



CAPE COD
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Cape Cod Bicycle and Pedestrian Planning Recommendations Report 2011

September 30, 2011





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ACKNOWLEDGEMENTS

The Cape Cod Commission would like to thank the 15 towns of Cape Cod for their participation in this report and the groups and individuals whose responses and hard work contributed to its production.



Introduction



Cape Cod Rail Trail, Orleans (Image: CCC)

Bicycle planning has garnered increased attention in recent years as multi-modal options for transportation are increasingly being explored for their ability to mitigate Vehicle Miles Traveled (VMT) and their climatic impacts. In addition to this potential for environmental benefit, recent studies have pointed to the economic opportunities associated with bicycle planning.

Barnstable County is uniquely positioned to become a leader in regional bicycle planning, as its existing network of trails already provides economic stimulus and recreational benefit to the local citizens of Cape Cod. With this in mind, the Cape Cod Commission has dedicated an effort to expanding upon the existing system and work toward creating a unified bicycle network.

OBJECTIVES

The primary objective of this report is to facilitate bicycling and walking as viable transportation modes within Barnstable County through development of regional networks and identification of key areas appropriate for new or improved bike path facilities. Additional objectives include examining options for improving segments of, and access to and from, existing bikeways and the development of new shared use paths.

Recent studies have pointed to the economic opportunities associated with bicycle planning. One recent study states that “for every \$1 million, the cycling projects (in the study) create a total of 11.4 jobs within the state where the project is located...road only projects create the least, with a total of 7.8 jobs per \$1 million” (Peltier, 2011).



COORDINATION WITH FEDERAL TRANSPORTATION PLANNING FACTORS

The Safe, Accountable, Flexible, Efficient Transportation Equity Act-A Legacy for Users (SAFETEA-LU) was passed into law in August 2005. It continued the programs for bicycling and walking established in earlier federal transportation legislation, added several new directives, increased funding for some programs, and gave other programs more flexibility. Relevant provisions in SAFETEA-LU regarding bicycling and walking include the following federal funding streams:

- Safe Routes to School (SRTS) program
- Congestion Mitigation and Air Quality (CMAQ) program
- Recreational Trails Program (RTP)

PREVIOUS WORK

The Cape Cod Commission has completed several studies and plans linking pedestrian and bicycle networks in Barnstable County, including:

- Pedestrian and Bicycling sections of 2007 Regional Transportation Plan: http://www.gocapecod.org/rtp/RTP2007docs/Ch2-4BikePed_fin.pdf
- Transit-accessible pathways online mapping project <http://www.gocapecod.org/pathways>
- In 2009, updated MassGIS state-wide bicycle maps for Cape Cod
- Planning for the continuation of the Cape Cod Rail Trail from the Yarmouth town line south to the Hyannis Regional Transit Center
- Harwich Bike Planning Plan 2010-2011
- Sandwich Interconnect Plan 2010-2011
- The Cape Cod National Seashore Integrated Bicycle Plan, 2010



Cape Wide Planning

PROCEDURES

The Cape Cod Commission has undertaken the following procedures toward bicycle and pedestrian planning in FY 2011:

- Data collection including specialized traffic counts at existing multi-use facilities, usage surveys, and efforts to identify origins/destinations of potential users
- Coordination with local planning officials to identify inter-town bicycling connections and integration of local bicycle/pedestrian networks
- Use Google Earth/Google Maps and GIS data to develop online mapping of proposed routes

PRODUCTS

From the above procedures, the following products are included in this report:

- Updates to Cape Cod Pathways network
- Mapping of proposed regional bike networks and publication of bicycling and walking path information
- Where data are available, map roadways with adequate shoulder width to accommodate bicyclists
- Final report with recommendations to improve bicycle and pedestrians paths on Cape Cod



Cape Cod Pathways



Pathways Event, 2009 (Image: CCC)

Cape Cod Pathways was initiated in November 1993. Since then the project has garnered widespread support from the Barnstable County Assembly of Delegates, Cape Cod National Seashore, town officials, conservation organizations, businesses, and other groups. Trail planning currently under way in Cape communities will result in newly dedicated trails in the years ahead.

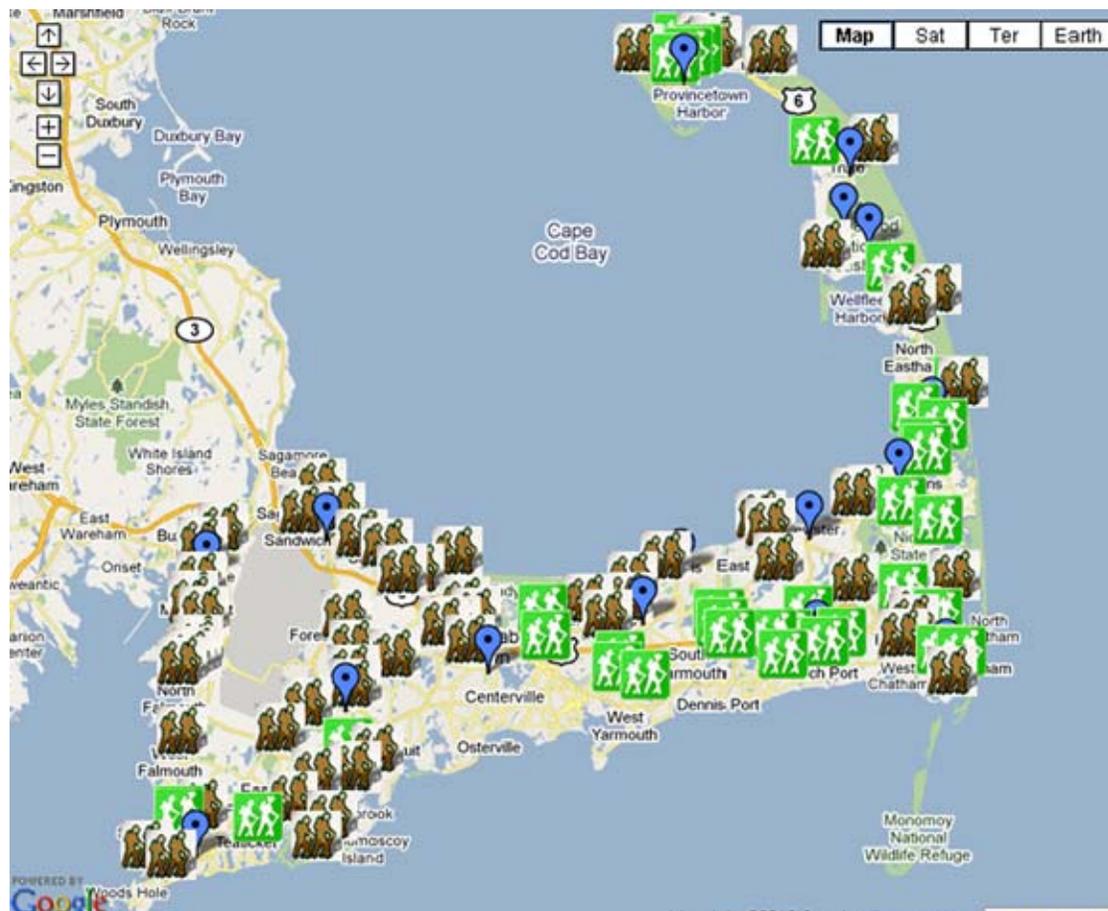
The creation of a Cape-wide trail network is an ambitious undertaking that requires planning, mapping, community organizing, fundraising, special events, publicity, negotiation of land and easements, clearing, and construction work.

Cape Cod Pathways hosted its 17th Annual Walking Weekend in October 2010. Walking Weekend features short walks and longer hikes led by historians, naturalists, and other outdoor enthusiasts. Walks are featured across the Cape, providing the opportunity to discover new places, and explore Cape Cod. Walking Weekend has been held annually over Columbus Day weekend since 1993. In peak years, volunteer walk leaders have led 40+ walks over the course of the three day weekend (Friday later



added to extend the fun), with 800 participants on weekends with good weather. Many Cape residents participate, but significantly, many off-cape visitors participate, some of them planning Cape vacations around Walking Weekend. One of the initial ideas in holding Walking Weekend in the fall was to encourage more folks to visit Cape Cod later in the shoulder season. Based on feedback from some local B & B's, that has been an effective program.

An AmeriCorps volunteer, Jenny Burkhardt, completed an online trail map tool in 2009. This is a terrific interactive map, and could be expanded with additional trail information from the towns, land trusts, and state and federal conservation partners. A screen shot of this map is shown below. The green trailhead symbols represent Cape Cod pathways that are accessible via public transportation.



Cape Cod Pathways Map (Image: CCC, google.com)



Regional Bike Path Network Planning

REGIONAL GOALS FOR BIKE PATH CONNECTIVITY

This report focuses on bike path planning on Cape Cod. There are three basic types of bicycle infrastructure: paths, lanes, and routes. Paths generally have their own separated right-of-way and follow certain standards for width, grade, and accessibility. Bicycle lanes are separate lanes within roadways marked for bicycle use. Bicycle routes are roadways with wide shoulders that have been designated for bicycle use. Pedestrians can access shared use paths and sidewalks. All pedestrian facilities support village centers and local businesses, and encourage travelers to walk instead of driving. According to the Rails to Trails Conservancy, bicycle and pedestrian facilities can increase property values and make areas more attractive to new residents, businesses, and tourists.

*A multi-use path is a paved right-of-way, separate from roadways. A multi-use path (sometimes referred to as a bicycle path) is **not a sidewalk.***

According to the American Association of State Highway and Transportation Officials (AASHTO), bicycle paths should have a paved surface 8-10 feet wide, with a 4 inch wide center line. Shoulders of 2-feet should be placed on either side of the path, with signage placed no closer than 3 feet from the pavement. The cross slope of a bicycle path should be no more than 2%. Bicycle paths must also meet other standards for grading,

accessibility, and roadway crossings that conform to AASHTO guidelines. There are many bicycle paths throughout Cape Cod. Some serve recreational needs, while others serve transportation needs.

A major transportation planning effort was undertaken by the Cape Cod National Seashore in partnership with the Cape Cod Commission. This effort included outreach throughout Barnstable County to key stakeholders. The resulting report is titled “Integrated Bicycle Plan for Cape Cod/Bicycle Feasibility Study”, released in 2010.



As a framework to regional bike planning on Cape Cod, the following figure represents an overall vision for bicycle *path* connections to and within Cape Cod. The segments shown in green represent existing bicycle paths. Orange line segments represent generalized routes; detailed alignments are yet to be defined. This figure represents the Cape Cod Commission's vision for expansion of the Cape's bicycle path infrastructure.

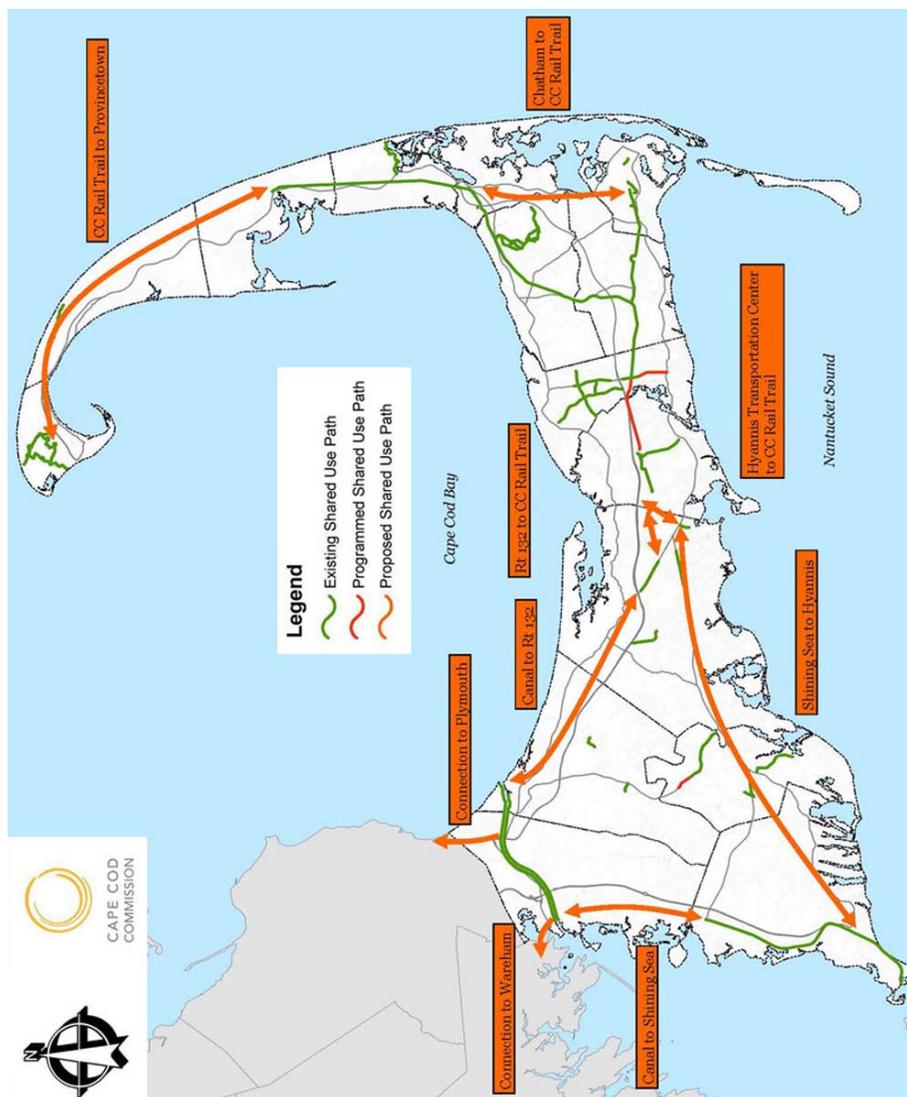


Fig 1: Shared Use Path Map (Image: CCC)



As the previous figure shows, gaps exist in the current system of bike paths and a goal has been set to create a consistent spine of interconnected bike paths from Provincetown to Bourne, eventually connecting the Cape to the East Coast Greenways. This network of bike paths would create a safe, enjoyable alternative to automobile travel, drawing both commuters and seasonal visitors to and from Cape Cod.

The following table defines the bicycle and pedestrian infrastructure of Cape Cod. This information forms the baseline of the existing system and helps identify gaps and opportunities to improve bicycling and walking on Cape Cod. Since this analysis was performed for the 2007 RTP, Multi-Use Path mileage increased Cape-wide by 16.2% and Bike Route mileage increased by 4.2%.

Town / Region	LENGTH IN MILES	
	Multi-	Bike Routes
All Cape	97.4	347.1
Upper Cape	30.9	173.9
Mid Cape	19.8	78.4
Lower Cape	27.3	55.5
Outer Cape	19.4	39.3
TOWNS		
Bourne	11.5	27.7
Sandwich	3.1	24.5
Falmouth	10.7	96.3
Mashpee	5.6	25.4
Barnstable	6.0	48.9
Yarmouth	3.9	15.3
Dennis	9.9	14.2
Harwich	8.7	20.0
Chatham	3.3	13.0
Brewster	13.4	11.3
Orleans	1.9	11.2
Eastham	7.2	0.4
Wellfleet	2.8	10.2
Truro	1.9	20.6
Provincetown	7.5	8.1

Table 1: Path and Route Mileage by Town/Region (Image: CCC)

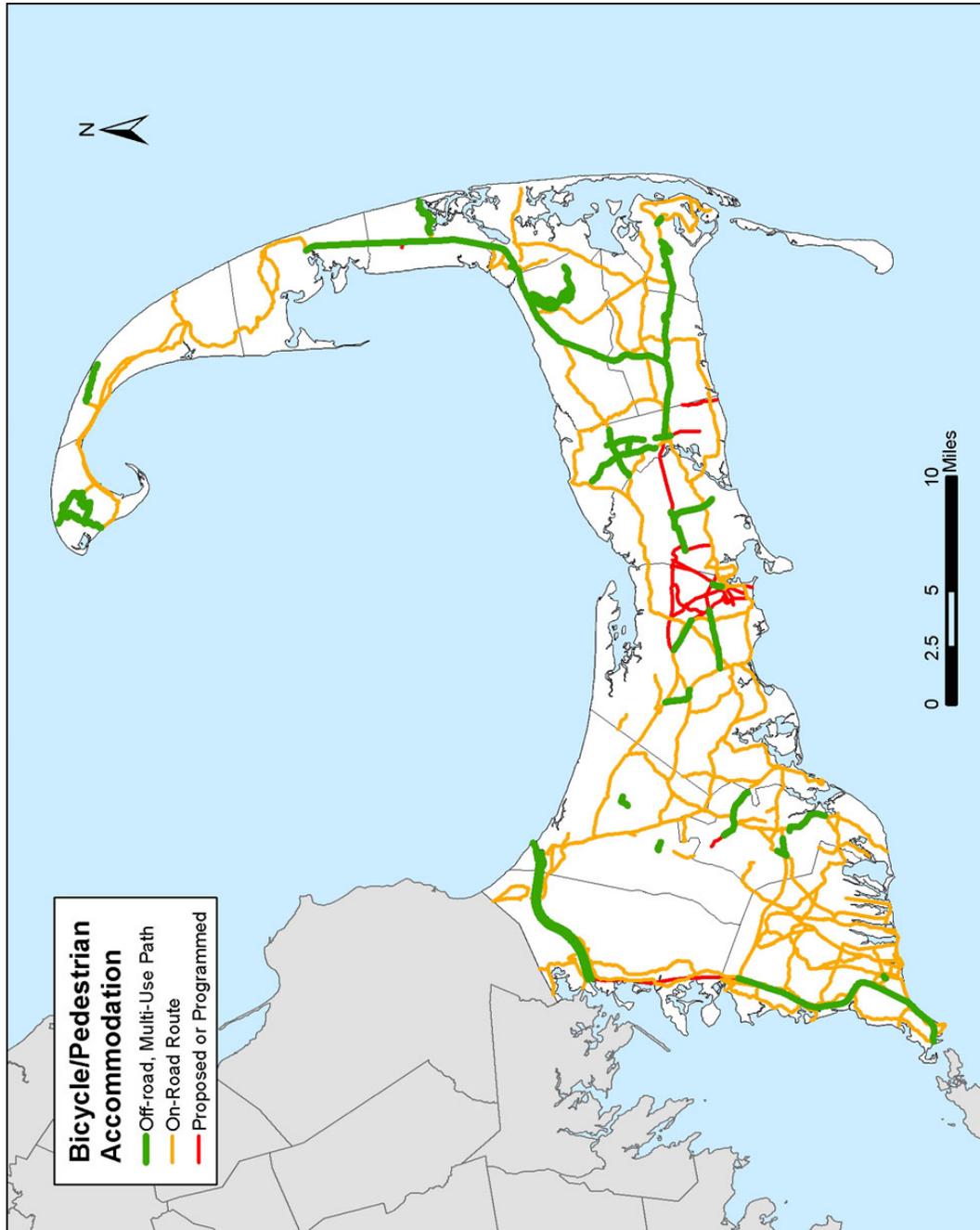


Fig 2: Multi Use Paths and Routes on Cape Cod (Image: CCC)



CAPE COD'S PRIMARY BIKE PATHS

The Cape Cod Rail Trail

The Cape Cod Rail Trail was constructed in the 1970s from the out of service Cape Cod Line rail right-of-way. Since 1991, an extension, two bridges over Route 6, and a tunnel have been constructed. The Massachusetts Department of Conservation and Recreation (DCR) owns and maintains the Rail Trail.

The Rail Trail runs from Route 134 in Dennis, just north of Great Western Road, to LeCount Hollow Road in Wellfleet. Given its length and location, the Cape Cod Rail Trail can be used to commute within the Lower and Outer Cape.



Cape Cod Rail Trail, Harwich (Image: CCC)

The Shining Sea Bike Path

The Shining Sea Bike Path, located in Falmouth, was constructed from a portion of the out-of-service Woods Hole Branch rail right-of-way. The path runs from the Steamship Authority terminal in Woods Hole to the southern crossing of Palmer Avenue. A future phase hopes to extend the bike path from Palmer Avenue to just south of Old County Road. The trail is currently 4.6 miles long, 8.5 feet wide, with 11 roadway crossings.

The Cape Cod Canal Bike Path

The Cape Cod Canal Bike Paths run along both sides of the Cape Cod Canal. The Army Corps of Engineers owns and maintains the paths as frontage roads for the Cape Cod Canal. Both sides have benches and sitting areas, and are lit at night. The southern-side path is 6.5 miles long, 8 feet wide and has 2 roadway crossings. The mainland-side path is 7 miles long, 8 feet wide and has 7 roadway crossings.

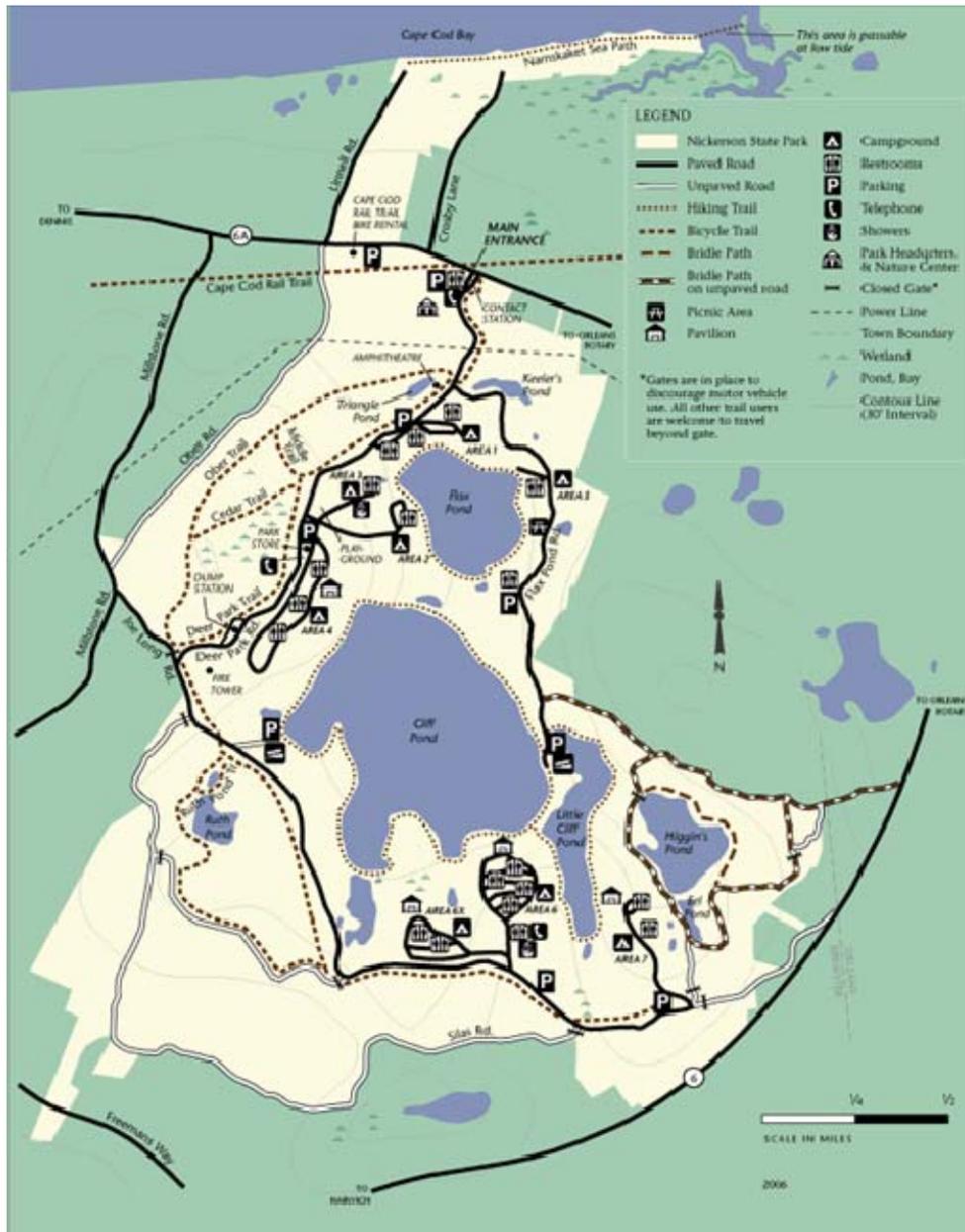


Fig 3. Nickerson State Park Trail Map (Image: DCR)



Nickerson State Park Bike Path

Several bicycle paths are located within Nickerson State Park in Brewster. These paths are used for recreation, offering a scenic ride through the park. They are owned by the Massachusetts Department of Conservation & Recreation. There are a total of 6.8 miles of bicycle path, with six roadway crossings. For a map of these trails, please see the previous page, fig 3.

The Old Colony Rail Trail

This Harwich-Chatham Extension of the rail trail is 6.2 miles long with 15 roadway crossings.

Provincelands Bike Path



Provincelands Trail at Race Point Visitors Center
(Image: CCC)

The Provincelands Trails are the set of trails at Race Point in Provincetown. They provide a path from near Route 6 to the Provincetown beaches and the Provincetown Municipal Airport. Travelers primarily use the Provincelands Trails for recreation and not to commute. The paths were built in the 1960s before bicycle path standards were developed. As a result they have many steep slopes, sharp curves and other

hazards. Bicycle traffic is restricted to 10 MPH travel for safety. The Provincelands Trails are owned by the Cape Cod National Seashore. There are a total of 7.6 miles of bicycle paths, with a paved surface 8 feet wide, and 4 roadway crossings.

Secondary Bike Paths

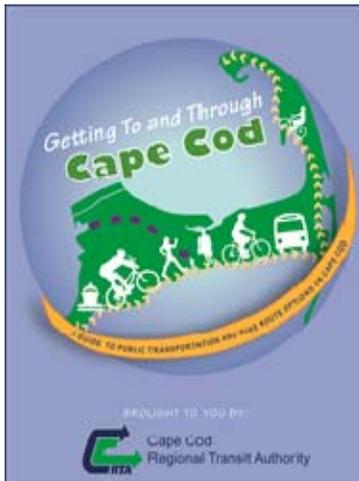
The following bike/multi-use paths exist throughout Cape Cod:

- Nauset Trail



- Head of the Meadow Trail
- Route 28 Path
- Route 130 Path
- Old Townhouse Road Trail
- Old Stage Road Path
- Forest Road Path
- Route 151 Path
- Hyannis Transportation Center Path
- Forestdale School Path
- Downtown Falmouth Path

GETTING TO AND THROUGH CAPE COD MAP



Getting To and Through Cape Cod
Map Cover (Image: CCC)

As a component of the Cape Cod Regional Transit Authority (CCRTA) transportation Mobility Management/Transit Enhancement federal funding, the CCRTA requested services from the Cape Cod Commission in 2011 in the form of cartographic design and print production to complete a free transit-oriented bike map for the regional consumer.

The Cape Cod Commission, through this technical assistance request, completed design and oversaw production of this regional map through coordination of partnership meetings between CCRTA/CCC to agree on map components

and design scheme, coordination with CCRTA/National Park Service/CCC GIS staff to compile existing GIS data layers, text and information; collection of bid quotes for print production, according to Federal Transit Administration rules and regulations; creation and export of GIS maps for incorporation into product; layout and design of print product, including illustrative additions to maps for integration; facilitation of print



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production. Released during Bike Week (May 2011), the “Getting To and Through Cape Cod Map” has been well received by the public, and the initial print run of 20,000 copies has been exceeded.

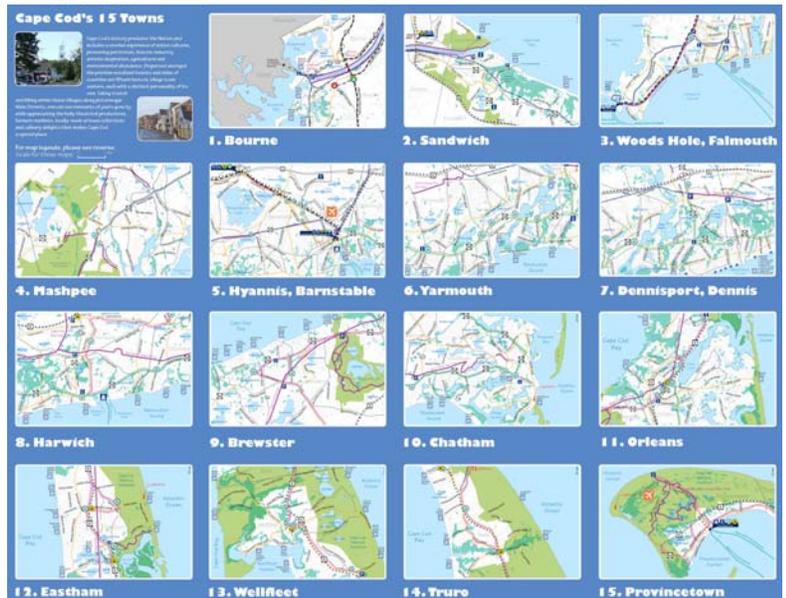


Fig 4. Getting To and Through Cape Cod Map (Image: CCC)



Town by Town Reporting and Recommendations

BARNSTABLE

As the most populous town on Cape Cod, The Town of Barnstable has long been proactive with regards to bike connectivity. Projects related to bike path planning completed in 2010 include the Hyannis multimodal path creation, Stevens Street and the Route 132 multimodal path.



Best Buddies Challenge, Hyannisport
(Image: <http://www.naaclub.org>)

Projects related to bike planning currently underway include planning and design work for a rail trail extension through Barnstable. A Contractor, VHB, has been hired to identify mitigation parcels and actions for use in negotiating with Mass Fish and Wildlife to obtain right to construct and maintain the future Cape Cod Rail Trail Extension from Willow Street to Marry Dunn Road over Fish and Game property. The Town and the consultant are coordinating with the Cape Cod Commission to identify

parcels of privately owned land located from Mary Dun Road to the Hyannis Municipal Golf course which are under consideration for near term development.

Once the parcels are defined for this project, the Town will work with both the CCC and the developers to reserve areas for future use for bike path construction as part of the development scenario for each parcel.

Goals include the creation of the east/west bike path through Barnstable along the Mid-Cape highway. For more information on existing and proposed bike paths in Barnstable, see the next page, fig 5.



BOURNE

Bourne has long been a gateway of bicycle activity on Cape Cod, as the connecting link between the rest of Barnstable County and mainland Massachusetts. The Cape Cod Canal bike trail follows both sides of the bridge, spanning over 11 miles of bike paths. These trails are operated and maintained by the Army Corps of Engineers.



Cape Cod Canal Bike Path
(Image: <http://www.kingmanyachtcenter.com>)

Building off this successful biking area, the Town of Bourne has been working towards the completion of streetscape improvements for Main Street in Buzzards Bay, which would improve the pedestrian and bicycling experience with a complete streets design.

Future bike planning pursuits that have been identified through the August 2010 CCC/National

Seashore study include the extension and eventual connection of the Shining Sea Bike Path to the Cape Cod Rail Trail via the Cape Cod Canal bike path, forming a more complete network of bike path connectivity in the Upper Cape.

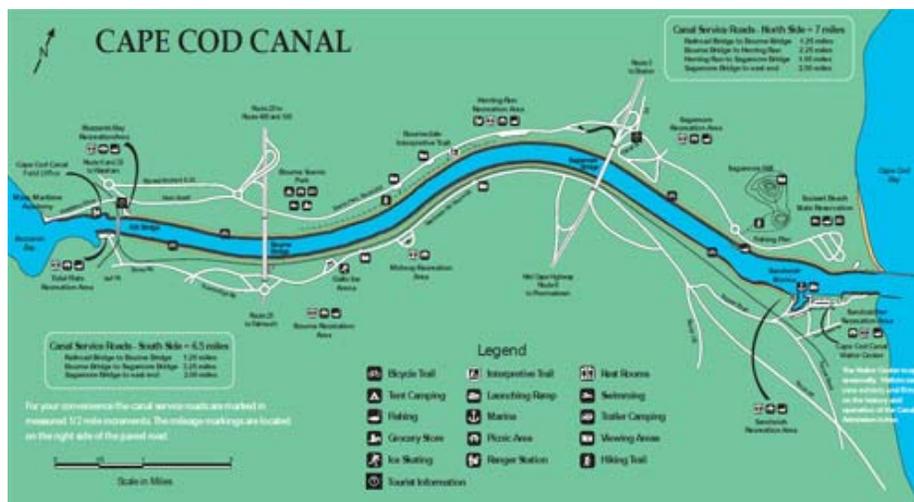


Fig 6. Cape Cod Canal Bike Path
(Image: <http://www.bikenewengland.com>)



BREWSTER

The town of Brewster is a local hub for outdoor activity, noted for its prime recreation destination: Nickerson State Park. In the past year, the town has helped in forming the Lower Cape Bikeways committee and advanced town bike planning through contact with Mass Bike and local school officials to initiate a Safe Routes to School Program and successfully giving away a dozen bike helmets to Ocean Edge resort for seasonal workers.

Future plans for the town of Brewster include the coordination of Route 6A reconstruction plans with bike amenities, traffic calming measures and wayfinding signage for the local bike paths; pursuing Cape Cod Rail Trail signage aligned with the neighboring towns of Harwich and Orleans; creating a Town map showing directions from the CCRT to in-town points of interest; and expanding local advocacy efforts. For a map of Nickerson State Park Bike paths, please see page 11, fig 3.



Cape Cod Rail Trail, Brewster, MA
(Image: <http://www.capecodholistic.com>)

CHATHAM

The town of Chatham harbors the eastern terminus of the Old Colony Rail Trail, a popular spur of the scenic Cape Cod Rail Trail. Chatham has been proactive in 2010, forming a Bikeways Committee which in has in the past year achieved the following goals:

- Board of selectmen approval of a \$10,000 line item in the budget for bikeways projects and expenses.



*Cape Cod Rail Trail, Chatham, MA
(Image: <http://www.bikexpert.com>)*

- Held the annual bike safety rodeo for elementary school children with the Chatham Police Department
- Continued the distribution of its Bicycling in Chatham map which shows the Old Colony Rail Trail (OCRT) and the Scenic Bike Route.

Projects currently underway in Chatham include:

- Tour de Chatham – a bike ride scheduled for May 19, 2012 during Bay State Bike Week and part of Chatham’s 300th Celebration.
- Creation of a spur linking the Old Colony Rail Trail (OCRT) to Route 28 in West Chatham and thereby linking with the bike/pedestrian path to Hardings Beach.
- Creation of a youth outreach program.
- Adding bike racks and benches.
- Doing more community outreach particularly with vacationers and with businesses hiring seasonal workers
- Continuation of Lower Cape Bike & Pedestrian Coalition to foster sharing of ideas and collaboration among the lower cape towns.
- Formation of the non-profit Friends of Chatham Bikeways.
- Improving signage where the OCRT ends at Crowell Road.

Goals for the town of Chatham include making Tour de Chatham an annual event ; the creation of a network of trails and on-road routes for getting around town by bike (currently a work in progress and a long-range plan); and creating more annual events around bikeways in the town. Please refer to the next page, fig 7 for a map of current bike trails in Chatham.



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Chatham Bikeways Committee - Rules & Regulations

Cyclists please note to insure the safety of Old Colony Rail Trail users cyclists should observe the following guidelines:

1. Wear protective headgear. This is required by state law for children 13 years of age and younger.
2. Keep to the right.
3. Ride in a straight line, single file.
4. Make a full stop at all STOP signs.
5. Dismount and walk your bike across all crosswalks.
6. When passing, check behind you and alert the cyclist with a call or bell ringing.
7. Move off the trail when stopped and not riding.
8. Wear bright, highly visible clothing especially at dusk.
9. Stop your children into child carriers attached to or behind your bicycle.
10. No motorized vehicles allowed on the trail.
11. Non-cyclists must yield to cyclists on the Rail Trail.
12. The safety of the Rail Trail users, all dogs must be leashed.
13. Dog owners are required to clean up after their animals.
14. Call 911 to report accidents.
15. Report illegal use of the Rail Trail to the Chatham Police (508) 743-3113.
16. Do not litter. Littering has a fine of \$100.00.
17. Please respect private property adjacent to the Rail Trail.
18. No alcoholic beverages allowed.
19. When taking on roads use proper signals when turning ahead in advance.
20. Rail Trail Curfew - 10:00 PM to 6:00 AM.

Fig 7. Chatham Bikeways (Image: Town of Chatham)



DENNIS

The Town of Dennis is a prime connection for bike path planning, as site to the western terminus of the Cape Cod Rail Trail (CCRT). The Town has been involved in Outer Cape Bikeways committee and MassBike planning efforts, and has recently completed a master plan for the revitalization of its primary village, Dennisport.

Planning efforts underway for connecting Dennis to the region via bike paths include a CCRT extension west from the current terminus through Yarmouth to Barnstable's Yarmouth Road. The following map outlines some of the goals for bike path connections throughout Dennisport.



Cape Cod Rail Trail, Dennis, MA
(Image: <http://www.capecodinsider.com>)

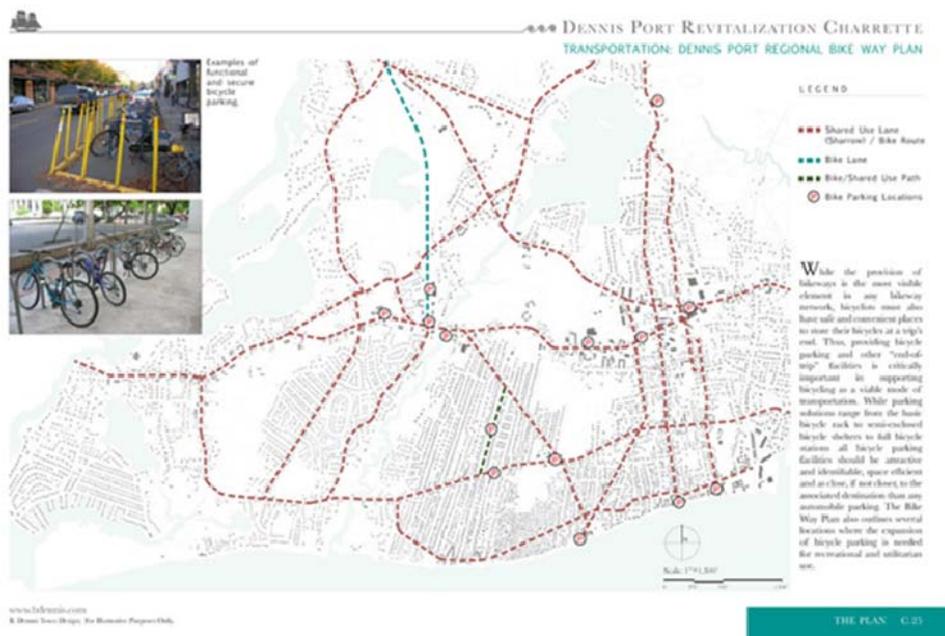


Fig 8. Dennisport Bikeways Plan (Image: Town of Dennis)



EASTHAM

Eastham is a significant link in the Outer Cape connectivity to the Cape Cod National Seashore and towns of Truro and Provincetown. As such, Eastham has played a part in bike path planning as a part of the plans for shuttle connectivity between Wellfleet and Provincetown (proposed for 2012) and Cape Cod National Seashore plans for bike connectivity and wayfinding signage.

FALMOUTH

The Town of Falmouth has led bike planning in the Cape Cod since its founding of the first bikeways committee in Barnstable County. The Falmouth Bikeways Committee also directs maintenance of the Shining Sea Bikeway, a paved pathway of extraordinary beauty. This Bikeway extends over 10 miles from North Falmouth to the Ferry terminal in Woods Hole. It also connects at a number of points to the network of designated Bike Routes across Falmouth.

In 2010, Falmouth completed the following road projects related to bike planning:

- A pavilion has been built at the Depot Avenue parking lot downtown. The structure was built by volunteer work with help from Public Works.
- A grant proposal was filed for funds to repave/ restore the historic section of the Shining Sea Bikeway.



Shining Sea Bikeway, Falmouth, MA

(Image: <http://www> <http://capecodinnblog.com>)

The section opened in 1975 has aged and cracked paving, posing hazards to safety and maintenance. Various stopgaps have been tried over the years without long lasting success.



Projects related to bike path planning currently underway in Falmouth include:

- The Falmouth Bikeways Committee has proposed and negotiated for land in MassDOT ownership around the old Falmouth train depot (now the bus depot). This proposal emphasizes maintenance improvements and formalizing a connection between the Bikeway and the commercial heart of Falmouth Village. If MassDOT allows, the committee has proposed to come up with funding to pave a narrow path alongside an existing bus way.
- The Bikeways committee continues to propose Shining Sea Bikeway connections to East Falmouth and Teaticket including a connection through Goodwill Park.
- The Bikeways committee is also advocating for bicycle parking improvements in several commercial centers including Woods Hole, where demand continually exceeds capacity in the warmer months (April through October); along Main Street, in the Falmouth Plaza and Falmouth Mall.
- The Falmouth Engineering Division continues to accommodate all forms of transportation as well as pedestrians. All future roadway designs will include planning for bicycles given funds remain available for design and construction.

Please see the next page, fig 9, for a map of bike paths in the Town of Falmouth.



New Signage in Harwich (Image: CCC)

HARWICH

The town of Harwich hosts both the Cape Cod Rail Trail and Old Colony Rail Trail spur, with 8 miles of designated bike paths and over 20 miles of bike routes. The town has been proactive towards bike path planning in 2010, beginning the new year with "A plan for improved pedestrian and bicycle facilities in Harwich", prepared by the Cape Cod Commission, which identified four Phase I projects and gave recommendations for wayfinding improvements to assist in connecting

Harwich Center to Harwichport. Goals of this study included:

- The identification of safe and effective pedestrian and bicycle access between the Cape Cod Rail Trail/Old Colony Rail Trail and Route 28, with a specific focus on a connection between Harwich Center and Harwich Port.
- The identification of safe and effective pedestrian and bicycle access between Wychmere and Saquatucket Harbors along Route 28 that would intersect with a connection to Harwich Center.
- The identification of a potential for shuttle bus service between Wychmere and Saquatucket Harbors.
- Improved pedestrian access along Route 28 from Dennis to Chatham.
- Coordination with the Regional Transportation Plan/Cape Cod Bike Plan. A goal of this effort is to construct new bicycle/pedestrian facilities using available funding sources. One such source is the Cape Cod Transportation Improvement Program (TIP) administered by the Cape Cod Commission and funded by the Massachusetts Department of Transportation and Federal Highway Administration. The TIP is an implementation process that flows from the Cape Cod Regional Transportation Plan (RTP).



- Commission staff is worked with the Town of Harwich to integrate these bicycle/pedestrian efforts into the current update of the RTP. The RTP update for 2011 includes a chapter dedicated to bicycle/pedestrian issues and efforts to designate regional bicycle routes.
- As a result of this plan, in early 2011 directional signs were fabricated and placed along bike routes according to the CCC plan.

Projects underway in Harwich include the planning and design phase of a Bank Street pedestrian/bicycle facility and initiation of survey work for a base plan to be done by Town Engineer. Funding is currently being sought from Harwich Capital Outlay, Harwich CPC and grants. Additionally, the town has contacted Massachusetts DOT for assistance with Route 28 sidewalk construction from Harwich Port to Julien Road, although funding is limited.

After completion of above items, the town of Harwich focus on the Rail Trail connection to Saquatucket Harbor through Thompson Field and/or Earle Road connection to Earle Road Beach.

A copy of the planning study with maps of existing and potential bikeways can be found attached to this report as an appendix.

MASHPEE



Route 130 Bike path (Image: CCC)

The Town of Mashpee, a focal point of economic development on Cape Cod, has been proactive in connecting to its neighboring town of Sandwich via roadside designated multi-use paths. In 2010, the Town completed a $\frac{3}{4}$ mile extension of this road adjacent 8' path along Route 130.

Projects related to bike path planning currently underway in Mashpee include the initial planning of an extension of the 8' bike path on Route 151 (approximately 1 mile).



Future goals for bike planning include an ongoing identification and prioritization of bike projects such as bike paths, signage, bike lanes, and more. Goals for the future include the identification of funding sources for implementation of bike projects (in conjunction with road project, traffic mitigation funds, grants, etc.) and the identification of links with adjacent communities and the rest of the State.

ORLEANS

Orleans is unique on Cape Cod as the only town where the Cape Cod Rail Trail path runs directly to its Village Center Main Street. Orleans citizens have been highly proactive towards bike path planning. The town is currently partnering with the Cape Cod Commission through a State

Direct Local Technical Assistance grant to formalize streetscape improvements for the village center. Proposed improvements coming out of this study will include wayfinding signage, bicycle parking facility siting and style recommendations, and improved pedestrian amenities throughout the village center (see the next page, fig 10). A completed streetscape plan will be presented to the Board of Selectmen at the end of 2011.



Orleans Village Center (Image: CCC)

Other projects related to bike planning currently underway in Orleans include:

- Ongoing participation in Outer Cape Bikeways committees and regional planning efforts, conferences and events.
- Planning a Orleans to South Orleans Multiuse Trail: an Engineering firm has been hired to conduct a feasibility Study which will recommend a preferred path in east Orleans running parallel to Route 28. This project is on hold pending final route selection and funding alternatives.



- The Town, Chamber of Commerce and Bikeways committee are conducting bike events to encourage biking safety and more people to ride, including a “Coast to Coast Bike Ride”, “Tour de Orleans Waters”, and a 5-mile Family Bike ride. They are also providing bike safety training for our seasonal employees.

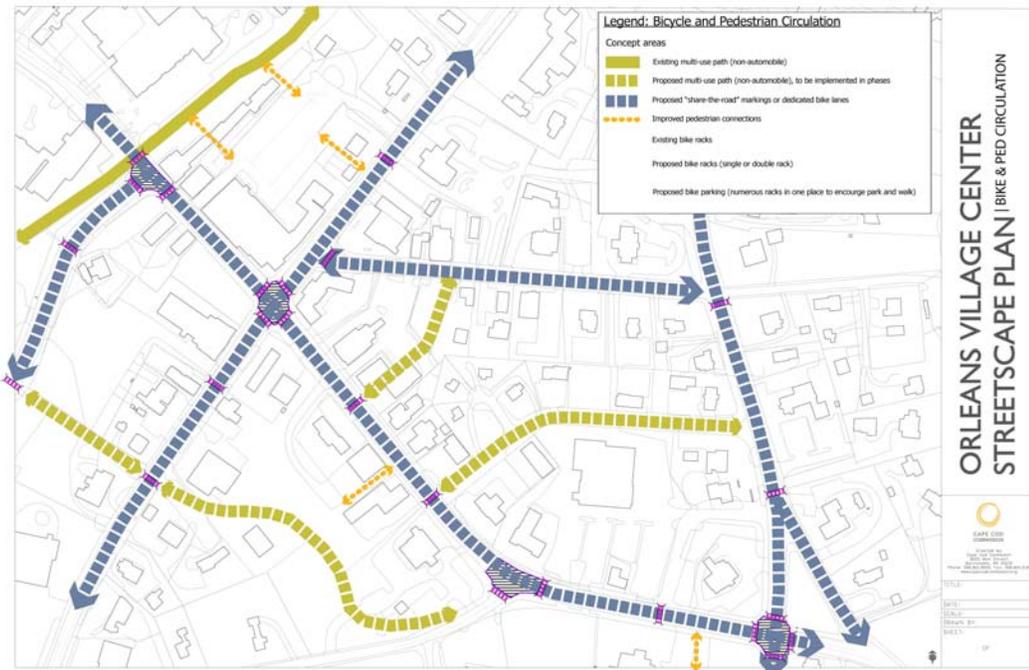


Fig 10. Orleans Village Center Draft Proposal (Image: CCC)

PROVINCETOWN

As the outermost town on the Cape Cod peninsula, Provincetown could easily remove itself from the rest of the State. However, the opposite has remained true as Provincetown continues to show leadership in increasing multi-modal connectivity to the remainder of Barnstable County, South Shore and City of Boston. Bike path planning Initiatives completed in 2010 include:

- Purchasing of new bike racks on public property.



- Submission of a Recreational Trails Grant for the expansion of the Bradford Street Extension Bike Trail. The grant has been denied but the project can be reconsidered in upcoming rounds.

Projects related to bike planning currently underway include:

- Provincetown Board of Selectmen vote on the following actions: the approval of a Scope of Work for the Provincetown/Truro Bicycle/Pedestrian Master Plan, provided by the Cape Cod Commission; establishment of a Bike Advisory Working Group to further develop a mission statement and purpose for a permanent “Bike Advisory Committee”; support of the refinement of the Rail Trail extension Project by the Cape Cod Commission and Cape Cod National Seashore and public process involved therein; an action, pursuant to MGL Chapter 44, Section 53A, to establish a special gift fund to be named, “Town of Provincetown Public Bike Paths & Bike Safety Projects Gift Fund” with the balance in said fund to be expended to promote and implement the mission of the Bicycle Advisory Committee.
- 6. Town and Bicycle Committee representatives participate in the Provincetown/Truro/Wellfleet Bicycle and Pedestrian Master Plan task force to develop a comprehensive vision plan.
- Provincetown Bicycle Committee to receive permanent town board status at the October 24, 2011 Special Town Meeting.
- Submission of a MassWorks infrastructure grant for the Provincelands Bike Trail Connection in the amount of \$290,000 to link the West End Rotary with the Seashore Moors Road Bike Trails.
- A proposed Bradford St Extension Bike Trail Connection to extend the existing Bradford Street Extension Bike Trail to meet with the Seashore Moors Road Bike Trail and the proposed Province Lands Rd Bike Trail. This expansion will be achieved with Town Chapter 90 funds (approximately \$26,000) and is slated to be completed in November 2011.
- Provincetown is working with the Cape Cod National Seashore to submit a grant proposal to the Paul Sarbanes Transportation in the Parks Grant with the Federal Transit Administration in the



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amount of \$107,120 for the Race Point/MacMillan Pier Bicycle Trail Connection.

- Future siting of new bike racks on public property.
- The Bicycle Committee and Visitor Services Board will publish a "Provincetown Bike Map and Safety Guide" to include Massachusetts Bicycle Laws and Rules of the Road to be handed out to all bike rentals and made available to the general biking public.

Goals for the future include:

- Approval of a Rail Trail extension Project to extend the Cape Cod Bike Trail from Wellfleet to Provincetown.
- Approval of a Provincetown Bike/ Pedestrian Master Plan to be incorporated into the Local Comprehensive Plan.
- Funding and construction of the Shank Painter Road Master Plan improvements to include sidewalks and bike paths along the entire extent of Shank Painter Rd from Bradford Street to Route 6.

SANDWICH



Proposed Bikeways Committee Logo
Image: CCC)

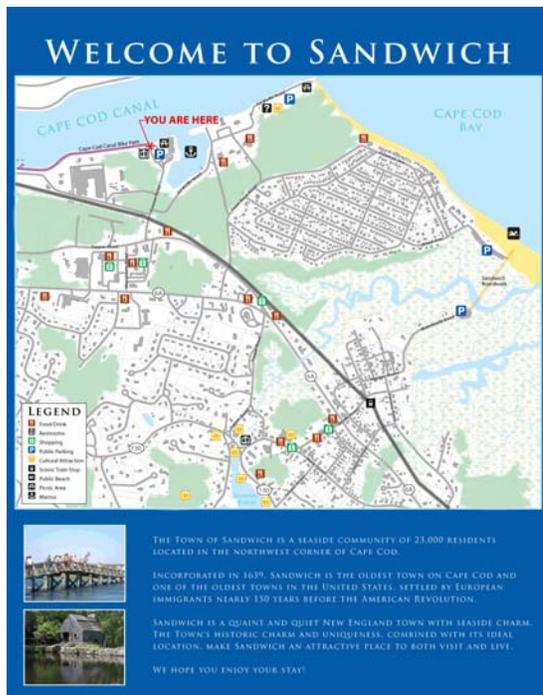
As the oldest town on Cape Cod, the town of Sandwich has made a bold effort in promoting tourism through pedestrian connectivity to its many natural and cultural attractions. The town remains a critical link in connecting the East Coast greenways to Cape Cod via its prime location along the canal, between its neighboring towns of Bourne and Barnstable.

In 2010, the town of Sandwich, Sandwich Chamber of Commerce and the group Friends of Sandwich Bikeways participated in a Cape Cod



Commission planning study “The Sandwich Interconnect”, which identified a preferred pathway to link from the Cape Cod Canal Bike Path

to the Merchant’s Square Shopping area and to the Village Center. This plan also designed a proposed sign for the Cape Cod Canal bikeway connection to help connect user groups with local attractions. This sign has been presented to the town and is awaiting funding for fabrication.



The Cape Cod Commission staff coordinated with stakeholders representing MassCoastal, NeoGen, The Army Corps of Engineers and other essential property owners in determining the preferred route, which was presented before the public at several smaller group meetings

Proposed Wayfinding Sign

Image: CCC)

before eventually presented to the Board of Selectmen in July 2011. The plan is undergoing revision and final public comment. Additional maps and information regarding the proposed routes for the Sandwich Interconnect study can be found on the following page, fig 11 &12.



		Notes	Pros	Cons
A	Freezer Road	Appears to be only feasible connection from Canal's end to Tupper (unless roundabout concept is built)	Direct access to Tupper Road	Road is built to the western edge of the ROW, potential issues at rail crossing
B	Straight Link to Merchant Square		Aligned with Freezer Road	
C	East Link to Merchant Square		Aligned with Merchant Square driveway or Water Districts western boundary	
D	Merchant Square Existing Roads	Using signage to direct users through the existing driveway/parking lot network	Inexpensive	Many conflict points with moving vehicles and perpendicular parking
E	Interior Merchant Square Path	With relocation of ~37 parking spaces, path could lead to bike/ped plaza	Brings users on off-road path through Merchant Square businesses; access to Stop & Shop Plaza	Potential loss of parking; cost
F	Exterior Merchant Square Path	Logical supplement to Interior Path and greater sidewalk concept plan	Brings users on off-road path through and around Merchant Square businesses; access to signal for safe crossing of Rt 6A	Cost
G	Water District Path	A bike plaza on MS's eastern boundary could draw in path users	close to Merchant Square businesses; does not disturb parking; good access to MS for neighborhoods	Cost; gives users option to bypass Merchant Square
H	Tupper Road (n)		Less traffic volume than Rt 6A; appears to have sufficient ROW - potential off-road accommodation	Allows users to bypass Merchant Square businesses
I	Route 6A (w)	Off-road multi-use path on north or south side of Rt 6A	for residential neighborhoods south of Rt 6A; direct access to downtown necessitating stop in Merchant Square	Topographical and wetland concerns; high traffic volumes and speeds
J	Tupper Road (s)	Need continuous sidewalk at the Rt 6A/Tupper intersection	Direct access to Downtown from Rt 6A; few curb cuts on east side	Circumvents Jarves Street businesses
K	Route 6A (e) to Jarves	Only concept that incorporates Jarves Businesses	Access to more businesses; attractive views on Rt 6A of marshland	
L	Jarves/Main Street		Creates access to Jarves Businesses and downtown	Very little usable ROW on Jarves/Main St unless flow is restricted or on-street parking is lost

Fig 11. Matrix of Proposed Bike Routes (Image: CCC)



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Sandwich Bike Study Area Concepts

This map is produced by the GIS Department of the Cape Cod Commission, a Division of Barnstable County. The information depicted on this map is for planning purposes only. It is not intended for field boundary delineation, regulatory interpretation, or general land analysis. It should not substitute for a deed or other legal instrument.



Fig 12. Map of Proposed Bike Routes (Image: CCC)



TRURO

As one of the towns on the outer Cape that is home to the Cape Cod National Seashore, Truro is a connection point for pedestrian trailways and multi-use paths that can take advantage of extraordinary natural surroundings. Bike and pedestrian planning projects currently underway in the area include the rehabilitation of the Province Lands Trail and procurement of bicycle trailers for implementation of an Outer Cape Bike Shuttle that would serve the town of Truro (which proposes to connect Wellfleet to Provincetown in 2012). The Town also has an actively involved Town Bike Committee.

WELLFLEET

With a vibrant village center and active arts and culture population, Wellfleet is home to the northern terminus of the Cape Cod Rail Trail providing access to the Cape Cod National Seashore. Current bike path and pedestrian planning in Wellfleet includes the initiation of development for signage standards along the CCRTA within the park (Eastham and Wellfleet) and the procurement of bicycle trailers for implementation of an Outer Cape Bike Shuttle which proposes to connect Wellfleet to Provincetown in 2012.

YARMOUTH



Setucket Road Bike Path
Image: CCC)

The Town of Yarmouth is a vibrant link in bike path connectivity on Cape Cod, situated between the towns of Barnstable and Dennis, the westernmost terminus of the Cape Cod Rail Trail. Currently, the Town of Yarmouth maintains a popular commuter and recreational bike path along Setucket Road, and future bike planning includes a proposal for a Willow Street Connection through

Yarmouth from Barnstable to the Cape Cod Rail Trail in Dennis.



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Appendix



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A Plan for Improved Pedestrian and Bicycle Facilities in Harwich

January 2011



A plan for improved pedestrian and bicycle facilities in Harwich

BACKGROUND

As part of an effort to improve bicycling, walking and transit service in Harwich and enhance the economic development of Saquatucket Harbor in Harwich Port. The Town of Harwich is seeking to provide safe and effective pedestrian and bicycle facilities between the Cape Cod Rail Trail/Old Colony Rail Trail and Route 28, with a specific focus on a connection between Harwich Center and Harwich Port. In addition, the Town of Harwich is looking to provide safe pedestrian and bicycle connections as well as coordination with public transit service especially between Wychmere Harbor and Saquatucket Harbor.

The goals of this study include:

- Identify safe and effective pedestrian and bicycle access between the Cape Cod Rail Trail/Old Colony Rail Trail and Route 28, with a specific focus on a connection between Harwich Center and Harwich Port.
- Identify safe and effective pedestrian and bicycle access between Wychmere and Saquatucket Harbors along Route 28 that would intersect with a connection to Harwich Center.
- Identify the potential for shuttle bus service between Wychmere and Saquatucket Harbors.
- Improve pedestrian access along Route 28 from Dennis to Chatham.
- Coordinate with the Regional Transportation Plan/Cape Cod Bike Plan. A goal of this effort is to construct new bicycle/pedestrian facilities using available funding sources. One such source is the Cape Cod Transportation Improvement Program (TIP) administered by the Cape Cod Commission and funded by the Massachusetts Department of Transportation and Federal Highway Administration. The TIP is an implementation process that flows from the Cape Cod Regional Transportation Plan (RTP).

Commission staff will work with the Town of Harwich to integrate these bicycle/pedestrian efforts into the current update of the RTP. The RTP update will include a chapter dedicated to bicycle/pedestrian issues and include efforts to designate regional bicycle routes.

PROJECT INITIATION

The Cape Cod Commission staff participated in initial site visits and kick-off meetings for the project with the Harwich Town Planner and invited participants.

During these site visits, the Cape Cod Commission staff gathered information from town staff and other sources regarding any previous pedestrian/bicycle or shuttle bus planning efforts within the study area. At the kickoff meetings, CCC staff recorded ideas and input. Roles and responsibilities of the team were reviewed and Cape Cod Commission staff worked with the Town staff to determine stakeholders, agencies, and organizations to contact, to set strategies for working with the community, and to assist in preparing the public involvement portion of the project. Subsequent meetings were scheduled during this trip to finalize the task.

Staff have participated in numerous site visits and planning meetings over the duration of this effort. Meeting notes are available in the appendix of this report.

COLLECT AND ANALYZE EXISTING DATA, PLANS, AND PROPOSALS

The Cape Cod Commission staff conducted an inventory of existing sidewalks, bike trails/routes and transit routes and analyzed these routes for connectivity within the study area. The inventory and analysis includes the following for each principal trail/route:

- Description of existing facilities and assessment of condition
- Estimated volume of use on sidewalk/bike route/bike path and transit. Potential sidewalks/bike routes, bike path, and transit service have been compared to other proposed facilities based on Cape Cod Commission staff experience with similar facilities.
- Roadway congestion problem areas
- Associated parking/park and ride facilities
- Existing Rights-of-Way concerns

Existing Facilities

The Cape Cod Commission staff has conducted a review of the study area and identified existing bicycle and pedestrian facilities (see next figure). For the most part these consist of road segments with usable shoulders and various types of sidewalks. Existing Cape Cod Regional Transit Authority bus stops are also indicated. Of note is the condition and irregular width/layout of the sidewalk on Bank Street. This facility needs upgrading to meet current standards and expected demand.

Environmental Resources

The Cape Cod Commission staff has collected environmental resource information (including wetlands, sensitive habitat, wellhead protection areas, etc.) using existing data sources sufficient to identify potential constraints and issues. These areas are identified on the following figure titled “Significant Natural Resources.” It is noteworthy that many of the most attractive biking or walking areas such as Forest Street are constrained by the close proximity of wetlands.

Crash History

A review of crash data (shown in Table 1 and on a following figure) indicates the higher incidence of study area crashes at locations along Route 28 between the Dennis town line and Bank Street. The following table show the number of crashes identified at each intersection within the mapped area for the period from 2006-2008 based on MassDOT records. As a lower limit, only intersections with four or more crashes are shown. There were no fatality crashes identified. Using MassDOT safety analysis methodology, each Injury Crash is assigned a value of 5 and each Property Damage Only Crashes are assigned a value of 1. These scores are totaled to determine the “Equivalent Property Damage Only” (EPDO*) for each location.

Table 1 - Crash History 2006-2008

Street	Intersection	Number of Crashes	Injury Crashes	Property Damage Only	EPDO*
Queen Anne Road	Pleasant Lake Avenue (Rt 124)	11	3	8	23
Belmont Road	Lower County Road	10	3	7	22
Pleasant Lake Avenue	<i>North of Whip O Will Lane</i>	7	3	4	19
Chatham Road	Lovers Lane	7	3	4	19
Main Street	Depot Street	5	3	2	17
Sisson Road (Rt 124/39)	Main Street (Rt 28)	8	2	6	16
Belmont Road	Willow Street	4	3	1	16
Main Street (Rt 124/39)	Pleasant Lake Avenue (Rt 124)	5	2	3	13
Great Western Road	Lothrop Avenue	5	2	3	13
Main Street (Rt 28)	Bank Street	4	2	2	12
Main Street (Rt 28)	Lower County Road	4	2	2	12
Queen Anne Road	Orleans Harwich Road (Rt 39)	6	1	5	10
Bank Street	Pleasant Street	5	1	4	9
Lower County Road	Grey Neck Road	5	1	4	9
Lower County Road	Earle Road	4	1	3	8
Main Street (Rt 28)	Doane Road	4	1	3	8
Bank Street	Miles Street	5	0	5	5
Main Street (Rt 28)	Brooks Road	4	0	4	4

Source: MassDOT Crash Records 2006-2008

Various Roads in Harwich | Existing Conditions: Pedestrian and Bike Facilities



No Shoulder



Bituminous Sidewalk w/ Landscape



Shoulder



Portland Cement Sidewalk

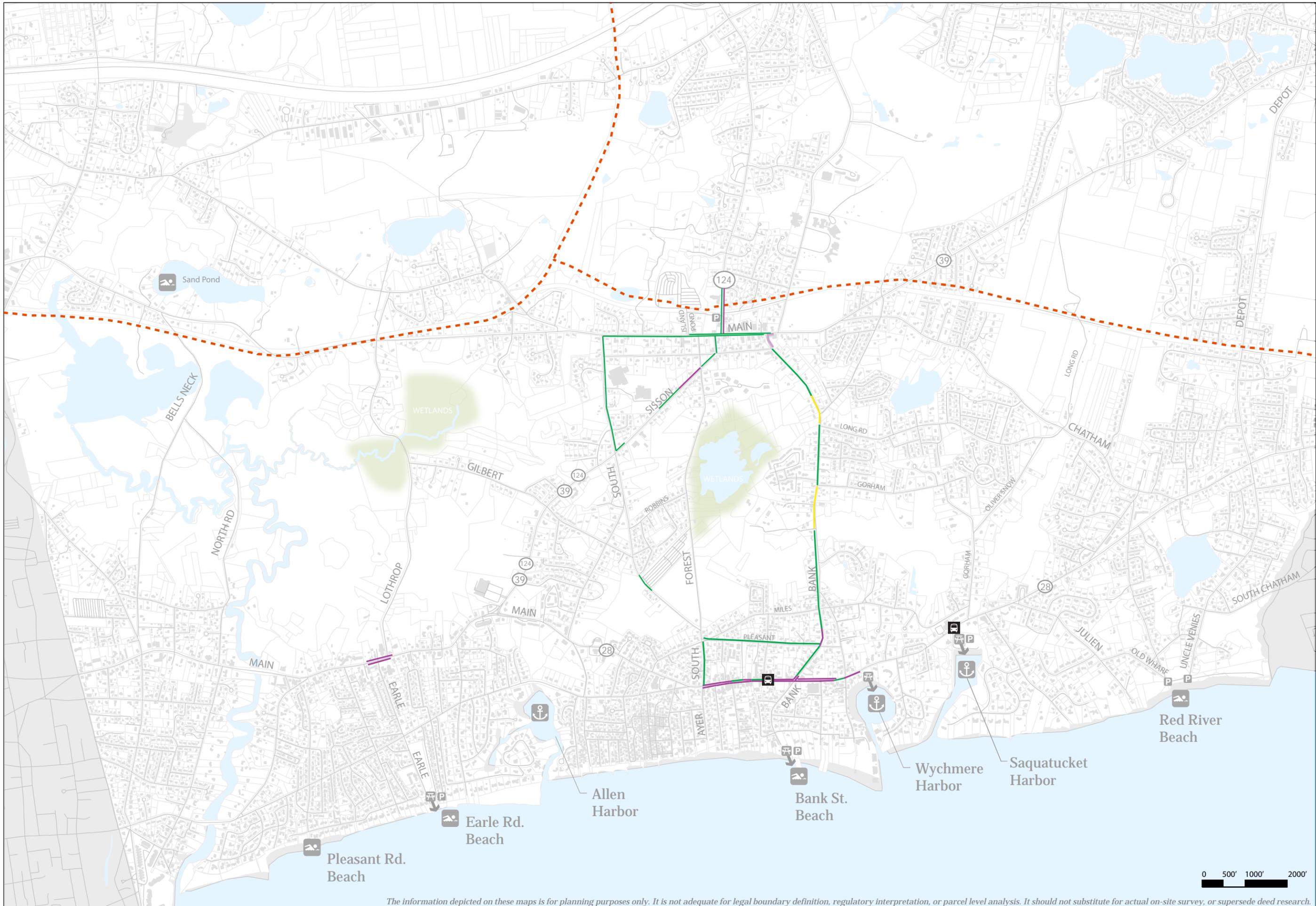


Brick Sidewalk

Harwich Bike Study Existing Conditions

Legend

-  Cape Cod Rail Trail
-  Shoulder
-  Bit Sidewalk w/ Landscape
-  Curbed Sidewalk
-  Brick Sidewalk
-  Existing Bus Stop
-  Beach
-  Harbor
-  Public Parking
-  Rest Area/ Public Access



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Created by: TH
 Reviewed By: LM
 Source CCC GIS ArcMap 9.3.1; modified with CS4
 Map modified 12/29/10



The information depicted on these maps is for planning purposes only. It is not adequate for legal boundary definition, regulatory interpretation, or parcel level analysis. It should not substitute for actual on-site survey, or supersede deed research.

Harwich Bike Study Significant Natural Resources

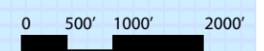
Legend

-  Cape Cod Rail Trail
-  Current DEP Zone II (2007)
-  350' Vernal Pool Buffer
-  Water Body
-  Potential Public Water Supply Area
-  Priority & Estimated Habitats (2008)
-  DEP Wetland Area
-  Bus Stop
-  Beach
-  Harbor
-  Public Parking
-  Rest Area/
Public Access

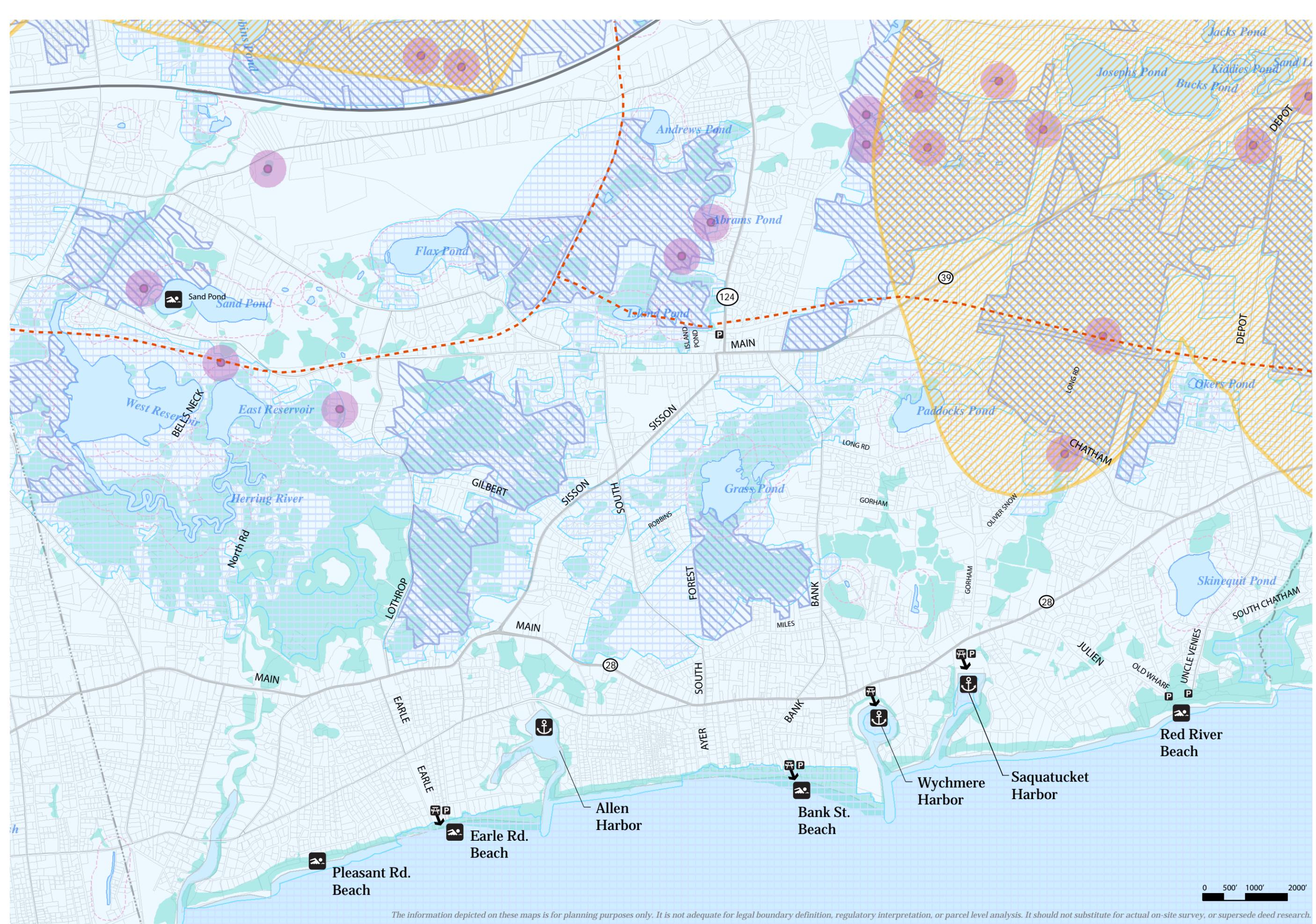


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Created by: TH
Reviewed By: GC
Source CCC GIS ArcMap
9.3.1; modified with CS4
Modified 1/19/11



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Harwich Crash Locations

2006-2008

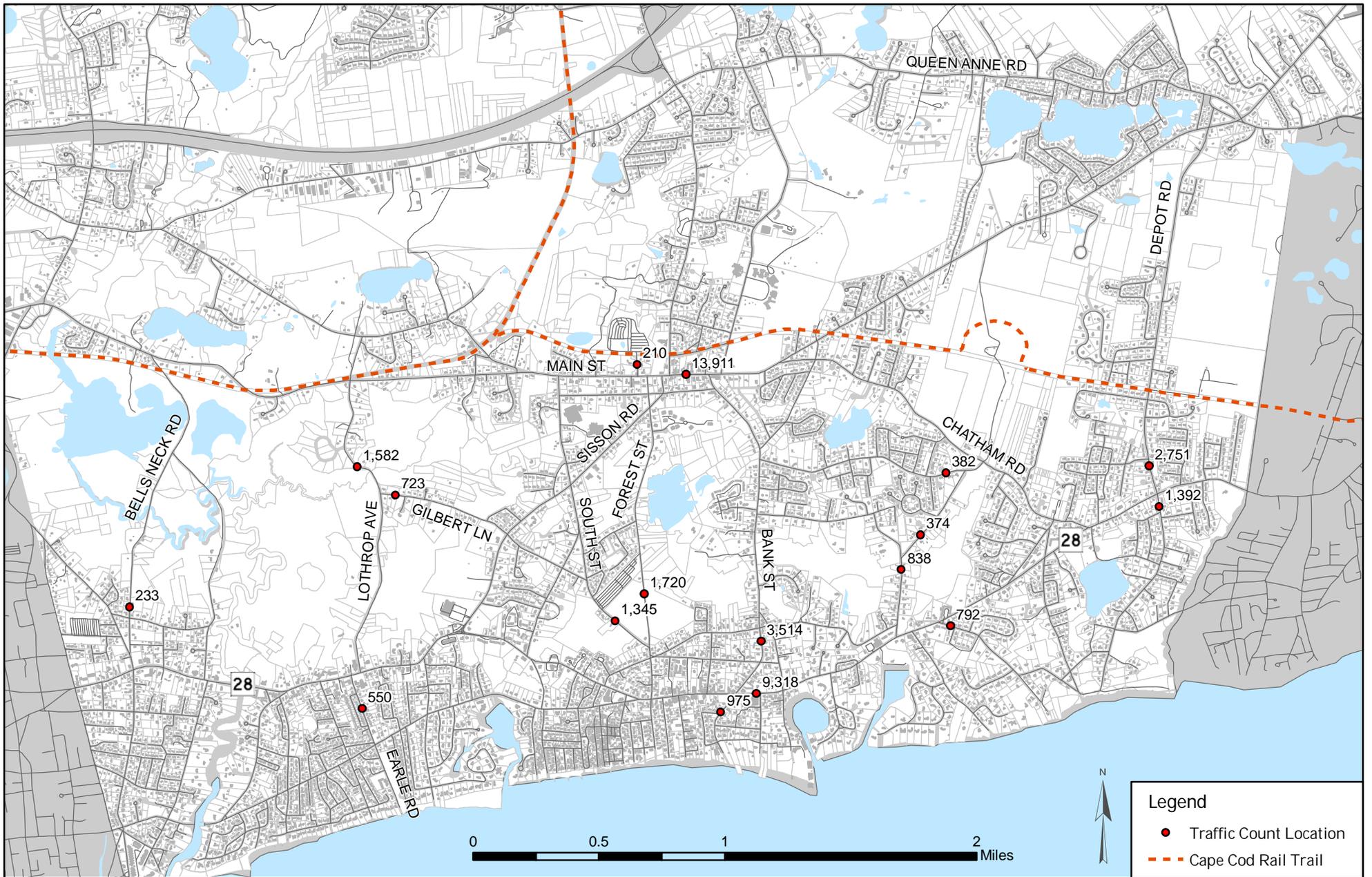
Source: MassDOT Crash Records, 2006-2008



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Traffic Volumes

Weekday and Weekend daily traffic flows at sampled locations show heavier volumes on Route 28 and Main Street (see figure) and lesser volumes on the north-south connector roads.



Harwich Summer Average Daily Traffic (Weekday)

Source: CCC Traffic Counting Program, 2010

Legend

- Traffic Count Location
- - - Cape Cod Rail Trail



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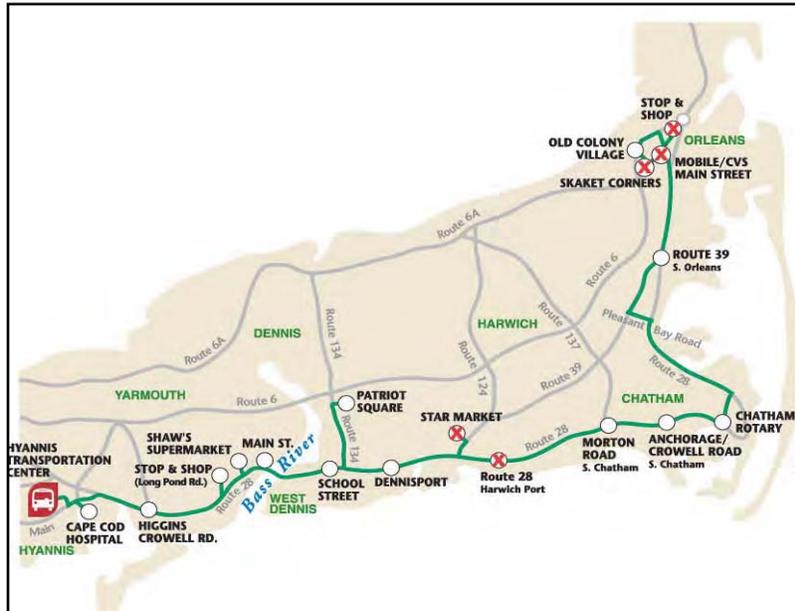
Harwich Summer Saturday Daily Traffic

Source: CCC Traffic Counting Program, 2010



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Public transportation is currently provided by the Cape Cod Regional Transit Authority's "Hyannis-Orleans" and "Flex" services as shown in the following figures:



ALTERNATIVES DEVELOPMENT

Using the data and analysis generated in previous tasks as well as input obtained during internal review, the Cape Cod Commission staff has developed alternatives for share-the-road/bicycle routes/sidewalks/bicycle paths/shuttle bus route improvements.

The following criteria were used in the consideration of alternatives:

- Prioritize potential pedestrian/bicycle connectivity between the Cape Cod Rail Trail/Old Colony Rail Trail and Route 28, with a specific focus on a connection between Harwich Center and Harwich Port;
- Prioritize potential pedestrian/bicycle/shuttle bus connectivity between Saquatucket Harbor, Wychmere Harbor, and Harwich Center;
- Identify opportunities for connections to the community;
- Identify partnership opportunities and funding strategies involving partners;
- Estimate cost of alternatives;
- Identify environmental constraints for all alternatives;
- Identify Right-of-Way constraints for all alternatives.

The MassHighway (MassDOT) Design Manual includes guidance on types of accommodation based on factors such as traffic volume, available right-of-way, and travel speeds. This guidance is provided in the following table/figure:

Exhibit 5-12
Widths of Usable Shoulders (In Feet)

Area Type	Roadway Type			Local Roads
	Freeways ¹	Arterials ²	Collectors ²	
Rural Natural	10 to 12	4 to 12	4 to 10	2 to 8
Rural Developed	10 to 12	4 to 12	4 to 10	2 to 8
Rural Village	N/A	4 to 12	4 to 10	2 to 8
Suburban Low Density	10 to 12	4 to 12	4 to 10	2 to 8
Suburban High Density	10 to 12	4 to 12	4 to 10	2 to 8
Suburban Village/Town Center	N/A	4 to 12	4 to 10	2 to 8
Urban	10 to 12	4 to 12	4 to 10	2 to 8

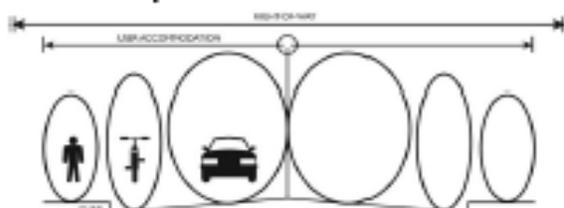
Source: *Flexibility in Highway Design*, AASHTO 2004, Chapter 6 Cross Section Elements

- 1 Left shoulders are required on Freeways and other divided roadways. See the AASHTO Green Book for left-shoulder guidance.
- 2 Shoulder widths less than the values shown above may be used if a design exception is obtained. See Chapter 2 for a description of the design exception procedure. Situations where narrower shoulders may be considered are described below.

Note: An additional 2-foot offset from the edge of the shoulder is required to vertical elements over 6-inches in height (such as guardrail).

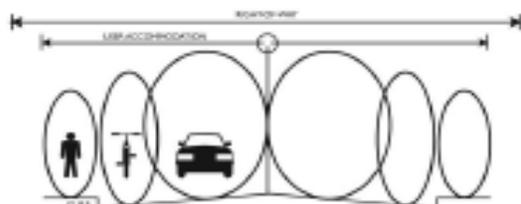
Minimum 4-foot shoulders are recommended for all arterials and collectors because of the value they provide for bicycle and pedestrian (particularly in rural areas) accommodation, and motor vehicle safety. If a design exception is obtained, shoulders narrower than 4 feet may be used in constrained areas where separate pedestrian accommodation is provided and shared bicycle/motor vehicle accommodation is suitable. Examples of these conditions are where design speeds are less than 45 miles per hour and traffic volumes are relatively low (less than 4,000 vehicles per day), or where the design speed is 30 miles per hour or less. Footprint road projects, as described in Chapter 2, could also consider narrower shoulders.

Case 1: Separate Accommodation for All Users



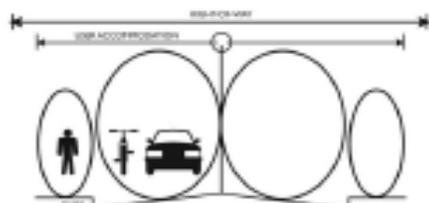
- Often the preferred option to provide safe, convenient, and comfortable travel for all users.
- Appropriate for areas with moderate to high levels of pedestrian and bicycle activity.
- Appropriate for roadways with moderate to high motor vehicle speeds.
- Appropriate in areas without substantial environmental or right-of-way constraints.

Case 2: Partial Sharing for Bicycles and Motor Vehicles



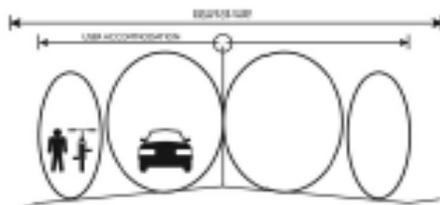
- Used in areas where the width necessary to provide Case 1 accommodation is not available.
- Under Case 2, pedestrians are provided with a sidewalk or separate path while space for bicyclists and drivers overlap somewhat.
- Appropriate in areas with low motor vehicle speeds and low to moderate motor vehicle volumes.

Case 3: Shared Bicycle/Motor Vehicle Accommodation



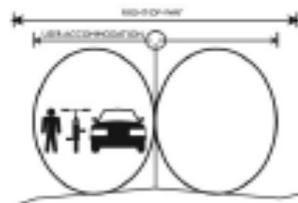
- Under Case 3, pedestrians remain separate but bicycle and motor vehicle space is shared.
- Used in densely developed areas where right-of-way is constrained.
- Also applicable to most residential/local streets where speeds and traffic volumes are low.

Case 4: Shared Bicycle/Pedestrian Accommodation



- Under Case 4, pedestrians and bicyclists share the shoulder.
- Common in rural or sparsely developed areas.
- Appropriate for areas with infrequent pedestrian and bicycle use.

Case 5: Shared Accommodation for All Users



- Under Case 5, all users share the roadway.
- Appropriate where user demands and motor vehicle speeds are very low or when severe constraints limit the feasibility of providing separate accommodation.

Source: MassHighway

Harwich Bike Study | Proposed Conditions: Pedestrian and Bike Facilities



Sharrow



Multi-use Path



Widened Shoulder



Sidewalk

Types of Alternatives

For bicycle and pedestrian accommodation, there are a few general strategies to consider:

1. **Multi-Use Path.** Similar to the Cape Cod Rail Trail, a multi-use path is constructed separately from the roadway. The path is usually a minimum ten feet wide and constructed from bituminous (asphalt) pavement. Bikers, walkers and other users enjoy a high-level of comfort and safety and operate in two directions. An additional five feet is recommended to accommodate landscaping, decorative trees, and meander of the path layout.
2. **Sidewalk.** With a minimum of three feet of 'traveled way' (additional width is required for roadside features such as mailboxes, street signs etc.), this paved surface mainly provides accommodation for pedestrians and is separated from the roadway by a vertical curb or the distance of a landscaped strip. Current laws allow for bicycle use, however bicyclists are required to yield to pedestrians and oncoming cyclists must usually stop to pass. To accommodate street furniture (e.g., signs, utility poles, etc.) the total sidewalk width is typically four to five feet wide.
3. **Shoulder.** Shoulders are used by pedestrians and cyclists in the absence of other accommodation. MassDOT requires four-foot wide shoulders for bicycle accommodation.
4. **Share the Road.** This technique relies primarily on information and education and is only appropriate in certain circumstances (lower speed/lower volume roadways). Share the Road primarily includes identifying signage (usually with iconic signage showing pedestrian, bicycle, and automobile) and "Share the Road" as the message. On busier roads an additional pavement marking, known as the "Sharrow" is installed at regular intervals. The Sharrow is used to reinforce the Share the Road message and has the additional benefit of giving both the motorist and the bicyclist the visual cue of the correct positioning of the bicycle in the lane. This reduces the chances of cyclists being "squeezed" off of the road.

For bicycle/pedestrian information, alternatives include:

- Informational kiosks w/maps etc.
- Designated routes (shown on maps and signed at roadway intersections)

Public Transportation Alternatives include:

- Coordinated wayfinding signage to locate bus stops
- Bus shelter installation at key nodes
- Work with the town and the Cape Cod RTA to improve service (frequency, daily duration, connections to key destinations)

The following section provides detailed information to use in developing a wayfinding plan.

Harwich Wayfinding

As part of ongoing planning for the revitalization of Harwich Center and in effort to connect points of Harwich to the Cape Cod Rail Trail Old Colony spur, the town of Harwich requested technical assistance from the Cape Cod Commission to begin development of a wayfinding plan.

This section of the report is intended to provide a summary of wayfinding standards, design specifications for wayfinding kiosks and conceptual site plans for placement of signage. The proposed signage program could be integrated into a regional signage plan for the Cape Cod Rail Trail moving forward.

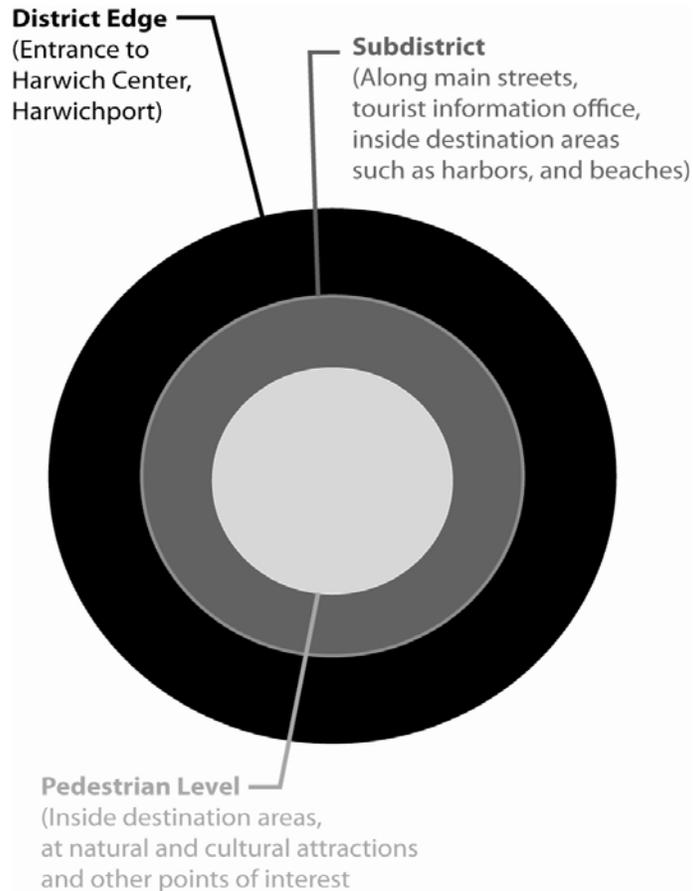
ESTABLISHING A WAYFINDING PROGRAM

Wayfinding plans provide visual aid to direct visitors between destinations and spaces; they should not only be attractive, but also a cohesive part of the community identity with an intention of giving the visitor visual cues that they are in a specific place. Wayfinding should be oriented to residents familiar with the landscape as well as visitors new to a community.

The common method for establishing wayfinding signs is to use a hierarchy of community elements to direct the motorist, pedestrian or bicyclist to their eventual destination without using an excessive amount of signs. This “peeling the onion” approach to planning has been effective in creating plans throughout the globe.

WAYFINDING IN HARWICH

Currently, Harwich has a partial collection of directional signs. Many of these signs are appropriate and helpful to the visitor; however, a fully integrated wayfinding program would incorporate these signs into a interconnected system to help visitors successfully navigate in potentially unfamiliar surroundings. Signage should be designed to indicate a sense of place. This report gives examples of potential signage types; it is recommended moving forward that the town work with a graphic designer to develop actual design standards. A potential signage hierarchy & placement in Harwich would include:



District Edges

The following examples could be located at natural entrances to Harwich Center and Harwichport.

Direct to: Smaller sub-districts, major landmarks (i.e.: Harbors, Beach, Parks, Main Street).

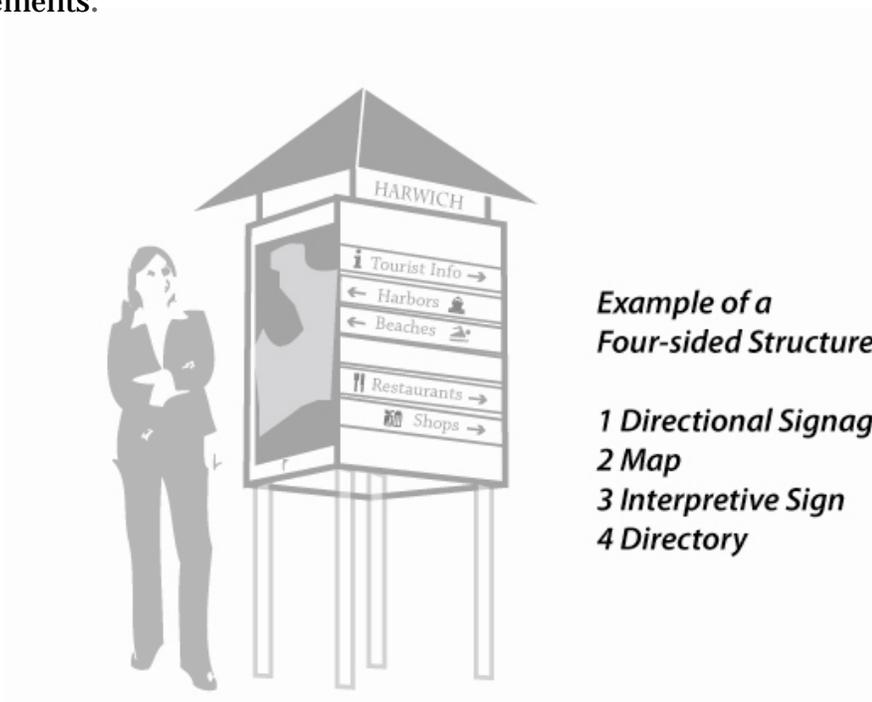
District Edge Signage could include:

Directional Signage: Routes pedestrian or vehicular traffic. Should have no more than 4 important destinations listed (i.e.: “Tourist Information”, “Shopping”, “Harbor/Beach”).



Example of directional signage

Wayfinding Kiosks: Small structure located at pedestrian based connections. May have 1-4 panels of information including directional signage, maps, interpretive signs or advertisements.



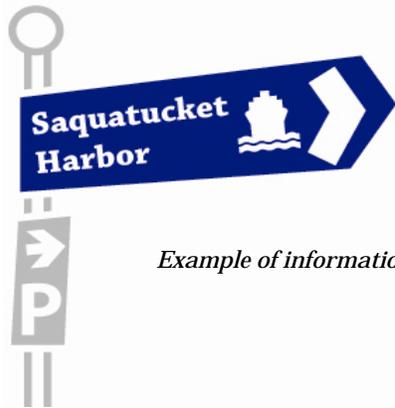
Inside Subdistrict

The following examples could be sited along main streets, at the tourist information office and inside destination areas such as harbors and beaches.

Direct to: Larger destinations and parking.

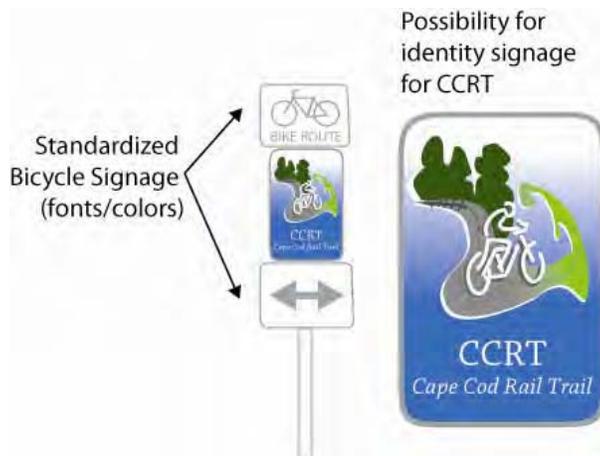
Subdistrict signage could include:

Informational and parking signage: Routes pedestrian or vehicular traffic. Design should be clearly recognizable, message content should be simple. If symbols used, they should be those that are internationally recognized.



Example of informational and parking signs

Logo Trailblazers: Signs for Rail Trail, nature trails or waterfront boardwalks. Should be distinctive, yet keeping with the design scheme of the overall signage plan.



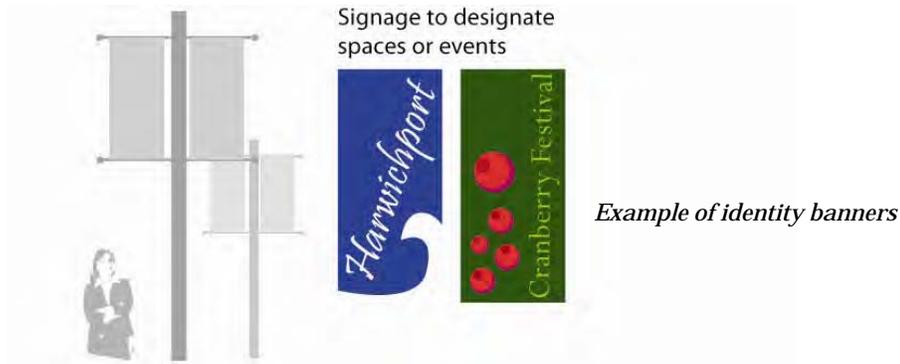
Example of Logo Trailblazer concept

Pedestrian Level

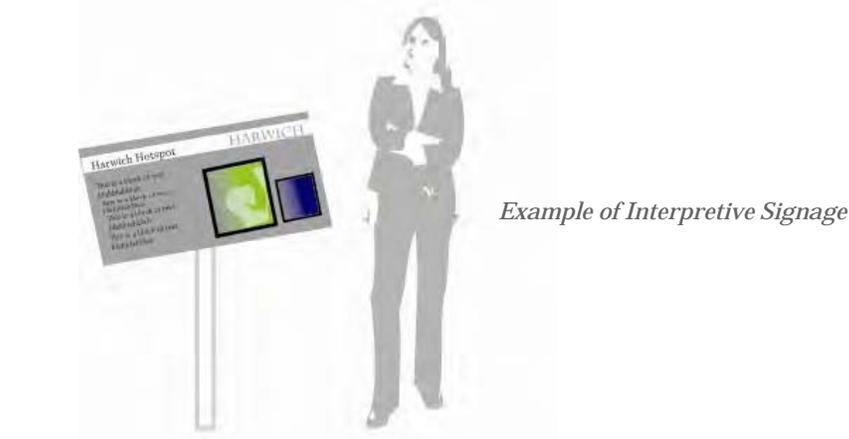
The following examples could be located inside destination areas, at natural and cultural attractions and at other points of interest. Any or all of these examples can be combined into a wayfinding kiosk at appropriate pedestrian connection points.

Direct to: Points of Interest.

Identity Banners/Signs: Decorative flags or banners (usually affixed to lightposts or poles) which designate a place, exhibition, or event. Can be easily replaced to vary the pedestrian experience.



Interpretive Signage: Interpretive information about specific local attractions (cultural or natural). Interpretive signs can be highly illustrative and can be more distinctive than other signs in the overall wayfinding plan.



Maps/Directories: These signs offer visitors an overview of their surroundings in the form of comprehensive site maps and directories. Most maps show a 'you are here' indicator. Outdoor maps show boundaries of an area, entry points, major buildings and pertinent sites. Maps should be simplified for clarity of use. For districts with a high rate of turnover, establishments can be assigned a letter/number, and listed on a replaceable directory as part of a kiosk.



Example of map signage currently in use in Harwich (photo: Michael Tuttle)

PLACEMENT OF SIGNS

See Attached Map of possible signage locations and types.

INDUSTRY SIGNAGE STANDARDS

For wayfinding to function as its intended, it must display useful information, be placed at an accessible point at a proper viewing height, and be adequately illuminated. Additional considerations include:

Typeface

Typefaces on directional, informational, and logo trailblazing signs, as well as main points that should be viewed at a distance from interpretive signs and maps, should be at a minimum 3 inches in height. Letter styles should be simple and avoid flourishes. Text which includes a mixture of capital letters and lowercase is more readable than text in all caps. Text must contrast clearly against the background. The demands of the aging eye especially need clear text styles including fonts such as Helvetica (a sans serif), and Garamond (a serif, more easily read for blocks of text).

Color

Foreground and background colors should contrast to ensure readability. Darker colors work best for backgrounds. Limit the number of different colors on general signage to 3-4. On interpretive signs and maps, a good rule of thumb is to have at most 8-9 colors in text, legend, or design elements.

Bicycle signs are standardized to adhere to certain color standards:

Yellow = warning

Green = guiding signs

Red, White, Black = Regulatory signs

The mixing or misusing of these sign types can lead to confusion for bikers accustomed to a signage standard. In order to incorporate a standardized bicycle sign into a wayfinding program, 'Logo trailblazer' signs could be matched with appropriate guiding signs. *At the time of this publication, CCRTA is considering a Cape-wide bicycle signage plan.*

Symbols and Logos

Internationally recognized symbols are best to use, such as "P" for parking or "H" for hospital (see attached for examples). Logos should be kept small and should not compete with the message on a sign. Logos for districts or subdistricts should be used in conjunction with a text message.



Example of directional sign integrating logo & text

MATERIALS & FABRICATION

Panel Height: Signs must be 7' from ground to satisfy ADA requirements. For interpretive signs, panels should be positioned to be easily readable.

Width: Generally 40" or less.

Horizontal Clearance: Panels should be at least 12" from street curbs to accommodate vehicles turning in parking areas.

Materials:

Standard bicycle signage is fabricated of powder coated steel from transportation sign fabricators. For larger signage, such as interpretive signs and maps shown on a scale of 18"x24", 24"x36" up to 40" in width, materials include:

- HPL (High Pressure Laminate) where high resolution prints are laminated under high pressure
- Polycarbonate/Aluminum Composite

- Fiberglass embedded Inkjet
- Porcelain Enamel, where graphics are molecularly fused to porcelain enamel (the most durable and expensive option).
- Additionally, the use of glass encased bulletin boards is often used for areas where signage is frequently changed. Signage materials can be produced stand alone and shipped for inclusion in a self-made stand, or fabricated to fit into bases to be installed by the buyer.

Depending on the design, signs can be designed by a graphic artist with print-ready files sent directly to the sign fabricator.

Exhibit Bases:

Bases and kiosks to hold sign panels must be sturdy and weather-resistant, made from materials such as powder-coated or Corten steel, treated wood or recycled plastic composite. Breakaway footers (which secure posts to concrete footings with bolts) are recommended, for their intrinsic replaceability if outdated, damaged or vandalized.

MAINTENANCE

Vandalism of sign panels is a common occurrence - Approximately 3-5% of elements in a wayfinding program are damaged or destroyed every year – therefore wayfinding plans should develop ongoing maintenance and replacement programs. Additionally, prevention measures which can be put into place to deter vandals include placing signage at a height that is difficult for vandals to reach, or and choosing a signage material that does not easily scratch and can be easily cleaned (HPL or porcelain).

SOURCES CONSULTED FOR WAYFINDING PLANNING:

American Planning Association, 2006. *Planning and Urban Design Standards*.

Berger, C. 2009. *Wayfinding: Designing and Implementing Graphic Navigational Systems*.

City of Cheyenne, 2008. *Cheyenne MPO Wayfinding Plan*.

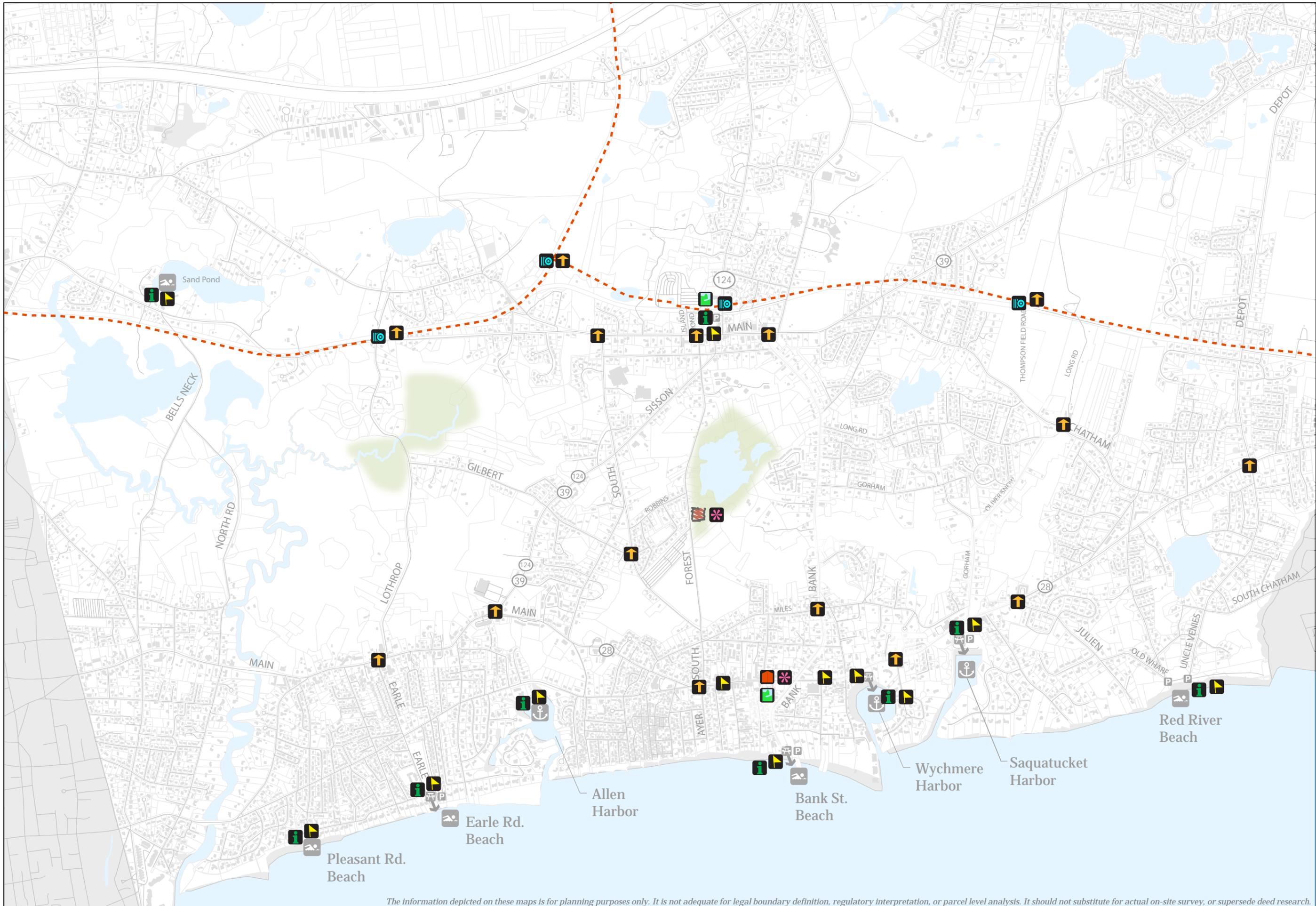
Gibson, D. 2009. *The Wayfinding Handbook: Information Design for Public Spaces*.

Nini, P. 2006. *Typography and the Aging Eye: Typeface Legibility for Older Viewers with Vision Problems*.

Harwich Road Study Wayfinding & Amenities

Legend

-  Cape Cod Rail Trail
-  Potential Viewing Platform
-  Directional Signage
-  Wayfinding Kiosk
-  Informational/Parking Signage
-  Logo Trailblazers
-  Identity Banners/Signage
-  Interpretive Signage
-  Maps/Directories



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Created by: TH
Reviewed By: GC
Source CCC GIS ArcMap
9.3.1; modified with CS4
Modified 12/29/10

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PEDESTRIAN/BICYCLE/SHUTTLE BUS SERVICE PLAN RECOMMENDATIONS

The Cape Cod Commission staff has compiled all pertinent data on existing conditions, alternative development, and alternative in this report. Potential recommendations (summarized in the Table 2 and Table 3 and following figures titled: “Phase I” and Future Phases”) include:

Multi-use Path

- Connection from Cape Cod Rail Trail-Chatham Spur through Thompson Field & Harwich Water Department property to Chatham Road/Long Road intersection.
- Along Lothrop Road from the Cape Cod Rail Trail to Route 28
- Along Earle Road from Lower County road to the town beach to the south

Sidewalks

Maintain, upgrade, or install as required sidewalks along the following roadways:

- Bank Street
- Route 28
- Julien Road
- Old Wharf Road
- Main Street (minimum from South St to Bank Street)

Share the Road

Include “Share the Road” signage and consider “Sharrow” pavement markings on the following roads:

- Bank Street (from Route 39 to Route 28)
- Forest Street (all)
- Bells Neck Road (from North Road to Sand Pond)
- Lothrop Road (from Great Western Road to Route 28)
- Gilbert Rd (from Lothrop Rd to South St)
- Parallel St (from South St to Bank St)
- Oliver Snow Rd (from Chatham Rd to Gorham Rd)
- Gorham Rd (from Oliver Snow Rd to Route 28)

Designated Bike Routes:

To be shown on maps installed in kiosks with on-road signage. Each route should be signed appropriately in each direction (e.g., using smaller bike route signs). Routes are defined by end points and paths along roadways and a listed here from west to east.

1st Route - Cape Cod Rail Trail to Earle Road Beach (via Lothrop Ave & Earle Road).

2nd Route - Old Colony Rail Trail – Bank Street Beach (via Island Pond Road, Forest Road, Pleasant Street – connect to 3rd route at Bank Street)

3rd Route - Harwich Center/Town Hall – Bank Street Beach (via Bank Street)

4th Route – Old Colony Rail Trail – Saquatucket Harbor (via Long Rd, Oliver Snow rd, Gorham Rd).

Also consider routing to Red River Beach

Identify Walking Paths

To be shown on kiosk maps. These can provide pedestrian and limited bicycle access:

- North Street (from Bells Neck to Route 28)
- Thompson’s Field (from Route 39 to Chatham Road)

Multi-modal Hub at Saquatucket Harbor

Transit/Bike/Pedestrian Hub at Route 28/Saquatucket Harbor/Gorham Rd

- Construct CCRTA bus shelter
- Kiosk maps/info
- Benches/amenities
- Bike racks

Redesignating Roadways

Consider converting 2-way traffic flow to 1-way traffic flow. Use new available width for bicycle/pedestrian accommodations. May be implemented on seasonal basis.

- Forest Street

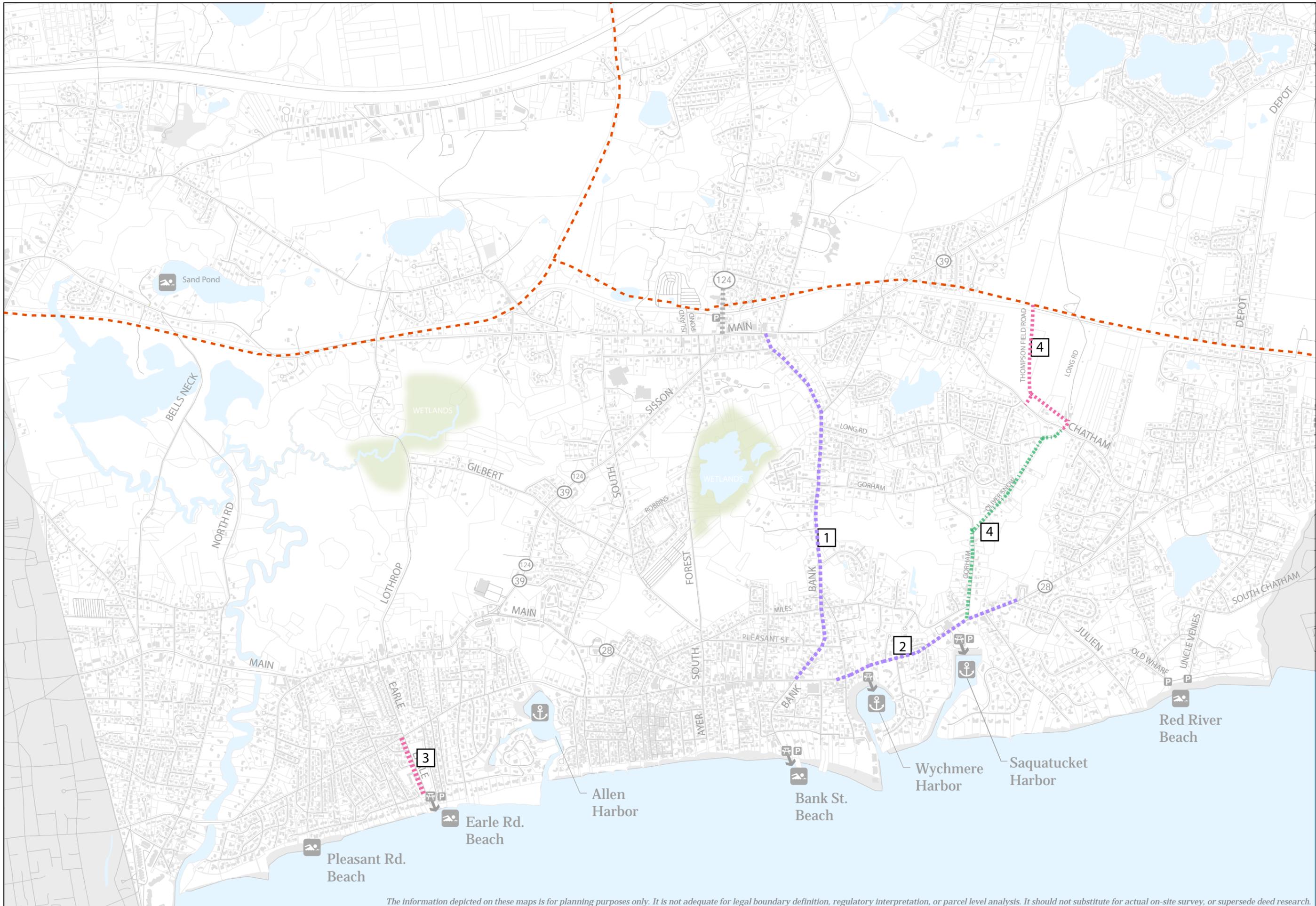
Table 2 - Recommendations (Phase I)

Project # /Location	Purpose	Construction Type	Funding	Next Steps	Schedule
[1] Bank Street – Route 39 (Harwich Center) to Route 28 (Harwich Port)	Main pedestrian link between Harwich Center and Harwich Port – suitable for walkers and slow-speed bikers (children, elders, etc.); part of Harwich Center/Harwich Port walking loop. Other accommodations for faster bikers.	Reconstruct as needed to establish curbed or separated 5-foot wide sidewalk on west side. Consider a wider shoulder, share-the-road designation or other improvements (widen sidewalk to multi-use path)	Local – Capital Outlay, DRI mitigation, Planning Board sidewalk fund, etc.	Public Works Dept. to determine required level of survey and design work; begin construction	2011-2013
[2] Route 28, Snow Inn Road to Julien Road (or to Old County Road)	Provide sidewalks/bike path from Harwich Port to Saquatucket Harbor and to road leading to Red River Beach	Sidewalk	TBD	Contact MassDOT; explore construction and funding options; get project on TIP list	Begin in 2011
[3] Earle Road, Lower County Road to Earle Road Beach	Provide off-road connection from Lower County Road to the beach on available Town property	Construct facility ranging from 5' wide sidewalk to 10' multiuse path	Local	Public Works Dept. to design and construct	2011
[4] Old Colony Rail Trail to Chatham Road/Long Road intersection	Connect rail trail in the direction of Saquatucket Harbor	Separated 10' wide asphalt path across Thompson Field and/or Water Dept. property; "share-the-road" along Long Road, Oliver Snow Road & Gorham Road	Local - CPC	Work with Water Dept and Recreation and Youth Dept regarding path location	2012-2014
[5] Bike/pedestrian trail network maps	Prepare/distribute trails maps for bikers and pedestrians – describe Harwich-wide bicycle/pedestrian trails	Bicycle/pedestrian trail maps	Local – CPC	Layout bike/ped routes including above projects	Prepare maps for printing in 2011

Harwich Bike Study Phase I

Legend

-  Existing Cape Cod Rail Trail
-  Proposed Share the Road
-  Proposed Sidewalk
-  Proposed Dedicated 10' Multi-Use Path
-  # Project Number



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Created by: TH
 Reviewed By: LM
 Source CCC GIS ArcMap 9.3.1; modified with CS4
 Modified 1/13/11

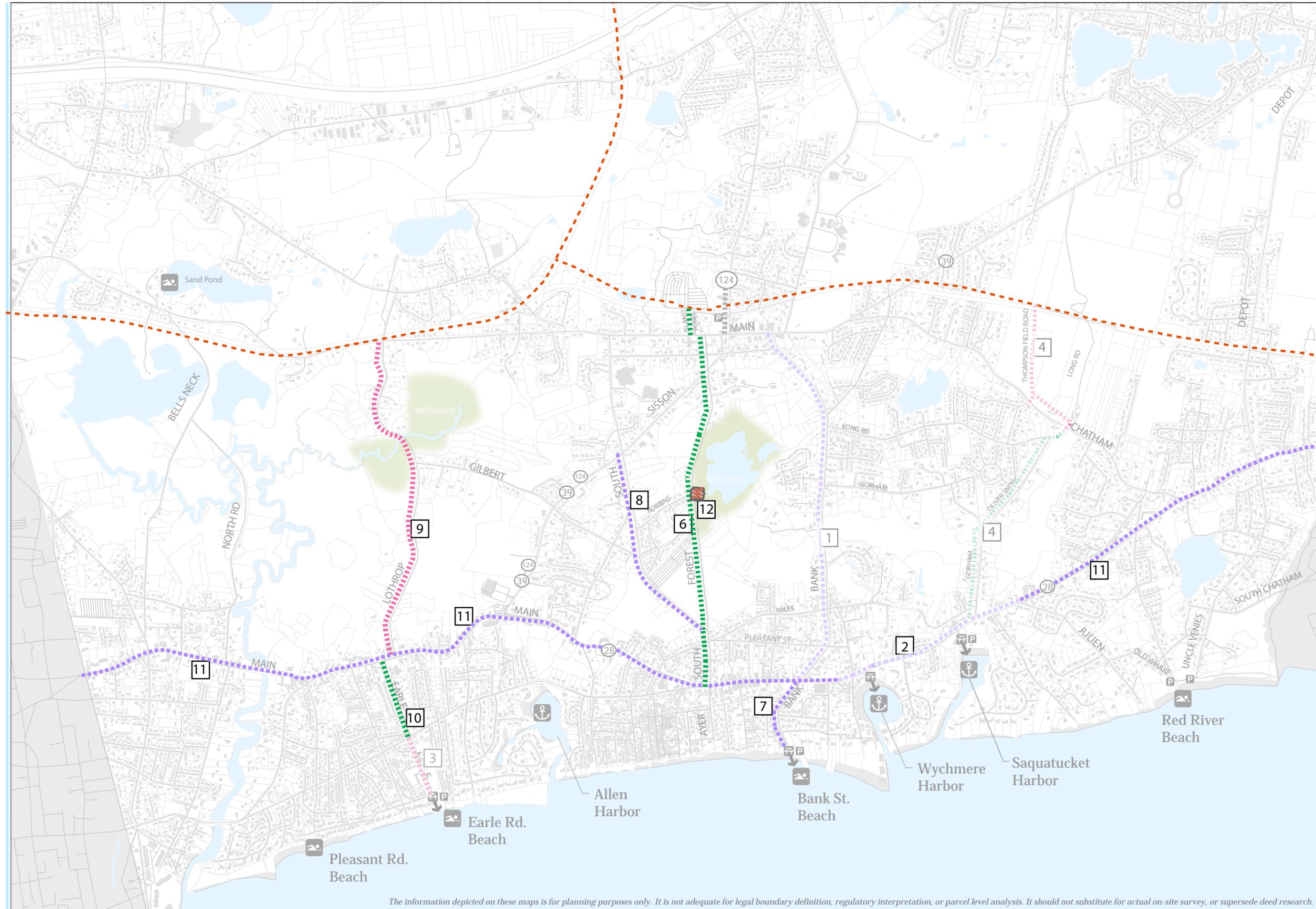
Table 3 - Recommendations (Future Phases)

Project # /Location	Purpose	Construction Type	Funding	Next Steps	Schedule
[6] Forest Street, Main Street to South Street	Share the road facility for bikers and walkers with connection via Island Pond Road to Old Colony Rail Trail	Signage and pavement markings only. Consider seasonal 1-way traffic flow	Operating funds	Determine signage and pavement marking details	2012
[7] Bank Street, Route 28 to Bank Street Beach	Provide safe pedestrian route to the beach. Extend existing sidewalks on Route 28 and Bank Street	Construct curbed 4 or 5' wide sidewalk on one side – may be a combination of east and west sides	Local – Capital Outlay, DRI mitigation, Planning Board sidewalk fund, etc.	Public Works Dept. to determine required level of survey and design work; begin construction	2013-2014
[8] South Street, Forest Street to Sisson Road	Completion of Harwich Center/Harwich Port sidewalk loop - suitable for walkers and low-speed bikers; share-the-road facility for bikers	5-foot wide sidewalk on one side	Local	Do survey to determine right-of-way availability	2012 to 2015
[9] Lothrop Road, Cape Cod Rail Trail to Route 28	Extend rail trail to Route 28 and beaches	Separated 10' wide asphalt path	Enhancement grant or other external source	Explore grant availability; determine wetland impacts	Begin in 2011; likely 5-year project or longer
[10] Earle Road, Route 28 to Lower County Road	Link to above bike path via share the road designation on Earle Road between Lower County Road and Route 28	Signage and pavement markings only	Local – Capital Outlay, sidewalk mitigation, etc	Wait until outcome of #9	TBD
[11] Balance of Route 28	Completion of sidewalk route from Dennis Town Line to Chatham Town Line		TBD	Contact Mass DOT; explore construction & funding options; get project on TIP list	TBD
[12] Grass Pond	Provide conservation viewing station in wetland/marsh area connected to Forest St via gravel path or boardwalk		Local – CPC	Follow Forest Street improvements; determine location & type of facility	2012 to 2015

Harwich Bike Study Future Phases

Legend

-  Existing Cape Cod Rail Trail
-  Proposed Share the Road
-  Proposed Sidewalk
-  Proposed Dedicated 10' Multi-Use Path
-  Potential Viewing Platform
-  # Project Number



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