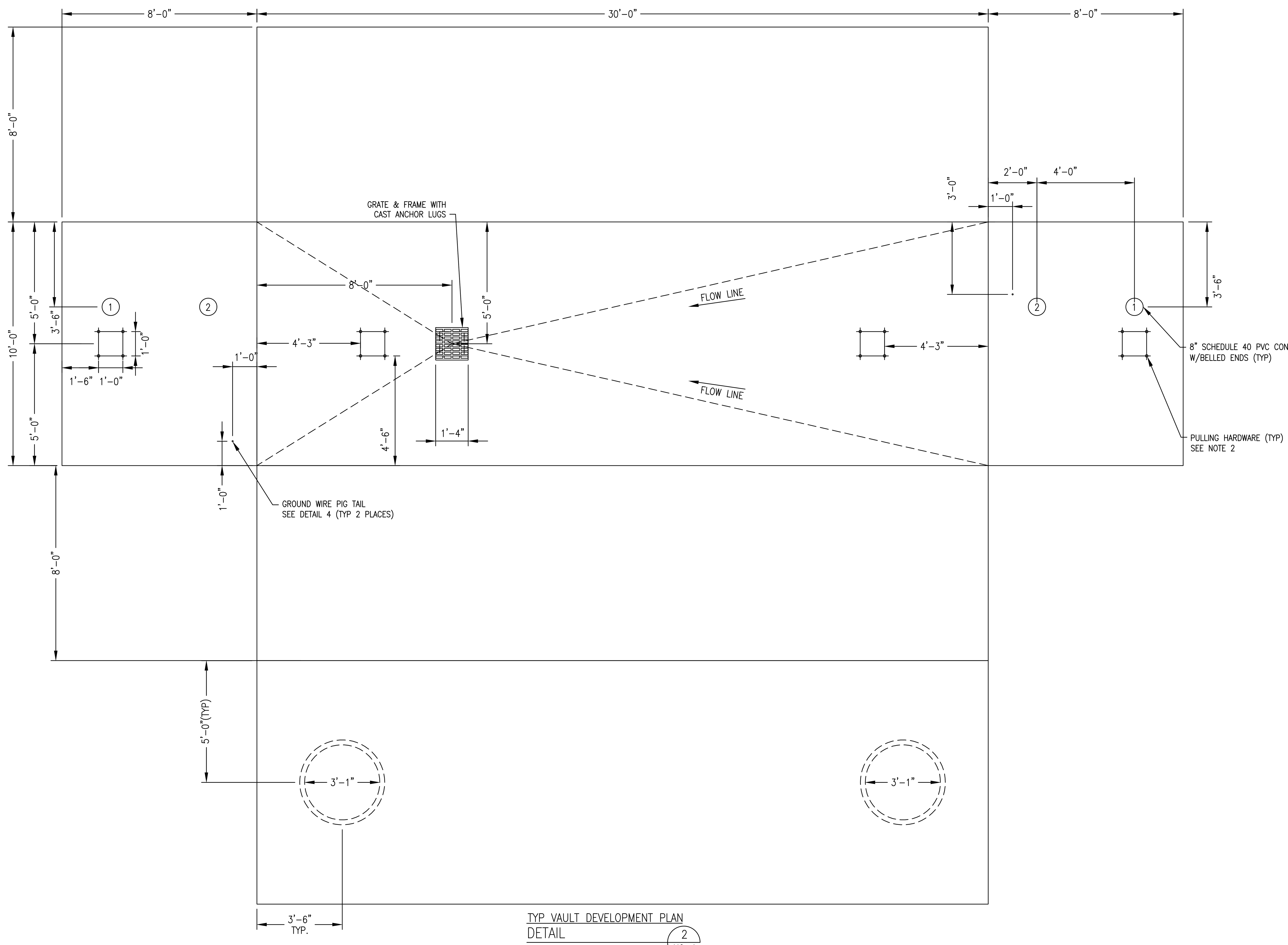
TYP RISER RING DETAIL
DETAIL 3 / U0-1
SCALE N.T.S.



TYP GROUND WIRE DETAIL
DETAIL 4 / U0-1
SCALE N.T.S.



TYP ANCHOR PLATE AND BOLT DETAIL
DETAIL 5 / U0-1
SCALE N.T.S.



TYP VAULT DEVELOPMENT PLAN
DETAIL 2 / U0-1
SCALE N.T.S.

NOTES:

1. ALL DIMENSIONS ARE INSIDE DIMENSIONS.

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B	ISSUED FOR REVIEW	05/06/22	RRT	TSG	TSG	
A	ISSUED FOR REVIEW	03/02/2022	BAJ	TSG	TSG	

REFERENCE DRAWINGS

DSGN	TSG	03/02/22
DRN	BAJ	03/02/22
CKD	TSG	03/02/22

SCALE:
FOR 22x34 DWG ONLY

POWER ENGINEERS

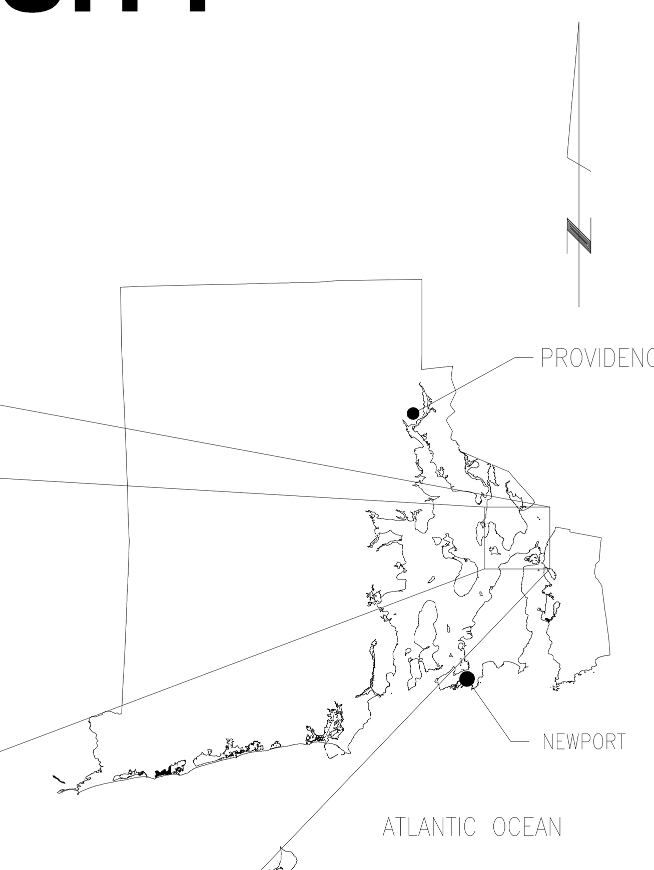
MAYFLOWER WIND
AQUIDNECK ISLAND DUCT BANK
30'X10' SPLICE VAULT DETAILS

JOB NUMBER: 172033
REV: C
DRAWING NUMBER: U0-3

172033 – Mayflower Details.dwg

MAYFLOWER WIND
30% HORIZONTAL DIRECTIONAL DRILL DESIGN
OFFSHORE EXPORT CABLE LANDFALL - ROGER WILLIAMS UNIVERSITY

VICINITY MAP
N.T.S.



AREA MAP RHODE ISLAND
N.T.S.

Know what's below. Call before you dig.

POWER ENGINEERS
PROJECT ENGINEER: TODD GOYETTE

POWER ENGINEERS
PROJECT NUMBER: 172033

ATTENTION: FOR CLEANER TEXT AND LINE FEATURES WHEN USING ADOBE TO VIEW THESE PDFS, TURN OFF THE "SMOOTH LINE ART" AND "ENHANCE THIN LINES" OPTIONS UNDER EDIT-PREFERENCES-PAGE DISPLAY

REV	REVISIONS	DATE	DRN	DSGN	CKD	APPD	REFERENCE DRAWINGS
E	INCORPORATED MAYFLOWER COMMENTS	05/11/2022	LAS	TSG	TSG		
D	INCORPORATED MAYFLOWER COMMENTS	04/29/2022	ASW	TSG	TSG		
C	INCORPORATED MAYFLOWER COMMENTS	04/01/2022	ASW	TSG	TSG		
B	ADDED SECOND HDD	02/01/2022	ASW	TSG	TSG		
A	ISSUED FOR REVIEW	12/10/2021	ASW	TSG	TSG		

DSGN	TSG	12/10/2021
DRN	ASW	12/10/2021
CKD	TSG	12/10/2021
SCALE:	AS SHOWN	

FOR 24x36 DWG ONLY

POWER ENGINEERS

MAYFLOWER WIND
AQUIDNECK ISLAND HDD
BAYPOINT RESIDENCE HALL COVER

JOB NUMBER: 172033
REV: E
DRAWING NUMBER: G0-1

172033 - Aquidneck Island Residence Hall HDD.dwg

DRAWING MANIFEST			
DRAWING NO.	TITLE/DESCRIPTION	REVISION	DATE
G0-1	COVER	E	05/11/22
G1-1	GENERAL NOTES & MANIFEST	E	05/11/22
P1-1	PLAN - STA. 00+00 TO 32+77	E	05/11/22
U1-1	HDD LAYOUTS	E	05/11/22

LEGEND

- HDD START/END
- SOIL BORE
- W — EXISTING WATER LINE
- G — EXISTING GAS LINE
- D — EXISTING STORM DRAINAGE LINE
- S — EXISTING SANITARY SEWER LINE
- E — EXISTING UNDERGROUND ELECTRIC LINE

GENERAL NOTES

1. THE UTILITIES AND NATURAL FEATURES SHOWN HEREON ARE BASED ON:
   - LEVEL D SURVEY PERFORMED BY DIPRETE ENGINEERING, 01/19/2022
   - GOOGLE EARTH 2020
   - OTHER FACILITIES MAY EXIST NOT DISCOVERED THROUGH THE RECORD CHECK. THE CONTRACTOR SHALL VERIFY THE EXACT LOCATION, BOTH HORIZONTAL AND VERTICAL, OF ALL UTILITIES THROUGH THE APPROPRIATE UTILITY COMPANIES. CALL BEFORE YOU DIG, 811 OR 1-888-344-7233.
2. STATE PLANE COORDINATE (HORIZONTAL DATUM): REFERENCES RHODE ISLAND PLAN COORDINATE SYSTEM - NAD83 1983, US FOOT.
3. STATE PLANE COORDINATE (VERTICAL DATUM): NAVD 1988. THE COORDINATE SYSTEM THAT THIS SURVEY WAS BASED UPON IS STATE PLANE NAD 88, US FOOT.
4. ALL VERTICAL RADII ARE 400', AND HORIZONTAL RADII ARE 50' UNLESS OTHERWISE NOTED.

ENVIRONMENTAL LEGEND:

- RI_FEMA FLOODZONE
- WETLANDS
- PSCL — PERENIAL STREAM CENTER LINE
- FWVC — FRESH WATER WETLANDS IN THE VICINITY OF THE COAST
- MOORING FEILDS

Know what's below. Call before you dig.

ATTENTION: FOR CLEANER TEXT AND LINE FEATURES WHEN USING ADOBE TO VIEW THESE PDFS, TURN OFF THE "SMOOTH LINE ART" AND "ENHANCE THIN LINES" OPTIONS UNDER EDIT-PREFERENCES-PAGE DISPLAY

REV	REVISIONS	DATE	DRN	DSGN	CKD	APPD	REFERENCE DRAWINGS
E	INCORPORATED MAYFLOWER COMMENTS	05/11/2022	LAS	TSG	TSG		
D	INCORPORATED MAYFLOWER COMMENTS	04/29/2022	ASW	TSG	TSG		
C	INCORPORATED MAYFLOWER COMMENTS	04/01/2022	ASW	TSG	TSG		
B	ADDED SECOND HDD	02/01/2022	ASW	TSG	TSG		
A	ISSUED FOR REVIEW	12/10/2021	ASW	TSG	TSG		

DSGN	TSG	12/10/2021
DRN	ASW	12/10/2021
CKD	TSG	12/10/2021
SCALE:	AS SHOWN	

FOR 24x36 DWG ONLY

POWER ENGINEERS

MAYFLOWER WIND

AQUIDNECK ISLAND HDD

BAYPOINT RESIDENCE HALL
COVER

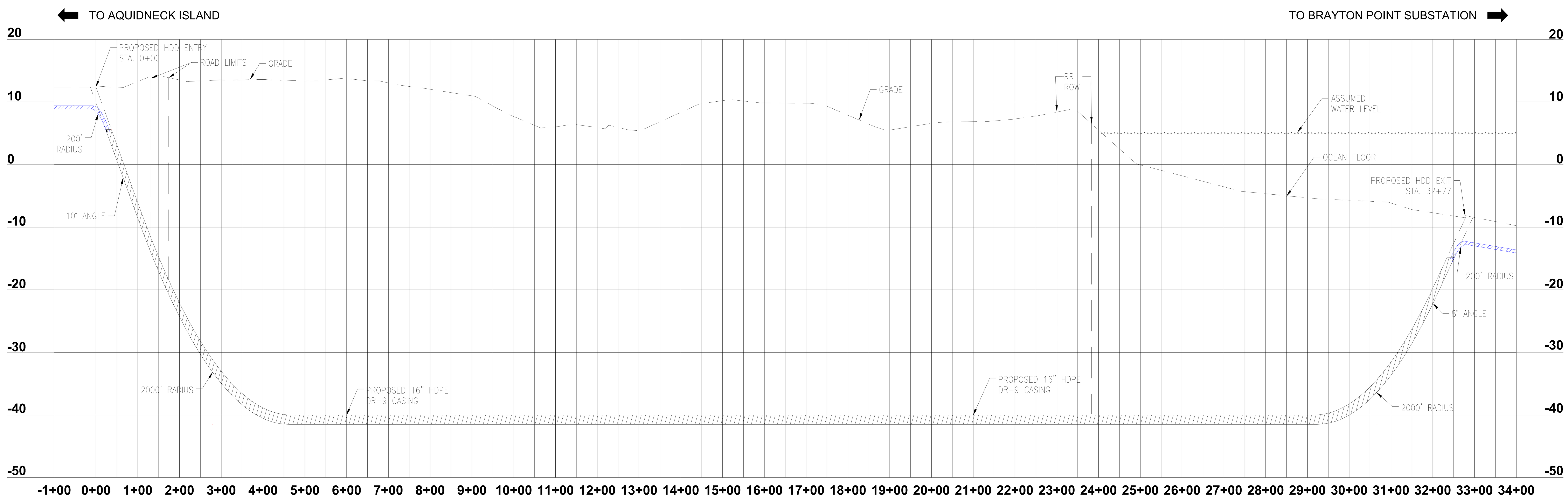
JOB NUMBER: 172033

REV: E

DRAWING NUMBER: G0-1

172033 – Aquidneck Island Residence Hall HDD.dwg

PLAN VIEW



PROFILE VIEW

NOTES:

1. THE UTILITIES AND NATURAL FEATURES SHOWN HEREON ARE BASED ON FIELD SURVEYS, AERIAL PHOTOGRAPHY AND RECORD DOCUMENTS. OTHER FACILITIES MAY EXIST NOT DISCOVERED THROUGH THE RECORD CHECK. THE CONTRACTOR SHALL VERIFY THE EXACT LOCATION, BOTH HORIZONTAL AND VERTICAL, OF ALL UTILITIES THROUGH THE APPROPRIATE UTILITY COMPANIES. CALL BEFORE YOU DIG, 811 OR 1-800-344-7233.
2. PLAN AND PROFILE ALIGNMENT IS CONCEPTUAL AND NOT BASED ON PROJECT SPECIFIC FIELD SURVEY OR GEOTECHNICAL INVESTIGATION.
3. THE UTILITIES AND NATURAL FEAUTRES SHOWN HEREON ARE BASED ON:
   - GOOGLE EARTH 2020
   - TOWN OF PORTSMOUTH WEB GIS MAPS AND ONLINE PROPERTY INFORMATION
4. PROPERTY LINES ARE APPROXIMATE FOR DISCUSSION PURPOSES.

811 Know what's below. Call before you dig.

0 150 300 450 FEET
HORIZONTAL SCALE 1"= 150'

0 10 20 30 FEET
VERTICAL SCALE 1"= 10'

ATTENTION: FOR CLEANER TEXT AND LINE FEATURES WHEN USING ADOBE TO VIEW THESE PDFS, TURN OFF THE "SMOOTH LINE ART" AND "ENHANCE THIN LINES" OPTIONS UNDER EDIT-PREFERENCES-PAGE DISPLAY

REV	REVISIONS	DATE	DRN	DSGN	CKD	APPD	REFERENCE DRAWINGS
E	INCORPORATED MAYFLOWER COMMENTS	05/11/2022	LAS	TSG	TSG		
D	INCORPORATED MAYFLOWER COMMENTS	04/29/2022	ASW	TSG	TSG		
C	INCORPORATED MAYFLOWER COMMENTS	04/01/2022	ASW	TSG	TSG		
B	ADDED SECOND HDD	02/01/2022	ASW	TSG	TSG		
A	ISSUED FOR REVIEW	12/10/2021	ASW	TSG	TSG		

DSGN	TSG	12/10/2021
DRN	ASW	12/10/2021
CKD	TSG	12/10/2021
SCALE:	AS SHOWN	

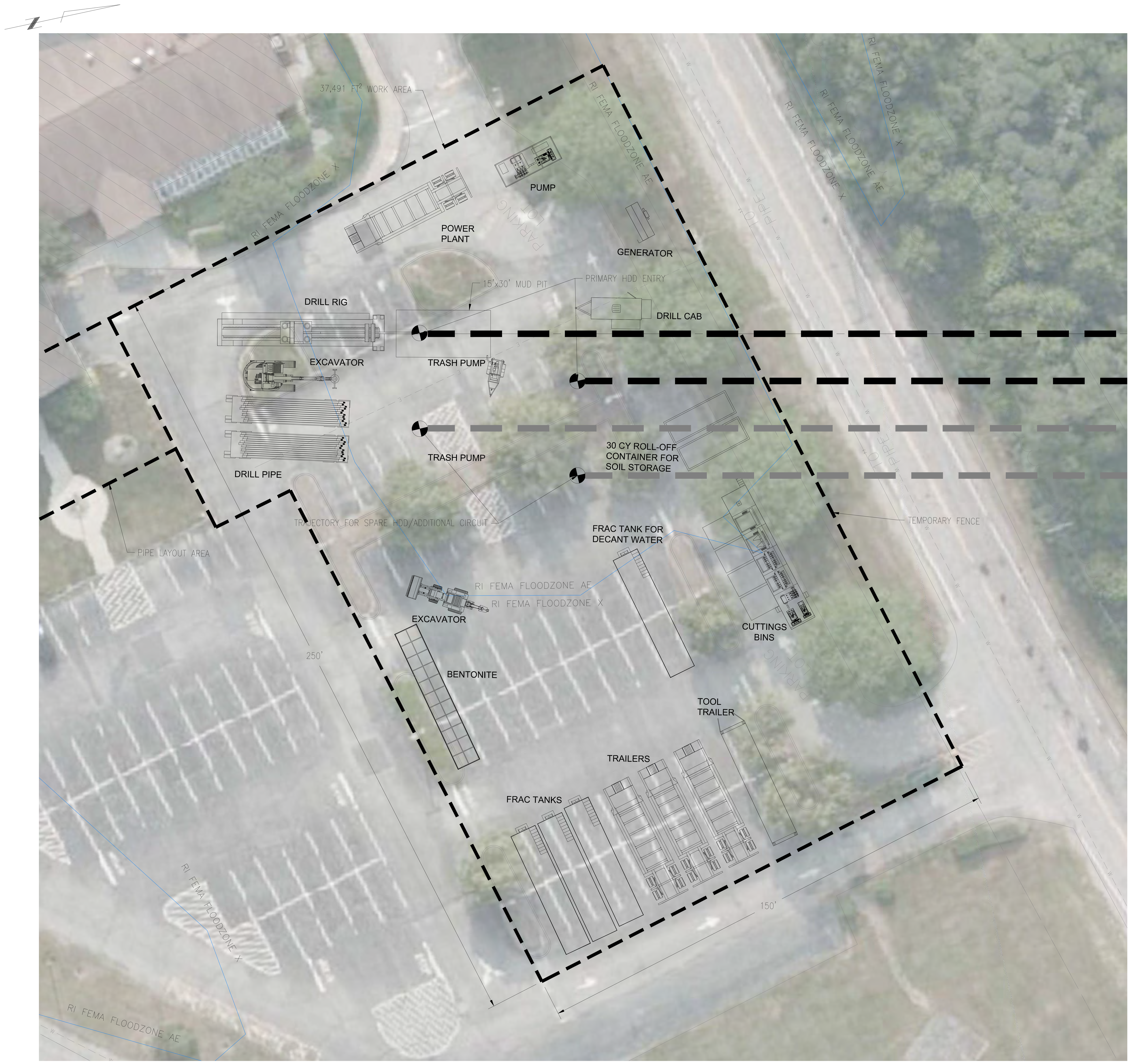
FOR 24x36 DWG ONLY

POWER ENGINEERS

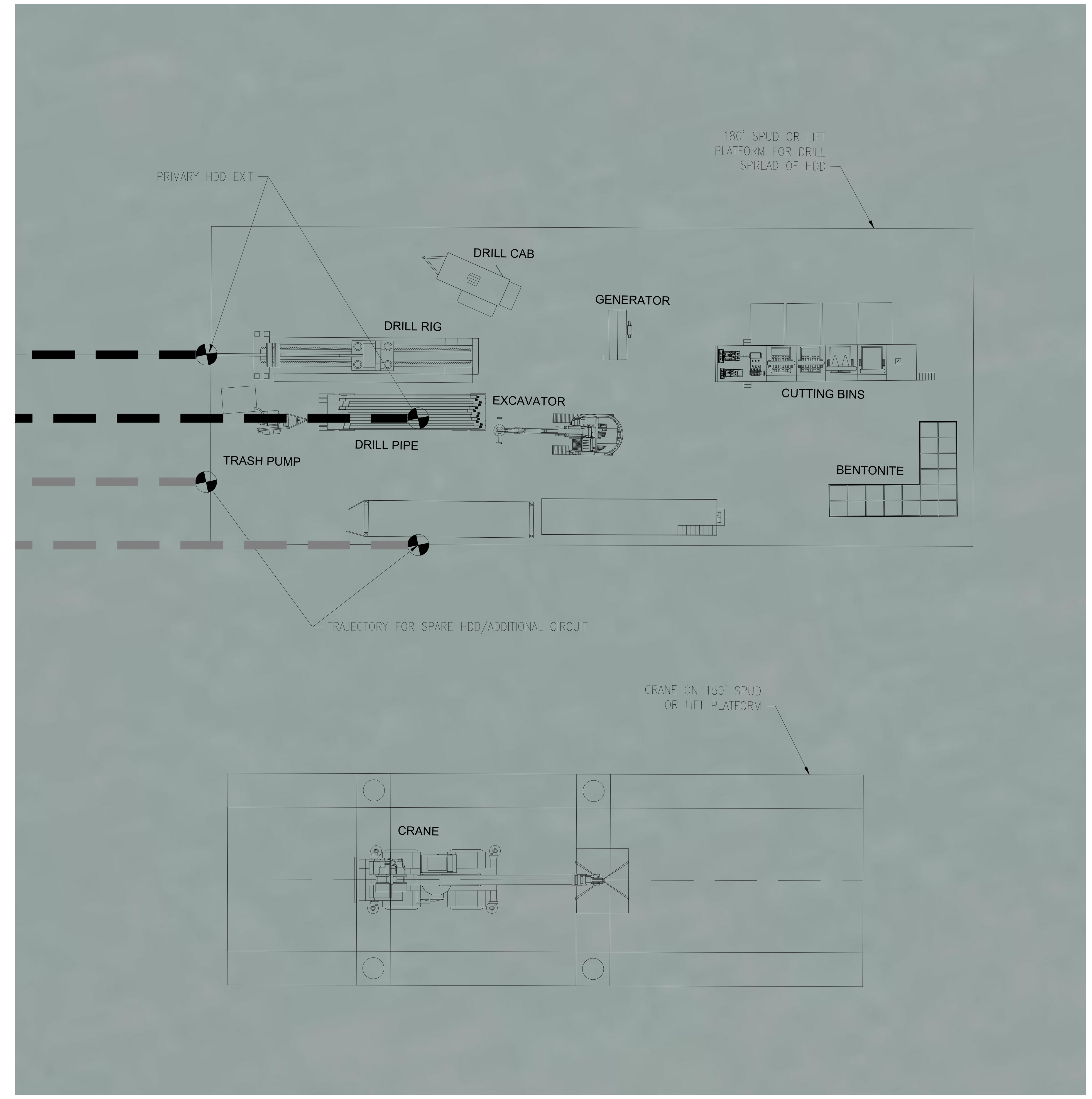
MAYFLOWER WIND
AQUIDNECK ISLAND HDD
BAYPOINT RESIDENCE HALL PLAN AND PROFILE

JOB NUMBER 172033
REV E
DRAWING NUMBER P1-1

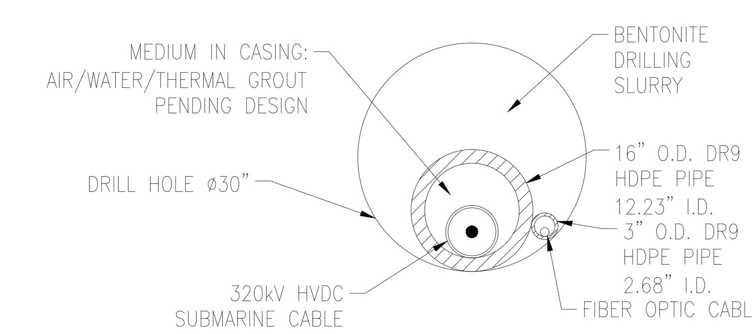
172033 - Aquidneck Island Residence Hall HDD.dwg



HDD ENTRY



HDD EXIT



PROPOSED BORE DETAIL

N.T.S.

Know what's below.
Call before you dig.

NOTES:

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3. THE UTILITIES AND NATURAL FEAUTRES SHOWN HEREON ARE BASED ON:
   - GOOGLE EARTH 2020
   - TOWN OF PORTSMOUTH WEB GIS MAPS AND ONLINE PROPERTY INFORMATION

4. PROPERTY LINES ARE APPROXIMATE FOR DISCUSSION PURPOSES.

0 20 40 60 FEET

HORIZONTAL SCALE 1"= 20'

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REV	REVISIONS	DATE	DRN	DSGN	CKD	APPD	REFERENCE DRAWINGS
E	INCORPORATED MAYFLOWER COMMENTS	05/11/2022	LAS	TSG	TSG		
D	INCORPORATED MAYFLOWER COMMENTS	04/29/2022	ASW	TSG	TSG		
C	INCORPORATED MAYFLOWER COMMENTS	04/01/2022	ASW	TSG	TSG		
B	ADDED SECOND HDD	02/01/2022	ASW	TSG	TSG		
A	ISSUED FOR REVIEW	12/10/2021	ASW	TSG	TSG		

DSGN	TSG	12/10/2021
DRN	ASW	12/10/2021
CKD	TSG	12/10/2021
SCALE:	AS SHOWN	

FOR 24x36 DWG ONLY

POWER ENGINEERS

MAYFLOWER WIND

AQUIDNECK ISLAND HDD

BAYPOINT RESIDENCE HALL
HDD LAYOUTS

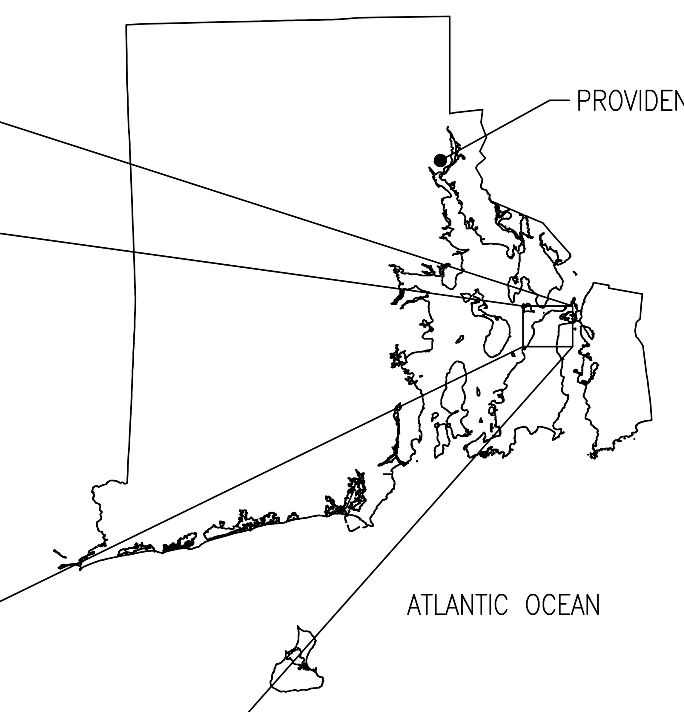
JOB NUMBER 172033 REV E

DRAWING NUMBER U1-1

172033 - Aquidneck Island Residence Hall HDD.dwg

MAYFLOWER WIND
30% UNDERGROUND EXPORT CABLE SYSTEM DESIGN
BOYDS LANE TO MONTAUP COUNTRY CLUB PARKING LOT

VICINITY MAP



AREA MAP RHODE ISLAND
N.T.S.

0 500 1000 1500FEET
HORIZONTAL SCALE 1"= 500'

ATTENTION: FOR CLEANER TEXT AND LINE FEATURES WHEN USING ADOBE TO VIEW THESE PDFS, TURN OFF THE "SMOOTH LINE ART" AND "ENHANCE THIN LINES" OPTIONS UNDER EDIT–PREFERENCES–PAGE DISPLAY

Know what's **below.**
Call before you dig.

POWER ENGINEERS
PROJECT ENGINEER: TODD GOYETTE

POWER ENGINEERS
PROJECT NUMBER: 172033

REV	REVISIONS	DATE	DRN	DSGN	CKD	APPD
C	REVISED PER CLIENT COMMENTS	05/11/22	RRT	TSG	TSG	
B	ISSUED FOR REVIEW	05/03/22	RRT	TSG	TSG	
A	ISSUED FOR REVIEW	03/02/2022	BAJ	TSG	TSG	

REFERENCE DRAWINGS

DSGN	TSG	03/02/22
DRN	BAJ	03/02/22
CKD	TSG	03/02/22
SCALE:	AS SHOWN	

FOR 22x34 DWG ONLY

POWER ENGINEERS

MAYFLOWER WIND
AQUIDNECK ISLAND DUCT BANK
COVER SHEET

JOB NUMBER: 172033
REV: C
DRAWING NUMBER: G0–1

172033 – Mayflower Cover And Manifest Option 2.dwg

LEGEND

- HDD START/END
- SOIL BORE
- W — EXISTING WATER LINE
- G — EXISTING GAS LINE
- D — EXISTING STORM DRAINAGE LINE
- S — EXISTING SANITARY SEWER LINE
- E — EXISTING UNDERGROUND ELECTRIC LINE

GENERAL NOTES

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   - GOOGLE EARTH 2020
   - OTHER FACILITIES MAY EXIST NOT DISCOVERED THROUGH THE RECORD CHECK. THE CONTRACTOR SHALL VERIFY THE EXACT LOCATION, BOTH HORIZONTAL AND VERTICAL, OF ALL UTILITIES THROUGH THE APPROPRIATE UTILITY COMPANIES. CALL BEFORE YOU DIG, 811 OR 1-888-344-7233.
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3. STATE PLANE COORDINATE (VERTICAL DATUM): NAVD 1988. THE COORDINATE SYSTEM THAT THIS SURVEY WAS BASED UPON IS STATE PLANE NAD 88, US FOOT.
4. ALL VERTICAL RADII ARE 400', AND HORIZONTAL RADII ARE 50' UNLESS OTHERWISE NOTED.
5. WETLAND DELINEATIONS SHOWN ARE BASED ON FIELD SURVEYS CONDUCTED IN DECEMBER 2021 AND JANUARY 2022

ENVIRONMENTAL LEGEND:

- RI_FEMA FLOODZONE
- WETLAND
- PSCL PERENIAL STREAM CENTER LINE
- FWVC FRESH WATER WETLANDS IN THE VICINITY OF THE COAST
- + + MOORING FIELDS

DRAWING MANIFEST

DRAWING NO.	TITLE/DESCRIPTION	REVISION	DATE
G0-1	COVER	C	05/11/22
G1-1	GENERAL NOTES & MANIFEST	C	05/11/22
P2-1	PLAN – STA. 00+00 TO 8+00	C	05/11/22
P2-2	PLAN – STA. 8+00 TO 18+00	C	05/11/22
P2-3	PLAN – STA. 18+00 TO 28+00	C	05/11/22
P2-4	PLAN – STA. 28+00 TO 38+00	C	05/11/22
P2-5	PLAN – STA. 38+00 TO 48+00	C	05/11/22
P2-6	PLAN – STA. 48+00 TO 58+00	C	05/11/22
P2-7	PLAN – STA. 58+00 TO 68+00	C	05/11/22
P2-8	PLAN – STA. 68+00 TO 78+00	C	05/11/22
P2-9	PLAN – STA. 78+00 TO 88+00	C	05/11/22
P2-10	PLAN – STA. 88+00 TO 88+53	C	05/11/22
U0-1	CONFIGURATION WITH NOTICED VARIATION	C	05/11/22
U0-2	CONFIGURATION WITHOUT NOTICED VARIATION	C	05/11/22
U0-3	30'X10' SPLICE VAULT DETAILS	C	05/11/22

811
Know what's below.
Call before you dig.

ATTENTION: FOR CLEANER TEXT AND LINE FEATURES WHEN USING ADOBE TO VIEW THESE PDFS, TURN OFF THE "SMOOTH LINE ART" AND "ENHANCE THIN LINES" OPTIONS UNDER EDIT-PREFERENCES-PAGE DISPLAY

172033 – Mayflower Cover And Manifest Option 2.dwg

REV	REVISIONS	DATE	DRN	DSGN	CKD	APPD
C	REVISED PER CLIENT COMMENTS	05/11/22	RRT	TSG	TSG	
B	ISSUED FOR REVIEW	05/03/22	RRT	TSG	TSG	
A	ISSUED FOR REVIEW	03/02/2022	BAJ	TSG	TSG	

REFERENCE DRAWINGS

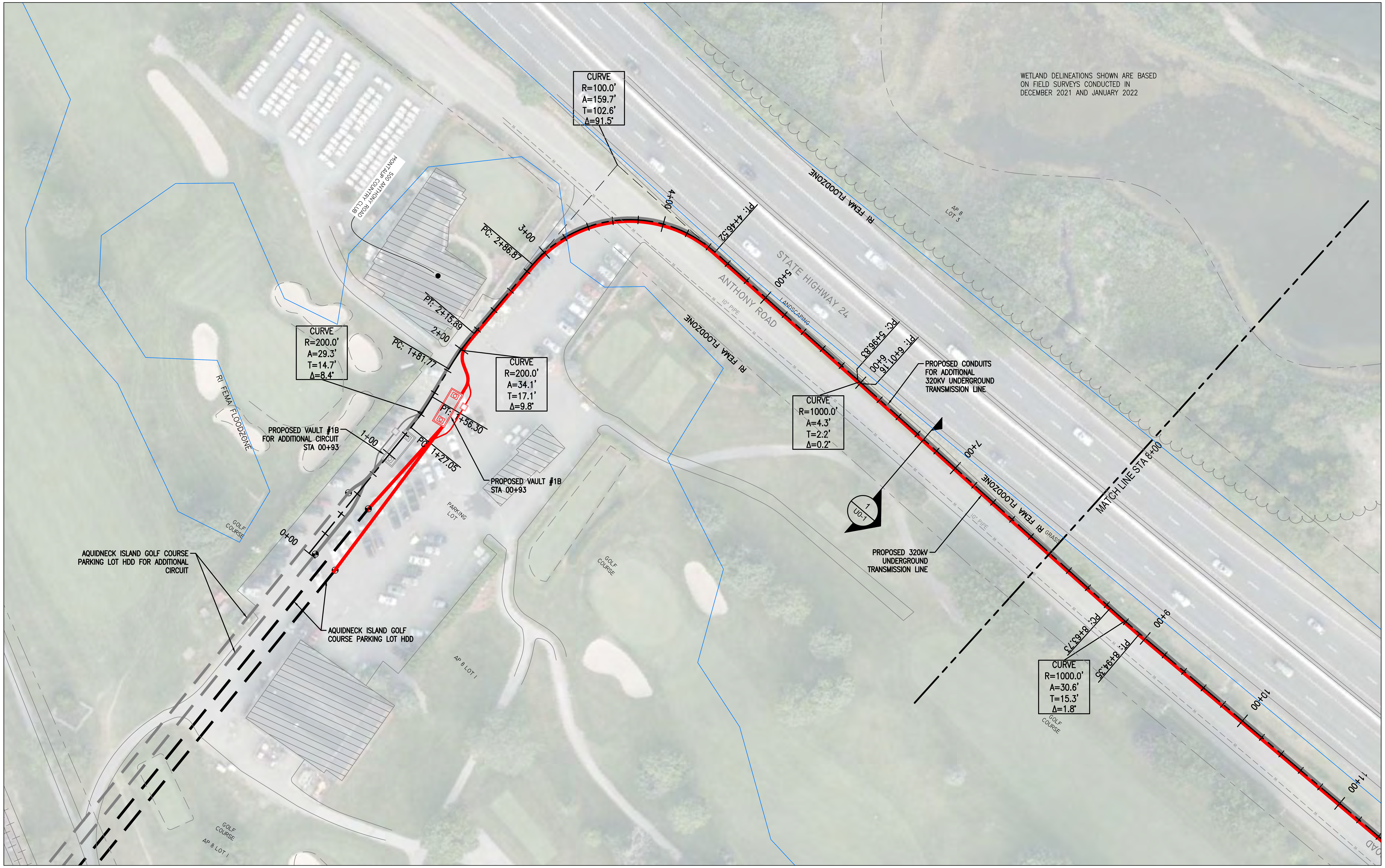
DSGN	TSG	03/02/22
DRN	BAJ	03/02/22
CKD	TSG	03/02/22
SCALE:	AS SHOWN	

FOR 22x34 DWG ONLY

POWER ENGINEERS

MAYFLOWER WIND
AQUIDNECK ISLAND DUCT BANK
GENERAL NOTES & MANIFEST

JOB NUMBER: 172033
REV: C
DRAWING NUMBER: G1-1



⬅ TO MONTAUP COUNTRY CLUB PARKING LOT HDD

PLAN VIEW

TO BOYDS LANE HDD ➡

NOTES

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0 20 40 80 120 FEET

HORIZONTAL SCALE: 1"= 40'

811 Know what's below. Call before you dig.

ATTENTION: FOR CLEANER TEXT AND LINE FEATURES WHEN USING ADOBE TO VIEW THESE PDFS, TURN OFF THE "SMOOTH LINE ART" AND "ENHANCE THIN LINES" OPTIONS UNDER EDIT-PREFERENCES-PAGE DISPLAY

REV	REVISIONS	DATE	DRN	DSGN	CKD	APPD
C	REVISED PER CLIENT COMMENTS	05/11/22	RRT	TSG	TSG	
B	ISSUED FOR REVIEW	05/03/22	RRT	TSG	TSG	
A	ISSUED FOR REVIEW	03/02/2022	BAJ	TSG	TSG	

REFERENCE DRAWINGS

DSGN	TSG	03/02/22
DRN	BAJ	03/02/22
CKD	TSG	03/02/22

SCALE: 1" = 40'

FOR 22x34 DWG ONLY

POWER ENGINEERS

MAYFLOWER WIND

AQUIDNECK ISLAND DUCT BANK

PLAN
STA 00+00 TO 08+00

JOB NUMBER 172033

REV C

DRAWING NUMBER P2-1

172033 - PLAN & PROFILE - OPTION 2.dwg

TO MONTAUP COUNTRY CLUB PARKING LOT HDD

PLAN VIEW

TO BOYDS LANE HDD

NOTES

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0 20 40 80 120 FEET

HORIZONTAL SCALE: 1"= 40'

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REV	REVISIONS	DATE	DRN	DSGN	CKD	APPD
C	REVISED PER CLIENT COMMENTS	05/11/22	RRT	TSG	TSG	
B	ISSUED FOR REVIEW	05/03/22	RRT	TSG	TSG	
A	ISSUED FOR REVIEW	03/02/2022	BAJ	TSG	TSG	

REFERENCE DRAWINGS

DSGN	TSG	03/02/22
DRN	BAJ	03/02/22
CKD	TSG	03/02/22

SCALE: 1" = 40'

FOR 22x34 DWG ONLY

POWER ENGINEERS

MAYFLOWER WIND

AQUIDNECK ISLAND DUCT BANK

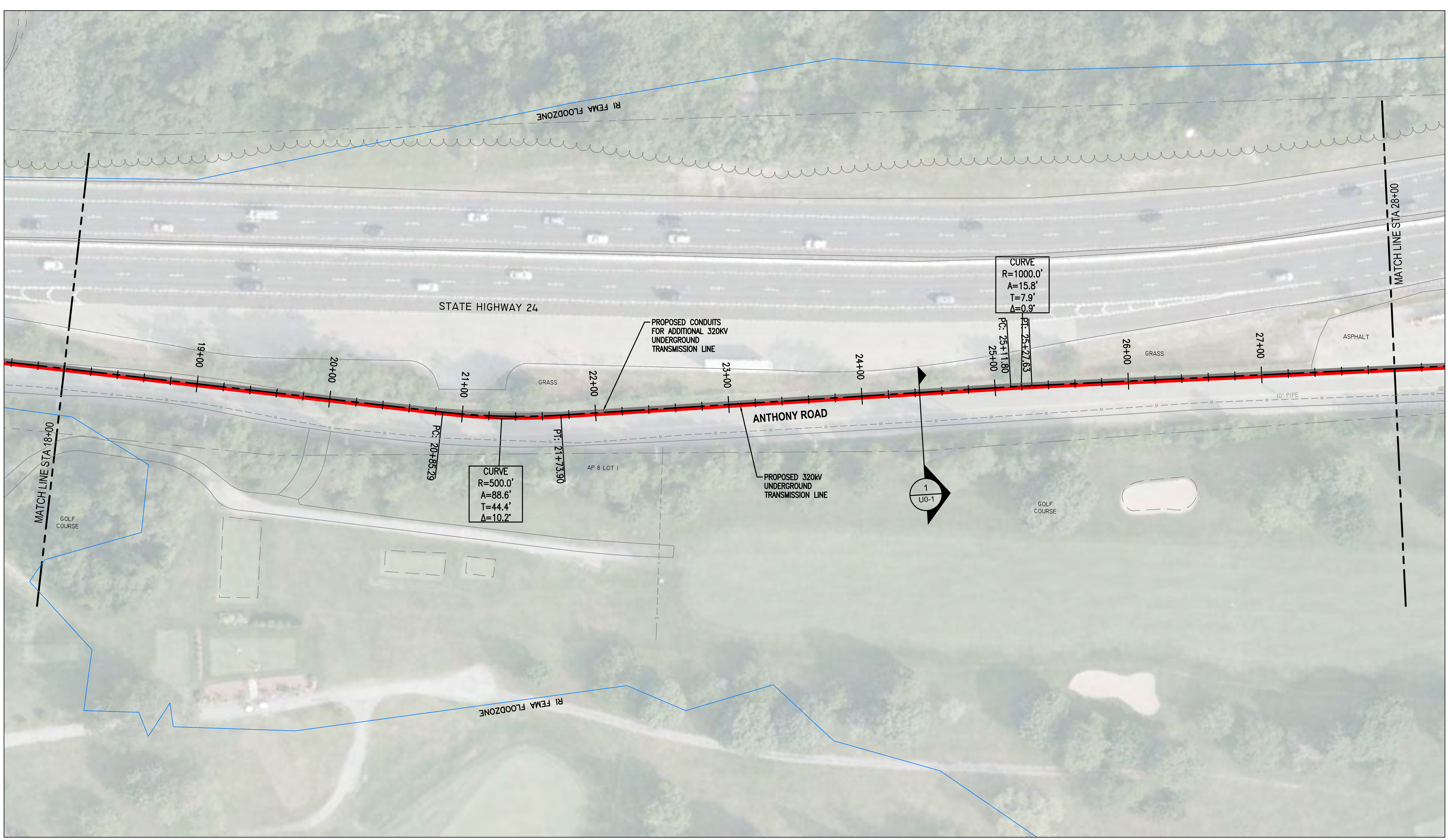
PLAN
STA 08+00 TO 18+00

JOB NUMBER 172033

REV C

DRAWING NUMBER P2-2

172033 - PLAN & PROFILE - OPTION 2.dwg



← TO MONTAUP COUNTRY CLUB PARKING LOT HDD

PLAN VIEW

TO BOYDS LANE HDD →

811 Know what's below. Call before you dig.

NOTES

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0 20 40 80 120 FEET

HORIZONTAL SCALE: 1"= 40'

ATTENTION: FOR CLEANER TEXT AND LINE FEATURES WHEN USING ADOBE TO VIEW THESE PDFS, TURN OFF THE "SMOOTH LINE ART" AND "ENHANCE THIN LINES" OPTIONS UNDER EDIT-PREFERENCES-PAGE DISPLAY

REV	REVISIONS	DATE	DRN	DSGN	CKD	APPD
C	REVISED PER CLIENT COMMENTS	05/11/22	RRT	TSG	TSG	
B	ISSUED FOR REVIEW	05/03/22	RRT	TSG	TSG	
A	ISSUED FOR REVIEW	03/02/2022	BAJ	TSG	TSG	

REFERENCE DRAWINGS

DSGN	TSG	03/02/22
DRN	BAJ	03/02/22
CKD	TSG	03/02/22

SCALE: 1" = 40'

FOR 22x34 DWG ONLY

POWER ENGINEERS

MAYFLOWER WIND

AQUIDNECK ISLAND DUCT BANK

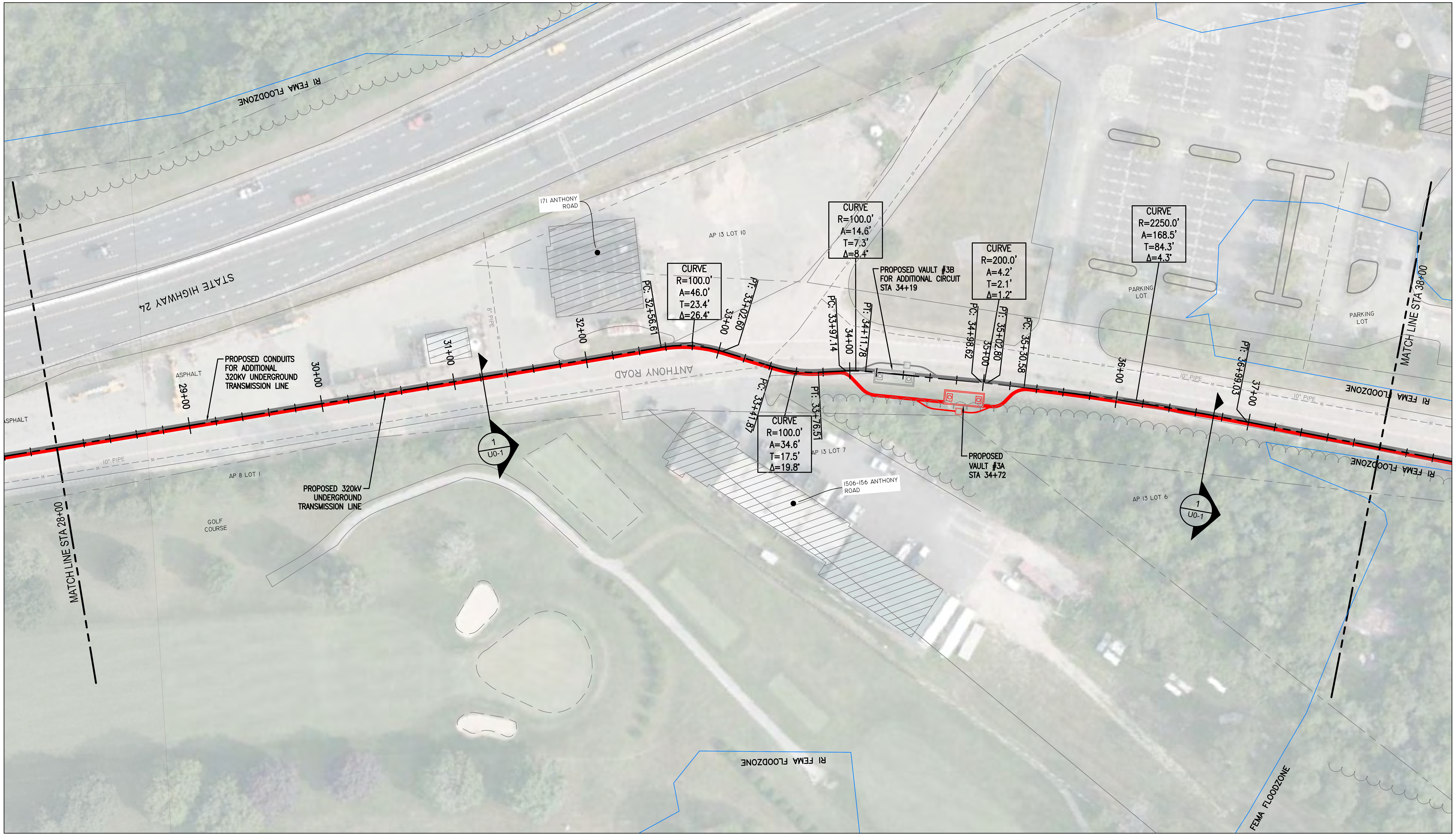
PLAN
STA 18+00 TO 28+00

JOB NUMBER 172033

REV C

DRAWING NUMBER P2-3

172033 - PLAN & PROFILE - OPTION 2.dwg



TO MONTAUP COUNTRY CLUB PARKING LOT HDD

PLAN VIEW

TO BOYDS LANE HDD

NOTES

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0 20 40 80 120 FEET

HORIZONTAL SCALE: 1"= 40'

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REV	REVISIONS	DATE	DRN	DSGN	CKD	APPD
C	REVISED PER CLIENT COMMENTS	05/11/22	RRT	TSG	TSG	
B	ISSUED FOR REVIEW	05/03/22	RRT	TSG	TSG	
A	ISSUED FOR REVIEW	03/02/2022	BAJ	TSG	TSG	

REFERENCE DRAWINGS

DSGN	TSG	03/02/22
DRN	BAJ	03/02/22
CKD	TSG	03/02/22

SCALE: 1" = 40'

FOR 22x34 DWG ONLY

POWER ENGINEERS

MAYFLOWER WIND

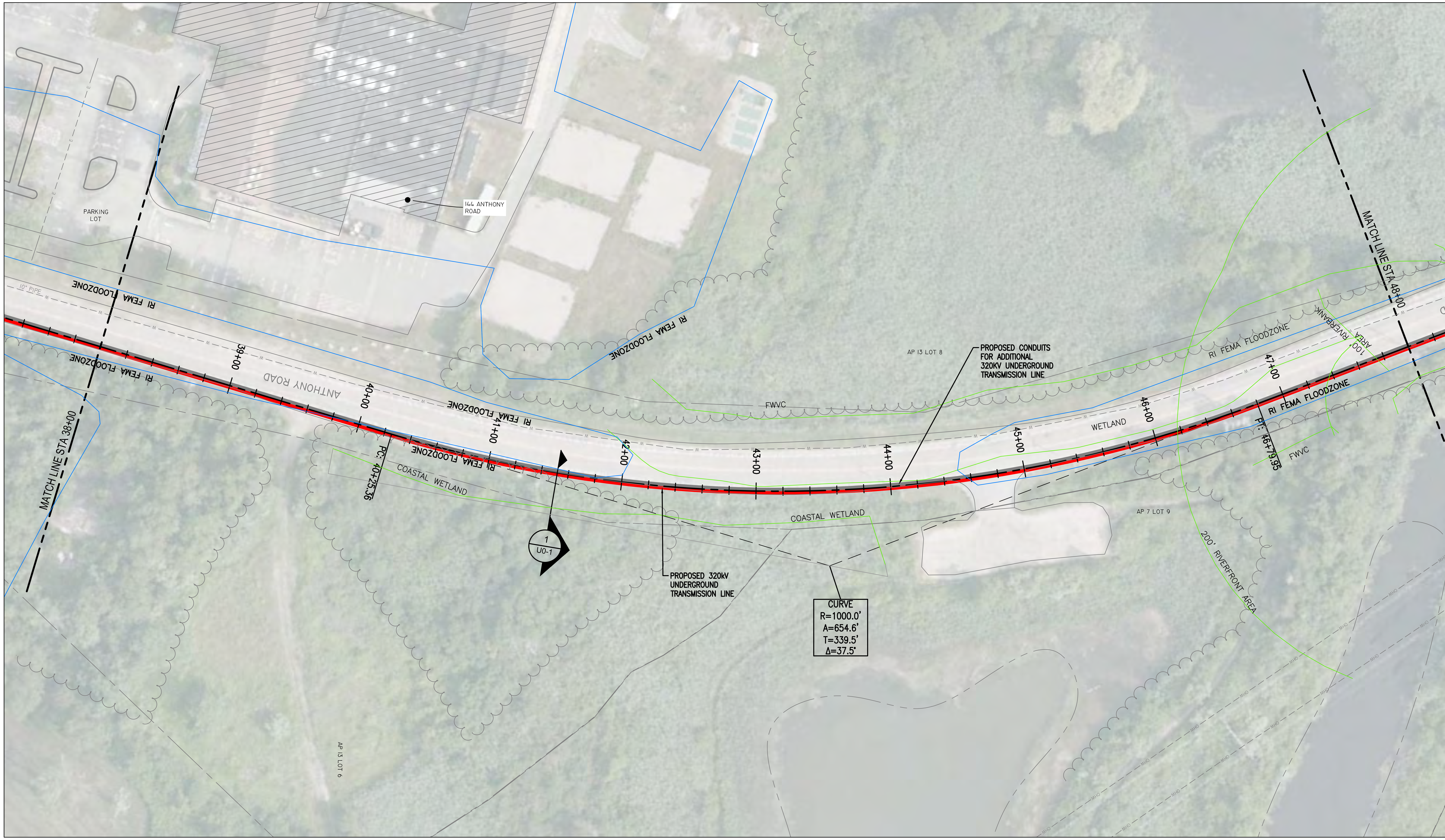
AQUIDNECK ISLAND DUCT BANK

PLAN
STA 28+00 TO 38+00

JOB NUMBER 172033

REV C

DRAWING NUMBER P2-4



TO MONTAUP COUNTRY CLUB PARKING LOT HDD

PLAN VIEW

TO BOYDS LANE HDD

811 Know what's below. Call before you dig.

NOTES

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0 20 40 80 120 FEET

HORIZONTAL SCALE: 1"= 40'

ATTENTION: FOR CLEANER TEXT AND LINE FEATURES WHEN USING ADOBE TO VIEW THESE PDFS, TURN OFF THE "SMOOTH LINE ART" AND "ENHANCE THIN LINES" OPTIONS UNDER EDIT-PREFERENCES-PAGE DISPLAY

REV	REVISIONS	DATE	DRN	DSGN	CKD	APPD
C	REVISED PER CLIENT COMMENTS	05/11/22	RRT	TSG	TSG	
B	ISSUED FOR REVIEW	05/03/22	RRT	TSG	TSG	
A	ISSUED FOR REVIEW	03/02/2022	BAJ	TSG	TSG	

REFERENCE DRAWINGS

DSGN	TSG	03/02/22
DRN	BAJ	03/02/22
CKD	TSG	03/02/22

SCALE: 1" = 40'

FOR 22x34 DWG ONLY

POWER ENGINEERS

MAYFLOWER WIND

AQUIDNECK ISLAND DUCT BANK

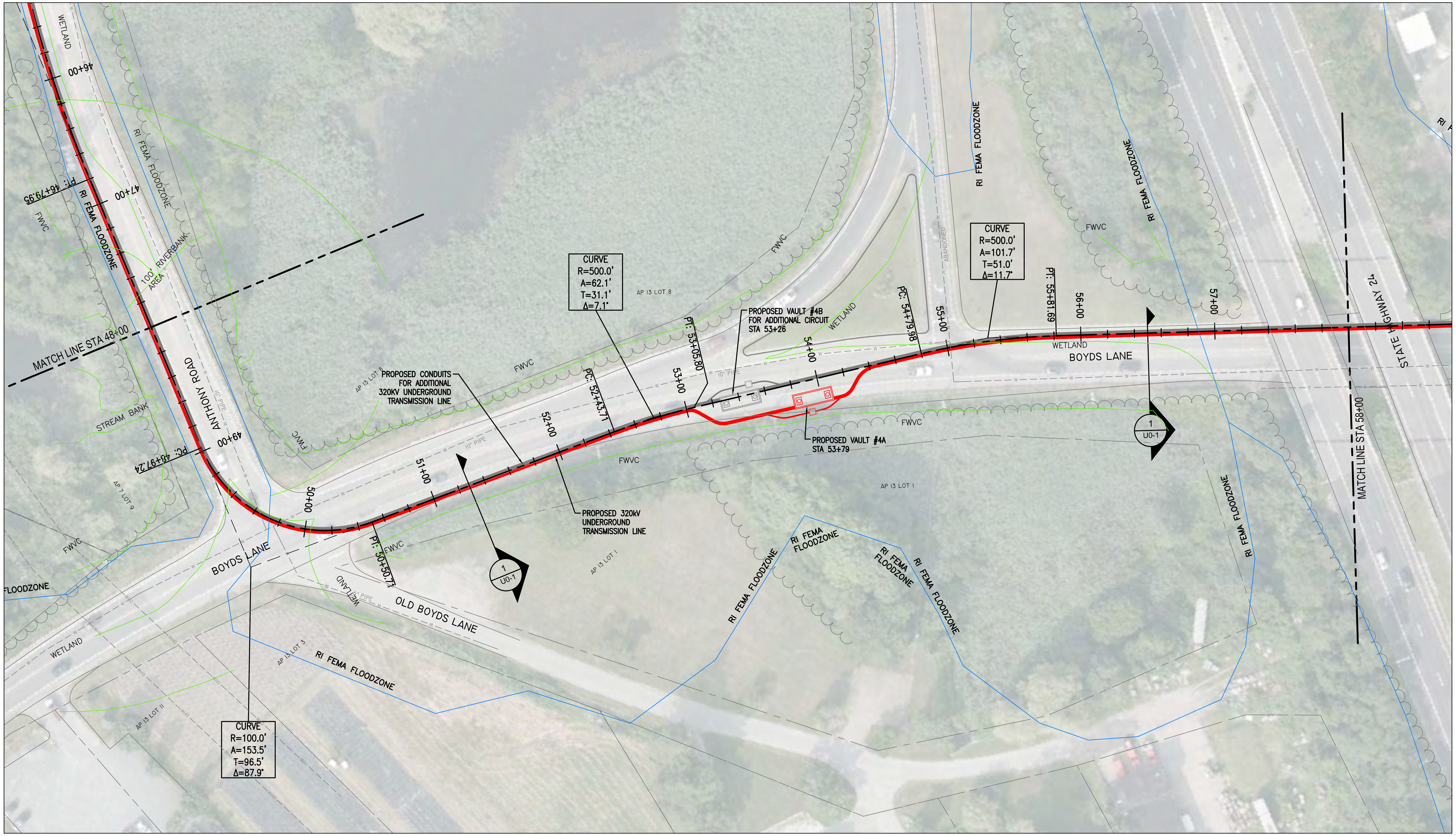
PLAN
STA 38+00 TO 48+00

JOB NUMBER 172033

REV C

DRAWING NUMBER P2-5

172033 - PLAN & PROFILE - OPTION 2.dwg



TO MONTAUP COUNTRY CLUB PARKING LOT HDD

PLAN VIEW

TO BOYDS LANE HDD

811 Know what's below. Call before you dig.

NOTES

1. THE UTILITIES AND NATURAL FEATURES SHOWN HEREON ARE BASED ON FIELD SURVEYS, AERIAL PHOTOGRAPHY AND RECORD DOCUMENTS. OTHER FACILITIES MAY EXIST NOT DISCOVERED THROUGH THE RECORD CHECK. THE CONTRACTOR SHALL VERIFY THE EXACT LOCATION, BOTH HORIZONTAL AND VERTICAL, OF ALL UTILITIES THROUGH THE APPROPRIATE UTILITY COMPANIES. 811 OR 1-888-344-7233.

0 20 40 80 120 FEET

HORIZONTAL SCALE: 1"= 40'

ATTENTION: FOR CLEANER TEXT AND LINE FEATURES WHEN USING ADOBE TO VIEW THESE PDFS, TURN OFF THE "SMOOTH LINE ART" AND "ENHANCE THIN LINES" OPTIONS UNDER EDIT-PREFERENCES-PAGE DISPLAY

REV	REVISIONS	DATE	DRN	DSGN	CKD	APPD
C	REVISED PER CLIENT COMMENTS	05/11/22	RRT	TSG	TSG	
B	ISSUED FOR REVIEW	05/03/22	RRT	TSG	TSG	
A	ISSUED FOR REVIEW	03/02/2022	BAJ	TSG	TSG	

REFERENCE DRAWINGS

DSGN	TSG	03/02/22
DRN	BAJ	03/02/22
CKD	TSG	03/02/22

SCALE: 1" = 40'

FOR 22x34 DWG ONLY

POWER ENGINEERS

MAYFLOWER WIND

AQUIDNECK ISLAND DUCT BANK

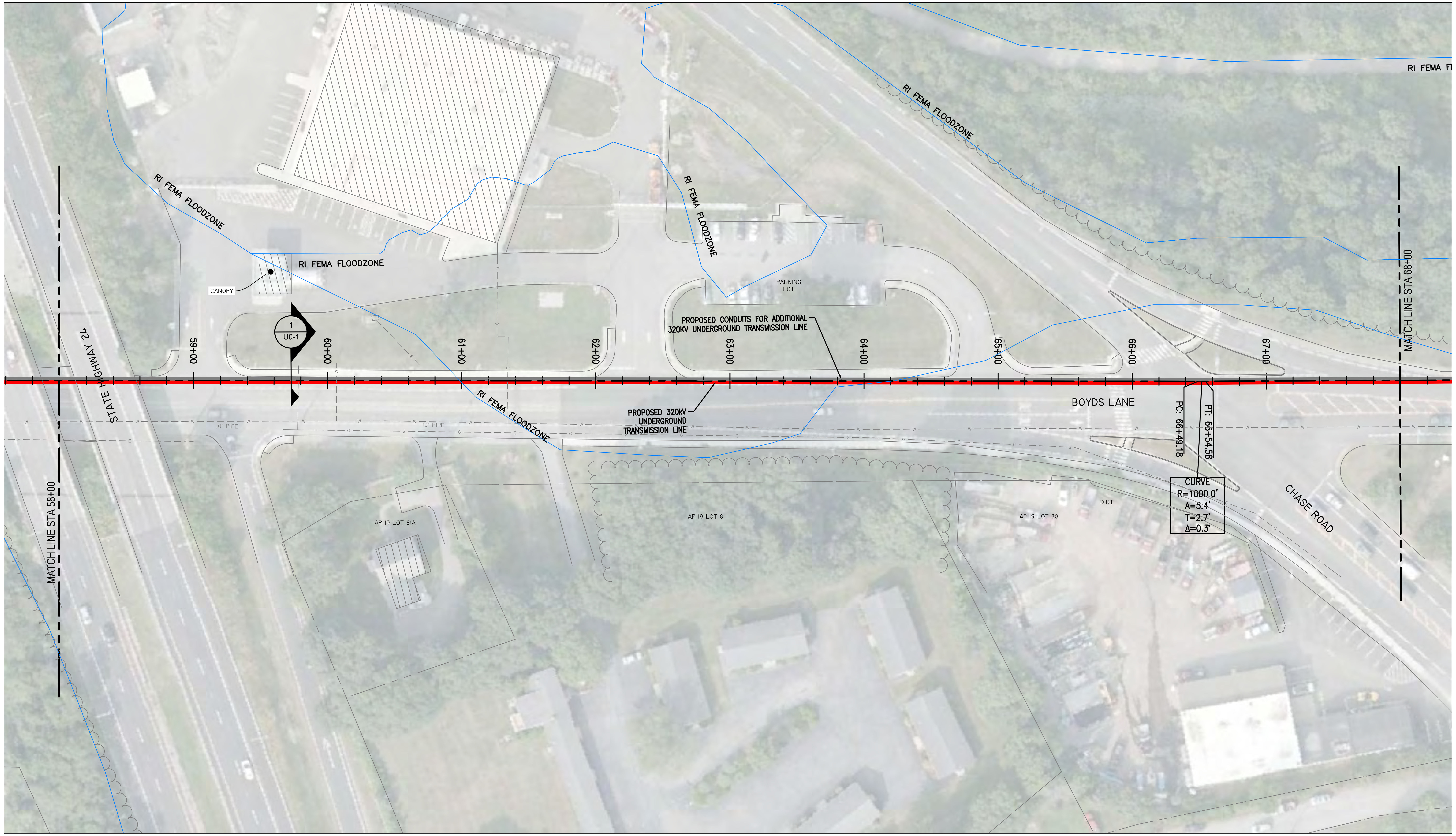
PLAN
STA 48+00 TO 58+00

JOB NUMBER 172033

REV C

DRAWING NUMBER P2-6

172033 - PLAN & PROFILE - OPTION 2.dwg



← TO MONTAUP COUNTRY CLUB PARKING LOT HDD

PLAN VIEW

TO BOYDS LANE HDD →

NOTES

1. THE UTILITIES AND NATURAL FEATURES SHOWN HEREON ARE BASED ON FIELD SURVEYS, AERIAL PHOTOGRAPHY AND RECORD DOCUMENTS. OTHER FACILITIES MAY EXIST NOT DISCOVERED THROUGH THE RECORD CHECK. THE CONTRACTOR SHALL VERIFY THE EXACT LOCATION, BOTH HORIZONTAL AND VERTICAL, OF ALL UTILITIES THROUGH THE APPROPRIATE UTILITY COMPANIES. 811 OR 1-888-344-7233.

0 20 40 80 120 FEET

HORIZONTAL SCALE: 1"= 40'

811 Know what's below. Call before you dig.

ATTENTION: FOR CLEANER TEXT AND LINE FEATURES WHEN USING ADOBE TO VIEW THESE PDFS, TURN OFF THE "SMOOTH LINE ART" AND "ENHANCE THIN LINES" OPTIONS UNDER EDIT-PREFERENCES-PAGE DISPLAY

REV	REVISIONS	DATE	DRN	DSGN	CKD	APPD
C	REVISED PER CLIENT COMMENTS	05/11/22	RRT	TSG	TSG	
B	ISSUED FOR REVIEW	05/03/22	RRT	TSG	TSG	
A	ISSUED FOR REVIEW	03/02/2022	BAJ	TSG	TSG	

REFERENCE DRAWINGS

DSGN	TSG	03/02/22
DRN	BAJ	03/02/22
CKD	TSG	03/02/22

SCALE: 1" = 40'

FOR 22x34 DWG ONLY

POWER ENGINEERS

MAYFLOWER WIND

AQUIDNECK ISLAND DUCT BANK

PLAN
STA 58+00 TO 68+00

JOB NUMBER 172033

REV C

DRAWING NUMBER P2-7

172033 - PLAN & PROFILE - OPTION 2.dwg

← TO MONTAUP COUNTRY CLUB PARKING LOT HDD

PLAN VIEW

TO BOYDS LANE HDD →

NOTES

1. THE UTILITIES AND NATURAL FEATURES SHOWN HEREON ARE BASED ON FIELD SURVEYS, AERIAL PHOTOGRAPHY AND RECORD DOCUMENTS. OTHER FACILITIES MAY EXIST NOT DISCOVERED THROUGH THE RECORD CHECK. THE CONTRACTOR SHALL VERIFY THE EXACT LOCATION, BOTH HORIZONTAL AND VERTICAL, OF ALL UTILITIES THROUGH THE APPROPRIATE UTILITY COMPANIES. 811 OR 1-888-344-7233.

0 20 40 80 120 FEET

HORIZONTAL SCALE: 1"= 40'

811 Know what's below. Call before you dig.

ATTENTION: FOR CLEANER TEXT AND LINE FEATURES WHEN USING ADOBE TO VIEW THESE PDFS, TURN OFF THE "SMOOTH LINE ART" AND "ENHANCE THIN LINES" OPTIONS UNDER EDIT-PREFERENCES-PAGE DISPLAY

REV	REVISIONS	DATE	DRN	DSGN	CKD	APPD
C	REVISED PER CLIENT COMMENTS	05/11/22	RRT	TSG	TSG	
B	ISSUED FOR REVIEW	05/03/22	RRT	TSG	TSG	
A	ISSUED FOR REVIEW	03/02/2022	BAJ	TSG	TSG	

REFERENCE DRAWINGS

DSGN	TSG	03/02/22
DRN	BAJ	03/02/22
CKD	TSG	03/02/22

SCALE: 1" = 40'

FOR 22x34 DWG ONLY

POWER ENGINEERS

MAYFLOWER WIND

AQUIDNECK ISLAND DUCT BANK

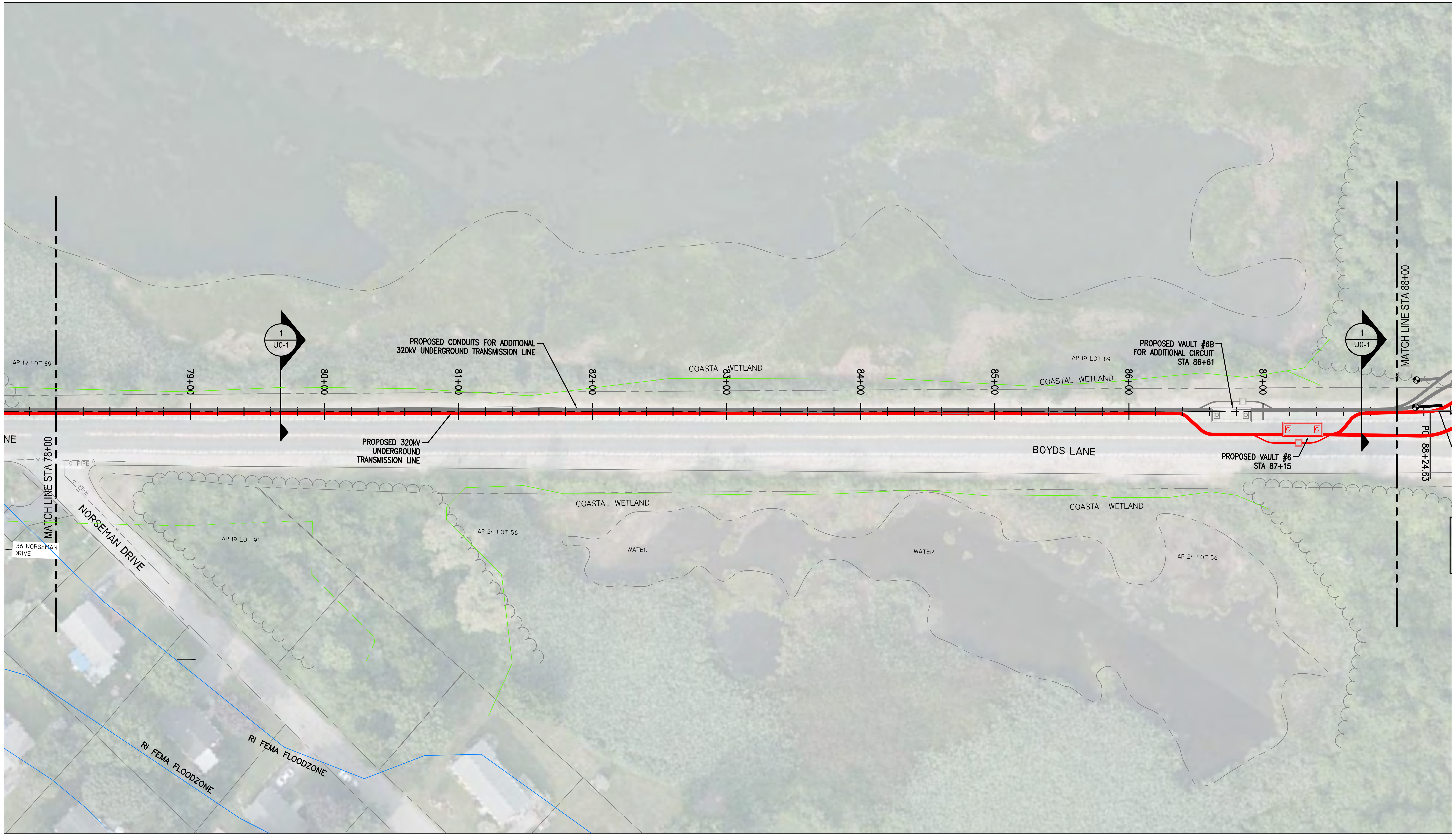
PLAN
STA 68+00 TO 78+00

JOB NUMBER 172033

REV C

DRAWING NUMBER P2-8

172033 - PLAN & PROFILE - OPTION 2.dwg



TO MONTAUP COUNTRY CLUB PARKING LOT HDD

PLAN VIEW

TO BOYDS LANE HDD

NOTES

1. THE UTILITIES AND NATURAL FEATURES SHOWN HEREON ARE BASED ON FIELD SURVEYS, AERIAL PHOTOGRAPHY AND RECORD DOCUMENTS. OTHER FACILITIES MAY EXIST NOT DISCOVERED THROUGH THE RECORD CHECK. THE CONTRACTOR SHALL VERIFY THE EXACT LOCATION, BOTH HORIZONTAL AND VERTICAL, OF ALL UTILITIES THROUGH THE APPROPRIATE UTILITY COMPANIES. 811 OR 1-888-344-7233.

0 20 40 80 120 FEET

HORIZONTAL SCALE: 1"= 40'

ATTENTION: FOR CLEANER TEXT AND LINE FEATURES WHEN USING ADOBE TO VIEW THESE PDFS, TURN OFF THE "SMOOTH LINE ART" AND "ENHANCE THIN LINES" OPTIONS UNDER EDIT–PREFERENCES–PAGE DISPLAY

811 Know what's below. Call before you dig.

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C	REVISED PER CLIENT COMMENTS	05/11/22	RRT	TSG	TSG	
B	ISSUED FOR REVIEW	05/03/22	RRT	TSG	TSG	
A	ISSUED FOR REVIEW	03/02/2022	BAJ	TSG	TSG	

REFERENCE DRAWINGS

DSGN	TSG	03/02/22
DRN	BAJ	03/02/22
CKD	TSG	03/02/22

SCALE: 1" = 40'

FOR 22x34 DWG ONLY

POWER ENGINEERS

MAYFLOWER WIND

AQUIDNECK ISLAND DUCT BANK

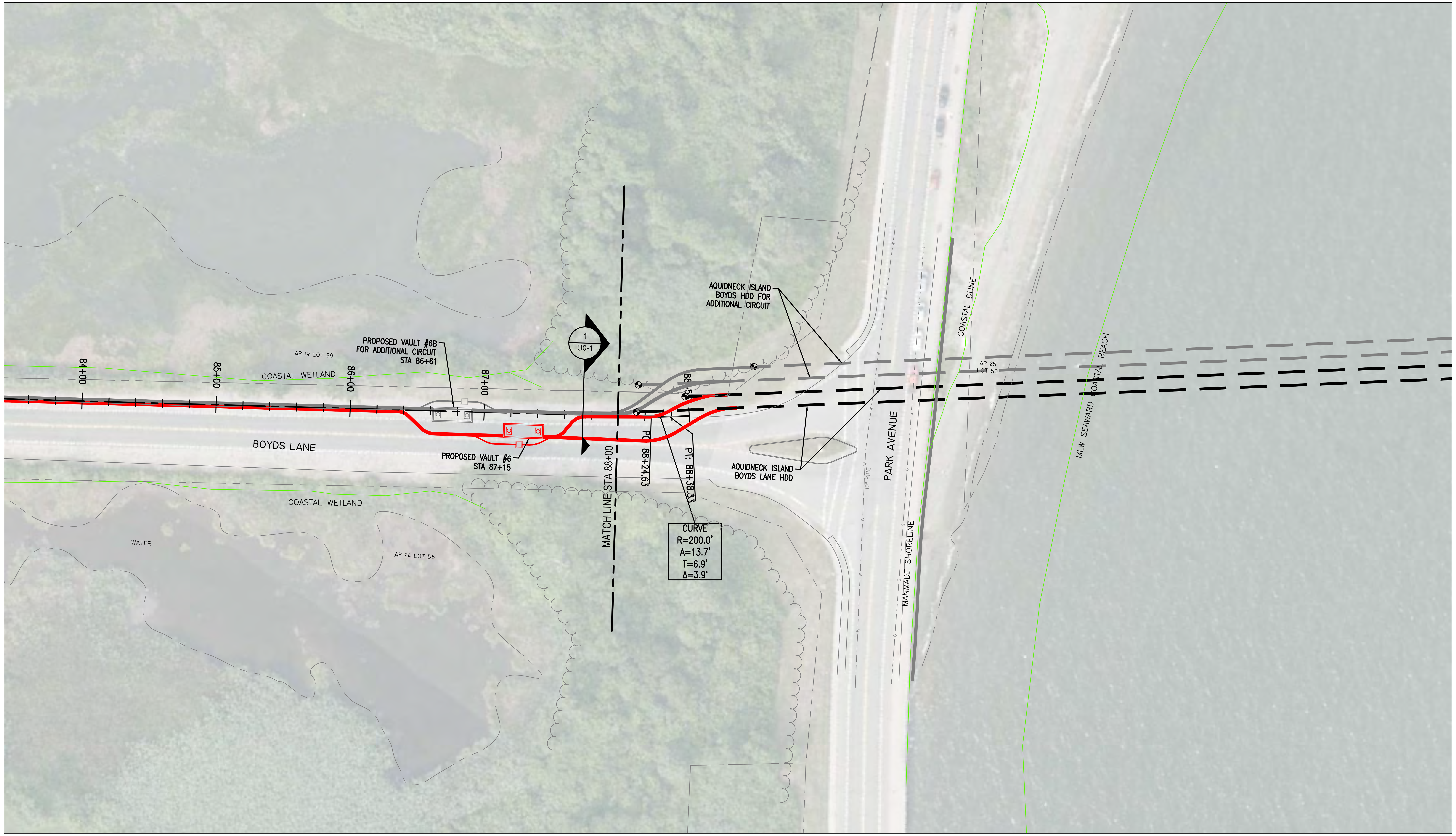
PLAN
STA 78+00 TO 88+00

JOB NUMBER 172033

REV C

DRAWING NUMBER P2-9

172033 – PLAN & PROFILE – OPTION 2.dwg



TO MONTAUP COUNTRY CLUB PARKING LOT HDD

PLAN VIEW

TO BOYDS LANE HDD

NOTES

1. THE UTILITIES AND NATURAL FEATURES SHOWN HEREON ARE BASED ON FIELD SURVEYS, AERIAL PHOTOGRAPHY AND RECORD DOCUMENTS. OTHER FACILITIES MAY EXIST NOT DISCOVERED THROUGH THE RECORD CHECK. THE CONTRACTOR SHALL VERIFY THE EXACT LOCATION, BOTH HORIZONTAL AND VERTICAL, OF ALL UTILITIES THROUGH THE APPROPRIATE UTILITY COMPANIES. 811 OR 1-888-344-7233.

0 20 40 80 120 FEET
HORIZONTAL SCALE: 1"= 40'

811 Know what's below. Call before you dig.

ATTENTION: FOR CLEANER TEXT AND LINE FEATURES WHEN USING ADOBE TO VIEW THESE PDFS, TURN OFF THE "SMOOTH LINE ART" AND "ENHANCE THIN LINES" OPTIONS UNDER EDIT-PREFERENCES-PAGE DISPLAY

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B	ISSUED FOR REVIEW	05/03/22	RRT	TSG	TSG	
A	ISSUED FOR REVIEW	03/02/2022	BAJ	TSG	TSG	

REFERENCE DRAWINGS

DSGN	TSG	03/02/22
DRN	BAJ	03/02/22
CKD	TSG	03/02/22

SCALE: 1" = 40'

FOR 22x34 DWG ONLY

POWER ENGINEERS

MAYFLOWER WIND

AQUIDNECK ISLAND DUCT BANK

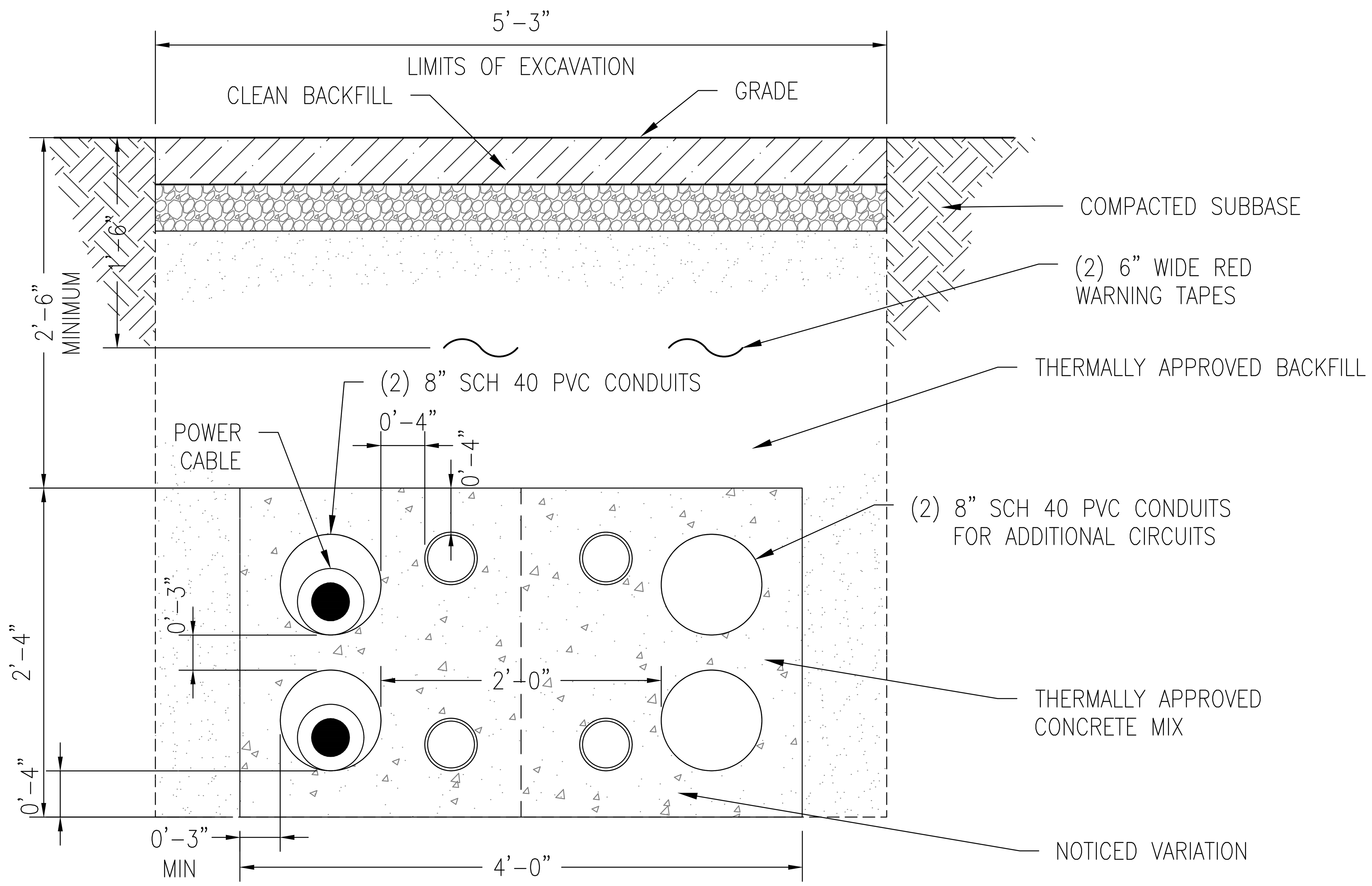
PLAN
STA 88+00 TO 88+53

JOB NUMBER 172033

REV C

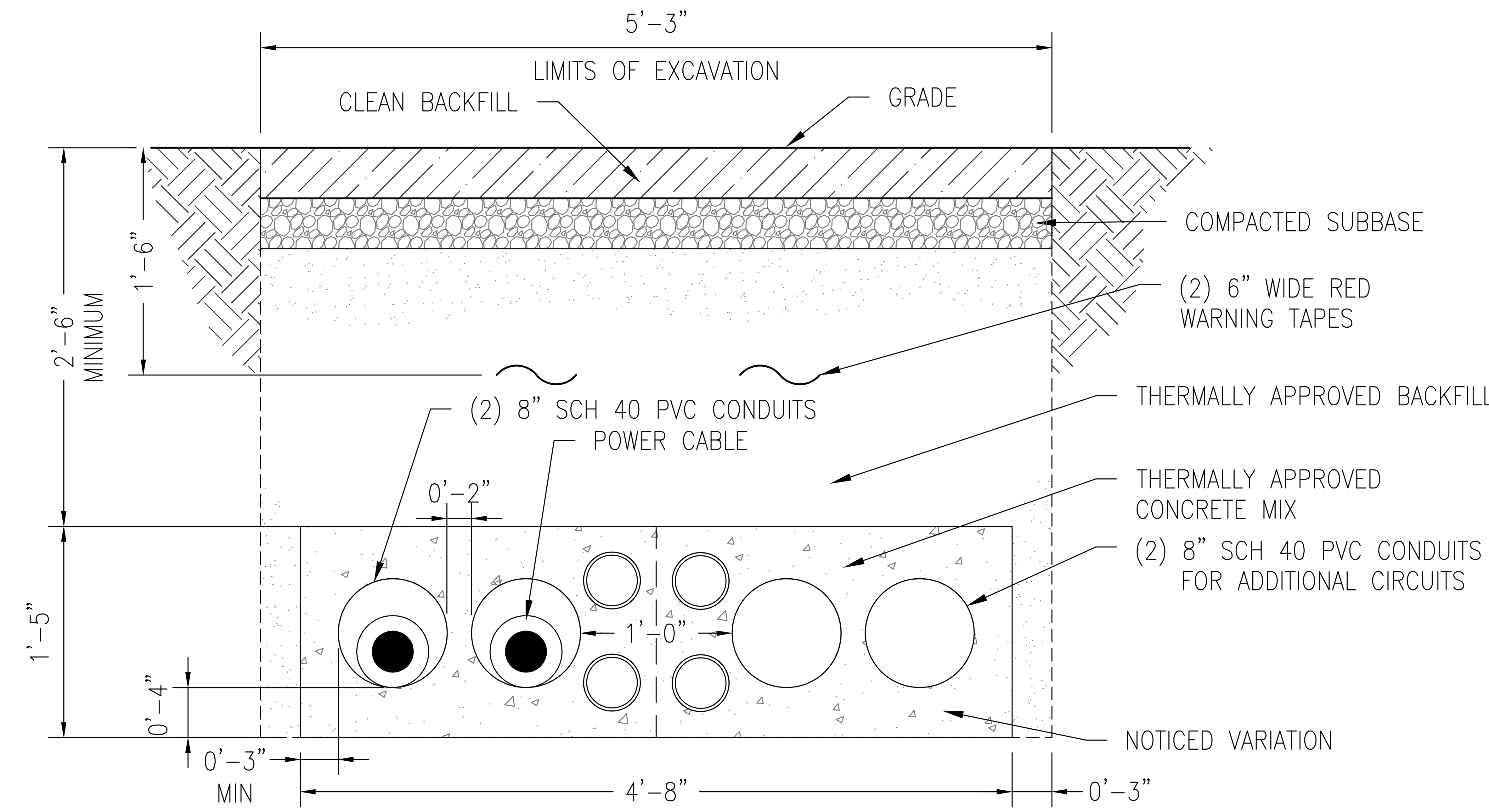
DRAWING NUMBER P2-10

172033 - PLAN & PROFILE - OPTION 2.dwg



DOUBLE CIRCUIT DUCT BANK OPTION 1

SECTION 1 / U0-1
N.T.S.



DOUBLE CIRCUIT DUCT BANK OPTION 2

SECTION 2 / U0-2
N.T.S.

ATTENTION: FOR CLEANER TEXT AND LINE FEATURES WHEN USING ADOBE TO VIEW THESE PDFS, TURN OFF THE "SMOOTH LINE ART" AND "ENHANCE THIN LINES" OPTIONS UNDER EDIT–PREFERENCES–PAGE DISPLAY

REV	REVISIONS	DATE	DRN	DSGN	CKD	APPD
C	REVISED PER CLIENT COMMENTS	05/11/22	RRT	TSG	TSG	
B	ISSUED FOR REVIEW	05/06/22	RRT	TSG	TSG	
A	ISSUED FOR REVIEW	03/02/2022	BAJ	TSG	TSG	

REFERENCE DRAWINGS

DSGN	TSG	03/02/22
DRN	BAJ	03/02/22
CKD	TSG	03/02/22

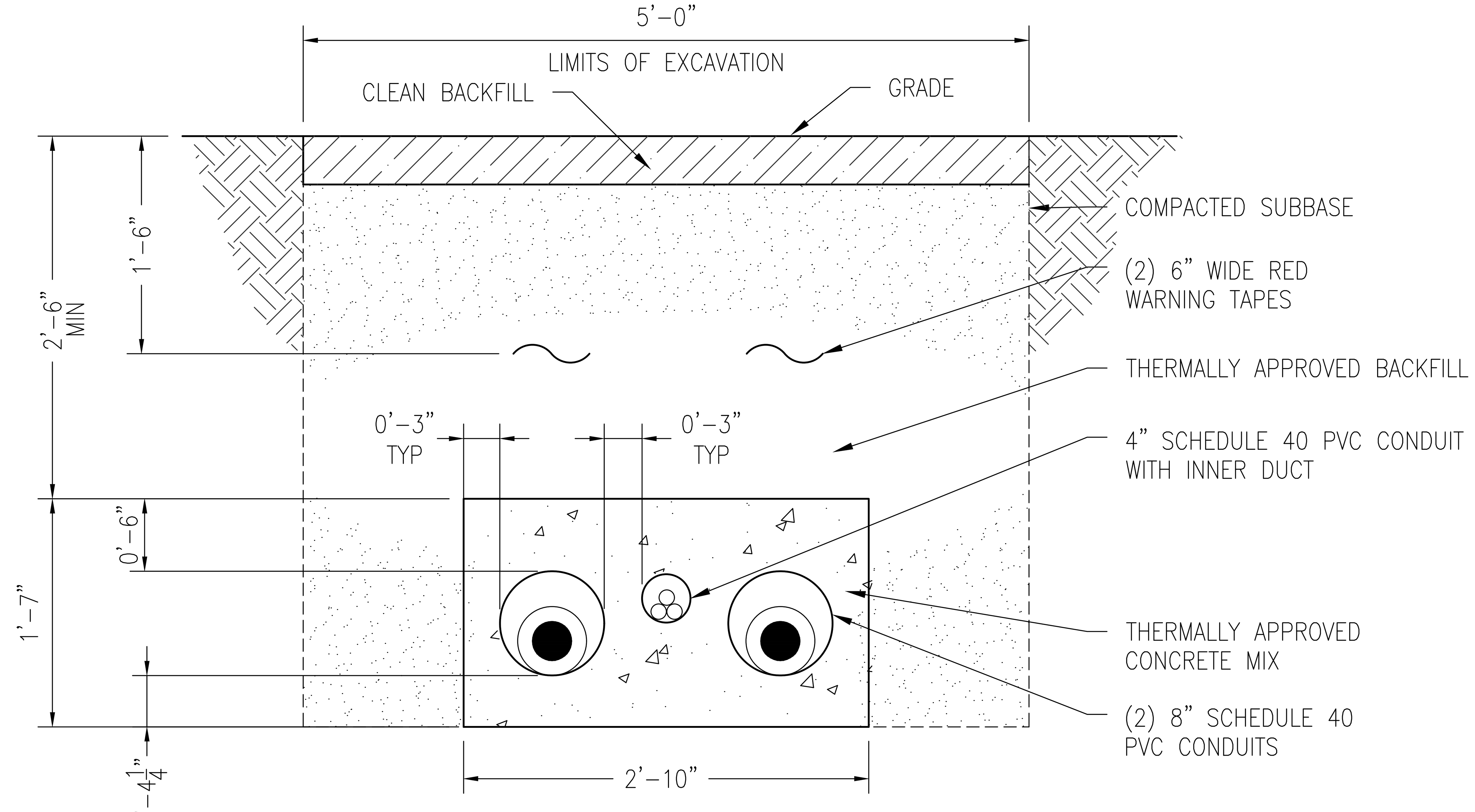
SCALE: AS SHOWN
FOR 22x34 DWG ONLY

POWER ENGINEERS

MAYFLOWER WIND
AQUIDNECK ISLAND DUCT BANK
CONFIGURATION WITH NOTICED VARIATION

JOB NUMBER: 172033
REV: C
DRAWING NUMBER: U0-1

172033 – Mayflower Details.dwg

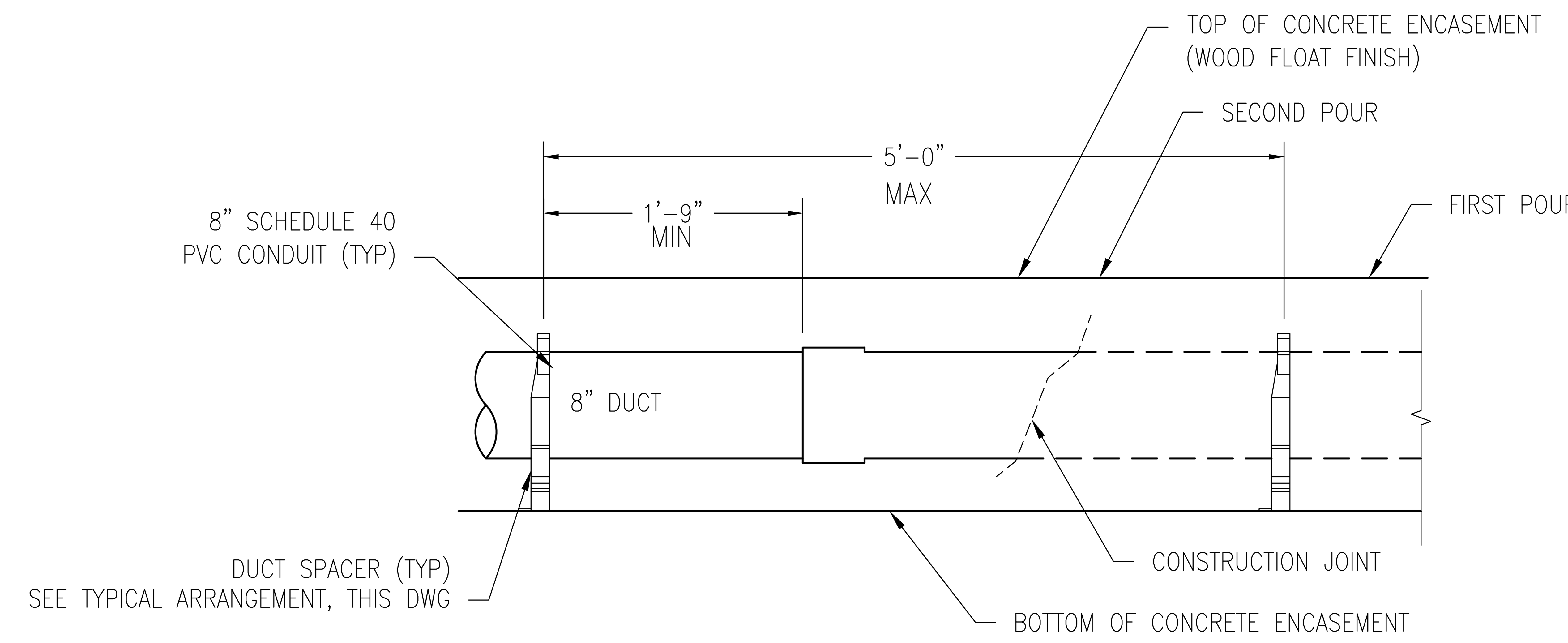


TYPICAL TRENCH RIGHT OF WAY APPLICATION

SECTION 1 U0-2

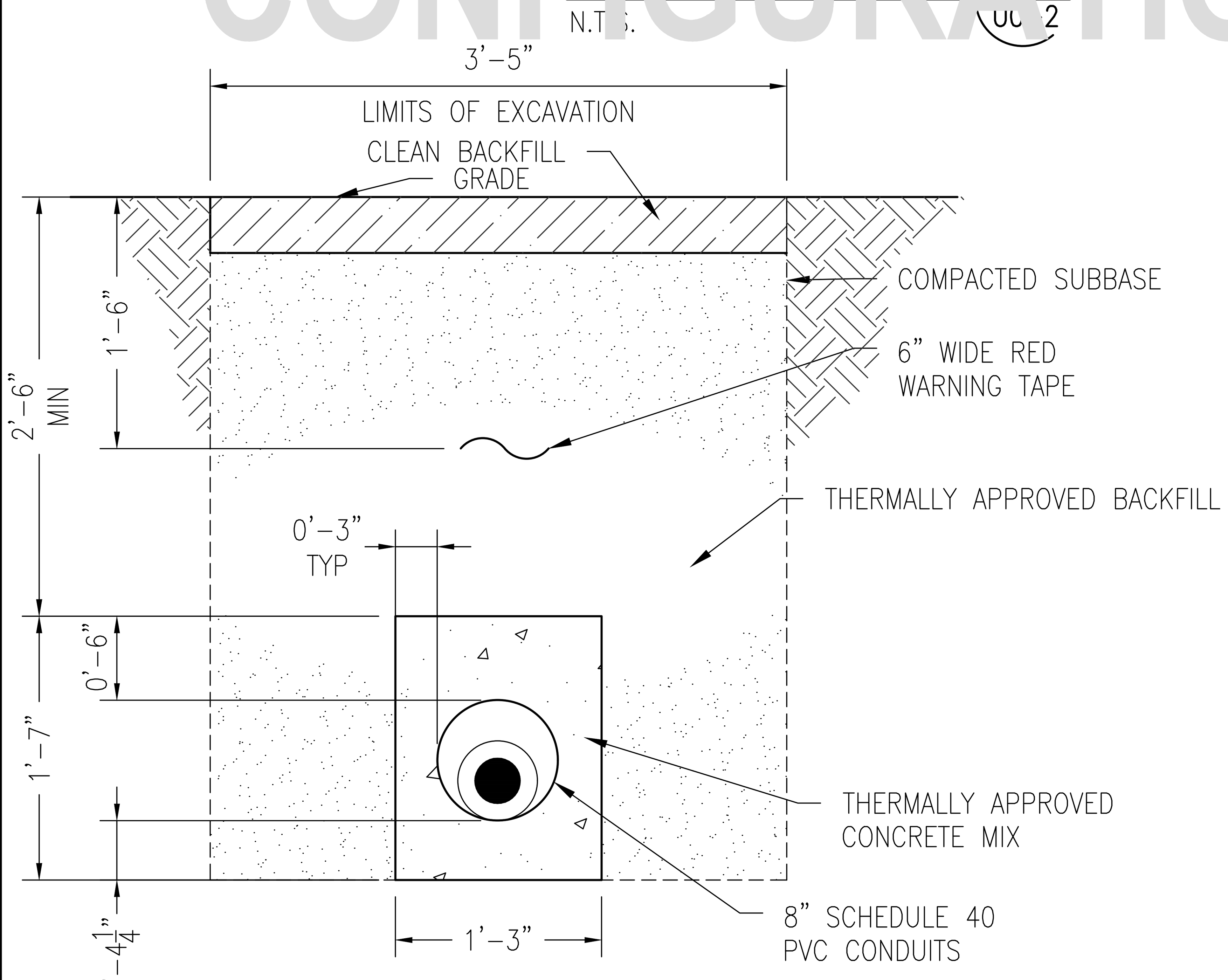
N.T.S.

CONFIGURATION WITHOUT NOTICED VARIATION



TYPICAL 1x2 DUCT ELEVATION

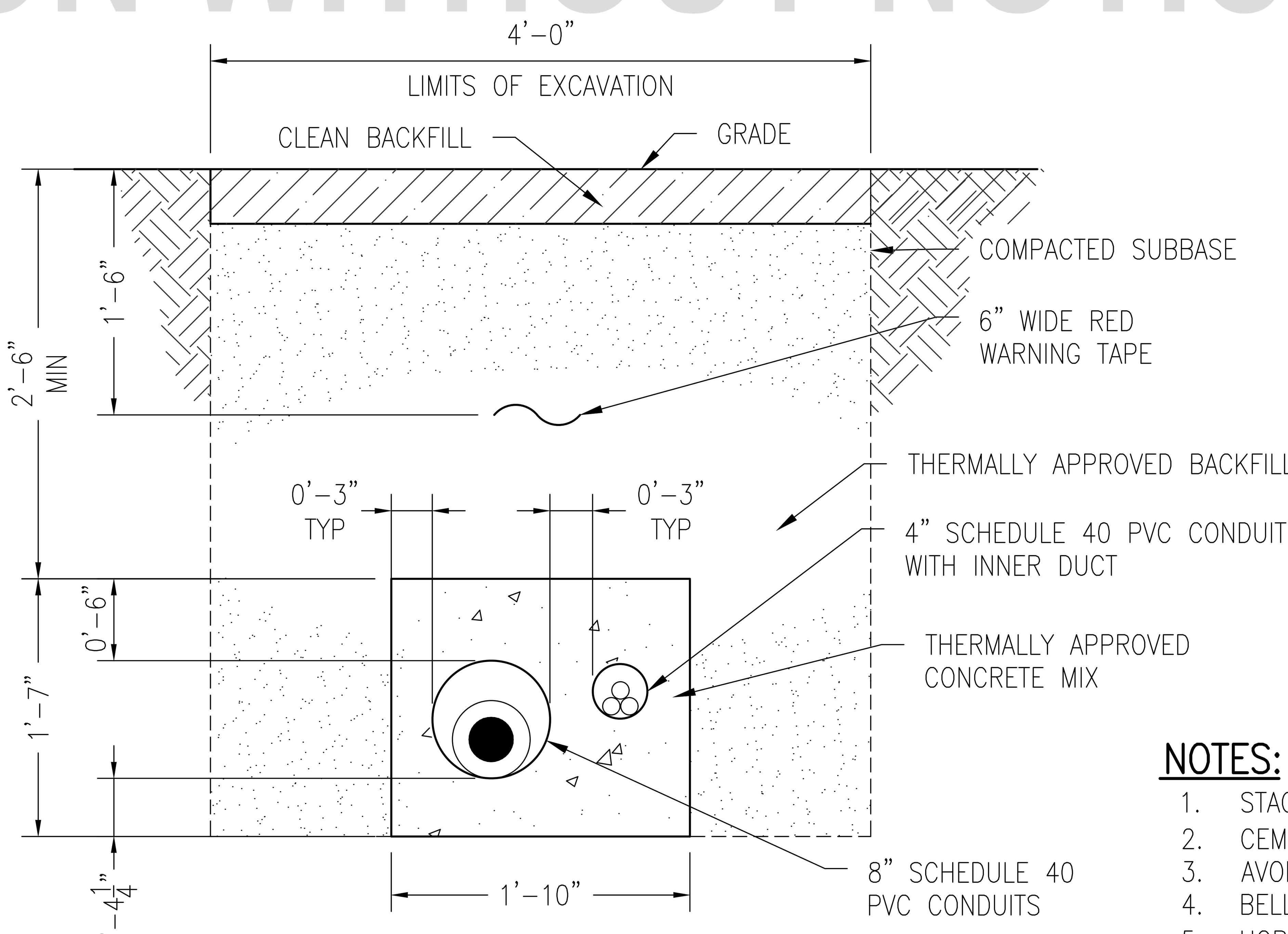
N.T.S.



TYPICAL 1X1 DUCT

SECTION 2 U0-2

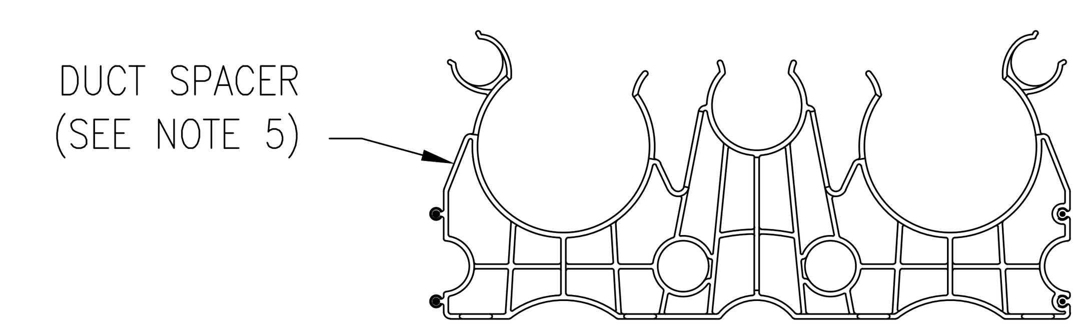
N.T.S.



TYPICAL 1X1 DUCT WITH FIBER OPTIC CABLE

SECTION 3 U0-2

N.T.S.



TYPICAL DUCT SPACER ARRANGEMENT

N.T.S.

NOTES:

1. STAGGER BELL ENDS.
2. CEMENT ALL JOINTS IN ACCORDANCE WITH CONDUIT MANUFACTURER'S SPECIFICATIONS.
3. AVOID STANDING ON CONDUIT.
4. BELL ENDS SHALL BE INSTALLED ALL IN THE SAME DIRECTION BETWEEN MANHOLES.
5. HORIZONTAL AND VERTICAL BEND RADIUS 400' UNLESS NOTED WITH A MINIMUM BEND RADIUS OF 50', EXCEPT RISER SWEEPS.

ATTENTION: FOR CLEANER TEXT AND LINE FEATURES WHEN USING ADOBE TO VIEW THESE PDFS, TURN OFF THE "SMOOTH LINE ART" AND "ENHANCE THIN LINES" OPTIONS UNDER EDIT-PREFERENCES-PAGE DISPLAY

REV	REVISIONS	DATE	DRN	DSGN	CKD	APPD
C	REVISED PER CLIENT COMMENTS	05/11/22	RRT	TSG	TSG	
B	ISSUED FOR REVIEW	05/06/22	RRT	TSG	TSG	
A	ISSUED FOR REVIEW	03/02/2022	BAJ	TSG	TSG	

REFERENCE DRAWINGS

DSGN	TSG	03/02/22
DRN	BAJ	03/02/22
CKD	TSG	03/02/22

SCALE: AS SHOWN

FOR 22x34 DWG ONLY

POWER ENGINEERS

MAYFLOWER WIND

AQUIDNECK ISLAND DUCT BANK

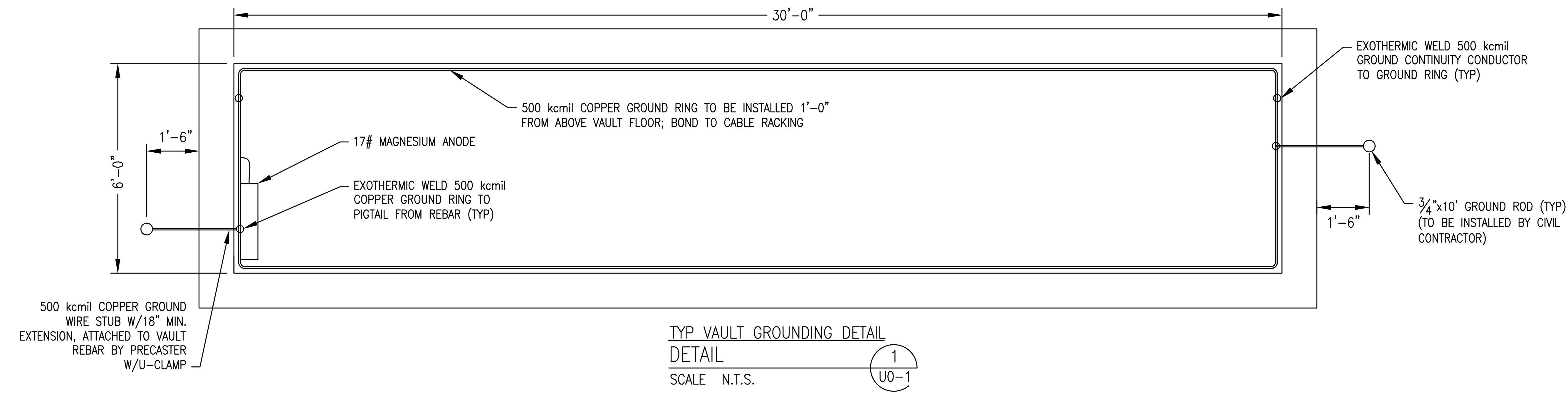
CONFIGURATION WITHOUT NOTICED VARIATION

JOB NUMBER 172033

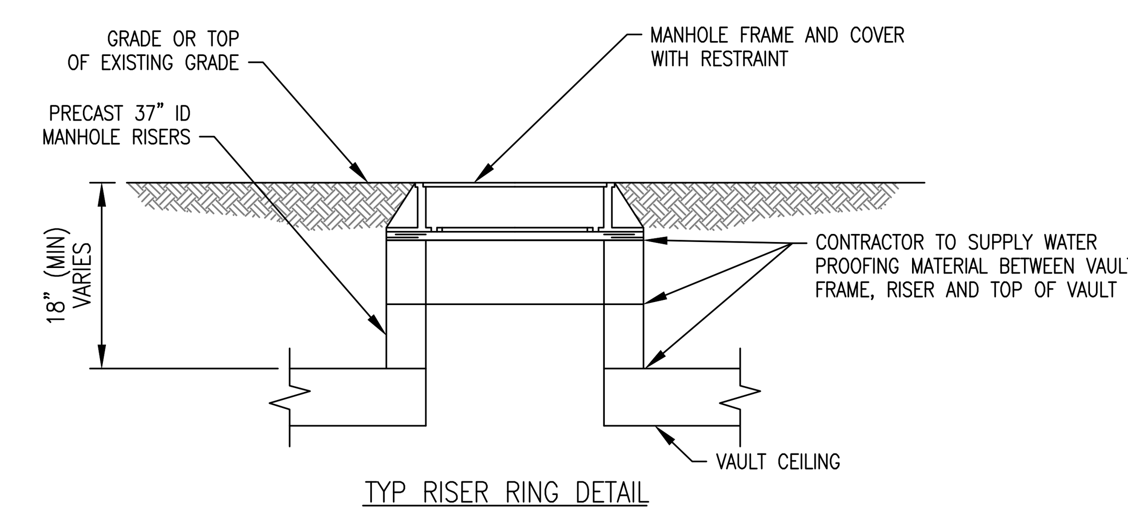
REV C

DRAWING NUMBER U0-2

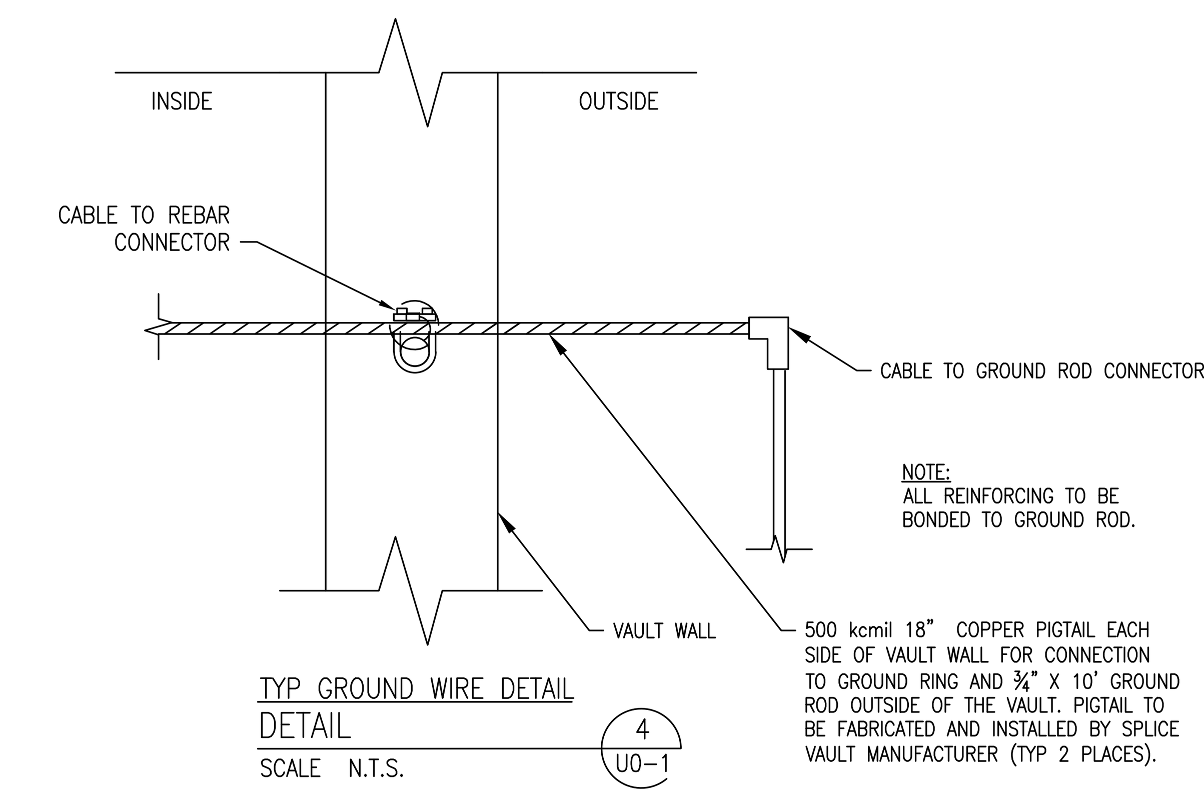
172033 – Mayflower Details.dwg



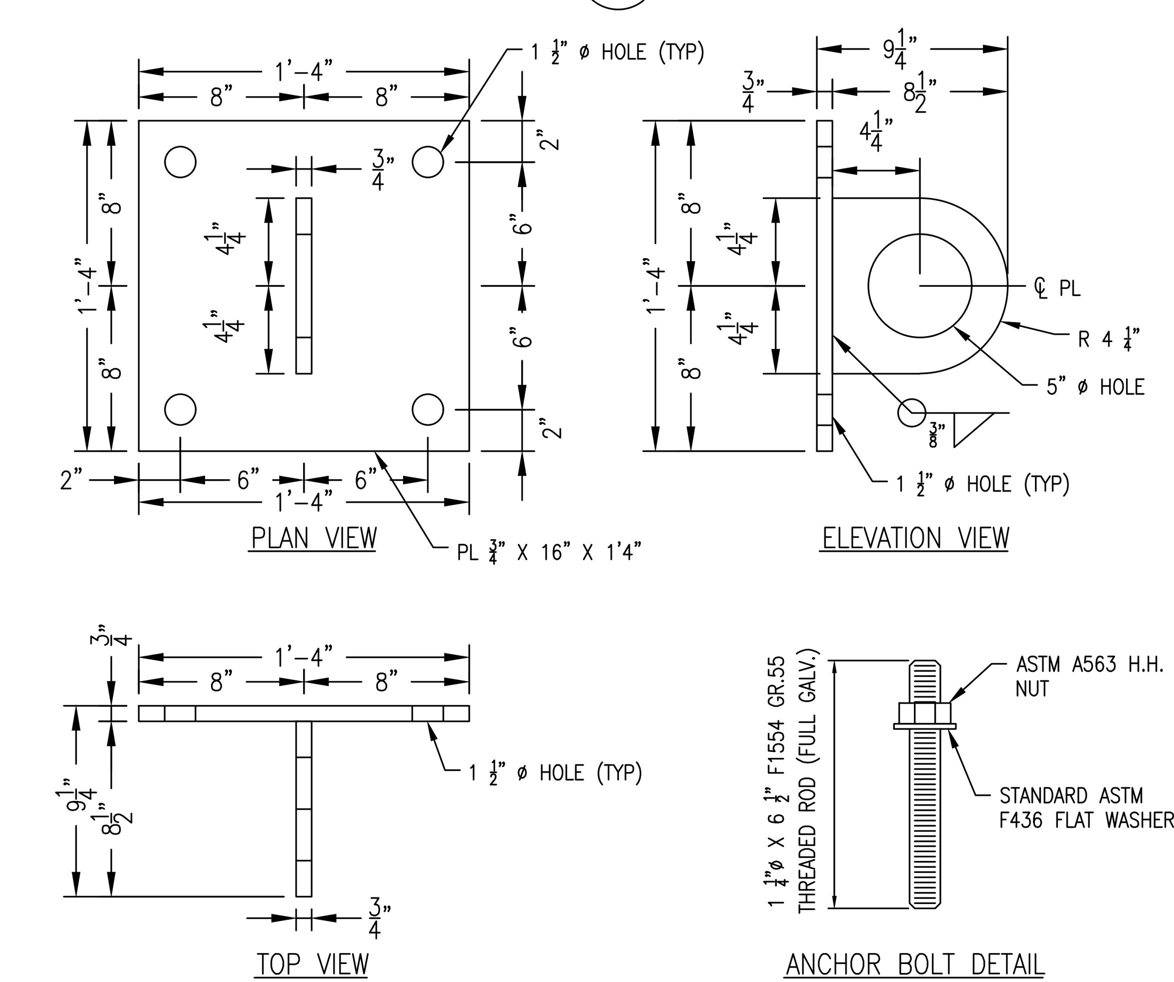
TYP VAULT GROUNDING DETAIL
DETAIL 1 U0-1
SCALE N.T.S.



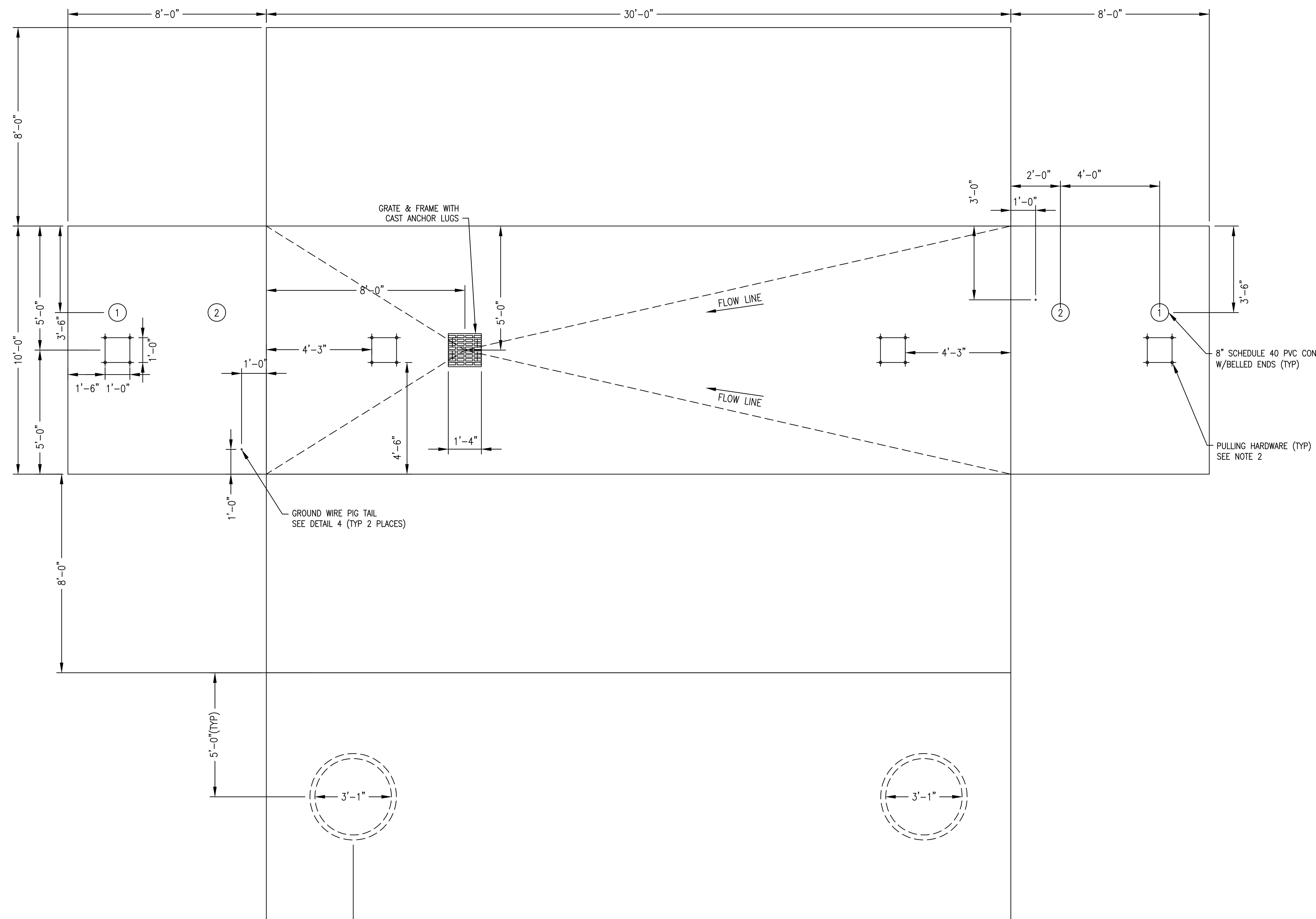
TYP RISER RING DETAIL
DETAIL 3 U0-1
SCALE N.T.S.



TYP GROUND WIRE DETAIL
DETAIL 4 U0-1
SCALE N.T.S.



TYP ANCHOR PLATE AND BOLT DETAIL
DETAIL 5 U0-1
SCALE N.T.S.



TYP VAULT DEVELOPMENT PLAN
DETAIL 2 U0-1
SCALE N.T.S.

NOTES:

1. ALL DIMENSIONS ARE INSIDE DIMENSIONS.

ATTENTION: FOR CLEANER TEXT AND LINE FEATURES WHEN USING ADOBE TO VIEW THESE PDFS, TURN OFF THE "SMOOTH LINE ART" AND "ENHANCE THIN LINES" OPTIONS UNDER EDIT-PREFERENCES-PAGE DISPLAY

REV	REVISIONS	DATE	DRN	DSGN	CKD	APPD
C	REVISED PER CLIENT COMMENTS	05/11/22	RRT	TSG	TSG	
B	ISSUED FOR REVIEW	05/06/22	RRT	TSG	TSG	
A	ISSUED FOR REVIEW	03/02/2022	BAJ	TSG	TSG	

REFERENCE DRAWINGS

DSGN	TSG	03/02/22
DRN	BAJ	03/02/22
CKD	TSG	03/02/22

SCALE:

FOR 22x34 DWG ONLY

POWER ENGINEERS

MAYFLOWER WIND

AQUIDNECK ISLAND DUCT BANK

30'X10' SPLICE VAULT DETAILS

JOB NUMBER 172033

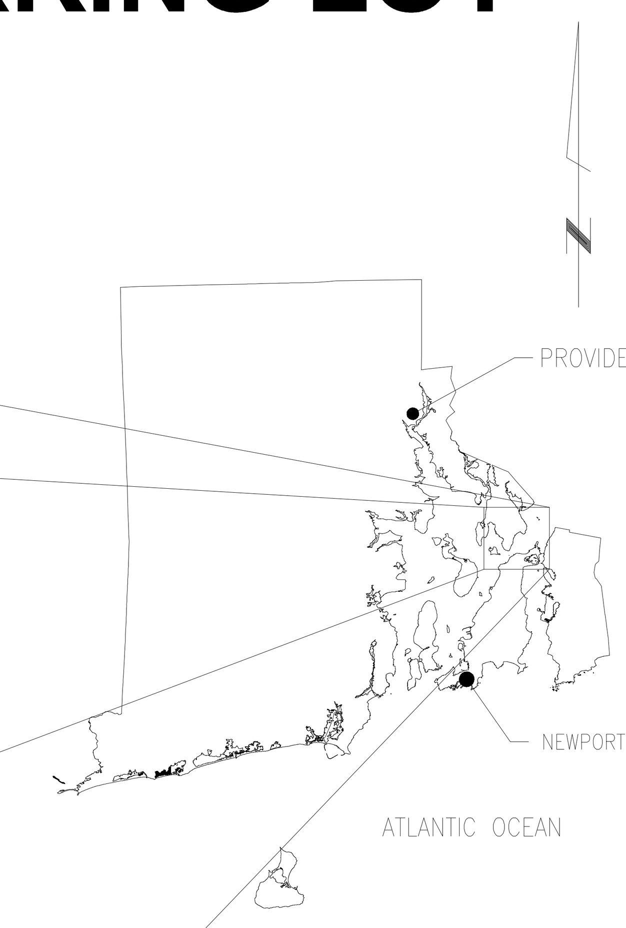
REV C

DRAWING NUMBER U0-3

172033 – Mayflower Details.dwg

MAYFLOWER WIND
30% HORIZONTAL DIRECTIONAL DRILL DESIGN
OFFSHORE EXPORT CABLE LANDFALL - MONTAUP COUNTRY CLUB PARKING LOT

VICINITY MAP
N.T.S.



AREA MAP RHODE ISLAND
N.T.S.

Know what's below. Call before you dig.

POWER ENGINEERS
PROJECT ENGINEER: TODD GOYETTE

POWER ENGINEERS
PROJECT NUMBER: 172033

ATTENTION: FOR CLEANER TEXT AND LINE FEATURES WHEN USING ADOBE TO VIEW THESE PDFS, TURN OFF THE "SMOOTH LINE ART" AND "ENHANCE THIN LINES" OPTIONS UNDER EDIT-PREFERENCES-PAGE DISPLAY

172033 - Aquidneck Island Golf Course Parking Lot HDD.dwg

REV	REVISIONS	DATE	DRN	DSGN	CKD	APPD	REFERENCE DRAWINGS
F	INCORPORATED MAYFLOWER COMMENTS	05/11/2022	LAS	TSG	TSG		
E	INCORPORATED MAYFLOWER COMMENTS	04/29/2022	ASW	TSG	TSG		
D	INCORPORATED MAYFLOWER COMMENTS	04/01/2022	ASW	TSG	TSG		
C	ADDED SECOND HDD	02/28/2022	ASW	TSG	TSG		
B	ISSUED FOR REVIEW	10/06/2021	ASW	TSG	TSG		

DSGN	TSG	08/13/2021
DRN	ASW	08/13/2021
CKD	TSG	08/13/2021
SCALE:	AS SHOWN	

FOR 24x36 DWG ONLY

POWER ENGINEERS

MAYFLOWER WIND
AQUIDNECK ISLAND HDD
MONTAUP COUNTRY CLUB PARKING LOT PLAN AND PROFILE

JOB NUMBER: 172033
REV: F
DRAWING NUMBER: G0-1

DRAWING MANIFEST			
DRAWING NO.	TITLE/DESCRIPTION	REVISION	DATE
G0-1	COVER	F	05/11/22
G1-1	GENERAL NOTES & MANIFEST	F	05/11/22
P1-1	PLAN – STA. 00+00 TO 16+50	F	05/11/22
U1-1	HDD LAYOUTS	F	05/11/22

LEGEND

HDD START/END

SOIL BORE

EXISTING WATER LINE

EXISTING GAS LINE

EXISTING STORM DRAINAGE LINE

EXISTING SANITARY SEWER LINE

EXISTING UNDERGROUND ELECTRIC LINE

PSCL PERENIAL STREAM CENTER LINE

FWVC FRESH WATER WETLANDS IN THE VICINITY OF THE COAST

GENERAL NOTES

1. THE UTILITIES AND NATURAL FEATURES SHOWN HEREON ARE BASED ON:
   - LEVEL D SURVEY PERFORMED BY DIPRETE ENGINEERING, 01/19/2022
   - GOOGLE EARTH 2020
   - OTHER FACILITIES MAY EXIST NOT DISCOVERED THROUGH THE RECORD CHECK. THE CONTRACTOR SHALL VERIFY THE EXACT LOCATION, BOTH HORIZONTAL AND VERTICAL, OF ALL UTILITIES THROUGH THE APPROPRIATE UTILITY COMPANIES. CALL BEFORE YOU DIG, 811 OR 1-888-344-7233.
2. STATE PLANE COORDINATE (HORIZONTAL DATUM): REFERENCES RHODE ISLAND PLAN COORDINATE SYSTEM – NAD83 1983, US FOOT.
3. STATE PLANE COORDINATE (VERTICAL DATUM): NAVD 1988. THE COORDINATE SYSTEM THAT THIS SURVEY WAS BASED UPON IS STATE PLANE NAD 88, US FOOT.
4. ALL VERTICAL RADII ARE 400', AND HORIZONTAL RADII ARE 50' UNLESS OTHERWISE NOTED.
5. WETLAND DELINEATIONS SHOWN ARE BASED ON FIELD SURVEYS CONDUCTED IN DECEMBER 2021 AND JANUARY 2022.

ENVIRONMENTAL LEGEND:

RI_FEMA FLOODZONE

WETLAND

PSCL PERENIAL STREAM CENTER LINE

FWVC FRESH WATER WETLANDS IN THE VICINITY OF THE COAST

MOORING FIELDS

Know what's below.
Call before you dig.

ATTENTION: FOR CLEANER TEXT AND LINE FEATURES WHEN USING ADOBE TO VIEW THESE PDFS, TURN OFF THE "SMOOTH LINE ART" AND "ENHANCE THIN LINES" OPTIONS UNDER EDIT-PREFERENCES-PAGE DISPLAY

REV	REVISIONS	DATE	DRN	DSGN	CKD	APPD
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D	INCORPORATED MAYFLOWER COMMENTS	04/01/2022	ASW	TSG	TSG	
C	ADDED SECOND HDD	02/28/2022	ASW	TSG	TSG	
B	ISSUED FOR REVIEW	10/06/2021	ASW	TSG	TSG	

REFERENCE DRAWINGS

DSGN	TSG	08/13/2021
DRN	ASW	08/13/2021
CKD	TSG	08/13/2021
SCALE:	AS SHOWN	

FOR 24x36 DWG ONLY

POWER ENGINEERS

MAYFLOWER WIND

AQUIDNECK ISLAND HDD

MONTAUP COUNTRY CLUB PARKING LOT
GENERAL NOTES AND MANIFEST

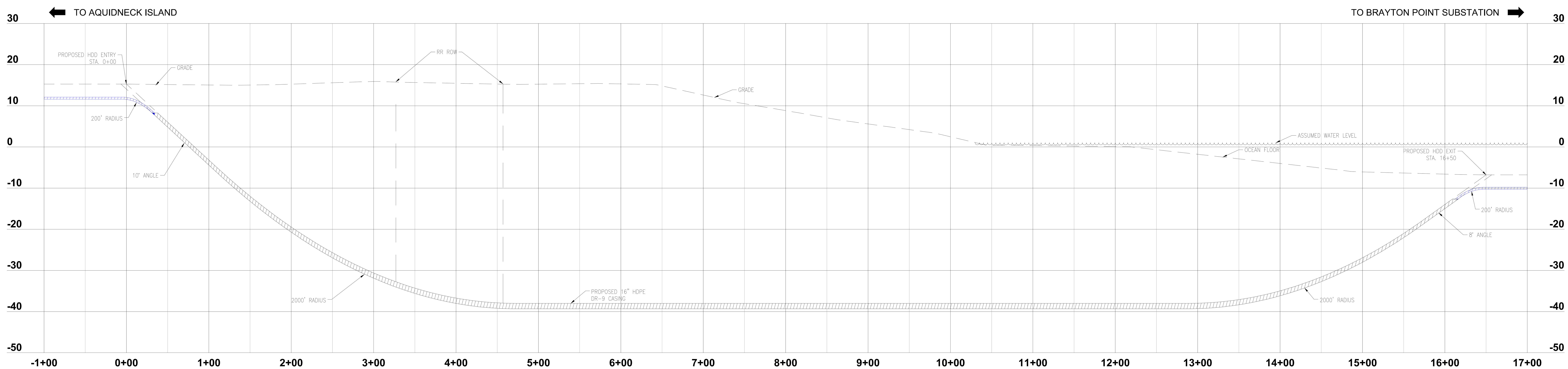
JOB NUMBER 172033

REV F

DRAWING NUMBER G1-1

172033 – Aquidneck Island Golf Course Parking Lot HDD.dwg

PLAN VIEW



PROFILE VIEW

Know what's **below.** **Call** before you dig.

NOTES:

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2. PLAN AND PROFILE ALIGNMENT IS CONCEPTUAL AND NOT BASED ON PROJECT SPECIFIC FIELD SURVEY OR GEOTECHNICAL INVESTIGATION.
3. THE UTILITIES AND NATURAL FEAUTRES SHOWN HEREON ARE BASED ON:
   - GOOGLE EARTH 2020
   - TOWN OF PORTSMOUTH WEB GIS MAPS AND ONLINE PROPERTY INFORMATION
4. PROPERTY LINES ARE APPROXIMATE FOR DISCUSSION PURPOSES.

0 60 120 180FEET
HORIZONTAL SCALE 1"= 60'

0 10 20 30 FEET
VERTICAL SCALE 1"= 10'

ATTENTION: FOR CLEANER TEXT AND LINE FEATURES WHEN USING ADOBE TO VIEW THESE PDFS, TURN OFF THE "SMOOTH LINE ART" AND "ENHANCE THIN LINES" OPTIONS UNDER EDIT-PREFERENCES-PAGE DISPLAY

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E	INCORPORATED MAYFLOWER COMMENTS	04/29/2022	ASW	TSG	TSG		
D	INCORPORATED MAYFLOWER COMMENTS	04/01/2022	ASW	TSG	TSG		
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B	ISSUED FOR REVIEW	10/06/2021	ASW	TSG	TSG		

DSGN	TSG	08/13/2021
DRN	ASW	08/13/2021
CKD	TSG	08/13/2021
SCALE:	AS SHOWN	

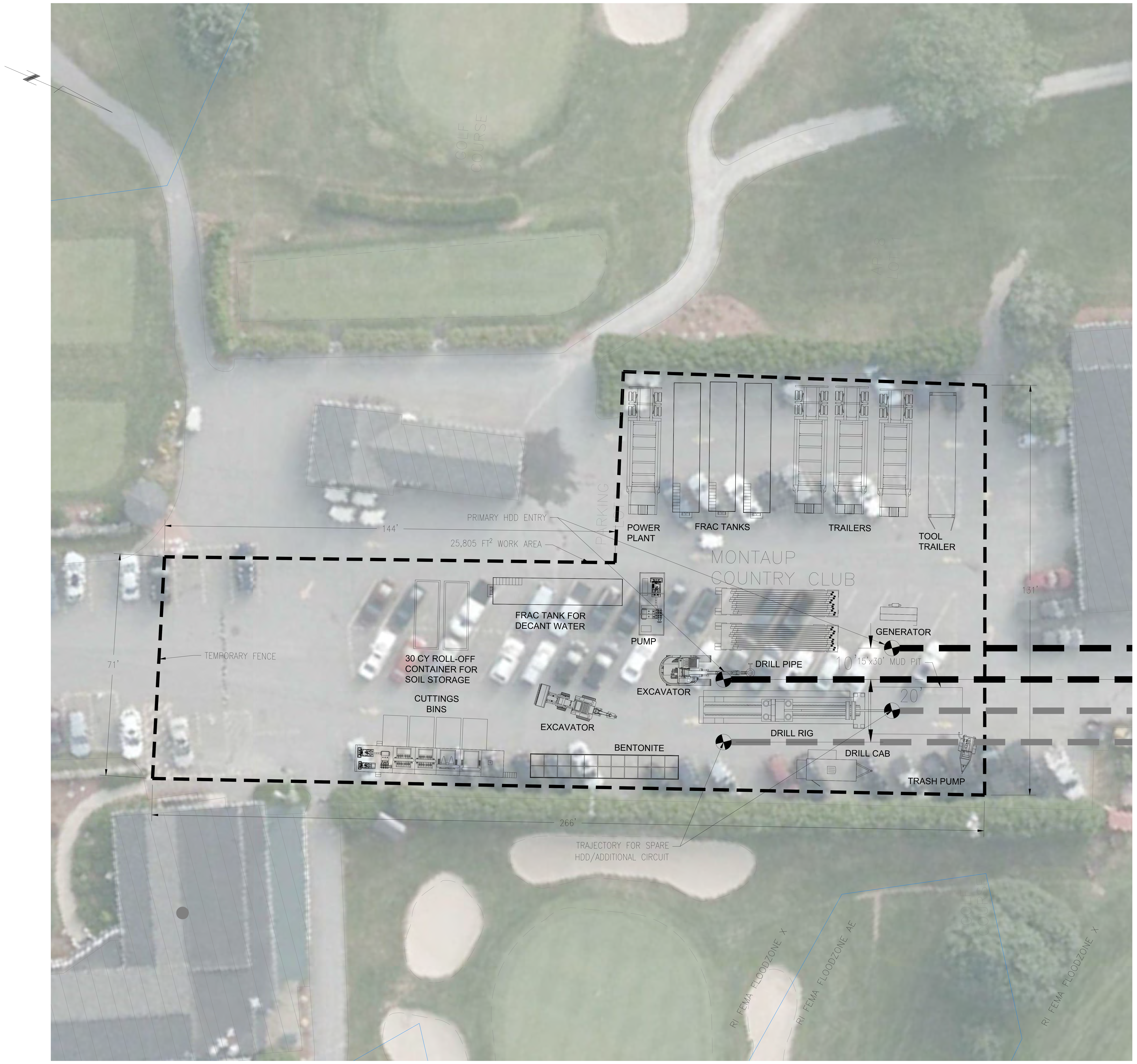
FOR 24x36 DWG ONLY

POWER ENGINEERS

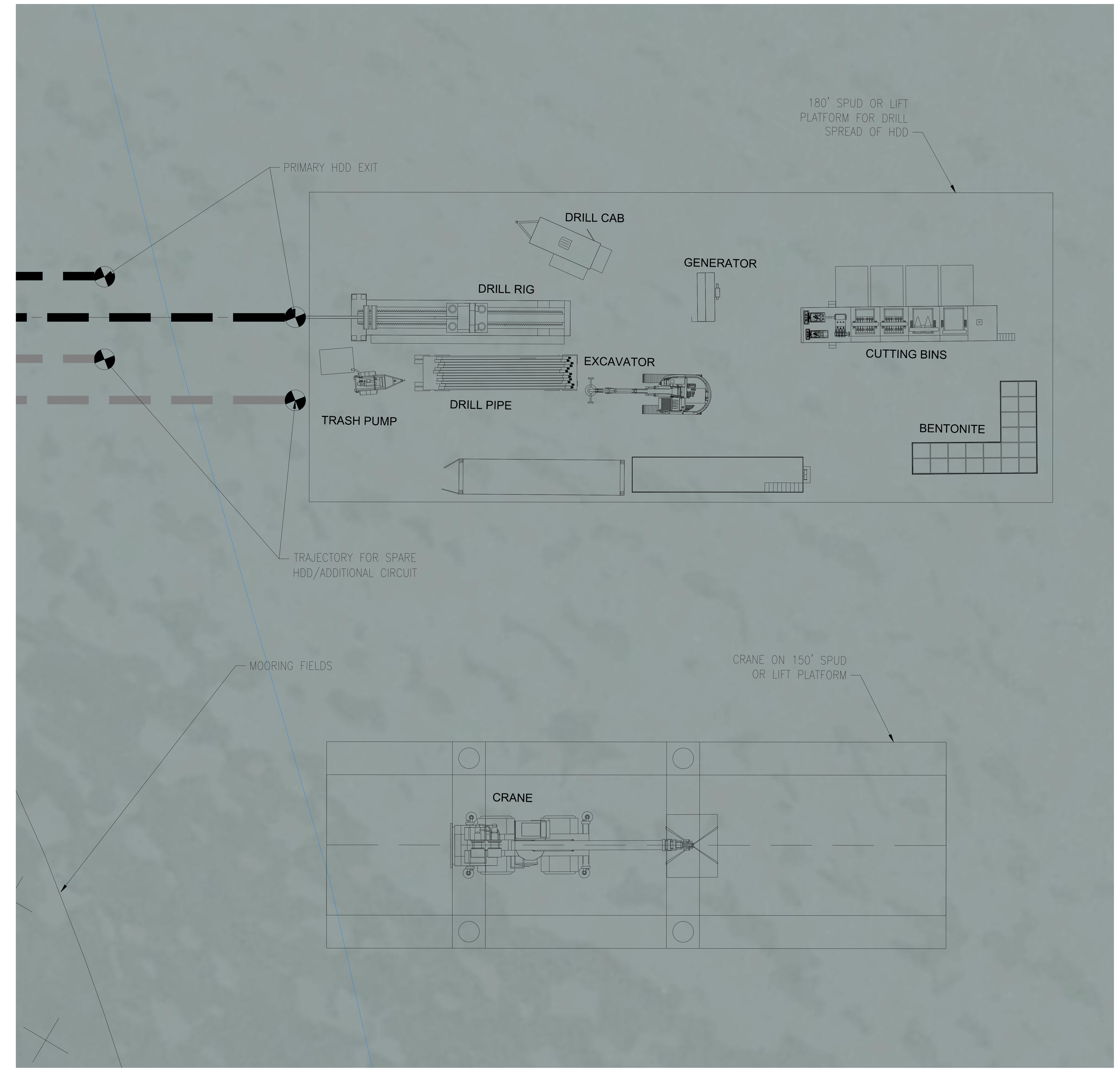
MAYFLOWER WIND
AQUIDNECK ISLAND HDD
MONTAUP COUNTRY CLUB PARKING LOT PLAN AND PROFILE

JOB NUMBER 172033
REV F
DRAWING NUMBER P1-1

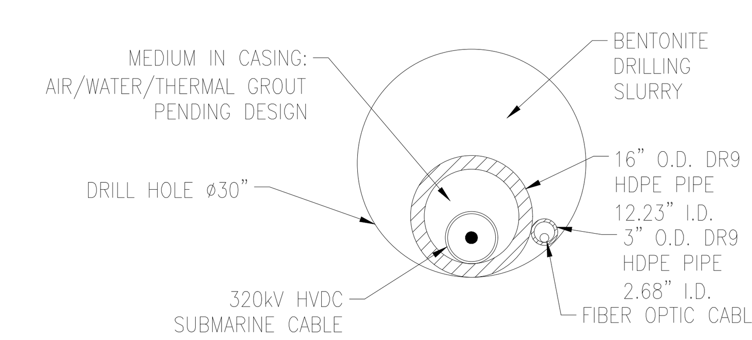
172033 - Aquidneck Island Golf Course Parking Lot HDD.dwg



HDD ENTRY



HDD EXIT



PROPOSED BORE DETAIL

N.T.S.

811 Know what's below. Call before you dig.

NOTES:

1. THE UTILITIES AND NATURAL FEATURES SHOWN HEREON ARE BASED ON FIELD SURVEYS, AERIAL PHOTOGRAPHY AND RECORD DOCUMENTS. OTHER FACILITIES MAY EXIST NOT DISCOVERED THROUGH THE RECORD CHECK. THE CONTRACTOR SHALL VERIFY THE EXACT LOCATION, BOTH HORIZONTAL AND VERTICAL, OF ALL UTILITIES THROUGH THE APPROPRIATE UTILITY COMPANIES. CALL BEFORE YOU DIG, 811 OR 1-800-344-7233.
2. PLAN AND PROFILE ALIGNMENT IS CONCEPTUAL AND NOT BASED ON PROJECT SPECIFIC FIELD SURVEY OR GEOTECHNICAL INVESTIGATION.
3. THE UTILITIES AND NATURAL FEAUTRES SHOWN HEREON ARE BASED ON:
   - GOOGLE EARTH 2020
   - TOWN OF PORTSMOUTH WEB GIS MAPS AND ONLINE PROPERTY INFORMATION
4. PROPERTY LINES ARE APPROXIMATE FOR DISCUSSION PURPOSES.

0 20 40 60 FEET

HORIZONTAL SCALE 1"= 20'

ATTENTION: FOR CLEANER TEXT AND LINE FEATURES WHEN USING ADOBE TO VIEW THESE PDFS, TURN OFF THE "SMOOTH LINE ART" AND "ENHANCE THIN LINES" OPTIONS UNDER EDIT-PREFERENCES-PAGE DISPLAY

REV	REVISIONS	DATE	DRN	DSGN	CKD	APPD	REFERENCE DRAWINGS
F	INCORPORATED MAYFLOWER COMMENTS	05/11/2022	LAS	TSG	TSG		
E	INCORPORATED MAYFLOWER COMMENTS	04/29/2022	ASW	TSG	TSG		
D	INCORPORATED MAYFLOWER COMMENTS	04/01/2022	ASW	TSG	TSG		
C	ADDED SECOND HDD	02/28/2022	ASW	TSG	TSG		
B	ISSUED FOR REVIEW	10/06/2021	ASW	TSG	TSG		

DSGN	TSG	08/13/2021
DRN	ASW	08/13/2021
CKD	TSG	08/13/2021
SCALE:	AS SHOWN	

FOR 24x36 DWG ONLY

POWER ENGINEERS

MAYFLOWER WIND

AQUIDNECK ISLAND HDD

MONTAUP COUNTRY CLUB PARKING LOT HDD LAYOUTS

JOB NUMBER 172033

REV F

DRAWING NUMBER U1-1

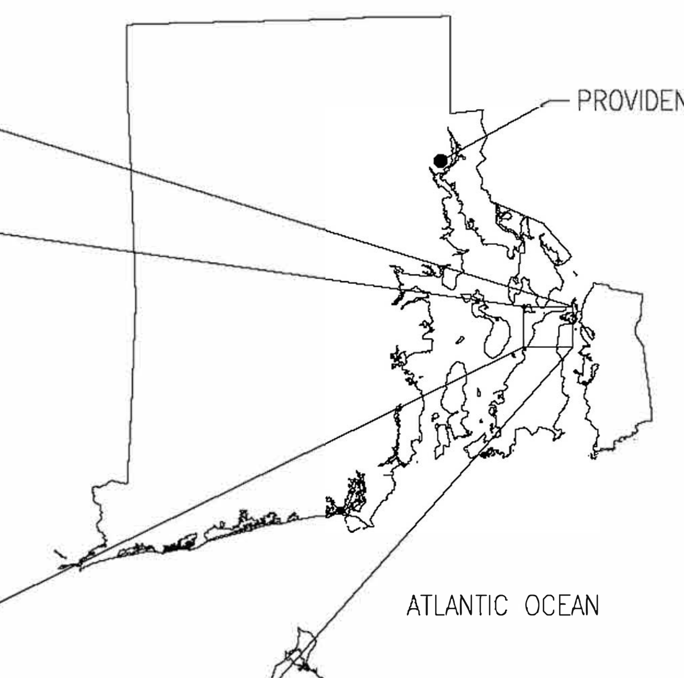
172033 - Aquidneck Island Golf Course Parking Lot HDD.dwg

MAYFLOWER WIND
30% UNDERGROUND EXPORT CABLE SYSTEM DESIGN
BOYDS LANE TO DEM/AQUIDNECK LAND TRUST

VICINITY MAP

0 500 1000 1500FEET

HORIZONTAL SCALE 1"= 500'



AREA MAP RHODE ISLAND

N.T.S.

Know what's **below.**
Call before you dig.

POWER ENGINEERS
PROJECT ENGINEER: TODD GOYETTE

POWER ENGINEERS
PROJECT NUMBER: 172033

ATTENTION: FOR CLEANER TEXT AND LINE FEATURES WHEN USING ADOBE TO VIEW THESE PDFS, TURN OFF THE "SMOOTH LINE ART" AND "ENHANCE THIN LINES" OPTIONS UNDER EDIT-PREFERENCES-PAGE DISPLAY

REV	REVISIONS	DATE	DRN	DSGN	CKD	APPD
C	REVISED PER CLIENT COMMENTS	05/11/22	LAS	TSG	TSG	
B	ISSUED FOR REVIEW	05/06/22	LAS	TSG	TSG	
A	ISSUED FOR REVIEW	03/25/22	LAS	TSG	TSG	

REFERENCE DRAWINGS

DSGN	TSG	03/25/22
DRN	LAS	03/25/22
CKD	TSG	03/25/22
SCALE:	AS SHOWN	

FOR 22x34 DWG ONLY

POWER ENGINEERS

MAYFLOWER WIND

AQUIDNECK ISLAND DUCT BANK

COVER SHEET

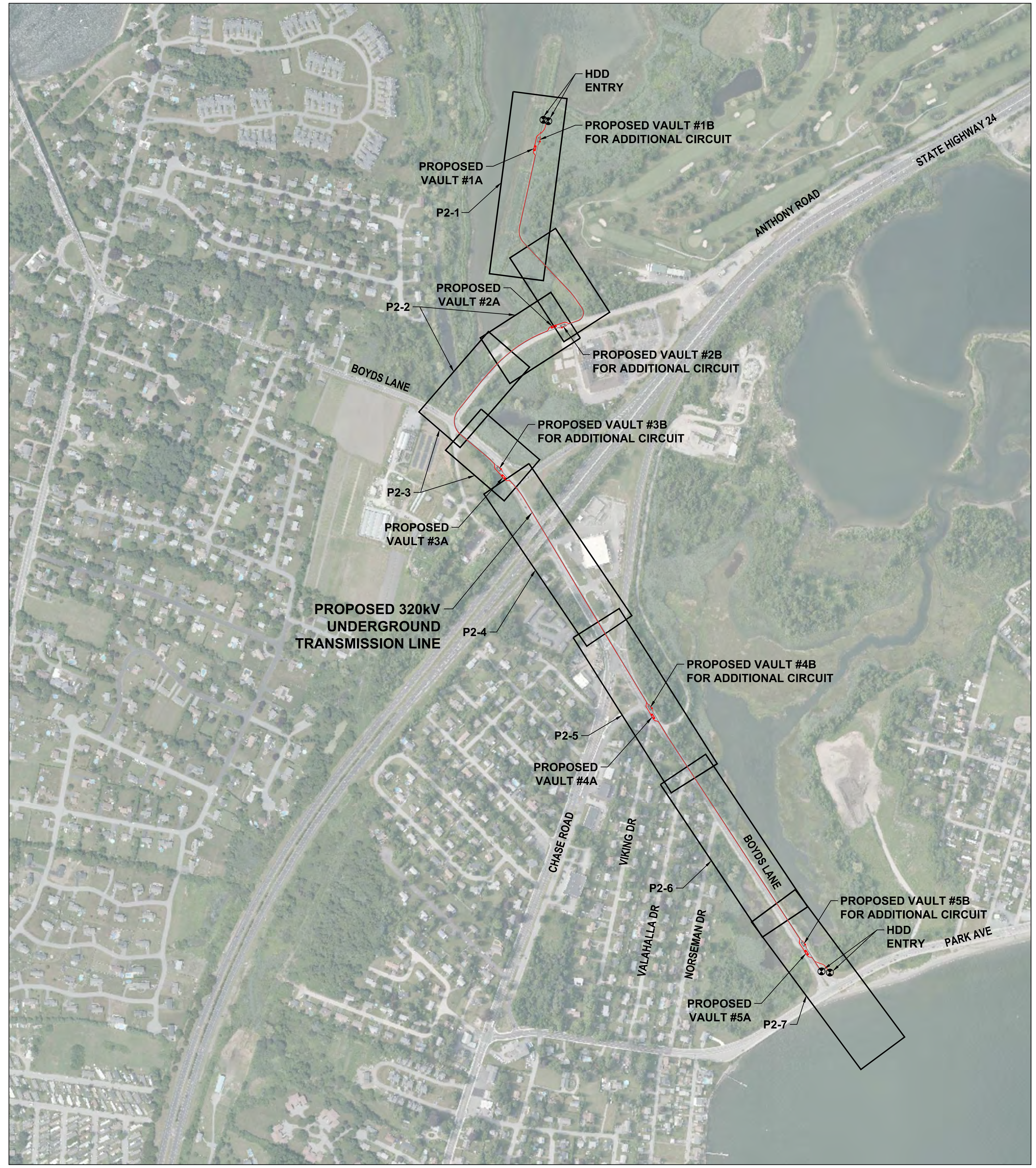
JOB NUMBER: 172033

REV: C

DRAWING NUMBER: G0-1

172033 - Mayflower Cover And Manifest Option 4.dwg

1 2 3 4 5 6 7 8



LEGEND

HDD START/END

SOIL BORE

— W — WATER LINE

— G — GAS LINE

— D — STORM DRAINAGE LINE

— S — SANITARY SEWER LINE

— E — UNDERGROUND ELECTRIC LINE

GENERAL NOTES

1. THE UTILITIES AND NATURAL FEATURES SHOWN HEREON ARE BASED ON:
   - LEVEL D SURVEY PERFORMED BY DIPRETE ENGINEERING, 01/19/2022
   - GOOGLE EARTH 2020
   - OTHER FACILITIES MAY EXIST NOT DISCOVERED THROUGH THE RECORD CHECK. THE CONTRACTOR SHALL VERIFY THE EXACT LOCATION, BOTH HORIZONTAL AND VERTICAL, OF ALL UTILITIES THROUGH THE APPROPRIATE UTILITY COMPANIES. CALL BEFORE YOU DIG, 811 OR 1-888-344-7233.
2. STATE PLANE COORDINATE (HORIZONTAL DATUM): REFERENCES RHODE ISLAND PLAN COORDINATE SYSTEM – NAD83 1983, US FOOT.
3. STATE PLANE COORDINATE (VERTICAL DATUM): NAVD 1988. THE COORDINATE SYSTEM THAT THIS SURVEY WAS BASED UPON IS STATE PLANE NAD 88, US FOOT.
4. ALL VERTICAL RADII ARE 400', AND HORIZONTAL RADII ARE 50' UNLESS OTHERWISE NOTED.
5. WETLAND DELINEATIONS SHOWN ARE BASED ON FIELD SURVEYS CONDUCTED IN DECEMBER 2021 AND JANUARY 2022.

ENVIRONMENTAL LEGEND:

RI_FEMA FLOODZONE

WETLAND

PSCL PERENIAL STREAM CENTER LINE

FWVC FRESH WATER WETLANDS IN THE VICINITY OF THE COAST

MOORING FIELDS

DRAWING MANIFEST			
DRAWING NO.	TITLE/DESCRIPTION	REVISION	DATE
G0-1	COVER	C	05/11/22
G1-1	GENERAL NOTES & MANIFEST	C	05/11/22
P2-1	PLAN – STA. 00+00 TO 8+00	C	05/11/22
P2-2	PLAN – STA. 8+00 TO 18+00	C	05/11/22
P2-3	PLAN – STA. 18+00 TO 28+00	C	05/11/22
P2-4	PLAN – STA. 28+00 TO 38+00	C	05/11/22
P2-5	PLAN – STA. 38+00 TO 48+00	C	05/11/22
P2-6	PLAN – STA. 48+00 TO 58+00	C	05/11/22
P2-7	PLAN – STA. 58+00 TO 61+95	C	05/11/22
U0-1	CONFIGURATION WITH NOTICED VARIATION	C	05/11/22
U0-2	CONFIGURATION WITHOUT NOTICED VARIATION	C	05/11/22
U0-3	30'X10' SPLICE VAULT DETAILS	C	05/11/22

Know what's **below.**
Call before you dig.

ATTENTION: FOR CLEANER TEXT AND LINE FEATURES WHEN USING ADOBE TO VIEW THESE PDFS, TURN OFF THE "SMOOTH LINE ART" AND "ENHANCE THIN LINES" OPTIONS UNDER EDIT-PREFERENCES-PAGE DISPLAY

172033 – Mayflower Cover And Manifest Option 4.dwg

REV	REVISIONS	DATE	DRN	DSGN	CKD	APPD
C	REVISED PER CLIENT COMMENTS	05/11/22	LAS	TSG	TSG	
B	ISSUED FOR REVIEW	05/06/22	LAS	TSG	TSG	
A	ISSUED FOR REVIEW	03/25/22	LAS	TSG	TSG	

REFERENCE DRAWINGS

DSGN	TSG	03/25/22
DRN	LAS	03/25/22
CKD	TSG	03/25/22
SCALE:	N.T.S.	

FOR 22x34 DWG ONLY

POWER ENGINEERS

MAYFLOWER WIND

AQUIDNECK ISLAND DUCT BANK

GENERAL NOTES & MANIFEST

JOB NUMBER 172033

REV C

DRAWING NUMBER G1-1

TO DEM/AQUIDNECK ISLAND TRUST HDD

PLAN VIEW

TO BOYDS LANE HDD

Know what's below. Call before you dig.

NOTES

1. THE UTILITIES AND NATURAL FEATURES SHOWN HEREON ARE BASED ON FIELD SURVEYS, AERIAL PHOTOGRAPHY AND RECORD DOCUMENTS. OTHER FACILITIES MAY EXIST NOT DISCOVERED THROUGH THE RECORD CHECK. THE CONTRACTOR SHALL VERIFY THE EXACT LOCATION, BOTH HORIZONTAL AND VERTICAL, OF ALL UTILITIES THROUGH THE APPROPRIATE UTILITY COMPANIES. 811 OR 1-888-344-7233.

0 20 40 80 120 FEET

HORIZONTAL SCALE: 1"= 40'

ATTENTION: FOR CLEANER TEXT AND LINE FEATURES WHEN USING ADOBE TO VIEW THESE PDFS, TURN OFF THE "SMOOTH LINE ART" AND "ENHANCE THIN LINES" OPTIONS UNDER EDIT–PREFERENCES–PAGE DISPLAY

THIS DRAWING WAS PREPARED BY POWER ENGINEERS, INC. FOR A SPECIFIC PROJECT, TAKING INTO CONSIDERATION THE SPECIFIC AND UNIQUE REQUIREMENTS OF THE PROJECT. REUSE OF THIS DRAWING OR ANY INFORMATION CONTAINED IN THIS DRAWING FOR ANY PURPOSE IS PROHIBITED UNLESS WRITTEN PERMISSION FROM BOTH POWER AND POWER'S CLIENT IS GRANTED.

REV	REVISIONS	DATE	DRN	DSGN	CKD	APPD
C	REVISED PER CLIENT COMMENTS	05/11/22	LAS	TSG	TSG	
B	ISSUED FOR REVIEW	05/06/22	LAS	TSG	TSG	
A	ISSUED FOR REVIEW	03/25/22	LAS	TSG	TSG	

REFERENCE DRAWINGS

DSGN	TSG	03/25/22
DRN	LAS	03/25/22
CKD	TSG	03/25/22

SCALE: HORZ: 1" = 40'

FOR 22x34 DWG ONLY

POWER ENGINEERS

MAYFLOWER WIND

AQUIDNECK ISLAND DUCT BANK

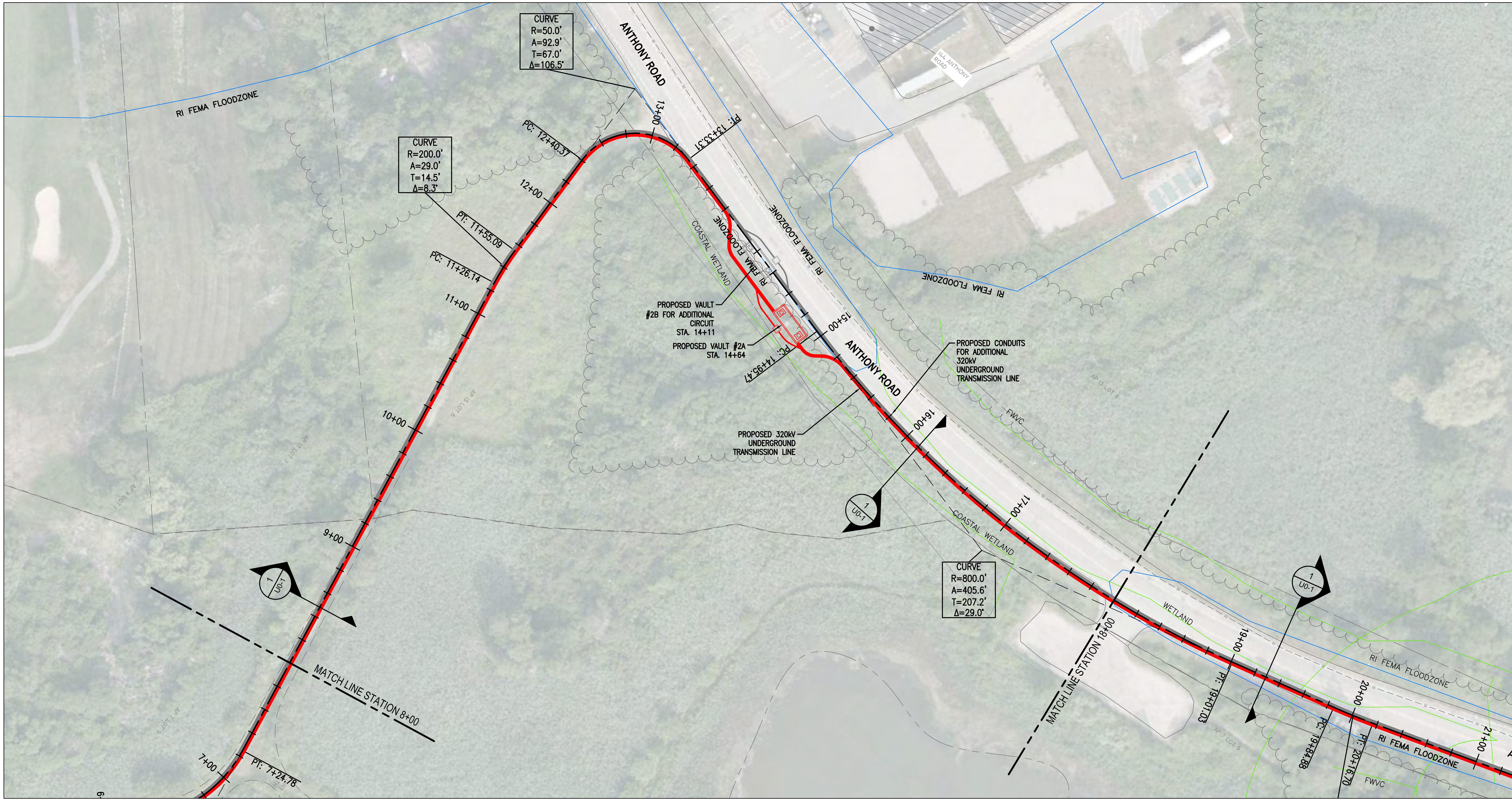
PLAN
STA 00+00 TO 08+00

JOB NUMBER 172033

REV C

DRAWING NUMBER P2-1

172033 – PLAN & PROFILE – OPTION 4.dwg



TO DEM/AQUIDNECK ISLAND TRUST HDD

PLAN VIEW

TO BOYDS LANE HDD

811
Know what's **below.**
Call before you dig.

NOTES

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0 20 40 80 120 FEET

HORIZONTAL SCALE: 1"= 40'

ATTENTION: FOR CLEANER TEXT AND LINE FEATURES WHEN USING ADOBE TO VIEW THESE PDFS, TURN OFF THE "SMOOTH LINE ART" AND "ENHANCE THIN LINES" OPTIONS UNDER EDIT-PREFERENCES-PAGE DISPLAY

REV	REVISIONS	DATE	DRN	DSGN	CKD	APPD
C	REVISED PER CLIENT COMMENTS	05/11/22	LAS	TSG	TSG	
B	ISSUED FOR REVIEW	05/06/22	LAS	TSG	TSG	
A	ISSUED FOR REVIEW	03/25/22	LAS	TSG	TSG	

REFERENCE DRAWINGS

DSGN	TSG	03/25/22
DRN	LAS	03/25/22
CKD	TSG	03/25/22

SCALE: **HORZ: 1" = 40'**

FOR 22x34 DWG ONLY

POWER ENGINEERS

MAYFLOWER WIND

AQUIDNECK ISLAND DUCT BANK

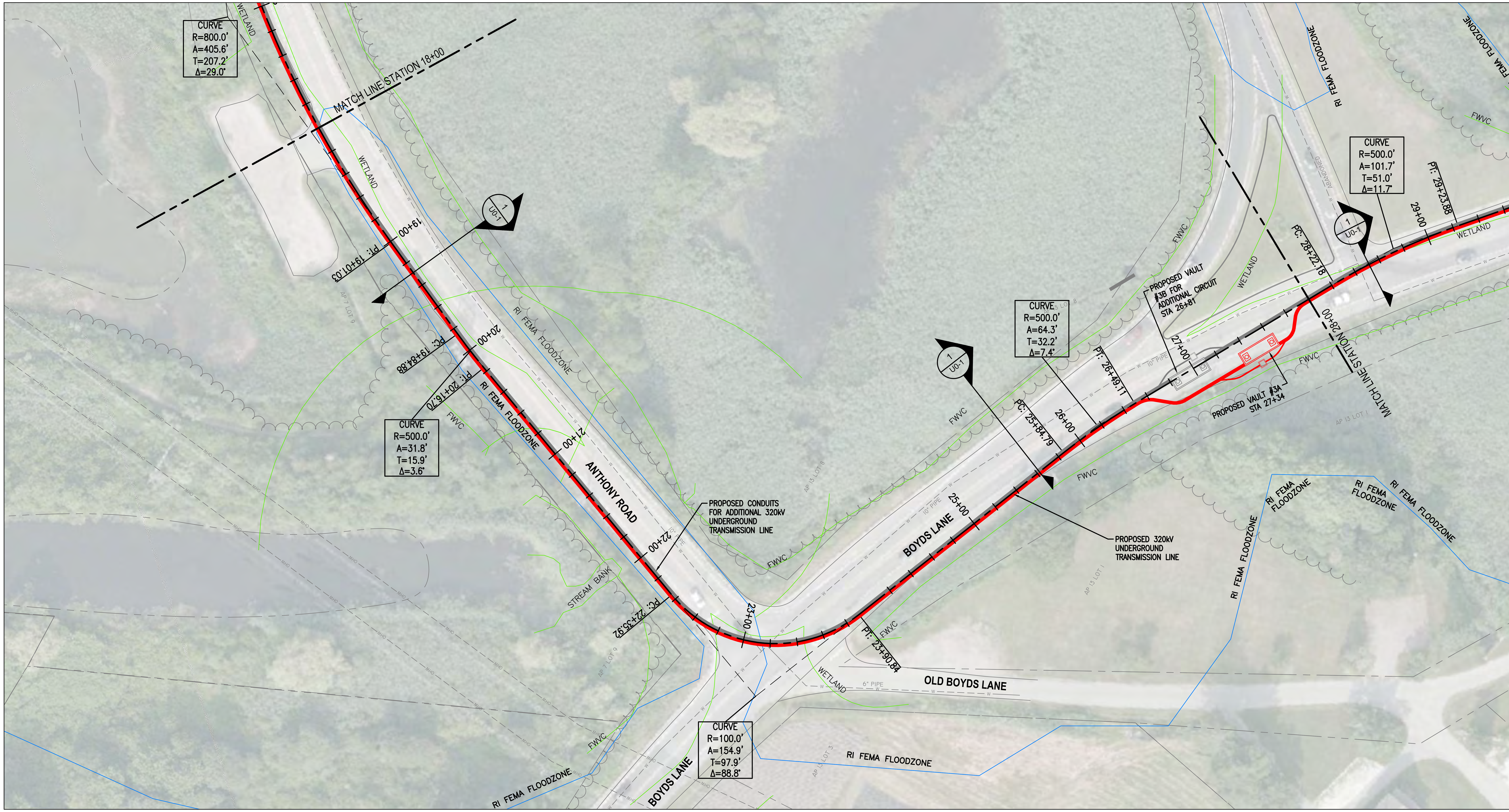
PLAN
STA 08+00 TO 18+00

JOB NUMBER: 172033

REV: C

DRAWING NUMBER: P2-2

172033 - PLAN & PROFILE - OPTION 4.dwg



TO DEM/AQUIDNECK ISLAND TRUST HDD

PLAN VIEW

TO BOYDS LANE HDD

NOTES

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0 20 40 80 120 FEET

HORIZONTAL SCALE: 1"= 40'

811 Know what's below. Call before you dig.

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REV	REVISIONS	DATE	DRN	DSGN	CKD	APPD
C	REVISED PER CLIENT COMMENTS	05/11/22	LAS	TSG	TSG	
B	ISSUED FOR REVIEW	05/06/22	LAS	TSG	TSG	
A	ISSUED FOR REVIEW	03/25/22	LAS	TSG	TSG	

REFERENCE DRAWINGS

DSGN	TSG	03/25/22
DRN	LAS	03/25/22
CKD	TSG	03/25/22

SCALE: HORZ: 1" = 40'

FOR 22x34 DWG ONLY

POWER ENGINEERS

MAYFLOWER WIND

AQUIDNECK ISLAND DUCT BANK

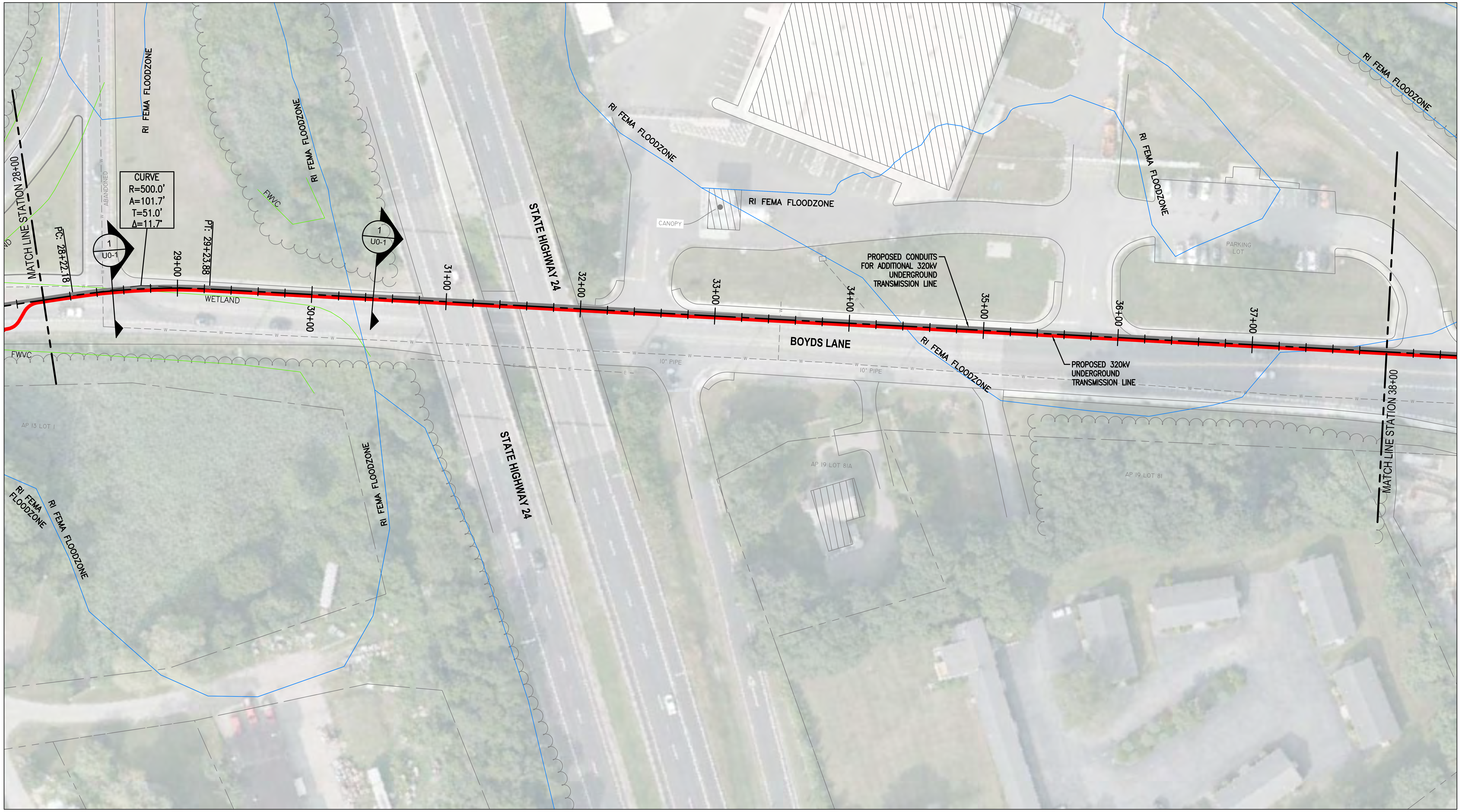
PLAN
STA 18+00 TO 28+00

JOB NUMBER 172033

REV C

DRAWING NUMBER P2-3

172033 – PLAN & PROFILE – OPTION 4.dwg



TO DEM/AQUIDNECK ISLAND TRUST HDD

PLAN VIEW

TO BOYDS LANE HDD

811 Know what's below. Call before you dig.

NOTES

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0 20 40 80 120 FEET

HORIZONTAL SCALE: 1"= 40'

ATTENTION: FOR CLEANER TEXT AND LINE FEATURES WHEN USING ADOBE TO VIEW THESE PDFS, TURN OFF THE "SMOOTH LINE ART" AND "ENHANCE THIN LINES" OPTIONS UNDER EDIT-PREFERENCES-PAGE DISPLAY

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REV	REVISIONS	DATE	DRN	DSGN	CKD	APPD
C	REVISED PER CLIENT COMMENTS	05/11/22	LAS	TSG	TSG	
B	ISSUED FOR REVIEW	05/06/22	LAS	TSG	TSG	
A	ISSUED FOR REVIEW	03/25/22	LAS	TSG	TSG	

REFERENCE DRAWINGS

DSGN	TSG	03/25/22
DRN	LAS	03/25/22
CKD	TSG	03/25/22

SCALE: HORZ: 1" = 40'

FOR 22x34 DWG ONLY

POWER ENGINEERS

MAYFLOWER WIND

AQUIDNECK ISLAND DUCT BANK

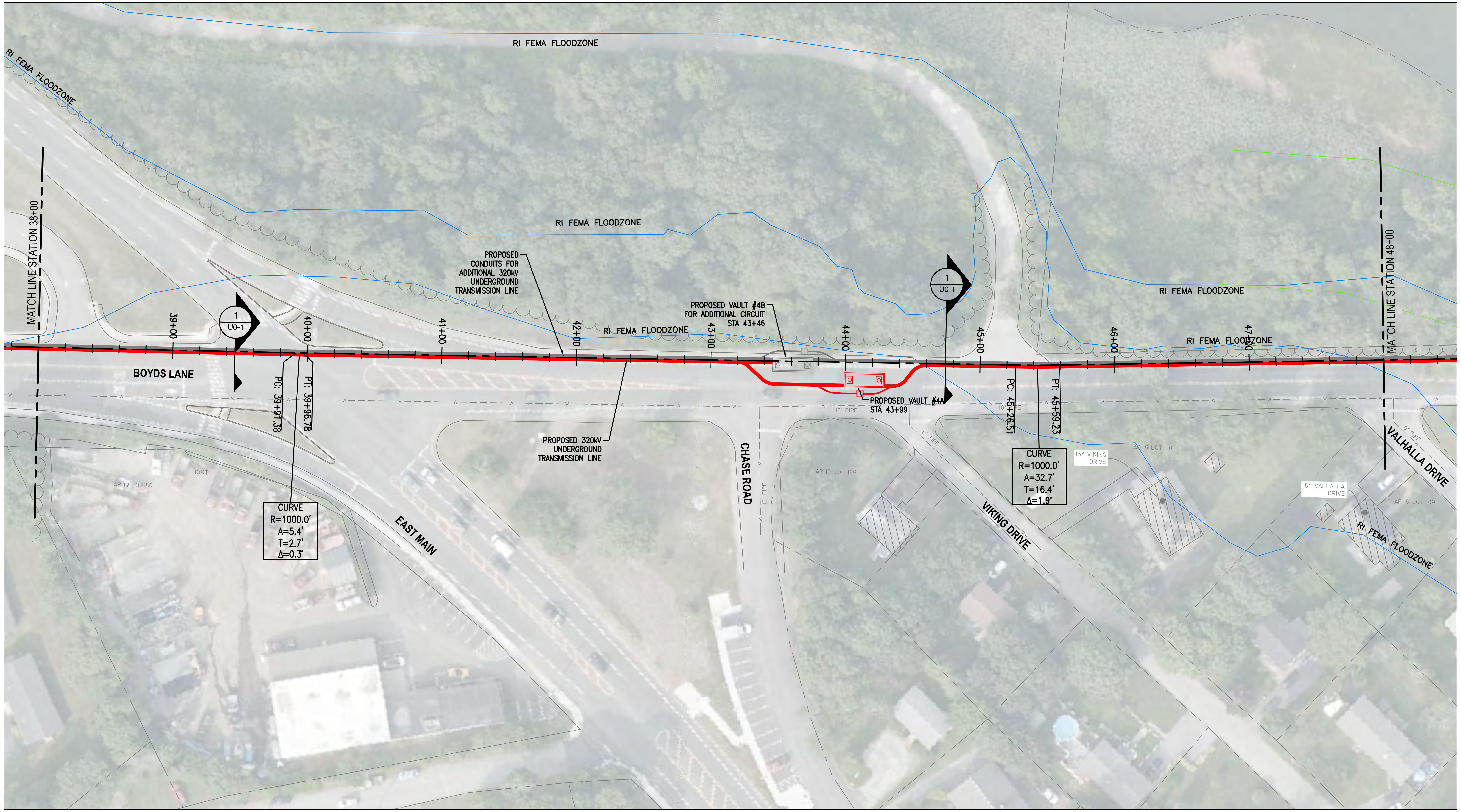
PLAN
STA 28+00 TO 38+00

JOB NUMBER 172033

REV C

DRAWING NUMBER P2-4

172033 - PLAN & PROFILE - OPTION 4.dwg



TO DEM/AQUIDNECK ISLAND TRUST HDD

PLAN VIEW

TO BOYDS LANE HDD

811 Know what's below. Call before you dig.

NOTES

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0 20 40 80 120 FEET

HORIZONTAL SCALE: 1"= 40'

ATTENTION: FOR CLEANER TEXT AND LINE FEATURES WHEN USING ADOBE TO VIEW THESE PDFS, TURN OFF THE "SMOOTH LINE ART" AND "ENHANCE THIN LINES" OPTIONS UNDER EDIT-PREFERENCES-PAGE DISPLAY

REV	REVISIONS	DATE	DRN	DSGN	CKD	APPD
C	REVISED PER CLIENT COMMENTS	05/11/22	LAS	TSG	TSG	
B	ISSUED FOR REVIEW	05/06/22	LAS	TSG	TSG	
A	ISSUED FOR REVIEW	03/25/22	LAS	TSG	TSG	

REFERENCE DRAWINGS

DSGN	TSG	03/25/22
DRN	LAS	03/25/22
CKD	TSG	03/25/22

SCALE: HORZ: 1" = 40'

FOR 22x34 DWG ONLY

POWER ENGINEERS

MAYFLOWER WIND

AQUIDNECK ISLAND DUCT BANK

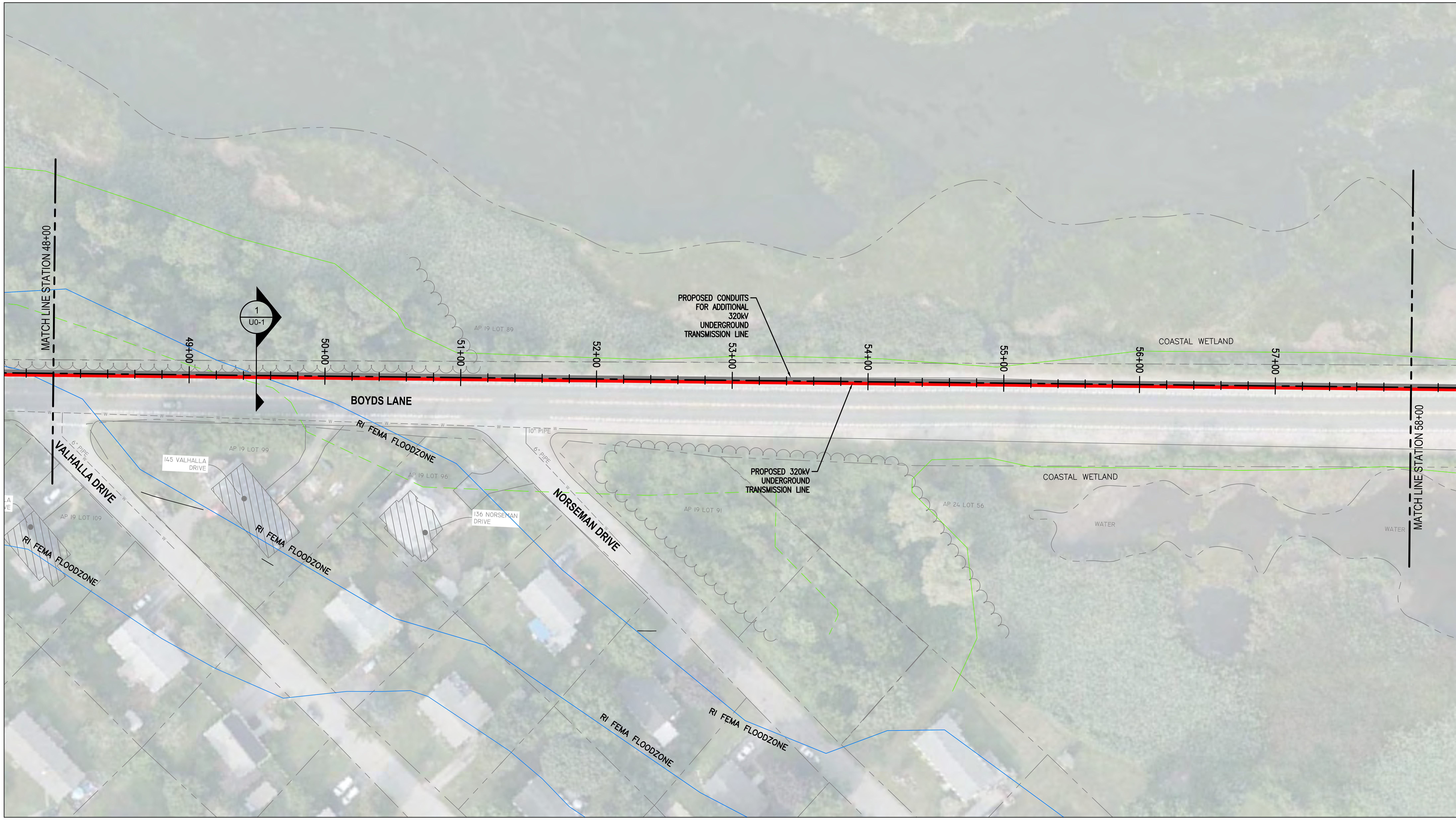
PLAN AND PROFILE
STA 38+00 TO 48+00

JOB NUMBER 172033

REV C

DRAWING NUMBER P2-5

172033 - PLAN & PROFILE - OPTION 4.dwg



TO DEM/AQUIDNECK ISLAND TRUST HDD

PLAN VIEW

TO BOYDS LANE HDD

NOTES

1. THE UTILITIES AND NATURAL FEATURES SHOWN HEREON ARE BASED ON FIELD SURVEYS, AERIAL PHOTOGRAPHY AND RECORD DOCUMENTS. OTHER FACILITIES MAY EXIST NOT DISCOVERED THROUGH THE RECORD CHECK. THE CONTRACTOR SHALL VERIFY THE EXACT LOCATION, BOTH HORIZONTAL AND VERTICAL, OF ALL UTILITIES THROUGH THE APPROPRIATE UTILITY COMPANIES. 811 OR 1-888-344-7233.

0 20 40 80 120 FEET

HORIZONTAL SCALE: 1"= 40'

811 Know what's below. Call before you dig.

ATTENTION: FOR CLEANER TEXT AND LINE FEATURES WHEN USING ADOBE TO VIEW THESE PDFS, TURN OFF THE "SMOOTH LINE ART" AND "ENHANCE THIN LINES" OPTIONS UNDER EDIT–PREFERENCES–PAGE DISPLAY

REV	REVISIONS	DATE	DRN	DSGN	CKD	APPD
C	REVISED PER CLIENT COMMENTS	05/11/22	LAS	TSG	TSG	
B	ISSUED FOR REVIEW	05/06/22	LAS	TSG	TSG	
A	ISSUED FOR REVIEW	03/25/22	LAS	TSG	TSG	

REFERENCE DRAWINGS

DSGN	TSG	03/25/22
DRN	LAS	03/25/22
CKD	TSG	03/25/22

SCALE: HORZ: 1" = 40'

FOR 22x34 DWG ONLY

POWER ENGINEERS

MAYFLOWER WIND

AQUIDNECK ISLAND DUCT BANK

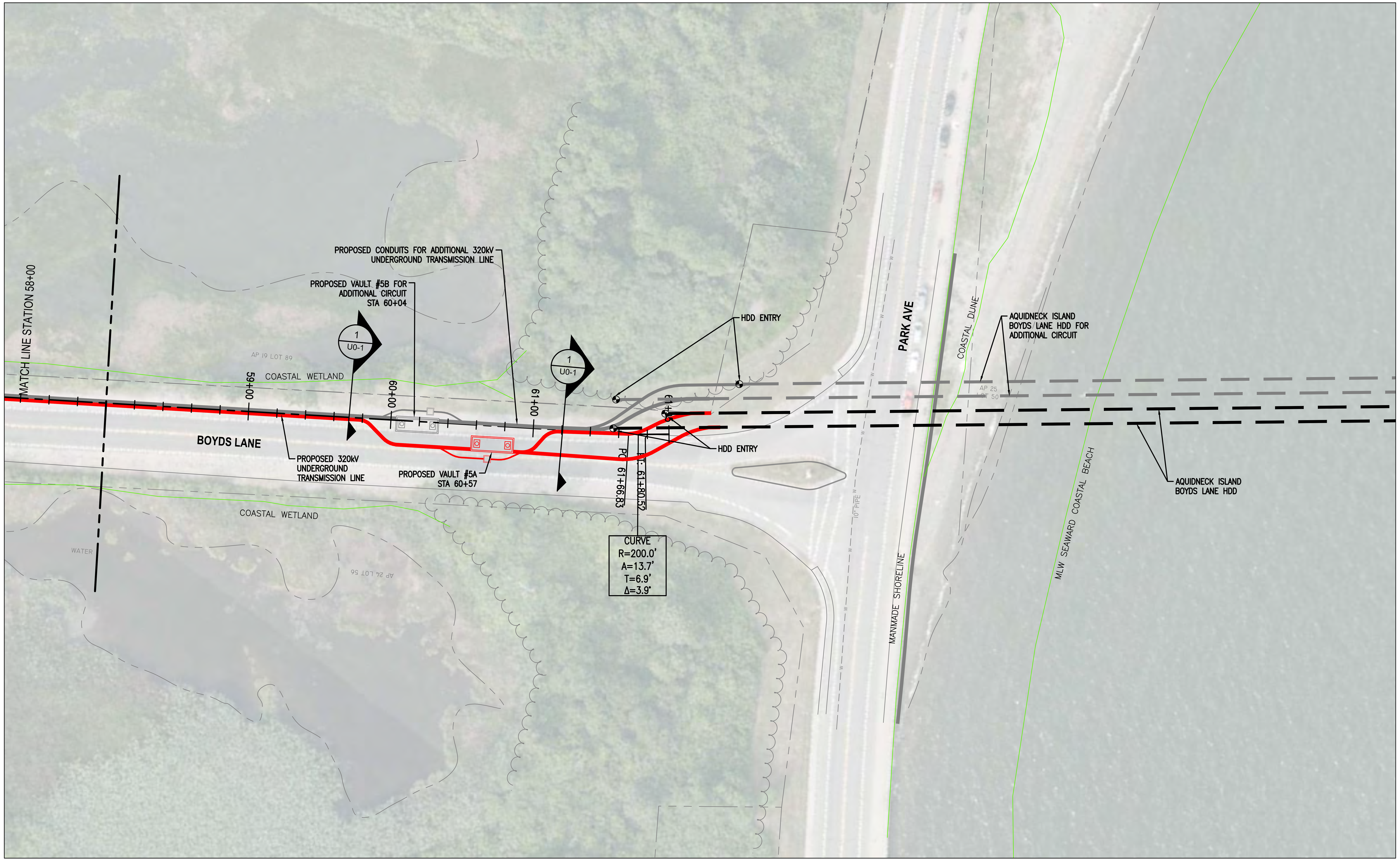
PLAN
STA 48+00 TO 58+00

JOB NUMBER 172033

REV C

DRAWING NUMBER P2–6

172033 – PLAN & PROFILE – OPTION 4.dwg



TO DEM/AQUIDNECK ISLAND TRUST HDD

PLAN VIEW

TO BOYDS LANE HDD

Know what's **below.** **Call** before you dig.

NOTES

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0 20 40 80 120 FEET

HORIZONTAL SCALE: 1"= 40'

ATTENTION: FOR CLEANER TEXT AND LINE FEATURES WHEN USING ADOBE TO VIEW THESE PDFS, TURN OFF THE "SMOOTH LINE ART" AND "ENHANCE THIN LINES" OPTIONS UNDER EDIT-PREFERENCES-PAGE DISPLAY

REV	REVISIONS	DATE	DRN	DSGN	CKD	APPD
C	REVISED PER CLIENT COMMENTS	05/11/22	LAS	TSG	TSG	
B	ISSUED FOR REVIEW	05/06/22	LAS	TSG	TSG	
A	ISSUED FOR REVIEW	03/25/22	LAS	TSG	TSG	

REFERENCE DRAWINGS

DSGN	TSG	03/25/22
DRN	LAS	03/25/22
CKD	TSG	03/25/22

SCALE: **HORZ: 1" = 40'**

FOR 22x34 DWG ONLY

POWER ENGINEERS

MAYFLOWER WIND

AQUIDNECK ISLAND DUCT BANK

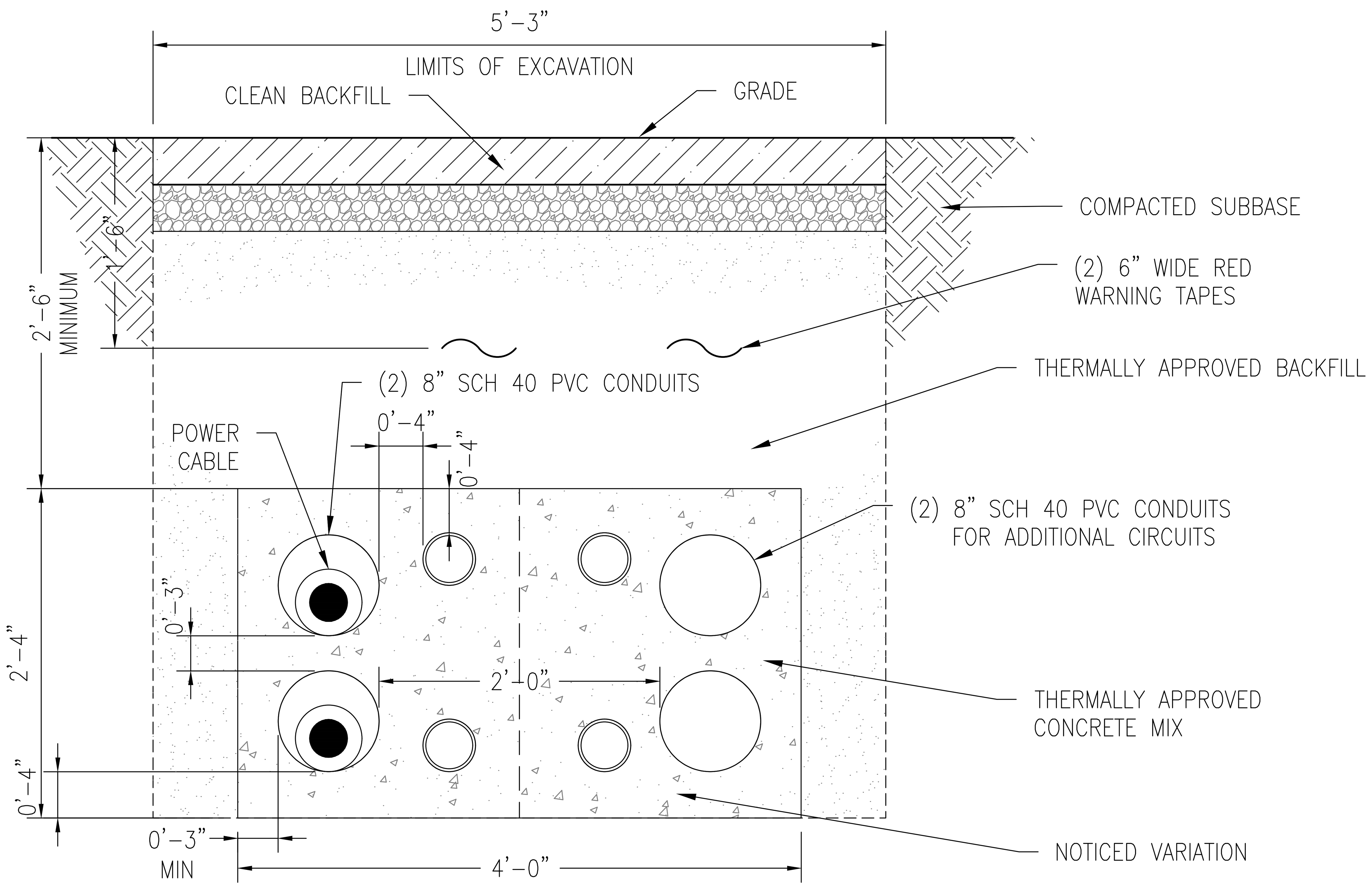
PLAN
STA 58+00 TO 61+95

JOB NUMBER 172033

REV C

DRAWING NUMBER P2-7

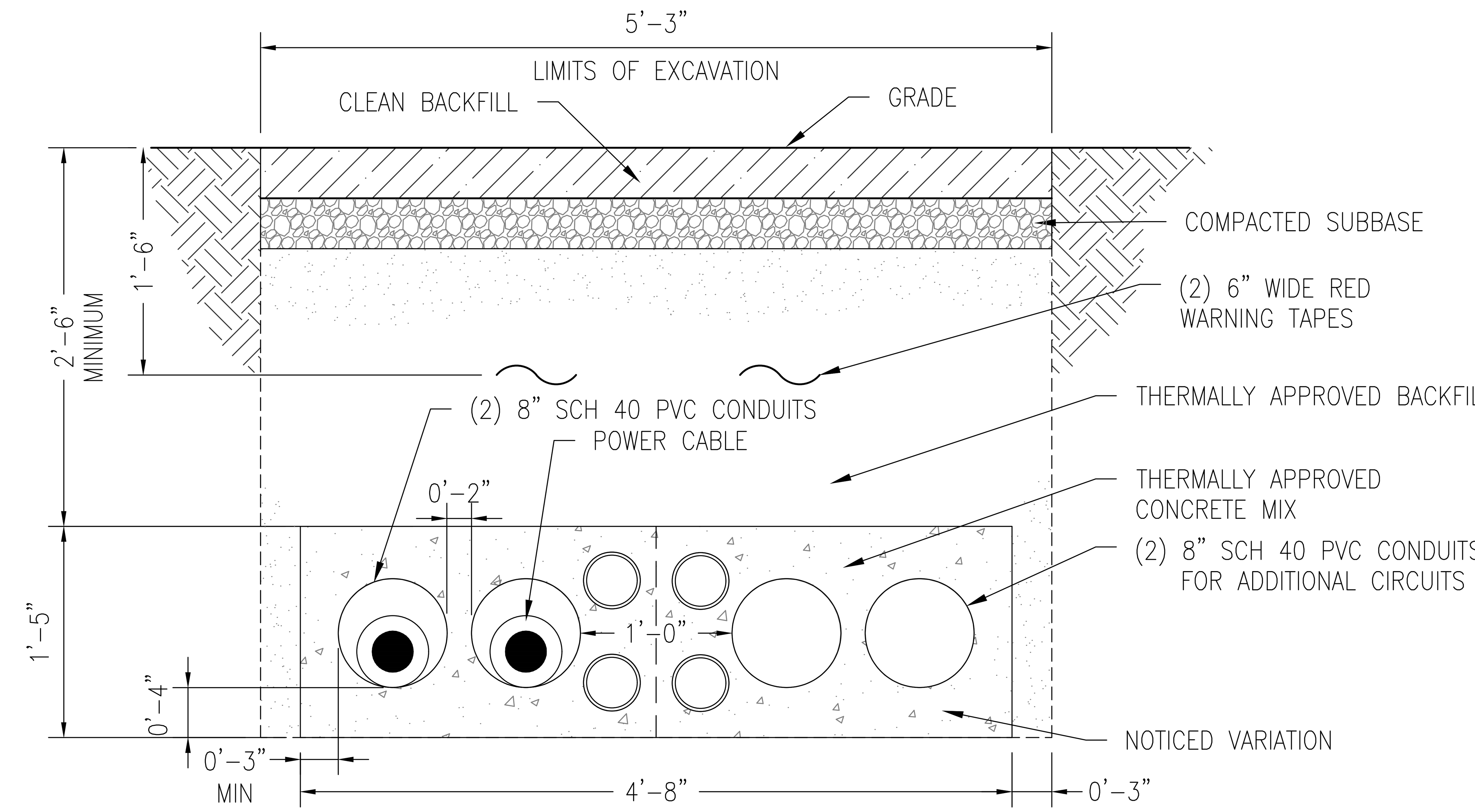
172033 – PLAN & PROFILE – OPTION 4.dwg



DOUBLE CIRCUIT DUCT BANK OPTION 1

SECTION 1 / U0-1

N.T.S.



DOUBLE CIRCUIT DUCT BANK OPTION 2

SECTION 2 / U0-1

N.T.S.

ATTENTION: FOR CLEANER TEXT AND LINE FEATURES WHEN USING ADOBE TO VIEW THESE PDFS, TURN OFF THE "SMOOTH LINE ART" AND "ENHANCE THIN LINES" OPTIONS UNDER EDIT-PREFERENCES-PAGE DISPLAY

REV	REVISIONS	DATE	DRN	DSGN	CKD	APPD
C	REVISED PER CLIENT COMMENTS	05/11/22	RRT	TSG	TSG	
B	ISSUED FOR REVIEW	05/06/22	RRT	TSG	TSG	
A	ISSUED FOR REVIEW	03/02/2022	BAJ	TSG	TSG	

REFERENCE DRAWINGS

DSGN	TSG	03/02/22
DRN	BAJ	03/02/22
CKD	TSG	03/02/22

SCALE: AS SHOWN

FOR 22x34 DWG ONLY

POWER ENGINEERS

MAYFLOWER WIND

AQUIDNECK ISLAND DUCT BANK

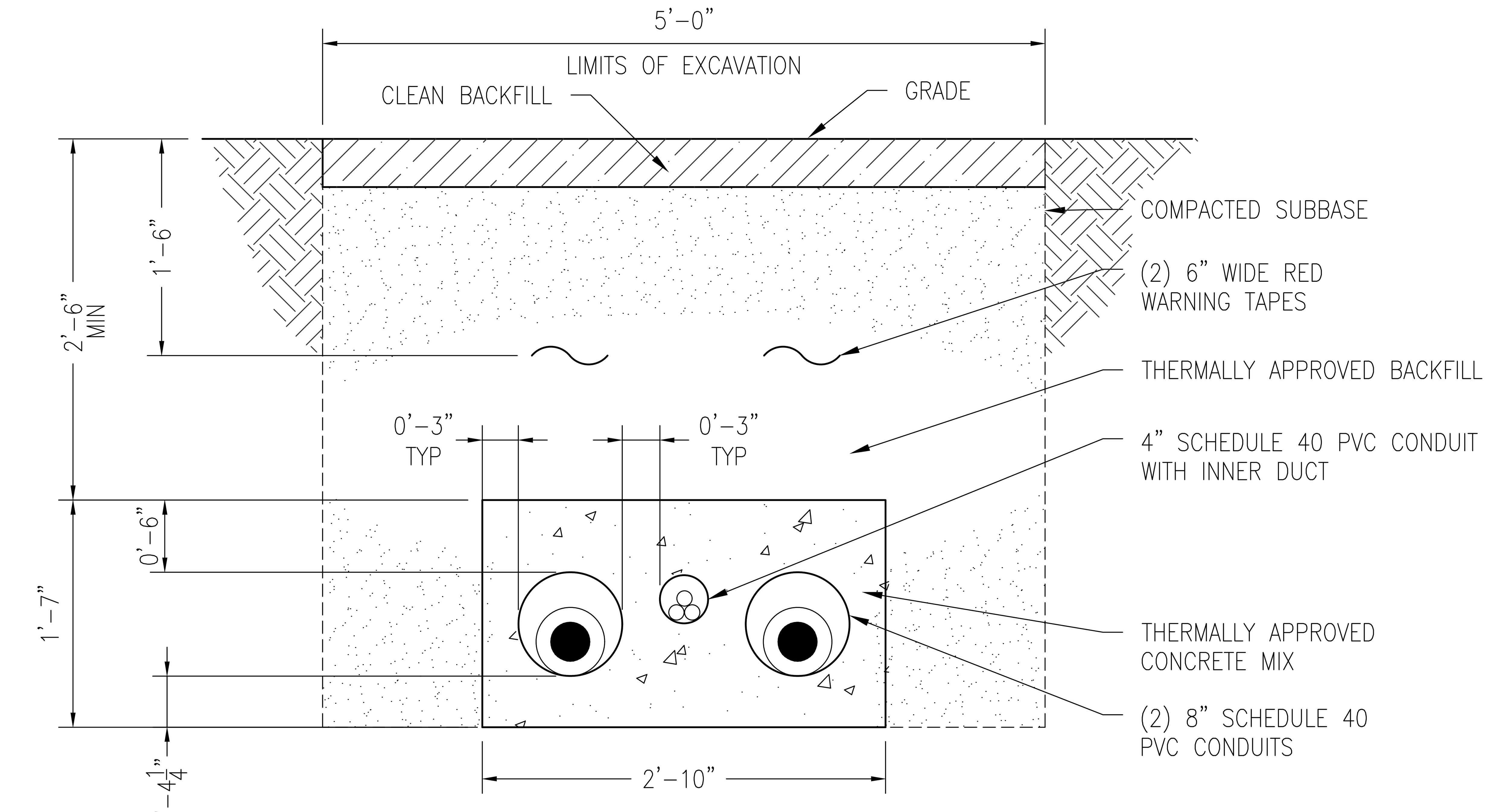
CONFIGURATION WITH NOTICED VARIATION

JOB NUMBER: 172033

REV: C

DRAWING NUMBER: U0-1

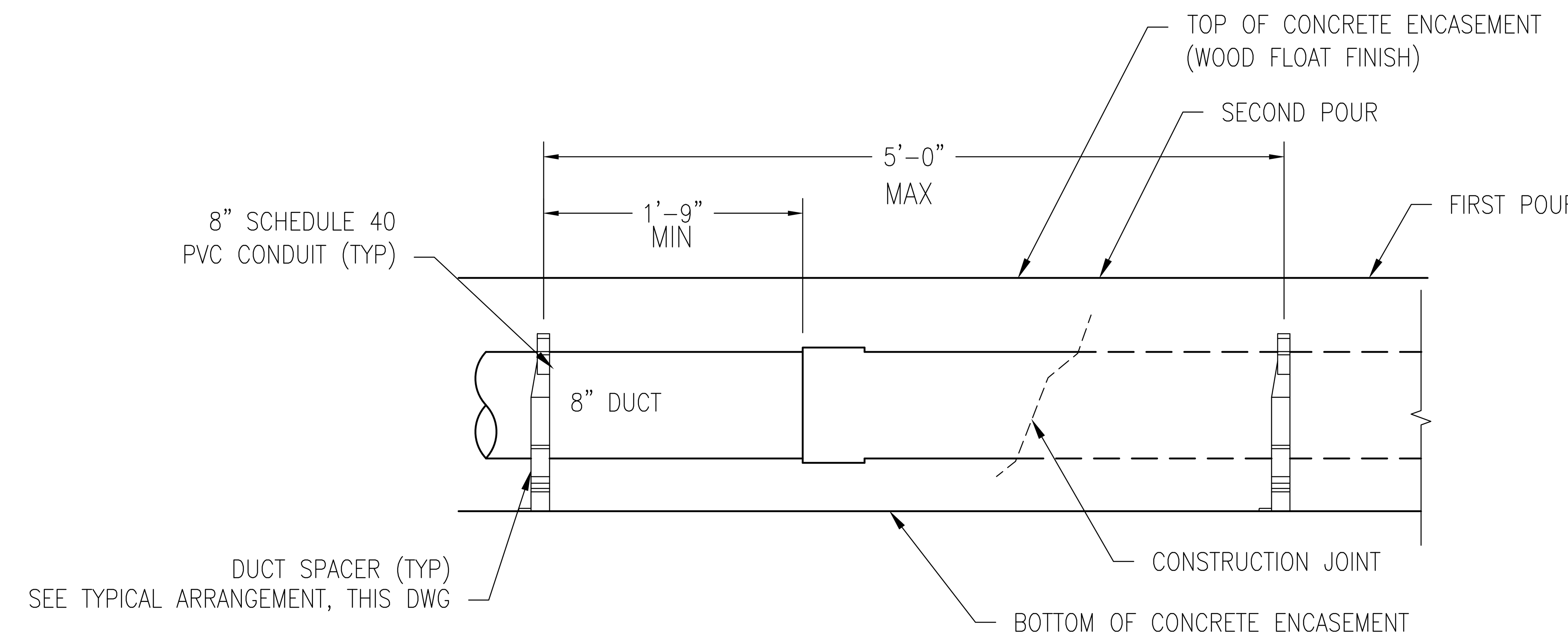
172033 - Mayflower Details.dwg



TYPICAL TRENCH RIGHT OF WAY APPLICATION

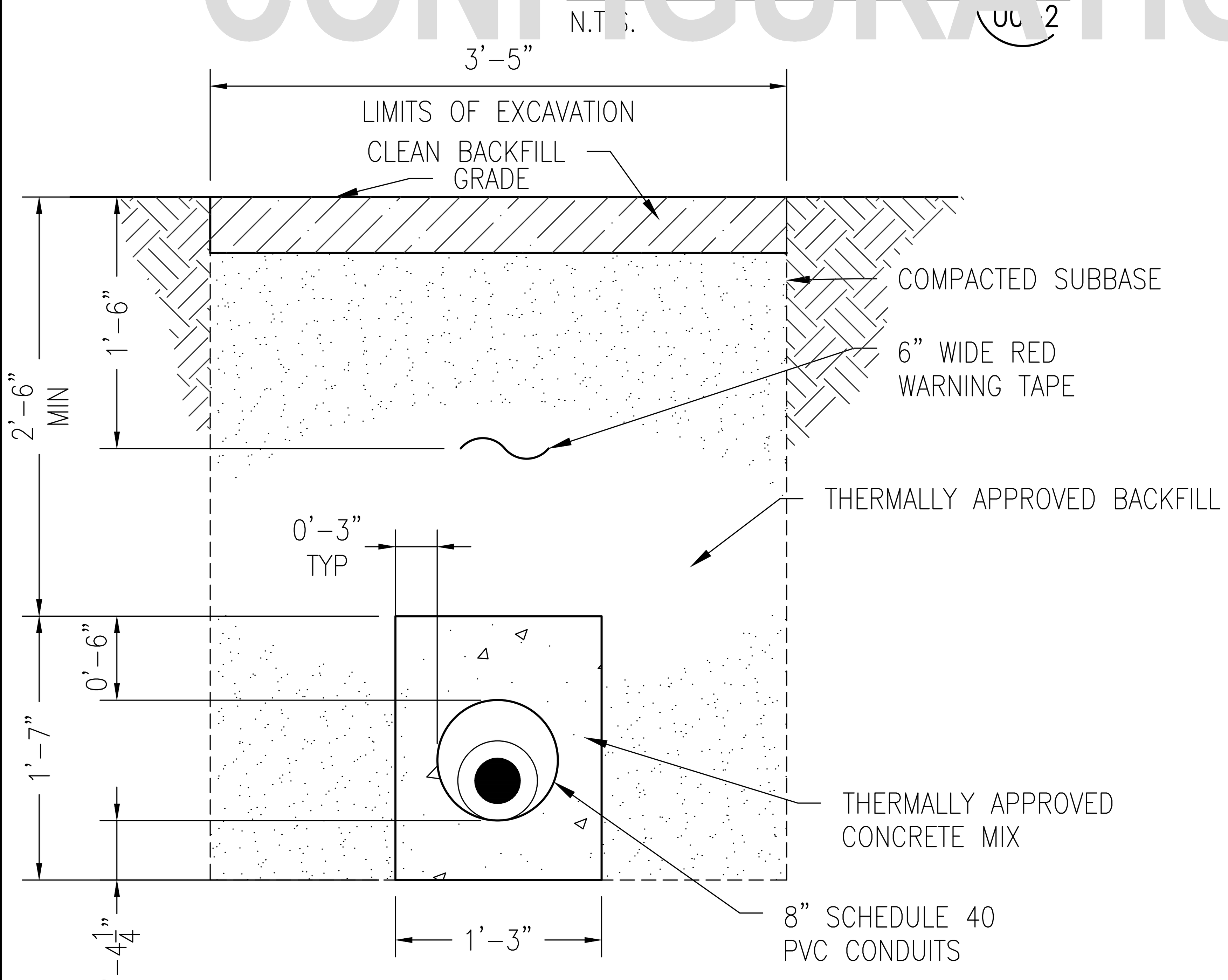
SECTION 1/U0-2

N.T.S.



TYPICAL 1x2 DUCT ELEVATION

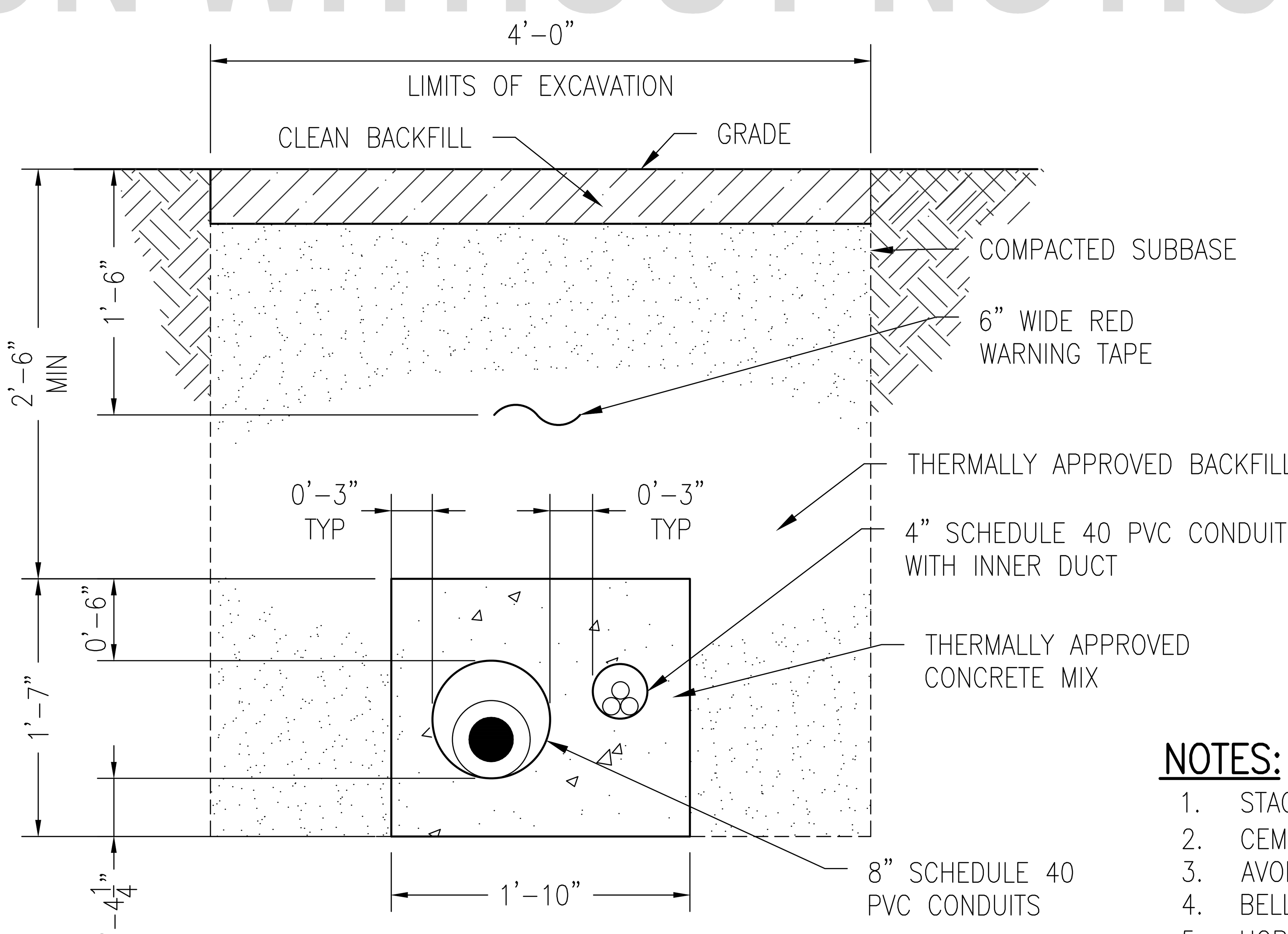
N.T.S.



TYPICAL 1X1 DUCT

SECTION 2/U0-2

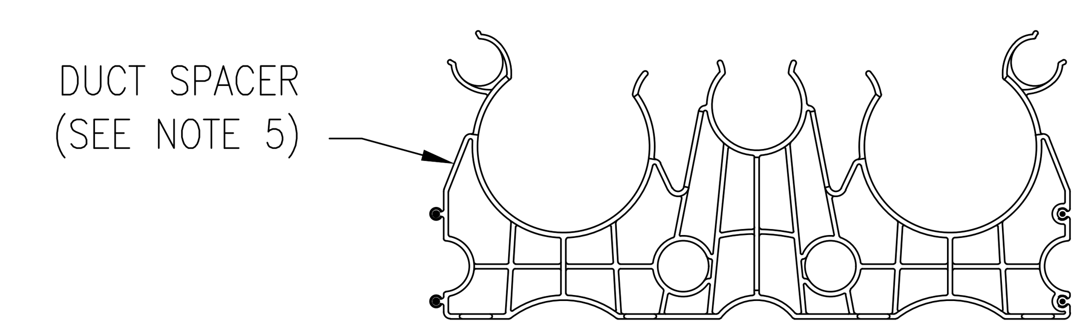
N.T.S.



TYPICAL 1X1 DUCT WITH FIBER OPTIC CABLE

SECTION 3/U0-2

N.T.S.



TYPICAL DUCT SPACER ARRANGEMENT

N.T.S.

NOTES:

1. STAGGER BELL ENDS.
2. CEMENT ALL JOINTS IN ACCORDANCE WITH CONDUIT MANUFACTURER'S SPECIFICATIONS.
3. AVOID STANDING ON CONDUIT.
4. BELL ENDS SHALL BE INSTALLED ALL IN THE SAME DIRECTION BETWEEN MANHOLES.
5. HORIZONTAL AND VERTICAL BEND RADIUS 400' UNLESS NOTED WITH A MINIMUM BEND RADIUS OF 50', EXCEPT RISER SWEEPS.

ATTENTION: FOR CLEANER TEXT AND LINE FEATURES WHEN USING ADOBE TO VIEW THESE PDFS, TURN OFF THE "SMOOTH LINE ART" AND "ENHANCE THIN LINES" OPTIONS UNDER EDIT–PREFERENCES–PAGE DISPLAY

REV	REVISIONS	DATE	DRN	DSGN	CKD	APPD
C	REVISED PER CLIENT COMMENTS	05/11/22	RRT	TSG	TSG	
B	ISSUED FOR REVIEW	05/06/22	RRT	TSG	TSG	
A	ISSUED FOR REVIEW	03/02/2022	BAJ	TSG	TSG	

REFERENCE DRAWINGS

DSGN	TSG	03/02/22
DRN	BAJ	03/02/22
CKD	TSG	03/02/22

SCALE: AS SHOWN

FOR 22x34 DWG ONLY

POWER ENGINEERS

MAYFLOWER WIND

AQUIDNECK ISLAND DUCT BANK

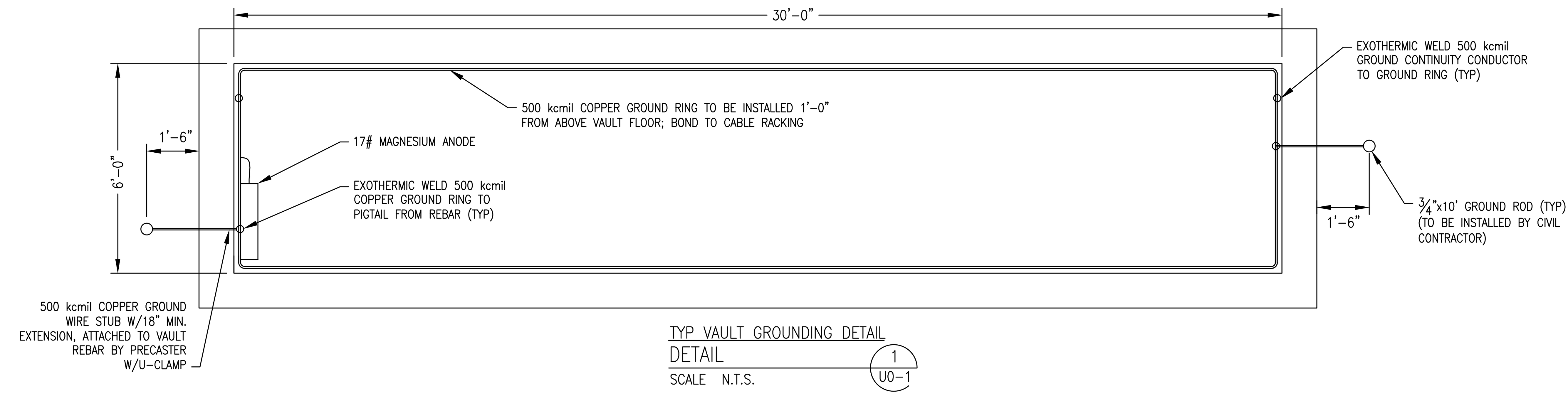
CONFIGURATION WITHOUT NOTICED VARIATION

JOB NUMBER 172033

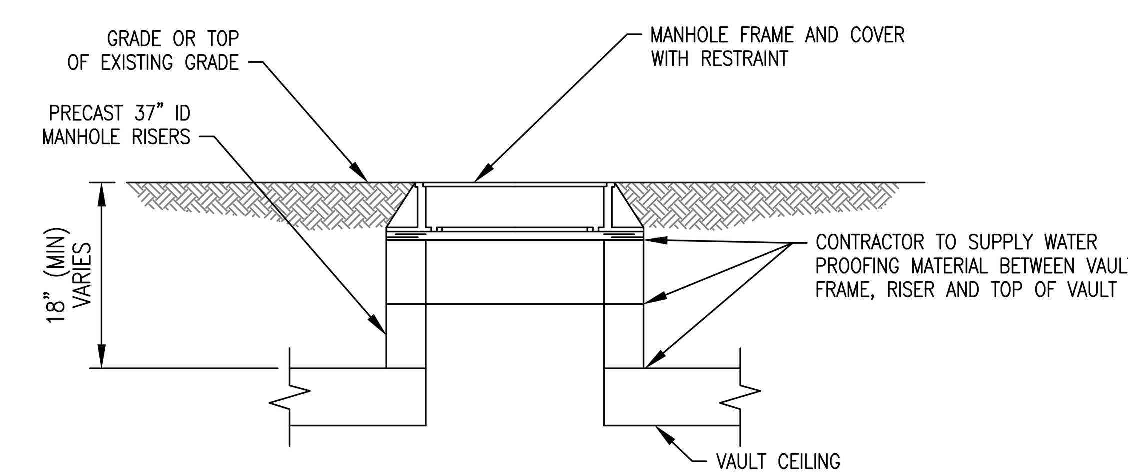
REV C

DRAWING NUMBER U0–2

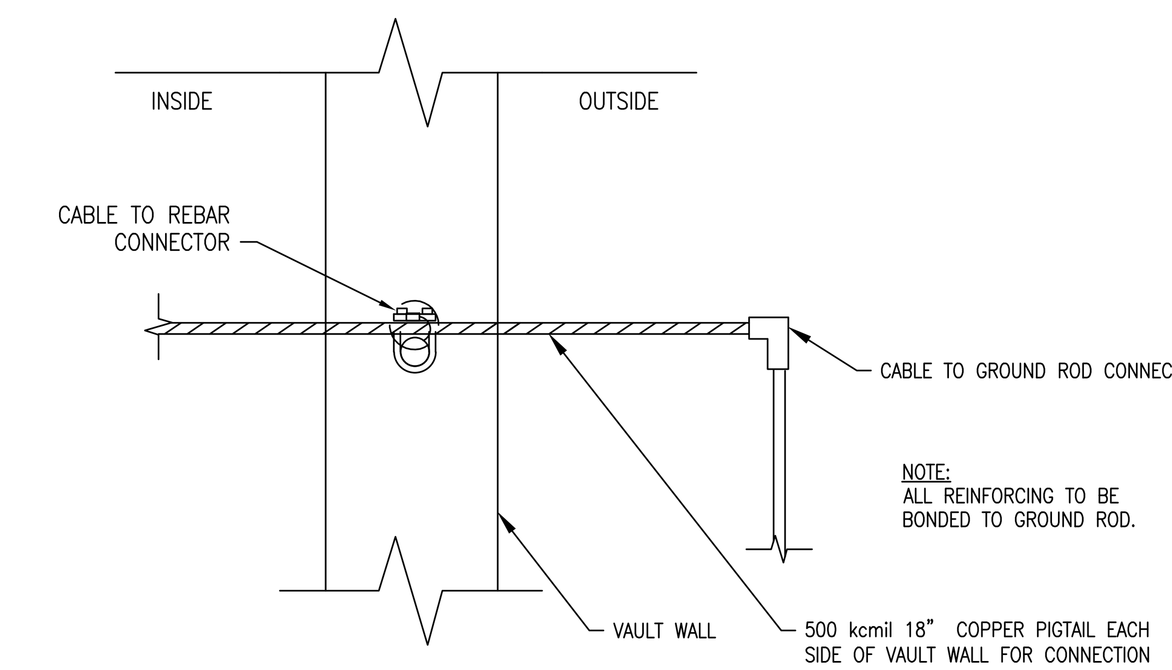
172033 – Mayflower Details.dwg



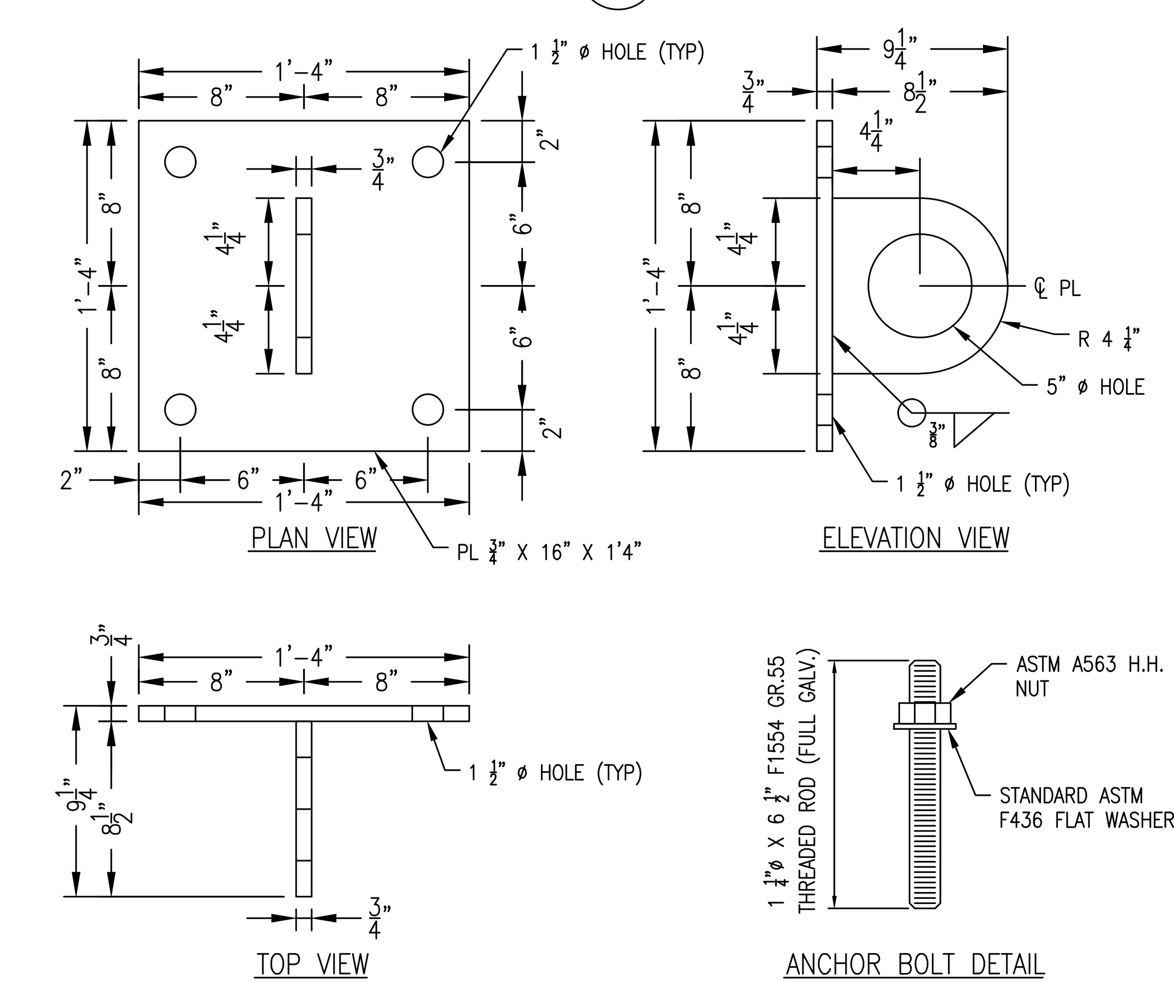
TYP VAULT GROUNDING DETAIL
DETAIL 1 / U0-1
SCALE N.T.S.



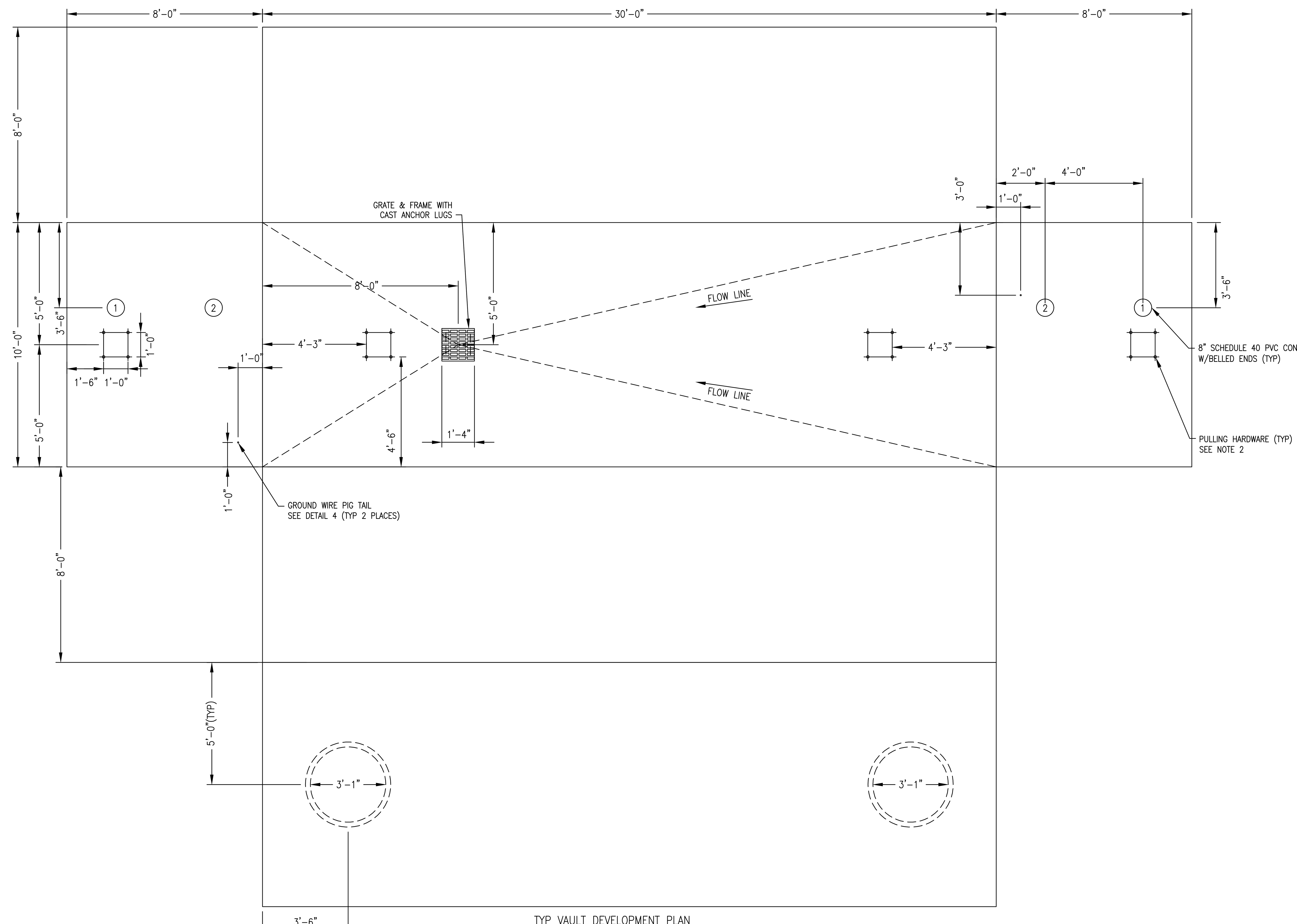
TYP RISER RING DETAIL
DETAIL 3 / U0-1
SCALE N.T.S.



TYP GROUND WIRE DETAIL
DETAIL 4 / U0-1
SCALE N.T.S.



TYP ANCHOR PLATE AND BOLT DETAIL
DETAIL 5 / U0-1
SCALE N.T.S.



TYP VAULT DEVELOPMENT PLAN
DETAIL 2 / U0-1
SCALE N.T.S.

NOTES:

1. ALL DIMENSIONS ARE INSIDE DIMENSIONS.

ATTENTION: FOR CLEANER TEXT AND LINE FEATURES WHEN USING ADOBE TO VIEW THESE PDFS, TURN OFF THE "SMOOTH LINE ART" AND "ENHANCE THIN LINES" OPTIONS UNDER EDIT-PREFERENCES-PAGE DISPLAY

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REFERENCE DRAWINGS

DSGN	TSG	03/02/22
DRN	BAJ	03/02/22
CKD	TSG	03/02/22

SCALE:

FOR 22x34 DWG ONLY

POWER ENGINEERS

MAYFLOWER WIND

AQUIDNECK ISLAND DUCT BANK

30'X10' SPLICE VAULT DETAILS

JOB NUMBER 172033

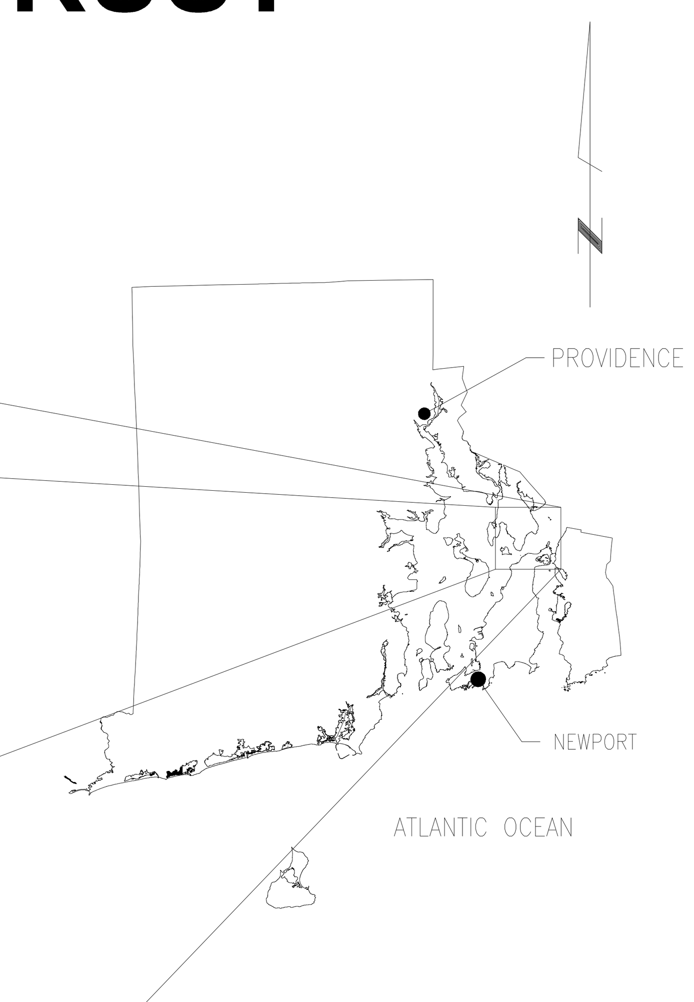
REV C

DRAWING NUMBER U0-3

172033 – Mayflower Details.dwg

MAYFLOWER WIND
30% HORIZONTAL DIRECTIONAL DRILL DESIGN
OFFSHORE EXPORT CABLE LANDFALL - DEM/AQUIDNECK ISLAND TRUST

VICINITY MAP
N.T.S.



AREA MAP RHODE ISLAND
N.T.S.

Know what's below.
Call before you dig.

POWER ENGINEERS
PROJECT ENGINEER: TODD GOYETTE

POWER ENGINEERS
PROJECT NUMBER: 172033

ATTENTION: FOR CLEANER TEXT AND LINE FEATURES WHEN USING ADOBE TO VIEW THESE PDFS, TURN OFF THE "SMOOTH LINE ART" AND "ENHANCE THIN LINES" OPTIONS UNDER EDIT-PREFERENCES-PAGE DISPLAY

172033 - Aquidneck Island TNEC ROW HDD.dwg

REV	REVISIONS	DATE	DRN	DSGN	CKD	APPD	REFERENCE DRAWINGS
G	INCORPORATED MAYFLOWER COMMENTS	05/11/2022	ASW	TSG	TSG		
F	INCORPORATED MAYFLOWER COMMENTS	04/29/2022	ASW	TSG	TSG		
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DSGN	TSG	08/13/2021
DRN	ASW	08/13/2021
CKD	TSG	08/13/2021
SCALE:	AS SHOWN	

FOR 24x36 DWG ONLY

POWER ENGINEERS

MAYFLOWER WIND
AQUIDNECK ISLAND HDD
DEM/AQUIDNECK ISLAND TRUST COVER

JOB NUMBER: 172033
REV: G
DRAWING NUMBER: G0-1

DRAWING MANIFEST			
DRAWING NO.	TITLE/DESCRIPTION	REVISION	DATE
G0-1	COVER	G	05/11/22
G1-1	GENERAL NOTES & MANIFEST	G	05/11/22
P1-1	PLAN – STA. 00+00 TO 19+50	G	05/11/22
U1-1	HDD LAYOUTS	G	05/11/22

LEGEND

	HDD START/END
	SOIL BORE
W	EXISTING WATER LINE
G	EXISTING GAS LINE
D	EXISTING STORM DRAINAGE LINE
S	EXISTING SANITARY SEWER LINE
E	EXISTING UNDERGROUND ELECTRIC LINE
PSCL	PERENIAL STREAM CENTER LINE
FWVC	FRESH WATER WETLANDS IN THE VICINITY OF THE COAST

GENERAL NOTES

1. THE UTILITIES AND NATURAL FEATURES SHOWN HEREON ARE BASED ON:
   - LEVEL D SURVEY PERFORMED BY DIPRETE ENGINEERING, 01/19/2022
   - GOOGLE EARTH 2020
   - OTHER FACILITIES MAY EXIST NOT DISCOVERED THROUGH THE RECORD CHECK. THE CONTRACTOR SHALL VERIFY THE EXACT LOCATION, BOTH HORIZONTAL AND VERTICAL, OF ALL UTILITIES THROUGH THE APPROPRIATE UTILITY COMPANIES. CALL BEFORE YOU DIG, 811 OR 1-888-344-7233.
2. STATE PLANE COORDINATE (HORIZONTAL DATUM): REFERENCES RHODE ISLAND PLAN COORDINATE SYSTEM – NAD83 1983, US FOOT.
3. STATE PLANE COORDINATE (VERTICAL DATUM): NAVD 1988. THE COORDINATE SYSTEM THAT THIS SURVEY WAS BASED UPON IS STATE PLANE NAD 88, US FOOT.
4. ALL VERTICAL RADII ARE 400', AND HORIZONTAL RADII ARE 50' UNLESS OTHERWISE NOTED.
5. WETLAND DELINEATIONS SHOWN ARE BASED ON FIELD SURVEYS CONDUCTED IN DECEMBER 2021 AND JANUARY 2022.

ENVIRONMENTAL LEGEND:

	RI_FEMA FLOODZONE
	WETLAND
PSCL	PERENIAL STREAM CENTER LINE
FWVC	FRESH WATER WETLANDS IN THE VICINITY OF THE COAST
	MOORING FIELDS

ATTENTION: FOR CLEANER TEXT AND LINE FEATURES WHEN USING ADOBE TO VIEW THESE PDFS, TURN OFF THE "SMOOTH LINE ART" AND "ENHANCE THIN LINES" OPTIONS UNDER EDIT-PREFERENCES-PAGE DISPLAY

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REFERENCE DRAWINGS

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DRN	ASW	08/13/2021
CKD	TSG	08/13/2021
SCALE:	AS SHOWN	

FOR 24x36 DWG ONLY

POWER ENGINEERS

MAYFLOWER WIND

AQUIDNECK ISLAND HDD

DEM/AQUIDNECK ISLAND TRUST
GENERAL NOTES & MANIFEST

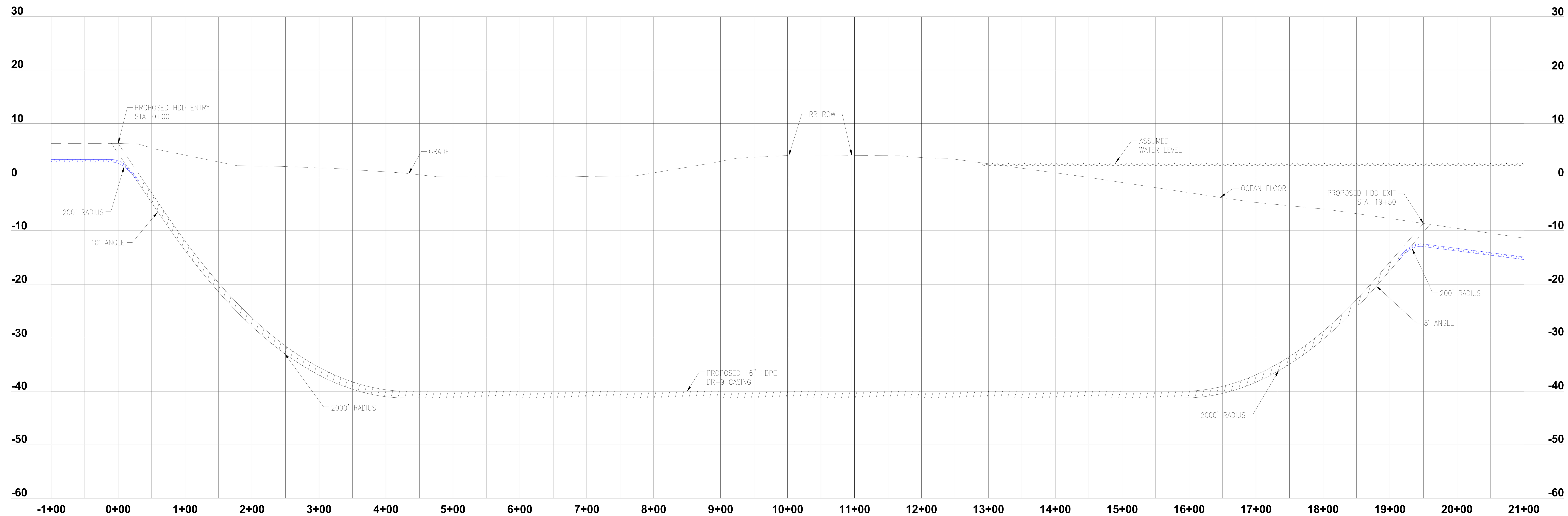
JOB NUMBER: 172033

REV: G

DRAWING NUMBER: G1-1

172033 - Aquidneck Island TNEC ROW HDD.dwg

PLAN VIEW



PROFILE VIEW

NOTES:

1. THE UTILITIES AND NATURAL FEATURES SHOWN HEREON ARE BASED ON FIELD SURVEYS, AERIAL PHOTOGRAPHY AND RECORD DOCUMENTS. OTHER FACILITIES MAY EXIST NOT DISCOVERED THROUGH THE RECORD CHECK. THE CONTRACTOR SHALL VERIFY THE EXACT LOCATION, BOTH HORIZONTAL AND VERTICAL, OF ALL UTILITIES THROUGH THE APPROPRIATE UTILITY COMPANIES. CALL BEFORE YOU DIG, 811 OR 1-800-344-7233.
2. PLAN AND PROFILE ALIGNMENT IS CONCEPTUAL AND NOT BASED ON PROJECT SPECIFIC FIELD SURVEY OR GEOTECHNICAL INVESTIGATION.
3. THE UTILITIES AND NATURAL FEAUTRES SHOWN HEREON ARE BASED ON:
   - GOOGLE EARTH 2020
   - TOWN OF PORTSMOUTH WEB GIS MAPS AND ONLINE PROPERTY INFORMATION
4. PROPERTY LINES ARE APPROXIMATE FOR DISCUSSION PURPOSES.

811 Know what's below. Call before you dig.

0 80 160 240 FEET — HORIZONTAL SCALE 1"= 80'

0 10 20 30 FEET — VERTICAL SCALE 1"= 10'

ATTENTION: FOR CLEANER TEXT AND LINE FEATURES WHEN USING ADOBE TO VIEW THESE PDFS, TURN OFF THE "SMOOTH LINE ART" AND "ENHANCE THIN LINES" OPTIONS UNDER EDIT-PREFERENCES-PAGE DISPLAY

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REFERENCE DRAWINGS

DSGN	TSG	08/13/2021
DRN	ASW	08/13/2021
CKD	TSG	08/13/2021

SCALE: AS SHOWN

FOR 24x36 DWG ONLY

POWER ENGINEERS

MAYFLOWER WIND

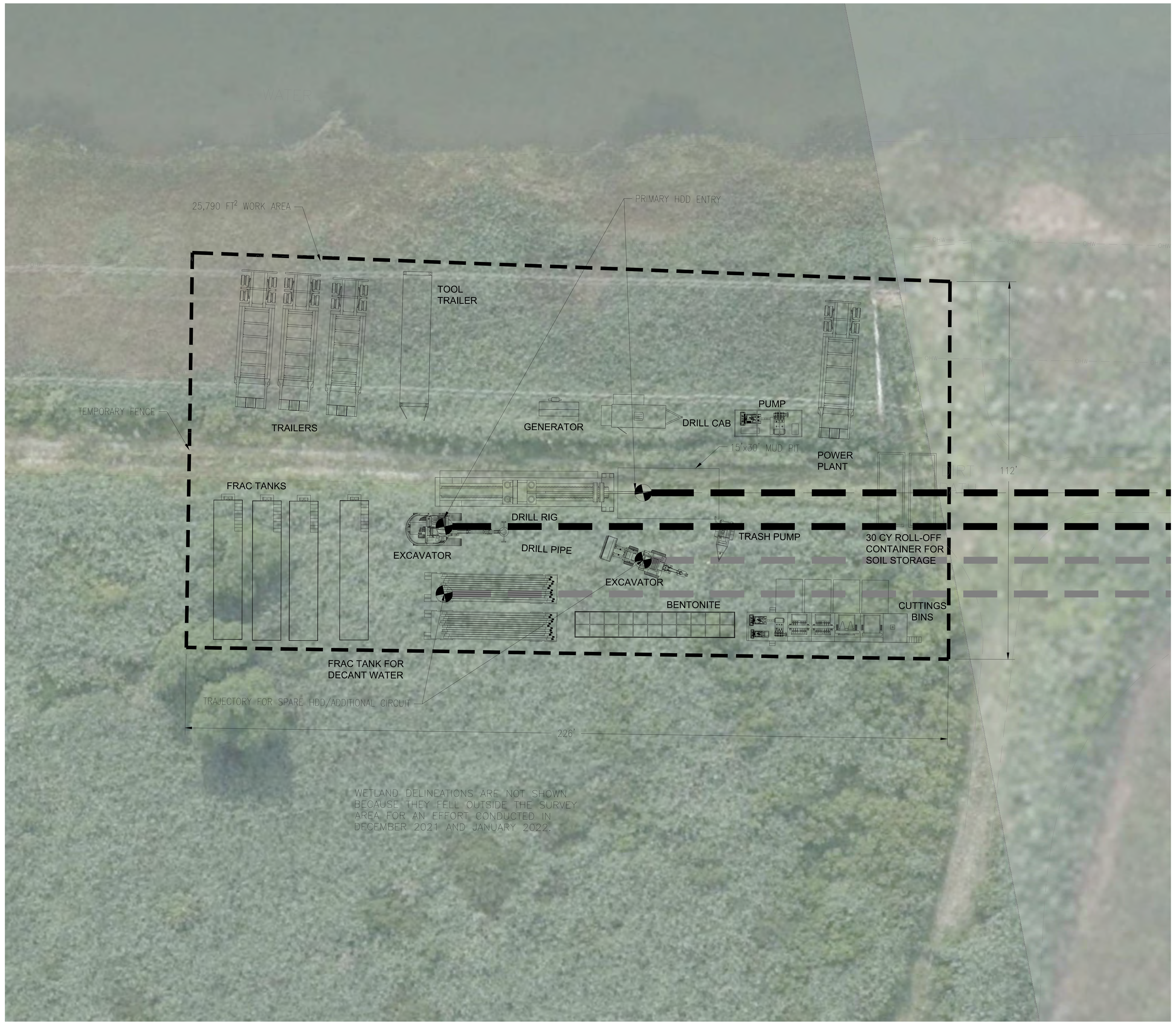
AQUIDNECK ISLAND HDD

DEM/AQUIDNECK ISLAND TRUST PLAN AND PROFILE

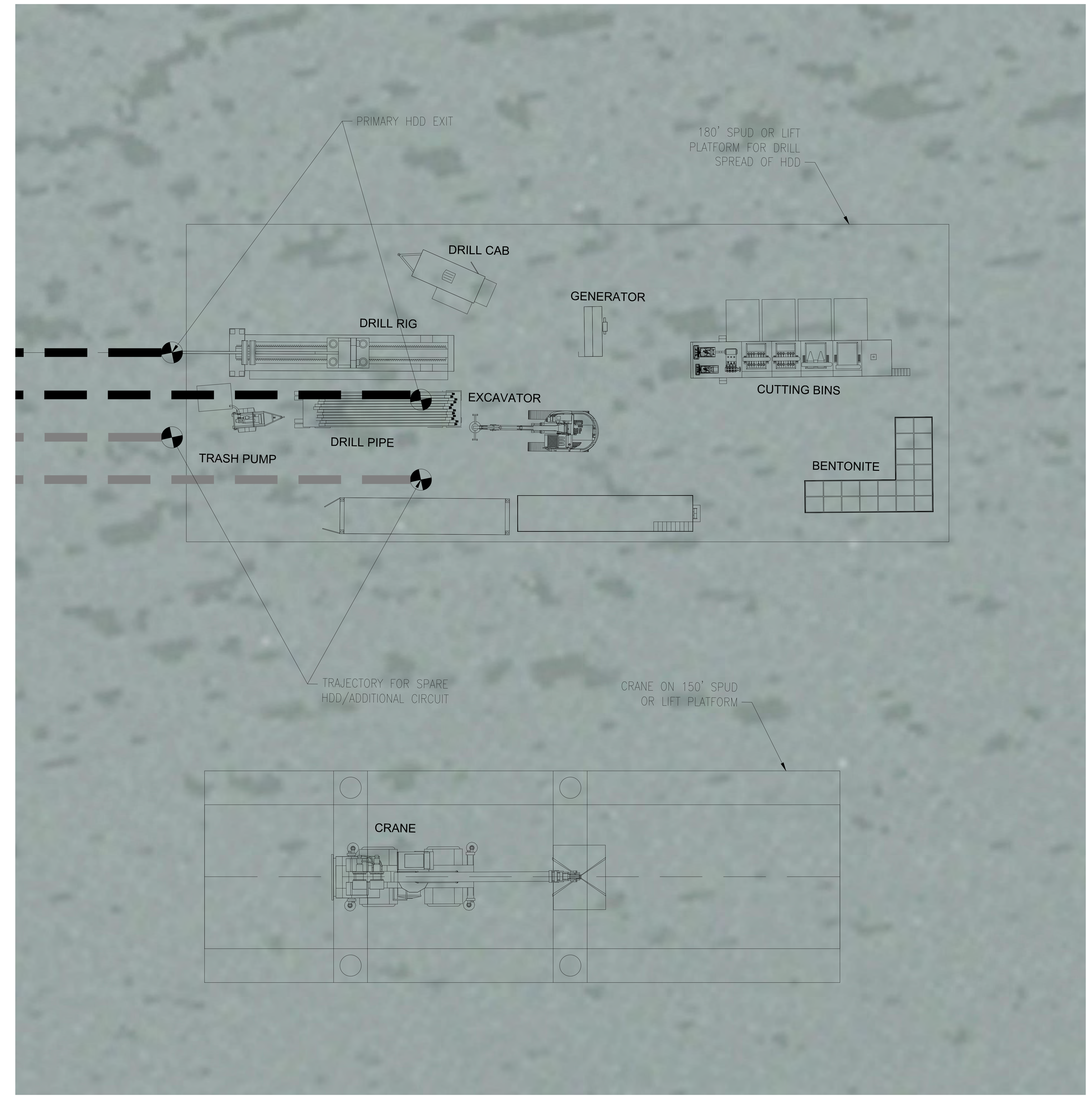
JOB NUMBER 172033 REV G

DRAWING NUMBER P1-1

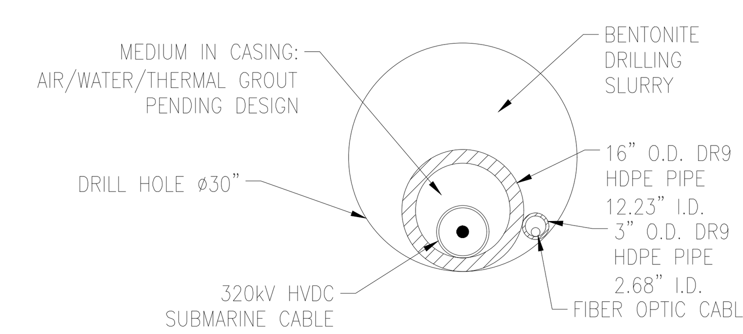
172033 - Aquidneck Island TNEC ROW HDD.dwg



HDD ENTRY



HDD EXIT



PROPOSED BORE DETAIL

N.T.S.

Know what's below. Call before you dig.

NOTES:

1. THE UTILITIES AND NATURAL FEATURES SHOWN HEREON ARE BASED ON FIELD SURVEYS, AERIAL PHOTOGRAPHY AND RECORD DOCUMENTS. OTHER FACILITIES MAY EXIST NOT DISCOVERED THROUGH THE RECORD CHECK. THE CONTRACTOR SHALL VERIFY THE EXACT LOCATION, BOTH HORIZONTAL AND VERTICAL, OF ALL UTILITIES THROUGH THE APPROPRIATE UTILITY COMPANIES. CALL BEFORE YOU DIG, 811 OR 1-800-344-7233.
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   - GOOGLE EARTH 2020
   - TOWN OF PORTSMOUTH WEB GIS MAPS AND ONLINE PROPERTY INFORMATION
4. PROPERTY LINES ARE APPROXIMATE FOR DISCUSSION PURPOSES.

0 20 40 60 FEET
HORIZONTAL SCALE 1"= 20'

ATTENTION: FOR CLEANER TEXT AND LINE FEATURES WHEN USING ADOBE TO VIEW THESE PDFS, TURN OFF THE "SMOOTH LINE ART" AND "ENHANCE THIN LINES" OPTIONS UNDER EDIT-PREFERENCES-PAGE DISPLAY

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DRN	ASW	08/13/2021
CKD	TSG	08/13/2021
SCALE:	AS SHOWN	

FOR 24x36 DWG ONLY

POWER ENGINEERS

MAYFLOWER WIND

AQUIDNECK ISLAND HDD

DEM/AQUIDNECK ISLAND TRUST
HDD LAYOUTS

JOB NUMBER: 172033
REV: G
DRAWING NUMBER: U1-1

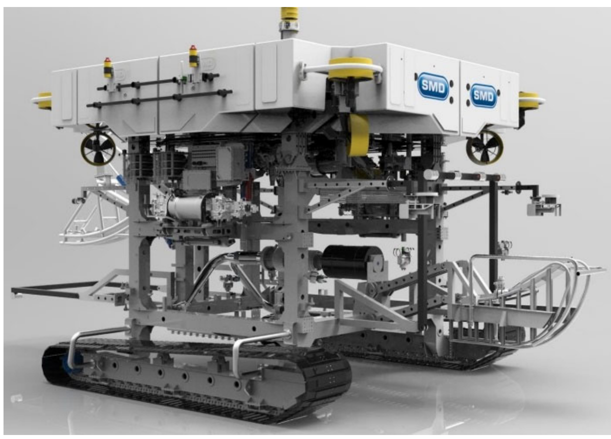
172033 - Aquidneck Island TNEC ROW HDD.dwg

ATTACHMENT C – PHOTO ARRAY

CABLE LAY VESSELS AND CABLE BURIAL TOOLS

EXAMPLE OF A BOULDER CLEARANCE PLOW

EXAMPLE OF A CABLE LAYING VESSEL

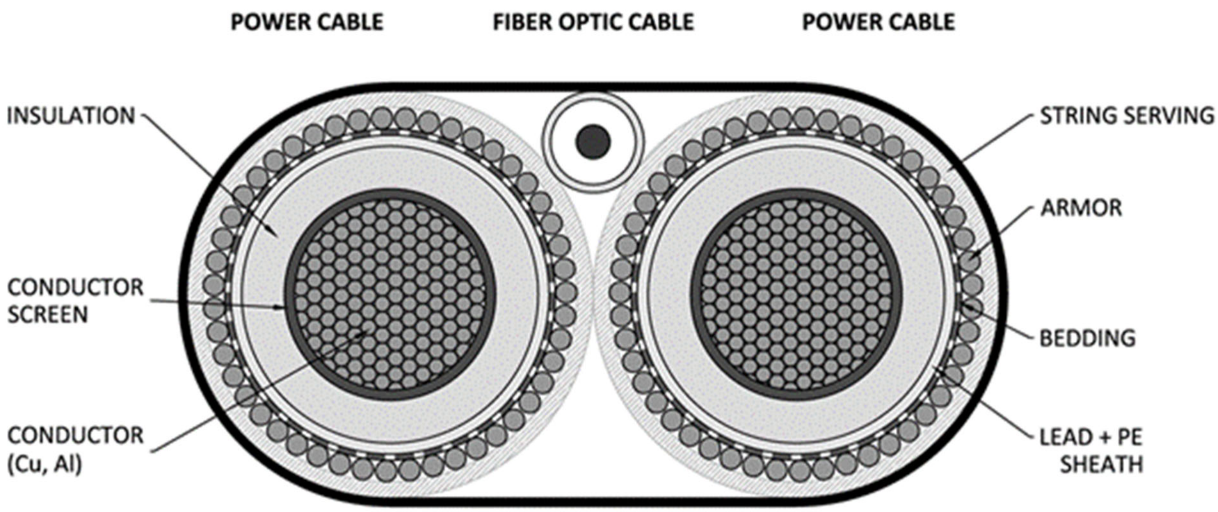


EXAMPLE OF JETTING ROV

EXAMPLE OF CABLE PROTECTION ROCK BAG

EXAMPLE OF CONCRETE CABLE PROTECTION MATTRESS

REPRESENTATIVE OFFSHORE CABLE CROSS SECTION



OFFSHORE CABLE CROSS SECTION (BUNDLED CONFIGURATION)

REPRESENTATIVE PHOTOGRAPHS OF ONSHORE UNDERGROUND CABLE SYSTEM CONSTRUCTION

UNDERGROUND RACK & SPACER SYSTEM WITH CONDUITS

POURING FLOWABLE FILL FOR DUCT BANK

CABLE REEL AND CABLE PULL

INSTALLATION OF TRANSITION JOINT BAY

RHODE ISLAND ROUTE - REPRESENTATIVE PHOTOGRAPHS

ISLAND PARK BEACH FROM PARK AVENUE AND BOYD'S LANE.

TYPICAL DUNE AND COASTAL BEACH AT ISLAND PARK BEACH ALONG PARK AVENUE.

PROPOSED HDD LOCATION FOR SEA-TO-SHORE TRANSITION AT BOYD'S LANE AND PARK AVENUE.

PROPOSED HDD LOCATION FOR SEA-TO-SHORE TRANSITION AT BOYD'S LANE AND PARK AVENUE.

VIEW OF NEARSHORE RESOURCES UNDER MOUNT HOPE BRIDGE INCLUDING COASTAL WETLAND AND COASTAL BEACH.

ROGER WILLIAMS UNIVERSITY BAYPOINT RESIDENCE HALL EASTERN PARKING LOT.

RHODE ISLAND ROUTE - REPRESENTATIVE PHOTOGRAPHS

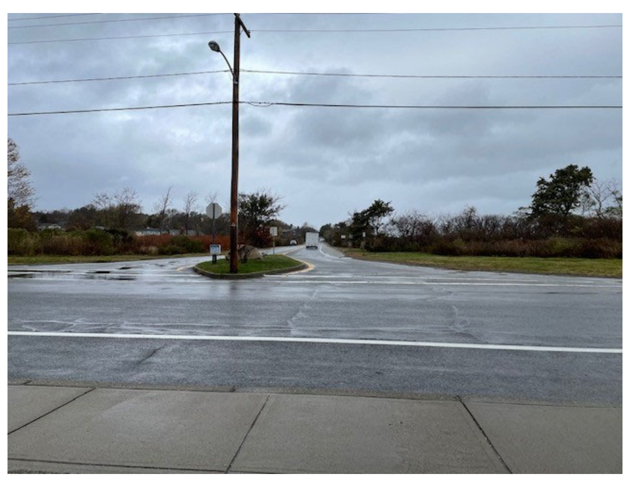
BEACH AND SEA WALL AT BOYD'S LANE LANDFALL

BOYD'S LANE INTERSECTION WITH ROUTE 24 ON-RAMP

BOYD'S LANE UNDER ROUTE 24 SOUTH OVERPASS

CORNER OF ANTHONY ROAD AND BOYD'S LANE

ANTHONY ROAD



INTERSECTION OF BOYD'S LANE AND PARK AVE

ATTACHMENT D – MAGNETIC FIELD MODELING REPORT

MW Exhibit 2(D)

May 17, 2022

Mayflower Wind Energy LLC
110 Federal Street
Boston, MA 02110

Re: Magnetic Field Analysis Report for Rhode Island (RI) Energy Facility Siting Board (EFSB) Application Submittal

Dear Sir or Madam:

This cover letter accompanies the Magnetic Field Analysis Report for the Mayflower Wind Brayton Point Project Cable Systems that was prepared by POWER Engineers, Inc. (POWER Engineers). The Magnetic Field Analysis Report summarizes model-predicted reasonable maximum magnetic field (MF) levels for the proposed Mayflower Wind offshore and onshore export cables that will deliver approximately 1,200 MW of clean, renewable energy from offshore wind generated in federal waters to a point of interconnection to the regional transmission system at Brayton Point in Somerset, Massachusetts. The export cable system includes two high-voltage direct current (HVDC) power cables at a nominal voltage of +/-320 kV DC and one dedicated communications cable.

The POWER Engineers modeling analysis is focused on magnetic fields because the electric fields arising from the voltage on the offshore export cables will be completely shielded by cable materials, and there will also be no aboveground electric fields from the onshore underground conductors due to shielding by the cables. This cover letter was prepared to compare the model-predicted MF levels for the HVDC export cables at the proposed landfall site and along the onshore underground route segment in Rhode Island to health-protective exposure guidelines, and to assess the potential for harmful impacts to marine organisms, including commercially and recreationally important fish species and benthic organisms, from the MF levels predicted for the HVDC offshore export cables.

In Rhode Island, the proposed export cable route includes a short, intermediate onshore crossing of Portsmouth after the HVDC cables come onshore *via* horizontal directional drilling (HDD) beneath Island Park Beach at depth (based on the preliminary site-specific engineering design, estimated to be 25 feet [7.6 meters] and 40 feet [12.2 meters] for the two conductors). The HVDC cables will cross Aquidneck Island for approximately 2 miles (3.2 km) in underground duct banks installed along proposed routes following Boyd's Lane and Anthony Road.

Mayflower Wind also identified a design variation to the Project intended to provide flexibility for the future expansion of the electric system in the Brayton Point area to accommodate the likely need to connect additional new renewable energy generation. This “Noticed Variation” would facilitate the delivery of up to an additional 1,200 MW of renewable clean energy by “right-sizing” certain facilities (primarily trenching and conduits for onshore underground transmission cables) while minimizing overall impacts to the community and environment. The Noticed Variation would involve sizing underground infrastructure on Aquidneck Island for the HVDC export cables to include spare conduits at landfall and onshore that would be capable of accommodating an additional 1,200 MW HVDC circuit consisting of an additional two power cables and one communications cable.

Mayflower Wind is committed to fully developing and delivering energy from its offshore Lease Area and believes it is prudent and efficient planning to provide for the potential that all the energy from the Lease Area could be delivered to points of interconnection at or near Brayton Point, pending additional study of regional grid considerations as part of the interconnection process managed by ISO New England. Mayflower Wind wishes to provide for this contingency to do the right thing by not only prudently planning but also avoiding/minimizing impacts to the community and the environment. Developing the project in this way would mean less disturbance of the natural and developed environment by conducting earthwork and civil construction onshore in a single campaign.

Peak maximum DC MF levels ranging from 181 to 433 milligauss (mG) were obtained at 1 meter above the ground surface for the three representative HVDC onshore duct bank configurations that were modeled, including a single circuit duct bank, a double circuit duct bank, and an alternate double circuit duct bank. The Noticed Variation model cases evaluate the double circuit duct bank with one 1,200 MW circuit installed. Although the Noticed Variation does not include a request for approval of additional export cables at this time, for informational purposes only, results are also presented for an indicative future scenario with a second 1,200 MW circuit installed.

For each duct bank configuration, the MF levels drop off very rapidly with increasing lateral distance from the cables, for example, ranging from 3.5 to 30.5 mG at 25 feet (7.6 meters) from the duct bank centerlines and 0.47 to 8.0 mG at 50 feet (15.2 meters) from the duct bank centerlines. For the Island Park Beach (Boyd's Lane) landfall site, a peak maximum MF level of 261 mG was obtained at the ground surface above the cable centerline; due to the approximately 21 foot (6.4 meter) separation distances of the +/- conductors at the landfall site, MF levels at the landfall site fall off more slowly with lateral distance than for the onshore duct bank configurations, with decreased MF levels of 174 mG and 79 mG at lateral distances of 25 feet and 50 feet, respectively, from the centerline between the two unbundled cables. On Aquidneck Island along the proposed onshore export cable route, the earth's steady (DC) geomagnetic field has a magnitude of approximately 512 mG, meaning that only MF levels in the immediate vicinity of the onshore underground duct banks along Boyd's Lane will appreciably differ from the earth's DC geomagnetic field.

The state of Rhode Island has not adopted standards for electric and magnetic fields (EMFs) from HVDC transmission lines or other sources that can be compared to the model-predicted DC MFs. There are also no US federal standards limiting general public or occupational exposure to EMFs from HVDC transmission lines. Scientists have not reported any confirmable chronic health risks for the weak steady EMFs associated with HVDC power transmission; this is consistent with the fact that humans have lived for tens of thousands of years in the presence of the earth's DC geomagnetic field, which is not known to adversely interact with biological processes or directly affect human health.

As summarized in Table 1, international health and safety organizations have established health-based exposure guidelines for DC MFs (also known as steady MFs) applicable to both the general public and occupational populations based on preventing transient sensory effects including vertigo and nausea. In particular, the International Commission on Non-Ionizing Radiation Protection (ICNIRP) has established a general public exposure guideline of 4,000,000 mG for steady MFs (ICNIRP, 2009). This exposure guideline encompasses safety factors in order to be sufficiently protective of the general public. Given potential harms to individuals with implantable medical devices possibly containing ferromagnetic materials (*e.g.*, pacemakers and cardiac defibrillators), ICNIRP recommends that such individuals not be exposed to steady MFs above 5,000 mG (ICNIRP, 2009). More recently, the International Committee on Electromagnetic Safety (ICES) within the Institute of Electrical and Electronics Engineers (IEEE) conducted an updated review of the scientific and medical research literature, and retained its safety guidelines for general public exposure to steady MFs of 1,180,000 mG and 3,530,000 mG for head and trunk exposure and limb exposure, respectively (IEEE, 2019). Importantly, each of these health-protective MF guidelines are far above the modeled DC MFs predicted for either the ground surface at the Island Park

Beach landfall site or at a height of 1 meter along Boyd's Lane in Portsmouth for the representative onshore underground duct bank configurations.

Table 1 DC MF Guidelines Established by Health and Safety Organizations

Organization	MF Guideline
General Public	
International Commission on Non-Ionizing Radiation Protection (ICNIRP) (exposure to any part of the body)	4,000,000 mG[(a)]
Institute of Electrical and Electronics Engineers (IEEE) Standard C95.6	1,180,000 mG[(b)] 3,530,000 mG[(c)]
Occupational	
International Commission on Non-Ionizing Radiation Protection (ICNIRP)	20,000,000 mG[(d)] 80,000,000 mG[(e)]
American Conference of Governmental and Industrial Hygienists (ACGIH) Threshold Limit Values (TLVs)	20,000,000 mG[(f)] 200,000,000 mG[(g)] 5,000 mG[(h)]

Notes:
DC = Direct Current; MF = Magnetic Field; kV/m = Kilovolts Per Meter; mG = Milligauss.
(a) Applies to exposures to any part of the body (ICNIRP, 2009).
(b) Applies to head and of trunk exposure (IEEE, 2019).
(c) Applies to exposure of limbs (IEEE, 2019).
(d) Applies to head and of trunk exposure (ICNIRP, 2009).
(e) Applies to exposure of limbs (ICNIRP, 2009).
(f) ACGIH TLV for general workplace whole body exposure (ACGIH, 2020).
(g) ACGIH TLV for general workplace limb exposure (ACGIH, 2020).
(h) ACGIH TLV for workers with implanted ferromagnetic or electronic medical devices (ACGIH, 2020).

The entire offshore export cable route will consist of HVDC submarine cables, and the POWER Engineers Magnetic Field Analysis predicted DC MF levels at the seafloor (or above the concrete mattress for the unburied installation case) associated with three representative installation scenarios for the HVDC offshore export cables: (1) the typical installation case that will be used wherever practicable, where the two DC conductors are bundled together (along with a communications cable) and buried at a target depth of 2 meters, (2) a worst-case installation case where the bundled conductors are laid directly on the seafloor surface and covered by a concrete mattress, such as at a cable crossing location, and (3) an unbundled installation case where the two DC conductors are separately buried approximately 50 meters (164 feet) apart at a target depth of 2 meters– to be used as needed to ensure safe installation and repair of the separate cables, as well as to minimize risk of damage to both cables from threats such as anchor strike. As shown in the POWER Engineers Magnetic Field Analysis Report, the highest modeled MF levels for these offshore export cable installation scenarios would occur directly above the cables (peaking at 123 mG for the typical installation case, and ranging from 1,909 to 3,785 mG across the two other possible installation cases), with a rapid reduction in MF levels with increasing lateral and vertical distance from the cables, *e.g.*, decreasing proportional to the square of the distance from the bundled cables. For example, for the two bundled cable installation scenarios where MF cancellation is increased by the bundling of two cables with current in equal but opposite polarity, the analysis shows 93->99% reductions in MF levels at lateral distances of ±25 feet (±7.6 meters) from the cable bundle centerlines as compared to the maximum MF levels directly above the cable bundles; and at lateral distances of ±25 feet, there is little difference in MF levels for the buried *versus* the surface-laid cables. Only for the two atypical installation cases, cases (2) and (3), will MF levels above the offshore export cables appreciably differ from the earth's steady (DC) geomagnetic field, and only within short distances from the cables.

No regulatory thresholds or guidelines for allowable EMF levels in marine environments have been established for either HVDC or HVAC transmission. There is a growing body of evidence suggesting that

EMFs from HVDC cables may be perceptible to some electromagnetic (EM)-sensitive marine species, but there remains a lack of evidence indicating potential harmful impacts at the population- or community-level for the various types of marine species which may experience exposure to DC EMFs from submarine export cables (CSA Ocean Sciences Inc. and Exponent, 2019; Gill and Desender, 2020; SEER, 2022; Taormina *et al*., 2018). Several different types of studies have been conducted in recent years, including experimental field studies, experimental laboratory studies, and field surveys, with a limited number of inconsistent findings of subtle behavioral responses and physiological changes from some studies. For example, Hutchison *et al*. (2020) observed minor behavioral responses of both Little skates (*Leucoraja erinacea*) and American lobsters (*Homarus americanus*) for *in situ* enclosure experiments conducted on top of the Cross Sound Cable (CSC), a buried submarine HVDC cable (330 MW, ±150 kV) that runs between Connecticut and Long Island. They did not report evidence of a barrier effect as both species were observed to freely cross over the cable, but their findings included several responses indicative of increased exploratory/foraging behavior for the Little skate, and more limited evidence of a subtle behavioral exploratory response for the American lobster. Despite the usage of highly elevated DC MF levels, laboratory experimental studies have frequently reported an absence of evidence of adverse biological responses. For example, Taormina *et al*. (2020) conducted laboratory experiments of juvenile European lobsters (*Homarus gammarus*) for higher DC MF gradients (as high as 2,250 mG), observing no changes in sheltering behavior or exploratory behavior. For a laboratory study where several different types of marine benthic (seafloor) species were exposed to highly elevated DC MFs (37,000 mG) over several week time periods, Bochert and Zettler (2004) observed no differences in survival between exposed and control test organisms that included North Sea prawn (*Crangon crangon*), round crab (*Rhithropanopeus harrisii*), glacial relict isopod (*Saduria entomon*), blue mussel (*Mytilus edulis*), and young flounder (*Plathichthys flesus*).

It is important to distinguish the types of subtle behavioral responses and physiological changes that have been observed in some research studies from evidence of potential harmful impacts at the population- and community-level (Taormina *et al*., 2018). Moreover, since exposures to elevated MF levels from submarine cables will be limited to small areas along the seafloor in the immediate vicinity of the submarine export cables, it is important to consider the low exposure potential of most marine species. For example, because they breathe at the sea surface and have large migratory ranges, marine mammals such as sea turtles and whales would not be expected to spend significant amounts of time at the seafloor in the vicinity of specific submarine export cables. Overall, although knowledge gaps remain and there is a need for continued research, the weight of the currently available evidence does not provide support for concluding there would be population-level harms to marine species from EMF associated with HVDC submarine transmission.

This conclusion regarding a lack of evidence of population-level harms to marine species from HVDC-related EMFs is supported by findings from recent governmental reports and expert state of the science reviews. For example, the U.S. Bureau of Ocean Energy Management (BOEM) released a report in 2019 aimed at summarizing what is currently known about potential EMF impacts in coastal marine environments, with a specific focus on fish species of commercial or recreational importance in southern New England (CSA Ocean Sciences Inc. and Exponent, 2019). This report includes an 8-page executive summary, a 36-page technical discussion, and a 7-page reference list with 92 specific citations. It addresses potential risks to marine species posed by both AC and DC fields. Overall, based on its review of the state of the knowledge regarding potential EMF-related impacts on marine life, the authors concluded, "The operation of offshore wind energy projects is not expected to negatively affect commercial and recreational fishes within the southern New England area. Negligible effects, if any, on bottom-dwelling species are anticipated. No negative effects on pelagic [*i.e*., in upper layers of the open sea] species are expected due to their distance from the power cables buried in the seafloor" (CSA Ocean Sciences Inc. and Exponent, 2019). This conclusion is based on the growing number of recent research studies published by US and European researchers, as well as information available from fish surveys conducted in Europe where both AC and DC submarine export cables have been operated in coastal environments for more than a decade.

With respect to findings from fish surveys in Europe, the study authors concluded, "During this time, many surveys have been conducted to determine if fish populations have declined following offshore wind energy project installation. The surveys have overwhelmingly shown that offshore wind energy projects and undersea power cables have no effect on fish populations [72,80,81,82]. Fish assessed as part of these surveys include flounder and other flatfish, herring, cod, and mackerel. These are similar to species harvested along the U.S. Atlantic coast" (CSA Ocean Sciences Inc. and Exponent, 2019).

Another recent example is the review of the current knowledge relevant to EMF-related risks to marine organisms from electric cables and marine renewable energy devices that was included in the Ocean Energy Systems (OES)- Environmental 2020 State of the Science Report: Environmental Effects of Marine Renewable Energy Development Around the World. OES-Environmental, which currently consists of 16 partner nations, was established in 2010 by the International Energy Agency (IEA) Ocean Energy Systems (OES). The 2020 EMF review, which was authored by Andrew B. Gill and Marieke Desender of the United Kingdom's Centre for Environment, Fisheries and Aquaculture Science, discussed how a number of targeted studies have contributed to an increase in the knowledge base since the analogous publication in the 2016 State of the Science Report, which highlighted significant gaps in the knowledge base. Gill and Desender (2020) observed that new research, including both field and laboratory studies, has included some detectable EMF-related effects and responses (*e.g.*, behavioral, physiological, developmental, and genetic) on a limited number of individual species, but emphasized that these findings are not generally for EMF strengths associated with marine renewable energy (MRE) projects. Overall, based on their updated review of the available science, Gill and Desender (2020) concluded, "Based on the knowledge to date, biological or ecological impacts associated with MRE subsea power cables may be weak or moderate at the scale that is currently being considered or planned. It is important, however, to acknowledge that this assessment comes from a handful of studies and that data about impacts are scarce, so significant uncertainties concerning electromagnetic effects remain." While this conclusion is not specific to DC cables, many of the recent studies discussed in the review were for DC fields. Gill and Desender (2020) highlighted the continued lack of conclusive evidence as to any harmful effects and the need for additional research targeting other receptor species, sensitive life stages, and different EMF exposures (sources, intensities).

Most recently, in February 2022, the U.S. Offshore Wind Synthesis of Environmental Effects Research (SEER) webinar #4 "Electromagnetic Fields & Vessel Collision: Effects on Marine Life from Offshore Wind Energy" included the following conclusion: "Overall, the effects of EMF have been considered minor to negligible and a less significant issue than other environmental effects at OSW [offshore wind] farms, but confidence remains low" (SEER, 2022).

In summary, for a conservative modeling analysis that assumed cable currents based on maximum (100 percent capacity) wind farm output[1], modeled DC MFs predicted for the ground surface at the Island Park Beach (Boyd's Lane) landfall site and at a height of 1 meter along Boyd's Lane in Portsmouth are well-below health-based exposure guidelines for DC MFs. In addition, MF modeling for the offshore export cables showed that DC MF levels will be increased only for small areas along the seafloor around certain localized cable locations where conservative (and atypical) installation conditions are present, contributing to highly localized deviations from the earth's DC geomagnetic field. As discussed above, the weight of the currently available scientific evidence does not provide support for concluding there would be population-level harm to marine species from EMFs associated with HVDC submarine transmission.

[1] The wind farm is expected to operate at an annual-average capacity factor of around 50 percent; thus, much of the time, the actual output and MF attributable to the Project export cables will be correspondingly lower than the values discussed in this letter, which are for maximum output.

Sincerely,

GRADIENT

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2022-05-17

MAYFLOWER WIND

Brayton Point Project Cable Systems

Magnetic Field Analysis

Revision 0

PROJECT NUMBER:
174444

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MAGNETIC FIELD ANALYSIS

PREPARED FOR:

MAYFLOWER WIND

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REVISION HISTORY						
REV.	ISSUE DATE	ISSUED FOR	PREP BY	CHKD BY	APPD BY	NOTES
A	2022-04-14	Prelim	JTL	ELB	CMB	Issued for preliminary review
B	2022-05-06	Appvl	JTL	ELB	CMB	Issued for Appvl
0	2022-05-12	Record	JTL	CWC	CMB	

“Issued For” Definitions:

- “Prelim” means this document is issued for preliminary review, not for implementation
- “Appvl” means this document is issued for review and approval, not for implementation
- “Impl” means this document is issued for implementation
- “Record” means this document is issued after project completion for project file

TABLE OF CONTENTS

INTRODUCTION

This report documents a magnetic field study completed by POWER Engineers, Inc. (POWER) for Mayflower Wind Energy, LLC (Mayflower). The study examines eight (8) cable configurations associated with the portions of the Mayflower Wind project in the Rhode Island and Massachusetts jurisdictions, both offshore in state waters and onshore on Aquidneck Island and Brayton Point. These configurations are listed below and described in the Cable Installation Scenarios section. Preliminary cable sizes and drawings of the circuit configurations are located in Appendix A and Appendix B.

1. HVDC offshore, bundled configuration, 6.6 ft (2.0 m) burial depth[1].
2. HVDC offshore, bundled, on seafloor under a 1.0 ft (0.3 m) thick concrete mattress.
3. HVDC offshore, non-bundled, cables separated by 164 ft (50 m), 6.6 ft (2.0 m) burial depth.
4. HVDC landfall horizontal directional drills (HDD), beach case under Island Park Beach near Boyd’s Lane and Park Avenue. Cable depths are 25 ft (7.6 m) and 40 ft (12.2 m) below the surface with a 15 ft (4.6 m) horizontal separation.
5. HVDC onshore, single circuit duct bank, 3.2 ft (0.96 m) burial depth.
6. HVDC onshore, double circuit duct bank, 3.3 ft (1.01 m) burial depth.
7. HVDC onshore, alternate double circuit duct bank, 3.4 ft (1.03 m) burial depth.
8. HVAC onshore, single circuit duct bank (two cables per phase), 3.3 ft (1.01 m) burial depth.

POWER has calculated magnetic field in milligauss (mG) for the above configurations. Interpretation of results and comparison to industry limits will be performed by others. Human exposure to electric fields is negligible when a cable includes a grounded sheath and/or armor. This is the case for the Mayflower wind project. Therefore, calculation of the small external electric fields due to voltages induced on cable sheaths and/or armor is not included in the study.

METHODOLOGY AND INPUT DATA

Magnetic fields are the result of electron flow (current) in conductors. DC current produces a static magnetic field and AC current produces a time varying magnetic field. POWER used the COMSOL Multiphysics finite element software (version 5.6) for the analysis and verified results with hand calculations. Currents in each case are assumed to be balanced. This means that the currents for all conductors in each case sum to zero.

Magnetic field results for the seabed installation scenarios were reported at the sea floor. The offshore exception to this is Case 2 where fields are reported at the surface of the cement mattress. Per typical industry practice, onshore magnetic fields are reported at 3.28 ft (1.0 m) above ground. The onshore exception is the landfall beach case. While it is standard practice to report EMF values at a height of 1 meter above the ground surface, we assumed that a person could be lying flat on the beach. Therefore, we conservatively reported the landfall magnetic field results at the ground surface. Magnetic fields are proportional to current and inversely proportional to the distance from the current carrying conductor. Therefore, magnetic fields at any non-zero height above the surface will be lower than what is reported at the surface.

[1] Burial depths in this document are from the surface of the seafloor or surface of the earth to the top of the respective cable.

When conductor groups include currents flowing in opposite directions, they can be arranged so that external magnetic fields partially cancel. Better cancellation of magnetic fields is achieved by reducing the spacing between the conductors. However, spacing between conductors is sometimes constrained by other factors. For example, the cable spacing of the un-bundled cables offshore in Case 3 is determined to facilitate safe installation and repair of the separate cables, as well as to minimize risk of damage to both cables from threats such as anchor strike. Conductor spacing within onshore duct banks is also constrained by thermal considerations. Multi-circuit results reported in the next section are based on geometric arrangements that maximize magnetic field cancellation. Table 1 summarizes the study inputs.

Table 1. Study Inputs

Parameter	Value	Comments
AC Frequency	60 Hz	
Nominal AC voltage	345 kV	Line-to-line rms. Maximum voltage is 362 kV.
Total AC Power	1200 MW	
AC current per cable	1120 Amps rms [a]	Based on two cables per phase.
Nominal DC voltage	±320 kV	Pole-to-ground
Total DC Power	1200 MW	600 MW on each pole.
DC current per cable	1974 Amps DC	Based on one cable per pole and 5% reduced pole voltage.
AC cable sheath current	0 Amps	Based on single point sheath bonding.
GCC current	0 Amps	Induced voltage and current in the GCCs are neglected [b].
DC sheath and armor current	0 Amps	No voltage induced due to static magnetic fields.
Non-magnetic material μ_r	1.0	Magnetic permeability of soil, air, water, Al, Cu, stainless steel.

[a] *Calculated at 0.95 per unit voltage, 0.95 power factor, and rounded up to the nearest 10 amps. Total current per phase is 2240 Amps rms.*

[b] *GCC currents have minor cancelling effects that would slightly reduce surface level magnetic fields. Neglecting these currents results in a slightly overestimated magnetic field.*

CABLE INSTALLATION SCENARIOS

Submarine Cable Scenarios Offshore and at Landfall

Mayflower Wind selected Model Cases 1-4 to capture representative configurations for the HVDC submarine transmission systems offshore and in the sea-to-shore transition at landfall. Some or all of these configurations will be present in the installed project equipment.

Case 1: HVDC offshore, bundled configuration, 6.6 ft (2.0 m) burial depth

This model case represents the typical configuration offshore, with all offshore export cables (two submarine power cables and one submarine communications cable) installed together in a bundled configuration and buried in the seabed. Mayflower Wind will install the offshore export cables in a bundled configuration where practicable.

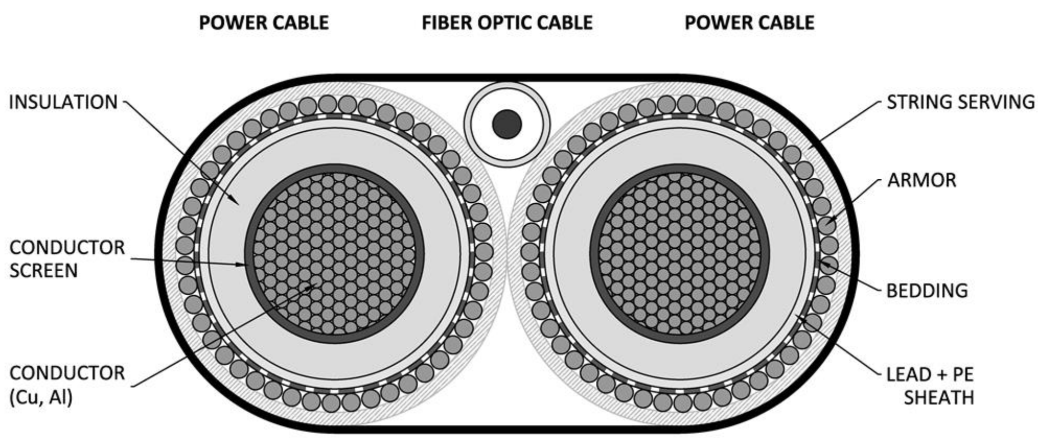


Figure 1: Typical HVDC Offshore Export Cable Bundled Configuration

Case 2: HVDC offshore, bundled, on seafloor under a 1.0 ft (0.3 m) thick concrete mattress

This model case represents the bundled configuration offshore, as described in Case 1 and illustrated in Figure 1**.** However, in certain local areas (including at crossings of existing pipelines such as those in the Sakonnet River), cable burial in the seabed may not be possible. In this case, the cables will be protected by means of secondary protection material (i.e., mattresses, rock) placed on top of the cables after installation. A typical example with representative geometry and thickness of cover is presented in this model case.

Case 3: HVDC offshore, non-bundled, cables separated by 164 ft (50 m), 6.6 ft (2.0 m) burial depth

As noted in Case 1, Mayflower Wind will install the offshore export cables in a bundled configuration where practicable. However, there may be portions of the route, including the approach to the landfall HDDs, where the cables must be installed separately (non-bundled). In this case, adequate separation will need to be maintained between the cables to ensure that they can be safely installed, maintained, and repaired (if needed). This model case represents a typical horizontal spacing between separately installed offshore export cables.

Case 4: HVDC landfall horizontal directional drills (HDD), beach case under Island Park Beach near Boyd's Lane and Park Avenue.

One cable is at a depth of 25 ft (7.6 m) below the surface and the other is at a depth of 40 ft (12.2 m). The horizontal spacing between cables is 15 ft (4.6 m). The offshore export cables will be brought to shore at each landfall location via HDD. Each submarine power cable will be installed in a separate HDD borehole and conduit. The trajectory of the HDDs will result in deeper burial of the cables beneath sensitive nearshore areas, including under Island Park Beach which is depicted in this model case. The cable depth represented in this model case is the current preliminary design depth of the cables at the landfall location at Boyd's Lane on Aquidneck Island.

Onshore Cable Scenarios

Mayflower Wind selected Model Cases 5-8 to capture representative configurations for the HVDC and HVAC underground transmission systems onshore. These configurations were evaluated as part of the preliminary engineering effort for the Project.

Case 5: HVDC onshore, single circuit duct bank, 3.2 ft (0.96 m) burial depth

This Model Case captures a typical configuration for an underground, concrete-encased duct bank that can accommodate two HVDC power cables and one dedicated communications cable.

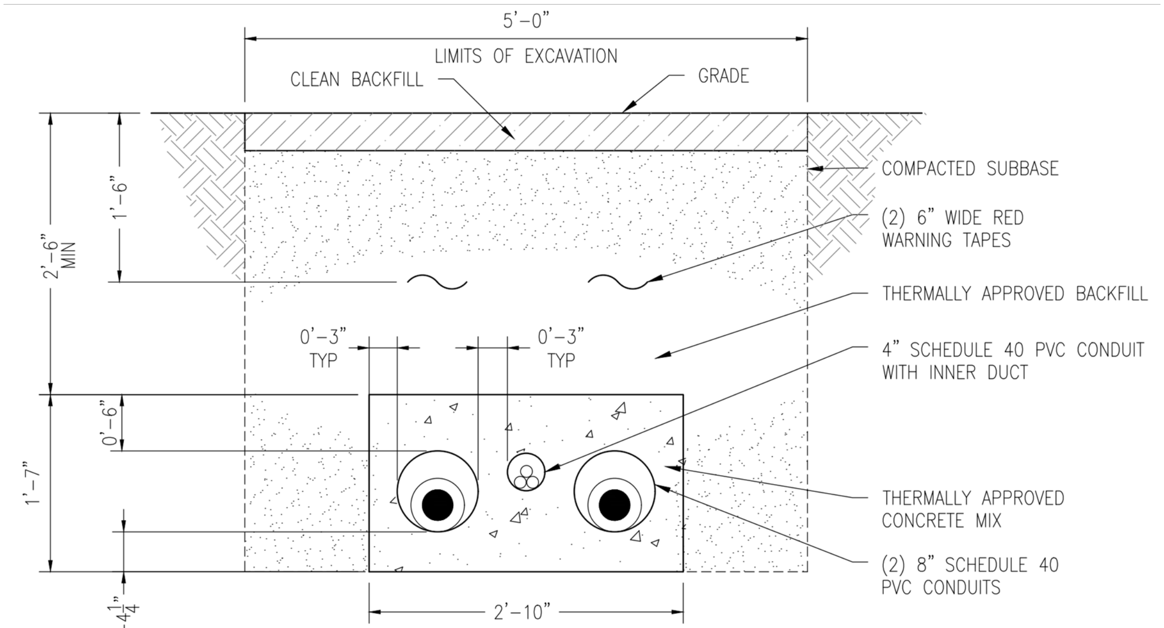


Figure 2: Typical HVDC Onshore Trench without the Noticed Variation

Case 6: HVDC onshore, double circuit duct bank, 3.3 ft (1.01 m) burial depth

This Model Case captures Mayflower Wind's Noticed Variation.

Mayflower Wind has identified a design variation to the Project, referred to as the Noticed Variation, which would involve the design and conditional construction of certain right-sized transmission facilities along the same onshore routes to enable the delivery of up to an additional 1,200 MW of renewable clean energy. The Noticed Variation would involve sizing underground infrastructure to include spare conduits and vaults at landfall and onshore, capable of accommodating an additional 1200 MW HVDC circuit.

Model Case 6 represents a typical configuration for an underground, concrete-encased duct bank that can accommodate four power cables and associated communication and ancillary cables in a single trench.

The Magnetic Field Results section reports results for the Noticed Variation, which includes two spare conduits for an additional circuit, as shown in Figure 3**.** Although the Noticed Variation does not incl ude a request for approval of additional export cables at this time, for informational purposes only, results are also presented for an indicative future scenario with a second 1200 MW circuit installed.

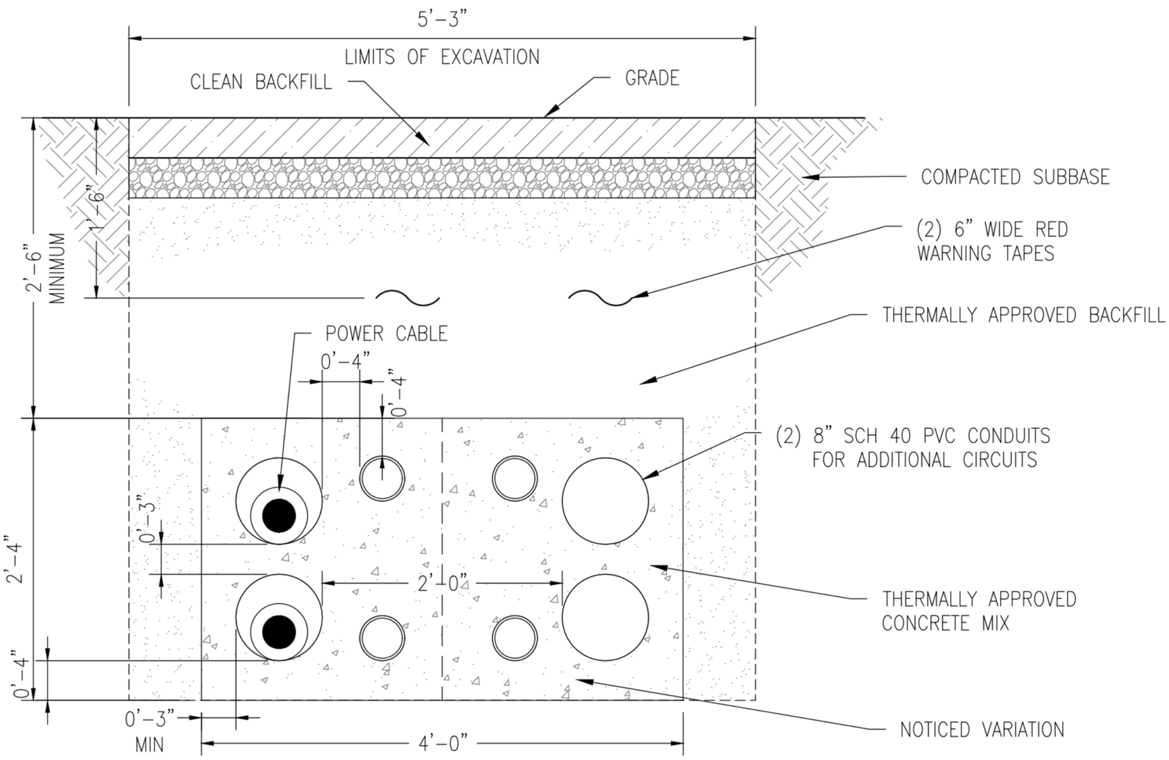


Figure 3: Typical HVDC Onshore Trench with the Noticed Variation

Case 7: HVDC onshore, alternate double circuit duct bank, 3.4 ft (1.03 m) burial depth

This Model Case captures an alternate configuration for Mayflower Wind's Noticed Variation.

Model Case 7 represents an alternate configuration for an underground, concrete-encased duct bank that can accommodate four power cables and associated communication and ancillary cables in a single trench.

The Magnetic Field Results section reports results for the scenario with two spare conduits for an additional circuit**.** Although the Noticed Variation does not include a request for approval of additional export cables at this time, for informational purposes only, results are also presented for an indicative future scenario with a second 1200 MW circuit installed.

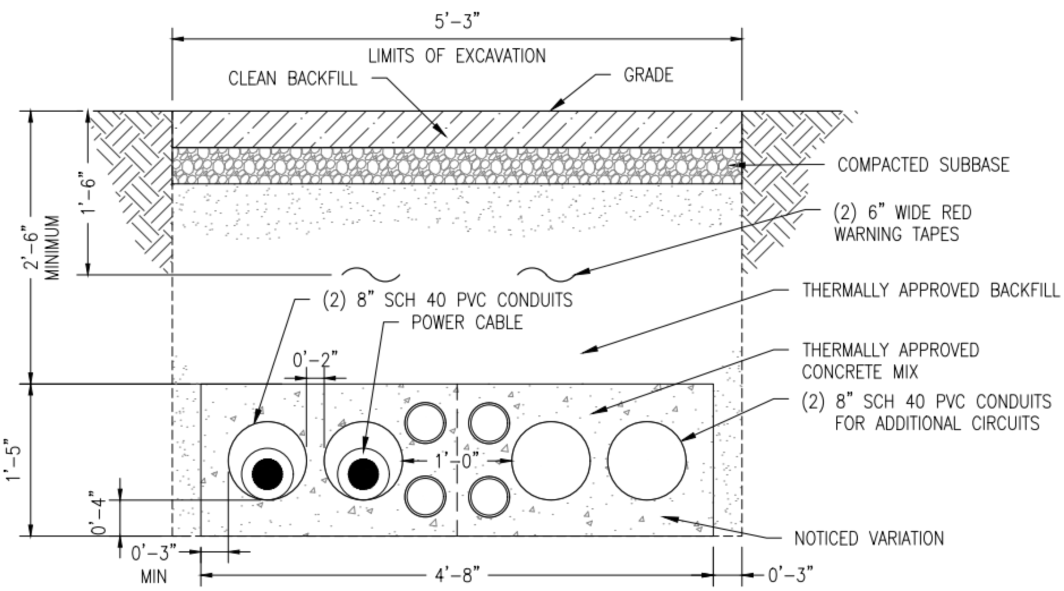


Figure 4: Alternate HVDC Onshore Trench with the Noticed Variation

Case 8: HVAC onshore, single circuit duct bank (two cables per phase), 3.3 ft (1.01 m) burial depth

This Model Case captures the typical configuration of an underground, concrete-encased duct bank that can accommodate three HVAC phases (each with two power cables per phase) and associated communication and ancillary cables in a single trench.

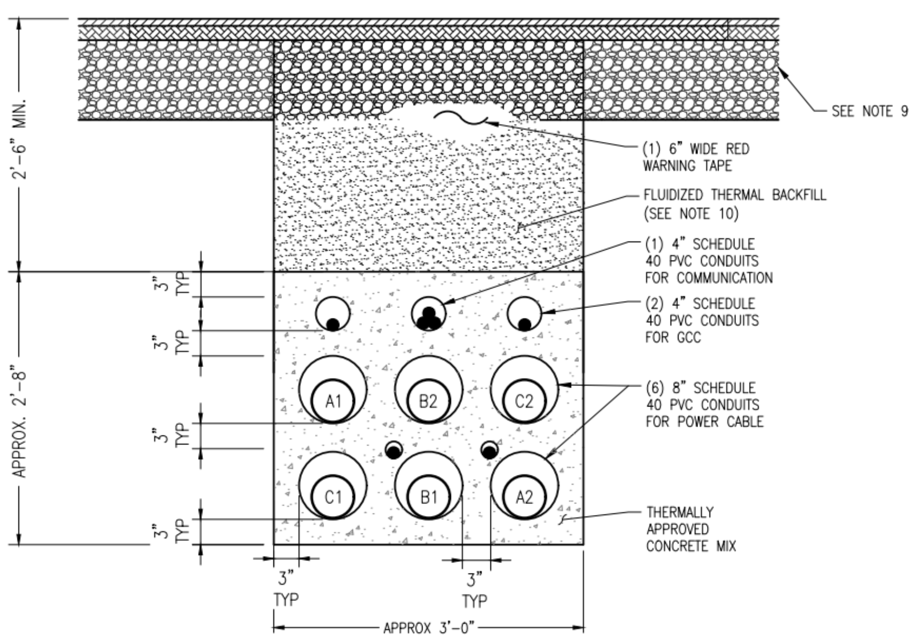


Figure 5: Typical HVAC Onshore Trench

MAGNETIC FIELD RESULTS

Table 2 lists the peak magnetic field results for each case. Corresponding profile plots are located in Figures 6 through 13.

Table 2. Study Results						
Case		Magnetic Field [a] (milligauss [b])				Figure
		Max	10 ft	25 ft	50 ft	
1	HVDC offshore, bundled, 6.6 ft burial depth.	123	38.7	8.4	2.2	6
2	HVDC offshore, bundled, on seafloor under a 1.0 ft concrete mattress.	3785	55.7	9.0	2.2	7
3	HVDC offshore, non-bundled, 164 ft cable separation, 6.6 ft burial depth.	1909	1120	579	360	8
4	HVDC landfall HDD, beach case, 25 ft, and 40 ft burial depths.	261	250	174	79.0	9
5	HVDC onshore, single circuit duct bank, 3.2 ft burial depth.	433	140	30.5	8.0	10
6	HVDC onshore, double circuit duct bank, 3.3 ft burial depth.	252 (181) [c]	101 (37.4)	20.6 (3.9)	5.2 (0.53)	11
7	HVDC onshore, alternate double circuit duct bank, 3.4 ft burial depth.	259 (188) [c]	95.8 (34.9)	18.9 (3.5)	4.7 (0.47)	12
8	HVAC onshore, single circuit duct bank (2 cables per phase), 3.3 ft burial depth.	66.7 [d]	13.9	1.5	0.20	13

[a] Magnetic field results at maximum and at varying distances from the centerline (or from cable in separated offshore case).
[b] Milligauss is a unit of magnetic flux density; however, the generic term "magnetic field" is used throughout this document.
[c] Values in parenthesis include an additional 1200-MW circuit with identical loading.
[d] Field values for the AC case are root-mean-square (rms).

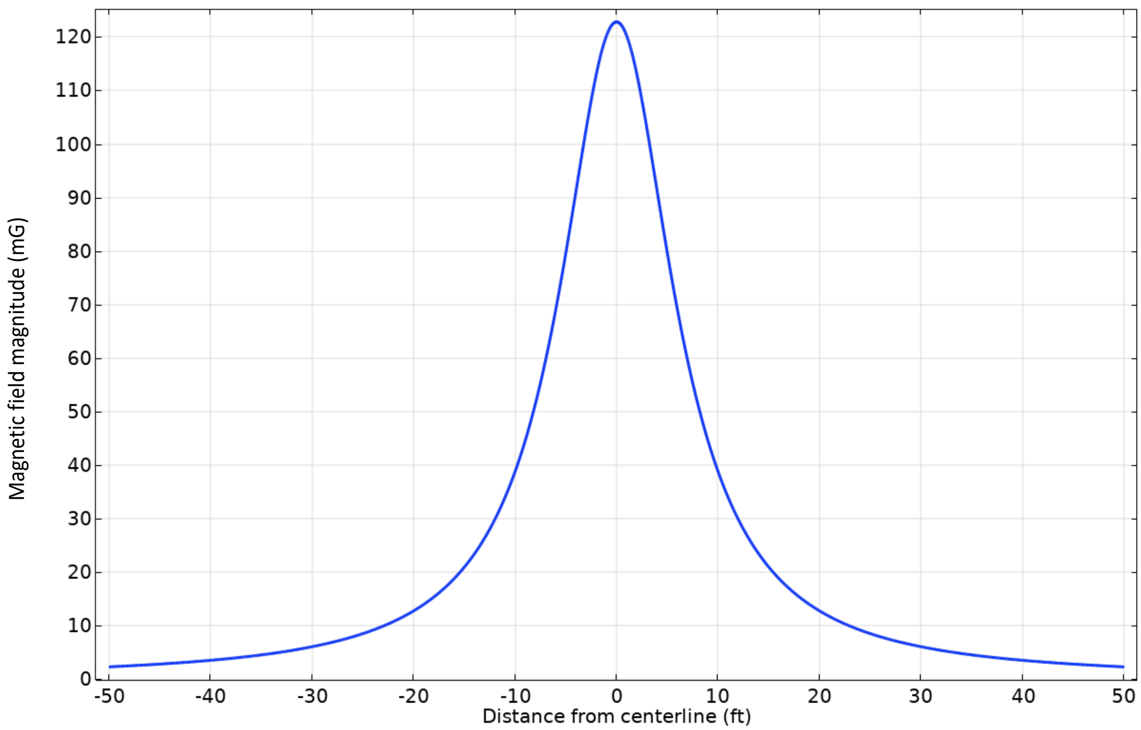


Figure 6. Magnetic field at the seafloor for Case 1: HVDC offshore, bundled, 6.6 ft (2.0 m) burial depth.

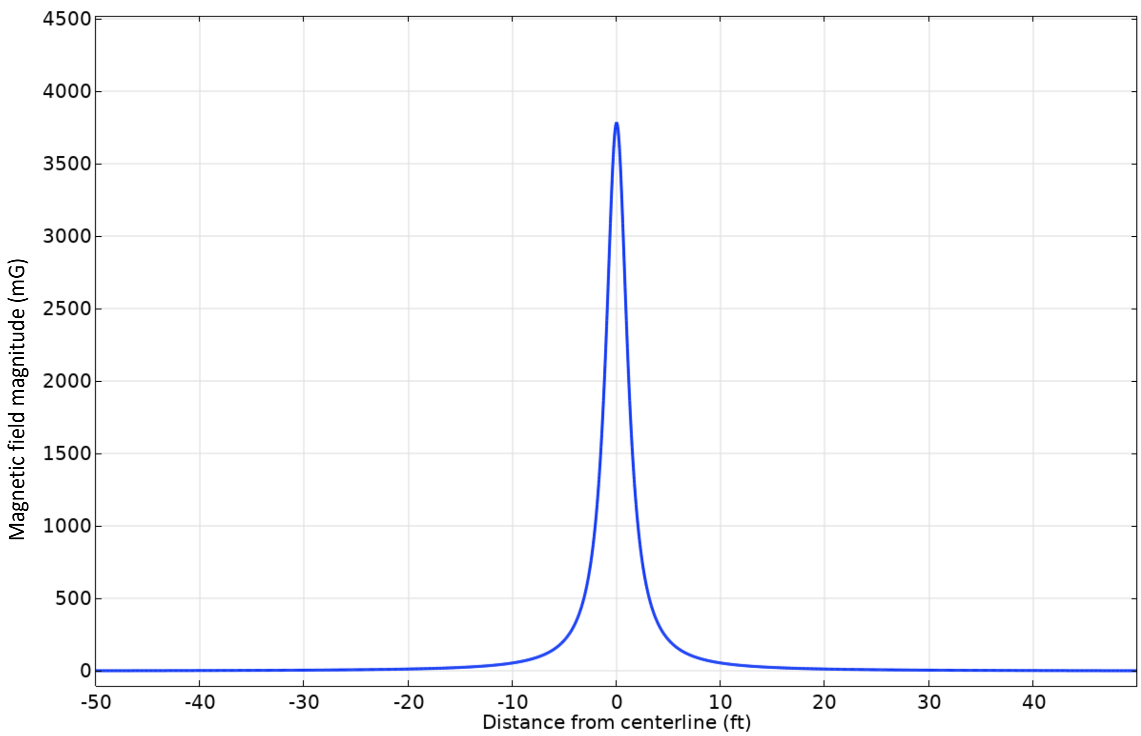


Figure 7. Magnetic field above the concrete mattress for Case 2: HVDC offshore, bundled, 1.0 ft (0.3 m) concrete mattress.

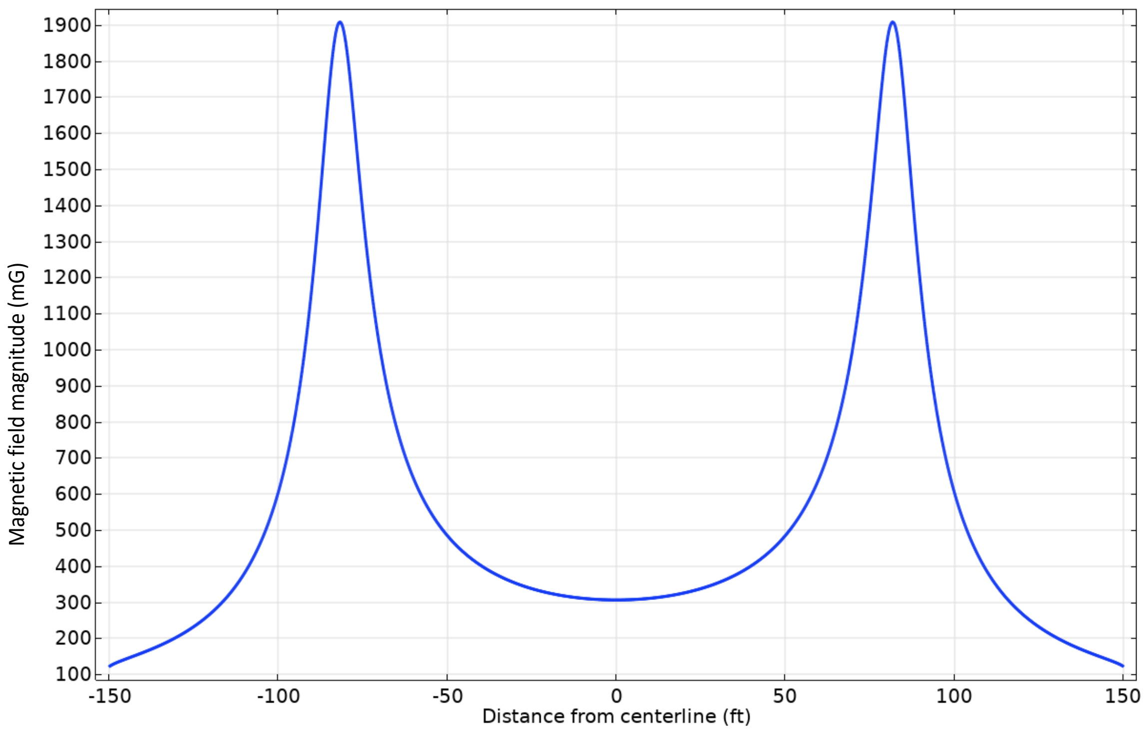


Figure 8. Magnetic field at the seafloor for Case 3: HVDC offshore, non-bundled 164 ft (50 m) separation, 6.6 ft (2.0 m) burial depth.

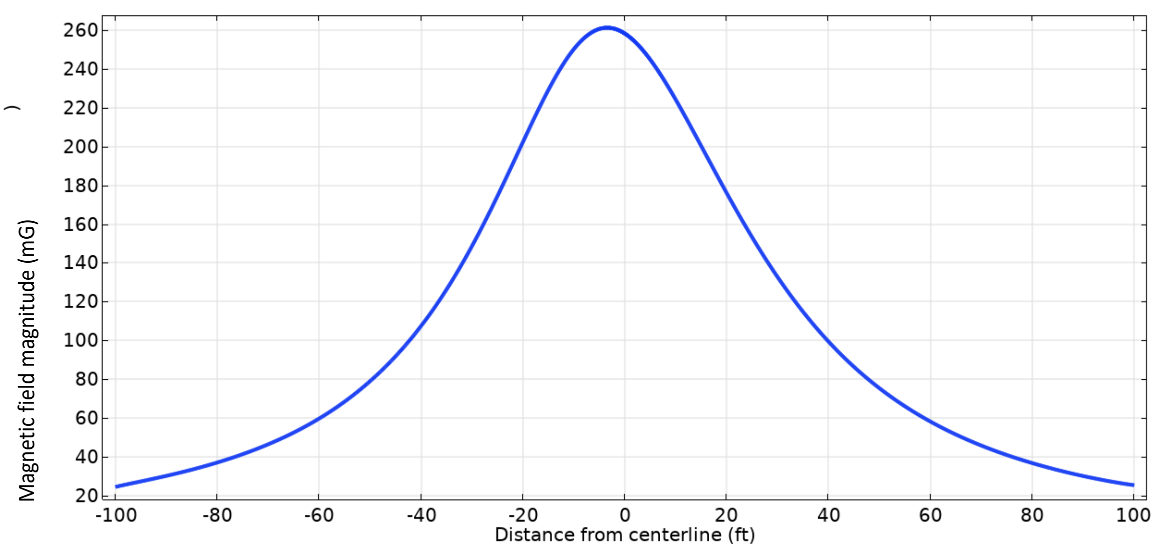
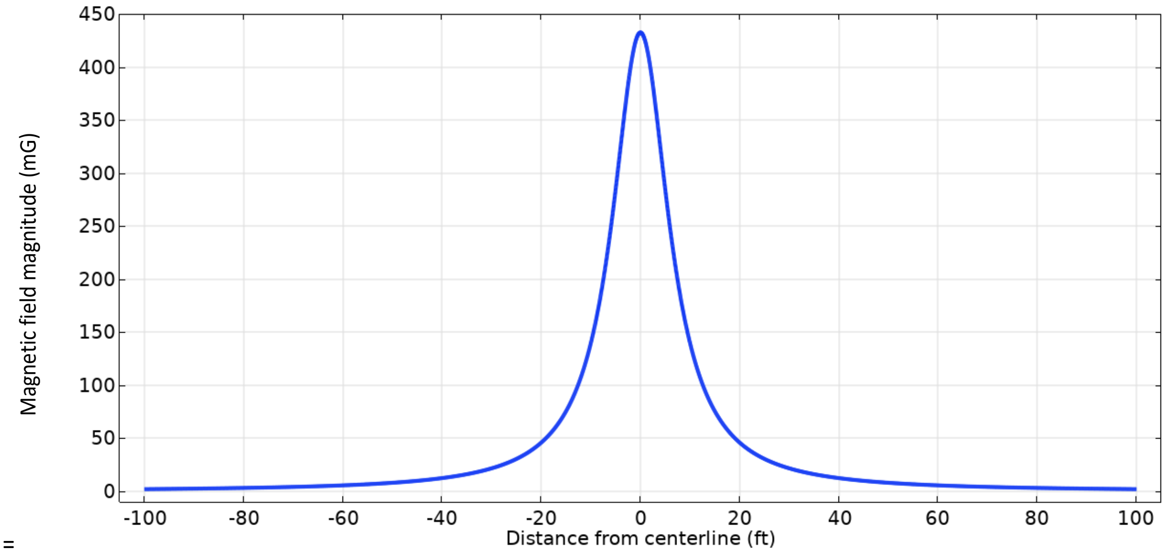


Figure 9. Magnetic field at the surface for Case 4: HVDC HDD landfall case, 25 ft (8.2 m) and 40 ft (12.2 m) burial depths and 15 ft (4.6 m) horizontal spacing.



=

Figure 10. Magnetic field at the earth surface for Case 5: HVDC onshore, single circuit, 3.2 ft (0.95 m) burial depth. (Model case does not include spare conduits for the Noticed Variation)

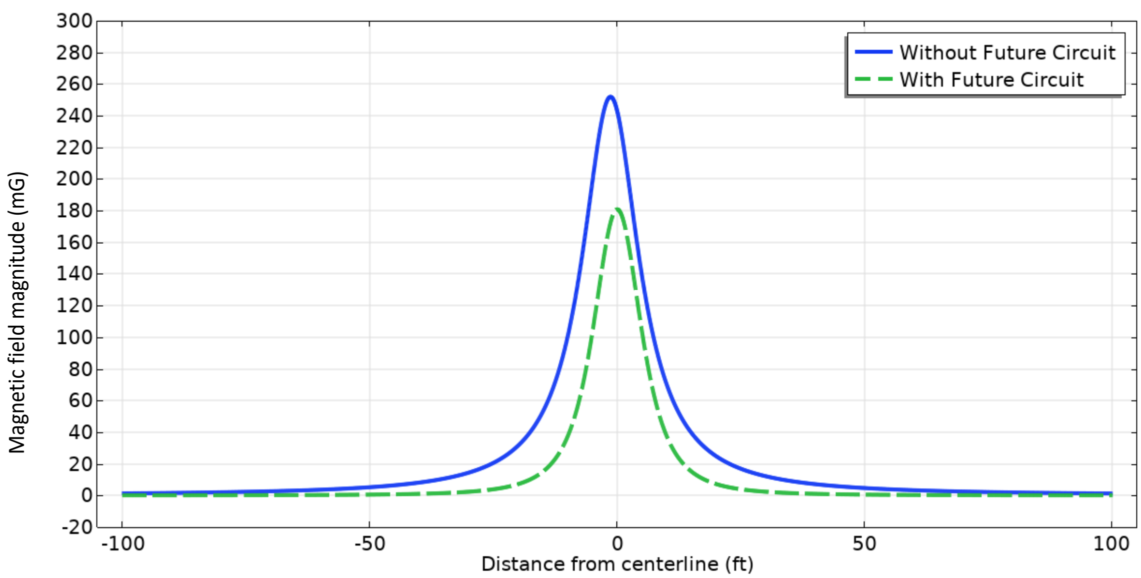


Figure 11. Magnetic field at the earth surface for Case 6: HVDC onshore double circuit duct bank, 3.3 ft (1.01 m) burial depth.

Note: *The blue line predicts MF for the Noticed Variation with empty spare conduits (as proposed). The green dashed line is an indicative future scenario that predicts MF with a second 1200 MW circuit installed. The reduction is due to field cancelling effects introduced by the second circuit.*

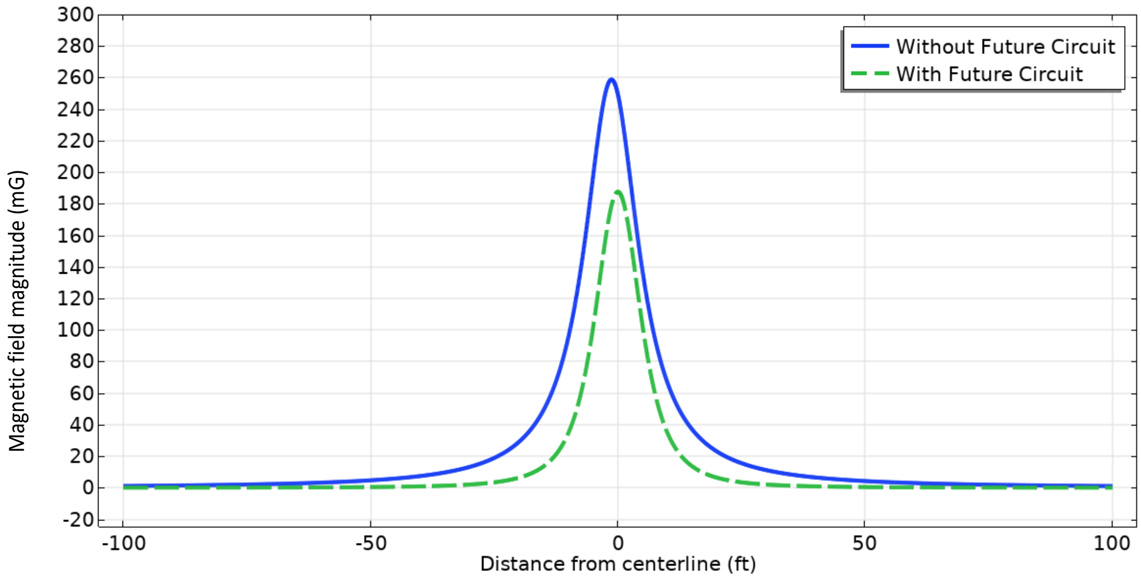


Figure 12. Magnetic field at the earth surface for Case 7: HVDC onshore alternate double circuit duct bank, 3.4 ft (1.03 m) burial depth.

Note: *The blue line predicts MF for the Noticed Variation with empty spare conduits (as proposed). The green dashed line is an indicative future scenario that predicts MF with a second 1200 MW circuit installed. The reduction is due to field cancelling effects introduced by the second circuit.*

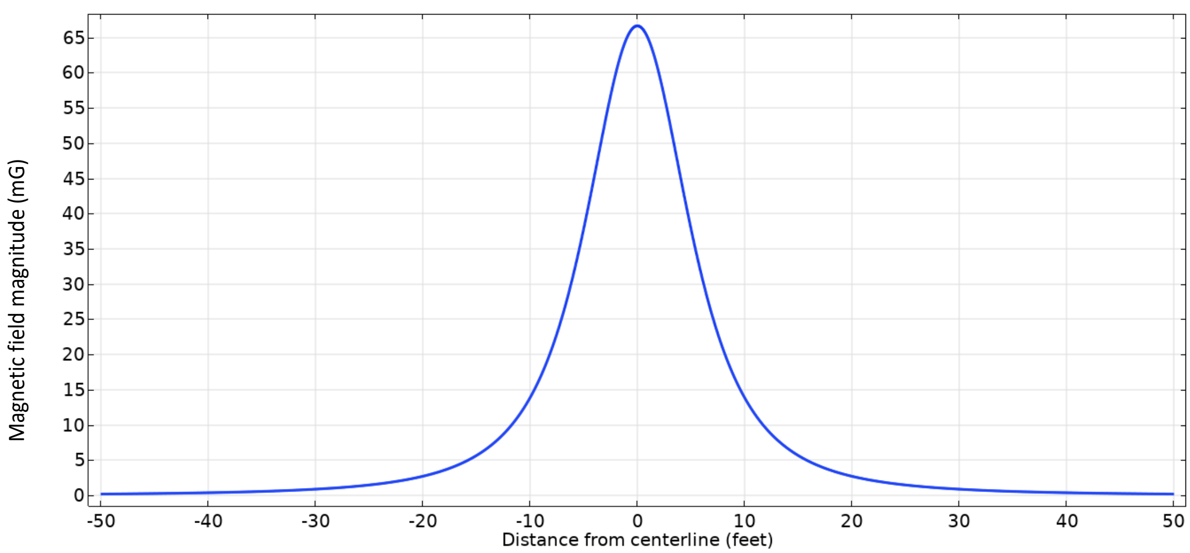
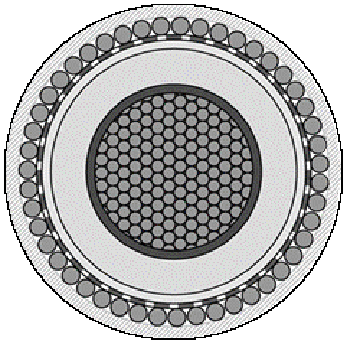


Figure 13. Magnetic field at the surface of the earth for Case 8: HVAC onshore, 3.3 ft (1.01 m) burial depth.

APPENDIX A – CABLE GEOMETRIES

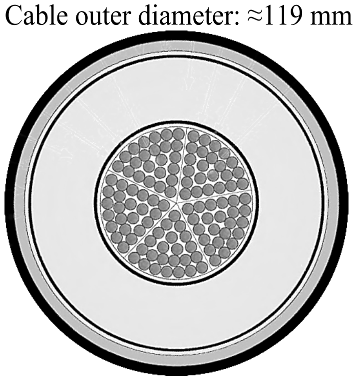
Approximate Submarine ±320 kV DC Cable Geometry (cable size provided by Mayflower)

Conductor core diameter: ≈48 mm (≈1.9 in)
Cable outer diameter: ≈133 mm (≈5.2 in)



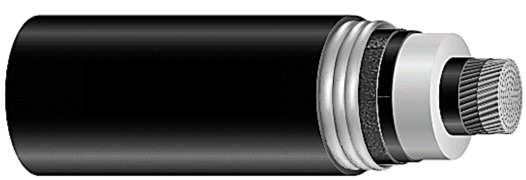
Approximate Underground ±320 kV DC Cable Geometry (cable size provided by Mayflower)

Conductor core diameter: ≈63 mm (≈1.9 in)
Cable outer diameter: ≈119 mm (≈5.2 in)



Approximate Underground 345 kV AC Cable Geometry (3000 kcmil cable size estimated by POWER based on desired ampacity of 1004 Amps AC rms per cable).

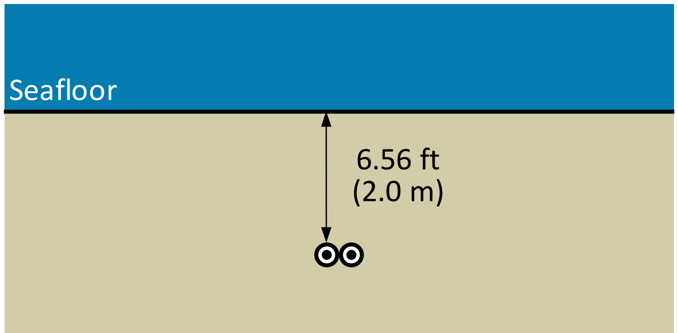
Conductor core diameter: ≈48 mm (≈1.89 in)
Cable outer diameter: ≈140 mm (≈5.5 in)



APPENDIX B – CIRCUIT GEOMETRIES

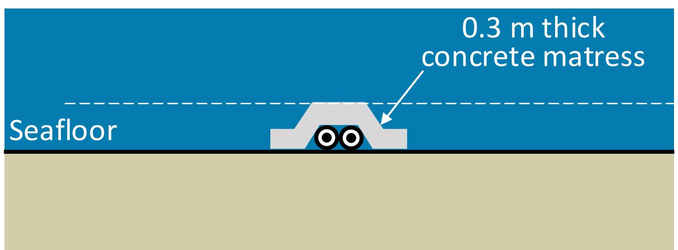
The drawings below are simplified diagrams showing relative cable placement. Depths are measured from the seafloor or earth surface to the top of the respective cable. Horizontal separation is measured from cable centers. Horizontal separation for bundled is therefore equal to one cable diameter.

Case 1: ±320 kV DC offshore, bundled configuration.



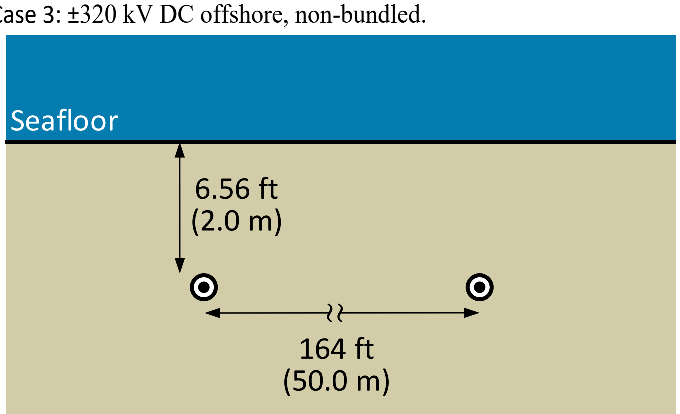
Magnetic field is measured at the sea floor.

Case 2: ±320 kV DC offshore, bundled and covered with concrete mattress.



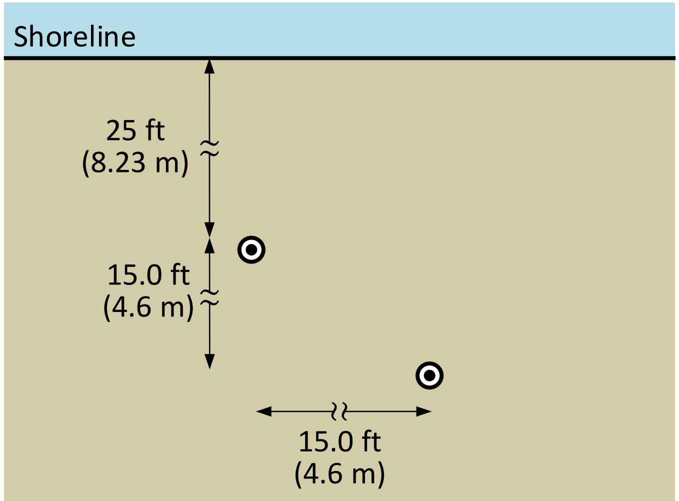
Magnetic field is measured along the dashed line (0.3 meters above top of cables).

Case 3: ±320 kV DC offshore, non-bundled.



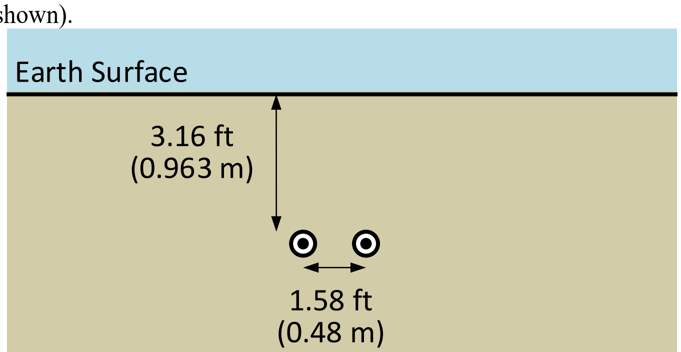
Magnetic field is measured at the sea floor.

Case 4: ±320 kV DC HDD landfall case under Island Park Beach near Boyd's Lane and Park Avenue.



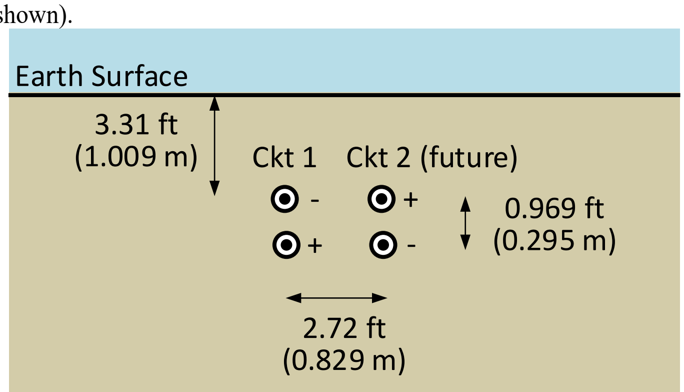
Magnetic field is measured at the beach surface.

Case 5: ±320 kV DC HVDC onshore, single circuit duct bank (conduit, engineered backfill, marketer tape etc. not shown).



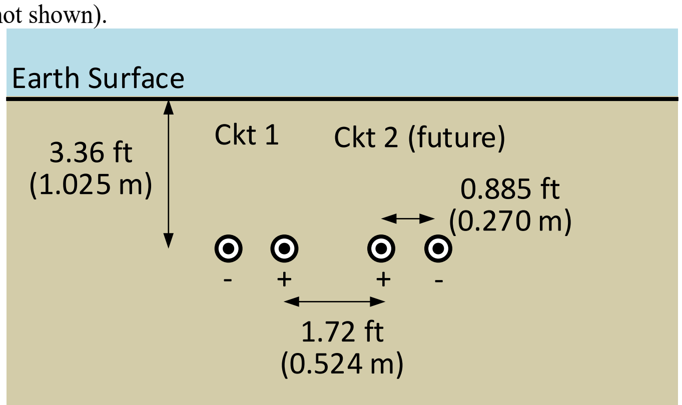
Magnetic field is measured at 3.28 ft (1 m) above the ground surface.

Case 6: ±320 kV DC HVDC onshore, double circuit duct bank (conduit, engineered backfill, marketer tape etc. not shown).



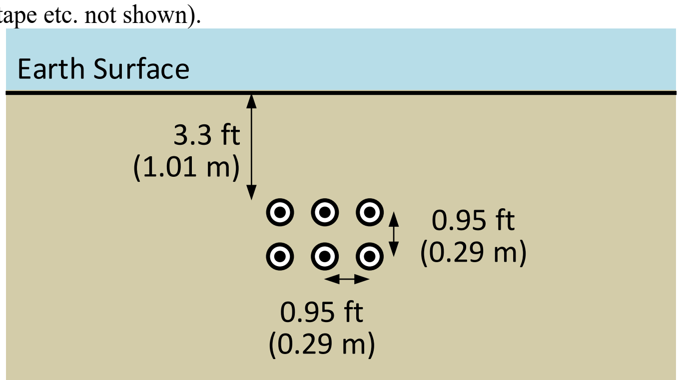
Magnetic field is measured at 3.28 ft (1 m) above the ground surface.

Case 7: ±320 kV DC HVDC onshore, alternate double circuit duct bank (conduit, engineered backfill, marketer tape etc. not shown).



Magnetic field is measured at 3.28 ft (1 m) above the ground surface.

Case 8: 345 kV HVAC onshore single circuit (two cables per phase) duct bank conduit, engineered backfill, marketer tape etc. not shown).



Magnetic field is measured at 3.28 ft (1 m) above the ground surface.
Phasing top: A1-B2-C2, bottom: C1-B1-A2. Results assume the angle of A1 equals the angle of A2; likewise, with B1, B2 and C1, C2.

ATTACHMENT E – AGENCY MEETINGS AND CONSULTATIONS

MW Exhibit 2(E)

AGENCY MEETINGS AND CONSULTATIONS

Agency	Date	Topics Discussed
Federal Agencies		
BOEM	March 2019 June 2019 July 2019 August 2019 November 2019 December 2019 January 2020 February 2020 April 2020 May 2020 June 2020 July 2020 August 2020 September 2020 October 2020 November 2020 December 2020 January 2021 February 2021 March 2021 April 2021 May 2021 June 2021 July 2021 August 2021 September 2021 October 2021 November 2021 December 2021 January 2022 February 2022 March 2022 April 2022	Project[1] overviews and updates Survey plans and updates (Site Assessment Plan, avian, benthic, cultural, G&G, visual, etc.) Permitting considerations (e.g., FAST-41) Project Design Envelope Lease Area activities Protected Species Section 106/NEPA process Tribal engagements Environmental Impact Report (EIS) Interagency Meeting (CPP Workshop) Benthic survey planning and habitat mapping Launching of geoarchaeological core viewer mapping system Visual simulations and Section 106 Marine Archaeological Resources Assessment (MARA)
National Oceanic and Atmospheric Administration (NOAA) /	June 2019 July 2019	Project overviews and updates

[1] For convenience and efficiency, the word “project” as used herein is intended to be inclusive for purposes of this document of communications regarding the Mayflower Wind offshore wind generation project, the Falmouth transmission connector project and/or the Brayton Point transmission connector project that is the subject of this Analysis. At different times over the evolution of the different elements of the project, Mayflower Wind has had various communications and engagements about the different and distinct project elements. Communications regarding the Brayton Point element commenced only after Mayflower Wind secured its interconnection queue position at Brayton Point in 2021.

Agency	Date	Topics Discussed
National Marine Fisheries Service (NMFS)	September 2019 November 2019 January 2020 February 2020 March 2020 April 2020 May 2020 June 2020 July 2020 August 2020 September 2020 October 2020 November 2020 December 2020 January 2021 March 2021 April 2021 June 2021 July 2021 August 2021 November 2021 January 2022 February 2022 March 2022 April 2022 May 2022	Survey plans and updates (e.g., benthic habitat, G&G surveys) Protected Species Incidental Take Authorizations EIS Interagency Meeting (CPP Workshop) Benthic survey planning and habitat mapping
United States Coast Guard (USCG)	January 2020 February 2020 March 2020 May 2020 June 2020 July 2020 August 2020 October 2020 November 2020 March 2021 April 2021 July 2021 August 2021 September 2021 October 2021 November 2021 April 2022 May 2022	Project overview and updates Navigation Safety Risk Assessment Port safety and security Local Notices to Mariners for surveys EIS Interagency Meeting (CPP Workshop)
United States Environmental Protection Agency (EPA)	January 2021 August 2021	Project overview and updates EIS Interagency Meeting (CPP Workshop)

Agency	Date	Topics Discussed
	October 2021 November 2021 April 2022	Air emissions information and permitting considerations
U.S. Army Corps of Engineers (USACE)	March 2020 March 2021 August 2021 January 2022 February 2022	Project overview and updates Permitting considerations EIS Interagency Meeting (CPP Workshop) Benthic survey planning and habitat mapping
State Agencies		
MA EFSB/DPU	February 2021 May 2021 September 2021 March 2022	Pre-filing Project updates and siting petition considerations
RI EFSB	March 2022	Pre-filing Project update and siting application considerations
Massachusetts Office of Coastal Zone Management (CZM)	January 2019 July 2020 March 2021 August 2021 September 2021 November 2021 December 2021 January 2022 February 2022	Project overviews and updates Survey plans and updates MEPA review process considerations Federal Consistency Review process, fisheries, surveys, one-year stay for consistency review process, and status reporting
Massachusetts Board of Underwater Archaeology (BUAR)	February 2020 March 2020 April 2020 May 2020 June 2020 July 2020 August 2020 October2020 April 2021 May 2021 June 2021 July 2021 August 2021 October 2021 December 2021 January 2022 April 2022	Project overviews and updates, export cable routing, proposed surveys, and survey plan execution Permitting considerations for marine archaeological surveys in State waters Tribal engagement on proposed cultural cores Live feed access information to testing of cultural cores from State waters Launching and demonstration of geoarchaeological core viewer mapping system Marine Archaeological Resources Assessment
Massachusetts Historic Commission (MHC)	April 2020 May 2020 June 2020	Project overviews and updates, export cable routing, proposed surveys, and survey plan execution

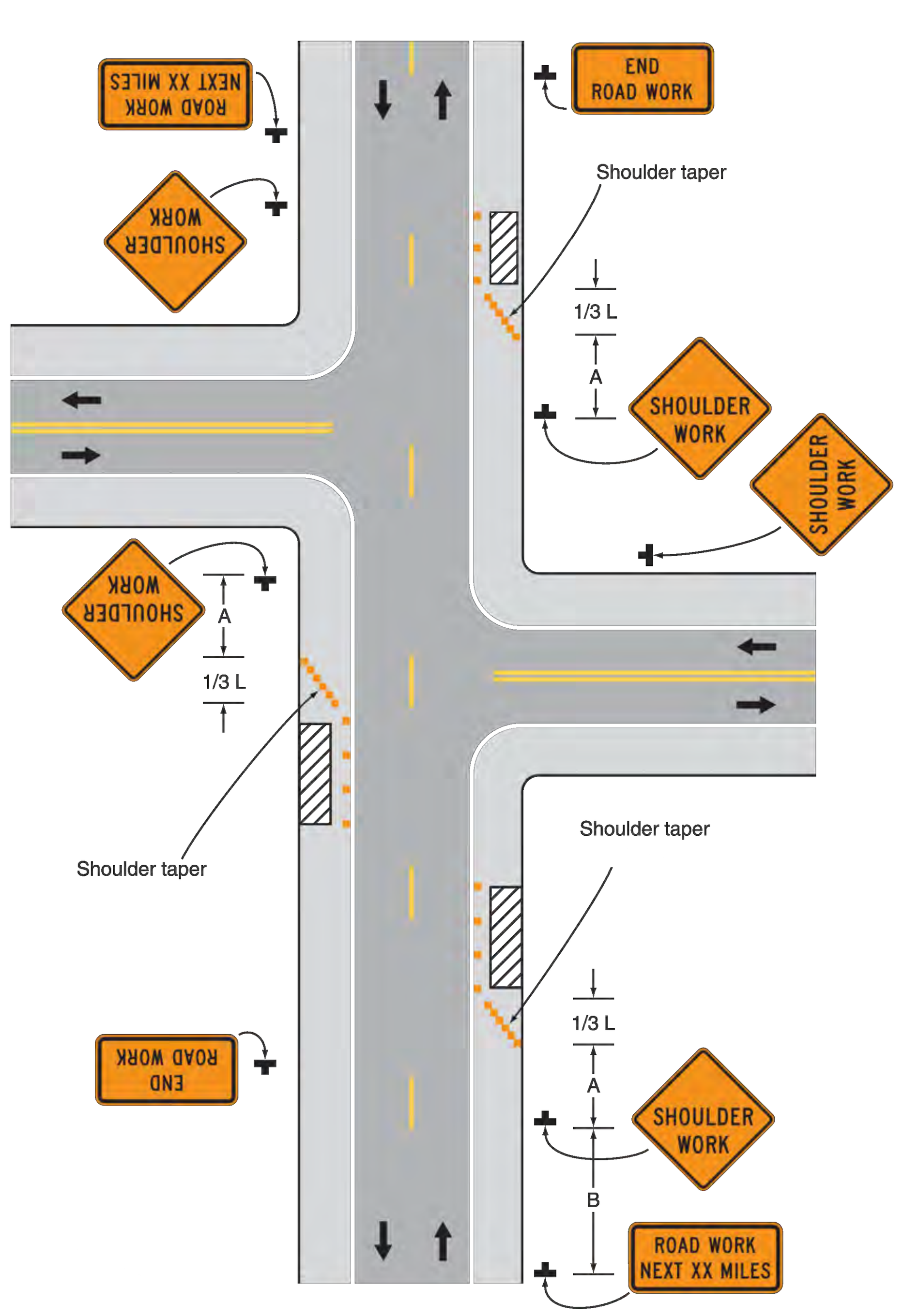
Agency	Date	Topics Discussed
	July 2020 August 2020 October 2020 January 2021 February 2021 April 2021 June 2021 July 2021 August 2021 January 2022 April 2022	Permitting considerations for terrestrial archaeological resources assessments Tribal engagement on proposed cultural cores Live feed access information to testing of cultural cores from State waters Launching and demonstration of geoarchaeological core viewer mapping system
Massachusetts Department of Fish and Game/ Massachusetts Division of Marine Fisheries (MA DMF)	November 2019 November 2020 July 2021	Project overview and updates
Massachusetts Department of Environmental Protection (MassDEP)	July 2020 November 2020 June 2021 November 2021 February 2022 March 2022	Project overviews and updates, export cable routing, surveys, and points of interconnection Permitting considerations Legacy environmental conditions onshore and offshore at Brayton Point Section 401 Water Quality Certificate and Dredge permits, including data needs
Massachusetts Fisheries and Wildlife (MassWildlife) – Natural Heritage & Endangered Species Program (NHESP)	March 2020 April 2020 July 2020 June 2021 September 2021 October 2021 April 2022	Project overview and updates State-listed rare species and updates under 2021 Atlas Avian surveys
Massachusetts Ocean Team (EEA, CZM, DMF, MassDEP, BUAR)	July 2020 November 2020 July 2021	Project overviews and updates Permitting considerations (e.g., landfall/HDD assessments, benthic sampling program, eelgrass and geotechnical surveys, export cable siting)
Massachusetts Environmental Policy Act Office (MEPA)	February 2020 April 21 August 2021 September 2021 November 2021	Project overview and updates New Environmental Justice requirements under 2021 Climate Act

Agency	Date	Topics Discussed
	February 2022 May 2022	Project's two points of interconnection from same Lease Area
Rhode Island Coastal Resources Management Council (RI CRMC)	June 2021 July 2021 September 2021 November 2021 December 2021 January 2022 February 2022 March 2022 April 2022	Project overview and updates Permitting considerations Letters of authorization for site characterization surveys in RI waters RI CZMA Consistency Certification
Rhode Island Historical Preservation & Heritage Commission (RI HPHC)	May 2021 June 2021 July 2021 December 2021 March 2022	Project overview and updates Permitting considerations for archaeological marine field investigations in RI state waters and terrestrial investigations in Portsmouth, RI Permitting for marine geophysical, geotechnical, and benthic surveys in RI State Waters Provided MARA and Portsmouth, RI TARA
Rhode Island Department of Environmental Management (RIDEM), Division of Marine Fisheries (DMF)	June 2021 July 2021 December 2021 March 2022	Project overview and updates Permitting considerations State-listed rare species and updates for Project study area Local Notices to Mariners for upcoming G&G surveys in the Sakonnet River and Mount Hope Bay Section 401 Water Quality Certificate and Dredge permits, including data needs
Local Agencies/ Municipalities/Tribes		
Town of Somerset	May 2021 January 2022 February 2022 March 2022	Project overview and updates Planned onshore activities (e.g., surveys) and upcoming events for the community. Meeting with the Somerset Economic Development Committee
Town of Portsmouth	October 2021 January 2022 April 2022	Project overview and updates Routing options across Aquidneck Island;

Agency	Date	Topics Discussed
	May 2022	responses to anticipated questions from community Project update and benefits meeting with Portsmouth Economic Development Committee
Town of Tiverton	October 2021	Overall project updates
Tribes including: Narragansett Indian Tribe, Wampanoag Tribe of Gay Head (Aquinnah), Mashpee Wampanoag Tribe, Delaware Tribe of Indians, Shinnecock Indian Nation, Mashantucket Pequot Tribal Nation, Mohegan Tribe of Connecticut	February 2020 June 2020 July 2020 August 2020 October 2020 February 2021 March 2021 April 2021 May 2021 August 2021 September 2021 November 2021 December 2021 January 2022 February 2022 March 2022	Pre-Survey meetings and project updates Geoarchaeological coring plans for activities in state waters Review offshore geophysical data and discuss proposed cultural coring plan Update on cultural coring plan execution Live feed access information to testing of cultural cores from State waters Launching and demonstration of Mayflower Wind web-based GIS map viewer showing locations of cores, core images, and the location of sampling within each core Introduced Tribal Protected Species Observer Training Program Provided TARA report for Portsmouth, RI and Brayton Pt, Somerset, MA

ATTACHMENT F – TRAFFIC MANAGEMENT DETAILS

Figure 6H-3. Work on the Shoulders (TA-3)

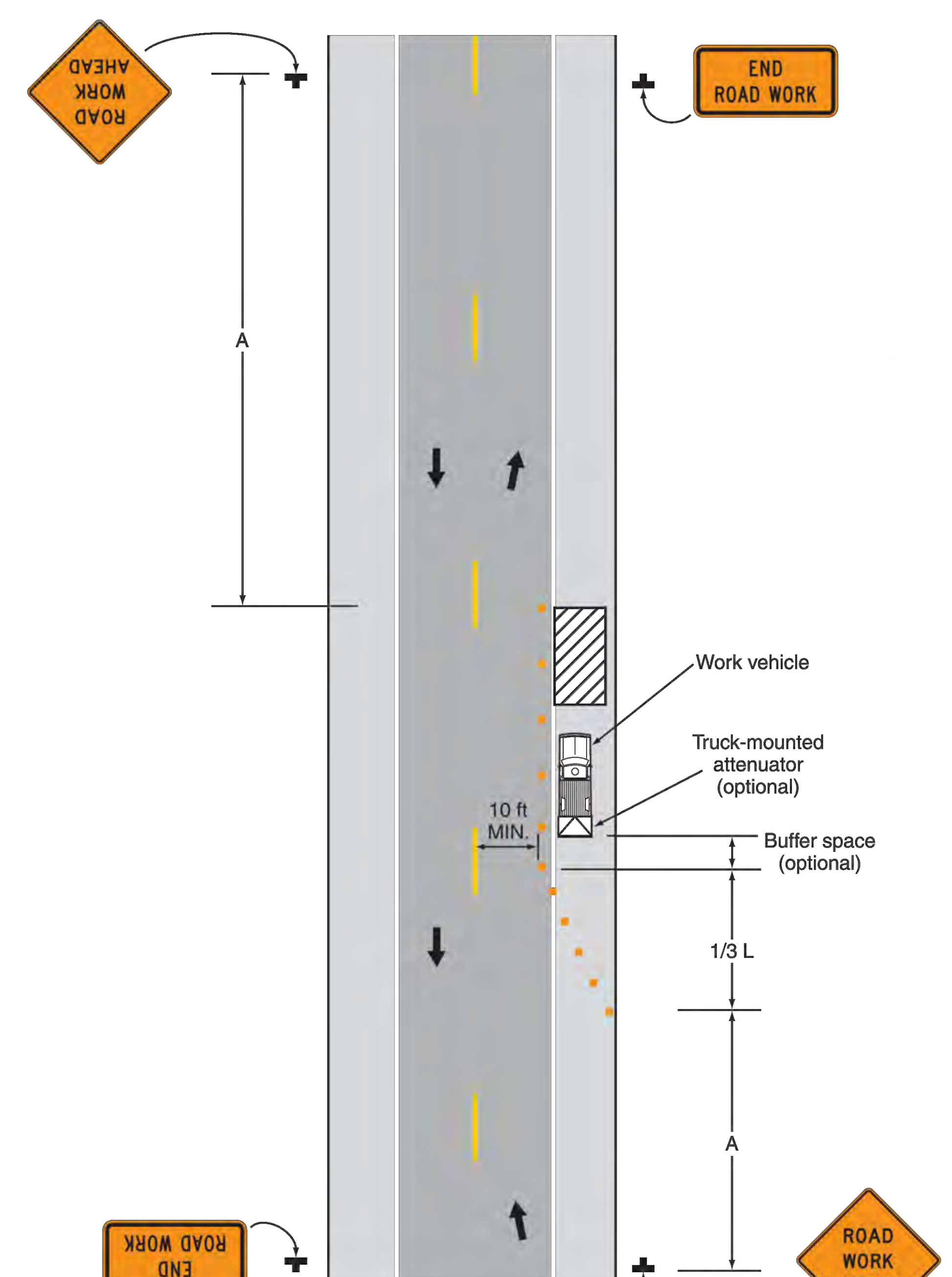


Typical Application 3

DETAIL 1

N.T.S.

Figure 6H-6. Shoulder Work with Minor Encroachment (TA-6)

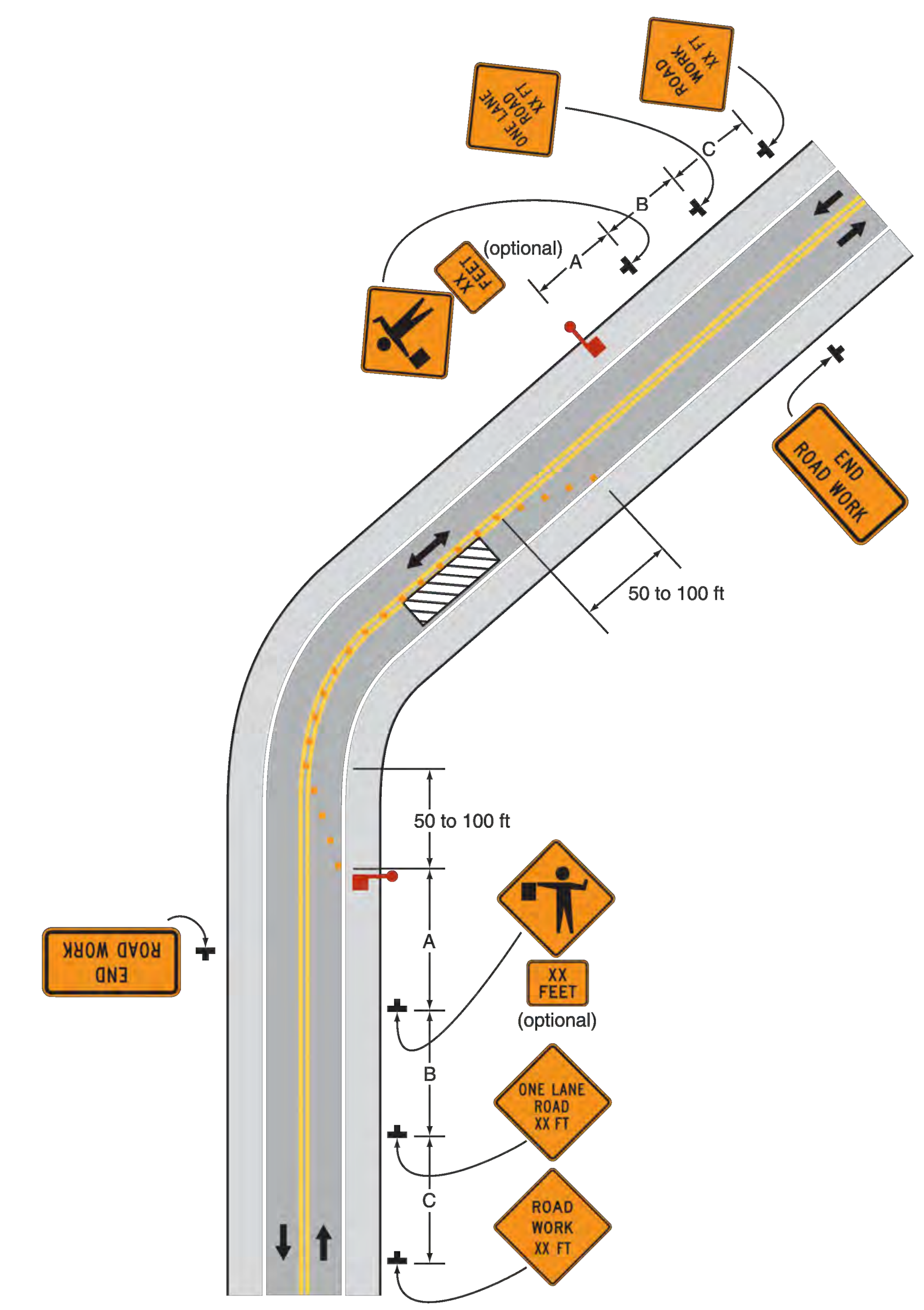


Typical Application 6

DETAIL 2

N.T.S.

Figure 6H-10. Lane Closure on a Two-Lane Road Using Flaggers (TA-10)

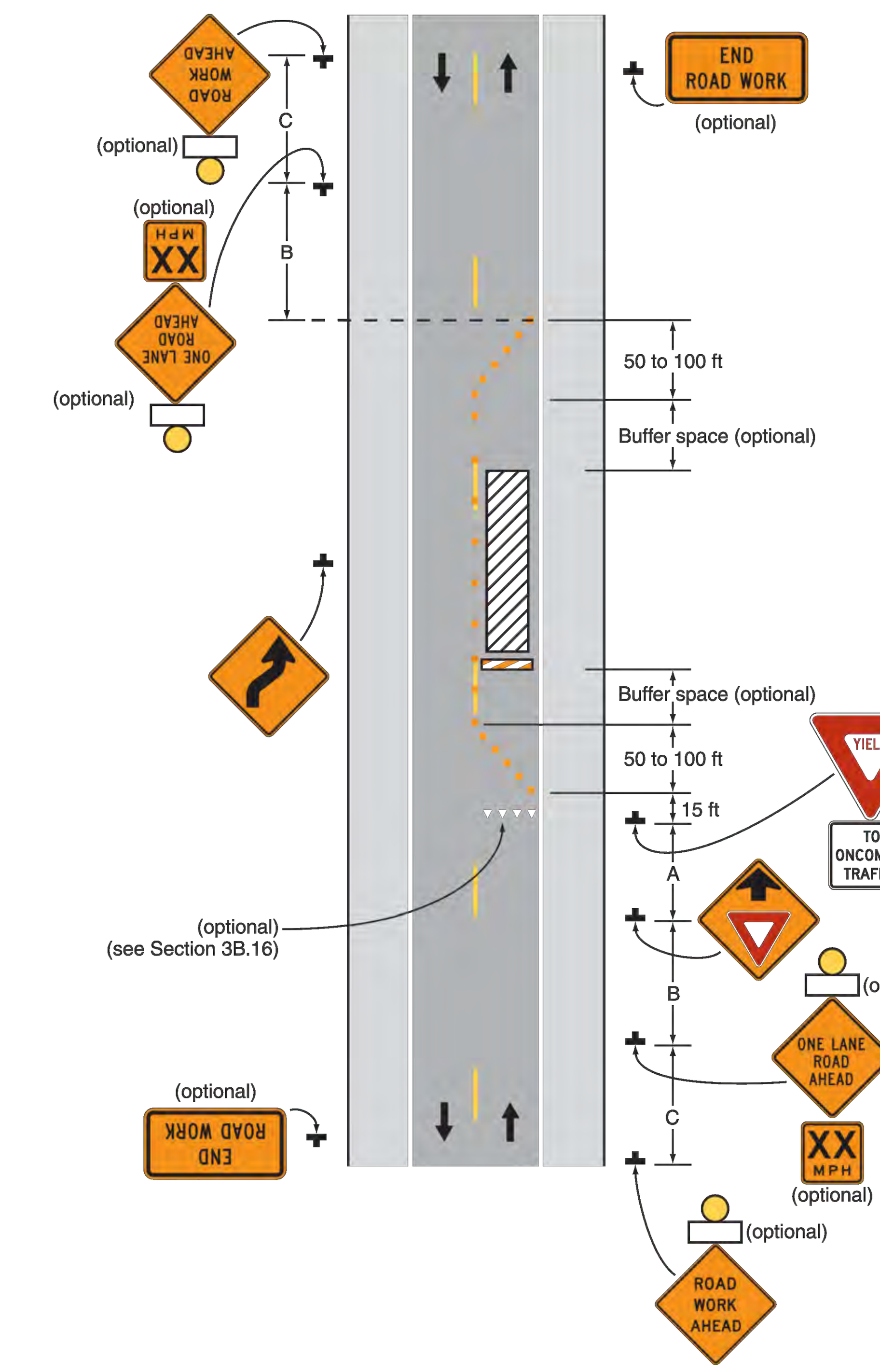


Typical Application 10

DETAIL 3

N.T.S.

Figure 6H-11. Lane Closure on a Two-Lane Road with Low Traffic Volumes (TA-11)



Typical Application 11

DETAIL 4

N.T.S.

NOTES:

1. ARRANGEMENTS TAKEN FROM "MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES FOR STREETS AND HIGHWAYS" FROM THE US DEPARTMENT OF TRANSPORTATION

REV	REVISIONS	DATE	DRN	DSGN	CKD	APPD
B	REVISED PER MAYFLOWER COMMENTS	05/13/2022	ASW	TSG	TSG	
A	ISSUED FOR REVIEW	04/06/2022	BAJ	ASW	TSG	

REFERENCE DRAWINGS

DSGN	ASW	04/06/22
DRN	BAJ	04/06/22
CKD	TSG	04/06/22

SCALE:

FOR 22x34 DWG ONLY

POWER ENGINEERS

MAYFLOWER WIND

AQUIDNECK ISLAND DUCT BANK

TRAFFIC MANAGEMENT PLANS

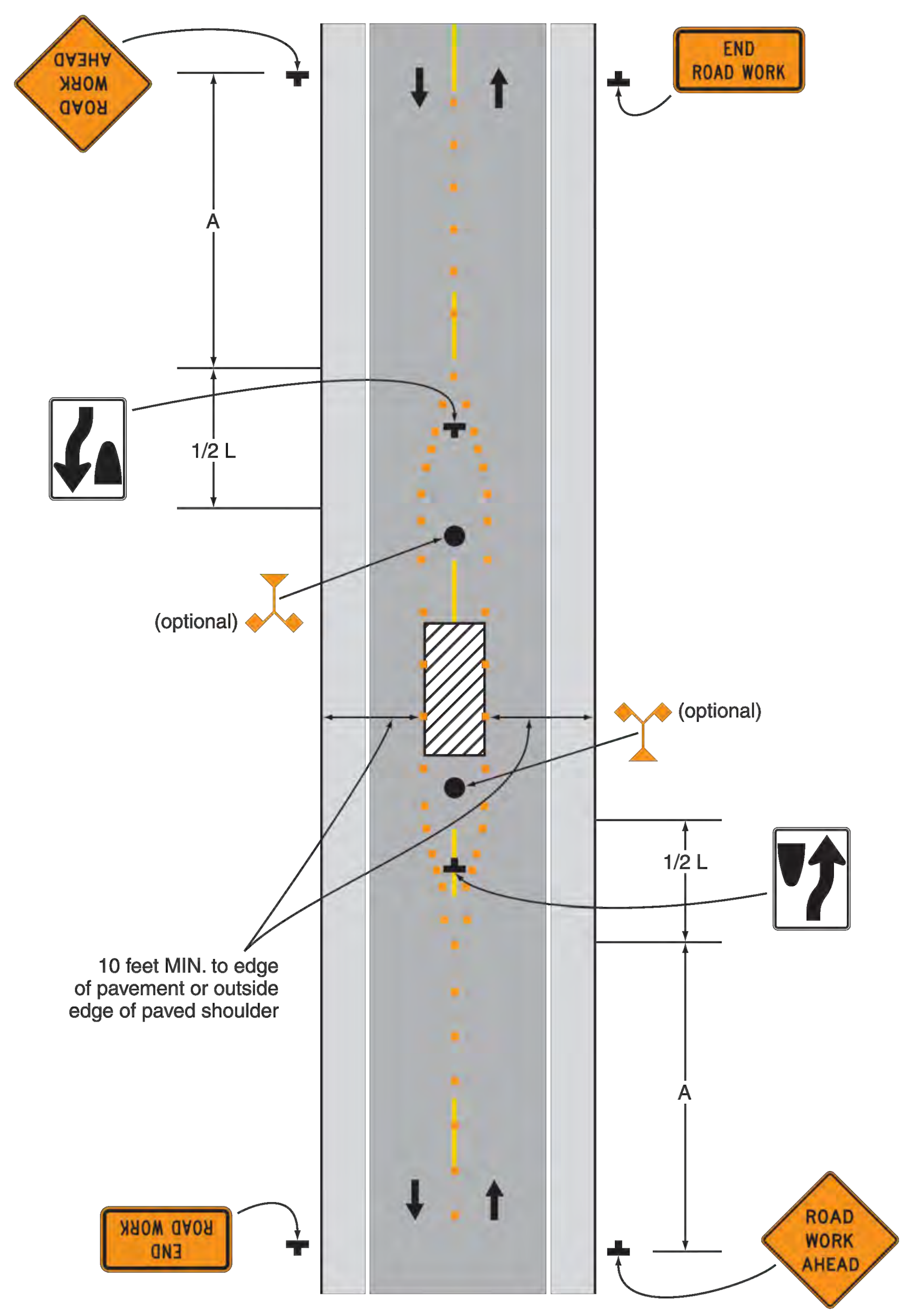
JOB NUMBER 172033

REV B

DRAWING NUMBER U1-1

172033 - Mayflower TMP Details.dwg

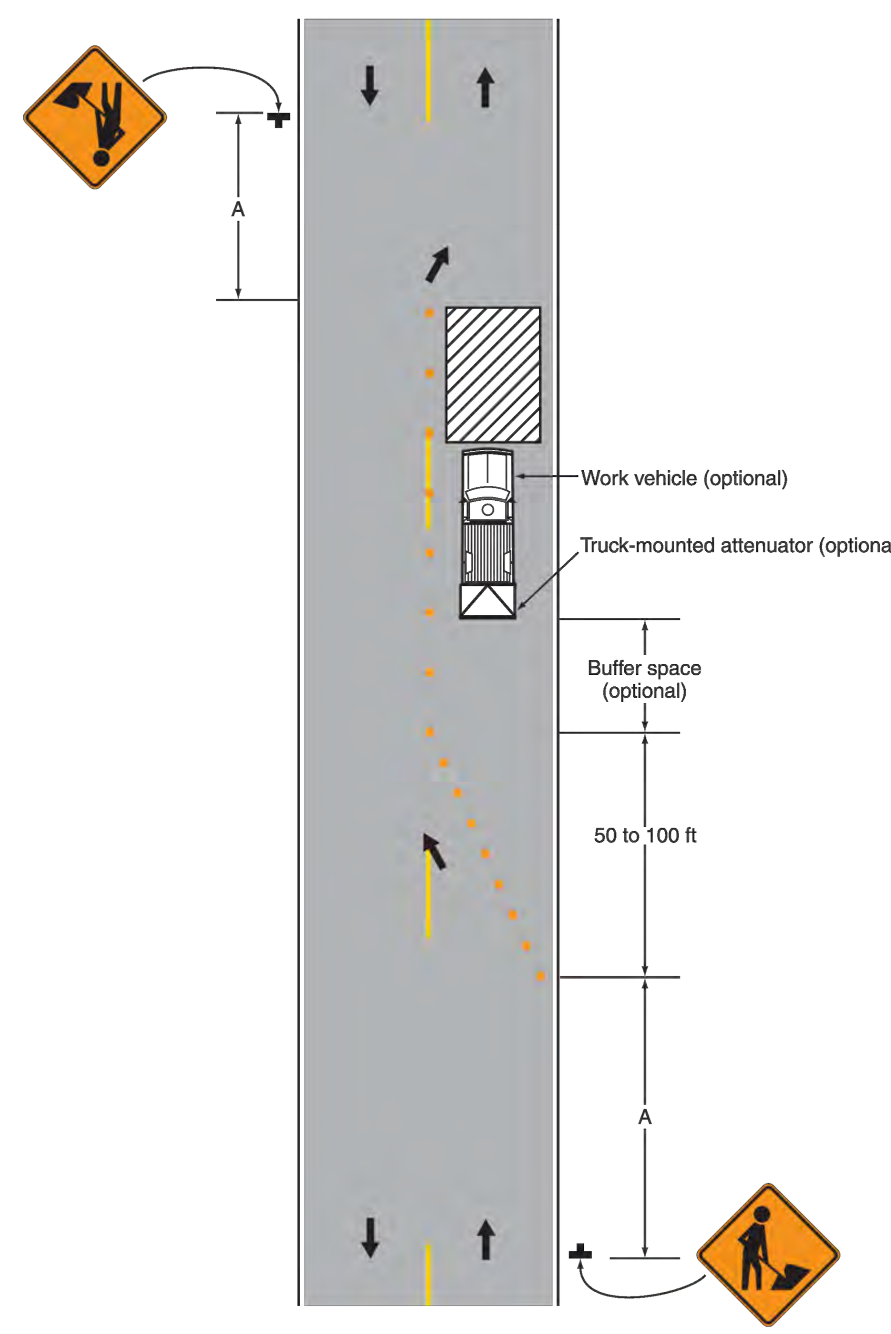
Figure 6H-15. Work in the Center of a Road with Low Traffic Volumes (TA-15)



Typical Application 15

DETAIL 5
N.T.S.

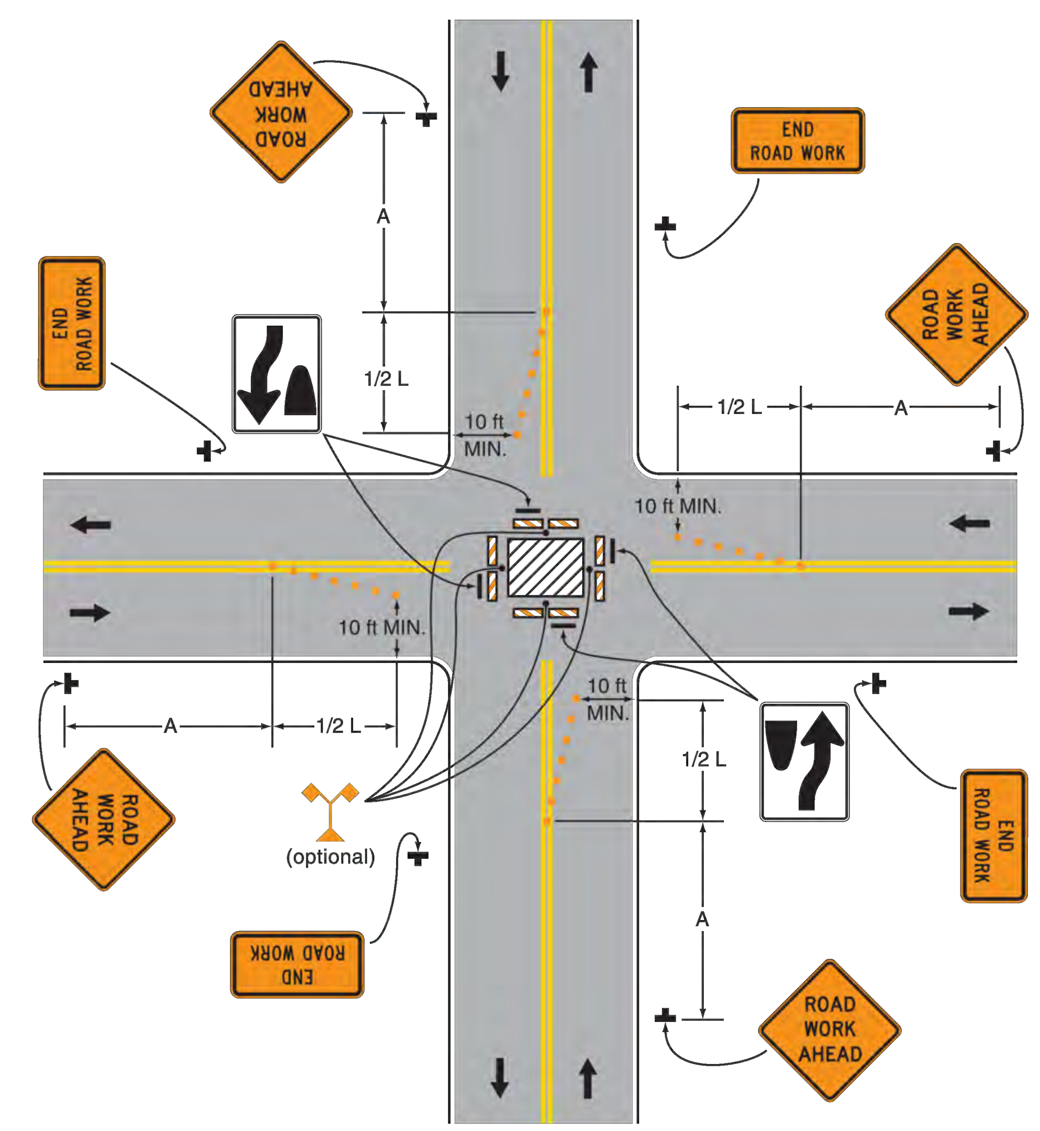
Figure 6H-18. Lane Closure on a Minor Street (TA-18)



Typical Application 18

DETAIL 6
N.T.S.

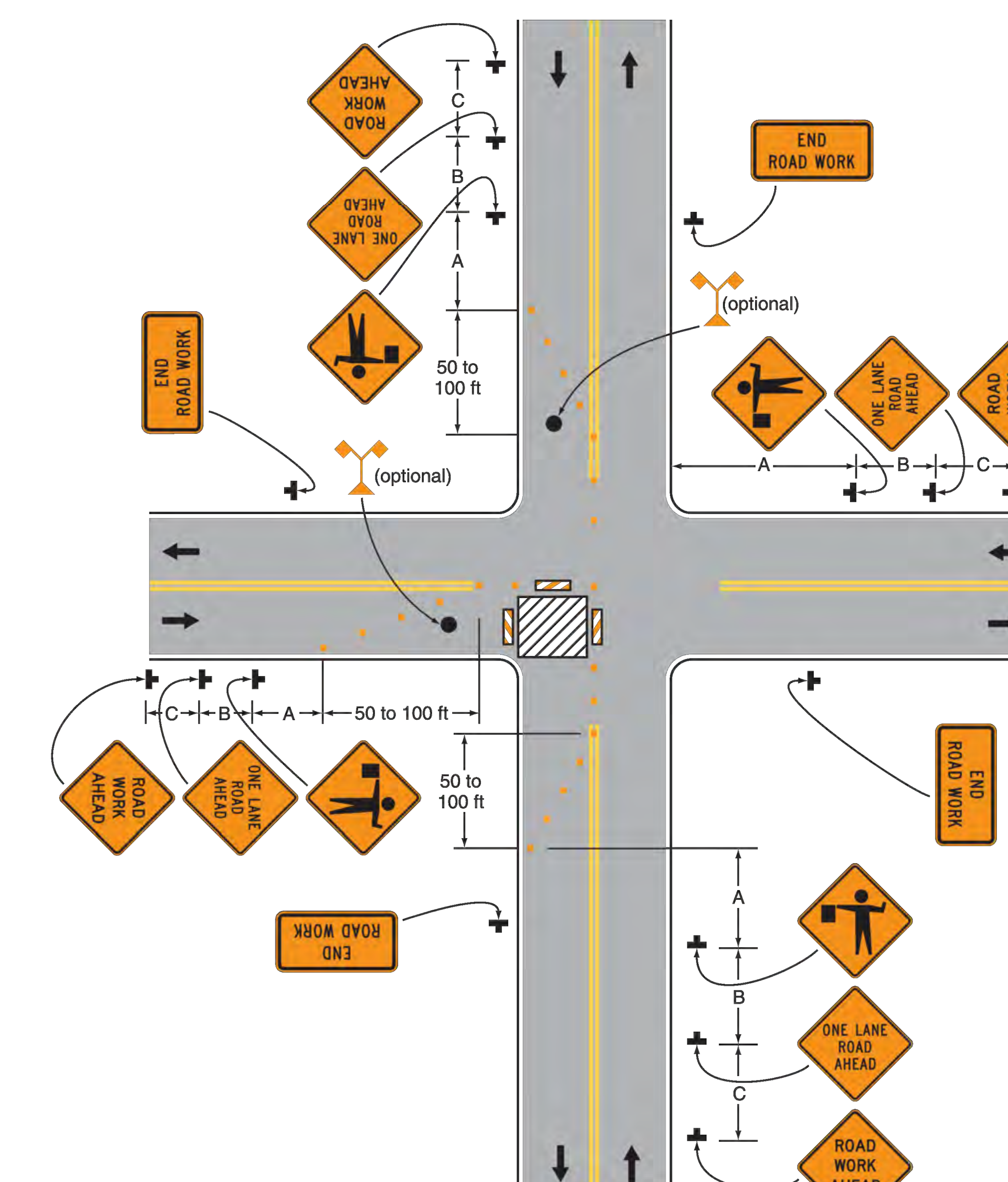
Figure 6H-26. Closure in the Center of an Intersection (TA-26)



Typical Application 26

DETAIL 7
N.T.S.

Figure 6H-27. Closure at the Side of an Intersection (TA-27)



Typical Application 27

DETAIL 8
N.T.S.

NOTES:

1. ARRANGEMENTS TAKEN FROM "MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES FOR STREETS AND HIGHWAYS" FROM THE US DEPARTMENT OF TRANSPORTATION

REV	REVISIONS	DATE	DRN	DSGN	CKD	APPD
B	REVISED PER MAYFLOWER COMMENTS	05/13/2022	ASW	TSG	TSG	
A	ISSUED FOR REVIEW	04/06/2022	BAJ	ASW	TSG	

REFERENCE DRAWINGS

DSGN	ASW	04/06/22
DRN	BAJ	04/06/22
CKD	TSG	04/06/22

SCALE:

FOR 22x34 DWG ONLY

POWER ENGINEERS

MAYFLOWER WIND

AQUIDNECK ISLAND DUCT BANK

TRAFFIC MANAGEMENT PLANS

JOB NUMBER 172033 | REV B

DRAWING NUMBER U1-2

172033 - Mayflower TMP Details.dwg

ATTACHMENT G – FISHERIES COMMUNICATION PLAN

TABLE OF CONTENTS

Glossary

Term	Definition
ACC	Anderson Cabot Center for Ocean Life
BOEM	Bureau of Ocean Energy Management
CFCRI	Commercial Fisheries Center of Rhode Island
F-TWG	Fisheries – Technical Working Group
FCP	Fisheries Communication Plan
FSET	Fisheries Science and Emerging Technologies
LNM	Local Notice to Mariners
MLA	Massachusetts Lobstermen's Association
NBPA	New Bedford Port Authority
NEAq	New England Aquarium
NERACOOS	Northeastern Regional Association of Coastal Ocean Observing Systems
NYSERDA	New York State Energy Research and Development Authority
ROSA	Responsible Offshore Science Alliance
SMAST	School for Marine Science and Technology of the University of Massachusetts Dartmouth

1 Fisheries Communication Plan

1.1 Mayflower Wind and Fishermen

Mayflower Wind Energy LLC (Mayflower Wind) is committed to mitigating potential negative environmental impacts of the Mayflower Wind Project (the Project) to avoiding unreasonable interference with existing offshore activities and to setting the bar for the industry as shown by our Core Values:

Safety First, Safety Always. We are committed to treating our people, community, and environment with care.

Innovation and Industry Development. We expect innovation will continue to drive the rapid decline in the cost of wind energy and aim to be a leader in this space.

Investing in Communities. We are committed to building responsible partnerships with local communities by supporting jobs, economic development, and innovation that will flourish for decades to come.

These Core Values guide our actions and decisions and have led us to a development principle to engage early and often with all communities. In the fishing community, we work with the commercial and recreational fishing industries, private anglers, and onshore businesses in the seafood supply chain.

Co-existence with this fishing community, characterized by early, continuous, and productive engagement, is central to how we operate. The Project's success depends on our ability to reasonably co-exist alongside those in the fishing community who fish in areas including the Project Area (consisting of the OCS-A 0521 Lease Area and the Project's export cable corridor) for their livelihood, enjoy the area for recreation, and share in and enjoy it as a collective resource.

Accomplishing these goals requires effective, valuable two-way communication. Mayflower Wind will continue to share knowledge, experience, and expertise with the fishing, offshore wind, and academic communities because the ability of offshore wind developments to co-exist with fisheries relies on our ability to build trust within the environment in which we will operate. Mayflower Wind has and will continue to listen to the fishing industry – to hear concerns and to gather information – in order to conduct operations in a manner that is practical and achieves this co-existence. We strive to communicate with the fishermen working on the water and the shoreside communities they support in the most efficient ways possible and to build and operate our Project in a way that allows fishermen to continue to fish the Project Area and co-exist with the Project.

Mayflower Wind is privileged to operate in an area with such a strong fishing history. Lobster, crab, tuna, surf clams, squid, scup, scallops, and more are fished in and around the Lease Area. Mayflower Wind has carefully gathered information on these fisheries and continues to engage in research and communication with these fishermen both from the commercial and recreational industries. This FCP is a continually evolving document that is adapted based on feedback from fishermen. The communication and outreach elements described in this FCP will provide the current state of our efforts and methods of communication with the fishing industry. A key part of our communication strategy is to provide fishermen with current information in a way that is easy for them to access. To do that, in addition to this document, our FCP will also exist on the Mayflower Wind website and have relevant, updated material easily accessible to fishermen.

Mayflower Wind believes and will demonstrate that offshore wind power can be sited and operated successfully, safely, and responsibly and without unreasonable interference with existing uses. We will show this using science and data-driven approaches and strive to do this cooperatively and collaboratively with the fishing industry. By working with research and industry organizations to support and produce credible science, fill data gaps, and build collaborative and cooperative science efforts, Mayflower Wind is able to leverage the efforts of our partners and bridge connections that make this science actionable.

Mayflower Wind is keenly aware of ongoing offshore wind development activities by other developers in U.S. waters and is committed to leading, not following, the industry. Mayflower Wind is focused on applying lessons learned and unique and innovative approaches to working with the local fishing industry. These efforts have been, and will continue to be, completed using input from stakeholders in the fishing industry to build this Project in a way that allows it to reasonably co-exist with fishermen that have been fishing in this area for hundreds of years.

1.2 Listening to Fishermen

Mayflower Wind's Fisheries Liaison Officer (Joel Southall, Joel.Southall@mayflowerwind.com), and other members of our Fisheries Communication Team talk directly with fishermen, sit on boards and working groups of organizations with fishermen, and engage directly with fishermen in scientific research and other efforts.

1.2.1 Port Hours

Mayflower Wind organizes and participates in Port Hours in Point Judith, RI and New Bedford, MA at least monthly in order to talk to commercial and recreational fishermen. In response to feedback from fishermen, we have partnered with other offshore wind developers to host a single event in ports near the offshore wind developments. We publicize Port Hours using our networks in the fishing industry and on our website to increase attendance at these events. Travel and gathering restrictions due to the COVID-19 pandemic have impacted these events beginning in March 2020 but Mayflower Wind made accommodations to allow modified versions of Port Hours to continue and developed alternative, virtual outreach efforts.

1.2.2 Fisheries Representatives

MASSACHUSETTS LOBSTERMEN'S ASS'N.

The Massachusetts Lobstermen's Association (MLA) is a Fisheries Representative of Mayflower Wind. MLA is a member-driven organization that accepts and supports the interdependence of species conservation and the members' collective economic interests. For the past 56 years, the MLA has become a trustworthy voice for the industry on important issues and is looked to by both the fishing industry and the management community. Mayflower Wind and MLA will work together to identify potential impacts to the lobstering community in the Project Area and collaborate on science initiatives that can help to better understand natural impacts to lobster in the region and to investigate potential impacts or changes to lobster populations with the introduction of offshore wind project components.

The New Bedford Port Authority (NBPA), which is also a Fisheries Representative of Mayflower Wind, supports the Port of New Bedford through the implementation of best management practices over port resources and the development of economic growth strategies. The NBPA is also responsible for the maintenance of facilities and equipment, safety, security and emergency response, and management of parking on NBPA piers and wharves. New Bedford is the largest commercial fishing port in America by value of annual commercial fishery landings, and 85 percent of those landings come from scallops. The number of boats utilizing the port provides strong representation of the scallop industry, and Mayflower Wind's relationship with the Port and its vessels is critical to collaboratively minimizing potential impacts to scallopers.

The Commercial Fisheries Center of Rhode Island (CFCRI) was founded to preserve commercial fishing as a profession, culture, and way of life through promoting the sustainability of the resource. The CFCRI brings fishermen, scientists, managers, and elected officials together in a collaborative effort to improve fisheries and the understanding of the marine environment.

1.3 Outreach and Communication

As Mayflower Wind conducts studies, surveys, and other activities in our lease area and along our export cable corridor, we have and will continue to update and work with fishermen to manage how these activities interact with fishing activities and to avoid unreasonable interference. Mayflower Wind has put in place proactive strategies to decrease the likelihood of interactions between Project components and activities with fishing activity. Mayflower Wind recognizes the possibility of offshore wind activity and commercial fishing gear encounters and conflicts. The Mayflower Wind website provides links to Notice to Mariners (LNMs), charts, and other information for fishermen on our current and upcoming activities. There is also a link to a form and additional information for fishermen to submit claims on lost gear that may have come from interactions between fishing activities and offshore wind development activities.

Notice to Mariners – coordinated communications through the U.S. Coast Guard regarding daily operations.

Charts – navigational information regarding the area in and around the Rhode Island – Massachusetts Wind Energy Area.

Lost Gear Claim Form - in the event there is gear loss or damage caused by or resulting from Project activities, we have provided this claim/damage procedure.

1.4 Monitoring and Research

Mayflower Wind is supporting research on fisheries in and around our Lease Area. Work being conducted with the New England Aquarium (NEAq) Anderson Cabot Center of Ocean Life's (ACC) Fisheries Science and Emerging Technologies (FSET) program will monitor highly migratory fish species. By using acoustic tagging and monitoring, this work will allow for the management of these species to be founded in solid science.

Mayflower Wind is also partnering with a research organization to conduct fisheries monitoring and impact assessment surveys. By understanding a baseline of existing fisheries data near our lease area, this work will help us understand the short- and long-term impacts of offshore wind developments on fisheries.

Mayflower Wind was a founding Board member of the Responsible Offshore Science Alliance (ROSA). ROSA's vision is an improved understanding of ocean and coastal ecosystems that allows for informed compatibility of sustainable fisheries and offshore wind energy. ROSA will advance regional research and monitoring of fishery and offshore wind interactions in the waters from Maine to North Carolina, including representatives from both the commercial and recreational fishing industries.

Mayflower is displaying real-time wind and ocean current observations from our FLiDAR buoy in the Lease Area. We are working with NERACOOS to provide this data to their Mariners Dashboard showing ocean and wind information across the Northeast. Mayflower has also included an acoustic receiver on the buoy to identify tagged cod moving across the area to Cox's Ledge.

1.5 Other Efforts

Mayflower Wind staff serve on the boards and working groups of a wide variety of organizations working on the intersection of wind and fishing. As efforts focusing on this intersection expand and new partnerships are formed, Mayflower Wind will continue to support and partner with these efforts to ensure that the development of offshore wind is conducted in a way that protects fisheries.

ATTACHMENT H – PROJECT COST TABLES

PUBLIC VERSION - REDACTED

MW Exhibit 2(H)

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ATTACHMENT I - CONSTRUCTION NOISE REPORT

MW Exhibit 2(I)

May 17, 2022

MAYFLOWER WIND

Portsmouth Construction Report

Construction Noise Levels Rhode Island

Revision 1

PROJECT NUMBER:
174444

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Construction Noise Levels

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REVISION HISTORY						
REV.	ISSUE DATE	ISSUED FOR	PREP BY	CHKD BY	APPD BY	NOTES
A	2022-01-28	Appvl	JAM	DTM	BCF	Issued for review and approval
B	2022-03-01	Appvl	JAM	DTM	BCF	Issued for review and approval
C	2022-03-02	Appvl	JAM	DTM	BCF	Issued for review and approval
D	2022-03-18	Appvl	JAM	DTM	JAB	Issued for review and approval
0	2022-04-01	Impl	JAM	DTM	BCF	Issued for implementation
1	2022-05-17	Impl	ADW	DTM	SP	Issued for implementation

"Issued For" Definitions:

- "Prelim" means this document is issued for preliminary review, not for implementation
- "Appvl" means this document is issued for review and approval, not for implementation
- "Impl" means this document is issued for implementation
- "Record" means this document is issued after project completion for project file

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1 INTRODUCTION

Mayflower Wind Energy LLC (Mayflower Wind), a joint venture of Shell New Energies US LLC (Shell New Energies) and OW North America LLC (Ocean Winds), proposes to construct and operate an offshore wind generation resource in federal waters with two transmission connector projects enabling delivery of energy to the regional transmission grid at points of interconnection in the Town of Falmouth, Massachusetts and at Brayton Point in the Town of Somerset, Massachusetts. The "Project" that is the focus of this report is the Brayton Point transmission connector Project, which includes: export cables in state waters with intermediate landfall in Portsmouth, Rhode Island and final landfall at Brayton Point in Somerset; an onshore high voltage direct current (HVDC) converter station at Brayton Point, and onshore, underground high-voltage alternating current transmission facilities to the point of interconnection at Brayton Point.

Mayflower Wind has identified potential locations for the subsea export cables to make landfall and cross Portsmouth with an onshore, underground cable system. Using horizontal directional drilling (HDD) technology, the cables will be installed under the beach and coastal ecosystem before making intermediate landfall on Aquidneck Island in Portsmouth at Boyds Lane/Park Avenue. Once ashore, the cables will continue underneath public roadways, along Boyds Lane to a fork where the route could head northeast towards Anthony Road or northwest towards the Mount Hope Bridge. The landfall will require use of HDD at two locations, entering and exiting Portsmouth/Aquidneck Island. Routing analysis and the identification of HDD staging areas for the onshore transmission infrastructure takes into consideration multiple factors, such as feasibility for construction, environmental resources, social impact, cultural resources, and other local concerns.

Mayflower Wind requested that POWER Engineers, Inc. (POWER) estimate the expected noise from the construction of the submarine export cables and onshore underground transmission lines in Portsmouth, Rhode Island. This study evaluates the potential for noise impacts associated with the construction and includes existing audible noise measurements taken in the vicinity of the Project area.

2 NOISE INFORMATION

2.1 Sound Pressure Levels

Sound magnitudes are measured in decibels (dB). In terms of the sensitivity of human hearing, the "A" weighting sound level (there are generally three noise-rating scales) is used as the noise-rating scale for construction noise (dB(A)). The following are definitions of noise measurements used in this analysis.

- Equivalent Sound Level (Leq): is defined as the steady sound pressure level which, over a given period of time, has the same total energy as the actual fluctuating noise. It is also known as the equivalent continuous sound level, or the time-averaged sound level.

- Exceedance Level (Ln): The fast-response, A-weighted noise levels equaled or exceeded by a fluctuating sound level for n- percent of a stated time period. L90 is the level exceeded for 90% of the time and is generally considered to represent the ambient noise level of an environment.

Sound can be described as the mechanical energy of a vibrating object transmitted by pressure waves through a liquid or gaseous medium (e.g., air) to a hearing organ, such as a human ear. In the science of acoustics, the fundamental model consists of a sound (or noise) source, a receptor, and the propagation path between the two. The loudness of the noise source and obstructions or atmospheric factors affecting the propagation path to the receptor determine the sound level and characteristics of the noise perceived by the receptor. Concern about noise is related to negative impacts on humans and animals. Human response to noise is most commonly expressed as an annoyance and the level of annoyance may be affected by the intensity of the noise, its frequency (pitch), its duration of exposure and/or its recurrence. Ambient noise is the total noise in an environment and usually comprises sounds from many sources. In typical environments, changes in noise levels of 1 to 2 dB are generally not perceptible. However, it is widely accepted that people, in general, are able to begin to detect sound level increases of 3 dB in typical environments. Further, a 5 dB increase is generally perceived as a distinctly noticeable increase, and a 10 dB increase is generally perceived as a doubling of loudness. Typical ranges of audible sound levels for some common sources of noise are presented in Table 1. The following sections of this report present the basic parameters used to describe the environmental sound levels evaluated in this analysis.

TABLE 1: TYPICAL RANGE OF AUDIBLE NOISE FROM VARIOUS SOURCES

SOURCE	MEASURED SOUND LEVEL
Loud Automobile Horn	110 to 120 dB(A)
Inside Motor Bus	80 to 90 dB(A)
Average Traffic on Street Corner	70 to 80 dB(A)
Conversational Speech	60 to 70 dB(A)
Typical Business Office	50 to 60 dB(A)
Living Room, Suburban Area	40 to 50 dB(A)
Library	30 to 40 dB(A)
Bedroom at Night	20 to 30 dB(A)

Source: U.S. EPA. 1974. Information on Levels of Environmental Noise Requisite to Protect the Public Health and Welfare with an Adequate Margin of Safety

Audible noise decreases with distance from the source. Overall, the attenuation of noise from the source is approximately 3-6 dB per doubling of the distance from a location.

An individual’s perception of a sound pressure level has been documented to estimate an individual’s reaction to a change in noise. Table 2 provides a range of perception of sound level change.

TABLE 2: PERCEPTION OF SOUND LEVEL CHANGE	
Change dB(A)	**Human Perception of Sound**
2-3	Barely perceptible
5	Readily noticeable
10	Doubling or "halving" of the loudness of sound
20	"Dramatic Change"
40	Difference between a faintly audible sound and a very loud sound

Source: Bolt, Beranek and Newman, Inc., Fundamentals and Abatement of Highway Traffic Noise, Report No, PB-222-703, June 1973

2.2 Change In Audible Noise

Noise sources are typically expressed in terms of decibels, which are a logarithmic comparison between a measured pressure and a reference pressure. Multiple noise sources expressed in terms of decibels cannot be summed using linear arithmetic methods. Rather they must be summed logarithmically after converting the values into units of pressure. Once summed together they can be converted and expressed again in terms of decibels using the following formula:

$$Lp(dB) = 10\log\left(\left(\frac{p1}{p0}\right)^2 + \left(\frac{p2}{p0}\right)^2\right)$$

where:

Lp = Sound pressure level in dB

p = measured pressure in Pa

p0 = reference pressure (0.00002 Pa)

The greater the difference between the sources in decibel ratings, the less impact they have in changing the overall resultant decibel level. Table 3 below shows the relationship of this deviation. This relationship combined with the perception of sound level changes, as shown in Table 2 provides guidelines indicating how perceptible the addition of a noise source will be. If the difference between two sources is greater than 6 dB, the addition of the smaller decibel source would be predicted to result in no perceived difference in sound level.

TABLE 3: SUMMING DECIBELS

DIFFERENCE BETWEEN LEVELS DB	AMOUNT TO BE ADDED TO HIGHER LEVEL DB
0	3.0
1	2.5
2	2.1
3	1.8
4	1.5
5	1.2
6	1.0
7	0.8
8	0.6
9	0.5

3 AUDIBLE NOISE MEASUREMENTS

In January of 2022, POWER Engineers performed existing audible noise measurements for both the preferred and alternate construction locations in Portsmouth. The following sections detail the test locations, equipment, and procedures used to complete the pre-construction audible noise testing.

3.1 Test Locations

Six measurement locations in Portsmouth were identified for the tests to be performed. These locations represent areas where the public has access or are in direct line with sensitive receptors in the immediate vicinity. Site selection was determined in part to reduce the effects of adjacent objects that would shield or reflect sound waves around the sound level meter.

3.2 Test Equipment

An ANSI Class 1 data logging sound level meter was used to automatically log A-weighted audible noise in accordance with IEEE Std 656-2018 (IEEE Standard for the Measurement of Audible Noise From Overhead Transmission Lines), IEEE Std C57.12.90-2015 (IEEE Standard Test Code for Liquid-Immersed Distribution, Power, and Regulating Transformers), and IEC/IEEE 60076-57-129 (Power Transformers for HVDC applications). The meter conforms with ANSI S1.4-2014, ANSI S1.25-1991 (R2007), and ANSI S1.11-2004.

Specifically, POWER performed measurements using a Larson Davis sound level meter. This instrument meets the requirements of the International Electrotechnical Commission (IEC) and the American

National Standards Institute (ANSI) as a Type 1, Precision Sound Level Meter. The device has 1/1 and 1/3 octave filters (8 Hz to 16 kHz) and performs statistical analysis to report the audible noise as a function of each octave band frequency. The microphone on the sound level meter is a random incidence microphone with a standard windscreen placed on top.

The measurements taken are A-weighted, an international standard weighting network built into sound level meters that is designed to approximate the hearing frequency range of most people. The A-weighted decibel results are presented in units of dBA. Additionally, the test device logs the individual unweighted octave levels for "pure tone" analysis. The sound level meter processes the signals from the directly connected microphone and records data through the measurement period.

3.3 Test Procedures

Measurements were made with the sound level meter placed on a tripod at a height of 1.5 m (5 ft) per IEEE Standard 656-2018. The use of 1.5 m (5 ft) provides an approximate location of an individual's ear. Separate log files were created on the sound level meter for each test location. File names and corresponding test locations were recorded during the test. All data was downloaded into a laptop computer and analyzed statistically with Larson Davis software.

General notes about each test location, including general noise observations, weather conditions, exact location, time of measurement, and other pertinent facts were recorded at each site.

Attended measurements were taken at sensitive receptor locations to establish the existing ambient sound levels. At each test location, measurements were collected for a minimum of 15 minutes. Measurements were performed at each location during daytime (7am-9pm) and nighttime (9pm-7am) hours in accordance with the town ordinance. Meter calibrations can be found in Appendix B.

3.4 Test Results

A summary of the audible noise measurement results is shown in Table 4. A complete detailed table of the field measurements can be found in Appendix A. A map of the general test site locations can be seen in Figure 1. The underground routing drawing that shows proposed construction path and HDD drilling locations is shown in Figure 2.

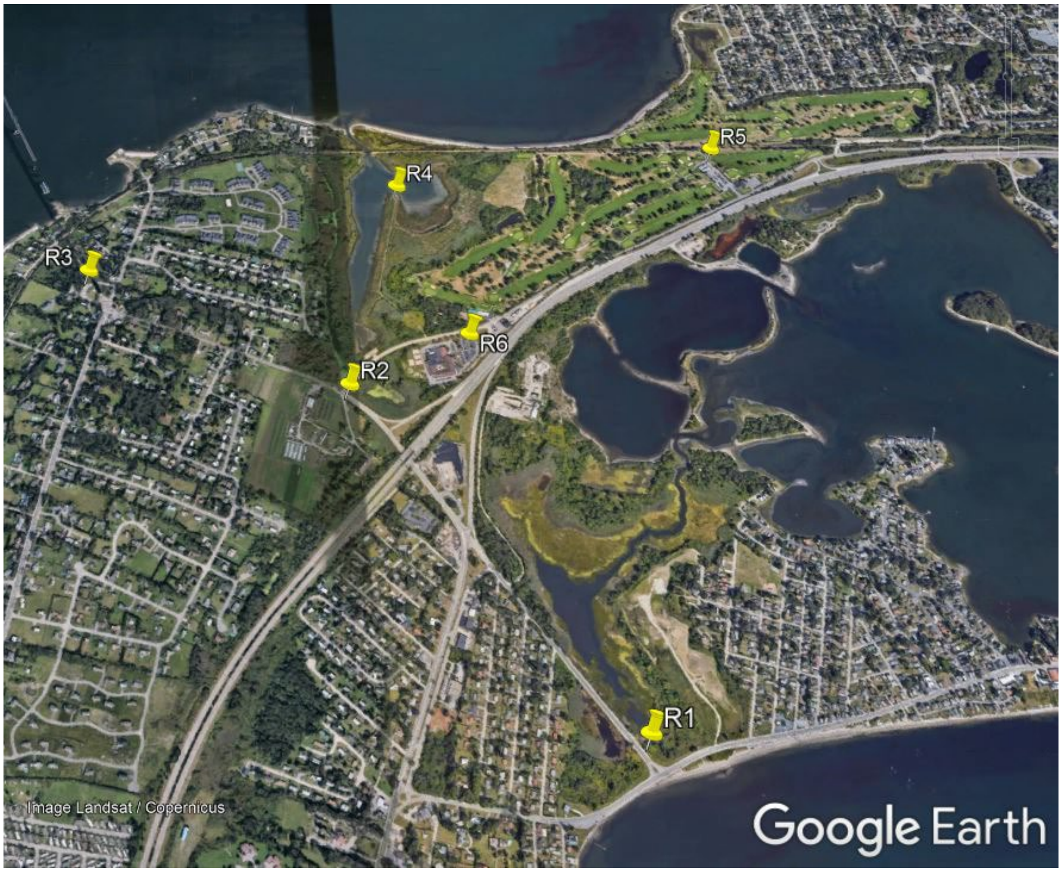


Figure 1: Portsmouth, RI Test Points

Figure 2: Portsmouth Underground Routing

TABLE 4: AUDIBLE NOISE FIELD MEASUREMENT RESULTS				
TEST POINT	**COORDINATES**	**TIME**	**LA_{eq}**	**LA_{90}**
R1	41°37'17.89"N 71°14'17.62"W	1:27 PM	60.1 dB(A)	43.6 dB(A)
		9:47 PM	52.4 dB(A)	39.5 dB(A)
R2	41°37'48.07"N 71°14'45.16"W	1:05PM	65.5 dB(A)	52.1 dB(A)
		9:25 PM	58.2 dB(A)	43.4 dB(A)
R3	41°37'59.42"N 71°15'16.06"W	12:43 PM	55.9 dB(A)	50.5 dB(A)
		9:03 PM	48.5 dB(A)	41.2 dB(A)
R4	41°38'11.15"N 71°14'37.46"W	6:04 PM	41.0 dB(A)	34.3 dB(A)
		10:40 PM	39.1 dB(A)	33.3 dB(A)
R5	41°38'15.66"N 71°13'57.26"W	5:01 PM	43.6 dB(A)	41.7 dB(A)
		11:10 PM	41.2 dB(A)	38.6 dB(A)
R6	41°37'54.67"N 71°14'30.80"W	5:28 PM	59.2 dB(A)	54.4 dB(A)
		10:10 PM	50.5 dB(A)	41.2 dB(A)

4 UNDERGROUND ONSHORE EXPORT CABLE AND HDD CONSTRUCTION

The nearest residence to any proposed HDD site is identified in Table 5. All proposed HDD layouts can be found in Appendix C. The nearest residence to the overall construction Project is identified in Table 6. Figure 3 through Figure 8 show the measured dimensions from the HDD sites and construction equipment to the nearest residences.

TABLE 5: NEAREST RESIDENCE TO HDD CONSTRUCTION SITES			
HDD SITE	**ADDRESS OF NEAREST RESIDENCE**	**DISTANCE FROM HDD EQUIPMENT TO RESIDENTIAL STRUCTURE**	**REFERENCE**
Mt Hope Bridge	20 Mussel Bed Shoal Rd.	60 ft	Figure 3
Golf Course Parking Lot	2 Attleboro Ave.	920 ft	Figure 4

TABLE 5: NEAREST RESIDENCE TO HDD CONSTRUCTION SITES			
HDD SITE	ADDRESS OF NEAREST RESIDENCE	DISTANCE FROM HDD EQUIPMENT TO RESIDENTIAL STRUCTURE	REFERENCE
Boyds Ln.	67 Norseman Dr.	720 ft	Figure 5
Baypoint Residence Hall	144 Anthony Rd.	150 ft	Figure 6
Anthony Ln. Peninsula	163 Ferry Landing Cir	950 ft	Figure 7

TABLE 6: NEAREST RESIDENCE TO OVERALL CONSTRUCTION		
ADDRESS OF NEAREST RESIDENCE	DISTANCE FROM CONSTRUCTION EQUIPMENT TO RESIDENTIAL STRUCTURE	REFERNCE
181 Boyds Ln.	20 ft	Figure 8

Figure 3: 20 Mussel Bed Shoal Rd.

Figure 4: 2 Attleboro Ave.

Figure 5: 67 Norseman Dr.

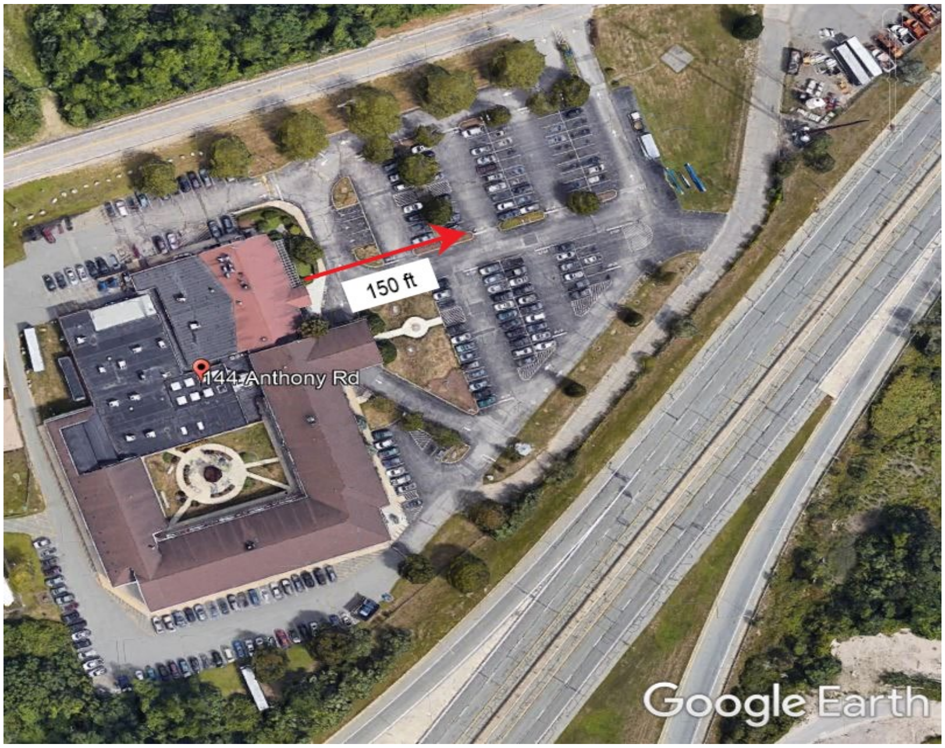


Figure 6: 144 Anthony Rd.

Figure 7: 163 Ferry Landing Cir.

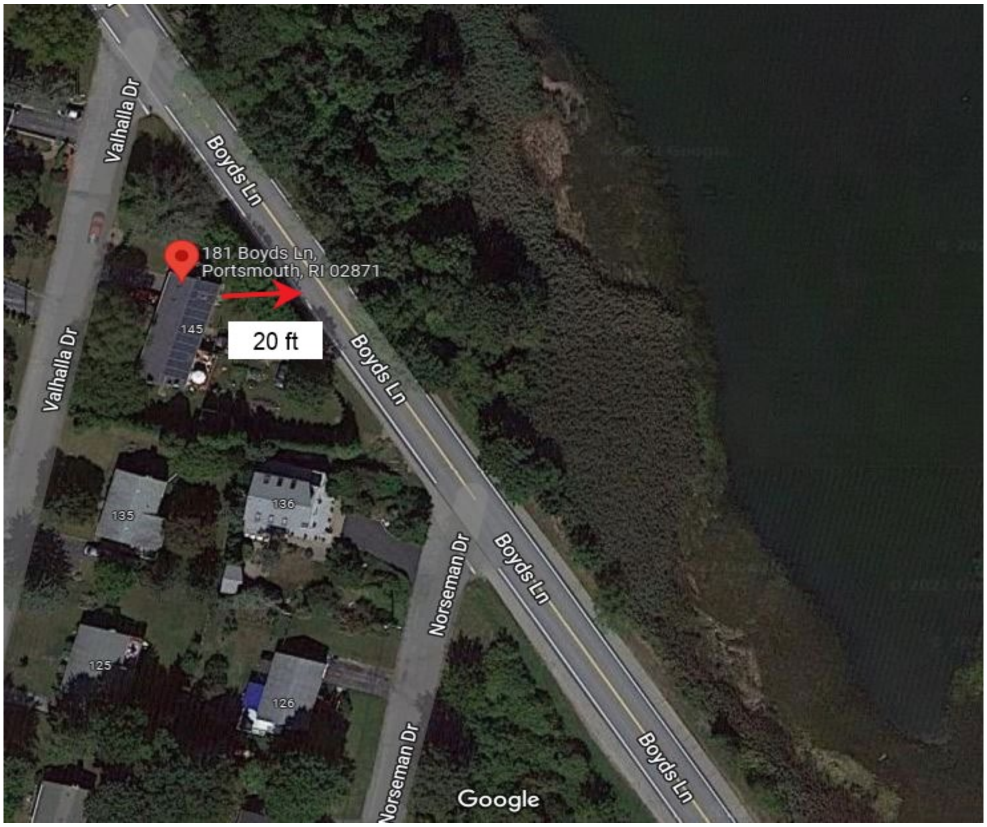


Figure 8: 181 Boyds Ln.

Table 7 identifies the types of equipment to be used for each activity during the construction sequence and provides a range of typical sound levels from the equipment. The construction equipment is grouped per construction activities; major types of equipment commonly used in that activity were included in the table. The range of sound levels includes the quietest to the loudest equipment listed. The typical sound levels are provided at a distance of 50 feet (15.24 meters) from the source and have also been calculated with an attenuation rate of 6 dB per doubling of distance for noise levels at the nearest residential building to provide a conservative estimate of the typical distance from work areas to residences.

Noise is assumed to be generated by a number of pieces of equipment at various locations at the Project site, as appropriate for each phase of construction. As shown in Table 7, the noise impacts from construction activities depends on the construction equipment used for each phase of construction and the specific construction activity. These levels range from 70 dBA to 135 dBA at a distance of 50 feet (15.2 m) from the construction activity. The closest residence to all proposed HDD sites is approximately 60 feet (18.3 m) away. The closest residence is 20 feet (6.1 m) away from all other Project construction. Requirements of the local noise ordinance in Portsmouth are outlined in Table 8.

TABLE 7: CONSTRUCTION SOUND LEVELS BEFORE MITIGATION[1]			
DESCRIPTION OF ACTIVITY	**TYPE OF EQUIPMENT**	**TYPICAL SOUND LEVELS AT 50 FEET FOR A SINGLE PIECE OF EQUIPMENT (DBA)**	**ESTIMATED SOUND LEVELS (DBA) AT CLOSEST RESIDENCE[2]**
HDD Process at Mt Hope Bridge	• Generator • Power Plant • Drill Rig • Trash Pump • Excavator • Crane	93 to 135	91 to 133
HDD Process at Golf Course Parking lot	• Generator • Power Plant • Drill Rig • Trash Pump • Excavator • Crane	93 to 135	67 to 109
HDD Process at Boyds Ln.	• Generator • Power Plant • Drill Rig • Trash Pump • Excavator • Crane	93 to 135	70 to 112
HDD Process at Baypoint Residence Hall	• Generator • Power Plant • Drill Rig • Trash Pump • Excavator • Crane	93 to 135	84 to 126
HDD Process at Anthony Ln. Peninsula	• Generator • Power Plant • Drill Rig • Trash Pump • Excavator • Crane	93 to 135	67 to 109
Vegetation Removal	• Grapple trucks • Bulldozers • Track-mounted mowers • Motorized tree shears • Log forwarders • Chippers • Chain saws • Box trailers	70 to 95	78 to 103
Erosion/Sediment Controls and Road Improvements and Maintenance	• Dump trucks • Bulldozers, excavators, backhoes • Graders • Forwarders • 10-wheel trucks with grapples • Cranes	70 to 98	78 to 106

TABLE 7: CONSTRUCTION SOUND LEVELS BEFORE MITIGATION[1]			
DESCRIPTION OF ACTIVITY	**TYPE OF EQUIPMENT**	**TYPICAL SOUND LEVELS AT 50 FEET FOR A SINGLE PIECE OF EQUIPMENT (DBA)**	**ESTIMATED SOUND LEVELS (DBA) AT CLOSEST RESIDENCE[2]**
Installation of Foundations and Structures	• Backhoes and excavators • Rock drills mounted on excavators • Cluster drills with truck mounted compressors • Concrete trucks • Cranes • Aerial lift equipment • Tractor trailers	70 to 94	78 to 102
Underground Wire Installation	• Puller-tensioners • Conductor reel stands • Cranes • Bucket trucks • Flatbed trucks • Drill rig trucks • Rock drill • Jackhammer	70 to 94	78 to 102
Site Restoration	• Bulldozers • Excavators • Tractor-mounted York rakes • Straw blowers • Hydro-seeders • Vibratory Concrete Mixer	70 to 95	78 to 103

[1] Values above 130 dB(A) exceed the threshold of discomfort
Source: https://www.fhwa.dot.gov/environment/noise/construction_noise/handbook/handbook09.cfm
HDD noise levels provided by Mayflower Wind
[2] Estimated sounds levels calculated at an attenuation rate of 6 dB per doubling of distance

TABLE 8: STATE AND MUNICIPAL NOISE ORDINANCE SUMMARY			
NOISE ORDINANCE	**ALLOWED CONSTRUCTION HOURS, WEEKDAYS**	**ALLOWED CONSTRUCTION HOURS, WEEKENDS**	**EXCEPTIONS/DECIBEL LIMITS**
Town of Portsmouth General Legislation Chapter 257 Noise	7 a.m. – 9 p.m.	Properly permitted construction and/or demolition activities are allowed between the hours of 7:00 a.m. and 9:00 p.m. each day. No weekend specifications.	No person shall operate or permit the operation of any tool or equipment in construction, drilling or demolition work, or in preventive maintenance work for public service utilities, which creates a noise disturbance across a residential real property boundary.
2021 Rhode Island General Laws Title 11 – Criminal Offenses Chapter 11-45.1 Unreasonable Noise Levels	N/A	N/A	It is hereby declared to be the policy of the state to prohibit unreasonable, excessive and annoying noise levels from all sources subject to its police power. There are no state-wide quantitative noise criteria for operations or construction. The State relies on municipalities to establish noise regulations through local by-laws.

https://ecode360.com/12278792
https://law.justia.com/codes/rhode-island/2021/title-11/chapter-11-45-1/

5 NOISE CONTROL, MITIGATION MEASURES & RECOMMENDATIONS

As discussed below, Mayflower Wind will take appropriate actions to mitigate adverse noise impacts for the Project.

This report for noise associated with the construction of the Project located in the town of Portsmouth includes baseline ambient sound levels measured and equipment noise levels expected in the areas of construction. To the extent practical, for all options, construction will comply with the noise ordinances in the municipality and state within which the Project is proposed as noted in Table 8. In some instances, and as dictated by state or the local authority, construction may need to be performed at night to minimize daytime impacts to commuters and local and state roadways. Construction-related activities such as the HDD drilling, installation of the high-density polyethylene conduit and cable-pulling operations may need to be continuous efforts that occur throughout the day and night. To the extent practicable, these operations will be maximized during daytime hours.

The potential noise impact of this Project is largely dependent on the final HDD location. The proposed drill location at the Mount Hope Bridge will produce a maximum estimated noise level of 133 dB(A) at the nearest residence assuming the HDD equipment is operated at continuous full load. The proposed drill location at the golf course parking lot will produce a maximum estimated noise level of 109 dB(A) at the nearest residence assuming the HDD equipment is operated at continuous full load. The proposed drill location at the intersection of Boyds Lane and Park Avenue will produce a maximum estimated noise level of 112 dB(A) at the nearest residence assuming the HDD equipment is operated at continuous full load. The proposed drill location at Baypoint Residence Hall will produce a maximum estimated noise level of 126 dB(A) at the nearest residence assuming the HDD equipment is operated at continuous full load. The proposed drill location at Anthony Road peninsula (electric transmission right-of-way) will produce a maximum estimated noise level of 109 dB(A) at the nearest residence assuming the HDD equipment is operated at continuous full load. Permit applications will need to be filed with the town on Portsmouth to perform construction work overnight.

During construction, Mayflower Wind will require that construction comply with the Portsmouth noise ordinance. Mayflower Wind will mitigate construction noise by:

- Implementing temporary noise barriers at HDD locations where practicable and safe
- Maintaining equipment with functioning mufflers
- Requiring continuous noise sources such as generators and compressors will be located away from residential properties to the best of their ability and have enclosed mufflers
- Using a low-noise generator to reduce noise impacts
- Requiring compliance with the Rhode Island Anti-Idling Laws

APPENDIX A – EXISTING AUDIBLE NOISE MEASUREMENT RESULTS

Test Point	Location Description	Latitude	Longitude	Date	Daytime/Nighttime	Time	Meter	Data File Name	Pre-Cal	Post-Cal	LASmax	LASmin	LAeq	LA90	Weather	Temp (deg F)	Notes
M1	North end of boat ramp parking lot	41°42'48.04"N	71°11'13.89"W	1/11/2022	Daytime	11:54 AM	A	831_0002984-20220111 115330-831_Data.011	0.03	-0.12	94.3	44.3	76.8	48.4	Windy	18	Big trucks on road. Excavator in operation about 50 steps away from meter location
				1/11/2022	Nighttime	2:15 AM	B	831_0003548-20220111 021438-831_Data.017	-0.01	-0.03	92.7	41	62.9	44.2			
M2	Top of berm	41°42'55.67"N	71°11'9.21"W	1/11/2022	Daytime	11:30 AM	A	831_0003548-20220110 221017-831_Data.010	0.09	-0.13	67.5	44.8	52	46.8	Windy	18	Big trucks coming through
				1/11/2022	Nighttime	2:40 AM	B	831_0003548-20220111 024017-831_Data.018	0.01	0.01	58	36.8	45.3	39.9			
M3	Brayton Pt Rd	41°42'57.17"N	71°11'6.22"	1/11/2022	Daytime	11:30 AM	B	831_0003548-20220111 113018-831_Data.020	0.34	-0.35	84.8	43.5	61.3	45.5	Windy	18	Big trucks coming through
				1/11/2022	Nighttime	2:40 AM	A	831_0003548-20220110 212505-831_Data.008	-0.01	-0.06	56.4	32.7	44	37.8			
M4	Brayton Pt Rd	41°42'53.52"N	71°11'9.28"W	1/11/2022	Daytime	11:54 AM	B	831_0003548-20220111 115346-831_Data.021	0.19	-0.21	83.5	43.4	63.8	46.1	Windy	18	Big trucks on road.
				1/11/2022	Nighttime	2:17 AM	A	831_0002984-20220111 021651-831_Data.007	0.12	-0.1	62.1	35.4	43.7	37.6			
M5	Mid-way down hill	41°42'58.40"N	71°11'35.37"W	1/10/2022	Daytime	4:05 PM	B	831_0003548-20220110 160519-831_Data.004	0.12	-0.08	52.1	38.5	42.1	39.8	Windy	34	Hill. Very minimal vehicle noise. No train activity
				1/11/2022	Nighttime	1:44 AM	A	831_0002984-20220111 014340-831_Data.006	0.23	-0.1	59.6	37.4	41.6	38.9			
M6	High point of field, across from perpendicular road	41°43'9.16"N	71°11'37.17"W	1/10/2022	Daytime	3:42 PM	A	831_0002984-20220110 154209-831_Data.003	0.24	-0.3	51.9	38.5	43.2	40	Windy	34	Mostly Flat. Vehicle noise, minimal if any. No train activity
				1/11/2022	Nighttime	1:40 AM	B	831_0003548-20220111 014033-831_Data.016	0.02	-0.02	51.7	27.8	36.8	31.5			
M7	Northwest most vehicle accessible point on property	41°43'15.60"N	71°11'28.00"W	1/10/2022	Daytime	3:36 PM	B	831_0003548-20220110 153550-831_Data.003	0.31	-0.33	56.3	40.9	45.5	43.1	Windy	34	Mostly flat, small land hill. No vehicle noise.
				1/11/2022	Nighttime	1:12 AM	B	831_0003548-20220111 011136-831_Data.015	0.22	-0.21	49.8	31.1	38.5	34.9			
M8		41°43'8.88"N	71°11'15.16"W	1/10/2022	Daytime	2:31 PM	B	831_0003548-20220106 235719-831_Data.002	-0.14	-0.2	54.9	46.5	50.1	47.9	Windy	34	
				1/11/2022	Nighttime	1:15 AM	A	831_0002984-20220111 011523-831_Data.005	0.31	-0.35	57.6	38.1	46.1	39.7			
M9	End of Hetherington Dr	41°43'12.93"N	71°11'49.64"W	1/11/2022	Daytime	10:59 AM	A	831_0002984-20220111 105858-831_Data.009	0.4	-0.35	57.3	38.4	45.4	40.6	Windy	18	
				1/11/2022	Nighttime	12:20 AM	B	831_0003548-20220111 001924-831_Data.014	0.12	-0.15	54.1	29.6	36.6	31.2	Slightly Windy	22	Slight road decline. Minimal during nighttime hours. No train activity
M10	Corner of Norwood St near playground	41°43'6.63"N	71°11'54.76"W	1/11/2022	Daytime	10:38 AM	B	831_0003548-20220111 103802-831_Data.019	0.41	-0.35	67.5	38.7	48.1	41.1	Windy	18	
				1/10/2022	Nighttime	11:58 PM	B	831_0003548-20220110 235809-831_Data.013	0.18	-0.19	48.8	27.4	35.5	28.6	Slightly Windy	22	Semi flat, many houses. Vehicle noise, minimal during nighttime hours
R1	Boyds Ln, near intersection of Park Ave	41°37'17.89"N	71°14'17.62"W	1/11/2022	Daytime	1:27 PM	A	831_0002984-20220111 132705-831_Data.014	0.11	0.02	79	41.2	60.1	43.6	Windy	15	Flat. Some vehicle noise
				1/10/2022	Nighttime	9:47 PM	B	831_0003548-20220110 214636-831_Data.009	0.02	-0.11	71	37.4	52.4	39.5	Slightly Windy	25	Flat - grass/marsh land. Vehicle noise, yes, next to road. No train activity
R2	Old Boyd S Ln, near intersection with Boyds Ln	41°37'48.07"N	71°14'45.16"W	1/11/2022	Daytime	1:05PM	A	831_0002984-20220111 130548-831_Data.013	0.09	-0.16	75.8	44.6	65.5	52.1	Windy	15	Ground flat. Vehicle noise - next to main road
				1/10/2022	Nighttime	9:25 PM	B	831_0003548-20220110 212505-831_Data.008	0.07	-0.2	71.2	41.6	58.2	43.4	Slightly Windy	25	Vehicle noise - next to the main road. No train activity
R3	Pull off on cloverleaf, near Mussel Bed Shoal Rd	41°37'59.42"N	71°15'16.06"W	1/11/2022	Daytime	12:43 PM	A	831_0002984-20220111 124248-831_Data.012	0.22	-0.2	66.8	45.4	55.9	50.5	Windy	15	Under bridge
				1/10/2022	Nighttime	9:03 PM	B	831_0003548-20220110 210255-831_Data.007	0.38	-0.32	60.2	38.4	48.5	41.2	Slightly Windy	25	Vehicle noise - yes, mostly on highway above. No train activity
R4	End of transmission line ROW peninsula	41°38'11.15"N	71°14'37.46"W	1/10/2022	Daytime	6:04 PM	A	831_0002984-20220110 180408-831_Data.004	0.25	-0.33	56.3	32.8	41	34.3	Slightly Windy	27	Next to water - more secluded. No vehicle noise. No train noise
				1/10/2022	Nighttime	10:40 PM	B	831_0003548-20220110 223927-831_Data.011	0.04	-0.28	52.1	30.8	39.1	33.3	Slightly Windy	25	Woods - next to water. Vehicle noise - very minimal. No train activity
R5	Montaup Country Club, North corner of northern-most building in parking lot	41°38'15.66"N	71°13'57.26"W	1/10/2022	Daytime	5:01 PM	B	831_0003548-20220110 170125-831_Data.005	0.39	-0.38	51.9	39.6	43.6	41.7	Windy	27	Flat - building / Golf Club. Vehicle noise - some parking lot
				1/10/2022	Nighttime	11:10 PM	B	831_0003548-20220110 231002-831_Data.012	0.13	-0.03	52.9	37.4	41.2	38.6	Slightly Windy	25	Vehicle Noise - Some Golf Club parking lot. No train activity
R6	Baypoint Residence Hall parking lot	41°37'54.67"N	71°14'30.80"W	1/10/2022	Daytime	5:28 PM	B	831_0003548-20220110 172731-831_Data.006	0.07	-0.14	67.8	47.4	59.2	54.4	Windy	24	Flat - Campus buidling parking lot. No train activity.
				1/10/2022	Nighttime	10:10 PM	B	831_0003548-20220110 221017-831_Data.010	0.06	-0.08	67.5	38.2	50.5	41.2	Slightly Windy	25	Flat - Parking lot. Vehicle noise - near road, in parking lot. No train activity

APPENDIX B – METER CALIBRATIONS

Certificate of Calibration and Conformance

This document certifies that the instrument referenced below meets published specifications per Procedure PRD-P263; ANSI S1.4-1983 (R 2006) Type 1; S1.4A-1985; S1.43-1997 Type 1; S1.11-2004 Octave Band Class 0; S1.25-1991; IEC 61672-2002 Class 1; 60651-2001 Type 1; 60804-2000 Type 1; 61260-2001 Class 0; 61252-2002.

Manufacturer:	Larson Davis	Temperature:	70.5	°F
Model Number:	831		21.39	°C
Serial Number:	2984	Rel. Humidity:	22.6	%
Customer:	TMS Rental	Pressure:	1001.4	mbars
Description:	Sound Level Meter		1001.4	hPa

Note: As Found / As Left: In Tolerance

Upon receipt for testing, this instrument was found to be:

Within the stated tolerance of the manufacturer's specification.

Calibration Date: 13-Feb-21 Calibration Due:

Calibration Standards Used:

Manufacturer	Model	Serial Number	Cal Due
Stanford Research Systems	DS360	123270	5-May-21
Larson Davis	2239	109	2-Jul-21

This Certificate attests that this instrument has been calibrated under the stated conditions with Measurement and Test Equipment (M&TE) Standards traceable to the National Institute of Standards and Technology (NIST). All of the Measurement Standards have been calibrated to their manufacturers' specified accuracy / uncertainty. Evidence of traceability and accuracy is on file at The Modal Shop and/or Larson Davis Corporate Headquarters. An acceptable accuracy ratio between the Standard(s) and the item calibrated has been maintained. This instrument meets or exceeds the manufacturer's published specification unless noted.

The results documented in this certificate relate only to the item(s) calibrated or tested. Calibration interval assignment and adjustment are the responsibility of the end user. This certificate may not be reproduced, except in full, without the written approval of The Modal Shop.

Technician: Ed Devlin Signature: Edward A. Devlin

THE MODAL SHOP
AN MTS COMPANY

10310 Aerohub Blvd.
Cincinnati, OH. 45215
Phone: (513) 351-9919
(800) 860-4867
www.modalshop.com

Calibration Certificate

Certificate Number 2021010986
Customer:
The Modal Shop
10310 AeroHub Boulevard
Cincinnati, OH 45215, United States

Model Number	831	***Procedure Number***	D0001.8378		
Serial Number	0003548	***Technician***	Ron Harris		
Test Results	**Pass**	***Calibration Date***	2 Sep 2021		
Initial Condition	AS RECEIVED same as shipped	***Calibration Due***			
Description	Larson Davis Model 831 Class 1 Sound Level Meter Firmware Revision: 2.403	***Temperature***	23.74	°C	± 0.25 °C
		Humidity	50.4	%RH	± 2.0 %RH
		Static Pressure	86.01	kPa	± 0.13 kPa

Evaluation Method Tested electrically using Larson Davis PRM831 S/N 036756 and a 12.0 pF capacitor to simulate microphone capacitance. Data reported in dB re 20 µPa assuming a microphone sensitivity of 50.0 mV/Pa.

Compliance Standards Compliant to Manufacturer Specifications and the following standards when combined with Calibration Certificate from procedure D0001.8384:

IEC 60651:2001 Type 1	ANSI S1.4-2014 Class 1
IEC 60804:2000 Type 1	ANSI S1.4 (R2006) Type 1
IEC 61252:2002	ANSI S1.25 (R2007)
IEC 61672:2013 Class 1	ANSI S1.43 (R2007) Type 1
IEC 61260:2001 Class 1	ANSI S1.11 (R2009) Class 1

Issuing lab certifies that the instrument described above meets or exceeds all specifications as stated in the referenced procedure (unless otherwise noted). It has been calibrated using measurement standards traceable to the International System of Units (SI) through the National Institute of Standards and Technology (NIST), or other national measurement institutes, and meets the requirements of ISO/IEC 17025:2017. **Test points marked with a ‡ in the uncertainties column do not fall within this laboratory's scope of accreditation.**

The quality system is registered to ISO 9001:2015.

This calibration is a direct comparison of the unit under test to the listed reference standards and did not involve any sampling plans to complete. No allowance has been made for the instability of the test device due to use, time, etc. Such allowances would be made by the customer as needed.

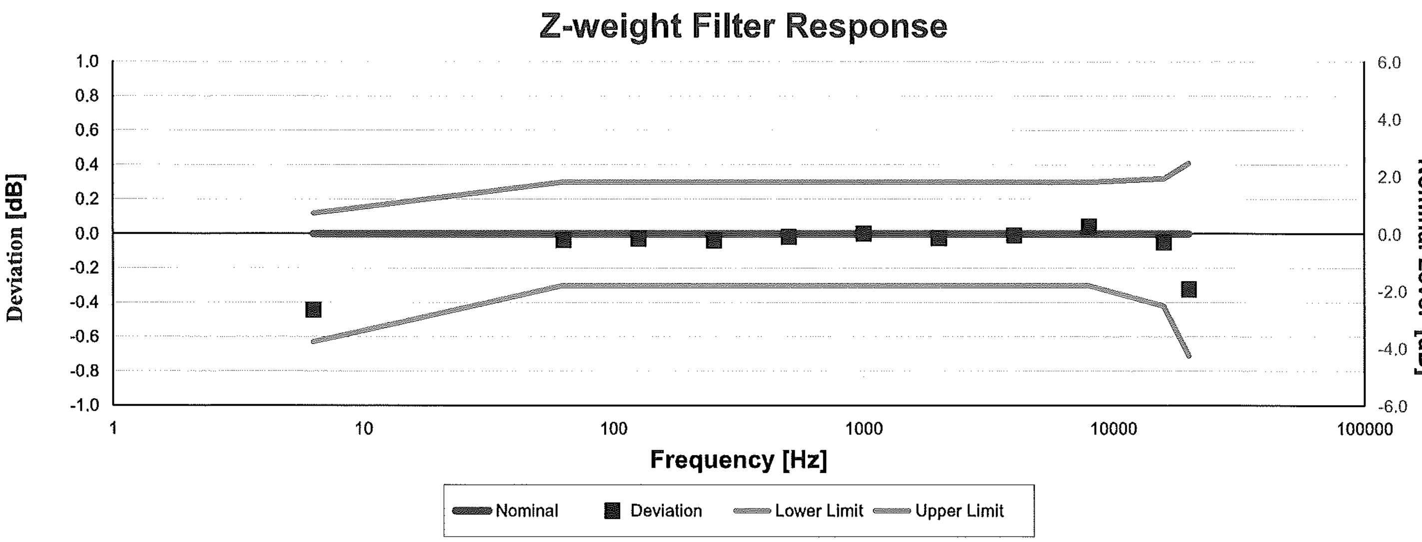
The uncertainties were computed in accordance with the ISO Guide to the Expression of Uncertainty in Measurement (GUM). A coverage factor of approximately 2 sigma (k=2) has been applied to the standard uncertainty to express the expanded uncertainty at approximately 95% confidence level.

Correction data from Larson Davis Model 831 Sound Level Meter Manual, I831.01 Rev S, 2019-09-10

Calibration Check Frequency: 1000 Hz; Reference Sound Pressure Level: 114 dB re 20 µPa; Reference Range: 0 dB gain

Standards Used

Description	Cal Date	Cal Due	Cal Standard
Hart Scientific 2626-H Temperature Probe	2021-02-04	2022-08-04	006767
SRS DS360 Ultra Low Distortion Generator	2021-04-13	2022-04-13	007635

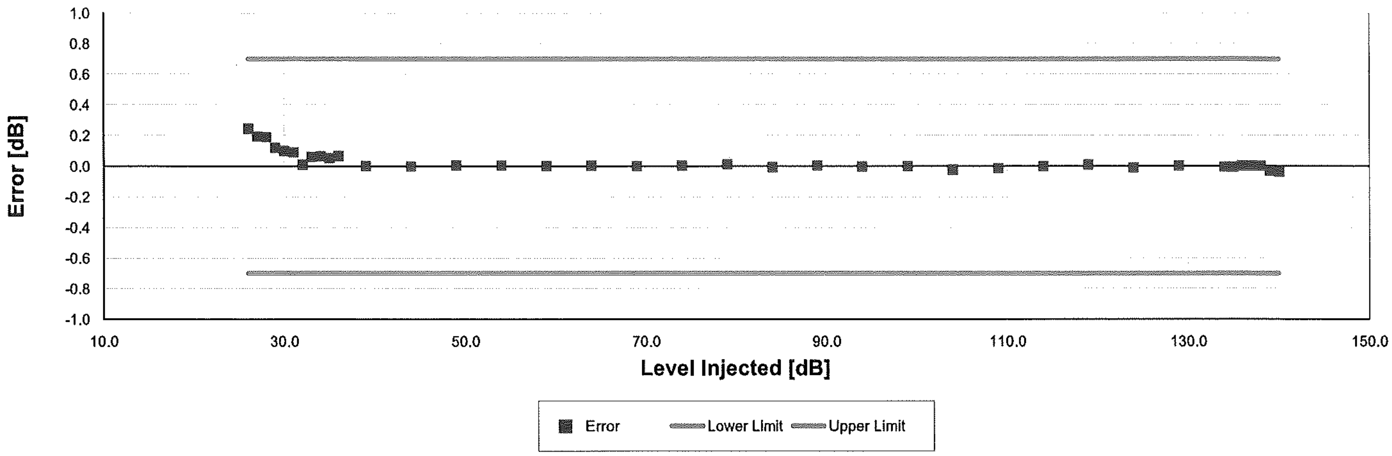


Electrical signal test of frequency weighting performed according to IEC 61672-3:2013 13 and ANSI S1.4-2014 Part 3: 13 for compliance to IEC 61672-1:2013 5.5; IEC 60651:2001 6.1 and 9.2.2; IEC 60804:2000 5; ANSI S1.4:1983 (R2006) 5.1 and 8.2.1; ANSI S1.4-2014 Part 1: 5.5

Frequency [Hz]	Test Result [dB]	Deviation [dB]	Lower limit [dB]	Upper limit [dB]	Expanded Uncertainty [dB]	Result
6.31	-0.44	-0.44	-0.63	0.12	0.15	Pass
63.10	-0.04	-0.04	-0.30	0.30	0.15	Pass
125.89	-0.03	-0.03	-0.30	0.30	0.15	Pass
251.19	-0.04	-0.04	-0.30	0.30	0.15	Pass
501.19	-0.02	-0.02	-0.30	0.30	0.15	Pass
1,000.00	0.00	0.00	-0.30	0.30	0.15	Pass
1,995.26	-0.03	-0.03	-0.30	0.30	0.15	Pass
3,981.07	-0.01	-0.01	-0.30	0.30	0.15	Pass
7,943.28	0.04	0.04	-0.30	0.30	0.15	Pass
15,848.93	-0.05	-0.05	-0.42	0.32	0.15	Pass
19,952.62	-0.32	-0.32	-0.71	0.41	0.15	Pass

-- End of measurement results--

A-weighted 0 dB Gain Broadband Log Linearity: 8,000.00 Hz



Broadband level linearity performed according to IEC 61672-3:2013 16 and ANSI S1.4-2014 Part 3: 16 for compliance to IEC 61672-1:2013 5.6, IEC 60804:2000 6.2, IEC 61252:2002 8, ANSI S1.4 (R2006) 6.9, ANSI S1.4-2014 Part 1: 5.6, ANSI S1.43 (R2007) 6.2

Level [dB]	Error [dB]	Lower limit [dB]	Upper limit [dB]	Expanded Uncertainty [dB]	Result
26.00	0.25	-0.70	0.70	0.16	Pass
27.00	0.20	-0.70	0.70	0.16	Pass
28.00	0.19	-0.70	0.70	0.16	Pass
29.00	0.12	-0.70	0.70	0.16	Pass
30.00	0.10	-0.70	0.70	0.16	Pass
31.00	0.09	-0.70	0.70	0.16	Pass
32.00	0.01	-0.70	0.70	0.16	Pass
33.00	0.06	-0.70	0.70	0.16	Pass
34.00	0.07	-0.70	0.70	0.16	Pass
35.00	0.05	-0.70	0.70	0.16	Pass
36.00	0.07	-0.70	0.70	0.16	Pass
39.00	0.00	-0.70	0.70	0.16	Pass
44.00	0.00	-0.70	0.70	0.16	Pass
49.00	0.01	-0.70	0.70	0.16	Pass
54.00	0.01	-0.70	0.70	0.16	Pass
59.00	0.00	-0.70	0.70	0.16	Pass
64.00	0.01	-0.70	0.70	0.16	Pass
69.00	0.00	-0.70	0.70	0.16	Pass
74.00	0.01	-0.70	0.70	0.16	Pass
79.00	0.01	-0.70	0.70	0.16	Pass
84.00	-0.01	-0.70	0.70	0.16	Pass
89.00	0.01	-0.70	0.70	0.16	Pass
94.00	0.00	-0.70	0.70	0.16	Pass
99.00	0.00	-0.70	0.70	0.16	Pass
104.00	-0.02	-0.70	0.70	0.15	Pass
109.00	-0.01	-0.70	0.70	0.15	Pass
114.00	0.00	-0.70	0.70	0.15	Pass
119.00	0.01	-0.70	0.70	0.15	Pass
124.00	-0.01	-0.70	0.70	0.15	Pass
129.00	0.01	-0.70	0.70	0.15	Pass
134.00	0.00	-0.70	0.70	0.15	Pass
135.00	0.00	-0.70	0.70	0.15	Pass
136.00	0.00	-0.70	0.70	0.15	Pass
137.00	0.00	-0.70	0.70	0.15	Pass
138.00	0.00	-0.70	0.70	0.15	Pass
139.00	-0.03	-0.70	0.70	0.15	Pass

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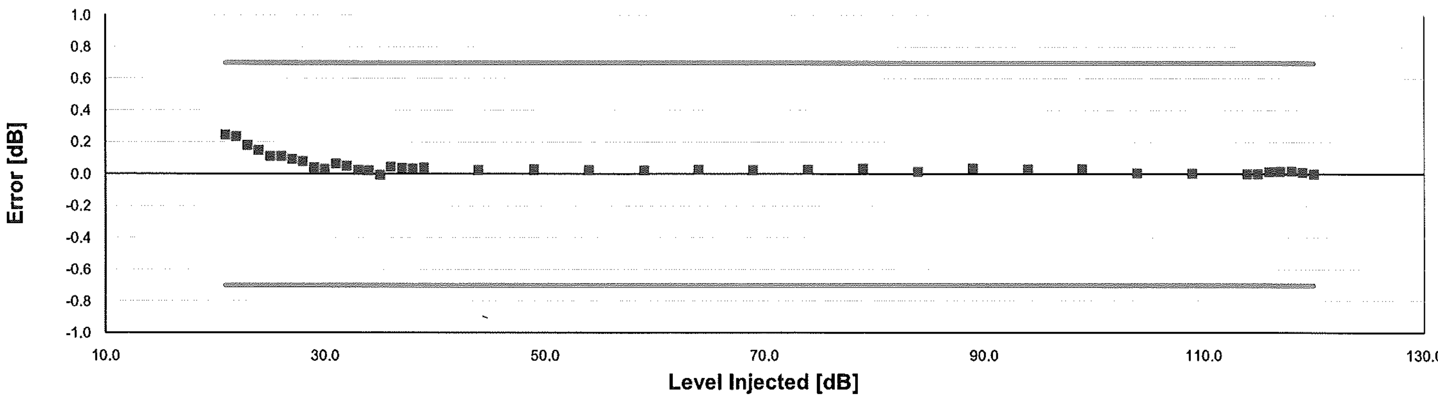
Level [dB]	Error [dB]	Lower limit [dB]	Upper limit [dB]	Expanded Uncertainty [dB]	Result
140.00	-0.04	-0.70	0.70	0.15	Pass

-- End of measurement results--

A-weighted 20 dB Gain Broadband Log Linearity: 8,000.00 Hz



Broadband level linearity performed according to IEC 61672-3:2013 16 and ANSI S1.4-2014 Part 3: 16 for compliance to IEC 61672-1:2013 5.6, IEC 60804:2000 6.2, IEC 61252:2002 8, ANSI S1.4 (R2006) 6.9, ANSI S1.4-2014 Part 1: 5.6, ANSI S1.43 (R2007) 6.2

Level [dB]	Error [dB]	Lower limit [dB]	Upper limit [dB]	Expanded Uncertainty [dB]	Result
21.00	0.25	-0.70	0.70	0.16	Pass
22.00	0.24	-0.70	0.70	0.16	Pass
23.00	0.18	-0.70	0.70	0.16	Pass
24.00	0.15	-0.70	0.70	0.16	Pass
25.00	0.11	-0.70	0.70	0.16	Pass
26.00	0.11	-0.70	0.70	0.16	Pass
27.00	0.09	-0.70	0.70	0.16	Pass
28.00	0.08	-0.70	0.70	0.16	Pass
29.00	0.04	-0.70	0.70	0.16	Pass
30.00	0.03	-0.70	0.70	0.16	Pass
31.00	0.07	-0.70	0.70	0.16	Pass
32.00	0.05	-0.70	0.70	0.16	Pass
33.00	0.03	-0.70	0.70	0.16	Pass
34.00	0.02	-0.70	0.70	0.16	Pass
35.00	0.00	-0.70	0.70	0.16	Pass
36.00	0.05	-0.70	0.70	0.16	Pass
37.00	0.04	-0.70	0.70	0.16	Pass
38.00	0.03	-0.70	0.70	0.16	Pass
39.00	0.04	-0.70	0.70	0.16	Pass
44.00	0.03	-0.70	0.70	0.16	Pass
49.00	0.03	-0.70	0.70	0.16	Pass
54.00	0.03	-0.70	0.70	0.16	Pass
59.00	0.02	-0.70	0.70	0.16	Pass
64.00	0.03	-0.70	0.70	0.16	Pass
69.00	0.02	-0.70	0.70	0.16	Pass
74.00	0.03	-0.70	0.70	0.16	Pass
79.00	0.04	-0.70	0.70	0.16	Pass
84.00	0.01	-0.70	0.70	0.16	Pass
89.00	0.04	-0.70	0.70	0.16	Pass
94.00	0.03	-0.70	0.70	0.16	Pass
99.00	0.03	-0.70	0.70	0.16	Pass
104.00	0.01	-0.70	0.70	0.15	Pass
109.00	0.01	-0.70	0.70	0.15	Pass
114.00	0.00	-0.70	0.70	0.15	Pass
115.00	0.00	-0.70	0.70	0.15	Pass
116.00	0.02	-0.70	0.70	0.15	Pass

Level [dB]	Error [dB]	Lower limit [dB]	Upper limit [dB]	Expanded Uncertainty [dB]	Result
117.00	0.02	-0.70	0.70	0.15	Pass
118.00	0.02	-0.70	0.70	0.15	Pass
119.00	0.01	-0.70	0.70	0.15	Pass
120.00	0.00	-0.70	0.70	0.15	Pass

-- End of measurement results--

Peak Rise Time

Peak rise time performed according to IEC 60651:2001 9.4.4 and ANSI S1.4:1983 (R2006) 8.4.4

Amplitude [dB]	Duration [μs]		Test Result [dB]	Lower limit [dB]	Upper limit [dB]	Expanded Uncertainty [dB]	Result
139.00	40	Negative Pulse	135.91	134.45	136.45	0.15	Pass
		Positive Pulse	135.90	134.44	136.44	0.15	Pass
	30	Negative Pulse	134.95	134.45	136.45	0.15	Pass
		Positive Pulse	134.96	134.44	136.44	0.15	Pass

-- End of measurement results--

Positive Pulse Crest Factor

200 μs pulse tests at 2.0, 12.0, 22.0, 32.0 dB below Overload Limit

Crest Factor measured according to IEC 60651:2001 9.4.2 and ANSI S1.4:1983 (R2006) 8.4.2

Amplitude [dB]	Crest Factor	Test Result [dB]	Limits [dB]	Expanded Uncertainty [dB]	Result
138.00	3	OVLD	± 0.50	0.15 ‡	Pass
	5	OVLD	± 1.00	0.15 ‡	Pass
	10	OVLD	± 1.50	0.15 ‡	Pass
128.00	3	-0.12	± 0.50	0.15 ‡	Pass
	5	-0.12	± 1.00	0.15 ‡	Pass
	10	OVLD	± 1.50	0.15 ‡	Pass
118.00	3	-0.14	± 0.50	0.15 ‡	Pass
	5	-0.13	± 1.00	0.15 ‡	Pass
	10	-0.17	± 1.50	0.15 ‡	Pass
108.00	3	-0.14	± 0.50	0.18 ‡	Pass
	5	-0.10	± 1.00	0.15 ‡	Pass
	10	-0.07	± 1.50	0.15 ‡	Pass

-- End of measurement results--

Negative Pulse Crest Factor

200 µs pulse tests at 2.0, 12.0, 22.0, 32.0 dB below Overload Limit

Crest Factor measured according to IEC 60651:2001 9.4.2 and ANSI S1.4:1983 (R2006) 8.4.2

Amplitude [dB]	Crest Factor	Test Result [dB]	Limits [dB]	Expanded Uncertainty [dB]	Result
138.00	3	OVLD	± 0.50	0.15 ‡	Pass
	5	OVLD	± 1.00	0.15 ‡	Pass
	10	OVLD	± 1.50	0.15 ‡	Pass
128.00	3	-0.12	± 0.50	0.15 ‡	Pass
	5	-0.12	± 1.00	0.15 ‡	Pass
	10	OVLD	± 1.50	0.15 ‡	Pass
118.00	3	-0.13	± 0.50	0.15 ‡	Pass
	5	-0.13	± 1.00	0.15 ‡	Pass
	10	-0.16	± 1.50	0.15 ‡	Pass
108.00	3	-0.13	± 0.50	0.15 ‡	Pass
	5	-0.11	± 1.00	0.15 ‡	Pass
	10	-0.06	± 1.50	0.15 ‡	Pass

-- End of measurement results--

Gain

Gain measured according to IEC 61672-3:2013 17.3 and 17.4 and ANSI S1.4-2014 Part 3: 17.3 and 17.4

Measurement	Test Result [dB]	Lower limit [dB]	Upper limit [dB]	Expanded Uncertainty [dB]	Result
0 dB Gain	94.02	93.91	94.11	0.15	Pass
0 dB Gain, Linearity	29.16	28.31	29.71	0.16	Pass
20 dB Gain	94.03	93.91	94.11	0.15	Pass
20 dB Gain, Linearity	24.13	23.31	24.71	0.16	Pass
OBA Low Range	94.01	93.91	94.11	0.15	Pass
OBA Normal Range	94.01	93.20	94.80	0.15	Pass

-- End of measurement results--

Broadband Noise Floor

Self-generated noise measured according to IEC 61672-3:2013 11.2 and ANSI S1.4-2014 Part 3: 11.2

Measurement	Test Result [dB]	Upper limit [dB]	Result
A-weight Noise Floor	6.97	15.00	Pass
C-weight Noise Floor	12.33	17.30	Pass
Z-weight Noise Floor	21.41	24.50	Pass

-- End of measurement results--

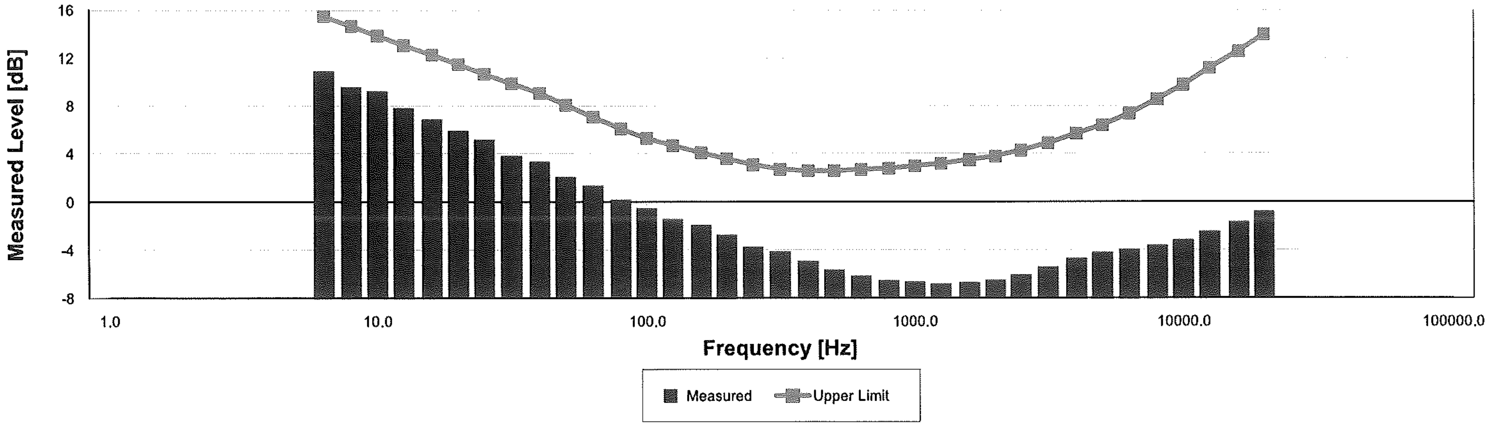
Total Harmonic Distortion

Measured using 1/3-Octave filters

Measurement	Test Result [dB]	Lower Limit [dB]	Upper Limit [dB]	Expanded Uncertainty [dB]	Result
10 Hz Signal	137.50	137.20	138.80	0.15	Pass
THD	-71.18		-60.00	0.00 ‡	Pass
THD+N	-65.31		-60.00	0.00 ‡	Pass

-- End of measurement results--

1/3-Octave Self-Generated Noise



The SLM is set to low range and 20 dB gain.

Frequency [Hz]	Test Result [dB]	Upper limit [dB]	Result
6.30	10.97	15.50	Pass
8.00	9.61	14.70	Pass
10.00	9.25	13.90	Pass
12.50	7.85	13.10	Pass
16.00	6.93	12.30	Pass
20.00	5.94	11.50	Pass
25.00	5.21	10.70	Pass
31.50	3.85	9.90	Pass
40.00	3.37	9.10	Pass
50.00	2.11	8.10	Pass
63.00	1.39	7.10	Pass
80.00	0.21	6.10	Pass
100.00	-0.53	5.30	Pass
125.00	-1.39	4.70	Pass
160.00	-1.90	4.10	Pass
200.00	-2.71	3.60	Pass
250.00	-3.70	3.10	Pass
315.00	-4.12	2.70	Pass
400.00	-4.90	2.60	Pass
500.00	-5.63	2.60	Pass
630.00	-6.13	2.70	Pass
800.00	-6.49	2.80	Pass
1,000.00	-6.61	3.00	Pass
1,250.00	-6.80	3.20	Pass
1,600.00	-6.65	3.50	Pass
2,000.00	-6.49	3.80	Pass
2,500.00	-6.03	4.30	Pass
3,150.00	-5.39	4.90	Pass
4,000.00	-4.67	5.70	Pass
5,000.00	-4.16	6.40	Pass
6,300.00	-3.92	7.40	Pass
8,000.00	-3.58	8.60	Pass
10,000.00	-3.13	9.80	Pass
12,500.00	-2.42	11.20	Pass
16,000.00	-1.62	12.60	Pass
20,000.00	-0.74	14.00	Pass

-- End of measurement results--

-- End of Report--

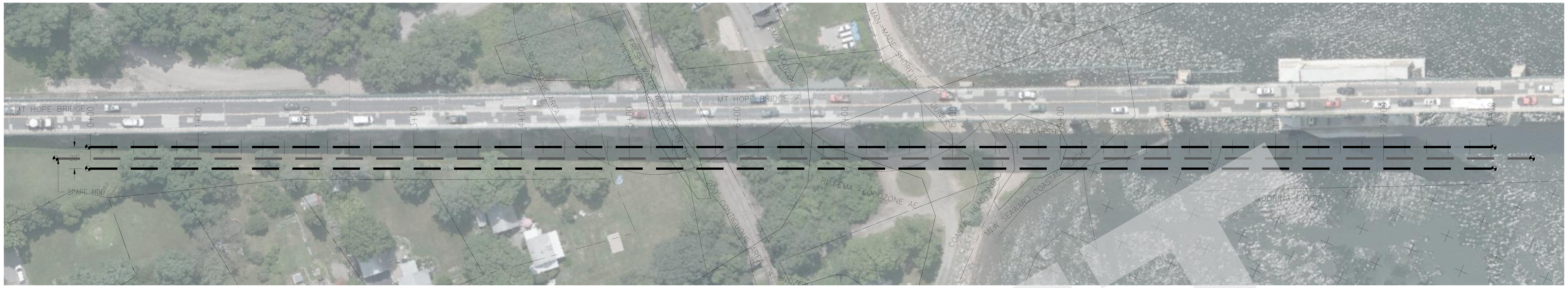
Signatory: Ron Harris

LARSON DAVIS - A PCB PIEZOTRONICS DIV.
1681 West 820 North
Provo, UT 84601, United States
716-684-0001

ACCREDITED
Cert. #3622.01

LARSON DAVIS
A PCB PIEZOTRONICS DIV.

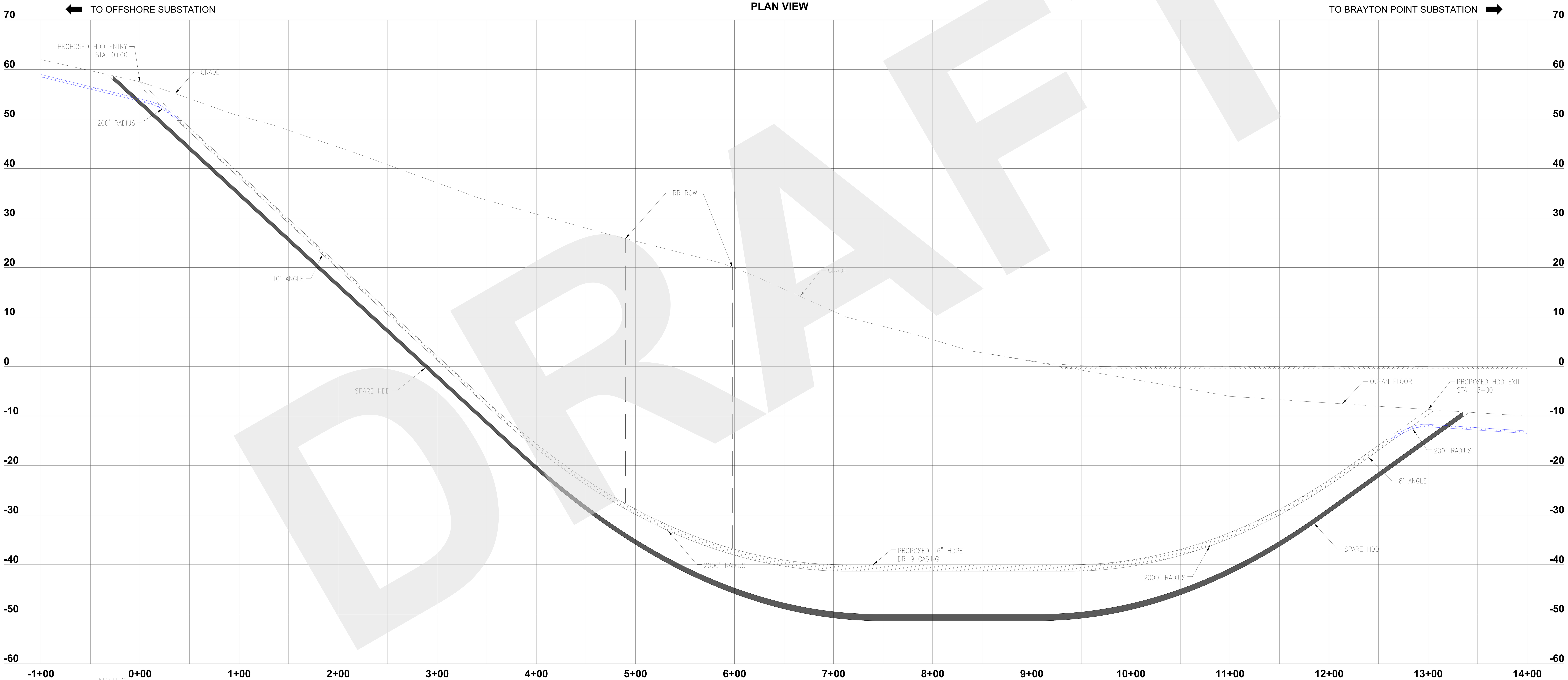
APPENDIX C – PRELIMINARY HDD SITE LAYOUTS



TO OFFSHORE SUBSTATION

PLAN VIEW

TO BRAYTON POINT SUBSTATION



PROFILE VIEW

DRAFT

Know what's **below.**
Call before you dig.

NOTES:

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   - TOWN OF PORTSMOUTH WEB GIS MAPS AND ONLINE PROPERTY INFORMATION
4. PROPERTY LINES ARE APPROXIMATE FOR DISCUSSION PURPOSES.

0 50 100 150 FEET
HORIZONTAL SCALE 1"= 50'

0 10 20 30 FEET
VERTICAL SCALE 1"= 10'

172033 – Aquidneck Island Mt Hope Bridge HDD.dwg

REV	REVISIONS	DATE	DRN	DSGN	CKD	APPD	REFERENCE DRAWINGS
D	INCORPORATED MAYFLOWER COMMENTS	04/01/2022	ASW	TSG	TSG		
C	ADDED SECOND HDD	02/28/2022	ASW	TSG	TSG		
B	ISSUED FOR REVIEW	10/06/2021	ASW	TSG	TSG		
A	ISSUED FOR REVIEW	08/06/2021	ASW	TSG	TSG		

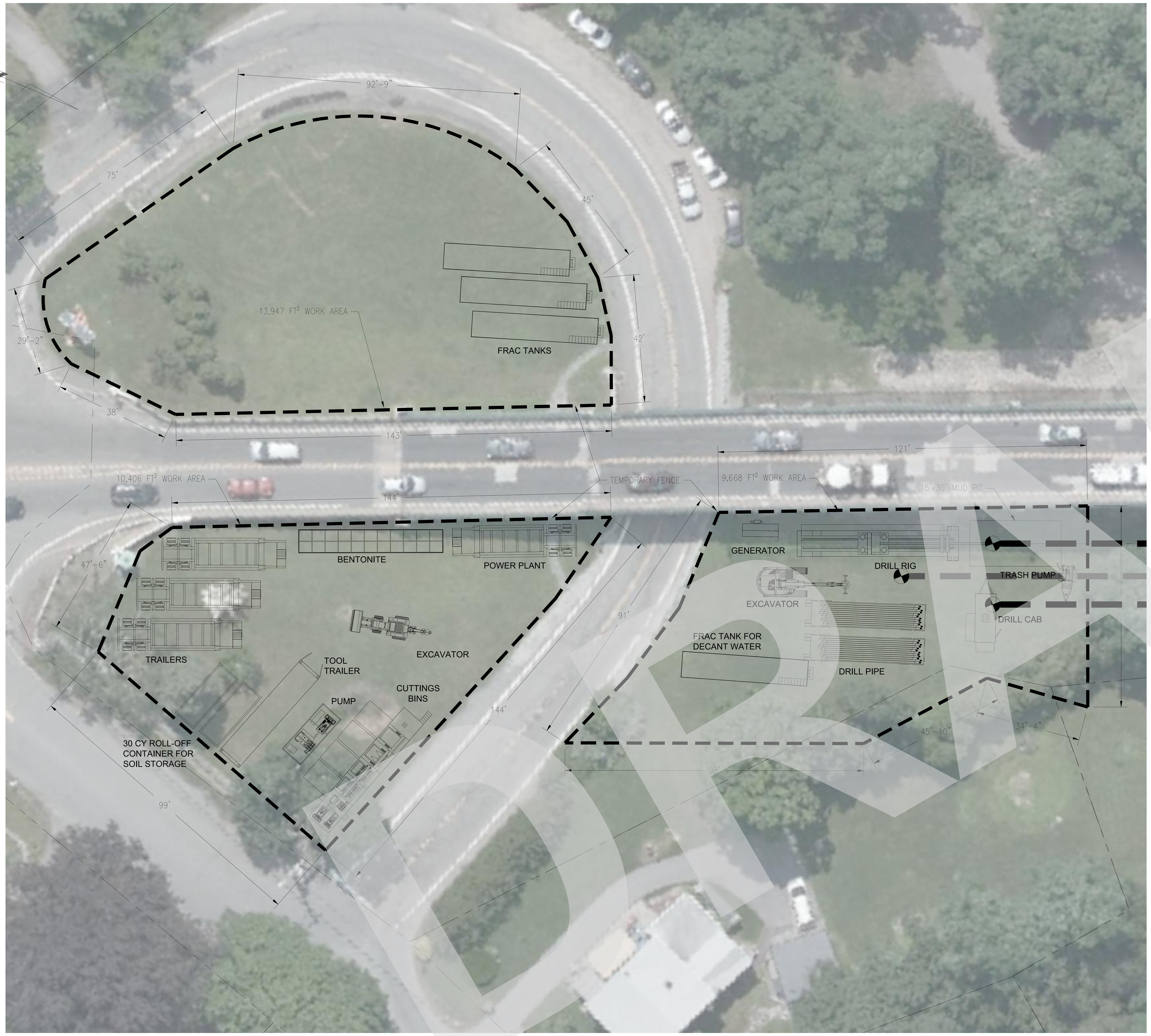
DSGN	TSG	08/06/2021
DRN	ASW	08/06/2021
CKD	TSG	08/06/2021
SCALE:	AS SHOWN	

FOR 24x36 DWG ONLY

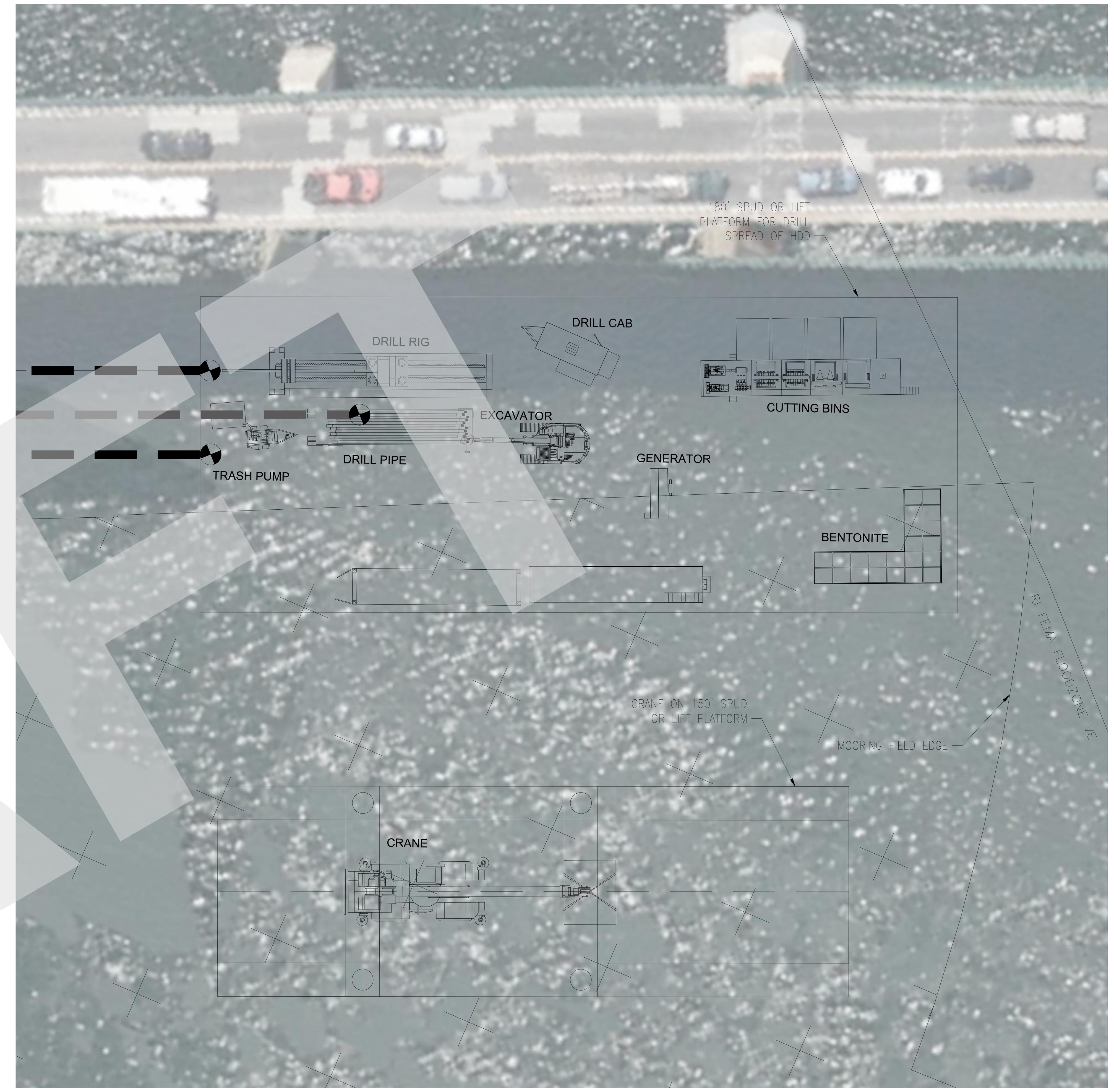
POWER ENGINEERS

MAYFLOWER WIND
AQUIDNECK ISLAND HDD
MT HOPE BRIDGE
PLAN AND PROFILE

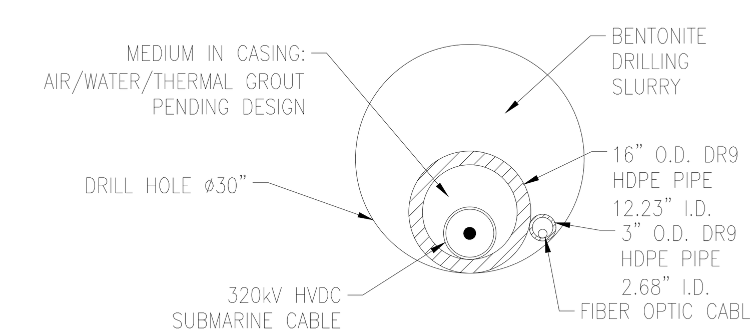
JOB NUMBER: 172033
REV: D
DRAWING NUMBER: P1-1



HDD ENTRY



HDD EXIT



PROPOSED BORE DETAIL

N.T.S.

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4. PROPERTY LINES ARE APPROXIMATE FOR DISCUSSION PURPOSES.

0 20 40 60 FEET
HORIZONTAL SCALE 1"= 20'

REV	REVISIONS	DATE	DRN	DSGN	CKD	APPD	REFERENCE DRAWINGS
D	INCORPORATED MAYFLOWER COMMENTS	04/01/2022	ASW	TSG	TSG		
C	ADDED SECOND HDD	02/28/2022	ASW	TSG	TSG		
B	ISSUED FOR REVIEW	10/06/2021	ASW	TSG	TSG		
A	ISSUED FOR REVIEW	08/06/2021	ASW	TSG	TSG		

DSGN	TSG	08/06/2021
DRN	ASW	08/06/2021
CKD	TSG	08/06/2021
SCALE:	AS SHOWN	
FOR 24x36 DWG ONLY		

POWER ENGINEERS

MAYFLOWER WIND
AQUIDNECK ISLAND HDD
MT HOPE BRIDGE
HDD LAYOUTS

JOB NUMBER 172033 REV D
DRAWING NUMBER U1-1

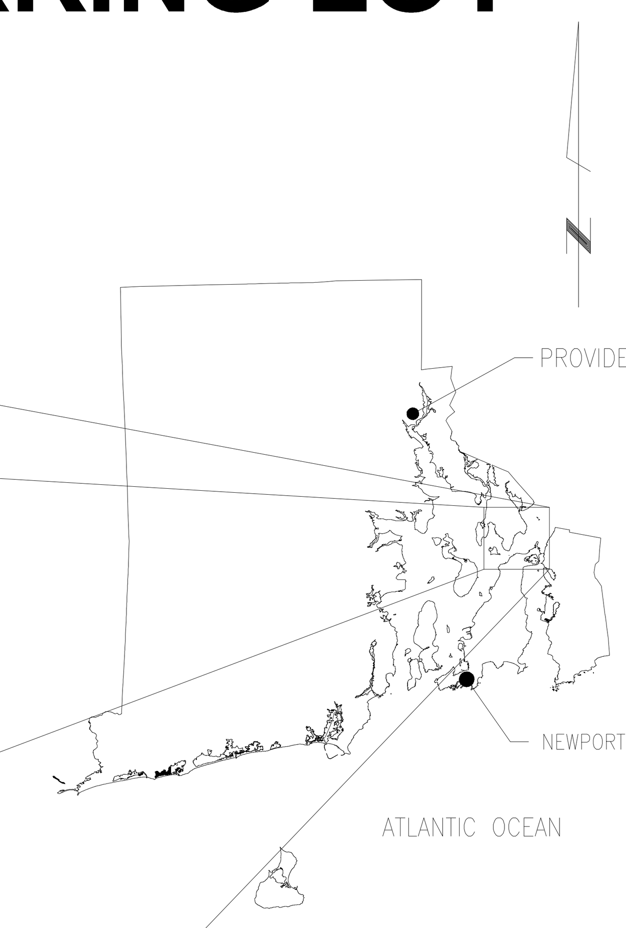
172033 - Aquidneck Island Mt Hope Bridge HDD.dwg

FRE 151-0557 174444 (2022-05-17) JM

REV. 1

MAYFLOWER WIND
30% HORIZONTAL DIRECTIONAL DRILL DESIGN
OFFSHORE EXPORT CABLE LANDFALL - MONTAUP COUNTRY CLUB PARKING LOT

VICINITY MAP
N.T.S.



AREA MAP RHODE ISLAND
N.T.S.

811
Know what's below.
Call before you dig.

POWER ENGINEERS
PROJECT ENGINEER: TODD GOYETTE

POWER ENGINEERS
PROJECT NUMBER: 172033

ATTENTION: FOR CLEANER TEXT AND LINE FEATURES WHEN USING ADOBE TO VIEW THESE PDFS, TURN OFF THE "SMOOTH LINE ART" AND "ENHANCE THIN LINES" OPTIONS UNDER EDIT-PREFERENCES-PAGE DISPLAY

THIS DRAWING WAS PREPARED BY POWER ENGINEERS, INC. FOR A SPECIFIC PROJECT, TAKING INTO CONSIDERATION THE SPECIFIC AND UNIQUE REQUIREMENTS OF THE PROJECT. REUSE OF THIS DRAWING OR ANY INFORMATION CONTAINED IN THIS DRAWING FOR ANY PURPOSE IS PROHIBITED UNLESS WRITTEN PERMISSION FROM BOTH POWER AND POWER'S CLIENT IS GRANTED.

REV	REVISIONS	DATE	DRN	DSGN	CKD	APPD
F	INCORPORATED MAYFLOWER COMMENTS	05/11/2022	LAS	TSG	TSG	
E	INCORPORATED MAYFLOWER COMMENTS	04/29/2022	ASW	TSG	TSG	
D	INCORPORATED MAYFLOWER COMMENTS	04/01/2022	ASW	TSG	TSG	
C	ADDED SECOND HDD	02/28/2022	ASW	TSG	TSG	
B	ISSUED FOR REVIEW	10/06/2021	ASW	TSG	TSG	

REFERENCE DRAWINGS

DSGN	TSG	08/13/2021
DRN	ASW	08/13/2021
CKD	TSG	08/13/2021
SCALE:	AS SHOWN	

FOR 24x36 DWG ONLY

POWER ENGINEERS

MAYFLOWER WIND
AQUIDNECK ISLAND HDD
MONTAUP COUNTRY CLUB PARKING LOT PLAN AND PROFILE

JOB NUMBER 172033 REV F

DRAWING NUMBER G0-1

172033 - Aquidneck Island Golf Course Parking Lot HDD.dwg

DRAWING MANIFEST			
DRAWING NO.	TITLE/DESCRIPTION	REVISION	DATE
G0-1	COVER	F	05/11/22
G1-1	GENERAL NOTES & MANIFEST	F	05/11/22
P1-1	PLAN - STA. 00+00 TO 16+50	F	05/11/22
U1-1	HDD LAYOUTS	F	05/11/22

LEGEND

HDD START/END

SOIL BORE

EXISTING WATER LINE

EXISTING GAS LINE

EXISTING STORM DRAINAGE LINE

EXISTING SANITARY SEWER LINE

EXISTING UNDERGROUND ELECTRIC LINE

PSCL PERENIAL STREAM CENTER LINE

FWVC FRESH WATER WETLANDS IN THE VICINITY OF THE COAST

GENERAL NOTES

1. THE UTILITIES AND NATURAL FEATURES SHOWN HEREON ARE BASED ON:
   - LEVEL D SURVEY PERFORMED BY DIPRETE ENGINEERING, 01/19/2022
   - GOOGLE EARTH 2020
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2. STATE PLANE COORDINATE (HORIZONTAL DATUM): REFERENCES RHODE ISLAND PLAN COORDINATE SYSTEM - NAD83 1983, US FOOT.
3. STATE PLANE COORDINATE (VERTICAL DATUM): NAVD 1988. THE COORDINATE SYSTEM THAT THIS SURVEY WAS BASED UPON IS STATE PLANE NAD 88, US FOOT.
4. ALL VERTICAL RADII ARE 400', AND HORIZONTAL RADII ARE 50' UNLESS OTHERWISE NOTED.
5. WETLAND DELINEATIONS SHOWN ARE BASED ON FIELD SURVEYS CONDUCTED IN DECEMBER 2021 AND JANUARY 2022.

ENVIRONMENTAL LEGEND:

RI_FEMA FLOODZONE

WETLAND

PSCL PERENIAL STREAM CENTER LINE

FWVC FRESH WATER WETLANDS IN THE VICINITY OF THE COAST

MOORING FIELDS

Know what's **below.**
Call before you dig.

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172033 - Aquidneck Island Golf Course Parking Lot HDD.dwg

REV	REVISIONS	DATE	DRN	DSGN	CKD	APPD	REFERENCE DRAWINGS
F	INCORPORATED MAYFLOWER COMMENTS	05/11/2022	LAS	TSG	TSG		
E	INCORPORATED MAYFLOWER COMMENTS	04/29/2022	ASW	TSG	TSG		
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B	ISSUED FOR REVIEW	10/06/2021	ASW	TSG	TSG		

DSGN	TSG	08/13/2021
DRN	ASW	08/13/2021
CKD	TSG	08/13/2021

SCALE: AS SHOWN

FOR 24x36 DWG ONLY

POWER ENGINEERS

MAYFLOWER WIND

AQUIDNECK ISLAND HDD

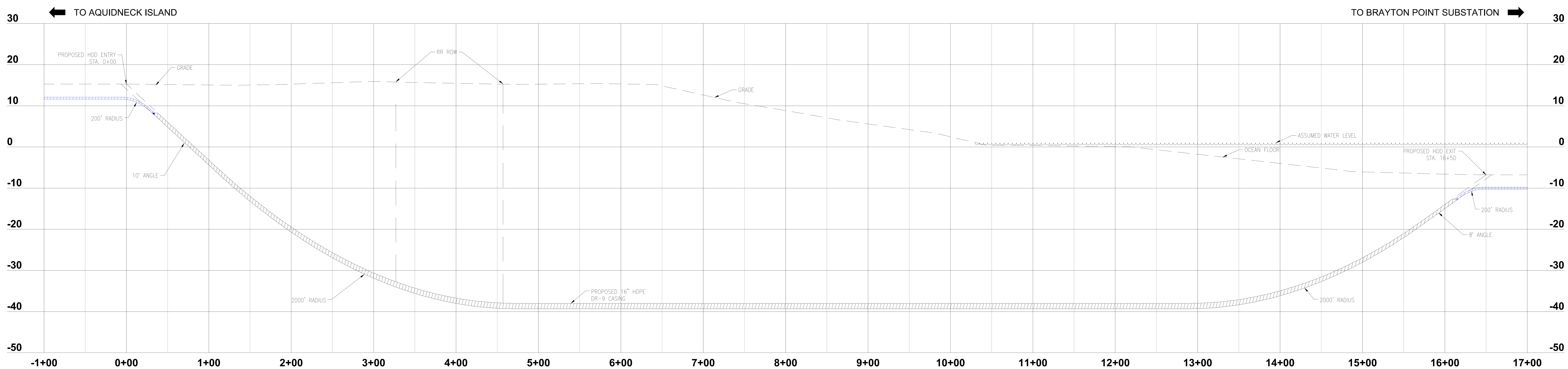
MONTAUP COUNTRY CLUB PARKING LOT
GENERAL NOTES AND MANIFEST

JOB NUMBER 172033

REV F

DRAWING NUMBER G1-1

PLAN VIEW



PROFILE VIEW

Know what's below. Call before you dig.

NOTES:

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   - TOWN OF PORTSMOUTH WEB GIS MAPS AND ONLINE PROPERTY INFORMATION
4. PROPERTY LINES ARE APPROXIMATE FOR DISCUSSION PURPOSES.

0 60 120 180FEET
HORIZONTAL SCALE 1"= 60'

0 10 20 30 FEET
VERTICAL SCALE 1"= 10'

ATTENTION: FOR CLEANER TEXT AND LINE FEATURES WHEN USING ADOBE TO VIEW THESE PDFS, TURN OFF THE "SMOOTH LINE ART" AND "ENHANCE THIN LINES" OPTIONS UNDER EDIT-PREFERENCES-PAGE DISPLAY

172033 - Aquidneck Island Golf Course Parking Lot HDD.dwg

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F	INCORPORATED MAYFLOWER COMMENTS	05/11/2022	LAS	TSG	TSG		
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D	INCORPORATED MAYFLOWER COMMENTS	04/01/2022	ASW	TSG	TSG		
C	ADDED SECOND HDD	02/28/2022	ASW	TSG	TSG		
B	ISSUED FOR REVIEW	10/06/2021	ASW	TSG	TSG		

DSGN	TSG	08/13/2021
DRN	ASW	08/13/2021
CKD	TSG	08/13/2021
SCALE:	AS SHOWN	

FOR 24x36 DWG ONLY

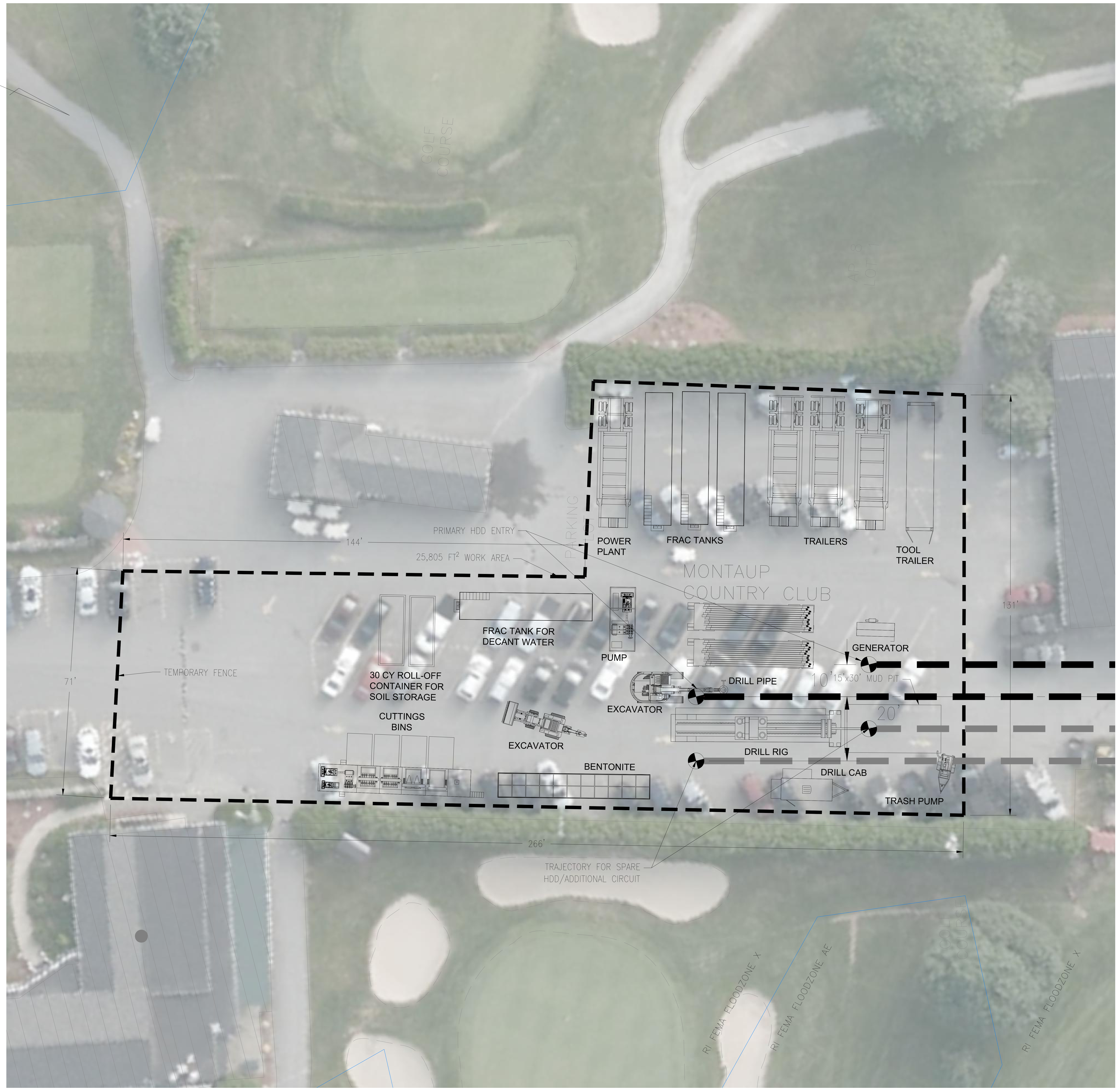
POWER ENGINEERS

MAYFLOWER WIND
AQUIDNECK ISLAND HDD
MONTAUP COUNTRY CLUB PARKING LOT PLAN AND PROFILE

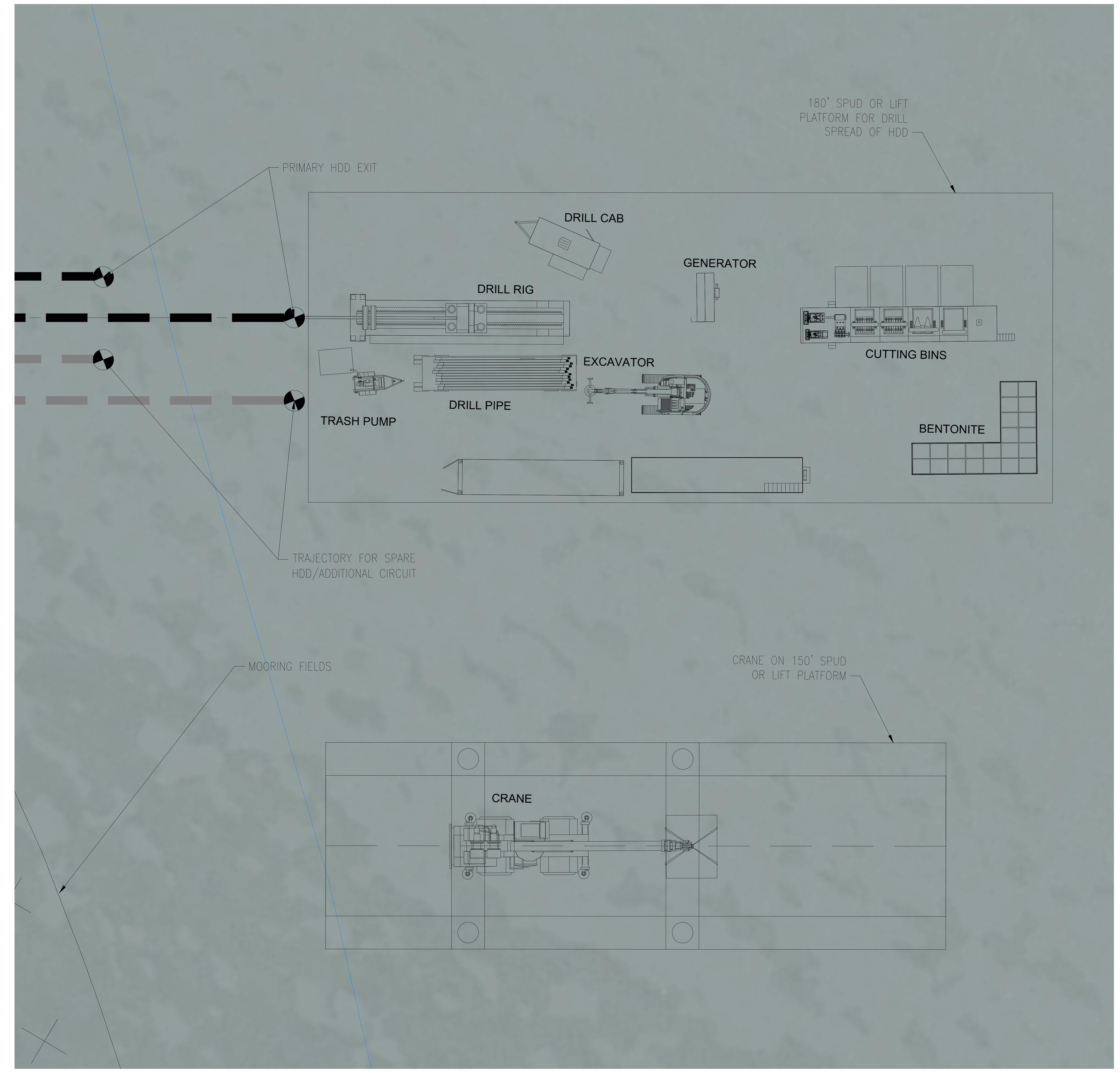
JOB NUMBER 172033
REV F
DRAWING NUMBER P1-1

FRE 151-0557 174444 (2022-05-17) JM

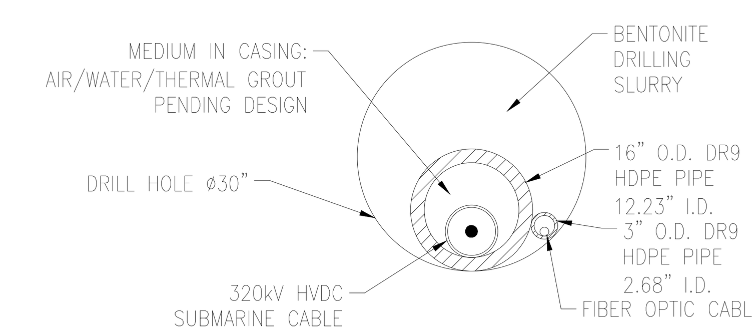
REV. 1



HDD ENTRY



HDD EXIT



PROPOSED BORE DETAIL
N.T.S.

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0 20 40 60 FEET
HORIZONTAL SCALE 1"= 20'

ATTENTION: FOR CLEANER TEXT AND LINE FEATURES WHEN USING ADOBE TO VIEW THESE PDFS, TURN OFF THE "SMOOTH LINE ART" AND "ENHANCE THIN LINES" OPTIONS UNDER EDIT-PREFERENCES-PAGE DISPLAY

REV	REVISIONS	DATE	DRN	DSGN	CKD	APPD	REFERENCE DRAWINGS
F	INCORPORATED MAYFLOWER COMMENTS	05/11/2022	LAS	TSG	TSG		
E	INCORPORATED MAYFLOWER COMMENTS	04/29/2022	ASW	TSG	TSG		
D	INCORPORATED MAYFLOWER COMMENTS	04/01/2022	ASW	TSG	TSG		
C	ADDED SECOND HDD	02/28/2022	ASW	TSG	TSG		
B	ISSUED FOR REVIEW	10/06/2021	ASW	TSG	TSG		

DSGN	TSG	08/13/2021
DRN	ASW	08/13/2021
CKD	TSG	08/13/2021
SCALE:	AS SHOWN	

FOR 24x36 DWG ONLY

POWER ENGINEERS

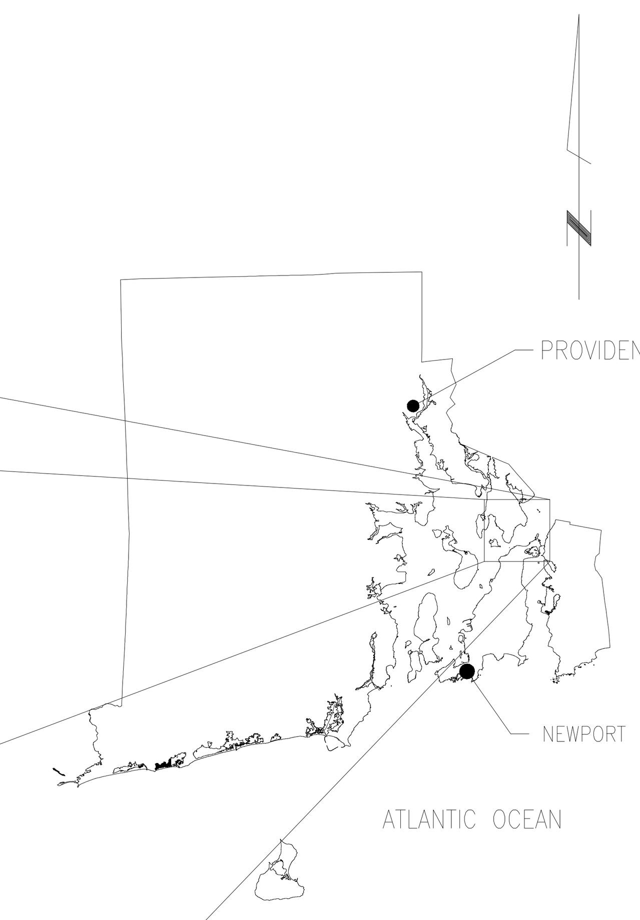
MAYFLOWER WIND
AQUIDNECK ISLAND HDD
MONTAUP COUNTRY CLUB PARKING LOT HDD LAYOUTS

JOB NUMBER 172033
REV F
DRAWING NUMBER U1-1

172033 - Aquidneck Island Golf Course Parking Lot HDD.dwg

MAYFLOWER WIND
30% HORIZONTAL DIRECTIONAL DRILL DESIGN
OFFSHORE EXPORT CABLE LANDFALL - BOYDS LANE

VICINITY MAP
N.T.S.



AREA MAP RHODE ISLAND
N.T.S.

POWER ENGINEERS
PROJECT ENGINEER: TODD GOYETTE

POWER ENGINEERS
PROJECT NUMBER: 172033

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172033 - Aquidneck Island Boyds LN HDD.dwg

REV	REVISIONS	DATE	DRN	DSGN	CKD	APPD
F	INCORPORATED MAYFLOWER COMMENTS	05/11/2022	ASW	TSG	TSG	
E	INCORPORATED MAYFLOWER COMMENTS	04/29/2022	ASW	TSG	TSG	
D	INCORPORATED MAYFLOWER COMMENTS	04/01/2022	ASW	TSG	TSG	
C	ADDED SECOND HDD	02/28/2022	ASW	TSG	TSG	
B	ISSUED FOR REVIEW	10/06/2021	ASW	TSG	TSG	

REFERENCE DRAWINGS

DSGN	TSG	08/10/2021
DRN	ASW	08/10/2021
CKD	TSG	08/10/2021

SCALE: AS SHOWN

FOR 24x36 DWG ONLY

POWER ENGINEERS

MAYFLOWER WIND
AQUIDNECK ISLAND HDD
BOYDS LN
COVER

JOB NUMBER: 172033
REV: F
DRAWING NUMBER: G0-1

DRAWING MANIFEST			
DRAWING NO.	TITLE/DESCRIPTION	REVISION	DATE
G0-1	COVER	F	05/11/22
G1-1	GENERAL NOTES & MANIFEST	F	05/11/22
P1-1	PLAN - STA. 00+00 TO 13+50	F	05/11/22
U1-1	HDD LAYOUTS	F	05/11/22
U1-2	HDD LAYOUTS	F	05/11/22

LEGEND

HDD START/END

SOIL BORE

W — EXISTING WATER LINE

G — EXISTING GAS LINE

D — EXISTING STORM DRAINAGE LINE

S — EXISTING SANITARY SEWER LINE

E — EXISTING UNDERGROUND ELECTRIC LINE

PSCL — PERENIAL STREAM CENTER LINE

FWVC — FRESH WATER WETLANDS IN THE VICINITY OF THE COAST

GENERAL NOTES

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   - GOOGLE EARTH 2020
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ENVIRONMENTAL LEGEND:

RI_FEMA FLOODZONE

WETLAND

PSCL PERENIAL STREAM CENTER LINE

FWVC FRESH WATER WETLANDS IN THE VICINITY OF THE COAST

MOORING FIELDS

ATTENTION: FOR CLEANER TEXT AND LINE FEATURES WHEN USING ADOBE TO VIEW THESE PDFS, TURN OFF THE "SMOOTH LINE ART" AND "ENHANCE THIN LINES" OPTIONS UNDER EDIT-PREFERENCES-PAGE DISPLAY

172033 - Aquidneck Island Boyds LN HDD.dwg

REV	REVISIONS	DATE	DRN	DSGN	CKD	APPD	REFERENCE DRAWINGS
F	INCORPORATED MAYFLOWER COMMENTS	05/11/2022	ASW	TSG	TSG		
E	INCOPRORATED MAYFLOWER COMMENTS	04/29/2022	ASW	TSG	TSG		
D	INCORPORATED MAYFLOWER COMMENTS	04/01/2022	ASW	TSG	TSG		
C	ADDED SECOND HDD	02/28/2022	ASW	TSG	TSG		
B	ISSUED FOR REVIEW	10/06/2021	ASW	TSG	TSG		

DSGN	TSG	08/10/2021
DRN	ASW	08/10/2021
CKD	TSG	08/10/2021
SCALE:	AS SHOWN	

FOR 24x36 DWG ONLY

POWER ENGINEERS

MAYFLOWER WIND

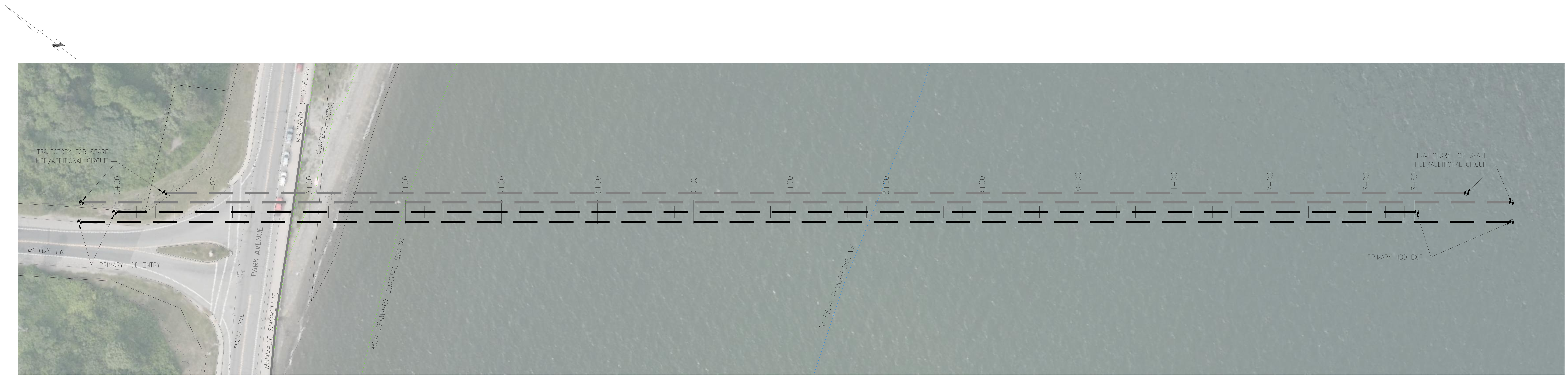
AQUIDNECK ISLAND HDD

BOYDS LN
GENERAL NOTES & MANIFEST

JOB NUMBER: 172033

REV: F

DRAWING NUMBER: G1-1



PLAN VIEW

PROFILE VIEW

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   - TOWN OF PORTSMOUTH WEB GIS MAPS AND ONLINE PROPERTY INFORMATION
4. PROPERTY LINES ARE APPROXIMATE FOR DISCUSSION PURPOSES.

0 50 100 150 FEET
HORIZONTAL SCALE 1"= 50'

0 10 20 30 FEET
VERTICAL SCALE 1"= 10'

ATTENTION: FOR CLEANER TEXT AND LINE FEATURES WHEN USING ADOBE TO VIEW THESE PDFS, TURN OFF THE "SMOOTH LINE ART" AND "ENHANCE THIN LINES" OPTIONS UNDER EDIT-PREFERENCES-PAGE DISPLAY

REV	REVISIONS	DATE	DRN	DSGN	CKD	APPD	REFERENCE DRAWINGS
F	INCORPORATED MAYFLOWER COMMENTS	05/11/2022	ASW	TSG	TSG		
E	INCOPRORATED MAYFLOWER COMMENTS	04/29/2022	ASW	TSG	TSG		
D	INCORPORATED MAYFLOWER COMMENTS	04/01/2022	ASW	TSG	TSG		
C	ADDED SECOND HDD	02/28/2022	ASW	TSG	TSG		
B	ISSUED FOR REVIEW	10/06/2021	ASW	TSG	TSG		

DSGN	TSG	08/10/2021
DRN	ASW	08/10/2021
CKD	TSG	08/10/2021

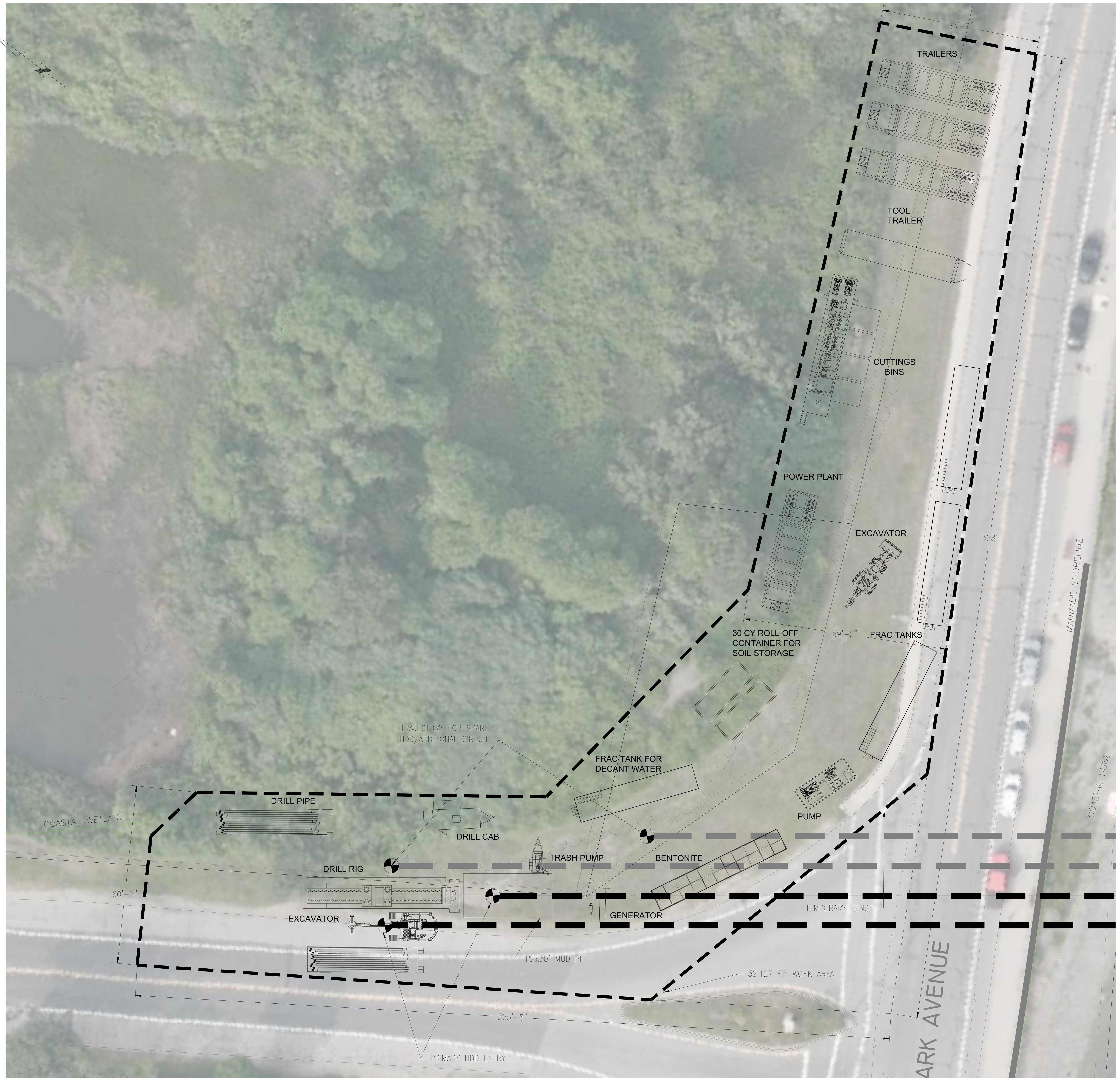
SCALE: AS SHOWN
FOR 24x36 DWG ONLY

POWER ENGINEERS

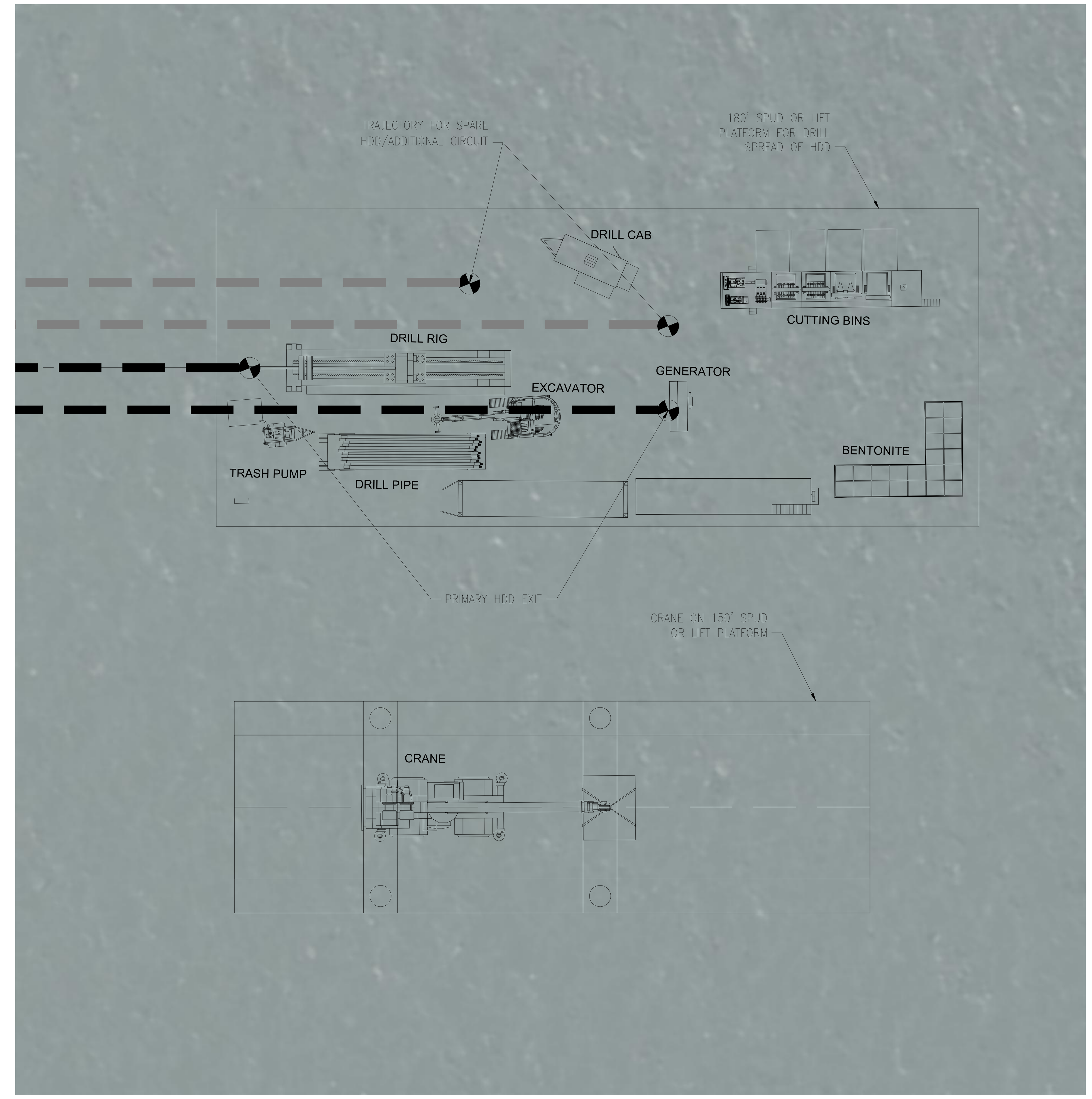
MAYFLOWER WIND
AQUIDNECK ISLAND HDD
BOYDS LN
PLAN AND PROFILE

JOB NUMBER 172033
REV F
DRAWING NUMBER P1-1

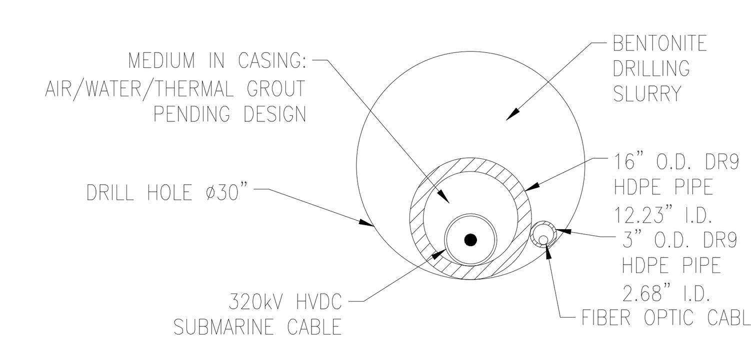
172033 - Aquidneck Island Boyds Ln HDD.dwg



HDD ENTRY - OPTION 1



HDD EXIT - OPTION 1 &2



PROPOSED BORE DETAIL - OPTION 1 &2

N.T.S.

811 Know what's below. Call before you dig.

NOTES:

1. THE UTILITIES AND NATURAL FEATURES SHOWN HEREON ARE BASED ON FIELD SURVEYS, AERIAL PHOTOGRAPHY AND RECORD DOCUMENTS. OTHER FACILITIES MAY EXIST NOT DISCOVERED THROUGH THE RECORD CHECK. THE CONTRACTOR SHALL VERIFY THE EXACT LOCATION, BOTH HORIZONTAL AND VERTICAL, OF ALL UTILITIES THROUGH THE APPROPRIATE UTILITY COMPANIES. CALL BEFORE YOU DIG, 811 OR 1-800-344-7233.
2. PLAN AND PROFILE ALIGNMENT IS CONCEPTUAL AND NOT BASED ON PROJECT SPECIFIC FIELD SURVEY OR GEOTECHNICAL INVESTIGATION.
3. THE UTILITIES AND NATURAL FEAUTRES SHOWN HEREON ARE BASED ON:
   - GOOGLE EARTH 2020
   - TOWN OF PORTSMOUTH WEB GIS MAPS AND ONLINE PROPERTY INFORMATION
4. PROPERTY LINES ARE APPROXIMATE FOR DISCUSSION PURPOSES.

0 20 40 60 FEET

HORIZONTAL SCALE 1"= 20'

ATTENTION: FOR CLEANER TEXT AND LINE FEATURES WHEN USING ADOBE TO VIEW THESE PDFS, TURN OFF THE "SMOOTH LINE ART" AND "ENHANCE THIN LINES" OPTIONS UNDER EDIT-PREFERENCES-PAGE DISPLAY

172033 - Aquidneck Island Boyds Ln HDD.dwg

REV	REVISIONS	DATE	DRN	DSGN	CKD	APPD	REFERENCE DRAWINGS
F	INCORPORATED MAYFLOWER COMMENTS	05/11/2022	ASW	TSG	TSG		
E	INCOPRORATED MAYFLOWER COMMENTS	04/29/2022	ASW	TSG	TSG		
D	INCORPORATED MAYFLOWER COMMENTS	04/01/2022	ASW	TSG	TSG		
C	ADDED SECOND HDD	02/28/2022	ASW	TSG	TSG		
B	ISSUED FOR REVIEW	10/06/2021	ASW	TSG	TSG		

DSGN	TSG	08/10/2021
DRN	ASW	08/10/2021
CKD	TSG	08/10/2021
SCALE:	AS SHOWN	

FOR 24x36 DWG ONLY

POWER ENGINEERS

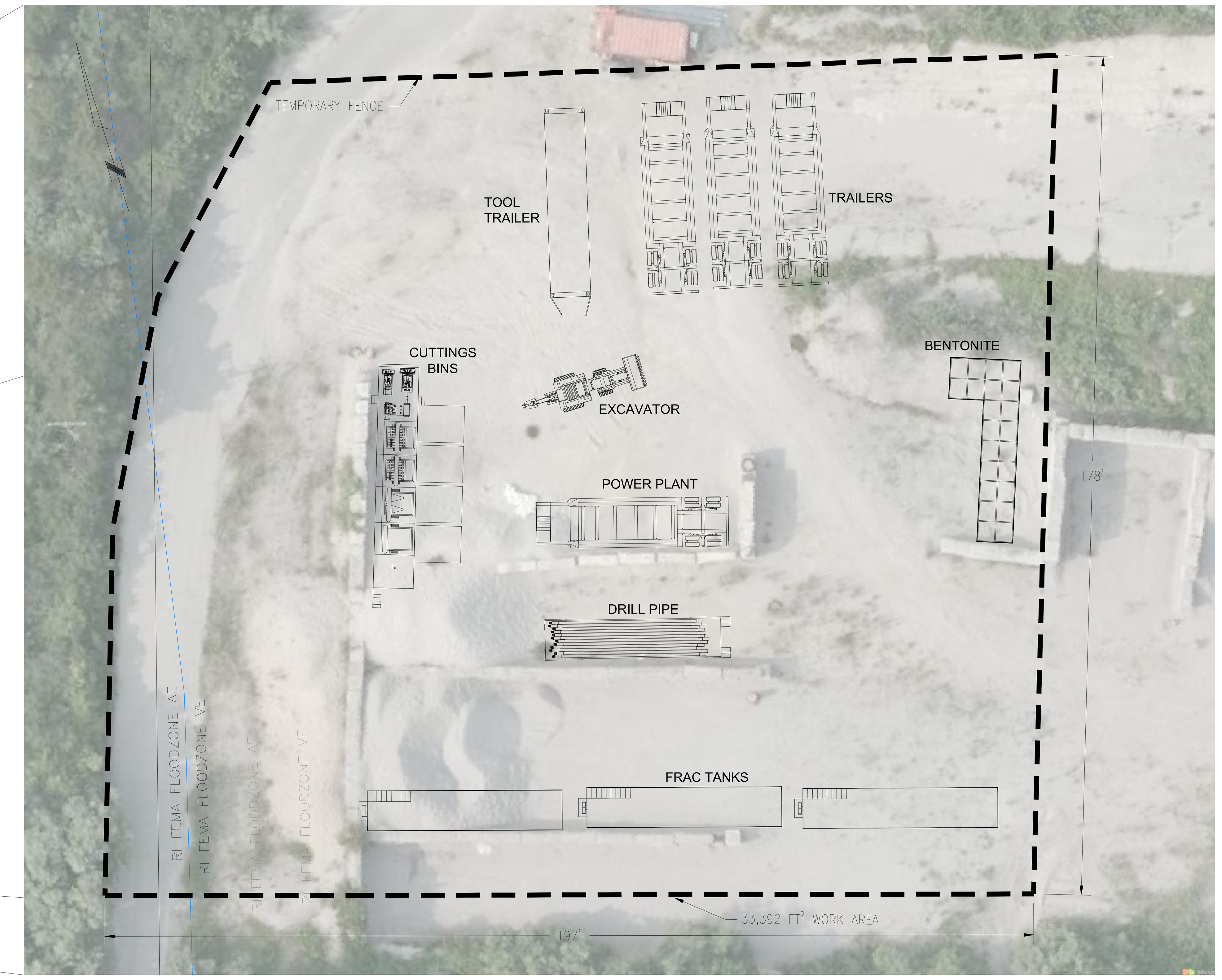
MAYFLOWER WIND

AQUIDNECK ISLAND HDD

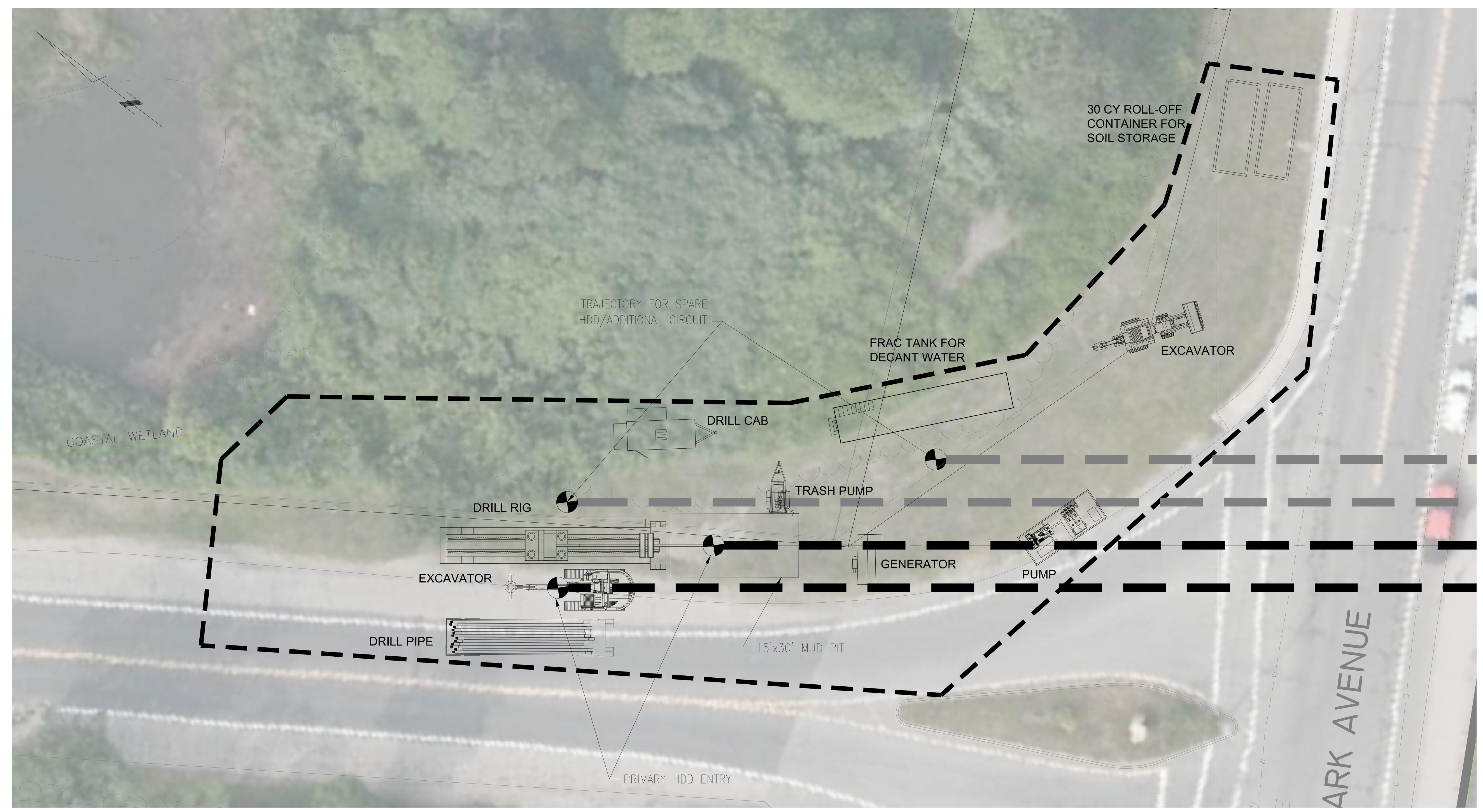
BOYDS LN
HDD LAYOUTS

JOB NUMBER 172033 | REV F

DRAWING NUMBER U1-1



HDD STAGING AREA



HDD ENTRY

Know what's **below.**
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   - TOWN OF PORTSMOUTH WEB GIS MAPS AND ONLINE PROPERTY INFORMATION

4. PROPERTY LINES ARE APPROXIMATE FOR DISCUSSION PURPOSES.

0 20 40 60 FEET
HORIZONTAL SCALE 1"= 20'

ATTENTION: FOR CLEANER TEXT AND LINE FEATURES WHEN USING ADOBE TO VIEW THESE PDFS, TURN OFF THE "SMOOTH LINE ART" AND "ENHANCE THIN LINES" OPTIONS UNDER EDIT-PREFERENCES-PAGE DISPLAY

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B	ISSUED FOR REVIEW	10/06/2021	ASW	TSG	TSG		

DSGN	TSG	08/10/2021
DRN	ASW	08/10/2021
CKD	TSG	08/10/2021
SCALE:	AS SHOWN	

FOR 24x36 DWG ONLY

POWER ENGINEERS

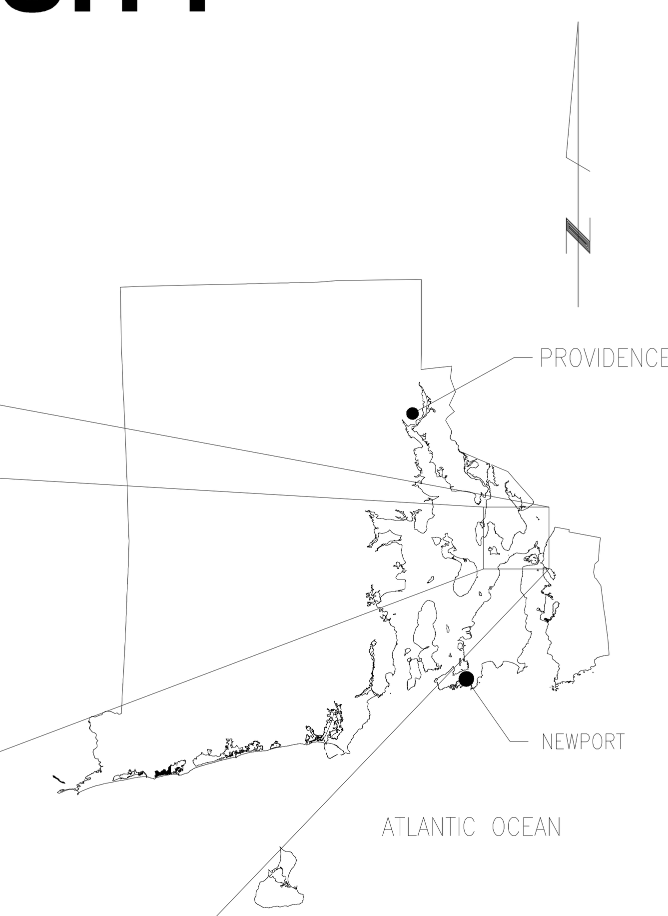
MAYFLOWER WIND
AQUIDNECK ISLAND HDD
BOYDS LN
HDD LAYOUTS – OPTION 2

JOB NUMBER: 172033
REV: F
DRAWING NUMBER: U1-2

172033 – Aquidneck Island Boyds Ln HDD.dwg

MAYFLOWER WIND
30% HORIZONTAL DIRECTIONAL DRILL DESIGN
OFFSHORE EXPORT CABLE LANDFALL - ROGER WILLIAMS UNIVERSITY

VICINITY MAP
N.T.S.



AREA MAP RHODE ISLAND
N.T.S.

Know what's below.
Call before you dig.

POWER ENGINEERS
PROJECT ENGINEER: TODD GOYETTE

POWER ENGINEERS
PROJECT NUMBER: 172033

ATTENTION: FOR CLEANER TEXT AND LINE FEATURES WHEN USING ADOBE TO VIEW THESE PDFS, TURN OFF THE "SMOOTH LINE ART" AND "ENHANCE THIN LINES" OPTIONS UNDER EDIT–PREFERENCES–PAGE DISPLAY

172033 – Aquidneck Island Residence Hall HDD.dwg

REV	REVISIONS	DATE	DRN	DSGN	CKD	APPD	REFERENCE DRAWINGS
E	INCORPORATED MAYFLOWER COMMENTS	05/11/2022	LAS	TSG	TSG		
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A	ISSUED FOR REVIEW	12/10/2021	ASW	TSG	TSG		

DSGN	TSG	12/10/2021
DRN	ASW	12/10/2021
CKD	TSG	12/10/2021
SCALE:	AS SHOWN	

FOR 24x36 DWG ONLY

POWER ENGINEERS

MAYFLOWER WIND
AQUIDNECK ISLAND HDD
BAYPOINT RESIDENCE HALL COVER

JOB NUMBER: 172033
REV: E
DRAWING NUMBER: G0–1

LEGEND

(symbol)	HDD START/END
(symbol)	SOIL BORE
W	EXISTING WATER LINE
G	EXISTING GAS LINE
D	EXISTING STORM DRAINAGE LINE
S	EXISTING SANITARY SEWER LINE
E	EXISTING UNDERGROUND ELECTRIC LINE

DRAWING MANIFEST			
DRAWING NO.	TITLE/DESCRIPTION	REVISION	DATE
G0-1	COVER	E	05/11/22
G1-1	GENERAL NOTES & MANIFEST	E	05/11/22
P1-1	PLAN – STA. 00+00 TO 32+77	E	05/11/22
U1-1	HDD LAYOUTS	E	05/11/22

GENERAL NOTES

1. THE UTILITIES AND NATURAL FEATURES SHOWN HEREON ARE BASED ON:
   - LEVEL D SURVEY PERFORMED BY DIPRETE ENGINEERING, 01/19/2022
   - GOOGLE EARTH 2020
   - OTHER FACILITIES MAY EXIST NOT DISCOVERED THROUGH THE RECORD CHECK. THE CONTRACTOR SHALL VERIFY THE EXACT LOCATION, BOTH HORIZONTAL AND VERTICAL, OF ALL UTILITIES THROUGH THE APPROPRIATE UTILITY COMPANIES. CALL BEFORE YOU DIG, 811 OR 1-888-344-7233.
2. STATE PLANE COORDINATE (HORIZONTAL DATUM): REFERENCES RHODE ISLAND PLAN COORDINATE SYSTEM – NAD83 1983, US FOOT.
3. STATE PLANE COORDINATE (VERTICAL DATUM): NAVD 1988. THE COORDINATE SYSTEM THAT THIS SURVEY WAS BASED UPON IS STATE PLANE NAD 88, US FOOT.
4. ALL VERTICAL RADII ARE 400', AND HORIZONTAL RADII ARE 50' UNLESS OTHERWISE NOTED.

ENVIRONMENTAL LEGEND:

	RI_FEMA FLOODZONE
	WETLANDS
PSCL	PERENIAL STREAM CENTER LINE
FWVC	FRESH WATER WETLANDS IN THE VICINITY OF THE COAST
	MOORING FEILDS

811 Know what's below. Call before you dig.

ATTENTION: FOR CLEANER TEXT AND LINE FEATURES WHEN USING ADOBE TO VIEW THESE PDFS, TURN OFF THE "SMOOTH LINE ART" AND "ENHANCE THIN LINES" OPTIONS UNDER EDIT–PREFERENCES–PAGE DISPLAY

172033 – Aquidneck Island Residence Hall HDD.dwg

REV	REVISIONS	DATE	DRN	DSGN	CKD	APPD	REFERENCE DRAWINGS
E	INCORPORATED MAYFLOWER COMMENTS	05/11/2022	LAS	TSG	TSG		
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A	ISSUED FOR REVIEW	12/10/2021	ASW	TSG	TSG		

DSGN	TSG	12/10/2021
DRN	ASW	12/10/2021
CKD	TSG	12/10/2021
SCALE:	AS SHOWN	

FOR 24x36 DWG ONLY

POWER ENGINEERS

MAYFLOWER WIND

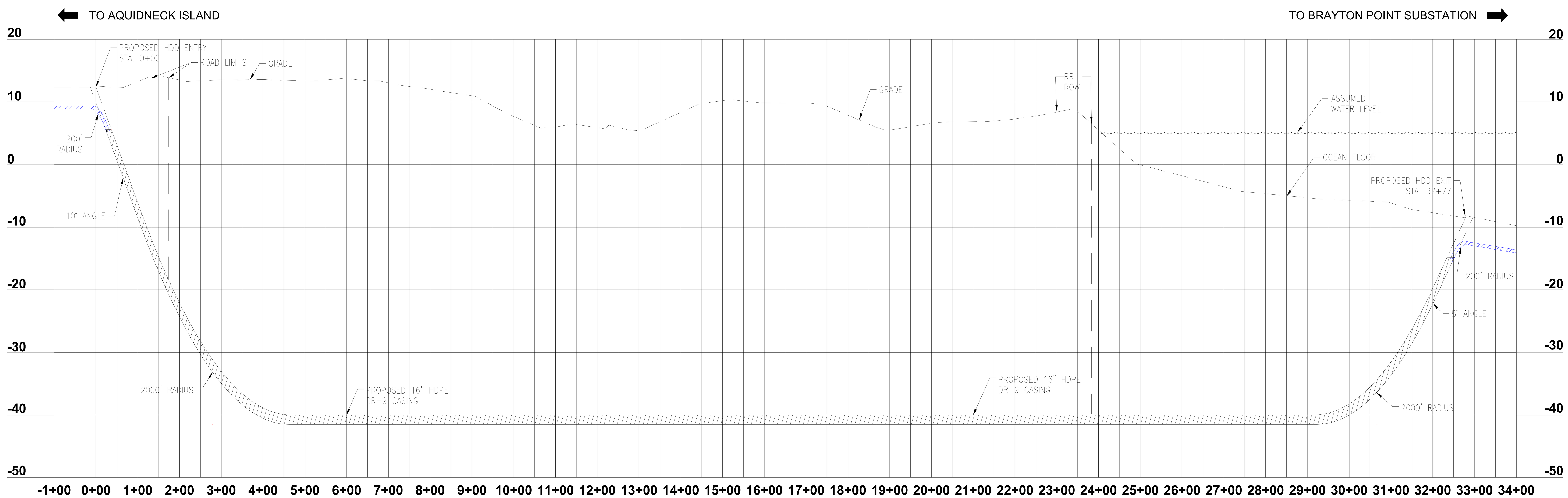
AQUIDNECK ISLAND HDD

BAYPOINT RESIDENCE HALL COVER

JOB NUMBER: 172033 REV: E

DRAWING NUMBER: G0-1

PLAN VIEW



PROFILE VIEW

NOTES:

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   - TOWN OF PORTSMOUTH WEB GIS MAPS AND ONLINE PROPERTY INFORMATION
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811 Know what's below. Call before you dig.

0 150 300 450 FEET
HORIZONTAL SCALE 1"= 150'

0 10 20 30 FEET
VERTICAL SCALE 1"= 10'

ATTENTION: FOR CLEANER TEXT AND LINE FEATURES WHEN USING ADOBE TO VIEW THESE PDFS, TURN OFF THE "SMOOTH LINE ART" AND "ENHANCE THIN LINES" OPTIONS UNDER EDIT-PREFERENCES-PAGE DISPLAY

REV	REVISIONS	DATE	DRN	DSGN	CKD	APPD	REFERENCE DRAWINGS
E	INCORPORATED MAYFLOWER COMMENTS	05/11/2022	LAS	TSG	TSG		
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DSGN	TSG	12/10/2021
DRN	ASW	12/10/2021
CKD	TSG	12/10/2021
SCALE:	AS SHOWN	

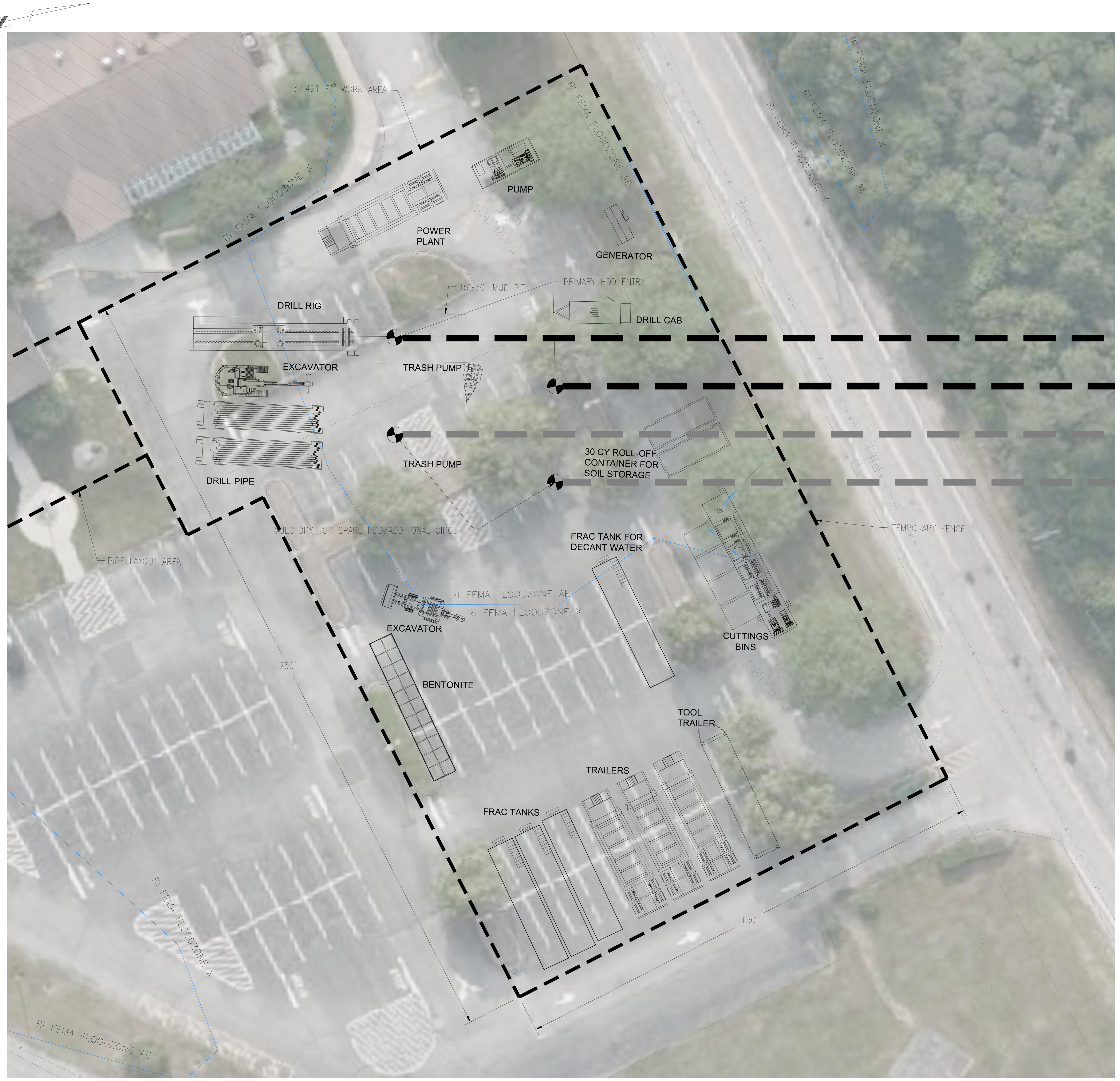
FOR 24x36 DWG ONLY

POWER ENGINEERS

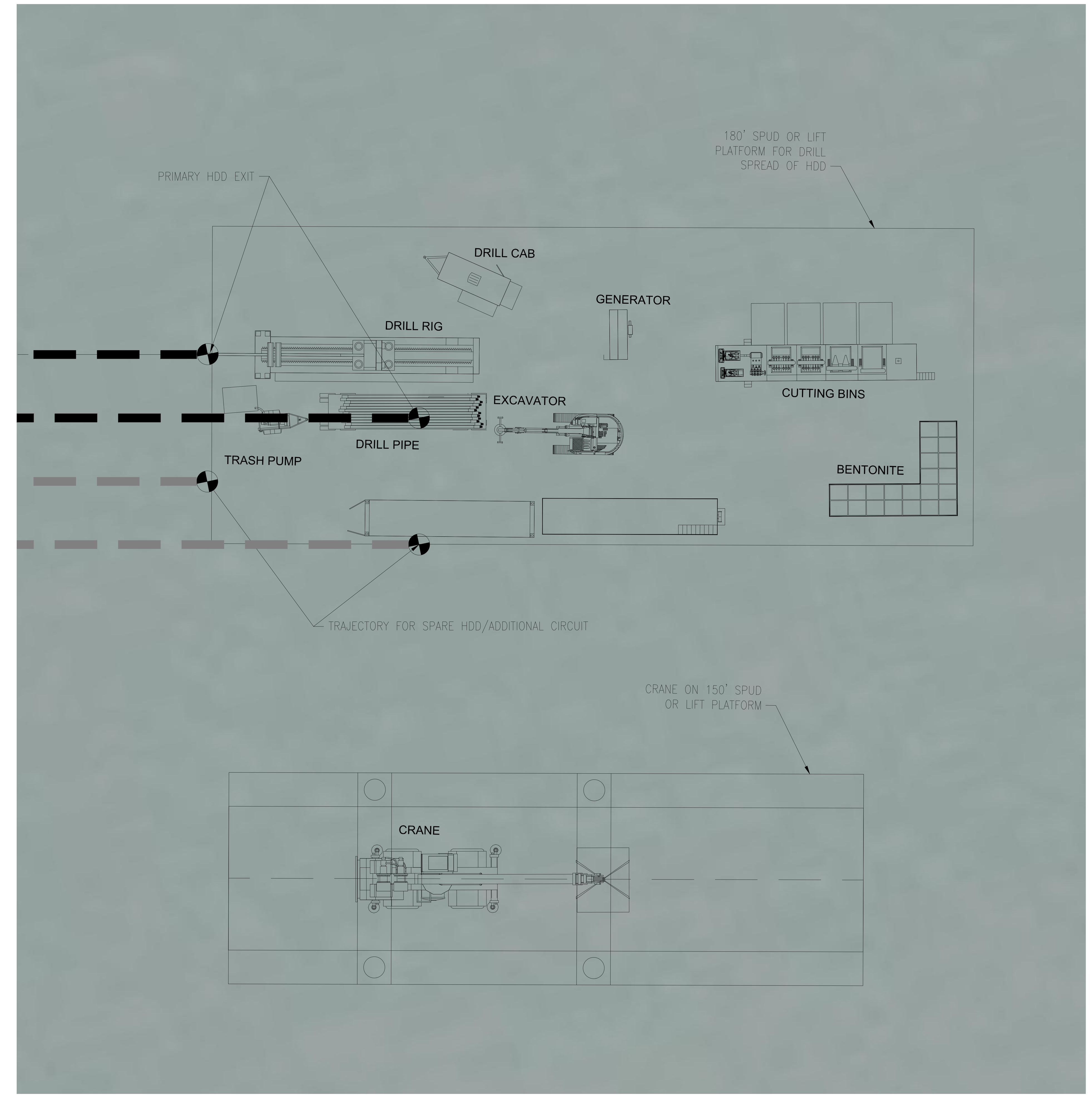
MAYFLOWER WIND
AQUIDNECK ISLAND HDD
BAYPOINT RESIDENCE HALL PLAN AND PROFILE

JOB NUMBER 172033
REV E
DRAWING NUMBER P1-1

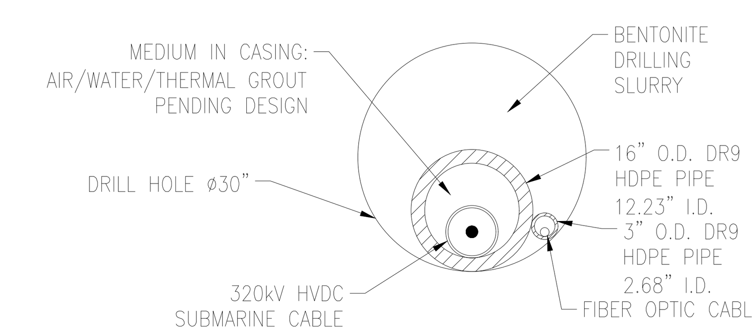
172033 - Aquidneck Island Residence Hall HDD.dwg



HDD ENTRY



HDD EXIT



PROPOSED BORE DETAIL

N.T.S.

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0 20 40 60 FEET
HORIZONTAL SCALE 1"= 20'

ATTENTION: FOR CLEANER TEXT AND LINE FEATURES WHEN USING ADOBE TO VIEW THESE PDFS, TURN OFF THE "SMOOTH LINE ART" AND "ENHANCE THIN LINES" OPTIONS UNDER EDIT-PREFERENCES-PAGE DISPLAY

172033 – Aquidneck Island Residence Hall HDD.dwg

REV	REVISIONS	DATE	DRN	DSGN	CKD	APPD	REFERENCE DRAWINGS
E	INCORPORATED MAYFLOWER COMMENTS	05/11/2022	LAS	TSG	TSG		
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C	INCORPORATED MAYFLOWER COMMENTS	04/01/2022	ASW	TSG	TSG		
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DSGN	TSG	12/10/2021
DRN	ASW	12/10/2021
CKD	TSG	12/10/2021
SCALE:	AS SHOWN	
FOR 24x36 DWG ONLY		

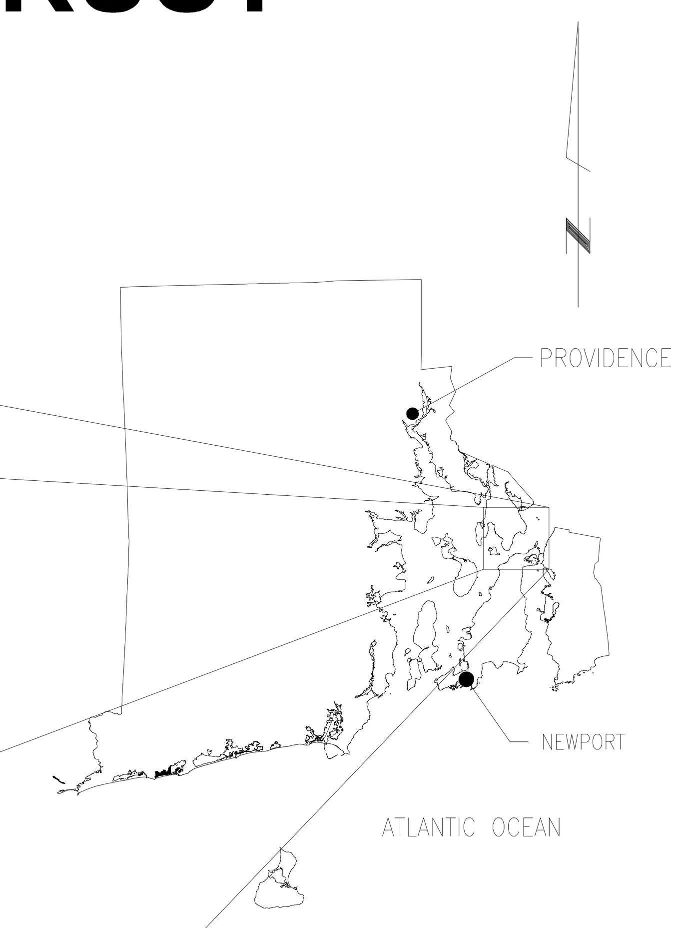
POWER ENGINEERS

MAYFLOWER WIND
AQUIDNECK ISLAND HDD
BAYPOINT RESIDENCE HALL HDD LAYOUTS

JOB NUMBER 172033
REV E
DRAWING NUMBER U1-1

MAYFLOWER WIND
30% HORIZONTAL DIRECTIONAL DRILL DESIGN
OFFSHORE EXPORT CABLE LANDFALL - DEM/AQUIDNECK ISLAND TRUST

VICINITY MAP
N.T.S.



AREA MAP RHODE ISLAND
N.T.S.

Know what's below.
Call before you dig.

POWER ENGINEERS
PROJECT ENGINEER: TODD GOYETTE

POWER ENGINEERS
PROJECT NUMBER: 172033

ATTENTION: FOR CLEANER TEXT AND LINE FEATURES WHEN USING ADOBE TO VIEW THESE PDFS, TURN OFF THE "SMOOTH LINE ART" AND "ENHANCE THIN LINES" OPTIONS UNDER EDIT–PREFERENCES–PAGE DISPLAY

172033 – Aquidneck Island TNEC ROW HDD.dwg

REV	REVISIONS	DATE	DRN	DSGN	CKD	APPD	REFERENCE DRAWINGS
G	INCORPORATED MAYFLOWER COMMENTS	05/11/2022	ASW	TSG	TSG		
F	INCORPORATED MAYFLOWER COMMENTS	04/29/2022	ASW	TSG	TSG		
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C	CHANGED HDD LOCATION	11/12/2021	ASW	TSG	TSG		

DSGN	TSG	08/13/2021
DRN	ASW	08/13/2021
CKD	TSG	08/13/2021
SCALE:	AS SHOWN	

FOR 24x36 DWG ONLY

POWER ENGINEERS

MAYFLOWER WIND
AQUIDNECK ISLAND HDD
DEM/AQUIDNECK ISLAND TRUST
COVER

JOB NUMBER: 172033
REV: G
DRAWING NUMBER: G0–1

DRAWING MANIFEST			
DRAWING NO.	TITLE/DESCRIPTION	REVISION	DATE
G0-1	COVER	G	05/11/22
G1-1	GENERAL NOTES & MANIFEST	G	05/11/22
P1-1	PLAN - STA. 00+00 TO 19+50	G	05/11/22
U1-1	HDD LAYOUTS	G	05/11/22

LEGEND

HDD START/END

SOIL BORE

W EXISTING WATER LINE

G EXISTING GAS LINE

D EXISTING STORM DRAINAGE LINE

S EXISTING SANITARY SEWER LINE

E EXISTING UNDERGROUND ELECTRIC LINE

PSCL PERENIAL STREAM CENTER LINE

FWVC FRESH WATER WETLANDS IN THE VICINITY OF THE COAST

GENERAL NOTES

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   - GOOGLE EARTH 2020
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2. STATE PLANE COORDINATE (HORIZONTAL DATUM): REFERENCES RHODE ISLAND PLAN COORDINATE SYSTEM - NAD83 1983, US FOOT.
3. STATE PLANE COORDINATE (VERTICAL DATUM): NAVD 1988. THE COORDINATE SYSTEM THAT THIS SURVEY WAS BASED UPON IS STATE PLANE NAD 88, US FOOT.
4. ALL VERTICAL RADII ARE 400', AND HORIZONTAL RADII ARE 50' UNLESS OTHERWISE NOTED.
5. WETLAND DELINEATIONS SHOWN ARE BASED ON FIELD SURVEYS CONDUCTED IN DECEMBER 2021 AND JANUARY 2022.

ENVIRONMENTAL LEGEND:

RI_FEMA FLOODZONE

WETLAND

PSCL PERENIAL STREAM CENTER LINE

FWVC FRESH WATER WETLANDS IN THE VICINITY OF THE COAST

MOORING FIELDS

ATTENTION: FOR CLEANER TEXT AND LINE FEATURES WHEN USING ADOBE TO VIEW THESE PDFS, TURN OFF THE "SMOOTH LINE ART" AND "ENHANCE THIN LINES" OPTIONS UNDER EDIT-PREFERENCES-PAGE DISPLAY

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D	ADDED SECOND HDD	02/28/2022	ASW	TSG	TSG	
C	CHANGED HDD LOCATION	11/12/2021	ASW	TSG	TSG	

REFERENCE DRAWINGS

DSGN	TSG	08/13/2021
DRN	ASW	08/13/2021
CKD	TSG	08/13/2021

SCALE: AS SHOWN

FOR 24x36 DWG ONLY

POWER ENGINEERS

MAYFLOWER WIND

AQUIDNECK ISLAND HDD

DEM/AQUIDNECK ISLAND TRUST
GENERAL NOTES & MANIFEST

JOB NUMBER 172033 REV G

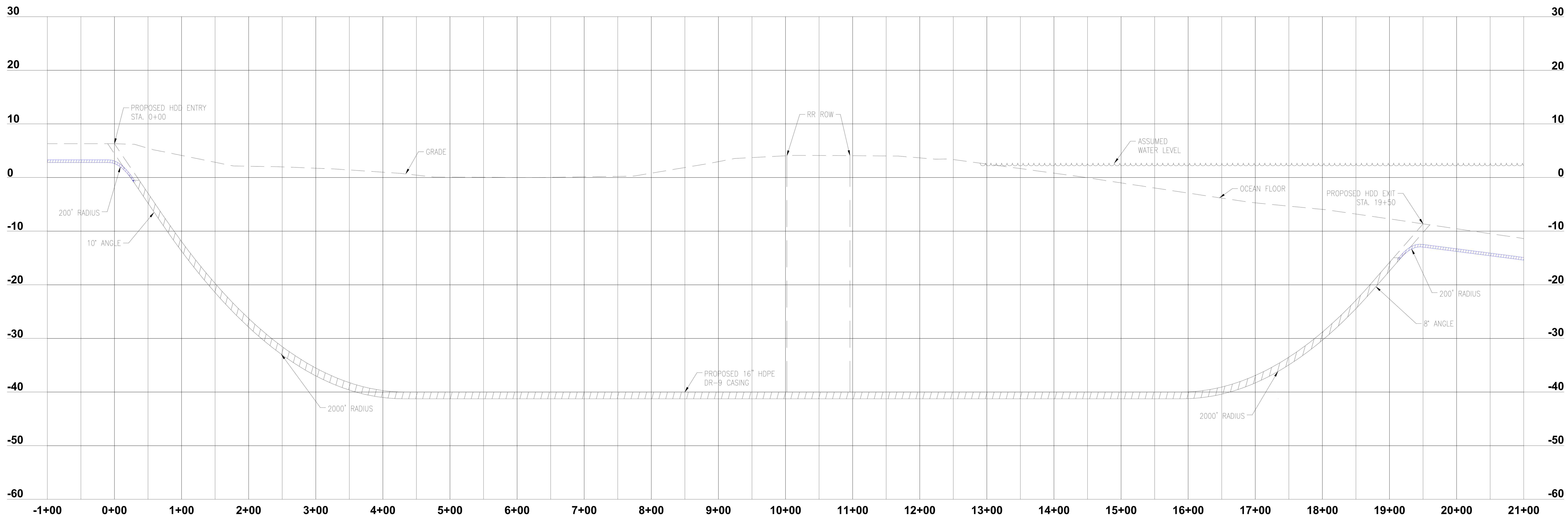
DRAWING NUMBER G1-1

172033 - Aquidneck Island TNEC ROW HDD.dwg

PLAN VIEW

TO AQUIDNECK ISLAND

TO BRAYTON POINT SUBSTATION



PROFILE VIEW

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   - TOWN OF PORTSMOUTH WEB GIS MAPS AND ONLINE PROPERTY INFORMATION
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811 Know what's below. Call before you dig.

0 80 160 240 FEET
HORIZONTAL SCALE 1"= 80'

0 10 20 30 FEET
VERTICAL SCALE 1"= 10'

ATTENTION: FOR CLEANER TEXT AND LINE FEATURES WHEN USING ADOBE TO VIEW THESE PDFS, TURN OFF THE "SMOOTH LINE ART" AND "ENHANCE THIN LINES" OPTIONS UNDER EDIT-PREFERENCES-PAGE DISPLAY

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DSGN	TSG	08/13/2021
DRN	ASW	08/13/2021
CKD	TSG	08/13/2021

SCALE: AS SHOWN

FOR 24x36 DWG ONLY

POWER ENGINEERS

MAYFLOWER WIND

AQUIDNECK ISLAND HDD

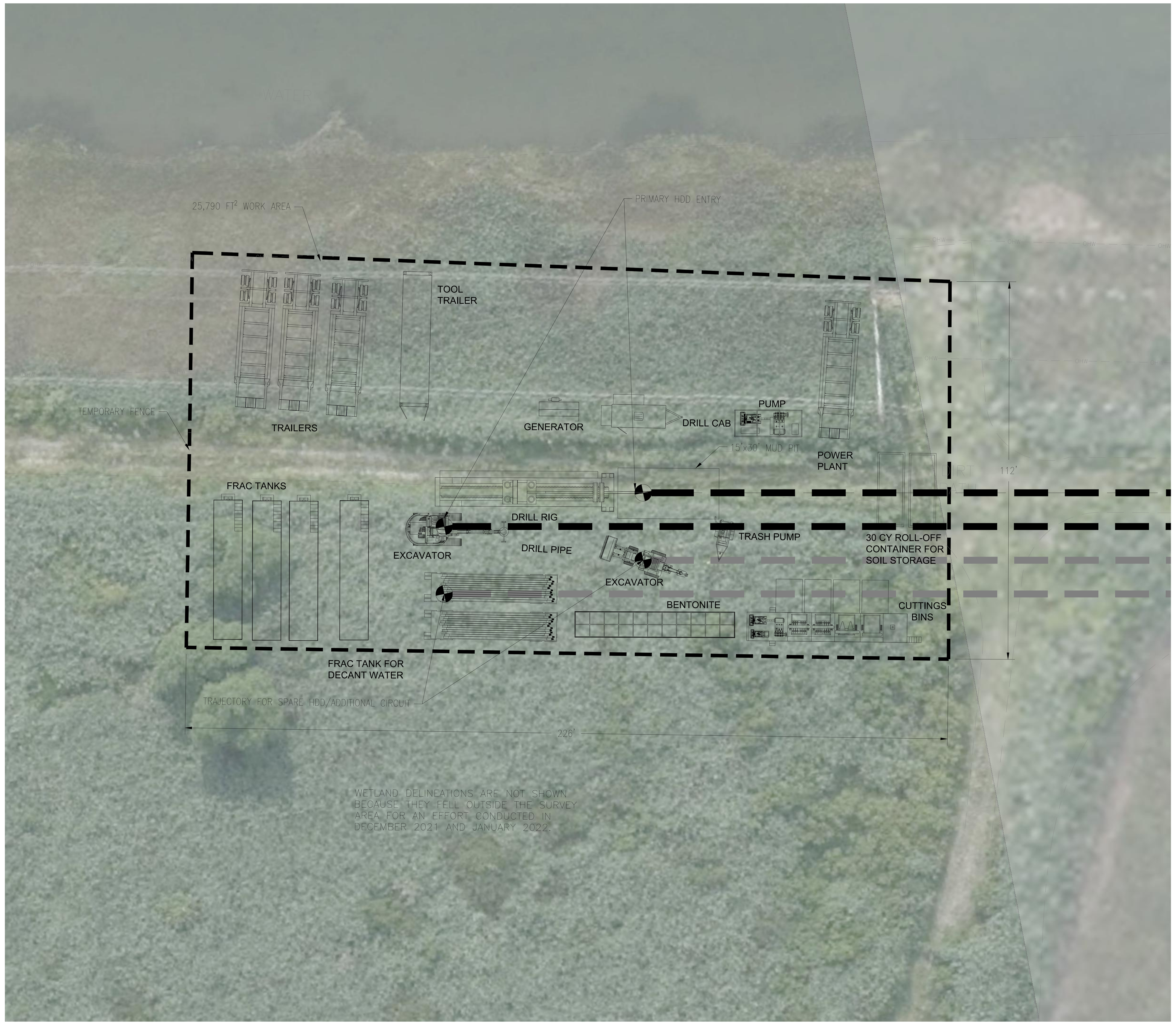
DEM/AQUIDNECK ISLAND TRUST
PLAN AND PROFILE

JOB NUMBER 172033

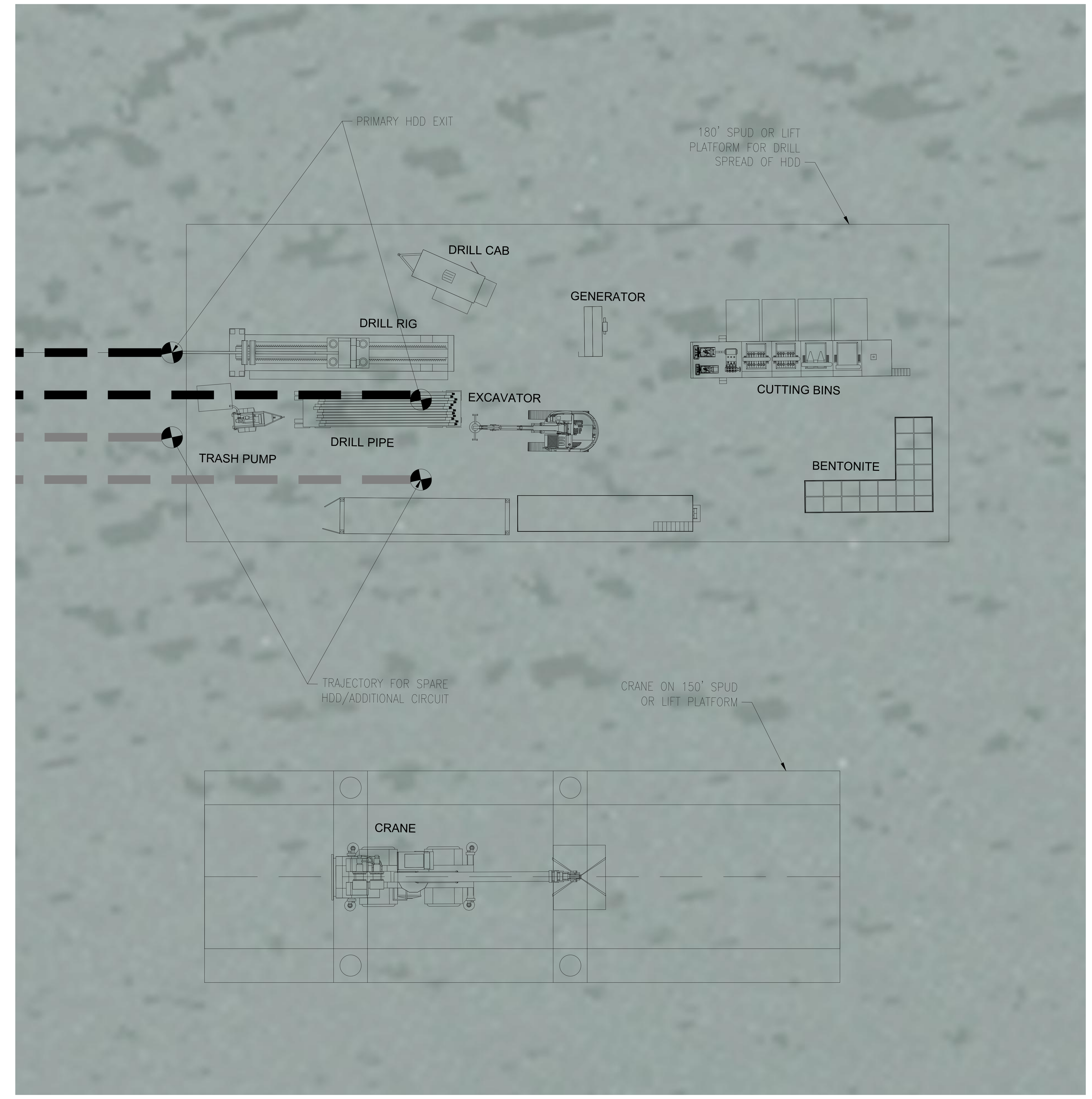
REV G

DRAWING NUMBER P1-1

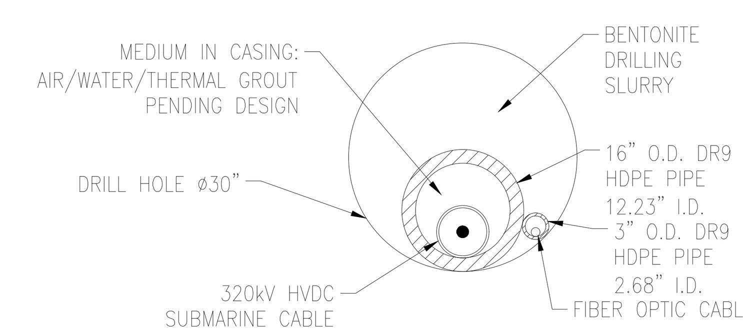
172033 - Aquidneck Island TNEC ROW HDD.dwg



HDD ENTRY



HDD EXIT



PROPOSED BORE DETAIL

N.T.S.

Know what's **below.**
Call before you dig.

NOTES:

1. THE UTILITIES AND NATURAL FEATURES SHOWN HEREON ARE BASED ON FIELD SURVEYS, AERIAL PHOTOGRAPHY AND RECORD DOCUMENTS. OTHER FACILITIES MAY EXIST NOT DISCOVERED THROUGH THE RECORD CHECK. THE CONTRACTOR SHALL VERIFY THE EXACT LOCATION, BOTH HORIZONTAL AND VERTICAL, OF ALL UTILITIES THROUGH THE APPROPRIATE UTILITY COMPANIES. CALL BEFORE YOU DIG, 811 OR 1–800–344–7233.

2. PLAN AND PROFILE ALIGNMENT IS CONCEPTUAL AND NOT BASED ON PROJECT SPECIFIC FIELD SURVEY OR GEOTECHNICAL INVESTIGATION.

3. THE UTILITIES AND NATURAL FEAUTRES SHOWN HEREON ARE BASED ON:
   - GOOGLE EARTH 2020
   - TOWN OF PORTSMOUTH WEB GIS MAPS AND ONLINE PROPERTY INFORMATION

4. PROPERTY LINES ARE APPROXIMATE FOR DISCUSSION PURPOSES.

0 20 40 60 FEET
HORIZONTAL SCALE 1"= 20'

ATTENTION: FOR CLEANER TEXT AND LINE FEATURES WHEN USING ADOBE TO VIEW THESE PDFS, TURN OFF THE "SMOOTH LINE ART" AND "ENHANCE THIN LINES" OPTIONS UNDER EDIT–PREFERENCES–PAGE DISPLAY

REV	REVISIONS	DATE	DRN	DSGN	CKD	APPD	REFERENCE DRAWINGS
G	INCORPORATED MAYFLOWER COMMENTS	05/11/2022	ASW	TSG	TSG		
F	INCORPORATED MAYFLOWER COMMENTS	04/29/2022	ASW	TSG	TSG		
E	INCORPORATED MAYFLOWER COMMENTS	04/01/2022	ASW	TSG	TSG		
D	ADDED SECOND HDD	02/28/2022	ASW	TSG	TSG		
C	CHANGED HDD LOCATION	11/12/2021	ASW	TSG	TSG		

DSGN	TSG	08/13/2021
DRN	ASW	08/13/2021
CKD	TSG	08/13/2021
SCALE:	AS SHOWN	

FOR 24x36 DWG ONLY

POWER ENGINEERS

MAYFLOWER WIND
AQUIDNECK ISLAND HDD
DEM/AQUIDNECK ISLAND TRUST
HDD LAYOUTS

JOB NUMBER 172033
REV G
DRAWING NUMBER U1–1

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