NARRAGANSETT BAY HIGH SPEED NETWORK

PHASE 1- SITE SELECTIONS AND SITE DESIGNS

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University of Rhode Island

June 2004

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16. Abstract

The premise of this student design project is to establish conceptual, site specific, layouts of a ferry terminal building serving as a welcome center and ticket kiosk. Parking lots were planned solely at the following sites deemed “Park-n-Ride” sites: India Point Park (Providence), Narragansett Landing (Collier Point Park - Providence), Rocky Point (Warwick), Quonset Point/Davisville (North Kingstown), and Warren Harbor (Warren).

The intent of establishing “Park-n-Ride” ferry sites is to attract seasonal beach-goers to these concentrated gathering points to utilize waterborne High Speed Ferry services to travel to “Destination” sites designed at the following Narragansett, RI sites: Scarborough State Beach and Sand Hill Cove (Roger Wheeler State Beach). Spin-off economic development around each “Park-n-Ride” site would develop as a result of increased local traffic to/from the “Park-n-Ride” Ferry Terminal complex due to pedestrian traffic, bikepaths, local buses/trolleys, and short distance automobile usage from neighboring communities within the respective site’s market of demand. Environmental benefits resulting from reduced traffic congestion to/from the Beaches would result as well. Rhode Island’s tourism industry would be provided with another attraction to compliment its robust offerings.

The economic premise of this project views the localized economic development as a positive offset to the operational deficiencies of the ferry service itself. Only a small quantity of trips can be made due to the long travel distances from the “Park-n Ride” sites to the “Destination” sites compounded with time required for boarding and ticketing. The “Beach” Ferry Service would not be able to generate enough revenue to cover construction and operational costs with such a low volume of revenue generating trips available to it. The number of trips could be increased only if boat speed is increased from the current 25knots to possibly 40knots, or even 60knots, but increased speed results in increased operational costs; such as, fuel consumption. Federal and State subsidies would be required.

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PREFACE

This report was prepared by the Rhode Island Design Studio consortium of high school and collegiate student design programs to develop site specific, conceptual site plans with marine terminals for tourist and commuter use. These site plans are presented for reference only as student conceptualization to the Coastal Resource Management Council (CRMC), the Department of Environmental Management (RIDEM), the Department of Transportation (RIDOT), Public Transit Authority (RIPTA), Economic Development Corporation (RIEDC), and respective town/municipal Planning Departments. The student generated concepts are not intended for implementation but rather to provide a design exercise for the students on a transportation related topic.

Funding support was provided by the University of Rhode Island Transportation Center (URITC). High school and collegiate student design programs significantly contributed to the development of this report as a research, education case study consistent with the theme of the URITC which is "Surface Intermodal Transportation systems and Advanced Transportation Infrastructure with special reference to the Marine Environment."

Please visit www.ridesignstudio.org for student presentations and additional student generated information not included in this report.

Pertinent Publications and Studies:

1) "Town Wharf," dated January 2002, study for the Town of Warren, RI

2) "India Point Park Ferry Terminal, Remote Parking Options for Providence to Newport Ferry Service," dated November 2001, by Edwards & Kelcey, Inc. for the Rhode Island Public Transit Authority,

3) "Boston Inner Harbor Passenger Water Transportation Plan," dated January 2000, by TAMS Consultants, Inc. for the Boston Redevelopment Authority and the City of Boston,

4) "Rhode Island Waterborne Passenger Transportation Plan," dated August 1998, Report Number 95, State Guide Plan Element 651 by Rhode Island Department of Transportation and the State Planning Council.

5) "Newport Marine Facilities, FHWA-RI-EIS-97-01-D, Draft Environmental Impact Statement Draft Section 4(f)/6(f) Evaluation," dated May 1997, by U.S. Department of Transportation Federal Highway Administration for Fort Adams Landing, Long Wharf Landing, Navy Pier 1 Landing

6) "Massachusetts Ferry Project," dated August 1997, by Boelter & Associates, Inc. for Massachusetts Executive Office of Transportation and Construction

7) "The Bay Islands Park Plan," 1974

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CHAPTER 1 – Executive Summary

The "Narragansett Bay High Speed Ferry Network – Phase 1 Site Selection & Site Design" project was undertaken to focus the energies of high school and collegiate students onto transportation related issues and professional fields. This fostered the establishment of a consortium of high schools and colleges with robust student design programs involving a student generated design.

The talents of students throughout the State of Rhode Island have been routinely exercised independently of each other on diverse topics. These independent programs never before attempted to coordinate their efforts onto a common subject matter so the Rhode Island Design Studio was created as a consortium of schools contributing their respective elements to the common subject of waterborne transportation on Narragansett Bay. The role of the Rhode Island Design Studio is to marshal the energies of these student design programs by providing support to each teacher and professor so as to streamline the incorporation of the topic into the classroom without disrupting the established curriculum requirements.

This project also enabled the Rhode Island Design Studio to invent and establish the operational processes that enable a common subject to be addressed by several schools located throughout the State of Rhode Island. An operational budget was established along with web hosting services and assembling design information databases. Business Planning has be furthered so as to establish this consortium as a educational, non-profit entity. This consortium is intent to expand to include additional student design programs at other colleges and high schools and to further refine the newly established operational processes and infrastructure that make this statewide student collaboration possible for future projects.

The goal of exposing students to transportation related professional fields was achieved by integrating student design programs that could relate to one another and widen the sphere of influence beyond a single trade or industry. Technology oriented student design programs; such as, architecture/landscape architecture/engineering classes, web design classes, and graphic design classes were chosen to be associated with this project to reflect the modern, internet based, project websites commonly used by architecture/engineering firms working on transportation projects.

The site plan designs produced by the collegiate landscape architecture, architecture, and engineering students provided the graphics and text to populate project webpages created by high school web design students while logos created by high school graphic design students enhanced the project with a business marketing conceptualization. High school students learning how to utilize Computer Aided Design (AutoCAD) software applied their lessons to developing rudimentary site plans as well. The AutoCAD students were also visited by the collegiate professors. Their visit presented the college site plan designs and served to introduce the high school students to the college degree programs as a recruiting tool while furthering the discussion among the students on a transportation related issue.

The culmination of this multi-industry approach (arch+engin/web/graphics) is a ferry network product identity with a tangible physical site plan layout. This enabled a very diverse exposure of transportation planning not only to landscape architecture, engineering, and architecture students but also to web students and graphic design students. The traditional collegiate and high school course curriculum was satisfied; as required, but the transportation theme of using ferries for mass transit in conjunction with land based bus routes, automobiles, bikepaths, and pedestrian traffic flows was injected into their team discussions as designs for site plans, logos, and webpages were refined.

A secondary benefit enabled the students to serve the State of Rhode Island. The students were excited to conceptualize a site plan design for a ferry landing that may be of interest to transportation planners, city/town planning offices, and legislators.. Students were excited to develop marketing logos that represent the sites that could interest transportation planners, city/town planning offices, and legislators. Students were excited to develop webpages that would be used to present these site plan designs and marketing logos that could be visited on the web by interested transportation planners, city/town planning offices, and legislators.

This URI Transportation Center (URITC) Project inherently executes the recommendations provided in the Rhode Island Waterborne Passenger Transportation Plan," dated August 1998, whereby, the "Rhode Island Waterborne Passenger Transportation Plan" tasks the Rhode Island Department of Transportation (RIDOT) with developing opportunities and facilitating programs to foster water transportation services into the year 2010. As a byproduct of fostering student interest in water transportation services, the Rhode Island Design Studio Consortium is now in existence and in position to continue to serve the State of Rhode Island.

Collegiate teachers and students who were instrumental in developing this report include:

Prof. Angelo Simeoni, University of Rhode Island Department of Community Planning & Landscape Architecture
Terry Boudreau, student (Junior year), India Point Park Landing site design and building layout
Chris Dorion, student (Junior year), India Point Park Landing site design and building layout
Samantha Head, student (Junior year), India Point Park Landing site design and building layout
Kimberly Downes, student (Junior year), Narragansett Landing site design and building layout
Roland Hellwig, student (Junior year), Narragansett Landing site design and building layout
Joan Lord, student (Junior year), Narragansett Landing site design and building layout
Emily Forcier, student (Junior year), Rocky Point Landing site design and building layout
Kristen Kaczmarek, student (Junior year), Rocky Point Landing site design and building layout
Jim Wolfe, student (Junior year), Rocky Point Landing site design and building layout
Joseph Skorupa, student (Junior year), Quonset Point Landing site design and building layout
Gregory Rusnica, student (Junior year), Quonset Point Landing site design and building layout
Trevor Jones, student (Junior year), Quonset Point Landing site design and building layout
Mike Doten, , student (Junior year), Scarborough Beach Landing site design and building layout
Colin Hines, student (Junior year), Scarborough Beach Landing site design and building layout
John Piccirillo, student (Junior year), Scarborough Beach Landing site design and building layout
Drew Madlinger, student (Junior year), Sand Hill Cove Landing site design and building layout
Mike Ogilvie, student (Junior year), Sand Hill Cove Landing site design and building layout
Cheryl Russ, student (Junior year), Sand Hill Cove Landing site design and building layout

Prof. B.G Shanklin, Roger Williams University School of Architecture, Art, & Historic Preservation
Timothy Bestor, student (Senior year), Warren Harbor Ferry Landing site design and building layout
Warren Callender, student (Senior year), Warren Harbor Ferry Landing site design and building layout
Chris Catarino, student (Senior year), Warren Harbor Ferry Landing site design and building layout
Jim Dixon, student (Senior year), Warren Harbor Ferry Landing site design and building layout
Dana Myers, student (Senior year), Warren Harbor Ferry Landing site design and building layout
David Norris, student (Senior year), Warren Harbor Ferry Landing site design and building layout
Chris Wedge, student (Senior year), Warren Harbor Ferry Landing site design and building layout
Josh Roth, student (Senior year), Warren Harbor Ferry Landing site design and building layout
Heather Rumore, student (Senior year), Warren Harbor Ferry Landing site design and building layout
Joe Tilli, student (Senior year), Warren Harbor Ferry Landing site design and building layout
Craig Olsen, student (Senior year), Warren Harbor Ferry Landing site design and building layout

Prof. Rodney Clifton, Brown University Department of Civil Engineering, Capstone Director
Prof. Janet Blume, Brown University Department of Civil Engineering, land surveying
Brian Miller, student (Senior year), Narragansett Landing site design and building layout
Katerine Leitch, student (Senior year), Narragansett Landing site design and building layout
Hannah Fry, student (Senior year), Narragansett Landing site design and building layout
Elizabeth Ward-Walker, student (Senior year), Narragansett Landing site design and building layout
Evan Waters, student (Senior year), Narragansett Landing site design and building layout

High School teachers and students who were instrumental in developing this report include:

Louis Giglietti, teacher, Graphic Communications and Design - Cranston Area Career & Technology Center
Jake Kashuk, student (Senior year), Final Report graphic layout & design

William Walker, teacher, AutoCAD - Cranston Area Career & Technology Center
Trevor Gerard, student (Senior year) Scarborough Beach Landing site design and building layout
Thomas Frezza, student (Senior year) Ferry Terminal building layout
Janessa Bentley, student (Senior year) Ferry Terminal building layout

Joseph Negro, teacher, AutoCAD - Newport Area Career & Technology Center
Whitney Carlson, student (Junior year) Easton's Beach Landing site design
Gabriella Malit, , student (Junior year) Easton's Beach Landing site design
Ben Callendret, , student (Senior year) Easton's Beach Landing site design
Andy Coleman, , student (Senior year) Easton's Beach Landing site design

Suzanne Blais, teacher Web Page Design - Newport Area Career & Technology Center
Casey Ramey, student (Senior year)) Easton's Beach Landing webpage
Chessarina Garrold, student (Senior year) Easton's Beach Landing webpage

David Connell, teacher, Graphic Communications and Design - Newport Area Career & Technology Center
Jasmine Maher, student (Senior year) India Point Park Landing logo
Claire Kowrach, student (Senior year) Narragansett Landing logo
Anthony Rivera, student (Senior year) East Providence Landing logo
Christie Sullivan, student (Senior year) Rocky Point Landing logo
Anna Watts, student (Senior year) Warren Harbor Landing logo
Brooke Gimple, student (Senior year) Quonset Point Landing logo
Chris Kearns, student (Senior year) Quonset Point Landing logo
Kyle Donovan, student (Senior year) Narragansett Town Beach Landing logo
Ben Machado, student (Senior year) Narragansett Town Beach Landing logo
Dani Neri, student (Senior year) Scarborough Beach Landing logo
Vanessa Walsh, student (Senior year) Sand Hill Cove Landing logo
Shane Massa, student (Senior year) Scarborough Beach Landing logo
Casey Ramey, student (Senior year)) Easton's Beach Landing logo
Chessarina Garrold, student (Senior year) Easton's Beach Landing logo

Mike Benedetto, techer, Web Page Design - Bishop Hendricken High School
Robert Petrin, student (Senior year) project website design
David Spirito, student (Senior year) project website design
Alex Potts, student (Senior year) project website design

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CHAPTER 2 - Project Premise: Narragansett Bay High Speed Ferry Network

Several ferry routes presented in the 1998 "Rhode Island Waterborne Passenger Transportation Plan," have been established. A maturing of a Bay-Based Transportation concept is being realized as indicated in the establishment of the following ferry routes:

1) Seasonal (summertime) high speed ferry service between Providence and Newport
2) Seasonal (summertime) high speed ferry service between Port of Galilee and Block Island
3) Seasonal (summertime) high speed ferry service between Quonset Point and Martha's Vineyard

The assumptions of this report that are in concert with the "Rhode Island Waterborne Passenger Transportation Plan," are the following:

1) Ferry network shall complement existing and proposed bikepaths and bus routes,
2) Proximity of marine terminal to major highway arteries
3) Small harbors with extensive pleasure craft volume hinder on-time ferry service
4) State and/or City owned property will facilitate acquisition vs. privately owned property
5) Ferry facilities shall be State and/or Federal Government constructed and owned
6) Ferry services shall be privately operated
7) Ferry Terminal facilities shall consist of four (4) fundamental components:
    a) terminal building/ticket kiosk/tourist welcome center
    b) floating dock
    c) pier
    d) waiting-area gazebo
8) The sites that can most readily host a marine facility are:
    a) Providence - India Point Park
    b) Quonset/Davisville
    c) Newport –Fort Adams
    d) Newport – Perrotti Park
9) The most common and familiar routes for ferry service are:
    a) between Providence and Newport
    b) between Port of Galilee and Block Island
    c) between Quonset Point and Martha's Vineyard

The "Narragansett Bay High Speed Ferry Network" project is contributing to this maturation by introducing an additional vantage point from which to analyze a Bay based transportation concept. This project is focused on the assumption that summer beach traffic can be diverted to "Park-n-Ride" alternatives. The following are assumptions of this report that borrow from the established Seasonal Ferry Services while also furthering the vision of the "Rhode Island Waterborne Passenger Transportation Plan:"

1) Metropolitan marine facilities are considered Park-n-Ride sites providing bus and ferry service to the Beaches. Ferries serving Newport Harbor, Block Island, and Martha's Vineyard may also utilize these new "Ports-of-Call."

2) Park-n-Ride sites include a parking lot and/or parking garage for 180 parking spaces,

3) Bike storage (lockable) at all ferry terminal facilities,

4) Destination sites do not include a parking lot or parking garage,

5) Destination sites are landscaped to allow pedestrian traffic from Ferry Terminal to Beach Pavilions without the use of a local shuttle bus, The Destination must be constructed so as to avoid having to board a shuttle bus which is time consuming and quite a hassle if handling beach gear and children. The elimination of the shuttle bus is is assumed to be a major hindrance to attracting interest in utilizing a ferry service to the Beach.

6) The selection of sites was not predicated on a requirement to have existing docking facilities. This strategy fostered "out-of-the-box" thinking allowing new sites to be considered for inclusion as a ferry facility. Newly constructed piers, floating docks, and terminal buildings are proposed for each site.

7) Ferry boat design should enable dry storage of bikes and strollers and wind mitigation on the top deck. High speeds (30 knots, 40 knots, or 60 knots) need to be maintained without impact to rider comfort.

8) Park-n-Ride sites addressed in this report are:
    a. Providence - India Point Park
    b. Providence – Narragansett Landing
    c. Warwick – Rocky Point
    d. Quonset/Davisville
    e. Warren River

9) Destination sites addressed in this report are:
    a. Narragansett – Scarborough State Beach
    b. Narragansett – Sand Hill Cove (Roger Wheeler State Beach)

This report is solely a student conceptual design document to assess the physical characteristics, benefits, and limitations of each site to host a ferry marine facility. The Park-n-Ride sites were chosen based on strong local interest in establishing ferry marine facilities there. The Destination sites (the Beaches) were chosen to expand the field of interest to include "out-of-the-box" thinking with regard to a Bay based transportation system.

CHAPTER 3 – Product Identity – Ferry Service Logos

Logo Designs by: Newport Area Career & Technical Center Graphic Communications

High School students undertaking Graphic Communications curriculum were asked to compliment site planning and route planning with a marketing identity of a High Speed Ferry Network. The results of this effort created a variety of logos that can be applied to the entire system. The intent is to have the ferry system adopt one theme and interchange the signage with the respective landing site's label. The following examples present each student's creation with the names of a particular ferry landing site inserted for demonstration purposes.

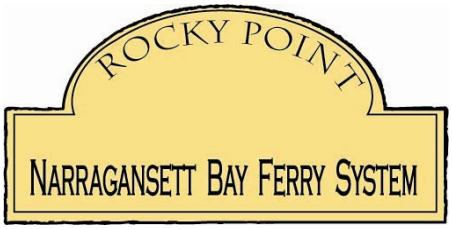
Theme #1

Anthony Rivera

Theme #2

Claire Kowrach

Theme #3



Christie Sullivan

Theme #4

Chris Kearns

Theme #5

Brooke Gimple

Theme #6

Anna Watts

Theme #7

Kyle Donovan

Theme #8

Ben Machado

Theme #9

Casey Ramey

Theme #10

Chessarina Garrold

CHAPTER 4 - Park-n-Ride Site: India Point Park Ferry Landing

Prepared By:

Terry Boudreau, Chris Dorion and Samantha Head

University of Rhode Island, Community Planning & Landscape Architecture Dept.

Text & Graphics Layout by: Jake Kashuk, Cranston Area Career & Technical Center Graphic Communications

I. Introduction

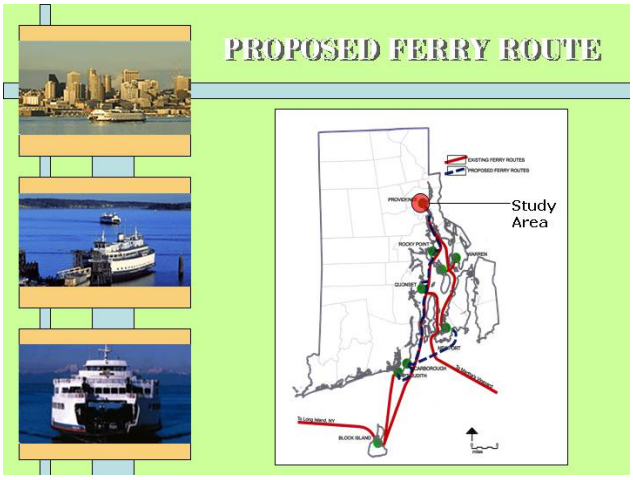
India Point is located at the head of Narragansett Bay making it the gateway to Providence. (Ref Figure 6) Its historical significance began when Roger Williams used this area as his entry point into the land that he would later name Rhode Island . In 1680, the first Port of Providence was established at India Point by John Brown and John Francis. By the 1700's, it had become Rhode Island 's epicenter for trade, most notably for its involvement with the East and West Indie trade business. This booming waterfront, despite a loss of the Brown's shipping industry in the early 1800s, remained highly active until its waterfront was destroyed by the 1938 Hurricane.

From the 1940's until the area was revitalized in 1974, India Point was victim to a rapid decline in commerce and public use. The surrounding neighborhood steadily saw a decrease in its economic viability and by the 1960s, many people were forced to leave the neighborhood to find work and to accommodate the creation of I-195 through the neighborhood.

Due to the public concern over the area and many years of planning for its revitalization, today, India Point is a magnificent park stretching over 18 acres along the bay. It is utilized by the citizens of Fox Point as a daily retreat for walking dogs, reading, or just as a calm relief from city life. It is home to local festivals, educational programs, and various concerts throughout the spring and summer months. India Point is also the terminal point for the Rhode Island Bike Path.

II. Existing Conditions

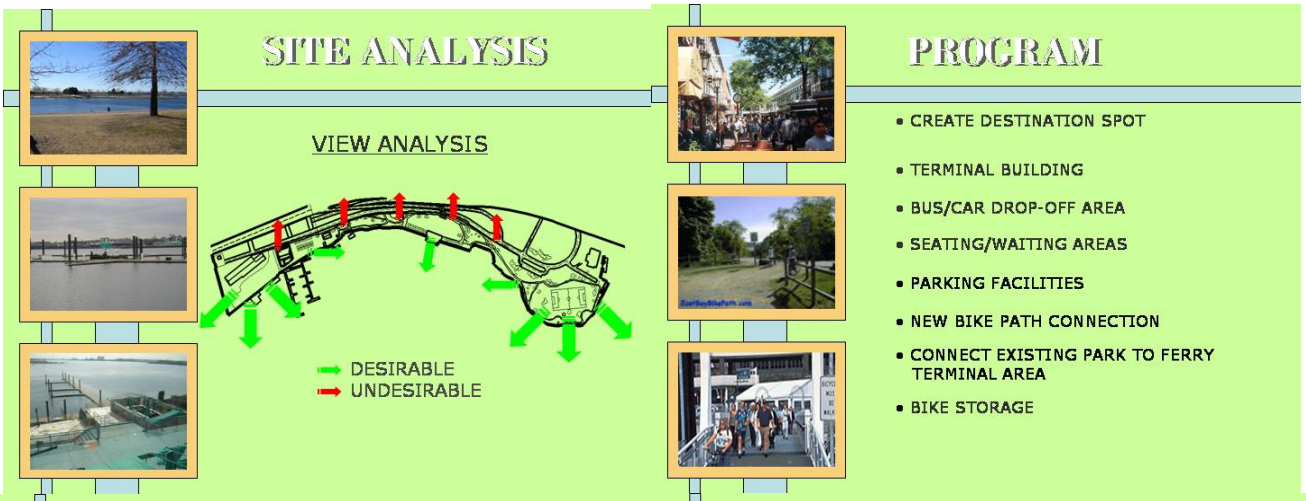
Currently, India Point Park consists of meandering pathways; grassy knolls and areas for play, benches, two playgrounds, and has west, east, and south waterfront views. There are mature trees, new trees, and some that need to be removed. As nice as the park is now, it could be made even better.

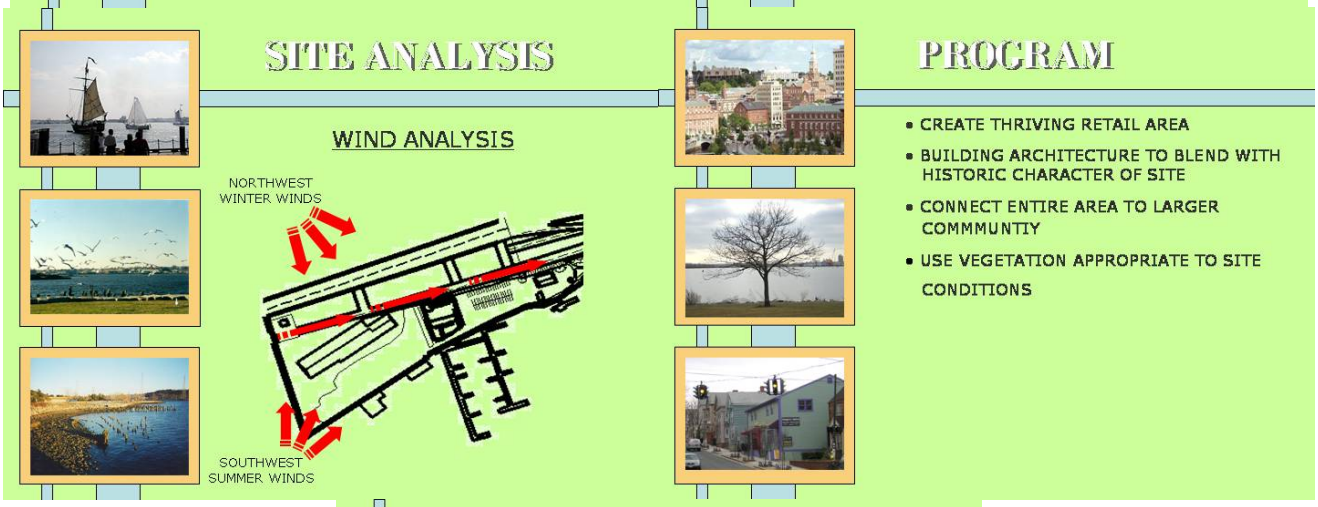


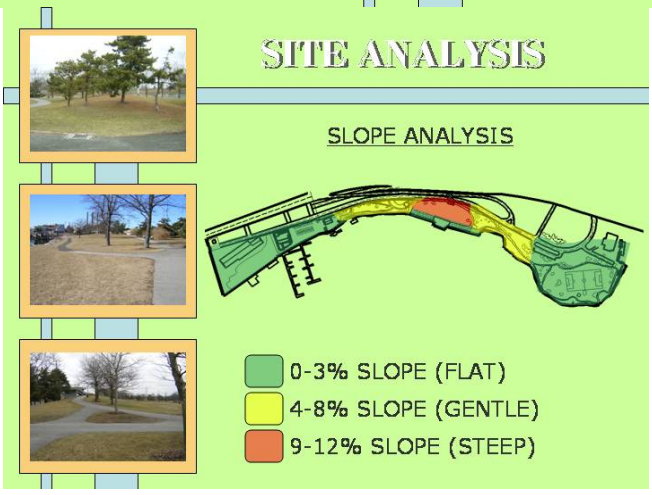
Directly to the west of and adjacent to the park sits the building that once housed the local waterfront bar and club Shooters. This building is currently abandoned due to the relocation of I-195. Adjacent to this building sits the current home of Providence Steamboat. This area is in a complete state of disrepair due to the above-mentioned highway relocation. This area also has the most industrial feeling due to its physical characteristics and uninhibited views towards Narragansett Electric and other industrial sites along the bay.

The community that surrounds India Point consists of residential, industrial, and commercial uses. Most notable is its proximity to: Wickenden Sreet, a local hang-out spot for artists, college

students, and residents; The Russian Submarine Museum; the future site for the Heritage Harbor Museum , and the Corliss Landing nightlife scene. The area as a whole sits on the edge what has historically been known as Providence ’s jewelry district.


SITE ANALYSIS
VIEW ANALYSIS
DESIRABLE
UNDESIRABLE
PROGRAM
• CREATE DESTINATION SPOT
• TERMINAL BUILDING
• BUS/CAR DROP-OFF AREA
• SEATING/WAITING AREAS
• PARKING FACILITIES
• NEW BIKE PATH CONNECTION
• CONNECT EXISTING PARK TO FERRY TERMINAL AREA
• BIKE STORAGE


SITE ANALYSIS
WIND ANALYSIS
NORTHWEST WINTER WINDS
SOUTHWEST SUMMER WINDS
PROGRAM
• CREATE THRIVING RETAIL AREA
• BUILDING ARCHITECTURE TO BLEND WITH HISTORIC CHARACTER OF SITE
• CONNECT ENTIRE AREA TO LARGER COMMMUNTIY
• USE VEGETATION APPROPRIATE TO SITE CONDITIONS


SITE ANALYSIS
SLOPE ANALYSIS
0-3% SLOPE (FLAT)
4-8% SLOPE (GENTLE)
9-12% SLOPE (STEEP)

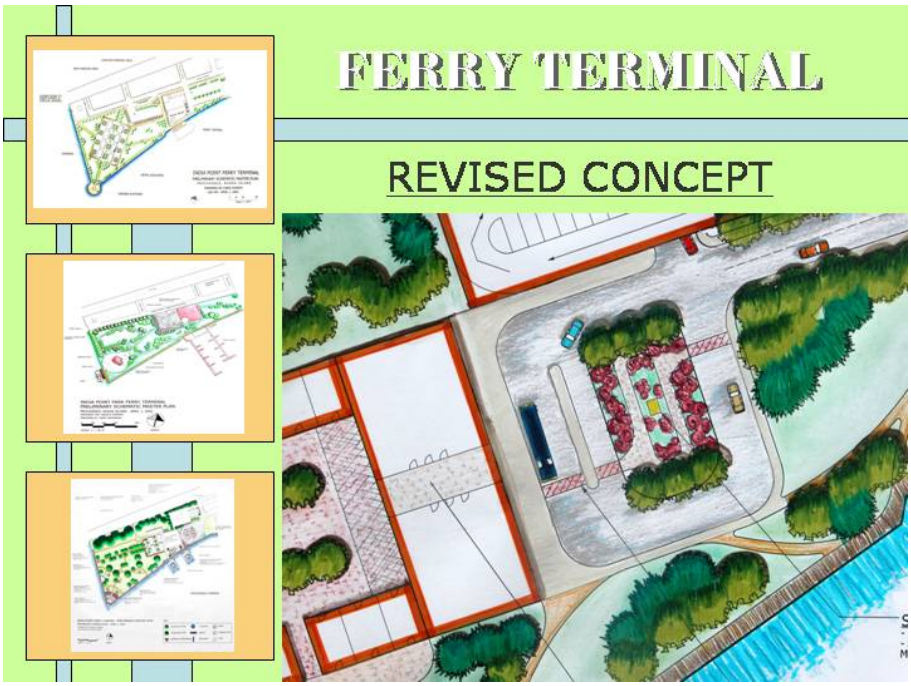
III. Design Goals

Team three will continue the revitalization of India Point by creating a ferry terminal on the site where Shooters and Providence Steamboat currently exist. The team has chosen to incorporate all 18 acres of India Point, from the location of Providence Steamboat to the Brown Boathouse, into its master plan for the terminal. Furthermore, the team will connect this area to Corliss Landing, to the existing bike path, and to the surrounding community. This will create an 18-acre destination spot for tourists, commuters, and residents. Aesthetically, the site will reflect the rich history of the site and its importance as the gateway to Providence .

The following are highlights of Team Three's Design:

1. Ferry Terminal and Retail Space: The ferry terminal building consists of a ticket purchasing area, a visitor's center, an art gallery, and restroom facilities. It has views toward India Street and towards the waterfront. The building is flanked by two retail buildings, which can be used for cafes and boutique shopping. These buildings create a direct path from the ferry dock to the ferry terminal and out towards the parking garage and India Street. In this way, both incoming and outgoing visitors are directed towards the retail center and visitor's center. The retail buildings also create a courtyard space where visitors can sit and enjoy the views of the waterfront.

2. Bus Drop-Off and Parking Garage: In an effort to make this area transmodal, a bus and car drop-off area has been conveniently designed at the front entrance to the ferry terminal building. Furthermore, there is a sidewalk at this entrance that leads directly to the parking garage where visitors can easily access their parked cars. As a point of interest, a small sculpture garden has been placed in front of the ferry terminal building.



3. Amphitheater: This area is located at one of the most important viewing areas on the entire site. To take advantage of the vast views of the waterfront, the amphitheater gently slopes toward the water and has been designed to incorporate a performance space and seating area.

4. Boardwalk: The boardwalk connects the ferry terminal area to India Point Park. It runs along the entire length of the waterfront and provides pedestrian access to the water's edge. It blends gently into the surrounding landscape and encourages visitors' to enjoy the entire 18 acres of space that India Point has to offer.

5. India Point Park: The existing park will be connected to the ferry terminal area through the introduction of more park space. Furthermore, the circulation paths have been revised to create smooth pedestrian movement throughout the space. Open spaces have been maintained to accommodate park events and the East Bay Bike Path has been directly connected to India Point Park.

IV. Program
The following elements address specific goals of the design:

- Provide adequate parking facilities to accommodate the needs of commuters and tourists
    - Create a parking garage that can meet the needs of commuters and visitors without obstructing views towards the waterfront

- Provide accommodations for public transportation
    - Create convenient bus pick-up and drop-off area

- Create exciting and accommodating ticket purchasing area
    - Include rotating exhibit spaces. Would include exhibits about the history of the location, information on re-location of I-195 (similar to exhibit at Boston Science Museum about The Big Dig), how the hurricane barrier works and why it's important, and exhibits by local artists.
    - Include visitor's center which would highlight destination spots in Providence and Rhode Island
    - Provide billboard spaces for local businesses to advertise
    - Include bathroom facilities

- Provide comfortable seating/waiting areas

- Make the ferry stop itself a destination by creating a promenade along waterfront complete with shops (think Newport wharves) and "street" vendors

- Connect India Point Park to ferry terminal by using consistent paving patterns, amenities, vegetation, and by creating clear circulation routes from ferry terminal area to park. This includes extending the park further towards the ferry terminal

- Connect ferry terminal to larger community by creating pedestrian access from ferry terminal to Corliss Landing. Will also encourage local artists (including graffiti artists) to paint murals on highway underpasses and structures similar to what can be currently found on Wickenden street

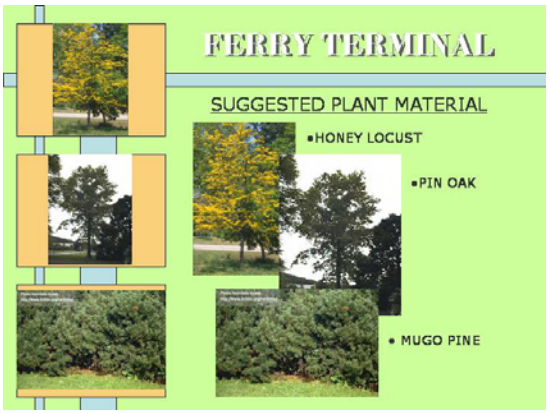
- Provide lighting for safety at night

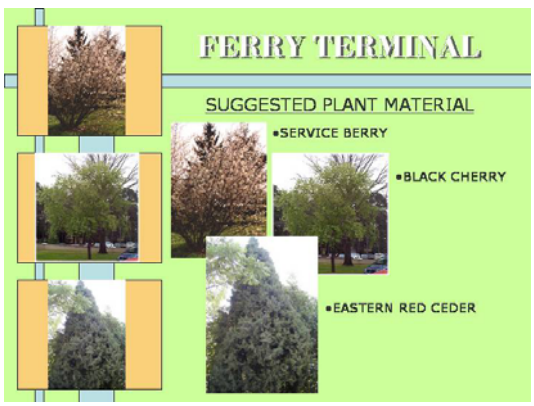
- Use site amenities (benches, lights, and trash receptacles) that can be found on other Providence waterfront sites (Waterplace park and Narragansett Landing)

- Use materials that blend in with the historical and industrial nature of the site

- Propose a new connection for the bike path to India Point Park

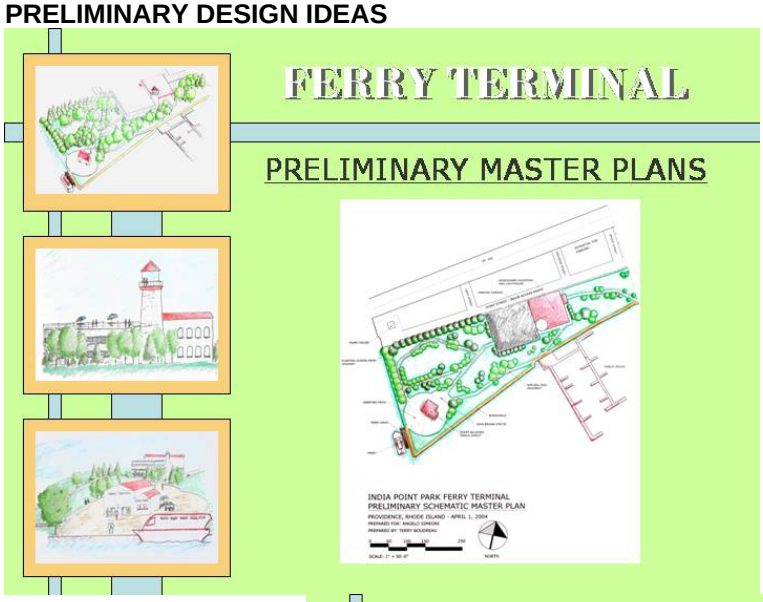
- Use vegetation that is tolerant to salt and wind and urban conditions

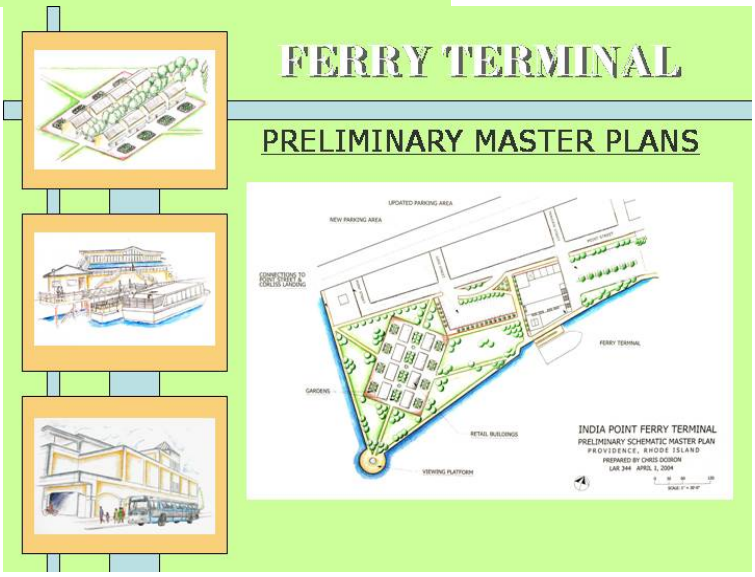




V. Product Guide

PRELIMINARY DESIGN IDEAS






INDIA POINT PARK
PROVIDENCE HARBOR
INDIA POINT
INDIA POINT PARK - PRELIMINARY SCHEMATIC MASTER PLAN
PROVIDENCE, RHODE ISLAND - APRIL 1, 2004
PREPARED FOR: ANGELO SIMEONI
PREPARED BY: TERRY BOUDREAU, CHRIS DOIRON, & SAMANTHA HEAD
0 50 100 150 250
SCALE: 1" = 50'-0"
NORTH

CHAPTER 5 Park-n-Ride Site: Narragansett Landing Ferry Site (Collier Point Park)

Prepared By:

Evan Waters, Elizabeth (Jeanie) Ward-Waller, Katherine Leitch, Brian Miller, Hannah Fry,

Brown University, Department of Civil Engineering

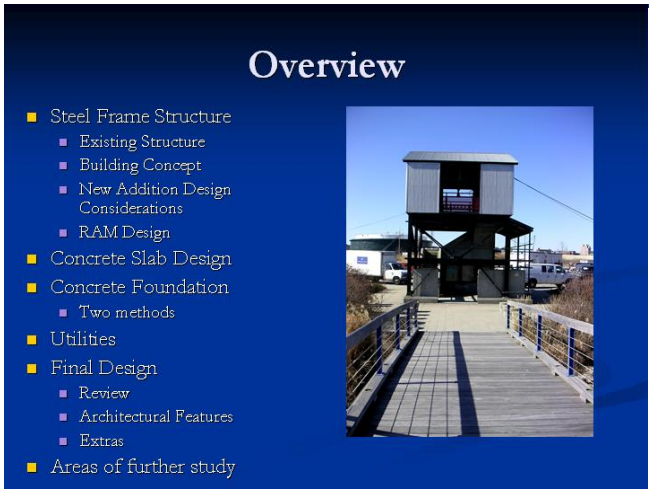
Text & Graphics Layout by: Jake Kashuk, Cranston Area Career & Technical Center Graphic Communications

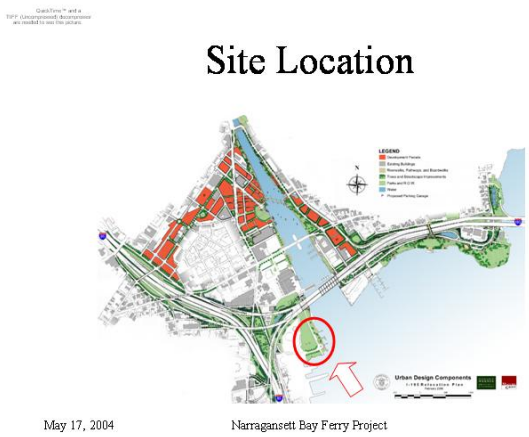
Overview and Building Concept

The new ferry terminal building at the Collier Point Park ferry site is a steel frame structure with a concrete footing foundation. A steel structure already exists on the site that was historically used as a coal transfer station. The structure commands the most prominent point on the site, and is directly adjacent to a small pier set on fixed piles that juts into the Providence River. This existing building is approximately 20 ft. by 25 ft., two stories, and currently used only as a lookout point for visitors to the park.

After some consideration, the point where the existing building stands was determined to be the optimum location for the new terminal. Because the current structure is over-designed and has historical significance on the site, we decided to add to and renovate the structure instead of demolishing and building a new structure from scratch. The new terminal will enclose all four sides of the first floor of the existing building, providing space for bathrooms, offices, a utility closet, a ticket desk and a large waiting area. The new footprint is constrained by the river bank on two sides, and the circle driveway in front. The new addition will be largely laterally and gravitationally supported by the existing structure, allowing for an open floor plan with gables and high ceilings. The ceilings of the addition will slope down from the second floor of the existing structure to the 10 ft. elevation of the outside edge of the roof. The north-east, Providence-facing side of the building will consist almost entirely of windows.

This report summarizes the details of the design and process, including the steel structure design using both RAM structural design software and hand calculations, the new concrete slab and foundation design, and the new sewer line construction

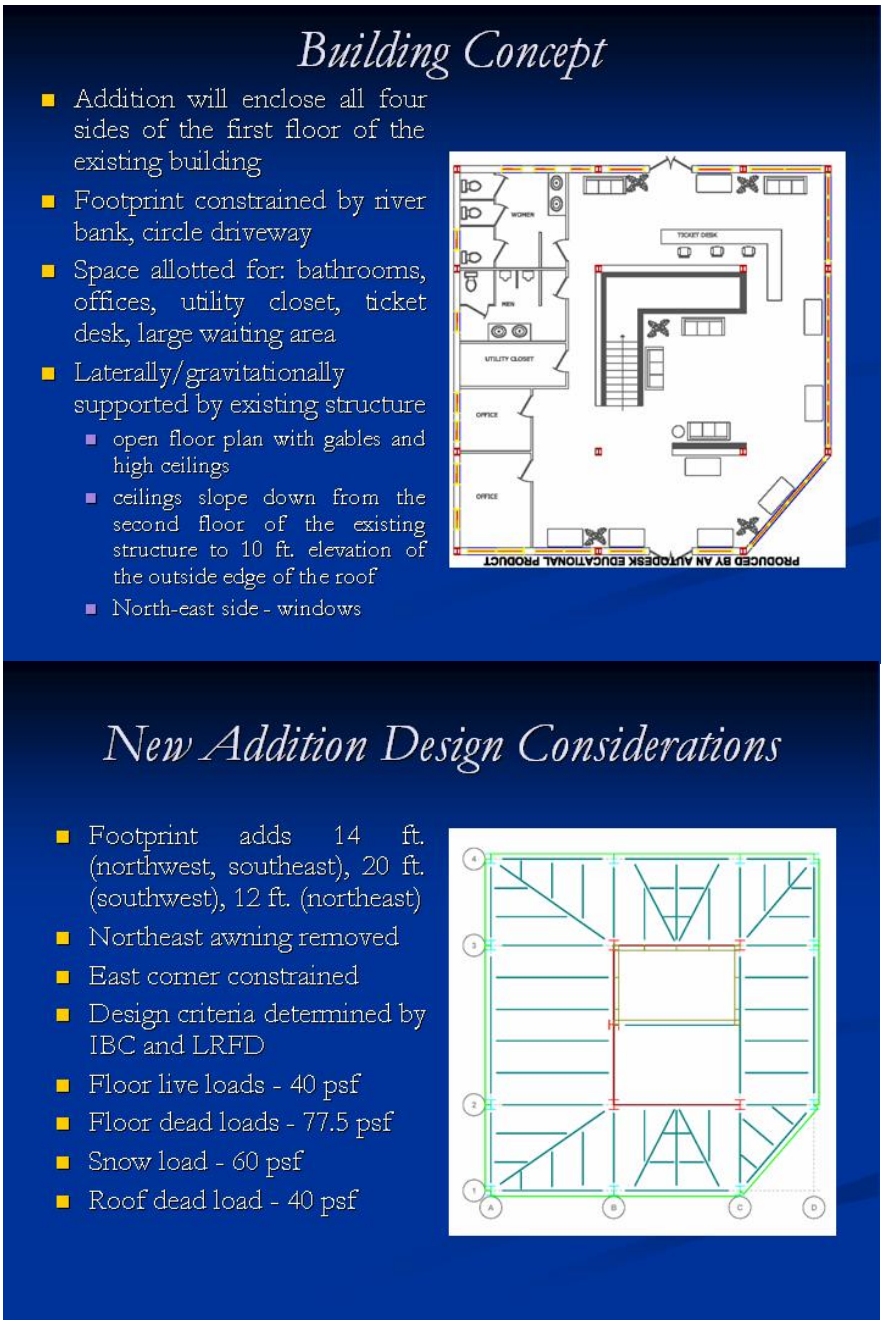




Steel Frame Structure

A lack of detailed plans for the structure required that detailed measurements be taken by hand in order to determine the existing conditions. Because the building was at one time used to transfer large loads of coal, it is considerably over designed for its current use as a tourist attraction. The large steel beams, columns, and framing members more than support the current gravity and lateral loads exerted on the structure. The four corner columns are typical W8x58 steel members, with one additional channel column on the south-west side. The existing beams ranged from a W10x30 in the roof to a W21x44 mid-support beam in the south-west wall. All framing members were double angles, specifically 2L3x3x3/16 members. A thick concrete stair leads to the second floor, which is supported by a 5 in. concrete slab. The second floor is enclosed with aluminum siding, while the first floor is entirely open to the air. No utilities exist in the current structure.

The existing conditions and plans for the new addition were designed and analyzed using RAM structural design software. The new footprint adds 14 ft. to the northwest and southeast sides of the building, 20 ft. to the southwest side, and 12 ft. to the northeast side. The east corner of the building is shortened due to the constraints of the riverbank. The design criteria used were determined by the International Building Code (IBC), and the Steel Load Resistance Factor Design (LRFD) Manual. The first floor and second floor lookout area were assumed to be waiting/assembly areas per the design codes, and will take live loads of 40 psf and dead loads due to structural and utility members of 77.5 psf. Because the roof of the new addition has considerable pitch, ponding of rainwater is not a design issue. Snow loading is the major design live load criteria when designing the roof and IBC specifies a snow load of 60 psf in the Collier Point Park region. The material dead load in the roof of the new addition was assumed to be 40 psf. Using these criteria and the dimensions specified in the architectural design of the new addition, RAM performed an analysis of the existing structure and designed the beam and column members of the new addition.

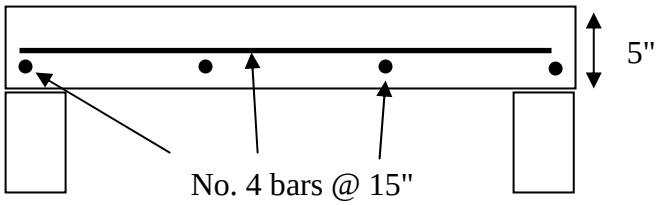


The addition requires 11 new columns, all typical W10x33 steel members. The columns are all within the exterior walls of the new addition, and support the roof beams above. RAM only has planar modeling capabilities; therefore the roof was modeled as a flat floor at the 14'2" elevation of the existing second floor. The roof beams are predominately typical W8x10 steel members, the smallest and most cost-efficient members used in RAM design, with a few larger members required where the highest loads are concentrated. A W16x26 is required along the exterior length of the largest bay, and a W14x22 is required along the same length in the opposite exterior wall. Three W20x12 and two W12x16 members provide support to the sloped northwest, southwest, and southeast corners, and two W12x16 members carry the extra load of the roof gables at the front and rear entrances. The rest of the roof beams are W8x10 members. Again, the over-designed original structure will support enough lateral loading that no lateral framing is required in the new addition. The entire plan and exterior walls can remain open and free of additional bracing members.

Concrete Slab

The floor of the new building addition was designed as a 3500 psi concrete slab on steel decking, supporting a dead load of 55 psf and a live load of 40 psf. The combined factored load using Load Resistance Factor Design (LRFD) standards was calculated to be 130 plf. The slab thickness was chosen to be 5 in to match the second floor slab, which is deep enough to resist the shearing stresses induced by the combined load.

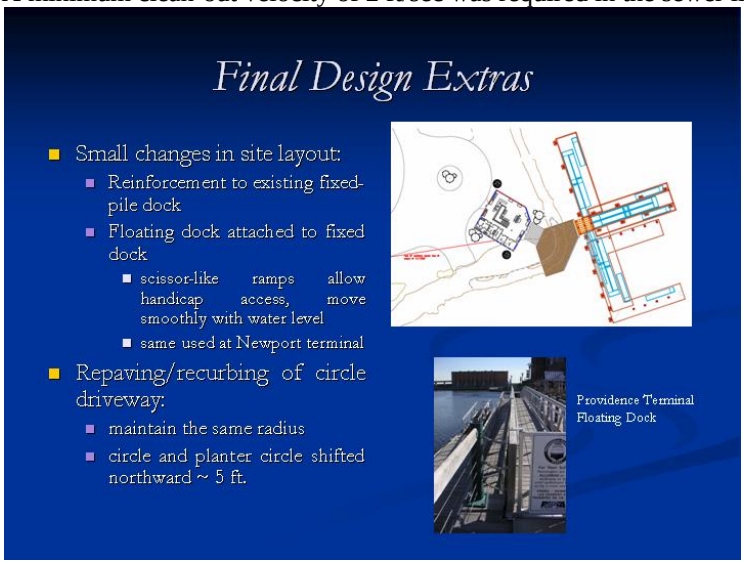
The reinforcement of the slab was designed using a method acquired in Engineering 138. This method requires modeling the slab as a 12 in. thick concrete beam, with 60 ksi steel bars resisting flexural stresses as well as temperature and shrinkage stresses in the concrete. Three different bay lengths of 12', 14' and 20' were typical to the new slab design, and were each analyzed separately. First, the moment induced on the slab "beam" by the factored load was calculated using standard coefficients for simply connected end supports. Then the minimum cross sectional area of reinforcing steel was determined using the calculated moment and the chosen concrete slab thickness. Standards for reinforcement to resist temperature and shrinkage stresses also provide minimum values for the cross sectional area of steel required, and were used to check the calculated values. Finally, the steel required was satisfied by choosing a standard steel bar at a minimum center-to-center spacing. In all three bays analyzed, a No. 4 bar at a 15" center-to-center spacing was adequate to counteract the stresses induced in the 5" slab.



Utilities

The new building will require electrical, sewer and water lines to be brought on site in order for the bathrooms, onsite heating and cooling, and electricity to function. Utilities in the existing building were sparse, with power lines running above ground possibly bringing electricity to the site at one time but no longer in service, and no other existing utilities. Plans for the new building will run the power lines below ground, and bring water and sewer lines in from the street. Unfortunately, limited time and available information constrained the amount of detail with which plans for these utilities could be made.

The Providence Department of Public Works provided plans and elevations for the sewer running down the center of Allens Ave., approximately 985 ft. from the corner of the new building. The Allens Ave. sewer line runs at a depth of 9.6 ft. below grade. The new sewer line should enter the building at an elevation below the frost depth, approximately 4.5 ft. below grade. A minimum clean-out velocity of 2 ft/sec was required in the sewer line. Using these assumptions and the manning formula for pipe flow, an 8 in. pipe at a slope of 4 ft. per 1000 ft. was chosen to run below the driveway leading from Allens Ave. to the new building. Two manholes are required to service the pipe, one at the bend in the line and another 500 ft along the line from the main line connection.



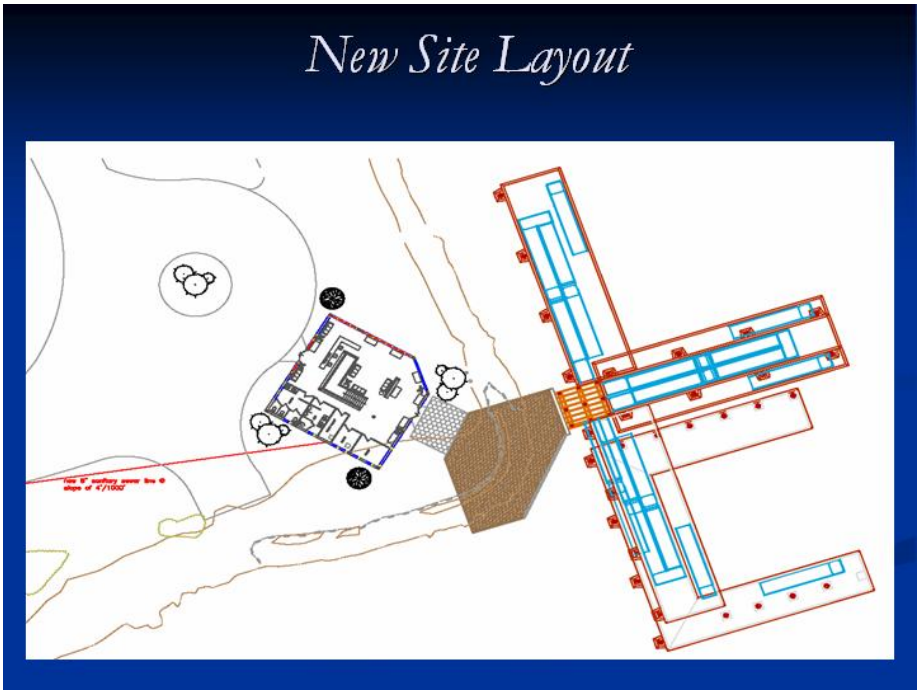
Exact plans regarding the location and size of the water and power lines to service the building were not made due to limited time and a lack of information. Information on the exact location of and connection to a water main and power source was not obtained, and knowledge of electrical systems in general was beyond the scope of the project. These lines would probably also be brought below ground from main lines on Allens Ave., and enter the building at the nearest corner to the driveway.

Final Design

As discussed and detailed in the previous sections, the new ferry terminal at Collier Point Park was designed as a steel frame structure on concrete footings with a 5 in. concrete slab on steel decking. The footings and slab are reinforced with standard steel reinforcing bars. The new building will be added to an existing coal transfer station that is more than adequately designed to support the gravity and lateral loads it would support in its new use as part of a ferry terminal. The existing structure supports so much of the lateral loading applied by wind loads that the new addition requires no lateral framing members. The plan of the new addition is therefore open and partition-free, allowing for many windows and large, airy waiting spaces. Utilities will enter the building below ground at the southwest corner of the building, closest to both the mains running down Allens Ave. and the bathrooms and utility closet which require their services.

The new construction requires a few small changes in the site layout in the direct vicinity of the terminal. Some reinforcement to an existing fixed-pile dock must be made with consideration to the amount of pedestrian and boat traffic that will utilize it each day. A floating dock will be attached to the fixed dock in order to adjust to the tide changes and provide a docking space for the ferry. The floating dock has scissor-like ramps which allow handicap access to the ferry and move smoothly with the changing water level. This dock is the same used at the Newport terminal of the existing Providence-Newport ferry.

Finally, the new construction will require a small amount of repaving and recurbing of the circle driveway. In order to maintain the same radius, the circle and the smaller planter circle in the middle must be shifted northward by approximately 5 ft.



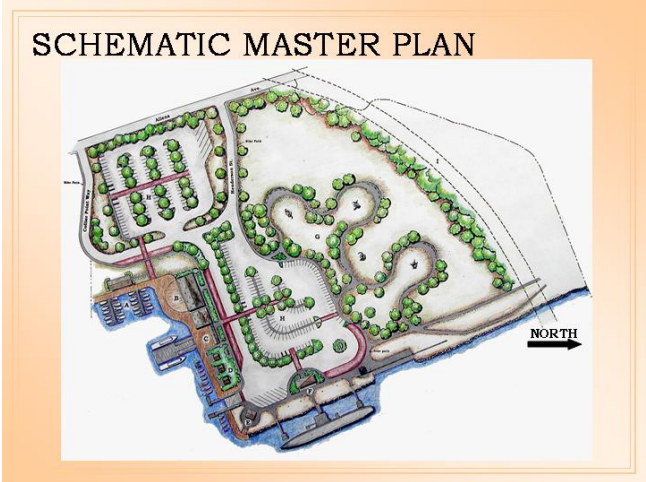
CHAPTER 6- Park-n-Ride Site: Narragansett Landing Ferry Site(Collier Point Park)

Prepared By:

Kimberly Downes, Roland Hellwig,and Joan Lord

University of Rhode Island, Community Planning & Landscape Architecture Dept.

Text & Graphics Layout by: Jake Kashuk, Cranston Area Career & Technical Center Graphic Communications



Introduction:
This project was undertaken to continue the notion for a ferry transportation system in Rhode Island. As the population of Rhode Island continues to grow, so does the need to alleviate the projected traffic congestion on Rhode Island roads. Having a high-speed ferry network in operation will not only lessen the strain on Rhode Island roads, but also give the opportunity to easily travel the state.

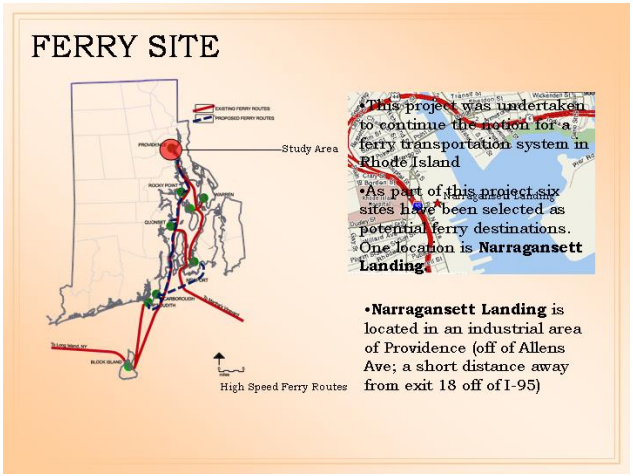
The state of Rhode Island possesses several natural attractions, one being Narragansett Bay. The Bay spans many communities and provides the state with miles and miles of beautiful coastline. It is a unique resource that is highly prized by Rhode Islanders as well as its neighbors. It is the resource that will enable this alternative transportation system.

As part of this project, six sites have been selected as potential ferry destinations. One location is Narragansett Landing. Narragansett Landing is currently an underutilized waterfront site located in an industrial area of Providence (off of Allens Avenue; a short distance away from exit 18 off of I-95). With some renovations and new development, Narragansett Landing has the potential to be an appealing location for all to enjoy.

Ferry Terminal Site:

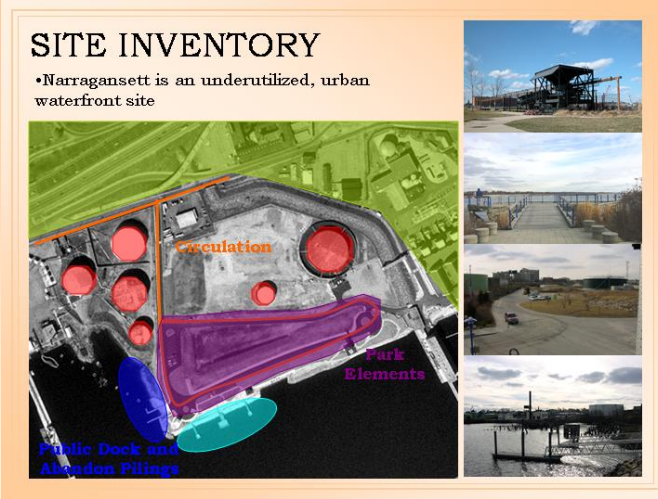
Narragansett Landing is located in a remote area on the edge of the Providence River. It is in close proximity to the construction of the new I-195/I-95 connection. It is a relative flat site with some areas of industrial fill and consists of minimal plantings, most of which are overgrown.

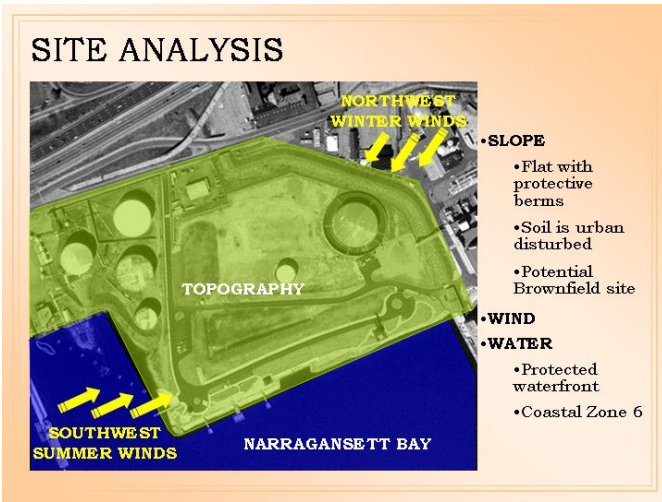
Historically, this area was heavily used for industry and manufacturing. It was mostly used as a coal shipping port. Currently, the surrounding neighborhood includes some residential areas and industry and manufacturing. This includes the Jewelry District downtown and the Manchester Street Station Electrical Plant located directly north of Narragansett Landing. Presently, the site itself appears to have lost its vitality and is now vacant.

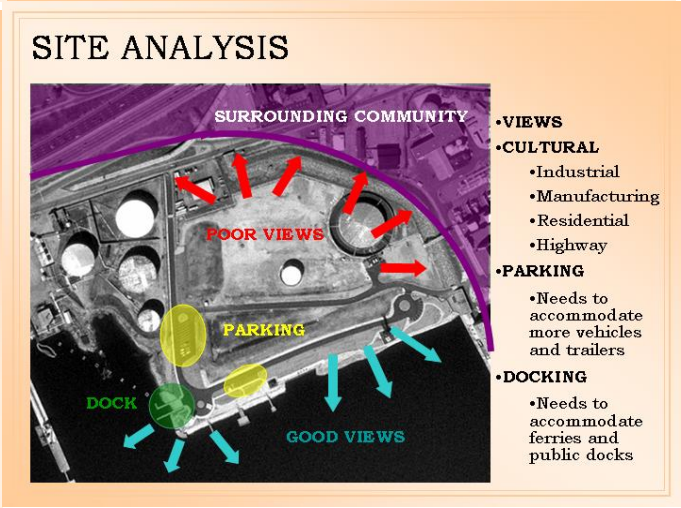


Narragansett Landing currently hosts the Russian Submarine and Museum and consists of Collier Point Park, which incorporates various design elements into the site. These include plantings, picnic areas, an observation tower, a public boat ramp, a fishing pier and informational signage. There are also oil tanks and abandoned pilings located on this site, which would need to be removed before implementing design improvements.

Aside from the existing park, characteristics of the location portray a cold, unwelcoming, industrial environment. It is in the midst of a renovation process underway in Providence and currently offers no feasible function.







Design Goals:

By improving the existing elements of Narragansett Landing and by developing a new landing for a ferry transportation system, we hope to create a site that will encourage travel throughout the Ocean State. Our goal is to design a site that will be attractive and accessible to all Rhode Island residents, commuters, and seasonal riders, bringing Northern Rhode Islanders south and Southern Rhode Islanders north. By blending the urban/industrial environment of the site with our proposed ferry terminal, we hope to enhance the overall nature of the area and create a functional and welcoming space for all users.

Suggested Improvements:

-To create an inviting entry-way/point of arrival. This will enhance the appeal of the site and will transform the long-tunneled entry into a welcoming allé, drawing people into our site

-To expand the parking area to accommodate commuters, long-term parking, boat trailers, and bikes

-To create efficient and convenient areas for the drop-off and pick-up of riders, enabling a hassle free environment

-To alter pedestrian and vehicular traffic patterns to eliminate congestion at certain points, giving visitors and

riders convenient access to the site regardless of the purpose of the visit. This will involve extending the perimeter walkway to offer a connecting element throughout the entire site.

-To expand upon Collier Park amenities. This will link the park to the proposed ferry landing area and create a harmonious relationship between the two areas.

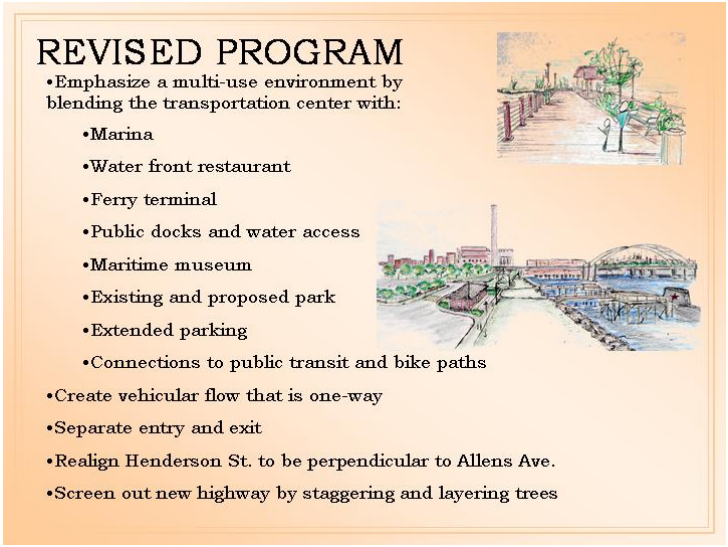
-To use vegetation appropriate for a marine environment.

-To create attractions/interest points for waiting riders to involve them in the site, allowing them to feel welcomed not alienated. This will include additional outdoor seating/picnic areas and informative signage.

-To expand facilities. This will include creating permanent bathroom facilities and pavilions and more public access to the water.

-To incorporate the Russian Sub Museum into our site as a permanent attraction rather than maintaining it's existing condition as a temporary trailer.

-To create an inviting environment by considering design elements that are conducive to the safety of its visitors. This involves abiding by ADA regulations and includes implementing elements such as, appropriate lighting, a guard station, and suitable barriers from the water. This will also involve cleaning the waterfront of obstructions (i.e. abandon pilings) and relocating the public boat ramp, which would be a hazard to the ferry traffic pattern.



Program:

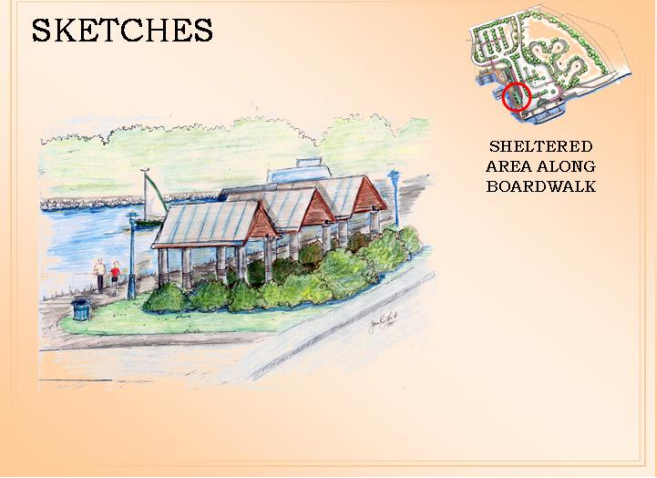
After analyzing the site and developing specific design goals, the following program emerged. Our main goal is to emphasize a multi-use environment by blending the transportation center with other amenities.

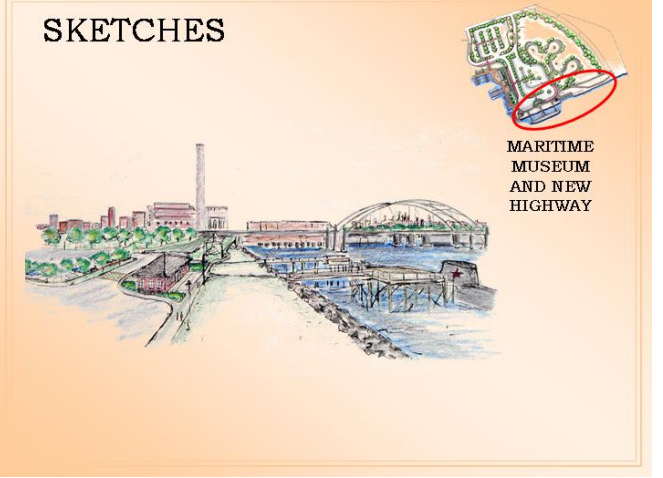
This includes:

-Ferry terminal
  -This building will be a multi-purpose facility, including ticketing, restrooms, information, and leaseable space
-Marina
  -Also a multi-purpose facility including office space, a small marine store, bathing and restroom areas
-Water front restaurant
-Public docks and water access
-Maritime museum
  -This will be an addition to the existing Russian Submarine area
-Park
  -Ribbon Park is an extension of the existing Collier Point Park. It will include paths and several industrial sculptures

Other program elements are:

-To realign Henderson St. to be perpendicular to Allens Ave.
-To screen out new highway by staggering and layering trees. This will focus attention into the site and to the pleasant water views that are offered
-To extend parking to provide adequate spaces for the projected amount of users
-To connect the area to public transit and bike paths to encourage a multi-modal environment
-To create vehicular flow that is one-way and to separate the entry and exit to lessen confusion and congestion





Design Summary:

-Entry

-In order to ensure vehicular safety, the entry road has been redesigned to be perpendicular to the main road. The traffic pattern on this site is one-way to lessen confusion and congestion. As a visitor enters this area he/she passes the first parking lot and approaches the marina and the first drop-off area.

-Ferry Terminal

-After the marina, there is a restaurant that provides waterfront dining. Next to this restaurant is the ferry terminal. This area includes access to ferry dock, public boat launch, picnic areas, and a boardwalk.

-Russian Submarine

-After a visitor passes through some of Collier Point Park's amenities, there is the Russian Submarine and the Museum. This area offers great views out to the water and waterfront walkways.

-Ribbon Park

-In order to incorporate more green space into this industrial neighborhood and on our site, Ribbon Park, an extension of Collier Point Park was designed. Included in this area is a continuous path and picnic areas land marked industrial sculptures.

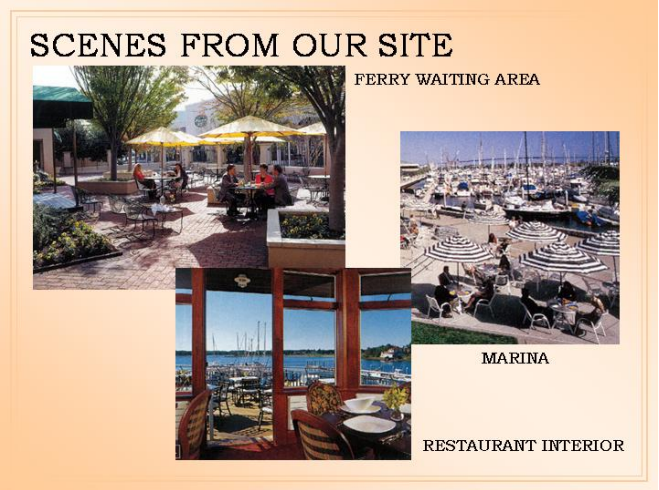
-Parking

-In order to accommodate all visitors, the parking lot has been expanded to two areas. This will insure ample parking and provide visitors with long-term parking if needed. The central parking lot incorporates friendly paths to direct pedestrian traffic and is easily accessible from all points on the site.

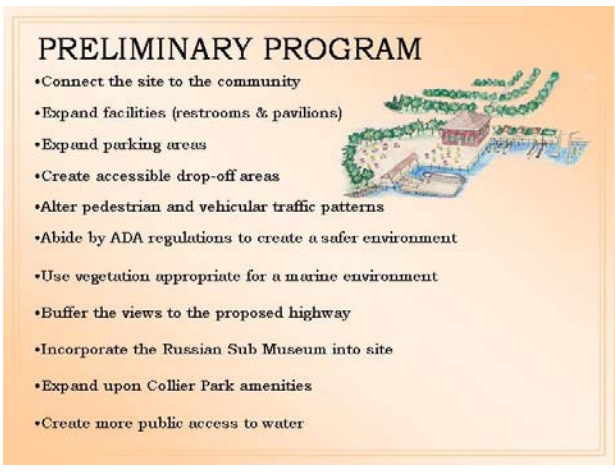
-Other

-The entire sight of Narragansett Landing can be circumnavigated by bike, has access to I-95 via Allens Avenue and is in close proximity to bus routes

Product Guide:
In order to maintain a consistent look and feel to our ferry terminal site, we suggest continuing the use of certain design elements and materials from surrounding sites, like Collier Point Park and Point Street Ferry Landing. Materials suitable for the marine environment such as, brick, stainless steel, and teak will be used. Vegetation will also suite the coastal environment and will assist in enhancing and screening views and creating a green ribbon along the coast.



PRELIMINARY DESIGN IDEAS



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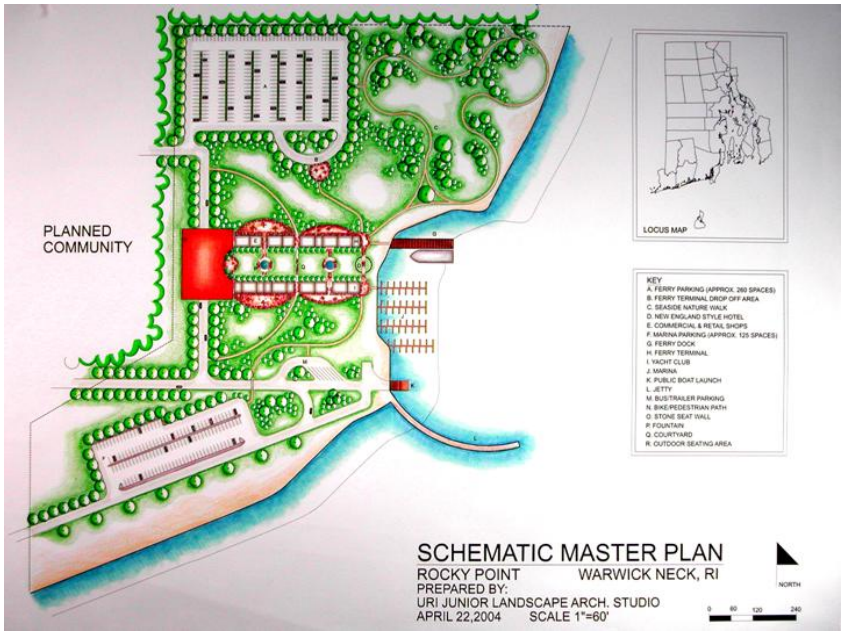
CHAPTER 7 - Park-n-Ride Site: Rocky Point Ferry Landing

Prepared By:

Emily Forcier, Kristen Kaczmarek and Jim Wolfe

University of Rhode Island, Community Planning & Landscape Architecture Dept.

Text & Graphics Layout by: Jake Kashuk, Cranston Area Career & Technical Center Graphic Communications



INTRODUCTION TO SITE: Rocky Point was an operating amusement park through the early 1990's. In 1992, the park closed its doors and remains unoccupied at this time. Presently the park is a dilapidated and has been vandalized by local teens. The park is slated to be redeveloped into a new community including residences, shops, churches and more.

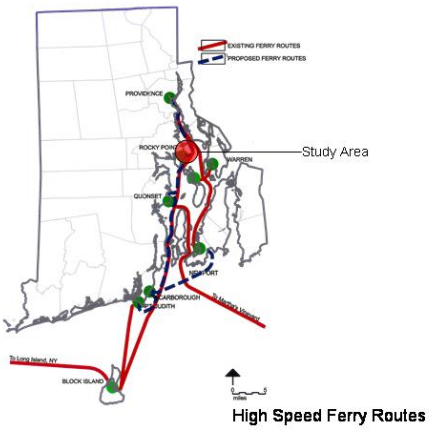
Site:
Located in a diverse residential area of Warwick, Rocky Point is known for the amusement park that resided on the property until 1992. Currently the site is unoccupied and has been noted and sought after for multifunctional development.

Rocky Point schedules to become a seaside a park community consisting of residential and commercial amenities. The community will have commuter-based functions including bus lines and bike routes which will link the community to the transportation network of Rhode Island. Furthermore the Rocky Point Community will support a ferry system.
The focused area of study at Rocky Point includes that of ferry based use, with the economical focus of a ferry terminal and marina. This area includes shops, gardens, bike paths, yacht club and a hotel.

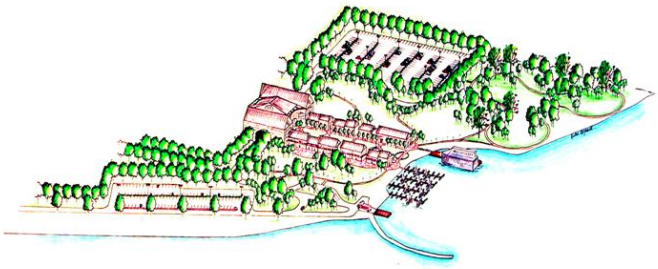
Theme:
Traditional Coastal New England Seaport (i.e. Newport, Nantucket) with a contemporary flare. This theme will capture traditional architecture, plantings, materials and details that will both be appropriate for use and the site.
Using this theme we designed a schematic master plan with elements that would be conducive to a successful and structured ferry terminal with the appropriate amenities for each program element. All components meet ADA requirements.

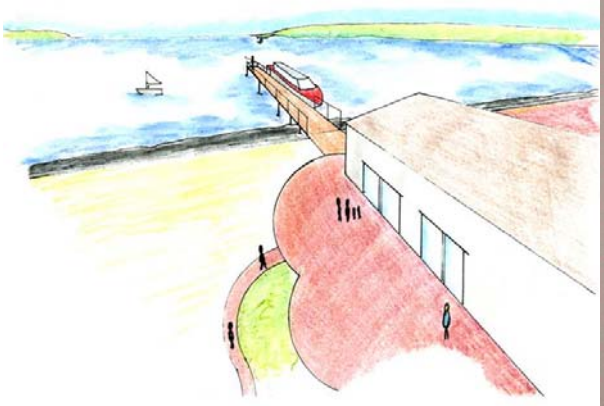
Elements:

- *Ferry Terminal*-to include ticket sales, restrooms, concessions and waiting areas.
- *Ferry Dock*-for easy and appropriate access to ferry.
- *Marina*-for both Yacht Club and day visitor use.
- *Yacht Club*-attraction and functional use for site.
- *Shops and Eateries*-community conveniences.
- *Hotel*-accommodations for tourism and yacht club.
- *Patios and Gardens*-multifunctional uses for recreation and relaxation.
- *Green Space*-preserve the aesthetical beauty of the site.
- *Bike Path*-to coordinate beyond and to explore Rocky Point.
- *Parking*-adequate and ample for functions on site.



High Speed Ferry Routes



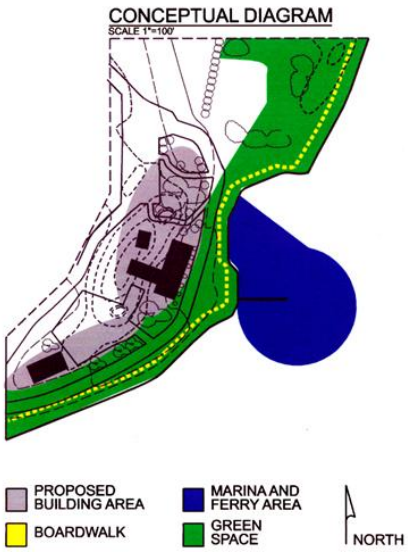


EXISTING CONDITIONS:

Rocky Point is located adjacent to a coastal residential community in Warwick. Presently, Rocky Point consists of an abandoned amusement park. This amusement park portion of the property is frequented by local adolescents who vandalize the existing buildings. Parking and roads still exist, but are slowly degrading and vegetation has started growing throughout. The site also includes a large undeveloped field, a jetty into the bay, and a broken down pier. The southern boarder of the property is coastal, (Narragansett Bay). In general, the existing slope is infusive to favorable views of Narragansett Bay , including the east side of the bay and the Newport Bridge . The site is typically urban disturbed soil from former development. Existing vegetation consists of prior plantings and emergent species.

Program:
After visiting the Rocky Point site and taking into account the natural features, as well as the slated future development, we have decided to create a site that would be favorable to commuter and seasonal ferry use. Our goal is to use Rhode Island's coastal waterways for quicker more efficient travel.

The style of our design approach will be that of a retro urban feel with a coastal flare. We would like to see this site become that of an Atlantic City boardwalk (minus the casinos). Considering this site's history, location, and perceived future development we feel that this is the best approach. We were inspired by other sites and ferry terminals such as Seattle , San Francisco , and Providence 's Collier Point Park .



We are proposing to redevelop the existing Shore Dinner Hall as a future ferry building. This would house an information center as well as ticket booths. There would be restrooms and a café for refreshments.

There is also a large house-type structure behind the dinner hall that could possibly be a bed and breakfast or a restaurant that could utilize the wonderful views of the bay.

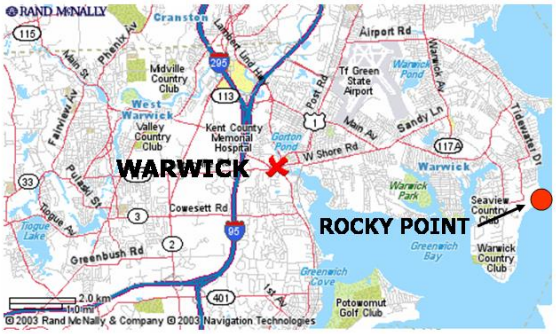
We are also proposing to turn the existing dilapidated pier into a functioning marina. This could house not only the ferry landing, but also local resident's marine craft.

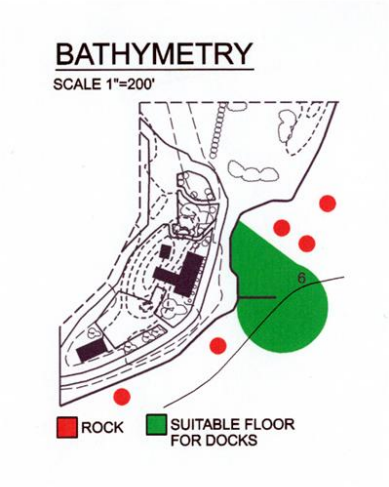
The existing parking areas would need to be resurfaced and brought up to capacity.

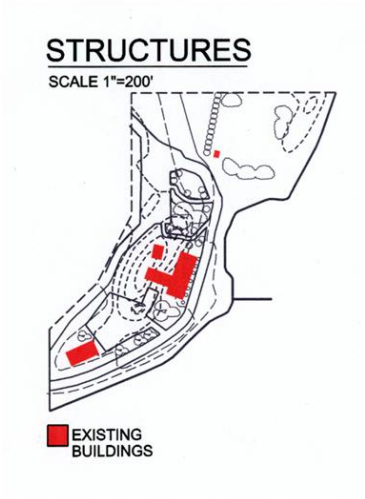
The field on the east side of the property would be left as a natural coastal field with walking paths for visitor's enjoyment.

With these proposed changes we feel that Rocky Point could become a wonderful location for patrons of the ferry system. By utilizing the favorable views of the bay we believe this could be a great stop on the ferry route.

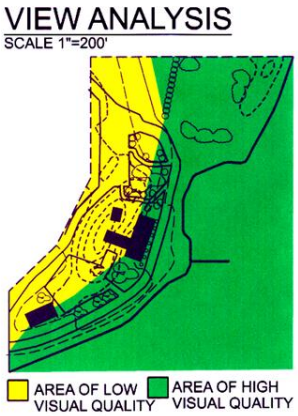
TRANSPORTATION ANALYSIS

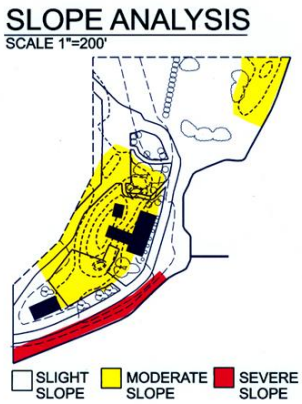



BATHYMETRY
SCALE 1"=200'
6
ROCK
SUITABLE FLOOR FOR DOCKS


STRUCTURES
SCALE 1"=200'
EXISTING BUILDINGS


ROCKY POINT


VIEW ANALYSIS
SCALE 1"=200'
AREA OF LOW VISUAL QUALITY
AREA OF HIGH VISUAL QUALITY


SLOPE ANALYSIS
SCALE 1"=200'
SLIGHT SLOPE
MODERATE SLOPE
SEVERE SLOPE

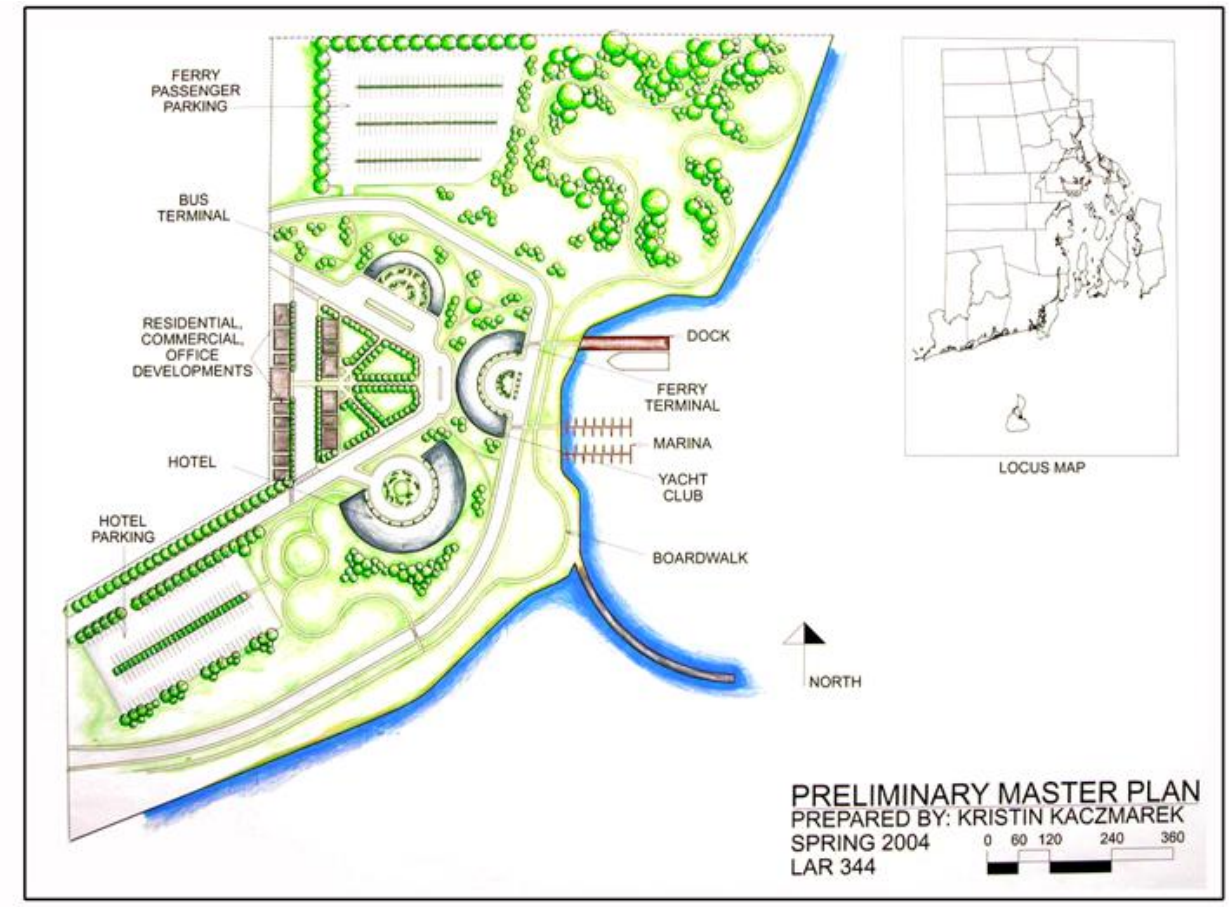

PATIO SEATING
WWW.COUNTRYCASUAL.COM

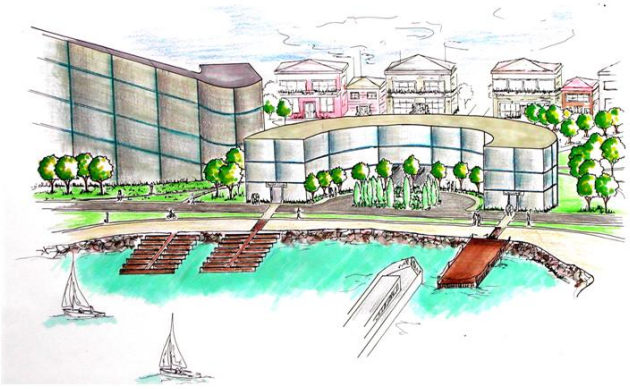

GARDEN SEATING
WWW.COUNTRYCASUAL.COM


RUBBISH RECPTICLE
WWW.COUNTRYCASUAL.COM


BLUESTONE PATIO
WWW.HOLLYRIDGEONLINE.COM

PRELIMINARY DESIGN IDEAS






SECTION ELEVATION

CHAPTER 8 - Park-n-Ride Site: Quonset Point/Davisville Ferry Landing

Prepared By:

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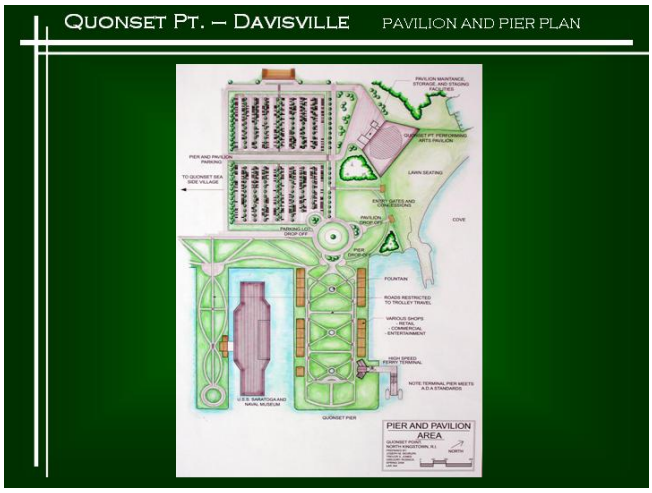
University of Rhode Island, Community Planning & Landscape Architecture Dept.

Text & Graphics Layout by: Jake Kashuk, Cranston Area Career & Technical Center Graphic Communications



Quonset Point Ferry Terminal Site Program and Analysis
The site consists of four primary areas: Dog Patch Beach, An abandoned military neighbrhood, a large paved area overgrown with pioneer species, and an existing industrial area. The site's primary use has been as an industrial port and rail hub which links ocean based cargo to delivery networks. The two adjacent piers were created to handle large load cargo deliveries and were also fitted with rail lines.

FERRY TERMINAL PROGRAM

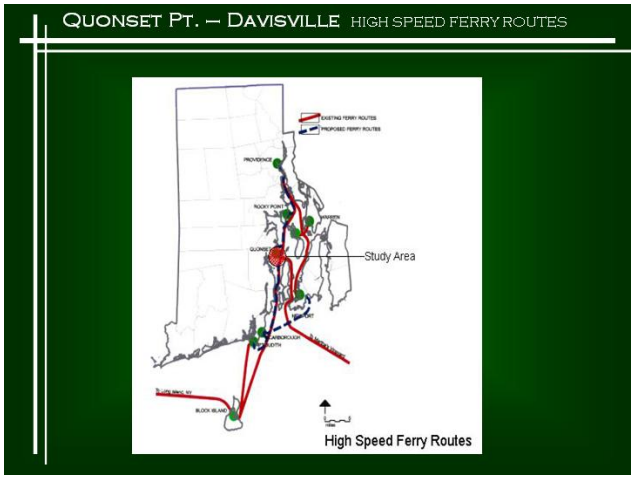
Goal: To Create, design and develop a terminal landing point that will meet and exceed the needs of the passengers, whether commuter or tourist, and contribute in elevating Quonset Point towards becoming a Center of Transportation for Rhode Island. The proposed location is Pier One.

1. Users

a. In-State commuters traveling North or South from or to Quonset. (Primary outbound commuter flow from Neighborhoods adjecent)
b. Runoff passengers from future Train Station (passenger traveling from Boston, Attleboro, South Attleboro,
c. In –State tourists;families and groups.
d. Military, Business, Tourist travelers.

2. Primary Elements

A. Terminal- design typical to Ferry development sites, modeled after Newport's existing ferry terminal with a formal or semi-formal entrance plaza with controlled views into the Bay.
B.Ticket Offices – offices which accommodate the traveler by design, and allow for large numbers of passengers to easily aquire tickets without impeding the flow of pedestrian traffic, with possibility of growth for particular ticket lines, such as seasonal, daily, etc...
C. Rest Rooms – must meet the number of passengers, as well as provide family changing stations.
D. Food Services/Concessions – although not an integral part of the terminal, these would meet the needs of commuters, families, and other travelers, as well achieve complete convenience.
E. Drop-off Area – a handicapped accessible turnabout which allows travelers to be dropped off, or drop off close to the launch site, or terminal. "Teaser" views offered while entering, to increase anticipation. These drop-off areas must allow for quick commuter flow.
F. Waiting Area- Sitting and gathering area for passengers waiting for ferry.(Shaded areas, or filtered sun areas). Possible activity areas (Chess or Checkers tables) or connection to activity areas are important, as well as connnection to concessions.
G. Parking – large parking areas, with extended-time parking, as well as all ADA required parking. Must be under surveillance or security watch and lit for night activity and high traffic. Snow-storage a must be a consideration. Parking areas should provide expansive



views, with the focus centered on the terminal itself, as well as provide obvious pedestrian connections to the terminal and other use areas.

H. Bus Stops – Overhead structures provided for RIPTA bus routes to travel to the Ferry Terminal Site, should visually relate to other terminal elements. Pedestrian connections to terminal, parking and nearby sites of interest or businesses. In compliance with this, proposed Trolley stops would be located close to Ripta stop.

I. Greenspace/Parkspace (which acts as a overflow rest/wait area) - area which will accept high traffic overflow, as well as act as a waiting area for travelers. Must be aesthetically pleasing, as well as provide a desire to enter and gather inside this area, preventing the terminal from being crowded or overflowed. This Greenspace area will provide a point of interest for travelers coming to Rhode Island (by Air or Sea), and travelers using the Ferry Network.

Necessary elements of Parkspace:

1. gathering areas
2. seating areas (shaded + sunny)
3. all required receptacles, water fountains, bike racks.
4. Controlled and exploited Bay Views, and views of The Newport Bridge. (externally focused towards the waterfront.)
5. all elements resistant to natural conditions of Quonset
6. a focal element; a sculpture, monument, water feature, or formal element.
7. Pedestrian access and connections to the terminal, Airport, Train station, local piers, local businesses, etc…
8. Growth potential to accomodate the future changes and development in the immediate area.
9. A Vertical Structure/observation area.

J. **Bike Racks/Storage Space –** to promote alternatives to car travel to and from the terminal area. To be completely successful, bike paths similar to South County's, or East Providence's Bike Path must be established.

K.**Lighting/ Signage/ Utility Receptacles-** All signage to be simple, graphically designed, and fairly low to the ground

(3-5ft.). Lighting should mimic Newport or Providence's old town style lighting (similar to acorn lighting). Trash and cigarette recepticles to be simple and subtle, matching related styles.

L. **Alternative Transportation Connections –** although previously mentioned, the importance of these must be stressed. In order to truly impact vehicular traffic, changes must be made in the way the public views these methods of travel. Pedestrian links to all related points of interest must be established, as well as links to bike paths, walking trails, the T-station, the Airport, the local businesses, etc,…

M. **Protection from Elements** – In reference to all site aspects, defense from the high winds, rain, sea spray, etc,… mst be taken into consideration. To design and create a successful site these elements must be manipulated and worked with, rather than fought.

N. Creation of a Desirable Activity Center – Future planning is essential for area of Quonset, as is planning concerning the waterfront. An extended and developed waterfront park (as previously mentioned) is a highly desirable design aesthetic that should be explored. The Pier North of the site will be used for the "tall ships" this summer, and will be considered as part of the design process for a future activity center for street venders, food venders, and street performers. Also a vertical structure (mentioned previously in the park section) would accomplish many goals, and help to create an interesting and unique waterfront, design styles for this could be a lighthouse design, or a quonset hut design. This point is key in a successful positive development. Concept for such development are provided under long term expansion.

O. Protection of existing wetland area – Sensitivity in design, construction, and development must be considered a priority to this Sites growth.

ADJACENT OFFSITE CONDITIONS

The areas surrounding the site are several important points of interest in Quonset:

- Anderson's Landing

Pier One- Presently contracted to Cardi Construction for movement of the materials for the 195 bridge across the bay.
Pier Two- Summer of 2004 will house the "Tall Ships", probable location for future events.

- Quonset Point Air Port – presently used mostly for private planes and some military purposes, development is in the planning process.

- Senesco Marine – Large-scale double hulled barge company, Contracted for the Cape Wind Project.

- General Dynamics: Electric Boat – Large military-contracted business, employer.

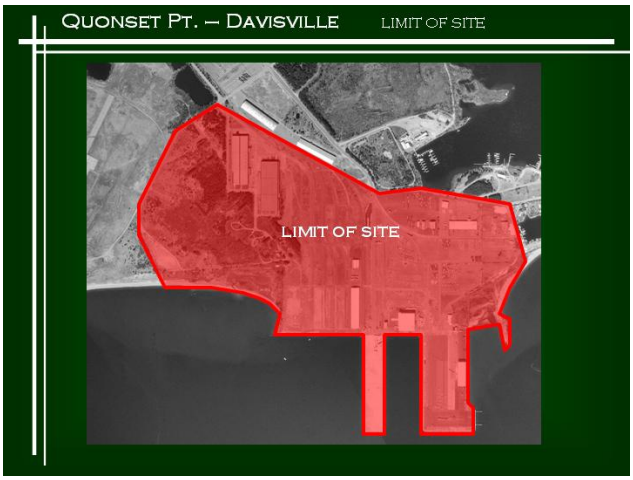
- RIEDC – Rhode Island Economic Development Corp.

- **Quonset's Fishing Jetty –** High use fishing area, w/ beach connection.
- **Quonset Pier** – Existing High Speed Ferry location.
- **Future Train Station -** link to the T-Line, establishing a Boston-Quonset connection.
- **Quonset Point Naval Air Museum**
- **Rhode Island National Guard**
- **Rhode Island N.G. Air Show**
- **NORAD-** Vehicle delivery piers.
- **Calf Pasture Beach - Cold Spring Beach**
- **Dog Patch Beach –** Adjecent to site, wetland and bea area.
- **Proximity to: East Greenwich commmercial center and downtown**
  Goddard park
  T.F.Green Airport
  Existing Kingston Train Station
  Wickford cultural center and commercial area

EXISTING CONDITIONS

The site itself consists of a beach and wet land area, and a level paved area with supported wooden piers and sea wall. The area has brilliant bay views of the Jamestown and Newport bridges, and Prudence island. Nature has overrun a previously paved industrial site to create a restored beauty to this abandoned area. Despite it's industrial history, the site is undeniable as a Rhode Island shoreline landmark and is feasible for future development.

EXISTING ENVIROMENTAL CONDITIONS



Soil – The Rhode Island Soil Survey classifies the soil quality in this area as **Urban Soil**, or soil that has been highly disturbed or backfilled. The area requires extremely hardy plants due to its ocean proximity and is reaffirmed the presence of mostly pioneer species . Marsh soils are present, connecting to the bay adjacent to the site. The beach area is mostly sand material with backfilled soil and rip rap to prevent erosion. Several large igneous rocks lie in a small jetty formation on the beach.

Wind – The winds are strong coming from the **Southwest** during the spring and summer months and winter win originate from the **Northeast**. The site itself (paved) is fairly calm for a beachfront area, as a juniperus Virginiana wall shields it.

Water – The site is well drained as it consists of paved and gravel surfaces. A adjecent Marsh collects water drained from the higher elevation neighborhood, and channels it into the bay about 40+ feet from site. The sea water is clear and fairly calm, due to the geographic cove. The beach appears very natural and undisturbed.

Rainfall – typical to region

Topography- About 80% of the site is completely level, as it was previously paved. The natural topography above the beach is sloped gradually higher, and held by a traditional, simple retaining wall.

Drainage Patterns- The site drains toward the Bay, and down into a broken pavement area against he pier walls. It also drains towards the wetland south of it, into a grassed area, and eventually into the bay.

Vegetation- Mostly salt-tolerant and pioneer species, and invasives that had seeded in:

-Pitch Pine
-Shadblow serviceberry
-Grey Birch (Beautiful Specimen)
-Juniperus Virgiana
-Shore Rose(Invasive)
- American Beachgrass
-Little Blue Stem
- Fraxinus Pennsylvanica (green Ash)
-White Oak
- Bayberry

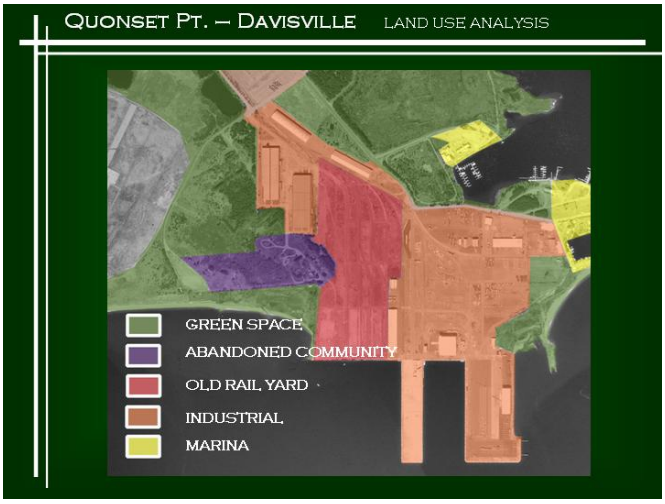
***** Note :** Many of the existing plants are young or dwarfed, have seeded themselves in, and are extremely hardy plants, which are strong and resistant to damage by salt or harsh conditions. Also, with the benefit of knowledge that these plants can defenitely survive and thrive on-site, there is strong evidence to support the re-planting, by potting or burlaping the root ball of each plant. To expand on this even more, an on-site location can be dedicated to create a nursery area for these plants during the construction process.

Concept Development

Several future development plans will allow the area to be considered in term of long range expansion and growth. Being in such proximity to future Train stations, the State Airport, and Large High Speed Ferry Terminals, the area will take large, quick steps in it's growth. Any growth considerations should be in conjunction with all other mentioned sites, to achieve the most positive growth, and develop the area in the best way possible.

1. Adjacent beach: Dog Patch beach should undergo testing to analyze the water quality conidering its proximity to an industrial facility, and if positive results are found the site could be researched as a future beach site. If the results are negative, a Boardwalk could be considered to create a oceanfront walk in conjunction with the Neighborhood's growth. This site holds great potential for a site that represents Rhode Island's splendor.

2. Adjacent Neighborhood: The Neighborhood is another site that holds significance to the area's growth. This site could be developed into a mixed use Commercial and Residential area, following the example of downtown East Greenwich or Wickford Village. This area could become a positively planned and designed community, which could represent the ideal coastal village, as well as provide affordable housing units for the residents of Quonset. Another aspect is the creation of commercial office parks on the industrial edge of the area in association with the residential community. These would ease the transition from Industrial to residential, as well as provide jobs and space for economic growth. The development of the area would create a "Green Ribbon" through Quonset, connecting this area to the N.K. Country Club and other public, non-industrial areas. Many other growth possibilities exist, such as situations like Goddard Park or the future development of Rocky Point, any of which could work in conjunction with others, as well as continue to promote positive growth in the area, as well as make the site more of popular destination.



3. Adjacent Piers: If the commercial or industrial management of the piers was to cease, or other piers were built in association with these other development oppurtinies, they could harbor activity areas and cultural ativities. Examples of this would be Key West, San Francisco, and South Beach, Miami. This would maximize tourism potential, act as a welcoming feature to the state (concerning the airport, ferry, and T-station), as well as promote a waterfire style activity with street vendors, performers, artists, and musicians, all of which would help to enrich Rhode Island's cultural potential. Daytime, Night, and Sunset hours would create different atmospheres, and events like concerts, speeches, and other activities would attract large numbers to the area, and surrounding tourist spots.

4. Forested area adjacent to the Neighborhood

This area is forested heavily and is a natural coastal area, primarily filled with pioneer species and hardy plants. Possible development into a low impact activity area, that is environmentally sensitive and will allow for community use. Considering the density of the proposed neighborhood, public greenspace is of high priority.

5. Industrial area to the North of the Site

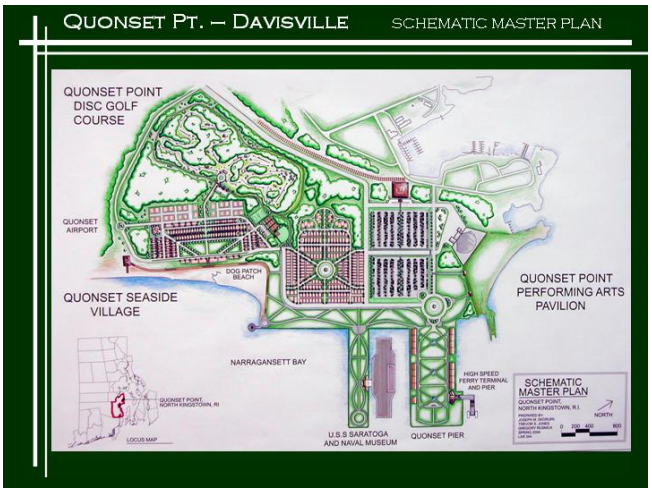
If Quonset is to grow into more than an industrial area, than relocations of some businesses must occur. The natural and coastal beauty of this site and it's potential for growth and development demand a dynamic change. The area's possibilities far outweigh it's industrial presence and should be reconsidered. The site's coastal connection and present level of disturbance suggest a high use area. A public pavilion and entertainment area with high density activity on Pier One (Terminal Location) would satisfy many public needs as well as state goals.

DESIGN THEMES

1.Industrial - Quonset Point was originally built for military purposes and was always used for naval and air-related engineering. The nature of the construction methods is simple, purposeful, and beautiful in its raw nature. The Quonset Hut, the flight hangars, and the mechanical aspects of Quonset make it's industrial nature visible in all aspects, where form follows function but is beautiful nonetheless.

2. Military – Originially a Naval and Air-Base, Military influences are visible throughout the area. The Landscaping, Road Layout, and Architecture all were designed in a straight-forward design style of the 60's. Many of these styles still exist as the area still exists due to military contracts for construction of equipment/vehicles.

3. Ocean/Bay – Possibly the most significant feature related to the site, the Bay is the State's greatest natural resource and the reason why Quonset was created in its' location, it also stands as the economic key to Quonset's growth. Rhode Island's sailing history is also an important factor to the Bay.



Schematic Master Plan Program

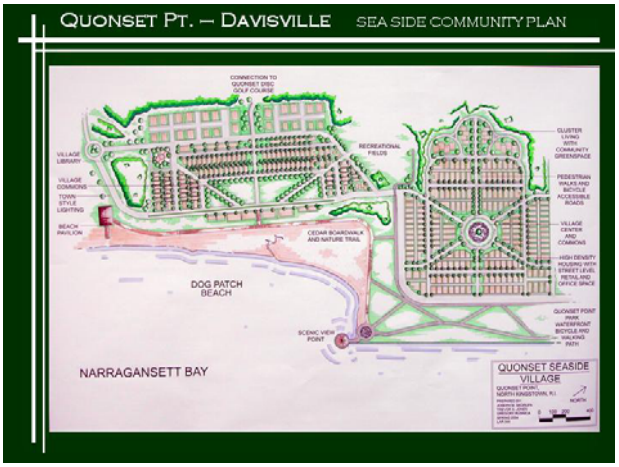
The proposed design contains three primary areas which create a dynamic vision for Quonset Point:

Quonset Seaside Community

Goal: to create a high density seaside community that maximizes use of alternative methods of transportation (non-vehicular), while increasing the quality of life for its residents and visitors. Modeled after the current trends in New Urbanism, a classic new england coastal village would be aesthetically pleasing as well as satisfy housing and affordable housing goals.

Benefits:

- Economic and financial
  - Residents save on vehicle costs and residence maintenance
  - City generates revenue by tourism and land lease
  - Coastal cities and areas throughout Southern R.I. benefit through tourism without increase in density.
  - Small businesses and developers benefit through large increase in jobs.
- Environmental
  - High density living stops suburban sprawl, concentrating a large amount of people in a fairly small area, rather than spreading them throughout many plots, decreasing impact
  - Large areas of shared greenspace are beneficial to environmental corridors and ecosystems.
  - Less vehicular traffic, combined with alternative and less pollutant forms of transportation lessen air quality impact.
- Social and cultural



-A R.I. community similar to historical cities is created, giving people an affordable seaside residence close to retail, commercial, and entertainment businesses, as well as greenspace, raising quality of life.
-A new cultural area in connection with East Greenwich and Wickford is created, Benefiting entire area while helping to restore traditional coastal living.
-Affordable living areas and venues allow for musicians and artists to give cultural energy to the area
-Affordable living areas also provide a living space for college and University students in proximity to several institutions.

- Existing vehicular infrastructure
-Traffic on Rt 1 South, Rt 4 South, and I95 South would be decreased in Summer Months
-Traffic on 95 North and Rt 2 would be decreased in winter months, as well as eased U.R.I. traffic.

Elements:

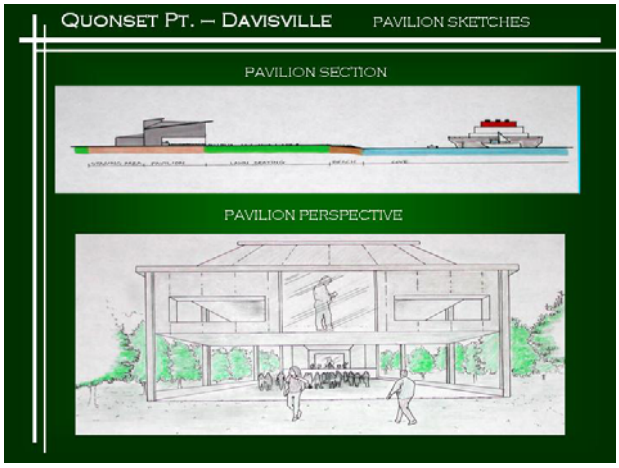
- High density residential streets which mixed retail and commercial.
-allow for community living while keeping trips in walking distance.
- Defined system of neighborhood center and edges.
-define the neighborhood's look and style.
- Functional grid of blocks, districts, streets, and corridors.
-provide an easy to navigate, comfortable, and driveable city.
- Large areas of community greenspace and public activity.
- Better quality of life while maintaining a sensitivity towards the environment.
- Emphasis on alternative transportation methods (multimodal).
-Vehicular traffic linked to bike, rail, ferry and pedestrian paths
- System of design guidelines for site features and structures.
-create a coastal community with a similar style yet unique feel.

Performing Arts Pavilion

Goal: to create an attraction to make Quonset Point a destination rather than just a departure point.

Features:

- Open air, outdoor, seasonal pavilion where events such as concerts and other performances can be held
- Open floor lower level with seating in upper level (balcony)
- Rear storage and staging area
- Open lawn for sitting and standing audiences
- Large projection screen to aid distant viewers and viewers/listeners on boats in near by cove
- Ticketing and concessions area



Benefits:

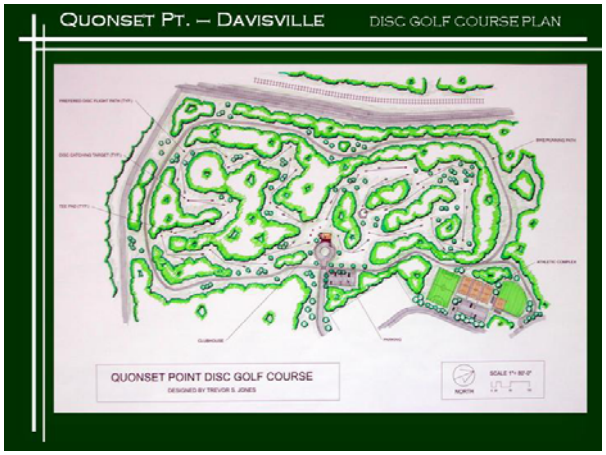
- Makes Quonset Pt. An attraction
- Increases patronage of adjacent pier and ferry
- Provides a landmark for the adjacent community
- Utilizes open green space

Pier

Goal: to utilize the existing pier to its fullest capacity to benefit the proposed community.

Features:

- Commercial area designed to service the adjacent community as well as ferry passengers
- Gateway to ferry terminal
- Contains multiple small shops ranging from coffee shops, to souvenirs stands, to newsstands, to restaurants and bars
- Features a trolley service ideal for community members and for travelers



Benefits:

- Provides goods and services to ferry passengers and as well as community member
- Aides in economic growth for area

Disc Golf Course

Goal: To provide an area for low cost outdoor recreation that is environmentally friendly and low maintenance

Benefits

- Provides green space
- Utilizes native species
- Low maintenance
- Men, women, and children of all ages and skill levels can play
- Low cost to players
- Can be tied in to other outdoor activities
- Encourages community involvement

Design Goals

- Layout of holes in a logical manner, moving in a loop
- Minimize walking distance between holes
- Provide a wide range of hole lengths
- Provide a good mixture of holes requiring controlled left, right, and straight throws
- Potential for multiple configurations to serve not only beginners but also players with advanced skills

QUONSET PT. – DAVISVILLE COLOR SCHEME

QUONSET PT. – DAVISVILLE CATALOG CUTS

VERTICAL AND HORIZONTAL CABLE RAILING

QUONSET PT. – DAVISVILLE CATALOG CUTS

POWDER COATED STEEL BENCHES

MANUFACTURED BY DUMOR INC.

QUONSET PT. – DAVISVILLE CATALOG CUTS

LOOP BIKE RACK

TRASH RECEPTICLES

MANUFACTURED BY DUMOR INC.

QUONSET PT. – DAVISVILLE CATALOG CUTS

DRINKING FOUNTAINS

MANUFACTURED BY MURDOC, INC. FOR ALBERT STERLING, INC.

QUONSET PT. – DAVISVILLE CATALOG CUTS

IN-GROUND LIGHTING

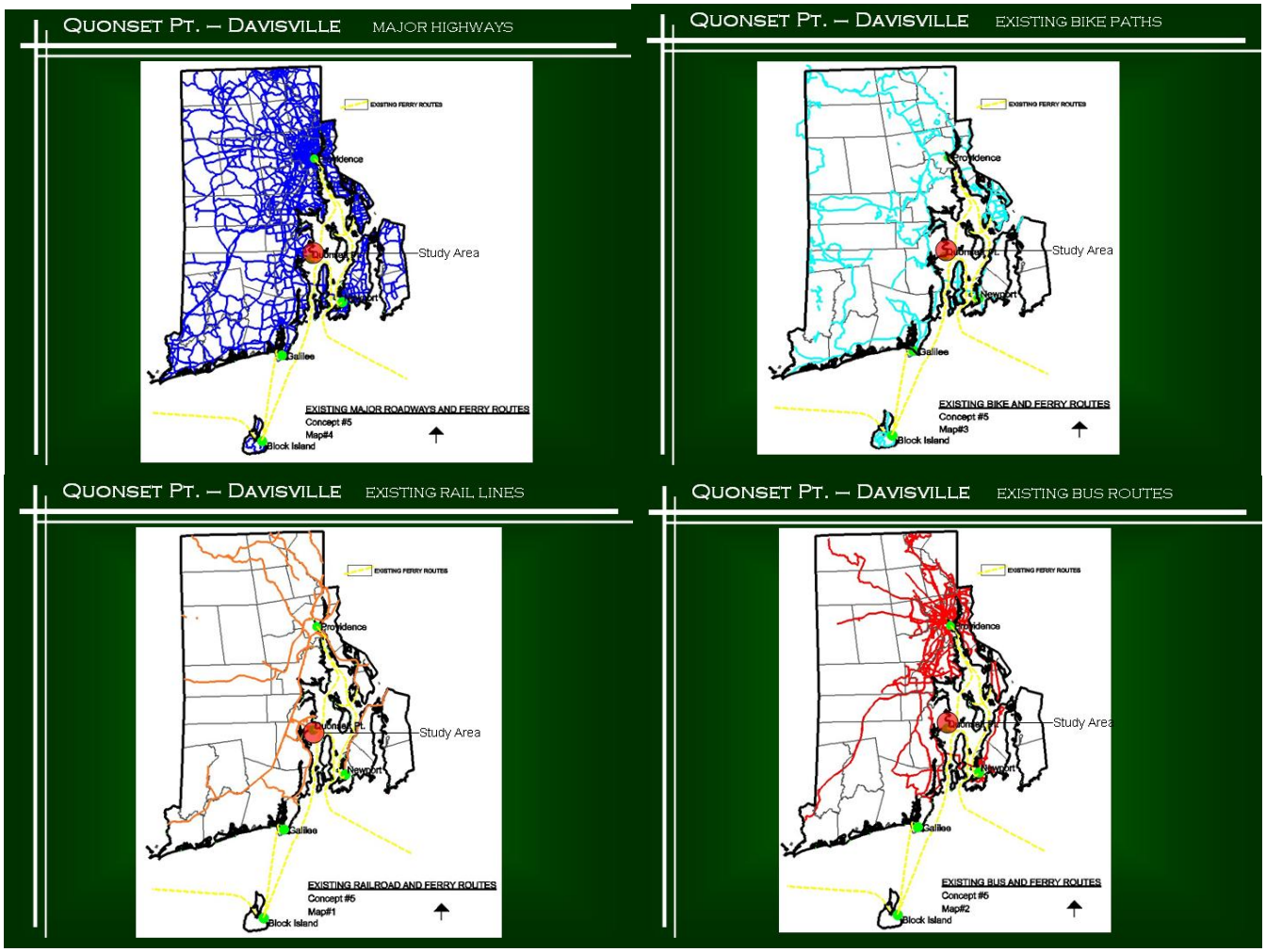
BOLLARD AND STREET LIGHTING

MANUFACTURED BY METALLIC ARTS MANUFACTUING

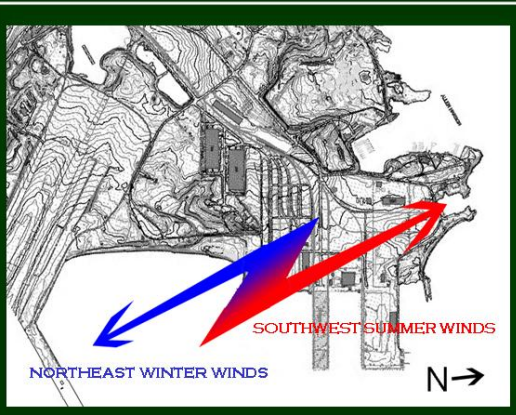
QUONSET PT. – DAVISVILLE CATALOG CUTS

DISC GOLF TARGET (HOLE)

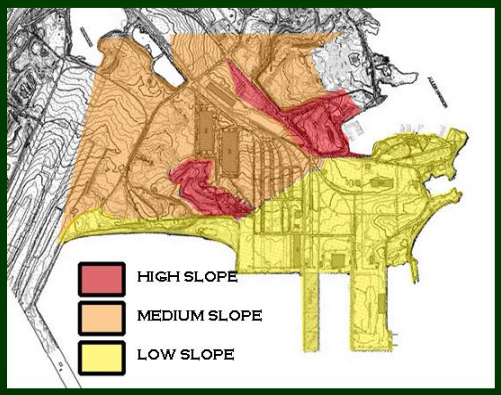
TRANSPORTATION ANALYSIS



QUONSET PT. – DAVISVILLE WIND ANALYSIS

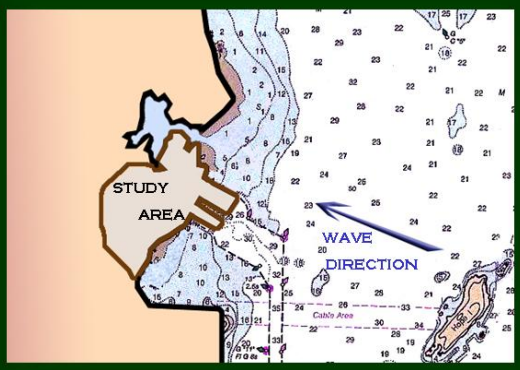


QUONSET PT. – DAVISVILLE SLOPE ANALYSIS

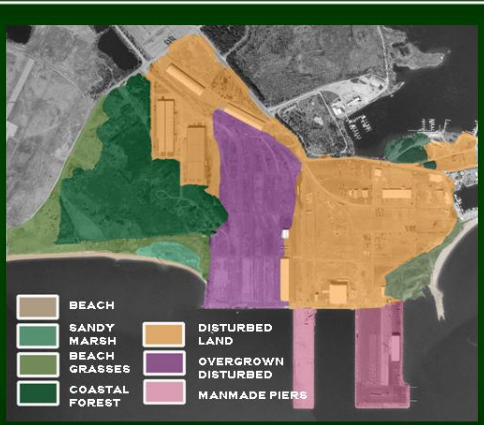


QUONSET PT. – DAVISVILLE VISUAL QUALITY ANALYSIS

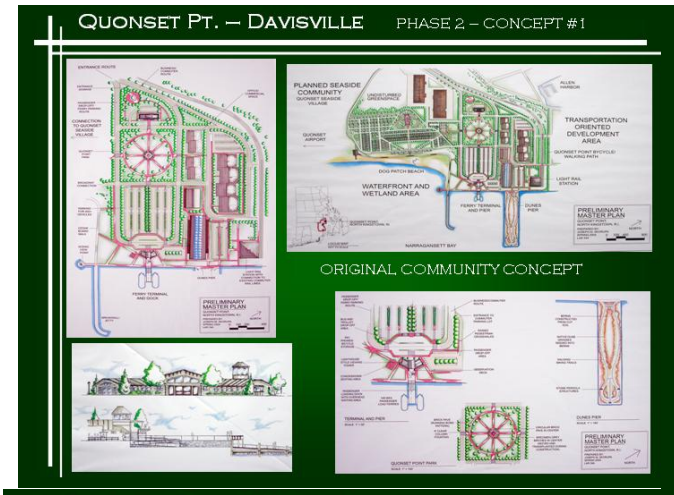
QUONSET PT. – DAVISVILLE BATHYMETRY ANALYSIS

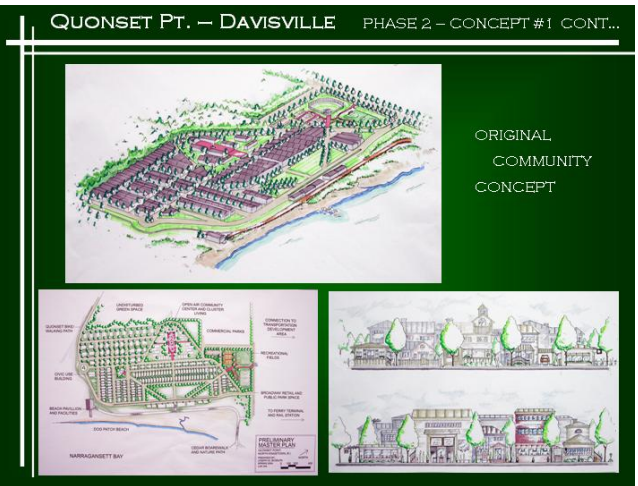


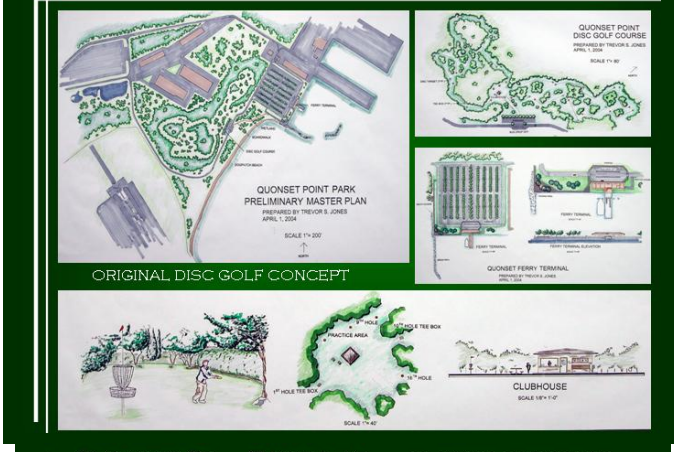
QUONSET PT. – DAVISVILLE ENVIRONMENTAL ANALYSIS

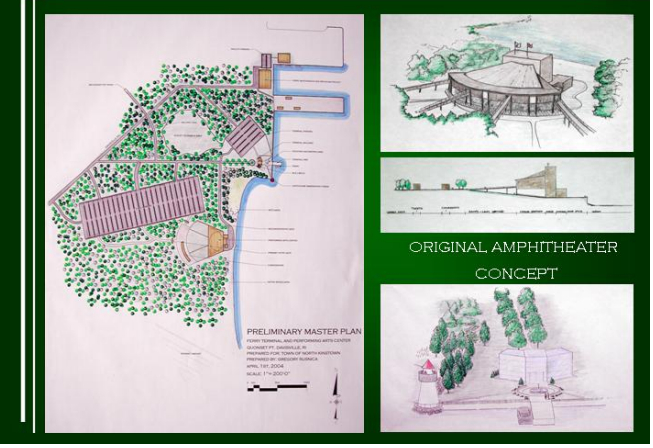


PRELIMINARY DESIGN IDEAS



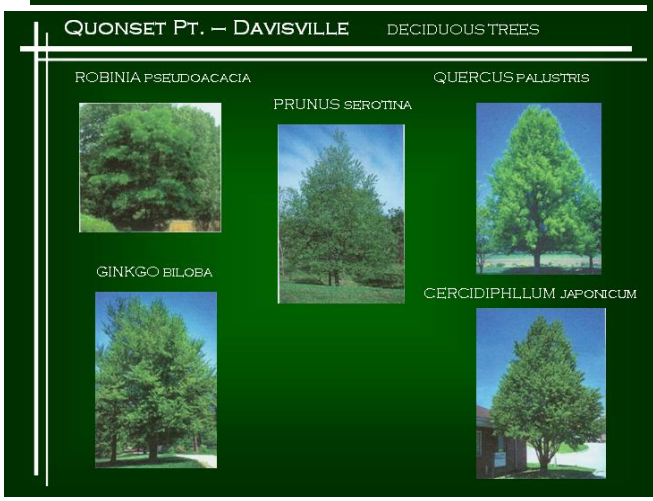







QUONSET PT. – DAVISVILLE DISC GOLF COURSE SKETCHES
GREEN PERSPECTIVE
CLUB HOUSE ELEVATION
CLUBHOUSE

QUONSET PT. – DAVISVILLE EVERGREEN TREES
CHAMAECYPARIS NOOTKATENSIS
JUNIPERUS VIRGINIANA
PINUS STROBUS
ABIES CONCOLOR


QUONSET PT. – DAVISVILLE DECIDUOUS TREES
ROBINIA PSEUDOACACIA
PRUNUS SEROTINA
QUERCUS PALUSTRIS
GINKGO BILOBA
CERCIDIPHLLUM JAPONICUM


QUONSET PT. – DAVISVILLE SHRUBS
KALMIA LATIFOLIA
CORNUS STOLONIFERA
AMELANCHIER ALNIFOLIA
VIBURNUM DENTATUM
ILEX GLABRA

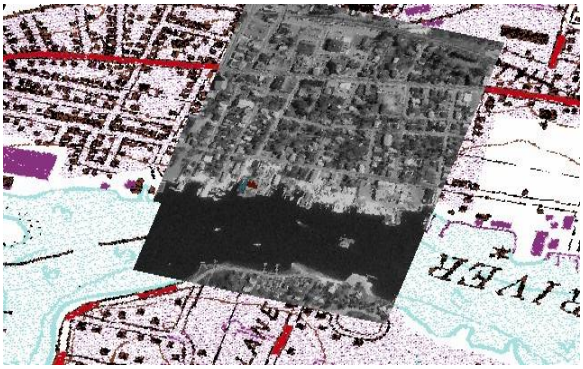
CHAPTER 9 - Park-n-Ride Site: Warren Harbor Ferry Landing

Prepared By:

Tim Bestor, James Dixon, and Josh Roth

Roger Williams University, School of Architecture, Art, and Historic Preservation

Text & Graphics Layout by: Jake Kashuk, Cranston Area Career & Technical Center Graphic Communications



Program

The Town of Warren, RI would like to encourage use of its water resource and simultaneously develop the Water Street and Downtown areas to be more advantageous for its own citizens and visitors.

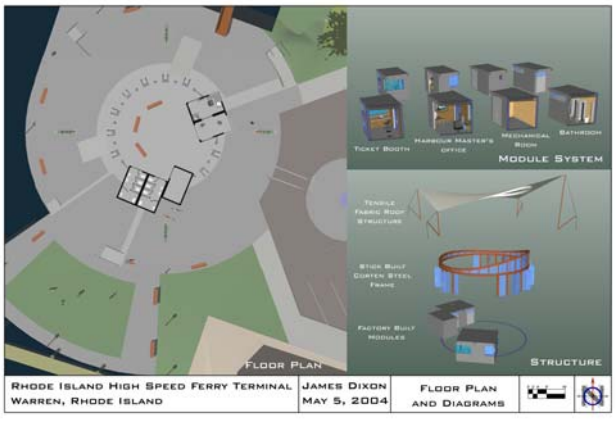
A ferry terminal could attract an increase in the number of people at the water's edge and allow visitors from other parts of the State to make day trips to town to access the Ferry Service and to use the Ferry Service as a primary means to travel to Warren's historic and charming Town Centre.

DESIGN ELEMENTS

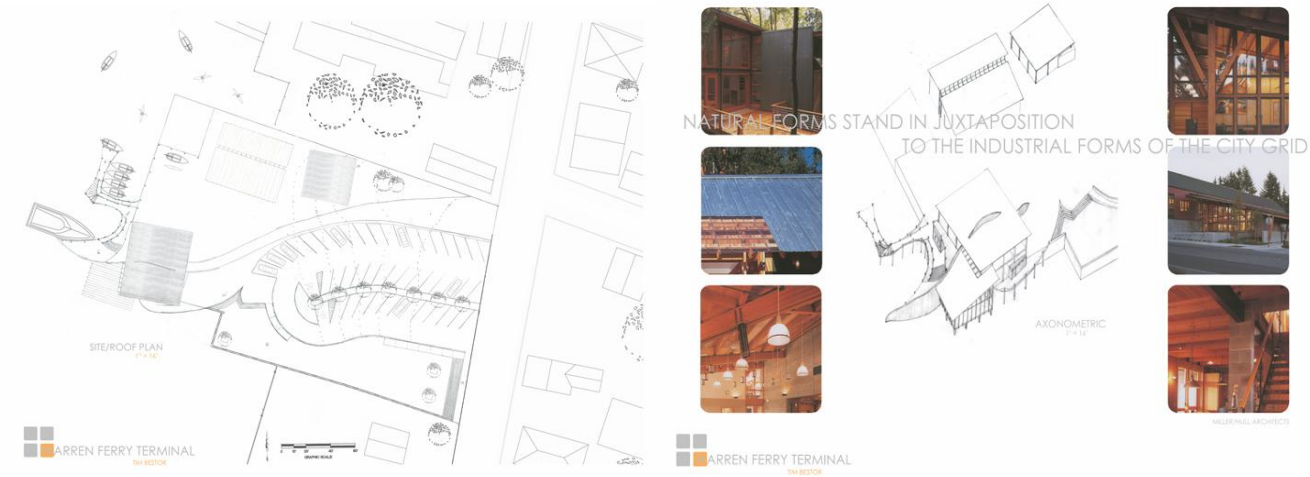
Ferry Terminal Interior
- Visitor's Center for brochures, area resource information, inclement weather waiting area, vending, or a news kiosk
- 2 bathrooms with appropriate number of stalls and legal requirement of handicap stalls. Consider the possibility of the bathrooms being accessed from the exterior if necessary.
- Janitor's Closet with storage and slop sink
- Dock Master/Ferry Master/Harbor Master office
- Ticket Office with minimum of two sales points, available to exterior or interior purchase
- Mechanical Room for heating, electrical, telephone, and fire prevention related equipment
- Elevators and stairs, as needed
- Drinking Fountain

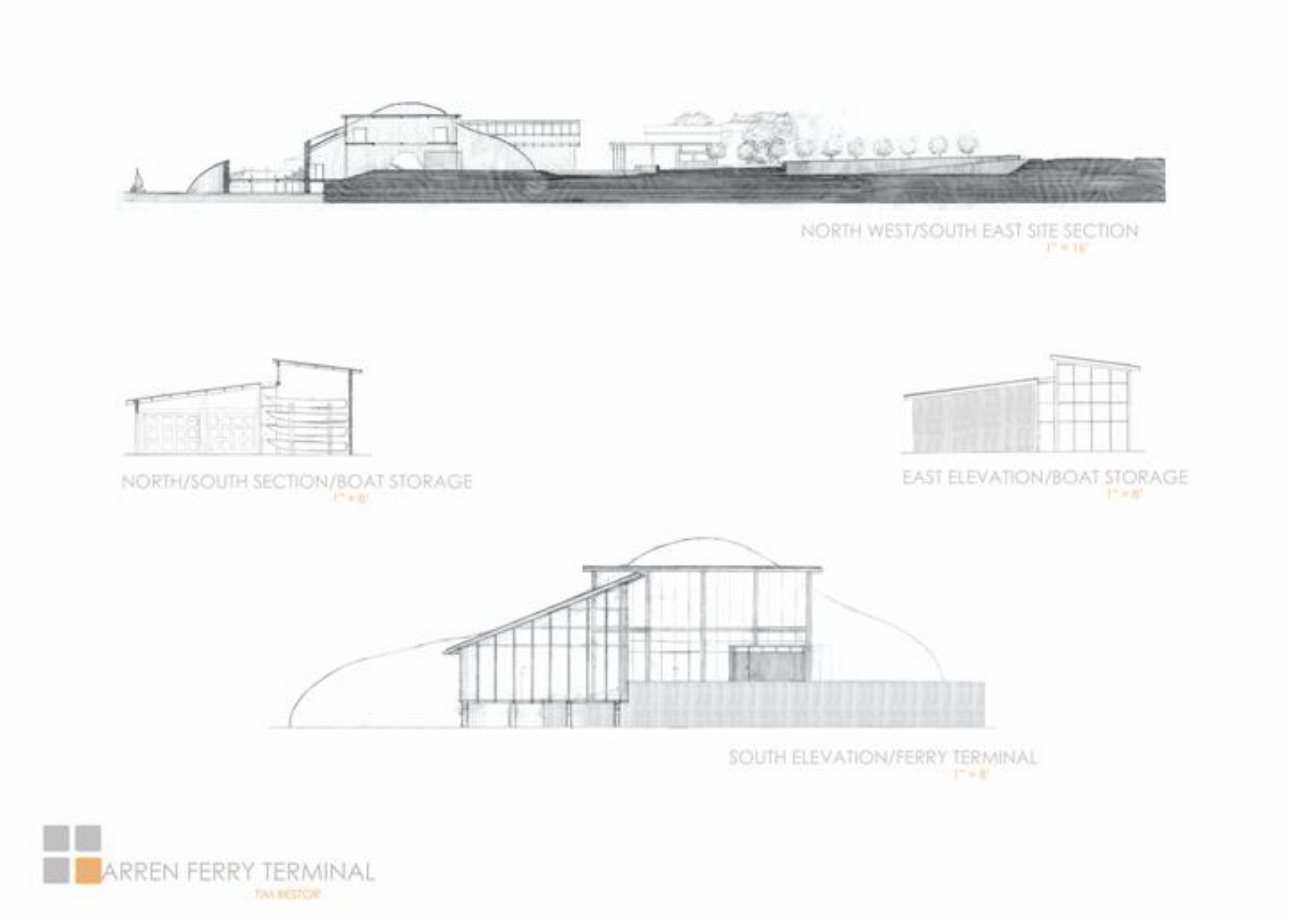
Ferry Terminal Interior
- Storage lockers undercover but accessed from the outside
- Covered ticketing area
- Covered waiting area with chairs/benches – does not need to be attached to building
- Docks, piers, and ramps as needed
- Vending Area
- Art work and sculpture
- Connection to immediate landscape including bikepaths, beach access, street or village access
- Parking: 180 car parking lot or structure may be remotely located near Town Hall or situated on the Ferry Terminal site. All code requirements regarding egress to be met. All zoning codes to be acknowledged and met or needed variances known.
- Septic field located if needed or acknowledge use of town and sewage availability

The following by: James Dixon

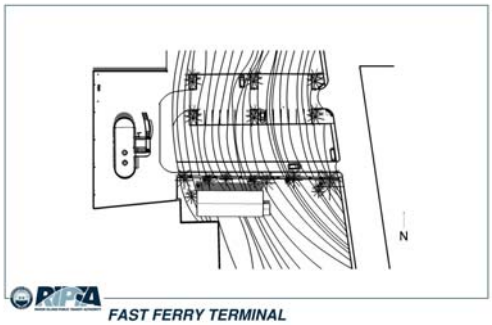


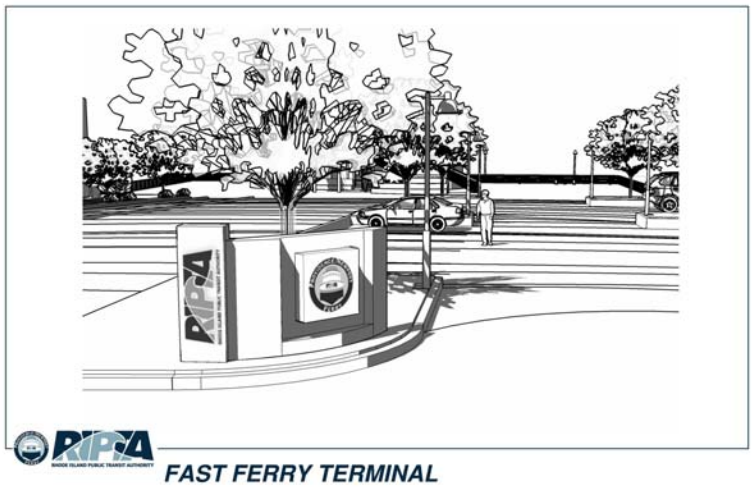
The following by: Tim Bestor

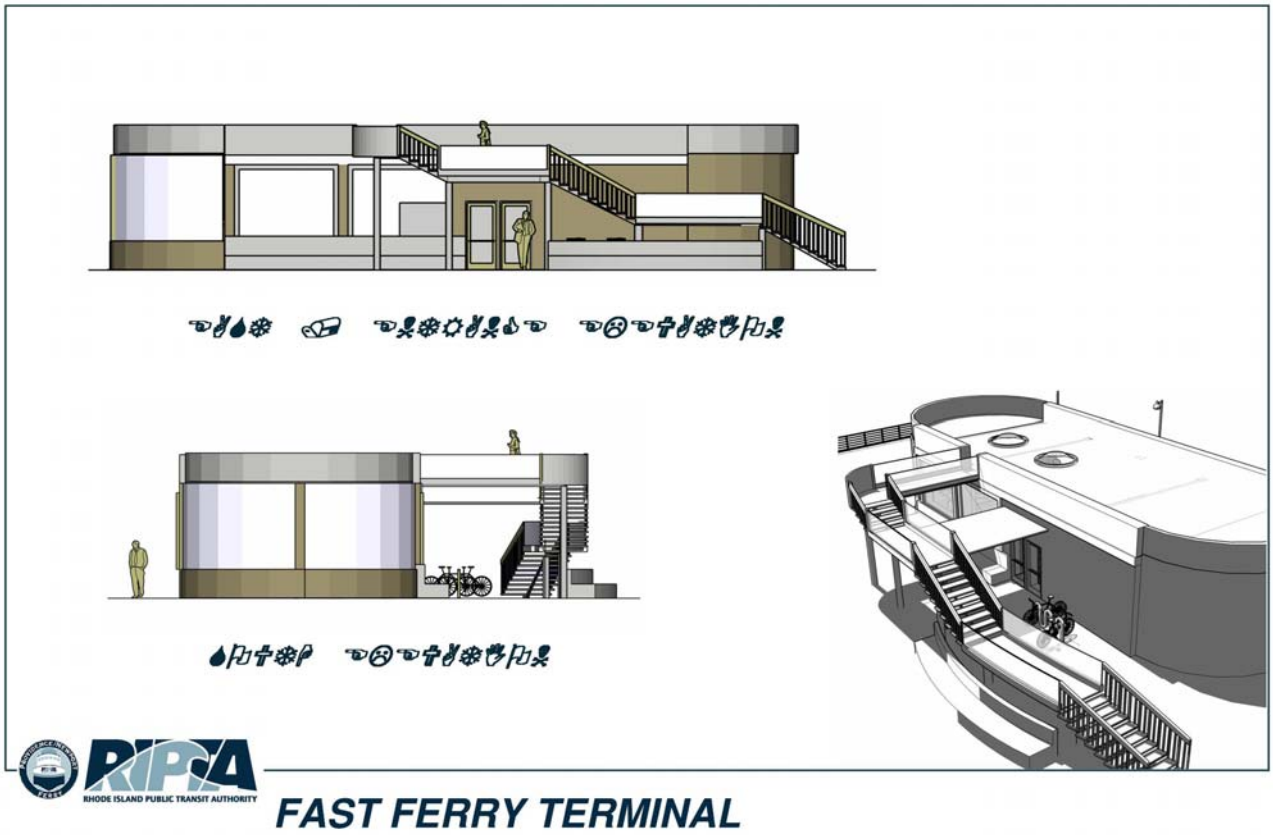


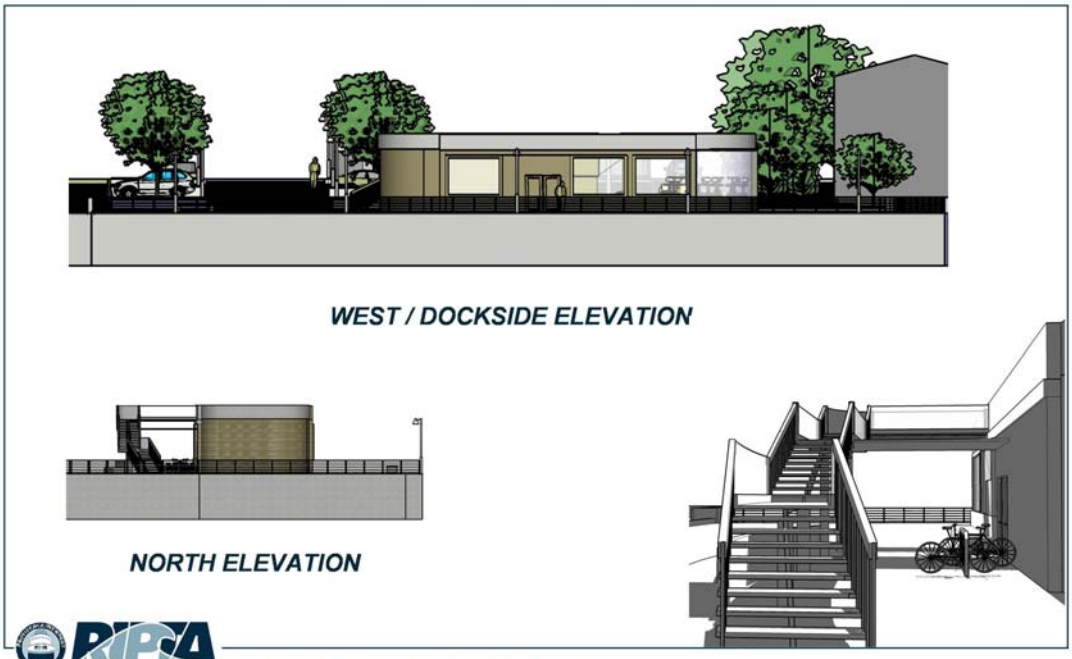


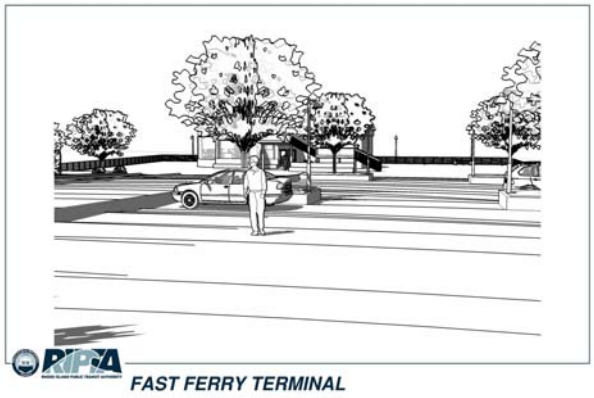
The following by: Josh Roth








WEST / DOCKSIDE ELEVATION
NORTH ELEVATION
RIPTA
RHODE ISLAND PUBLIC TRANSIT AUTHORITY
FAST FERRY TERMINAL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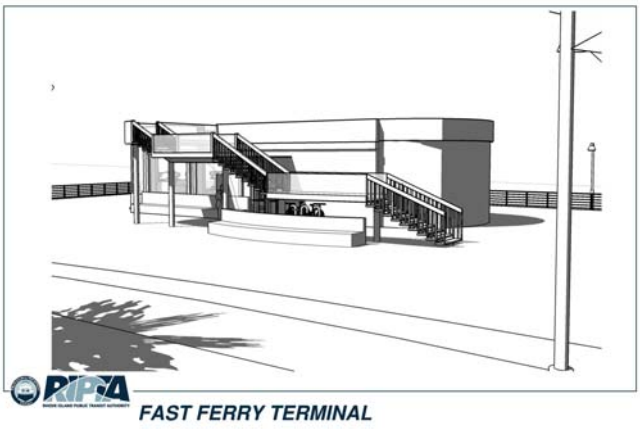
FAST FERRY TERMINAL


RIPTA
FAST FERRY TERMINAL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FAST FERRY TERMINAL

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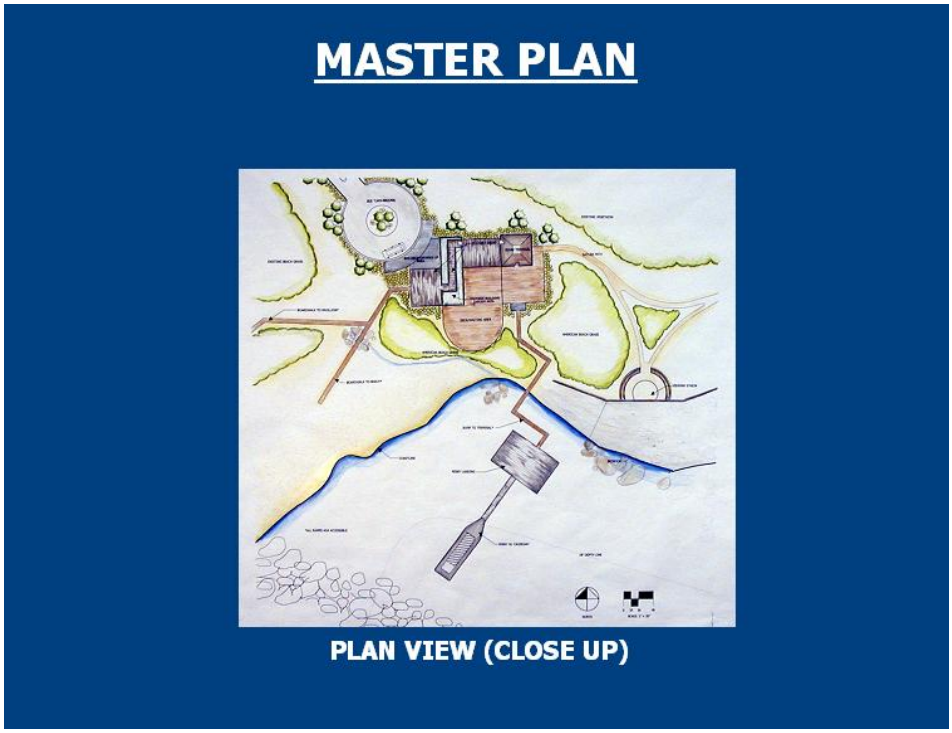
CHAPTER 10 - Destination Site: Scarborough State Beach Ferry Landing

Prepared By:

Mike Doten, Colin Hines and John Piccirillo

University of Rhode Island, Community Planning & Landscape Architecture Dept.

Text & Graphics Layout by: Jake Kashuk, Cranston Area Career & Technical Center Graphic Communications

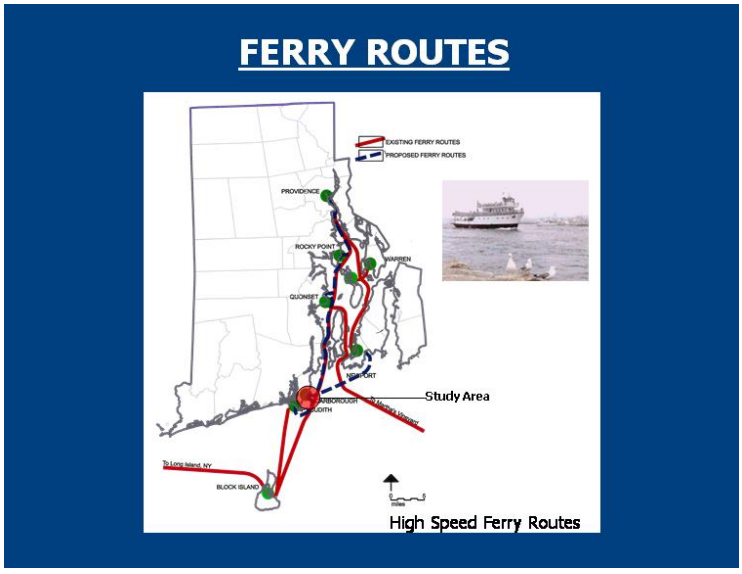


Scarborough Beach is located in Narragansett Rhode Island and is used by the public for recreation in the summer time. This beach area has an existing parking lot, which is planted with salt tolerant species. Pedestrian access to the beach pavilion and beach itself also exist on the site. Currently, no docking area of any type is in use on the site for the boarding of ferry passengers.

Goal: To provide the public with safe and easy access to the Scarborough Beach area using the proposed high-speed ferry system. A naturalistic theme that utilizes the historical significance of the existing landscape and architecture will be used as an attempt to maintain the beauty of the site and to keep from being over developed.

Program Elements:

1. Ferry landing/dock
2. Jetty or breakwater
3. Ticket booth
4. Smooth circulation
5. Bus drop-off/ pick-up area
6. Lifeguard station and/or some type of trained personnel on duty in case of medical emergency
7. Bicycle racks
8. Lockers to store belongings
9. Ample signage



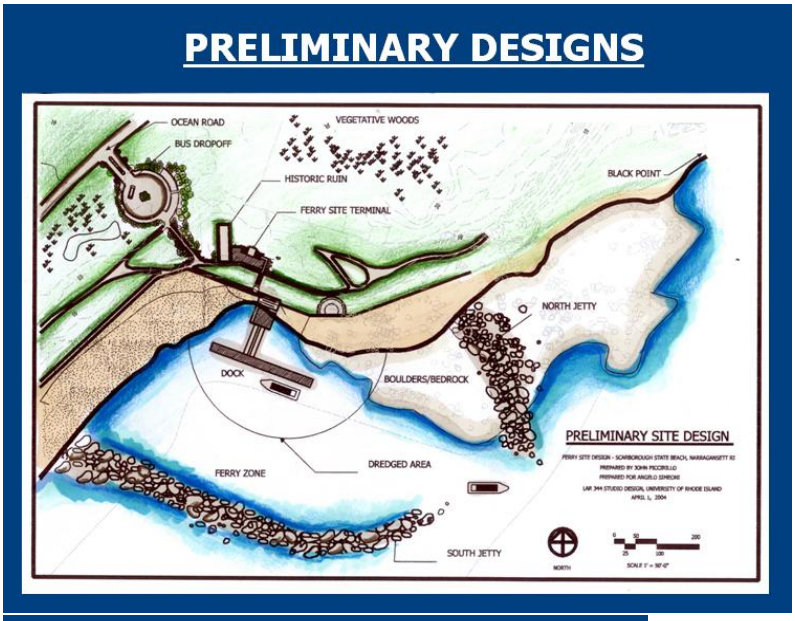
Goals and Objectives

Ferry Landing/Dock:

Goal: To provide the Vibe Tech causeway ferry with a landing pad for ferry passengers to safely board and unload onto the vessel. The front portion of this dock will be floating as to rise and fall with the tides to accommodate the causeway. The rear portion will be stationary to make possible an ADA accessible ramp

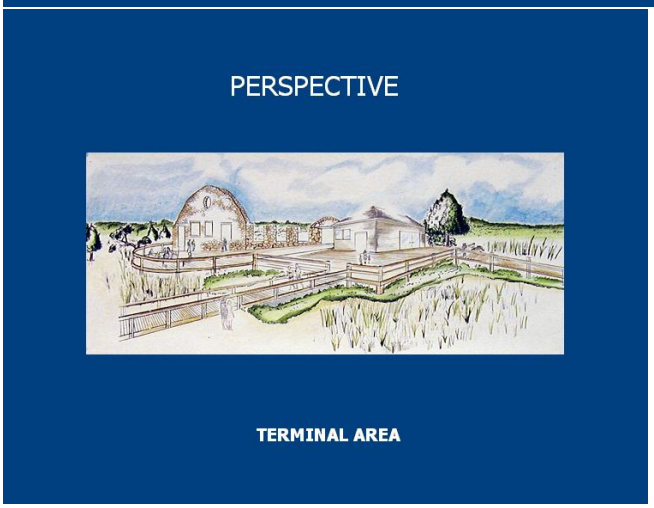
connection leading to the terminal.

Jetty or Breakwater:
Goal: To protect the ferry landing area from the ocean currents. Since Scarborough Beach is on the open ocean and may face some unpleasant sea conditions, the jetty must be installed to give the ferry a protected area to dock. The jetty is designed to leave a small opening for one ferry to safely pass, while being protected from any choppy sea conditions.

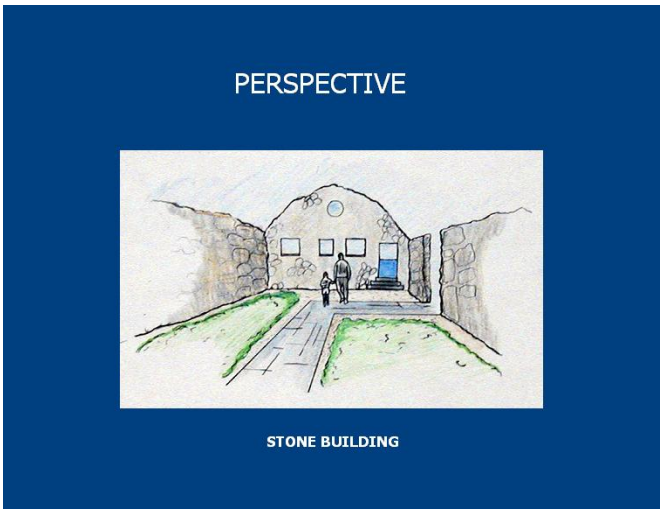


Ticket Booth:
Goal: To provide passengers with option of purchasing tickets. Though this area has been designed as a "destination site", meaning that most people will purchase round trip tickets from the main ferry terminal sites (i.e. Providence) to day trip at Scarborough Beach, people will still have the option to purchase tickets for departing ferries from the Scarborough Beach terminal. The ticket booth will also have other amenities such as restroom facilities and a small concession serving food and drink.

Smooth Circulation:
Goal: To provide all passengers safe and easy access to the ferry terminal facilities and to Scarborough Beach. All ramps will be ADA accessible and provide access to and from docking area, ticket booth, beach area, main beach pavilion and parking lots.



Waiting Area:
Goal: To provide passengers with areas wait to board and to regroup with family and friends. These areas will be designed to accommodate seating and standing of a large number of people. Also, overhead canvas shade tents will be used to give the passengers relief from the hot sun or from inclement weather.



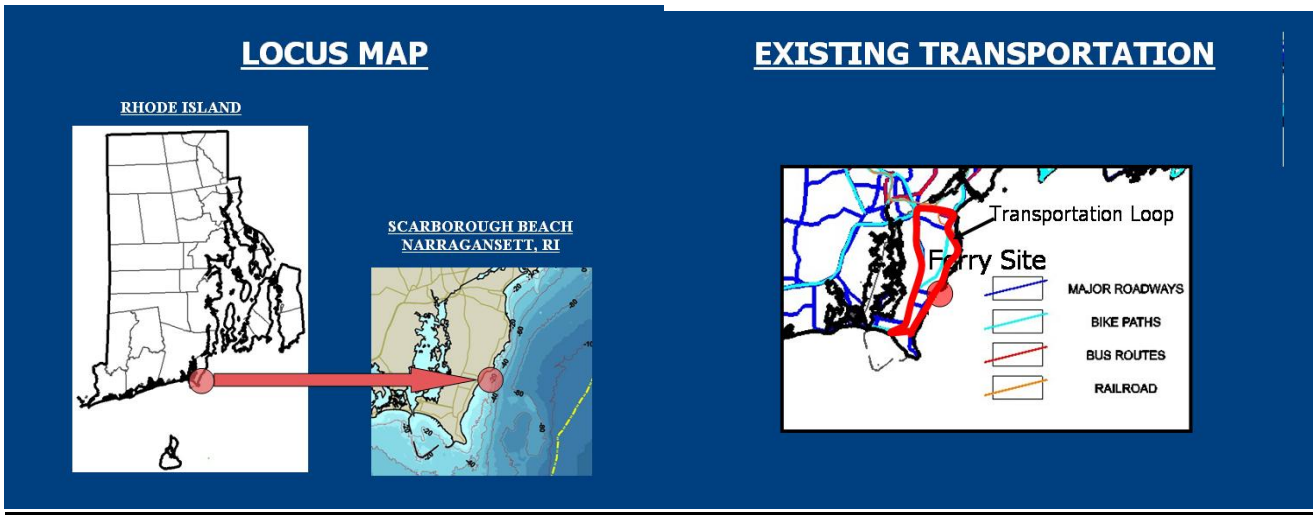
Bus Drop-off/ Pick-up Area:
Goal: To provide passengers options to other features in the area. A bus stop will be installed to give passengers options of going to other beaches in the area or to restaurants and other such areas. This connects the ferry to other modes of Rhode Island transportation.

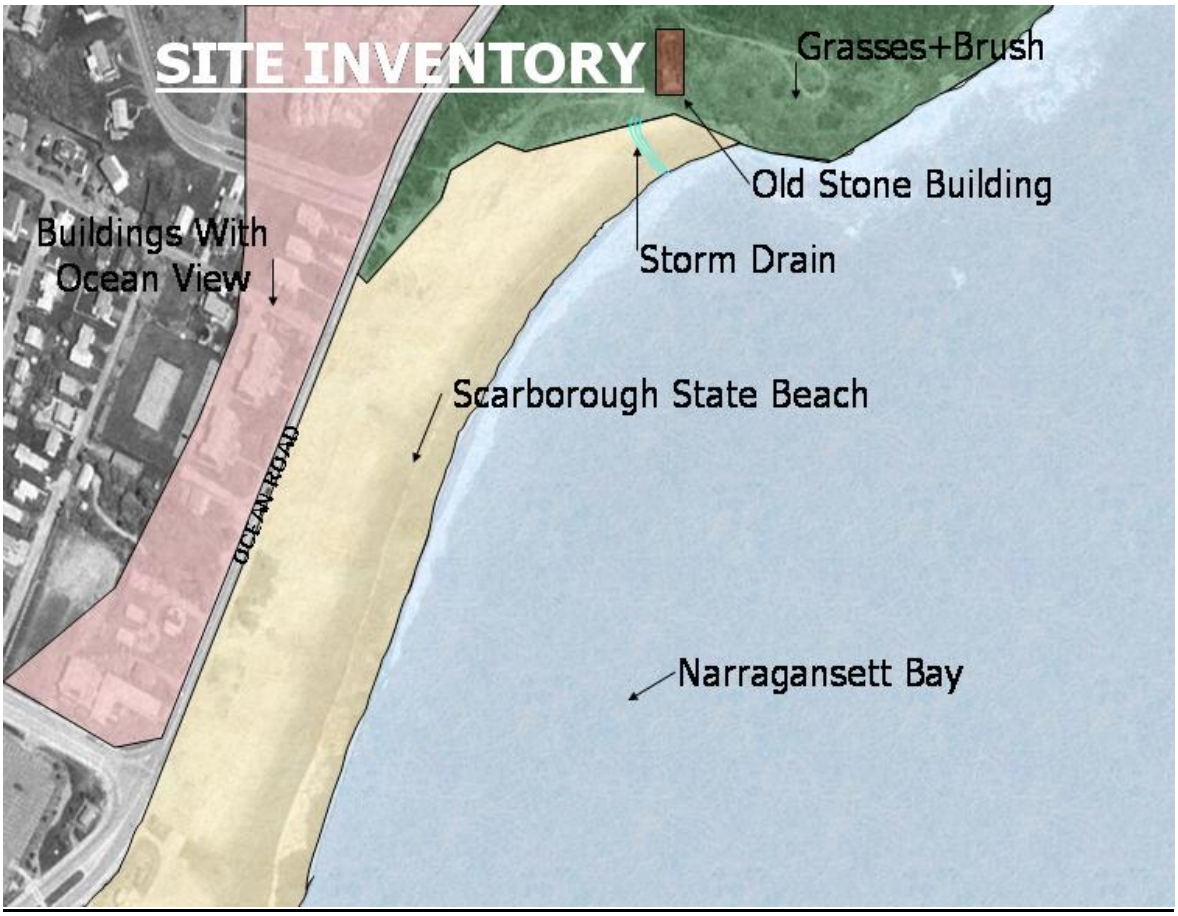
Lifeguard Station:
Goal: To provide passengers with medical attention whenever necessary. Trained personnel will be on duty when the ferry is in service in case of emergency.

Bike Racks:
Goal: To provide areas for passengers to store their bicycles.

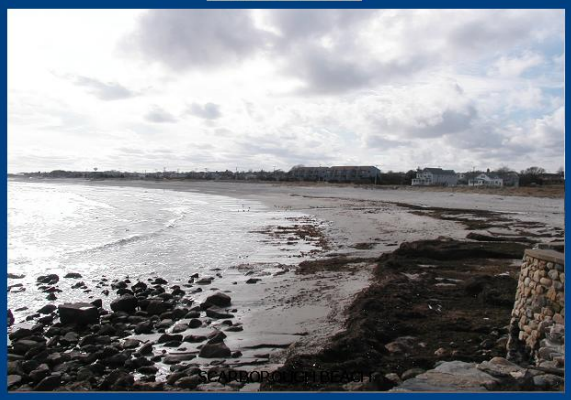
Ample Signage:
Goal: To quickly and easily direct the passengers around the terminal area.

Lockers : Goal: To provide passengers places to store belongings while using the beach.

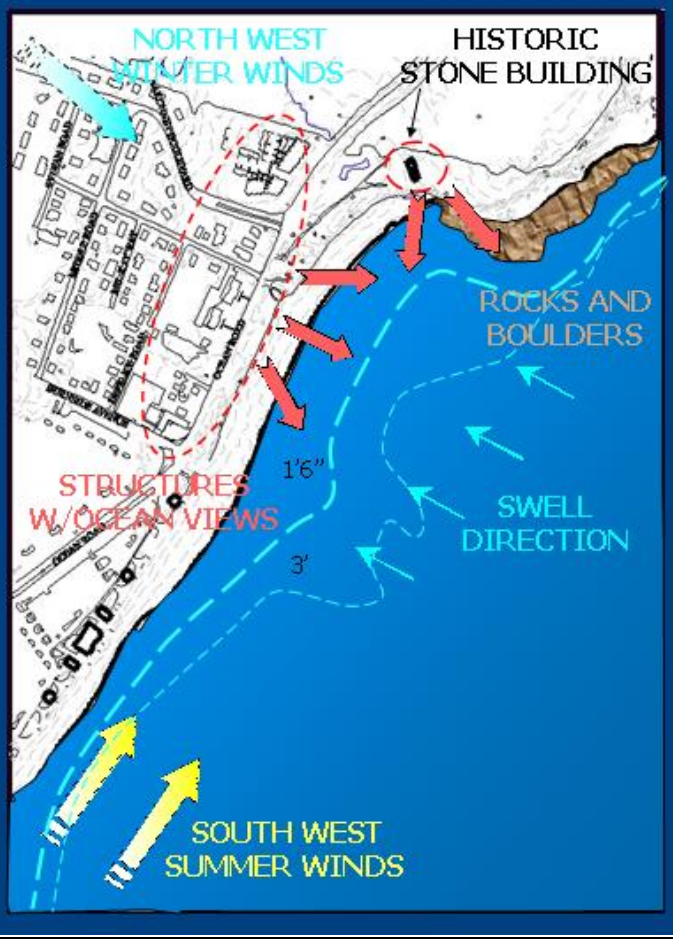

LOCUS MAP
RHODE ISLAND
SCARBOROUGH BEACH
NARRAGANSETT, RI
EXISTING TRANSPORTATION
Transportation Loop
Ferry Site
MAJOR ROADWAYS
BIKE PATHS
BUS ROUTES
RAILROAD


SITE INVENTORY
Grasses+Brush
Old Stone Building
Storm Drain
Buildings With
Ocean View
Scarborough State Beach
OCEAN ROAD
Narragansett Bay

SITE INVENTORY PHOTOS



SITE ANALYSIS



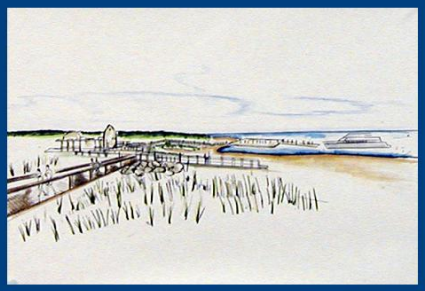
PROGRAM ELEMENTS

- Ferry landing/dock
- Jetty or breakwater
- A ticket booth, concession and restroom facilities
- Smooth circulation, ADA Accessibility
- Seating and shade areas
- Vehicular drop off area
- Lifeguard or medical personal
- Bike Racks
- Lockers for personal items
- Ample signage

PERSPECTIVE

DROP OFF AREA

PERSPECTIVES



BROAD VIEW

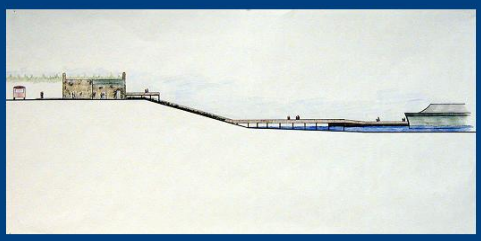
PERSPECTIVE

BOARDWALK SKETCH

PRODUCT GUIDE

BOARDWALK

SECTION



SECTION VIEW

PRODUCT GUIDE

Below are some samples of some of the materials that may be incorporated within the design of the proposed ferry terminal, boardwalk, any patio areas, and plantings.

EXAMPLE OF TERMINAL STRUCTURE

TERMINAL STRUCTURE

Shown to the right is an example of what the proposed ferry terminal may resemble. This is a photo of the buildings within the main area.

CIRCULATION/BOARDWALK

An example of boardwalk that would serve pedestrian circulation to and from the main beach pavilion and to our new proposed pavilion. Recycled Trex plastic-wood is recommended to sustain the existing conditions.

STONE MATERIALS

The fieldstone masonry here signifies the strongagricultural history of stone use in South CountyRI. Fieldstones preserve the existing aestheticsof the area, and therefore, could be used for rebuilding the existing sea wall and creation of a seating wall in the proposed seating area.

HISTORIC S

PLANTINGS

Salt/coastal tolerant plantings such as Black Pine, Bayberry,American Beach Grass, Bearberry, Shore Rose, and the Shore Juniper are just a few suggestions. Our choices were based on the existing palette of plantings used in the main pavilion/parking areas at Scarborough Beach.

Note: we have not provided a formal planting plan since our design plan was mainly conceptual; hence, those mentioned above are only suggestions of saline and coastal tolerant plant

BLACK PINE TREE

PAVEMENT

Here is a sample of some stone pavers from the Uni-Lock Pavers Company. These come in a variety of colors and textures. This is what we proposed in the waiting areas and shaded spots at the terminal.

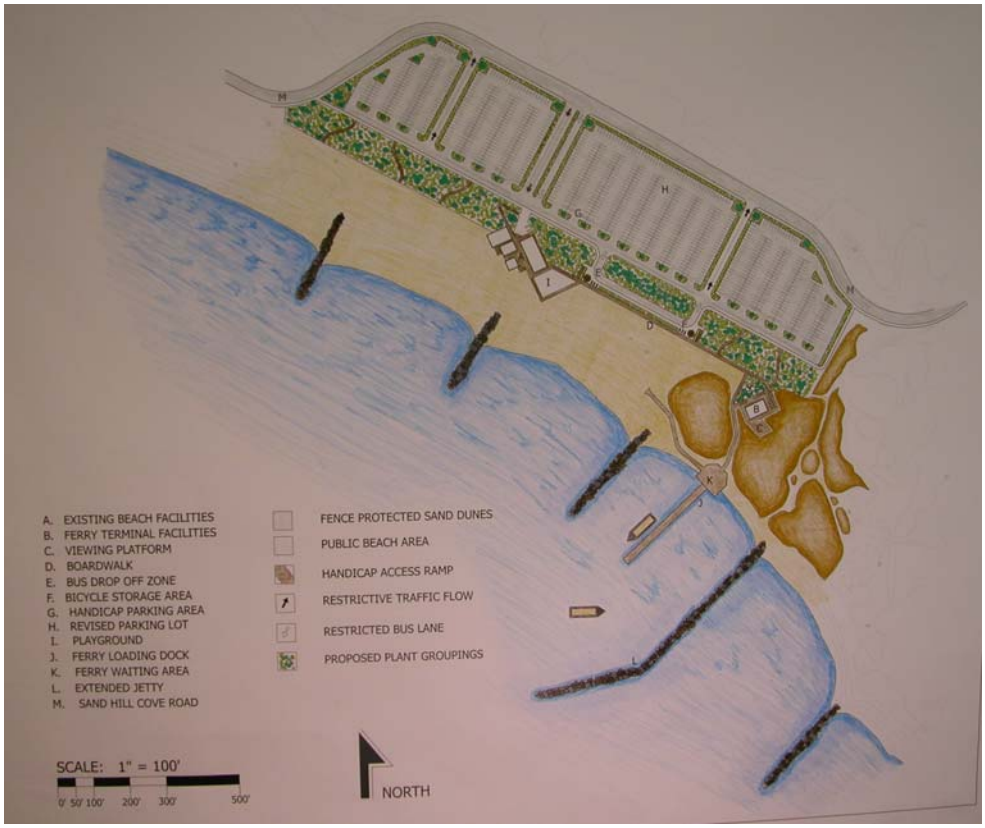
CHAPTER 11 - Destination Site: Sand Hill Cove State Beach Ferry Landing

Prepared By:

Drew Madlinger, Mike Ogilvie and Cheryl Russ

University of Rhode Island, Community Planning & Landscape Architecture Dept.

Text & Graphics Layout by: Jake Kashuk, Cranston Area Career & Technical Center Graphic Communications



SITE BACKGROUND

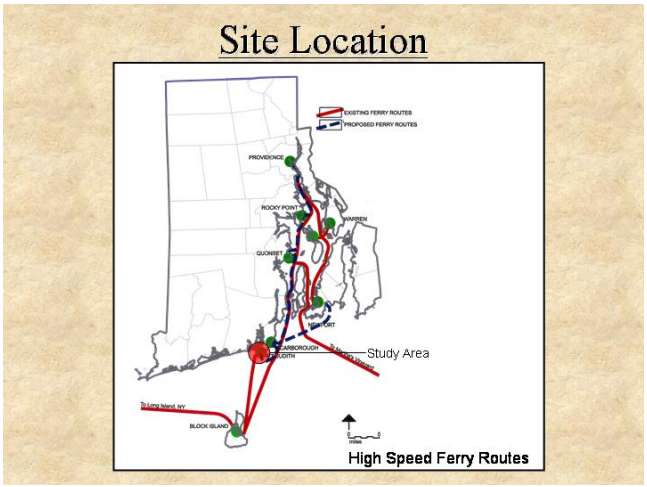
Sand Hill Cove Beach (Roger Wheeler State Park) is located in Narragansett between Point Judith and Galilee . This site is a public beach with adequate parking to handle the population for tourists and commuters. The site is located near popular tourist attractions such as restaurants and shops.

History of the Site:

In 1955, the existing buildings on the site consisted of a "modern bathhouse" that was built in 1955. This building was demolished and a new bathhouse was constructed in 1996 and cost 1.3 million dollars. The funding for this project came from state funding along with national park service. The new bathhouse consists of materials that would be protected from the salty conditions (rust and corrode preventing materials). The new bathhouse contains amenities such as stainless steel hardware, aluminum gates, coin operated showers, and drains that do not clog with sand. Other structures onsite include a playground, a concession building, and lifeguard stations. **(Information provided by:www.riparks.com)**

Existing Conditions:

The existing 27 acre beach site consists of a seasonal southwest summer wind that blows perpendicular to this site. Along with the existing southwest winds that occur in the summer season the wave direction also flows in the same direction as well. Jetties are constructed on the existing site to allow for some breakwaters ideal for a proposed ferry docking system. Our entire site is exposed to intense sunlight, which would have to be considered when choosing our proposed plant material. Sand dunes located on the east side of our site allow for some restrictions during our design process.



SITE ANALYSIS

The Sand Hill Cove Beach consists of elements seen in an ideal natural beach environment. The landscape of the site is made up of rolling sand dunes, blanketed with *Rosa rugosa* and beach grasses. It is located in direct sun and wind exposure. Therefore, plant selection is limited to vegetation hardy in conditions consisting of direct sun, wind and salt.

Along with its natural appearance, it also borrows landscape of adjacent sites. A bird sanctuary is located across from the beach's property. Although there is no access from the beach to the sanctuary, it provides a natural feel which is very desirable among most residents and vacationers.

The site is also slightly developed for the accommodation of visitors. The existing parking lot can be accessed through a main entrance where ticket booths are located for admissions into the beach parking lot. Two exits are located on each far end of the parking lot as one way exits, allowing vehicular circulation to flow more readily. Existing buildings are located approximately in the middle of the beach, and the hours of operation for these facilities are seasonal.

Even during the off season, Sand Hill Cove Beach is a great place to watch the sunset. It can be seen anywhere on the beach, and depending on what time of year, one might also catch a glimpse of a seal.

Relating Ferry System to Existing Transportation

A drop off area would be accessed by a main entrance and exited from the east side of the parking lot. This area would be able to provide a shuttle service, handicap drop off and allow emergency vehicles access to the dock. Bike and pedestrian routes will be designed to connect with the other existing forms of transportation. Designating an area for bike racks that would encourage locals to ride bicycles to the beach and also be used by ferry passengers and beach goers.

Parking

Providing a separate area for ferry parking will add more security and convenience for ferry customers. Due to a drop off area, ferry customers will have access to the entrance gate for short term drop off and handicap accessibility. This will separate beach traffic from ferry traffic.

Pedestrian Walks and Ferry Loading Zone

The creation of a boardwalk connecting the proposed ferry dock to ferry entrance gate allows handicapped access to the dock. Another boardwalk system will also be constructed for trails throughout the sand dunes. This will allow for people waiting for their ferry to enjoy the coastal aesthetics of Sand Hill Cove Beach .

The size of the dock is proposed to accommodate the traffic that a large ferry would provide to the loading zone and will be interconnected with the nature trails within the sand dunes.

Site Amenities

Installation of bollards along proposed walks will provide sufficient lighting during dusk and dawn hours ensuring the security and safety of passengers and beach goers.

Benches will also be provided for the use of passengers waiting for their designated ferry. These benches will be located by the loading zone, near the entrance gate and also along the nature trails. A covered structure is proposed to provide some shade from the intense sunlight. This will accommodate passengers who want to get out of the sun while waiting for their ferry. The providing of light refreshments, sunscreen and beach toys, along with restroom facilities, will coordinate among the existing buildings. A first aid service is proposed to be on duty during the operations of the ferry and beach service.

ADA

Handicap accessibility to all beaches, nature trails and ferry dock.

Vegetation

Vegetation for the site would be able to adapt to the harsh, full sun, sufficient wind and salt exposure to the shore as such of the coastal environment of the site.

The Design Process:

In the early stages of analyzing the site of Roger Wheeler Beach, our group began to study the existing conditions. We were able to determine a southwest wind direction, which would be blowing in the summer season. The wave direction varies at this site depending on the time of year and if there are stormy conditions, however, we were able to estimate an approximate direction. These two determinations made it very easy to come to a conclusion with the location of the dock. We felt that if we could place the dock on the inside of the jetties, allowing for some more protection during those times when the ocean is rough.

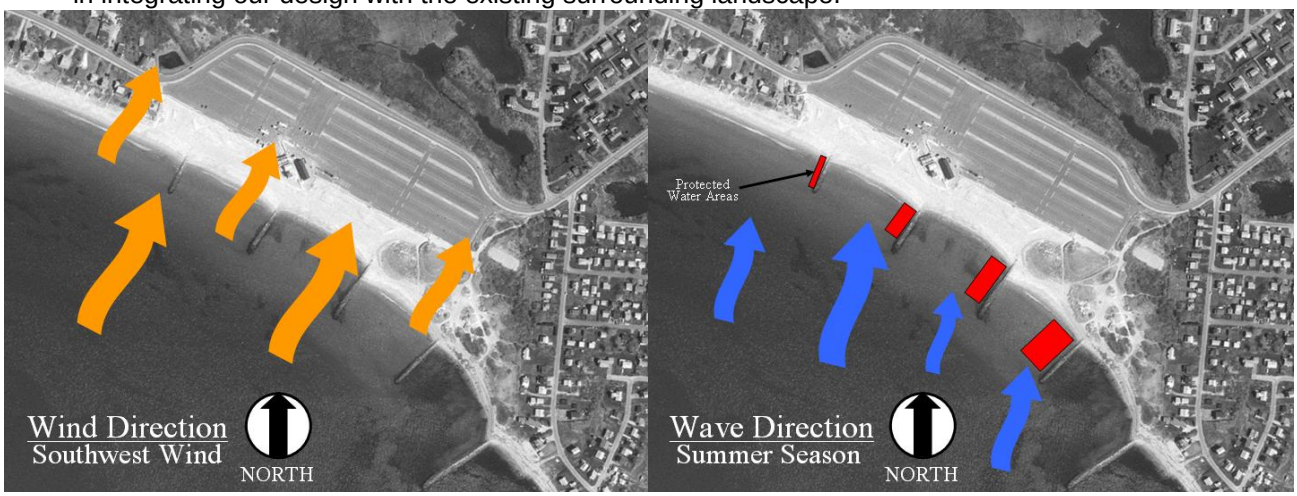
Additional analyses that helped with the design of an appropriate terminal location were slope and land use analysis. These two studies allowed for us to determine the location of the sand dunes in which we proposed walkways that meandered through the existing dunes. The land use analysis allowed for us to look at the site from different perspectives, from a local resident, ferry rider, beach goer or even first time visitors. We were able to determine that we did not want to interfere with the permanent residents east and west of our site. One of our goals was to separate the uses of pedestrians, and beach goers from these permanent residents.

As our group began designing our site, our main goals were to locate a ferry terminal in a area that would allow for ferry riders to view the water to see the arrival of their ferry and be out of the way from beach visitors as well. It was very important to us that we allowed ample parking for the amount of beach and ferry visitors and design to the parking in a way that the pedestrians and vehicle traffic would be separated. Our group also wanted to create a "Garden" that would buffer the parking lot from the beach area, allowing for some vertical scale to this fairly flat site. Bus drop offs were also an essential portion of our design. We wanted to accommodate the bus passengers with places to wait that would be sheltered from the sun. The designs of these gazebo-like structures would all reflect back to the architecture and materials that were constructed on the structures that already exist on the site. Local beach transportation routes, by shuttle bus, would be available to allow for people to get to other local beaches

We couldn't help but notice the natural qualities of our site. The sand dunes, beach grasses, its small size, quiet feeling and location which is nestled in a residential community all portrayed a sense of beauty in which our group wanted to disturb as little as possible. In doing so, we proposed boardwalks that would move between the existing sand dunes and link up with a proposed ferry dock and proposed redesigned parking lot. A boardwalk would be proposed to run the length of the site in order to link the whole site together. A redesigned parking

lot would accommodate approximately 1000 parking spaces while also accommodating 25 handicap spaces. By doing this, we separated pedestrians from vehicles by designing the parking lot perpendicular to the existing beach. This allows for pedestrians to travel to the beach without crossing multiple lanes of traffic.

In concluding our design process, we were able to analyze the existing conditions and the functions of the site. We feel that this design will allow for a functional ferry terminal containing aesthetically pleasing qualities. In achieving our goal to create a manmade landscape, we successfully accomplished our goal in integrating our design with the existing surrounding landscape.



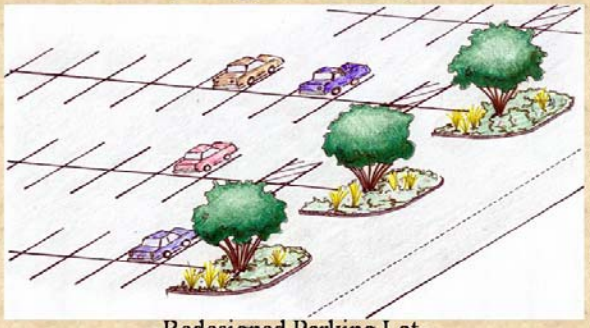
Program Elements

- Improve aesthetic value of parking lot and entrance
- ADA Handicap Accessibility
- Improve and Redesign Parking Lot (i.e. Bus drop off, circulation)
- Provide bike racks and new walkways
- Widen existing sidewalks for easy pedestrian circulation
- Plant Vegetation that would thrive in coastal conditions
- Covered bus terminals
- Implement site amenities (i.e. benches, trash receptacles etc.)
- Boardwalks constructed for pedestrian traffic to docks
- Garden to buffer parking lot and beach
- Separation of pedestrians and vehicles
- Provide resting areas (i.e. benches)
- Link to alternate modes of transportation
- Restroom facilities and light concessions
- Borrow existing landscape views and enhance

Theme:

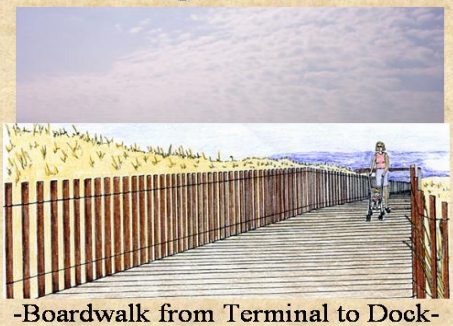
Keeping the natural beauty of the beach and rolling sand dunes, our group decided to approach this project with a theme of natural existence. By using the surrounding elements of Roger Wheeler Beach, we could blend nature with manmade construction. In doing so, this allowed our group to enhance the beauty of our site through design and it's remaining natural features.

Design Sketches



-Redesigned Parking Lot-

Design Sketches

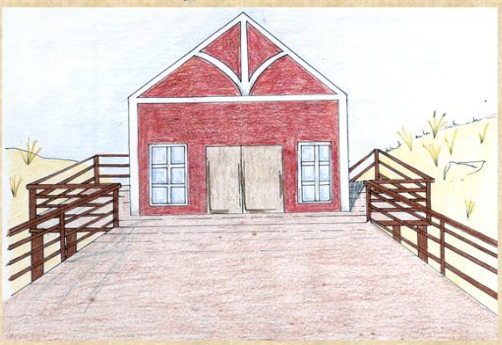


-Boardwalk from Terminal to Dock-

Design Sketches

-Path through garden to Beach area-

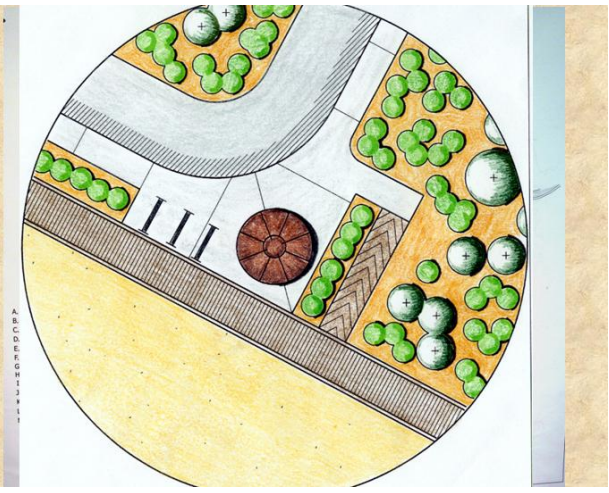
Design Sketches



-Terminal Building-

Design Sketches

-Bus Drop Off-



Product Guide

Bench

- **Size**
  -64"W X 34"H X 26"D
- **Seat Height**
  -18"
- **Weight**
  -78lbs
- **Material**
  -Solid Teak Wood
- **Color**
  -Unfinished/Natural

Information Provided
www.teak-furniture-store.com

Product Guide

Trash Receptacle

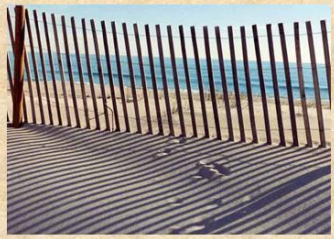
- **Size**
  - 27" round x 37" H
- **Weight**
  -135 lbs
- **Material**
  -Cast Iron Frame
  -Teak Wood
  -Embossed Metal Cover
  -Anti Corrosion Finish
- **Color**
  -Unfinished/Natural

Information Provided
www.commercialtrashcans.com

Product Guide

Sand Dune Fencing

- **Size**
  -8'W X 36"H
  -50' Roll
- **Material**
  -Cedar
- **Color**
  -Unfinished/Natural



Information Provided
http://interlinc.ci.lincoln.ne.us.pdf

Product Guide

Bike Rack

- **Size**
  -36"H X 95"L
  -Accommodates 9 Bicycles
- **Weight**
  -92 lbs
- **Material**
  -Hot Dipped Galvanized Steel
  -Zinc Undercoat for Rust Protection
  -Polyester Powder Coat
- **Color**
  -Black

Information Provided
www.frederickbench.com

Product Guide

Retaining Wall

- **Size**
  -12"W X 15"H X 8"D
- **Coverage**
  -.85 square feet
- **Weight**
  -85 lbs
- **Material**
  -Pre-Cast Concrete
- **Color**
  -Natural

Geosynthetic
Reinforcement

Information Provided
www.rogersblock.com

Suggested Plant Material

Prunus maritima (Beach Plum)

Lathyrus japonicus (Beach Pea)

Ammophila breviligulata
(Beach Grass)

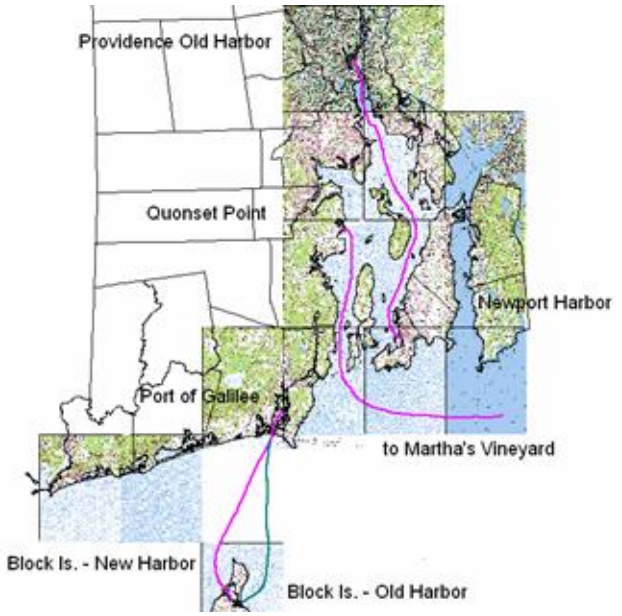
Amelanchier canadensis
(Shadblow Serviceberry)

Myrica pennsylvatica
(Shadblow Serviceberry)

CHAPTER 12 - System Analysis: Economic/Transportation/Operational Impacts

This report focuses on seasonal ferry services as an opportunity for expansion of waterborne transportation. The summer season creates an intense demand on the major highway arteries as motor vehicles utilize the highway system to transport residents and tourists from the metropolitan north to the southern coastline. The ferry services serve as a summertime novelty, in addition to, a transportation option. Wintertime drop in demand of traveling to/from the southern coastline substantially eases congestion on the highway system and the novelty of a wintertime boat ride on Narragansett Bay is minimal.

The high speed of the ferry vessel has reduced travel time considerably so as to compete against the allure of driving direct. The existing Providence to Newport ferry service has demonstrated that patrons are willing to invest the time to make ticket reservations, stand in embarkation/disembarkation lines, and to voluntarily structure their activities of the day to coincide with the ferry schedule. These are significant findings of the existing high speed ferry services.



The benefits of utilizing ferry services are found to be avoidance of traffic congestion, free and convenient parking at the ferry terminal, reduced mileage on personal vehicle, and the novelty to experience a boat trip rather than spending time driving on the highway.

Summertime routes currently operating successfully with High Speed ferry service are serving traditional Destination sites that have existing infrastructure to accommodate ferry landings. These routes are:

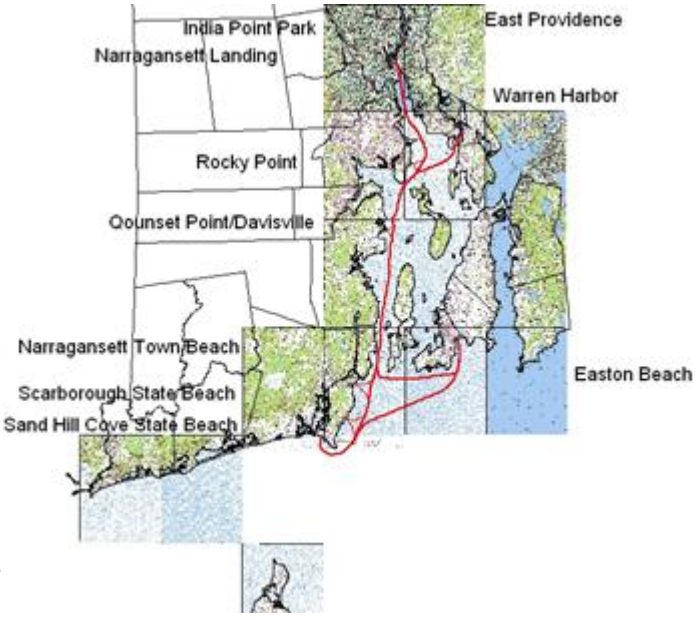
a) between Providence and Newport Harbor
b) between Quonset Pt and Martha's Vineyard
c) between Port of Galilee and Block Island

<u>The Beach Loop</u>

The primary aspect of this report is an evaluation of Beach destinations to host ferry marine facilities. The "Rhode Island Waterborne Passenger Transportation Plan" did not consider such site evaluations due to the lack of any navigational facility at these locations. These sites will require extensive site preparation and local permitting to enable "the Beaches" to become viable destinations.

This report presents the following seasonal routes proposed between metropolitan Park-n-Ride sites to Destination sites at "the Beach":

a) between India Pt and the Beaches
b) between Narr. Landing and the Beaches
c) between Rocky Pt and the Beaches
d) between Quonset Pt and the Beaches
e) between Warren River and the Beaches



<u>Economic Impact</u>

Bikepaths, RIPTA bus routes, and the offer of free parking for automobiles serve as feeder transportation modes to the ferry mode. This transportation hub will provide economic impact to the host city & town neighborhood in the form of "spin-off" sandwich shops, concessions, bicycle shops, etc. due to the increased consumer foot traffic along respective Main Streets USA. The ferry terminal could actually be a business incubator for a particular neighborhood.

Rhode Island's tourism industry is the second largest industry in the state. The Rhode Island Economic Development

Corporation (RIEDC) aggressively markets statewide environmental attractions in a manner known as ecological tourism (ECO-Tourism). Rhode Island's ECO-Tourism is robust and there is always room for product development. The Beach ferry network concept could be a RIEDC goal to enhance the Rhode Island product to compete for tourists who are considering visiting other New England destinations.

The novelty of a public transit system on Narragansett Bay offering destinations such as Newport Harbor, Block Island, Martha's Vineyard, and "the Beaches" maximizes all that Rhode Island has to offer. The boat excursion aspect of the ferry network provides another attraction for the tourist and resident to experience.

a) Day trip Regional tourists from New England will be tempted to capitalize on a family **"Excursion on the Bay"** and also a **"Day at the Beach,"** in lieu of, battling traffic to get to the Cape.

b) National and International tourists and conventioneers will be tempted to center their New England visit near the Park-n-Ride sites offering Bay access to the Destinations while also capitalizing on the metropolitan attractions and easy access to Boston.

Visitors can conveniently drive, bus, trolley, walk, or bike to a metropolitan area's "Park-n-Ride" ferry terminal to board a Ferry Service linking directly to the best tourist attraction Rhode Island has to offer; "The Beaches." Once on board the ferry, it's a hassle-free ride until instructed to disembark onto the sandy beach of one's choice. The return trip is a guaranteed seat assignment with roundtrip ticket purchase so the patron need not fear a sellout which alleviates the avoiding the rush hour to the highway

State looks for tourists close to home

Ads on television, in magazines and on the Internet will promote Rhode Island's attractions to people who live within a half-day's drive.

BY TIMOTHY C. BARMANN
Journal State Writer

PROVIDENCE — Governor Carcieri yesterday unveiled a new marketing campaign designed to persuade New Yorkers and New Englanders to vacation in Rhode Island.

The four-month program, which will cost the state about $600,000, is one of the most ambitious efforts to date to market the state as a vacation spot.

Tourism is one of the most important components of the state's economy. The tourism and hospitality sector brought in revenues of $4.7 billion and employed about 60,000 people in 2002, according to the Rhode Island Division of Tourism. Figures for 2003 will not be available until early May, said David C. DePetrillo, director of the agency.

The campaign's central theme, which has been used in previous years, is "Unwind in Rhode Island." The centerpiece is a series of three 30-second television commercials that show sweeping vistas of the state from aerial perspectives.

SEE CAMPAIGN, E2

Newport

Providence Journal article; March 10, 2004

Transportation Impact

The Beaches are popular Rhode Island destinations as evidenced by the weekend traffic congestion on Route 4 and Route 138. Morning traffic is congested as people are trying to get to the beaches. Evening traffic is congested as people are trying to return home. The congestion may be solved with the construction of overpasses to remove traffic light intersections. This is a solution that does not reduce the volume of motor vehicles traveling from the metropolitan north to the southern coastline. It also does not afford any of the aforementioned economic benefits.

The Park-n-Ride sites are located in urban and suburban centers along bikepaths, interstate highways, primary roadways, and Rhode Island Public Transit Authority (RIPTA) bus routes to facilitate access and utilization of the service. Residents of suburban neighborhoods and tourists staying in nearby accommodations will have the opportunity to use any of these transportation modes, including walking, to get to a particular ferry terminal. Funneling this traffic to Park-n-Ride sites will maintain the traffic where it originates.

Traditional Park-n-Ride sites are often solely serviced by RIPTA bus routes. Constructing a Ferry Terminal will constitute a waterfront, transportation hub that provides 2 options to get to the Beaches (Ferry Boat or RIPTA Bus). Existing RIPTA beach routes would be scheduled to stop at each ferry terminal as well. This will provide relief to the ferry service if the boat is at maximum capacity and passengers need to be turned away. Utilization of any of these transportation modes reduces the consumption of gasoline and emission of fossil fuel exhaust. These benefits may offset the construction impacts that the Beaches will require.

Construction Impact

Ferry Boat Discretionary Funding from the Federal Highway Administration would be a source of federal funding for construction if the ferry service is a year-round commuter service. To be eligible for **Ferry Boat Discretionary Funding**, the Beach service could operate during the winter on a limited commuter basis from Park-n-Ride site to Park-n-Ride site and then expand in the summertime to include the Beach Destinations.

a) Seasonal services that shut-down and operate only during parts of the year are not eligible for this funding; therefore, the State would have to fully fund the construction costs from revenue generated from "spin-off" economic development. Creative public/private financing schemas could be invented. State owned land and/or buildings leased to private sandwich shop operators, bike shops operators, tour operators, etc could generate the required funding to substitute for the construction funding that wouldn't be available.

b) State owned, residential developments at Quonset Point with views of Narragansett Bay could provide operational subsides. State owned landing reclaimed by the Route 195 Relocation Project affords another opportunity for the State to lease land to private entities and utilize that funding for ferry service subsides. Debate in the State General Assembly would probably focus on the legitimacy of using the funds generated from State leasing holdings on ferry terminal construction when it could be used for health care, education, etc.

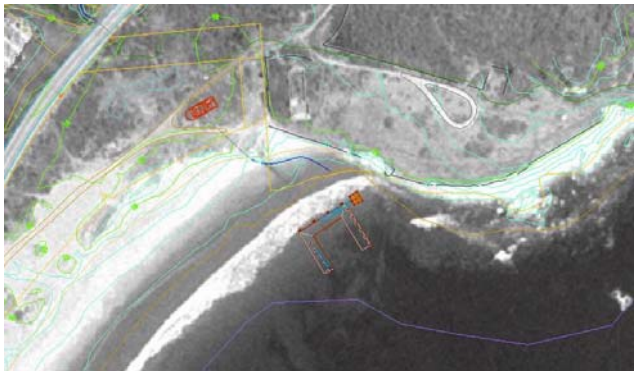
The Rhode Island Department of Transportation (RIDOT) would most likely be responsible for requesting construction funds from the Federal Highway Administration, design and permitting oversight, and to oversee the construction of each facility.

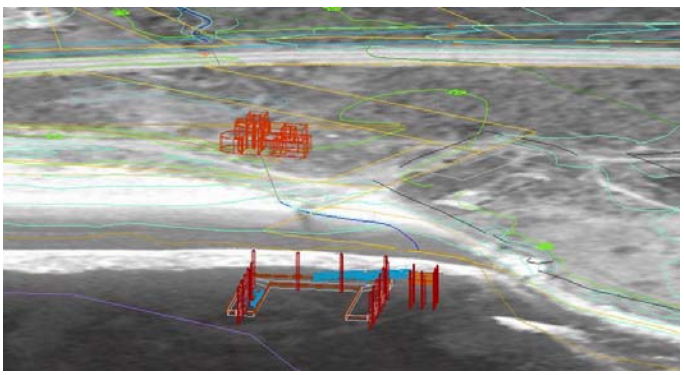
The site specific conceptual designs of the Park-n-Ride sites and the Destination sites are presented in the subsequent Chapters. The conceptual design parameters presented in the "Rhode Island Waterborne Passenger Transportation Plan" have been applied to these specific sites, in addition to, ferry terminal components in existence at Perrotti Park in Newport. The Perrotti Park components are successfully serving the high demand of the Providence-Newport service; hence, they are considered as the baseline design for site adaptation for these ferry network nodes.

Constructing a ferry terminal at the Park-n-Ride sites are common considerations for these locations. These sites have routinely accommodated boat traffic throughout Rhode Island's maritime history. These particular sites have been studied in the following reports which offer ferry landing site plans for each respective site:

"Rocky Point Park Conceptual Design Plan," dated July 1997,
"Rhode Island Waterborne Passenger Transportation Plan," dated August 1998,
"India Point Park Ferry Terminal-Remote Parking Options," dated November 2001,
"Warren Town Wharf," dated 2002.

Conceptualizing a ferry terminal at the Destination beach sites is a bold idea that constitutes the most difficult to implement scenario for the sake of improving the ECO-Tourism product that Rhode Island offers. The ferry landing locations were chosen at either end of the respective beach so as not to divide the beach in half with a pier situated in the middle of the beach expanse. Dredging, wave attenuation structures, retaining walls, and grading/filling to higher elevations are required at all Destination sites.





The Beach site plan layouts are extremely sensitive to the beach environment and are designed to accentuate the existing natural features. New construction would include sand dunes and plantings intertwined with pedestrian walkways, ferry terminal building, waiting-area gazebo, pier and pilings, and floating dock.

Environmental Permitting

This project is proposing construction on the shoreline of Rhode Island which would require extensive review/approval from the **Costal Resource Mgmt Council (CRMC**). The entire Rhode Island shoreline is classified from Type 1 (pristine beaches) thru to Type 6 (industrial harbors). Type 6 allows for approved construction while Type 1 warrants no construction at all, unless a Special Exception is granted based on "compelling public service."

If the Beach ferry service was ever to come to fruition, it would be because a strong case was made proving a "compelling public service" of great economic impact and significant reduction in traffic and pollution. Additional review/approval would be required from:

RI Dept Environmental Management (RIDEM) Water Resources – for water quality
U.S. Army Corp of Engineers - for dredging
U.S. Coast Guard – for traffic patterns, boater safety, homeland defense

RIDOT could contribute to demonstrate "compelling public service" via reduced traffic counts
RIDEM could contribute to demonstrate "compelling public service" via reduced parking demand
RIEDC could contribute to demonstrate "compelling public service" via increased tourism, job creation, and business development in the locales in close proximity to the ferry terminal sites.

The layout of ferry site plans affords the opportunity to design environmental restoration aspects to the industrial sites such as ell grass plantings, etc. This may help contribute to justifying the "compelling public service" to facilitate CRMC approval of construction on particular shoreline sites.

Government Operational Subsidies

A State/Federal Government subsidized expansion of the current ferry infrastructure consisting of property acquisition, ferry terminal building, floating dock, and pier could be constructed as a Government investment. This investment would be intended to stimulate economic expansion in the same fashion as the national highway infrastructure investment of the 1950's; whereby, the Herculean task of constructing the interstate highway system was offset with the vision of resulting economic benefits.

The **Congestion Mitigation Air/Quality Program (CMAQ)** from the Federal Transit Administration subsidies operating expenses for the first 3 years only. The ferry service needs to have enough ridership established by the 4th year to be able to operate without a CMAQ subsidy. The low ridership realities of the Providence-Newport Harbor ferry service indicate a commuter ferry service and a seasonal ferry service are not capable of being self sufficient on Narragansett Bay. The CMAQ subsidy has provided the opportunity to establish the testbed but the Providence-Newport seasonal (summertime) service will not exist after the 3-year start-up subsidies have been exhausted.

In addition to construction costs, the State of Rhode Island would have to partially fund the operational costs from revenue generated from "spin-off" economic development in the form of creative public/private financing schemas. Special events such as periodic dinner cruises, etc. can be routes to expand the ferry boat usage to help subsidize the overall operation of service to the Beaches.

Debate in the State General Assembly would probably focus on the legitimacy of using the funds generated from State land lease revenues on annual ferry service operations when it could be used for health care, education, etc.

CHAPTER 13 – Route Planning: Regional vs. Express

Boat speeds need be optimized to quickly traverse the travel distances of the Beach Service Routes and overcome necessary impediments that inherently slow a boat and lengthen the travel time on a particular route. The following are major impediments to establishing a successful Beach Service

a) "No Wake Allowed"
"Rule of thumb" speed restrictions to reduce wake impact to nearby boaters in local harbors (and throughout the expanses of Narragansett Bay) detrimentally slow the scheduled route and reduce the number of revenue generating trips a ferry can perform.

b) "All Aboard"
Time allotted for Boarding and Off-loading of passengers is typically to 30 minutes.
Off-Loading = 15 minutes / Boarding = 15 minutes / Total Port-of-Call Time = 30 minutes

This "turnaround time" must be streamlined to a minimum duration if multiple stops are to be made along a particular ferry route. Please reference Appendix 1 for **Regional Routes** Time Tables; whereby, a total of 15 min was assumed for Off-Loading/Boarding, in lieu of, the typical 30 min.

c) "The Cost for Speed"
The cost associated with increasing speed tends to be the need for 3 engines to operate at speeds in excess of approximately 32 knots. Fuel consumption increases as a result of using 3 engines to achieve a higher speed. This additional fuel cost would be translated into higher ticket prices which might detract users and decrease ridership; therefore, making higher speeds a delicate balancing act with 30 knots being the economic pivot point.

The current operator of the Providence- Newport ferry service, New England Fast Ferry, has indicted that the ferry operates at approx. 28 knots with 2 engines. The ferry has operated at slower speeds to accommodate customer complaints of too much wind on the topside, exposed deck.

Increasing the speed along the ferry route may prove the run to be more successful if more runs can be made. This speed increase would require the use of a different boat design. Fast Ferries have operated elsewhere at 40 knots. **Vibtech, Inc.** has a conceptual design that may successfully operate the service at 60 knots.

a) 60 knots (possible next generation of fast ferries)
b) 40 knots (used safely elsewhere)
c) 20 knots (RIPTA slowed the speed to increase customer comfort on the exposed top deck due to excessive wind.)

Existing Ferry Operations

The existing ferry service operates at a speed of 28Knots from Providence to Newport with each one-way trip serving paying customers.

Existing RIPTA High Speed Ferry Season (May 1 – October 31)

Ticketing & Boarding	Depart	Arrive	Ticketing & Boarding	Depart	Arrive	
	Providence	Newport		Newport	Providence	
0:45 min	7:45 AM	8:30 AM	0:45 min	9:15 AM	10:00AM	Roundtrip #1
0:45 min	10:45 AM	11:30 AM	0:45 min	12:15 PM	1:00 PM	Roundtrip #2
0:45 min	1:45 PM	2:30 PM	0:45 min	3:15 PM	4:00 PM	Roundtrip #3
0:45 min	4:45 PM	5:30 PM	0:45 min	6:15 PM	7:00 PM	Roundtrip #4
0:45 min	7:45 PM	8:30 PM	0:45 min	9:15 PM	10:00 PM	Roundtrip #5
0:45 min	10:45 PM	11:30 PM	0:45 min	12:15 AM	1:00 AM	Roundtrip #6 (Fri & Sat only)

Adult: $6.00 one-way; $12.00 roundtrip
Disabled/ADA/Medicare Card/Seniors 65+/Children 5 – 11: $4.00 one-way; $8.00 roundtrip
Children (4 & under): FREE one-way; FREE roundtrip

Free Parking at Providence Davol Square
$1.00 All-day Parking at Newport Gateway Center

Ferry Service Operations

The beach service concept of this report is reminiscent of the Boston – Nantasket Beach service which operated from the early 1900's to approximately 1987. This service provided 3 daily trips to the beach and 3 daily return trips (one-way travel time: 1hr 15min).

Boston Harbor to Nantasket Beach	**Nantasket Beach "return" trip to Boston Harbor**
9AM (canceled due to low ridership)	1PM
10AM	3PM
11AM	5:30PM
12AM	

This project is presenting a seasonal, summertime ferry service of moving people from metropolitan Providence sites to destination sites at the Beaches in the same fashion. The current Providence to Newport Harbor ferry service shuts down in the wintertime due to reduced market demand; hence, this project is assuming a service to The Beaches would also necessitate a wintertime suspension of service.

Beach-goers want to get to the beach in the morning which limits the timeframe to operate the ferries to attract paying customers since "Return Trips" would need to start no later than 3PM. These return trips are fulfilling the obligation to return the passengers safely home; therefore, new customers would have to be turned away so as to ensure seating for the roundtrip customers.

Economic analysis of ferry routes was not developed for this report. General assessments of economic viability were developed solely to facilitate analysis in Phase 2 of this project. These general assessments are presented in this report for information only. Establishing conceptual routes and time tables was considered for each Park-n-Ride site to all the Beaches. This revealed that off-load/on-load is a critical, time consuming, aspect of a ferry route that hinders the creation of a speedy service that competes against use of the automobile.

Regional Routes Time Tables (Reference Appendix 1) –- To provide maximum ridership per ferry "run," the ferry could stop at several Park-n-Ride sites so as to fill the boat as it goes down the Bay. Due to the Port-of-Call time of 15 minutes, this practice makes for slow progress as the Regional Route is traversed before heading towards the Beaches. This also limits the number of trips while making the automobile more attractive than the ferry option.

Express Routes Time Tables (Reference Appendix 2) - To provide several Destination options, the ferry would need to stop at each Beach destination prior to returning to the Park-n-Ride of its origin. This practice makes for a fast Express Route to the Beach Region but stopping at each Beach site adds considerable time to the roundtrip duration; thereby, limiting the number of trips from the Park-n-Ride site.

One (1) high speed ferry would be required for each Park-n-Ride site; therefore, establishing a sizable fleet of ferries operating on the Bay. Secondary ferries would be needed to replace ferries that require maintenance. The fleet would consist of 5 – 7 high speed ferries at a minimum in comparison to the 1 serving the existing Providence – Newport Harbor service.

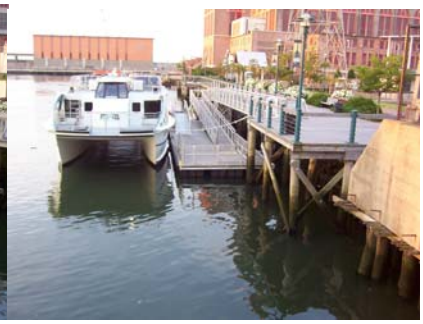
Ferry Boat Design Types

Design Type: Crowther (Australian)

149 passenger High Speed Ferry Boat - currently operating from Providence's Old Harbor to Newport's Perrotti Park

Speed: 28knots	Fuel Consumption: 75gal/one-way	Cost: $2 million	Rear Boarding



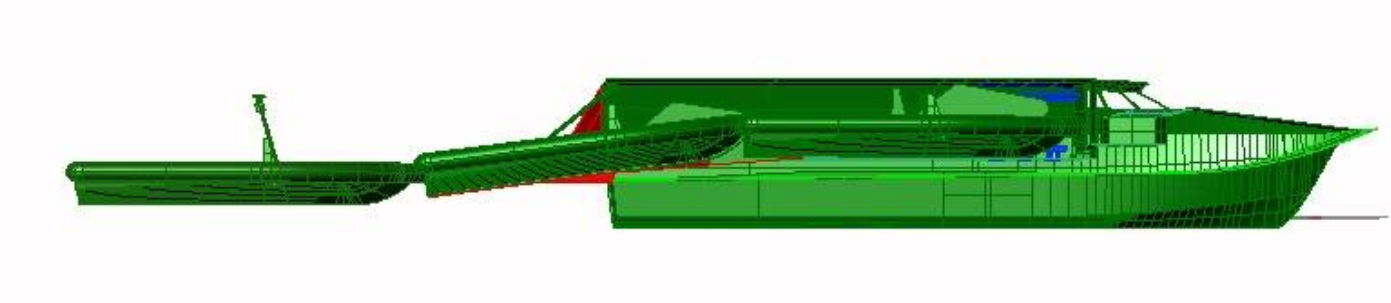


Conceptual Design Type: Vibtech, Inc. (USA)

180 passenger High Speed Ferry Boat – this is a conceptual idea that could be placed under development to satisfy high speeds, low draft (approx 5 ft max.), and rider safety/comfort requirements of a Beach Service ferry system.

Speed: 60knots	Fuel Consumption: ??gal/one-way	Conceptual Design	Front Loading via floating causeway contained within the boat

photos from Vibtech. Inc.



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Appendix 1 – Regional Travel Distances & Time Schedules to ALL Beaches

The Beach Service proposed in this report would involve the majority of paying customers paying for a roundtrip ticket. The following are examples of a Regional ferry loop serving multiple Commuter Sites to transport patrons to/from the Beach Loop:

Regional Travel Distances & Time Schedules to ALL Beaches

Table 1A - Regional Route Planning: India Point/Quonset Point to ALL Beaches
Table 1B – Regional Route Planning: Narragansett Landing/Rocky Point to ALL Beaches
Table 1C – Regional Route Planning: Warren River/Rocky Point to ALL Beaches
Table 1D – Regional Route Planning: Warren River/Quonset Point to ALL Beaches
Table 1E – Regional Route Planning: Warren River/Rocky Point/Quonset Point to ALL Beaches

Regional Travel Distances & Time Schedules to Narragansett Beaches ONLY

Table 2A – Regional Route Planning: India Point/Quonset Point to Narragansett Beaches
Table 2B – Regional Route Planning: Narragansett Landing/Rocky Point to Narragansett Beaches
Table 2C – Regional Route Planning: Warren River/Rocky Point to Narragansett Beaches
Table 2D – Regional Route Planning: Warren River/Quonset Point to Narragansett Beaches
Table 2E – Regional Route Planning: Warren River/Rocky Point/Quonset Point to Narragansett Beaches

Regional Travel Distances & Time Schedules to Rhode Island State Beaches ONLY

Table 3A – Regional Route Planning: India Point/Quonset Point to Rhode Island State Beaches
Table 3B – Regional Route Planning: Narragansett Landing/Rocky Point to Rhode Island State Beaches
Table 3C – Regional Route Planning: Warren River/Rocky Point to Rhode Island State Beaches
Table 3D – Regional Route Planning: Warren River/Quonset Point to Rhode Island State Beaches
Table 3E – Regional Route Planning: Warren River/Rocky Point/Quonset Point to RI State Beaches

Table 1A – Regional Route Planning: India Point/Quonset Point to ALL Beaches

INDIA POINT & QUONSET POINT - High Speed Ferry Travel Distances — **REGIONAL ROUTE to all beaches**

		Depart India Point	Arrive Quonset Point		Depart Quonset Point	Narragansett Town Beach Arrive (miles)		Depart (miles)	Scarborough State Beach Arrive (miles)		Depart (miles)	Sand Hill Cove Arrive (miles)		Depart (miles)	Easton's Beach Arrive (miles)		Depart (miles)	Arrive Quonset Point		Depart Quonset Point	Arrive India Point	
	Leg 1	0	16		0	14																
	Leg 2							0	4													
	Leg 3										0	5										
	Leg 4													0	16							
	Leg 5																0	21		0	16	Total
travel distance =>			16			14			4			5			16			21			16	76
knots	Docking, Boarding, Re-fueling, Launch (hh:mm:ss)			Docking, Boarding, Launch (hh:mm:ss)			Docking, Boarding, Launch (hh:mm:ss)			Docking, Boarding, Launch (hh:mm:ss)			Docking, Boarding, Launch (hh:mm:ss)			Docking, Boarding, Launch (hh:mm:ss)			Docking, Boarding, Launch (hh:mm:ss)			
20	0:30:00	7:30 AM	8:18 AM	0:15:00	8:33 AM	9:15 AM	0:15:00	9:30 AM	9:42 AM	0:15:00	9:57 AM	10:12 AM	0:15:00	10:27 AM	11:15 AM	0:15:00	11:30 AM	12:33 PM	0:15:00	12:48 PM	1:36 PM	
	0:30:00	1:03 PM	1:51 PM	0:15:00	2:06 PM	2:48 PM	0:15:00	3:03 PM	3:15 PM	0:15:00	3:30 PM	3:45 PM	0:15:00	4:00 PM	4:48 PM	0:15:00	5:03 PM	6:06 PM	0:15:00	6:21 PM	7:09 PM	return trip
40	0:30:00	7:30 AM	7:54 AM	0:15:00	8:09 AM	8:30 AM	0:15:00	8:45 AM	8:51 AM	0:15:00	9:06 AM	9:13 AM	0:15:00	9:28 AM	9:52 AM	0:15:00	10:07 AM	10:39 AM	0:15:00	10:54 AM	11:18 AM	
	0:30:00	11:09 AM	11:33 AM	0:15:00	11:48 AM	12:09 PM	0:15:00	12:24 PM	12:30 PM	0:15:00	12:45 PM	12:52 PM	0:15:00	1:07 PM	1:31 PM	0:15:00	1:46 PM	2:18 PM	0:15:00	2:33 PM	2:57 PM	
	0:30:00	2:48 PM	3:12 PM	0:15:00	3:27 PM	3:48 PM	0:15:00	4:03 PM	4:09 PM	0:15:00	4:24 PM	4:31 PM	0:15:00	4:46 PM	5:10 PM	0:15:00	5:25 PM	5:57 PM	0:15:00	6:12 PM	6:36 PM	return trip
60	0:30:00	7:30 AM	7:46 AM	0:15:00	8:01 AM	8:15 AM	0:15:00	8:30 AM	8:34 AM	0:15:00	8:49 AM	8:54 AM	0:15:00	9:09 AM	9:25 AM	0:15:00	9:40 AM	10:01 AM	0:15:00	10:16 AM	10:32 AM	
	0:30:00	10:31 AM	10:47 AM	0:15:00	11:02 AM	11:16 AM	0:15:00	11:31 AM	11:35 AM	0:15:00	11:50 AM	11:55 AM	0:15:00	12:10 PM	12:26 PM	0:15:00	12:41 PM	1:02 PM	0:15:00	1:17 PM	1:33 PM	
	0:30:00	1:32 PM	1:48 PM	0:15:00	2:03 PM	2:17 PM	0:15:00	2:32 PM	2:36 PM	0:15:00	2:51 PM	2:56 PM	0:15:00	3:11 PM	3:27 PM	0:15:00	3:42 PM	4:03 PM	0:15:00	4:18 PM	4:34 PM	return trip
	0:30:00	4:33 PM	4:49 PM	0:15:00	5:04 PM	5:18 PM	0:15:00	5:33 PM	5:37 PM	0:15:00	5:52 PM	5:57 PM	0:15:00	6:12 PM	6:28 PM	0:15:00	6:43 PM	7:04 PM	0:15:00	7:19 PM	7:35 PM	return trip

Assumed: 1nautical mile = 1 mile (1.0018 nautical mile /mile) 1knot = 1 mile/hour

* harbor speed restrictions are not factored into the travel times

"return trips" are ferry runs that cannot deliver passengers to a beach prior to 2PM; hence they are exclusively to provide transport back home

Table 1B– Regional Route Planning: Narragansett Landing/Rocky Point to ALL Beaches

NARRAGANSETT LANDING & ROCKY POINT - High Speed Ferry Travel Distances — **REGIONAL ROUTE to all beaches**

		Depart Narragansett Landing	Arrive Rocky Point		Depart Rocky Point	Narragansett Town Beach Arrive (miles)		Depart (miles)	Scarborough State Beach Arrive (miles)		Depart (miles)	Sand Hill Cove Arrive (miles)		Depart (miles)	Easton's Beach Arrive (miles)		Depart (miles)	Arrive Rocky Point		Depart Rocky Point	Arrive Narragansett Landing	
	Leg 1	0	10		0	20																
	Leg 2							0	4													
	Leg 3										0	5										
	Leg 4													0	16							
	Leg 5																0	26		0	10	Total
travel distance =>			10			20			4			5			16			26			10	81
knots	Docking, Boarding, Re-fueling, Launch (hh:mm:ss)			Docking, Boarding, Launch (hh:mm:ss)			Docking, Boarding, Launch (hh:mm:ss)			Docking, Boarding, Launch (hh:mm:ss)			Docking, Boarding, Launch (hh:mm:ss)			Docking, Boarding, Launch (hh:mm:ss)			Docking, Boarding, Launch (hh:mm:ss)			
20	0:30:00	7:30 AM	8:00 AM	0:15:00	8:15 AM	9:15 AM	0:15:00	9:30 AM	9:42 AM	0:15:00	9:57 AM	10:12 AM	0:15:00	10:27 AM	11:15 AM	0:15:00	11:30 AM	12:48 PM	0:15:00	1:03 PM	1:33 PM	
	0:30:00	1:18 PM	1:48 PM	0:15:00	2:03 PM	3:03 PM	0:15:00	3:18 PM	3:30 PM	0:15:00	3:45 PM	4:00 PM	0:15:00	4:15 PM	5:03 PM	0:15:00	5:18 PM	6:36 PM	0:15:00	6:51 PM	7:21 PM	return trip
40	0:30:00	7:30 AM	7:45 AM	0:15:00	8:00 AM	8:30 AM	0:15:00	8:45 AM	8:51 AM	0:15:00	9:06 AM	9:13 AM	0:15:00	9:28 AM	9:52 AM	0:15:00	10:07 AM	10:46 AM	0:15:00	11:01 AM	11:16 AM	
	0:30:00	11:16 AM	11:31 AM	0:15:00	11:46 AM	12:16 PM	0:15:00	12:31 PM	12:37 PM	0:15:00	12:52 PM	1:00 PM	0:15:00	1:15 PM	1:39 PM	0:15:00	1:54 PM	2:33 PM	0:15:00	2:48 PM	3:03 PM	
	0:30:00	3:03 PM	3:18 PM	0:15:00	3:33 PM	4:03 PM	0:15:00	4:18 PM	4:24 PM	0:15:00	4:39 PM	4:46 PM	0:15:00	5:01 PM	5:25 PM	0:15:00	5:40 PM	6:19 PM	0:15:00	6:34 PM	6:49 PM	return trip
60	0:30:00	7:30 AM	7:40 AM	0:15:00	7:55 AM	8:15 AM	0:15:00	8:30 AM	8:34 AM	0:15:00	8:49 AM	8:54 AM	0:15:00	9:09 AM	9:25 AM	0:15:00	9:40 AM	10:06 AM	0:15:00	10:21 AM	10:31 AM	
	0:30:00	10:36 AM	10:46 AM	0:15:00	11:01 AM	11:21 AM	0:15:00	11:36 AM	11:40 AM	0:15:00	11:55 AM	12:00 PM	0:15:00	12:15 PM	12:31 PM	0:15:00	12:46 PM	1:12 PM	0:15:00	1:27 PM	1:37 PM	
	0:30:00	1:42 PM	1:52 PM	0:15:00	2:07 PM	2:27 PM	0:15:00	2:42 PM	2:46 PM	0:15:00	3:01 PM	3:06 PM	0:15:00	3:21 PM	3:37 PM	0:15:00	3:52 PM	4:18 PM	0:15:00	4:33 PM	4:43 PM	return trip
	0:30:00	4:48 PM	4:58 PM	0:15:00	5:13 PM	5:33 PM	0:15:00	5:48 PM	5:52 PM	0:15:00	6:07 PM	6:12 PM	0:15:00	6:27 PM	6:43 PM	0:15:00	6:58 PM	7:24 PM	0:15:00	7:39 PM	7:49 PM	return trip

Assumed: 1nautical mile = 1 mile (1.0018 nautical mile /mile) 1knot = 1 mile/hour

* harbor speed restrictions are not factored into the travel times

"return trips" are ferry runs that cannot deliver passengers to a beach prior to 2PM; hence they are exclusively to provide transport back home

Table 1C – Regional Route Planning: Warren River/Rocky Point to ALL Beaches

WARREN RIVER & ROCKY POINT - High Speed Ferry Travel Distances — REGIONAL ROUTE to all beaches

	Depart Warren River	Arrive Rocky Point		Depart Rocky Point	Narragansett Town Beach Arrive (miles)		Depart (miles)	Scarborough State Beach Arrive (miles)		Depart (miles)	Sand Hill Cove Arrive (miles)		Depart (miles)	Easton's Beach Arrive (miles)		Depart (miles)	Arrive Rocky Point		Depart Rocky Point	Arrive Warren River	
Leg 1	0	5		0	20																
Leg 2							0	4													
Leg 3										0	5										
Leg 4													0	16							
Leg 5																0	26		0	5	**Total**
travel distance =>		5			20			4			5			16			26			5	76
knots	Docking, Boarding, Re-fueling, Launch (hh:mm:ss)			Docking, Boarding, Launch (hh:mm:ss)			Docking, Boarding, Launch (hh:mm:ss)			Docking, Boarding, Launch (hh:mm:ss)			Docking, Boarding, Launch (hh:mm:ss)			Docking, Boarding, Launch (hh:mm:ss)			Docking, Boarding, Launch (hh:mm:ss)		
20	0:30:00	7:30 AM	7:45 AM	0:15:00	8:00 AM	9:00 AM	0:15:00	9:15 AM	9:27 AM	0:15:00	9:42 AM	9:57 AM	0:15:00	10:12 AM	11:00 AM	0:15:00	11:15 AM	12:33 PM	0:15:00	12:48 PM	1:03 PM	
	0:30:00	1:03 PM	1:18 PM	0:15:00	1:33 PM	2:33 PM	0:15:00	2:48 PM	3:00 PM	0:15:00	3:15 PM	3:30 PM	0:15:00	3:45 PM	4:33 PM	0:15:00	4:48 PM	6:06 PM	0:15:00	6:21 PM	6:36 PM	return trip
40	0:30:00	7:30 AM	7:37 AM	0:15:00	7:52 AM	8:22 AM	0:15:00	8:37 AM	8:43 AM	0:15:00	8:58 AM	9:06 AM	0:15:00	9:21 AM	9:45 AM	0:15:00	10:00 AM	10:39 AM	0:15:00	10:54 AM	11:01 AM	
	0:30:00	11:09 AM	11:16 AM	0:15:00	11:31 AM	12:01 PM	0:15:00	12:16 PM	12:22 PM	0:15:00	12:37 PM	12:45 PM	0:15:00	1:00 PM	1:24 PM	0:15:00	1:39 PM	2:18 PM	0:15:00	2:33 PM	2:40 PM	
	0:30:00	2:48 PM	2:55 PM	0:15:00	3:10 PM	3:40 PM	0:15:00	3:55 PM	4:01 PM	0:15:00	4:16 PM	4:24 PM	0:15:00	4:39 PM	5:03 PM	0:15:00	5:18 PM	5:57 PM	0:15:00	6:12 PM	6:19 PM	return trip
60	0:30:00	7:30 AM	7:35 AM	0:15:00	7:50 AM	8:10 AM	0:15:00	8:25 AM	8:29 AM	0:15:00	8:44 AM	8:49 AM	0:15:00	9:04 AM	9:20 AM	0:15:00	9:35 AM	10:01 AM	0:15:00	10:16 AM	10:21 AM	
	0:30:00	10:31 AM	10:36 AM	0:15:00	10:51 AM	11:11 AM	0:15:00	11:26 AM	11:30 AM	0:15:00	11:45 AM	11:50 AM	0:15:00	12:05 PM	12:21 PM	0:15:00	12:36 PM	1:02 PM	0:15:00	1:17 PM	1:22 PM	
	0:30:00	1:32 PM	1:37 PM	0:15:00	1:52 PM	2:12 PM	0:15:00	2:27 PM	2:31 PM	0:15:00	2:46 PM	2:51 PM	0:15:00	3:06 PM	3:22 PM	0:15:00	3:37 PM	4:03 PM	0:15:00	4:18 PM	4:23 PM	return trip
	0:30:00	4:33 PM	4:38 PM	0:15:00	4:53 PM	5:13 PM	0:15:00	5:28 PM	5:32 PM	0:15:00	5:47 PM	5:52 PM	0:15:00	6:07 PM	6:23 PM	0:15:00	6:38 PM	7:04 PM	0:15:00	7:19 PM	7:24 PM	return trip

Assumed: 1nautical mile = 1 mile (1.0018 nautical mile /mile) 1knot = 1 mile/hour

* harbor speed restrictions are not factored into the travel times

"return trips" are ferry runs that cannot deliver passengers to a beach prior to 2PM; hence they are exclusively to provide transport back home

Table 1D – Regional Route Planning: Warren River/Quonset Point to ALL Beaches

WARREN RIVER & QUONSET POINT - High Speed Ferry Travel Distances — **REGIONAL ROUTE to all beaches**

		Depart Warren River	Arrive Quonset Point		Depart Quonset Point	Narragansett Town Beach Arrive (miles)		Depart (miles)	Scarborough State Beach Arrive (miles)		Depart (miles)	Sand Hill Cove Arrive (miles)		Depart (miles)	Easton's Beach Arrive (miles)		Depart (miles)	Arrive Quonset Point		Depart Quonset Point	Arrive Warren River	
	Leg 1	0	11		0	20																
	Leg 2							0	4													
	Leg 3										0	5										
	Leg 4													0	16							
	Leg 5																0	26		0	11	Total
travel distance =>			11			20			4			5			16			26			11	82
knots	Docking, Boarding, Re-fueling, Launch (hh:mm:ss)			Docking, Boarding, Launch (hh:mm:ss)			Docking, Boarding, Launch (hh:mm:ss)			Docking, Boarding, Launch (hh:mm:ss)			Docking, Boarding, Launch (hh:mm:ss)			Docking, Boarding, Launch (hh:mm:ss)			Docking, Boarding, Launch (hh:mm:ss)			
20	0:30:00	7:30 AM	8:03 AM	0:15:00	8:18 AM	9:18 AM	0:15:00	9:33 AM	9:45 AM	0:15:00	10:00 AM	10:15 AM	0:15:00	10:30 AM	11:18 AM	0:15:00	11:33 AM	12:51 PM	0:15:00	1:06 PM	1:39 PM	
	0:30:00	1:21 PM	1:54 PM	0:15:00	2:09 PM	3:09 PM	0:15:00	3:24 PM	3:36 PM	0:15:00	3:51 PM	4:06 PM	0:15:00	4:21 PM	5:09 PM	0:15:00	5:24 PM	6:42 PM	0:15:00	6:57 PM	7:30 PM	return trip
40	0:30:00	7:30 AM	7:46 AM	0:15:00	8:01 AM	8:31 AM	0:15:00	8:46 AM	8:52 AM	0:15:00	9:07 AM	9:15 AM	0:15:00	9:30 AM	9:54 AM	0:15:00	10:09 AM	10:48 AM	0:15:00	11:03 AM	11:19 AM	
	0:30:00	11:18 AM	11:34 AM	0:15:00	11:49 AM	12:19 PM	0:15:00	12:34 PM	12:40 PM	0:15:00	12:55 PM	1:03 PM	0:15:00	1:18 PM	1:42 PM	0:15:00	1:57 PM	2:36 PM	0:15:00	2:51 PM	3:07 PM	
	0:30:00	3:06 PM	3:22 PM	0:15:00	3:37 PM	4:07 PM	0:15:00	4:22 PM	4:28 PM	0:15:00	4:43 PM	4:51 PM	0:15:00	5:06 PM	5:30 PM	0:15:00	5:45 PM	6:24 PM	0:15:00	6:39 PM	6:55 PM	return trip
60	0:30:00	7:30 AM	7:41 AM	0:15:00	7:56 AM	8:16 AM	0:15:00	8:31 AM	8:35 AM	0:15:00	8:50 AM	8:55 AM	0:15:00	9:10 AM	9:26 AM	0:15:00	9:41 AM	10:07 AM	0:15:00	10:22 AM	10:33 AM	
	0:30:00	10:37 AM	10:48 AM	0:15:00	11:03 AM	11:23 AM	0:15:00	11:38 AM	11:42 AM	0:15:00	11:57 AM	12:02 PM	0:15:00	12:17 PM	12:33 PM	0:15:00	12:48 PM	1:14 PM	0:15:00	1:29 PM	1:40 PM	
	0:30:00	1:44 PM	1:55 PM	0:15:00	2:10 PM	2:30 PM	0:15:00	2:45 PM	2:49 PM	0:15:00	3:04 PM	3:09 PM	0:15:00	3:24 PM	3:40 PM	0:15:00	3:55 PM	4:21 PM	0:15:00	4:36 PM	4:47 PM	return trip
	0:30:00	4:51 PM	5:02 PM	0:15:00	5:17 PM	5:37 PM	0:15:00	5:52 PM	5:56 PM	0:15:00	6:11 PM	6:16 PM	0:15:00	6:31 PM	6:47 PM	0:15:00	7:02 PM	7:28 PM	0:15:00	7:43 PM	7:54 PM	return trip

Assumed: 1nautical mile = 1 mile (1.0018 nautical mile /mile) 1knot = 1 mile/hour

* harbor speed restrictions are not factored into the travel times

"return trips" are ferry runs that cannot deliver passengers to a beach prior to 2PM; hence they are exclusively to provide transport back home

Table 1E – Regional Route Planning: Warren River/Rocky Point/Quonset Point to ALL Beaches

WARREN RIVER * ROCKY POINT * QUONSET POINT - High Speed Ferry Travel Distances — **REGIONAL ROUTE to all beaches**

	Depart Warren River	Arrive Rocky Point		Depart Rocky Point	Arrive Quonset Point		Depart Quonset Point	Narragansett Town Beach Arrive (miles)		Depart (miles)	Scarborough State Beach Arrive (miles)		Depart (miles)	Sand Hill Cove Arrive (miles)		Depart (miles)	Easton's Beach Arrive (miles)		Depart (miles)	Arrive Quonset Point		Depart Quonset Point	Arrive Rocky Point		Depart Rocky Point	Arrive Warren River	
Leg 1	0	5		0	7		0	20																			
Leg 2										0	4																
Leg 3													0	5													
Leg 4																0	18										
Leg 5																			0	21		0	7		0	5	Total
travel distance =>		5			7			20			4			5			18			21			7			5	85
	Docking, Boarding, Re-fueling, Launch (hh:mm:ss)			Docking, Boarding, Launch (hh:mm:ss)			Docking, Boarding, Launch (hh:mm:ss)			Docking, Boarding, Launch (hh:mm:ss)			Docking, Boarding, Launch (hh:mm:ss)			Docking, Boarding, Launch (hh:mm:ss)			Docking, Boarding, Launch (hh:mm:ss)			Docking, Boarding, Launch (hh:mm:ss)			Docking, Boarding, Launch (hh:mm:ss)		
knots																											
20	0:30:00	7:30 AM	7:45 AM	0:15:00	8:00 AM	8:21 AM	0:15:00	8:36 AM	9:36 AM	0:15:00	9:51 AM	10:03 AM	0:15:00	10:18 AM	10:33 AM	0:15:00	10:48 AM	11:36 AM	0:15:00	11:51 AM	12:54 PM	0:15:00	1:09 PM	1:30 PM	0:15:00	1:45 PM	2:00 PM	
	0:30:00	1:24 PM	1:39 PM	0:15:00	1:54 PM	2:15 PM	0:15:00	2:30 PM	3:30 PM	0:15:00	3:45 PM	3:57 PM	0:15:00	4:12 PM	4:27 PM	0:15:00	4:42 PM	5:30 PM	0:15:00	5:46 PM	6:48 PM	0:15:00	7:03 PM	7:24 PM	0:15:00	7:39 PM	7:54 PM	return trip
40	0:30:00	7:30 AM	7:37 AM	0:15:00	7:52 AM	8:03 AM	0:15:00	8:18 AM	8:48 AM	0:15:00	9:03 AM	9:09 AM	0:15:00	9:24 AM	9:31 AM	0:15:00	9:46 AM	10:10 AM	0:15:00	10:25 AM	10:57 AM	0:15:00	11:12 AM	11:22 AM	0:15:00	11:37 AM	11:45 AM	
	0:30:00	11:27 AM	11:34 AM	0:15:00	11:49 AM	12:00 PM	0:15:00	12:15 PM	12:45 PM	0:15:00	1:00 PM	1:06 PM	0:15:00	1:21 PM	1:28 PM	0:15:00	1:43 PM	2:07 PM	0:15:00	2:22 PM	2:54 PM	0:15:00	3:09 PM	3:19 PM	0:15:00	3:34 PM	3:42 PM	
	0:30:00	3:24 PM	3:31 PM	0:15:00	3:46 PM	3:57 PM	0:15:00	4:12 PM	4:42 PM	0:15:00	4:57 PM	5:03 PM	0:15:00	5:18 PM	5:25 PM	0:15:00	5:40 PM	6:04 PM	0:15:00	6:19 PM	6:51 PM	0:15:00	7:06 PM	7:16 PM	0:15:00	7:31 PM	7:39 PM	return trip
60	0:30:00	7:30 AM	7:35 AM	0:15:00	7:50 AM	7:57 AM	0:15:00	8:12 AM	8:32 AM	0:15:00	8:47 AM	8:51 AM	0:15:00	9:06 AM	9:11 AM	0:15:00	9:26 AM	9:42 AM	0:15:00	9:57 AM	10:18 AM	0:15:00	10:33 AM	10:40 AM	0:15:00	10:55 AM	11:00 AM	
	0:30:00	10:48 AM	10:53 AM	0:15:00	11:08 AM	11:15 AM	0:15:00	11:30 AM	11:50 AM	0:15:00	12:05 PM	12:09 PM	0:15:00	12:24 PM	12:29 PM	0:15:00	12:44 PM	1:00 PM	0:15:00	1:15 PM	1:36 PM	0:15:00	1:51 PM	1:58 PM	0:15:00	2:13 PM	2:18 PM	
	0:30:00	2:06 PM	2:11 PM	0:15:00	2:26 PM	2:33 PM	0:15:00	2:48 PM	3:08 PM	0:15:00	3:23 PM	3:27 PM	0:15:00	3:42 PM	3:47 PM	0:15:00	4:02 PM	4:18 PM	0:15:00	4:33 PM	4:54 PM	0:15:00	5:09 PM	5:16 PM	0:15:00	5:31 PM	5:36 PM	return trip
	0:30:00	5:24 PM	5:29 PM	0:15:00	5:44 PM	5:51 PM	0:15:00	6:06 PM	6:26 PM	0:15:00	6:41 PM	6:46 PM	0:15:00	7:00 PM	7:05 PM	0:15:00	7:20 PM	7:36 PM	0:15:00	7:51 PM	8:12 PM	0:15:00	8:27 PM	8:34 PM	0:15:00	8:49 PM	8:54 PM	return trip

Assumed: 1nautical mile = 1 mile (1.0018 nautical mile /mile) 1knot = 1 mile/hour

* harbor speed restrictions are not factored into the travel times

"return trips" are ferryruns that cannot deliver passengers to a beach prior to 2PM; hence they are exclusively to provide transport back home

Table 2A – Regional Route Planning: India Point/Quonset Point to Narragansett Beaches

INDIA POINT & QUONSET POINT - High Speed Ferry Travel Distances — **REGIONAL ROUTE to Narragansett Beaches only**

		Depart India Point	Arrive Quonset Point		Depart Quonset Point	Narragansett Town Beach Arrive (miles)		Depart (miles)	Scarborough State Beach Arrive (miles)		Depart (miles)	Sand Hill Cove Arrive (miles)		Depart (miles)	Arrive Quonset Point		Depart Quonset Point	Arrive India Point	
Leg 1		0	16		0	14													
Leg 2								0	4										
Leg 3											0	5							
Leg 4														0	21				
Leg 5																	0	16	Total
travel distance =>			16			14			4			5			21			16	60
knots	Docking, Boarding, Re-fueling, Launch (hh:mm:ss)			Docking, Boarding, Launch (hh:mm:ss)			Docking, Boarding, Launch (hh:mm:ss)			Docking, Boarding, Launch (hh:mm:ss)			Docking, Boarding, Launch (hh:mm:ss)			Docking, Boarding, Launch (hh:mm:ss)			
20	0:30:00	7:30 AM	8:18 AM	0:15:00	8:33 AM	9:15 AM	0:15:00	9:30 AM	9:42 AM	0:15:00	9:57 AM	10:12 AM	0:15:00	10:27 AM	11:30 AM	0:15:00	11:45 AM	12:33 PM	
	0:30:00	12:00 PM	12:48 PM	0:15:00	1:03 PM	1:45 PM	0:15:00	2:00 PM	2:12 PM	0:15:00	2:27 PM	2:42 PM	0:15:00	2:57 PM	4:00 PM	0:15:00	4:15 PM	5:03 PM	return trip
40	0:30:00	7:30 AM	7:54 AM	0:15:00	8:09 AM	8:30 AM	0:15:00	8:45 AM	8:51 AM	0:15:00	9:06 AM	9:13 AM	0:15:00	9:28 AM	10:00 AM	0:15:00	10:15 AM	10:39 AM	
	0:30:00	10:30 AM	10:54 AM	0:15:00	11:09 AM	11:30 AM	0:15:00	11:45 AM	11:51 AM	0:15:00	12:06 PM	12:13 PM	0:15:00	12:28 PM	1:00 PM	0:15:00	1:15 PM	1:39 PM	
	0:30:00	1:30 PM	1:54 PM	0:15:00	2:09 PM	2:30 PM	0:15:00	2:45 PM	2:51 PM	0:15:00	3:06 PM	3:13 PM	0:15:00	3:28 PM	4:00 PM	0:15:00	4:15 PM	4:39 PM	return trip
	0:30:00	4:30 PM	4:54 PM	0:15:00	5:09 PM	5:30 PM	0:15:00	5:45 PM	5:51 PM	0:15:00	6:06 PM	6:13 PM	0:15:00	6:28 PM	7:00 PM	0:15:00	7:15 PM	7:39 PM	return trip
60	0:30:00	7:30 AM	7:46 AM	0:15:00	8:01 AM	8:15 AM	0:15:00	8:30 AM	8:34 AM	0:15:00	8:49 AM	8:54 AM	0:15:00	9:09 AM	9:30 AM	0:15:00	9:45 AM	10:01 AM	
	0:30:00	10:00 AM	10:16 AM	0:15:00	10:31 AM	10:45 AM	0:15:00	11:00 AM	11:04 AM	0:15:00	11:19 AM	11:24 AM	0:15:00	11:39 AM	12:00 PM	0:15:00	12:15 PM	12:31 PM	
	0:30:00	12:30 PM	12:46 PM	0:15:00	1:01 PM	1:15 PM	0:15:00	1:30 PM	1:34 PM	0:15:00	1:49 PM	1:54 PM	0:15:00	2:09 PM	2:30 PM	0:15:00	2:45 PM	3:01 PM	
	0:30:00	3:00 PM	3:16 PM	0:15:00	3:31 PM	3:45 PM	0:15:00	4:00 PM	4:04 PM	0:15:00	4:19 PM	4:24 PM	0:15:00	4:39 PM	5:00 PM	0:15:00	5:15 PM	5:31 PM	return trip
	0:30:00	5:30 PM	5:46 PM	0:15:00	6:01 PM	6:15 PM	0:15:00	6:30 PM	6:34 PM	0:15:00	6:49 PM	6:54 PM	0:15:00	7:09 PM	7:30 PM	0:15:00	7:45 PM	8:01 PM	return trip

Assumed: 1nautical mile = 1 mile (1.0018 nautical mile /mile) 1knot = 1 mile/hour

* harbor speed restrictions are not factored into the travel times

"return trips" are ferry runs that cannot deliver passengers to a beach prior to 2PM; hence they are exclusively to provide transport back home

Table 2B– Regional Route Planning: Narragansett Landing/Rocky Point to Narragansett Beaches

NARRAGANSETT LANDING & ROCKY POINT - High Speed Ferry Travel Distances — REGIONAL ROUTE to Narragansett Beaches only

		Depart Narragansett Landing	Arrive Rocky Point		Depart Rocky Point	Narragansett Town Beach Arrive (miles)		Depart (miles)	Scarborough State Beach Arrive (miles)		Depart (miles)	Sand Hill Cove Arrive (miles)		Depart (miles)	Arrive Rocky Point		Depart Rocky Point	Arrive Narragansett Landing	
	Leg 1	0	10		0	20													
	Leg 2							0	4										
	Leg 3										0	5							
	Leg 4													0	26				
	Leg 5																0	10	**Total**
travel distance =>			10			20			4			5			26			10	65
knots	Docking, Boarding, Re-fueling, Launch (hh:mm:ss)			Docking, Boarding, Launch (hh:mm:ss)			Docking, Boarding, Launch (hh:mm:ss)			Docking, Boarding, Launch (hh:mm:ss)			Docking, Boarding, Launch (hh:mm:ss)			Docking, Boarding, Launch (hh:mm:ss)			
20	0:30:00	7:30 AM	8:00 AM	0:15:00	8:15 AM	9:15 AM	0:15:00	9:30 AM	9:42 AM	0:15:00	9:57 AM	10:12 AM	0:15:00	10:27 AM	11:45 AM	0:15:00	12:00 PM	12:30 PM	
	0:30:00	12:15 PM	12:45 PM	0:15:00	1:00 PM	2:00 PM	0:15:00	2:15 PM	2:27 PM	0:15:00	2:42 PM	2:57 PM	0:15:00	3:12 PM	4:30 PM	0:15:00	4:45 PM	5:15 PM	return trip
40	0:30:00	7:30 AM	7:45 AM	0:15:00	8:00 AM	8:30 AM	0:15:00	8:45 AM	8:51 AM	0:15:00	9:06 AM	9:13 AM	0:15:00	9:28 AM	10:07 AM	0:15:00	10:22 AM	10:37 AM	
	0:30:00	10:37 AM	10:52 AM	0:15:00	11:07 AM	11:37 AM	0:15:00	11:52 AM	11:58 AM	0:15:00	12:13 PM	12:21 PM	0:15:00	12:36 PM	1:15 PM	0:15:00	1:30 PM	1:45 PM	
	0:30:00	1:45 PM	2:00 PM	0:15:00	2:15 PM	2:45 PM	0:15:00	3:00 PM	3:06 PM	0:15:00	3:21 PM	3:28 PM	0:15:00	3:43 PM	4:22 PM	0:15:00	4:37 PM	4:52 PM	return trip
	0:30:00	4:52 PM	5:07 PM	0:15:00	5:22 PM	5:52 PM	0:15:00	6:07 PM	6:13 PM	0:15:00	6:28 PM	6:36 PM	0:15:00	6:51 PM	7:30 PM	0:15:00	7:45 PM	8:00 PM	return trip
60	0:30:00	7:30 AM	7:40 AM	0:15:00	7:55 AM	8:15 AM	0:15:00	8:30 AM	8:34 AM	0:15:00	8:49 AM	8:54 AM	0:15:00	9:09 AM	9:35 AM	0:15:00	9:50 AM	10:00 AM	
	0:30:00	10:05 AM	10:15 AM	0:15:00	10:30 AM	10:50 AM	0:15:00	11:05 AM	11:09 AM	0:15:00	11:24 AM	11:29 AM	0:15:00	11:44 AM	12:10 PM	0:15:00	12:25 PM	12:35 PM	
	0:30:00	12:40 PM	12:50 PM	0:15:00	1:05 PM	1:25 PM	0:15:00	1:40 PM	1:44 PM	0:15:00	1:59 PM	2:04 PM	0:15:00	2:19 PM	2:45 PM	0:15:00	3:00 PM	3:10 PM	
	0:30:00	3:15 PM	3:25 PM	0:15:00	3:40 PM	4:00 PM	0:15:00	4:15 PM	4:19 PM	0:15:00	4:34 PM	4:39 PM	0:15:00	4:54 PM	5:20 PM	0:15:00	5:35 PM	5:45 PM	return trip
	0:30:00	5:50 PM	6:00 PM	0:15:00	6:15 PM	6:35 PM	0:15:00	6:50 PM	6:54 PM	0:15:00	7:09 PM	7:14 PM	0:15:00	7:29 PM	7:55 PM	0:15:00	8:10 PM	8:20 PM	return trip

Assumed: 1nautical mile = 1 mile (1.0018 nautical mile /mile) 1knot = 1 mile/hour

* harbor speed restrictions are not factored into the travel times

"return trips" are ferry runs that cannot deliver passengers to a beach prior to 2PM; hence they are exclusively to provide transport back home

Table 2C – Regional Route Planning: Warren River/Rocky Point to Narragansett Beaches

WARREN RIVER & ROCKY POINT - High Speed Ferry Travel Distances — **REGIONAL ROUTE to Narragansett Beaches only**

		Depart Warren River	Arrive Rocky Point		Depart Rocky Point	Narragansett Town Beach Arrive (miles)		Depart (miles)	Scarborough State Beach Arrive (miles)		Depart (miles)	Sand Hill Cove Arrive (miles)		Depart (miles)	Arrive Rocky Point		Depart Rocky Point	Arrive Warren River	
	Leg 1	0	5		0	20													
	Leg 2							0	4										
	Leg 3										0	5							
	Leg 4													0	26				
	Leg 5																0	5	Total
travel distance =>			5			20			4			5			26			5	60
knots	Docking, Boarding, Re-fueling, Launch (hh:mm:ss)			Docking, Boarding, Launch (hh:mm:ss)			Docking, Boarding, Launch (hh:mm:ss)			Docking, Boarding, Launch (hh:mm:ss)			Docking, Boarding, Launch (hh:mm:ss)			Docking, Boarding, Launch (hh:mm:ss)			
20	0:30:00	7:30 AM	7:45 AM	0:15:00	8:00 AM	9:00 AM	0:15:00	9:15 AM	9:27 AM	0:15:00	9:42 AM	9:57 AM	0:15:00	10:12 AM	11:30 AM	0:15:00	11:45 AM	12:00 PM	
	0:30:00	12:00 PM	12:15 PM	0:15:00	12:30 PM	1:30 PM	0:15:00	1:45 PM	1:57 PM	0:15:00	2:12 PM	2:27 PM	0:15:00	2:42 PM	4:00 PM	0:15:00	4:15 PM	4:30 PM	return trip
	0:30:00	4:30 PM	4:45 PM	0:15:00	5:00 PM	6:00 PM	0:15:00	6:15 PM	6:27 PM	0:15:00	6:42 PM	6:57 PM	0:15:00	7:12 PM	8:30 PM	0:15:00	8:45 PM	9:00 PM	return trip
40	0:30:00	7:30 AM	7:37 AM	0:15:00	7:52 AM	8:22 AM	0:15:00	8:37 AM	8:43 AM	0:15:00	8:58 AM	9:06 AM	0:15:00	9:21 AM	10:00 AM	0:15:00	10:15 AM	10:22 AM	
	0:30:00	10:30 AM	10:37 AM	0:15:00	10:52 AM	11:22 AM	0:15:00	11:37 AM	11:43 AM	0:15:00	11:58 AM	12:06 PM	0:15:00	12:21 PM	1:00 PM	0:15:00	1:15 PM	1:22 PM	
	0:30:00	1:30 PM	1:37 PM	0:15:00	1:52 PM	2:22 PM	0:15:00	2:37 PM	2:43 PM	0:15:00	2:58 PM	3:06 PM	0:15:00	3:21 PM	4:00 PM	0:15:00	4:15 PM	4:22 PM	return trip
	0:30:00	4:30 PM	4:37 PM	0:15:00	4:52 PM	5:22 PM	0:15:00	5:37 PM	5:43 PM	0:15:00	5:58 PM	6:06 PM	0:15:00	6:21 PM	7:00 PM	0:15:00	7:15 PM	7:22 PM	return trip
60	0:30:00	7:30 AM	7:35 AM	0:15:00	7:50 AM	8:10 AM	0:15:00	8:25 AM	8:29 AM	0:15:00	8:44 AM	8:49 AM	0:15:00	9:04 AM	9:30 AM	0:15:00	9:45 AM	9:50 AM	
	0:30:00	10:00 AM	10:05 AM	0:15:00	10:20 AM	10:40 AM	0:15:00	10:55 AM	10:59 AM	0:15:00	11:14 AM	11:19 AM	0:15:00	11:34 AM	12:00 PM	0:15:00	12:15 PM	12:20 PM	
	0:30:00	12:30 PM	12:35 PM	0:15:00	12:50 PM	1:10 PM	0:15:00	1:25 PM	1:29 PM	0:15:00	1:44 PM	1:49 PM	0:15:00	2:04 PM	2:30 PM	0:15:00	2:45 PM	2:50 PM	
	0:30:00	3:00 PM	3:05 PM	0:15:00	3:20 PM	3:40 PM	0:15:00	3:55 PM	3:59 PM	0:15:00	4:14 PM	4:19 PM	0:15:00	4:34 PM	5:00 PM	0:15:00	5:15 PM	5:20 PM	return trip
	0:30:00	5:30 PM	5:35 PM	0:15:00	5:50 PM	6:10 PM	0:15:00	6:25 PM	6:29 PM	0:15:00	6:44 PM	6:49 PM	0:15:00	7:04 PM	7:30 PM	0:15:00	7:45 PM	7:50 PM	return trip

Assumed: 1nautical mile = 1 mile (1.0018 nautical mile /mile) 1knot = 1 mile/hour

* harbor speed restrictions are not factored into the travel times

"return trips" are ferry runs that cannot deliver passengers to a beach prior to 2PM; hence they are exclusively to provide transport back home

Table 2D – Regional Route Planning: Warren River/Quonset Point to Narragansett Beaches

WARREN RIVER & QUONSET POINT - High Speed Ferry Travel Distances — **REGIONAL ROUTE to Narragansett Beaches only**

		Depart Warren River	Arrive Quonset Point		Depart Quonset Point	Narragansett Town Beach Arrive (miles)		Depart (miles)	Scarborough State Beach Arrive (miles)		Depart (miles)	Sand Hill Cove Arrive (miles)		Depart (miles)	Arrive Quonset Point		Depart Quonset Point	Arrive Warren River	
	Leg 1	0	11		0	20													
	Leg 2							0	4										
	Leg 3										0	5							
	Leg 4													0	21				
	Leg 5																0	11	**Total**
	travel distance =>		11			20			4			5			21			11	61
knots	Docking, Boarding, Re-fueling, Launch (hh:mm:ss)			Docking, Boarding, Launch (hh:mm:ss)			Docking, Boarding, Launch (hh:mm:ss)			Docking, Boarding, Launch (hh:mm:ss)			Docking, Boarding, Launch (hh:mm:ss)			Docking, Boarding, Launch (hh:mm:ss)			
20	0:30:00	7:30 AM	8:03 AM	0:15:00	8:18 AM	9:18 AM	0:15:00	9:33 AM	9:45 AM	0:15:00	10:00 AM	10:15 AM	0:15:00	10:30 AM	11:33 AM	0:15:00	11:48 AM	12:21 PM	
	0:30:00	12:03 PM	12:36 PM	0:15:00	12:51 PM	1:51 PM	0:15:00	2:06 PM	2:18 PM	0:15:00	2:33 PM	2:48 PM	0:15:00	3:03 PM	4:06 PM	0:15:00	4:21 PM	4:54 PM	return trip
	0:30:00	4:36 PM	5:09 PM	0:15:00	5:24 PM	6:24 PM	0:15:00	6:39 PM	6:51 PM	0:15:00	7:06 PM	7:21 PM	0:15:00	7:36 PM	8:39 PM	0:15:00	8:54 PM	9:27 PM	return trip
40	0:30:00	7:30 AM	7:46 AM	0:15:00	8:01 AM	8:31 AM	0:15:00	8:46 AM	8:52 AM	0:15:00	9:07 AM	9:15 AM	0:15:00	9:30 AM	10:01 AM	0:15:00	10:16 AM	10:33 AM	
	0:30:00	10:31 AM	10:48 AM	0:15:00	11:03 AM	11:33 AM	0:15:00	11:48 AM	11:54 AM	0:15:00	12:09 PM	12:16 PM	0:15:00	12:31 PM	1:03 PM	0:15:00	1:18 PM	1:34 PM	
	0:30:00	1:33 PM	1:49 PM	0:15:00	2:04 PM	2:34 PM	0:15:00	2:49 PM	2:55 PM	0:15:00	3:10 PM	3:18 PM	0:15:00	3:33 PM	4:04 PM	0:15:00	4:19 PM	4:36 PM	return trip
	0:30:00	4:34 PM	4:51 PM	0:15:00	5:06 PM	5:36 PM	0:15:00	5:51 PM	5:57 PM	0:15:00	6:12 PM	6:19 PM	0:15:00	6:34 PM	7:06 PM	0:15:00	7:21 PM	7:37 PM	return trip
60	0:30:00	7:30 AM	7:41 AM	0:15:00	7:56 AM	8:16 AM	0:15:00	8:31 AM	8:35 AM	0:15:00	8:50 AM	8:55 AM	0:15:00	9:10 AM	9:31 AM	0:15:00	9:46 AM	9:57 AM	
	0:30:00	10:01 AM	10:12 AM	0:15:00	10:27 AM	10:47 AM	0:15:00	11:02 AM	11:06 AM	0:15:00	11:21 AM	11:26 AM	0:15:00	11:41 AM	12:02 PM	0:15:00	12:17 PM	12:28 PM	
	0:30:00	12:32 PM	12:43 PM	0:15:00	12:58 PM	1:18 PM	0:15:00	1:33 PM	1:37 PM	0:15:00	1:52 PM	1:57 PM	0:15:00	2:12 PM	2:33 PM	0:15:00	2:48 PM	2:59 PM	
	0:30:00	3:03 PM	3:14 PM	0:15:00	3:29 PM	3:49 PM	0:15:00	4:04 PM	4:08 PM	0:15:00	4:23 PM	4:28 PM	0:15:00	4:43 PM	5:04 PM	0:15:00	5:19 PM	5:30 PM	return trip
	0:30:00	5:34 PM	5:45 PM	0:15:00	6:00 PM	6:20 PM	0:15:00	6:35 PM	6:39 PM	0:15:00	6:54 PM	6:59 PM	0:15:00	7:14 PM	7:35 PM	0:15:00	7:50 PM	8:01 PM	return trip

Assumed: 1nautical mile = 1 mile (1.0018 nautical mile /mile) 1knot = 1 mile/hour

* harbor speed restrictions are not factored into the travel times

"return trips" are ferry runs that cannot deliver passengers to a beach prior to 2PM; hence they are exclusively to provide transport back home

Table 2E – Regional Route Planning: Warren River/Rocky Point/Quonset Point to Narragansett Beaches

WARREN RIVER & ROCKY POINT & QUONSET POINT - High Speed Ferry Travel Distances — **REGIONAL ROUTE to Narragansett Beaches only**

	Depart Warren River	Arrive Rocky Point		Depart Rocky Point	Arrive Quonset Point		Depart Quonset Point	Narragansett Town Beach Arrive (miles)		Depart (miles)	Scarborough State Beach Arrive (miles)		Depart (miles)	Sand Hill Cove Arrive (miles)		Depart (miles)	Arrive Quonset Point		Depart Quonset Point	Arrive Rocky Point		Depart Rocky Point	Arrive Warren River	
Leg 1	0	5		0	7		0	20																
Leg 2										0	4													
Leg 3													0	5										
Leg 4																0	21							
Leg 5																			0	7		0	5	Total
travel distance =>		5			7			20			4			5			21			7			5	69
knots	Docking, Boarding, Re-fueling, Launch (hh:mm:ss)			Docking, Boarding, Launch (hh:mm:ss)			Docking, Boarding, Launch (hh:mm:ss)			Docking, Boarding, Launch (hh:mm:ss)			Docking, Boarding, Launch (hh:mm:ss)			Docking, Boarding, Launch (hh:mm:ss)			Docking, Boarding, Launch (hh:mm:ss)			Docking, Boarding, Launch (hh:mm:ss)		
20	0:30:00	7:30 AM	7:45 AM	0:15:00	8:00 AM	8:21 AM	0:15:00	8:36 AM	9:36 AM	0:15:00	9:51 AM	10:03 AM	0:15:00	10:18 AM	10:33 AM	0:15:00	10:48 AM	11:51 AM	0:15:00	12:06 PM	12:27 PM	0:15:00	12:42 PM	12:57 PM	
	0:30:00	12:21 PM	12:36 PM	0:15:00	12:51 PM	1:12 PM	0:15:00	1:27 PM	2:27 PM	0:15:00	2:42 PM	2:54 PM	0:15:00	3:09 PM	3:24 PM	0:15:00	3:39 PM	4:42 PM	0:15:00	4:57 PM	5:18 PM	0:15:00	5:33 PM	5:48 PM	return trip
40	0:30:00	7:30 AM	7:37 AM	0:15:00	7:52 AM	8:03 AM	0:15:00	8:18 AM	8:48 AM	0:15:00	9:03 AM	9:09 AM	0:15:00	9:24 AM	9:31 AM	0:15:00	9:46 AM	10:18 AM	0:15:00	10:33 AM	10:43 AM	0:15:00	10:58 AM	11:06 AM	
	0:30:00	10:48 AM	10:55 AM	0:15:00	11:10 AM	11:21 AM	0:15:00	11:36 AM	12:06 PM	0:15:00	12:21 PM	12:27 PM	0:15:00	12:42 PM	12:49 PM	0:15:00	1:04 PM	1:36 PM	0:15:00	1:51 PM	2:01 PM	0:15:00	2:16 PM	2:24 PM	
	0:30:00	2:06 PM	2:13 PM	0:15:00	2:28 PM	2:39 PM	0:15:00	2:54 PM	3:24 PM	0:15:00	3:39 PM	3:45 PM	0:15:00	4:00 PM	4:07 PM	0:15:00	4:22 PM	4:54 PM	0:15:00	5:09 PM	5:19 PM	0:15:00	5:34 PM	5:42 PM	return trip
	0:30:00	5:24 PM	5:31 PM	0:15:00	5:46 PM	5:57 PM	0:15:00	6:12 PM	6:42 PM	0:15:00	6:57 PM	7:03 PM	0:15:00	7:18 PM	7:25 PM	0:15:00	7:40 PM	8:12 PM	0:15:00	8:27 PM	8:37 PM	0:15:00	8:52 PM	9:00 PM	return trip
60	0:30:00	7:30 AM	7:35 AM	0:15:00	7:50 AM	7:57 AM	0:15:00	8:12 AM	8:32 AM	0:15:00	8:47 AM	8:51 AM	0:15:00	9:06 AM	9:11 AM	0:15:00	9:26 AM	9:47 AM	0:15:00	10:02 AM	10:09 AM	0:15:00	10:24 AM	10:29 AM	
	0:30:00	10:17 AM	10:22 AM	0:15:00	10:37 AM	10:44 AM	0:15:00	10:59 AM	11:19 AM	0:15:00	11:34 AM	11:38 AM	0:15:00	11:53 AM	11:58 AM	0:15:00	12:13 PM	12:34 PM	0:15:00	12:49 PM	12:56 PM	0:15:00	1:11 PM	1:16 PM	
	0:30:00	1:04 PM	1:09 PM	0:15:00	1:24 PM	1:31 PM	0:15:00	1:46 PM	2:06 PM	0:15:00	2:21 PM	2:25 PM	0:15:00	2:40 PM	2:45 PM	0:15:00	3:00 PM	3:21 PM	0:15:00	3:36 PM	3:43 PM	0:15:00	3:58 PM	4:03 PM	return trip
	0:30:00	3:51 PM	3:56 PM	0:15:00	4:11 PM	4:18 PM	0:15:00	4:33 PM	4:53 PM	0:15:00	5:08 PM	5:12 PM	0:15:00	5:27 PM	5:32 PM	0:15:00	5:47 PM	6:08 PM	0:15:00	6:23 PM	6:30 PM	0:15:00	6:45 PM	6:50 PM	return trip

Assumed: 1nautical mile = 1 mile (1.0018 nautical mile /mile) 1knot = 1 mile/hour

* harbor speed restrictions are not factored into the travel times

"return trips" are ferry runs that cannot deliver passengers to a beach prior to 2PM; hence they are exclusively to provide transport back home

Table 3A – Regional Route Planning: India Point/Quonset Point to RI State Beaches

INDIA POINT & QUONSET POINT - High Speed Ferry Travel Distances — REGIONAL ROUTE to RI State Beaches only

	Depart India Point	Arrive Quonset Point		Depart Quonset Point	Scarborough State Beach Arrive (miles)		Depart (miles)	Sand Hill Cove Arrive (miles)		Depart (miles)	Arrive Quonset Point		Depart Quonset Point	Arrive India Point	
Leg 1	0	16													
Leg 2				0	17										
Leg 3							0	5							
Leg 4										0	21				
Leg 5													0	16	**Total**
travel distance =>		16			17			5			21			16	59
knots	Docking, Boarding, Re-fueling, Launch (hh:mm:ss)			Docking, Boarding, Launch (hh:mm:ss)			Docking, Boarding, Launch (hh:mm:ss)			Docking, Boarding, Launch (hh:mm:ss)			Docking, Boarding, Launch (hh:mm:ss)		
20	0:30:00	7:30 AM	8:18 AM	0:15:00	8:33 AM	9:24 AM	0:15:00	9:39 AM	9:54 AM	0:15:00	10:09 AM	11:12 AM	0:15:00	11:27 AM	12:15 PM	
	0:30:00	11:42 AM	12:30 PM	0:15:00	12:45 PM	1:36 PM	0:15:00	1:51 PM	2:06 PM	0:15:00	2:21 PM	3:24 PM	0:15:00	3:39 PM	4:27 PM	return trip
	0:30:00	3:54 PM	4:42 PM	0:15:00	4:57 PM	5:48 PM	0:15:00	6:03 PM	6:18 PM	0:15:00	6:33 PM	7:36 PM	0:15:00	7:51 PM	8:39 PM	return trip
40	0:30:00	7:30 AM	7:54 AM	0:15:00	8:09 AM	8:34 AM	0:15:00	8:49 AM	8:57 AM	0:15:00	9:12 AM	9:43 AM	0:15:00	9:58 AM	10:22 AM	
	0:30:00	10:13 AM	10:37 AM	0:15:00	10:52 AM	11:18 AM	0:15:00	11:33 AM	11:40 AM	0:15:00	11:55 AM	12:27 PM	0:15:00	12:42 PM	1:06 PM	
	0:30:00	12:57 PM	1:21 PM	0:15:00	1:36 PM	2:01 PM	0:15:00	2:16 PM	2:24 PM	0:15:00	2:39 PM	3:10 PM	0:15:00	3:25 PM	3:49 PM	return trip
	0:30:00	3:40 PM	4:04 PM	0:15:00	4:19 PM	4:45 PM	0:15:00	5:00 PM	5:07 PM	0:15:00	5:22 PM	5:54 PM	0:15:00	6:09 PM	6:33 PM	return trip
60	0:30:00	7:30 AM	7:46 AM	0:15:00	8:01 AM	8:18 AM	0:15:00	8:33 AM	8:38 AM	0:15:00	8:53 AM	9:14 AM	0:15:00	9:29 AM	9:45 AM	
	0:30:00	9:44 AM	10:00 AM	0:15:00	10:15 AM	10:32 AM	0:15:00	10:47 AM	10:52 AM	0:15:00	11:07 AM	11:28 AM	0:15:00	11:43 AM	11:59 AM	
	0:30:00	11:58 AM	12:14 PM	0:15:00	12:29 PM	12:46 PM	0:15:00	1:01 PM	1:06 PM	0:15:00	1:21 PM	1:42 PM	0:15:00	1:57 PM	2:13 PM	
	0:30:00	2:12 PM	2:28 PM	0:15:00	2:43 PM	3:00 PM	0:15:00	3:15 PM	3:20 PM	0:15:00	3:35 PM	3:56 PM	0:15:00	4:11 PM	4:27 PM	return trip
	0:30:00	4:26 PM	4:42 PM	0:15:00	4:57 PM	5:14 PM	0:15:00	5:29 PM	5:34 PM	0:15:00	5:49 PM	6:10 PM	0:15:00	6:25 PM	6:41 PM	return trip

Assumed: 1nautical mile = 1 mile (1.0018 nautical mile /mile) 1knot = 1 mile/hour

* harbor speed restrictions are not factored into the travel times

"return trips" are ferry runs that cannot deliver passengers to a beach prior to 2PM; hence they are exclusively to provide transport back home

Table 3B– Regional Route Planning: Narragansett Landing/Rocky Point to RI State Beaches

NARRAGANSETT LANDING & ROCKY POINT - High Speed Ferry Travel Distances — REGIONAL ROUTE to RI State Beaches only

		Depart Narragansett Landing	Arrive Rocky Point		Depart Rocky Point	Scarborough State Beach Arrive (miles)		Depart (miles)	Sand Hill Cove Arrive (miles)		Depart (miles)	Arrive Rocky Point		Depart Rocky Point	Arrive Narragansett Landing	
	Leg 1	0	10													
	Leg 2				0	22										
	Leg 3							0	5							
	Leg 4										0	26				
	Leg 5													0	10	**Total**
travel distance =>			10			22			5			26			10	63
knots	Docking, Boarding, Re-fueling, Launch (hh:mm:ss)			Docking, Boarding, Launch (hh:mm:ss)			Docking, Boarding, Launch (hh:mm:ss)			Docking, Boarding, Launch (hh:mm:ss)			Docking, Boarding, Launch (hh:mm:ss)			
20	0:30:00	7:30 AM	8:00 AM	0:15:00	8:15 AM	9:21 AM	0:15:00	9:36 AM	9:51 AM	0:15:00	10:06 AM	11:24 AM	0:15:00	11:39 AM	12:09 PM	
	0:30:00	11:54 AM	12:24 PM	0:15:00	12:39 PM	1:45 PM	0:15:00	2:00 PM	2:15 PM	0:15:00	2:30 PM	3:48 PM	0:15:00	4:03 PM	4:33 PM	return trip
	0:30:00	4:18 PM	4:48 PM	0:15:00	5:03 PM	6:09 PM	0:15:00	6:24 PM	6:39 PM	0:15:00	6:54 PM	8:12 PM	0:15:00	8:27 PM	8:57 PM	return trip
40	0:30:00	7:30 AM	7:45 AM	0:15:00	8:00 AM	8:33 AM	0:15:00	8:48 AM	8:55 AM	0:15:00	9:10 AM	9:49 AM	0:15:00	10:04 AM	10:19 AM	
	0:30:00	10:19 AM	10:34 AM	0:15:00	10:49 AM	11:22 AM	0:15:00	11:37 AM	11:45 AM	0:15:00	12:00 PM	12:39 PM	0:15:00	12:54 PM	1:09 PM	
	0:30:00	1:09 PM	1:24 PM	0:15:00	1:39 PM	2:12 PM	0:15:00	2:27 PM	2:34 PM	0:15:00	2:49 PM	3:28 PM	0:15:00	3:43 PM	3:58 PM	return trip
	0:30:00	3:58 PM	4:13 PM	0:15:00	4:28 PM	5:01 PM	0:15:00	5:16 PM	5:24 PM	0:15:00	5:39 PM	6:18 PM	0:15:00	6:33 PM	6:48 PM	return trip
60	0:30:00	7:30 AM	7:40 AM	0:15:00	7:55 AM	8:17 AM	0:15:00	8:32 AM	8:37 AM	0:15:00	8:52 AM	9:18 AM	0:15:00	9:33 AM	9:43 AM	
	0:30:00	9:48 AM	9:58 AM	0:15:00	10:13 AM	10:35 AM	0:15:00	10:50 AM	10:55 AM	0:15:00	11:10 AM	11:36 AM	0:15:00	11:51 AM	12:01 PM	
	0:30:00	12:06 PM	12:16 PM	0:15:00	12:31 PM	12:53 PM	0:15:00	1:08 PM	1:13 PM	0:15:00	1:28 PM	1:54 PM	0:15:00	2:09 PM	2:19 PM	
	0:30:00	2:24 PM	2:34 PM	0:15:00	2:49 PM	3:11 PM	0:15:00	3:26 PM	3:31 PM	0:15:00	3:46 PM	4:12 PM	0:15:00	4:27 PM	4:37 PM	return trip
	0:30:00	4:42 PM	4:52 PM	0:15:00	5:07 PM	5:29 PM	0:15:00	5:44 PM	5:49 PM	0:15:00	6:04 PM	6:30 PM	0:15:00	6:45 PM	6:55 PM	return trip

Assumed: 1nautical mile = 1 mile (1.0018 nautical mile /mile) 1knot = 1 mile/hour

* harbor speed restrictions are not factored into the travel times

"return trips" are ferry runs that cannot deliver passengers to a beach prior to 2PM; hence they are exclusively to provide transport back home

Table 3C – Regional Route Planning: Warren River/Rocky Point to RI State Beaches

WARREN RIVER & ROCKY POINT - High Speed Ferry Travel Distances — REGIONAL ROUTE to RI State Beaches only

		Depart Warren River	Arrive Rocky Point		Depart Rocky Point	Scarborough State Beach Arrive (miles)		Depart (miles)	Sand Hill Cove Arrive (miles)		Depart (miles)	Arrive Rocky Point		Depart Rocky Point	Arrive Warren River	
	Leg 1	0	5													
	Leg 2				0	22										
	Leg 3							0	5							
	Leg 4										0	26				
	Leg 5													0	5	**Total**
travel distance =>			5			22			5			26			5	58
knots	Docking, Boarding, Re-fueling, Launch (hh:mm:ss)			Docking, Boarding, Launch (hh:mm:ss)			Docking, Boarding, Launch (hh:mm:ss)			Docking, Boarding, Launch (hh:mm:ss)			Docking, Boarding, Launch (hh:mm:ss)			
20	0:30:00	7:30 AM	7:45 AM	0:15:00	8:00 AM	9:06 AM	0:15:00	9:21 AM	9:36 AM	0:15:00	9:51 AM	11:09 AM	0:15:00	11:24 AM	11:39 AM	
	0:30:00	11:39 AM	11:54 AM	0:15:00	12:09 PM	1:15 PM	0:15:00	1:30 PM	1:45 PM	0:15:00	2:00 PM	3:18 PM	0:15:00	3:33 PM	3:48 PM	return trip
	0:30:00	3:48 PM	4:03 PM	0:15:00	4:18 PM	5:24 PM	0:15:00	5:39 PM	5:54 PM	0:15:00	6:09 PM	7:27 PM	0:15:00	7:42 PM	7:57 PM	return trip
40	0:30:00	7:30 AM	7:37 AM	0:15:00	7:52 AM	8:25 AM	0:15:00	8:40 AM	8:48 AM	0:15:00	9:03 AM	9:42 AM	0:15:00	9:57 AM	10:04 AM	
	0:30:00	10:12 AM	10:19 AM	0:15:00	10:34 AM	11:07 AM	0:15:00	11:22 AM	11:30 AM	0:15:00	11:45 AM	12:24 PM	0:15:00	12:39 PM	12:46 PM	
	0:30:00	12:54 PM	1:01 PM	0:15:00	1:16 PM	1:49 PM	0:15:00	2:04 PM	2:12 PM	0:15:00	2:27 PM	3:06 PM	0:15:00	3:21 PM	3:28 PM	return trip
	0:30:00	3:36 PM	3:43 PM	0:15:00	3:58 PM	4:31 PM	0:15:00	4:46 PM	4:54 PM	0:15:00	5:09 PM	5:48 PM	0:15:00	6:03 PM	6:10 PM	return trip
60	0:30:00	7:30 AM	7:35 AM	0:15:00	7:50 AM	8:12 AM	0:15:00	8:27 AM	8:32 AM	0:15:00	8:47 AM	9:13 AM	0:15:00	9:28 AM	9:33 AM	
	0:30:00	9:43 AM	9:48 AM	0:15:00	10:03 AM	10:25 AM	0:15:00	10:40 AM	10:45 AM	0:15:00	11:00 AM	11:26 AM	0:15:00	11:41 AM	11:46 AM	
	0:30:00	11:56 AM	12:01 PM	0:15:00	12:16 PM	12:38 PM	0:15:00	12:53 PM	12:58 PM	0:15:00	1:13 PM	1:39 PM	0:15:00	1:54 PM	1:59 PM	
	0:30:00	2:09 PM	2:14 PM	0:15:00	2:29 PM	2:51 PM	0:15:00	3:06 PM	3:11 PM	0:15:00	3:26 PM	3:52 PM	0:15:00	4:07 PM	4:12 PM	return trip
	0:30:00	4:22 PM	4:27 PM	0:15:00	4:42 PM	5:04 PM	0:15:00	5:19 PM	5:24 PM	0:15:00	5:39 PM	6:05 PM	0:15:00	6:20 PM	6:25 PM	return trip
	0:30:00	6:35 PM	6:40 PM	0:15:00	6:55 PM	7:17 PM	0:15:00	7:32 PM	7:37 PM	0:15:00	7:52 PM	8:18 PM	0:15:00	8:33 PM	8:38 PM	return trip

Assumed: 1nautical mile = 1 mile (1.0018 nautical mile /mile) 1knot = 1 mile/hour

* harbor speed restrictions are not factored into the travel times

"return trips" are ferry runs that cannot deliver passengers to a beach prior to 2PM; hence they are exclusively to provide transport back home

Table 3D – Regional Route Planning: Warren River/Quonset Point to RI State Beaches

WARREN RIVER & QUONSET POINT - High Speed Ferry Travel Distances — REGIONAL ROUTE to RI State Beaches only

		Depart Warren River	Arrive Quonset Point		Depart Quonset Point	Scarborough State Beach Arrive (miles)		Depart (miles)	Sand Hill Cove Arrive (miles)		Depart (miles)	Arrive Quonset Point		Depart Quonset Point	Arrive Warren River	
	Leg 1	0	11													
	Leg 2				0	17										
	Leg 3							0	5							
	Leg 4										0	21				
	Leg 5													0	11	**Total**
	travel distance =>		11			17			5			21			11	54
knots	Docking, Boarding, Re-fueling, Launch (hh:mm:ss)			Docking, Boarding, Launch (hh:mm:ss)			Docking, Boarding, Launch (hh:mm:ss)			Docking, Boarding, Launch (hh:mm:ss)			Docking, Boarding, Launch (hh:mm:ss)			
20	0:30:00	7:30 AM	8:03 AM	0:15:00	8:18 AM	9:09 AM	0:15:00	9:24 AM	9:39 AM	0:15:00	9:54 AM	10:57 AM	0:15:00	11:12 AM	11:45 AM	
	0:30:00	11:27 AM	12:00 PM	0:15:00	12:15 PM	1:06 PM	0:15:00	1:21 PM	1:36 PM	0:15:00	1:51 PM	2:54 PM	0:15:00	3:09 PM	3:42 PM	return trip
	0:30:00	3:24 PM	3:57 PM	0:15:00	4:12 PM	5:03 PM	0:15:00	5:18 PM	5:33 PM	0:15:00	5:48 PM	6:51 PM	0:15:00	7:06 PM	7:39 PM	return trip
40	0:30:00	7:30 AM	7:46 AM	0:15:00	8:01 AM	8:27 AM	0:15:00	8:42 AM	8:49 AM	0:15:00	9:04 AM	9:36 AM	0:15:00	9:51 AM	10:07 AM	
	0:30:00	10:06 AM	10:22 AM	0:15:00	10:37 AM	11:03 AM	0:15:00	11:18 AM	11:25 AM	0:15:00	11:40 AM	12:12 PM	0:15:00	12:27 PM	12:43 PM	
	0:30:00	12:42 PM	12:58 PM	0:15:00	1:13 PM	1:39 PM	0:15:00	1:54 PM	2:01 PM	0:15:00	2:16 PM	2:48 PM	0:15:00	3:03 PM	3:19 PM	return trip
	0:30:00	3:18 PM	3:34 PM	0:15:00	3:49 PM	4:15 PM	0:15:00	4:30 PM	4:37 PM	0:15:00	4:52 PM	5:24 PM	0:15:00	5:39 PM	5:55 PM	return trip
	0:30:00	5:54 PM	6:10 PM	0:15:00	6:25 PM	6:51 PM	0:15:00	7:06 PM	7:13 PM	0:15:00	7:28 PM	8:00 PM	0:15:00	8:15 PM	8:31 PM	return trip
60	0:30:00	7:30 AM	7:41 AM	0:15:00	7:56 AM	8:13 AM	0:15:00	8:28 AM	8:33 AM	0:15:00	8:48 AM	9:09 AM	0:15:00	9:24 AM	9:35 AM	
	0:30:00	9:39 AM	9:50 AM	0:15:00	10:05 AM	10:22 AM	0:15:00	10:37 AM	10:42 AM	0:15:00	10:57 AM	11:18 AM	0:15:00	11:33 AM	11:44 AM	
	0:30:00	11:48 AM	11:59 AM	0:15:00	12:14 PM	12:31 PM	0:15:00	12:46 PM	12:51 PM	0:15:00	1:06 PM	1:27 PM	0:15:00	1:42 PM	1:53 PM	
	0:30:00	1:57 PM	2:08 PM	0:15:00	2:23 PM	2:40 PM	0:15:00	2:55 PM	3:00 PM	0:15:00	3:15 PM	3:36 PM	0:15:00	3:51 PM	4:02 PM	return trip
	0:30:00	4:06 PM	4:17 PM	0:15:00	4:32 PM	4:49 PM	0:15:00	5:04 PM	5:09 PM	0:15:00	5:24 PM	5:45 PM	0:15:00	6:00 PM	6:11 PM	return trip
	0:30:00	6:15 PM	6:26 PM	0:15:00	6:41 PM	6:58 PM	0:15:00	7:13 PM	7:18 PM	0:15:00	7:33 PM	7:54 PM	0:15:00	8:09 PM	8:20 PM	return trip

Assumed: 1nautical mile = 1 mile (1.0018 nautical mile /mile) 1knot = 1 mile/hour

* harbor speed restrictions are not factored into the travel times

"return trips" are ferry runs that cannot deliver passengers to a beach prior to 2PM; hence they are exclusively to provide transport back home

Table 3E – Regional Route Planning: Warren River/Rocky Point/Quonset Point to RI State Beaches

WARREN RIVER * ROCKY POINT * QUONSET POINT - High Speed Ferry Travel Distances — REGIONAL ROUTE to RI State Beaches only

	Depart Warren River	Arrive Rocky Point		Depart Rocky Point	Arrive Quonset Point		Depart Quonset Point	Scarborough State Beach Arrive (miles)		Depart (miles)	Sand Hill Cove Arrive (miles)		Depart (miles)	Arrive Quonset Point		Depart Quonset Point	Arrive Rocky Point		Depart Rocky Point	Arrive Warren River	
Leg 1	0	5		0	7																
Leg 2							0	17													
Leg 3										0	5										
Leg 4													0	21							
Leg 5																0	7		0	5	Total
travel distance =>		5			7			17			5			21			7			5	62
knots	Docking, Boarding, Re-fueling, Launch (hh:mm:ss)			Docking, Boarding, Launch (hh:mm:ss)			Docking, Boarding, Launch (hh:mm:ss)			Docking, Boarding, Launch (hh:mm:ss)			Docking, Boarding, Launch (hh:mm:ss)			Docking, Boarding, Launch (hh:mm:ss)			Docking, Boarding, Launch (hh:mm:ss)		
20	0:30:00	7:30 AM	7:45 AM	0:15:00	8:00 AM	5:40 AM	0:15:00	5:55 AM	6:46 AM	0:15:00	7:01 AM	7:16 AM	0:15:00	7:31 AM	8:34 AM	0:15:00	8:49 AM	9:10 AM	0:15:00	9:25 AM	9:40 AM	
	0:30:00	9:04 AM	9:19 AM	0:15:00	9:34 AM	7:15 AM	0:15:00	7:30 AM	8:21 AM	0:15:00	8:36 AM	8:51 AM	0:15:00	9:06 AM	10:09 AM	0:15:00	10:24 AM	10:45 AM	0:15:00	11:00 AM	11:15 AM	return trip
	0:30:00	10:39 AM	10:54 AM	0:15:00	11:09 AM	8:49 AM	0:15:00	9:04 AM	9:55 AM	0:15:00	10:10 AM	10:25 AM	0:15:00	10:40 AM	11:43 AM	0:15:00	11:58 AM	12:19 PM	0:15:00	12:34 PM	12:49 PM	return trip
40	0:30:00	7:30 AM	7:37 AM	0:15:00	7:52 AM	8:03 AM	0:15:00	8:18 AM	8:43 AM	0:15:00	8:58 AM	9:06 AM	0:15:00	9:21 AM	9:52 AM	0:15:00	10:07 AM	10:18 AM	0:15:00	10:33 AM	10:40 AM	
	0:30:00	10:22 AM	10:30 AM	0:15:00	10:45 AM	10:55 AM	0:15:00	11:10 AM	11:36 AM	0:15:00	11:51 AM	11:58 AM	0:15:00	12:13 PM	12:45 PM	0:15:00	1:00 PM	1:10 PM	0:15:00	1:25 PM	1:33 PM	
	0:30:00	1:15 PM	1:22 PM	0:15:00	1:37 PM	1:48 PM	0:15:00	2:03 PM	2:28 PM	0:15:00	2:43 PM	2:51 PM	0:15:00	3:06 PM	3:37 PM	0:15:00	3:52 PM	4:03 PM	0:15:00	4:18 PM	4:25 PM	return trip
	0:30:00	4:07 PM	4:15 PM	0:15:00	4:30 PM	4:40 PM	0:15:00	4:55 PM	5:21 PM	0:15:00	5:36 PM	5:43 PM	0:15:00	5:58 PM	6:30 PM	0:15:00	6:45 PM	6:55 PM	0:15:00	7:10 PM	7:18 PM	return trip
60	0:30:00	7:30 AM	7:35 AM	0:15:00	7:50 AM	7:57 AM	0:15:00	8:12 AM	8:29 AM	0:15:00	8:44 AM	8:49 AM	0:15:00	9:04 AM	9:25 AM	0:15:00	9:40 AM	9:47 AM	0:15:00	10:02 AM	10:07 AM	
	0:30:00	9:55 AM	10:00 AM	0:15:00	10:15 AM	10:22 AM	0:15:00	10:37 AM	10:54 AM	0:15:00	11:09 AM	11:14 AM	0:15:00	11:29 AM	11:50 AM	0:15:00	12:05 PM	12:12 PM	0:15:00	12:27 PM	12:32 PM	
	0:30:00	12:20 PM	12:25 PM	0:15:00	12:40 PM	12:47 PM	0:15:00	1:02 PM	1:19 PM	0:15:00	1:34 PM	1:39 PM	0:15:00	1:54 PM	2:15 PM	0:15:00	2:30 PM	2:37 PM	0:15:00	2:52 PM	2:57 PM	
	0:30:00	2:45 PM	2:50 PM	0:15:00	3:05 PM	3:12 PM	0:15:00	3:27 PM	3:44 PM	0:15:00	3:59 PM	4:04 PM	0:15:00	4:19 PM	4:40 PM	0:15:00	4:55 PM	5:02 PM	0:15:00	5:17 PM	5:22 PM	return trip
	0:30:00	5:10 PM	5:15 PM	0:15:00	5:30 PM	5:37 PM	0:15:00	5:52 PM	6:09 PM	0:15:00	6:24 PM	6:29 PM	0:15:00	6:44 PM	7:05 PM	0:15:00	7:20 PM	7:27 PM	0:15:00	7:42 PM	7:47 PM	return trip

Assumed: 1nautical mile = 1 mile (1.0018 nautical mile /mile) 1knot = 1 mile/hour

* harbor speed restrictions are not factored into the travel times

"return trips" are ferry runs that cannot deliver passengers to a beach prior to 2PM; hence they are exclusively to provide transport back home

Appendix 2 – Express Travel Distances & Time Schedules to Beach Loop

The Beach Service proposed in this report would involve the majority of paying customers paying for a roundtrip ticket. The following are examples of Express ferry routes serving to transport patrons directly to/from the Beach Loop:

Express Travel Distances & Time Schedules to Beach Loop (All Beaches)
Table 4A – Express Route Planning: India Point Park to Beach Loop (All Beaches)
Table 4B – Express Route Planning: Narragansett Landing to Beach Loop (All Beaches)
Table 4C – Express Route Planning: Rocky Point to Beach Loop (All Beaches)
Table 4D – Express Route Planning: Quonset Point to Beach Loop (All Beaches)
Table 4E – Express Route Planning: Warren River to Beach Loop (All Beaches)
Table 4F – Express Route Planning: Fall River to Beach Loop (All Beaches)

Express Travel Distances & Time Schedules to Beach Loop (Narragansett Beaches ONLY)
Table 5A – Express Route Planning: India Point Park to Beach Loop (Narragansett Beaches ONLY)
Table 5B – Express Route Planning: Narragansett Landing to Beach Loop (Narragansett Beaches ONLY)
Table 5C – Express Route Planning: Rocky Point to Beach Loop (Narragansett Beaches ONLY)
Table 5D – Express Route Planning: Quonset Point to Beach Loop (Narragansett Beaches ONLY)
Table 5E – Express Route Planning: Warren River to Beach Loop (Narragansett Beaches ONLY)
Table 5F – Express Route Planning: Fall River to Beach Loop (Narragansett Beaches ONLY)

Express Travel Distances & Time Schedules to Beach Loop (Rhode Island State Beaches ONLY)
Table 6A – Express Route Planning: India Point Park to Beach Loop (RI State Beaches ONLY)
Table 6B – Express Route Planning: Narragansett Landing to Beach Loop (RI State Beaches ONLY)
Table 6C – Express Route Planning: Rocky Point to Beach Loop (RI State Beaches ONLY)
Table 6D – Express Route Planning: Quonset Point to Beach Loop (RI State Beaches ONLY)
Table 6E – Express Route Planning: Warren River to Beach Loop (RI State Beaches ONLY)
Table 6F – Express Route Planning: Fall River to Beach Loop (RI State Beaches ONLY)

Table 4A – Express Route Planning: India Point Park to Beach Loop (ALL Beaches)

INDIA POINT PARK - High Speed Ferry Travel Distances — **BEACH EXPRESS**

	Depart India Point Park	Narragansett Town Beach Arrive (miles)		Depart (miles)	Scarborough State Beach Arrive (miles)		Depart (miles)	Sand Hill Cove Arrive (miles)		Depart (miles)	Easton's Beach Arrive (miles)		Depart (miles)	Arrive India Point Park	
Leg 1	0	30													
Leg 2				0	4										
Leg 3							0	5							
Leg 4										0	16				
Leg 5													0	36	**Total**
travel distance =>		30			4			5			16			36	91
knots	Docking, Boarding, Re-fueling, Launch (hh:mm:ss)			Docking, Boarding, Launch (hh:mm:ss)			Docking, Boarding, Launch (hh:mm:ss)			Docking, Boarding, Launch (hh:mm:ss)			Docking, Boarding, Launch (hh:mm:ss)		
20	0:30:00	7:30 AM	9:00 AM	0:15:00	9:15 AM	9:27 AM	0:15:00	9:42 AM	9:57 AM	0:15:00	10:12 AM	11:00 AM	0:15:00	11:15 AM	1:03 PM	
	0:30:00	1:33 PM	3:03 PM	0:15:00	3:18 PM	3:30 PM	0:15:00	3:45 PM	4:00 PM	0:15:00	4:15 PM	5:03 PM	0:15:00	5:18 PM	7:06 PM	return trip
	0:30:00	7:36 PM	9:06 PM	0:15:00	9:21 PM	9:33 PM	0:15:00	9:48 PM	10:03 PM	0:15:00	10:18 PM	11:06 PM	0:15:00	11:21 PM	1:09 AM	return trip
40	0:30:00	7:30 AM	8:15 AM	0:15:00	8:30 AM	8:36 AM	0:15:00	8:51 AM	8:58 AM	0:15:00	9:13 AM	9:37 AM	0:15:00	9:52 AM	10:46 AM	
	0:30:00	11:16 AM	12:01 PM	0:15:00	12:16 PM	12:22 PM	0:15:00	12:37 PM	12:45 PM	0:15:00	1:00 PM	1:24 PM	0:15:00	1:39 PM	2:33 PM	
	0:30:00	3:03 PM	3:48 PM	0:15:00	4:03 PM	4:09 PM	0:15:00	4:24 PM	4:31 PM	0:15:00	4:46 PM	5:10 PM	0:15:00	5:25 PM	6:19 PM	return trip
	0:30:00	6:49 PM	7:34 PM	0:15:00	7:49 PM	7:55 PM	0:15:00	8:10 PM	8:18 PM	0:15:00	8:33 PM	8:57 PM	0:15:00	9:12 PM	10:06 PM	return trip
60	0:30:00	7:30 AM	8:00 AM	0:15:00	8:15 AM	8:19 AM	0:15:00	8:34 AM	8:39 AM	0:15:00	8:54 AM	9:10 AM	0:15:00	9:25 AM	10:01 AM	
	0:30:00	10:31 AM	11:01 AM	0:15:00	11:16 AM	11:20 AM	0:15:00	11:35 AM	11:40 AM	0:15:00	11:55 AM	12:11 PM	0:15:00	12:26 PM	1:02 PM	
	0:30:00	1:32 PM	2:02 PM	0:15:00	2:17 PM	2:21 PM	0:15:00	2:36 PM	2:41 PM	0:15:00	2:56 PM	3:12 PM	0:15:00	3:27 PM	4:03 PM	
	0:30:00	4:33 PM	5:03 PM	0:15:00	5:18 PM	5:22 PM	0:15:00	5:37 PM	5:42 PM	0:15:00	5:57 PM	6:13 PM	0:15:00	6:28 PM	7:04 PM	return trip
	0:30:00	7:34 PM	8:04 PM	0:15:00	8:19 PM	8:23 PM	0:15:00	8:38 PM	8:43 PM	0:15:00	8:58 PM	9:14 PM	0:15:00	9:29 PM	10:05 PM	return trip

Assumed: 1nautical mile = 1 mile (1.0018 nautical mile /mile) 1knot = 1 mile/hour

* harbor speed restrictions are not factored into the travel times

"return trips" are ferry runs that cannot deliver passengers to a beach prior to 2PM; hence they are exclusively to provide transport back home

Table 4B – Express Route Planning: Narragansett Landing (Collier Point Park) to Beach Loop (ALL Beaches)

NARRAGANSETT LANDING - High Speed Ferry Travel Distances — BEACH EXPRESS

		Depart Narragansett Landing	Narragansett Town Beach Arrive (miles)		Depart (miles)	Scarborough State Beach Arrive (miles)		Depart (miles)	Sand Hill Cove Arrive (miles)		Depart (miles)	Easton's Beach Arrive (miles)		Depart (miles)	Arrive Narragansett Landing	
	Leg 1	0	30													
	Leg 2				0	4										
	Leg 3							0	5							
	Leg 4										0	16				
	Leg 5													0	36	**Total**
travel distance =>			30			4			5			16			36	91
knots	Docking, Boarding, Re-fueling, Launch (hh:mm:ss)			Docking, Boarding, Launch (hh:mm:ss)			Docking, Boarding, Launch (hh:mm:ss)			Docking, Boarding, Launch (hh:mm:ss)			Docking, Boarding, Launch (hh:mm:ss)			
20	0:30:00	7:30 AM	9:00 AM	0:15:00	9:15 AM	9:27 AM	0:15:00	9:42 AM	9:57 AM	0:15:00	10:12 AM	11:00 AM	0:15:00	11:15 AM	1:03 PM	
	0:30:00	1:33 PM	3:03 PM	0:15:00	3:18 PM	3:30 PM	0:15:00	3:45 PM	4:00 PM	0:15:00	4:15 PM	5:03 PM	0:15:00	5:18 PM	7:06 PM	return trip
	0:30:00	7:36 PM	9:06 PM	0:15:00	9:21 PM	9:33 PM	0:15:00	9:48 PM	10:03 PM	0:15:00	10:18 PM	11:06 PM	0:15:00	11:21 PM	1:09 AM	return trip
40	0:30:00	7:30 AM	8:15 AM	0:15:00	8:30 AM	8:36 AM	0:15:00	8:51 AM	8:58 AM	0:15:00	9:13 AM	9:37 AM	0:15:00	9:52 AM	10:46 AM	
	0:30:00	11:16 AM	12:01 PM	0:15:00	12:16 PM	12:22 PM	0:15:00	12:37 PM	12:45 PM	0:15:00	1:00 PM	1:24 PM	0:15:00	1:39 PM	2:33 PM	
	0:30:00	3:03 PM	3:48 PM	0:15:00	4:03 PM	4:09 PM	0:15:00	4:24 PM	4:31 PM	0:15:00	4:46 PM	5:10 PM	0:15:00	5:25 PM	6:19 PM	return trip
	0:30:00	6:49 PM	7:34 PM	0:15:00	7:49 PM	7:55 PM	0:15:00	8:10 PM	8:18 PM	0:15:00	8:33 PM	8:57 PM	0:15:00	9:12 PM	10:06 PM	return trip
60	0:30:00	7:30 AM	8:00 AM	0:15:00	8:15 AM	8:19 AM	0:15:00	8:34 AM	8:39 AM	0:15:00	8:54 AM	9:10 AM	0:15:00	9:25 AM	10:01 AM	
	0:30:00	10:31 AM	11:01 AM	0:15:00	11:16 AM	11:20 AM	0:15:00	11:35 AM	11:40 AM	0:15:00	11:55 AM	12:11 PM	0:15:00	12:26 PM	1:02 PM	
	0:30:00	1:32 PM	2:02 PM	0:15:00	2:17 PM	2:21 PM	0:15:00	2:36 PM	2:41 PM	0:15:00	2:56 PM	3:12 PM	0:15:00	3:27 PM	4:03 PM	
	0:30:00	4:33 PM	5:03 PM	0:15:00	5:18 PM	5:22 PM	0:15:00	5:37 PM	5:42 PM	0:15:00	5:57 PM	6:13 PM	0:15:00	6:28 PM	7:04 PM	return trip
	0:30:00	7:34 PM	8:04 PM	0:15:00	8:19 PM	8:23 PM	0:15:00	8:38 PM	8:43 PM	0:15:00	8:58 PM	9:14 PM	0:15:00	9:29 PM	10:05 PM	return trip

Assumed: 1nautical mile = 1 mile (1.0018 nautical mile /mile) 1knot = 1 mile/hour

* harbor speed restrictions are not factored into the travel times

"return trips" are ferry runs that cannot deliver passengers to a beach prior to 2PM; hence they are exclusively to provide transport back home

Table 4C – Express Route Planning: Rocky Point to Beach Loop (ALL Beaches)

ROCKY POINT - High Speed Ferry Travel Distances **BEACH EXPRESS**

		Depart Rocky Point	Narragansett Town Beach Arrive (miles)		Depart (miles)	Scarborough State Beach Arrive (miles)		Depart (miles)	Sand Hill Cove Arrive (miles)		Depart (miles)	Easton's Beach Arrive (miles)		Depart (miles)	Arrive Rocky Point	
	Leg 1	0	20													
	Leg 2				0	4										
	Leg 3							0	5							
	Leg 4										0	16				
	Leg 5													0	26	**Total**
	travel distance =>		20			4			5			16			26	71
knots	Docking, Boarding, Re-fueling, Launch (hh:mm:ss)			Docking, Boarding, Launch (hh:mm:ss)			Docking, Boarding, Launch (hh:mm:ss)			Docking, Boarding, Launch (hh:mm:ss)			Docking, Boarding, Launch (hh:mm:ss)			
20	0:30:00	7:30 AM	8:30 AM	0:15:00	8:45 AM	8:57 AM	0:15:00	9:12 AM	9:27 AM	0:15:00	9:42 AM	10:30 AM	0:15:00	10:45 AM	12:03 PM	
	0:30:00	12:33 PM	1:33 PM	0:15:00	1:48 PM	2:00 PM	0:15:00	2:15 PM	2:30 PM	0:15:00	2:45 PM	3:33 PM	0:15:00	3:48 PM	5:06 PM	return trip
	0:30:00	5:36 PM	6:36 PM	0:15:00	6:51 PM	7:03 PM	0:15:00	7:18 PM	7:33 PM	0:15:00	7:48 PM	8:36 PM	0:15:00	8:51 PM	10:09 PM	return trip
40	0:30:00	7:30 AM	8:00 AM	0:15:00	8:15 AM	8:21 AM	0:15:00	8:36 AM	8:43 AM	0:15:00	8:58 AM	9:22 AM	0:15:00	9:37 AM	10:16 AM	
	0:30:00	10:46 AM	11:16 AM	0:15:00	11:31 AM	11:37 AM	0:15:00	11:52 AM	12:00 PM	0:15:00	12:15 PM	12:39 PM	0:15:00	12:54 PM	1:33 PM	
	0:30:00	2:03 PM	2:33 PM	0:15:00	2:48 PM	2:54 PM	0:15:00	3:09 PM	3:16 PM	0:15:00	3:31 PM	3:55 PM	0:15:00	4:10 PM	4:49 PM	return trip
	0:30:00	5:19 PM	5:49 PM	0:15:00	6:04 PM	6:10 PM	0:15:00	6:25 PM	6:33 PM	0:15:00	6:48 PM	7:12 PM	0:15:00	7:27 PM	8:06 PM	return trip
60	0:30:00	7:30 AM	7:50 AM	0:15:00	8:05 AM	8:09 AM	0:15:00	8:24 AM	8:29 AM	0:15:00	8:44 AM	9:00 AM	0:15:00	9:15 AM	9:41 AM	
	0:30:00	10:11 AM	10:31 AM	0:15:00	10:46 AM	10:50 AM	0:15:00	11:05 AM	11:10 AM	0:15:00	11:25 AM	11:41 AM	0:15:00	11:56 AM	12:22 PM	
	0:30:00	12:52 PM	1:12 PM	0:15:00	1:27 PM	1:31 PM	0:15:00	1:46 PM	1:51 PM	0:15:00	2:06 PM	2:22 PM	0:15:00	2:37 PM	3:03 PM	
	0:30:00	3:33 PM	3:53 PM	0:15:00	4:08 PM	4:12 PM	0:15:00	4:27 PM	4:32 PM	0:15:00	4:47 PM	5:03 PM	0:15:00	5:18 PM	5:44 PM	return trip
	0:30:00	6:14 PM	6:34 PM	0:15:00	6:49 PM	6:53 PM	0:15:00	7:08 PM	7:13 PM	0:15:00	7:28 PM	7:44 PM	0:15:00	7:59 PM	8:25 PM	return trip

Assumed: 1nautical mile = 1 mile (1.0018 nautical mile /mile) 1knot = 1 mile/hour

* harbor speed restrictions are not factored into the travel times

"return trips" are ferry runs that cannot deliver passengers to a beach prior to 2PM; hence they are exclusively to provide transport back home

Table 4D – Express Route Planning: Quonset Point to Beach Loop (ALL Beaches)

QUONSET POINT - High Speed Ferry Travel Distances — BEACH EXPRESS

		Depart Quonset Point	Narragansett Town Beach Arrive		Depart (miles)	Scarborough State Beach Arrive		Depart (miles)	Sand Hill Cove Arrive		Depart (miles)	Easton's Beach Arrive		Depart (miles)	Arrive Quonset Point	
	Leg 1	0	14													
	Leg 2				0	4										
	Leg 3							0	5							
	Leg 4										0	16				
	Leg 5													0	21	**Total**
travel distance =>			14			4			5			16			21	60
knots	Docking, Boarding, Re-fueling, Launch (hh:mm:ss)			Docking, Boarding, Launch (hh:mm:ss)			Docking, Boarding, Launch (hh:mm:ss)			Docking, Boarding, Launch (hh:mm:ss)			Docking, Boarding, Launch (hh:mm:ss)			
20	0:30:00	7:30 AM	8:12 AM	0:15:00	8:27 AM	8:39 AM	0:15:00	8:54 AM	9:09 AM	0:15:00	9:24 AM	10:12 AM	0:15:00	10:27 AM	11:30 AM	
	0:30:00	12:00 PM	12:42 PM	0:15:00	12:57 PM	1:09 PM	0:15:00	1:24 PM	1:39 PM	0:15:00	1:54 PM	2:42 PM	0:15:00	2:57 PM	4:00 PM	return trip
	0:30:00	4:30 PM	5:12 PM	0:15:00	5:27 PM	5:39 PM	0:15:00	5:54 PM	6:09 PM	0:15:00	6:24 PM	7:12 PM	0:15:00	7:27 PM	8:30 PM	return trip
40	0:30:00	7:30 AM	7:51 AM	0:15:00	8:06 AM	8:12 AM	0:15:00	8:27 AM	8:34 AM	0:15:00	8:49 AM	9:13 AM	0:15:00	9:28 AM	10:00 AM	
	0:30:00	10:30 AM	10:51 AM	0:15:00	11:06 AM	11:12 AM	0:15:00	11:27 AM	11:34 AM	0:15:00	11:49 AM	12:13 PM	0:15:00	12:28 PM	1:00 PM	
	0:30:00	1:30 PM	1:51 PM	0:15:00	2:06 PM	2:12 PM	0:15:00	2:27 PM	2:34 PM	0:15:00	2:49 PM	3:13 PM	0:15:00	3:28 PM	4:00 PM	return trip
	0:30:00	4:30 PM	4:51 PM	0:15:00	5:06 PM	5:12 PM	0:15:00	5:27 PM	5:34 PM	0:15:00	5:49 PM	6:13 PM	0:15:00	6:28 PM	7:00 PM	return trip
60	0:30:00	7:30 AM	7:44 AM	0:15:00	7:59 AM	8:03 AM	0:15:00	8:18 AM	8:23 AM	0:15:00	8:38 AM	8:54 AM	0:15:00	9:09 AM	9:30 AM	
	0:30:00	10:00 AM	10:14 AM	0:15:00	10:29 AM	10:33 AM	0:15:00	10:48 AM	10:53 AM	0:15:00	11:08 AM	11:24 AM	0:15:00	11:39 AM	12:00 PM	
	0:30:00	12:30 PM	12:44 PM	0:15:00	12:59 PM	1:03 PM	0:15:00	1:18 PM	1:23 PM	0:15:00	1:38 PM	1:54 PM	0:15:00	2:09 PM	2:30 PM	
	0:30:00	3:00 PM	3:14 PM	0:15:00	3:29 PM	3:33 PM	0:15:00	3:48 PM	3:53 PM	0:15:00	4:08 PM	4:24 PM	0:15:00	4:39 PM	5:00 PM	return trip
	0:30:00	5:30 PM	5:44 PM	0:15:00	5:59 PM	6:03 PM	0:15:00	6:18 PM	6:23 PM	0:15:00	6:38 PM	6:54 PM	0:15:00	7:09 PM	7:30 PM	return trip

Assumed: 1nautical mile = 1 mile (1.0018 nautical mile /mile) 1knot = 1 mile/hour

* harbor speed restrictions are not factored into the travel times

"return trips" are ferry runs that cannot deliver passengers to a beach prior to 2PM; hence they are exclusively to provide transport back home

Table 4E – Express Route Planning: Warren River to Beach Loop (ALL Beaches)

WARREN RIVER - High Speed Ferry Travel Distances — BEACH EXPRESS

	Depart Warren River	Narragansett Town Beach Arrive (miles)		Depart (miles)	Scarborough State Beach Arrive (miles)		Depart (miles)	Sand Hill Cove Arrive (miles)		Depart (miles)	Easton's Beach Arrive (miles)		Depart (miles)	Arrive Warren River	
Leg 1	0	24													
Leg 2				0	4										
Leg 3							0	5							
Leg 4										0	16				
Leg 5													0	30	**Total**
travel distance =>		24			4			5			16			30	79
knots	Docking, Boarding, Re-fueling, Launch (hh:mm:ss)			Docking, Boarding, Launch (hh:mm:ss)			Docking, Boarding, Launch (hh:mm:ss)			Docking, Boarding, Launch (hh:mm:ss)			Docking, Boarding, Launch (hh:mm:ss)		
20	0:30:00	7:30 AM	8:42 AM	0:15:00	8:57 AM	9:09 AM	0:15:00	9:24 AM	9:39 AM	0:15:00	9:54 AM	10:42 AM	0:15:00	10:57 AM	12:27 PM	
	0:30:00	12:57 PM	2:09 PM	0:15:00	2:24 PM	2:36 PM	0:15:00	2:51 PM	3:06 PM	0:15:00	3:21 PM	4:09 PM	0:15:00	4:24 PM	5:54 PM	return trip
	0:30:00	6:24 PM	7:36 PM	0:15:00	7:51 PM	8:03 PM	0:15:00	8:18 PM	8:33 PM	0:15:00	8:48 PM	9:36 PM	0:15:00	9:51 PM	11:21 PM	return trip
40	0:30:00	7:30 AM	8:06 AM	0:15:00	8:21 AM	8:27 AM	0:15:00	8:42 AM	8:49 AM	0:15:00	9:04 AM	9:28 AM	0:15:00	9:43 AM	10:28 AM	
	0:30:00	10:58 AM	11:34 AM	0:15:00	11:49 AM	11:55 AM	0:15:00	12:10 PM	12:18 PM	0:15:00	12:33 PM	12:57 PM	0:15:00	1:12 PM	1:57 PM	
	0:30:00	2:27 PM	3:03 PM	0:15:00	3:18 PM	3:24 PM	0:15:00	3:39 PM	3:46 PM	0:15:00	4:01 PM	4:25 PM	0:15:00	4:40 PM	5:25 PM	return trip
	0:30:00	5:55 PM	6:31 PM	0:15:00	6:46 PM	6:52 PM	0:15:00	7:07 PM	7:15 PM	0:15:00	7:30 PM	7:54 PM	0:15:00	8:09 PM	8:54 PM	return trip
60	0:30:00	7:30 AM	7:54 AM	0:15:00	8:09 AM	8:13 AM	0:15:00	8:28 AM	8:33 AM	0:15:00	8:48 AM	9:04 AM	0:15:00	9:19 AM	9:49 AM	
	0:30:00	10:19 AM	10:43 AM	0:15:00	10:58 AM	11:02 AM	0:15:00	11:17 AM	11:22 AM	0:15:00	11:37 AM	11:53 AM	0:15:00	12:08 PM	12:38 PM	
	0:30:00	1:08 PM	1:32 PM	0:15:00	1:47 PM	1:51 PM	0:15:00	2:06 PM	2:11 PM	0:15:00	2:26 PM	2:42 PM	0:15:00	2:57 PM	3:27 PM	
	0:30:00	3:57 PM	4:21 PM	0:15:00	4:36 PM	4:40 PM	0:15:00	4:55 PM	5:00 PM	0:15:00	5:15 PM	5:31 PM	0:15:00	5:46 PM	6:16 PM	return trip
	0:30:00	6:46 PM	7:10 PM	0:15:00	7:25 PM	7:29 PM	0:15:00	7:44 PM	7:49 PM	0:15:00	8:04 PM	8:20 PM	0:15:00	8:35 PM	9:05 PM	return trip

Assumed: 1nautical mile = 1 mile (1.0018 nautical mile /mile) 1knot = 1 mile/hour

* harbor speed restrictions are not factored into the travel times

"return trips" are ferry runs that cannot deliver passengers to a beach prior to 2PM; hence they are exclusively to provide transport back home

Table 4F – Express Route Planning: Fall River to Beach Loop (ALL Beaches)

FALL RIVER - High Speed Ferry Travel Distances — **BEACH EXPRESS**

		Depart	Narragansett Town Beach			Scarborough State Beach			Sand Hill Cove			Easton's Beach			Arrive	
		Fall River	Arrive (miles)		Depart (miles)	Arrive (miles)		Depart (miles)	Arrive (miles)		Depart (miles)	Arrive (miles)		Depart (miles)	Fall River	
	Leg 1	0	29													
	Leg 2				0	4										
	Leg 3							0	5							
	Leg 4										0	16				
	Leg 5													0	35	**Total**
	travel distance =>		29			4			5			16			35	89
knots	Docking, Boarding, Re-fueling, Launch (hh:mm:ss)			Docking, Boarding, Launch (hh:mm:ss)			Docking, Boarding, Launch (hh:mm:ss)			Docking, Boarding, Launch (hh:mm:ss)			Docking, Boarding, Launch (hh:mm:ss)			
20	0:30:00	7:30 AM	8:57 AM	0:15:00	9:12 AM	9:24 AM	0:15:00	9:39 AM	9:54 AM	0:15:00	10:09 AM	10:57 AM	0:15:00	11:12 AM	12:57 PM	
	0:30:00	1:27 PM	2:54 PM	0:15:00	3:09 PM	3:21 PM	0:15:00	3:36 PM	3:51 PM	0:15:00	4:06 PM	4:54 PM	0:15:00	5:09 PM	6:54 PM	return trip
40	0:30:00	7:30 AM	8:13 AM	0:15:00	8:28 AM	8:34 AM	0:15:00	8:49 AM	8:57 AM	0:15:00	9:12 AM	9:36 AM	0:15:00	9:51 AM	10:43 AM	
	0:30:00	11:13 AM	11:57 AM	0:15:00	12:12 PM	12:18 PM	0:15:00	12:33 PM	12:40 PM	0:15:00	12:55 PM	1:19 PM	0:15:00	1:34 PM	2:27 PM	
	0:30:00	2:57 PM	3:40 PM	0:15:00	3:55 PM	4:01 PM	0:15:00	4:16 PM	4:24 PM	0:15:00	4:39 PM	5:03 PM	0:15:00	5:18 PM	6:10 PM	return trip
	0:30:00	6:40 PM	7:24 PM	0:15:00	7:39 PM	7:45 PM	0:15:00	8:00 PM	8:07 PM	0:15:00	8:22 PM	8:46 PM	0:15:00	9:01 PM	9:54 PM	return trip
60	0:30:00	7:30 AM	7:59 AM	0:15:00	8:14 AM	8:18 AM	0:15:00	8:33 AM	8:38 AM	0:15:00	8:53 AM	9:09 AM	0:15:00	9:24 AM	9:59 AM	
	0:30:00	10:29 AM	10:58 AM	0:15:00	11:13 AM	11:17 AM	0:15:00	11:32 AM	11:37 AM	0:15:00	11:52 AM	12:08 PM	0:15:00	12:23 PM	12:58 PM	
	0:30:00	1:28 PM	1:57 PM	0:15:00	2:12 PM	2:16 PM	0:15:00	2:31 PM	2:36 PM	0:15:00	2:51 PM	3:07 PM	0:15:00	3:22 PM	3:57 PM	
	0:30:00	4:27 PM	4:56 PM	0:15:00	5:11 PM	5:15 PM	0:15:00	5:30 PM	5:35 PM	0:15:00	5:50 PM	6:06 PM	0:15:00	6:21 PM	6:56 PM	return trip
	0:30:00	7:26 PM	7:55 PM	0:15:00	8:10 PM	8:14 PM	0:15:00	8:29 PM	8:34 PM	0:15:00	8:49 PM	9:05 PM	0:15:00	9:20 PM	9:55 PM	return trip

Assumed: 1nautical mile = 1 mile (1.0018 nautical mile /mile) 1knot = 1 mile/hour

* harbor speed restrictions are not factored into the travel times

"return trips" are ferry runs that cannot deliver passengers to a beach prior to 2PM; hence they are exclusively to provide transport back home

Table 5A – Express Route Planning: India Point Park to Beach Loop (Narragansett Beaches Only)

INDIA POINT PARK - High Speed Ferry Travel Distances — **Narragansett Beaches Only EXPRESS**

	Depart	Narragansett Town Beach		Scarborough State Beach			Sand Hill Cove			Arrive	
	India Point Park	Arrive (miles)		Depart (miles)	Arrive (miles)		Depart (miles)	Arrive (miles)		Depart (miles)	India Point Park	
Leg 1	0	30										
Leg 2				0	4							
Leg 3							0	5				
Leg 4										0		
Leg 5											36	**Total**
travel distance =>		30			4			5			36	75
knots	Docking, Boarding, Re-fueling, Launch (hh:mm:ss)			Docking, Boarding, Launch (hh:mm:ss)		Docking, Boarding, Launch (hh:mm:ss)			Docking, Boarding, Launch (hh:mm:ss)			
20	0:30:00	7:30 AM	9:00 AM	0:15:00	9:15 AM	9:27 AM	0:15:00	9:42 AM	9:57 AM	0:15:00	10:12 AM	12:00 PM	
	0:30:00	12:30 PM	2:00 PM	0:15:00	2:15 PM	2:27 PM	0:15:00	2:42 PM	2:57 PM	0:15:00	3:12 PM	5:00 PM	return trip
	0:30:00	5:30 PM	7:00 PM	0:15:00	7:15 PM	7:27 PM	0:15:00	7:42 PM	7:57 PM	0:15:00	8:12 PM	10:00 PM	return trip
40	0:30:00	7:30 AM	8:15 AM	0:15:00	8:30 AM	8:36 AM	0:15:00	8:51 AM	8:58 AM	0:15:00	9:13 AM	10:07 AM	
	0:30:00	10:37 AM	11:22 AM	0:15:00	11:37 AM	11:43 AM	0:15:00	11:58 AM	12:06 PM	0:15:00	12:21 PM	1:15 PM	
	0:30:00	1:45 PM	2:30 PM	0:15:00	2:45 PM	2:51 PM	0:15:00	3:06 PM	3:13 PM	0:15:00	3:28 PM	4:22 PM	return trip
	0:30:00	4:52 PM	5:37 PM	0:15:00	5:52 PM	5:58 PM	0:15:00	6:13 PM	6:21 PM	0:15:00	6:36 PM	7:30 PM	return trip
60	0:30:00	7:30 AM	8:00 AM	0:15:00	8:15 AM	8:19 AM	0:15:00	8:34 AM	8:39 AM	0:15:00	8:54 AM	9:30 AM	
	0:30:00	10:00 AM	10:30 AM	0:15:00	10:45 AM	10:49 AM	0:15:00	11:04 AM	11:09 AM	0:15:00	11:24 AM	12:00 PM	
	0:30:00	12:30 PM	1:00 PM	0:15:00	1:15 PM	1:19 PM	0:15:00	1:34 PM	1:39 PM	0:15:00	1:54 PM	2:30 PM	
	0:30:00	3:00 PM	3:30 PM	0:15:00	3:45 PM	3:49 PM	0:15:00	4:04 PM	4:09 PM	0:15:00	4:24 PM	5:00 PM	return trip
	0:30:00	5:30 PM	6:00 PM	0:15:00	6:15 PM	6:19 PM	0:15:00	6:34 PM	6:39 PM	0:15:00	6:54 PM	7:30 PM	return trip

Assumed: 1nautical mile = 1 mile (1.0018 nautical mile /mile) 1knot = 1 mile/hour

* harbor speed restrictions are not factored into the travel times

"return trips" are ferry runs that cannot deliver passengers to a beach prior to 2PM; hence they are exclusively to provide transport back home

Table 5B – Express Route Planning: Narr Landing (Collier Point Park) to Beach Loop (Narr Beaches Only)

NARRAGANSETT LANDING - High Speed Ferry Travel Distances — **Narragansett Beaches Only EXPRESS**

		Depart Narragansett Landing	Narragansett Town Beach Arrive (miles)		Depart (miles)	Scarborough State Beach Arrive (miles)		Depart (miles)	Sand Hill Cove Arrive (miles)		Depart (miles)	Arrive Narragansett Landing	
	Leg 1	0	30										
	Leg 2				0	4							
	Leg 3							0	5				
	Leg 4										0		
	Leg 5											36	**Total**
	travel distance =>		30			4			5			36	75
knots	Docking, Boarding, Re-fueling, Launch (hh:mm:ss)			Docking, Boarding, Launch (hh:mm:ss)			Docking, Boarding, Launch (hh:mm:ss)			Docking, Boarding, Launch (hh:mm:ss)			
20	0:30:00	7:30 AM	9:00 AM	0:15:00	9:15 AM	9:27 AM	0:15:00	9:42 AM	9:57 AM	0:15:00	10:12 AM	12:00 PM	
	0:30:00	12:30 PM	2:00 PM	0:15:00	2:15 PM	2:27 PM	0:15:00	2:42 PM	2:57 PM	0:15:00	3:12 PM	5:00 PM	return trip
	0:30:00	5:30 PM	7:00 PM	0:15:00	7:15 PM	7:27 PM	0:15:00	7:42 PM	7:57 PM	0:15:00	8:12 PM	10:00 PM	return trip
40	0:30:00	7:30 AM	8:15 AM	0:15:00	8:30 AM	8:36 AM	0:15:00	8:51 AM	8:58 AM	0:15:00	9:13 AM	10:07 AM	
	0:30:00	10:37 AM	11:22 AM	0:15:00	11:37 AM	11:43 AM	0:15:00	11:58 AM	12:06 PM	0:15:00	12:21 PM	1:15 PM	
	0:30:00	1:45 PM	2:30 PM	0:15:00	2:45 PM	2:51 PM	0:15:00	3:06 PM	3:13 PM	0:15:00	3:28 PM	4:22 PM	return trip
	0:30:00	4:52 PM	5:37 PM	0:15:00	5:52 PM	5:58 PM	0:15:00	6:13 PM	6:21 PM	0:15:00	6:36 PM	7:30 PM	return trip
60	0:30:00	7:30 AM	8:00 AM	0:15:00	8:15 AM	8:19 AM	0:15:00	8:34 AM	8:39 AM	0:15:00	8:54 AM	9:30 AM	
	0:30:00	10:00 AM	10:30 AM	0:15:00	10:45 AM	10:49 AM	0:15:00	11:04 AM	11:09 AM	0:15:00	11:24 AM	12:00 PM	
	0:30:00	12:30 PM	1:00 PM	0:15:00	1:15 PM	1:19 PM	0:15:00	1:34 PM	1:39 PM	0:15:00	1:54 PM	2:30 PM	
	0:30:00	3:00 PM	3:30 PM	0:15:00	3:45 PM	3:49 PM	0:15:00	4:04 PM	4:09 PM	0:15:00	4:24 PM	5:00 PM	return trip
	0:30:00	5:30 PM	6:00 PM	0:15:00	6:15 PM	6:19 PM	0:15:00	6:34 PM	6:39 PM	0:15:00	6:54 PM	7:30 PM	return trip

Assumed: 1nautical mile = 1 mile (1.0018 nautical mile /mile) 1knot = 1 mile/hour

* harbor speed restrictions are not factored into the travel times

"return trips" are ferry runs that cannot deliver passengers to a beach prior to 2PM; hence they are exclusively to provide transport back home

Table 5C – Express Route Planning: Rocky Point to Beach Loop (Narragansett Beaches Only)

ROCKY POINT - High Speed Ferry Travel Distances — **Narragansett Beaches Only EXPRESS**

		Depart Rocky Point	Narragansett Town Beach Arrive (miles)		Depart (miles)	Scarborough State Beach Arrive (miles)		Depart (miles)	Sand Hill Cove Arrive (miles)		Depart (miles)	Arrive Rocky Point	
Leg 1		0	20										
Leg 2					0	4							
Leg 3								0	5				
Leg 4											0		
Leg 5												26	Total
travel distance =>			20			4			5			26	55
knots	Docking, Boarding, Re-fueling, Launch (hh:mm:ss)			Docking, Boarding, Launch (hh:mm:ss)			Docking, Boarding, Launch (hh:mm:ss)			Docking, Boarding, Launch (hh:mm:ss)			
20	0:30:00	7:30 AM	8:30 AM	0:15:00	8:45 AM	8:57 AM	0:15:00	9:12 AM	9:27 AM	0:15:00	9:42 AM	11:00 AM	
	0:30:00	11:30 AM	12:30 PM	0:15:00	12:45 PM	12:57 PM	0:15:00	1:12 PM	1:27 PM	0:15:00	1:42 PM	3:00 PM	return trip
	0:30:00	3:30 PM	4:30 PM	0:15:00	4:45 PM	4:57 PM	0:15:00	5:12 PM	5:27 PM	0:15:00	5:42 PM	7:00 PM	return trip
40	0:30:00	7:30 AM	8:00 AM	0:15:00	8:15 AM	8:21 AM	0:15:00	8:36 AM	8:43 AM	0:15:00	8:58 AM	9:37 AM	
	0:30:00	10:07 AM	10:37 AM	0:15:00	10:52 AM	10:58 AM	0:15:00	11:13 AM	11:21 AM	0:15:00	11:36 AM	12:15 PM	
	0:30:00	12:45 PM	1:15 PM	0:15:00	1:30 PM	1:36 PM	0:15:00	1:51 PM	1:58 PM	0:15:00	2:13 PM	2:52 PM	return trip
	0:30:00	3:22 PM	3:52 PM	0:15:00	4:07 PM	4:13 PM	0:15:00	4:28 PM	4:36 PM	0:15:00	4:51 PM	5:30 PM	return trip
60	0:30:00	7:30 AM	7:50 AM	0:15:00	8:05 AM	8:09 AM	0:15:00	8:24 AM	8:29 AM	0:15:00	8:44 AM	9:10 AM	
	0:30:00	9:40 AM	10:00 AM	0:15:00	10:15 AM	10:19 AM	0:15:00	10:34 AM	10:39 AM	0:15:00	10:54 AM	11:20 AM	
	0:30:00	11:50 AM	12:10 PM	0:15:00	12:25 PM	12:29 PM	0:15:00	12:44 PM	12:49 PM	0:15:00	1:04 PM	1:30 PM	
	0:30:00	2:00 PM	2:20 PM	0:15:00	2:35 PM	2:39 PM	0:15:00	2:54 PM	2:59 PM	0:15:00	3:14 PM	3:40 PM	return trip
	0:30:00	4:10 PM	4:30 PM	0:15:00	4:45 PM	4:49 PM	0:15:00	5:04 PM	5:09 PM	0:15:00	5:24 PM	5:50 PM	return trip

Assumed: 1nautical mile = 1 mile (1.0018 nautical mile /mile) 1knot = 1 mile/hour

* harbor speed restrictions are not factored into the travel times

"return trips" are ferry runs that cannot deliver passengers to a beach prior to 2PM; hence they are exclusively to provide transport back home

Table 5D – Express Route Planning: Quonset Point to Beach Loop (Narraganett Beaches Only)

QUONSET POINT - High Speed Ferry Travel Distances — **Narragansett Beaches Only EXPRESS**

		Depart Quonset Point	Narragansett Town Beach Arrive		Depart	Scarborough State Beach Arrive		Depart	Sand Hill Cove Arrive		Depart	Arrive Quonset Point	
			(miles)		(miles)	(miles)		(miles)	(miles)		(miles)		
	Leg 1	0	14										
	Leg 2				0	4							
	Leg 3							0	5				
	Leg 4										0	21	
	Leg 5												**Total**
travel distance =>			14			4			5			21	44
knots	Docking, Boarding, Re-fueling, Launch (hh:mm:ss)			Docking, Boarding, Launch (hh:mm:ss)			Docking, Boarding, Launch (hh:mm:ss)			Docking, Boarding, Launch (hh:mm:ss)			
20	0:30:00	7:30 AM	8:12 AM	0:15:00	8:27 AM	8:39 AM	0:15:00	8:54 AM	9:09 AM	0:15:00	9:24 AM	10:27 AM	
	0:30:00	10:57 AM	11:39 AM	0:15:00	11:54 AM	12:06 PM	0:15:00	12:21 PM	12:36 PM	0:15:00	12:51 PM	1:54 PM	
	0:30:00	2:24 PM	3:06 PM	0:15:00	3:21 PM	3:33 PM	0:15:00	3:48 PM	4:03 PM	0:15:00	4:18 PM	5:21 PM	return trip
40	0:30:00	7:30 AM	7:51 AM	0:15:00	8:06 AM	8:12 AM	0:15:00	8:27 AM	8:34 AM	0:15:00	8:49 AM	9:21 AM	
	0:30:00	9:51 AM	10:12 AM	0:15:00	10:27 AM	10:33 AM	0:15:00	10:48 AM	10:55 AM	0:15:00	11:10 AM	11:42 AM	
	0:30:00	12:12 PM	12:33 PM	0:15:00	12:48 PM	12:54 PM	0:15:00	1:09 PM	1:16 PM	0:15:00	1:31 PM	2:03 PM	
	0:30:00	2:33 PM	2:54 PM	0:15:00	3:09 PM	3:15 PM	0:15:00	3:30 PM	3:37 PM	0:15:00	3:52 PM	4:24 PM	return trip
60	0:30:00	7:30 AM	7:44 AM	0:15:00	7:59 AM	8:03 AM	0:15:00	8:18 AM	8:23 AM	0:15:00	8:38 AM	8:59 AM	
	0:30:00	9:29 AM	9:43 AM	0:15:00	9:58 AM	10:02 AM	0:15:00	10:17 AM	10:22 AM	0:15:00	10:37 AM	10:58 AM	
	0:30:00	11:28 AM	11:42 AM	0:15:00	11:57 AM	12:01 PM	0:15:00	12:16 PM	12:21 PM	0:15:00	12:36 PM	12:57 PM	
	0:30:00	1:27 PM	1:41 PM	0:15:00	1:56 PM	2:00 PM	0:15:00	2:15 PM	2:20 PM	0:15:00	2:35 PM	2:56 PM	
	0:30:00	3:26 PM	3:40 PM	0:15:00	3:55 PM	3:59 PM	0:15:00	4:14 PM	4:19 PM	0:15:00	4:34 PM	4:55 PM	return trip

Assumed: 1nautical mile = 1 mile (1.0018 nautical mile /mile) 1knot = 1 mile/hour

* harbor speed restrictions are not factored into the travel times

"return trips" are ferry runs that cannot deliver passengers to a beach prior to 2PM; hence they are exclusively to provide transport back home

Table 5E – Express Route Planning: Warren River to Beach Loop (Narragansett Beaches Only)

WARREN RIVER - High Speed Ferry Travel Distances — **Narragansett Beaches Only EXPRESS**

	Depart Warren River	Narragansett Town Beach Arrive (miles)		Depart (miles)	Scarborough State Beach Arrive (miles)		Depart (miles)	Sand Hill Cove Arrive (miles)		Depart (miles)	Arrive Warren River	
Leg 1	0	24										
Leg 2				0	4							
Leg 3							0	5				
Leg 4										0		
Leg 5											30	**Total**
travel distance =>		24			4			5			30	63
knots	Docking, Boarding, Re-fueling, Launch (hh:mm:ss)			Docking, Boarding, Launch (hh:mm:ss)			Docking, Boarding, Launch (hh:mm:ss)			Docking, Boarding, Launch (hh:mm:ss)		
20	0:30:00	7:30 AM	8:42 AM	0:15:00	8:57 AM	9:09 AM	0:15:00	9:24 AM	9:39 AM	0:15:00	9:54 AM	11:24 AM	
	0:30:00	11:54 AM	1:06 PM	0:15:00	1:21 PM	1:33 PM	0:15:00	1:48 PM	2:03 PM	0:15:00	2:18 PM	3:48 PM	return trip
	0:30:00	4:18 PM	5:30 PM	0:15:00	5:45 PM	5:57 PM	0:15:00	6:12 PM	6:27 PM	0:15:00	6:42 PM	8:12 PM	return trip
40	0:30:00	7:30 AM	8:06 AM	0:15:00	8:21 AM	8:27 AM	0:15:00	8:42 AM	8:49 AM	0:15:00	9:04 AM	9:49 AM	
	0:30:00	10:19 AM	10:55 AM	0:15:00	11:10 AM	11:16 AM	0:15:00	11:31 AM	11:39 AM	0:15:00	11:54 AM	12:39 PM	
	0:30:00	1:09 PM	1:45 PM	0:15:00	2:00 PM	2:06 PM	0:15:00	2:21 PM	2:28 PM	0:15:00	2:43 PM	3:28 PM	return trip
	0:30:00	3:58 PM	4:34 PM	0:15:00	4:49 PM	4:55 PM	0:15:00	5:10 PM	5:18 PM	0:15:00	5:33 PM	6:18 PM	return trip
60	0:30:00	7:30 AM	7:54 AM	0:15:00	8:09 AM	8:13 AM	0:15:00	8:28 AM	8:33 AM	0:15:00	8:48 AM	9:18 AM	
	0:30:00	9:48 AM	10:12 AM	0:15:00	10:27 AM	10:31 AM	0:15:00	10:46 AM	10:51 AM	0:15:00	11:06 AM	11:36 AM	
	0:30:00	12:06 PM	12:30 PM	0:15:00	12:45 PM	12:49 PM	0:15:00	1:04 PM	1:09 PM	0:15:00	1:24 PM	1:54 PM	
	0:30:00	2:24 PM	2:48 PM	0:15:00	3:03 PM	3:07 PM	0:15:00	3:22 PM	3:27 PM	0:15:00	3:42 PM	4:12 PM	return trip
	0:30:00	4:42 PM	5:06 PM	0:15:00	5:21 PM	5:25 PM	0:15:00	5:40 PM	5:45 PM	0:15:00	6:00 PM	6:30 PM	return trip

Assumed: 1nautical mile = 1 mile (1.0018 nautical mile /mile) 1knot = 1 mile/hour

* harbor speed restrictions are not factored into the travel times

"return trips" are ferry runs that cannot deliver passengers to a beach prior to 2PM; hence they are exclusively to provide transport back home

Table 5F – Express Route Planning: Fall River to Beach Loop (Narragansett Beaches Only)

FALL RIVER - High Speed Ferry Travel Distances — **Narragansett Beaches Only EXPRESS**

	Depart Fall River	Narragansett Town Beach Arrive (miles)		Depart (miles)	Scarborough State Beach Arrive (miles)		Depart (miles)	Sand Hill Cove Arrive (miles)		Depart (miles)	Arrive Fall River	
Leg 1	0	29										
Leg 2				0	4							
Leg 3							0	5				
Leg 4										0		
Leg 5											35	**Total**
travel distance =>		29			4			5			35	73
knots	Docking, Boarding, Re-fueling, Launch (hh:mm:ss)			Docking, Boarding, Launch (hh:mm:ss)			Docking, Boarding, Launch (hh:mm:ss)			Docking, Boarding, Launch (hh:mm:ss)		
20	0:30:00	7:30 AM	8:57 AM	0:15:00	9:12 AM	9:24 AM	0:15:00	9:39 AM	9:54 AM	0:15:00	10:09 AM	11:54 AM	
	0:30:00	12:24 PM	1:51 PM	0:15:00	2:06 PM	2:18 PM	0:15:00	2:33 PM	2:48 PM	0:15:00	3:03 PM	4:48 PM	return trip
40	0:30:00	7:30 AM	8:13 AM	0:15:00	8:28 AM	8:34 AM	0:15:00	8:49 AM	8:57 AM	0:15:00	9:12 AM	10:04 AM	
	0:30:00	10:34 AM	11:18 AM	0:15:00	11:33 AM	11:39 AM	0:15:00	11:54 AM	12:01 PM	0:15:00	12:16 PM	1:09 PM	
	0:30:00	1:39 PM	2:22 PM	0:15:00	2:37 PM	2:43 PM	0:15:00	2:58 PM	3:06 PM	0:15:00	3:21 PM	4:13 PM	return trip
	0:30:00	4:43 PM	5:27 PM	0:15:00	5:42 PM	5:48 PM	0:15:00	6:03 PM	6:10 PM	0:15:00	6:25 PM	7:18 PM	return trip
60	0:30:00	7:30 AM	7:59 AM	0:15:00	8:14 AM	8:18 AM	0:15:00	8:33 AM	8:38 AM	0:15:00	8:53 AM	9:28 AM	
	0:30:00	9:58 AM	10:27 AM	0:15:00	10:42 AM	10:46 AM	0:15:00	11:01 AM	11:06 AM	0:15:00	11:21 AM	11:56 AM	
	0:30:00	12:26 PM	12:55 PM	0:15:00	1:10 PM	1:14 PM	0:15:00	1:29 PM	1:34 PM	0:15:00	1:49 PM	2:24 PM	
	0:30:00	2:54 PM	3:23 PM	0:15:00	3:38 PM	3:42 PM	0:15:00	3:57 PM	4:02 PM	0:15:00	4:17 PM	4:52 PM	return trip
	0:30:00	5:22 PM	5:51 PM	0:15:00	6:06 PM	6:10 PM	0:15:00	6:25 PM	6:30 PM	0:15:00	6:45 PM	7:20 PM	return trip

Assumed: 1nautical mile = 1 mile (1.0018 nautical mile /mile) 1knot = 1 mile/hour

* harbor speed restrictions are not factored into the travel times

"return trips" are ferry runs that cannot deliver passengers to a beach prior to 2PM; hence they are exclusively to provide transport back home

Table 6A – Express Route Planning: India Point Park to Beach Loop (RI State Beaches Only)

INDIA POINT PARK - High Speed Ferry Travel Distances — **RI State Beaches Only EXPRESS**

		Depart India Point Park	Scarborough State Beach Arrive (miles)		Depart (miles)	Sand Hill Cove Arrive (miles)		Depart (miles)	Arrive India Point Park	
	Leg 1	0	32							
	Leg 2				0	5				
	Leg 3									
	Leg 4									
	Leg 5							0	36	**Total**
	travel distance =>		32			5			36	73
knots	Docking, Boarding, Re-fueling, Launch (hh:mm:ss)			Docking, Boarding, Launch (hh:mm:ss)			Docking, Boarding, Launch (hh:mm:ss)			
20	0:30:00	7:30 AM	9:06 AM	0:15:00	9:21 AM	9:36 AM	0:15:00	9:51 AM	11:39 AM	
	0:30:00	12:09 PM	1:45 PM	0:15:00	2:00 PM	2:15 PM	0:15:00	2:30 PM	4:18 PM	
	0:30:00	4:48 PM	6:24 PM	0:15:00	6:39 PM	6:54 PM	0:15:00	7:09 PM	8:57 PM	return trip
40	0:30:00	7:30 AM	8:18 AM	0:15:00	8:33 AM	8:40 AM	0:15:00	8:55 AM	9:49 AM	
	0:30:00	10:19 AM	11:07 AM	0:15:00	11:22 AM	11:30 AM	0:15:00	11:45 AM	12:39 PM	
	0:30:00	1:09 PM	1:57 PM	0:15:00	2:12 PM	2:19 PM	0:15:00	2:34 PM	3:28 PM	
	0:30:00	3:58 PM	4:46 PM	0:15:00	5:01 PM	5:09 PM	0:15:00	5:24 PM	6:18 PM	return trip
60	0:30:00	7:30 AM	8:02 AM	0:15:00	8:17 AM	8:22 AM	0:15:00	8:37 AM	9:13 AM	
	0:30:00	9:43 AM	10:15 AM	0:15:00	10:30 AM	10:35 AM	0:15:00	10:50 AM	11:26 AM	
	0:30:00	11:56 AM	12:28 PM	0:15:00	12:43 PM	12:48 PM	0:15:00	1:03 PM	1:39 PM	
	0:30:00	2:09 PM	2:41 PM	0:15:00	2:56 PM	3:01 PM	0:15:00	3:16 PM	3:52 PM	return trip
	0:30:00	4:22 PM	4:54 PM	0:15:00	5:09 PM	5:14 PM	0:15:00	5:29 PM	6:05 PM	return trip

Assumed: 1nautical mile = 1 mile (1.0018 nautical mile /mile) 1knot = 1 mile/hour

* harbor speed restrictions are not factored into the travel times

"return trips" are ferry runs that cannot deliver passengers to a beach prior to 2PM; hence they are exclusively to provide transport back home

Table 6B – Express Route Planning: Narr Landing (Collier Pt Park) to Beach Loop (RI State Beaches Only)

NARRAGANSETT LANDING - High Speed Ferry Travel Distances — **RI State Beaches Only EXPRESS**

		Depart Narragansett Landing	Scarborough State Beach Arrive (miles)		Depart (miles)	Sand Hill Cove Arrive (miles)		Depart (miles)	Arrive Narragansett Landing	
	Leg 1	0	32							
	Leg 2				0	5				
	Leg 3									
	Leg 4									
	Leg 5							0	36	**Total**
	travel distance =>		32			5			36	73
knots	Docking, Boarding, Re-fueling, Launch (hh:mm:ss)			Docking, Boarding, Launch (hh:mm:ss)			Docking, Boarding, Launch (hh:mm:ss)			
20	0:30:00	7:30 AM	9:06 AM	0:15:00	9:21 AM	9:36 AM	0:15:00	9:51 AM	11:39 AM	
	0:30:00	12:09 PM	1:45 PM	0:15:00	2:00 PM	2:15 PM	0:15:00	2:30 PM	4:18 PM	
	0:30:00	4:48 PM	6:24 PM	0:15:00	6:39 PM	6:54 PM	0:15:00	7:09 PM	8:57 PM	return trip
40	0:30:00	7:30 AM	8:18 AM	0:15:00	8:33 AM	8:40 AM	0:15:00	8:55 AM	9:49 AM	
	0:30:00	10:19 AM	11:07 AM	0:15:00	11:22 AM	11:30 AM	0:15:00	11:45 AM	12:39 PM	
	0:30:00	1:09 PM	1:57 PM	0:15:00	2:12 PM	2:19 PM	0:15:00	2:34 PM	3:28 PM	
	0:30:00	3:58 PM	4:46 PM	0:15:00	5:01 PM	5:09 PM	0:15:00	5:24 PM	6:18 PM	return trip
60	0:30:00	7:30 AM	8:02 AM	0:15:00	8:17 AM	8:22 AM	0:15:00	8:37 AM	9:13 AM	
	0:30:00	9:43 AM	10:15 AM	0:15:00	10:30 AM	10:35 AM	0:15:00	10:50 AM	11:26 AM	
	0:30:00	11:56 AM	12:28 PM	0:15:00	12:43 PM	12:48 PM	0:15:00	1:03 PM	1:39 PM	
	0:30:00	2:09 PM	2:41 PM	0:15:00	2:56 PM	3:01 PM	0:15:00	3:16 PM	3:52 PM	return trip
	0:30:00	4:22 PM	4:54 PM	0:15:00	5:09 PM	5:14 PM	0:15:00	5:29 PM	6:05 PM	return trip

Assumed: 1nautical mile = 1 mile (1.0018 nautical mile /mile) 1knot = 1 mile/hour

* harbor speed restrictions are not factored into the travel times

"return trips" are ferry runs that cannot deliver passengers to a beach prior to 2PM; hence they are exclusively to provide transport back home

Table 6C – Express Route Planning: Rocky Point to Beach Loop (RI State Beaches Only)

ROCKY POINT - High Speed Ferry Travel Distances — RI State Beaches Only EXPRESS

		Depart Rocky Point	Scarborough State Beach Arrive (miles)		Depart (miles)	Sand Hill Cove Arrive (miles)		Depart (miles)	Arrive Rocky Point	
	Leg 1	0	22							
	Leg 2				0	4				
	Leg 3									
	Leg 4									
	Leg 5							0	26	Total
	travel distance =>		22			4			26	52
knots	Docking, Boarding, Re-fueling, Launch (hh:mm:ss)			Docking, Boarding, Launch (hh:mm:ss)			Docking, Boarding, Launch (hh:mm:ss)			
20	0:30:00	7:30 AM	8:36 AM	0:15:00	8:51 AM	9:03 AM	0:15:00	9:18 AM	10:36 AM	
	0:30:00	11:06 AM	12:12 PM	0:15:00	12:27 PM	12:39 PM	0:15:00	12:54 PM	2:12 PM	
	0:30:00	2:42 PM	3:48 PM	0:15:00	4:03 PM	4:15 PM	0:15:00	4:30 PM	5:48 PM	return trip
40	0:30:00	7:30 AM	8:03 AM	0:15:00	8:18 AM	8:24 AM	0:15:00	8:39 AM	9:18 AM	
	0:30:00	9:48 AM	10:21 AM	0:15:00	10:36 AM	10:42 AM	0:15:00	10:57 AM	11:36 AM	
	0:30:00	12:06 PM	12:39 PM	0:15:00	12:54 PM	1:00 PM	0:15:00	1:15 PM	1:54 PM	
	0:30:00	2:24 PM	2:57 PM	0:15:00	3:12 PM	3:18 PM	0:15:00	3:33 PM	4:12 PM	return trip
	0:30:00	4:42 PM	5:15 PM	0:15:00	5:30 PM	5:36 PM	0:15:00	5:51 PM	6:30 PM	return trip
60	0:30:00	7:30 AM	7:52 AM	0:15:00	8:07 AM	8:11 AM	0:15:00	8:26 AM	8:52 AM	
	0:30:00	9:22 AM	9:44 AM	0:15:00	9:59 AM	10:03 AM	0:15:00	10:18 AM	10:44 AM	
	0:30:00	11:14 AM	11:36 AM	0:15:00	11:51 AM	11:55 AM	0:15:00	12:10 PM	12:36 PM	
	0:30:00	1:06 PM	1:28 PM	0:15:00	1:43 PM	1:47 PM	0:15:00	2:02 PM	2:28 PM	
	0:30:00	2:58 PM	3:20 PM	0:15:00	3:35 PM	3:39 PM	0:15:00	3:54 PM	4:20 PM	return trip
	0:30:00	4:50 PM	5:12 PM	0:15:00	5:27 PM	5:31 PM	0:15:00	5:46 PM	6:12 PM	return trip

Assumed: 1nautical mile = 1 mile (1.0018 nautical mile /mile) 1knot = 1 mile/hour

* harbor speed restrictions are not factored into the travel times

"return trips" are ferry runs that cannot deliver passengers to a beach prior to 2PM; hence they are exclusively to provide transport back home

Table 6D – Express Route Planning: Quonset Point to Beach Loop (RI State Beaches Only)

QUONSET POINT - High Speed Ferry Travel Distances — **RI State Beaches Only EXPRESS**

		Depart Quonset Point	Scarborough State Beach: Arrive		Depart (miles)	Sand Hill Cove: Arrive (miles)		Depart (miles)	Arrive Quonset Point	
	Leg 1	0	17							
	Leg 2				0	5				
	Leg 3									
	Leg 4									
	Leg 5							0	21	**Total**
	travel distance =>		17			5			21	43
knots	Docking, Boarding, Re-fueling, Launch (hh:mm:ss)			Docking, Boarding, Launch (hh:mm:ss)			Docking, Boarding, Launch (hh:mm:ss)			
20	0:30:00	7:30 AM	8:21 AM	0:15:00	8:36 AM	8:51 AM	0:15:00	9:06 AM	10:09 AM	
	0:30:00	10:39 AM	11:30 AM	0:15:00	11:45 AM	12:00 PM	0:15:00	12:15 PM	1:18 PM	
	0:30:00	1:48 PM	2:39 PM	0:15:00	2:54 PM	3:09 PM	0:15:00	3:24 PM	4:27 PM	
	0:30:00	4:57 PM	5:48 PM	0:15:00	6:03 PM	6:18 PM	0:15:00	6:33 PM	7:36 PM	return trip
40	0:30:00	7:30 AM	7:55 AM	0:15:00	8:10 AM	8:18 AM	0:15:00	8:33 AM	9:04 AM	
	0:30:00	9:34 AM	10:00 AM	0:15:00	10:15 AM	10:22 AM	0:15:00	10:37 AM	11:09 AM	
	0:30:00	11:39 AM	12:04 PM	0:15:00	12:19 PM	12:27 PM	0:15:00	12:42 PM	1:13 PM	
	0:30:00	1:43 PM	2:09 PM	0:15:00	2:24 PM	2:31 PM	0:15:00	2:46 PM	3:18 PM	
	0:30:00	3:48 PM	4:13 PM	0:15:00	4:28 PM	4:36 PM	0:15:00	4:51 PM	5:22 PM	return trip
	0:30:00	5:52 PM	6:18 PM	0:15:00	6:33 PM	6:40 PM	0:15:00	6:55 PM	7:27 PM	return trip
60	0:30:00	7:30 AM	7:47 AM	0:15:00	8:02 AM	8:07 AM	0:15:00	8:22 AM	8:43 AM	
	0:30:00	9:13 AM	9:30 AM	0:15:00	9:45 AM	9:50 AM	0:15:00	10:05 AM	10:26 AM	
	0:30:00	10:56 AM	11:13 AM	0:15:00	11:28 AM	11:33 AM	0:15:00	11:48 AM	12:09 PM	
	0:30:00	12:39 PM	12:56 PM	0:15:00	1:11 PM	1:16 PM	0:15:00	1:31 PM	1:52 PM	
	0:30:00	2:22 PM	2:39 PM	0:15:00	2:54 PM	2:59 PM	0:15:00	3:14 PM	3:35 PM	return trip
	0:30:00	4:05 PM	4:22 PM	0:15:00	4:37 PM	4:42 PM	0:15:00	4:57 PM	5:18 PM	return trip
	0:30:00	5:48 PM	6:05 PM	0:15:00	6:20 PM	6:25 PM	0:15:00	6:40 PM	7:01 PM	return trip

Assumed: 1nautical mile = 1 mile (1.0018 nautical mile /mile) 1knot = 1 mile/hour

* harbor speed restrictions are not factored into the travel times

"return trips" are ferry runs that cannot deliver passengers to a beach prior to 2PM; hence they are exclusively to provide transport back home

Table 6E – Express Route Planning: Warren River to Beach Loop (RI State Beaches Only)

WARREN RIVER - High Speed Ferry Travel Distances — RI State Beaches Only EXPRESS

		Depart Warren River	Scarborough State Beach Arrive (miles)		Depart (miles)	Sand Hill Cove Arrive (miles)		Depart (miles)	Arrive Warren River	
	Leg 1	0	27							
	Leg 2				0	5				
	Leg 3									
	Leg 4									
	Leg 5							0	30	**Total**
	travel distance =>		27			5			30	62
knots	Docking, Boarding, Re-fueling, Launch (hh:mm:ss)			Docking, Boarding, Launch (hh:mm:ss)			Docking, Boarding, Launch (hh:mm:ss)			
20	0:30:00	7:30 AM	8:51 AM	0:15:00	9:06 AM	9:21 AM	0:15:00	9:36 AM	11:06 AM	
	0:30:00	11:36 AM	12:57 PM	0:15:00	1:12 PM	1:27 PM	0:15:00	1:42 PM	3:12 PM	
	0:30:00	3:42 PM	5:03 PM	0:15:00	5:18 PM	5:33 PM	0:15:00	5:48 PM	7:18 PM	return trip
40	0:30:00	7:30 AM	8:10 AM	0:15:00	8:25 AM	8:33 AM	0:15:00	8:48 AM	9:33 AM	
	0:30:00	10:03 AM	10:43 AM	0:15:00	10:58 AM	11:06 AM	0:15:00	11:21 AM	12:06 PM	
	0:30:00	12:36 PM	1:16 PM	0:15:00	1:31 PM	1:39 PM	0:15:00	1:54 PM	2:39 PM	
	0:30:00	3:09 PM	3:49 PM	0:15:00	4:04 PM	4:12 PM	0:15:00	4:27 PM	5:12 PM	return trip
	0:30:00	5:42 PM	6:22 PM	0:15:00	6:37 PM	6:45 PM	0:15:00	7:00 PM	7:45 PM	return trip
60	0:30:00	7:30 AM	7:57 AM	0:15:00	8:12 AM	8:17 AM	0:15:00	8:32 AM	9:02 AM	
	0:30:00	9:32 AM	9:59 AM	0:15:00	10:14 AM	10:19 AM	0:15:00	10:34 AM	11:04 AM	
	0:30:00	11:34 AM	12:01 PM	0:15:00	12:16 PM	12:21 PM	0:15:00	12:36 PM	1:06 PM	
	0:30:00	1:36 PM	2:03 PM	0:15:00	2:18 PM	2:23 PM	0:15:00	2:38 PM	3:08 PM	
	0:30:00	3:38 PM	4:05 PM	0:15:00	4:20 PM	4:25 PM	0:15:00	4:40 PM	5:10 PM	return trip
	0:30:00	5:40 PM	6:07 PM	0:15:00	6:22 PM	6:27 PM	0:15:00	6:42 PM	7:12 PM	return trip

Assumed: 1nautical mile = 1 mile (1.0018 nautical mile /mile) 1knot = 1 mile/hour

* harbor speed restrictions are not factored into the travel times

"return trips" are ferry runs that cannot deliver passengers to a beach prior to 2PM; hence they are exclusively to provide transport back home

Table 6F – Express Route Planning: Fall River to Beach Loop (RI State Beaches Only)

FALL RIVER - High Speed Ferry Travel Distances — **RI State Beaches Only EXPRESS**

		Depart	Scarborough State Beach			Sand Hill Cove			Arrive	
		Fall River	Arrive (miles)		Depart (miles)	Arrive (miles)		Depart (miles)	Fall River	
	Leg 1	0	29							
	Leg 2				0	5				
	Leg 3									
	Leg 4									
	Leg 5							0	35	**Total**
	travel distance =>		29			5			35	69
knots	Docking, Boarding, Re-fueling, Launch (hh:mm:ss)			Docking, Boarding, Launch (hh:mm:ss)			Docking, Boarding, Launch (hh:mm:ss)			
20	0:30:00	7:30 AM	8:57 AM	0:15:00	9:12 AM	9:27 AM	0:15:00	9:42 AM	11:27 AM	
	0:30:00	11:57 AM	1:24 PM	0:15:00	1:39 PM	1:54 PM	0:15:00	2:09 PM	3:54 PM	
	0:30:00	4:24 PM	5:51 PM	0:15:00	6:06 PM	6:21 PM	0:15:00	6:36 PM	8:21 PM	return trip
40	0:30:00	7:30 AM	8:13 AM	0:15:00	8:28 AM	8:36 AM	0:15:00	8:51 AM	9:43 AM	
	0:30:00	10:13 AM	10:57 AM	0:15:00	11:12 AM	11:19 AM	0:15:00	11:34 AM	12:27 PM	
	0:30:00	12:57 PM	1:40 PM	0:15:00	1:55 PM	2:03 PM	0:15:00	2:18 PM	3:10 PM	
	0:30:00	3:40 PM	4:24 PM	0:15:00	4:39 PM	4:46 PM	0:15:00	5:01 PM	5:54 PM	return trip
	0:30:00	6:24 PM	7:07 PM	0:15:00	7:22 PM	7:30 PM	0:15:00	7:45 PM	8:37 PM	return trip
60	0:30:00	7:30 AM	7:59 AM	0:15:00	8:14 AM	8:19 AM	0:15:00	8:34 AM	9:09 AM	
	0:30:00	9:39 AM	10:08 AM	0:15:00	10:23 AM	10:28 AM	0:15:00	10:43 AM	11:18 AM	
	0:30:00	11:48 AM	12:17 PM	0:15:00	12:32 PM	12:37 PM	0:15:00	12:52 PM	1:27 PM	
	0:30:00	1:57 PM	2:26 PM	0:15:00	2:41 PM	2:46 PM	0:15:00	3:01 PM	3:36 PM	
	0:30:00	4:06 PM	4:35 PM	0:15:00	4:50 PM	4:55 PM	0:15:00	5:10 PM	5:45 PM	return trip
	0:30:00	6:15 PM	6:44 PM	0:15:00	6:59 PM	7:04 PM	0:15:00	7:19 PM	7:54 PM	return trip

Assumed: 1nautical mile = 1 mile (1.0018 nautical mile /mile) 1knot = 1 mile/hour

* harbor speed restrictions are not factored into the travel times

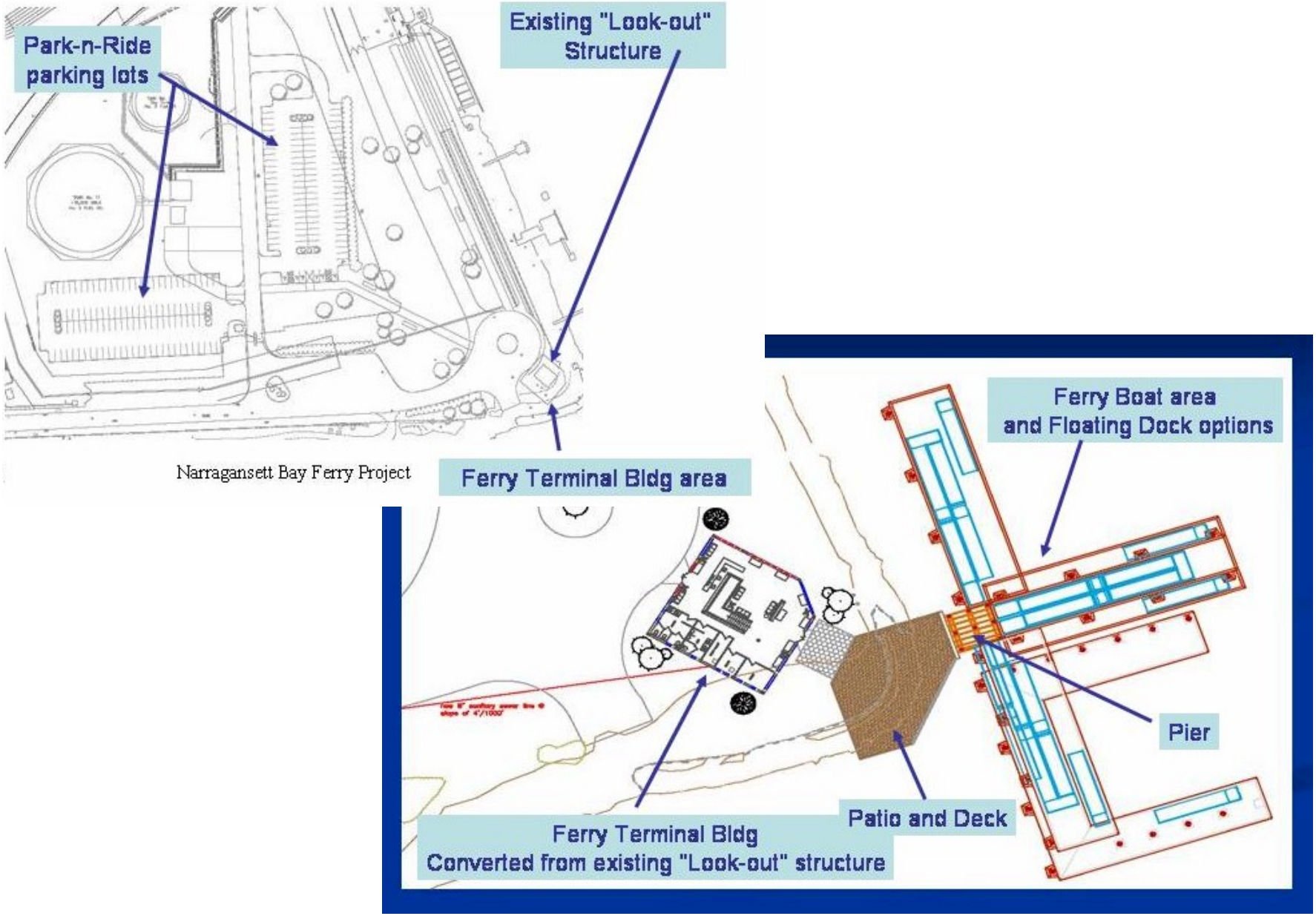
"return trips" are ferry runs that cannot deliver passengers to a beach prior to 2PM; hence they are exclusively to provide transport back home

Appendix 3 – Enlarged Site Plan Drawings

Figure 1 – India Point Park – by University of Rhode Island
Figure 2 – Narragansett Landing (Collier Point Park) – by Brown University
Figure 3 – Narragansett Landing (Collier Point Park) – by University of Rhode Island
Figure 4 – Rocky Point – by University of Rhode Island
Figure 5 – Quonset Point – by University of Rhode Island
Figure 6 – Warren River – by Roger Williams University
Figure 7 – Scarborough State Beach – by University of Rhode Island
Figure 8 – Sand Hill Cove (Roger Wheeler State Beach) – by University of Rhode Island

<u>FIGURE 1 – India Point Ferry Terminal Site Plan</u> (University of Rhode Island Landscape Architecture Department)

<u>FIGURE 2– Narragansett Landing Ferry Terminal Site Plan</u> (Brown University Department of Civil Engineering)



<u>FIGURE 3– Narragansett Landing Ferry Terminal Site Plan</u> (University of Rhode Island Landscape Architecture Department)

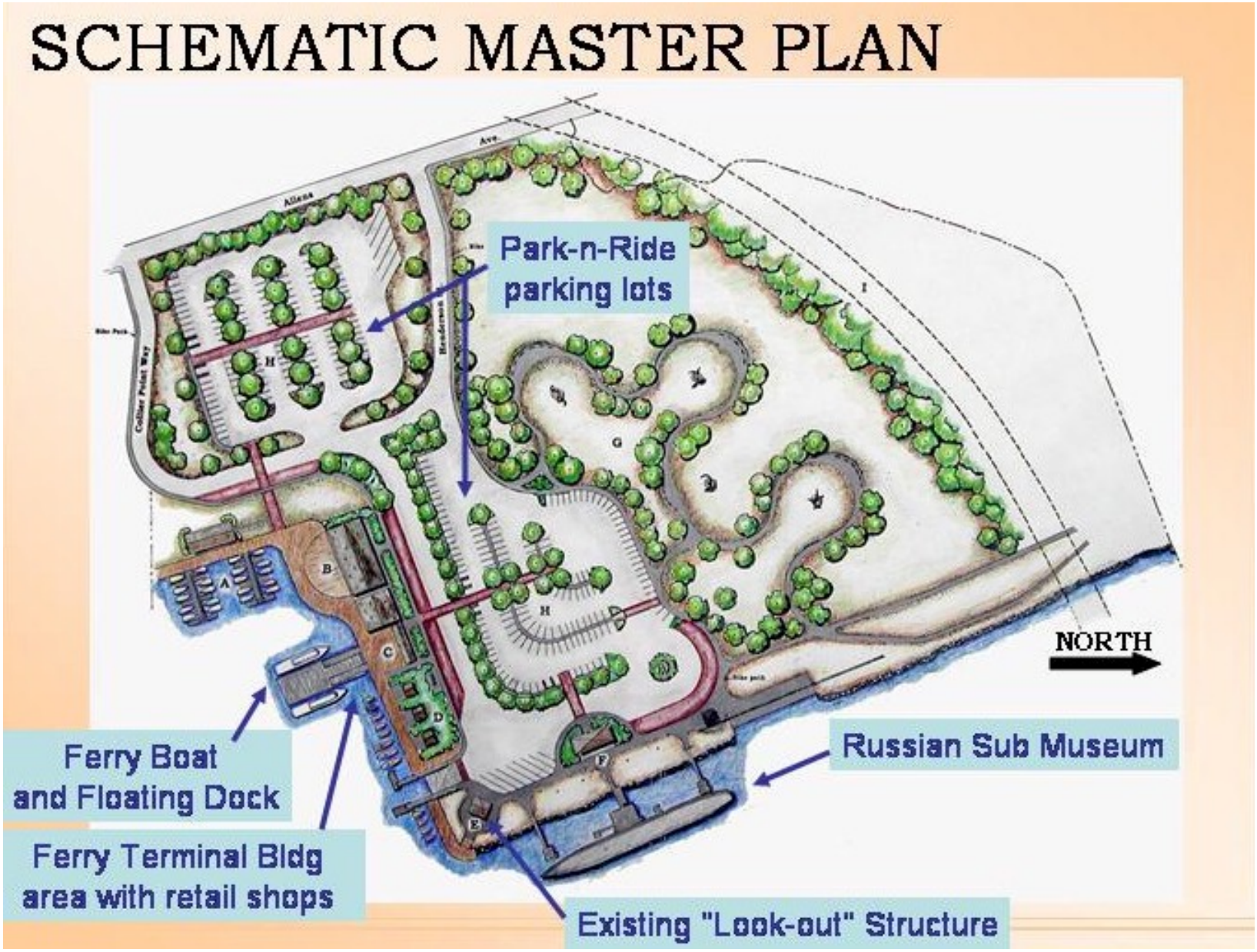


FIGURE 4 – Rocky Point Ferry Terminal Site Plan (University of Rhode Island Landscape Architecture Department)

FIGURE 5– Quonset Point Ferry Terminal Site Plan (University of Rhode Island Landscape Architecture Department)

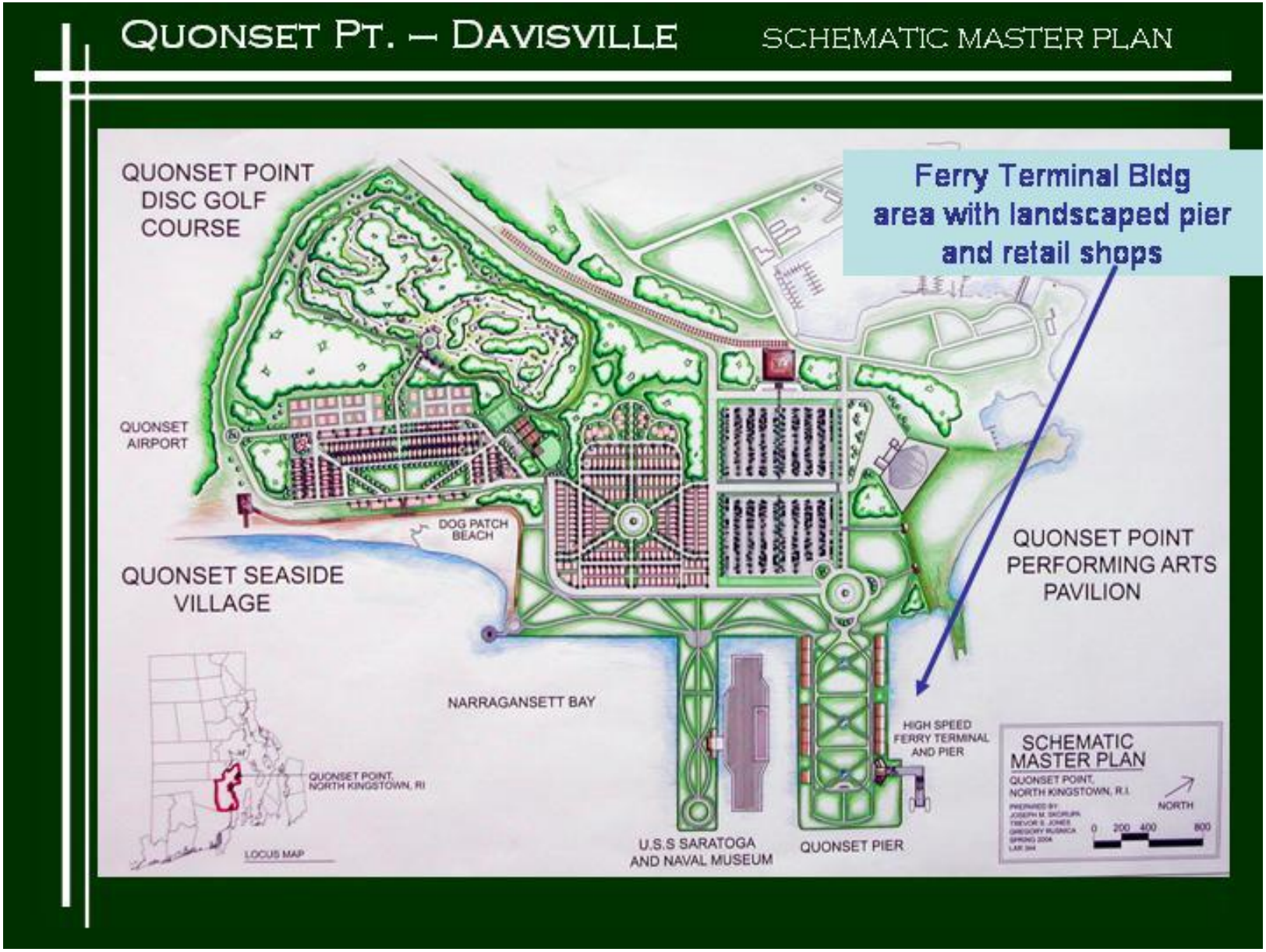


FIGURE 6– Warren Harbor Ferry Terminal Site Plan (Roger Williams University School of Architecture, Art, & Historic Preservation)

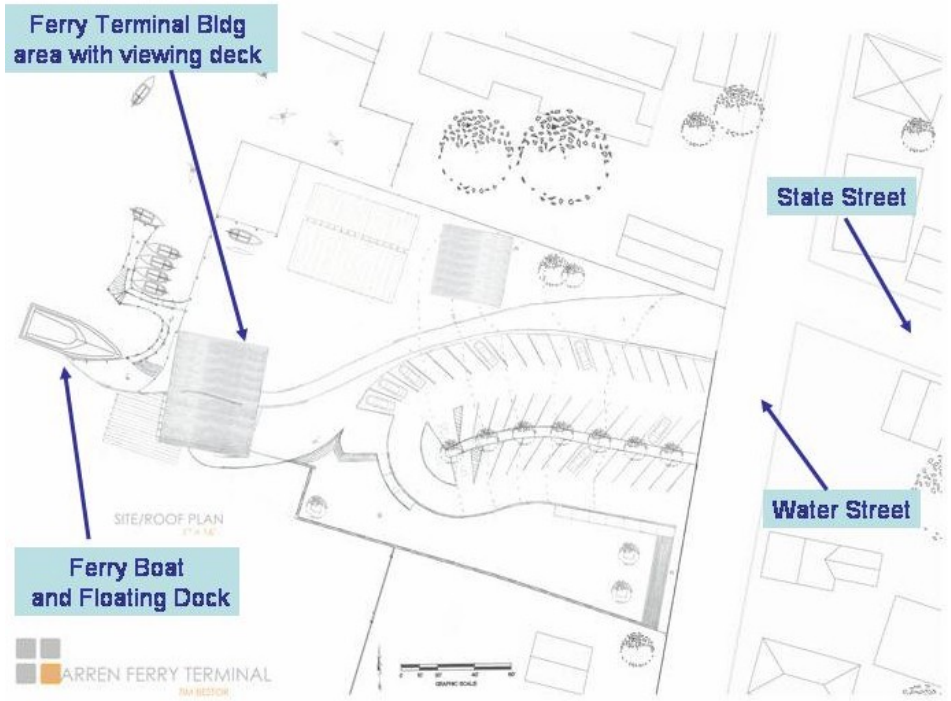


FIGURE 7– Scarborough State Beach Ferry Terminal Site Plan (University of Rhode Island Landscape Architecture Department)

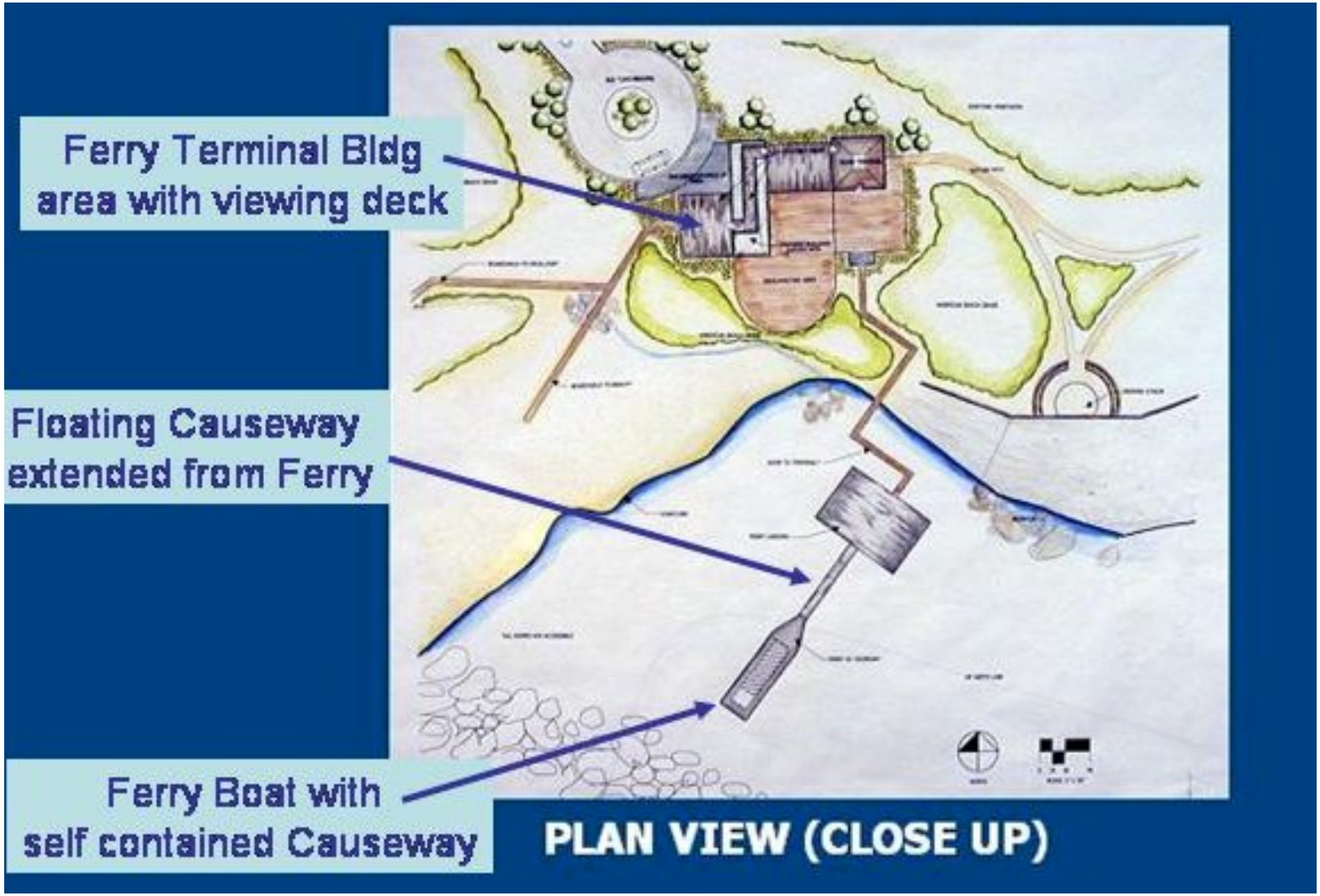
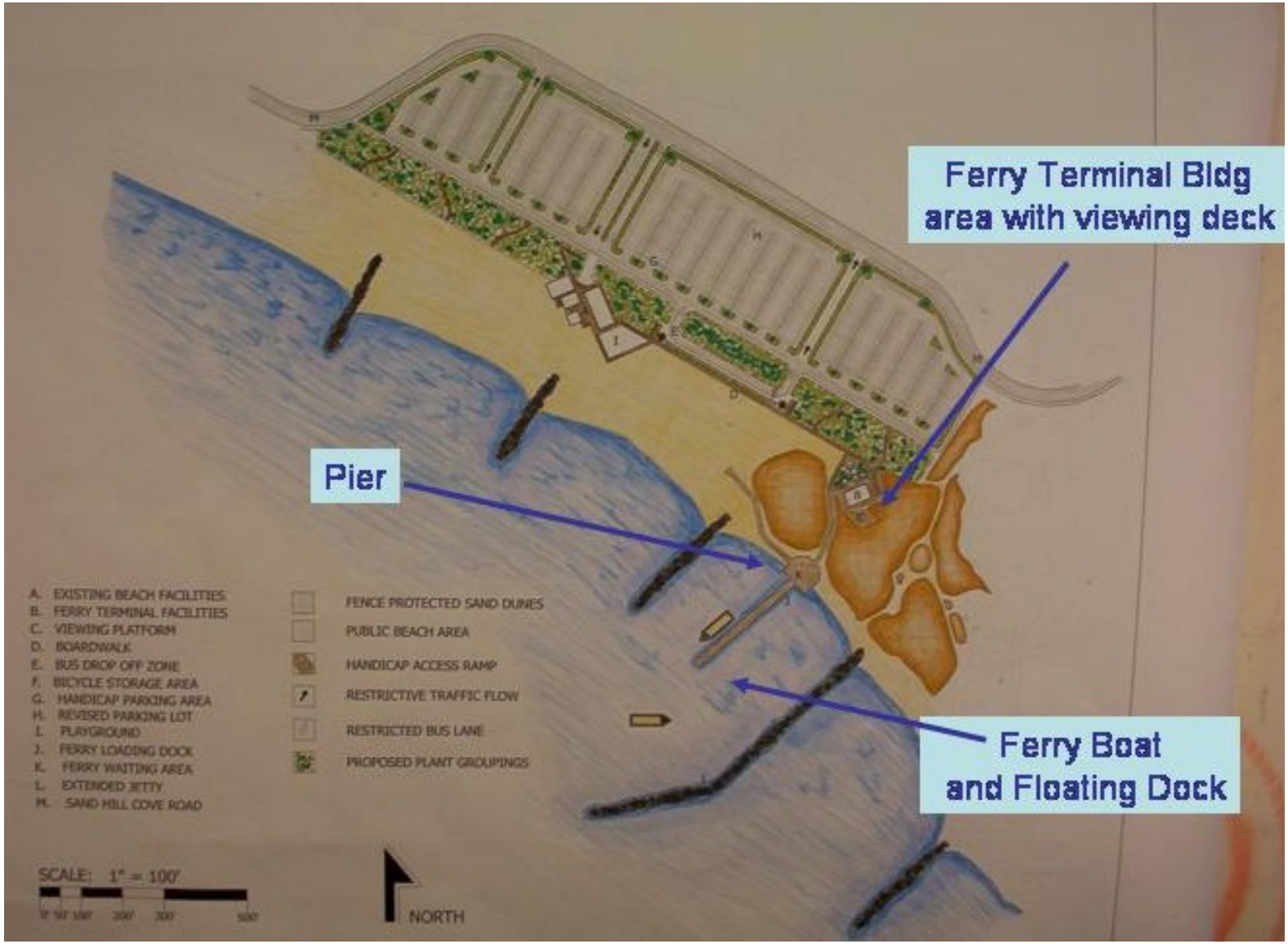


FIGURE 8 - Sand Hill Cove Ferry Terminal Site Plan (University of Rhode Island Landscape Architecture Department)



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