

Pre-Feasibility Study of the Extension of the Martha's Vineyard Network of Shared-Use Paths (SUP)



Submitted to:

Martha's Vineyard Commission

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Submitted by:

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This study produced for the Martha's Vineyard Joint Transportation Committee
with the cooperation of the Bicycle and Pedestrian Planning Advisory Committee,
c/o Martha's Vineyard Commission, P.O. Box 1447, Oak Bluffs, MA 02557, 508-603-3453.

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1.0 INTRODUCTION

Martha's Vineyard is a resort community with large seasonal swings in population and outdoor recreational activity. Large volumes of pedestrians and bicyclists in summer months have led to the communities providing 37 miles of shared use paths (SUPs) – (commonly called bike paths) to serve the Island's four most populous towns – Edgartown, Oak Bluffs, Tisbury and West Tisbury. The SUPs also provide links to many of the Island's primary tourism destinations. These asphalt paths, are essentially wide sidewalks, physically separated from motor vehicle traffic, and are preferred by many cyclists who are uncomfortable with riding in the roadway with motor vehicles. The SUPs function to accommodate the Island's heavy bicycle volume and also accommodate other forms of non-motorized traffic such as rollerbladers and pedestrians.

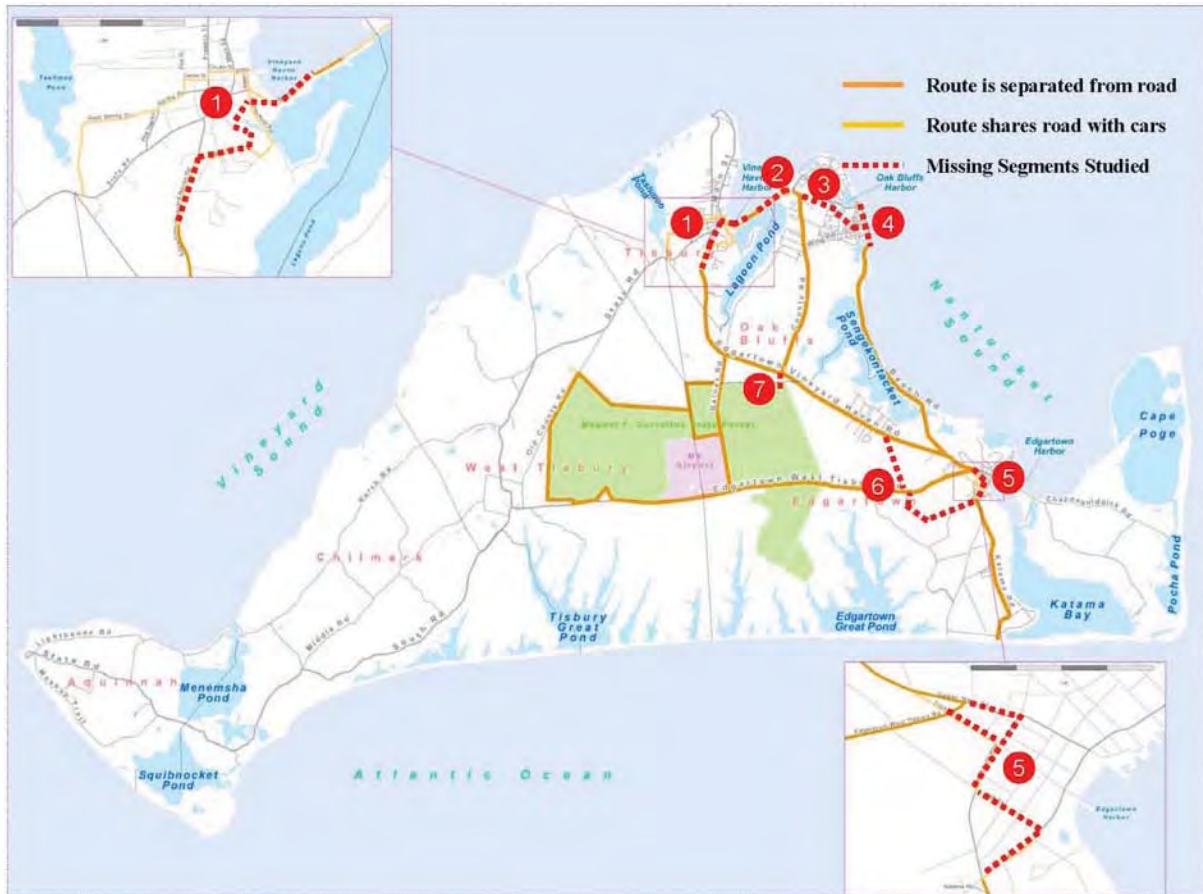
While the island has an extensive network of SUPs, there remain major gaps in the SUP network that prevent continuous paths throughout the island. The bike paths provide direct links between the Down-Island towns, but stop at the perimeter of the downtowns and, notably, do not connect to the ferries or most of the bike rental shops. Sidewalks usually extend between the town centers and the SUPs to accommodate most pedestrians, but these are inadequate for most bicyclists, resulting in bicyclists being forced in to the roadway at the very places where the roadways are most congested. The terminations of SUPs also create situations where cyclists have to cross the roadway either to access the SUP or to proceed along the correct side of the roadway, increasing potential conflicts between motorists and cyclists.

Greenman-Pedersen, Inc. (GPI) was retained by the Martha's Vineyard Commission (MVC) to develop the *Pre-Feasibility Study of the Extension of Martha's Vineyard's existing Shared Used Path (SUP)* networks. This study takes a preliminary look at potential alternatives to eliminate the gaps in the network and provide continuous SUPs connecting the three Down-Island Towns – Tisbury, Oak Bluffs and Edgartown – with each other and with the State Forest. Most of this off-road SUP network exists, however the presence of several missing links creates safety hazards for users and acts as a deterrent to the use of bicycles by less experienced riders who prefer to travel only on off-road paths. Figure 1 illustrates the Vineyard's existing and proposed SUP network and identifies the missing segments addressed in this study.

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FIGURE 1
MISSING LINKS OF VINEYARD SHARED USE PATH NETWORK



The study examines the following missing segments in the shared use path network:

- Segment 1 – Beach Road SUP to Edgartown-Vineyard Haven Road SUP
- Segment 2 – Drawbridge SUP to County Road SUP
- Segment 3 – County Road SUP to Sunset Lake
- Segment 4 – Perimeter SUP and Extension of Sea View Avenue
- Segment 5 – Perimeter SUP Around Edgartown Center
- Segment 6 – Meshacket Road/Cleveland Town Road and
West Tisbury Road SUP to Edgartown-Vineyard Haven Road SUP
- Segment 7 – Edgartown-Vineyard Haven Road SUP to State Forest SUP

Each segment was evaluated in terms of available public right-of-way, construction impacts (wetlands, resource areas, etc.) and estimated construction costs. In order to complete the

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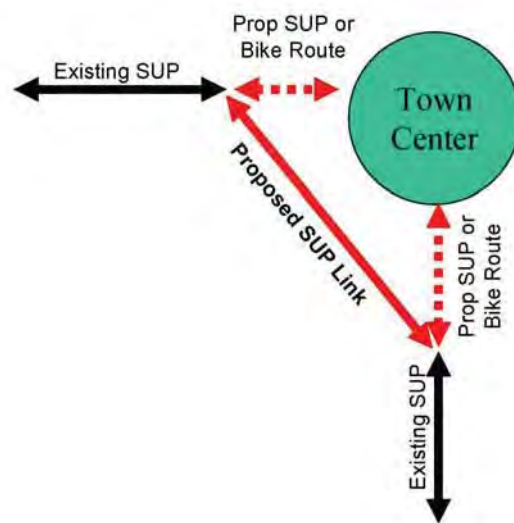
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evaluation, GPI researched available data from the MVC's GIS database, as well as any available roadway plans. The right-of-way information is approximate only and more detailed field survey information is required to accurately determine the true impacts of the proposed alternatives on ROW, utilities and resource areas.

Construction costs are preliminary in nature and are based on current MassHighway materials costs. In most instances, because detailed ROW and roadway plans were not available, the worst case scenario of needing to rebuild both the roadway surface as well as a new SUP was considered. More detailed ground survey to determine whether reconstruction of the roadway is needed and/or construction of SUP improvements by Town forces could significantly reduce the construction costs estimated in this study.

This study identifies options for consideration by the Vineyard community. It is not possible within the scope of this study to make a definitive recommendation as to which is the best solution for each segment. Where possible, the report indicates which approach seems to be the most promising.

1.1 Project Goals & Objectives



The goal of this study is to evaluate the extension of the Martha's Vineyard network of Shared Use Paths (SUPs) in order to achieve two objectives:

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Objective 1: Complete a Seamless SUP Network Linking the Down-Island Towns

The objective is to close the gaps in the SUP network to provide a continuous off-road pathway for pedestrians and especially for users who are bicycling at slow speeds and whose cycling skills make them uncomfortable riding on the roadways and shoulders, where it is assumed more skilled cyclists will choose to remain.

For particularly problematic areas, the SUP network might include short portions of designated bike routes on roadways that have a low volume of vehicles and where travel speeds are very low, thus being relatively safe for inexperienced or unskilled bicyclist and bicyclists pulling trailers. Such integration of cyclists in the roadway would be an interim fix and should not be considered a long term solution to providing a seamless SUP network for the Down-Island towns.

Objective 2: Provide Bicycle Links from the SUP Network into Down-Island Town Centers

Ideally, the SUP network would be extended into the town centers, which are the origin and destination points for cyclists using the ferries and for many who rent bikes. However, the narrow street rights-of-way bounded by dense development make it improbable to bring SUPs directly into or through the hearts of the towns. In such cases, the following strategies guided the evaluation of bicycle access into and through the town centers:

- Bring the SUP as close as possible to the centers of town – at least within easy walking distance via sidewalk – to locations where it is feasible to create a bicycle rest areas with bike parking and other amenities;
- Provide bicycle access from the nearest points in the SUP network on each side of town, into and through the towns via bike lanes on existing roadways or by designating low-volume roadways as “bike routes” accompanied with proper signage and markings.

1.2 Design Criteria



Photo by Doug Mink

Technically called Shared Use Paths (SUPs), the terms bike paths and SUPs will be used interchangeably to refer to off-road paths accommodating bicycles as well as other non-motorized transportation including pedestrians, rollerbladers, wheelchair users and pedestrians with baby carriages. SUPs provide a safe environment for pedestrian and leisurely bicycle traffic separated from motorized traffic. The 1999 American

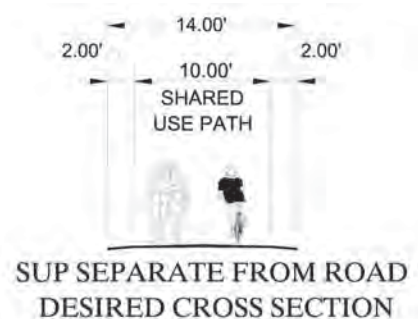
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Association of State Highway and Transportation Officials (AASHTO) *Guide for the Development of Bicycle Facilities* presents guidelines for the creation of shared use paths.

1.2.1 - Width

Because these paths are designed to provide two-way travel of bikes and are also assumed to accommodate pedestrians, the width of the paths must be sufficient to safely and comfortably accommodate all users. The AASHTO guideline is that such paths should have a width of 10 feet with 2-foot graded shoulders adjacent to the path. In addition 3 feet clearances from the edge of path should be provided to any obstruction (i.e. sign, fence, building, etc.) A minimum path width of 8 feet may be considered where the following conditions prevail:



- Bicycle traffic is expected to be low, even on peak days or during peak hours,
- Pedestrian use of the facility is not expected to be more than occasional,
- There will be good horizontal and vertical alignment providing safe and frequent passing opportunities, and
- Vehicle loading conditions that would not cause pavement edge damage during normal maintenance.

MassHighway's 2006 *Project Development & Design Guide* further states that an 8-foot path may be considered where severe environmental, historical and/or structural constraints exist. Many of the Vineyard's SUPs are just 8 feet wide but receive heavy use by both cyclists and pedestrians.

1.2.2 - Alignment



The horizontal alignment or curvature of a path is dependent on the desired design speed, anticipated lean angle and the cross-slope of the path. For most paths a lean angle of 15 degrees is appropriate and a typical design speed would be 20 mph. Based on a 20 mph design speed the minimum radius for a horizontal curve would be 100 feet. Smaller radii of as little as 36 feet can be used in areas with design speeds as low as 12 mph. Appropriate warning signs

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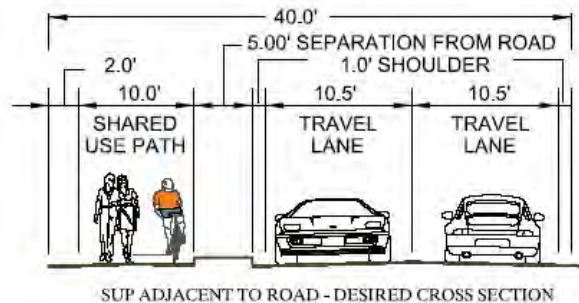
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should be installed along the path in these instances. While it is always desirable to provide a smooth alignment and horizontal curvature, due to physical constraints or limited right-of-way, areas of sharper corners may be necessary. In these areas of sharper, almost 90 degree curves, appropriate warning signs should be posted along the SUP advising users of the alignment.

In areas where SUPs start or end, particularly at streets or intersections, additional right-of-way is typically required to provide appropriate trail definition, provide some form of physical vehicle barrier and maintain appropriate clearances for two-way bike travel.

1.2.3 - Buffer

Where the path is adjacent to roadways, AASHTO and MassHighway both recommend a minimum separation of 5 feet between the path and the roadway surface. When a 5 foot separation can not be provided, suitable physical barriers such as fences, walls, cushioning vegetation or concrete/guardrail barriers are recommended. These barriers should be a minimum height of 3.5 feet to prevent bicyclists from toppling over it and should be designed to not be a hazard to motorists or bicyclists. Existing Vineyard SUPs have varying widths of adjacent clear zones. Guardrails less than 3.5 feet in height exist along some of the narrower separation zones, but there are sections where the SUP surface joins the roadway and no physical barrier exists.



The criteria recommend that 17-18 feet be available for establishing a 10 foot SUP adjacent to the roadway. If an 8 foot SUP is utilized the required Right-of-Way (ROW) associated with the SUP would be 15-16 feet. However, it should be noted that these are guidelines and the cross section for each proposed segment should be carefully reviewed and designed to maximize the width of the path and separation from the roadway.

In most areas of the island, road ROW are limited to 40 feet or less, leaving approximately 23 feet or less available for the roadway surface. In most locations, the construction of a new SUP would likely require reconstruction of the adjacent roadway to maintain both the SUP and roadway in the existing ROW. Alternatively, ROW would be required to establish a SUP adjacent to the existing roadway surface without reconstructing the existing roadway surface. On Martha's Vineyard, this could be problematic in many locations due to the presence of mature trees, grading or features such as walls, fences, or landscaping that have scenic and/or historic value. In some instances, variances or design waivers (if State or Federal Funds are used for construction) may be required, given the physical constraints of the area.

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1.2.4 – Vertical Grades

Vertical grades are a major concern in the design of SUPs. Generally grades in excess of 5% are not desirable for SUPs because ascents are difficult for many cyclists and descents may cause some cyclists to exceed a comfortable speed. Steeper grades also do not meet pedestrian accessibility requirements.

While grades in excess of 5% may be considered for bicycle facilities for shorter distances, grades for pedestrians can not exceed 5% unless treated as a ramp (switchback), with a maximum slope of 8.33% in the built condition. This restriction would apply to any shared use path unless a variance from 521 CMR from the Massachusetts Architectural Access Board was granted.

1.2.5 – Intersections

Intersections along SUP routes are a critical issue, particularly roadway intersections. It is imperative that the design of a crossing provide a clear indication to users of the path where and how they should cross the intersection as well as who has the right-of-way. Generally, the following basic design principles should be followed:

- Unusual conflicts should be avoided
- Intersection design should create a path for bicyclists that is direct, logical and as close to the path of the motor vehicle traffic as possible
- Bicyclists following the intended trajectory should be visible and their movements should be predictable
- Potential safety problems associated with the difference between auto and bicycle speeds should be minimized.

2.0 INDIVIDUAL SUP SEGMENTS

The following section will focus on the seven individual segments evaluated in the study. Various conceptual level alternatives will be discussed and evaluated to assess the feasibility and impacts of construction and how they will help achieve the goals of the study.

2.1 Segment 1 - Beach Road SUP to Edgartown-Vineyard Haven Road SUP

The existing SUPs in this area currently terminate well before the downtown area of Vineyard Haven.

- Replacement of the Lagoon Pond drawbridge will include a SUP along Beach Road that will extend to the State boat ramp in Tisbury and connect with a short existing SUP that currently ends at the Wind's Up sporting shop, the beginning point of development on both sides of Beach Road.
- The Edgartown Road-Vineyard Haven Road SUP terminates at Sanborn Way more than one mile from Five Corners.

The first objective is to provide a SUP connection between the current ends of the Beach Road and Edgartown-Vineyard Haven Road SUPs, located as close as possible to the ferry terminal and downtown retail area. The second objective is to provide appropriate on-street bicycle access from these SUPs to the town center.

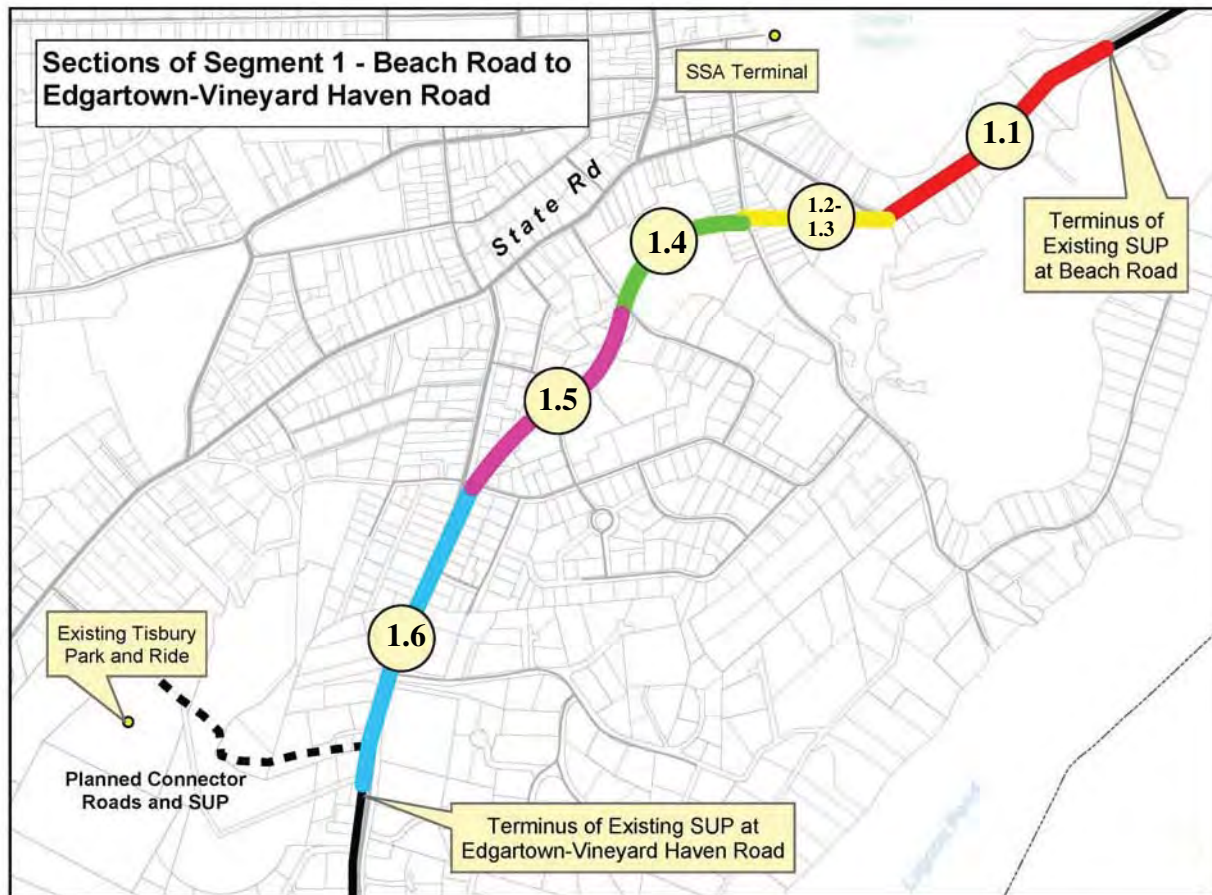
This segment is divided into six (6) sub-sections:

- Section 1.1 – Beach Road between Wind's Up Watersports and the Saltwater restaurant
- Section 1.2 – Beach Road between Saltwater restaurant and the Five Corners intersection
- Section 1.3 – Beach Road to Lagoon Pond Road
- Section 1.4 – Lagoon Pond Road through the Veterans Memorial Park to Causeway Road
- Section 1.5 – Veteran's Memorial Park to Edgartown-Vineyard Haven Road
- Section 1.6 – Skiff Avenue to current SUP along Edgartown-Vineyard Haven Road

The following schematic indicates the overall intended connections of Segment 1 with the six (6) sub-sections noted.

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2.1.1 Section 1.1 – Beach Road – Winds Up Watersports to Saltwater Restaurant

Alternative 1A

Along this portion of Beach Road, the adjacent land uses are primarily industrial including warehouses and oil storage tanks. Pedestrian activity related to these land uses is limited and there is currently no sidewalk along the northerly side of this section of Beach Road. The current SUP terminates abruptly in the vicinity of Wind's Up Watersports. Based on a review of the existing GIS mapping provided by the MVC, it appears that the ROW along Beach Road in this area is between 33 and 40 feet. A conceptual plan illustrating the proposed alignment of the SUP through this section is provided in Figure 2.

As illustrated in Figure 2, the desirable cross section for Alternative 1A (solid red) would be 40 feet, providing a 10-foot SUP along the southerly side of Beach Road with 5-foot separation from the roadway. The roadway would consist of 22 feet of pavement providing 10.5-foot travel lanes

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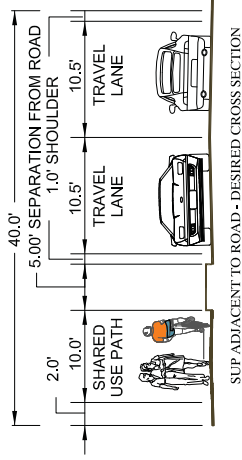
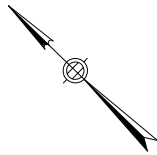
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with 1-foot shoulders. The critical cross section along this segment appears to be adjacent to the cement wall abutting the oil tanks on the north and the warehouse structures on the south. These physical obstructions may require reduction of the desirable SUP width and/or offset from the edge of road. It may be feasible in these areas of limited ROW where significant impacts to adjacent properties would occur to consider a reduction of the proposed cross section to as little as 34 feet, by reducing the width of the path to 8 feet and the offset from the roadway to 2 feet. However, reduction in the path width or offset distances would likely require Design Waivers if the project were to utilize State or Federal funds for construction.






Continuing the SUP along Beach Road to the Saltwater restaurant would achieve the goal of extending the SUP network as close as possible to the town center, however provisions must be considered to provide some form of bicycle access to the heart of Vineyard Haven as well as to connect the SUP to the existing SUP on Edgartown-Vineyard Haven Road. The following sections explore alternatives to achieve these goals.

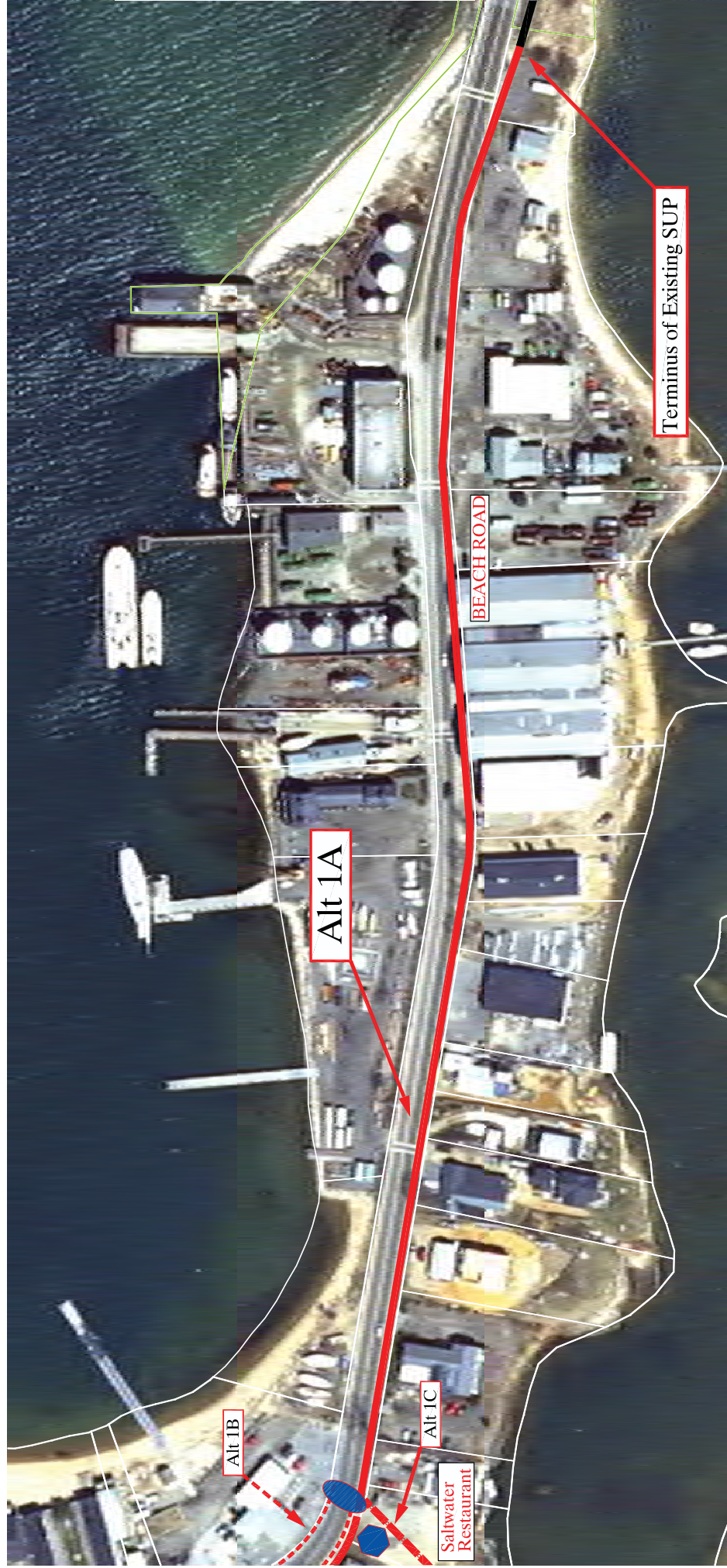
2.1.2 Section 1.2 – Beach Road –Saltwater Restaurant to Five Corners Intersection

While it is desirable to provide an off-road SUP as close as possible to the downtown area and the Steamship Terminal via Beach Road, the character of Beach Road changes in the vicinity of the Saltwater restaurant which affects the consideration of the appropriateness of a SUP for this section. From this point west to the Five Corners intersection, there are retail and commercial uses and sidewalks on both sides of the road. Pedestrian activity in this area is more prominent, particularly on the southerly side of Beach Road. Two alternatives are shown in Figure 3.

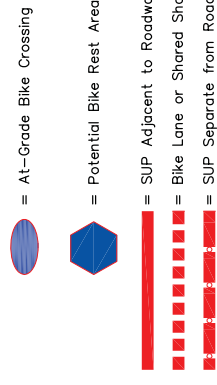
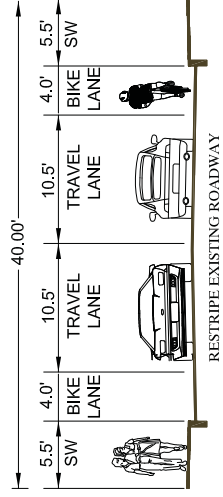


LEGEND:

-  = At-Grade Bike Crossing
-  = Potential Bike Rest Area/Racks, etc
-  = SUP Adjacent to Roadway
-  = Bike Lane or Shared Shoulder Use on Roadway
-  = SUP Separate from Roadway



SEGMENT 1 - BEACH ROAD SUP TO EDGARTOWN-VINEYARD HAVEN ROAD SUP
SECTION 1.1 - BEACH ROAD - WINDS UP TO SALTWATER RESTAURANT



SEGMENT 1 - BEACH ROAD SUP TO EDGARTOWN-VINEYARD HAVEN ROAD SUP
SECTION 1.2 - BEACH ROAD - SALTWATER RESTAURANT TO FIVE CORNERS INTERSECTION

FIGURE 3
NOT TO SCALE

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Alternative 1A₁

One alternative through this section is to continue the configuration of Alternative 1A (Alt 1A₁ solid red) along the southerly side of Beach Road to the Five Corners intersection. This configuration will provide a SUP along the south side of the road, with no sidewalk or pedestrian amenities provided along the northerly side of the road. The elimination of sidewalks along the northerly side of Beach Road could increase mid-block pedestrian crossings along the corridor at unmarked locations or encourage pedestrians to walk along the northern road edge and would make access to businesses along the northerly side of Beach Road particularly difficult for disabled pedestrians. In addition, this would create increased conflicts between bikes and pedestrians on a shared path where pedestrians, as well as some cyclists, would be entering and exiting from businesses along the southerly side of Beach Road.

Alternative 1B

Because pedestrian sidewalks already exist along both sides of Beach Road in this area, an alternative to providing a dedicated SUP is to retain these sidewalks and re-stripe the pavement to provide 10-10.5 foot travel lanes and dedicate the remaining shoulders to bike lanes. Bike lanes less than 5 feet would require a Design Waiver if State or Federal funds were used for construction. This cross section is displayed in Figure 3 as Alternative 1B (dashed red) and may require minor construction to utilize all of the available right of way. This does not meet Objective 1, providing a continuous SUP, but will eliminate potential conflicts between slow moving pedestrians and faster moving bicycles while achieving the second objective of the study to bring bike access into the downtown area at Five Corners.

The transition between Alternatives 1A and 1B introduces a crossing on Beach Road where westbound bicyclists would need to cross from the SUP on the south side of Beach Road to the north side of Beach Road to travel with traffic in the westbound shoulder. Visibility and safety of this crossing are critical elements to the success of this alternative.

A variant of Alternative 1B would be to widen the sidewalks on both sides of Beach Road to 6 feet. This would enable bicyclists to be out of the roadway, consistent with Objective 1, and might diffuse the amount of bicycle and pedestrian activity that may otherwise occur on a single SUP. However, this would introduce conflicts between slower moving pedestrians and faster moving cyclists on narrow paths or walkways. In addition, any alternative promoting cyclists on both sides of this section of Beach Road –whether on the roadway or off – combined with one of the SUP alternatives for the next section that extend from midway along this stretch of Beach Road would introduce another street crossing of this busy roadway only a few hundred feet from the crossing near the Saltwater restaurant.

Consideration should be given to utilizing the open space adjacent to the Saltwater restaurant as a potential bicycle rest area with bike parking and other amenities. This would give cyclists an opportunity to leave their bikes and utilize the sidewalk and/or paths into town center. In

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addition, as will be discussed in the next section, there are alternatives that could continue a SUP around the downtown area to the Edgartown-Vineyard Haven Road SUP.

2.1.3 Section 1.3 – Connection between Beach Road and Lagoon Pond Road

Section 1.3 provides a critical connection across private property between Beach Road and Lagoon Pond Road and will require donations and cooperation from various businesses and individual land owners in the area (or possibly land takings). Figure 4 illustrates four alternatives 1C, 1D, 1E and 1F to connect these areas via a 10-foot SUP with 2-foot graded shoulders (14 ft ROW required). Additional alternatives could be developed by combining portions of two or more of the four identified here. Note that while the routes of the alternatives portrayed in Figure 4 are from an initial assessment of how the impact upon abutting landowners might be minimized, it is expected that any of these routes would require further exploration with the respective landowners to determine preferred alignments across their properties to minimize any potential interference with their use of the parcels.

Alternative 1C






Alternative 1C (red dashed dot) would provide a dedicated SUP through the open parcel adjacent to the Saltwater restaurant and Tisbury Marketplace retail area. The path would continue adjacent to the Boat Yard facility building, the Hinckley Home Center Lumber Yard and 80 Lagoon Pond Road. Rights-of-way or easements from approximately 4-5 properties would be required. While the illustration depicts Alternative 1C running along the southwestern property line of Tisbury Marketplace, based on site visits, it appears that the structure along this property line is utilized by the neighboring boat yard and this alignment could introduce a conflict or crossing area. This potential conflict could be avoided by routing the SUP to the northeast of the structure as illustrated with Alternative 1C₁ (yellow dashed dot)

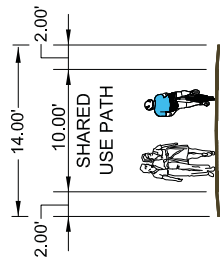
Alternative 1D

Alternative 1D (blue dashed dot) would provide access between Beach Road and Lagoon Pond Road between 45 and 47 Beach Road, traverse the Hinckley Lumber Yard southerly property line and again utilize a portion of 80 Lagoon Pond Road to complete the link. This option would require rights-of-way or easements from 3-6 land owners and the location of the path would need to be coordinated with owners to minimize conflicts.

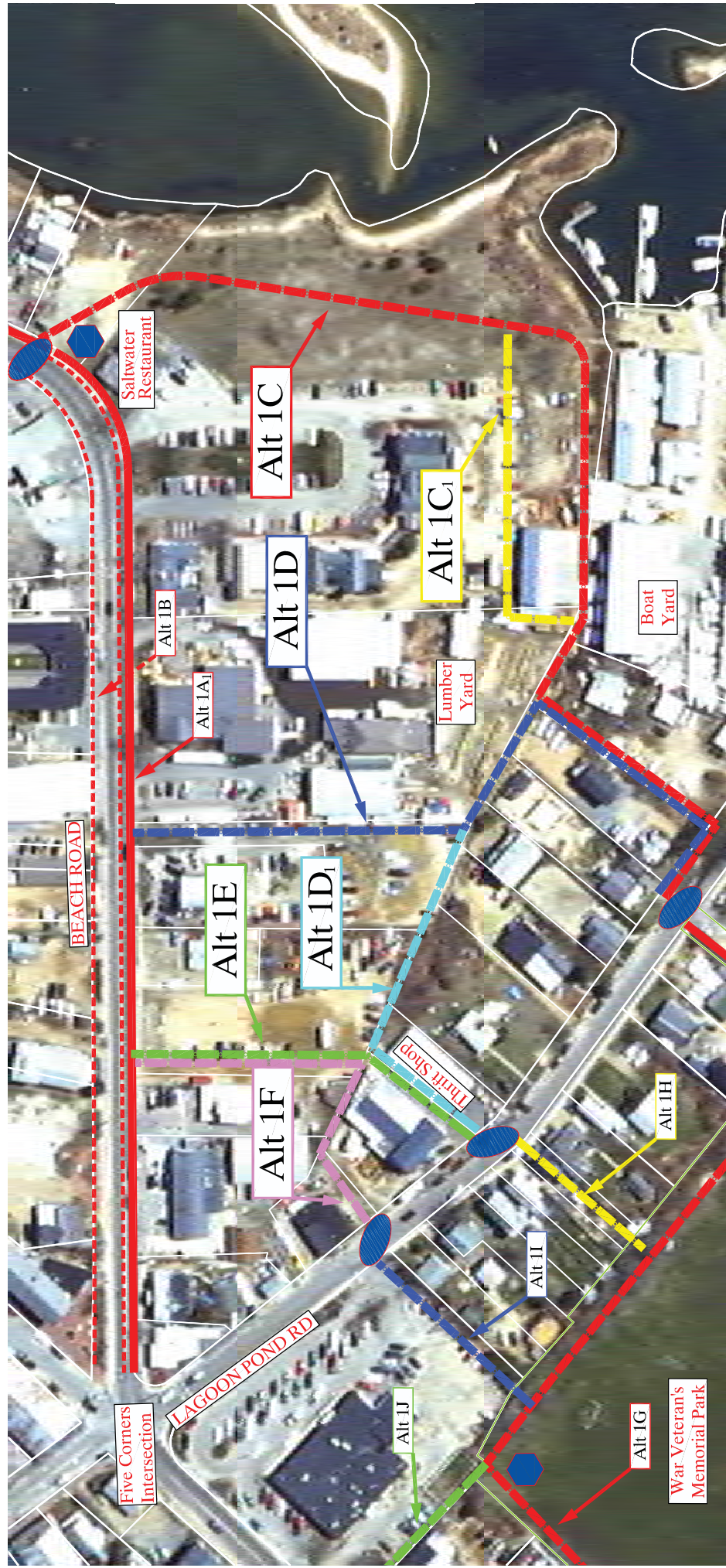
Both alternatives 1C and 1D require routing the SUP through an actively working boat yard and lumber yard and would access Lagoon Pond Road just east of the existing parking lot entrance for the War Veteran's Memorial Park (Veteran's Park). A brief section of SUP adjacent to Lagoon Pond Road would be necessary to connect to the Veteran's Park access drive, where it would be expected that the SUP would continue as described in detail under options 1G, in Section 1.4.

LEGEND:

-  = At-Grade Bike Crossing
-  = Potential Bike Rest Area/Rocks, etc
-  = SUP Adjacent to Roadway
-  = Bike Lane or Shared Shoulder Use on Roadway
-  = SUP Separate from Roadway



SUP SEPARATE FROM ROAD
DESIRED CROSS SECTION



SEGMENT 1 - BEACH ROAD SUP TO EDGARTOWN-VINEYARD HAVEN ROAD SUP
SECTION 1.3 - CONNECTION BETWEEN BEACH ROAD AND LAGOON POND ROAD

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Alternative 1D₁

Alternative 1D₁ (light blue dashed dot) should be considered to provide additional flexibility to provide links through the parcels between Lagoon Pond Road and Beach Road. Alt 1D₁ would provide an option to connect Alternative 1C or Alternative 1D with Alternatives 1E or 1F to provide additional combinations of routes.

Alternative 1E

Alternative 1E (green dashed dot) would impact 2-3 parcels and would access Beach Road where recent development at 29 Beach Road was designed around a potential public easement. The SUP would link to the existing driveway/access road adjacent to the Thrift Shop. This route receives some casual vehicular use by some Islanders wishing to avoid the Five Corners intersection. How much of this use is authorized by the landowners is not clear. This alignment would connect to Lagoon Pond Road nearly opposite 39 Lagoon Pond Road (Alternative 1H in the next section).

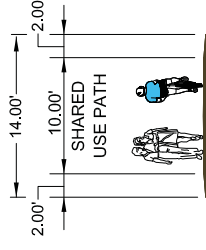
Alternative 1F

Alternative 1F (pink dashed dot) would access Beach Road the same as Alternative 1E, however, rather than utilizing the access adjacent to the Thrift Shop, Alternative 1F would create a path behind and adjacent to 26-32 Lagoon Pond Road to intersect Lagoon Pond Road in the vicinity of the Post Office (Alternative 1I in the next section). This option would impact between 3-5 property owners.

Sections 1.1, 1.2 and 1.3 present the biggest challenges in meeting the objectives of the project. While Alternative 1C, when paired with Alternative 1A, fulfills the objective of providing a continuous SUP (at least to Lagoon Pond Road), it involves the most right-of-way issues and potential conflicts with intensive lumberyard and boat yard operations. While Alternatives 1D, 1E and 1F appear to reduce these conflicts by bypassing the more intense commercial operations, they would require connecting to a SUP along Beach Road with the limitations previously discussed concerning access and interaction of pedestrians and bicyclists.

2.1.4 Section 1.4– Lagoon Pond Road to Causeway Road

Continuation of the SUP is proposed through the War Veteran's Memorial Park, which contains public restrooms and is a natural rest area or destination for SUP users. In addition, the park is immediately adjacent the center of Vineyard Haven's commercial activity. Figure 5 illustrates the main route (Alternative 1G) through Veteran's Park and several options for the termini at Lagoon Pond Road and Causeway Road.



SUP SEPARATE FROM ROAD
DESIRED CROSS SECTION

LEGEND:

= At-Grade Bike Crossing

= Potential Bike Rest Area/Racks, etc

= SUP Adjacent to Roadway

= Bike Lane or Shared Shoulder Use on Rdwy

= SUP Separate from Roadway

SEGMENT 1 - BEACH ROAD SUP TO EDGARTOWN-VINEYARD HAVEN ROAD SUP
SECTION 1.4 - LAGOON POND ROAD TO CAUSEWAY ROAD

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Alternative 1G

The proposed alignment shown as Alternative 1G (red dashed dot) picks up from either Alternatives 1C or 1D (previously discussed) using the park's existing parking lot and driveway off of Lagoon Pond Road at the southeastern corner of the park. Because of the presence of wetlands along the southerly side of the park, the SUP is proposed along the northerly side. This route also brings the SUP closer to access points with the town center and exits alongside the park's restroom facilities at the existing, northerly maintenance road to Causeway Road.

Alternative 1H

Alternative 1H (yellow dashed dot) proposes an access via the property at 39 Lagoon Pond Road, which was for sale at the time of the site visit (August 2008) and directly abuts Veteran's Park. If acquisition of this parcel was possible, the proposed access to the fields would closely align with Alternative 1E in Section 1.3 via a diagonal crossing of Lagoon Pond Road.

Alternative 1I

Alternative 1I (blue dashed dot) proposes access via the southerly edge of the Post Office property and parking lot to align with Alternative 1F in Section 1.3 via a crossing of Lagoon Pond Road. This may require reconfiguring the parking lot to relocate the existing 8-9 spaces on the southerly property line and may result in a reduction of 1-3 spaces. However, further review of the parking layout and configuration may result in a revised parking plan that could reallocate parking and offset any potential loss of spaces.

Selection of Alternatives 1H or 1G would shorten the length of the park's SUP (Alternative 1G) necessary to connect with the Beach Road to Lagoon Pond Road portion (Section 1.3) of a SUP.

Alternative 1J

Also indicated in Figure 5 is a potential connection to the Ferry Terminal (Alternative 1J green dashed dot). There is currently a 5.5 foot sidewalk between the Fire Station and Post Office properties with a low retaining wall adjacent to the Fire Station parcel. This allows a connection for pedestrians or people walking their bikes from the proposed SUP in the Veterans Memorial Field to South Main Street. However, the path is currently not wide enough to be designated as an official SUP. Based on discussions with local officials, it was discovered that the existing Fire Station on South Main Street may relocate in the future. If the Fire Station was relocated and/or this pedestrian path adjacent to the Fire Station could be widened, a dedicated SUP could be provided to connect to South Main Street. Access would then be possible via an at-grade crossing to continue along Cromwell Lane. Because of the low volume and low speed of vehicular traffic on Cromwell Lane, "Shared Road" signing could be established along Cromwell Lane to provide bike and pedestrian access directly to the convenience station and steamship terminal area.

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Pre-Feasibility Study of the Extension of the Martha's Vineyard Network of Shared-Use Paths (SUP)

Alternative 1K

Alternative 1K (pink dashed dot) examines an alternative to exiting the park SUP at the northern maintenance road along Causeway Road by remaining within the park property and extending the SUP to the southerly parking/access drive on Causeway Road. This would reduce the need for construction of a SUP along Causeway Road between the two driveways and eliminate any potential conflicts between the parking on the easterly side of Causeway Road. However, this option would have to address potential conflicts with users of the park's playground equipment, however.

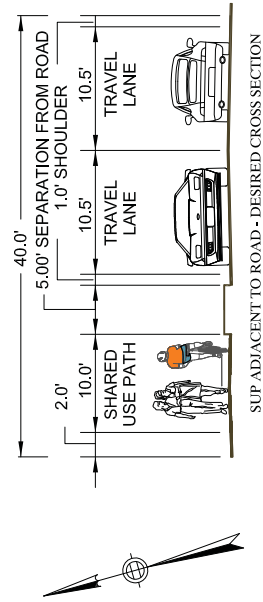
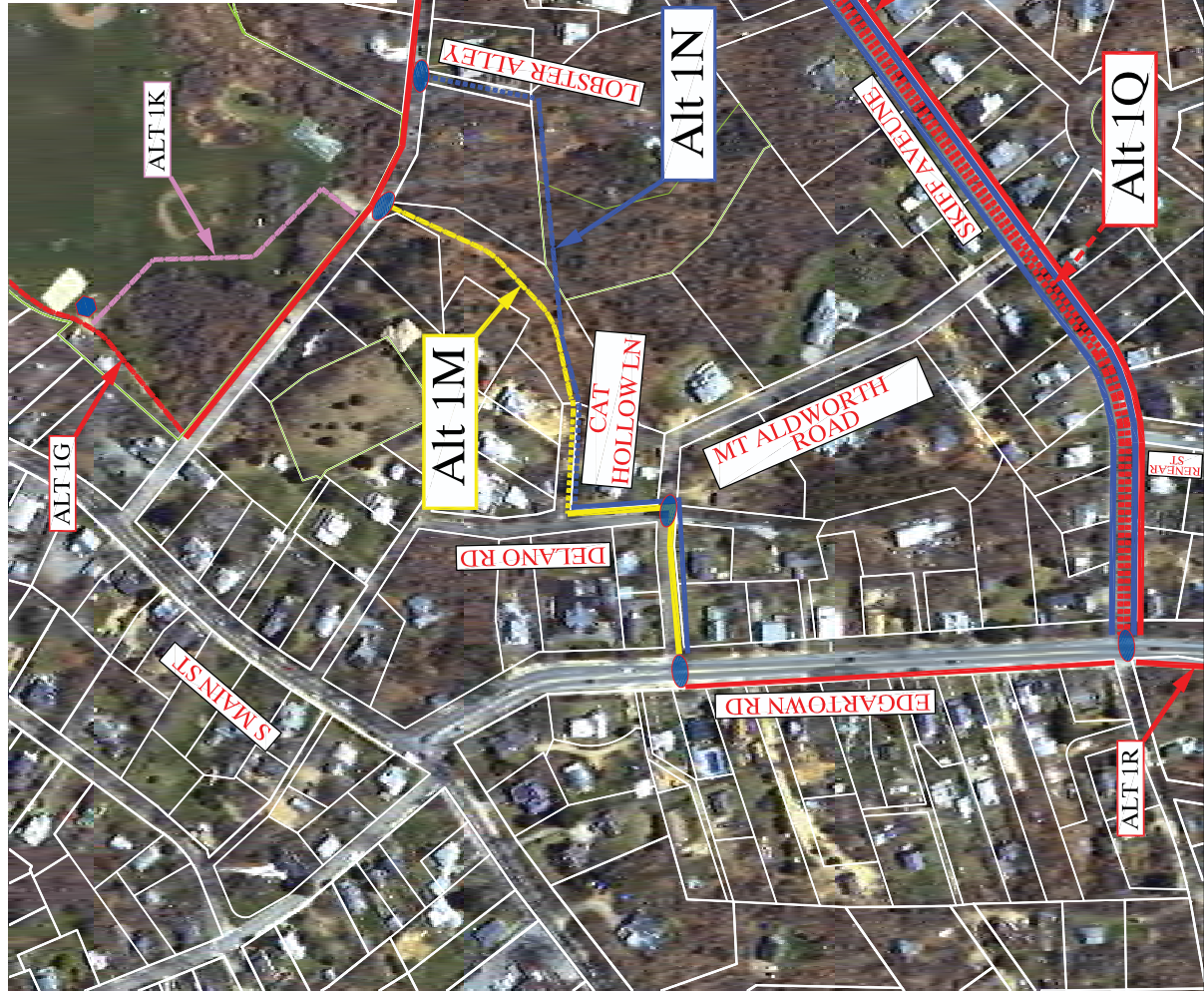
There are opportunities in Section 1.4 to further address the goals of the study by providing additional facilities for pedestrians and cyclists. There are currently rest room facilities provided at the maintenance shed building on the northwest corner of the park, this area could be expanded to provide bike storage racks to encourage use of the recreational fields and as a departure point to access the downtown area as a pedestrian. Similar opportunities for additional bike storage are possible on the northeast corner of the parcel, where bikes could be stored and the existing pedestrian access adjacent to the Fire Station and Post Office could be better utilized.

2.1.5 Section 1.5 – Causeway Road to Edgartown-Vineyard Haven Road

The section from the Veteran's Memorial Park to Edgartown-Vineyard Haven Road is characterized by a marked rise in elevation – more than 60 feet – over relatively short distances. How SUP users might cope with such grades, both uphill and downhill, factors into the evaluation of the alternatives. While six alternatives are illustrated in Figure 6, there are just two principle routes: along the public road rights-of-way of Causeway Road (Alternative 1L) and Skiff Avenue (Alternatives 1O, 1P and 1Q), or a route traversing private land and utilizing public roadway ROW to access Edgartown-Vineyard Haven Road at Mount Aldworth Road.

Alternative 1L

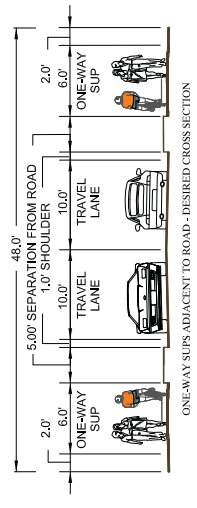
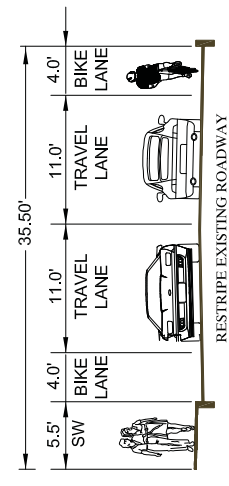
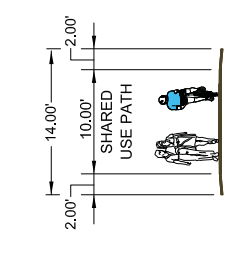
Alternative 1L (solid red) explores the potential to provide a dedicated SUP along the Causeway Road ROW, which would combine with one of the Skiff Avenue alternatives to complete the linkage to Edgartown-Vineyard Haven Road. Causeway Road is a low-volume road that provides parking alongside Veteran's Park but otherwise primarily services single family residential properties. The road rises in grade most sharply between its bend and intersection with Skiff Avenue. Based on available GIS mapping, it appears that the ROW of Causeway Road is approximately 30 feet (27-31 feet). To provide the desirable SUP cross section adjacent to the roadway would require at least 39 feet to accommodate two 10 foot travel lanes with a 1 foot shoulder area as well as a 10 foot SUP with 5 foot separation from the roadway surface. Two additional feet of shoulder would be required adjacent to the SUP for clearance and comfort of SUP users. Land takings or easements of between 8-12 feet would likely be required along the majority of the roadway to accommodate a SUP.



LEGEND:

- = At-Grade Bike Crossing
- = Potential Bike Rest Area/Racks, etc

- = SUP Adjacent to Roadway
- = Bike Lane or Shared Shoulder Use on Roadway
- = SUP Separate from Roadway



SEGMENT 1 - BEACH ROAD SUP TO EDGARTOWN-VINEYARD HAVEN ROAD SUP
SECTION 1.5 - CAUSEWAY ROAD TO EDGARTOWN-VINEYARD HAVEN ROAD

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Pre-Feasibility Study of the Extension of the Martha's Vineyard Network of Shared-Use Paths (SUP)

Along Causeway Road it may be necessary to consider reducing the SUP width and offset from the roadway. If the SUP were reduced to 8 feet with a 2 foot offset from the edge of pavement *and* the vehicle travel lanes were reduced to 10 feet with no shoulder area, the minimum ROW could be reduced to 32 feet. If construction of this portion of the SUP network were constructed with State or Federal funding assistance, Design Waivers would be required to accommodate reductions to the SUP and roadway cross section.

A short-term variation for Causeway Road could be to provide a 5 to 6 foot sidewalk on one side of the roadway and identify the roadway as a bike route with appropriate signage and markings. Causeway Road receives very little vehicle traffic and the sidewalk would allow pedestrians to be out of the roadway and could be used occasionally by less experienced cyclists.

Alternative 1M and Alternative 1N

Two alternatives for this section depart from public road ROWs to join with Edgartown-Vineyard Haven Road using Delano Road and Mount Aldworth Road as well as existing private road ROWs. Assessor maps state Delano and Mount Aldworth roads have ROWs of 35 feet and 30 feet, respectively. These roads both experience very low volumes of traffic, although they are sometimes used as a shortcut to avoid the Edgartown-Vineyard Haven Road intersection with State Road. Alternative 1M (yellow dashed dot) would extend the SUP across from the southern Veteran's Park entrance along Causeway Road uphill through one privately owned undeveloped parcel to the eastern end of the private Cat Hollow Lane right-of-way. Alternative 1N (blue dashed dot) would start farther east along Causeway Road where it intersects with the private Lobster Alley ROW and 2 to 3 additional private parcels before connecting to the Cat Hollow ROW.

Based on a review of topographic mapping, there is a significant grade difference between Delano Road and Causeway Road dropping nearly 60 feet from an elevation of approximately 75 feet to 15 feet. This translates into an average slope of between 8% and 11% for the SUPs. This grading is too steep for a recreational SUP and should be avoided if possible. One way to reduce the grade of the SUP might be through use of switchbacks – angling back and forth across grade – and providing rest areas out of the way of SUP traffic. Consideration would also have to be given to separating pedestrians from cyclists for portions of this SUP. This technique would require significantly wider swaths of the property than a straight SUP.

The three remaining alternatives explore potential cross sections and roadway treatments along the Skiff Avenue ROW. These combine with the Causeway Road alternative to connect to Edgartown-Vineyard Haven Road. Skiff Avenue is well traveled but not congested with motor vehicles; it links with Lagoon Pond Road to access the Post Office and short-term downtown parking without encountering Five Corners traffic. Because of the connection, it is a common route for bicyclists wishing to avoid State Road. Skiff Avenue descends about 60 feet from Edgartown-Vineyard Haven Road before encountering the intersection with Causeway Road. Notably, this intersection is less than 100 feet after the road bend and has restricted sight lines.

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Pre-Feasibility Study of the Extension of the Martha's Vineyard Network of Shared-Use Paths (SUP)

Based on a review of the GIS Mapping, it appears that Skiff Ave has a ROW of approximately 40 ft (38-41 feet). The current configuration of Skiff Ave provides a wide lane/shoulder combination eastbound (downhill) allowing for on-street parking. However, based on field observations and discussions with local officials, the on-street parking is not heavily used and could be considered for elimination in order to provide improved bicycle and pedestrian accommodations. All of the alternatives are based on removal of on-street parking.

Alternative 1O

A dedicated SUP could be provided within the existing ROW as illustrated in Alternative 1O (solid red). It is likely that the construction of the SUP would require complete reconstruction and realignment of the roadway to ensure that both the SUP and the roadway were within the ROW. While a dedicated SUP is typically the most desirable routing for bicycles, the grade of Skiff Avenue is a concern with Alternative 1O. Because eastbound cyclists will be traveling downhill and entering a horizontal curve just east of Renear Street, there could be the potential for head-on conflicts between westbound cyclists or with pedestrians on the SUP. The gradient of the SUP exacerbates the speed differential and potential conflict between cyclists and pedestrians. The width of the SUP could be increased to 12 or 14 feet and striped with a centerline to reinforce the two-way travel on the path; however, this would require additional ROW along the corridor. Warning signs could also be utilized along the SUP to help provide additional guidance to SUP users.

Alternative 1P

Alternative 1P (solid blue) addresses the concern of head-on crashes by providing a one-way SUP along both sides of Skiff Avenue. To provide one-way SUPs adjacent to Skiff Avenue the minimum width would be 6 feet, with a 2 foot graded shoulder and 5 foot separation from the roadway surface. With 10 foot travel lanes and a 1 foot shoulder, this would require a 48 foot ROW. One-way SUPs are generally not recommended, as enforcement of the one-way travel by bicyclists is not practical and generally two-way usage will occur. Provision of one-way SUPs also does not address the mix of pedestrians with higher speed bicyclists.

Alternative 1Q

Alternative 1Q (dashed red) re-stripes the Skiff Avenue pavement surface to provide 11-foot travel lanes with 4 to 5 foot bike lanes rather than create a dedicated SUP. This alternative would maintain the existing sidewalk on the southerly portion of Skiff Avenue, separating pedestrian and bicycle traffic, and would not likely require any widening of the existing roadway surface. However, it would not achieve Objective 1 of the study; to provide a continuous dedicated SUP through or around the Down-Island towns.

Because of the grading along Skiff Avenue, consideration of a combination of alternatives 1P and 1Q may be appropriate for this section. Within the 40-foot ROW, two 5.5-foot sidewalks could be provided with 4-foot bicycle lanes and 11-foot travel lanes. This would result in a roadway cross-section of 41 feet, requiring only minor easements or takings to accommodate. By

TECHNICAL MEMORANDUM

Pre-Feasibility Study of the Extension of the Martha's Vineyard Network of Shared-Use Paths (SUP)

providing “sidewalks” rather than SUPs on both sides of Skiff Avenue, the required 5-foot offset from the travel lane is not required. In addition, the 2-foot graded shoulder adjacent to the SUP would not be necessary. While not encouraged, the sidewalk area could be used by recreational bicycle riders (families, young children, etc.) and provide the desired access for pedestrians, wheelchair users, roller bladders, etc. while the on-pavement bike lanes would service the more experienced riders and function as the official bike route. Another variation would be to provide a sidewalk on just one side of Skiff to allow for wider bike lanes, especially on the up-hill side to allow for bicyclists to pass slower cyclists. A 4 foot bike lane adjacent to curbing would require a Design Waiver if constructed with State or Federal funds.

2.1.6 Section 1.6 –Edgartown-Vineyard Haven Road

Alternative 1R

Alternative 1R (solid red) on Figure 7 illustrates the final section of Segment 1 and explores the potential to extend the Edgartown Road-Vineyard Haven SUP from its current terminus adjacent to Sanborn Way to Skiff Avenue or Mount Aldworth Road. Based on the available GIS mapping, it appears that the ROW along Edgartown-Vineyard Haven Road varies from approximately 50 feet in the vicinity of Sanborn Way to approximately 70 feet. There is currently a striped shoulder providing for on-street parking along both sides of the roadway, and a grass strip and sidewalk along the western side of the roadway.

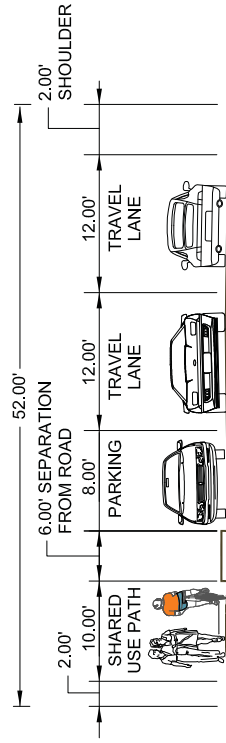
Alternative 1R would require 52 feet of ROW and would provide a 10-foot SUP, separated from the roadway by 6 feet. In addition, an 8-foot shoulder or parking lane would be maintained on the westerly side of the roadway and 12-foot travel lanes would be provided with a 2-foot shoulder on the easterly side. While it appears that a SUP may be feasible with limited reconstruction of the roadway surface, a detailed base survey would be required to establish the alignment of the roadway within the ROW and determine if alignment changes were necessary to ensure the SUP, parking, roadway surface and shoulders all fell within the existing ROW.

2.1.7 Segment 1 Summary

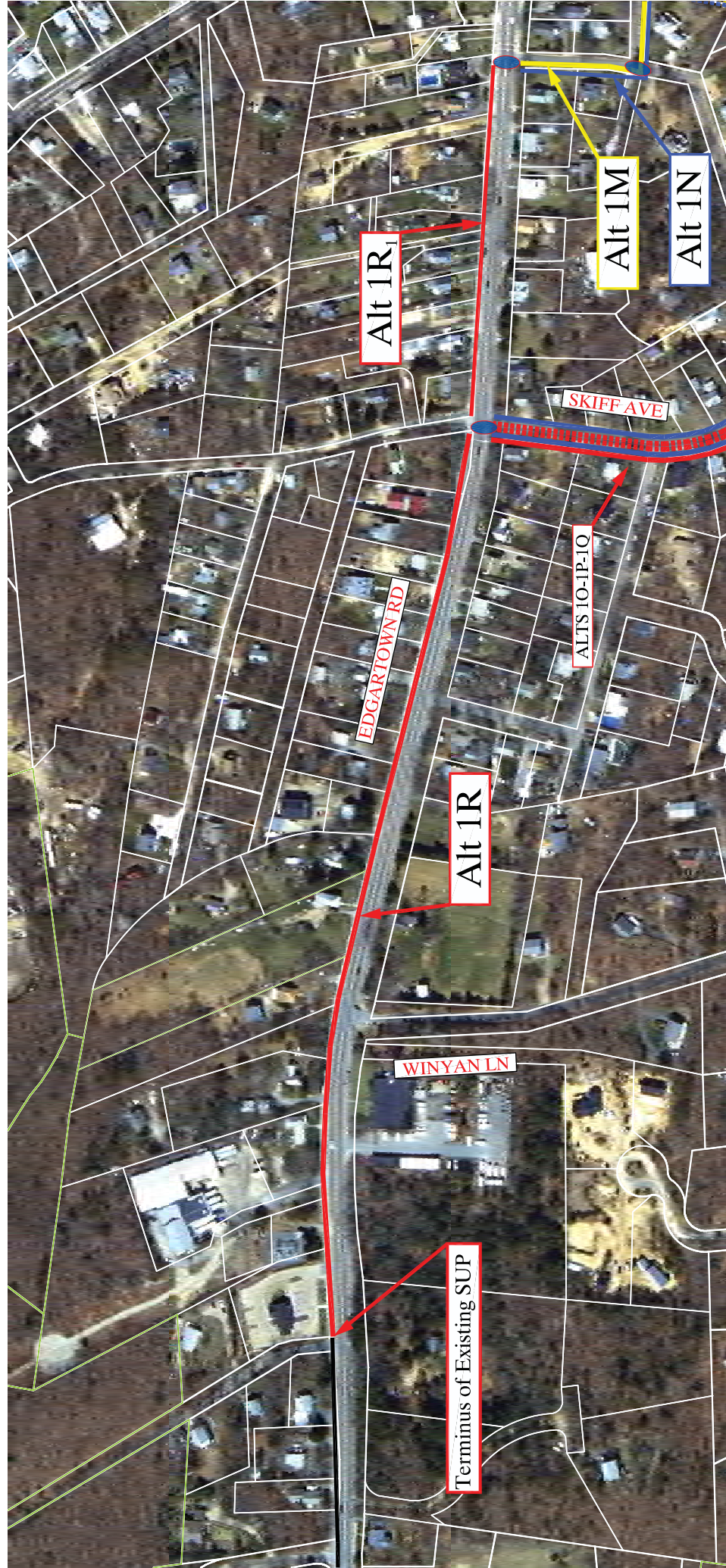
Alternative 1A would provide a SUP adjacent to Beach Road and extend the existing path to the northwest from its current terminus at Wind's Up Watersports to approximately the Saltwater restaurant. There appears to be sufficient ROW available so that the majority of the path could be constructed within the ROW, with potential Design Waivers required to reduce the path width and/or offset from the roadway along portions of the SUP. The construction of the path would likely require reconstruction of the roadway in order to keep the entire facility within the available ROW. This would significantly increase the cost of the project but is partially offset by the planned resurfacing of Beach Road by MassHighway.

LEGEND:

-  = At-Grade Bike Crossing
-  = Potential Bike Rest Area/Racks, etc
-  = SUP Adjacent to Roadway
-  = Bike Lane or Shared Shoulder Use on Roadway
-  = SUP Separate from Roadway
-  = Existing SUP



SUP ADJACENT TO ROAD WITH PARKING



SEGMENT 1 - BEACH ROAD SUP TO EDGARTOWN-VINEYARD HAVEN ROAD SUP
SECTION 1.6 - EDGARTOWN-VINEYARD HAVEN ROAD

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Pre-Feasibility Study of the Extension of the Martha's Vineyard Network of Shared-Use Paths (SUP)

From the Saltwater restaurant north to the Five Corners intersection, the current configuration provides sidewalks on both sides of the road. In order to maintain the current pedestrian accessibility in this area, consideration should be given to providing bike access further into the downtown area via on-street bike lanes. This configuration, would provide a continuous bike facility into Vineyard Haven, but would require an at grade crossing at the transition from the SUP to the Bike Lanes.

To connect from Beach Road to the Veterans Memorial Park, Alternative 1C would achieve the primary objective of providing a continuous SUP link around Vineyard Haven but will require ROW or easements to cross privately owned parcels. Alternative 1E would have the fewest impacts to area properties and provide the shortest and most direct route. This would require extending an off-road SUP along Beach Road, beyond the Saltwater restaurant, which as discussed, could negatively impact pedestrian access along the corridor. However, connecting Alternative 1C to Alternative 1E via Alternative 1D₁ would allow access to 39 Lagoon Pond Road without the need to extend the SUP along Beach Road. Alternative 1E is most successful if the acquisition of 39 Lagoon Pond Road were possible.

In order to enhance the experience for users of the SUP and to further achieve the goals of the study, any option along Beach Road should explore the potential to utilize the open space adjacent to the Saltwater restaurant as a bike rest facility. Provisions for bike storage, trail information and potentially restroom facilities could be provided.

Access through the War Veteran's Memorial Park via Alternative 1G would have the least impact on the operations of the playing fields and locate the SUP furthest away from the wetland areas. The SUP through the field presents opportunities to provide bike rest areas or other facilities for cyclists in the vicinity of the existing maintenance shed and/or adjacent to the pedestrian path between the Post Office and the Fire Station.

Access between the park and Edgartown-Vineyard Haven Road is recommended via Causeway Road (Alternative 1L) and Skiff Avenue (Alternatives 1O, 1P or 1Q). The critical element along Causeway Road will be the availability of ROW and or feasibility of providing a reduced cross section. The section of SUP along Skiff Avenue may require some modifications to the traditional SUP cross section to provide a safe link for pedestrians and cyclists. Alternatives 1M and 1N not only require the path to pass through private lands, but would also require significant vertical grades (greater than 8%) for the paths, which would not be conducive to a recreational bike path. Continuation of the SUP along the westerly side of Edgartown-Vineyard Haven Road appears to be possible with few impacts to adjacent parcels.

Table 1 presents a summary of the various costs associates with the alternatives discussed in Segment 1.

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Pre-Feasibility Study of the Extension of the Martha's Vineyard Network of Shared-Use Paths (SUP)

TABLE 1 Segment 1 - Beach Road SUP to Edgartown-Vineyard Haven Road SUP Estimated Cost Summary								
Alternative	Section	ID	Start	End	Construction	Length	Cost per ft	Estimated Cost¹
Alt 1A	1.1	Beach Road	Terminus of Drawbridge SUP	Sweetwater Restaurant	Roadway with Adjacent Path	1,585	\$ 600.00	\$ 951,000.00
Alt 1B	1.2	Beach Road	Saltwater Restaurant	Five Corners Intersection	Restripe Roadway	1,000	\$ 25.00	\$ 25,000.00
Alt 1A₁	1.2	Beach Road	Saltwater Restaurant	Five Corners Intersection	Roadway with Adjacent Path	1,010	\$ 600.00	\$ 606,000.00
Alt 1C	1.3	Adj. to Saltwater Rest	Beach Road	Lagoon Pond Road (Ball Field)	Path Only	1,200	\$ 175.00	\$ 210,000.00
Alt 1D or 1D₁	1.3	45-47 Beach Road	Beach Road	Lagoon Pond Road	Path Only	750	\$ 175.00	\$ 131,250.00
Alt 1E	1.3	Thrift Shop	Beach Road	Lagoon Pond Road	Path Only	360	\$ 175.00	\$ 63,000.00
Alt 1F	1.3	Post Office	Beach Road	Lagoon Pond Road	Path Only	400	\$ 175.00	\$ 70,000.00
Alt 1G	1.4	War Vet. Mem. Field (drive access)	Lagoon Pond Road	Causeway Road	Path Only	1,530	\$ 175.00	\$ 267,750.00
Alt 1H	1.4	39 Lagoon Pond Road	Lagoon Pond Road	War Vet. Mem. Field	Path Only	170	\$ 175.00	\$ 29,750.00
Alt 1I	1.4	Post Office	Lagoon Pond Road	War Vet. Mem. Field	Path Only	200	\$ 175.00	\$ 35,000.00
Alt 1J	1.4	Fire Station Access	Public Restroom Facility	War Vet. Mem. Field	Path Only	500	\$ 175.00	\$ 87,500.00
Alt 1K	1.4	Causeway Rd Alternative	War Vet. Mem. Field	Causeway Rd	Path Only	530	\$ 175.00	\$ 92,750.00
Alt 1L	1.5	Causeway Rd	Causeway Rd/War Vet Mem Field	Skiff Avenue	Roadway with Adjacent Path	1,740	\$ 600.00	\$ 1,044,000.00
Alt 1M	1.5	Cat Hollow Rd	Causeway Rd	Mount Adworth Rd- Edgartown Rd	Roadway with Adjacent Path Path Only	185 870	\$ 600.00 \$ 175.00	\$ 111,000.00 \$ 152,250.00
Alt 1N	1.5	Lobsetter Alley	Causeway Rd	Mount Adworth Rd- Edgartown Rd	Roadway with Adjacent Path Path Only	360 920	\$ 600.00 \$ 175.00	\$ 216,000.00 \$ 161,000.00
Alt 1O	1.5	Skiff Avenue	Causeway Rd (via Skiff Ave)	Edgartown Rd	Roadway with Adjacent Path	1,600	\$ 600.00	\$ 960,000.00
Alt 1P	1.5	Skiff Avenue	Causeway Rd (via Skiff Ave)	Edgartown Rd	Roadway with Adjacent Path	1,600	\$ 800.00	\$ 1,280,000.00
Alt 1Q	1.5	Skiff Avenue	Causeway Rd (via Skiff Ave)	Edgartown Rd	Restripe Roadway	1,600	\$ 25.00	\$ 40,000.00
Alt 1R	1.6	Edgartown Road	Sanborn Way	Skiff Rd/MT Aldworth Rd	Roadway with Adjacent Path	2,300	\$ 700.00	\$ 1,610,000.00

¹Construction Cost - Does not include any land acquisitions.