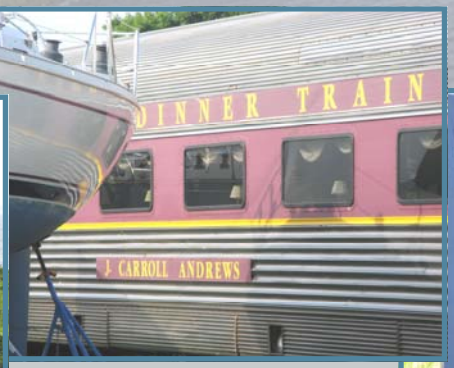
# Feasibility Study

# Shoreline Bikeway/Aquidneck Island Bicycle Path
# Burma Road Segment

Prepared For:

Aquidneck Island Planning Commission
Rhode Island

Funded through the generosity of the
Alletta Morris McBean Charitable Trust





September 19, 2007

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# FEASIBILITY STUDY

## SHORELINE BIKEWAY/AQUIDNECK ISLAND BIKE PATH
## BURMA ROAD SEGMENT

**SEPTEMBER 19, 2007**

**PREPARED FOR:**
**AQUIDNECK ISLAND PLANNING COMMISSION**
**RHODE ISLAND**

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## SECTION 1 – INTRODUCTION AND BACKGROUND

The Aquidneck Island Planning Commission (AIPC) has requested this study to investigate the feasibility of constructing a dedicated multi-use/bike path adjacent to Burma Road and the Newport Secondary rail corridor from Chases Lane (Naval Station Newport) to the Stringham Road railroad grade crossing in Melville. This proposed route would form the "Burma Road Segment" of the greater Shoreline Bikeway/Aquidneck Island Bicycle Path. The information presented in this report is based on previously completed studies, a review of available railroad right-of-way plans and utility record plans, an analysis of the compiled base mapping of the railroad corridor, discussions with State Officials and railroad operators, field investigations, and engineering analysis.

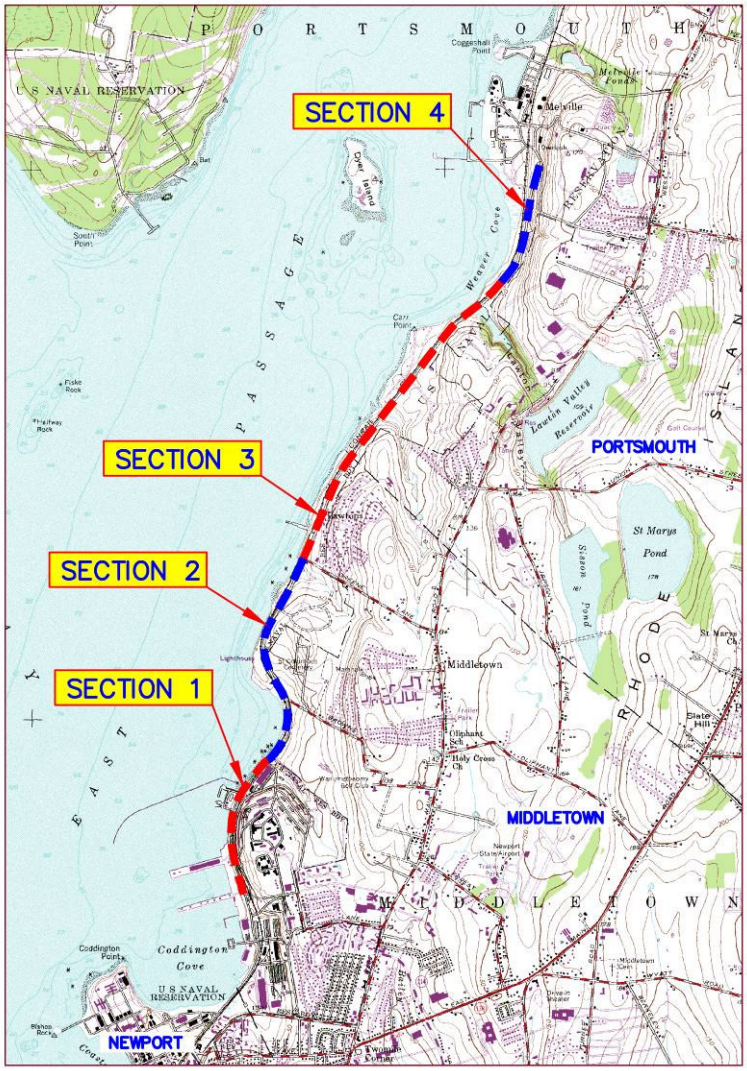



**Figure 1 – Route Map**

The work involved the development of an alignment of a proposed dedicated multi-use/bicycle path (path) in relation to the existing rail line and Burma Road. The available project wide base mapping and "critical cross-sections" were utilized to conceptually study a route for the path. The study considered right-of-way needs and other related impacts for the Burma Road Segment. Conceptual route plans of the proposed path were prepared and analyzed (See Appendix E).

The bicycle path route was based upon the September 2002 "Aquidneck Island Passenger Rail/Bicycle Path Project" report prepared for the Rhode Island Department of Transportation (RIDOT) by the Louis Berger Group, Inc. This report presented the 15.9 mile Shoreline Bikeway/Aquidneck Island Bicycle Path, from Newport northward to the Massachusetts' state line in Tiverton. This previous study proposed to utilize the existing Defense Highway Commuter Bike Lane (Burma Road) to route the path through the area. The route developed in this current study would form a part of this larger path. However, this current study presents a proposed 4.7 mile Burma Road Segment that will utilize a "separated pathway". The route generally runs northward from Chases Lane, along Gate 17 Access Road (Naval Station Newport), continuing northward adjacent to Burma Road and the Newport Secondary rail

corridor to the Melville neighborhood of Portsmouth. The Segment has been subdivided into four sections as shown on the Route Map (Figure 1), each of which may be constructed separately. The proposed path route was developed to provide a safe and scenic alternative transportation link that minimizes impacts to abutting properties, Burma Road, the Newport Secondary Rail Corridor, and adjacent secure areas of Naval Station Newport.

***Related Studies and Projects***

This study is one of several that have been conducted to assist in the planning of transportation and land use of the west side of Aquidneck Island. Related studies include:

- The State of Rhode Island has completed the Final Environmental Impact Statement (EIS), FHWA Record of Decision, permitting, and final design of the replacement of the Sakonnet River Highway Bridge (Route 24). Construction of the proposed bridge structure will replace the existing aging bridge and will provide vehicular, pedestrian, and bicycle access across the river. Construction of the replacement bridge is scheduled to commence in Spring 2008.
- The Rhode Island Department of Transportation (RIDOT) completed a feasibility study of constructing passenger rail service and a bicycle path within the 15.9-mile Newport Secondary Rail corridor from Newport, RI to Fall River, MA. The study completed in 2002 utilized available aerial photographs (orthophotos) and geographical information system (GIS) overlays to develop conceptual plans of the possible passenger rail and bicycle path. Though the re-establishment of passenger rail service to Aquidneck Island remains a distant possibility, the results of this study form the basis of the proposed Shoreline Bikeway/Aquidneck Island Bicycle Path. This study proposed minor improvements such as signage and striping to the existing Burma Road (Defense Highway) bicycle lanes to retain this existing shared bike route on road to connect the proposed off-road path segments to the north and south.
- Building off of the above study, RIDOT has plans to begin the design work of the northern section of the Shoreline Bikeway/Aquidneck Island Bicycle Path along the Newport Secondary rail corridor. This northern section would extend from approximately the Stringham Road grade crossing in Melville northward to the Rhode Island/Massachusetts state line in Tiverton. The bicycle path will run for approximately 8.8 miles along the existing railroad right-of-way with the bicycle route using the new Sakonnet River Highway Bridge, currently under construction, to cross to the mainland. On Aquidneck Island, the bicycle path will be designed to accommodate the existing rail service (dinner and excursion trains) and will also be designed in consideration of potential future passenger rail service. As the former swing span railroad bridge across the Sakonnet River has been demolished by the State, the proposed bicycle path north of the Sakonnet River will utilize the existing track bed (rail trail) to the Rhode Island/Massachusetts state line to help minimize project impacts and construction costs. Aerial photogrametry and supplemental field surveys have been conducted and compiled to form the base mapping to be utilized in design.
- The Rhode Island Turnpike and Bridge Authority and RIDOT are conducting a study of conceptual design alternatives for the Pell Bridge approach ramps in Newport. The study limits extend from the Pell Bridge to the ramp terminus on Admiral Kalbfus Road, and

from the JT Connell Highway Rotary to America's Cup Avenue. In addition to highway considerations, the study will consider a pedestrian and bicycle connection from America's Cup Avenue north to JT Connell Highway along the Newport Secondary rail corridor.

- RIDOT is currently studying alternatives for the reconstruction of Coddington Highway in Newport and Middleton. The study includes considerations to carry a segment of the proposed Shoreline Bikeway/Aquidneck Island Bicycle Path along the highway providing a path link that would avoid Naval Station Newport secure areas.
- The West Side Master Plan completed in 2005 by the AIPC provides a shared, "community-based" vision for the West Side of Aquidneck Island. In addition to land use, economic development, and utilities issues, the Master Plan provides a number of transportation strategies including a bicycle way along the Newport Secondary north of the Pell Bridge ramps to the Sakonnet Bridge. This bicycle way would run parallel to an envisioned "Shoreline Drive". Burma Road (Defense Highway) would be reconstructed/converted into Shoreline Drive to create a scenic and useful alternative transportation route. The Master plan envisions a network of pedestrian trails and bicycle paths that extend along the entire West Side of Aquidneck Island linking residential areas, recreational amenities, and commercial centers. A recreational and scenic hub to the West Side would be the proposed Greene Lane Park at the end of Greene Lane on Narragansett Bay in Middletown.
- The AIPC has recently completed a study of the proposed Shoreline Drive Gateways at Simonpietri Drive in Middleton and the Burma Road/Stringham Road intersection in Portsmouth. The study provided guidance for the development of designs for the southern gateway at Simonpietri Drive and prepared conceptual plans for the northern gateway at Stringham Road including an adjacent multi-use path.
- A variety of land use proposals and developments are underway in Newport, Portsmouth, and Tiverton. The Newport Secondary Rail corridor traverses and runs adjacent to many properties that are under development or are proposed for future development. These developments include: the O'Neill Properties Group proposals at the Hood Site (Weaver Cove) in Melville and at the Weyerhaeuser Site in Portsmouth; and the Villages on Mount Hope Bay in Tiverton developed by Starwood Tiverton LLC.

***History and Use of the Rail Corridor***

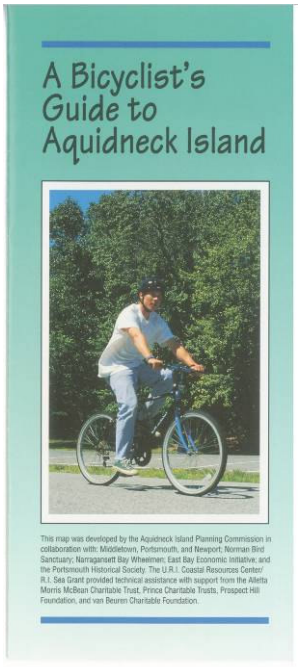
The Newport Secondary Rail corridor was established by the Old Colony and Newport Railroad in 1864. From its establishment in 1864 until 1938, the corridor provided passenger rail service to and from Aquidneck Island. At its peak in 1913, the corridor served eleven passenger trains a day in each direction. The construction of the Mt. Hope Bridge in 1929 caused a drastic decline in ridership, which eventually lead to the discontinuation of passenger rail service. The rail corridor has also provided freight service to and from the commercial and naval facilities located along the Island. Passage has been discontinued since the late 1970's when the Sakonnet River RR Bridge was determined to be unsafe for passage. At the request of the US Coast Guard, the rail bridge over the Sakonnet River connecting the corridor to the mainland was demolished in 2006 by the State. The State has no plans to construct a replacement bridge. The rail corridor, running approximately 16 miles from Newport to Tiverton, is owned by the Rhode Island Department of Transportation. The State of Rhode Island acquired the Aquidneck Island rail

right-of-way in 1977 and the Providence and Worcester Railroad company continues to hold operating rights for freight use of the line. The corridor along Aquidneck Island is leased to private firms to operate tourist and dinner excursion trains. During the summer tourist season, approximately three trains ride the line between Newport and Melville at 10mph or less. During the off-season, the rail corridor is rarely used.

***Defense Highway Commuter Bike Lane***


Signs located at the north and south end of Defense Highway, also known as Burma Road, post the roadway shoulders as commuter bike lanes. Several "Share the Road" signs are also spaced sporadically along the roadway. However, there are no standard pavement marking symbols informing bicyclists or motorists of the presence of the bike lanes. The Burma Road bicycle route is advertised by the AIPC in its pamphlet entitled "A Bicyclist's Guide to Aquidneck Island" and is also shown on the RIDOT map "A Guide to Cycling in the Ocean State" as a "most suitable road" for bicycling. During the project site visits numerous bikers were found to be utilizing the route.


Existing Burma Road is posted for a speed of 35 mph. The existing bituminous pavement of Burma Road is generally 30-ft to 32-ft feet in width and is in good condition. The roadway consists of two 12-ft wide vehicle travel lanes, one northbound and one southbound. The paved left side shoulders of Burma Road vary in width from 3-ft to 4-ft. The left side shoulders are typically 3-ft wide at roadway constrictions such as bridges and culverts. In several areas the existing steel beam highway guardrail face is offset 3-ft from the edge of the travel lanes. The existing roadway typically does not have curbing, with the exception of a short length at its southern limit near Navy Pier 1&2. The American Association of State Highway and Transportation Officials (AASHTO) reference "Guide for the Development of Bicycle Facilities" specifies that the minimum bike lane width for roadways with no curb and gutter should be 4-ft. The recommended width of a bike lane is 5-ft from the face of a curb or guardrail to the bike lane strip (edge of vehicle travel lane). Hence, the existing shoulders of Burma Road do not meet current bike lane standards.




However, the existing width of Burma Road, its use as a less congested alternative to parallel roadways (West Main Road and East Main Road), its wider curb lanes as compared to parallel roadways, its smooth well maintained surface, few drainage grates/covers/obstructions, no on-street parking and its scenic nature linking a number of recreational,

commercial and residential destinations warrant its continued use as a signed shared roadway. Signed shared roadways are defined by AASHTO as those roadways that have been identified by signage as preferred bike routes. RIDOT Design Policy Memo No. 920.06 provides additional guidance regarding signed shared roadways and presents a standard Bicycle Suitability Report form. For a more definitive analysis of the use of Burma Road as a signed shared roadway, a Bicycle Suitability Report should be developed. Accident history data, traffic counts/volumes, vehicle speed study data, and other information are required to complete the suitability report.

In relation to the current study, AASHTO guidance states that dedicated "shared use paths should not be used to preclude on-road bicycle facilities, but rather to supplement a system of on-road bike lanes, wide outside lanes, paved shoulders and bike routes". Dedicated shared use paths should not substitute for street improvements when paths are located parallel to roadways, as is the case with this current study. Most experienced bicyclists and bicycle commuters find shared use paths less convenient for utility travel as compared to the adjacent roadway. As highlighted above, improvements to Burma Road may not be warranted for its continued use as a signed shared roadway by experienced bicyclists after the construction of the proposed path proposed in this study.

## SECTION 2 – PURPOSE AND NEED

The purpose of the Aquidneck Island Multi-use/Bicycle Path Burma Road segment is to provide local residents and seasonal visitors with a safe alternative to motorized transportation. Local roads such as, West Main Road (Route 114), East Main Road (Route 138) are congested, narrow, have missing sections of sidewalk, and have limited usable shoulders. Though Burma Road is currently promoted as a bicycle route, recreational bikers may avoid travel along the roadway particularly during the morning and afternoon peak travel times. Further, existing signage prohibits various forms of transportation (roller-blades, skateboards, etc.) and there are few safe, improved turnouts for users to rest or to enjoy the views of Narragansett Bay. Construction of a multi-use path would result in improved public safety by removing recreational bicyclists and pedestrians from the adjacent roadway. The path would also provide a safe place for other potential users including: in-line skaters, roller skaters, strollers, wheelchair users, walkers, and joggers.

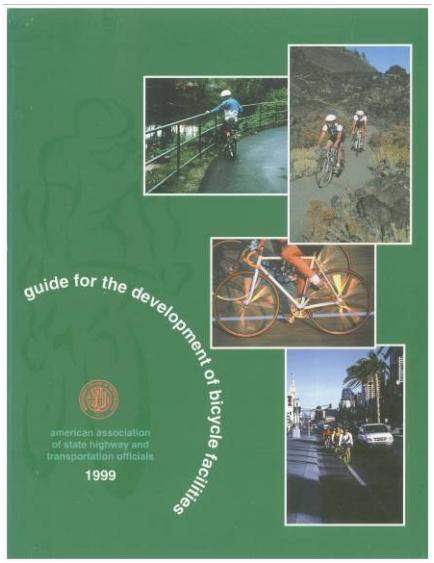
The proposed multi-use path would encourage increased tourist and recreational usage of the area providing a safe and scenic linkage to the areas amenities. The path will connect the recreational sites at McAllister's Beach, the Weaver Cove Public Boat Launch, and proposed Greene Lane Park. In addition, the Burma Road segment will allow local residents alternative access to the commercial and business centers to the south (including Naval Station Newport) and the Melville business and marine center to the north. Future development along the corridor increases the importance of the proposed multi-use path. New development strains local

roadways and increases the number of potential path users. Providing a safe and efficient alternative mode of transportation will help relieve traffic congestion and lead to a reduction of emissions of air pollutants.

The multi-use path is an integral part of the West Side Master Plan developed by the AIPC and would be a key part of a larger regional trail network and recreational corridor. The West Side Master Plan envisions a multi-modal transportation network including a scenic Shoreline Drive with northern and southern gateways, ferry and shuttle service, improved on-island rail service, a "Blue Trail" of small-boat landings, and a network of pedestrian and bicycle routes.

## SECTION 3 – DESIGN STANDARDS

All proposed construction must conform to several design requirements. These include the following: Americans with Disabilities Act Accessibility Guidelines (ADAAG), American Association of State Highway and Transportation Officials (AASHTO) "Guide for the Development of Bicycle Facilities", and appropriate RIDOT design standards.




This study also utilized several additional resources to aid in the layout and design of the path. These include the following: the Federal Highway Administration "Rails-with-Trails: Lessons Learned", the Vermont Agency of Transportation "Vermont Pedestrian and Bicycle Facility Planning and Design Manual", and the Massachusetts Highway Department Project Development & Design Guidebook Chapter 11 "Shared Use Paths and Greenways".

It is possible that the design and construction of the proposed multi-use path will be funded through the TE or CMAQ Programs and will need to comply with all the requirements from these programs. The main focus of all of these guidelines is to provide a safe and barrier free facility that is accessible to people with disabilities. Specific design elements that must be considered for this project include: width and grade of path, materials to be utilized, pavement markings required, signing, design/layout of crossings.

The bicycle path has been designed to accommodate the existing rail service (dinner and excursion trails) along the corridor. The proposed multi-use path will also not preclude the future redevelopment of passenger rail service. The bicycle path design was based upon the September 2002 "Aquidneck Island Passenger Rail/Bicycle Path Project, Design Concept Report" (Task II) prepared for RIDOT by the Louis Berger Group, Inc. Section 3.0 of the Design Concept Report (included in Appendix B) presents the proposed bicycle path design guidelines.

## SECTION 4 - BASE MAPPING

Survey and base map information was obtained by RIDOT in 2007 for the entire Newport Secondary Rail Corridor from Newport to Tiverton to assist in the design of the Shoreline Bikeway/Aquidneck Island Bicycle Path. Aerial photogrametry of the corridor was obtained from a low altitude flight. Using photogrammetric procedures digital mapping was prepared to to 1"=20' scale accuracy with one (1) foot surface elevation contours. Horizontal and vertical control points, (i.e. a base line and vertical benchmarks along the project corridor), were established and incorporated into base plan. The base mapping is referenced horizontally to the North Atlantic Datum of 1983 and referenced vertically to the Nation Geodetic Vertical Datum of 1929. Supplemental field survey were performed at approximately 32 public and private at-grade rail crossings, 29 bridge locations, and approximately 78 railroad drainage structures (cross culverts, box culverts, etc.) The supplemental survey located additional topographic features such as: utility structures and inverts, buildings, pavement markings, roadways, culverts, headwalls, walls, fences, erosion, steep side slopes, spot grades, sidewalks, curbing, traffic striping, traffic signs, traffic signal equipment, rail road appurtenances, overhead wires, top of rail, and bridge structures. Right-of-way information and abutting property line information was researched at various public and private sources. Utility information was compiled and inserted into the base mapping. With the permission of RIDOT, the latest version of this information has been utilized for this study.

As part of the current study Berger reviewed available data, roadway plans, record right-of-way plans, record utility plans, naval facilities plans, and data/plans of other completed and ongoing projects to assist in the development of the proposed path route. Berger also performed a site walk with AIPC personnel and then visually inspected the proposed bicycle path route between Chases Lane northward to Melville. Photographs taken during the site inspections are contained in Appendix A.

## SECTION 5 – TYPICAL SECTION

To aid in the establishment of a proposed path route and to assess the proposed path impacts to adjacent properties, typical sections were created to depict various conditions encountered. Five path typical sections were analyzed and applied to the route alignment. Since the proposed path will parallel an active rail line, an appropriate clearance setback from the rail line was developed. The design team coordinated with the railroad owner (State of Rhode Island) and the railroad operator (Newport Dinner Train) during development of the proposed sections and clearance setback. The Technical Memorandum prepared by Transystems contained in Appendix C summarizes this coordination.

The bicycle path will be typically 12-feet wide and will be surfaced with bituminous concrete. In constrained areas, the width of the bicycle path may be reduced to 10-feet for a short distance.

It is assumed that the bicycle path pavement design will include 2 inches of bituminous top course and 2 inches of bituminous binder course over 12 inches of gravel borrow subbase. An 8-feet tall chain link fence will aid in the separation between the path and the existing rail line. This fence will be transitioned to 4-feet in height at intersections to provide better sight visibility. A 12-foot wide wooden boardwalk will be utilized to span steep side slopes, minimize impacts to sensitive environmental areas, and limit disturbance to the existing track drainage system.

The five typical sections are presented in the attached Feasibility Study Plans (See Appendix E). One section illustrates the proposed path parallel to Gate 17 Access Road at the south end of the project. Per AASHTO guidelines, a 5-feet landscape buffer has been provided between the proposed path and the adjacent roadway. Due to the physical constraints at the south end of Burma Road (steep slopes to the east of the rail tracks, fencing of abutting naval secure areas, existing buildings adjacent to the roadway, and limited space between the rail tracks and the roadway), the required 5-feet landscaped buffer could not be attained. Therefore, another section was developed to illustrate a concrete median barrier separating the proposed path from Burma Road. Another section illustrates the proposed path where it will diverge from Burma Road and the rail line. As warranted, a 42" tall wooden bike rail will be installed to protect users from steep side slopes or other obstructions. Utilizing the required 10-feet clearance setback, another section illustrates the path running parallel to the active rail line. This section, developed in coordination with the design team's railroad engineer, shows that proposed impacts to the existing track drainage system (track side ditches) have been minimized. The adjacent track ditch line will be retained with minor modifications as required. The final section illustrates the path utilizing a 12-feet wide wooden boardwalk to traverse sensitive areas and to minimize the required earthwork.

## SECTION 6 – PATH ALIGNMENT

A key component of this study was a technical review of the proposed path alignment. The typical critical cross-sections were applied to the project base mapping to formulate a potential path route parallel to the active rail line and Burma Road. Route alignment alternatives were evaluated with respect to abutting properties, sensitive naval facilities, environmental impacts, construction cost, and alternative benefit. Utilizing the guidance presented in the West Side Master Plan to convert existing Burma Road into a scenic roadway and recreational corridor, the proposed path alignment was developed to favor the Narragansett Bay side of the rail line and the roadway while minimizing rail and road crossings. Utilizing the Narragansett Bay (west) side of the rail line also allows the path to diverge from the rail right-of-way increasing the separation between the path and the rail line. The FHWA publication "Rails-with-Trails: Lesson's Learned" and AASHTO Guidelines state that increasing setbacks from rail lines and roadways is desirable. The space available on the eastern side of the rail line would not allow an increase in setbacks as great as the west. Several potential locations for scenic overlooks and several potential path connections were also sited.

Previous studies have indicated that stormwater drainage is one of the major concerns along the Newport Secondary rail corridor. Adjacent development discharges drainage to the rail right-of-way, numerous cross culverts appear undersized to handle current flows, and vegetation and debris clog swales and structures. However, the portion of the rail corridor along Burma Road has relatively well functioning and well maintained storm drainage facilities. Care was taken while developing the proposed typical sections and path route alignment to avoid the existing stormwater drainage facilities (swales, ditches, culverts, bridges, etc.) along the rail corridor wherever possible. Avoidance of these existing facilities minimizes impacts to the existing rail infrastructure and helps reduce project costs.

Though no trailhead parking areas were considered as part of the current study, adjacent projects include parking. The Shoreline Bikeway/Aquidneck Island Bicycle Path Project from Melville north to Tiverton, under consideration by RIDOT, proposes trailhead parking at Melville. Proposed Greene Lane Park presented in the West Side Master Plan would also include parking facilities. Additionally, there are several existing parking facilities that could be utilized by path users including the Weaver Cove Public Boat Launch and Carr Point Navy recreation area.

The proposed path sections are described below. Refer to Figures 4-12 contained in the attached Feasibility Study Plans for a graphical presentation of the path alignment. The construction cost estimate presented in Section 9 of this study is based upon the segments outlined below.

**Section 1 – Chases Lane to Second Track Crossing (Sta. 806+80)**

Section 1 of the proposed path begins at the southwest corner of the intersection of Gate 17 Access Road and Chases Lane. The 12-feet wide path runs westward along the south side of Gate 17 Access road and will be separated from the adjacent roadway by a 5-feet landscape buffer. The path will generally follow an existing paved sidewalk and landscape strip through the area. Minor slope and path impacts to the adjacent naval facilities and rail right-of-way will result. These impacts will require the relocation of existing chain link fencing to accommodate the proposed path. The existing highway guardrail and utility poles along the roadway will be retained. The typical section shown on the attached Feasibility Study Plans Figure 1 illustrates the proposed relationship of the proposed path to the existing roadway. The north side of Gate 17 Access Road was considered as an alternate location for the proposed path. However, the presence of steep slopes and an existing parking area near the rail crossing were found to limit its feasibility.

The proposed path route will cross the rail line tracks at the southern end of Burma Road. Future studies will determine if this path crossing will need rail signalization and gates. Costs for the installation of railroad warning signals have been included in the construction cost estimate.

At the southern end of Burma Road the proposed path route will follow along the eastern side of Burma Road. Constraints along the western side of Burma Road were found in this area. These constraints include adjacent naval secure areas at Gate 17, Navy Pier 1 & 2, and the Naval Undersea Warfare Center; steep side slopes, light poles, fencing of naval secure areas, fire hydrants, and building structures. To minimize impacts to these existing features (in particular the naval secure areas), the proposed path will be located between Burma Road and the rail line through this sub-section. Due to the limited lateral space in this area, the proposed typical section (included on Figure 1 of the attached Feasibility Study Plans) will utilize the minimum determined clearance setback from the center of the rail tracks to obstructions and a concrete median barrier to separate the proposed path from the adjacent roadway. Further, the bike path width will be limited to 10-ft.

Even after utilizing this minimized cross section, there remain two constrained areas that will require minor realignment of Burma Road to accommodate the path. The roadway realignment will utilize a combination of box widening and bituminous pavement cold plan and overlay to shift Burma Road westward a maximum of 3 to 4 feet. Adjacent to the northern Burma Road relocation, the existing slope down to Narragansett Bay may require additional stabilization. Costs for the realignment of Burma Road and rip-rap slope stabilization are included in the construction cost estimate. One of the constrained areas will also require the removal of an existing siding track to accommodate the path. However, there appears to be sufficient space to relocate the existing siding track to the south if required. Costs for the siding track relocation are not included in the construction cost estimate. The study considered locating the proposed path on the eastern side of the rail tracks however, extensive slopes limited feasibility.

At the northern end of Section 1 Burma Road crosses from the west to the east side of Burma Road. To remain on the east side of the rail tracks, the proposed path will cross Burma Road. Future studies will determine if this path crossing will need signalization. Costs for the installation of pedestrian crossing signals have been included in the construction cost estimate. From this point northward the proposed path will follow the western or Narragansett Bay side of the tracks.

**Section 2 - Second Track Crossing (Sta. 806+80) to Greene Lane Park (Sta. 736+60)**

From the second Burma Road track crossing northward, the proposed path diverges from Burma Road to follow along the western side of the rail line. The proposed path generally

falls within the existing rail right-of-way, however, in several locations in deviates from the rail alignment to follow a more scenic and interesting route along the shore of Narragansett Bay. Several potential scenic overlooks have been sited along the path section. Several lengths of boardwalk will be utilized within this section to minimize impacts to wetlands resources, span water bodies and track drainage facilities, span steep track side slopes, and to generally minimize required earthwork. The cross-country, boardwalk, and path adjacent to track typical sections presented in the attached Feasibility Study Plans would be used within this path section. Section 2 will end at proposed Greene Lane Park. A proposed track crossing will allow access to the path from the park on both the east and west sides of the rail line.

Adjacent to the McAllister's Point Landfill, the path will utilize the route of an existing dirt road to minimize excavation and disturbance. Previous studies have noted the possible presence of hazardous materials within the landfill; therefore impacts to this area have been minimized.

The study considered alternate locations for the proposed path through this section however constraints limited their feasibility. The area to the east of the rail line, west of Burma Road was considered. Steep side slopes and large drainage swales limited this locations viability. The east side of Burma Road was also considered. Fencing, utility poles adjacent to the roadway, private property impacts (Wanumetonomy Golf and Country Club and Catholic Cemeteries Inc.), the Middletown Transfer Station ruled out this location. Further, in the context of the overall path concept, the Narragansett Bay side of the rail line will provide a more pleasant and scenic path, allowing a desirable increased separation from the adjacent rail line and significant separation from the vehicle traffic utilizing Burma Road.

**Section 3 - Greene Lane Park (Sta. 736+60) to Northern Shoreline Drive Gateway (Sta. 640+00)**

From Greene Lane Park the path continues northward along the west side of the rail line. In several locations the path diverges from the rail right-of-way to follow the shore of Narragansett Bay. This divergence will provide a more interesting riding experience and helps to minimize impacts to the rail line by limiting the required adjacent grading. Scenic overlooks have been sited to provide rest stops and expansive views of the East Passage of Narragansett Bay and Prudence Island. Views of the distant Pell Bridge from Newport to Jamestown to the south are also available.

As with the previous section, the cross-country, boardwalk, and path adjacent to track typical sections presented in the attached Feasibility Study Plans would be used within this path section. Existing utility poles running along the west side of the rail line have been avoided.

At the Carr Point Navy recreational area, the proposed path will cross an existing track siding. Since it is not desirable for bicycle paths to cross rail lines at an angle (potential for bicycle tires to become wedged and stuck within rails), it is proposed that the siding track be removed within the limits of the proposed crossing. The siding track is in disrepair and is missing several lengths of rail. The siding track provides access to an adjacent navy storage area that does not appear to be currently utilized for railroad storage. The fenced storage area contains a number of boats, automobiles, campers and recreational vehicles.

Two path connections to the existing parking area and ball fields at Carr Point and one path connection to the Weaver Cove Public Boat Landing would be provided. The proposed path route will cross the Weaver Road Public Boat Launch Access Road and then cross the rail line tracks adjacent to this access road. Future studies will determine if the track crossing will need rail signalization and gates. Costs for the installation of railroad warning signals have been included in the construction cost estimate. Immediately past the rail crossing, the path diverges from the rail right-of-way to follow along the access road to its intersection with Burma Road. Section 3 ends on Burma Road at the limits of the proposed adjacent Northern Shoreline Drive Gateway project.

The study considered alternate locations for the proposed path through this section however constraints limited their feasibility. The area to the east of the rail line and west of Burma Road was considered. Similar to the previous section, steep side slopes and large drainage swales limited this locations viability. The east side of Burma Road was also considered. Fencing, utility poles adjacent to the roadway, existing narrow roadway bridges (approximately Sta. 697+00 and Lawton Valley Sta. 658+40), and private property impacts (Raytheon Company) detract from this location. Using the east side of Burma Road would also require numerous roadway and rail crossings to access the existing recreational amenities located on Narragansett Bay west of Burma Road and the rail line. The Narragansett Bay side of the rail line provides a more

pleasant and scenic path, allowing a desirable increased separation from the adjacent rail line and significant separation from the vehicle traffic utilizing Burma Road.

**Section 4 - Northern Shoreline Drive Gateway (Sta. 640+00) to Stringham Road (Sta. 611+50)**

Section 4 contains the portion of the path adjacent to the proposed relocation of Burma Road. As part of the Northern Shoreline Drive Gateway project, AIPC has developed a proposed realignment of Burma Road and its intersection with Stringham Road. The project study, prepared by others, proposes a roundabout at the intersection of the two roadways and realigns a portion of Burma Road to the west. The proposed path would follow the realignment of Burma Road, with a 5-feet landscape buffer separating the path from the roadway. CAD files of the proposed Northern Shoreline Drive Gateway project (including the adjacent path) were obtained from AIPC and inserted into the Feasibility Study Plans. Costs for the construction of the path through within Section 4 are not included in the construction cost estimate. Section 4 terminates in Melville at the northern end of Burma Road.

## SECTION 7 – RIGHT-OF-WAY IMPACTS

Based on the developed path typical sections and available property information gathered in the preparation of the base mapping, a proposed path route was developed that minimizes impacts to sensitive navy properties and private abutters. Right-of-way requirements for the conceptual bicycle path route along Burma Road where then further evaluated.

- In general, the railroad right-of-way limits are approximately 35.25’ east and 47.25’ west of the centerline of the tracks for a total right-of-way width of 82.50’. The existing rail right-of-way is owned by the State of Rhode Island. Throughout most of the Burma Road Segment, the railroad right-of-way is bounded on both sides by property owned by the United States Government and managed by the United States Navy. Burma Road is a public roadway through mostly United States Government property. Therefore, most of the proposed path route of the Burma Road Segment will be through publicly owned land. The proposed path route favors the Narragansett Bay side (west side) of the rail corridor. A minimum clearance of 10’ from the centerline of the railroad tracks to the edge of the path was established during coordination with RIDOT and the private rail operator. Adequate width exists within the railroad right-of-way on the west side of the railroad tracks to locate the path. However since most of the adjacent properties are publicly

owned, there are opportunities for the path to diverge from the railroad right-of-way to provide a more scenic route along Narragansett Bay. Authorization from the United States Government will be required for use of these properties for the proposed bicycle path route.

- The proposed path route was developed to limit impacts to adjacent naval secure areas associated with Naval Station Newport, Navy Piers 1 & 2, and the Naval Undersea Warfare Center. These secure areas are located at the south end of Burma Road, generally to the west of the roadway. Other restrictions including fencing, buildings, and steep slopes were also identified on the west side of the roadway. The proposed path was designed to follow along the eastern side of Burma Road. Beyond the second track crossing, approximate track Sta. 806+80, there are no naval secure areas that constrain the proposed path route.
- Easements from private property owners will be required for any work (temporary or permanent) that will occur outside of the railroad right-of-way and other publicly owned lands. This includes trail construction, slope grading, or drainage improvements. Figure 2 below provides a summary of private property impacts resulting from the proposed path route. Impacts to the adjacent private properties of the Wanumetonomy Golf and Country Club and the Catholic Cemeteries, Inc. have been avoided.

| | Section Number | Location | Approximate Track Sta. | Property Owner | Impact | Additional Comments |
|---|---|---|---|---|---|---|
| Burma Road Segment | 1 | Chases Lane to Gate 11<br>Schibner Lot 6A | | Schibner | Permanent Path Impact<br>Temporary Construction Impact | Impact to private property necessitated by required 5-ft minimum landscape buffer from adjacent roadway to edge of proposed 12-ft wide multi-use path. |
| | 1 | Gate 17 Access Road crossing of Newport Secondary Rail Corridor | 848+20 | United States of America<br>State of Rhode Island | Permanent Path Impact<br>Temporary Construction Impact | Impact to naval secure area necessitated to provide adequate space for proposed multi-use path. Existing chainlink fence in the area will be relocated to provide space for the proposed path. |
| | | | | | | |
| | 3 | Weaver Cove Public Boat Launch<br>Melville Marine Industries - Lot 7 | 655+00 to 645+00 | Melville Marine Industries | Temporary Construction Impact | Possible slope/grading impact to private property. |
| | 3 | Weaver Cove Public Boat Launch<br>Raytheon Company Lot 5 | 644+40 to 640+00 | Raytheon Company | Permanent Path Impact<br>Temporary Construction Impact | Impact to private property necessitated to constructed proposed multi-use path along boat lauch access road. |
| | | | | | | |
| | 4 | Melville<br>Raytheon Company Lot 5 | 640+00 to 638+40 | Raytheon Company | Permanent Path Impact<br>Temporary Construction Impact | Impact to private property necessitated to constructed proposed multi-use path and relocated Burma Road. Work proposed in section 4 is included in the Shoreline Drive Gateways Feasibility Study. |
| | 4 | Melville<br>Melville Marine Industries - Lot 7 | 638+40 to 628+60 | Melville Marine Industries | Permanent Path Impact<br>Temporary Construction Impact | Impact to private property necessitated to constructed proposed multi-use path and relocated Burma Road. Work proposed in section 4 is included in the Shoreline Drive Gateways Feasibility Study. |
| | 4 | Melville<br>Melville Marine Industries - Lot 6 | 628+60 to 611+60 | Melville Marine Industries | Permanent Path Impact<br>Temporary Construction Impact | Impact to private property necessitated to constructed proposed multi-use path and relocated Burma Road. Work proposed in section 4 is included in the Shoreline Drive Gateways Feasibility Study. |

**Figure 2 – Property Impacts**

## SECTION 8 – WETLANDS AND ENVIRONMENTAL CONSTRAINTS

To aid in the development of the proposed path alignment, existing wetlands information was obtained from the Rhode Island Geographic Information System (RIGIS) and spatially inserted into the project base mapping. The wetland information was interpreted by RIGIS from 1988 aerial photography to one quarter acre polygon resolution and is considered approximate. The attached Feasibility Study Plans (Appendix E) graphically represent the RIGIS wetlands data.

As part of the September 2002 "Aquidneck Island Passenger Rail/Bicycle Path Project" a Phase I Environmental Site Assessment was conducted for the proposed rail/bicycle path project. For informational and project planning purposes, a copy of this assessment is included in Appendix D. Several locations along the rail corridor were identified as possible concerns. The Phase I Assessment recommended that localized Phase II Assessments be conducted at several sites along the bicycle path route.

## SECTION 9 – CONSTRUCTION COST ESTIMATE

The following table (Figure 3) provides a construction cost estimate for the proposed path construction as described in Section 6 and as shown on the attached Feasibility Study Plans. The estimate is based upon the major construction items shown on the attached Typical Sections. RIDOT unit prices for these items were utilized and adjusted as needed. Adjustment factors (contingency) for miscellaneous items, drainage, mobilization, etc. were added to the base price and a cost per linear foot was determined. The resulting cost was $68 per linear foot for path construction. Similarly unit costs for the box widening/shifting of Burma Road to accommodate the proposed path were developed based on RIDOT unit prices. The costs of major construction items as shown on the Typical Sections (i.e. full-depth pavement construction, bituminous pavement cold plane and overlay, concrete median barrier, etc.) were utilized and adjusted as needed. No right-of-way acquisition costs have been included.

In addition to the trail construction, 6 boardwalks will be required to span sensitive environmental resources, steep slopes, and water bodies. Based on recent boardwalk construction designs by Berger and recently constructed boardwalk projects in Rhode Island, a unit price of $600 per linear foot of 12-foot wide boardwalk was utilized in preparation of the construction cost estimate.

The construction cost estimate was developed in current year (2007) dollars. However, it is likely that construction will not occur for several years. Therefore, the construction cost has been escalated at a rate of 2.5% until the assumed year of construction, 2011. Another factor that will affect the total cost of the project is the professional services required. These include planning, design, survey, permitting, and construction supervision/administration. It is anticipated that future survey costs would be minimal, due to previous information already gathered.



## Figure 3 – Construction Cost Estimate

| | Section Number | Beginning of Segment | End of Segment | Length (miles) | Estimated Path Cost | Estimated Structure Cost | Estimated Roadway Reconstruction Cost | Segment Total | Additional Comments |
|---|---|---|---|---|---|---|---|---|---|
| Burma Road Segment | 1 | Chases Lane | Second Track Crossing STA 806+80 | 1.06 | $481,000 | $0 | $390,000 | $871,000 | Roadway reconstruction includes box widening, cold plane and overlay, and installation of median barrier on Burma Road. Path cost includes RR signals for one path crossing of railroad at Gate 17 Access Road and pedestrian signals for one roadway crossing of Burma Road at second road crossing. |
| | | | | | | | | | |
| | 2 | Second Track Crossing STA 806+80 | Greene Lane Park STA 736+60 | 1.33 | $378,000 | $964,000 | $0 | $1,342,000 | Structure costs include 1,460 LF of 12 FT wide boardwalk. |
| | | | | | | | | | |
| | 3 | Greene Lane Park STA 736+60 | Northern Shoreline Drive Gateway STA 640+00 | 1.83 | $681,000 | $736,000 | $0 | $1,417,000 | Structure costs include 1,115 LF of 12 FT wide boardwalk. Path cost includes RR signals for two path crossings of railroad (Greene Lane Park and Weaver Cove Boat Lauch Access Road). |
| | | | | | | | | | |
| | 4 | Northern Shoreline Drive Gateway STA 640+00 | Stringham Road STA 611+50 | 0.54 | NA | NA | NA | NA | Section 4 included in Norhern Shoreline Drive Gateway Project. |
| | **Total** | | | 4.76 | **$1,540,000** | **$1,700,000** | **$390,000** | **$3,630,000** | |
| | | | | | | Construction estimate (current dollar, FY 2007) | | $3,630,000 | |
| | | | | | | Construction estimate (FY 2011 dollars) | | $3,993,000 | (assumes 2.5% inflation for 4 years) |
| | | | | | | Planning/design/surveying/permitting/construction inspection | | $799,000 | (20% of total construction) |
| | | | | | | **Total (FY 2011 dollars)** | | **$4,792,000** | |

# APPENDIX A
# SITE PHOTOGRAPHS

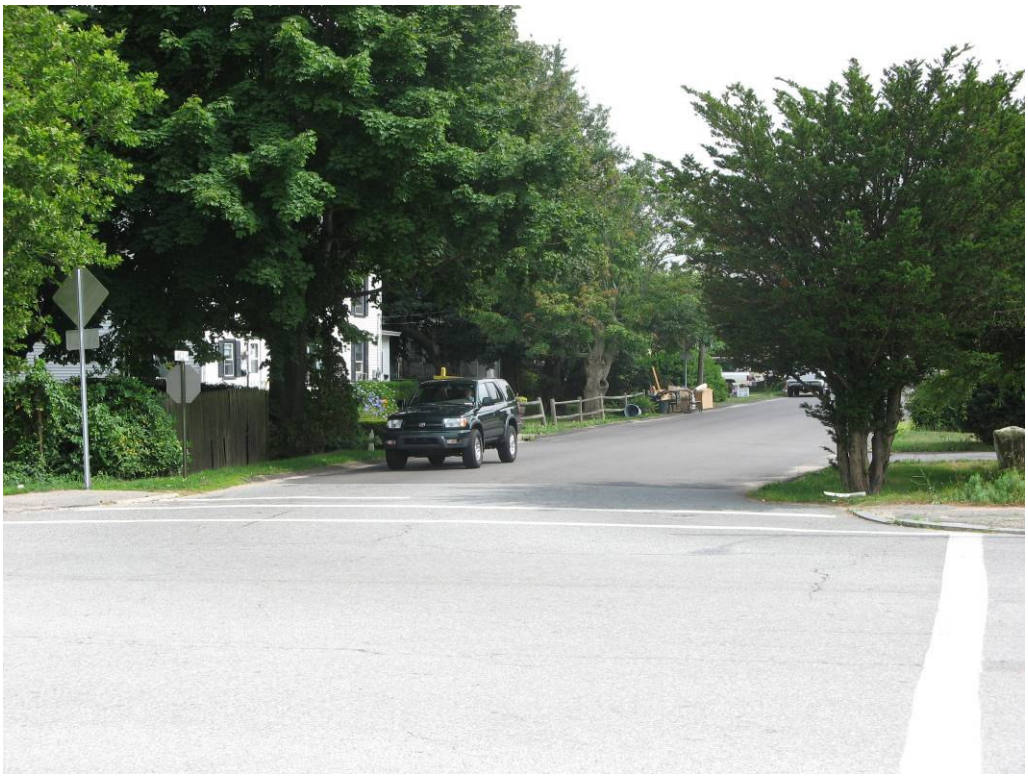


**PHOTO 1 – CHASES LANE**

**PHOTO 2 – GATE 17 ACCESS ROAD**

**PHOTO 3 – GATE 17 ACCESS ROAD AT GATE 11**

**PHOTO 4 – GATE 17 ACCESS ROAD**


**PHOTO 5 – NEWPORT SECONDARY CROSSING OF GATE 17 ACCESS ROAD**

**PHOTO 6 – NEWPORT SECONDARY CROSSING OF GATE 17 ACCESS ROAD**

**PHOTO 7 – BURMA ROAD AT GATE 17**

**PHOTO 8 – SOUTH END OF BURMA ROAD**

**PHOTO 9 – NEWPORT SECONDARY AT GATE 17**

**PHOTO 10 – BURMA ROAD WITH ADJACENT SIDING TRACK**


**PHOTO 11 – NEWPORT SECONDARY TRACK WITH ADJACENT SIDING TRACKS**

**PHOTO 12 – BURMA ROAD AT NAVY PIER 1 & 2 ACCESS ROAD**

**PHOTO 1 3– BURMA ROAD AT CROSSING "H", GATE 26**

**PHOTO 1 4– BURMA ROAD VIEW OF NAVAL UNDERSEA WARFARE CENTER**

**PHOTO 15 – BURMA ROAD AT CROSSING "H", GATE 26**

**PHOTO 16 – BURMA ROAD AT TRACK CROSSING**

**PHOTO 17 – BURMA ROAD SLOPE TO NARRAGANSETT BAY**

**PHOTO 1 8– BURMA ROAD SLOPE TO NARRAGANSETT BAY**

**PHOTO 19 – BURMA ROAD TRACK CROSSING**

**PHOTO 20 – NEWPORT SECONDARY AT BURMA ROAD CROSSING**

**PHOTO 21 – BURMA ROAD AT TRACK CROSSING**

**PHOTO 22 – MCALLISTER'S POINT DRIVE ACCESS CROSSING**

**PHOTO 23 – NEWPORT SECONDARY AT MCALLISTER'S POINT**

**PHOTO 24 – BURMA ROAD AT MCALLISTER'S POINT**

**PHOTO 25 – BURMA ROAD AT MCALLISTER'S POINT**

**PHOTO 26 – NEWPORT SECONDARY AT MCALLISTER'S POINT**

**PHOTO 27 – BURMA ROAD AT TRANSFER STATION**

**PHOTO 28 – BURMA ROAD AT TRANSFER STATION**

**PHOTO 29 – VIEW FROM BURMA ROAD AT TRANSFER STATION**

**PHOTO 30 – BURMA ROAD**

**PHOTO 31 – BURMA ROAD**

**PHOTO 32 – PELL BRIDGE FROM BURMA ROAD**

**PHOTO 33 – NARRAGANSETT BAY FROM BURMA ROAD**

**PHOTO 34 –DRAINAGE SWALE AT GOMES BROOK**

**PHOTO 35 – TRACK BRIDGES AT GOMES BROOK**

**PHOTO 36 – NARRAGANSETT BAY FROM GOMES BROOK**

**PHOTO 37– NARRAGANSETT BAY FROM GOMES BROOK**

**PHOTO 38– BRIDGE AT GOMES BROOK TOWARDS PROP. GREENE LANE PARK**


**PHOTO 39 – BURMA ROAD AT GOMES BROOK**

**PHOTO 40 – BRIDGE AT GREENE LANE**

**PHOTO 41 – BRIDGE AT GOMES BROOK**

**PHOTO 42 – DRAINAGE SWALE AT GOMES BROOK**

**PHOTO 43 – PUMP STATION AT PROP. GREENE LANE PARK**

**PHOTO 44 –BURMA ROAD AT PROP. GREENE LANE PARK**

**PHOTO 45 – NEWPORT SECONDARY AT PROP. GREENE LANE PARK**

**PHOTO 46 – PELL BRIDGE FROM PROP. GREEN LANE PARK**

**PHOTO 47 – NEWPORT SECONDARY AT PROP. GREENE LANE PARK**


**PHOTO 48 – NEWPORT SECONDARY AT CARR POINT ACCESS DRIVE**


**PHOTO 49 – NEWPORT SECONDARY AT CARR POINT ACCESS DRIVE**

**PHOTO 50 – BURMA ROAD AT CARR POINT ACCESS DRIVE**


**PHOTO 51 – BURMA ROAD AT CARR POINT ACCESS DRIVE**


**PHOTO 52 – CARR POINT ACCESS DRIVE FROM BURMA ROAD**

**PHOTO 53 – TRACK SIDING AT CARR POINT**

**PHOTO 54 – NEWPORT SECONDARY BRIDGE OVER BROOK**

**PHOTO 55 – DRAINAGE SWALE BETWEEN TRACK AND BURMA ROAD**

**PHOTO 56 – DRAINAGE SWALE BETWEEN TRACK AND BURMA ROAD**

**PHOTO 57 – DEBRIS PILE AT CARR POINT**


**PHOTO 58 – BURMA ROAD AT LAWTON VALLEY**

**PHOTO 59 – BRIDGE AT LAWTON VALLEY**

**PHOTO 60 – BURMA ROAD AT LAWTON VALLEY**


**PHOTO 61 – BURMA ROAD THROUGH RAYTHEON PROPERTY**

**PHOTO 62 – WEAVER COVE BOAT LAUNCH PARKING AREA**

**PHOTO 63 – WEAVER COVE BOAT LAUNCH**

**PHOTO 64 – WEAVER COVE BOAT LAUNCH PARKING AREA**

**PHOTO 65– BRIDGE AT WEAVER COVE**

**PHOTO 66 – TRACK CROSSING OF WEAVER COVE BOAT LAUNCH ACCESS ROAD**

**PHOTO 67 – NEWPORT SECONDARY AT WEAVER COVE BOAT LAUNCH ACCESS**

**PHOTO 68 – BURMA ROAD NEAR MELLVILLE**

**PHOTO 69 – STRINGHAM ROAD TRACK CROSSING AT MELLVILLE**

**PHOTO 1 – STRINGHAM ROAD TRACK CROSSING AT MELLVILLE**

# APPENDIX B
# DESIGN CONCEPT REPORT - SECTION 3.0

(Taken from Section 3.0 of the Aquidneck Island Passenger Rail/Bicycle Path Project, Task II, Design Concept Report dated September 2002 prepared for the Rhode Island Department of Transportation by the Louis Berger Group, Inc.)

# 3.0 BICYCLE PATH

## 3.1 Introduction

The historic Algonquin trail that ran along the spine of Aquidneck Island and Route 138 in Tiverton has long since disappeared, replaced by an auto-dominated landscape unsafe and unclear to bicyclists and pedestrians. Only a few designated bicycle path routes exist outside of Newport.

The 15.9-mile bicycle path proposed in this study along the scenic coast will provide a safe, scenic, and continuous transportation option for users in Tiverton and connect the Portsmouth bank of the Sakonnet River to the Gateway Center in Newport.

## 3.2 Existing Conditions and Initial Concepts

### 3.2.1 Base Mapping

Site walks along the entire corridor length and Burma Road were performed in the spring of 2001. Using aerial photographs as the base, Opportunities and Constraints Plans were generated in June 2001 based on input from previous studies and the site walks (Figures 3-1 to 3-10).

### 3.2.2 Opportunities

Opportunities to enhance the proposed bicycle path and railroad experience were identified within and adjacent to the existing corridor. 12 locations were identified within the corridor as potential station sites. Criteria for identifying these areas include:

- Access to major highways, e.g. West Main Road, and parking areas
- Adequate spacing between stations
- Proximity to tourist attractions and major employment centers
- Maximum of four stations on-island to provide reliable frequent service and to lower capital & operating costs
- One station in Tiverton
- Available land

Resource Areas outside the corridor, such as open space, athletic fields, schools, and connections to other path systems, were identified. Additional resources mapped include those of historical significance. Desired views along the corridor indicate future potential for overlooks.

### 3.2.3 Constraints

Bridge and at-grade crossings present another layer of planning and design challenges with the addition of the bicycle path. Most of the existing bridges require widening to include the bicycle path. Areas of steep slopes and narrow corridors that have historically supported the railroad will require additional grading and earthwork. A reduction or relapse in drainage maintenance has left many areas of the corridor seasonally or in some cases permanently flooded (Figure 3-1, Tiverton). It was initially unknown whether wet areas would be considered wetlands or just areas of poor drainage due to lapses in maintenance.

Ownership conflicts and areas of encroachment onto railroad property represent a constraint that should be dealt with on a case-by-case basis. Additional constraints identified and primarily affecting the bicycle path include areas of high vehicular noise and areas of high wind.

### 3.2.4 Bicycle Path Types and Alignment

Existing on-road bicycle routes were identified. A preliminary layout was proposed based on the degree of modifications necessary to construct the bicycle path adjacent to the railroad: Paths on Grade require little to no grading and would be the cheapest to construct; Paths with Grading require minor to moderate grading and alignment modifications within the corridor. Paths on Structure include boardwalks and paths in areas that

### 3.3.5 Fencing and Screening

An 8-ft height chain link fence is proposed between the bicycle path and railway. At intersections, the fence will transition down to 4-ft high for better visibility. Utilizing a tension wire in lieu of a top-rail will reduce the linear foot cost and make the fence more transparent. PVC-coated chain link fence is more expensive but will reduce long-term maintenance costs.

To screen industrialized landscapes from the bicycle path, a combination of wood screen fencing and planting is recommended. Initial cost, height, and long-term maintenance and replacement costs of the wood screen fencing are important factors in selecting the proper fencing.

### 3.3.6 View Management Areas

Several areas identified as view corridors on the Opportunities and Constraints Plans require initial management to enhance vistas. Selective removal of individual trees and shrubs, outside of protective areas, is recommended. Where possible, limbing up of large canopy trees and removal of invasive over non-invasive species, is recommended.

### 3.3.7 Planting

Creating plant communities that are self-sustaining, diverse, and low-maintenance is recommended within the transportation corridor and at the stations. On each side of the bicycle path, seeding with a conservation seed mix of native warm- and cool-season grasses and wildflowers is proposed. In areas of high disturbance or more shaded areas, shrub and tree seeds can be added to the mix.

In wetland and other protected resource areas, boardwalk construction on pier systems requires minimum planting as little to no disturbance is anticipated. If disturbance does occur, use of a native seed mix appropriate to the existing wetland plant community is recommended. For all seeding applications, proper preparation of the seedbed is required to ensure the establishment and long-term success of the project. Removal of the competitive seed bank and using appropriate seeding techniques will increase the chance of success. Once established, seeded areas need only be mowed once a year (preferably in the spring) to remove woody species.

At trailheads, crossings, and stations, the use of native or naturalized, non-invasive plants can aid in highlighting special areas: deciduous shade trees, evergreen trees for screening, flowering shrubs, and low-maintenance groundcovers. Permanent irrigation will not be necessary if the proper species are used; however, watering during the initial establishment period should be anticipated.

### 3.3.8 Parking and Amenities at Stations

Enlarged plans for each of the stations are shown in Figures 3-12 to 3-17. General criteria used for parking layout include: no dead-end circulation routes; provide drop-off areas adjacent to the platform on the passenger side of vehicles; utilize a cul-de-sac in situations where vehicles need to turn around to drop-off on the appropriate side; and provide accessible stalls and ramps sloped at less than 1:12. Concrete curbs, standard basin-type drainage, and site lighting were also assumed for the parking areas.
The number of parking spaces per station is as follows:

- Tiverton - none (parking at proposed Starwood mall area)
- Anthony Road/Mt. Hope - 100 each
- Melville - 30
- CCRI/Ranger Road - 20
- Newport - none (parking provided at Gateway Center)

### 3.4.8 Stairway Crossing at St. Philomena School

An opportunity for improvement of the existing beach access and rerouting of the path away from the railway exist at the St. Philomena School (Figure 3-14). The current stairs do not meet code and drain a large area of lawn at the school. Diverting the uphill water and rebuilding the stairway using sound construction practices will improve access to the shoreline and allow for the separation of railway and path.

### 3.4.9 Melville Station (Portsmouth)

A 30-car parking lot and 2 platforms characterize the Melville Station (Figure 3-14). Siting of the parking east of the tracks makes it possible to park without crossing the tracks. The removal of the overhead span and support post on the defunct Bradford Avenue bridge make use of the corridor easier. A small park could benefit the Melville neighborhood if the parcel west of the station were incorporated with the bicycle path. Interpretive opportunities include wartime training facilities (JFK), boat building/active marina, and the adjacent Melville Campground.

### 3.4.10 Weaver Cove Public Boat Launch Access (Portsmouth)

Path users travelling from a distance and wishing to access the bicycle path may use the public boat launch area as a parking facility. Its proximity to the water and location near the midpoint of the bicycle path also make it a perfect location for a picnic/rest area.

It is also in this area for a distance of approximately 1.3 miles that the bicycle path could follow the adjacent public utility ROW. This area is already maintained through mowing and usually has a maintenance road that could be paved and used in conjunction with the bicycle path.

### 3.4.11 McAllister's Point (Middletown)

A passenger siding, just north of the Navy landfill, will afford spectacular views of the bay. The landfill could possibly function as a passive park at some future date, conveniently accessed from the bicycle path.

### 3.4.12 Navy Secure Area (Middletown)

Between Gate 17 and Chase's Lane, the bicycle path will follow the alignment of the existing sidewalk. This section of the multiuse path would be the only section of the bicycle path not considered handicapped-accessible (slope in excess of 5%). At Chase's Lane, construction of a separate bicycle path is possible by narrowing Chases Lane from 32 feet to 24 feet and utilizing the shoulder and narrow strip of Navy property. The path ties into the existing Navy path, using the same alignment and widening the path, and running west of the existing housing development (Figure 3-16). The existing path is constructed of concrete and should be reconstructed using bituminous concrete (asphalt). Combining the two trail systems would reduce maintenance, ensure that the path stays out of secure area, and eliminate the need to re-grade the steep embankment.

### 3.4.13 CCRI Station (Newport)

Access to the CCRI Station will be from Coddington Highway (Figure 3-16). The path winding down to the station will be accessible and accommodate users from the future CCRI campus and points north. Approximately 20 feet of grade change from Coddington Highway to the station will be accommodated between the entrance road and station. The location of the entrance road allows for future development adjacent to the highway.

### 3.4.14 Newport Station/Bicycle Path Terminus (Newport)

The bicycle path terminates at Poplar Street, as the railroad tracks split providing too little room within the corridor for the path to continue all the way to Bridge Street (Figure 3-17). The bicycle path continues as a 5'-wide bicycle lane on both sides of America's Cup Way. A small gateway pavilion marks the entrance to the bicycle path from America's Cup Way. Bollards or similar devices will be used to prevent vehicular access onto the path. Parking for the Newport Station is to be accommodated across Bridge Street at the

**Table 3-1**
**Bicycle Path Cost Summary**

| Section | Bicycle path miles | Bicycle path cost | Proposed Stations | Station cost | Total Cost |
|---|---|---|---|---|---|
| Tiverton | 2.6 | $1,136,200 | Tiverton Station | $44,900 | $1,181,100 |
| Anthony Road to Melville Station | 5.8 | $4,310,900 | • Anthony Road or Mount Hope<br>• Melville Station | $355,300<br>$172,100 | $4,838,300 |
| Burma Road (existing) | 4.4 plus 0.3 miles of new shared roads | $24,900 (minor improvements, overlook, view management area) | --- | --- | $24,900 (minor improvements) |
| Gate 17 to Newport Station | 2.8 | $1,395,700 (includes fencing at gates from Gate 17 to crossing J) | • CCRI Station<br>• Newport Station | $166,400<br>$92,100 | $1,654,200 |
| **Total** | **15.9** | **$6,867,700** | --- | **$830,800** | **$7,698,500** |

### 3.6.2 Tiverton

This section includes approximately 2.60 miles of bicycle path and the proposed Tiverton Station (parking not included). Total Cost of $1,181,100; The Tiverton Station cost is $44,900, and includes plantings, signage, benches, bike racks, and trash receptacles. The bicycle path component is $1,136,200.

### 3.6.3 Anthony Road to Melville Station

Includes approximately 5.84 miles of bikeway and two proposed stations: the northern terminus at either Anthony Road or Mount Hope (parking for 100 cars), and the Melville Station (30-car parking). This portion also includes the connection to the existing Burma Road bicycle lanes. The total cost of this section is $4,838,300. The Anthony Road (or Mt. Hope) Station costs a total of $355,300, the Melville Station is estimated at $172,100, and the bikeway component is $4,310,900.

### 3.6.4 Burma Road (Existing) Section

Includes Melville Station in Portsmouth to the Gate 17 Navy Crossing in Middletown. Total Cost of $24,900 for additional signage and pavement markings for 4.4 miles of existing bike lanes, 0.32 miles of new shared bike lanes (signage and markings only), one overlook, and one view management area.

### 3.6.5 Gate 17 Crossing (Middletown) to Newport Station

This section includes proposed fencing and gates from Gate 17 to Crossing J, a new bikeway along and through Navy property, the CCRI and Newport Stations, and the bicycle path terminating at Poplar Street. Total cost for this section is $1,654,200. The CCRI Station is estimated at $166,400 and the Newport Station is estimated at $92,100. 2.8 miles of bicycle path is estimated at $1,395,700.

### 3.6.6 Summary – Annual Maintenance Costs

The annual maintenance cost for the 15.9-mile bicycle path is $206,000, an average of $13,100 per mile. The breakdown of maintenance costs (tasks) is 70% labor, 30% materials. Maintenance includes both on-going repair and full replacement (see Bicycle Path Maintenance section for items included).

# APPENDIX C
# RAILROAD CORRESPONDENCE

TranSystems

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**To:** Jeremy Marsette, P.E.
The Louis Berger Group

**From:** Domenic Bua

**Date:** July 31, 2007

**Subject:**

**CC:** Susan Szala RIDOT
Jon Babbitt

P701070092

**AQUIDNECK ISLAND PLANNING COMMISSION**
**FEASIBILITY STUDY**
**AQUIDNECK ISLAND BICYCLE PATH**
**BURMA ROAD SEGMENT**

On July 19, 2007 TranSystems contacted the Newport Dinner Train to discuss with them their requirements for their standard horizontal clearance from the centerline of track to the closest obstruction and the Burma Road Segment of the Aquidneck Island Bicycle Path. The Railroad requested that a minimum 10'-0" be maintained throughout their entire line. Therefore 10'-0" from the centerline of rail is the closest any fence that is used to divide the bike trail and the operating track.

In addition they would hope that use of the actual railroad Right-of-Way (ROW) be minimized for safety reasons and future operating considerations. The Railroad in the future may want to install a passing siding or maintenance track and do not want to be shut off from those options.

All fences must be 8"-0" in height. Any modifications to drainage shall direct water away from the railroad ROW. The railroad expects that they will have an opportunity to review all design plans or reports that involve work on or adjacent to their ROW.

On July 31, 2007 TranSystems talked to RIDOT who is the Owner of the property and they are in agreement with the requirements described by the Railroad and stated above.

TranSystems has reviewed the Draft Plan labeled "Figure 2 Typical Sections Burma Road Segment" and the section labeled "Adjacent to Burma Road and Rail Multi-Use/Bicycle Path Typical Section" appears to meet what was discussed with the Railroad and RIDOT

# APPENDIX D
# DESIGN CONCEPT REPORT – SECTION 4.5
# PHASE I ENVIRONMENTAL SITE ASSESSMENT

(Taken from Section 4.5 of the Aquidneck Island Passenger Rail/Bicycle Path Project, Task II, Design Concept Report dated September 2002 prepared for the Rhode Island Department of Transportation by the Louis Berger Group, Inc.)

approximately 18,700 vehicles crossed the Mt. Hope Bridge on/off the Island and 40,700 crossed the Sakonnet River Highway Bridge. These 59,400 vehicles and their occupants are the target market for the on-island and commuter shuttles services analyzed in this report. These numbers are a blended average of year-round demand including weekdays, weekends, and peak days. A more detailed breakdown of demand will be available after the AIPC study described above has been completed.

During high season weekends, single car trains whose combined ridership has been forecast at approximately 900 boardings, would offer 1% +/- reductions in roadway traffic on the two northern bridges, depending on actual ridership, persons/car, and how much of the new transit capacity is used. Typically, new passenger rail services, especially those catering to visitors, gradually become accepted and performance often exceeds forecast demand. The Burlington-Shelburne, VT, and Cape May, NJ, lines are examples of this pattern.

During the past decade, Rhode Island tourist demand has grown approximately 5% per year. The 5,200 seat daily capacity of the minimum equipment needed to operate passenger rail service is equivalent to approximately 2,100 weekday vehicle trips. This would represent up to a 4%+/- reduction in vehicle traffic across the bridges. Since the proposed facilities allow the operation of two-car trains, reductions of crossings on the northern bridges could reach 8% before additional infrastructure or equipment are needed.

Overall, operation of the passenger rail shuttles would have a small, but noticeable positive impact on the Island's traffic congestion.

## 4.5 Phase I Environmental Site Assessment

At the request of Rhode Island Department of Transportation ("RIDOT"), the Louis Berger Group, Inc., ("Berger") has prepared a Phase 1 Environmental Site Assessment ("ESA") of the Newport Secondary Corridor, Conrail Line, which consists of the railroad property within the right-of-way ("ROW") lines located in the communities of Tiverton, Portsmouth, Middletown, and Newport, Rhode Island ("rail corridor"). Within the rail corridor, a total of six train stations ("Stations") are proposed which include Tiverton Station (milepost 13.66, Tiverton), Anthony Road Station (milepost 12.36, Portsmouth), Mount Hope Station (milepost 9.96, Portsmouth), Melville Station (milepost 7.13, Portsmouth), Community College of Rhode Island ("CCRI") Station (milepost 1.72, Newport), and Newport Station (milepost 0.06, Newport). This report includes a site inspection, a historical characterization, and a regulatory file review of the rail corridor, stations, and Subject Parcels[1].

The rail corridor is currently owned by RIDOT, who is leasing the rail corridor to two firms to operate tourist and dinner trains. The rail corridor is approximately 16 miles in length from mileposts 0.0, at Newport, to 15.8 at the Rhode Island and Massachusetts State border, in Tiverton. On Aquidneck Island, consisting of the communities of Newport, Middletown, and Portsmouth, the rail corridor is situated along the western coast with a north/south orientation. In Tiverton, the rail corridor is also situated along the coast with a north/south orientation. The track is typically located in the center of the ROW with a centerline located at the center of the distance between the rails.

The purpose of the ESA is to identify the presence of any "Recognized Environmental Conditions" ("REC") as defined by American Society for Testing and Materials ("ASTM") Standard Practice E-1527, *Standard Practice for Environmental Site Assessments: Phase 1 Environmental Site Assessment Process*, with respect to the rail corridor. Berger conducted visual site inspections and RIDEM file review[2].

[1] Properties located adjacent or in close proximity to the Rail Corridor and/or Stations.

[2] The file review was based on the database search conducted by Vistainfo of San Diego, California, which search the Rail Corridor and areas within a 400-foot offsets from the centerline of the track.

The following Subject Parcels and areas of the rail corridor, from mileposts 15.6 to 0.0, are identified as RECs (see Figures 1-T through 14-N):

1. **Rail Corridor at milepost 2.2**
   Stained grass within the rail corridor below the aboveground piping system associated with the Boiler Plant (Building No. 7) of the Navy facility was observed, which could be a result of pipe leaks.

2. **Derektor Shipyard, Coddington Cove, Middletown, RI (milepost 2.4)**
   Based on the upgradient location, proximity of the shipyard, and contamination of: BTEX compounds, solvents, waste oil, spent sand blast grit, abandoned 55-gallon drums, undocumented underground storage tanks ("USTs") and ASTs, and other waste solids and liquids, this site may pose a threat to the rail corridor.

3. **Derektor Shipyard, Coddington Cove, Middletown, RI (milepost 2.4)**
   Derektor Shipyard underwent a PCB cleanup with the work described in the closure report. Additional releases of oil and/or hazardous materials ("OHM"), gasoline, were uncovered during the cleanup work, which is believed to be from the upgradient gas station.

4. **Naval Undersea Warfare Center ("NUWC") Disposal Area, Middletown, RI (milepost 3.4)**
   Based on the upgradient location, proximity of the NUWC Disposal Area, and the petroleum contamination currently present on this site but that no remediation is currently taking place, this site may pose a threat to the rail corridor.

5. **McAllister Point Landfill, Middletown, RI (milepost 3.8)**
   Based on the proximity of the Landfill area and contamination of BTEX compounds, acids, waste oil, PCBs, pesticides, carcinogenic Polynuclear Aromatic Hydrocarbons ("PAHs"), and metals. this site may pose a threat to the rail corridor.

6. **U.S. Navy Fuel Line, Middletown & Portsmouth, RI (mileposts 4.1 to 7.1)**
   A main fuel pipeline, which connects all the tank farms, is situated on the east side and along Burma Road. The pipeline crosses Burma Road and Railroad tracks to refueling points along the western coast of Aquidneck Island. There was evidence that pipeline have leakage.

7. **Tank Farms 4 & 5, Middletown & Portsmouth, RI (mileposts 4.1 & 5.6)**
   Although the USTs were demolished at Tank Farms 4 and 5, no remedial actions were implemented to address the bedrock fuel leakage.

8. **Rail Corridor adjacent to Green Lane (milepost 4.5, Middletown)**
   Berger observed a utility underground vault and aboveground structure with an AST. The utility housing was located within the rail corridor, or approximately 20 feet east of the rails.

9. **Midway Pump House (milepost 4.67, Middletown)**
   Free oil product was uncovered at the Midway pump house, located east of the rail corridor. Transformers were observed by Mr. Kulpa to be south and adjacent to the Midway pump house.

10. **Tank Farms 1, 2, & 3, Portsmouth, RI (mileposts 6.0, 7.0, and 7.1)**
    Tank Farms 1, 2, and 3 are functioning with stored materials ranging from heavy oil to jet fuel. A comprehensive site characterization at the three tank farms has not been initiated. According to Mr. Kulpa releases of OHM in these Tank Farms are most likely. However, on August 1, 2002, Mr. Kulpa stated that these tanks had not been used for approximately 3 years.

**11. Melville North Landfill, Portsmouth, RI (milepost 6.8)**[3]

Based on the proximity of the Landfill area and contamination of benzene, toluene, ethyl benzene, and xylene ("BTEX") compounds, acids, waste oil, polychlorinated biphenyls ("PCBs"), pesticides, and metals. this site may pose a threat to the rail corridor.

**12. Melville North Landfill, sludge drying bed, Portsmouth, RI (milepost 6.8)**[3]

Based on the proximity of the Sludge Drying Bed area and waste oil contamination, this site may pose a threat to the rail corridor.

**13. Melville North Landfill, Structure 214, Portsmouth, RI (milepost 6.9)** [3]

Based on the proximity of the Structure 214, reported waste oil contamination, and no information on remediation, this site may pose a threat to the rail corridor.

**14. Rail Corridor at the dinner train staging area in Melville (milepost 7.1)**

Berger observed junk metal parts, batteries, electrical equipment parts, used oil drums, and new oil containers. Also, Berger observed a concrete utility vault which houses control valves for the oil tanks located up-gradient. Berger did not gain access to the vault for inspection. However, the vault should be thoroughly inspected for oil leakage.

**15. Rail Corridor at milepost 7.1**

In Melville, Berger observed solid waste in the southwest corner of the intersection of Stringham Road, which consisted of an abandoned small volume gasoline container, an empty 55-gallon drum, a small-volume, rusty propane tank, a plastic barrel on its side, and general rubbish.

**16. Rail Corridor at mileposts 7.4 and 7.1**

Berger observed commercial solid waste, oil sheen, unknown orange powdery substance, and turbid standing water in the ditch area, in the vicinity of Melville.

**17. Rail Corridor at the intersection of Willow Lane (milepost 9.3)**

Berger observed tall silos next to an industrial building formerly known as Keiser and adjacent to the west side of the rail corridor. No signs of oil or hazardous materials ("OHM") spills were observed around the silo.

**18. Rail Corridor at milepost 9.84**

The area of concern is located just south of the Mount Hope Maritime Terminal, Berger observed abandoned rail cars on the west side of the rails.

**19. Rail Corridor at milepost 10.4 (Portsmouth)**

Berger observed a dark stain in between the rails, which is typical throughout the rail corridor.

**20. Rail Corridor at milepost 13.6**

Berger was prevented from proceeding south due to very dense vegetation growth. The inspection was reestablished at milepost 13.2; therefore, the segment of the rail corridor between mileposts 13.2 and 13.6 was not inspected.

**21. Rail Corridor adjacent to Carey Lane intersection (milepost 13.8)**

[3] On August 1, 2002, Mr. Kulpa state that the report submitted by the Navy regarding the Melville North Landfill (Parcels 11, 12, and 13) had not yet been accepted to RIDEM. Therefore, this report reflects the most recent data on record.

Berger observed a large open area (approximately 80 acres) adjacent to the east side of the rail corridor. In comparison to surrounding undeveloped areas, no major vegetative or plant growth was observed in the open area. According to the United States Geological Survey ("USGS") Quadrangle map, the area was occupied by a tank farm with aboveground storage tanks ("ASTs").

**22. Rail Corridor adjacent to the corner of Judson Street and Bay Street (milepost 15.4, Tiverton)**

Berger observed household solid waste on both sides of the rail corridor, which consisted of wood furniture, a refrigerator, plastic sheeting, and containers.

Berger recommends that, to evaluate potential exposure to pedestrians and bicyclists, a Phase II Environmental Site Assessment be conducted to evaluate surface and subsurface soil, which will consist of sampling for PAHs, VOCs, TPH, PCBs, DDT, and metals at Melville North Landfill, Melville Sludge Drying area, Melville Structure 214, McAllister Landfill, and Derektor Shipyard. In addition, samples should be taken at Rail Corridor adjacent to Tank Farms 1 through 5, main fuel line crossing points, and Midway pump house for analyses of VOCs, TPH, and SVOCs. Inspection for OHM releases at the concrete vault, dinner train staging area in Melville (milepost 7.1), should be conducted, Berger did not gain access to the vault for inspection. Other concrete vaults housing fuel valves should also be thoroughly inspected for OHM releases.

## 4.5.1 Background

At the request of Rhode Island Department of Transportation ("RIDOT"), the Louis Berger Group, Inc., ("Berger") has prepared a Phase 1 Environmental Site Assessment ("ESA") of the Newport Secondary Corridor, Conrail Line, which consists of the railroad property within the right-of-way ("ROW") lines located in the communities of Tiverton, Portsmouth, Middletown, and Newport, Rhode Island ("rail corridor"). Within the rail corridor, a total of six train stations ("Stations") are proposed which include Tiverton Station (milepost 13.8, Tiverton), Anthony Road Station (milepost 12.7, Portsmouth), Mount Hope Station (milepost 10.0, Portsmouth), Melville Station (milepost 7.1, Portsmouth), Community College of Rhode Island ("CCRI") Station (milepost 1.72, Newport), and Newport Station (milepost 0.0, Newport). This report includes a site inspection, a historical characterization, and a regulatory file review of the rail corridor, Stations, and Subject Parcels[4].

### *4.5.1.1 Rail Corridor*

The rail corridor is currently owned by the Rhode Island Department of Transportation (RIDOT), which is leasing the rail corridor to two firms to operate tourist and dinner trains. The rail corridor is approximately 16 miles in length from mileposts 0.0, at Newport, to 15.8 at the Rhode Island and Massachusetts state border, in Tiverton, RI. On Aquidneck Island, consisting of the towns of Newport, Middletown, and Portsmouth, the rail corridor is situated along the western coast with a north/south orientation. In Tiverton, the rail corridor is also situated along the coast with a north/south orientation. The track is typically located in the center of the ROW with a centerline located at the center of the rails.

Topography

The rail corridor is generally elevated between 25 and 35 feet above mean sea level; however, the grade is lower near the Coddington Cove section of rail. Additionally, the rail is situated in close proximity to the coast and is within 50 feet of the shoreline west of Kings Grant, south of the Portsmouth boat landing and south of Greene Lane. This shoreline proximity limits use of the corridor on the west side of the track. The rail corridor is also located within the 100-year-flood zone in several areas. (Edwards and Kelcey, *Final West Side Transportation Guide Plan*, 2001)

[4] Properties located adjacent or in close proximity to the Rail Corridor and/or Stations.

#### *4.5.1.2 Stations*

The stations are proposed to be located along the corridor, at Mileposts 0 (Newport), 1.7 (CCRI), 7.1 (Melville), 10.0 (Mt. Hope), 12.4 (Anthony Road), and 13.7 (Tiverton) as previously discussed in Section 2.5.2 and presented in Figures 3-11 through 3-25.

#### *4.5.1.3 Summary*

The objectives of project include preservation of the underutilized rail right-of-way for future transportation use, determination of feasible interim uses to serve the transportation needs of Aquidneck Island, and provision of information to assist local decision-makers in land use decisions on the west side of the Aquidneck Island. The evaluation of the transportation needs and associated investment for Aquidneck Island requires strategies for options of rail upgrades with rail stations and a potential bike path location within or along the rail corridor. Properties located adjacent and/or within close proximity to the corridor are defined as "Subject Parcels." Properties identified as having recognized environmental conditions[5] ("RECs") including a release or threat of a release of oil and/or hazardous materials ("OHM") which may affect the rail right-of-way are defined as "properties of concern."

The ESA was performed to identify RECs with respect to the corridor based on a review of available environmental records and evidence of a release or a threat of a release of OHM that may affect the rail right-of-way. The ESA included records a visual site inspection, review of site history, and a review of federal and state of the rail corridor and Parcels.

### 4.5.2 Soils

Soil deposits within the Aquidneck Rail passage vary throughout the length of the corridor and Station locations. Beginning at the northernmost portion of the rail in Tiverton, dominant soil series include interspersed UD (Udorthents-Urban land complex), NeC (Newport silt loam, 8 to 15 percent slopes), and HnC (Hinckley-Enfield complex, rolling). Near the Sakonnet swing bridge, the series is classified as UD. This UD classification continues on the Portsmouth side of the swing bridge as well and changes to PmB (Pittstown silt loam, 3 to 8 percent slopes) in the vicinity of the Mount Hope Bridge. The section of the rail line from immediately south of the Mount Hope Bridge through Portsmouth to Melville varies widely in soil series classification and includes small areas of MmA (Merrimac sandy loam, 0 to 3 percent slopes), Wa (Walpole sandy loam), EfB (Enfield silt loam, 3 to 8 percent slopes), Sb (Scarboro mucky sandy loam), and concludes with an extended section of NeB (Newport silt loam, 3 to 8 percent slopes) north of Melville. In Melville, the soil classification changes to UD, extending southward interspersed with areas of NeB. In Middletown through Coasters Harbor, the soil classification is primarily UD or Ur (Urban land), with a lengthy stretch of NP (Newport-Urban land complex) heading toward Newport and the conclusion of the rail line.

The dominant soil series along the rail corridor include UD, NeB/C, PmB, and NP, each of which will be discussed individually below.

Udorthents-Urban land complex (UD) soils consist of moderately well-drained to excessively drained soils that have been disturbed by cutting or filling, and areas that are covered by buildings and pavement. The permeability and stability of this unit are variable, as the complex is about 70 percent Udorthents, 20 percent Urban land, and 10 percent other soils. Udorthents soils are generally very steep and used for summer recreation activities such as sunbathing and hiking. The unit is unsuited or poorly suited to most other uses

[5] *Recognized Environmental Condition* as defined by American Society for Testing and Materials ("ASTM") Standard Practice E-1527, *Standard Practice for Environmental Site Assessments: Phase 1 Environmental Site Assessment Process* – the presence or likely presence of any hazardous substances or petroleum products on a property under conditions which indicate an existing release, a past release, or a material threat of release of any hazardous substances or petroleum products into structures, or the ground, groundwater or surface water of the property.

because of slope, position on the landscape, erosion, and exposure to winds and salt spray. Urban land soil areas consist mostly of sites for buildings, paved roads, and parking lots.

Newport silt loam (NeB/C) soils are primarily located on the side slopes of drumlins and glacial till plains in southeastern Rhode Island. Slopes range from 3 to 8 percent for NeB soils and from 8 to 15 percent for NeC soils. Typically, the surficial soil layer is very dark brown silt loam. The subsoil is olive brown and olive silt loam 16 inches thick. The substratum is olive gray channery silt loam to a depth of 60 inches or more. The permeability of this soil is moderate to moderately rapid in the surface layer and subsoil and slow to very slow in the substratum. This soil is suitable for community development, but it is limited due to a slow permeability in the substratum of the substratum. However, this soil is suited to cultivate crops and some areas are used for farming.

Pittstown silt loam (PmB) soils are primarily located on side slopes of glacial upland hills and drumlins. Slopes range from 3 to 8 percent. Typically, the soil contains a very dark grayish brown silt loam surface layer followed by a dark yellowish brown and olive brown silt loam subsoil. The substratum is olive gray, mottled channery silt loam, and it can extend to a depth of 60 inches or more. The permeability of this soil is moderate in the surface layer and subsoil and slow in the substratum. Available water capacity is moderate, and runoff is medium.
Newport-Urban land complex (NP) soils are primarily located on drumlins and glacial till plains of densely populated areas. Slopes are about 6 percent but can range from 1 to 15 percent. Typically, the Newport soils have a surface layer of very dark brown silt loam followed by an olive brown and olive silt loam subsoil. The substratum is olive gray channery silt loam, and it can extend to a depth of 60 inches or more. The permeability of this soil is moderate to moderately rapid in the surface and subsoil layers and slow to very slow in the substratum. Available water capacity is moderate, and runoff is medium to rapid. Areas of this complex are used mainly for residential complexes, shopping centers, and other urban development purposes. (*Soil Survey of Rhode Island,* 1981)

#### *4.5.2.1 Surficial Geology*

The surficial geology in the vicinity of the rail corridor is dominated primarily by the *Narragansett till plains*. Till is an ice-deposited sediment, and it is highly variable in texture (clay to large boulders), composition, thickness, and structural features. This variability is often reflected in its hydraulic properties. These till plains make up the area immediately surrounding Narragansett Bay and are composed of glacial till derived from sedimentary rock, shale, sandstone, and conglomerate. These Pleistocene sediments were deposited 12,000 years ago during the Wisconsin glacial period. The till is generally compacted, dark gray to olive-colored, and it is of a finer texture than the till derived from granitic rock. The region contains few bedrock outcrops, and is dominated by drumloidal landforms smoothed by the prior glaciation. The Newport soils often formed within these deposits. (*Soil Survey of Rhode Island,* 1981)

#### *4.5.2.2 Bedrock Geology*

The Narragansett Bay area, containing the rail corridor, is located within the Narragansett Basin, a synclinal feature stretching 55 miles northward toward Hanover, Massachusetts. The bedrock formations in Rhode Island are almost completely mantled by deposits of outwash and glacial till. Bedrock and consolidated rocks within the rail corridor can be categorized into crystalline (igneous and metamorphic) and sedimentary rocks. Two distinct formations can be observed within the rail corridor; older igneous granitic rock of several ages and compositions in Tiverton, and the Rhode Island Formation, a suite of Pennsylvanian-age sedimentary rocks south of the bridge and throughout the remainder of the rail corridor and the Narragansett Bay area. (*Soil Survey of Rhode Island,* 1981)

The granitic rocks found in the northern reaches of the rail corridor include the pre-Pennsylvanian Bulgarmarsh granite, Metacom granite gneiss, and porphyritic granite, as well as slate and quartzite. These rocks also become exposed to the south in Newport Neck. The Rhode Island Formation has an approximate

thickness of 10,000 feet and its composition can be described as fine to coarse conglomerate, sandstone, graywacke, arkose, shale, and meta-anthracite. (CDM, *Final SIP Report, Melville North Area,* 1995)

#### *4.5.2.3 Groundwater*

The rail corridor is contained within the Narragansett Bay Basin, the most extensive basin in Rhode Island. The basin includes the system of waterways that discharge into the Atlantic Ocean between Point Judith in Narragansett and Sakonnet Point in Little Compton. The Narragansett Bay Basin also contains the watershed tributaries to Narragansett Bay as well as the small waterways that flow into the Atlantic Ocean from Sakonnet Point east to the Massachusetts-Rhode Island state line in Tiverton, at the northernmost extent of the rail corridor. In the vicinity of the rail corridor, groundwater is generally flowing to the west, toward Narragansett Bay.

Groundwater in the vicinity of the corridor is classified as mainly as GA by Rhode Island Geographical Information Systems ("RIGIS"), with a small area of GB classification in the vicinity of Melville and a more extensive area of GB classification extending from the Navy piers south past Newport Gateway and the southern terminus of the rail corridor. According to RIDEM, class GA groundwater consists of groundwater resources that are designated to be suitable for public or private drinking water use without treatment. Groundwater classified as GB consists of groundwater resources that have been designated not suitable for public or private drinking water use. Groundwater located beneath highly urbanized areas with dense concentrations of industrial and commercial activity, permanent waste disposal areas, and areas immediately surrounding the permanent waste disposal area may be classified as GB. No Community and/or Non-Community Wellhead protection areas are located in the immediate vicinity of the rail corridor.

#### *4.5.2.4 Surface Water*

The nearest surface water bodies to the rail corridor consist of coastal portions of eastern Narragansett Bay, the Mount Hope Bay, and the upper reaches of the Sakonnet River near the Sakonnet swing bridge. The Narragansett Bay is rated use Class SA, which is presumed to be suitable for shellfish harvesting for direct human consumption, primary and secondary contact recreational activities, and fish and wildlife habitat. Class SA waters are also considered suitable for aquacultural uses, navigation, and industrial cooling with good aesthetic value. The Mount Hope Bay is rated use Classes SA and SB in the vicinity of the rail corridor. Waters immediately north of the Sakonnet swing bridge are rated use Class SB, while waters to the west between Bristol and Portsmouth are rated use Class SA. Class SB waters are presumed to be suitable for primary and secondary contact recreational activities; shellfish harvesting for controlled relay and depuration; and fish and wildlife habitat. Class SB waters are also considered suitable for aquacultural uses, navigation, and industrial cooling with good aesthetic value. The upper reaches of the Sakonnet River near the Sakonnet swing bridge are rated use Class SB as well.

Additionally, numerous small coastal inlets are classified along the coast of Portsmouth, Middletown, and Newport. These inlet waters are rated as use Class SB/SB1/SB{a}. Class SB1 waters are presumed to be suitable for primary and secondary contact recreational activities and fish and wildlife habitat. They are suitable for aquacultural uses, navigation, and industrial cooling with good aesthetic value. However, primary contact recreational activities may be impacted due to pathogens from approved wastewater discharges. For waters rated SB{a}, {a} indicates a partial use designation due to impacts from CSOs. (RIDEM, *Water Quality Regulations,* 1997)

### 4.5.3 History

The rail corridor was established in 1864 by the Old Colony and Newport Railroad. At the peak of service in 1913, the rail corridor served eleven passenger trains a day in each direction until 1929, when the Mt. Hope Bridge was constructed. The ridership decline caused the discontinuation of all passenger service in 1938.

The rail corridor is currently owned by RIDOT, which is leasing the rail corridor to two firms to operate tourist and dinner trains. The rail corridor is approximately 16 miles in length from mileposts 0.0, at

Newport, to 15.8 at the Rhode Island and Massachusetts state border, in Tiverton. On Aquidneck Island, consisting of the towns of Newport, Middletown, and Portsmouth, the rail corridor is situated along the western coast with a north/south orientation. In Tiverton, the rail corridor is also situated along the coast with a north/south orientation.

### 4.5.4 Review of Public Records

In order to supplement and cross-reference the information received from various government agencies, Berger reviewed a search of Federal and State databases conducted by Vistainfo of San Diego, California. If any information about the rail corridor or properties in the vicinity was found, a discussion of the listing is presented in the text under the appropriate classification. Dates shown are those of the most recent updates to the databases. A complete copy of the database report is contained in Appendix B.

#### *4.5.4.1 Federal Environmental Review*

Berger reviewed information from the following federal databases, identified by ASTM Standard E1527, as sources of information relevant to the Phase I Environmental Site Assessment process.

- Resource Conservation and Recovery Information System ("RCRIS") List, (June 2000)
- RCRA Treatment, Storage, or Disposal ("TSD") Facilities List (June 2000)
- Corrective Action Report ("CORRACTS") (June 2001)
- Comprehensive Environmental Response, Compensation and Liability Information System ("CERCLIS") List, (July 2001)
- U.S. Environmental Protection Agency ("EPA") CERCLIS No Further Remedial Action Planned ("NFRAP") (July 2001)
- National Priorities List ("NPL"), (July 2001)
- Emergency Response Notification System ("ERNS") List, (December 2000)

4.5.4.1.1 RCRIS List

The RCRIS list is a compilation of records from a nationwide database created to maintain and regulate sites or facilities that handle, treat, store, or dispose of hazardous wastes under the Resource Conservation and Recovery Act ("RCRA"). Inclusion on the list is not necessarily indicative of contamination; rather, it indicates the presence of potential sources of contamination.

The discussion of RCRA sites is divided into two sub-sections, which differentiate the RCRA sites located on private properties and the Federal Defense Department property.

*4.5.4.1.1.1 RCRIS Sites Located on Private Properties*

Review of the November 12, 2001 list of RCRA listings revealed five sites located within a 400-foot offset from the centerline of the rail corridor. No adjoining RCRA sites were detected in the results. Instead, the properties that have greater potential to impact the rail corridor are reviewed. The following properties were reviewed at Rhode Island Department of Environmental Management ("RIDEM"):

- Whitey's Auto Repair, 110 Bay St., Tiverton, RI;
- TPI Composites, 225 Alexander Rd., Portsmouth, RI;
- U-Haul Center of Newport, 111 Connell Hwy., Newport, RI; Viking Tours of Newport, 88 Connell Hwy., Newport, RI; and
- Pine's Body and Fender Repair, 51 Gould Street, Newport, RI.

The items listed are discussed as follows:

- **Whitey's Auto Repair, 110 Bay St., Tiverton, RI (milepost 15.5)**

Whitey's Auto Repair was identified as RCRIS Small Quantity Generator ("SQG") No. RID019553502. According to RIDEM Biennial Report for year 1989, Whitey's Auto Repair generated less than 100 kilograms per month of waste oil. Whitey's Auto Repair also employed "Safety Kleen" parts cleaner, which was recycled every six weeks. No information was found on any violation in the RIDEM file.

- **TPI Composites, 225 Alexander Rd., Portsmouth, RI (milepost 7.3)**

TPI Composites was identified as RCRIS SQG No. RI5000001081. According to the EPA Notification of Hazardous Waste Activity, Whitey's Auto Repair generated less than 100 kilograms per month of hazardous waste. No information was given to the type of waste. No information was found on any violation in the RIDEM file.

- **U-Haul Center of Newport, 111 Connell Hwy., Newport, RI (milepost 0.8)**

The U-Haul Center of Newport was identified as RCRIS SQG No. RID980521355. According to the EPA Notification of Hazardous Waste Activity (September 8, 1988), the U-Haul Center of Newport generated less than 100 kilograms per month of hazardous waste with ignitable characteristics. No information was found on any violation in the RIDEM file.

- **Viking Tours of Newport, 88 Connell Hwy., Newport, RI (milepost 0.7)**

Viking Tours of Newport was identified as RCRIS SQG No. RI5000010652. According to the EPA Notification of Hazardous Waste Activity, Viking Tours of Newport generated less than 100 kilograms per month of waste oil from buses. No information was found on any violation in the RIDEM file.

- **Pine's Auto Body & Fender Repair, 51 Gould St., Newport, RI (milepost 0.2)**

Pine's Auto Body was not identified with a RCRIS Number. According to the RIDEM Notification of Hazardous Waste Activity, Pine's Auto Body generated less than 100 kilograms per month of hazardous waste, with ignitable characteristics. No information was given to the type of waste. No information was found on any the violation in the RIDEM file.

*RCRA TSD Facilities List*

A search of the November 12, 2001 RCRIS list revealed two TSD facilities located within a 400-foot offset from the centerline of the rail corridor.

- **U.S. Navy, Naval Education and Training Center ("NETC"),** Public Works Dept., Middletown, RI 02842; and
- **Eastern Resorts,** 125-135, 126-128 Long Wharf, Newport, RI 02840.
  The U.S. Navy site is currently under review for location.

The Eastern Resorts sites are located downgradient from the rail corridor and adjacent to Narragansett Bay. As a result, no impacts from the Eastern Resorts sites to the rail corridor is anticipated and, therefore, Berger did not review RIDEM files on these sites.

*RCRA CORRACTS Facilities List*

A search of the November 12, 2001 CORRACTS list revealed one facility located within a 400-foot offset from the centerline of the rail corridor, which was the U.S. Navy, NETC, Public Works Dept., Middletown, RI 02842. Berger is currently reviewing location information with regard to U.S. Navy sites within the rail corridor.

*CERCLIS-Listed Facilities*

The CERCLIS list is a compilation of records from a nationwide database created to maintain and regulate those facilities or sites that the EPA has investigated or will investigate for suspected or uncontrolled releases of hazardous substances, contaminants or pollutants as reported by states, municipalities, private companies and private citizens under the Comprehensive Environmental Response, Compensation and Liability Act

(CERCLA or the Superfund Program). Once a site is placed on the CERCLIS list, it may be subjected to several additional levels of evaluation, to determine the severity of the contamination from discovery and preliminary assessment to site inspection, and possibly the application of the HRS. Such a determination could ultimately place the site under consideration for inclusion on the NPL. Inclusion on the CERCLIS list does not confirm the presence of an environmental problem or a public health threat.

The discussion of CERCLIS sites is divided into two sub-sections, which differentiate the CERCLIS sites located on private properties and the Federal Defense Department property.

*4.5.4.1.4.1 CERCLIS Sites Located on Private Properties*
Review of the November 12, 2001 list of CERCLIS listings revealed seven sites located within a 400-foot offset from the centerline of the rail corridor. One adjoining CERCLIS site was detected in the results. In addition, the properties that have greater potential to impact the rail corridor were reviewed. The following properties were reviewed at RIDEM:

- Melville North Landfill, Structure 214, Portsmouth, RI;
- Melville North Landfill, sludge drying bed, Portsmouth, RI;
- Melville North Landfill, Portsmouth, RI;
- McAllister Point Landfill, Middletown, RI;
- Derektor Shipyard, Coddington Cove, Middletown, RI;
- Naval Undersea Warfare Center ("NUWC") Disposal Area, Middletown, RI; and
- U-Haul Facility, 111 Connell Highway, Newport, RI.

The items listed are discussed as follows:

- **Melville North Landfill, Structure 214, Portsmouth, RI (milepost 6.9)** [6]

According to the EPA Final Site Inspection Prioritization Report of August 25, 1994, Structure 214 (CERCLIS No. RID981064249) was located adjoining and north of the Sludge Drying Bed, indicated with a locus map (see Appendix C) and within the ROW. In 1980, the U.S. Navy stored eight drums of waste oil adjacent to Structure 214, which had no secondary containment. The U.S. Navy reported that waste oil spills had occurred at Structure 214. Drums were removed on May 1982. According to the site sketch, the soil under the drums was stained.

Based on the proximity of the Structure 214, reported contamination, and no information on remediation, this site may pose a REC with respect to the rail corridor.

- **Melville North Landfill, Sludge Drying Bed, Portsmouth, RI (milepost 6.8)**[6]

According to the Final Site Inspection Prioritization Report of August 25, 1994, the Sludge Drying Bed (CERCLIS No. RID981064306) was located adjoining and north of Melville North Landfill, indicated with a locus map (see Appendix C) and adjoining to the west side of the ROW. The Sludge Drying Bed area was a 15-foot by 40-foot sludge drying bed that the U.S. Navy used to dispose of waste oil. No other specific information regarding the sludge bed was found.

Based on the proximity of the Sludge Drying Bed and undetermined contamination, this site may pose a REC with respect to the rail corridor.

- **Melville North Landfill, Portsmouth, RI (milepost 6.6)** [6]

[6] On August 1, 2002, Mr. Kulpa state that the report submitted by the Navy regarding the Melville North Landfill (Parcels 11, 12, and 13) had not yet been accepted to RIDEM. Therefore, this report reflects the most recent data on record.

According to the EPA Final Site Inspection Prioritization Report (July 18, 1994), the Melville North Landfill (CERLIS No. RID981064421) was an inactive landfill located adjoining to the west side of the ROW (see report's locus map in Appendix C). The landfill was situated in a low-lying, wetland-type area along the shoreline of Narragansett Bay, Weaver Cove. There were no buildings or other structures on the site. The U.S. Navy utilized the landfill from World War II (approximately 1939) to 1955. At the time of the report, Melville Marine Industries owned the landfill property and surrounding areas. The wastes within the landfill remained in place at the site with the presumed types of waste listed as follows:

- Domestic Trash;
- Spent acids;
- Waste paints;
- Solvents;
- Waste oil (diesel, fuel and lube);
- Polychlorinated Biphenyls ("PCBs");
- Scrap metal; and
- Wood debris.

Illegal dumping had been reported at Melville North Landfill before Melville Marine Industries purchase the land in 1984. TRC Environmental Consultants ("TRC") conducted extensive field studies at the landfill in conjunction with the remedial investigation of the landfill. A summary of analytical results of samples taken is shown in Table 4-2.

**Table 4-2**
**Highlights of Analytical Results Source Sample Analysis for Melville North Landfill By TRC**

| Sample Location | Media Type | Compound/Element | Maximum Concentration |
|---|---|---|---|
| SS-1 | Surface Soil | PCB (Aroclor-1260) | 8,000 ppb |
| SS-5* | Surface Soil | Copper | 135 ppm |
| SS-5* | Surface Soil | Zinc | 547 ppm |
| B-3 | Soil Boring | 4,4' – DDT | 160 ppb |
| B-4 | Soil Boring | Carbon Disulfide | 12 J ppb |
| B-9 | Soil Boring | Mercury | 2 ppm |
| B-9 | Soil Boring | Lead | 5,920 ppm |
| B-12 | Soil Boring | Benzene | 83 ppb |
| MW-3 | Soil Boring | Iron | 52,600 ppm |
| MW-4* | Soil Boring | 1,4-Dichlorobenzene | 7,900 ppb |
| MW-4* | Soil Boring | Ethylbenzene | 2,300 J ppb |
| MW-4* | Soil Boring | Xylenes | 11,000 ppb |

*Source: EPA*
* Location is adjacent (60 to 80 feet) to the west right-of-way line of the ROW
ppb: parts per billion
ppm: parts per million
J: Quantitation is approximate due to limitations identified during the quality control review.

According to the Final Site Inspection Prioritization Report, by EPA, the groundwater underlying the landfill flowed west into Narragansett Bay and was hydraulically connected to Narragansett Bay.

Based on the proximity of the Melville North Landfill and well documented contamination, this site may pose a REC with respect to the rail corridor.

- **Derektor Shipyard, Coddington Cove, Middletown, RI (milepost 2.4)**

The Derektor Shipyard site adjoins the east side of the rail corridor. Prior to 1940, this property was farm land. It was acquired by the U.S. Navy in 1940 for use as a supply station and received heavy use during World War II when barracks, warehouses, and quonset huts were constructed on the property. In the 1960s, the Navy used the property to pier warships. In 1973, the Navy left the property. From 1979 to 1992, the property was subleased by the Rhode Island Port Authority to Derektor Shipyard, which performed ship manufacturing on the property. In 1992, Derektor filed for bankruptcy.

Many areas of environmental concern were identified on this property, which included the following:

- Waste oil;
- Paints;
- Solvents;
- Thinners;
- Sodium Hydroxide;
- Spent sand blast grit;
- Used oil;
- Underground storage tanks ("USTs");
- Aboveground storage tanks ("ASTs");
- Storm drain system;
- Abandoned 55-gallon drums; and
- Other waste solids and liquids.

Subsurface investigations included test pitting, soil sampling, soil borings, and groundwater monitoring well installation. Brown and Root concluded, "Much of the soil contamination was localized and apparently related to surficial discharges. Low concentrations of contaminants were also detected in groundwater samples collected at the site."

A human health risk assessment performed on the property indicated that the primary contaminants of concern were polychlorinated biphenyls ("PCBs") and arsenic. PCBs in soil north of Building 6 were determined to have the potential to cause a risk of cancer in site workers above the U.S. EPA's recommended target level of 1 in 100,000 incremental cancer risk. Building 6 is on the Bay side of the railroad tracks.

An ecological risk assessment found that "the likelihood for an interaction that would cause (ecological) receptors to be affected by the contaminants present is extremely low." In the 1997 report, Brown and Root recommended limited soil remedial excavations at several areas but did not recommend a Remedial Investigation/Feasibility Study under CERCLA.

Based on the upgradient location and proximity of the Derektor Shipyard, and documented contamination, this site may pose a REC with respect to the rail corridor.

- **U-Haul Facility, 111 Connell Highway, Newport, RI (milepost 0.8)**

The discussion of the U-Haul site is in Leaking Underground Storage Tank ("LUST") section (see Section 8).

*4.5.4.1.4.2 CERCLIS Sites Located on U.S. Navy Property*

Review of the May 9, 2002 list of CERCLIS listings revealed two sites located within the 400-foot offset from the centerline of the rail corridor. One adjoining CERCLIS site was detected in the results. In addition, the properties that have greater potential to impact the rail corridor were reviewed. The following properties were reviewed at RIDEM:

- **McAllister Point Landfill, Middletown, RI (milepost 3.8)**

The McAllister Point Landfill is located adjoining to the west side of the rail corridor. According to the Draft Final Remedial Investigation Report (1994), the McAllister Point Landfill covered an 11.5-acre area. It was characterized by a mounded area in the central to north-central portion of the site. McAllister Point Landfill was first used in 1955 following the closure of the Melville North Landfill, which continued to operate until the mid-1970's. During the period of operations, McAllister Point Landfill received wastes from all of the industrial activities associated with the Navy. Materials reported disposed of at the landfill included spent acid, paints, solvents, waste oils (diesel, lube, and fuel), and PCB transformer oil. In 1965, an incinerator was constructed, which operated between 1965 and 1972, at the landfill to burn approximately 98% of the waste before the ash was disposed of in the landfill. Following the landfill closure, a three-foot soil cap was reportedly placed over the site.

A Phase I study which evaluated the soil and groundwater of the McAllister Point Landfill detected the following compounds in the soil:

- Volatile organic compounds ("VOCs");
- Semi-volatile organic compounds ("SVOCs");
- Pesticides;
- PCBs;
- Polynuclear aromatic hydrocarbons ("PAHs"), including carcinogenic PAHs;
- Antimony;
- Arsenic;
- Barium;
- Cadmium;
- Calcium;
- Chromium;
- Cobalt;
- Copper;
- Lead;
- Manganese;
- Magnesium;
- Nickel;
- Silver;
- Vanadium; and
- Zinc.

PCBs were detected in almost 50% of the subsurface soil samples with the maximum concentration of 1.1 ppm.

The compounds detected in the groundwater included the following:

- VOC;
- SVOC;
- PAHs;
- PCBs;
- Antimony;
- Arsenic;
- Beryllium;
- Cadmium;
- Chromium;
- Copper;

- Lead;
- Mercury; and
- Nickel.

A human health evaluation was conducted for the McAllister Point Landfill site on the basis of Phase I findings. The exposure scenarios considered in the human health evaluation included both current use and potential use scenarios including trespassing, recreational use, on-site construction, commercial and industrial use, and residential use. Both cancer risks and non-cancer risks were evaluated using available regulatory guidance. Total cancer risks were determined to exceed the acceptable risk range of $1x10^{-4}$ to $1x10^{-6}$ under commercial and residential use.

During the site inspection walk through, March 28, 2002, Berger observed that the McAllister Point Landfill was undergoing the final phase of construction activities. The surface of the landfill was re-established with grass, vents, new rip rap for slope protection and fencing.

More information from the construction/remediation activities to determine whether the site is a REC with respect to the rail corridor.

- **NUWC Disposal Area, Middletown, RI (milepost 3.4)**

Documents available for this property consisted of mostly environmental site assessment work plans. According to Mr. Kulpa, this site is currently under the jurisdiction of the U.S. Army Corps of Engineers. Mr. Kulpa stated that petroleum contamination is currently present on this site but that no remediation is currently taking place. This property is shown on figures photocopied from the 1994 TRC report for the McAllister Point Landfill site (see above) and is believed to be upgradient from the Aquidneck Rail line.

Based on the upgradient location and proximity of the NUWC Disposal Area, and documented contamination, this site may pose a REC with respect to the rail corridor.

*USEPA CERCLIS NFRAP Sites*

A search of the November 12, 2001 CERCLIS NFRAP listed nine sites located within a 400-foot offset from the centerline of the rail corridor, which are the following:

- Long Wharf Area, Corner of Long Wharf and Washington Street, Newport, RI;
- STP Sludge Drying Bed (next to Melville North Landfill), Portsmouth, RI;
- Structure 214 (north of Melville North Landfill), Portsmouth, RI;
- Portsmouth Abandoned Mine, West Shore Road RR Tracks, Portsmouth, RI;
- Melville North Landfill, Burma Road, Portsmouth, RI;
- Melville North Area, Maritime Drive, Portsmouth, RI;
- Gould Island Bunker #11, Southeastern Shore of Gould Island, Middletown, RI;
- Gould Island Disposal Area, Western Shore of Gould Island, Middletown, RI; and
- Melville Terminal, Portsmouth, RI.

The Long Wharf Area site is located down gradient from the rail corridor and adjacent to Narragansett Bay. As a result, no impacts from the Long Wharf Area to the rail corridor is anticipated and, therefore, are not reviewed at RIDEM.

The STP Sludge Drying Bed, Structure 214, and Melville North Landfill sites are discussed in the CERCLIS facilities (Section 4).

No impacts from Gould Island sites, which is located in Narragansett Bay, are anticipated to affect the rail corridor, due to the hydraulic barrier of Narragansett Bay.

*NPL Facilities*
The EPA's NPL (or Superfund List) is a federal listing of uncontrolled or abandoned hazardous waste sites that pose a potential risk to human health or the environment. The list is created from the CERCLIS database (see below) and is primarily based upon a score that each site or facility receives from the EPA's Hazard Ranking System (HRS). After a site or facility has been identified as a CERCLIS site, the EPA conducts an assessment of the property. The HRS score associated with the degree of environmental risk found is one of the determinations made as to whether the site is placed on the NPL. These sites are then prioritized for possible long-term remedial action and referred to the state for further action under state programs.

Review of the November 12, 2001 NPL sites listing confirmed eight sites located within one-mile radius of the rail corridor.

*USPA ERNS List*
The ERNS list is a compilation of records from a national computer database and retrieval system created to store information on accidental releases of oil and hazardous substances. The information stored in this database is acquired through the National Response Center. Each reported incident is required to contain and provide the discharger name, date of release, amount released, and type of substance released. The database did not identify the rail corridor as an ERNS site.

A search of the November 12, 2001 ERNS list revealed 93 listings located within a 400-foot offset from the centerline of the rail corridor.

#### *4.5.4.2 State of Rhode Island Department of Environmental Management*
Berger reviewed information from the following state databases, identified by ASTM Standard E1527, as sources of information relevant to the Phase I Environmental Site Assessment process.

- UST Registration and Closure Database (May 2001)
- RIDEM Registered AST Facility Database (May 2001)
- LUST (August 2001)
- State spills (August 2001)
- State Hazardous Waste Site ("SHWS") Database (Including Equivalent NPL and CERCLIS Sites) (June 2001)

The rail corridor was not identified in the UST databases.

##### 4.5.4.2.1 Underground Storage Tanks
The discussion of USTs is divided into two sub-sections, which differentiate the USTs located on private properties and the Federal Defense Department property.

*4.5.4.2.1.1 USTS Located on Private Properties*
Berger reviewed data obtained from RIDEM's UST Inventory for listings of former and existing UST's deemed to lie within 400 feet from the center line of the of rail corridor. Review of the May 9, 2002 list of USTs, revealed 6 sites containing USTs are located within the 400 feet offset from the center line of the rail corridor.

- TPI, Inc., 225 Alexander Rd., Portsmouth, RI; and
- Bayside Village, 13 Rolling Green Rd., Newport, RI.

The detail discussions of the USTs located on the Bridge Gulf, Viking Tours of Newport, U-Haul, and Green Animals Museum properties are listed in the LUST sections.

The listed items are discussed as follows:

- **TPI, Inc., 225 Alexander Rd., Portsmouth, RI (milepost 7.3)**

According to the RIDEM UST Registration form (August 30, 1993), a 10,000-gallon, steel UST was closed on September 9, 1993. The UST contained no. 2 fuel oil. The RIDEM inspector described that the UST and piping had little corrosion and no holes were found. No free product was found in the soil. RIDEM issued a "no further action required" on September 29, 1993.

- **Bayside Village, 13 Rolling Green Rd., Newport, RI (milepost 0.9)**

According to the RIDEM UST Registration form (February 21, 2000), there were three UST located on the Bayside Village property. All had 5,000-gallon capacity and contained heating oil. The USTs became operational in 1972. According to the tightness test result (April 27, 2000) of the three USTs, one failed. A report by Cyn Environmental Services (November 3, 2000), an unknown volume of No. 2 oil was released due to a failed feed and return line at 5,000-gallon UST, discovery on August 24, 2000. Additional information was designated as "Not available for public review."

4.5.4.2.2 Registered AST Facility Database

The discussion of ASTs is divided into two sub-sections, which differentiate the ASTs located on private properties and the Federal Defense Department property.

*4.5.4.2.2.1 ASTS Located on Private Properties*

Berger reviewed data obtained from RIDEM's AST Inventory for listings of existing AST's deemed to lie within 400 feet offset from the center line of the of rail corridor. Review of the May 9, 2002 list of ASTs, revealed one private property site containing ASTs.

The Island Fuel Terminal, located at 25 State Avenue, Tiverton, RI., (a bulk terminal, milepost 15.6) was reviewed for release of OHM. In relation to the rail corridor (based on observations during the site inspection), the site was located abutting the rail corridor on the west side, which is in the lower gradient. However, due to the large capacity of the ASTs, a release of OHM could impact the rail corridor. The Island Fuel Terminal has a total of eleven ASTs with the storage capacity range of 1.7 hundred thousand gallons to 5.5 million gallons. Five ASTs were located adjoining to the west ROW line, which are listed as follows:

- AST no. 1 contained no. 2 fuel oil with 3.4 million gallon capacity;
- AST no. 2 contained kerosene with 2.3 million gallon capacity;
- AST no. 3 contained no. 2 fuel oil with 2.3 million gallon capacity;
- AST no. 8 contained no. 2 fuel oil with 5.5 million gallon capacity; and
- AST no. 9 contained no. 2 fuel oil with 5.5 million gallon capacity.

Berger did not find groundwater quality monitoring information related to the Island Fuel Terminal. Information regarding a network of monitoring wells was found. The adjacent ASTs represent a REC.

4.5.4.2.3 Leaking Underground Storage Tanks

The discussion of LUSTs is divided into two sub-sections, which differentiate the LUSTs located on private properties and the Federal Defense Department property.

*4.5.4.2.3.1 LUSTS located on Private Properties*

Berger reviewed data obtained from RIDEM's LUST inventory for listings of LUST deemed to lie within a 400-feet offset from the centerline of the rail corridor. Berger reviewed four LUST sites on private properties. The rail corridor was not identified in this database.

- Green Animals Museum, 380 Corys Lane, Portsmouth, RI;
- U-Haul International, 111 Connell Highway, Newport, RI;

- Viking Tours of Newport, Inc., 88 Connell Highway, Newport, RI; and
- Bridge Citgo, 58 Van Zandt Avenue, Newport, RI.

The items listed are discussed as follows:

- **Green Animals Museum, 380 Corys Lane, Portsmouth, RI (milepost 8.2)**

According to the RIDEM Closure Inspection sheet, May 4, 1998, a 1,000 gallon UST of no. 2 oil was removed. The UST was in "terrible" condition at the time of removal with two large holes, which had the approximate diameter of a hand. In addition, the UST bottom was "totally stained." The inspection sheet stated that the soil was saturated with No. 2 oil. The contaminated soil was removed.

An UST Closure Assessment Report was submitted to RIDEM in November of 1998 that stated, "visual observations, headspace analysis, and laboratory analysis of the soil samples indicated a release of petroleum products to the surrounding area of the UST. The total petroleum hydrocarbon ("TPH") level under the UST indicated less than the GA limit groundwater classification, no further environmental investigation of the site is warranted at this time."

Based on the UST Closure Assessment Report, this site does not appear to pose a REC with respect to the rail corridor.

- **U-Haul International, 111 Connell Highway, Newport, RI (milepost 0.8)**

According to RIDEM Closure Inspection sheet, February 23, 1995, U-Haul removed two USTs, which were UST no. 1 (5,000 gallon, diesel) and UST no. 2 (5,000 gallon, gasoline). The tank condition of both USTs was slightly corroded with no visible holes. The soil condition, however, was impacted by petroleum with the report of very strong gasoline odor at the filler and lines. The RIDEM Closure Inspection also indicated that there was a sheen present in the groundwater. An UST Closure Assessment Report was submitted, which stated that, based on the analytical results, the contaminated soil have been removed and no further excavation is warranted, and the groundwater had elevated BTEX concentrations. The UST Closure Report recommended that monitoring wells should placed to determine the extent of the contamination. A RIDEM letter, April 23, 1997, stated that the downgradient monitoring wells showed the presence of VOCs and semi-VOCs at very low concentrations, the GB groundwater standards for VOCs and SVOCs were not exceeded in any of the wells. As a result, RIDEM issued "no further action is required at this time."

Based on the UST Closure Assessment Report and RIDEM letter, this site does not appear to pose a REC with respect to the rail corridor.

- **Viking Tours of Newport, Inc., 88 Connell Highway, Newport, RI (milepost 0.7)**

According to the RIDEM Closure Certificate, October 9, 1997, three USTs were removed, which included a 6,000-gallon diesel tank, a 5,000-gallon gasoline tank, and a 5,000-gallon diesel tank. The site was designated as a LUST site, which required "soil removal only" (occurred on August 8, 1997). According to the UST Closure Assessment Report, by Applied Enviro-Tech, Inc., RIDEM received date September 19, 1997, the low level of VOCs is consistent with a GA groundwater classification; therefore, Applied Enviro-Tech, Inc. recommends no further action be initiated following the removal of the stockpiled soil. According to the RIDEM letter, October 8, 1997, the site obtained the status of "no further action is presently required."

Based on the UST Closure Assessment Report and RIDEM letter, this site does not appear to pose a REC with respect to the rail corridor.

- **Bridge Citgo, 58 Van Zandt Avenue, Newport, RI, (milepost 0.4)**

According to RIDEM letter, December 14, 1998, Bridge Citgo was to remove five USTs. They are listed as follows:

- UST no. 1 contained gasoline with 9,200-gallon capacity;
- UST no. 2 contained gasoline with 6,000-gallon capacity;
- UST no. 3 contained diesel with 5,000-gallon capacity;
- UST no. 4 contained gasoline with 10,000-gallon capacity; and
- UST no. 5 contained diesel with 5,000-gallon capacity.

During the removal activities on December 22, 1998, evidence of significant petroleum release was observed. An UST Closure Assessment Report was submitted on March 18, 1999 by Sage Environmental ("SAGE"). The UST Closure Assessment Report indicated that the soil results conducted during the UST removal showed that the subsurface soils in the former UST field had been impacted by petroleum constituents. In conducting the site investigation prior to remedial excavation, SAGE was able to determine the extent of the impact of subsurface soil and groundwater at the site, which resulted in volume estimates of impacted soil. SAGE concluded that a quarterly monitoring of groundwater for VOC attenuation should implemented. According to SAGE, the groundwater flow direction was north.

According to the quarterly monitoring report, by SAGE, March 21, 2001, concentrations of BTEX and methyl tert-butyl ether ("MTBE") were in compliant with RIDEM Method 1, GB, Groundwater objectives in monitoring wells MW-1, MW-2, and MW-3. However, monitoring well MW-1E had concentrations of BTEX exceeded the Method 1, GB criteria.

Based on the quarterly monitoring report, this site may pose a REC with respect to the rail corridor.

*4.5.4.2.3.2 LUSTS Located ON U.S. Navy property*

Berger reviewed data obtained from RIDEM's LUST inventory for listings of LUST deemed to lie within a 400-foot offset from the centerline of the Rail Corridor. However, some sites outside and adjacent of the 400-foot offset were included due to the possible impacts to the Rail Corridor. Berger reviewed five LUST sites on U.S. Navy property (Tank Farms 1 through 5). Information from other sites were obtained from Mr. Kulpa of RIDEM at a meeting on May 7, 2002. He was also interviewed on June 11, and August 1, 2002. The Rail Corridor was not identified in this database.

- Tank Farm 1 (LS-2704);
- Tank Farm 2 (No specific records found-see Current Status of Tank Farms);
- Tank Farm 3 (LS-2704);
- Tank Farm 4 (LS-2712);
- Tank Farm 5 (LS-2227);
- U.S. Navy Fuel Line;
- Midway pump house; and
- Derektor Shipyard.

The Tank Farms 1 through 5 sites are located east and upgradient of the Rail Corridor. The U.S. Navy Fuel line, which connects all the tank farms, is situated on the east side and along Burma Road. The pipeline crosses Burma Road and Rail Corridor to refueling points along the western coast of Aquidneck Island. Midway pump house is located 800 feet north of Greene Lane and 50 feet east of the tracks. During a PCB cleanup at Derektor Shipyard, Free gasoline product was discovered adjacent to the Rail Corridor.

*Tank Farm History*

In 1941, the U.S. Navy began construction of five tank farms (Tank Farms 1 through 5) to store fuel oils and other petroleum products to supply warships.

The USTs[7] at Tank Farm 5 were constructed between 1942 and 1943, and used for fuel storage from World War II to 1974. Tank Farm 5 consisted of eleven USTs. By 1974, the farm was abandoned except for Tanks 53 and 56. In 1975, the Navy began using Tanks 53 and 56 for waste oil storage as part of an oil recovery and recycling program. Between 1975 and 1982, the waste oil was utilized as an alternate heating oil.

Tank Farm 4 was constructed as a war measure from 1942 and 1943 on the Navy property to support the fueling requirements of the Newport-based Atlantic Fleet. The tank farm consists of twelve 2.52 million-gallon concrete USTs[5]. The tanks were used to store heavy fuel oils and No. 2 fuel oil, from World War II until 1974. For a brief period, three of the four tanks were leased to a private petroleum distribution company, which stored No. 2 fuel oil. By 1977, all USTs were taken out of service.

*Current Status of Tank Farms*

According to Mr. Paul Kulpa of RIDEM, Tank Farms 4 and 5 were decommissioned with the demolition of all on-site USTs. Releases of OHM, mostly heavy oils, were uncovered during the decommissioning due to the disposal method of settled contaminants (tank sludge) in oil containing USTs and tank leakage. To prevent the buildup of tank sludge within the USTs, the sludge was removed via pumping to an on-site designated area for drying and incineration. Some designated areas had sand filters, which allowed the aqueous phase material to infiltrate into the ground, and retained oil contaminants at the surface, which sometimes was incinerated. The retained oil contaminants or dried at the designated areas were left in place without disposal. A possible transporter of OHM to the Rail Corridor from Tank Farm 5 is Gomes Brook which is located approximately 100 feet to the north at the nearest point to Tank Farm 5 and continues west through Rail Corridor to the west coast of Aquidneck Island.

UST leakage at Tank Farms 4 and 5 were uncovered during removal and excavation operations, when oil product was encountered in the soil. Most of the contaminated soil was removed, however, due to the location of the ASTs which were constructed on bedrock, the oil leakage which flowed through cracks and veins of the bedrock was not quantified and removed.

Tank Farms 1, 2, and 3 are functioning with stored materials ranging from heavy oil to jet fuel. A comprehensive site characterization at the three tank farms has not been initiated. Jet fuel release on the surface had occurred at Tank Farm 3. According to Mr. Kulpa releases of OHM in these Tank Farms are most likely. However, on August 1, 2002, Mr. Kulpa stated that these tanks had not been used for approximately 3 years.

Tank Farm 1 contains six 1.134 million gallon steel USTs, two 2.3 million gallon steel ASTs, an oil water separator, and two concrete USTs for groundwater and stormwater from Tank Farm 1 and 2. In the Initial Assessment Report, it states the following:

- Petroleum related compounds were confirmed to exist in the soils between Tanks 15 and 16 and southeast of Tank 12.
- Liquid petroleum was found a monitoring well near Tank 17. Based on gauging data and the influence of the ring drains, there appears to be limited potential for subsurface petroleum migration in this area.
- The analytical data indicates that the primary compounds of interest at Tank Farm 1 are benzene, toluene, ethylbenzene, and xylenes ("BTEX").

[7] Typical construction of the storage tanks consisted of stripping the soil overburden bedrock, and then blasting and excavating between 10 and 30 feet of bedrock to create a steep walled bedrock "socket" in which the tank was built or stop excavation at the bedrock surface. The tank bottom and walls were cast in the bedrock socket or on the bedrock surface with reinforced concrete. Once the bottom and walls were completed, the annular space between the tank walls and bedrock was backfilled with crushed bedrock and other local materials. The tank roof was also completed with the cast-in-place reinforced concrete, 12-inch nominal, which was buried under four feet of backfill materials.

Based on the Initial Assessment of Tank 70 of Tank Farm 3, petroleum seepage occurred at the Tank 70. The data collected suggests that there have been minor impacts to soil and groundwater in the area of investigation.

Mr. Kulpa mentioned that a main pipeline, which connects all the tank farms, is situated on the east side and along Burma Road. The pipeline crosses Burma Road and Railroad tracks to refueling points along the western coast of Aquidneck Island. There was evidence that pipeline have leakage.

Mr. Kulpa mentioned that the concrete vaults which house the valves have floor drains, which he has no information where they are connected.

Currently, free oil product was uncovered at the Midway pump house. Transformers were observed by Mr. Kulpa to be south and adjacent to the Midway pump house.

Derektor Shipyard underwent a PCB cleanup with the work described in the closure report. Additional releases of OHM, gasoline, were uncovered during the cleanup work, which is believed to be from the upgradient gas station.

4.5.4.2.4 State Spill Sites

The discussion of the State spill sites is divided into two sub-sections, which differentiate the state spill sites located on private properties and the Federal Defense Department property.

*4.5.4.2.4.1 State spill sites LOCATED ON PRIVATE PROPERTIES*

Berger reviewed data obtained from RIDEM's State Spill Inventory for listings of spill sites deemed to lie within 400 feet offset from the center line of the of rail corridor. Review of the spill sites (May 9, 2002), revealed one spill site on private property.

According to the letter of Lincoln Environmental, Inc. (May 18, 1994), an estimated volume of 40 to 50 gallons of no. 2 fuel oil was released to the basement of the residence, 33 State Avenue, Tiverton, Rhode Island, during a fuel delivery by Rite Oil Co., which recovered the fuel into a 275 gallon tank. Residual fuel impacted materials stored in the basement and seeped partially into the concrete floor.

On April 8, 1994, seven test holes were excavated beneath the concrete floor to assess the impact to underlying soil, according to Lincoln Environmental, Inc. (June 6, 1994). Based on the results of the TPH analyses, Lincoln Environmental, Inc. recommended no further excavation. A follow up letter by Lincoln Environmental, Inc. (June 20, 1994) stated that Lincoln Environmental, Inc. met with RIDEM representative to inspect the site condition. It was the understanding of Lincoln Environmental, Inc. that no further action is required by RIDEM.

Based on the Lincoln Environmental letter (June 20, 1994) this site does not appear to pose a REC with respect to the rail corridor.

4.5.4.2.5 State Hazardous Waste Site Database (Including Equivalent NPL and CERCLIS Sites)

Berger reviewed data obtained from RIDEM's SHWS inventory for listings of SHWS deemed to lie within 400-foot offset from the rail corridor. A search of the November 12, 2001 SHWS list revealed no listings.

The results of the reviews of the State equivalent of the CERCLIS sites are discussed in Subsections as follows:

| Site | Subsection |
|---|---|
| • Melville North Landfill, sludge drying bed, Portsmouth, RI; | 4.4.5 |

- McAllister Point Landfill, Middletown, RI; 4.4.5
- Derektor Shipyard, Coddington Cove, Middletown, RI; 4.4.5
- Naval Undersea Warfare Center ("NUWC") Disposal Area, Middletown, RI; and 4.4.5
- U-Haul Facility, 111 Connell Highway, Newport, RI. 4.4.5

Berger is currently reviewing location information with regard to U.S. Navy sites within the rail corridor.

### 4.5.5 Site Inspection

Berger conducted visual inspections of the rail corridor and Station locations to collect information that would identify RECs. The inspection required six days to cover the entire 15.8 miles of the rail corridor. The segments inspected and associated dates are shown in Table 4-3.

**Table 4-3**
**Inspection Schedule**

| Segment | Inspection Date | Town | Segment Limits (including Station) | Mileposts |
|---|---|---|---|---|
| 1 | 12/10/01 | Tiverton | Massachusetts State Line to Swing Bridge (Tiverton Station) | 15.8 to 13.1 |
| 2 | 12/11/01 | Portsmouth | Swing Bridge to Boyd's Marsh (Anthony Road Station) | 13.0 to 11.3 |
| 3 | 1/23/02 | Portsmouth | Boyd's Marsh to Willow Lane (Mount Hope Station) | 11.3 to 9.3 |
| 4 | 1/24/02 | Portsmouth | Willow Lane to Melville (Melville Station) | 9.3 to 7.1 |
| 5 | 1/25/02 | Newport | Admiral Kalbfus Road to Newport Station (Newport Station) | 0.0 to 0.9 |
| 6* | 3/28/02 | Portsmouth, Middletown, and Newport | Melville to Admiral Kalbfus Road (CCRI Station) | 7.1 to 0.9 |

*Navy property (permission to access the railroad right-of-way was required.)

Starting from the northern tip in Tiverton (milepost 15.8), Berger inspected the rail corridor by walking along and in between the rails to the end of the rail corridor in Newport (milepost 0.0). Depending on the density of the plant growth and elevation of the rails, areas forty feet and beyond on either side of the rails were accessible to visual observations. Once important evidence was identified, Berger recorded the location using a global positioning system ("GPS") receiver and on aerial photographs. Berger also took representative photographs of the evidence. Appendix B contains photographs taken at the rail corridor during inspections.

In general, Berger observed dark stains in between the rails, which is typical throughout the rail corridor (Photograph 3-2).

The site inspection revealed the information summarized in the following bulleted lists.

*Segment 1*
Berger initiated the inspection at the point on the rail corridor which coincided with the Massachusetts and Rhode Island State Border and proceeded south to the railroad swing bridge.
Berger concluded the inspection of Segment 1 at the swing bridge east abutment or milepost 13.1.

- At the Massachusetts and Rhode Island State Border, Berger observed a tank farm (Inland Fuel Terminals, Inc., 25 State Ave., Tiverton, RI) on the west side of the rails, which consisted of five high-capacity ASTs that were adjacent to the west side of the rail corridor. No evidence of OHM spills that impacted the rail corridor was observed.

- At milepost 15.4 (rail corridor adjacent to the corner of Judson Street and Bay Street), Berger observed household solid waste on both sides of the rail corridor, which consisted of wood furniture, a refrigerator, plastic sheeting, and containers. No evidence of OHM spills that impacted the rail corridor was observed.

- At milepost 13.8 (Carey Lane intersection), Berger observed a large open area (approximately 80 acres) adjacent to the east side of the rail corridor. In comparison to surrounding undeveloped areas, no major vegetative growth was observed in the open area. According to the USGS Quadrangle map, the area was occupied by a tank farm with ASTs. No evidence of OHM spills that impacted the rail corridor and Tiverton Station location was observed. However, the area was low and could be in the flood zone and coastal wetland resource area.

- At milepost 13.6, Berger was prevented from proceeding south due to very dense vegetation growth. The inspection was reestablished at milepost 13.2; therefore, the segment of the rail corridor between mileposts 13.2 and 13.6 was not inspected.

- At the swing bridge east embankment, Berger observed high-capacity transmission cables and towers over the rail corridor. However, no transformers were observed with the electrical towers. No evidence of OHM spills that impacted the rail corridor was observed.

*Segment 2*
At the west abutment of the swing bridge, milepost 13.0, Berger proceeded south to Boyd's Marsh (milepost 11.3).

- Berger observed high-capacity transmission cables and towers located adjacent to the north side of the rail corridor for the majority of Segment 2. However, no transformers were observed with the electrical towers. No evidence of OHM was observed for this segment.

- At milepost 12.7, No evidence of OHM was observed at the Anthony Road Station location.

*Segment 3*
- From Boyd's Marsh, milepost 11.3, Berger advanced south to the Willow Lane intersection (milepost 9.3).

- At milepost 10.8, approximately 150 feet north of the Mount Hope Bridge, Berger observed some household solid waste, which consisted of window frames, storm windows, and plywood. The solid waste appeared to be located within the rail corridor. No evidence of OHM spills that impacted the rail corridor was observed.

- At milepost 10.0, no evidence of OHM spills was observed at the Mount Hope Station location, which is located north and east of the Mount Hope Maritime Terminal.

- At milepost 9.84, just south of the Mount Hope Maritime Terminal, Berger observed abandoned rail cars on the west side of the rails. Due to dense growth, areas surrounding and below the rail cars was unobservable (Photograph 3-1).
- At milepost 9.4, Berger observed an abandoned plastic barrel on its side. No evidence of OHM spills that impacted the rail corridor was observed (Photograph 3-3).

*Segment 4*
From the Willow Lane intersection (milepost 9.3), Berger continued south to Melville (milepost 7.1).

- At the intersection of Willow Lane, Berger observed a tall silo (approximately 5 stories) next to an industrial building formerly known as Kaiser and adjacent to the west side of the rail corridor (Photographs 4-1 and 4-2). No signs of OHM spills were observed around the silo.

- At mileposts 7.4 and 7.1, Berger observed commercial solid waste, oil sheen, unknown orange powdery substance, and turbid standing water in the ditch area (approximately 20 feet in length and 3 inches in depth), in the vicinity of Melville (Photographs 4-3 to 4-6).

- At the dinner train staging area in Melville (milepost 7.1), Berger observed junk metal parts, batteries (associated with the rail cars), electrical equipment parts, used oil drums, and new 5-gallon engine lubricant oil containers. Also, Berger observed a concrete utility vault which houses control valves for the ASTs located up-gradient, which was not accessible for inspection (Photographs 4-7 to 4-12). No evidence of OHM spills was observed at the Melville Station location, which is located east of the track and staging area, where the area was dense with vegetative growth.

*Segment 5*
At the intersection of Admiral Kalbfus Road, milepost 0.9, Berger proceeded to the south end (approximately milepost 0.0) of the rail corridor.

- At milepost 0.9, several 55-gallon drums located adjacent to the west side of the rail corridor were observed. The drums may belong to the local businesses. In addition, Berger observed several overturned plastic barrels. The plastic barrels may be part of the lobster operation in the adjacent building (Photographs 5-1 and 5-2). No evidence of OHM spills that impacted the rail corridor was observed.

- At milepost 0.8, Berger observed an abandoned truck engine (Photograph 5-3).

- At milepost 0.0, no evidence of OHM was observed at the Newport Station Location.

*Segment 6*
The inspection of this segment was within Navy property and began in Melville (milepost 7.1), finally terminating at milepost 0.9 (intersection of Admiral Kalbfus Road).

- In Melville (milepost 7.1), Berger observed solid waste in the southwest corner of the intersection of Stringham Road, which consisted of an abandoned small volume gasoline container, an empty 55-gallon drum, a 3-gallon rusty propane tank, a plastic barrel on its side, and general rubbish (Photographs 6-1 to 6-4).

- At milepost 4.5 or adjacent to Green Lane, Berger observed a utility underground vault and aboveground structure with an AST. The utility housing was located within the rail corridor, or approximately 20 feet east of the rails (Photograph 6-6).

- At mileposts 4.0 to 3.7, Berger observed a recently capped landfill adjacent to the west side of the rail corridor. No OHM was observed from the landfill (Photograph 6-7).

- At milepost 3.3, Berger observed a typical concrete box located approximately 20 feet east of the rails. The concrete box was covered; however, Berger observed other opened concrete boxes, which were storing batteries and electrical equipment. No evidence of OHM spills that impacted the rail corridor was observed (Photograph 6-5).

- At milepost 2.4, a solidified mass of molten metal (approximately 10 feet by 5 feet) was observed on the west side of the rails (Photograph 6-8).

- At milepost 2.2, stained grass below the aboveground piping system associated with the Boiler Plant (Navy Building No. 7) was observed, which could be a result of pipe leaks (Photographs 6-9 and 6-10).

- At milepost 1.9, Berger observed an abandoned household AST (approximately 100 gallons), located 10 feet west of the rail corridor (Photograph 6-11). No evidence of OHM spills that impacted the rail corridor was observed.

- At milepost 1.72, no evidence of OHM was observed at the CCRI Station location.

- At milepost 1.1, Berger observed solid waste west of the rail corridor and in the wetland area, consisting of a plastic "Dunkin Donuts" sign and large rubber tire. No evidence of OHM spills that impacted the rail corridor was observed (Photograph 6-12).

*The following items represent RECs, as the result of the site inspection:*

- **Typical dark stains along the Rail Corridor**
  Berger observed a dark stain in between the rails, which is typical throughout the rail corridor. This condition represent a REC, due to possible release of OHM.

- **Rail Corridor adjacent to the corner of Judson Street and Bay Street (milepost 15.4)**
  Berger observed household solid waste on both sides of the rail corridor, which consisted of wood furniture, a refrigerator, plastic sheeting, and containers. This area represents REC, due to possible release of OHM.

- **Rail Corridor adjacent to Carey Lane intersection (milepost 13.8)**
  Berger observed a large open area (approximately 80 acres) adjacent to the east side of the rail corridor. In comparison to surrounding undeveloped areas, no major vegetative or plant growth was observed in the open area. According to the USGS Quadrangle map, the area was occupied by a tank farm with ASTs. This area represents REC, due to possible release of OHM from past operations of the tank farm.

- **Rail Corridor at milepost 13.6**
  Berger was prevented from proceeding south due to very dense vegetation growth. The inspection was reestablished at milepost 13.2; therefore, the segment of the rail corridor between mileposts 13.2 and 13.6 was not inspected. This area represents REC, due to possible release of OHM.

- **Rail Corridor at milepost 9.84**
  The area of concern is located just south of the Mount Hope Maritime Terminal, Berger observed abandoned rail cars on the west side of the rails. This area represents REC, due to possible release of OHM from abandoned rail equipment.

- **Rail Corridor at the intersection of Willow Lane (milepost 9.3)**
  Berger observed tall silos next to an industrial building formerly known as Keiser and adjacent to the west side of the rail corridor. Although, no visual signs of OHM spills were observed around the silo, more information is needed to determine whether any OHM releases occurred.

- **Rail Corridor at mileposts 7.4 and 7.1**
  Berger observed commercial solid waste, oil sheen, unknown orange powdery substance, and turbid standing water in the ditch area, in the vicinity of Melville. The observation indicated that a release of OHM occurred.

- **Rail Corridor at milepost 7.1**
  In Melville, Berger observed solid waste in the southwest corner of the intersection of Stringham Road, which consisted of an abandoned small volume gasoline container, an empty 55-gallon drum, a small-volume, rusty propane tank, a plastic barrel on its side, and general rubbish. This area represents REC, due to possible release of OHM from empty containers.

- **Rail Corridor at the dinner train staging area in Melville (milepost 7.1)** Berger observed junk metal parts, batteries, electrical equipment parts, used oil drums, and new oil containers. Also, Berger observed a concrete utility vault which houses control valves for the oil tanks located up-gradient. Berger did not gain access to the vault for inspection. This area represents REC, due to possible release of OHM from utility vault, equipment, and storage containers.

- **Rail Corridor adjacent to Green Lane (milepost 4.5)**
  Berger observed a utility underground vault and aboveground structure with an AST. The utility housing was located within the rail corridor, or approximately 20 feet east of the rails. This area represents REC, due to lack of information regarding the operation of the equipment.

- **Rail Corridor at milepost 2.2**
  Stained grass with the rail corridor below the aboveground piping system associated with the Boiler Plant (Building No. 7) was observed, which could be a result of pipe leaks. This area represents REC, due to lack of information regarding the leaked material.

- **Rail Corridor at milepost 1.9**
  Berger observed an abandoned AST, located 10 feet west of the rail corridor. This area represents REC, due to possible release of OHM.

- **Rail Corridor at milepost 0.8**
  Berger observed a large abandoned engine located within the railroad ROW and east side of the rail corridor. This area represents REC, due to possible release of OHM.

### 4.5.6 Business Environmental Risks

The rail corridor has a general and specific Business Environment Risk[8] ("BER") associated deteriorating overhead bridges and asbestos containing material ("ACM"). During the site inspection, Berger noticed that, typically, overhead bridges exhibited deteriorated wood beams and decks, which could generate falling

[8] ASTM Standard E1527 defines "business environmental risk" as "a risk which can have a material environment or environmentally-driven impact on the business associated with the current or planned use of a parcel of commercial real estate, not necessarily limited to those environmental issues required to be investigated in this practice."

debris. For the specific BER, according to Site Assessment and Screening Evaluation Report for the Derektor Shipyard, ACM was found to be prevalent at the facility.

### 4.5.7 Conclusions

On the basis of the ESA findings discussed in the preceding sections, Berger has identified properties of concern along the rail corridor as follows (see Figures 1-T through 14-N):

1. **Rail Corridor at milepost 2.2**
   Stained grass within the rail corridor below the aboveground piping system associated with the Boiler Plant (Building No. 7) of the Navy facility was observed, which could be a result of pipe leaks.

2. **Derektor Shipyard, Coddington Cove, Middletown, RI (milepost 2.4)**
   Based on the upgradient location, proximity of the shipyard, and contamination of: BTEX compounds, solvents, waste oil, spent sand blast grit, abandoned 55-gallon drums, undocumented underground storage tanks ("USTs") and ASTs, and other waste solids and liquids, this site may pose a threat to the rail corridor.

3. **Derektor Shipyard, Coddington Cove, Middletown, RI (milepost 2.4)**
   Derektor Shipyard underwent a PCB cleanup with the work described in the closure report. Additional releases of OHM, gasoline, were uncovered during the cleanup work, which is believed to be from the upgradient gas station.

4. **Naval Undersea Warfare Center ("NUWC") Disposal Area, Middletown, RI (milepost 3.4)**
   Based on the upgradient location, proximity of the NUWC Disposal Area, and the petroleum contamination currently present on this site but that no remediation is currently taking place, this site may pose a threat to the rail corridor.

5. **McAllister Point Landfill, Middletown, RI (milepost 3.8)**
   Based on the proximity of the landfill area and contamination of BTEX compounds, acids, waste oil, PCBs, pesticides, carcinogenic Polynuclear Aromatic Hydrocarbons ("PAHs"), and metals. this site may pose a threat to the rail corridor.

6. **U.S. Navy Fuel Line, Middletown & Portsmouth, RI (mileposts 4.1 to 7.1)**
   A main pipeline, which connects all the tank farms, is situated on the east side and along Burma Road. The pipeline crosses Burma Road and Railroad tracks to refueling points along the western coast of Aquidneck Island. There was evidence that pipeline have leakage.

7. **Tank Farms 4 & 5, Middletown & Portsmouth, RI (mileposts 4.1 & 5.6)**
   Although the USTs were demolished at Tank Farms 4 and 5, no remedial actions were implemented to address the bedrock fuel leakage.

8. **Rail Corridor adjacent to Green Lane (milepost 4.5, Middletown)**
   Berger observed a utility underground vault and aboveground structure with an AST. The utility housing was located within the rail corridor, or approximately 20 feet east of the rails.

9. **Midway Pump House (milepost 4.67, Middletown)**
   Free oil product was uncovered at the Midway pump house, located east of the rail corridor. Transformers were observed by Mr. Kulpa to be south and adjacent to the Midway pump house.

10. **Tank Farms 1, 2, & 3, Portsmouth, RI (mileposts 6.0, 7.0, and 7.1)**

Tank Farms 1, 2, and 3 are functioning with stored materials ranging from heavy oil to jet fuel. A comprehensive site characterization at the three tank farms has not been initiated. According to Mr. Kulpa releases of OHM in these Tank Farms are most likely. However, on August 1, 2002, Mr. Kulpa stated that these tanks had not been used for approximately 3 years.

**11. Melville North Landfill, Portsmouth, RI (milepost 6.8)**[9]

Based on the proximity of the Landfill area and contamination of benzene, toluene, ethyl benzene, and xylene ("BTEX") compounds, acids, waste oil, polychlorinated biphenyls ("PCBs"), pesticides, and metals. this site may pose a threat to the rail corridor.

**12. Melville North Landfill, sludge drying bed, Portsmouth, RI (milepost 6.8)**[9]

Based on the proximity of the Sludge Drying Bed area and waste oil contamination, this site may pose a threat to the rail corridor.

**13. Melville North Landfill, Structure 214, Portsmouth, RI (milepost 6.9)**[9]

Based on the proximity of the Structure 214, reported waste oil contamination, and no information on remediation, this site may pose a threat to the rail corridor.

**14. Rail Corridor at the dinner train staging area in Melville (milepost 7.1)**

Berger observed junk metal parts, batteries, electrical equipment parts, used oil drums, and new oil containers. Also, Berger observed a concrete utility vault which houses control valves for the oil tanks located up-gradient. Berger did not gain access to the vault for inspection. However, the vault should be thoroughly inspected for oil leakage.

**15. Rail Corridor at milepost 7.1**

In Melville, Berger observed solid waste in the southwest corner of the intersection of Stringham Road, which consisted of an abandoned small volume gasoline container, an empty 55-gallon drum, a small-volume, rusty propane tank, a plastic barrel on its side, and general rubbish.

**16. Rail Corridor at mileposts 7.4 and 7.1**

Berger observed commercial solid waste, oil sheen, unknown orange powdery substance, and turbid standing water in the ditch area, in the vicinity of Melville.

**17. Rail Corridor at the intersection of Willow Lane (milepost 9.3)**

Berger observed tall silos next to an industrial building formerly known as Keiser and adjacent to the west side of the rail corridor. No signs of oil or hazardous materials ("OHM") spills were observed around the silo.

**18. Rail Corridor at milepost 9.84**

The area of concern is located just south of the Mount Hope Maritime Terminal, Berger observed abandoned rail cars on the west side of the rails.

**19. Rail Corridor at milepost 10.4 (Portsmouth)**

Berger observed a dark stain in between the rails, which is typical throughout the rail corridor.

**20. Rail Corridor at milepost 13.6**

Berger was prevented from proceeding south due to very dense vegetation growth. The inspection was reestablished at milepost 13.2; therefore, the segment of the rail corridor between mileposts 13.2 and 13.6 was not inspected.

[9] On August 1, 2002, Mr. Kulpa state that the report submitted by the Navy regarding the Melville North Landfill (Parcels 11, 12, and 13) had not yet been accepted to RIDEM. Therefore, this report reflects the most recent data on record.

21. **Rail Corridor adjacent to Carey Lane intersection (milepost 13.8)**
    Berger observed a large open area (approximately 80 acres) adjacent to the east side of the rail corridor. In comparison to surrounding undeveloped areas, no major vegetative or plant growth was observed in the open area. According to the United States Geological Survey ("USGS") Quadrangle map, the area was occupied by a tank farm with aboveground storage tanks ("ASTs").

22. **Rail Corridor adjacent to the corner of Judson Street and Bay Street (milepost 15.4, Tiverton)**
    Berger observed household solid waste on both sides of the rail corridor, which consisted of wood furniture, a refrigerator, plastic sheeting, and containers.

### 4.5.8 Recommendations

Berger recommends that, to evaluate potential exposure to pedestrians and bicyclists, a Phase II Environmental Site Assessment be conducted to evaluate surface and subsurface soil, which will consist of sampling for PAHs, VOCs, TPH, PCBs, DDT, and metals at Melville North Landfill, Melville Sludge Drying area, Melville Structure 214, McAllister Landfill, and Derektor Shipyard. In addition, samples should be taken at Rail Corridor adjacent to Tank Farms 1 through 5, main fuel line crossing points, and Midway pump house for analyses of VOCs, TPH, and SVOCs. Inspection for OHM releases at the concrete vault, dinner train staging area in Melville (milepost 7.1), should be conducted, Berger did not gain access to the vault for inspection. Other concrete vaults housing fuel valves should also be thoroughly inspected for OHM releases.

## 4.6 Air Quality Considerations

Development of either new rail service or the bike path or both aspects of the feasibility study will have some impact on air quality in the area. The requirements of the Federal Clean Air Act (CAA) of 1970, as amended, and state regulations direct that transportation plans, projects and improvement programs not do the following:

- Cause or contribute to any new violation of the National Ambient Air quality Standard (NAAQS);
- Increase the frequency or severity of any existing violations of the NAAQS, or
- Delay the timely attainment of the NAAQS.

Under CAA and its amendments, the EPA has the ultimate authority for protecting ambient air quality, and has issued NAAQS for six criteria pollutants; carbon monoxide, sulfur dioxide, particulate pollution less than or equal to 10 micrometers in diameter, ozone, nitrogen dioxide and lead. The CAA directs that states and local governments have a primary responsibility for air pollution prevention and control, and authorizes that they may adopt standards and enforce ambient air quality standards (AAQS) more stringent than the NAAQS. Rhode Island has adopted the NAAQS. Areas that do not meet the NAAQS are classified as non-attainment areas.

All counties within Rhode Island are classified by the EPA as being in non-attainment status for the NAAQS pollutant, ozone, with a classification of serious. The State of Rhode Island in conformance with CAA requirements has developed and submitted a State Implementation Plan (SIP) to the EPA, which describes how the State will attain and maintain air quality standards in non-attainment areas. The Rhode Island Department of Environmental Management is the state agency responsible for implementing the SIP.

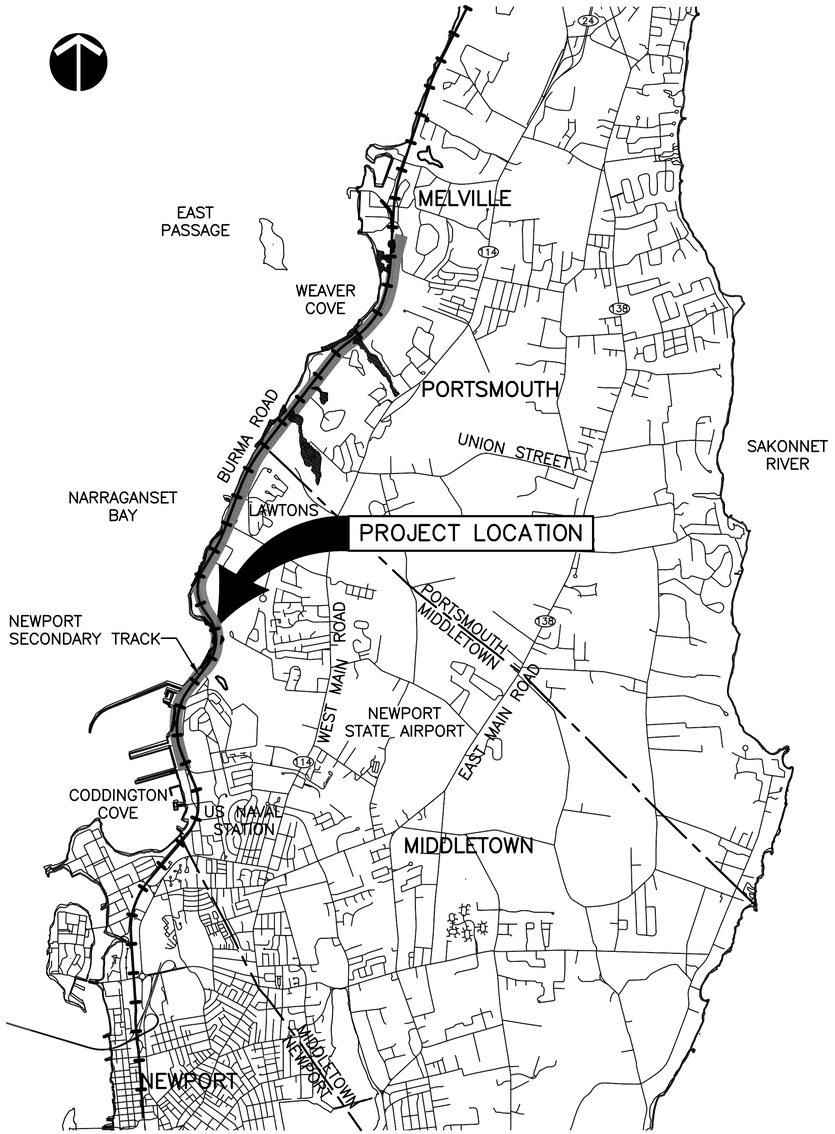
Rail Service alternatives are estimated to result in some reduction of automobile traffic (See Section 1.) according to the ridership projections. Any increase in emissions resulting from introduction of rail service would be compared to projected reductions form decreases in automobile trips on the study area.

Rail service alternatives propose using a Diesel Multiple Unit (DMU) for all service on Aquidneck Island. The rail vehicle is a self-propelled car powered by a diesel engine with a power rating in the range of 600 - 1000 hp. Please see Section 2 for further details on car capacity and specification. New diesel engine

# APPENDIX E
# FEASIBILITY STUDY PLANS

# AQUIDNECK ISLAND PLANNING COMMISSION
# RHODE ISLAND

## FEASIBILITY STUDY
## SHORELINE BIKEWAY/AQUIDNECK ISLAND BICYCLE PATH
## BURMA ROAD SEGMENT




AQUIDNECK ISLAND PLANNING COMMISSION
1985

SEPTEMBER 19, 2007

**INDEX OF SHEETS**

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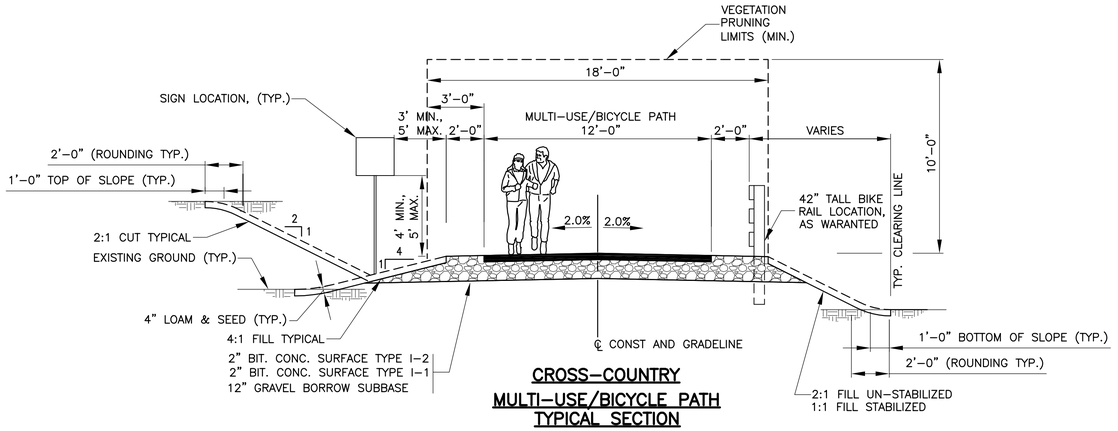
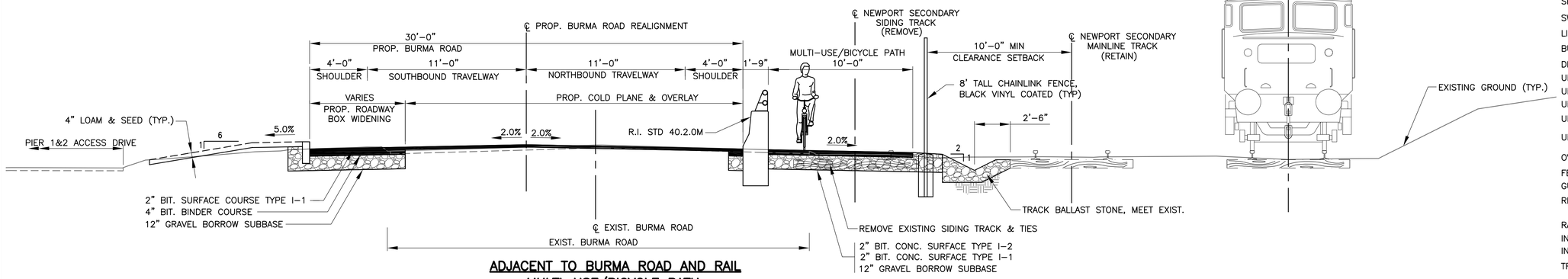
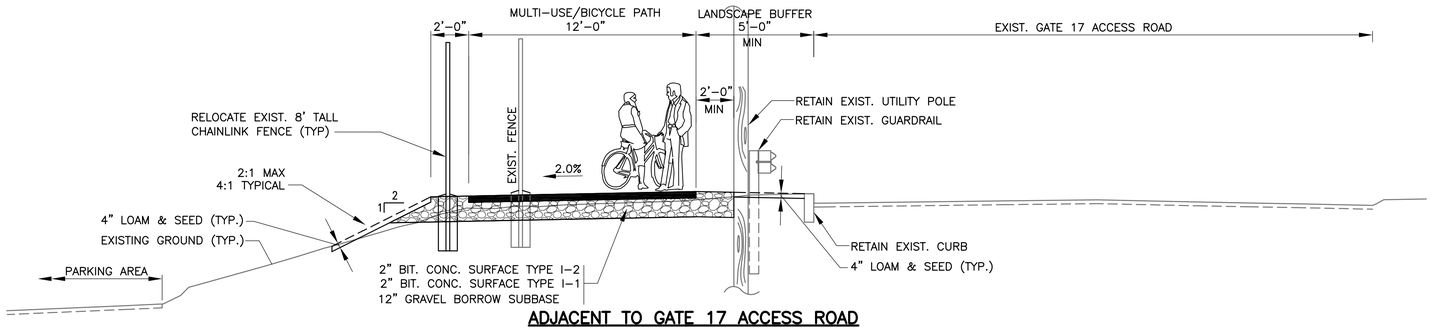



**CROSS-COUNTRY MULTI-USE/BICYCLE PATH TYPICAL SECTION**




**ADJACENT TO BURMA ROAD AND RAIL MULTI-USE/BICYCLE PATH TYPICAL SECTION**




**ADJACENT TO GATE 17 ACCESS ROAD MULTI-USE/BICYCLE PATH TYPICAL SECTION**

## LEGEND

### EXISTING

- DRAINAGE MANHOLE
- CATCH BASIN
- SEWER MANHOLE
- SIGNS
- UTILITY POLE
- LIGHTPOLE
- SPOT ELEVATION x19.6
- SWAMP,MARSH OR WETLANDS
- LIMIT OF WETLAND (RIGIS)
- BUILDINGS
- DRAINAGE PIPE 12" RCP
- UNDERGROUND WATER 12" W
- UNDERGROUND SEWER S
- UNDERGROUND GAS G
- UNDERGROUND CONDUIT CONDUIT
- UNDERGROUND STEAM STEAM
- OVERHEAD WIRES OHW
- FENCE
- GUARDRAIL
- RIGHT-OF-WAY/PROPERTY LINE
- RAILROAD TRACK NEWPORT SECONDARY TRACK
- INTERMEDIATE CONTOUR
- INDEX CONTOUR 20
- TREELINE
- RAILROAD BASE LINE 270+00
- BURMA ROAD
- PHOTOGRAPH LOCATION XX

### PROPOSED

- MULTI-USE/BICYCLE PATH TRACK CROSSING SIGNAL (S)
- MULTI-USE/BICYCLE PATH
- MEDIAN BARRIER
- ROADWAY RECONSTRUCTION (BY OTHERS)
- ROADWAY RECONSTRUCTION
- BOARDWALK

## NOTES

1. BASE MAPPING COMPILED BY ASEC CORP. FROM AERIAL PHOTOGRAMETRY AND SUPPLEMENTAL FIELD SURVEY DATED 2007.
2. ALL ELEVATIONS SHOWN ARE BASED ON NGVD 1929. THE STATE PLANE COORDINATES ARE BASED ON RHODE ISLAND HORIZONTAL DATUM (NAD83)
3. UTILITY INFORMATION DEPICTED ON THESE PLANS IS BASED ON FIELD SURVEY OF SURFACE EVIDENCE AND AVAILABLE RECORD PLAN DATA.

GRAPHIC SCALE

4 0 2 4 8 16 HORIZONTAL

Figure No. 1

TYPICAL SECTIONS

BURMA ROAD SEGMENT

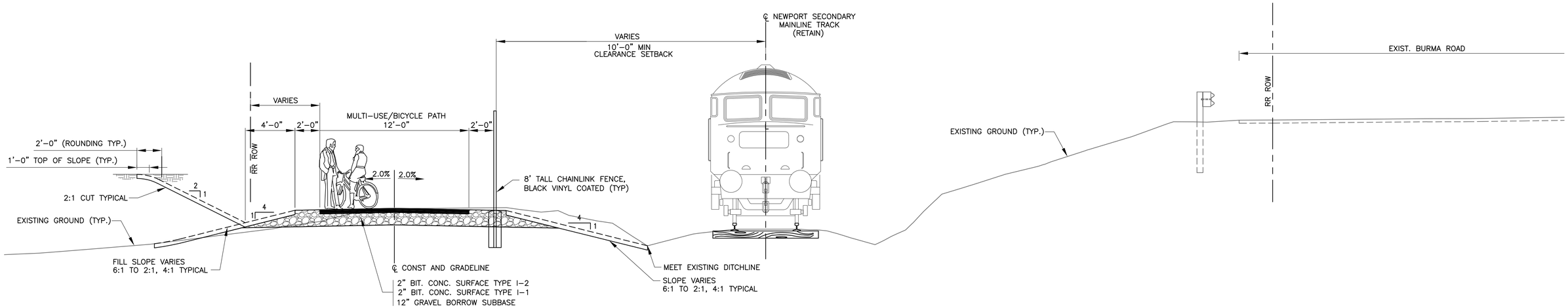
SEPTEMBER 19, 2007

SHORELINE BIKEWAY/AQUIDNECK ISLAND BICYCLE PATH STUDY

RHODE ISLAND

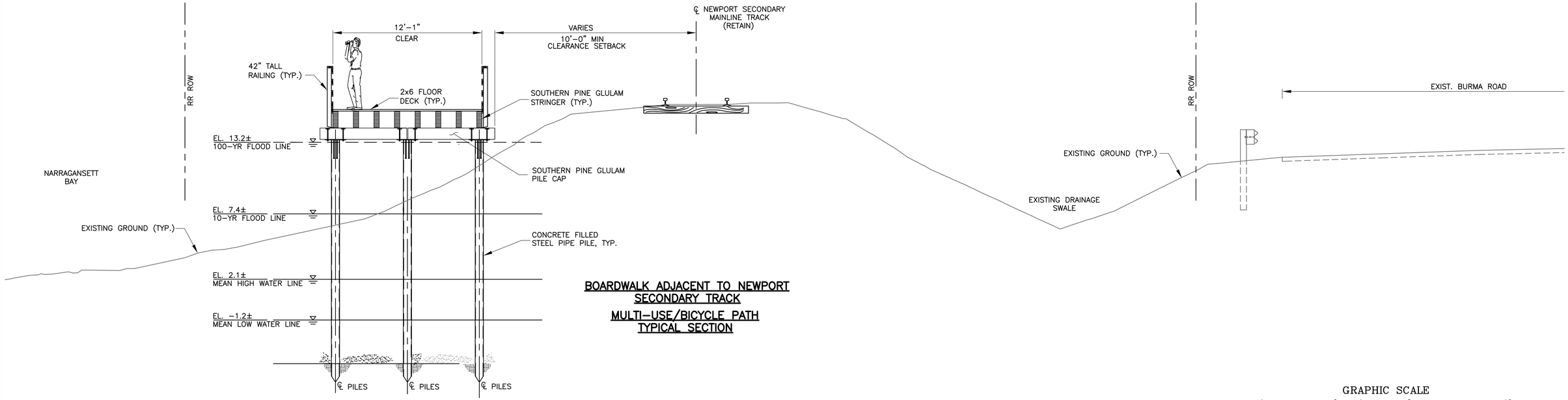
The Louis Berger Group, Inc.

Aquidneck Island Planning Commission




**ADJACENT TO NEWPORT SECONDARY TRACK**

**MULTI–USE/BICYCLE PATH**
**TYPICAL SECTION**




**BOARDWALK ADJACENT TO NEWPORT SECONDARY TRACK**

**MULTI–USE/BICYCLE PATH**
**TYPICAL SECTION**

GRAPHIC SCALE
4 0 2 4 8 16
HORIZONTAL

Figure No. 2
TYPICAL SECTIONS
BURMA ROAD SEGMENT
SHORELINE BIKEWAY/AQUIDNECK ISLAND BICYCLE PATH STUDY
RHODE ISLAND

SEPTEMBER 19, 2007

The Louis Berger Group, Inc.

Aquidneck Island Planning Commission

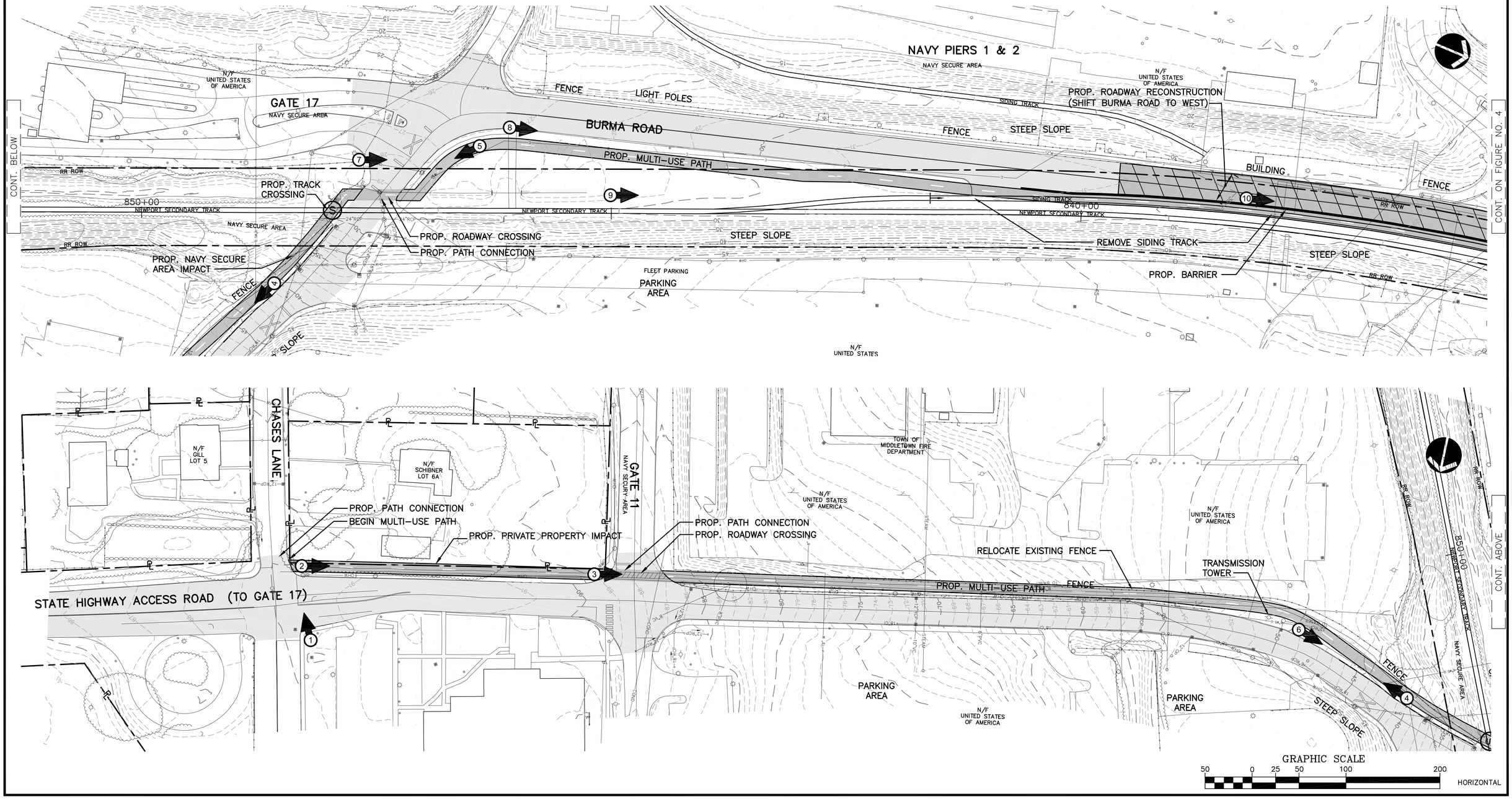



Figure No. 3

ROUTE STUDY PLANS

BURMA ROAD SEGMENT

SEPTEMBER 19, 2007

SHORELINE BIKEWAY/AQUIDNECK ISLAND BICYCLE PATH STUDY

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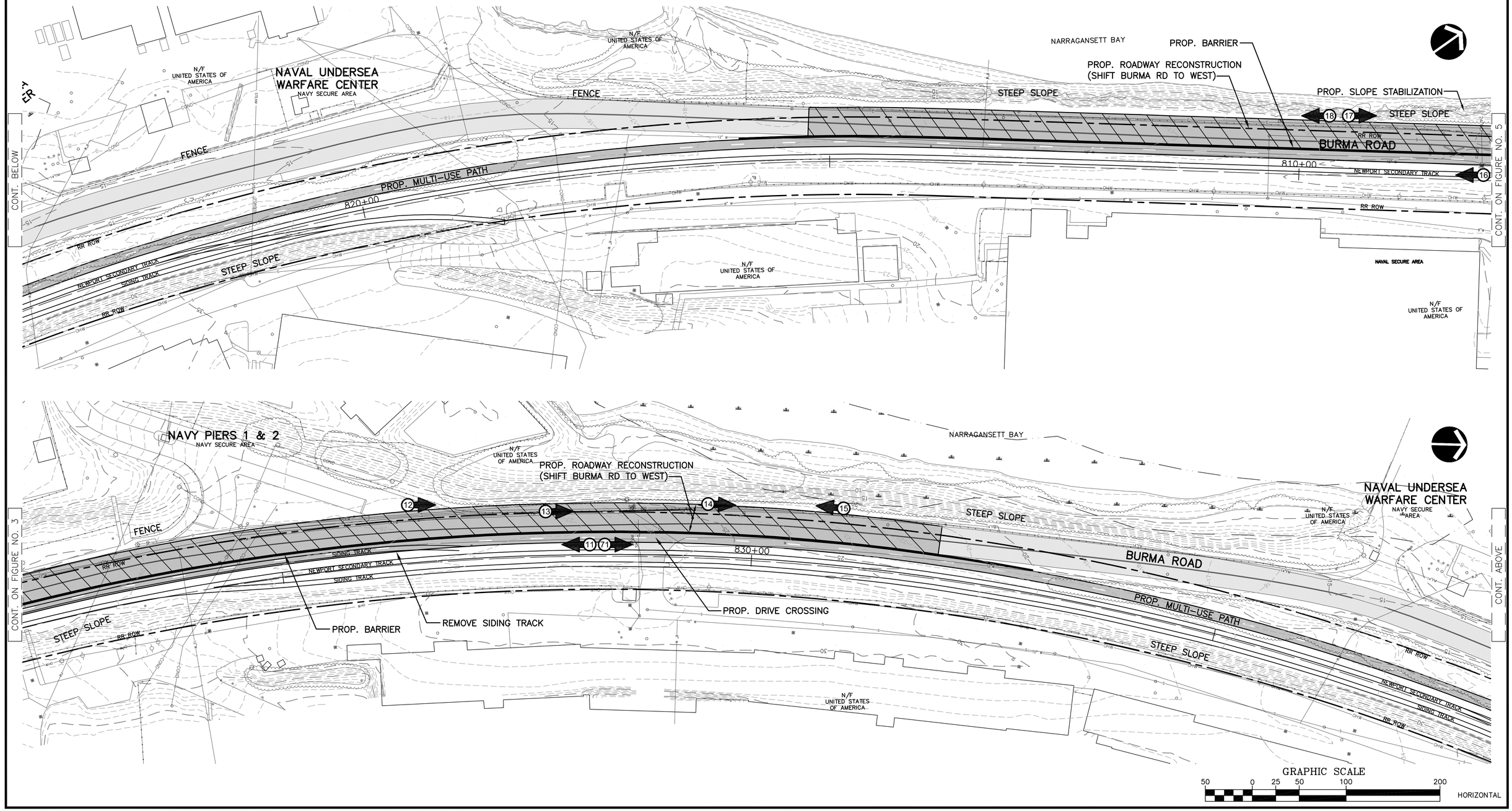


Figure No. 4

ROUTE STUDY PLANS

BURMA ROAD SEGMENT

SEPTEMBER 19, 2007

SHORELINE BIKEWAY/AQUIDNECK ISLAND BICYCLE PATH STUDY

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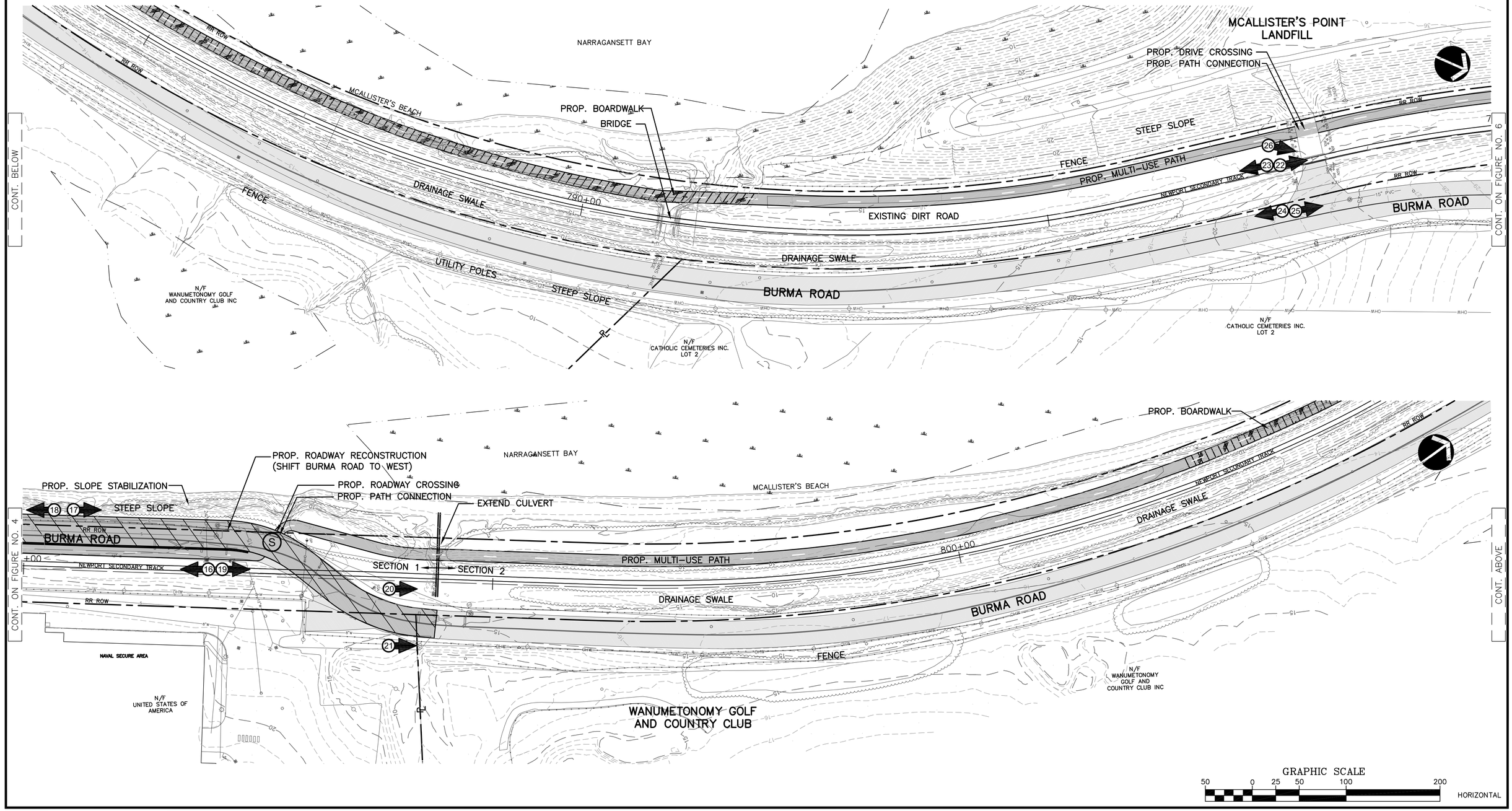


Figure No. 5

ROUTE STUDY PLANS

BURMA ROAD SEGMENT

SEPTEMBER 19, 2007

SHORELINE BIKEWAY/AQUIDNECK ISLAND BICYCLE PATH STUDY

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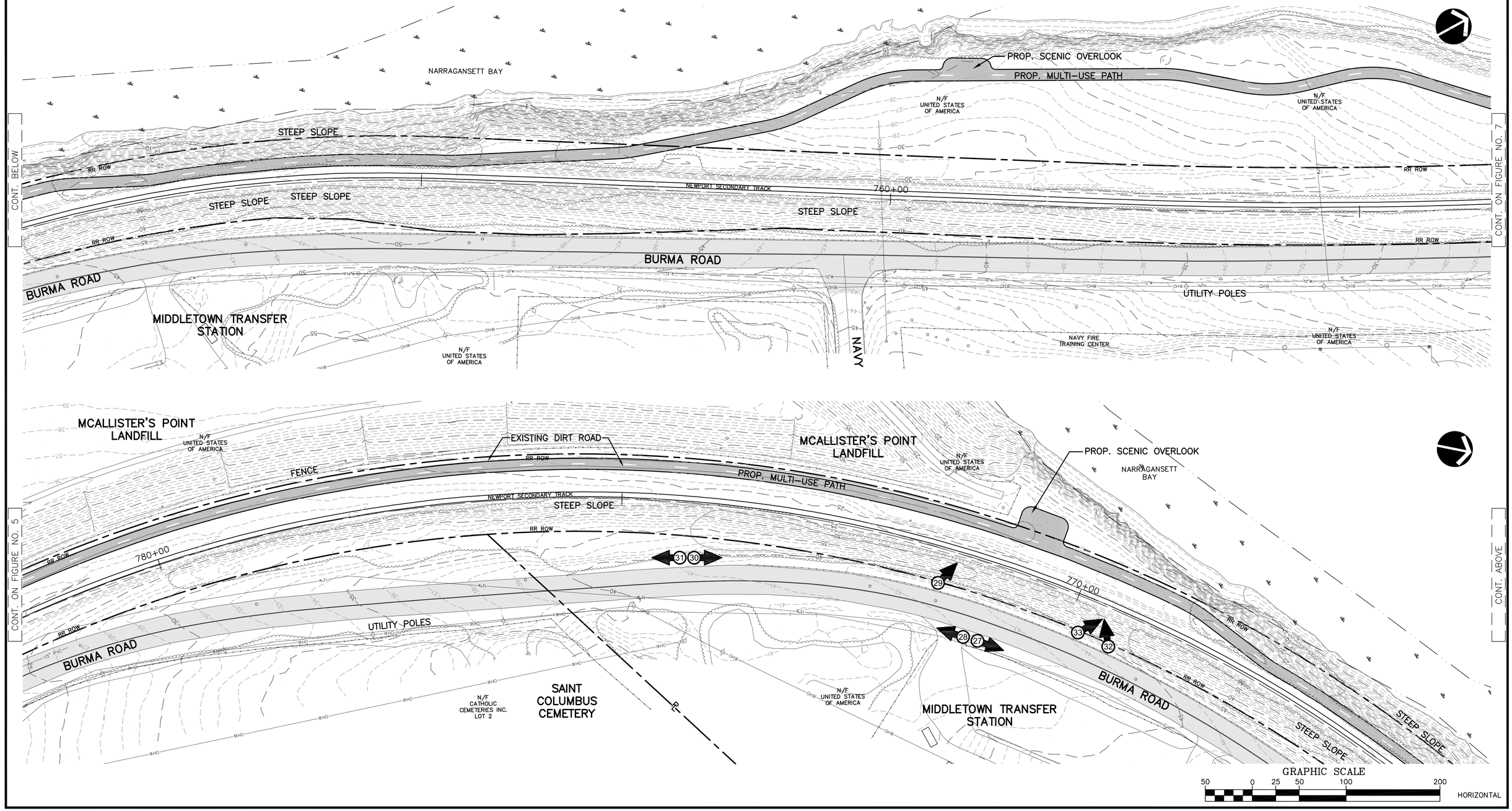


Figure No. 6

ROUTE STUDY PLANS

BURMA ROAD SEGMENT

SEPTEMBER 19, 2007

SHORELINE BIKEWAY/AQUIDNECK ISLAND BICYCLE PATH STUDY

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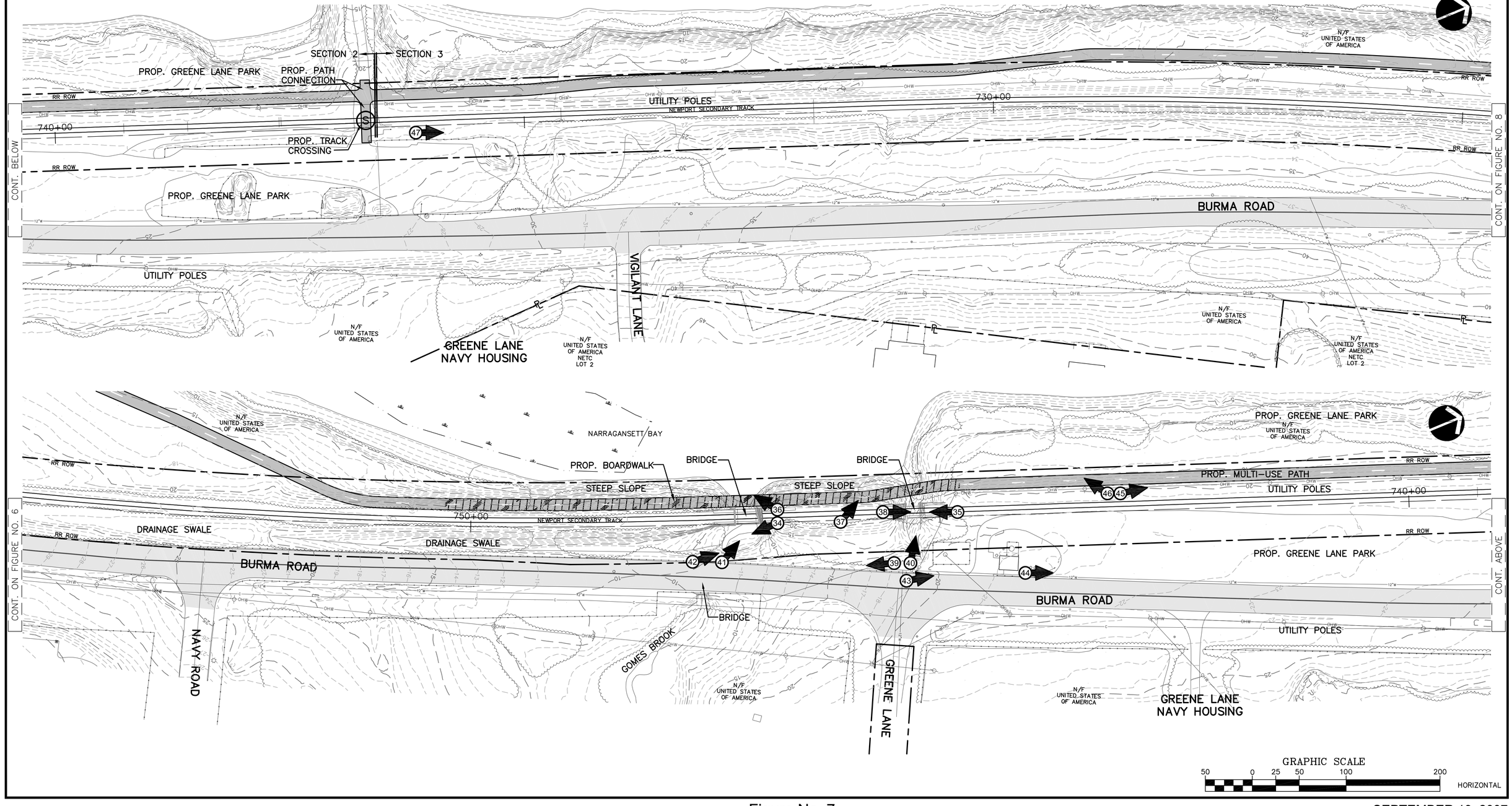


Figure No. 7

ROUTE STUDY PLANS

BURMA ROAD SEGMENT

SEPTEMBER 19, 2007

SHORELINE BIKEWAY/AQUIDNECK ISLAND BICYCLE PATH STUDY

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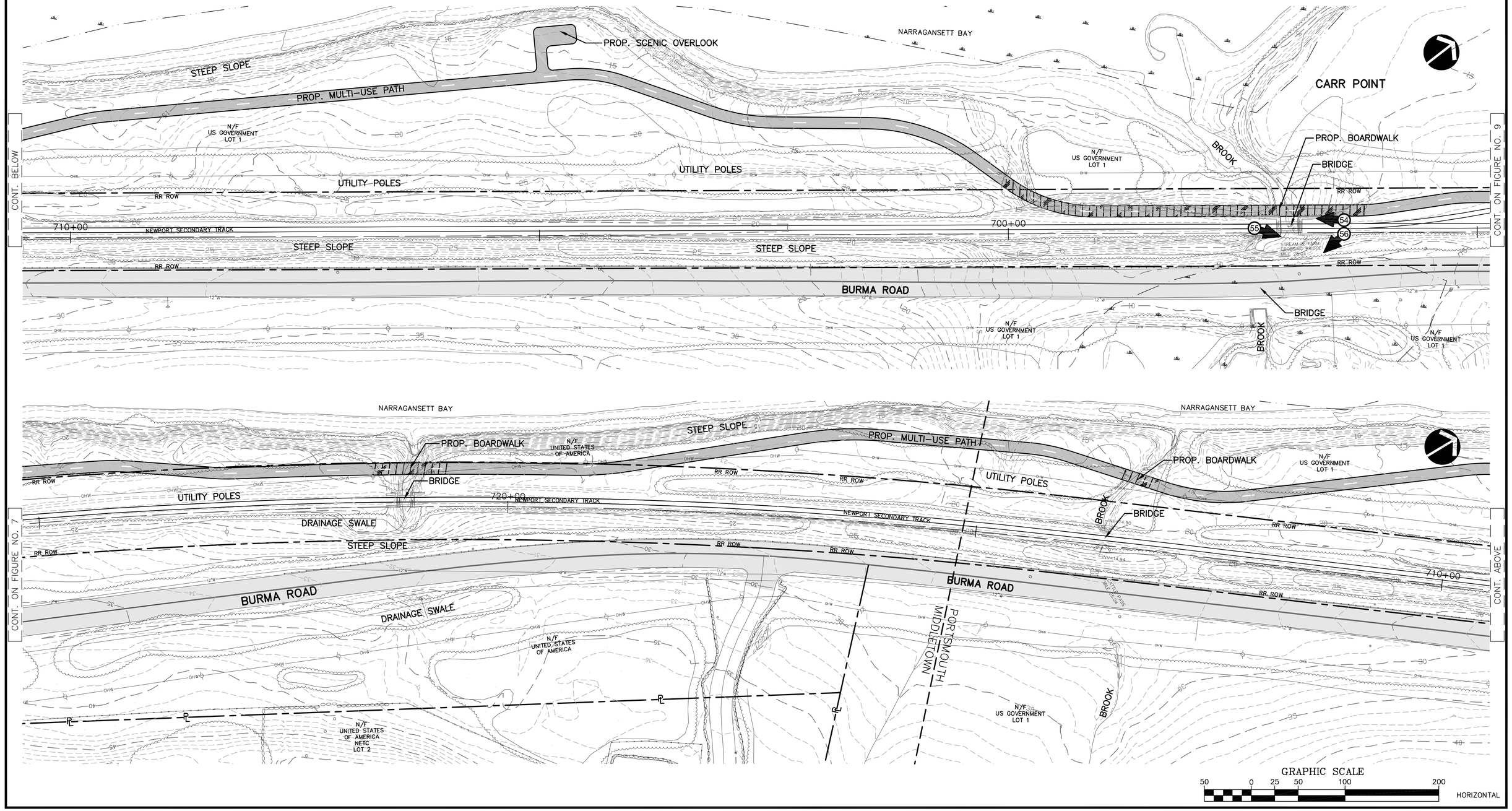


Figure No. 8

ROUTE STUDY PLANS

BURMA ROAD SEGMENT

SEPTEMBER 19, 2007

SHORELINE BIKEWAY/AQUIDNECK ISLAND BICYCLE PATH STUDY

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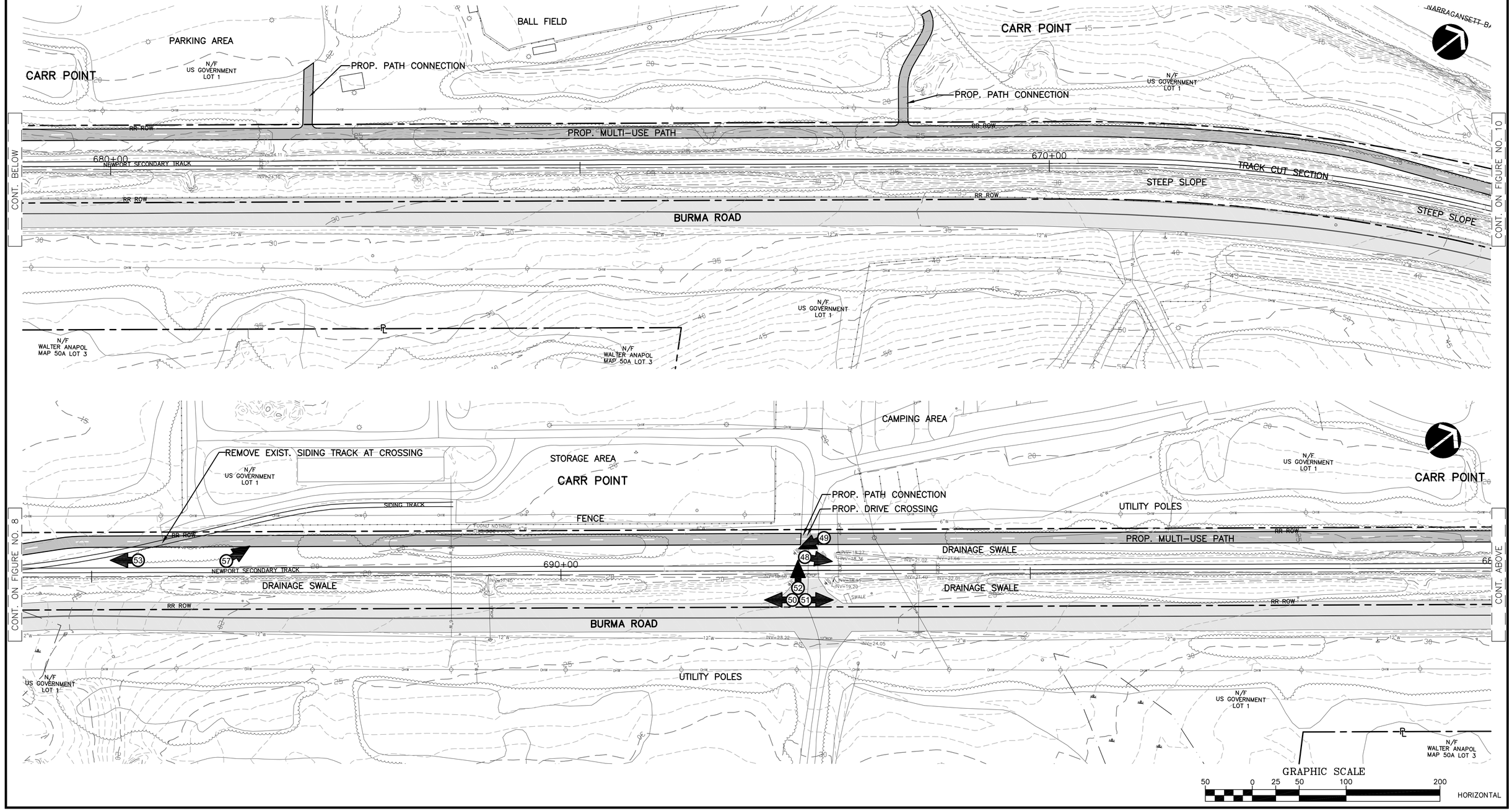


Figure No. 9

ROUTE STUDY PLANS

BURMA ROAD SEGMENT

SEPTEMBER 19, 2007

SHORELINE BIKEWAY/AQUIDNECK ISLAND BICYCLE PATH STUDY

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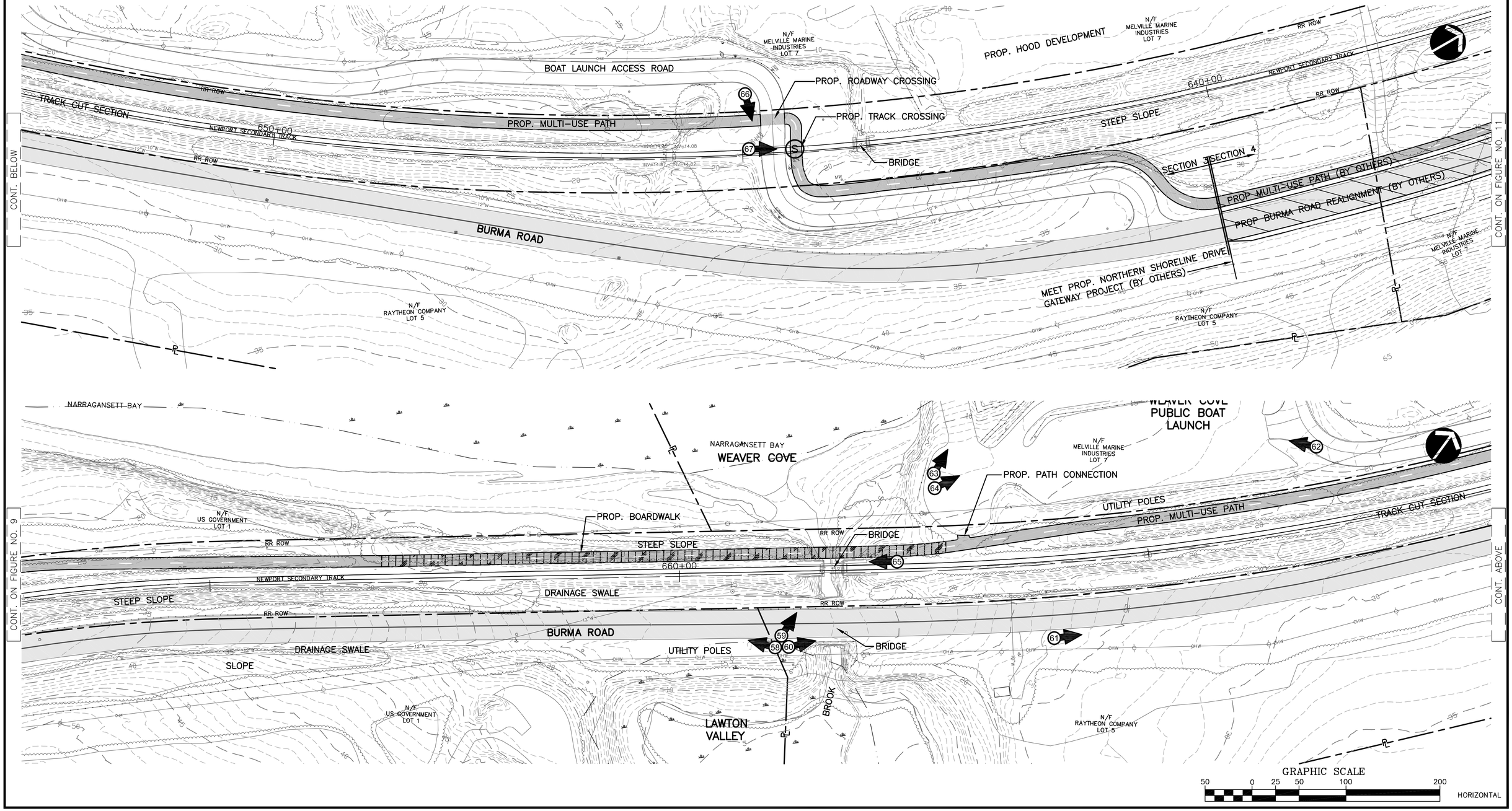


Figure No. 10

ROUTE STUDY PLANS

BURMA ROAD SEGMENT

SEPTEMBER 19, 2007

SHORELINE BIKEWAY/AQUIDNECK ISLAND BICYCLE PATH STUDY

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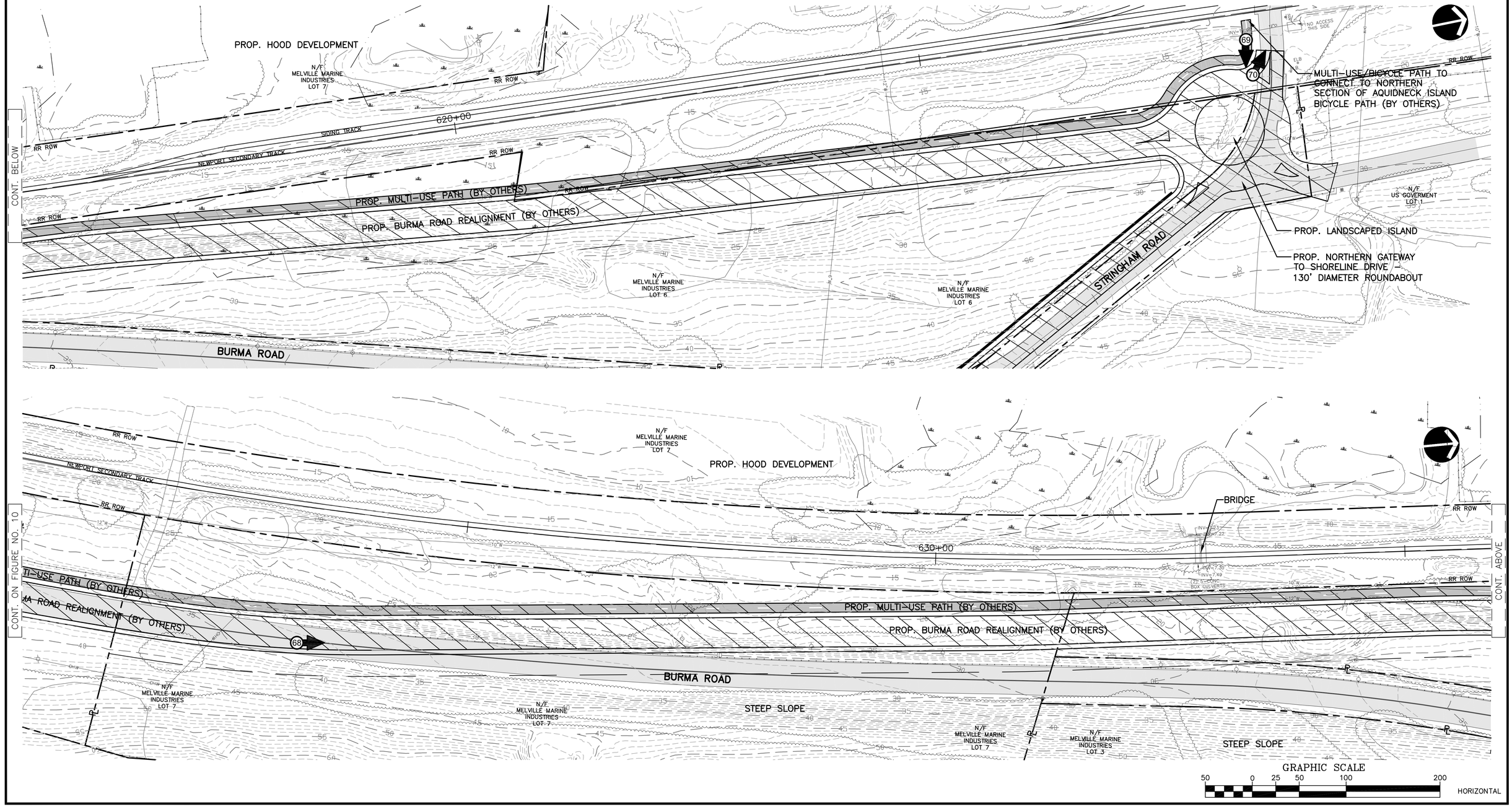


Figure No. 11

ROUTE STUDY PLANS

BURMA ROAD SEGMENT

SEPTEMBER 19, 2007

SHORELINE BIKEWAY/AQUIDNECK ISLAND BICYCLE PATH STUDY

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