State of Rhode Island and Providence Plantations
Coastal Resources Management Council
Oliver H. Stedman Government Center
4808 Tower Hill Road, Suite 3
Wakefield, RI 02879-1900

(401) 783-3370
Fax (401) 783-2069

APPLICATION FOR STATE ASSENT

To perform work regulated by the provisions of Chapter 279 of the Public Laws of 1971 Amended.

Project Location: 2574 Davisville Road, North Kingstown, RI (No. Street City/Town)	File No. (CRMC USE ONLY): 2025-05-029
Owner's Name: Quonset Development Corporation/RI Commerce	Plat: 193 ⊞ Lot(s): 26 ⊞
Mailing Address: 95 Cripe Street, North Kingstown, RI 02852 (Address City/Town, State Zip Code)	Owner's Contact: Mr. Greg Coren Number: 401.295.0044 x238 ⊞ Email Address: gcoren@quonset.com ⊞
Contractor RI Reg. # TBD ⊞ Address	Email address: kaitlyn.cross@foth.com ⊞ Tel. No. TBD ⊞
Designer Foth Infrastructure & Environment LLC ⊞ Address: 114 Touro St. Newport, RI 02840	Tel. No. 401-626-7208 ⊞
Name of Waterway: Narragansett Bay	Estimated Project Cost (EPC): Application Fee: NA ⊞

Provide Below a Description of Work As Proposed (*required*).

The proposed work will consist of constructing a pile supported stern offloading ramp alongside the existing Pier 1 to accommodate RO/RO vessels within the Port of Davisville. See attached project narrative for additional information.

Have you or any previous owner filed an application for and/or received an assent for any activity on this property?
(If so please provide the file and/or assent numbers): _____

Is this site within a designated historic district? ○ **YES** ◉ **NO**

Is this application being submitted in response to a coastal violation? ○ **YES** ◉ **NO**

If YES, you must indicate NOV or C&D Number: _____

Name/mailing addresses of adjacent property owners whose property adjoins the project site. Accurate mailing addresses will insure proper notification. ____ Applicant must initial to certify accuracy of adjacent property owners and accuracy of mailing addresses.

Seafreeze, Ltd. 2578 Davisville Rd. North Kingstown, RI 02852 ⊞

GFOE, 2580 Davisville Rd. North Kingstown, RI 02852 ⊞

STORMTOOLS (Http://www.beachsamp.org/resources/stormtools/) is a planning tool to help applicants evaluate the impacts of sea level rise and storm surge on their projects. The Council encourages applicants to use STORMTOOLS to help them understand the risk that may be present at their site and make appropriate adjustments to the project design.

NOTE: The applicant acknowledges by evidence of their signature that they have reviewed the Rhode Island Coastal Resources Management Program, and have, where possible, adhered to the policies and standards of the program. Where variances or special exceptions are requested by the applicant, the applicant will be prepared to meet and present testimony on the criteria and burdens of proof for each of these relief provisions. The applicant also acknowledges by evidence of their signature that to the best of their knowledge the information contained in the application is true and valid. If the information provided to the CRMC for this review is inaccurate or did not reveal all necessary information or data, then the permit granted under this application may be found to be null and void. Applicant requires that as a condition to the granting of this assent, members of the CRMC or its staff shall have access to the applicant's property to make on-site inspections to insure compliance with the assent. This application is made under oath and subject to the penalties of perjury. 08/04

Steven J. King P.E., Managing Director, QDC
Owner Name (PRINT)

Owner's Signature (SIGN)

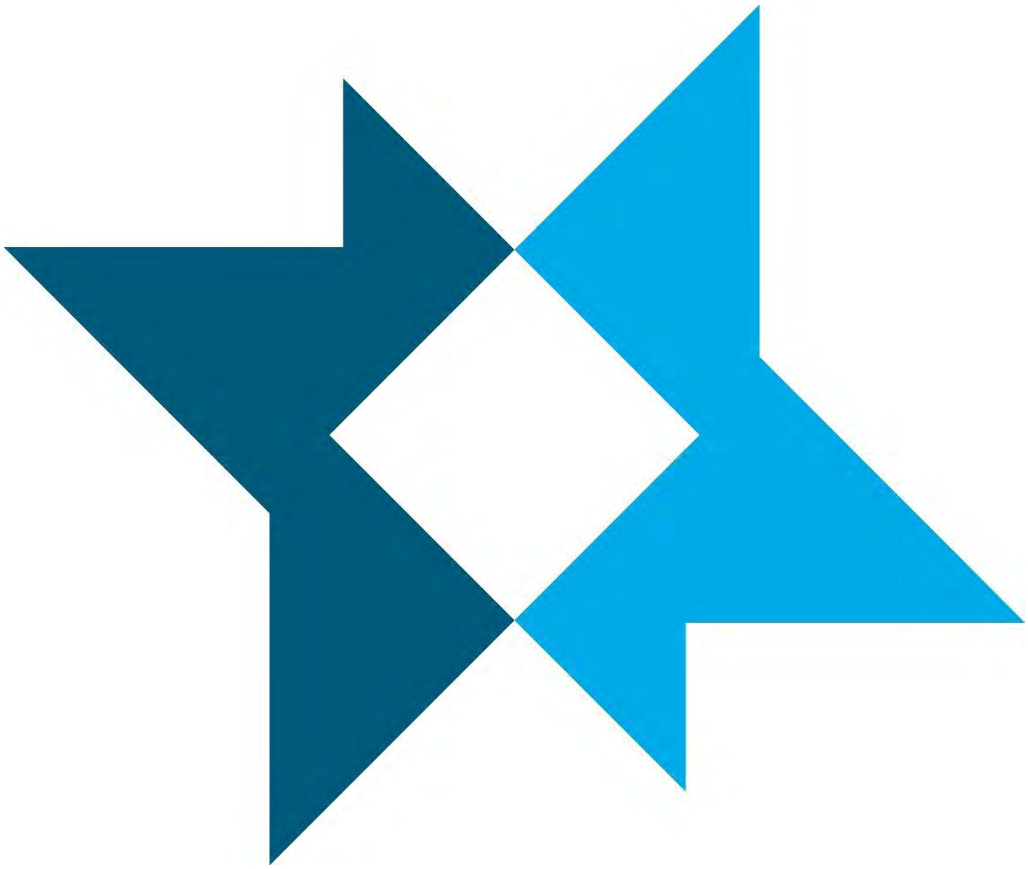
PLEASE REVIEW REVERSE SIDE OF APPLICATION FORM

RECEIVED
5/5/2025
COASTAL RESOURCES MANAGEMENT COUNCIL

Foth

Permit Application

Port of Davisville
Pier 1 Stern Ramp



Quonset Development Corporation

North Kingstown, Rhode Island

April 2025

Project ID: 0024Q003

Solving our clients' toughest science and engineering challenges.

114 Touro Street
Newport, RI 02840
(401) 236-0360
foth.com

April 18, 2025

Richard Lucia
Rhode Island Coastal Resources Management Council
4808 Tower Hill Rd. #116, Wakefield, RI 02879

Re: Port of Davisville Pier 1 Stern Ramp
Quonset Development Corporation, North Kingstown, RI

Dear Mr. Lucia:

On behalf Quonset Development Corporation (QDC), Foth Infrastructure & Environment, LLC (Foth) respectfully requests your review of the attached permit application for the installation of a new stern ramp along the north face Pier 1 within the Port of Davisville (Port). The proposed stern ramp would allow the Port more flexibility to accommodate stern door offloading Roll-On/Roll-Off (RO/RO) vessels. With the current configuration of Pier 1, the Port can only accommodate RO/RO vessels with quarter offloading stern ramps, which has become increasingly less common for RO/RO vessels. In order to remain current with industry trends and continue to service the same capacity of vessels which currently call on the Port, the QDC must provide a solution to accommodate stern door offloading vessels.

The proposed project is intended to provide an offloading stern ramp that will consist of similar design elements and construction techniques as the Pier 1 reconstruction projects that are currently underway.

This application is being submitted as part of the General Permit (GP) for the State of Rhode Island under Section 10 of the Rivers and Harbors Act of 1899. It is anticipated that the proposed project shall fall under the U.S. Army Corp of Engineers (USACE) Programmatic General Permit (PGP) No. 4 for the installation of pile-supported structures & floats and other miscellaneous structures, Pre-Construction Notification (PCN) as well as a Rhode Island Coastal Resources Management Council (RI CRMC) Category B Assent. Pursuant to past practice, QDC respectfully requests that the scheduled CRMC Application Fee for the proposed Pier 1 Stern Ramp project be waived. Thank you for your attention to this request.

Sincerely,
Foth Infrastructure & Environment, LLC

Kaitlyn Cross
Project Manager

Wendy Rocha
Market Leader – Ports and Harbors

cc: Mr. Steven. J. King, P.E. Managing Director/QDC, Mr. Gregory J. Coren, P.E., Manager of Engineering/QDC, Mr. Christian Jones, Special Port Projects Manager/QDC

Port of Davisville Pier 1 Stern Ramp

Project ID: 0024Q003

Prepared for

Quonset Development Corporation

95 Cripe Street
North Kingstown, RI 02852

Prepared by

Foth Infrastructure & Environment, LLC

April 2025

114 Touro St. • Newport, RI 02840 • (401) 236-0360
foth.com

Port of Davisville Pier 1 Stern Ramp

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1. Introduction

The Quonset Development Corporation (QDC) is proposing the installation of an approximately 108-foot wide by 82-foot long (7,800 +/- SF) pile supported stern ramp on the north side of Pier 1 located within the Port of Davisville as detailed below in Figure 1. The proposed stern ramp is to be supported by approximately thirty-two (32) 24-inch diameter steel pipe piles. Twenty (20) 12-inch timber piles are also proposed to be installed at the end of the ramp as part of the fender system. The proposed stern ramp will provide the Port the ability to continue to service the existing Roll-On/Roll-Off (RO/RO) industry through the creation of berthing space for stern offloading vessels. With the current configuration of Pier 1, the Port can only accommodate vessels with quarter offloading stern ramps are able to use the port, which have become less common in recent years. The project is located in the Port of Davisville (the Port) within the Quonset Business Park (QBP) in North Kingstown, Rhode Island (RI) (Figure 1). The proposed improvements are located on Plat 193, Lot 026 on the North Kingstown Assessors Map and at Lat. 41° 36' 46.49" N Long. 71° 24' 27.51" W along Narragansett Bay. A Project locus map is provided in Attachment A.

Figure 1: Proposed Project Location

As part of this project, the QDC is requesting the following agency actions:

- United State Army Corps of Engineers (USACE) Programmatic General Permit (PGP) for the installation of a fixed pile supported structure within the existing RI CRMC perimeter limit of the facility. The project is intended to be classified as a PGP No. 4 under a Pre-Construction Notification (PCN) for the installation of pile-supported structures & floats and other miscellaneous structures.

- Rhode Island Coast Resource Management Council (RI CRMC) Category B Assent for Commercial/Industrial Structures.
- The proposed Pier 1 stern ramp shall be an extension of the Pier 1 North rehabilitation authorized under CRMC Maintenance Application # M2024-03-015.
- As part of this application the QDC requests the modification of the existing CRMC Permitter Limit for the Port of Davisville to include the Pier 1 stern ramp. Proposed CRMC Permitter Limit modification is detailed within Attachment A.

1.1 Project Site

The proposed project location consists of the redevelopment of the approximately 108-feet of face along the north side of Pier 1 with the extension of Pier 1 approximately 82-feet northerly into the Narragansett Bay. The current project site consists of unoccupied deepwater utilized for vessel berthing. Figure 2 below details the proposed improvement location.

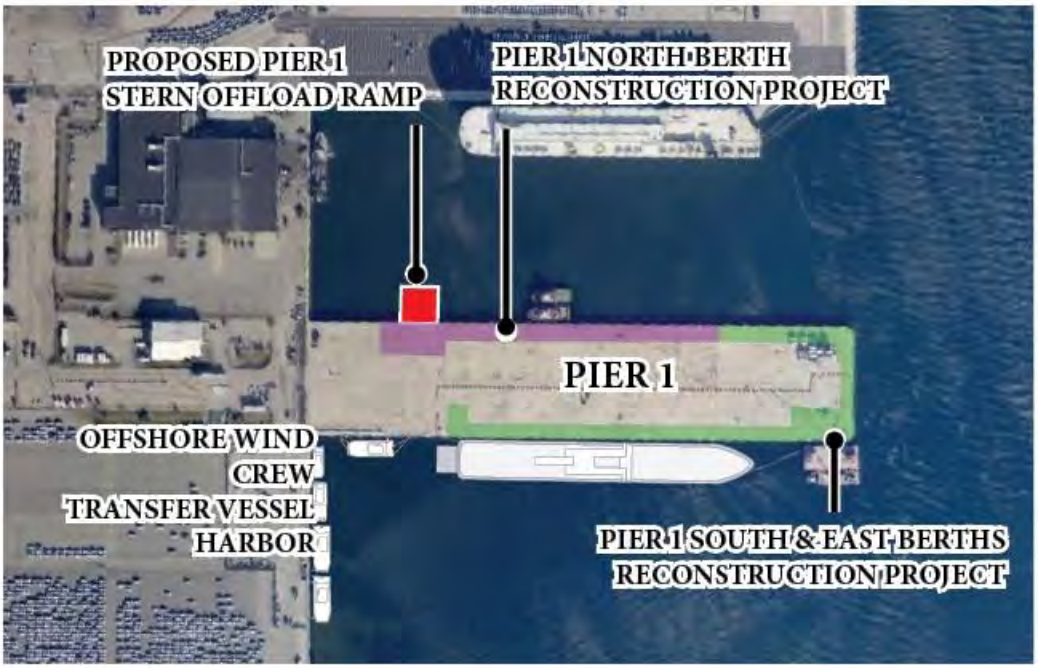


Figure 2: Proposed Pier 1 Stern Offloading Ramp Location

1.2 Purpose

The improvements QDC is making to the Port of Davisville create redundancy, flexibility, and resiliency at the Port. Currently, vehicles are brought to the Port of Davisville on RO/RO vessels in the Pure Car Carrier (PCC) Class. These vessels contain a stern quarter ramp, arranged at approximately a 30-degree angle from the vessel's center line. However, there is reportedly a shortage of PCC class RO/RO vessels available to call to east coast ports, which is causing carriers to seek other vessel types to be able to supply finished automobiles to the United States. During the COVID-19 pandemic and subsequent microchip shortage, when production of finished automobiles was reduced, the RO/RO vessels that were taken out of use due to age or condition were not replaced by carriers.

In addition, there has been a greater demand for the remaining PCC class RO/RO vessels in the far east trade, further impacting the capacity of the PCC RO/RO market. To overcome the PCC RO/RO shortage, solutions included changing the transportation mode or utilizing different vessel types. Carriers have

already begun utilizing smaller RO/RO vessels, equipped with side and/or stern off-load ramps. Currently, the Port facility operates at a top of deck elevation of approximately +8.95' North American Vertical Datum of 1988 [NAVD88] (+12.0' QVD / +11.13' mean low water [MLW]), which is too high for efficiently, safely, and predictably using a vessel's stern offload ramps.

This project is vital to the continued operations of the Port at its existing call capacity. Currently, the Port supports approximately $375 million in business output within the State of Rhode Island. In addition, the Port operations support over 1,650 jobs with over $97 million in household earnings withing the State of Rhode Island. To continue this industry is to continue to support Rhode Island's and the regional economy.

1.3 Scope of Work

The proposed stern ramp will consist of similar design elements and construction techniques as the Pier 1 Reconstruction projects that are currently underway and the recently completed Pier 2 extension. The structure is anticipated to be approximately 108-foot wide by 82-foot long (7,800 +/- SF) and will be supported by approximately fifty (50) 24-inch diameter coated steel pipe piles driven to refusal. The proposed pile caps are expected to be reinforced pre-cast concrete units, topped with pre-cast concrete deck panels and a cast-in-place concrete topping slab & curb. The easterly portion of the stern ramp will be sloped from the existing Pier 1 deck elevation of +12.0' QVD down to +6.0' QVD to accommodate the ship stern ramps during all tide cycles. Twenty (20) timber piles are also proposed to be installed around the bottom of the stern ramp slope as part of the fendering system. The piles, concrete, and any ancillary components will be designed for marine exposure and will have a 50-year minimum design life. Work is planned to be phased to align with the ongoing construction of the north side of Pier 1 to reduce the need to additional demolition.

2. Alternative Analysis

This section describes the alternatives that were developed in support of the Pier 1 Stern Offloading Ramp. A total of 5 different alternatives were explored for possible accommodation of stern offloading RO/RO vessels to use the port.

2.1 Alternative 1 – Pier 1 South Stern Ramp

Alternative 1 explored the opportunity of constructing the Pier 1 Stern Offloading Ramp on the south side of Pier 1, as detailed below in Figure 3.

Figure 3: Alternative Location 1

Initially considered as the preferred location for the Pier 1 Stern Ramp, the development of the Terminal 4 bulkhead into a crew vessel transfer hub has led to the proposed relocation of the Stern Ramp to the north side of Pier 1. Relocating the stern ramp to the north side of Pier 1 better aligns with the ongoing operations of port tenants such as Seafreeze Ltd., as opposed to the CTV operations on the southern side of Pier 1. This strategic shift not only optimizes the use of available space but also significantly enhances the capacity for offshore wind development. By relocating the Stern Ramp to the north side of Pier 1 QDC is able to increase space and availability for offshore wind growth, positioning the State of Rhode Island as a leader in the renewable energy industry. The expansion of offshore wind infrastructure will also create numerous job opportunities within the State of Rhode Island. In addition to the optimization of space for the existing offshore wind development, aligning the stern ramp on the north side of Pier 1 reduces the amount of required demolition. Since the work on the south side of Pier 1 was completed in 2024, constructing the stern ramp on the south side would necessitate the unplanned demolition of a newly built structure. To mitigate this, the QDC plans to strategically phase the proposed stern ramp construction to align with the ongoing construction on the north side of Pier 1. This approach aims to minimize additional demolition and leverage the current construction activities.

2.2 Alternative 2 – Construct Stern Ramp at Terminal 4

Alternative 2 considered the modification of the existing Terminal 4 to support the Stern Offloading location, as detailed in Figure 4 below. This alternative would require significant modification to the existing

bulkhead, including the lowering of the deck elevation to safely support the stern ramps. This would increase the Port of Davisville's susceptibility to sea level rise and coastal storms.

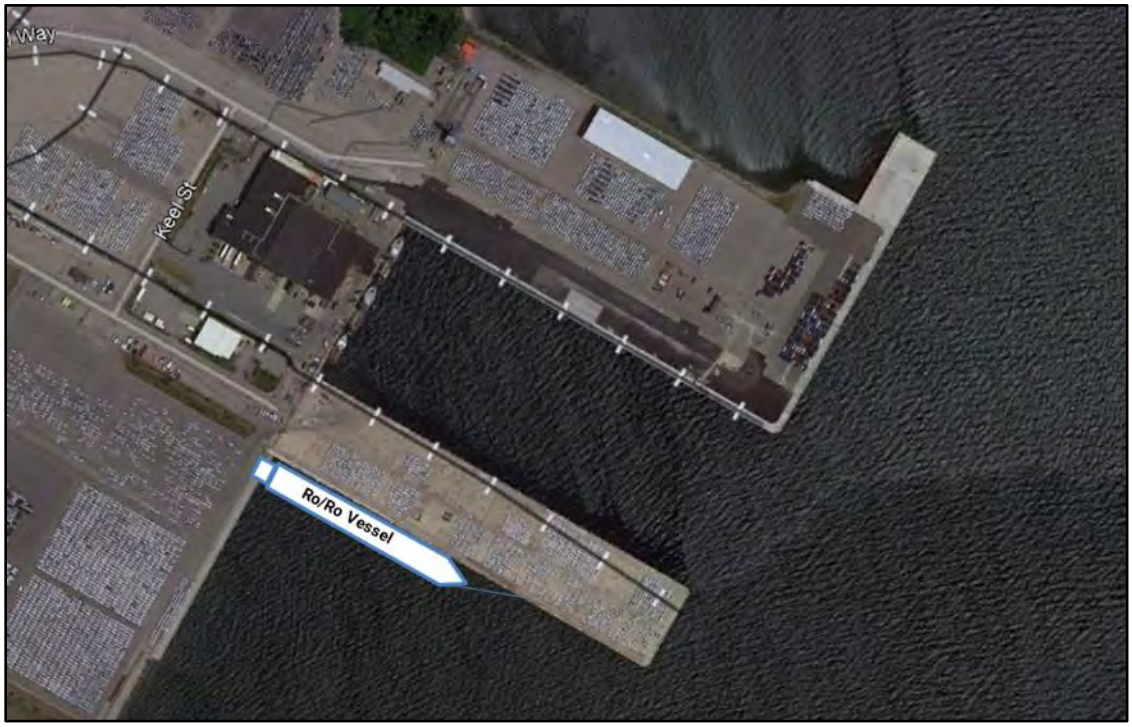


Figure 4: Alternative 2 Location

In addition, the existing mudline elevations immediately adjacent to the Terminal 4 bulkhead range from approximately +1.29' NAVD88 (-1.76' QVD /-0.89' MLW / -1.04' MLLW) to -5.10' NAVD88 (-8.15' QVD / -7.28' MLW / -7.43' MLLW). RO/RO vessels require a minimum operating depth at the Port of -32.0' MLLW to maintain safe operations. This would result in a significant dredging and associated benthic habitat impacts. Additionally, the adjacent bulkhead along the eastern face of Terminal 4 is not designed to the depths that would be required by the dredging. Lastly, this area is currently leased by port tenant and utilized to support the Crew Transport Vessels (CTVs) which service the offshore wind industry. The utilization of this area for the offloading ramp would require that an existing port tenant vacate the area and infrastructure contracted for their use be demolished.

Due to the direct impact on the Rhode Island economy, habitat, and Port safety, this alternative was not considered beneficial or effective.

2.3 Alternative 3 – Construct Stern Ramp at Pier 2 Extention

Alternative 3 considered the utilization of the West side of the Pier 2 extension for stern offloading, as detailed in Figure 5. This alternative presents the same infrastructure challenges as Alternative 2 and would require significant improvements to support the use of stern offloading vessels as well as the reduction in deck elevation. This alternative would require the construction of mooring and/or breasting dolphins to support this berth location. This would extend the footprint of the Port into the Narragansett Bay and create impacts outside of the currently industrialized limits of the Port. These challenges would not only result in costly repairs to a recently completed infrastructure project, but also leave the Port susceptible to Sea Level Rise and coastal storms.

In addition, the existing mudline elevations immediately adjacent to the Pier 2 extension range from approximately -4.67' NAVD88 (-7.72' QVD / -6.85' MLW / -7.0' MLLW) to -10.67' NAVD88 (-13.72' QVD / -12.85' MLW / -13.0' MLLW). RO/RO vessels require a minimum operating depth at the Port of -32.0' MLLW to maintain safe operations. This would result in a significant dredging and associated benthic habitat impacts. The area located West of the Pier 2 extension is also considered to be a protected aquatic habitat. Turbidity resulting from the required dredging could create a direct impact to the habitat and species which utilize this area. Due to the direct impact on habitat and Port safety, this alternative was not considered beneficial or effective.

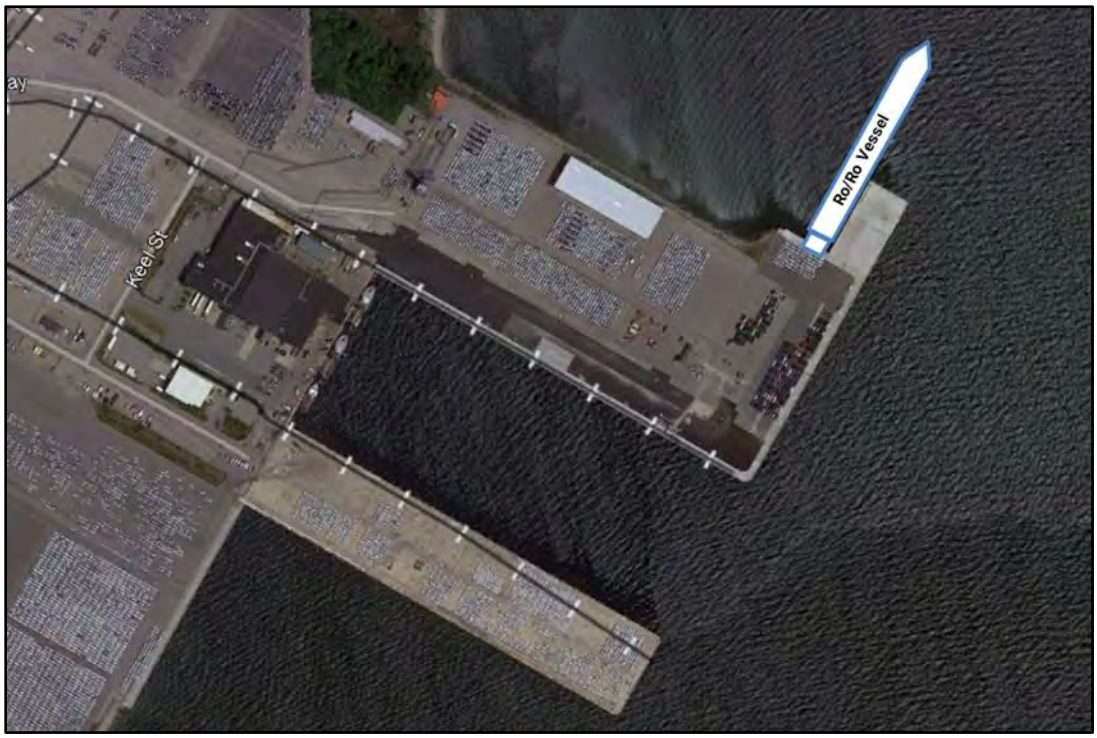


Figure 5: Alternative 3 Location

2.4 Alternative 4 – Retrofitting Piers 1 or 2

The last alternative considered was the retrofitting of either Pier 1 or Pier 2 to support the stern offloading. Similar to Alternative 2 and 3, this alternative would reduce the existing deck height of the Port and leave infrastructure susceptible to Sea Level Rise and coastal storms. Similar to Alterative 3, this alternative would require the construction of mooring and/or breasting dolphins to support this berth location. Although these structures would be confined within the currently industrialized limits of the Port, the resulting infrastructure would create navigational hazards and impacts to the Ports day-to-day operations by limiting the maneuverability of the vessels which traverse the existing berths. Due to the direct impact on Port and public safety, this alternative was not considered beneficial or effective.

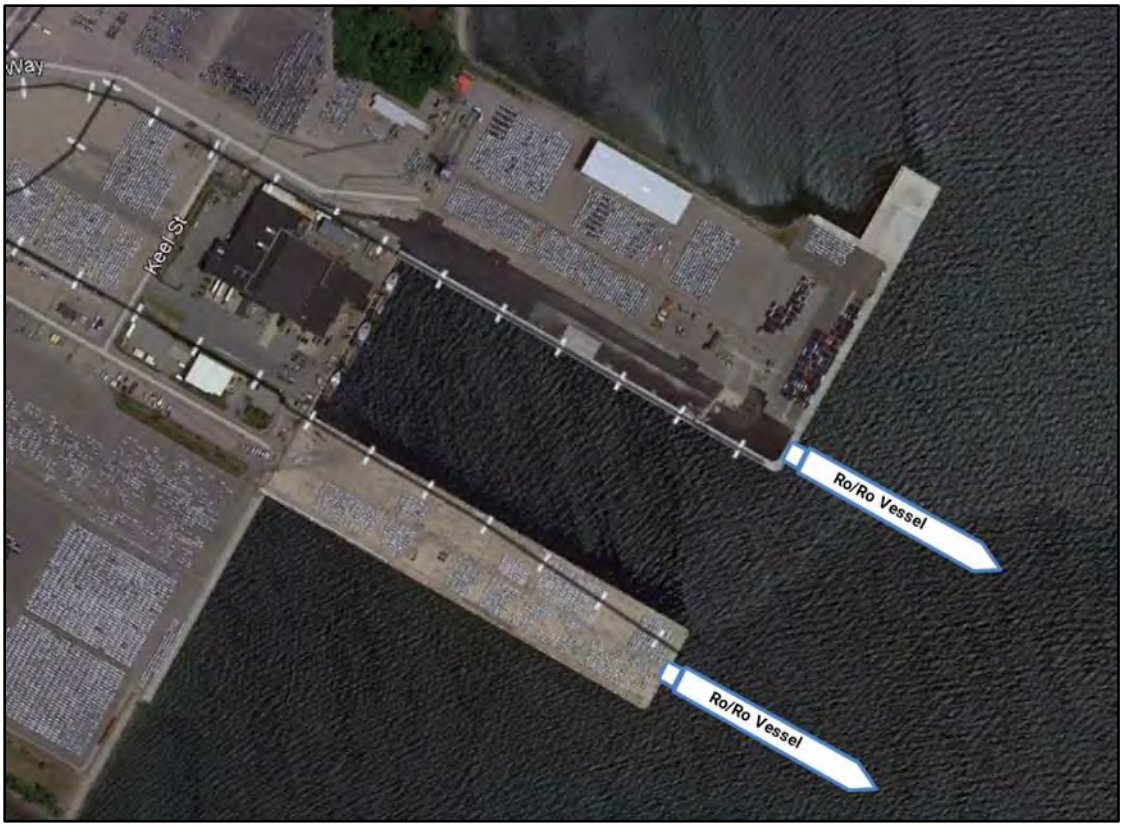


Figure 6: Alternative 4 Location

2.5 Alternative 5 – No action

A No Action Alternative would propose no improvements to the Port and no change to its loading or unloading capabilities. No Action would not allow the Port facility to efficiently and safely service the new cargo vessels which would result in diminished offloading operations. Without a variety of birthing options, port cargo through-put would be restricted, hampering the Port's competitiveness. As one of the top ten finished automobile import ports in North America, this would directly impact Rhode Island's economy.

3. Mitigation Measures and Permits

All special or supplemental requirements identified in permitting documents shall be adhered to during the construction process. Best management practices will be followed during construction. The proposed site is located within an active Port and an industrial/commercial business park. The following mitigation measures will be taken to minimize adverse impacts associated with the proposed project.

3.1 Threatened and Endangered Species

The QDC has considered and will implement the following effects of the project on sturgeon and sea turtles:

- For activities that increase levels of suspended sediment, the use of silt management and/or soil erosion best practices shall be implemented.
- All debris generated during construction shall be removed from the site and disposed of at an appropriate upland disposal location in accordance with all local, State, and Federal laws and regulations.
- The extent of the project disturbance and ground disturbance shall be limited to the minimum necessary during construction.
- Appropriate BMPs shall be implemented throughout the project site.
- For activities that may affect underwater noise levels, the use of a soft start, cushion blocks, and/or other noise attenuating tools shall be used to avoid reaching noise levels that will cause injury or behavioral disturbance to sturgeon and sea turtles. The table below shall be referenced in regard to noise criteria for injury/behavioral disturbance in sturgeon and sea turtles.

Table 3-1
Behavioral and Physiological (Injury) Thresholds for ESA-Listed Species in NMFS' Greater Atlantic Region

Species	Thresholds	Units
Sturgeon Behavioral	150	dB re 1 µPA RMS
Sturgeon Physiological	206	dB re 1 µPA Peak
Sturgeon Physiological (>2g)	187	dB re 1 μPa^2s cSEL
Sturgeon Physiological (<2g)	183	dB re 1 µPa2s cSEL
Sea turtle Behavioral	175	dB re 1 µPA RMS
Vibratory – Sea Turtle Permanent Threshold Shift (PTS, SEL cumulative)	220	dB re 1 µPa2s SEL
Impact - Sea Turtle Permanent Threshold Shift (PTS, SEL cumulative)	204	dB re 1 μPa^2s SEL
Impact - Sea Turtle Permanent Threshold Shift (PTS, Peak SPL)	232	dB re 1 µPA Peak
Vibratory - Marine Mammal Behavioral	120	dB re 1 µPA RMS
Impact – Marine Mammal Behavioral	160	dB re 1 µPA RMS
Vibratory – LF Cetacean Auditory Injury (SEL cumulative)	197	dB re 1 µPa2s SEL
Vibratory – HF Cetacean Auditory Injury (SEL cumulative)	201	dB re 1 µPa2s SEL
Vibratory – VHF Cetacean Auditory Injury (SEL cumulative)	181	dB re 1 µPa2s SEL
Vibratory – PW Pinniped Auditory Injury (SEL cumulative)	195	dB re 1 µPa2s SEL
Vibratory – OW Pinniped Auditory Injury (SEL cumulative)	199	dB re 1 µPa2s SEL
Impact – LF Cetacean Auditory Injury (SEL cumulative)	183	dB re 1 µPa2s SEL

Impact – HF Cetacean Auditory Injury (SEL cumulative)	193	dB re 1 µPa2s SEL
Impact – VHF Cetacean Auditory Injury (SEL cumulative)	159	dB re 1 µPa2s SEL
Impact – PW Pinniped Auditory Injury (SEL cumulative)	183	dB re 1 µPa2s SEL
Impact – OW Pinniped Auditory Injury (SEL Cumulative)	185	dB re 1 µPa2s SEL
Impact – LF Cetacean Permanent Threshold Shift (PTS, Peak SPL)	222	dB re 1 µPA Peak
Impact – MF Cetacean Permanent Threshold Shift (PTS, Peak SPL)	230	dB re 1 µPA Peak
Impact – HF Cetacean Permanent Threshold Shift (PTS, Peak SPL)	202	dB re 1 µPA Peak
Impact – PW Pinniped Permanent Threshold Shift (PTS, Peak SPL)	223	dB re 1 µPA Peak
Impact – OW Pinniped Permanent Threshold Shift (PTS, Peak SPL)	230	dB re 1 µPA Peak

Notes:
cSEL = cumulative sound exposure levels
dB = decibel
g = gram
PTS = Permanent Threshold Shift
RMS = root mean square
SEL = sound exposure level
SPL = sound pressure level
TTS = Temporary Threshold Shift
µPA = micro-Pascal

The maximum extents of the sound wave have been estimated using the GARFO Acoustic Tool in order to calculate the estimated SEL limits based on the design parameters. The governing threshold criteria for this project was determined from the table mentioned above. The agreed upon criteria identify sound pressure levels of 150 dB for Sturgeon behavioral threshold (vibratory hammer) as well as sound pressure levels of 206 dB peak and 187 dB accumulated SEL for Sturgeon (impact hammer). For vibratory pile driving, only behavioral thresholds exist for fish. For Sea Turtles, the agreed upon criteria identify sound pressure levels of 175 dB for behavioral threshold and 220 dB cumulative SEL PTS onset (vibratory hammer), and sound pressure levels ranging from 232 dB Peak to 204 dB cumulative SEL PTS onset (impact hammer).

Estimated SEL and SPL limits were calculated using 24” steel pipe piles and 12” timber piles for the Stern Ramp. A full detailed report of the impacts determined by the GARFO Tool can be found in Appendix F. It is the intent of the contractor to drive the piles using a vibratory hammer to the maximum extent possible followed by impact driving to the specified embedment depth for the steel pipe piles.

The potential impacts of this project are minimal based on the overall impact area of the project. Nevertheless, QDC shall implement the following additional mitigation measures into the proposed project to reduce any adverse impacts:

- Soft start pile driving/removal will be conducted. This is expected to protect any threatened or endangered species that may be in the project vicinity.
- The piles will be driven utilizing a vibratory hammer to the maximum extent possible with the least amount of impact driving possible, which is not expected to exceed NMFS specifications regarding dBs noise levels.
- The extent of the project disturbance and ground disturbance shall be limited to the minimum necessary during construction.
- All debris generated during construction shall be removed from the site and disposed of at an appropriate upland disposal location in accordance with all local, State, and Federal laws and regulations.
- Appropriate BMPs shall be implemented throughout the project site.

3.2 Erosion Controls

The proposed action will have little to no effect to the physical environment during the pile driving activities; these impacts are anticipated to last only during the construction period and be limited to the proposed footprint of the stern ramp. No long-term or cumulative impacts to the physical environment are anticipated. The short-term impacts on the physical environment due to construction will be minimized with the implementation of best management practices (BMP), and mitigation measures specified in the required permits. In summary, the physical impacts from this project have minimal adverse impacts and are anticipated to be limited to construction activities.

Erosion controls, such as silt fencing and turbidity barriers, will be placed as necessary to minimize impacts of silt or suspended sediments from impacting waterways. These will be erected prior to starting work when required, and their effectiveness must be maintained until all work at the site is completed and the area has been stabilized against erosion.

3.3 Regulated Resources

Section 404 of the Federal Clean Water Act and Section 10 of the Federal Rivers and Harbors Act of 1899 give the U.S. Army Corps of Engineers (USACE) authority to regulate work and structures located in or that affect navigable waters of the United States. The waters adjacent to Pier 1 is considered both "waters of the U.S." and "navigable waters of the U.S." as defined in the above referenced Acts and are therefore under the jurisdiction of the USACE.

The Rhode Island Water Quality Regulations have classified the waters adjacent to Pier 1 as Class SB waters 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, navigation, and industrial cooling.

The proposed project will not negatively affect the objectives of CRMC, and in fact, conform to CRMC's stated purpose of Type 6 designated waters. Coastal zone environmental concerns, such as wetlands, historic preservation, public access and nonpoint pollution control, will not be adversely impacted. Wildlife habitat is anticipated to have no long-term impacts due to the location and existing nature of the site within the Port.

No wetlands are located on or adjacent to the pier. The nearest wetlands are approximately 0.3 miles from the Property. One is located to the north of the site while the other is located to the southwest of the site. Both consisting of freshwater forested/shrub wetland along the Narragansett Bay. The proposed work will not impact wetlands, either in the short-term or long term.

3.4 CRMC Category B and Climate Change Requirements

3.4.1 RI CRMC Management Program Section 1.3.1.A Category B Requirements

1. Demonstrate the need for the proposed activity or alteration;

- Please refer to Section 1.4, Purpose and Need.
- Currently, vehicles are brought to the Port of Davisville on RO/RO vessels in the Pure Car Carrier (PCC) Class. These vessels contain a stern quarter ramp, arranged at approximately a 30-degree angle from the vessel's center line. However, there is reportedly a shortage of PCC class RO/RO vessels available to call to east coast ports, which is causing carriers to seek other vessel types to be able to supply finished automobiles to the United States. Currently, the Port facility operates at a top of deck elevation of approximately +8.95' North American Vertical Datum of 1988 [NAVD88] (+12.0' QVD / +11.13' mean low water [MLW]), which is too high for efficiently, safely, and predictably using a vessel's stern offload ramps.

2. **Demonstrate that all applicable local zoning ordinances, building codes, flood hazard standards, and all safety codes, fire codes, and environmental requirements have or will be met;**

- The QDC developed a Master Land Use and Development Plan, which was reviewed and approved by the CRMC. This plan identifies the POD as "Waterfront Space and Marine Trades" for future development. Proposed land use includes the continuation of existing uses at the piers through auto importing, exporting, and temporary parking; and seafood transporting and processing; and new industrial and office uses including those that are water dependent. The proposed project is consistent with the above referenced Master Plan.

- The QBP was established through unique state legislation for the primary purpose of managing the land transferred to the State by the Navy upon closure of the former Quonset Naval Air Station and the Davisville Navy Construction Battalion Center. The purpose of the QBP is to activate the transferred land for large-scale economic development. As QBP is owned by the State and operated by QDC, a quasi-state agency, land use control rests with QDC. According to the Town of North Kingstown Code of Ordnance (Sec. 21-100, dated January 15, 2021) the proposed site location is classified under the QBP district. According to the Town Ordinance, "Development proposals in the QBP shall be reviewed under the procedures and standards located in the Quonset Business Park Development Package […]." [Sec. 21-100(c)]. The Quonset Business Park Development Package is adopted by the QDC Board of Directors and considered a state regulation. The QDC, as steward of the QBP, is an integral part of the Town's and the State's overall fiscal and economic viability as a provider of tax revenue and jobs.

- No negative long-term impacts to land use at the project site are anticipated. Land use and zoning will remain the same, appropriate for port and industrial uses. Surrounding land use will not be negatively impacted by the project. In the long-term, the development of the facility will positively impact land use, allowing the pier to overcome the PCC class RO/RO vessel shortage and utilize different vessel types. Additional beneficial cumulative socioeconomic impacts will be realized long-term by the increased operations at the Port and the associated increased job generation and tax revenue directly related to Rhode Island's and the regional economy.

- In the short-term, during construction, pile driving activities will affect the use of the site as well as the temporary impacts due to shoring. Due to the short duration of construction, this will not pose notable impacts to any local ordinances.

3. **Describe the boundaries of the coastal water and land area that is anticipated to be affected;**

- Please see Section 3.3, Regulated Resources.

- The proposed site is located within CRMC designated Type 6 waters. The proposed project will not negatively affect the objectives of CRMC. The proposed work is intended to conform with CRMC's stated purpose of Type 6 designated waters for industrial use. The project is in direct support of the CRMC policy to support modernization and increased commercial activity related to shipping. The highest priority uses of Type 6 waters and adjacent lands include the construction and maintenance of dock space and facilities required for the support of the ports existing industries. The proposed improvements support the current day-to-day and future operations of the facility and are consistent with the CRMC goals for Type 6 Waters.

4. Demonstrate that the alteration or activity will not result in significant impacts on erosion and/or deposition processes along the shore and in tidal waters;

- Please see Section 3.2, Erosion Control.
- The proposed work is proposed to consist of the construction of an overwater pile supported pier. The proposed structure is anticipated to be constructed along the northern side of the existing Pier 1 using like material and pile configuration. The proposed action will have little to no effect to the physical environment during the pile driving activities; these impacts are anticipated to last only during the construction period and be limited to the proposed footprint of the stern ramp. No long-term or cumulative impacts to the physical environment are anticipated.

5. Demonstrate that the alteration or activity will not result in significant impacts on the abundance and diversity of plant and animal life.

- Please see Section 3.1, Threated and Endangered Species.
    - Plate Life:
        I. Eelgrass – Based on the results of a desktop study of the Rhode Island Submerged Aquatic Vegetation from 2006, 2012, 2016, and 2021, it was indicated that eelgrass exists within the vicinity of the proposed project in one location. The closest known location of eelgrass is greater than 1.5 miles south of the proposed Pier 1 Stern Ramp located on the South face of the Quonset Airport.

        II. Wetlands – In accordance with the Rhode Island Geographic Information System (GIS) mapping tools and the Wetlands Inventory Mapper, Marine/Estuarine Unconsolidated shore and Estuarine Emergent wetlands are located approximately 1700 feet south of the proposed project site.

        III. Saltmarsh – In accordance with the Rhode Island GIS mapping tools, saltmarsh habitat, specifically mudflats, exists approximately 1100 feet south of the project site

    - Animal Life
        I. Shellfish – Waters adjacent to and outside of the project site are classified as Rhode Island DEM SA waters, which are designated for shellfish harvesting for direct human consumption, primary and secondary contact recreational activities, and fish and wildlife habitat. A shellfish survey, conducted by QDC, between October 1, 2024, and October 2, 2024, concluded that minimal shellfish were present and no relocation was necessary.

        II. Tautog (Tautoga onitus) – This species of fish lives in close association with structures such as rocks, wrecks, pilings, jetties, natural and artificial reefs, and other bottom discontinuities. They are active in the daytime and become quiescent at night, often retiring to shelter. Adult tautog migrate into Narragansett Bay in late April and remain through September and are

essentially absent in the Bay from late November to March. Spawning takes place within Narragansett Bay from May through August, and peak spawning occurs in June and July. Juvenile tautog are present from July through October in Narragansett Bay but likely begin settling in June. Construction activities are best conducted between mid-fall and mid-spring when adult fish are in deeper waters and no spawning is happening.

III. Winter Flounder – These fish are bottom dwelling fish. They are active during the day. Winter flounder make short seasonal migrations into shallower bays and estuaries in the fall and winter to span in the late winter-early spring. They may move offshore in response to warmer waters in the late summer-early fall or to sever cold in shallow bays in the winter, returning in spring to spawn. Winter flounder spawn from January through May in Narragansett Bay, with peak spawning occurring in February and March.

IV. Scup – These are a pelagic schooling fish and appear to school more closely at night. Narragansett Bay serves as a spawning ground and nursery area for the species with the latter being the more important function, as the Bay is a host to both young and juveniles. In addition, scup serves as a food source for weakfish, bluefish, and striped bass. The migration patterns for scup into and out of Narragansett Bay suggest that work should occur between November and April (Normandeau Associates, 1999).

V. Other Fish – Other Fish – The populations in Narragansett Bay include summer flounder, bluefish, and weakfish. The peak of bivalve larval occurs as water temperatures are around 68˚F, as summer progresses.

- In summary, the proposed project will not significantly impact the presently low abundance of plant life, nor will it impact its diversity. Since the work proposed within this application is located outside of plant life listed above, it is not anticipated that any adverse impacts will occur. The use of mitigation measures such as turbidity barriers will further emphasize this prevention. Temporary impacts to animal life are anticipated due to the construction activities, however, these impacts will be localized to the duration of construction. It is likely the any affected areas will be re-colonized by the benthic organisms found in the adjacent undisturbed sediments and the finfish will return to their habitat once construction reaches completion. Any impacts to the benthic habitat experienced by the proposed work are expected to recover and thereby restore the finfish food source.

6. Demonstrate that the alteration will not unreasonably interfere with, impair, or significantly impact existing public access to, or use of, tidal waters and/or the shore.

- The proposed improvements are located within the Port of Davisville, an active port facility with minimal to no public access or use. The entirety of the proposed site location is owned and operated by the QDC. It is not anticipated that the proposed work will unreasonably interfere with, impair, or significantly impact existing public access to, or use. In addition, construction activities are anticipated to be minimal and occur for a duration of six (6) months.

7. Demonstrate that the alteration will not result in significant impacts to water circulation, flushing, turbidity, and sedimentation.

- The proposed improvements will have no long-term impact to the water circulation, flushing, turbidity, and sedimentation at the site. Design considerations implanted to archive this include:
    - All pile spacing has been designed to provide reasonably unimpeded water flow. Pile bent spacing parallel with ebb and flow patterns has been designed at approximately 7 to 10 times the pile diameter in areas of open water flow.
    - The lowest horizontal structural support element proposed for the stern ramp is proposed to be built to an elevation of +3.45' NAVD88 at the bottom of the slope of the proposed ramp.
- Short-term impacts to circulation, flushing, turbidity, and sedimentation may occur due to construction activities. However, construction activities are anticipated to be localized to six (6) months and are expected to return to pre-construction conditions. Any short-term or temporary impacts to turbidity or sedimentation will be mitigated through the use of use of silt fencing and turbidity barriers.

8. Demonstrate that there will be no significant deterioration in the quality of the water in the immediate vicinity as defined by DEM.

- RI DEM classifies the waters around the proposed improvements as Class SB waters which are designated for primary and secondary contact recreational activities, shellfish harvesting for controlled relay and depuration, and fish and wildlife habitat. No permanent impacts are anticipated due to the proposed work. The proposed stern ramp is to be constructed in a way that matches the recent reconstruction of the north face of Pier 1 with similar piles. In addition, the proposed work is consistent with other structures found within the Port of Davisville, as well as other structures found within Class SB waters.
- Temporary impacts to water quality due to the installation of the Stern Ramp will not result in the discharge of pollutants that will violate Water Quality Standards. It is anticipated that Water Quality will be visually monitored throughout the course of work. Mitigation measures, such as silt fencing and turbidity barriers, will be placed as necessary to avoid impacts of suspended sediments into adjacent waterways.

9. Demonstrate that the alteration or activity will not result in significant impacts to areas of historic and archaeological significance.

- Rhode Island's Historical Society's Historic Preservation Database was reviewed to determine potential historical, architectural, and archaeological sites on or adjacent to the area of potential effect for this project. No historical, architectural, or archaeological sites were identified on or adjacent to the project site. The nearest historic listing identified was Camp Endicott Historic District located greater than 1.5 miles to the southwest, Allen-Madison House, located approximately 1.0 miles away on Post Road in North Kingstown, RI, and next the Davisville Historic District located over 3.0 miles west of the site.
- No short-term or long-term impacts to historic, archaeological, or cultural resources are anticipated within the project site. Due to the location and existing site use of the POD, it is not anticipated that local historic properties will be impacted by the proposed work. No ground disturbances, visible or audible disturbances, or changes in public access, traffic

patterns, or land use will occur within the vicinity of historic properties. As part of the USACE consultation for this application, The State Historic Preservation Office (SHPO) and Tribal Historic Preservation Office (THPO) will be contacted to initiate a 30-day comment period for the proposed project.

10. Demonstrate that the alteration or activity will not result in significant conflicts with water dependent uses and activities such as recreational boating, fishing, swimming, navigation, and commerce.

- The proposed improvements are within the active Port of Davisville and located within Type 6 Industrial Waterfronts and Industrial Waterfronts and
- Commercial Navigation Channels Commercial Navigation Channels. Due to the current use as an active port as well as the intended use of waters as industrial/commercial, it is anticipated that the proposed improvements will not hinder the public's use of the water resources in the area.

11. Demonstrate that measures have been taken to minimize any adverse scenic impact (see § 1.3.5 of this Part).

- The proposed improvements are not anticipated to have any adverse scenic impact. The proposed project is located within an industrialized business park. The proposed Stern Ramp is consistent with the surrounding port infrastructure. Other than the temporary visual impact of the construction within Narragansett Bay, the impacts to the site will be consistent with that of the POD and will not have an adverse scenic impact.

3.4.2 Section 1.1.10 Climate Change and Sea Level Rise Policies

1. The Council will review its policies, plans and regulations to proactively plan for and adapt to climate change and sea level rise. The Council will integrate climate change and sea level rise scenarios into its programs to prepare Rhode Island for these new, evolving conditions and make our coastal areas more resilient.
   - See Attachment C: Coastal Hazard Analysis (CHA) Worksheet.
2. The Council's sea level rise policies are based upon the CRMC's legislative mandate to preserve, protect, and where possible, restore the coastal resources of the state through comprehensive and coordinated long-range planning.
   - See Attachment C: CHA Worksheet.
3. The Council recognizes that sea level rise is ongoing, and its foremost concern is the accelerated rate of rise and the associated risks to Rhode Island coastal areas today and in the future. The Council recognizes that the lower the sea level rise estimate used, the greater the risk that policies and efforts to adapt sea level rise and climate change will prove to be inadequate. Therefore, the policies of the Council may take into account different risk tolerances for differing types of public and private coastal activities. In addition, the Council will regularly review new scientific evidence regarding sea level change.
   - See Attachment C: CHA Worksheet.

4. The Council relies upon the most recent NOAA sea level rise data to address both short- and long-term planning horizons and the design life considerations for public and private infrastructure. The Council's policy is to adopt and use the most recent sea level change scenarios published by NOAA (currently Technical Report NOS CO-OPS 083 (2017)), and the NOAA. sea level rise changes curves for Newport and Providence as provided in the U.S. Army Corps of Engineers online sea level rise calculator tool available at: http://corpsclimate.us/ccaceslcurves.cfm. The Council requires the use of the NOAA High scenario curve for projecting sea level rise for future conditions. In addition, the Council adopts and recommends use of the STORMTOOLS online mapping tool developed on behalf of the CRMC by the University of Rhode Island Ocean Engineering program to evaluate the flood extent and inundation from sea level rise and storm surge.

- See Attachment C: CHA Worksheet.

4. Performance Standards

The USACE states that in Rhode Island a project is eligible under a Pre-Construction Notification (PCN) of the General Permit (GP) if they are subject to USACE jurisdiction, meet the general conditions of the GPs and are regulated by the State and received all applicable State approvals. Since this project consists of the construction of pile-supported structures, the described work falls within GP-4. Projects within Rhode Island seeking PCN authorizations must comply with the general conditions and other Federal laws such as the National Historic Preservation Act, the Endangered Species Act and the Wild and Scenic Rivers Act.

The Rhode Island Water Quality Regulations (Regulations) describe several impacts to water quality that are not allowed as the result of any activity. The proposed installation of the pile supported stern ramp will not result in the discharge of pollutants that will violate Water Quality Standards, interfere with the above-listed uses, or violate the Antidegradation provisions of the Regulations.

It is CRMC's policy to support modernization and increased commercial activity related to shipping. The highest priority uses of Type 6 waters and adjacent lands include the construction and maintenance of berths and facilities required for the support of commercial shipping and fisheries. The construction of a stern ramp to allow for more readily available RO/RO vessels with stern unloading ramps to use the facilities at Pier 1 is consistent with the CRMC goals for Type 6 Waters.

The CZM program is administered by the CRMC which has determined that any project in the Coastal Area that is authorized under Category 1 of the Corp's PGP is consistent with the CZM program and does not require additional CZM review.

4.1 Air

All local, state, and federal requirements shall be adhered to maintain and preserve air quality in and around the vicinity of the proposed support docks and boat ramp during construction. In order to reduce any impacts due to the construction phase anti-idling and other measures to limit emissions from construction equipment shall be implemented. All construction equipment will be maintained in compliance with all applicable state and federal emission regulations. Equipment will not be idled without an operator in the cab.

4.2 Construction Methodology

The proposed work is expected to be completed using barge-mounted cranes, as determined by the selected contractor and approved by the Engineer. A general sequence of construction is provided below.

- The contractor will mobilize all equipment to the site which is expected to consist of crane and materials barges, driving hammers (Vibratory and impact), and support vehicles.
- Erosion and sediment control devices will be deployed as required.
- The new steel piles will be installed.
- New precast concrete pile caps will be installed on the steel piles.
- Precast concrete deck panels will be installed on the stern ramp piles.
- New concrete curbing and marine bollards/high-capacity foam fenders will be installed.
- Contractor will demobilize all materials, equipment, and personnel.
- Contractor will minimize impacts to coastal resource areas at all times during the proposed work.

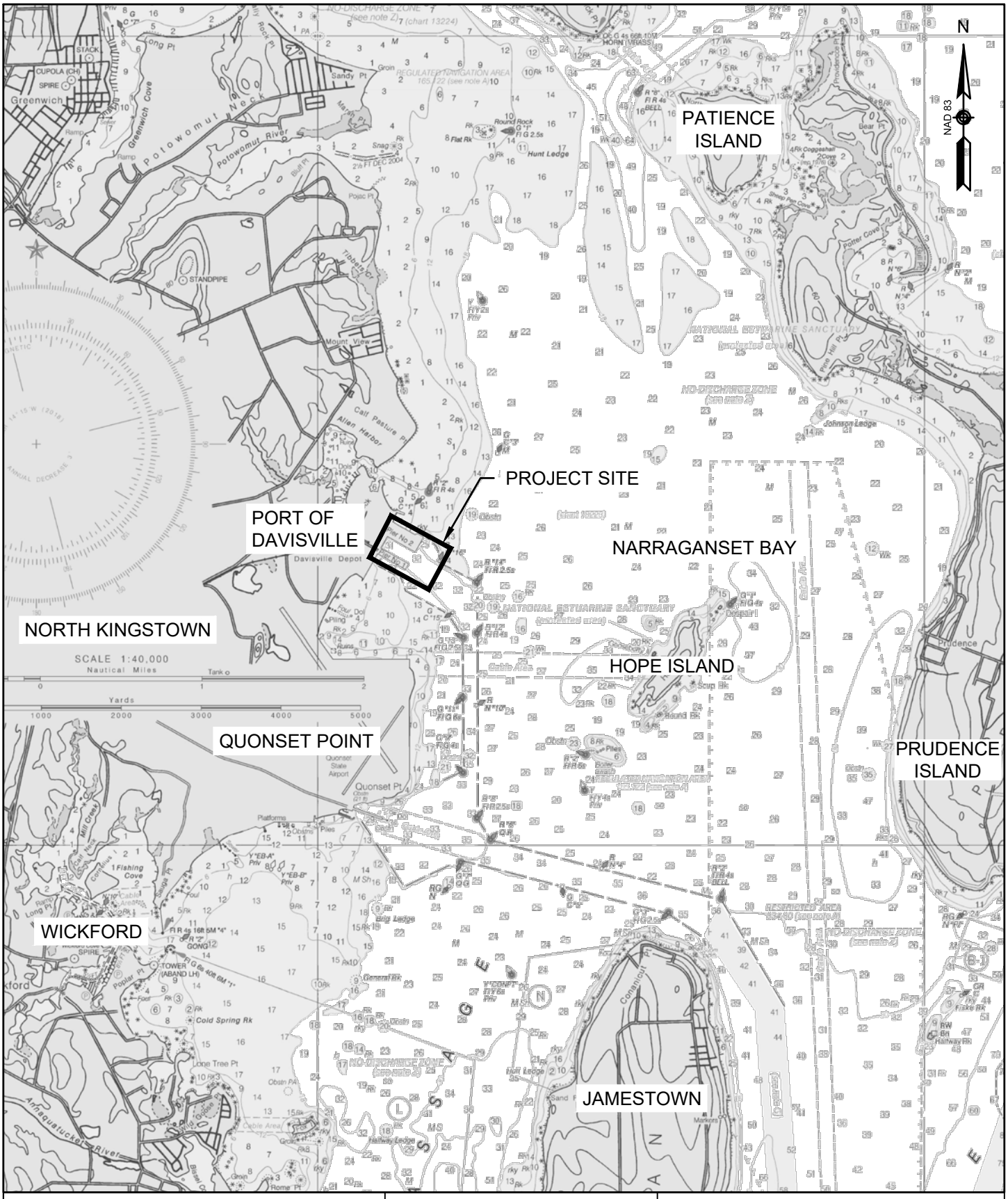
4.3 Summary of Mitigation Measures

The proposed construction of a new vessel stern ramp would be conducted as to minimize impacts to the surrounding coastal resource areas, as follows:

- Soft start pile driving/removal will be conducted. This is to protect any threatened or endangered species that may be in the project's vicinity.
- The piles will be driven utilizing a vibratory hammer to the maximum extent possible with the least amount of impact driving possible, which is not expected to exceed NMFS specifications regarding dBs noise levels.
- The extent of the project disturbance and ground disturbance shall be limited to the minimum necessary during construction.
- All debris generated as a result of the project construction shall be removed from the site and disposed of at an appropriate upland disposal location in accordance with all local, state, and federal laws and regulations.
- Appropriate BMPs shall be Implemented throughout the project site.
- All local, state, and federal requirements shall be adhered to maintain and preserve air quality in and around the vicinity of the proposed stern ramp during construction.
- To reduce any impacts due to the construction phase, anti-idling and other measures to limit emissions from construction equipment shall be implemented
- All construction equipment will not be idled without an operator in the cab.

Attachment A

Project Locus & Resource Plan



PURPOSE: PORT OF DAVISVILLE PIER 1 STERN OFFLOADING RAMP

DATUM: MLLW = -2.33' MHW = +1.62'
MLW = -2.18' MHHW= +1.88'
NAVD88 = 0.00'

FOTH INFRASTRUCTURE & ENVIRONMENT, LLC
114 TOURO ST. NEWPORT, RI 02840

PROJECT LOCUS

0' 2500' 5000'
SCALE: 1 INCH =5000FEET

PLAN ACCOMPANYING PETITION OF:
QUONSET DEVELOPMENT CORPORATION
NORTH KINGSTOWN, RI 02852

AT DAVISVILLE; NARRAGANSETT BAY
COUNTY OF: WASHINGTON

03/05/2025

SHEET 1 OF 2

RECEIVED
5/5/2025
COASTAL RESOURCES MANAGEMENT COUNCIL

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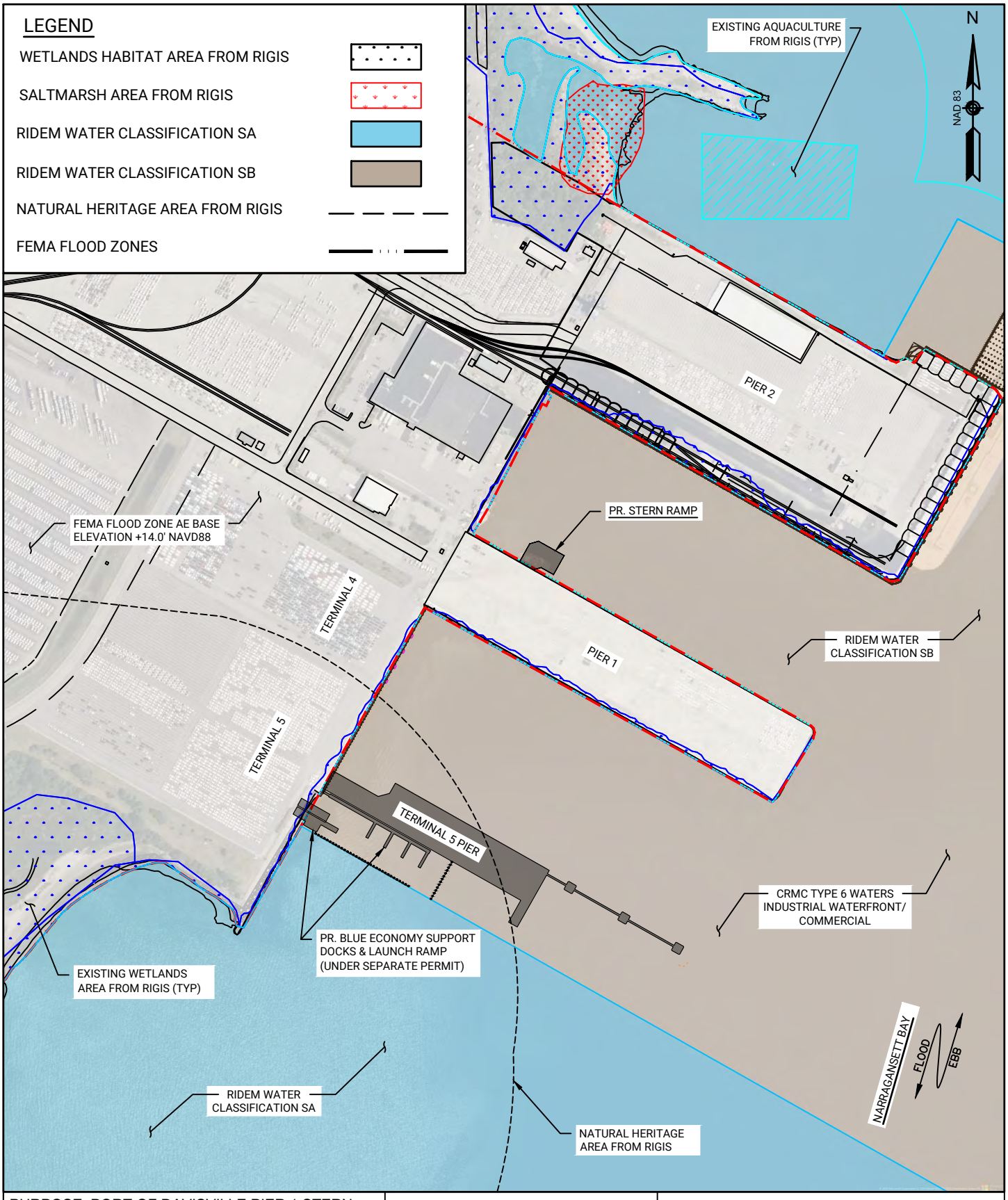

PURPOSE: PORT OF DAVISVILLE PIER 1 STERN OFFLOADING RAMP

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MLW = -2.18' MHHW= +1.88'
NAVD88 = 0.00'

FOTH INFRASTRUCTURE & ENVIRONMENT, LLC
114 TOURO ST. NEWPORT, RI 02840

RESOURCE PLAN

0' 200 400
SCALE: 1 INCH = 400 FEET

PLAN ACCOMPANYING PETITION OF:
QUONSET DEVELOPMENT CORPORATION
NORTH KINGSTOWN, RI 02852

AT DAVISVILLE; NARRAGANSETT BAY
COUNTY OF: WASHINGTON

03/05/2025

SHEET 2 OF 2

RECEIVED
5/5/2025
COASTAL RESOURCES MANAGEMENT COUNCIL

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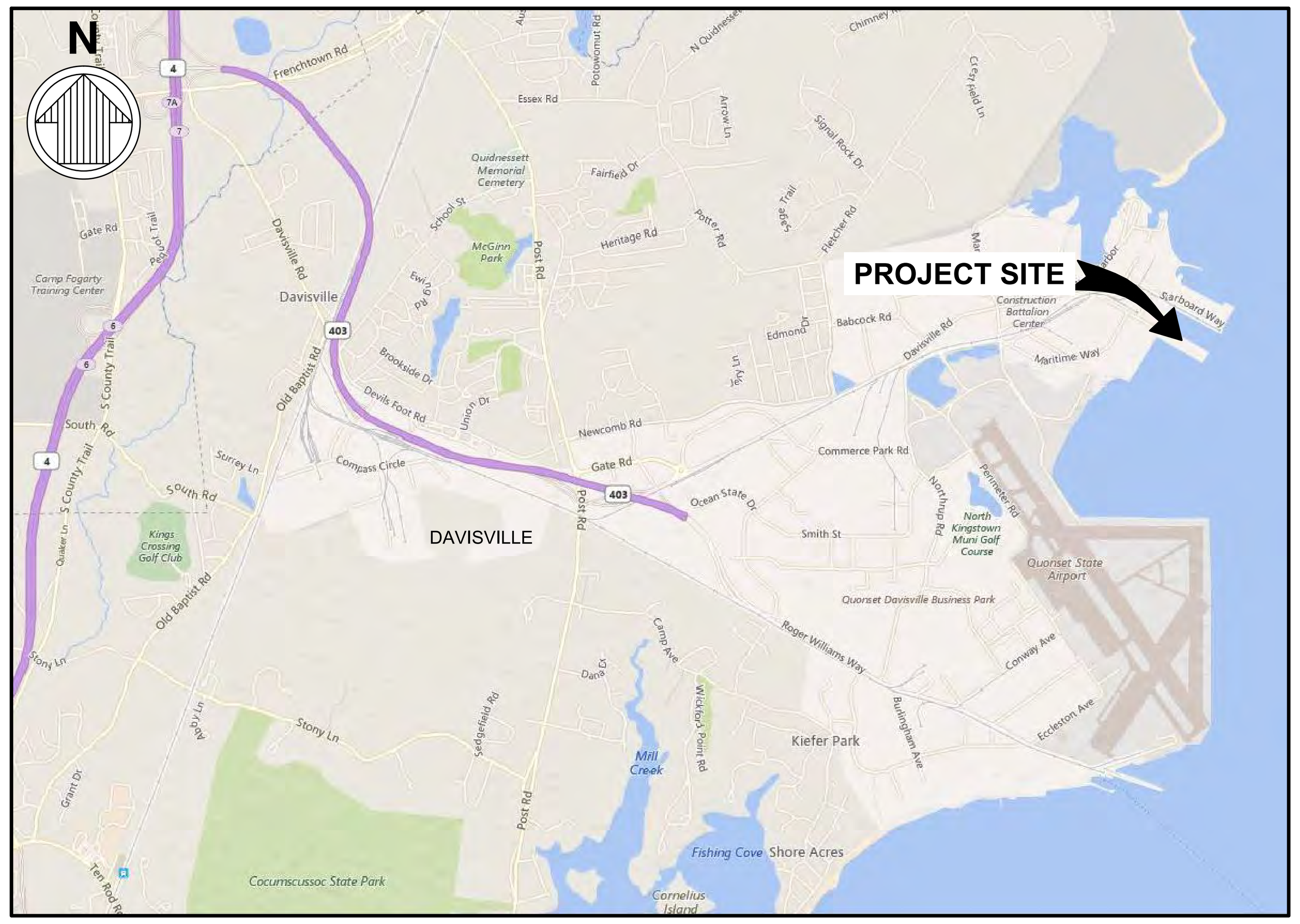
Attachment B

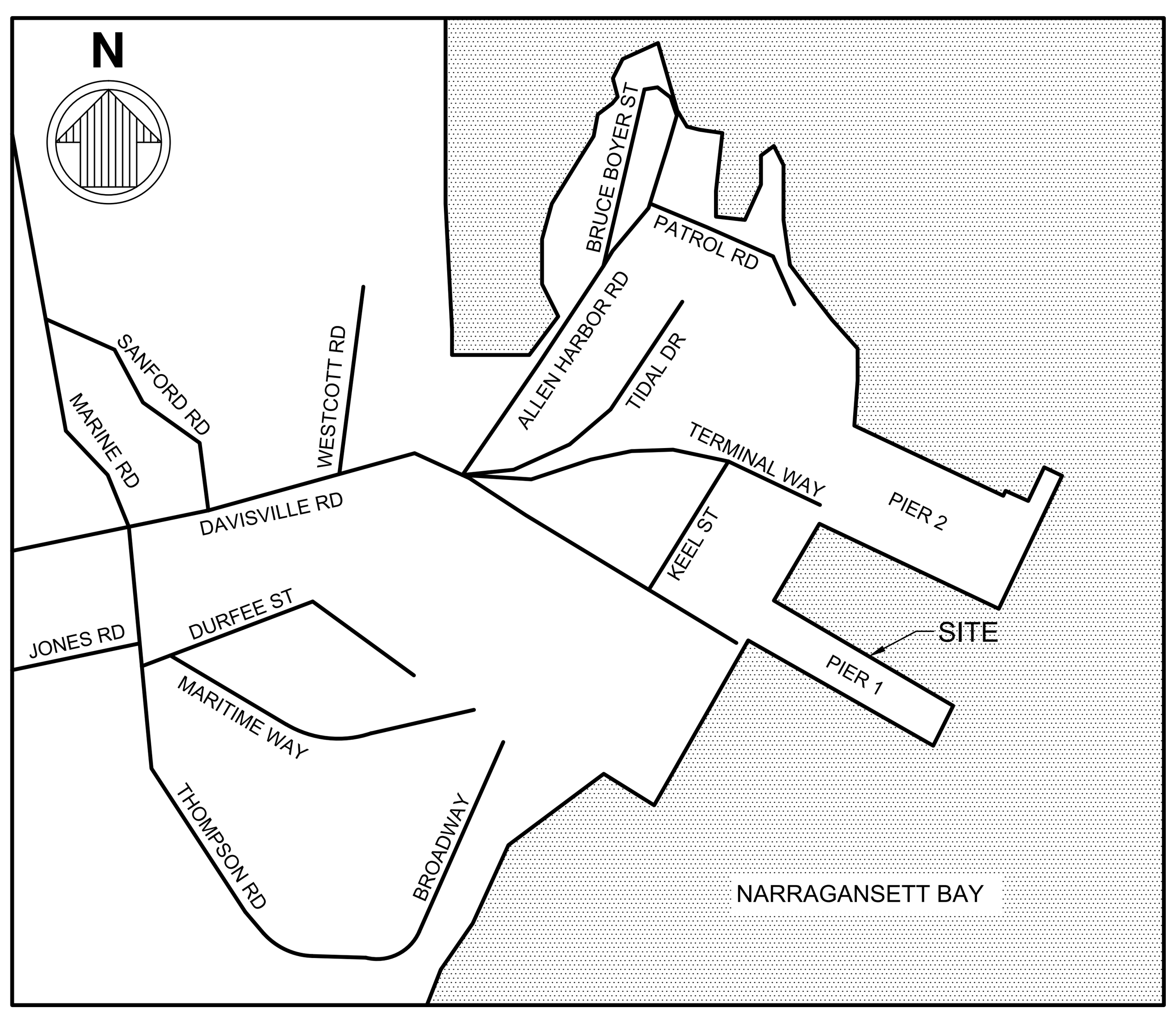
Conceptual Design Plans for Pier 1 Stern Offloading Ramp (Prepared by Moffat & Nichol)

QUONSET DEVELOPMENT CORPORATION
PIER 1 RAMP & NORTH BERTH
NORTH KINGSTOWN, RHODE ISLAND
M&N CONTRACT NO: 2021-010 A7

PERMIT DRAWINGS



VICINITY MAP



LOCATION MAP

INDEX NUMBER	SHEET NUMBER	SHEET TITLE
1	G-001	TITLE SHEET AND INDEX OF DRAWINGS
2	G-002	GENERAL NOTES
3	G-003	GENERAL NOTES AND ABBREVIATIONS
4	G-101	EXISTING CONDITIONS
5	G-102	OVERALL SITE AND KEY PLAN
~~6~~	~~G-103~~	~~MOORING PLAN~~
7	G-201	VESSEL ELEVATION
8	B-101	BORING LOCATION PLAN
9	B-301	BORING PROFILE - SHEET 1 OF 3
10	B-302	BORING PROFILE - SHEET 2 OF 3
11	B-303	BORING PROFILE - SHEET 3 OF 3
~~12~~	~~SD101~~	~~DEMOLITION PLAN - SHEET 1 OF 5~~
~~13~~	~~SD102~~	~~DEMOLITION PLAN - SHEET 2 OF 5~~
~~14~~	~~SD103~~	~~DEMOLITION PLAN - SHEET 3 OF 5~~
~~15~~	~~SD104~~	~~DEMOLITION PLAN - SHEET 4 OF 5~~
~~16~~	~~SD105~~	~~DEMOLITION PLAN - SHEET 5 OF 5~~
~~17~~	~~SD301~~	~~DEMOLITION SECTIONS - SHEET 1 OF 2~~
~~18~~	~~SD302~~	~~DEMOLITION SECTIONS - SHEET 2 OF 2~~
19	S-001	STRUCTURAL NOTES
20	S-100	PROPOSED SITE PLAN
21	S-101	PILE & BENT PLAN - SHEET 1 OF 5
~~22~~	~~S-102~~	~~PILE & BENT PLAN - SHEET 2 OF 5~~
~~23~~	~~S-103~~	~~PILE & BENT PLAN - SHEET 3 OF 5~~
~~24~~	~~S-104~~	~~PILE & BENT PLAN - SHEET 4 OF 5~~
~~25~~	~~S-105~~	~~PILE & BENT PLAN - SHEET 5 OF 5~~
26	S-111	DECK PLAN - SHEET 1 OF 5
~~27~~	~~S-112~~	~~DECK PLAN - SHEET 2 OF 5~~
~~28~~	~~S-113~~	~~DECK PLAN - SHEET 3 OF 5~~
~~29~~	~~S-114~~	~~DECK PLAN - SHEET 4 OF 5~~
~~30~~	~~S-115~~	~~DECK PLAN - SHEET 5 OF 5~~
31	S-121	PLANK PLAN - SHEET 1 OF 5
~~32~~	~~S-122~~	~~PLANK PLAN - SHEET 2 OF 5~~
~~33~~	~~S-123~~	~~PLANK PLAN - SHEET 3 OF 5~~
~~34~~	~~S-124~~	~~PLANK PLAN - SHEET 4 OF 5~~
~~35~~	~~S-125~~	~~PLANK PLAN - SHEET 5 OF 5~~
~~36~~	~~S-301~~	~~TYPICAL SECTIONS - SHEET 1 OF 3~~
~~37~~	~~S-302~~	~~TYPICAL SECTIONS - SHEET 2 OF 3~~
~~38~~	~~S-303~~	~~TYPICAL SECTIONS - SHEET 3 OF 3~~
39	S-501	PILE DETAILS
~~40~~	~~S-502~~	~~FENDER DETAILS~~
~~41~~	~~S-503~~	~~MOORING HARDWARE DETAILS~~

DRAWING SHEETS THAT ARE CROSSED-OUT ABOVE DEPICT THE PIER 1 NORTH BERTH RECONSTRUCTION PROJECT, WHICH WAS EVALUATED AND APPROVED UNDER RICRMC PERMIT NO. 2024-03-015 ON MAY 6, 2024, AND UNDER A USACE SELF-VERIFICATION (JULY 6, 2022). AS SUCH, THOSE CROSSED-OUT DRAWING SHEETS ARE NOT INCLUDED IN THIS SUBMISSION TO AVOID CONFUSION.

DRAWING SHEETS THAT ARE INCLUDED IN THIS SUBMISSION DEPICT THE PIER 1 STERN OFFLOAD RAMP PROJECT AND ARE PROVIDED HEREIN TO RICRMC AND USACE FOR PERMIT APPROVALS.

QUONSET DEVELOPMENT CORPORATION
Development Services
95 Cripe Street
North Kingstown, RI 02852
Tel: (401) 295-0044
Fax: (401) 268-9885

moffatt & nichol
180 WELLS AVENUE, SUITE 302
NEWTON, MA 02459
617-299-7330
www.moffattnichol.com

PERMIT DRAWING SET
NOT TO BE USED FOR CONSTRUCTION

SEAL
FLORIJON DHIMITRI
No. 13978
REGISTERED PROFESSIONAL ENGINEER CIVIL
4/9/2025

NO.	REVISION	DATE	APP.

DESIGN BY: LGS	CHECKED BY: FD
DRAWN BY: CM	ENGINEER: FD
SCALE: NOTED	PROJECT NO. 210766-05
CONTRACT NO. 2021-010 A7	
FILE NAME:	

APPROVED ______________

DATE ______________

DRAWING TITLE
PIER 1 RAMP & NORTH BERTH

TITLE SHEET AND INDEX OF DRAWINGS

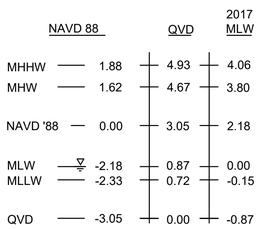
Quonset Business Park®

SHEET NO. **G-001**
1 OF 41 SHEETS

DRAWING NO. **26895**

GENERAL NOTES

1. NOTES BELOW ARE NOT INTENDED TO REPLACE SPECIFICATIONS. IF THERE IS A CONFLICT, CONTACT ENGINEER.
2. THE CONTRACTOR SHALL VERIFY ALL DIMENSIONS AND EXISTING CONDITIONS BEFORE STARTING WORK. NOTIFY OWNER/ENGINEER OF ANY DISCREPANCIES.
3. CONSTRUCTION LOADS FOR ANY NEW PORTION OF THE STRUCTURE OR REPAIR AREA SHALL NOT BE IMPOSED UNTIL THE CONCRETE CYLINDER STRENGTH FOR THOSE MEMBERS AND CONNECTING POURS HAS REACHED 80% OF THE 28 DAY CONCRETE STRENGTH.
4. ALL WORK SHALL CONFORM TO THE REQUIREMENTS OF THESE PLANS AND SPECIFICATIONS. ANY WORK PERFORMED NOT IN CONFORMANCE, AND NOT APPROVED BY ENGINEER, SHALL BE DEEMED NON-CONFORMING, AND MAY BE REJECTED AT CONTRACTOR'S RISK.
5. ALL FEDERAL, STATE, AND LOCAL SAFETY REGULATIONS ARE TO BE STRICTLY FOLLOWED. METHODS OF CONSTRUCTION AND INSTALLATION OF MATERIAL IS THE CONTRACTORS RESPONSIBILITY.
6. ELEVATIONS SHOWN ARE BASED ON QVD (QUONSET VERTICAL DATUM), UNLESS OTHERWISE NOTED.
7. THE CONTRACTOR SHALL ABIDE BY ALL APPLICABLE FEDERAL, STATE, AND LOCAL ENVIRONMENTAL PROTECTION STANDARDS, LAWS AND REGULATIONS.
8. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE MAINTENANCE OF THE CONSTRUCTION SITE AND THE AREAS OF WORK WHILE PERFORMING THE WORK OF THIS CONTRACT. CONSTRUCTION DEBRIS SHALL BE REMOVED FROM THE CONSTRUCTION SITE ON A DAILY BASIS. NO BURNING OF DEBRIS SHALL BE PERMITTED.
9. PIER 1 IS AN OPERATIONAL AUTO TERMINAL AND WILL BE STORING NEW AUTOS NEAR THE PROJECT SITE. KEEP DUST DOWN AT ALL TIMES, INCLUDING DURING NONWORKING PERIODS. USE OF VACUUMING, WET MOPPING, WET SANDING, OR WET POWER BROOMING. AIR BLOWING WILL BE PERMITTED ONLY FOR CLEANING NON-PARTICULATE DEBRIS SUCH AS STEEL REINFORCING BARS. ONLY WET CUTTING WILL BE PERMITTED FOR CUTTING CONCRETE BLOCKS, CONCRETE, AND BITUMINOUS CONCRETE. DO NOT UNNECESSARILY SHAKE BAGS OF CEMENT, CONCRETE MORTAR, OR PLASTER. USE WIND SCREENS OR OTHER MEANS TO DECREASE THE CHANCE OF DUST AND/OR DEBRIS FROM SETTLING ON AUTOS. CONTRACTOR IS RESPONSIBLE FOR ANY ACCUMULATION OF DUST AND/OR DEBRIS ON AUTOS COMING FROM CONSTRUCTION SITE, SUBJECT TO OWNER'S DISCRETION.
10. VERTICAL DATUM NOTES



VERTICAL DATUM CONVERSION DIAGRAM

A. THE TIDAL DATA SHOWN WAS TAKEN FROM THE U.S. DEPARTMENT OF COMMERCE, NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION (NOAA) VERTICAL ONLINE DATUM TRANSFORMATION PROGRAM, DETERMINED AT THE FOLLOWING LOCATION:

LOCATION: Quonset, Rhode Island
LATITUDE: 41.614 N
LONGITUDE: 71.405 W

B. REFERENCE TO QVD WAS OBTAINED FROM A PLAN TITLED "SURVEY CONTROL PLAN FOR RHODE ISLAND ECONOMIC DEVELOPMENT CORPORATION" PREPARED BY FOSTER SURVEY COMPANY OF WARWICK, RI AND LAST REVISED JULY 23, 2008.

C. TIDAL DATA IS PER NOAA AVERAGES BASED ON 1983-2001 TIDAL EPOCH AND NOT GUARANTEED TO REPRESENT CONDITIONS WHICH MAY OCCUR DURING CONSTRUCTION, ACTUAL TIDES WILL VARY FROM LEVELS INDICATED. THE CONTRACTOR IS RESPONSIBLE FOR MAKING HIS OWN ESTIMATES OF TIDES WHICH MAY OCCUR DURING CONSTRUCTION. VARIATION OF TIDAL LEVELS FROM THOSE INDICATED OR CONTRACTOR'S ESTIMATION OF TIDAL LEVELS SHALL NOT BE CONSIDERED AS A CLAIM FOR ADDITIONAL COMPENSATION OR DELAY OF THE WORK.

11. A GEOTECHNICAL INVESTIGATION OF THE SITE WAS PERFORMED BY GZA. THEIR REPORTS, BORING LOGS, LABORATORY TEST RESULTS AND RECOMMENDATIONS ARE AVAILABLE AS AN ATTACHMENT IN THE CONTRACT DOCUMENTS. FOR GZA SOIL BORING LOCATIONS SEE SHEET B-101.
12. EXISTING CONDITIONS ARE BASED ON RECORD DRAWINGS, ACTUAL CONDITIONS MAY VARY. CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR THE CONFIRMATION AND VERIFICATION OF EXISTING CONDITIONS, INCLUDING BUT NOT LIMITED TO THE EXISTING TIMBER PILES, ASSOCIATED PILE REHABILITATION WORK THAT HAS BEEN PREVIOUSLY PERFORMED, AND ANY AND ALL BRACING AND OTHER EXISTING COMPONENTS. THESE DRAWINGS INDICATE GENERAL CONDITIONS AS PRESENTED IN THE RECORD DRAWINGS PROVIDED BY OWNER AND MAY DIFFER FROM FIELD CONDITIONS.

EXISTING PIER LOAD LIMITATIONS

1. UNIFORM VERTICAL LOADS (INCLUDING BUT NOT LIMITED TO EQUIPMENT AND/OR MATERIALS) ACTING ON THE EXISTING PIER DECK SHALL BE LIMITED TO 250 POUNDS PER SQUARE FOOT OR LESS DURING ALL CONSTRUCTION ACTIVITIES.
2. NOTWITHSTANDING THE ABOVE, THE CONTRACTOR WILL NOT BE PERMITTED TO STOCKPILE PROJECT COMPONENTS INCLUDING BUT NOT LIMITED TO DEMOLITION DEBRIS, PILES, PRECAST ELEMENTS, REINFORCING STEEL, FENDERS, AND/OR BOLLARDS ON THE EXISTING PIER, PROVIDED THAT THE RESULTING LOAD IS LESS THAN 250 PSF. CONTACT OWNER/ENGINEER IF HEAVIER PRESSURES ARE ANTICIPATED.
3. BASED ON THE OWNER'S PAST EXPERIENCE, VEHICLES SUCH AS CONCRETE TRUCKS AND TRACTOR TRAILERS HAVE SAFELY OPERATED ON THE PIER. HOWEVER, THE CONTRACTOR SHALL SUBMIT A LIST OF VEHICLES IT ANTICIPATES WILL BE REQUIRED TO OPERATE ON THE PIER DURING THE WORK FOR APPROVAL BY THE OWNER.
4. THE OWNER RESERVES THE RIGHT TO REQUIRE THE CONTRACTOR TO DEMONSTRATE THAT ITS APPLIED VERTICAL LOADS ON THE PIER ARE WITHIN THE LIMITS DEFINED ABOVE, THROUGH A SUBMITTAL PREPARED AND STAMPED BY A PROFESSIONAL ENGINEER REGISTERED IN THE STATE OF RHODE ISLAND (OR OTHER MEANS AS DETERMINED BY THE OWNER).

TURBIDITY CURTAIN

1. A FLOATING TURBIDITY BARRIER SHALL BE DEPLOYED AROUND AND/OR IMMEDIATELY ADJACENT TO THE WORK AREA DURING EACH CONSTRUCTION PHASE THAT IS EXPECTED TO PRODUCE DEBRIS AND/OR SEDIMENT (E.G, DEMOLITION OF EXISTING PIER, CONCRETE DECK/CURB) IN 600 FOOT (MAX) LENGTHS. TURBIDITY CURTAINS ARE NOT REQUIRED DURING PILE DRIVING UNLESS OTHERWISE DICTATED IN THE PERMITS.

DESIGN CRITERIA

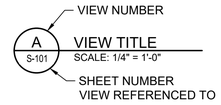
1. VERTICAL LOADS
   A. TYPICAL
      a. 1000 PSF (UNIFORM LIVE LOAD)
   B. NORTH BERTH ONLY
      a. 175 METRIC TON RAMP. LOAD DISTRIBUTED OVER 389 SF FOOTPRINT (992 PSF).
      b. 363 METRIC TON RAMP. LOAD DISTRIBUTED OVER 952 SF FOOTPRINT (840 PSF).
2. WIND CRITERIA
   A. DESIGN WIND FOR STRUCTURES = 128 MPH (3 SECOND GUST).
      RISK CATEGORY II.
3. WAVE CRITERIA
   A. SIGNIFICANT WAVE HEIGHT = 3.9 FEET (HOLD)
   B. PERIOD = 4.2 SEC (HOLD)
4. SOIL SEISMIC CRITERIA (ASCE7-16/IBC2018)
   SITE CLASS E
   Ss = 0.195g
   S1 = 0.054g
   RESPONSE MODIFICATION FACTOR = 3.0
5. BERTHING LOAD
   A. RAMP STRUCTURE. THIS STRUCTURE IS NOT DESIGNED FOR BERTHING LOADS. FENDERS SHALL NOT BE PERMITTED TO BE INSTALLED IN THE STRUCTURE.
   B. NORTH BERTH
      a. 0.2 M/S WITH 10 APPROACH ANGLE.
      b. 6.5'DIA.x13.0' LONG FOAM FENDER. REACTION AT MAXIMUM RATED DEFLECTION = 340 KIPS, INCLUDES 15% TOLERANCE
6. MOORING LOAD
   A. RAMP STRUCTURE. THIS STRUCTURE IS NOT DESIGNED FOR MOORING LOADS. BOLLARDS SHALL NOT BE PERMITTED TO BE INSTALLED IN THE STRUCTURE.
   B. NORTH BERTH. 100 MT BOLLARDS.
7. DESIGN VESSELS (FOR RORO GEOMETRY ONLY)
   A. RAMP STRUCTURE. RORO VESSEL PARAMETERS (EUROCARGO BARI)
      a. LOA_____656.00 FEET [200.00 METERS]
      b. LENGTH B/P_____624.15 FEET [190.29 METERS]
      c. BREADTH MOULDED_____86.92 FEET [26.50 METERS]
      d. DOCKING DRAFT_____20.34 FEET [6.20 METERS]
      e. DEPTH TO FREEBOARD DECK_____30.83 FEET [9.40 METERS]
      f. STERN RAMP LENGTH (W/O FLAP)_____45.92 FEET [14.00 METERS]
      g. STERN RAMP FLAP_____9.84 FEET [3.0 METERS]
      h. STERN RAMP WIDTH_____59.37 FEET [18.10 METERS]
   B. NORTH BERTH. RORO VESSEL PARAMETERS (M/S IRIS LEADER)
      a. DISPLACEMENT TONNAGE_____40500 MTON
      b. LOA_____656 FEET
      c. LENGTH B/P_____620FEET
      d. BEAM_____114.1 FEET
      e. DRAFT_____29.5 FEET
8. TIMBER PILE
   TIMBER PILES ARE NOT PART OF THE FENDER SYSTEM, ARE NOT INTENDED FOR BERTHING LOADS, AND ONLY SERVE AS SACRIFICIAL ELEMENTS FOR THE RAMP STRUCTURE IN THE EVENT OF ACCIDENTAL BERTHING.

REFERENCE

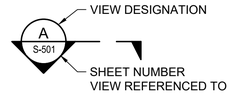
1. RIDOT STANDARD SPECIFICATIONS FOR ROADS AND BRIDGE DESIGN AND OTHER SPECIFICATIONS, 2013. INCLUDING LATEST INTERIMS AND COMPILATION OF APPROVED SPECIFICATIONS.
2. SBC-1: RHODE ISLAND STATE BUILDING CODE, 2021.
3. ACI 318/318R - AMERICAN CONCRETE INSTITUTE "BUILDING CODE REQUIREMENTS FOR REINFORCED CONCRETE AND COMMENTARY", 2014.
4. ACI 301 - AMERICAN CONCRETE INSTITUTE "SPECIFICATION FOR STRUCTURAL CONCRETE FOR BUILDINGS", 2010.
5. IBC - INTERNATIONAL CODE COUNCIL "INTERNATIONAL BUILDING CODE, 2018 EDITION"
6. ASCE 7 - AMERICAN SOCIETY OF CIVIL ENGINEERS, "MINIMUM DESIGN LOADS FOR BUILDINGS AND OTHER STRUCTURES", 2016.
7. AISC - AMERICAN INSTITUTE OF STEEL CONSTRUCTION "STEEL CONSTRUCTION MANUAL", 15TH EDITION (2016).
8. PCI - PRECAST / PRESTRESSED CONCRETE INSTITUTE "DESIGN HANDBOOK - 7TH EDITION", 2010.
9. AASHTO - AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS, "STANDARD SPECIFICATION FOR HIGHWAY BRIDGES", 17TH EDITION (2002).
10. UFC 4-152-01 - "DESIGN: PIERS AND WHARVES", 2017.
11. AWS D1.1 - AMERICAN WELDING SOCIETY "STRUCTURAL WELDING CODE-STEEL", 2010.

TIMBER PILES

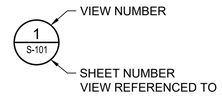
1. REFER TO SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS.
2. PILES SHALL BE DRIVEN TO THE MINIMUM TIP ELEVATIONS INDICATED ON THE PLANS, USING AND APPROVED HAMMER, WITH A CAPACITY AT LEAST EQUAL TO THE HAMMER MANUFACTURER'S RECOMMENDATION FOR THE TOTAL WEIGHT OF PILE AND CHARACTER OF SUBSURFACE MATERIAL TO BE ENCOUNTERED.
3. TIMBER FENDER PILES SHALL BE TREATED DOUGLAS FIR OR SOUTHER YELLOW PINE.
4. ALL PILE CONSTRUCTION SHALL CONFORM TO THE RECOMMENDATIONS OF THE NATIONAL DESIGN SPECIFICATION FOR WOOD CONSTRUCTION (NDS-2005 & THE AMERICAN INSTITUTE FOR TIMBER CONSTRUCTION.
5. TIMBER PILES SHALL CONFORM TO ASTM D 25. TIMBER PILE DIAMETERS VARY AND SHALL BE AS SHOWN ON THE DRAWINGS. DIAMETERS SHOWN ON THE DRAWINGS ARE MINIMUM BUTT DIAMETERS MEASURED 3 FEET FROM THE BUTT END.
6. TIMBER SHALL BE TREATED WITH ACZA OR CCA IN ACCORDANCE WITH AWPA (USE CATEGORY SYSTEM U1-06 COMMODITY SPECIFICATION G) AND T1-06 8.7 MARINE SALT WATER APPLICATIONS FOR MARINE PILINGS. PRESERVATION RETENTION SHALL BE 2.50 POUNDS PER CUBIC FOOT.
7. UNLESS OTHERWISE SPECIFIED IN THE DRAWINGS, ALL HARDWARE SHALL CONFORM TO ASTM A307. WASHERS SHALL BE CAST IRON OGEE. ALL CONNECTION HARDWARE SHALL BE HOT-DIP GALVANIZED.
8. FIELD TREAT ALL CUTS, ABRASIONS, BOLT HOLES AND OTHER SURFACE DAMAGE IN TREATED TIMBER PILES IN ACCORDANCE WITH AWPA M4-06.
9. SPUDDING, PRE-AUGERING AND/OR JETTING OF PILING IS NOT ALLOWED.



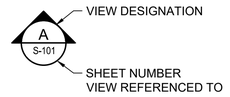
VIEW TITLE



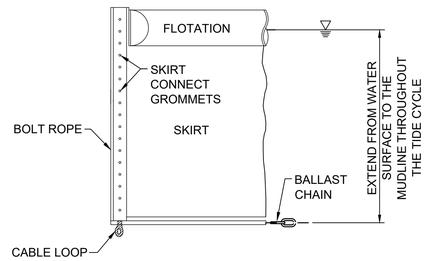
SECTION CUT



DETAIL CALLOUT



ELEVATION VIEW



NOTES:

1. FIGURE IS FOR REFERENCE ONLY. TURBIDITY CURTAIN LAYOUT PLAN, ANCHORAGE, AND DETAILS SHALL BE SUBMITTED FOR APPROVAL.

TURBIDITY CURTAIN GENERIC DETAIL

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5/5/2025
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QUONSET DEVELOPMENT CORPORATION
Development Services
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DRAWING TITLE
PIER 1 RAMP & NORTH BERTH

GENERAL NOTES

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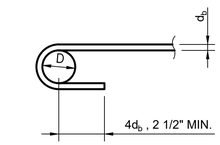
SHEET NO. G-002
2 OF 41 SHEETS

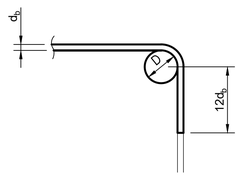
DRAWING NO. 26895

TYPICAL REINFORCING DETAILS



D=6d_b FOR #3 TO #8
D=8d_b FOR #9 TO #11

180° HOOK



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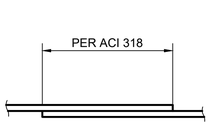
D=8d_b FOR #9 TO #11

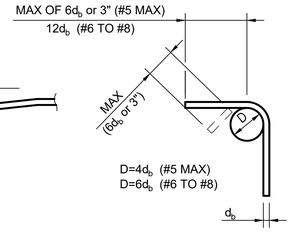
90° HOOK OR BEND



NOTE: WIRE TOGETHER OR SEPARATE BY 2" CLEAR.

LAP SPLICE

OFFSET



D=4d_b (#5 MAX)
D=6d_b (#6 TO #8)

STIRRUPS AND TIE HOOKS AND BENDS

NOTES:

1. WHERE HOOKS ARE SHOWN ON DRAWINGS, THEY SHALL BE AS DETAILED ABOVE UNLESS OTHERWISE NOTED.
2. UNLESS OTHERWISE SPECIFIED, CAST IN DOWELS SHALL BE EMBEDDED INTO CONCRETE THE AMOUNTS SCHEDULED FOR LAP SPLICES.

ABBREVIATIONS

AASHTO	AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS
ACI	AMERICAN CONCRETE INSTITUTE
ADD	ADDITIONAL
AISC	AMERICAN INSTITUTE OF STEEL CONSTRUCTION
APPROX	APPROXIMATE
ASCE	AMERICAN SOCIETY OF CIVIL ENGINEERS
ASTM	AMERICAN SOCIETY FOR TESTING AND MATERIALS
AWG	AMERICAN WIRE GAUGE
AWS	AMERICAN WELDING SOCIETY
BOTT	BOTTOM
B/P	BETWEEN PERPENDICULARS
B/W	BETWEEN
CF	CUBIC FEET
CI	CAST IRON
CIP	CAST-IN-PLACE
CJ	CONSTRUCTION JOINT
CLR	CLEAR
CONC	CONCRETE
CONST	CONSTRUCTION
CONT	CONTINUOUS
CONT'D	CONTINUED
CY	CUBIC YARDS
D	DIAMETER
d_b	REINFORCING BAR DIAMETER
DET	DETAIL
DIA	DIAMETER
DISCONT	DISCONTINUOUS
E	EAST
EA	EACH
EF	EACH FACE
EJ	EXPANSION JOINT
EL	ELEVATION
ELEC	ELECTRICAL
EMBED	EMBEDMENT
ETC	ETCETERA
EQ	EQUAL
EW	EACH WAY
EXIST.	EXISTING
EXP	EXPANSION
EXT	EXTERIOR
F	FAHRENHEIT
FOC	FACE OF CONCRETE
FT	FEET
GALV	GALVANIZED
HDPE	HIGH DENSITY POLYETHYLENE
HK	HOOK
HORIZ	HORIZONTAL
IN	INCHES
INCL	INCLUDING
INFO	INFORMATION
INV	INVERT ELEVATION
JT	JOINT
K	KIPS
KLF	KIPS PER LINEAR FOOT
KSI	KIPS PER SQUARE INCH
L	ANGLE OR PILE LENGTH
LB	POUND
LBS	POUNDS
LF	LINEAR FEET
LG	LONG
LOA	LENGTH OVERALL
LONG.	LONGITUDINAL
LS	LANDSIDE
LT	LEFT OR LONG TON
MAX	MAXIMUM
MFR	MANUFACTURER
MHW	MEAN HIGH WATER
MHHW	MEAN HIGHER HIGH WATER
MID	MIDDLE
MIN	MINIMUM
MISC	MISCELLANEOUS

ABBREVIATIONS CONT'D

MLW	MEAN LOW WATER
MLLW	MEAN LOWER LOW WATER
MPH	MILES PER HOUR
MSL	MEAN SEA LEVEL
N	NORTH
NA	NOT APPLICABLE
NAD	NORTH AMERICAN DATUM
NAVD	NORTH AMERICAN VERTICAL DATUM
NIC	NOT IN CONTRACT
NO.	NUMBER
NTS	NOT TO SCALE
OC	ON CENTER
OFCI	OWNER FURNISHED CONTRACTOR INSTALLED
P/C	PRECAST
PCF	POUNDS PER CUBIC FOOT
PSI	POUND PER SQUARE INCH
PSF	POUNDS PER SQUARE FOOT
PVC	POLYVINYL CHLORIDE
QDC	QUONSET DEVELOPMENT CORPORATION
QTY	QUANTITY
QVD	QUONSET VERTICAL DATUM
R/C	REINFORCED CONCRETE
RCP	REINFORCED CONCRETE PIPE
REQ'D	REQUIRED
REINF	REINFORCEMENT
R/F	REINFORCEMENT
RIDOT	RHODE ISLAND DEPARTMENT OF TRANSPORTATION
RO/RO	ROLL ON/ ROLL OFF
RT	RIGHT
S	SOUTH
SCH	SCHEDULE
SEC	SECOND
SF	SQUARE FOOT
SHT	SHEET
SPA	SPACES
SPT N	STANDARD PENETRATION TEST NUMBER
SQ	SQUARE
SS	STAINLESS STEEL
SSP	STEEL SHEET PILE
STA	STATION STD
STL	STEEL
T	TON
T&B	TOP & BOTTOM
TOC	TOP OF CONCRETE
TEMP	TEMPORARY OR TEMPERATURE
UFC	UNIFIED FACILITIES CRITERIA
TYP	TYPICAL
UON	UNLESS OTHERWISE NOTED
U.S.	UNITED STATES
VERT	VERTICAL
VLF	VERTICAL LINEAR FEET
W	WEST OR WATER
W/	WITH
W/O	WITHOUT
WS	WATERSIDE
WT	WALL THICKNESS
YD	YARD
"	SECONDS OR INCH
'	MINUTES, FEET OR PRIME
*	ASTERISK
#	NUMBER OR POUNDS
&	AND
@	AT
℄	CENTERLINE
Ø	DIAMETER OR PHASE
°	DEGREES
₹	PLATE
±	PLUS OR MINUS
%	PERCENT

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5/5/2025
COASTAL RESOURCES MANAGEMENT COUNCIL

QUONSET DEVELOPMENT CORPORATION

Development Services
95 Cripe Street
North Kingstown, RI 02852
Tel: (401) 295-0044
Fax: (401) 268-9885

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PIER 1 RAMP & NORTH BERTH

GENERAL NOTES AND ABBREVIATIONS

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3 OF 41 SHEETS

DRAWING NO. **26895**

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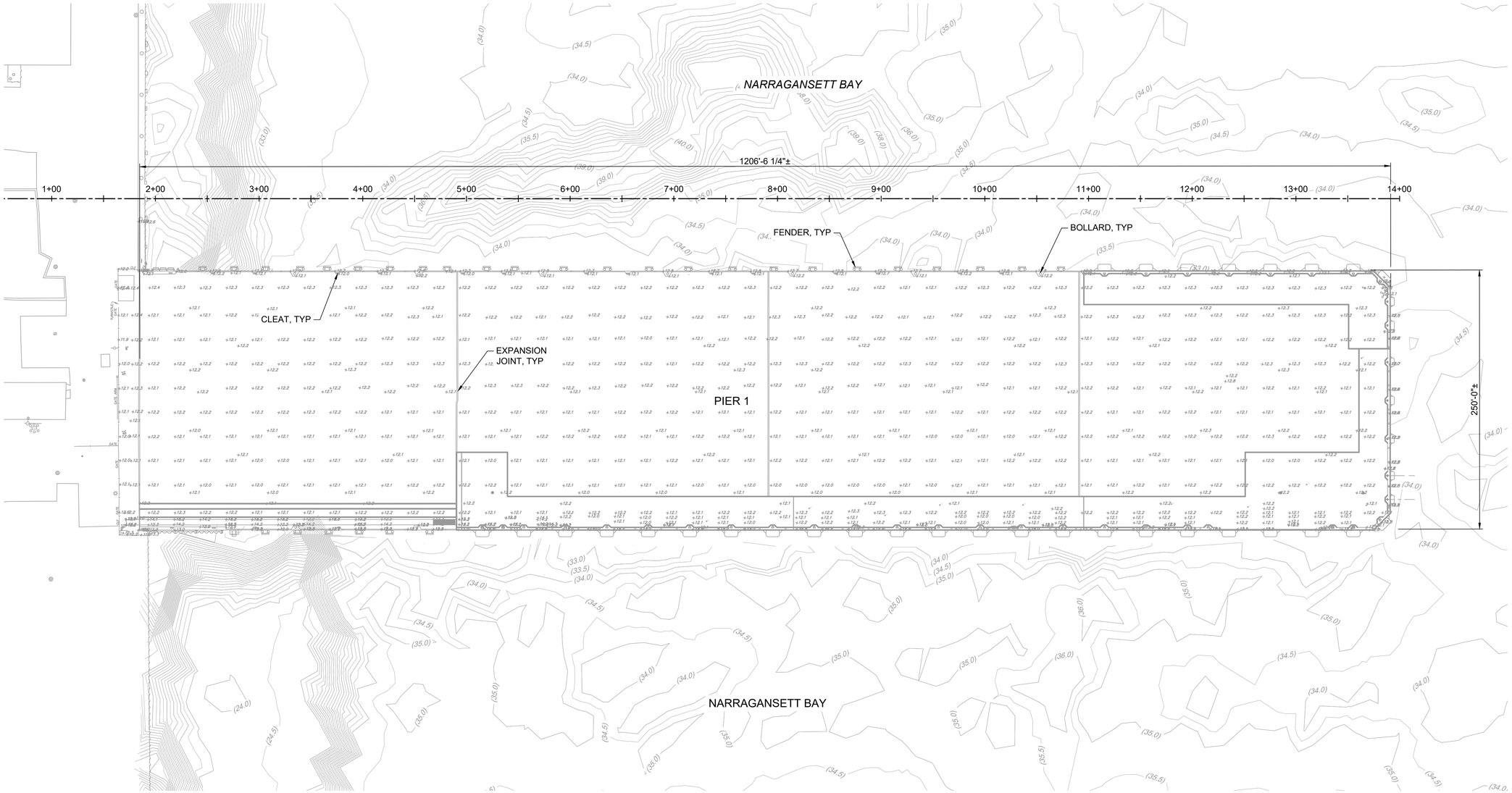

NOTES:

1. THE BATHYMETRIC DATA SHOWN ON THIS PLAN WAS PROVIDED BY FOTH ENGINEERING INC ON FEBRUARY 2, 2022. DEPTHS ARE DISPLAYED IN MLLW DATUM.
2. THE TOPOGRAPHIC SURVEY DATA SHOWN ON THIS PLAN WAS GATHERED AND PROVIDED ON JUNE 2021 BY GAROFALO & ASSOCIATES, INC. ELEVATION DISPLAYED IN QVD DATUM.
3. EXISTING FENDER LOCATIONS AND TYPE MAY DIFFER FROM WHAT IS SHOWN HEREIN. CONTRACTOR TO VERIFY IN FIELD.

50' 0' 50' 100'
SCALE: 1"=50'

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PIER 1 RAMP & NORTH BERTH

EXISTING CONDITIONS

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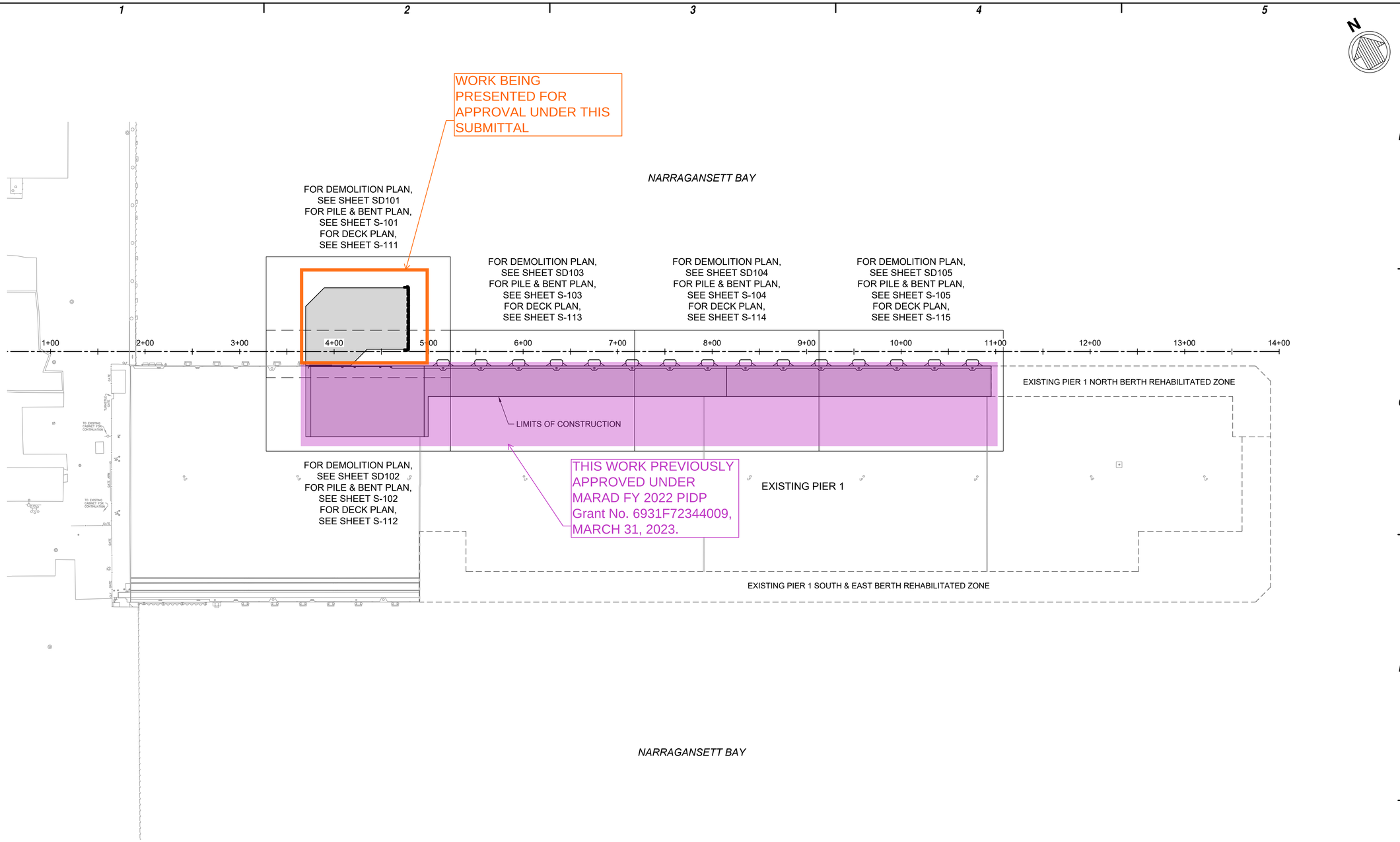
4 OF 41 SHEETS	



NOTE:

1. THE CONTRACTOR SHALL BE RESPONSIBLE FOR DEVELOPING ITS OWN CONSTRUCTION SEQUENCING. HOWEVER, THE OWNER RESERVES THE RIGHT TO DIRECT THE CONTRACTOR TO MODIFY ITS CONSTRUCTION SEQUENCING TO ACCOMMODATE ONGOING PORT OPERATIONS AT PIER 1, AT NO ADDITIONAL COST TO THE OWNER. CONTRACTOR TO COORDINATE SEQUENCE WITH OWNER.

50' 0' 50' 100'

SCALE: 1"=50'

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PIER 1 RAMP & NORTH BERTH

OVERALL SITE AND KEY PLAN

Quonset Business Park®

SHEET NO.	DRAWING NO.
G-102	26895
5 OF 41 SHEETS	

NOTE:

1. VESSEL AND ITS RAMP'S OUTLINE ARE NOT TO SCALE AND SHOWN HEREIN AS REPRESENTATIVE OF THE DESIGN VESSEL.

VESSEL PARTICULARS:

1. DESIGN VESSELS (FOR RORO GEOMETRY ONLY)
   A. RORO VESSEL PARAMETERS (EUROCARGO BARI)
      a. LOA 656.00 FEET [200.00 METERS]
      b. LENGTH B/P 624.15 FEET [190.29 METERS]
      c. BREADTH MOULDED 86.92 FEET [26.50 METERS]
      d. DOCKING DRAFT 20.34 FEET [6.20 METERS]
      e. DEPTH TO FREEBOARD DECK 30.83 FEET [9.40 METERS]
      f. STERN RAMP LENGTH (W/O FLAP) 45.92 FEET [14.00 METERS]
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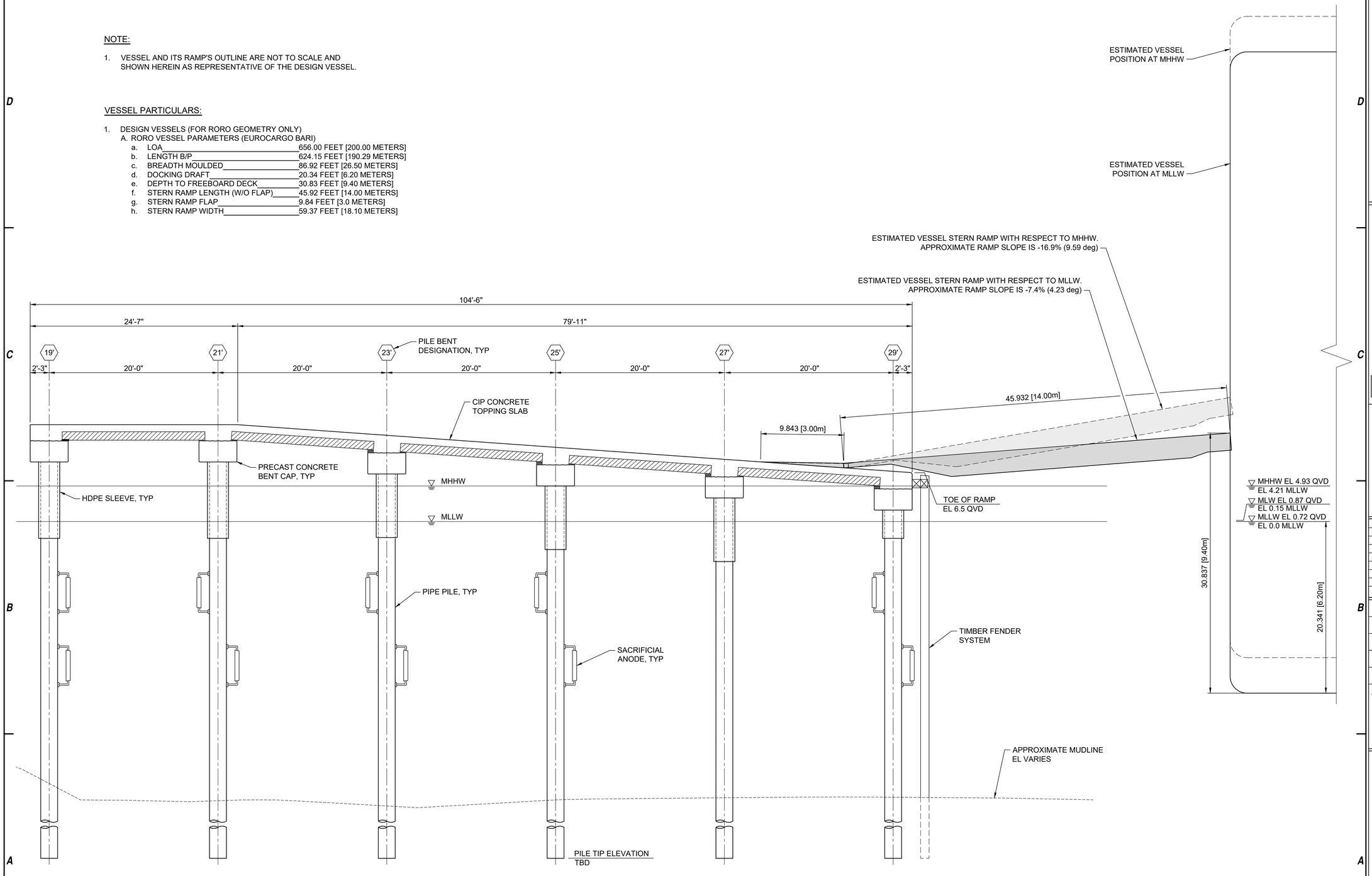
      h. STERN RAMP WIDTH 59.37 FEET [18.10 METERS]



A1 / G-103 ELEVATION - RAMP STRUCTURE AND VESSEL
SCALE: 3/16" = 1'-0"

8'-0" 0'-0" 4'-0" 8'-0"
SCALE: 3/16"=1'-0"

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CONTRACT NO. 2021-010 A7	
FILE NAME: 210766-05G-201.DWG	

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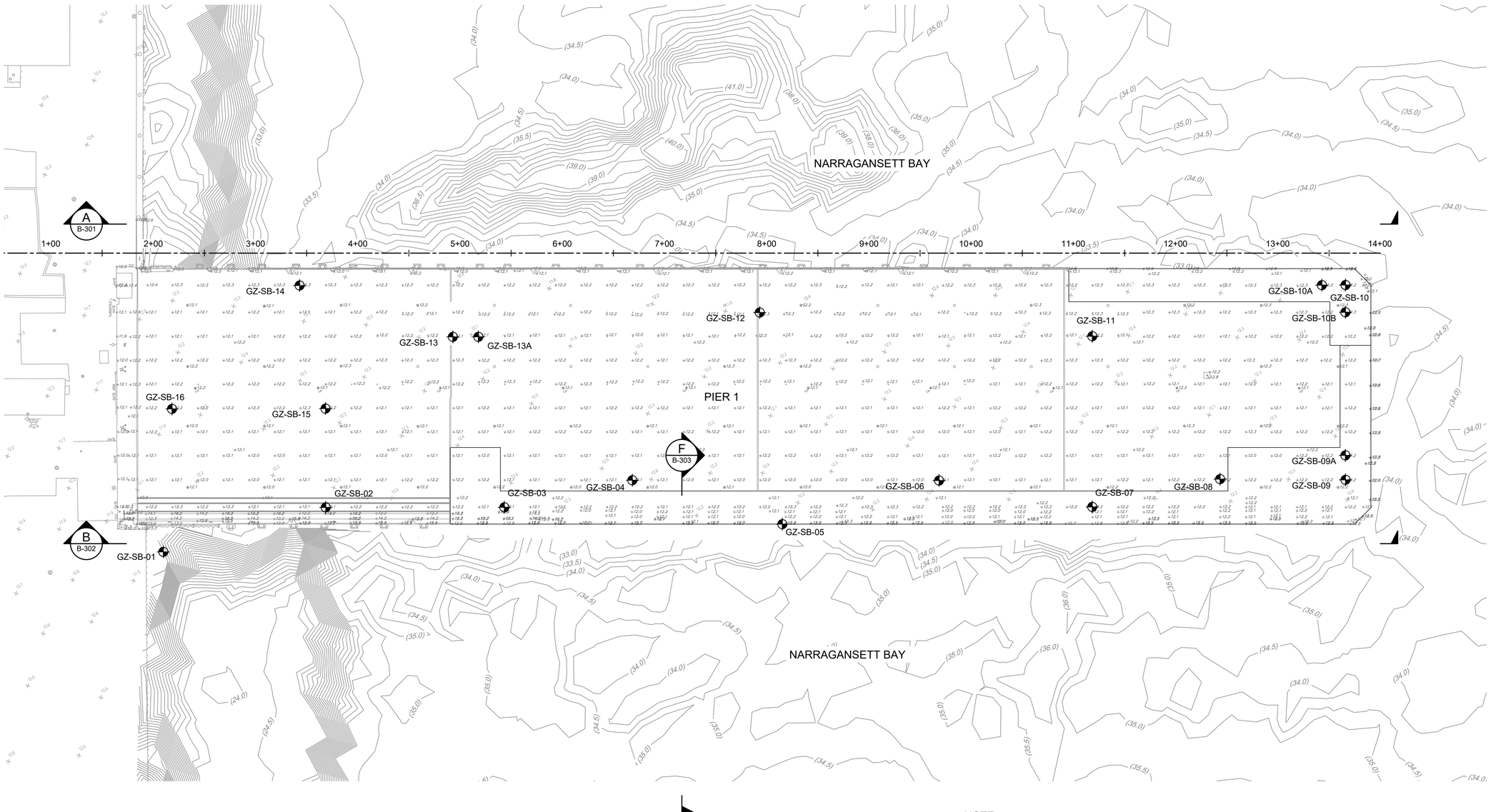
DATE _____

DRAWING TITLE
PIER 1 RAMP & NORTH BERTH

VESSEL ELEVATION

Quonset Business Park

SHEET NO.	DRAWING NO.
G-201	**26895**
7 OF 41 SHEETS	



NOTE:

1. REFER TO GZA'S "GEOTECH DATA REPORT - INFRASTRUCTURE IMPROVEMENTS PIER 1 AND TERMINAL 5", DATED JULY 20, 2021 FOR ADDITIONAL DETAILS AND INFORMATION, AS WELL AS BORINGS PREVIOUSLY PERFORMED.

LEGEND:

GZ-SB-## APPROXIMATE LOCATION OF BORING DRILLED BY NEW ENGLAND BORING CONTRACTORS BETWEEN APRIL 6, 2021 AND JUNE 3, 2021 AND OBSERVED BY GZA PERSONNEL

50' 0' 50' 100'

SCALE: 1"=50'

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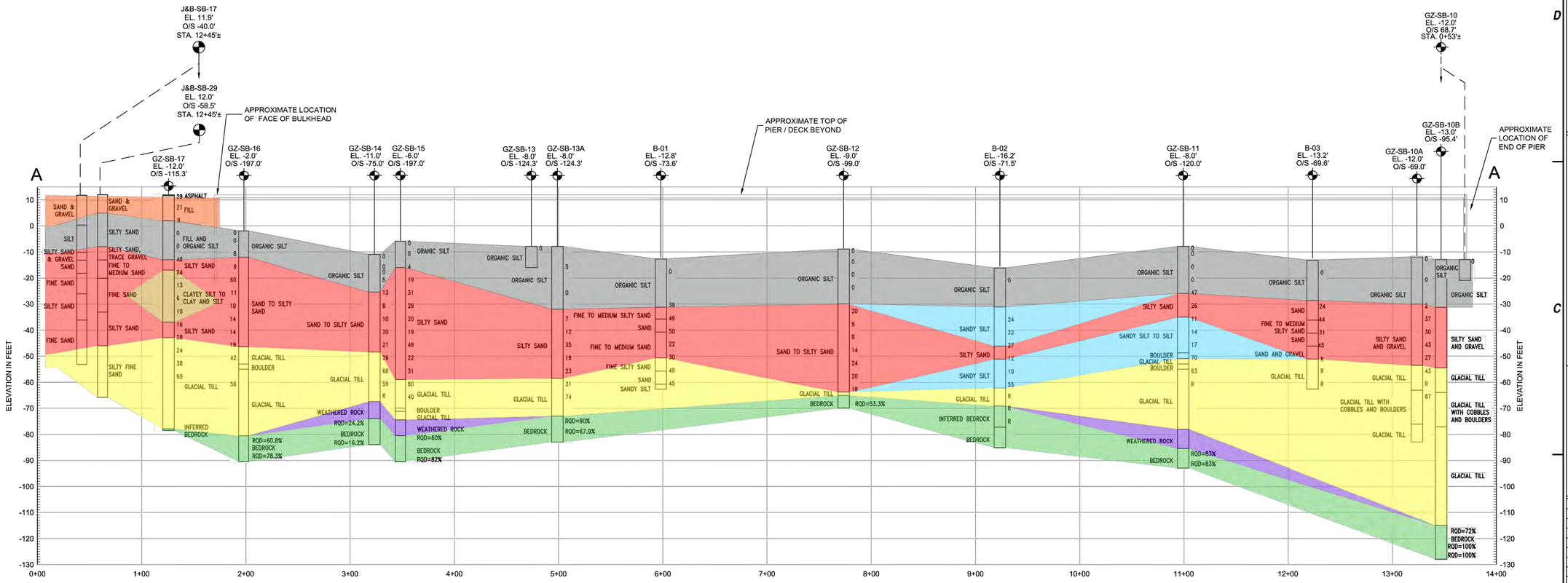
PIER 1 RAMP & NORTH BERTH

BORING LOCATION PLAN

Quonset Business Park

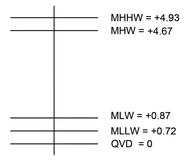
SHEET NO.	DRAWING NO.
B-101	**26895**
8 OF 41 SHEETS	



PROFILE A-A

NOT TO SCALE

TIDAL ELEVATIONS



NOTE:

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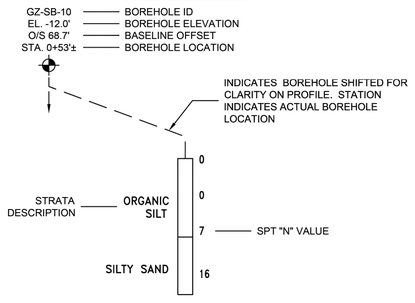
BOREHOLE LEGEND



INTERPRETIVE SOIL LEGEND

- ORGANIC SILT
- FILL
- SAND TO SILTY SAND
- SILT TO SANDY SILT
- CLAYEY SILT TO CLAY AND SILT
- GLACIAL TILL
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- BEDROCK

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COASTAL RESOURCES MANAGEMENT COUNCIL

QUONSET DEVELOPMENT CORPORATION
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CONTRACT NO. 2021-010 A7	
FILE NAME:	

APPROVED

DATE _____

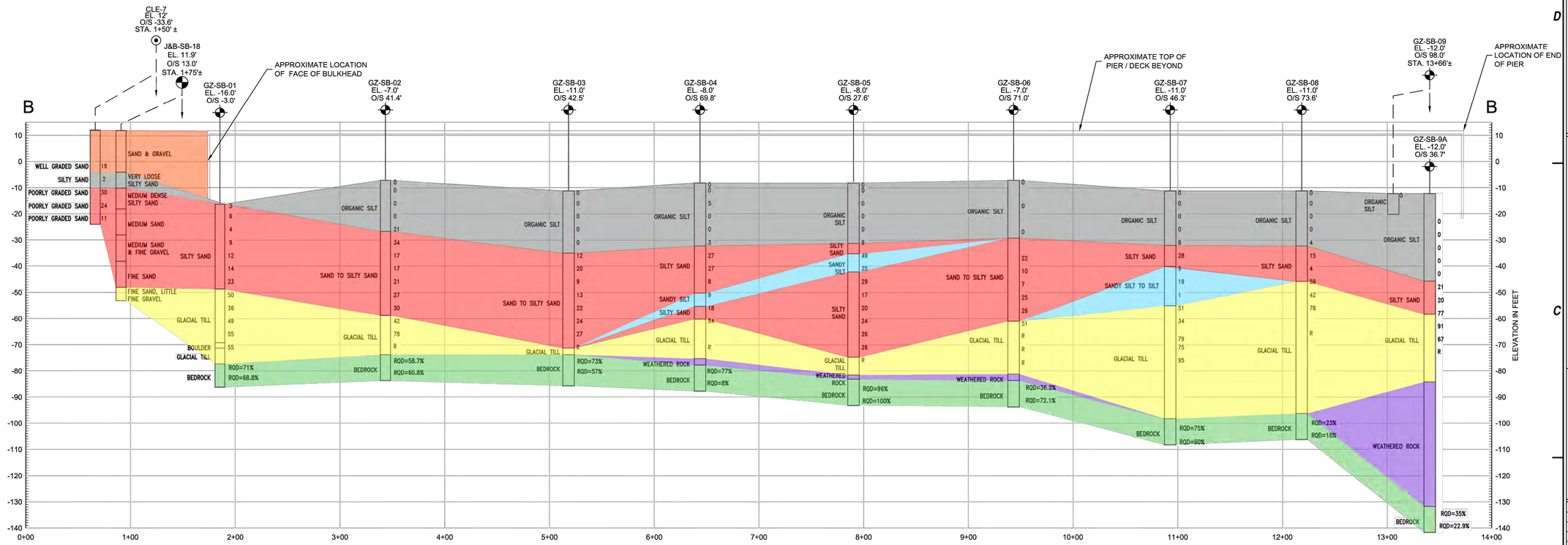
DRAWING TITLE

PIER 1 RAMP & NORTH BERTH

BORING PROFILE - SHEET 1 OF 3

Quonset Business Park®

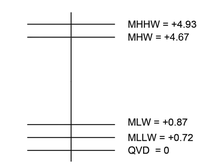
SHEET NO.	DRAWING NO.
B-301	**26895**
9 OF 41 SHEETS	



PROFILE B-B

NOT TO SCALE

TIDAL ELEVATIONS



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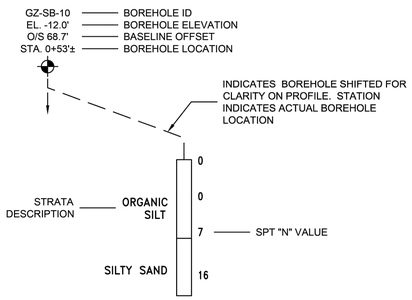
BOREHOLE LEGEND



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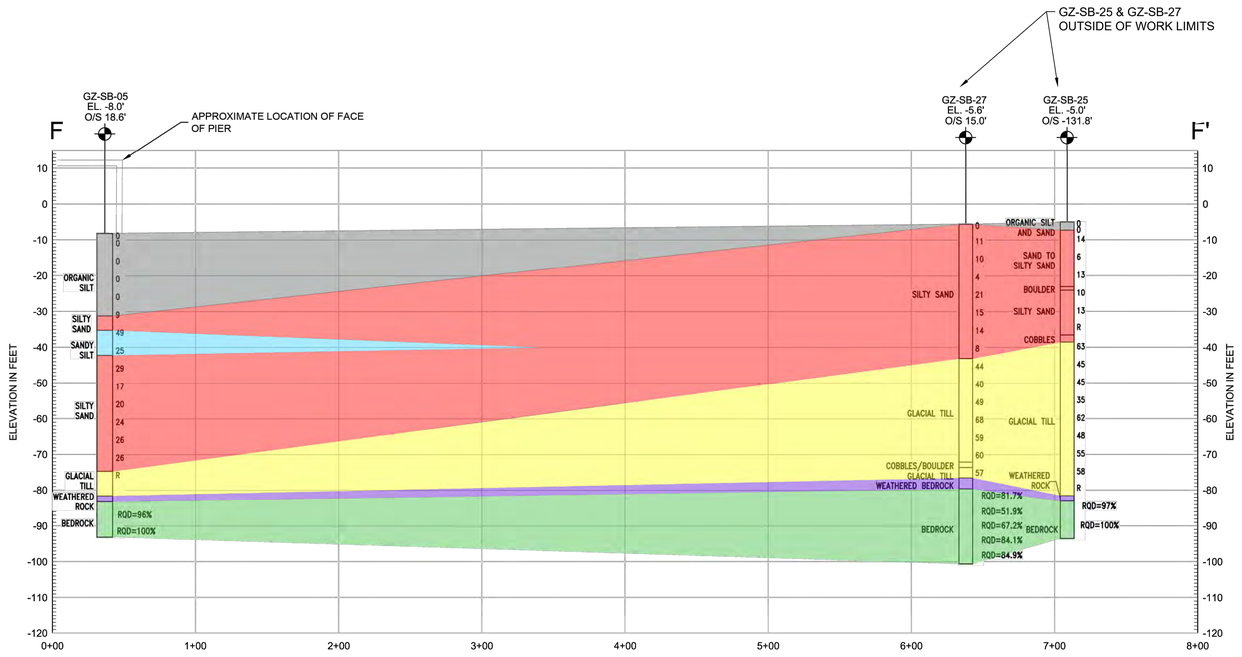
DRAWING TITLE

PIER 1 RAMP & NORTH BERTH

BORING PROFILE - SHEET 2 OF 3

Quonset Business Park

SHEET NO.	DRAWING NO.
B-302	**26895**
10 OF 41 SHEETS	



PROFILE F-F'

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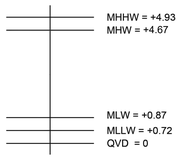
TIDAL ELEVATIONS



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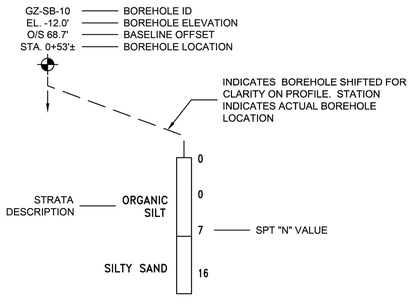

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DRAWING TITLE

PIER 1 RAMP & NORTH BERTH

BORING PROFILE - SHEET 3 OF 3

Quonset Business Park®

SHEET NO.	DRAWING NO.
B-303	26895
11 OF 41 SHEETS	

CONCRETE AND REINFORCING STEEL

1. ALL CONCRETE WORK SHALL BE PERFORMED IN ACCORDANCE WITH ACI 301, UNLESS OTHERWISE NOTED.
2. ALL CONCRETE SHALL BE NORMAL WEIGHT, EXPOSURE CLASSES C2 AND F3.
3. ALL DETAILING, FABRICATION, AND ERECTION OF REINFORCING STEEL SHALL CONFORM TO THE ACI MANUAL OF STANDARD PRACTICE FOR DETAILING REINFORCED CONCRETE STRUCTURES, ACI 315.
4. MATERIALS SHALL CONFORM TO THE FOLLOWING, UNLESS OTHERWISE NOTED:
   A. CONCRETE STRENGTH

1	CAST-IN-PLACE CONCRETE (UON)	5,000 PSI (MIN AT 28 DAYS)
2	CAST-IN-PLACE CONCRETE (PILE PLUG & PILE BLOCK-OUT)	6,000 PSI (MIN AT 28 DAYS)
3	PRECAST CONCRETE	5,000 PSI (MIN AT 28 DAYS)
4	NON-METALLIC AND NON-SHRINK GROUT	8,000 PSI (MIN AT 28 DAYS)

   B. REINFORCING STEEL - REINFORCING STEEL SHALL BE IN ACCORDANCE WITH ASTM A 615, UNLESS OTHERWISE NOTED. REINFORCING SHALL HAVE THE FOLLOWING CHARACTERISTICS:

1	REINFORCING STEEL AND DOWELS FOR CONCRETE	ASTM A 615, GRADE 60, EPOXY COATED
2	SPIRALS	ASTM A 1064, EPOXY COATED

   C. AIR ENTRAINMENT SHALL BE PROVIDED IN ACCORDANCE WITH ACI 301, EXPOSURE CLASS F3.
   D. ALL CONCRETE SHALL INCLUDE CALCIUM NITRITE CORROSION INHIBITOR PER THE SPECIFICATION.
   E. TOPPING SLAB CONCRETE MIX SHALL INCLUDE A SHRINKAGE REDUCING ADMIXTURE PER THE SPECIFICATIONS.
5. CHAMFER ALL EXPOSED EXTERNAL CORNERS OF CONCRETE WITH 3/4", 45° CHAMFERS UNLESS OTHERWISE NOTED.
6. MINIMUM CONCRETE COVER FOR REINFORCING SHALL BE 3" UNLESS OTHERWISE NOTED.
7. ALL REINFORCING BAR SPLICES SHALL BE IN ACCORDANCE WITH THE SPLICE SCHEDULE AND IN ACCORDANCE WITH ACI 318, UNLESS OTHERWISE NOTED. SPLICES SHALL BE STAGGERED AND LOCATED AWAY FROM POINTS OF MAXIMUM TENSILE STRESS. FOR EPOXY COATED BARS, MULTIPLY THE TABULATED VALUES BY THE FACTORS OUTLINED BELOW.

SPLICE SCHEDULE

BAR SIZE	LAP SPLICE LENGTHS	
	VERTICAL BARS & BEAM BOTTOM BARS	ALL OTHER BARS
#3	17"	22"
#4	22"	29"
#5	28"	36"
#6	33"	43"
#7	49"	63"
#8	55"	72"
#9	63"	81"
#10	70"	91"
#11	78"	101"

MODIFICATION FACTOR	CONDITION	VALUE OF FACTOR
EPOXY[1] Ψ_e	EPOXY-COATED OR ZINC AND EPOXY DUAL-COATED REINFORCEMENT WITH CLEAR COVER LESS THAN $3d_b$ OR CLEAR SPACING LESS THAN $6d_b$	1.5
	EPOXY-COATED OR ZINC AND EPOXY DUAL-COATED REINFORCEMENT FOR ALL OTHER CONDITIONS	1.2
CASTING POSITION Ψ_t	MORE THAN 12 IN. OF FRESH CONCRETE PLACED BELOW HORIZONTAL REINFORCEMENT	1.3
	OTHER	1.0

[1]THE PRODUCT $\Psi_t\Psi_e$ NEED NOT EXCEED 1.7.

8. ALL JOINTS BETWEEN CAST-IN-PLACE CONCRETE AND HARDENED CONCRETE SHALL BE CLEAN WITH A ROUGHENED SURFACE OF 1/4" AMPLITUDE AND COATED WITH AN APPROVED BONDING COMPOUND UNLESS NOTED OTHERWISE. PRECAST PANELS SHALL COME WITH THE ROUGHENED SURFACE AT THE PLANNED JOINTS.
9. EXPOSED FINISHED CONCRETE SURFACES (HORIZONTAL) SHALL BE ROUGH BROOM FINISH.
10. EPOXY COATED REINFORCING STEEL SHALL COMPLY WITH ASTM A775.
11. CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR THE REVIEW, CONFIRMATION, AND FABRICATION, SHIPPING, SAFE HANDLING OF THE PRECAST MEMBERS DURING INSTALLATION. CONTRACTOR TO SUBMIT A WORK PLAN TO ENGINEER FOR APPROVAL PRIOR TO FABRICATION OUTLINING SHIPPING AND HANDLING OPERATIONS, INCLUDING PICK POINTS OF THE PRECAST MEMBERS ENSURING THAT NO CRACKING OCCURS THROUGHOUT THE HANDLING AND INSTALLATION PHASE.
12. CONTRACTOR TO VERIFY AND CONFIRM THE PROPOSED SPLICE LOCATIONS, INDEPENDENTLY CALCULATE WEIGHTS OF PRECAST MEMBERS (UNLESS OTHERWISE SPECIFIED), AND DETERMINE THE APPROPRIATE METHOD FOR FABRICATION AND INSTALLATION OF ALL MEMBERS. SUBMIT WORK PLAN TO ENGINEER FOR APPROVAL PRIOR TO FABRICATION.

STRUCTURAL AND MISCELLANEOUS STEEL:

1. THE DETAILING, FABRICATION AND ERECTION OF STRUCTURAL STEEL SHALL CONFORM TO ALL REQUIREMENTS OF THE CURRENT AISC 360 "SPECIFICATION FOR STRUCTURAL STEEL BUILDINGS," AND AISC 303 "CODE OF STANDARD PRACTICE FOR STEEL BUILDINGS AND BRIDGES."
2. STEEL FABRICATOR SHALL FURNISH ALL NUTS, BOLTS, WASHERS, ETC. NECESSARY FOR ERECTION PLUS 5% OVERAGE. FABRICATOR SHALL BE RESPONSIBLE FOR PROVIDING LIFTING LUGS AND TEMPORARY BRACING FOR TRANSPORTATION, LIFTING AND STORAGE. FABRICATOR TO PROVIDE COMPLETE BILL OF MATERIALS.
3. STEEL MATERIALS SHALL CONFORM TO THE FOLLOWING, UNLESS OTHERWISE NOTED:

A	STRUCTURAL STEEL PIPE PILES	ASTM A252, GRADE 3 MODIFIED, COATED (FY= 50 KSI)
B	STRUCTURAL STEEL PIPE	ASTM A252, GRADE 3 MODIFIED, GALV (FY= 50 KSI)
C	STRUCTURAL CARBON STEEL	ASTM A572 & A992, GALV UON
D	STEEL PLATES	ASTM A572, GRADE 50, GALV
E	STAINLESS STEEL SHAPES	ASTM A276, TYPE 316L
F	STAINLESS STEEL PLATES	ASTM A240, TYPE 316L
G	STAINLESS STEEL PIPE SLEEVES	ASTM A269 TYPE 316L
H	ANCHOR RODS	ASTM F1554, GRADE 55, GALV UON
I	BOLLARD ANCHOR RODS	PER MANUFACTURER'S RECOMMENDATION
J	STRUCTURAL BOLTS	ASTM F3125, GRADE A325, GALV
K	STAINLESS STEEL BOLTS	ASTM F593, ALLOY GROUP 2 TYPE 316L
L	NUTS	ASTM A563, GALV
M	STAINLESS STEEL NUTS	ASTM F594 TYPE 316L
N	WASHER	ASTM F436, GALV
O	HEADED WELDED STUDS	ASTM A29, AWS D1.1 CLAUSE 7
P	FENDER SYSTEM BOLTS	ASTM F3125, GRADE A325, GALV
Q	FENDER SYSTEM NUTS	ASTM A563, GALV
R	MOORING HARDWARE	ASTM A27, GRADE 65-35
S	HSS MEMBERS	ASTM A500, GRADE B, COATED
T	PIPES (NON-STRUCTURAL)	ASTM A53, GRADE B, GALV
U	STAINLESS STEEL LEVELING BOLTS	ASTM F593, ALLOY GROUP 2 TYPE 316L

4. ALL EXPOSED CARBON STRUCTURAL STEEL (EXCEPT AS INDICATED) SHALL BE HOT-DIP GALVANIZING. SEE SPECIFICATIONS.
5. SPLICING OF STRUCTURAL STEEL IS PROHIBITED EXCEPT AS DETAILED.
6. ALL BOLTS SHALL BE NEW, HOT DIP GALVANIZED IN ACCORDANCE WITH ASTM F2329. ALL BOLTS SHALL INCLUDE COMPATIBLE WASHERS.
7. ALL DAMAGED GALVANIZED FINISH SHALL BE FIELD TREATED WITH TWO COATS OF HIGH ZINC OXIDE PAINT, COLD GALVANIZING COMPOUNDS, OR APPROVED EQUAL CONFORMING TO ASTM A780. ALL EXPOSED THREADED SURFACES SHALL BE PAINTED WITH TWO COATS OF HIGH ZINC DUST OXIDE PAINT AFTER INSTALLATION.
8. WELDING SHALL CONFORM TO THE CURRENT AWS D1.1 "STRUCTURAL WELDING CODE-STEEL".
9. WELDS SHALL BE MADE BY CERTIFIED WELDERS AND WELDING OPERATORS WHO HAVE BEEN PREVIOUSLY QUALIFIED BY TESTS AS PRESCRIBED IN THE CURRENT AWS D1.1 "STRUCTURAL WELDING CODE-STEEL." PROOF OF CERTIFICATION SHALL BE SUBMITTED TO THE OWNER FOR APPROVAL BEFORE ANY WELDING IS PERMITTED TO BEGIN.
10. ALL WELDING OF CARBON STEEL SHALL USED E70 SERIES LOW HYDROGEN ELECTRODES.
11. ALL WELDING OF STAINLESS STEEL TO STAINLESS STEEL SHALL USE E308 OR E316 ELECTRODES DEPENDING ON BASE MATERIAL.
12. ALL WELDING OF STAINLESS STEEL TO CARBON STEEL SHALL USE E309 ELECTRODES.
13. EACH PIECE TO BE CLEARLY MARKED WITH MARK NUMBER AS PER DETAIL DRAWING.

COMPONENTS TO HOT-DIP GALVANIZED:

A. ALL BOLTS, NUTS, WASHERS, COUPLERS, AND MISCELLANEOUS HARDWARE.
B. MISCELLANEOUS STEEL.

COMPONENTS TO BE COATED:

A. STEEL PIPE PILES
B. FIELD WELDS
C. BOLLARDS

POST-INSTALLED ANCHOR NOTES:

1. INSTALL TEST PRODUCTS IN ACCORDANCE WITH MANUFACTURER'S PRINTED INSTALLATION INSTRUCTIONS (MPII) AND MOST RECENT EDITION OF ACI 355.4.
2. PRIOR TO INSTALLATION, CONTRACTOR SHALL CONTACT MANUFACTURER'S REPRESENTATIVE FOR PRODUCT-SPECIFIC INSTALLATION TRAINING AND LETTER SHALL BE SUBMITTED TO THE ENGINEER INDICATING TRAINING HAS TAKEN PLACE.
3. DRILLED HOLES SHALL HAVE ROUGHENED INTERIOR SURFACE AS PER MANUFACTURER'S RECOMMENDATIONS.
4. CONTRACTOR SHALL LOCATE REINFORCEMENT PRIOR TO DRILLING ANCHOR HOLES, SO AS NOT TO DAMAGE THE REINFORCING STEEL, UNLESS OTHERWISE NOTED. TOLERANCE OF THE INSTALLED SYSTEM SHALL BE ACCOUNTED FOR IN ANY SHIFTING OF COMPONENTS.
5. SUBMIT MANUFACTURER'S DATA SHEET AND RECOMMENDATIONS FOR APPROVAL.
6. DESIGN BOND STRENGTH IS BASED ON CRACKED CONCRETE, ACI 355.4 TEMPERATURE CATEGORY B, AND INSTALLATIONS INTO DRY HOLES DRILLED INTO CONCRETE THAT HAS CURED FOR AT LEAST 21 DAYS USING A DRILL BIT QUALIFIED BY THE MANUFACTURER.
7. THE FIRST 10 INSTALLATIONS SHALL BE SPECIAL INSPECTED DURING INSTALLATION BY A CERTIFIED ADHESIVE ANCHOR INSTALLER.

FOUNDATION

1. PILES SHALL BE DRIVEN TO THE MINIMUM TIP ELEVATION SPECIFIED ON SHEET ##### AND MINIMUM COMPRESSION CAPACITY SPECIFIED ON SHEET S-501 WITHOUT OVERSTRESSING THE PILE. PILES SHALL BE DRIVEN WITH A PILE DRIVING SYSTEM OF SUFFICIENT CAPACITY AS DETERMINED BY A WAVE EQUATION ANALYSIS AND DRIVABILITY STUDY THAT SHALL DEMONSTRATE THE ADEQUACY OF THE HAMMER. CONTRACTOR TO SUBMIT DRIVABILITY STUDY FOR APPROVAL PRIOR TO PROCUREMENT OF PILES.
2. TEST PILES (PDA PILES) SHALL BE DRIVEN AND RESULTS PROVIDED TO ENGINEER PRIOR TO PLACING ORDER OR INSTALLATION OF PRODUCTION PILES.
3. JETTING OF PILES SHALL NOT BE ALLOWED.
4. THE CONTRACTOR SHALL COORDINATE THE PILE DRIVING SCHEDULE SO AS NOT TO INTERFERE WITH OR BE DETRIMENTAL TO THE CONCRETE PLACEMENT AND CURING OPERATIONS.
5. COAT PILE PER SPECIFICATION SECTION 09 97 7 AND AS INDICATED ON SHEET S-501.

DOMESTIC PURCHASE REQUIREMENTS

1. CONTRACTOR SHALL PROCURE PRODUCTS THAT CONFORM WITH THE BUY-AMERICA ACT, INCLUDING PROVIDING CERTIFICATION THAT SUCH PRODUCTS MEET THE BUY-AMERICA ACT. THE FOLLOWING SUPPLIERS ARE KNOWN TO CONFORM TO THE BUY-AMERICA ACT, HOWEVER, IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO VERIFY AND ENSURE COMPLIANCE.
   1.1. BOLLARDS SHALL BE PROCURED BY MARINE STRUCTURES (MOREHEAD CITY, NC).
   1.2. FOAM FENDERS MAY BE PROCURED BY MORSE RUBBER, LLC (KEOKUK, IOWA), J.H. MENGE & CO INC (NEW ORLEANS, LA), OR MARINE STRUCTURES (MOREHEAD CITY, NC).
   1.3. CHAINS FOR THE FENDERS MAY BE PROCURED FROM WASHINGTON CHAIN (WWW.WACHAIN.COM)
   1.4. ALL OTHER ITEMS SUCH AS THE ALUMINUM ANODES, CONCRETE, REINFORCING BARS, HDPE SLEEVES, STEEL PIPE PILES TO BE PROCURED DOMESTICALLY IN CONFORMANCE WITH THE BUY AMERICA ACT.
2. IN CASE THE CONTRACTOR IS UNABLE TO PRODUCE CERTIFICATION SHOWING CONFORMANCE WITH THE BUY-AMERICA ACT, CONTRACTOR TO DEMONSTRATE VIA THE SUBMITTAL PROCESS DOCUMENTATION FROM VARIOUS DOMESTIC VENDORS DEMONSTRATING THAT THE PRODUCT IS UNABLE TO BE PROCURED IN CONFORMANCE WITH THE BUY-AMERICA ACT.

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NO.	REVISION	DATE	APP.

DESIGN BY: LGS	CHECKED BY: FD
DRAWN BY: CM	ENGINEER: FD
SCALE: NOTED	PROJECT NO. 210766-05
CONTRACT NO. 2021-010 A7	
FILE NAME: 210766-03S-001.DWG	

APPROVED

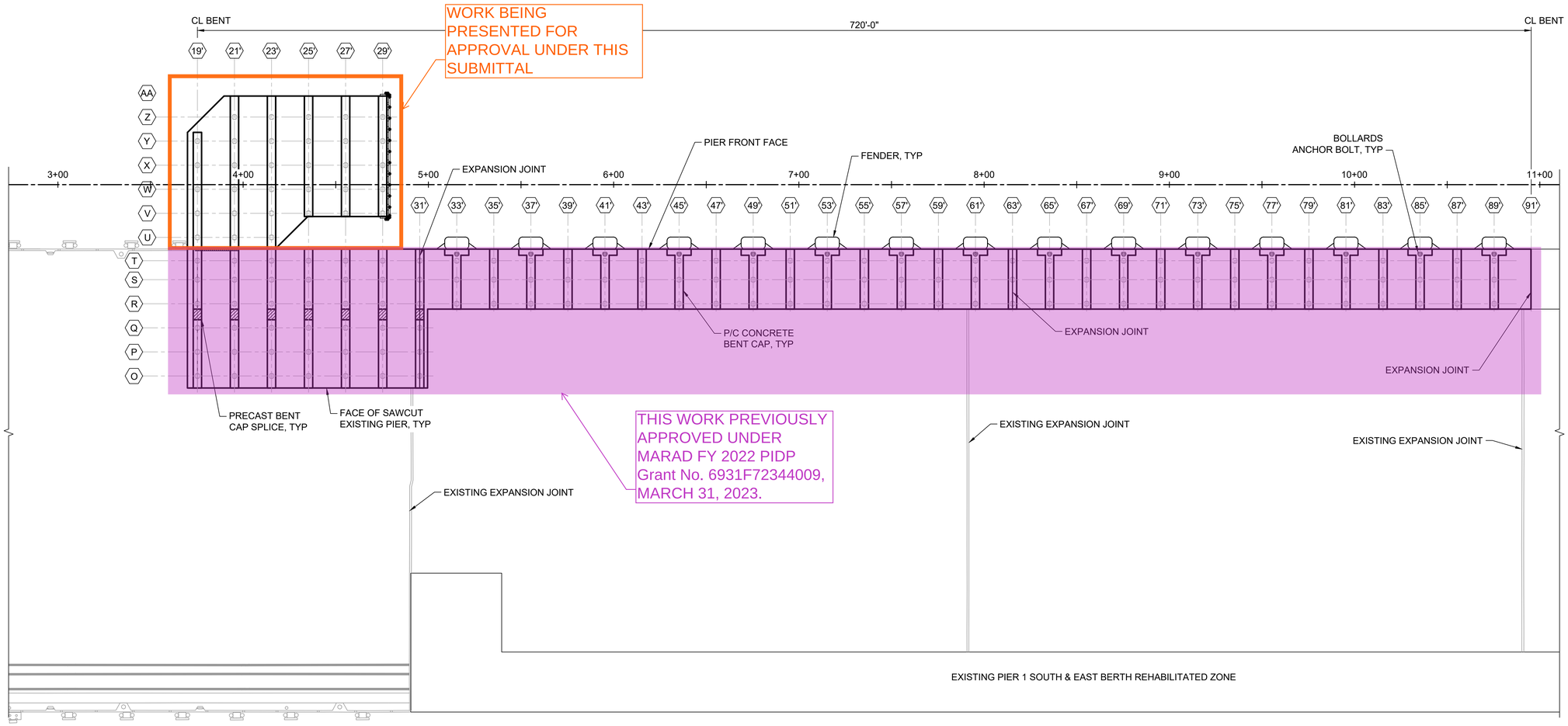
DATE _____

DRAWING TITLE
PIER 1 RAMP & NORTH BERTH

STRUCTURAL NOTES

Quonset Business Park®

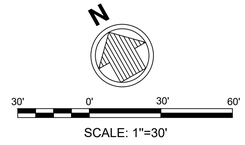
SHEET NO.	DRAWING NO.
S-001	26895
19 OF 41 SHEETS	



B1 / S-100 OVERALL SITE PLAN - NORTH BERTH REHABILITATION
SCALE: 1" = 30'

NOTE:

1. REFER TO DESIGN CRITERIA NOTE 1.B ON SHEET G-002 FOR RAMP LOADING CRITERIA.



SCALE: 1"=30'

RECEIVED
5/5/2025
COASTAL RESOURCES MANAGEMENT COUNCIL

QUONSET DEVELOPMENT CORPORATION
Development Services
95 Cripe Street
North Kingstown, RI 02852
Tel: (401) 295-0044
Fax: (401) 268-9885

moffatt & nichol
180 WELLS AVENUE, SUITE 302
NEWTON, MA 02459
617-299-7330
www.moffattnichol.com

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SEAL

NO.	REVISION	DATE	APP.

DESIGN BY: LGS	CHECKED BY: FD
DRAWN BY: CM	ENGINEER: FD
SCALE: NOTED	PROJECT NO. 210766-05
CONTRACT NO. 2021-010 A7	
FILE NAME:	

APPROVED

DATE _____

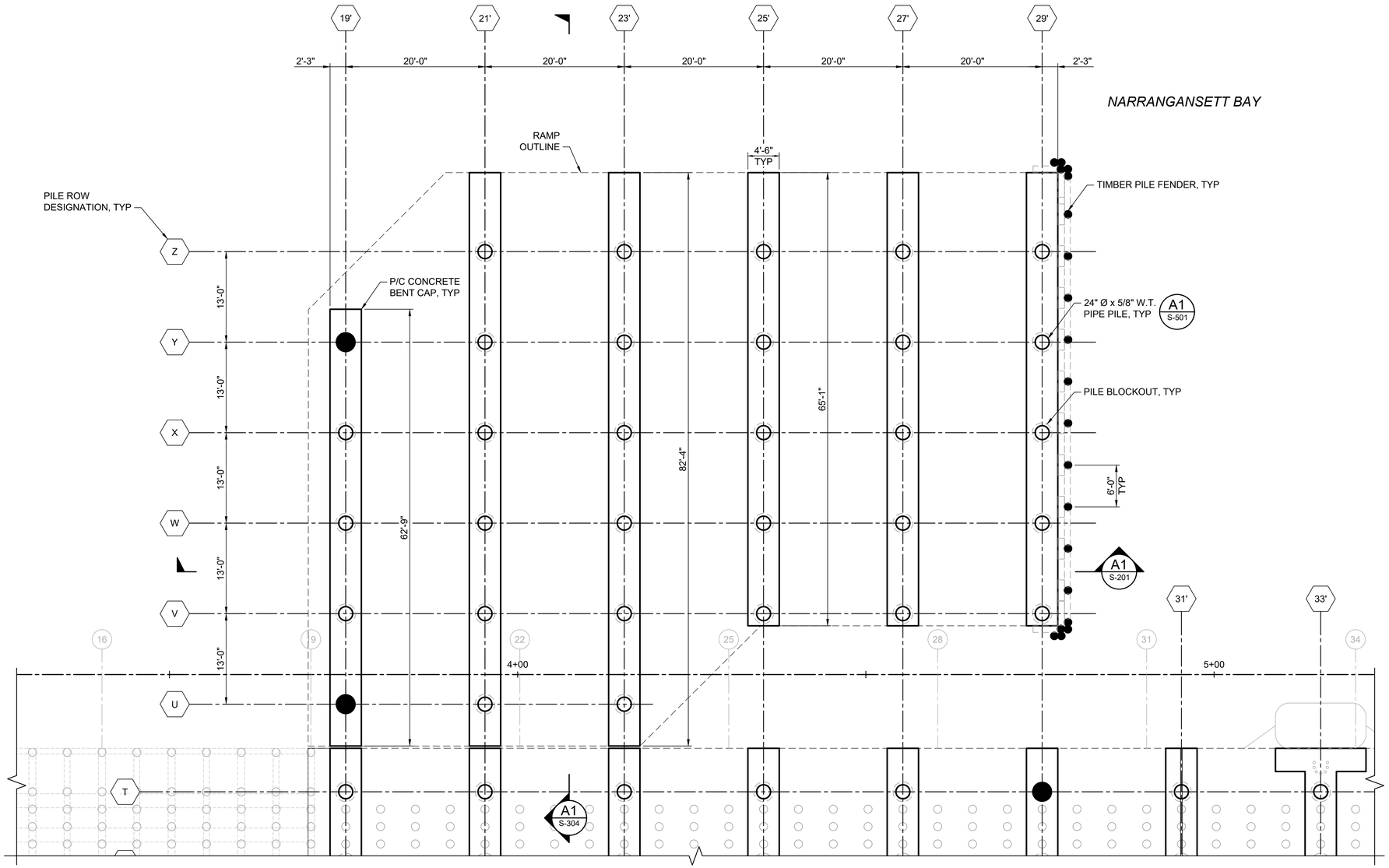
DRAWING TITLE

PIER 1 RAMP & NORTH BERTH

PROPOSED SITE PLAN

Quonset Business Park

SHEET NO.	DRAWING NO.
S-100	**26895**
20 OF 41 SHEETS	



LEGEND:

- ##' NEW PILE BENT DESIGNATION
- A NEW PILE ROW DESIGNATION
- ## EXISTING TIMBER PILE BENT
- ⊗ EXISTING TIMBER PILES TO BE CUT OFF AT EL +6.5'
- ○ EXISTING TIMBER PILES WITHIN WORK AREA TO BE CUT OFF AT THE MUDLINE
- CAST IN PLACE CONCRETE
- PDA TEST PILE

NOTES:

1. PRECAST BENT CAP SPLICE LOCATION MAY BE ADJUSTED AT THE CONTRACTOR'S DISCRETION IF CONTRACTOR CAN PROVIDE WORK PLAN (STAMPED CALCULATION AND PLANS) ENSURING CONCRETE'S INTEGRITY DURING SHIPPING AND INSTALLATION.
2. PRECAST MANUFACTURER TO ENSURE PRECAST MEMBERS ARE DESIGNED ADEQUATELY FOR HANDLING AND CONSTRUCTION LOADS TO AVOID CRACKING AND DAMAGING OF SECTIONS.

N

8'-0" 0'-0" 8'-0" 16'-0"

SCALE: 1/8"=1'-0"

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DRAWN BY: CM	ENGINEER: FD
SCALE: NOTED	PROJECT NO. 210766-05
CONTRACT NO. 2021-010 A7	
FILE NAME:	

APPROVED

DATE _____

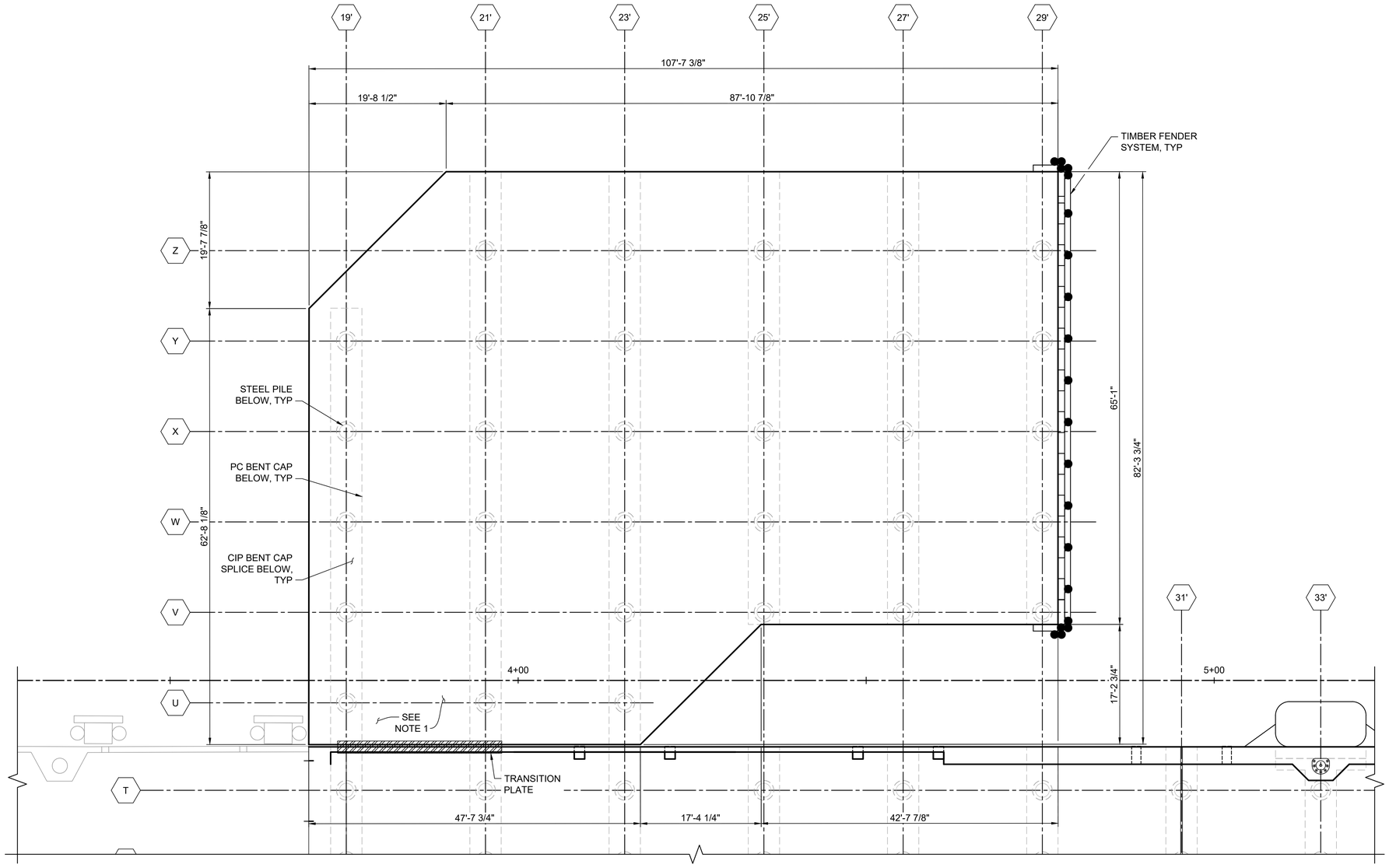
DRAWING TITLE

PIER 1 RAMP & NORTH BERTH

PILE & BENT PLAN - SHEET 1 OF 5

Quonset Business Park®

SHEET NO.	DRAWING NO.
S-101	**26895**
21 OF 41 SHEETS	



NOTES:

1. NEW DECK TO MATCH THE EXISTING DECK ELEVATION OR 1%, WHICHEVER IS STEEPER.
2. CONTRACTOR TO PROVIDE UTILITY DRAIN SUBMITTAL WITH NOMINAL 4" PVC CLEAR OPENING AND GRATE. GRATE LOAD RATING TO BE MIN 1000 PSF.

LEGEND:

##' NEW PILE BENT DESIGNATION

A NEW PILE ROW DESIGNATION

N

8'-0" 0'-0" 8'-0" 16'-0"

SCALE: 1/8"=1'-0"

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NO.	REVISION	DATE	APP.

DESIGN BY: LGS	CHECKED BY: FD
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SCALE: NOTED	PROJECT NO. 210766-05
CONTRACT NO. 2021-010 A7	
FILE NAME:	

APPROVED

DATE _____

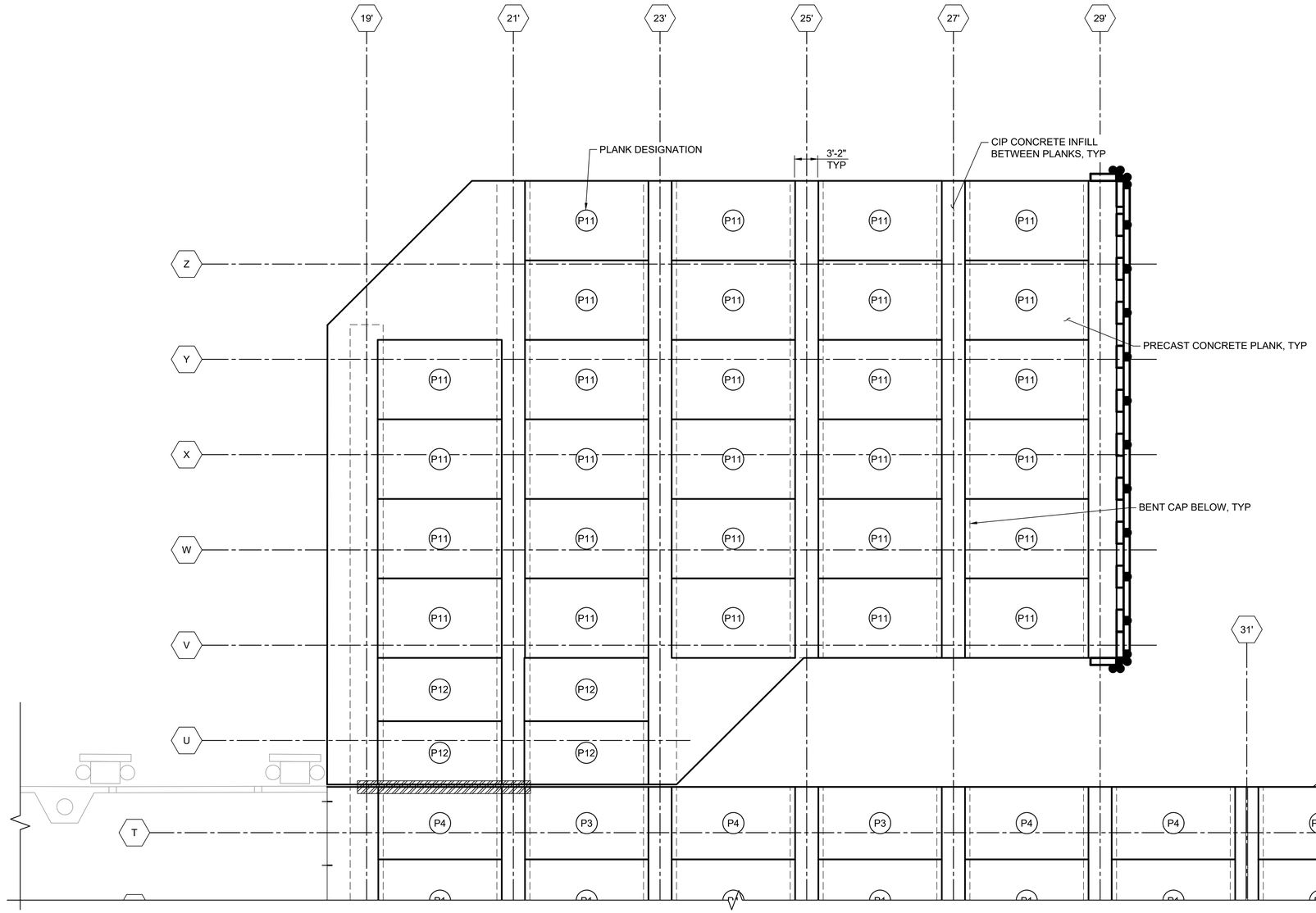
DRAWING TITLE

PIER 1 RAMP & NORTH BERTH

DECK PLAN - SHEET 1 OF 5

Quonset Business Park

SHEET NO.	DRAWING NO.
S-111	**26895**
26 OF 41 SHEETS	



LEGEND:

##' NEW PILE BENT DESIGNATION

T NEW PILE ROW DESIGNATION

N

8'-0" 0'-0" 8'-0" 16'-0"

SCALE: 1/8"=1'-0"

RECEIVED
5/5/2025
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DESIGN BY: LGS	CHECKED BY: FD
DRAWN BY: CM	ENGINEER: FD
SCALE: NOTED	PROJECT NO. 210766-05
CONTRACT NO. 2021-010 A7	
FILE NAME:	

APPROVED

DATE _____

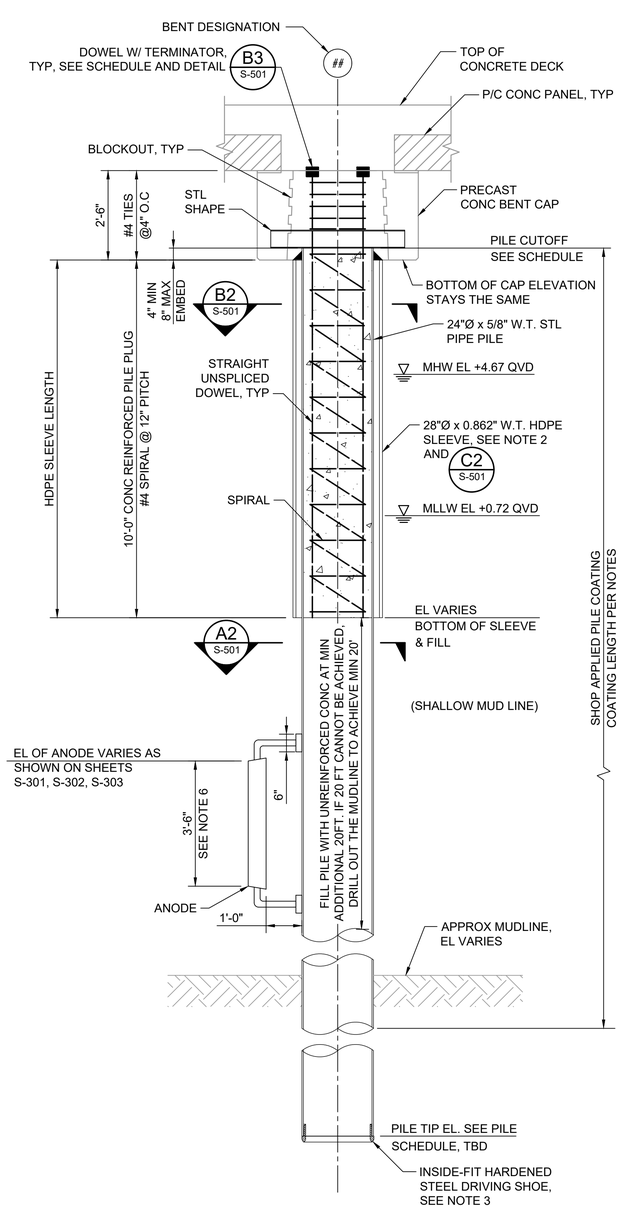
DRAWING TITLE

PIER 1 RAMP & NORTH BERTH

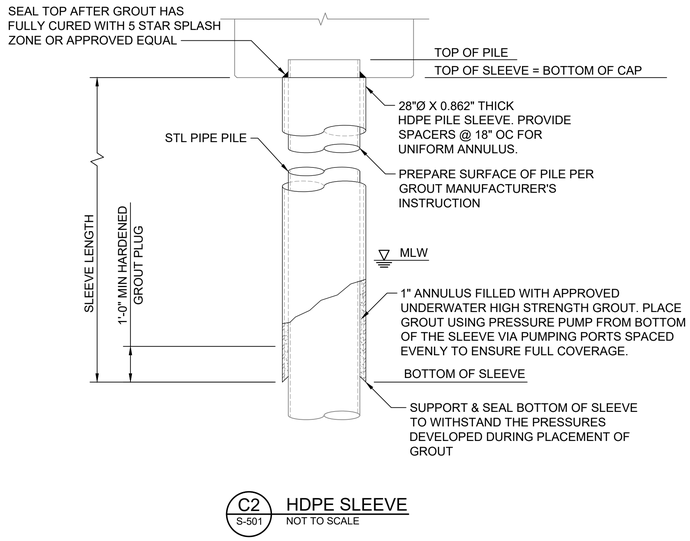
PLANK PLAN - SHEET 1 OF 5

Quonset Business Park®

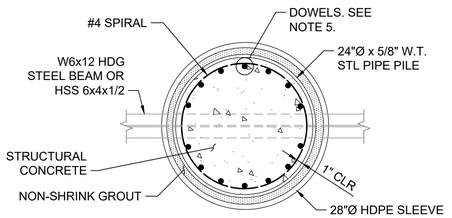
SHEET NO.	DRAWING NO.
S-121	**26895**
31 OF 41 SHEETS	



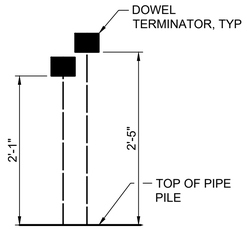
A1 S-101 **24 INCH STEEL PIPE PILE**
SCALE: 1/2" = 1'-0"
S-102 THRU S-105



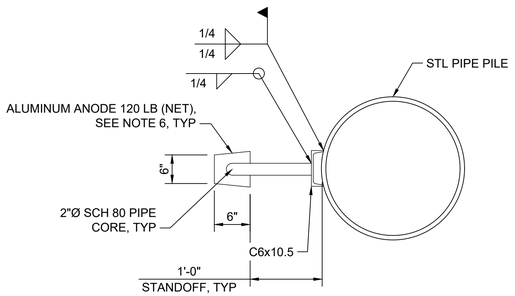
C2 S-501 **HDPE SLEEVE**
NOT TO SCALE



B2 S-501 **SECTION**
NOT TO SCALE



B3 S-501 **DETAIL - DOWEL STAGGERING DETAIL**
SCALE: NOT TO SCALE



A2 S-501 **SACRIFICIAL ANODE**
NOT TO SCALE
S-301 THRU S-303

STEEL PIPE PILE NOTES

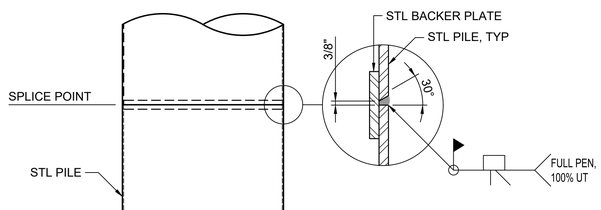
1. DRIVING CRITERIA FOR STEEL PIPE PILES:
   A. MINIMUM ALLOWABLE AND ULTIMATE SOIL-PILE AXIAL CAPACITY PER TABLE BELOW, BASED ON FS = 2.5 FOR COMPRESSION AND 3.0 FOR TENSION. FACTOR OF SAFETY ASSUMES PILES ARE TESTED (PDA).
   B. DRIVE PILES TO MEET BOTH OF THE FOLLOWING CRITERIA:
      - DEPTH REQUIRED TO ACHIEVE ACCEPTANCE CRITERIA FOR COMPRESSION AND TENSION CAPACITY BASED ON FS = 2.5 AND FS= 3.0, RESPECTIVELY,
      - AND MINIMUM TIP ELEVATION INDICATED ON THE PILE SCHEDULE (TBD).
   C. IF STEEL PIPE PILE REACHES PRACTICAL REFUSAL PRIOR TO MINIMUM TIP ELEVATION, NOTIFY ENGINEER FOR FURTHER INSTRUCTION. PRACTICAL REFUSAL SHALL BE DETERMINED BY IMPACT ENERGY AND DRIVING RESISTANCE REQUIRED TO ACHIEVE STRESS OF 0.9*Fy IN THE PILE, AS DETERMINED BY WAVE EQUATION ANALYSIS AND DYNAMIC LOAD TESTING. SELECT PILE HAMMER OF AN APPROPRIATE SIZE SO THAT PRACTICAL REFUSAL, AS DEFINED ABOVE, CAN BE REACHED WITHIN NORMAL OPERATING RANGE OF THE HAMMER.

COMPRESSION (TONS)			TENSION (TONS)	
BENT	ALLOWABLE	ULTIMATE	ALLOWABLE	ULTIMATE
19' THRU 33'	239	598	23	69
35' THRU 63'	255	638	15	45
65' THRU 77'	231	578	27	81
79' THRU 89'	230	575	27	81

2. HDPE SLEEVE UV STABILIZED HARDNESS ASTM D2240 62 SHORE.
3. ATTACH DRIVING SHOE TO PIPE PILE PER MANUFACTURER'S RECOMMENDATIONS.
4. COATING LENGTH SHALL BE MINIMUM 70 FT FOR ALL PILES. TOUCH-UP PAINT ALL DAMAGED AREA.
5. DOWELS SHALL BE GRADE 60 KSI. SEE SCHEDULE:

PILE ROWS	REINFORCING
O , P , Q , R , S & T	14-#14

6. ANODE DIMENSIONS SHOWN ARE NOMINAL, MANUFACTURERS DIMENSIONS MAY VARY. UNDERWATER WELDING IN ACCORDANCE TO AWS D3.6M. ANODES SHALL BE ALUMINUM-GALVANIC TYPE III, INDIUM ACTIVATED IN ACCORDANCE WITH MIL-DTL-24779-D. FOR SACRIFICIAL ANODE QUANTITIES AND ORIENTATION, SEE SHEETS S-301 THROUGH S-303.



NOTES:
1. FIELD SPLICING OF PIPE PILES IS NOT PERMITTED WITHOUT PRIOR APPROVAL FROM ENGINEER. IF PILE SPLICE IS REQUIRED, CONTRACTOR SHALL SUBMIT SHOP DRAWING FOR APPROVAL. CONTRACTOR SHALL INCLUDE, AT A MINIMUM, THE SPLICE LOCATIONS FOR ALL THE PILES WITHIN THE PILE SUBMITTAL AND MINIMIZE THE NUMBER OF SPLICES PER PILE. SPLICE LOCATIONS AT FINAL DRIVEN CONDITION SHOULD BE PLANNED TO BE 10'-0" BELOW MUDLINE.
2. CONTRACTOR SHALL CUT TOP OF PILE SQUARE AND GRIND SMOOTH FOR SPLICE WELDING.
3. REPAIR COATING A MINIMUM OF 1'-0" ON EACH SIDE OF THE WELD IN ACCORDANCE WITH THE COATING MANUFACTURER'S RECOMMENDATION.
4. SPLICES TESTING SHALL BE PERFORMED BY QUALIFIED TESTING AGENCY AS PER THE SPECIFICATIONS. SUBMIT TO ENGINEER FINAL UT TESTING RESULTS.

A4 S-501 **PILE SPLICE**
NOT TO SCALE

2'-0" 0'-0" 2'-0" 4'-0"
SCALE: 1/2"=1'-0"

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NO.	REVISION	DATE	APP.

DESIGN BY: LGS	CHECKED BY: FD
DRAWN BY: CM	ENGINEER: FD
SCALE: NOTED	PROJECT NO. 210766-05
CONTRACT NO. 2021-010 A7	
FILE NAME:	

APPROVED

DATE _____

DRAWING TITLE
PIER 1 RAMP & NORTH BERTH

PILE DETAILS

Quonset Business Park

SHEET NO.	DRAWING NO.
S-501	**26895**
39 OF 41 SHEETS	

Attachment C

CRMC Coastal Hazard Analysis Worksheet

CRMC File Number:

RICRMC COASTAL HAZARD ANALYSIS WORKSHEET

APPLICANT NAME: Quonset Development Corporation (QDC)

PROJECT SITE ADDRESS: 2574 Davisville Rd, North Kingstown, RI 02852

STEP 1. PROJECT DESIGN LIFE

☐ A. For properties in a FEMA-designated **A,** or **X** Zone, provide the first floor elevation (FFE) of the proposed structure referenced to NAVD88, **OR** For properties in a FEMA-designated **V** or **Coastal A** Zone, please provide the elevation of the lowest horizontal structural member (LHSM) referenced to NAVD88.

FFE ____ ft

OR

LHSM elevation 3.45 ft

☐ B. How long do you want your project to last? Identify the expected design life for the project (CRMC recommends a **minimum of 30 years**)

Design Life: 50 yrs

☐ C. Add the number of years you identified in 1B to the current year. (For example, if you are completing this form in the year 2020, and you want your project to last 30 years, your design life year will be 2050.)

Design Life Year: 2075

RECEIVED 5/5/2025 COASTAL RESOURCES MANAGEMENT COUNCIL

☐ D. **CHECK** beneath the sea level rise (SLR) projection that matches or comes closest to project design life year.

Year	2030	2040	2050	2060	2070	2080	2090	2100
SLR	0.71	1.11	1.60	2.29	3.17	4.19	5.35	6.47
	○	○	○	○	○	◉	○	○

Source: Sea Level Rise (SLR) Projections (Feb. 2022). NOAA High Curve, Newport, RI Tide Gauge. All values are expressed in feet relative to NAVD88. https://sealevel.nasa.gov/task-force-scenario-tool?psmsl_id=351

NOTE: The present National Tidal Datum Epoch (NTDE) is 1983 through 2001. The NOAA 2017 data use a baseline starting at 2000, and the NOAA 2022 data use a baseline starting at 2020. Between 1991 and 2020 there was an annual average of 4.03 mm/year of sea level rise at the Newport (8452660) tide station based on the trends data from the Permanent Service for Mean Sea Level (https://www.psmsl.org/products/trends/). Because the PSMSL trends are based on a minimum 30 years of data we will assume a similar trend applies to the shorter 20 year period of 2000 to 2020. Thus, there was approximately 8.06 cm (3.39 inches) of sea level rise during the period 2000 to 2020. Accordingly, the MHHW elevation of 3.85 feet at the Newport station (Epoch 1983-2001) would be adjusted an additional 3.39 inches to 4.13 feet MHHW. For reference, NAVD88 at Newport is 2.04 feet.

STEP 2. SITE ASSESSMENT

☐ A. Open *RICRMC Coastal Hazard Mapping Tool.* Following the tutorial along the left side of the screen, enter the project site address and turn on the sea level layer closest to the number you circled in 1D.

☐ B. **ENTER** the STORMTOOLS SLR map layer closest to the SLR value you checked in Step 1D above. If the value falls between the available STORMTOOLS SLR map layers, round up to the closest of these sea level rise (SLR) numbers: 1ft, 2ft, 3ft, 5ft, 7ft, 10ft, or 12ft — 3 ft

☐ C. Does the STORMTOOLS SLR map layer you circled above expose your project site to future tidal inundation? **CHECK YES or NO** — ○ YES ◉ NO

☐ D. List any **roads or access routes** that are potentially inundated from SLR. To do this, ZOOM OUT from your project location, change BASEMAP on the viewer to "street view" – see Step 2A.

N/A

Please be advised that CRMC staff may also review the implications of sea level rise in combination with nuisance storm flooding and discuss these potential project concerns with the applicant. Nuisance flooding impacts may be viewed in STORMTOOLS here.

STEP 3. STORMTOOLS DESIGN ELEVATION (SDE)

☐ A. Follow the tutorial included along the left panels of the viewer to enter the address of your project site. Select the tab across the top that corresponds to the sea level rise projection you identified in STEP 1

☐ B. Click on the map at project site to identify **STORMTOOLS Design Elevation (SDE)**

from the pop up box. **Enter the SDE value:** 22.4 ft

RI CRMC COASTAL HAZARD APPLICATION WORKSHEET

STEP 4. SHORELINE CHANGE

■ A. Using the *CRMC Shoreline Change maps*, indicate the transect number closest to your site, and erosion rate listed for that transect.

Transect Number: 1700 - 1704

Erosion Rate: -0.02 **ft/year**

B. **CHECK** below the Projected Erosion Rate that corresponds to the design life you identified above.

Year	2050	2060	2070	2080	2090	2100
Projected Future ErosionMultiplier	1.34	1.45	1.57	1.70	1.84	2.00
	○	○	○	◉	○	○

Source: Projected Shoreline Change Rate multipliers. (Oakley et al., 2016)

C. **COMPLETE EROSION SETBACK CALCULATION:**

Historicshoreline changerate, STEP4A		Design Life, STEP 1C		Projected Future ErosionMultiplier, STEP 4B		Erosion Setback (ft) 4A x 1C x 4B
-0.02	X	50	X	1.70	=	-1.7

NOTE: *Setbacks are required per the CRMC Red Book, Section 1.1.9.* ***A minimum setback of 50-feet is required****, but a greater setback may be necessary and/or desirable based on this analysis.*

STEP 5. OTHER SITE CONSIDERATIONS: CERI & SLAMM

■ A. Use the **Coastal Environmental Risk Index (CERI) map (See Tab 5A on the viewer)** to enter your address and CHECK the level of projected damage to your location, as indicated on the map that corresponds to the design life identified in STEP 1.

CERI Level:	Moderate	High	Severe	Extreme	Inundated by 2100	Not applicable
	○	○	○	◉	○	○

■ B. **Sea Level Affecting Marshes Model (SLAMM) (See Tab 5B on the Viewer) -** This step is for Large Projects and Subdivisions only, six (6) or more units, as defined by the CRMC Red Book Section 1.1.6.I(1)(f). This step may be skipped for other projects. Use the Sea Level Affecting Marshes Model (SLAMM) Maps to assess potential impacts to large projects and subdivisions from salt marsh migration resulting from projected sea level rise. CRMC SLAMM maps can be accessed here. The CRMC recommends using the 3-foot SLR projection within SLAMM to assess future potential project impacts on migrating marshes. Does the SLAMM map that corresponds to the design life you identified in STEP 1 expose your project site to future salt marsh migration? **CHECK YES or NO**

YES	NO
○	◉

■ C. Consider and discuss with your design consultant other forces or factors that might impact the development, such as coastal habitats, shoreline features, public access, wastewater, storm water, depth to watertable/groundwater dynamics, saltwater intrusion, or other issues not listed above. In addition, pressure from rising sea levels will result in rising subsurface groundwater levels ultimately effecting wells and septic systems.

STEP 6: DESIGN EVALUATION

☐ A. Using Chapter 7 of the RI Shoreline Change SAMP as a guide, investigate mitigation options for the exposure identified above and include that in the final application.

This fully completed Coastal Hazard Application Guidance worksheet must accompany the application. If you are a design or engineering professional, please print and sign here that you have discussed the findings of this worksheet with the Owner.

DESIGN/ENGINEER SIGNATURE: _____ **DATE:**

OWNER'S SIGNATURE: _____ **DATE:** 4/10/25

Attachment D

Letter from Local Building Official

A Building Official's form was submitted to the RI State Architect for his review, but has not yet been provided back to QDC. Once this form is returned, it will be forwarded to CRMC. However, it is not expected that this work will require a Building Permit, as it does not fall under the International Building Code.

Attachment E

Proof of Property Ownership

DAVISVILLE RD

Location	DAVISVILLE RD	**Plat and Lot (MBLU)**	193/ 026/ / /
Owner	R I COMMERCE CORPORATION	**Assessment**	$8,456,000
Appraisal	$8,456,000	**PID**	185580
Building Count	1		

Current Value

Appraisal			
Valuation Year	**Improvements**	**Land**	**Total**
2025	$7,200,000	$1,256,000	$8,456,000
Assessment			
Valuation Year	**Improvements**	**Land**	**Total**
2025	$7,200,000	$1,256,000	$8,456,000

Owner of Record

Owner	R I COMMERCE CORPORATION	**Sale Price**	$0
Co-Owner		**Certificate**	
Address	95 CRIPE ST N KINGSTOWN, RI 02852	**Book & Page**	0317/0087
		Sale Date	11/28/1978
		Instrument	MP

Ownership History

Ownership History					
Owner	**Sale Price**	**Certificate**	**Book & Page**	**Instrument**	**Sale Date**
R I COMMERCE CORPORATION	$0		0317/0087	MP	11/28/1978

Building Information

Building 1 : Section 1

Year Built:
Living Area: 0

Building Attributes	
Field	**Description**
Style:	Vacant Land

Model	
Grade:	
Stories:	
Occupancy	
Exterior Wall	
Exterior Wall 2	
Roof Structure:	
Roof Cover	
Interior Wall	
Interior Wall 2	
Interior Flr	
Interior Flr 2	
Heat Fuel	
Heat Type:	
AC Type:	
Total Bedrooms:	
Total Bthrms:	
Total Half Baths:	
Total Xtra Fixtrs:	
Total Rooms:	
Bathrm Style	
Kitchen Style	
Num Kitchens	
Cndtn	
Basement Rec	
Basement Fin	
Basement Gar	
Chimney Mason	
Num Park	
ExtraFPLOpen	
Chimney Metal	
Gas FPL/stove	
Fndtn Cndtn	
Basement	

Building Photo

(https://images.vgsi.com/photos/NorthKingstownRIPhotos//default.jpg)

Building Layout

(https://images.vgsi.com/photos/NorthKingstownRIPhotos//Sketches/18558

Building Sub-Areas (sq ft)	Legend
No Data for Building Sub-Areas	

Extra Features

Extra Features	Legend
No Data for Extra Features	

Land

Land Use

Use Code	9010
Description	STATE - V
Zone	QBPD
Alt Land Appr	No
Category	

Land Line Valuation

Size (Acres)	6.90
Depth	0
Assessed Value	$1,256,000
Appraised Value	$1,256,000

Outbuildings

Outbuildings						Legend
Code	**Description**	**Sub Code**	**Sub Description**	**Size**	**Value**	**Bldg #**
DCK2	COM TYPE			240000.00 S.F.	$7,200,000	1

Valuation History

Appraisal			
Valuation Year	**Improvements**	**Land**	**Total**
2024	$7,200,000	$1,173,600	$8,373,600
2023	$7,200,000	$1,173,600	$8,373,600
2022	$7,200,000	$1,173,600	$8,373,600

Assessment			
Valuation Year	**Improvements**	**Land**	**Total**
2024	$7,200,000	$1,173,600	$8,373,600
2023	$7,200,000	$1,173,600	$8,373,600
2022	$7,200,000	$1,173,600	$8,373,600

Attachment F

GARFO Pile Driving Acoustic Tool Results for the Pier 1 Stern Ramp

IMPACT PILE DRIVING

Use check boxes for Taxa present

☑ Fishes ☑ Sea Turtles ☑ Phocid

☑ LF Cet. ☑ MF Cet. ☑ HF Cet. ☐ Otariid

VERSION 2.0-Multi-Species: 2024

KEY

User Provided Information *Default values are in bold, italics turquoise (can be changed by user if project-specific information is available).*

Preset NMFS Provided Information (cannot be altered by user). NMFS thresholds/default weighting value are in bold red.

OUTPUT: Resultant Isopleth/range to effects (cannot be altered by user); Note: isopleths are presented in meters and feet

Automatically Calculated Values Based on User Provided Information (only weighting adjustment (-dB) can be altered by user, Row 68, if spectrum is available)

STEP 1: GENERAL PROJECT INFORMATION

PROJECT TITLE and CONTACT	Pier 1 Stern Ramp
PROJECT/SOURCE INFORMATION (size, material, number, pile strikes, etc.)	24" Steel Pipe Piles

Notes (Please include all assumptions)

STEP 2: QUANTITATIVE PROJECT-SPECIFIC INFORMATION

	METRICS				WEIGHTING (WFA in kHz)	
	Peak	**SELss**	**RMS**			
Unattenuated Single strike level (dB) (see Proxy Level Tab for surrogate values; Copy, ONLY Paste Values (123), not formulas)	195	164	176	**Effective Quiet (Fish Only)**	**Sea Turtle Default WFA (kHz)**	**Marine Mammal Default WFA (kHz)**
Attenuated Single strike level (dB)¤ (calculation done automatically)	**195**	**164**	**176**	150	0.16	2
Distance associated with single strike level/Measurement distance from pile (meters); Typically, 10-m but please double check data being used	*10*	*10*	*10*		WFA: Weighting Factor Adjustment	
Transmission loss constant (NMFS recommends: 15 if unknown)	*15*					
Number of piles per day (best estimate based on previous experience)	5	**Attenuation assumed (e.g., bubble curtain) (enter positive number)**	0			
Number of strikes per pile (best estimate based on previous experience)	50		NMFS recommends 5 dB as default, If attenuation used			
Number of strikes per day	250					
Cumulative SEL at measured distance	188					

RESULTANT ISOPLETHS¶ (Range to Effects)

¶Impulsive sounds have dual metric thresholds for injury (SEL_{cum} & PK). Metric producing largest isopleth should be used.

Fishes present

FISHES	ONSET OF PHYSICAL INJURY		BEHAVIOR
	Peak (PK) Threshold (dB)	SEL_{cum} Threshold (dB)**	RMS Threshold (dB)¥
		Fish ≥ 2 g	Fish < 2 g	
	206	187	183	150
Isopleths (meters)	1.8	11.6	21.5	541.2
Isopleth (feet)	6.1	38.1	70.5	1,775.5

**This calculation accounts for single strike SEL < 150 dB do not accumulate to cause injury (Effective Quiet)

¥The 150 dB threshold is not a "formal" threshold (i.e., level where one can begin to look at potential responses). Please check with your appropriate NMFS HQ/Regional staff to determine if this threshold should be used.

Sea Turtles present

SEA TURTLES	PTS ONSET		BEHAVIOR
	Peak (PK) Threshold (dB)	SEL_{cum} Threshold (dB)	RMS Threshold (dB)
	232	204	175
Isopleths (meters)	0.0	0.9	11.7
Isopleth (feet)	0.1	2.8	38.3

MARINE MAMMALS			AUD INJ ONSET		
Hearing Group	LF Cetacean PTS Peak (PK) Threshold (dB)	MF Cetacean Peak (PK) Threshold (dB)	HF Cetacean PTS Peak (PK) Threshold (dB)	PW Pinniped PTS Peak (PK) Threshold (dB)	OW Pinniped PTS Peak (PK) Threshold (dB)
	222	230	202	223	230
Isopleths (meters)	0.2	0.0	3.4	0.1	0.0
Isopleth (feet)	0.5	0.2	11.2	0.4	0.2
	LF Cetacean AUD INJ SEL_{cum} Threshold (dB)	HF Cetacean AUD INJ SEL_{cum} Threshold (dB)	VHF Cetacean AUD INJ SEL_{cum} Threshold (dB)	PW Pinniped AUD INJ SEL_{cum} Threshold (dB)	OW Pinniped AUD INJ SEL_{cum} Threshold (dB)
	183	193	159	183	185
Isopleths (meters)	21.4	2.7	33.1	19.0	7.1
Isopleth (feet)	70.1	8.9	108.5	62.3	23.2

ALL MARINE MAMMALS	BEHAVIOR
	RMS Threshold (dB)
	160
Isopleths (meters)	116.6
Isopleth (feet)	382.5

LF Cet. present
MF Cet. present
HF Cet. present
Phocids present
NO OTARIIDS

Marine Mammal Hearing Group
Low-frequency (LF) cetaceans: baleen whales
Mid-frequency (MF) cetaceans: dolphins, toothed whales, beaked whales, bottlenose whales
High-frequency (HF) cetaceans: true porpoises, *Kogia*, river dolphins, cephalorhynchid, *Lagenorhynchus cruciger* & *L. australis*
Phocid pinnipeds (PW): true seals
Otariid pinnipeds (OW): sea lions and fur seals

WEIGHTING FUNCTION CALCULATIONS (Sea Turtles and Marine Mammals Only)

Weighting Function Parameters	Low-Frequency Cetaceans	Mid-Frequency Cetaceans	High-Frequency Cetaceans	Phocid Pinnipeds	Otariid Pinnipeds	Sea Turtles
a	0.99	1.55	2.23	1.63	1.58	1.4
b	5	5	5	5	5	2
f_1	0.168	1.73	5.93	0.81	2.53	0.077
f_2	26.6	129	186	68.3	43.8	0.44
C	0.12	0.32	0.91	0.29	1.37	2.35
Adjustment (-dB)†	-0.03	-3.45	-21.19	-0.80	-5.23	0.00

$$W(f) = C + 10\log_{10}\left\{\frac{(f/f_1)^{2a}}{[1+(f/f_1)^2]^b[1+(f/f_2)^2]^b}\right\}$$

IMPACT PILE DRIVING REPORT

VERSION 2.0-Multi-Species: 2024

PRINT IN LANDSCAPE TO CAPTURE ENTIRE SCREEN

(if OTHER INFO or NOTES get cut-off, please include information elsewhere)

Pier 1 Stern Ramp

PROJECT INFORMATION	PEAK	SELss	RMS
Single strike level (dB)	195	164	176
Distance associated with single strike level (meters)	10	10	10
Transmission loss constant	15		
Number of piles per day	5		
Number of strikes per pile	50		
Number of strikes per day	250		
Cumulative SEL at measured distance	188		

OTHER INFO 24" Steel Pipe Piles

NOTES 0

Attenuation 0

RESULTANT ISOPLETHS

(Range to Effects)

FISHES

	ONSET OF PHYSICAL INJURY			BEHAVIOR
	Peak Isopleth	SEL_{cum} Isopleth		RMS Isopleth
		Fish ≥ 2 g	Fish < 2 g	
ISOPLETHS (meters)	1.8	11.6	21.5	541.2
Isopleth (feet)	6.1	38.1	70.5	1,775.5

Fishes present

SEA TURTLES

	PTS ONSET		BEHAVIOR
	Peak Isopleth	SEL_{cum} Isopleth	RMS Isopleth
ISOPLETHS (meters)	0.0	0.9	11.7
Isopleth (feet)	0.1	2.8	38.3

Sea Turtles present

MARINE MAMMALS

	LF Cetacean	MF Cetaceans	HF Cetaceans	PW Pinniped	OW Pinnipeds
AUD INJ ONSET (Peak isopleth, meters)	0.2	0.0	3.4	0.1	0.0
AUD INJ ONSET (Peak isopleth, feet)	0.5	0.2	11.2	0.4	0.2
AUD INJ ONSET (SEL_{cum} isopleth, meters)	21.4	2.7	33.1	19.0	7.1
AUD INJ ONSET (SEL_{cum} isopleth, feet)	70.1	8.9	108.5	62.3	23.2
	ALL MM	MF Cet. present	HF Cet. present	Phocids present	NO OTARIIDS
Behavior (RMS isopleth, meters)	116.6	LF Cet. present			
Behavior (RMS isopleth, feet)	382.5				

Vibratory Pile Driving

Use check boxes for Taxa present

☑ Fishes ☑ Sea Turtles ☑ Phocid

☑ LF Cet. ☑ MF Cet. ☑ HF Cet. ☐ Otariid

VERSION 2.0-Multi-Species: 2024

KEY

	User Provided Information *Default values are in bold, italics turquoise (can be changed by user if project-specific information is available).*
	Preset NMFS Provided Information (cannot be altered by user). NMFS thresholds/default weighting value are in bold red.
	OUTPUT: Resultant Isopleth/Range to Effects (cannot be altered by user); Note: isopleths are presented in meters and feet
	Automatically Calculated Values Based on User Provided Information (only weighting adjustment (-dB) can be altered by user; Row 65, if spectrum is available)

STEP 1: GENERAL PROJECT INFORMATION

PROJECT TITLE and CONTACT	Pier 1 Stern Ramp
PROJECT/SOURCE INFORMATION (size, material, number, duration to drive pile, etc.)	12" Timber Piles for Fender System

Notes (please include all assumptions)

STEP 2: QUANTITATIVE PROJECT-SPECIFIC INFORMATION

1 sec SEL = RMS	METRIC: RMS (NOT Peak)	WEIGHTING (WFA in kHz)	
Unattenuated Sound Pressure Level (dB) (see Proxy Level Tab for surrogate values; Copy, ONLY Paste Values (123), not formulas)	162	Sea Turtle Default WFA (kHz)	Marine Mammal Default WFA (kHz)
Attenuated Sound Pressure Level (dB)* (calculation done automatically)	**162**	**0.16**	**2.5**
Distance associated with sound pressure level measurement/Measurement distance from pile (meters); Typically, 10-m but please double check data being used	*10*		
Transmission loss constant (NMFS recommends: 15 if unknown)	*15*		
Number of piles per day (best estimate based on previous experience)	10	Attenuation (e.g., bubble curtain) (enter positive number)	0
Duration to drive a single pile (minutes) (best estimate based on previous experience)	45		
Duration of Sound Production within a day (seconds)	27000	Cumulative SEL at measured distance (dB)	206.31
10 Log (duration of sound production)	44.31		

*If sound pressure level provided includes attenuation methods (e.g., bubble curtain), please note this in Project/Source Information in Step 1

RESULTANT ISOPLETHS
(Range to Effects)

For vibratory pile driving, only behavioral thresholds exist for fishes

Fishes present	FISHES: BEHAVIOR
	RMS Threshold (dB)¥
	150
Isopleth (meters)	63.1
Isopleth (feet)	207.0

¥The 150 dB threshold is not a "formal" threshold (i.e., level where one can begin to look at potential responses). Please check with your appropriate NMFS HQ/Regional staff to determine if this threshold should be used.

Sea Turtles present	SEA TURTLES: PTS ONSET	BEHAVIOR
	PTS SEL_{cum} Threshold (dB)	RMS Threshold (dB)
	220	175
Isopleth (meters)	1.2	1.4
Isopleth (feet)	4.0	4.5

Hearing Group	MARINE MAMMALS: LF Cetacean AUD INJ SEL_{cum} Threshold (dB)	HF Cetacean AUD INJ SEL_{cum} Threshold (dB)	AUD INJ ONSET: VHF Cetacean AUD INJ SEL_{cum} Threshold (dB)	PW Pinniped AUD INJ SEL_{cum} Threshold (dB)	OW Pinniped AUD INJ SEL_{cum} Threshold (dB)
	197	201	181	195	199
Isopleth (meters)	41.2	15.8	33.7	53.0	17.8
Isopleth (feet)	135.2	51.9	110.4	174.0	58.6

ALL MARINE MAMMALS	BEHAVIOR
	RMS Threshold (dB)
	120
Isopleth (meters)	6,309.6
Isopleth (feet)	20,700.7

LF Cet. present
MF Cet. present
HF Cet. present
Phocids present
NO OTARIIDS

Marine Mammal Hearing Group
Low-frequency (LF) cetaceans: baleen whales
Mid-frequency (MF) cetaceans: dolphins, toothed whales, beaked whales, bottlenose whales
High-frequency (HF) cetaceans: true porpoises, *Kogia*, river dolphins, cephalorhynchid, *Lagenorhynchus cruciger* & *L. australis*
Phocid pinnipeds (PW): true seals
Otariid pinnipeds (OW): sea lions and fur seals

WEIGHTING FUNCTION CALCULATIONS

Weighting Function Parameters	Low-Frequency Cetaceans	Mid-Frequency Cetaceans	High-Frequency Cetaceans	Phocid Pinnipeds	Otariid Pinnipeds	Sea Turtles
a	0.99	1.55	2.23	1.63	1.58	1.4
b	5	5	5	5	5	2
f_1	0.168	1.73	5.93	0.81	2.53	0.077
f_2	26.6	129	186	68.3	43.8	0.44
C	0.12	0.32	0.91	0.29	1.37	2.35
Adjustment (-dB)†	-0.09	-2.32	-17.41	-0.45	-3.54	0.00

$$W(f) = C + 10\log_{10}\left\{\frac{(f/f_1)^{2a}}{[1+(f/f_1)^2]^a[1+(f/f_2)^2]^a}\right\}$$

VIBRATORY PILE DRIVING REPORT

PRINT IN **LANDSCAPE** TO CAPTURE ENTIRE SCREEN

VERSION 2.0-Multi-Species: 2024

(if OTHER INFO or NOTES get cut-off, please include information elsewhere)

Pier 1 Stern Ramp

PROJECT INFORMATION	RMS
Sound pressure level (dB)	162
Distance associated with sound pressure level (meters)	10
Transmission loss constant	15
Number of piles per day	10
Duration to drive pile (minutes)	45
Duration of sound production in day	27000
Cumulative SEL at measured distance	206

OTHER INFO 12" Timber Piles for Fender System

NOTES 0

Attenuation 0

RESULTANT ISOPLETHS

(Range to Effects)

FISHES

	BEHAVIOR
Fishes present	RMS Isopleth
ISOPLETHS (meters)	63.1
ISOPLETHS (feet)	207.0

SEA TURTLES

	PTS ONSET	BEHAVIOR
Sea Turtles present	SEL_{cum} Isopleth	RMS Isopleth
ISOPLETHS (meters)	1.2	1.4
ISOPLETHS (feet)	4.0	4.5

MARINE MAMMALS

	LF Cetacean	MF Cetaceans	HF Cetaceans	PW Pinniped	OW Pinnipeds
UD INJ ONSET (SELcum isopleth, meters)	41.2	15.8	33.7	53.0	17.8
AUD INJ ONSET (SELcum isopleth, feet)	135.2	51.9	110.4	174.0	58.6
	ALL MM	MF Cet. present	HF Cet. present	Phocids present	NO OTARIIDS
Behavior (RMS isopleth, meters)	6,309.6	LF Cet. present			
Behavior (RMS isopleth, feet)	20,700.7				

Vibratory Pile Driving

Use check boxes for Taxa present

☑ Fishes ☑ Sea Turtles ☑ Phocid

☑ LF Cet. ☑ MF Cet. ☑ HF Cet. ☐ Otariid

VERSION 2.0-Multi-Species: 2024

KEY

	User Provided Information *Default values are in bold, italics turquoise (can be changed by user if project-specific information is available).*
	Preset NMFS Provided Information (cannot be altered by user). NMFS thresholds/default weighting value are in bold red.
	OUTPUT: Resultant Isopleth/Range to Effects (cannot be altered by user); Note: isopleths are presented in meters and feet
	Automatically Calculated Values Based on User Provided Information (only weighting adjustment (-dB) can be altered by user; Row 65, if spectrum is available)

STEP 1: GENERAL PROJECT INFORMATION

PROJECT TITLE and CONTACT	Pier 1 Stern Ramp
PROJECT/SOURCE INFORMATION (size, material, number, duration to drive pile, etc.)	24" Steel Pipe Piles

Notes (please include all assumptions)

STEP 2: QUANTITATIVE PROJECT-SPECIFIC INFORMATION

1 sec SEL = RMS	METRIC: RMS (NOT Peak)	WEIGHTING (WFA in kHz)	
Unattenuated Sound Pressure Level (dB) (see Proxy Level Tab for surrogate values; Copy, ONLY Paste Values (123), not formulas)	153	Sea Turtle Default WFA (kHz)	Marine Mammal Default WFA (kHz)
Attenuated Sound Pressure Level (dB)* (calculation done automatically)	**153**	**0.16**	**2.5**
Distance associated with sound pressure level measurement/Measurement distance from pile (meters); Typically, 10-m but please double check data being used	*10*		
Transmission loss constant (NMFS recommends: 15 if unknown)	*15*		
Number of piles per day (best estimate based on previous experience)	5	Attenuation (e.g., bubble curtain) (enter positive number)	0
Duration to drive a single pile (minutes) (best estimate based on previous experience)	90		
Duration of Sound Production within a day (seconds)	27000	Cumulative SEL at measured distance (dB)	197.31
10 Log (duration of sound production)	44.31		

*If sound pressure level provided includes attenuation methods (e.g., bubble curtain), please note this in Project/Source Information in Step 1

RESULTANT ISOPLETHS
(Range to Effects)

For vibratory pile driving, only behavioral thresholds exist for fishes

Fishes present	FISHES: BEHAVIOR
	RMS Threshold (dB)¥
	150
Isopleth (meters)	15.8
Isopleth (feet)	52.0

¥The 150 dB threshold is not a "formal" threshold (i.e., level where one can begin to look at potential responses). Please check with your appropriate NMFS HQ/Regional staff to determine if this threshold should be used.

Sea Turtles present	SEA TURTLES: PTS ONSET	BEHAVIOR
	PTS SEL_{cum} Threshold (dB)	RMS Threshold (dB)
	220	175
Isopleth (meters)	0.3	0.3
Isopleth (feet)	1.0	1.1

	MARINE MAMMALS		AUD INJ ONSET		
Hearing Group	LF Cetacean AUD INJ SEL_{cum} Threshold (dB)	HF Cetacean AUD INJ SEL_{cum} Threshold (dB)	VHF Cetacean AUD INJ SEL_{cum} Threshold (dB)	PW Pinniped AUD INJ SEL_{cum} Threshold (dB)	OW Pinniped AUD INJ SEL_{cum} Threshold (dB)
	197	201	181	195	199
Isopleth (meters)	10.3	4.0	8.5	13.3	4.5
Isopleth (feet)	34.0	13.0	27.7	43.7	14.7

ALL MARINE MAMMALS	BEHAVIOR
	RMS Threshold (dB)
	120
Isopleth (meters)	1,584.9
Isopleth (feet)	5,199.8

LF Cet. present
MF Cet. present
HF Cet. present
Phocids present
NO OTARIIDS

Marine Mammal Hearing Group
Low-frequency (LF) cetaceans: baleen whales
Mid-frequency (MF) cetaceans: dolphins, toothed whales, beaked whales, bottlenose whales
High-frequency (HF) cetaceans: true porpoises, *Kogia*, river dolphins, cephalorhynchid, *Lagenorhynchus cruciger* & *L. australis*
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WEIGHTING FUNCTION CALCULATIONS

Weighting Function Parameters	Low-Frequency Cetaceans	Mid-Frequency Cetaceans	High-Frequency Cetaceans	Phocid Pinnipeds	Otariid Pinnipeds	Sea Turtles
a	0.99	1.55	2.23	1.63	1.58	1.4
b	5	5	5	5	5	2
f_1	0.168	1.73	5.93	0.81	2.53	0.077
f_2	26.6	129	186	68.3	43.8	0.44
C	0.12	0.32	0.91	0.29	1.37	2.35
Adjustment (-dB)†	-0.09	-2.32	-17.41	-0.45	-3.54	0.00

$$W(f) = C + 10\log_{10}\left\{\frac{(f/f_1)^{2a}}{[1+(f/f_1)^2]^a[1+(f/f_2)^2]^a}\right\}$$

VIBRATORY PILE DRIVING REPORT

PRINT IN **LANDSCAPE** TO CAPTURE ENTIRE SCREEN

VERSION 2.0-Multi-Species: 2024

(if OTHER INFO or NOTES get cut-off, please include information elsewhere)

Pier 1 Stern Ramp

PROJECT INFORMATION	RMS
Sound pressure level (dB)	153
Distance associated with sound pressure level (meters)	10
Transmission loss constant	15
Number of piles per day	5
Duration to drive pile (minutes)	90
Duration of sound production in day	27000
Cumulative SEL at measured distance	197

OTHER INFO 24" Steel Pipe Piles

NOTES 0

Attenuation 0

RESULTANT ISOPLETHS

(Range to Effects)

FISHES

	BEHAVIOR
Fishes present	RMS Isopleth
ISOPLETHS (meters)	15.8
ISOPLETHS (feet)	52.0

SEA TURTLES

	PTS ONSET	BEHAVIOR
Sea Turtles present	SEL_{cum} Isopleth	RMS Isopleth
ISOPLETHS (meters)	0.3	0.3
ISOPLETHS (feet)	1.0	1.1

MARINE MAMMALS

	LF Cetacean	MF Cetaceans	HF Cetaceans	PW Pinniped	OW Pinnipeds
UD INJ ONSET (SELcum isopleth, meters)	10.3	4.0	8.5	13.3	4.5
AUD INJ ONSET (SELcum isopleth, feet)	34.0	13.0	27.7	43.7	14.7
	ALL MM	MF Cet. present	HF Cet. present	Phocids present	NO OTARIIDS
Behavior (RMS isopleth, meters)	1,584.9	LF Cet. present			
Behavior (RMS isopleth, feet)	5,199.8				

Attachment G

Site Photographs

Photo 1: Port of Davisville's Pier 1 and Pier 2 facing west.

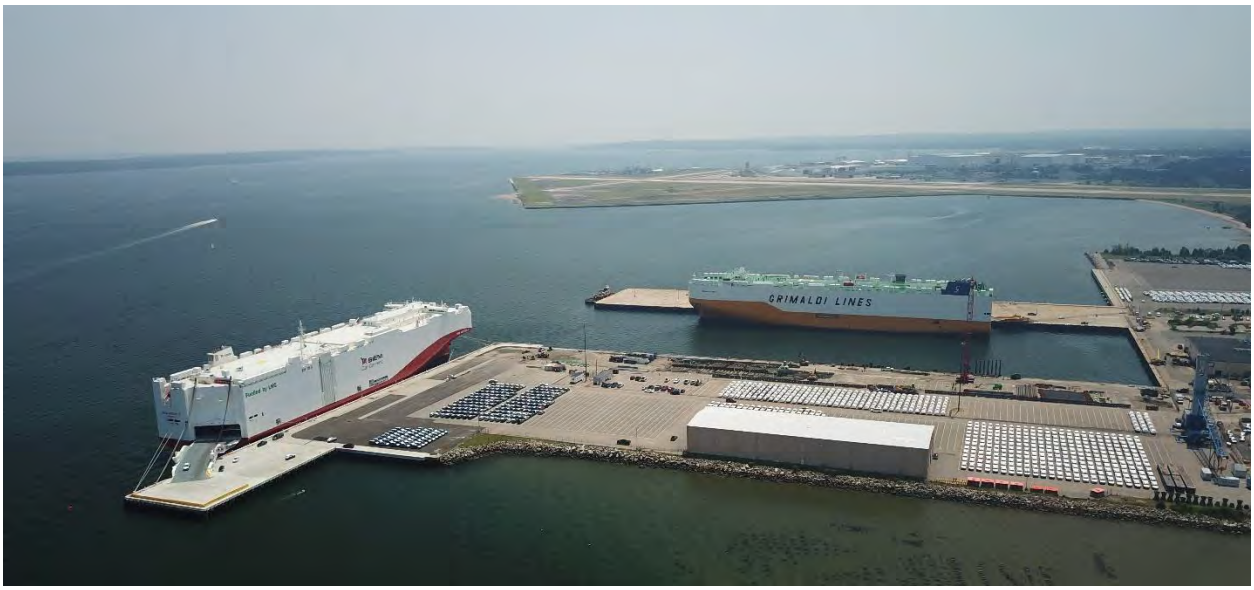

Photo 2: Port of Davisville's Pier 1 and Pier 2 facing south.

Attachment H

Proposed Updated Structure Limit Plan

GENERAL NOTES:
1. PORT OF DAVISVILLE PIER 1 AND 2, AND SUPPORTING BERTHS PROVIDED BY QUONSET DEVELOPMENT CORPORATION (QDC) IN DECEMBER OF 2018.
2. TERMINAL 5 PIER AND BLUE ECONOMY SUPPORT DOCKS AND VESSLEL LAUNCH RAMP LIMITS PROVIDED BY WSP IN JULY OF 2024.
3. PIER 1 STERN RAMP LIMITS PROVIDED BY MOFFAT & NICHOL IN MARCH 2025.
4. THE STRUCTURE LIMITS DEVELOPED WITHIN THIS PLAN WERE DETERMINED FROM THE ABOVE NOTED FILES AND CAN ONLY BE CONSIDERED REPRESENTATIVE OF THESE FILES. FOTH HAS NOT PERFORMED ANY CONFIRMATORY SURVEYS TO SUPPORT THE INFORMATION DEPICTED IN THESE FILES.

POINT ID	EASTING	NORTHING
A	354623.6	193911.0
B	354750.3	354750.3
C	354865.6	194042.7
D	354997.5	193968.3
E	354538.5	193160.6
F	353491.3	193755.2
G	353261.8	193351.5
H	353401.0	193272.7
I	353440.2	193341.9
J	353551.1	193279.1
K	353512.0	193210.0
L	354309.7	192759.0
M	354174.0	192517.6
N	353131.0	193107.0
O	352896.2	192686.0
P	353912.0	192110.7
Q	353804.4	191920.6
R	353169.6	192279.7
S	353142.2	353142.2
T	352711.0	192476.1

COORDINATES ARE BASED ON NAD83 RHODE ISLAND STATE PLANE GRID SYSTEM, US SURVEY FOOT

QUONSET DEVELOPMENT CORPORATION

Development Services
95 Cripe Street
North Kingstown, RI 02852
Tel: (401) 295-0044
Fax: (401) 268-9885

Foth
FOTH INFRASTRUCTURE & ENVIRONMENT, LLC
15 CREEK ROAD
MARION, MA 02738

SEAL

MICHAEL CAMPAGNONE
No. 14357
REGISTERED PROFESSIONAL ENGINEER
CIVIL

NO.	REVISION	DATE	APP.

DESIGN BY: MEC	CHECKED BY: KEC
DRAWN BY: EDB	ENGINEER: MEC
SCALE: 1" = 150'	PROJECT NO.
CONTRACT NO.	
FILE: QDC POD STRUCTURE LIMITS.DWG	

APPROVED

GREGORY J. COREN, P.E.
QDC ENGINEERING MANAGER

DATE _____

RECEIVED 5/5/2025 COASTAL RESOURCES MANAGEMENT COUNCIL

DRAWING TITLE

PORT OF DAVISVILLE STRUCTURE LIMIT - PIER 1 STERN RAMP

Quonset Business Park®

SHEET NO.	DRAWING NO.
1 OF 1	