

**Sakonnet River Bridge  
Rehabilitation or Replacement Project**

**DRAFT ENVIRONMENTAL  
IMPACT STATEMENT  
& SECTION 4(f) STATEMENT**

**Volume IIa**

**Bicycle and Pedestrian Facilities**



**BICYCLE AND PEDESTRIAN FACILITIES  
SAKONNET RIVER BRIDGE NO. 250  
PORTSMOUTH AND TIVERTON  
RHODE ISLAND**



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## BICYCLE AND PEDESTRIAN FACILITIES

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## BICYCLE AND PEDESTRIAN FACILITIES

### CHAPTER I EXECUTIVE SUMMARY

#### A. INTRODUCTION:

The objectives of this study are twofold:

1. **To investigate establishing a designated bicycle and pedestrian facility for crossing the Sakonnet River Bridge**
2. **To identify a typical cross-section width which will be utilized in the development of the various reconstruction alignments.**

This study will outline various design alternatives proposed to establish a bicycle and pedestrian facility for the Sakonnet River Bridge Reconstruction Project. The alternatives presented in this study will consider the following:

- A. **Construction Costs**
- B. **Access and Egress**
- C. **Safety of bicycles and pedestrians**

To establish primary design practices for the implementation of bicycle facilities on transportation improvement projects, the following sources were referenced:

1. American Association of State Highway and Transportation Officials (AASHTO) Edition 1990,
2. AASHTO Guide for the Development of Bicycle Facilities, 1999 Edition
3. The Americans with Disabilities Act (ADA)

This study includes the following:

- A. **Definition/explanation** of the type of bicycle and pedestrian facilities proposed.
- B. **Recommended alternative** that provides an opportunity to enhance the safety and convenience of bicycle travel through the study area. The proposed alternative is consistent with the community's transportation plan and overall community goals.
- C. **Identification** of a cross sectional width to be utilized in development of the alternative for the Environmental Impact Statement.



## BICYCLE AND PEDESTRIAN FACILITIES

### B. RHODE ISLAND BICYCLE/PEDESTRIAN PROJECTS

The Rhode Island Department of Transportation (RIDOT) presently has three additional bicycle and pedestrian facility projects in Tiverton and on Aquidneck Island. The proposed projects are defined as follows:

#### **1. *Tiverton Sakonnet Bikeway Enhancement Program 2<sup>1</sup>, Tiverton, Rhode Island:***

This project will establish a bicycle route along scenic roadways in Tiverton, beginning in the north at Grinnell's Beach at the intersection of Lawton Avenue and Main Road (RI Route 77) and ending at the southern portion of Tiverton at Fogland Beach. RIDOT Enhancement Program 2 includes several roadways within Tiverton, i.e., Main Road, Lawton Avenue and Highland Road.

#### **2. *Tiverton Bike Route Enhancement Program 3<sup>2</sup>, Tiverton, Rhode Island.***

This project would extend the Tiverton Bikeway Program 2 as previously described. (Middletown Road, Highland Road, the northern portion of Main Road and Riverside Drive, ending at the Sakonnet River Bridge are additional roadways that will be upgraded to serve as more suitable bike routes.)

#### **3. *The Aquidneck Island Passenger Rail Study.*<sup>3</sup>**

This project will study the feasibility of incorporating a commuter rail service and bicycle facility on the Newport secondary rail line. RIDOT has recently developed a bike lane on Burma Road within a four-foot shoulder. (Burma Road is a navy-owned roadway, running along Narragansett Bay from Coggeshall Point, Portsmouth to Coddington Cove, Middletown.)

The Newport Secondary Track, once connecting downtown Newport, RI to Fall River, MA, runs parallel to Burma Road. The rail portion on Aquidneck Island is currently utilized by the Newport Dinner Train for sight seeing tours. The rail portion in northern Tiverton however, is presently unused. The Aquidneck Island Passenger Rail Study will include the potential for a shared use right-of-way with bicycles, from North of Burma Road to the northern portion of Tiverton, including the existing railroad swing bridge that crossed the Sakonnet River.

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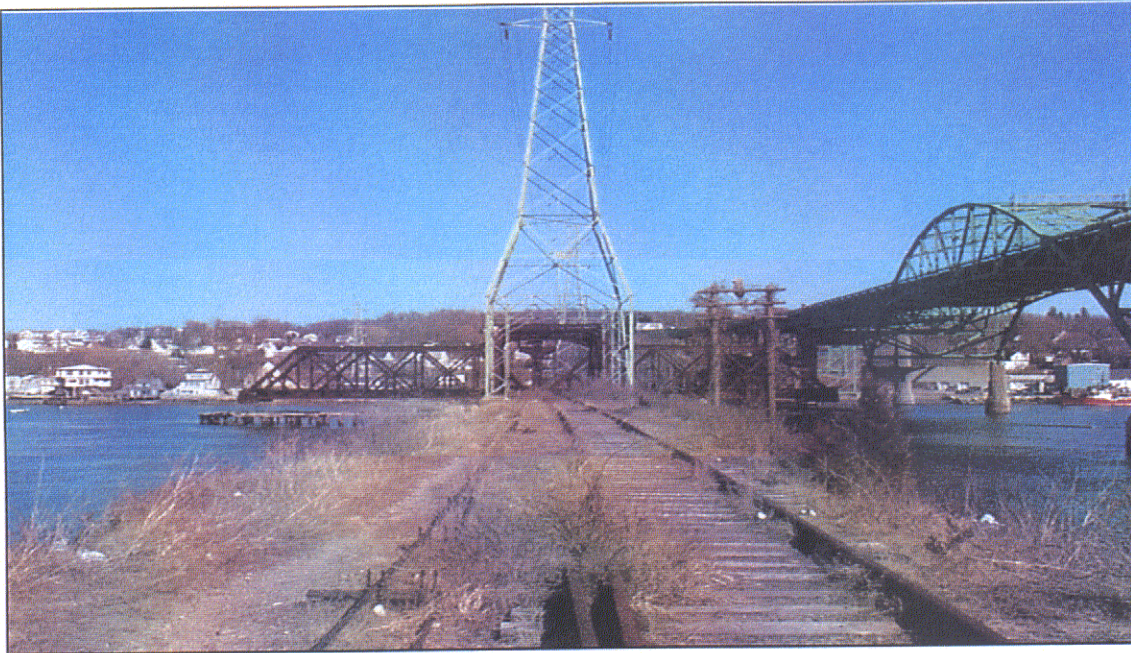
<sup>1</sup>Tiverton Sakonnet River Bikeway Design Study , Bikeway and/or Pedestrian Facility Enhancements Program 2, Prepared by Keyes Associates for The Rhode Island Department of Transportation, December 20, 1999.

<sup>2</sup>Tiverton Bike Route Enhancement, 1999 Enhancement Project for The Rhode Island Department of Transportation.

<sup>3</sup>The Aquidneck Island Passenger Rial Study, Feasibility Study being conducted by Louis Berger Group, year 2000.



## BICYCLE AND PEDESTRIAN FACILITIES



**Newport Secondary Track at the Sakonnet River**

The U.S. Coast Guard has mandated removal of the railroad swing bridge over the Sakonnet River. Running north and parallel to the Sakonnet River Bridge, it is currently locked in the open position for navigational passage. The use of this corridor to cross the Sakonnet River, although feasible, is not likely because a new swing bridge would need to be constructed and staffed to open when the navigational channel is in use. The cost associated with this crossing would be prohibitive. The 90-percent design plans for the demolition of the swing bridge have been prepared and submitted to the RIDOT. Anticipated schedule for demolition is not known at this time.

### C. BICYCLE FACILITY CLASSIFICATIONS:

The following is a listing of the types of bicycle facilities as outlined in the Guide for the Development of Bicycle Facilities, 1999, Published by the American Association of State Highway and Transportation Officials (AASHTO): (see Figure 1).



## BICYCLE AND PEDESTRIAN FACILITIES

1. ***Shared Roadway (No bikeway designation)***: A roadway which is open to both bicycles and motor vehicle travel without any bikeway designations. The possibilities include:
  - A. **An existing roadway with wide curb lanes**
  - B. **A road with paved shoulders**

This type of roadway may or may not be suitable for bicyclists depending on a cyclist's operating skills as well as the cross-sectional width of the roadway.

Note: Cycling is neither encouraged nor discouraged on this type of roadway.

2. ***Signed Shared Roadway (Signed Bike Route)***: Signed shared roadways are designated by bike route signs and serve either to provide continuity to other bicycle facilities or designated preferred routes through high-demand corridors.

Cyclists anticipate a safe and maintained facility with sufficient lane and shoulder width for both motor vehicle and bicyclist.

3. ***Bike Lane or Bicycle Lane***: A portion of the roadway which has been designated by striping, signing and pavement markings for the preferential or exclusive use of bicyclists.

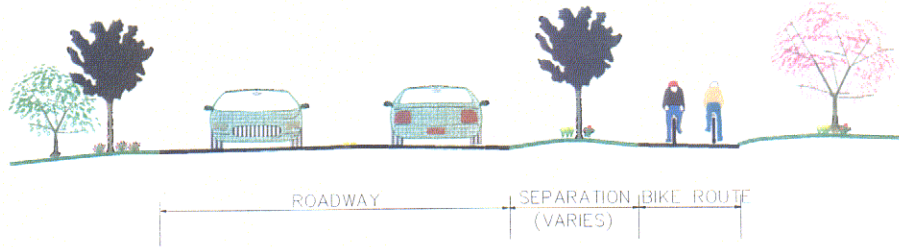
Bike lanes delineate the right of way assigned to bicyclists and motorists and provide for more predictable movements by each.

4. ***Shared Use Path***: A bikeway that is physically separated from motorized vehicular traffic by an open space or barrier and either within the highway right-of-way or within an independent right-of-way.

As defined by AASHTO a "Shared use path should offer opportunities not provided by the road system." These routes or paths are physically separated from the travel corridor of the motoring public. Because this study relates to a bridge waterway crossing, an independent (10-25' setback from the roadway) shared use path is not feasible, therefore, the shared use path as defined by AASHTO would require an acceptable crash tested barrier which physically separates cyclists and non-motorized users from motor vehicles.

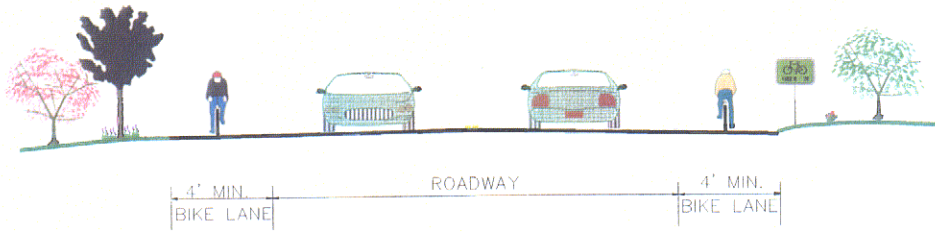


## BICYCLE AND PEDESTRIAN FACILITIES



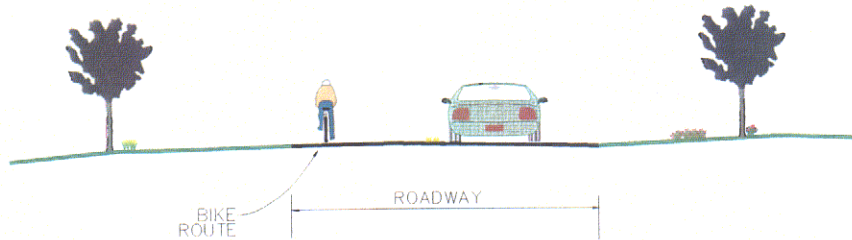
### SHARED USE PATH

A path for the exclusive use of bicyclists, physically separated from motorized vehicular traffic either within an existing right-of-way or on a completely new location



### BICYCLE LANES

A portion of a roadway which has been designated by striping, signing, and pavement markings for the preferential or exclusive use of bicyclists.



### BICYCLE ROUTE

A shared right-of-way identified only by signing. Bike routes are proposed along low speed, low volume roadways where there is insufficient width to provide bicycle lanes

**Figure No. 1: AASHTO BICYCLE FACILITY CLASSIFICATIONS**



## BICYCLE AND PEDESTRIAN FACILITIES

### CHAPTER II PROJECT DESCRIPTION

#### A. PROJECT BACKGROUND

The Federal Highway Administration and The Rhode Island Department of Transportation jointly sponsor the Sakonnet River Bridge Project. The target area of this project incorporates the Towns of Portsmouth and Tiverton, Rhode Island. The project goal is to evaluate viable alternatives to rehabilitate or replace the Sakonnet River Bridge in Portsmouth and Tiverton, Rhode Island.

RIDOT is considering several alignment alternatives for the rehabilitation or replacement of the Sakonnet River Bridge. The alignment alternatives under consideration are as follows:

- A. **“No Build” - Do nothing to the existing bridge.**
- B. **Rehabilitation / Repair to the existing bridge.**
- C. **A new bridge along the existing alignment.**
- D. **A new bridge to the north of the existing bridge along the alignment of the existing railroad, which would provide for vertical clearance over the Newport Secondary railway line for future intermodal development,**
- E. **A new bridge to the south of the existing bridge.**

The proposed cross section for a four-lane freeway as recommended by AASHTO Page 583, consisting of four (4) 12-foot through travel lanes, 10-foot minimum right shoulder, 4-foot minimum left shoulder and 5-foot minimum sidewalk.

The proposed cross section for the new Sakonnet River Bridge was developed based on:

1. Recommendation of AASHTO’s A Policy on Geometric Design of Highways and Street 1990.
2. The RIDOT Functional Classification of Roads, Technical Paper 130, 1995-2005 for Newport County. The project area is defined as Freeway and Expressway (Urban).
3. Future Average Daily Traffic of 44,000 vehicles per day and 2 percent trucks.
4. Design speed of 60 mph.

These alternatives, as presented in the Draft Environmental Impact Statement (DEIS), must include potential provisions of pedestrian and bicycle access on the Sakonnet River Bridge, to link the proposed Tiverton and Portsmouth bikeways.



## BICYCLE AND PEDESTRIAN FACILITIES

State and Federal agencies mandate consideration of provisions for pedestrian and bicycle facilities on all new bridge alternatives. Therefore, this document will both outline the viable bicycle and pedestrian facilities as well as offer a recommendation as to the most suitable one for this project.

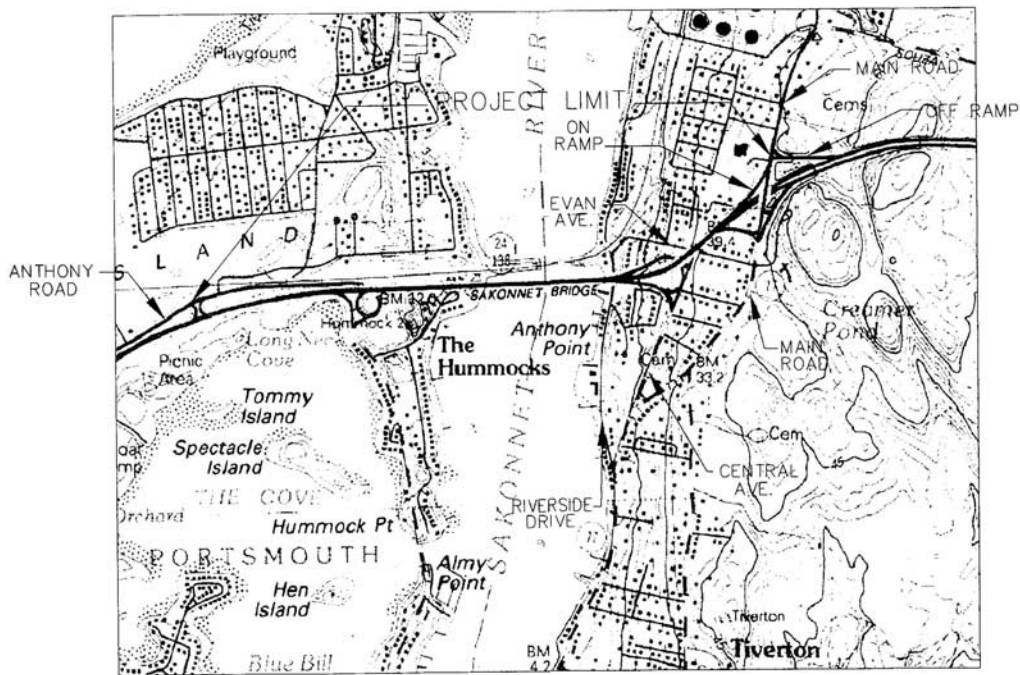
### B. DESCRIPTION OF PROJECT AREA

The Sakonnet River Bridge carries Rhode Island Route 24 (RI 24) over the Sakonnet River, a tidal passage separating the Town of Portsmouth on Aquidneck Island to the west and the Town of Tiverton to the east. The project limits for the Sakonnet River Bridge project are from Main Road, Tiverton to Anthony Road/Hummocks Point, Portsmouth, including the Central Avenue interchange. Figure 2 indicates these limits.

### C. PURPOSE AND NEED

**The purpose of this study is to recommend a safe, easily accessible, and convenient bicycle and pedestrian route on RI Route 24 and over the Sakonnet River.** The route will link the Tiverton bikeways with Aquidneck Island as part of the Sakonnet River Bridge reconstruction project.

The existing Sakonnet River Bridge has a three-foot (0.9 meters) wide walkway on both the northbound and southbound sides (reference graphic below). This walkway is separated from the travel lanes by curbing. The walkway is suitable for emergency use only. Pedestrian and bicycle access is currently prohibited on the bridge because there is neither convenient access, nor sufficient pedestrian and cyclist width and barrier protection.



Source: COMMONWEALTH ENGINEERS & CONSULTANTS, INC.

Rhode Island  
Department of Transportation  
  
Federal Highway Administration

# PROJECT LOCATION MAP

## BICYCLE AND PEDESTRIAN FACILITY

Figure No.  
2

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## BICYCLE AND PEDESTRIAN FACILITIES

The RIDOT Bicycle Programs have identified numerous roadways throughout the State as either “**suitable**” or “**more suitable**” on the State bicycle map.<sup>4</sup> RIDOT defines, a “**suitable**” roadway as one on which a bicyclist is more likely to share the road with motorized traffic. A “**suitable**” roadway, (both state and local roadway), is one that generally has heavier traffic volumes. A “**more suitable**” roadway is generally defined as having both adequate shoulders for bicycle travel and lower traffic volumes.

The RIDOT Bicycle Program has identified bicycle routes from the East Bay area to Newport with passage across the Mount Hope Bridge. Although these East Bay bicycle routes are in their preliminary stage of planning and construction, they would link the Town of Bristol to Aquidneck Island. Developing a bicycle facility on the Sakonnet River Bridge would connect the Town of Tiverton Proposed Enhancement Programs 2 and 3 to Aquidneck Island.

The bikeway connection from Aquidneck Island to northern Tiverton potentially provides direct access to both Fall River and to Providence via the Mount Hope Bridge and the East Bay Bike Path.

The Newport-Pell Bridge was designed for motor vehicle use only; bicyclists and pedestrians are prohibited. Presently, however, RIPTA offers a Rack N’ Ride service, which allows cyclists the opportunity to cross the Newport-Pell Bridge by bus and then continue his/her route through Newport.

The Jamestown-Verrazzano Bridge has pedestrian sidewalks on both sides of the bridge and 4-foot (1.2m) striped shoulders defined as suitable for bicycle access. Access to the Jamestown-Verrazzano Bridge from North Kingstown and Jamestown is currently in the design development stage.

Bicycle use has increased significantly in recent years, mandating a safe, attractive and convenient bicycle network. Health conscious communities are now far more informed of the medical benefits, both physical and psychological, that bicycling and walking provide. As such, it behooves local, state and federal agencies to focus attention on accommodating bicycle traffic during the project development stage of a project.

### D. PROJECT COORDINATION

The goal of any transportation improvement project is to design facilities for optimum performance paying particular attention to preserving and, where possible, enhancing the character of the surrounding environment. The study process for this bicycle/pedestrian facility includes substantial input from state and local officials, public agencies, and other interested groups including bicycle organizations, local business owners and abutting property owners.

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<sup>4</sup>A Guide to Cycling in the Ocean State, published by the Rhode Island Department of Transportation, 1999, see Appendix.



## BICYCLE AND PEDESTRIAN FACILITIES

Additional coordination with RIDOT regarding the “Aquidneck Island Passenger Rail Study” and “Sakonnet River Bikeway, Tiverton” is necessary to incorporate the related bicycle and pedestrian facilities into the Sakonnet River Bridge bicycle path access alternatives to Main Road. Correspondence pertinent with the bicycle and pedestrian facility are included in Appendix A.

### E. COMMUNITY CONSIDERATION

When developing a bicycle/pedestrian facility, the designer’s objective is to provide a safe, attractive and convenient environment to promote an alternative mode of transportation. The community in which the bicycle/pedestrian facility is constructed must be considered regarding any increase in activity as well as the opinions of the adjacent residents. These considerations must be weighed since the implementation of the facility will further link communities and significantly increase pedestrian and tourist traffic.

Certainly, a primary concern of any community is that the development of bicycle facilities would encourage crime and lower property values. Studies<sup>5</sup> have determined, however, that bicycle facilities will, in actuality, decrease crime due to increased use by people and visibility. Property values have actually increased when located near a bicycle facility according to local real estate assessments along the East Bay Bike Path. In fact, many real estate listings promote the proximity of a property to a bike route in its description. Additional studies indicated that the overall quality of life for families has increased in those areas where a facility was easily accessible since it afforded them an easy opportunity to exercise as well as to spend quality time together.

The Sakonnet River Bridge is an important connection in the transportation network directly linking Massachusetts and portions of Rhode Island to Aquidneck Island and the City of Newport resort area. By providing a suitable bicycle facility over the bridge, both Massachusetts and Rhode Island’s overall bicycle network would expand to incorporate other communities which would otherwise be excluded.

The proposed Tiverton Bikeway Enhancement Projects 2 and 3 include roadways in the Town that are close to the shore of the Sakonnet River and provide direct connection to many of Tiverton’s recreational and historic areas. Connecting the bikeway enhancement projects with the Sakonnet River Bridge will expand the Tiverton intermodal network and encourage community activity. The Town of Tiverton endorses development of bicycle and pedestrian facilities in their comprehensive plan and is committed to providing a safe environment for bicyclists and pedestrians. See Appendix A for correspondence from the Town of Tiverton.

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<sup>5</sup>The Rails to Trails Conservancy (RTC)



## BICYCLE AND PEDESTRIAN FACILITIES

### CHAPTER III EXISTING CONDITIONS

#### A. ROADWAY CLASSIFICATION

RI 24 is classified by RIDOT as an “Urban Principal Arterial-Other Freeway and Expressway (Urban).<sup>6</sup> This classification is equivalent to an urban principal arterial as discussed in Technical Paper Number 130.

Technical Paper Number 130 defines an urban principal arterial as one that:

1. Carry a major portion of the longer-distance trips passing through the urban area.
2. Serve the longer-distance movements within urbanized areas.
3. Carry a high portion of the total urban area travel on a minimum of road mileage.
4. Frequently, carry important intra urban as well as intercity bus routes.
5. Provide continuity for all rural arterials that pass through the urban area.
6. Include all limited-access and most (although not all roads that have interchanges with Interstate highways.)
7. Typically, speeds are 45 mph or greater except in built-up areas.

Central Avenue and Main Road are both classified in the State of Rhode Island Functional Classification of Roads dated June 12, 1997 as “minor arterial (urban)”. This classification, discussed in Technical Paper Number 130, is defined as one that:

1. After principal arterials, form the network or backbone of cross-travel within a community.
2. May carry local bus routes.
3. Often, carry traffic through a large portion of a city or town.
4. Often, feed traffic from collectors into the principal arterials.
5. Preferably, do not penetrate neighborhoods.
6. Provide the urban connections to rural collector roads.
7. May parallel a principal arterial and carry shorter-length trips, connection built-up areas and traffic generators in one or more towns.
8. May connect outlying smaller town centers and built-up areas with routes of higher classification.
9. May carry the heaviest-volume cross-traffic between two principal arterials that closely parallel each other.

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<sup>6</sup>Rhode Island Department of Transportation, Technical Paper No. 130 and Highway Functional Classification System for the State of Rhode Island, 1995-2005, October 1988 update.



## BICYCLE AND PEDESTRIAN FACILITIES

### B. TRAFFIC VOLUMES

To maximize an environment safe for bicyclists, pedestrians, and motor vehicles, knowledge of motor vehicle volumes helps to dictate those specific traffic design features (signage, traffic control devices, etc.) needed. The Sakonnet River Bridge is a major transportation facility connecting the Towns of Tiverton and Portsmouth.

The existing traffic volumes and types of vehicles using RI 24 in the project area were quantified over several periods in 1998 and 1999. The Average Daily Traffic (ADT) and Design Hourly Volume (DHV) for Sakonnet River Bridge is summarized in Table 1. Traffic volume data is included in Appendix B.

**Table No. 1: Traffic Volume Data**

	Northbound	Southbound	Total
ADT	20,000	20,700	40,700
DHV	1,820	1,880	3,700
Percent Commercial	2.5	2.5	-----

### C. POPULATION

According to the 1990 Decennial Population Counts, published by the Department of Administration, Office of Municipal Affairs, the Towns of Tiverton and Portsmouth have experienced an average growth per year of 1-percent and 3.5-percent respectively over the past 10 years. Assuming that recent development trends and population growth rates will continue at approximately the same rate, Tiverton and Portsmouth can expect an average growth of 1.0-percent and 3.5-percent per year respectively. The actual populations as published by the Rhode Island Statewide Planning Programs are illustrated in Table No. 2.

**Table No. 2: Population Data, RI Statewide Planning Program**

TOWN	1995	2000	% Change	2005	% Change	2010	% Change
Tiverton	14,210	14,473	1.85%	14,645	1.19%	14,787	0.97%
Portsmouth	16,697	17,460	4.57%	18,095	3.64%	18,710	3.4%



## BICYCLE AND PEDESTRIAN FACILITIES

### D. ACCIDENT ANALYSIS

**Safety is the primary concern when planning, designing and locating any type of bicycle/pedestrian facility on a given roadway.**

Any location that reports high accident rates and high motor vehicle traffic volume is generally avoided. The accident history of RI 24 was investigated for four years from 1995 to 1998. The study area consisted of 1.5 miles of the RI 24 corridor from the Anthony Road, Portsmouth exit to Main Road, Tiverton. According to AASHTO<sup>7</sup>, the national average of highway fatalities as measured in million vehicle miles (MVM) is 2.51. As shown in Table No. 3, the highway rate for Route 24 is below this national average. A summary of accident reports are included in Appendix C.

**Table No. 3: Summary of Accidents & Accident Rates per Million Vehicle Miles (MVM)**

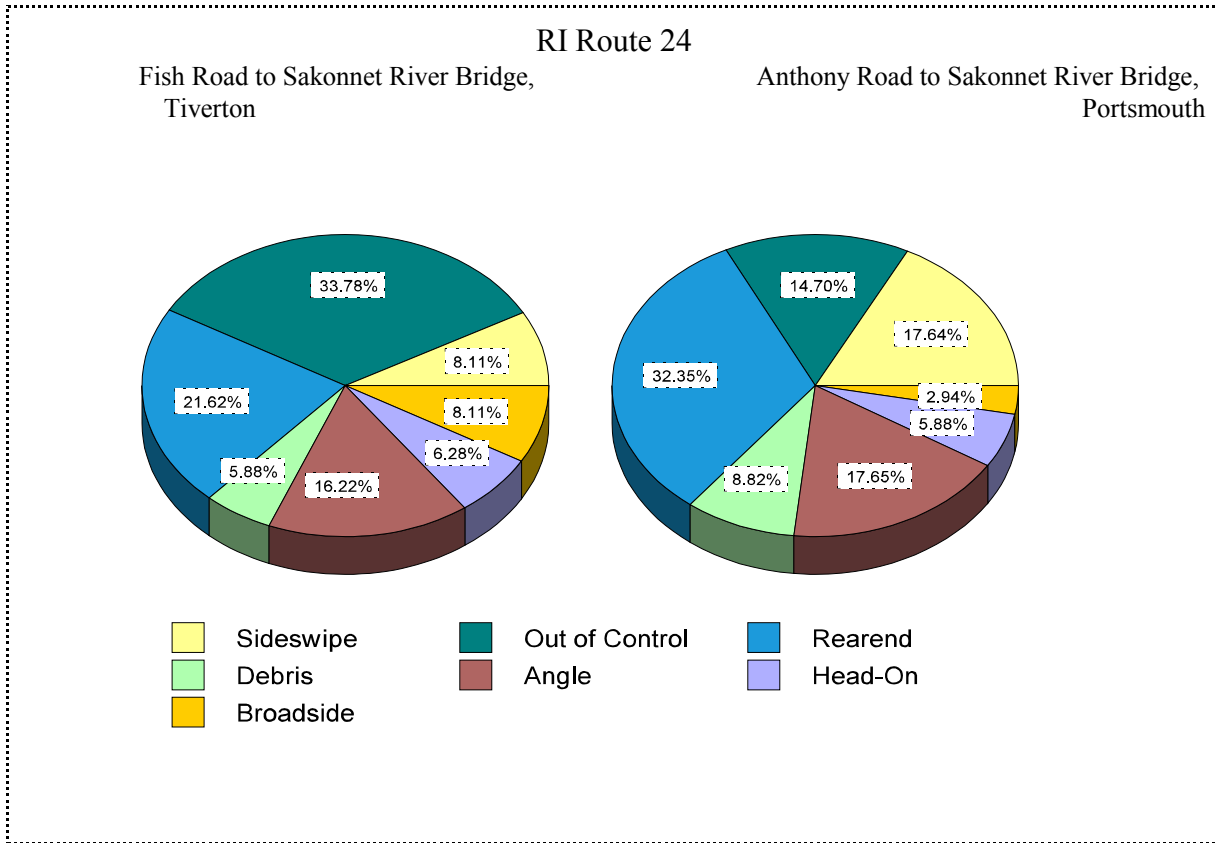
SUMMARY OF ACCIDENTS (1995-1998)		
	NORTHBOUND	SOUTHBOUND
ACCIDENTS	51	88
INJURIES	29	62
FATALITIES	1	0
ACCIDENTS/ MVM	1.16	1.96
INJURIES/ MVM	0.66	1.38
FACILITIES/ MVM	0.002	0

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<sup>7</sup>A Police on Geometric Design of Highways and Streets, 1990, published by The American Association of State Highway and Transportation Officials (AASHTO).



## BICYCLE AND PEDESTRIAN FACILITIES



**Figure No. 3: Accident Type Summary (1995 to 1998)**

Specific accident types were also tabulated for the analysis. Figure No. 3 indicates the type of accidents recorded for RI Route 24 throughout the four-year period. Improvements to RI Route 24 under the Sakonnet River Bridge Reconstruction Project will reduce the accident potential, by means of lengthening tangent sections on the freeway and increasing sight distance and vehicle perception. Redesigning auxiliary lanes and eliminating the Central Avenue interchange under the Sakonnet River Bridge project will improve the merging movement for vehicles and reduce rear-end type accident occurrences on RI 24.



## BICYCLE AND PEDESTRIAN FACILITIES

### E. SPEED STUDY

A spot speed study was conducted on RI Route 24 within the project limits on January 6, 2000. Spot speeds were obtained to determine the 85<sup>th</sup> percentile speed, standard deviation of speeds, and the average operating speeds. This information is useful in evaluating specific aspects of the physical design of the roadway, i.e., cross-sectional widths and trends in performance of the roadway system. The 85<sup>th</sup> percentile speed for RI Route 24 was calculated to be 66 mph northbound and 65 mph southbound. Also studied was the ramp from Main Road to RI Route 24 northbound. A summary of the results is indicated in Table No. 4.

**Table No. 4: Spot Speed Study Summary**

LOCATION	SPOT SPEED STUDY	
	50 <sup>th</sup> Percentile Speed ( mph)	85 <sup>th</sup> Percentile Speed (mph)
RI Route 24 northbound	58	56
RI Route 24 southbound	66	65
RI Route 24 South to Main Road	40	43
Main Road Ramp to RI Route 24 North	42	51



## BICYCLE AND PEDESTRIAN FACILITIES

### CHAPTER IV ALTERNATIVES

#### A. GENERAL

RI Route 24 is a limited access highway without bikeway designations because this facility is unsuitable for bicycle travel at present. The type of facility chosen for the Sakonnet River Bridge project, as classified by the American Association of State Highway and Transportation Officials (AASHTO)<sup>8</sup>, will affect the level of use as well as the types of users expected to use the facility. As outlined by AASHTO, the bicycle alternative which promotes a shared shoulder will attract only the most confident riders. This same alternative with a 6-foot (1.8 m) shoulder or a bike lane may very well provide sufficient “comfortable operating space” for many more adult riders. Unfortunately, it may not be comfortable for children or for those adults with less confidence. **By utilizing a shared use path, however, most riders of any experience level will benefit from this facility.**

The shared roadway and signed shared roadway bicycle facility classification were not considered as viable alternatives for the RI Route 24 corridor due to the limited access nature of the facility, speed of the motorist, approach width from RI Route 24 to the Sakonnet River Bridge and the fact that the bridge crosses a navigational waterway. Each of these items would appear to lower the level of comfort for all types of riders.

**For this reason, two (2) types of bicycle facilities are being considered for this project: the bicycle lane with accompanying pedestrian sidewalks on the bridge, or the shared use path classification.**

Presently, the Sakonnet River Bridge prohibits bicycle and pedestrian access. Alternatives under the scenarios of “no build” or “rehabilitation” of the existing bridge will continue to prohibit bicycles and pedestrians. The cost associated with increasing the curb to curb width of the existing bridge structure would be cost prohibitive. Pedestrian and bicycle access utilizing Central Avenue is not considered in this report because under every alternative, the RI Route 24 southbound Central Avenue ramp is to be eliminated. The northbound RI Route 24 off ramp to Central Avenue grade differential does not permit ADA compliance and therefore was not considered viable.

**The first alternative** investigated for all three (3) of the reconstruction alignments is to provide a bicycle lane with a separate pedestrian sidewalk on both sides of the bridge. Four separate interchanges along the RI Route 24 corridor would provide access and egress.

**The second and third alternatives** incorporate the shared use path criteria. They could be either

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<sup>8</sup> Guide for the Development of Bicycle Facilities, 1999, Published by the American Association of State Highway and Transportation Officials.



## BICYCLE AND PEDESTRIAN FACILITIES

one-directional, on both sides of the bridge (alternative 3) or two-directional located on one side of the proposed bridge (alternative 2). Provisions will be made to separate bicycle traffic physically from motor vehicle traffic under these alternatives.

**The fourth and last bicycle/pedestrian facility alternative** for the reconstruction project is to continue prohibiting bicycles and pedestrians on the bridge.

### *Bicycle Lane Criteria*

According to AASHTO, the recommended bike lane width is 5 feet (1.5 meters) for a one directional lane measured from the face of a curb or guardrail to the shoulder pavement marking stripe. Bicycle lanes will be one-way facilities and carry bike traffic in the same direction as adjacent motor vehicle traffic. Origin and destination for the bicycle route would be designed from both sides of RI Route 24.

An on-ramp or adjacent lane from the Main Road Interchange in Tiverton would be required for both north and south egress and access of the bicycle facility onto the Sakonnet River Bridge. The Anthony Road interchange would be reconstructed to provide an egress for the bicycle lane from the Sakonnet River Bridge southbound and the Hummocks Point interchange would be redesigned to accommodate the access to the Sakonnet River Bridge bicycle facilities. Pedestrian sidewalks would be designed for both the north and south sides of the bridge, with a minimum width of 5-feet (1.5 meters), excluding the railing width.

Bike lane pavement markings would be provided and the motor vehicle travel lanes would be delineated from the bike lane by a 6-inch (150 mm) solid white line.

### *Shared Use Path Criteria*

A shared use path across the bridge would be advantageous given the appropriate level of separation designed between the path and roadway. A shared use path would accommodate riders of all skill levels and promote and enhance cycling as a family recreational activity. The immediate disadvantage of a shared use path of this type is that it would be restricted to a short distance on the highway via the Sakonnet River Bridge and terminate on the local roadway network. When the path terminates, in either Tiverton or Portsmouth, bicyclists going against the traffic may likely travel on the wrong side of the road. Design configurations for both ends of the bridge would require considerable engineering in developing this alternative appropriately.



## BICYCLE AND PEDESTRIAN FACILITIES

Only one direction of bicycle traffic within the shared use path is recommended unless physically separated from vehicular traffic. According to AASHTO, when “the distance between the edge of the shoulder and the shared use path is less than 5-feet (1.5 meters) a suitable physical barrier is recommended.” This barrier should be a minimum of 42-inches (1.1 meters) high, to prevent bicyclists from toppling over and from making unwanted movements into the on-coming travel lane shoulder. The recommended paved width for a two-directional shared use path is 10-feet (3 meters). A minimum width of a one-directional shared use path is 6-feet (1.8 meters).

A minimum 2-foot (0.2m) wide graded area with a maximum 1:6 slope should be maintained adjacent to both sides of the path when not utilizing a double barrier shared use path. With the long incline of the bridge, the grade on the shared-use path should not exceed 5%.

The two-way shared use path with a 42-inch barrier (Alternative No. 2) would be a facility within the proposed/existing State right-of-way, immediately adjacent to the travel lane shoulder on the Sakonnet River Bridge. A two-way shared path located adjacent to Route 24 via the Sakonnet River Bridge on either the northbound or southbound would be designed under this alternative.

The one-way shared use path with a 42-inch barrier (Alternative No. 3) would be a facility within the proposed/existing State right-of-way, adjacent to the Sakonnet River Bridge on both the northbound and southbound sides. This will accommodate bicyclists and pedestrians alike.

### B. ALTERNATIVE NO. 1: BIKE LANE AND SIDEWALK ON BOTH SIDES OF THE PROPOSED BRIDGE.

The proposed highway cross section for the Sakonnet River Bridge project (as discussed in Chapter II Section A of this Report) includes a 10-foot (3.0 m) striped shoulder. Under this alternative, the proposed 10-foot (3.0 m) shoulder would be signed and striped as a bike route. A 5-foot (1.5 m) sidewalk would also be proposed on both sides of the bridge. The total cross sectional width of the proposed bridge under this alternative is 93 feet (34 m) (shown in Figure No. 4).

The southbound bike lane would begin on Main Road in Tiverton with access being on or immediately adjacent to the existing southbound on-ramp. RIDOT is currently developing a Design Study Report to determine the feasibility of eliminating vehicular traffic on the RI Route 24 southbound ramp. If approved, this ramp could be narrowed and used as bicycle and pedestrian access to the Sakonnet River Bridge. If rejected, a pedestrian and cyclist path could be added immediately adjacent to the existing ramp. The bike lane would continue over the proposed bridge and terminate at the Anthony Road off-ramp. Design improvements for the Anthony Road interchange under the reconstruction project would include a minimum 6-foot (1.8m ) outside shoulder, signed and striped for a bike lane, and an adjacent five-foot (1.5m) pedestrian sidewalk at its termini. Locations for the connection to the local bicycle route network would depend upon which bridge alignment is chosen and recommendations outlined in the ongoing toll plaza study being prepared as part of the DEIS.



## BICYCLE AND PEDESTRIAN FACILITIES

The northbound bike lane would begin at the Hummock Avenue interchange in Portsmouth, continue along the proposed alignment of the Sakonnet River Bridge and terminate at the existing Main Road off-ramp. Modifications to the Main Road off-ramp will vary depending on which bridge alternative is selected. At a minimum, the ramp at Hummock Avenue will need to be reconstructed to accommodate a 6-foot (1.8m) outside shoulder and adjacent 5-foot (1.5m) pedestrian sidewalk. (Shown in Figure No. 5)

### C. ALTERNATIVE NO. 2: TWO-DIRECTIONAL SHARED USE PATH

A 10'-0" ( 3.0m) two-directional (barrier) shared use path would run along the southbound side of the proposed bridge, including a 1'-0" to 1'-9" (0.3m-0.9m) rail element along both edges, for a total cross sectional width of 93 feet (34 m) (shown in Figure No. 4). The access from Main Road would require modifying the existing southbound on-ramp either by widening if the ramp is not closed to vehicular traffic or by narrowing to prohibit vehicular traffic, to accommodate the 10-foot (3.0m) shared path. A pedestrian signal would be required to allow pedestrians and cyclists to cross Main Road to access the modified RI Route 24 southbound on-ramp in order to pass over the Sakonnet River Bridge. Once into Portsmouth, the two-way shared use path would terminate at Anthony Road. The Anthony Road interchange with RI 24 would be modified to accommodate the one-way on and one-way off to/from the shared use path. Once on Anthony Road, pedestrians and cyclists would use local roadways to reach their final destination. On the return trip, the pedestrian and cyclist would use the same travel path previously taken to access from the south. This alternative would require only one north and south access point.

### D. ALTERNATIVE NO. 3: ONE-DIRECTIONAL SHARED USE PATH

A 6'-0" (1.8 m) one-directional (barrier) shared use path would be located along both sides of the Sakonnet River Bridge creating a total cross sectional width of 95 feet (35 m) for the proposed bridge alignment (Shown in Figure No. 4).

Access from Main Road would require two (2) pedestrian crossings. The first would be north of RI Route 24 to the modified RI Route 24 southbound ramp, and the second would be south of the RI Route 24 overpass on Main Road near Evans Avenue for the returning pedestrians and bicyclists from Portsmouth. The proposed cross-sectional width of the RI Route 24 northbound ramp to Main Road will need to accommodate pedestrians, cyclists, and barrier protection.

Access in Portsmouth will require modifications to Anthony Road (southbound pedestrians) and the Hummock Avenue interchange (northbound pedestrians).



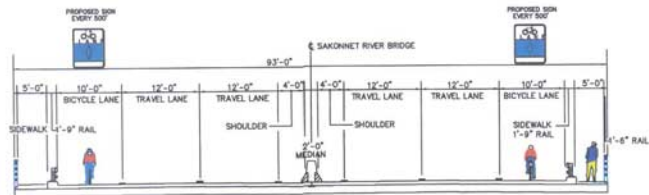
## BICYCLE AND PEDESTRIAN FACILITIES

The bike route to and from the Sakonnet River Bridge would be the same as described under Alternative 1, and shown in Figure No. 5. The difference between Alternative 1 and Alternative 3 is the bicycle lane. As described in Alternative 1, this lane would be separated from motor vehicle traffic by a 1'-0" to 1'-9" wide and 8" high rail element, and a 36" high barrier.

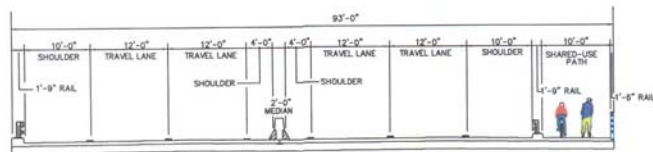
### E. ALTERNATIVE NO. 4: BICYCLE AND PEDESTRIANS PROHIBITED

This alternative is being considered because there is a no build alternative being evaluated in the Draft Environmental Impact Statement (DEIS). The "No Build" Sakonnet River Bridge Alternative would prohibit the inclusion of pedestrian and bicycle facilities on the existing cross sectional width of the bridge because to expand the existing cross section on either side of the bridge is cost and structurally prohibitive.

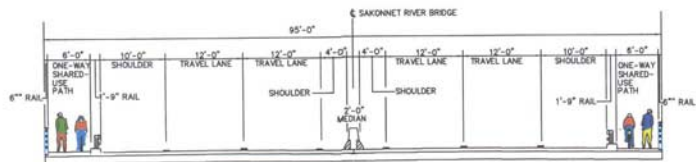
This alternative also evaluates prohibiting pedestrian and bicycle facilities on the proposed Sakonnet River Bridge alignments, and to continue to prohibit pedestrian and bicycle traffic on RI Route 24. This alternative would eliminate the need for, and cost associated with, pedestrian access on RI Route 24 north and south bridge approaches, and modifications to the Hummock Avenue interchange and Anthony Road. The overall cross sectional width of all three (3) proposed alignments would be reduced to 81 feet (31m), a reduction of 14 feet in the cross sectional cost and potential environmental impacts. In addition, a decrease in the potential number of residential and commercial properties impacted will reduce the impacts to marine life by the reduction of pier sizes, material costs, construction duration, and area disturbance. If RIDOT authorizes the elimination of the existing RI Route 24 southbound ramp from Main Road, as recommended in the RI Route 24 and RI Route 138 Ramps Design Study Report, the cost associated with the removal of the ramp and vegetation of this area would be included in this alternative. The State and Federal Government both mandate the inclusion of pedestrian and bicycle access on all new bridge construction, therefore, this alternative has little merit if a new Sakonnet Bridge is to be constructed.



ALTERNATIVE NO. 1



ALTERNATIVE NO. 2



ALTERNATIVE NO. 3

Source: COMMONWEALTH ENGINEERS & CONSULTANTS, INC.

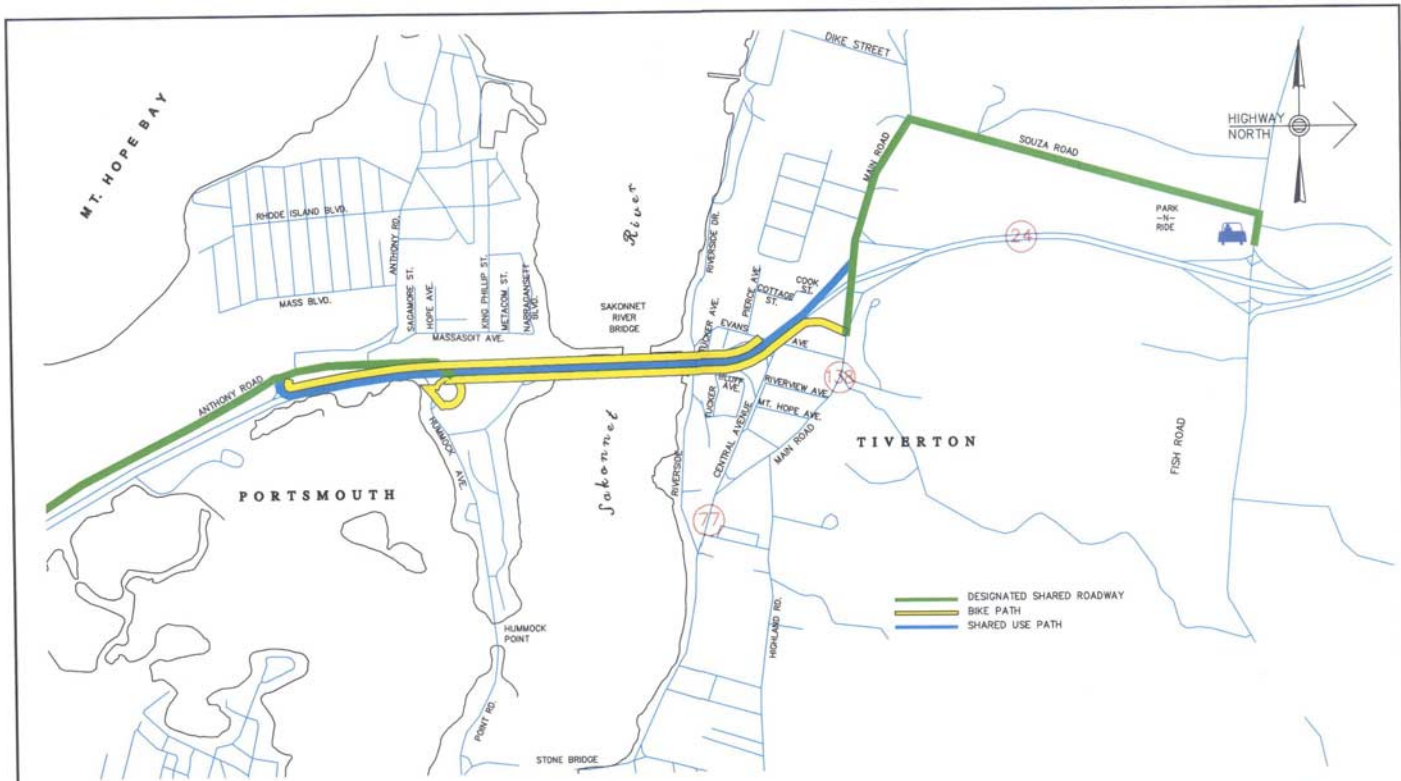
Rhode Island  
Department of Transportation  
Federal Highway Administration

# TYPICAL SECTIONS

## BICYCLE AND PEDESTRIAN FACILITY

Figure No.  
4

Page 21



Source: COMMONWEALTH ENGINEERS & CONSULTANTS, INC.

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Department of Transportation  
Federal Highway Administration

# PROPOSED BICYCLE ROUTES

## BICYCLE AND PEDESTRIAN FACILITY

Figure No.  
5

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## BICYCLE AND PEDESTRIAN FACILITIES

### CHAPTER V RECOMMENDATIONS

#### A. RECOMMENDED ALTERNATIVE

The advantages and disadvantages of the four alternatives for a bicycle and pedestrian facility are shown in Table No. 5.

**Based upon the findings of this report, the recommended alternative for a bicycle facility crossing the Sakonnet River, for the Reconstruction/ Rehabilitation of the Sakonnet River Bridge, is Alternative 2, a two-directional shared use path on the south side of the proposed bridge alignment.**

It is recommended that the Sakonnet River Bridge Project be selected as the means for crossing the Sakonnet River, as it will be most beneficial to incorporate the bicycle/pedestrian facility for all new alignments, as opposed to utilizing the Newport Secondary Track Railroad Corridor via the swing bridge. The limited usage of the swing bridge, since it must remain in the open position for navigational purposes, as well as the close proximity to the tracks makes this option a less desirable one.

#### B. DESIGN CRITERIA

As recommended by AASHTO, the bikeway should be a minimum of 10 feet (3 m) in width, and incorporate a crash worthy separation barrier (rail element) with a minimum 1'-0" (0.3m) width and a minimum height of 4'-6" (1.35 m). The recommended cross-section width which should be used in determining the potential environmental impacts associated with construction of a new Sakonnet River Bridge is 93 feet.

#### C. ACCESS AND PARKING

A RIPTA Park and Ride facility is located near the intersection of Fish Road and RI Route 24 in Tiverton. This facility can be used as a starting and finishing point for the bicycle route. From this Park and Ride facility, cyclists can travel north on Fish Road to Souza Road and proceed south on Souza Road to Main Road, all of which have been identified as suitable bikeway roads according to the RIDOT bikeway map. Once on Main Road, cyclists will need to cross Main Road to the modified RI Route 24 southbound ramp and over the new Sakonnet River Bridge to Anthony Road in the Town of Portsmouth. The returning cyclists will use the same access and travel path back to the Park and Ride facility on Fish Road for this alternative.



## BICYCLE AND PEDESTRIAN FACILITIES

There are currently no parking facilities along the bicycle routes in Portsmouth and no immediate RIDOT proposals or studies in the development phase to construct additional park and ride facilities in Portsmouth. Parking restrictions exist on the local roadways that comprise the suitable routes identified in the RIDOT bikeway map; therefore, it is recommended that the park and ride facility on Fish Road be the designated parking facility. The current parking facilities on Fish Road include enough spaces to accommodate the proposed increase in parking traffic generated by the bicycle facility.

This preferred alternative is the most cost effective and minimize construction improvement for access in both Tiverton and Portsmouth.

### D. PRELIMINARY COST ESTIMATE

A preliminary cost estimate was prepared for the four alternatives described. The complete cost estimate is included in Appendix B and is summarized in Table No. 5.

CHAPTER

PAGE

**Table No. 5: The Advantages and Disadvantages for Bicycle Facility Alternatives**

	ADVANTAGES (ADV) / DISADVANTAGES (DIS)							
	ALTERNATIVE 1		ALTERNATIVE 2		ALTERNATIVE 3		ALTERNATIVE 4	
	ADV	DIS	ADV	DIS	ADV	DIS	ADV	DIS
two-way bicycle route			◆					◆
one-way bicycle route	◆				◆			◆
two-way multi-use path			◆					◆
one-way multi-use path					◆			◆
bicycle/pedestrian allowed	◆		◆		◆			◆
shared bike lane & vehicles		◆	◆		◆		◆	
bicycle tolerant shoulder		◆	◆		◆		◆	
crossing vehicle path	◆			◆	◆		◆	
park and ride facility	◆		◆		◆		◆	
impacts to residential area		◆		◆		◆	◆	
cost roadway improvements		◆		◆		◆	◆	
cost of proposed ramps		◆		◆		◆	◆	
cost of proposed railings	◆			◆		◆	◆	
landscaping	◆		◆		◆			◆
preliminary cost estimate	\$4.0 million		\$3.0 million		\$4.0 million		\$2.0 million	