

bicycle trail plan

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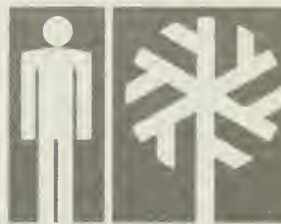
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# CAPE COD

NATIONAL SEASHORE/MASSACHUSETTS



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June 22, 1988

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August 10, 1988

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September 15, 1988

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BICYCLE TRAIL PLAN

CAPE COD NATIONAL SEASHORE  
Massachusetts




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## INTRODUCTION

The bike trail system described in this document consists of components of the four alternative bike trail systems presented in the draft Parkwide Bicycle Trail Study/Traffic Safety Study/Environmental Assessment (May 1987). The decision about the location of a bike trail system within Cape Cod National Seashore was made by the National Park Service based upon discussions with local and state officials about and public comments on the draft study.

A range of divergent opinions about the location and need for a bike trail system on the Lower Cape were received during the public comment period of May 1 to June 30, 1987 (see appendixes A and B). Within the same towns, opposite opinions about trail location were received from local residents and officials. There was substantial opposition to the placement of any trail system in the town of Truro. Because of the wide range of opinions about the need for a bike trail system and the lack of preference for a specific route, only a limited portion of a bike trail system, about 8.2 miles, is being proposed for designation and development in this final plan. Most of the designation and development will be done on NPS land by the Park Service, although a small portion of trail included in this plan will be done, if agreed, by the town of Eastham. New construction will comprise approximately 40 percent of the approximately 8.2 miles of trails being proposed. The bike trail plan described in this document also presents options, ones that the National Park Service considers the most reasonable considering the information, discussions, and planning efforts to date, for the local towns and the commonwealth to consider for designation of their respective components of a trail system.

Future efforts by town bike committees, the bicycle subcommittee of the Cape Cod Planning and Economic Development Commission (CCPEDC), and the commonwealth toward the extension of the Cape Cod Rail Trail and future designation of town roads as bike routes may result in the eventual designation of a bike system to Provincetown.

Actions described in this bike trail plan are those that will be undertaken by the National Park Service to provide connections and improvements to existing NPS and commonwealth trails, including cooperative efforts for signing several Eastham town roads to connect Coast Guard and Nauset Light beaches and the Cape Cod Rail Trail. When the Cape Cod Rail Trail extension is completed and the towns of Wellfleet, Truro, and Provincetown pursue designation of bike trails in their respective towns, the National Park Service will consider similar cooperative efforts to sign those bike trails, if requested.

The implementation of all NPS components of this plan (signing or bike lane or bike path construction) is subject to the availability of congressional funding for all or parts of this project. Upon receipt of such funds, the National Park Service will undertake design and construction of new trail segments under its jurisdiction.

## PURPOSE AND NEED FOR THE STUDY

Tourism, especially in the summer, has become a major economic force on Cape Cod. The number of residents on the cape has also increased at a very high rate over the last three decades. The effect of increases (in population and visitors) on Cape Cod has been increased vehicular and bicycle traffic on the existing road system, increased demand for visitor support facilities, and a need for an alternative safer way of traveling on the cape, especially during the crowded summer season.

The "Statewide Comprehensive Outdoor Recreation Plan" (SCORP) (Commonwealth of Massachusetts 1978) identified bicycling as one of the three most popular recreational activities in the state. Bicycling and nature walks had the most significant deficit of facilities statewide, and Cape Cod was one of the sections that had the most critical needs. The Outdoor Heritage of Massachusetts (SCORP) (Commonwealth of Massachusetts 1983) reaffirmed the need for bicycle facilities. Trail-oriented activities were one of the major current and future needs.


Bicyclists use of US 6 creates potential conflicts between bicyclists and drivers. Where shoulders are narrow or nonexistent, bicyclists must travel on the vehicular traveling surface. On the four-lane sections in Eastham bicyclists generally use the vehicular traveling surface rather than adjacent sidewalk because driveway access cuts have produced a very uneven traveling surface. With the expanding automobile and bicycle use on Cape Cod, motorists often encounter delays and must move into adjacent lanes to pass bicyclists. Some bicycle/automobile accidents occur.

The Boston-Cape Cod Bikeway goes from Boston to Provincetown. As part of this bikeway, the commonwealth of Massachusetts is building the Cape Cod Rail Trail, which will extend from the town of Dennis to Le Count Hollow Road in Wellfleet when completed. The northernmost 5-mile portion of the 24.6-mile Rail Trail--from just opposite the NPS Salt Pond visitor center in Eastham to Le Count Hollow Road--that is adjacent to and partially on national seashore land is not yet constructed. The Rail Trail has led to increased bicycle use on the cape and, when finished, the 5-mile portion will bring riders into the heart of the national seashore. The Rail Trail provides a safe corridor for bicyclists; however, it does not provide safe accesses to many area cultural and scenic resources. Secondary accesses to these resources from the Rail Trail are on town roads that have heavy automobile traffic and that were not designed for use by bicyclists. Numerous east-west roads will inevitably bisect any extension of the north-south Rail Trail corridor, and intersections should be designed to maximize safety. The portion of the Boston-Cape Cod Bikeway north of the Le Count Hollow Road uses low-volume local roads and two segments of the US 6 corridor, which, as described above, creates traffic congestion and safety problems. No safe bicycle corridor exists from the proposed terminus of the Rail Trail to Provincetown, and no safe connector routes are available for accessing cultural or scenic resources.

These considerations, a concern for visitor/resident safety and the limited number of roads and parking areas for bicycle use, have resulted in the need for a trail system for the lower cape.

The main purpose of the draft study was to present alternatives for meeting existing and future needs by determining the location of a bicycle corridor that would provide a safe transportation route from Le Count Hollow Road to Provincetown and safe connector routes to various area cultural and scenic resources from Eastham to Provincetown. The route would also serve as an alternate transportation system for permanent and seasonal residents of Cape Cod who are affected by the continuing increase in population and traffic. The purpose of the final Bicycle Trail Plan is to present the findings of the draft study.



-  Authorized National Seashore Boundary
- \* National Seashore Beach
- \* Town Beach

Cape Cod National Seashore  
UNITED STATES DEPARTMENT OF THE INTERIOR/  
NATIONAL PARK SERVICE

DSC/JANUARY 1987/609-40,027A

0 1 2 3 4 5 MILES 

## BACKGROUND FOR THE STUDY

Cape Cod peninsula, with several unique landscapes, is a dynamic mix of natural processes and man's activities. The peninsula juts out from the mainland into the Atlantic Ocean and creates Cape Cod Bay. The physical features have influenced man's use of the area. From a sparsely settled, fishing-oriented region, Cape Cod has developed into a heavily used, tourism-oriented area. It is in this complex integration of natural and cultural processes that Cape Cod National Seashore was created.

## LEGISLATIVE HISTORY

Cape Cod National Seashore was authorized on August 7, 1961 (PL 87-126) to preserve unique flora and fauna, physiographic conditions, and historic sites and structures for public enjoyment and understanding. Although no development for visitor convenience is to impair these resources, the establishment of trails, observation points, exhibits, and services is specified as important. The 1961 legislation reinforces this balance between preservation and development by further citing the organic act of August 25, 1916, which establishes the National Park Service and mandates conservation of resources for public enjoyment and future generations, and the act of August 8, 1953, which facilitates management of the national park system.

The authorization act of August 7, 1961, which is specifically for Cape Cod National Seashore, provides authority for acquisition of land and a procedure for zoning to protect land without acquisition. Government condemnation of land is restricted in several ways. Town or commonwealth of Massachusetts property can only be purchased with the consent of the owner. Federal lands can be exchanged. If residential property improved prior to September 1, 1959, is acquired, owners may negotiate to retain use and occupancy for life or 25 years. Improved residential property within seashore boundaries is exempt from condemnation if it conforms with town zoning that meets the standards of the secretary of the interior. The implementation of this legislation has resulted in several blocks of federal land interspersed between town and private property. Locating a bicycle trail corridor among the various landownerships is subject to these restrictions. Another pertinent part of the legislation requires that NPS development will not diminish the value or enjoyment of improved residential property.

## PLANNING HISTORY

The approved "Master Plan" (NPS 1970) proposed development of a bicycle and hiking trail for the length of the national seashore. It was envisioned to provide internal circulation and access and to expand popular recreational opportunities. The trail was proposed to run from Eastham to Provincetown, connecting three existing NPS bike trails (totaling 11 miles) and adjacent towns to beaches. The location of the

corridor was only conceptual in the master plan. The need to acquire private land to provide part of this trail was identified in the plan and was listed as one of the top priorities for the future needs of the seashore. The draft Parkwide Bicycle Trail Study/Traffic Safety Study, in which four alternative trail systems were presented, was the initial effort to study how the trail envisioned in the master plan could become a reality. This final Bicycle Trail Plan after analysis, comments, and discussions on the draft study, presents the Park Service's assessment of the most effective role it can play in creating a bicycle trail for the length of the national seashore.

## EXISTING CONDITIONS

The future of Cape Cod National Seashore is interwoven with the towns in which it exists. Within the designated seashore boundary nearly 10 percent of the upland area and 25 percent of the tidal lands remain in private, state, town, or other federal ownership. The forces that are affecting the future of the entire lower cape therefore affect the national seashore. Any successful bicycle trail plan for the national seashore depends not only on the commitment and resources of the National Park Service, but also on the commitment and resources of the local towns, the commonwealth, Barnstable County, and local individuals.

Transportation to Cape Cod National Seashore is by airplane, ferry, automobile, bus, and bicycle. The major transportation vehicle is the private automobile. The narrow, linear layout of the cape has restricted automobile traffic to one highway on the lower cape--US 6--from Orleans to Provincetown. US 6 functions as the main highway, with secondary accesses to the towns, beaches, and other cape resources. During off-season use, US 6 is adequate, but during summer high use days demands often result in sections of US 6 reaching capacity and traffic being slowed well below posted speed limits. The greatest congestion along US 6 on the lower cape during the summer occurs near the Wellfleet and Eastham town centers.

Biking and hiking trails have been developed on the cape, and some also exist within the national seashore. The Rail Trail is on an old railroad grade where the gentle topography affords access to hikers, bicyclists, and horseback riders (motorized vehicles are not allowed on the Rail Trail). Visitors use the Rail Trail to see different areas and reach destinations because it offers a safer alternate route that bypasses many of the heavily congested areas. However, the secondary accesses from the Rail Trail to beaches, accommodations, and cultural and natural resources are not as safe because they are on town roads that have heavy automobile traffic and are not wide enough for bicyclists because they were not originally designed for that use. Plans are being finalized by the commonwealth to extend the Rail Trail north to Le Count Hollow Road in Wellfleet; beyond that, the existing railroad grade is in mixed ownership and there are no current plans to extend it beyond Le Count Hollow Road.

Within the national seashore are three bike trails. The Nauset trail (1.6 miles) follows Nauset Bay to Coast Guard Beach from the Salt Pond visitor center and passes close to Doane Rock and its picnic area. A variety of environments can be experienced, including oak-pine forest, the scattered red cedar fields, and Nauset Bay. The Head of the Meadow trail (2 miles) is almost level and was part of the route to Provincetown called the Old Kings Highway; it runs from Head of the Meadow Beach to High Head Road at Pilgrim Lake and passes Pilgrim Spring. The Province Lands trail is a loop trail (5.3 miles) with spurs to Race Point, Herring Cove, and Bennett Pond (2 additional miles). It passes ponds, pine forests, sand dunes, Beech Forest, and the Province Lands visitor center and amphitheater.

Visitor use on Cape Cod varies greatly in type of use and in numbers of users. The natural resources of the cape provide opportunities for hiking, biking, beachcombing, swimming, berry-picking, bird-watching, and hunting. For its relatively small size, the cape has a number of major landscape types--the great beach, the plain, the marshes, and Cape Cod Bay--and within these landscapes are many areas that provide additional diversity and potential for visitor experience and interpretation. A number of historic homes, lighthouses, and wharfs are also available to enjoy. As a result of this rich variety, tourism has become a major economic force on Cape Cod. The popularity of the area, especially for summer vacations, has increased steadily since the 1950s. Peak summer visitation on Cape Cod runs from the end of June through Labor Day. The peak visitor season is also the most crowded period in relation to traffic on all Cape Cod roads.

## THE BICYCLE TRAIL PLAN

### INTRODUCTION

Several objectives were addressed during the development of this plan. An additional transportation system is needed because of high traffic volumes on US 6 during the summer months and bicycle/vehicle conflicts and congestion on that road during the same period. The popularity of bicycle use on the cape is increasing. Access to destination points (beaches, town centers, NPS facilities, etc.) is limited to the existing road and trail system. Potential users of a new system include long-distance riders and touring groups as well as recreation-oriented cyclists ranging from experienced riders to those less skilled.

The many jurisdictions involved on the lower cape were identified and consulted during the development of this plan (see appendixes A and B). Successful implementation of a trail system from Le Count Hollow Road to Provincetown will require coordinated efforts and future agreement by all parties concerned.

The eight segments described below represent a limited portion of a bike trail system--about 8.2 miles--that is being proposed for designation and development by the National Park Service (see Bicycle Trail Plan map at the end of this section). Little new construction is proposed (3.6 miles). The National Park Service can only construct a bicycle trail on land where it holds some legal ownership (fee title or easement). Because of the complex landownership, it is not feasible for the National Park Service to construct a trail system that would go to all desired areas. A coordinated effort among jurisdictions is essential to the eventual completion of a bicycle trail system on the lower cape.

Each trail segment would be either

- a bike route--with an existing roadway designated for bicycle use,
- a bike lane--with a portion of an existing roadway that has been designated for preferential or exclusive use of bicyclists, or
- a bike path--a bikeway that is physically separated from motorized vehicular traffic.

A more detailed discussion of routes, lanes, and paths and specific design guidelines is given in appendix C.

## SEGMENT 1 - COAST GUARD BEACH TO NAUSET LIGHT BEACH ON OCEAN VIEW DRIVE

Visitor Experience--Recreational riding on this segment will allow for the connection of Coast Guard and Nauset Light beaches and access to site facilities. It will connect to the existing Nauset bike trail, which goes from Salt Pond visitor center to Coast Guard Beach. Views of the ocean and nearby local architecture will be accommodated from this trail segment. Shrub and grass vegetative communities are found along roadways near the ocean edge.

Conditions/Actions/Rationale--The town of Eastham currently owns and maintains the paved road. All decisions about the designation of the road will be in cooperation with the town. Adjacent to the road are environmentally sensitive areas. There is town-owned land to the east and private and town-owned land to the west. Signs will be placed along the road to designate it as part of a bike trail system. Trailhead parking will be designated at the Salt Pond visitor center parking area, where visitor facilities (telephone, drinking water, and restrooms) are currently available. This segment will provide access and connections to seashore facilities including beaches, trails, picnic areas, natural and cultural resources, and will provide views of the ocean. It is a necessary component to provide a designated loop trail from the Cape Cod Rail Trail.

The existing Nauset bike trail will be widened to a 10-foot-wide paved travel surface, with vegetation removed for improved sight distance and improved views of Nauset Bay. (More detailed information about improvements to the Nauset bike trail are given in appendix D.)

### Trail Type--Route

## SEGMENT 2 - NAUSET LIGHT BEACH TO CAPE COD RAIL TRAIL ON CABLE, NAUSET, AND BRACKETT ROADS

Visitor Experience--Bike riders will pass through a typical pine forest and residential area. This segment will connect the Nauset Light Beach area to the Cape Cod Rail Trail and provide an opportunity to interpret the Three Sisters Lighthouses. Local vernacular architecture--typical "cape cod" style houses--can be seen adjacent to the roads.

Conditions/Actions/Rationale--Cable Road from Ocean View Drive to Nauset Road is owned and maintained by the national seashore and will be designated and signed as a bicycle route. In cooperation with the town of Eastham, Nauset and Brackett roads can be designated and signed as a connecting route for bicycle use between Cable Road and the Cape Cod Rail Trail (extension). The town currently owns and maintains these roads. A pedestrian walkway will be constructed by the National Park Service along Cable Road to provide access from the Nauset Light parking area to the Three Sisters Lighthouses. This segment will provide access

to seashore facilities and complete the loop trail, which includes the existing Nauset bike trail and the bike route on Ocean View Drive.

#### Trail Type--Route

### SEGMENT 3 - CAPE COD RAIL TRAIL (EXTENSION) TO THE MARCONI AREA ON MARCONI BEACH AND MARCONI STATION ROADS

Visitor Experience--Use of these trails will take the riders through the open plains of pine and oak that end at Marconi Beach and the historic site at Marconi Station. The large expanse of public land in this area creates an attractive habitat for wildlife, which can often be seen except during the busy summer season. Views of the ocean and the escarpment along the great beach can be reached by way of this segment.

Conditions/Actions/Rationale--These trails will be on national seashore roads, which are surrounded by a large area of national seashore-owned lands. This segment will connect the Cape Cod Rail Trail (extension) to national seashore facilities. Trailhead parking will be developed north of the seashore headquarters when visitor facilities are available (drinking water and restrooms). By designating the existing roads for bicycle use, bike riders will know where they can access seashore facilities and motor vehicle users will be notified of the potential for bikes on the roads by signing the roads for bike use.

#### Trail Type--Route

### SEGMENT 4 - WELLFLEET: LE COUNT HOLLOW ROAD TO WELLFLEET/TRURO TOWN LINE

Visitor Experience--At the terminus of the Cape Cod Rail Trail at Le Count Hollow Road, bike riders will need to determine whether to continue north on the Lower Cape on US 6 roadway shoulders or on town roads. Narrow, steep, and sometimes sand-covered town roads, especially near the ponds, can make town roads difficult to use. Views on the trail could include the ocean and great ponds as well as the oak and pine forests and access to the town center. Varied topography will provide opportunities to view the range of the lower cape's geologic history.

Condition/Actions/Rationale--All decisions and designation of trails in this area will be by the town of Wellfleet and the commonwealth. Consideration should be given to designating a bike route using portions of Ocean View Drive, Long Pond Road, Main Street, West Main Street, and Bound Brook Road to Old County Road. The Park Service would consider a request from the commonwealth and towns to construct a bicycle path on the abandoned railroad grade owned by the Park Service. This bike path could be used in place of Old County Road. The designation of Old County Road should be in cooperation with the town of Truro. All these roads are owned and maintained by the town of Wellfleet. The advantage of using Long Pond Road is the availability of

an overpass for crossing US 6 for access to the Wellfleet town center. The consideration of the above-named town roads is based upon the potential for hazardous conditions of use of US 6 shoulders in Wellfleet because of numerous intersections and curb cuts. It will not be feasible for the Park Service to construct a bike trail on land it owns because of numerous private improved properties and topography. The National Park Service would cooperate in the construction of trailhead parking at Pamet Point Road and US 6 to accommodate the need for trailhead parking in this segment.

Trail Type--To be determined by town of Wellfleet and the commonwealth

#### SEGMENT 5 - SOUTH TRURO: WELLFLEET/TRURO TOWN LINE TO SOUTH HIGHLAND ROAD

Visitor Experience--Trail routes that may be considered in this area could take the bike rider to the bay side of the Lower Cape on town roads through areas adjacent to fresh and salt water marshes.

Condition/Actions/Rationale--All decisions and designation of trails in this area will be by the town of Truro and the commonwealth. If the towns of Wellfleet and Truro agree to the designation and signing of existing roads and connections to Old County Road and Prince Valley Road, consideration should be given to the use of US 6 from Prince Valley Road to South Highland Road as a bicycle route. These roads are owned and maintained by the town of Truro. Access to some town beaches could be made from this segment.

If in the future a bicycle route is designated that is similar to that described in segments 4 and 5, the abandoned railroad grade in Wellfleet and Truro could be made available for use by bicycles. Limited areas are available in this area for bike trails because of private properties, wetlands, and only a few developed roads.

Trail Type--To be determined by town of Truro and the commonwealth

#### SEGMENT 6 - NORTH TRURO: SOUTH HIGHLAND ROAD TO TRURO/PROVINCETOWN TOWN LINE

Visitor Experience--The bike rider would travel through the highlands of North Truro past the Highland Lighthouse, museum, and golf course. The oak and pine forests would be adjacent to the route. Tremendous views of the ocean and escarpment are accessible from the lighthouse area. Three campgrounds within the national seashore boundary will be accessible from this route. If this area is designated for bike use by the town of Truro, it could be connected to the Head of the Meadow beaches and the existing Head of the Meadow bike trail. Views of the bay, Pilgrim Lake, and at a distance the town of Provincetown will be found in this segment. The existing Head of the Meadow bike trail passes by the historic Pilgrim Spring and can provide access to the Pilgrim Heights picnic area.

Condition/Actions/Rationale--The town of Truro should consider designating and signing South Highland Road from its intersection with US 6 as a bike route. This would remove some bicycle traffic from the highway. All decisions and designations of trails in this area will be by the town of Truro and the commonwealth. If the town of Truro designates South Highland and Coast Guard roads as bike routes and improves High Head Road for bike use, the Park Service will provide a connecting bicycle path between Coast Guard Road and Head of the Meadow Road, either on Old Kings Highway or adjacent national seashore lands. The Park Service will improve the High Head parking area and access road, which are in federal ownership, to connect with the town-owned portion of High Head Road. Trailhead parking will be at Head of the Meadow Beach and at Pilgrim Heights. Both areas contain visitor service facilities (drinking water and restrooms). Construction of a bike path to the Pilgrim Heights parking area will be necessary to connect it to the Head of the Meadow bike trail. The existing Head of the Meadow bike trail will be widened to a 10-foot-wide paved travel surface, and some vegetation will be removed to improve sight distance. At Pilgrim Lake narrow landforms will result in the close proximity of bike use to US 6 and heavy motor traffic. At Pilgrim Lake the only feasible trail location appears to be the continued use of US 6 with additional signing and safety features. A decision by the town of Truro and commonwealth on the use of the US 6 corridor by bikes is needed to determine if this is an appropriate trail location. Consideration should be given to the installation of a traffic signal for crossing US 6.

Trail Type--To be determined by the town of Truro and the commonwealth

#### SEGMENT 7 - PROVINCETOWN/TRURO TOWN LINE TO RACE POINT ROAD

Visitor Experience--Riders in this area will travel through a variety of natural and topographic conditions. Past Pilgrim Lake the riders will approach sand dunes that occasionally drift onto the highway road surface. Along the rest of the distance to Race Point Road pine and low shrub communities along the highway can also be seen. Upon reaching the national seashore boundary and continuing towards the beach, a transition occurs that includes traveling through the oak and pine forests to sand dunes along the ocean's edge. Many locations on the existing trail system and those described in this segment allow for views of the ocean, bay, wetlands, and wildlife. The segment provides access to the Province Lands visitor center, interpretive trails, the beach, and the Provincetown airport. This area of the seashore is a large area of shifting sands and grasslands. The relocated Old Harbor U.S. Life Saving Station (on the National Register of Historic Places) can also be visited. During the busy summer season, this area is heavily used by residents and visitors.

Conditions/Actions/Rationale--If US 6 is designated as a bike route from High Head Road past Pilgrim Lake (in segment 6), this designation should be considered on the remaining portion of US 6 to Race Point Road. The





commonwealth should be encouraged to improve shoulders along US 6 where possible. The commonwealth should continue to remove sand from the highway. All action on US 6 would be determined by the commonwealth and the town of Provincetown.

Race Point Road from US 6 to the national seashore boundary should be improved to provide for a bike lane. This part of Race Point Road is owned by the commonwealth. Any actions undertaken by the commonwealth that would affect this road might include involvement with the town of Provincetown. Race Point Road from the NPS boundary to Race Point Beach will be widened by the Park Service to provide for a bike lane its entire length. This will be an alternate bike trail for access to Race Point Beach. The existing bike path network in the Province Lands will remain in place and be improved. The existing trails will be widened to a 10-foot-wide paved travel areas. Vegetation will be removed to improve sight distance. Tunnel height will be increased to provide a safe clearance. (See appendix D for further details.) The Beech Forest parking area will be identified as a trailhead parking area with visitor facilities available (drinking water and restrooms).

Trail Type--From town line to Race Point Road to be determined by the commonwealth and town of Provincetown; bike lane on Race Point Road

#### SEGMENT 8 - HERRING COVE TO PROVINCETOWN (WEST END)

Visitor Experience--This short segment will provide a safer access for both bikes and pedestrians from the heavily used Herring Cove Beach and the Province Lands bike trail. Trail users will be passing through dunes, low shrubs, and grasses. Views of the ocean will be available along the trail.

Condition/Actions/Rationale--A bicycle path will be built by the Park Service from the Herring Cove parking area to US 6A at the west end of Provincetown along the northern side of Moors Road within the national seashore boundary. Conflicts occur among cars, bikes, and pedestrians during busy periods on the existing narrow road between Herring Cove Beach and the west end of Provincetown. The road cannot be widened, which then requires an optional access into town. Trailhead parking will be identified at the Herring Cove parking area with visitor services available (drinking water and restrooms). Limited area available for development exists because of sand dunes, wetlands, and tidal areas. This segment is at the very end of the land areas on the cape. During the summer season heavy use of the Herring Cove area, especially by residents of Provincetown, results in congested roadway traffic. Providing a safe option for bike and foot traffic between the beach and town is necessary for continued bike use of this part of the national seashore.

Trail Type--Bike path on national seashore land from Herring Cove parking area to US 6A

## COMPLIANCE

New construction activities for the development of the bicycle trail plan will comply with the National Environmental Policy Act. Preparation of the "Environmental Assessment" section in the draft study provided for compliance with many laws and executive orders. Site-specific evaluations will be necessary prior to construction for any trail segments that might affect designated wetlands. Critical natural resource areas have been avoided in the development of the plan.

Compliance with section 106 of the National Historic Preservation Act, as amended, has been accomplished by the review of the draft study. No known significant prehistoric or historic sites will be affected by the plan. Archeological evaluation of areas disturbed during the construction of bike paths or lanes will occur prior to construction. Adjustments of trail locations may be necessary to avoid significant or sensitive sites.

## SAFETY CONSIDERATIONS

High traffic volumes exist on US 6 in Eastham and Wellfleet during the summer, especially on weekends. Vehicle conflicts on the highway exist in these towns because of the many secondary roads and curb cuts that intersect US 6. Also, variations in the number of lanes and shoulder widths on US 6 can result in safety problems because the conditions change unexpectedly.

Most public roads in the national seashore are in good condition and have a low accident history. The ratio of vehicular injury accidents to property damage accidents is low on national seashore roads. Nearly 30 percent of the accidents have occurred because of improper backing and parking maneuvers. Anticipated improvements in areas where accidents have occurred will require the consideration of existing road features and adjusting conditions towards improving safety.

Bicyclists use the vehicle traveling surface on US 6 for several reasons. In Eastham bicyclists often use the roadway because adjacent sidewalks contain obstacles and driveway access cuts resulting in an uneven surface. Sidewalks, where usable, are also potential conflict areas for foot and bike traffic. The absence of road shoulders at some places in Wellfleet and Truro forces bicycles into the traveling lanes. When bicycles travel in vehicle lanes, the faster-moving cars and trucks must either slow down or change lanes, resulting in delays of traffic and potential vehicle conflicts.

The number of bicycle accidents on US 6 has been low except in Eastham, probably because of the higher traffic volumes in Eastham than in the other towns. Bicycle crossings of US 6 and side road intersections with the highway have also been conflict areas. Of the 129 bicycle accidents

reported in the national seashore from 1982 to 1985, 82.2 percent occurred on designated bicycle trails, 9.3 percent on roads, and 8.5 percent in parking lots. Modifications to the Province Lands and Nauset bicycle trails to improve sight distance and reduce curves will be done to reduce the number of accidents.

Safety considerations will be given to any new construction proposed in this plan. Other national seashore roads identified in the draft study as high accident locations are under consideration for improvements or redesign.

## COST ESTIMATES

The following cost estimate is for the trail segments identified in this plan that will be developed or designated by the National Park Service. Cooperative efforts with local towns and the commonwealth for signing bike routes described in the plan have been included. Future trail designations of town roads are not included. In the future, the National Park Service would be interested in coordinating trail signing with the local towns and the commonwealth.

Segment 1 - Coast Guard Beach to Nauset Light Beach--bike route (signs)	1.1 miles	\$ 400
Segment 2 - Nauset Light Beach to Cape Cod Rail Trail--bike route (signs)	2.0 miles	900
Segment 3 - Cape Cod Rail Trail to Marconi area--bike routes (signs)	2.5 miles	1,000
visitor services (drinking water and restrooms)		100,000
Segment 4 - Le Count Hollow Road to Wellfleet/Truro town line--to be determined by the town of Wellfleet and the commonwealth (Pamet Point Road parking--20 cars)		(32,000)
Segment 5 - Wellfleet/Truro town line to South Highland Road--to be determined by the town of Truro and the commonwealth		
Segment 6 - South Highland Road to Truro/Provincetown town line--to be determined by the town of Truro and the commonwealth (future bike path--Old Kings Highway)	(0.8 mile)	(106,000)
Segment 7 - Provincetown/Truro town line to Race Point Road--part to be determined by the town of Provincetown and the commonwealth; Race Point Road--bike lane	2.2 miles	150,000
Segment 8 - Herring Cove to Provincetown (west end)--bike path	<u>1.4 miles</u> <u>8.2 miles</u>	<u>185,000</u> <u>\$437,300</u>

Miscellaneous signs, directional markers, and mileposts (average four per mile)		\$ 9,000
Archeological survey for bike lane and path		<u>20,000</u>
	Subtotal	<u>\$466,300</u>
Indirect costs for survey, design, contract documents, contract award, and administration		<u>147,700</u>
	Total (gross construction)	\$614,000
Annual maintenance costs--labor and materials		\$ 18,000

## APPENDIX A: CONSULTATION AND COORDINATION

Because of the complexities of landownership and use within the national seashore boundary and adjacent areas, it was important that concerned public and private interests were consulted during the development of the bicycle trail corridor alternatives. It was also critical that the many jurisdictions, agencies, and others provide information that could be used in this study and in developing the final plan. Meetings were held at the national seashore headquarters in March and May 1986 to discuss possible trail corridor locations, destination areas, anticipated trail experiences, issues, and concerns. Input and discussions occurred in these meetings, as well as through individual telephone and personal contacts to agencies listed below.

Bicycle Committee  
Board of Selectmen/Town Manager  
Conservation Commission  
Police Departments  
Clerks and Assessors Offices

} [for the towns of Eastham,  
Wellfleet, Truro, Provincetown]

Cape Cod Planning and Economic Development Commission  
Cape Cod Chamber of Commerce  
Coastal Zone Management Commission  
Massachusetts Audubon Society  
Massachusetts Historical Commission  
Massachusetts Department of Environmental Management  
Massachusetts Department of Public Works  
    District Office, Taunton  
    Central Office, Boston  
Massachusetts Department of Environmental Quality Engineering  
Massachusetts Department of Fisheries, Wildlife, and Recreational  
    Vehicles  
Massachusetts Department of Commerce and Development  
U.S. Federal Highway Administration  
U.S. Fish and Wildlife Service  
U.S. Geological Survey  
U.S. Coast Guard  
National Marine Fisheries Service  
U.S. Soil Conservation Service

## APPENDIX B: SUMMARY OF PUBLIC COMMENTS

### Cape Cod Parkwide Bicycle Trail Study Traffic Safety Study/Environmental Assessment

The draft bicycle trail study was on public review from May 1 through June 30, 1987 (extended from June 15 because of public request). A total of 500 copies of the study were distributed to federal, commonwealth, and local government officials, agencies, interest groups and organizations, as well as private individuals. In addition, 30 newspapers and radio stations in Cape Cod, Southeastern Massachusetts, Boston, and New York were sent copies of the study and news releases about the review period and public open house. Notification about the availability of the study and public review period was also placed in the Federal Register on May 1, 1987.

Open-house meetings were held all day and evening on June 3, 1987, at national seashore headquarters to provide opportunity for the public or officials to discuss or ask questions about the study. Members of the study team were available to discuss concerns, ideas, and specific problems with approximately 50 individuals. A special evening information meeting was held at the Truro town hall on June 1, 1987, on request of the chairman of the Board of Selectmen. A total of 50 to 60 individuals attended the meeting, where concerns were discussed, questions answered, and statements made about the location and need for a bicycle trail. On May 27, a member of the study team attended an informal meeting/field investigation conducted by the Wellfleet police chief to discuss the location of the bike trail in the town of Wellfleet.

A total of 150 written comments and two petitions were received during the 60-day review period. Of these, 127 were from individuals, 13 were from representatives and members of groups and organizations, eight were from local government officials, and two were from commonwealth agency officials. A total of 96 comments were received from Cape Cod addresses: 42 from Truro, 25 from Wellfleet, six from Provincetown, six from Orleans, five from Eastham, and 12 from other cape towns. Twenty-five comments were received from other Massachusetts addresses, and 27 were from other parts of the country. Two comments had no return address. The two petitions received were from Truro and included signatures from residents of Truro and Provincetown.

The comments covered a wide range of ideas for the locations and opinions about the necessity of constructing a bicycle trail on the lower cape. Of the comments that indicated a preference for an alternative: 38 chose A (US 6), 20 chose B (existing rights-of-way), 29 favored C (NPS lands), and 35 preferred D (no action). Sixteen stated no preference but explained that a bike trail was a good thing to do. Five comments said all or part of the railroad grade should be used to complete the lower cape bicycle trail. Seven comments made no reference to any trail location or preference.

In addition, 17 commentators suggested modification to alternatives A, B, or C. The submitted petitions indicated the following:

Petition of Opposition to Bike Trail - 37 signatures

"Residents and property owners of South Pamet and Collins roads opposed to bike trail on South Pamet, Collins, and North Pamet roads in Truro, Massachusetts."

Petition - 366 signatures

"Taxpayers and concerned citizens of Truro and Provincetown are unalterably opposed to alternatives A, B, and C for bike paths, lanes, and routes through the town of Truro. Suggest bike traffic continue to use US 6 and alternate scenic routes already in place" (officially transmitted to NPS from Board of Selectmen, Truro).

The Cape Cod Planning and Economic Development Commission (CCPEDC) participated in discussions on the draft study with town officials, the Bikeway Subcommittee of the CCPEDC Joint Transportation Committee, the Massachusetts Coastal Zone Management staff, board members of the Association for the Preservation of Cape Cod, and the Compact of Cape Cod Conservation Trusts. As part of their comments on the draft study, CCPEDC transmitted a list of common points that these groups reached:

A composite trail route, using parts of each of alternatives A, B, C, and D may be more appropriate.

Trail designers must be sensitive to traffic concerns, environmental concerns, bicyclist needs, and private homeowners' concerns.

Selected trail should accommodate both recreational users and through-traffic destination-oriented users.

Use of US 6 right-of-way as a main stem through Wellfleet is inappropriate because of recent road resurfacing and numerous curb cuts. Use of US 6 in Truro and Provincetown should be minimized.

Portions of alternative C through Truro are highly inappropriate because the trail would disturb sensitive ecological areas and steep slopes.

Bicyclists will use roads on the lower Cape whether or not an official trail is identified. Should bicycle use be further encouraged by officially sanctioning a trail?

Funding and implementing a trail system will require close cooperation of all levels of government and private interests.

CCPEDC staff recommended a compromise main trail system: Le Count Hollow Road, Ocean View Drive, Gross Hill Road (cut off), Gull Pond

Road, Old Kings Highway (including Collins Road), South Pamet, US 6, South Highland Road, Coast Guard Road, Old Kings Highway, High Head Road, US 6, and the railroad right-of-way in Provincetown.

A modification of the CCPEDC route was submitted as a comment by the Association for the Preservation of Cape Cod (APCC), the change being use of the US 6 right-of-way (bike path) from Gull Pond Road to South Pamet Road rather than Old Kings Highway and Collins Road. Another option APCC suggested was to use US 6 to Head of the Meadow Road if Coast Guard Road cannot connect with Head of the Meadow. APCC comments also recommended construction of a bike bridge over US 6 at High Head Road and cantilevering trails to avoid filling wetlands.

Massachusetts Coastal Zone Management gave official support for the CCPEDC compromise trail design and agreed with comments and recommendations stated in CCPEDC comments.

The Joint Transportation Committee of CCPEDC recommended that the US 6 right-of-way be used to the minimum extent possible as a location for a bicycle path from South Wellfleet to Provincetown.

The Compact of Cape Cod Conservation Trusts applauded the idea of a bicycle trail system, but recommended further study, especially on the level of bicycle use in specific areas.

The Truro Board of Selectmen felt there is a need for a bike trail but recommended further study and more local input before selecting a route.

The Truro Conservation Commission opinions included a recommendation of further study and more local input. Their recommendation for a trail location in Truro is using Collins Road rather than US 6 with a new connection through the woods to avoid South Pamet Road. (Some commissioners favored using US 6 rather than Collins Road.) Their route would then use US 6, South Highland Road, Coast Guard Road, and Old Kings Highway to Head of the Meadow. While acknowledging the dunes on the northwest side of Pilgrim Lake are fragile, they stated this area may be less objectionable than either side of US 6 or US 6A. They object to any filling of Pilgrim Lake or the flood storage area west of US 6. They also requested that the following roads/areas not be designated as official trail: North Pamet, South Pamet, and Depot roads; Small's Hill; and Higgins Hollow Road. Following the comment period, the Truro Neighborhood Association endorsed the Truro Conservation Commission's recommendation.

The Wellfleet Board of Selectmen, in their comments on the draft study, supported a modification of alternative B - which generally, in the town of Wellfleet, is the route described by CCPEDC.

The Wellfleet Planning Board commented that they would not support any bike trail plan that would not remove bicycle traffic from the state highway and from town roads. They recommended that a separate bicycle trail be created through Cape Cod National Seashore land, using and connecting already existing dirt roads.

The Wellfleet police chief stated that all bicycle trail activities should be removed from the US 6 corridor.

Specific comments received on the location and need for the bicycle trail, followed by the number of comments, are:

Keep all bicycles on US 6 - 8 comments (plus 366-signature petition)

Put bicycles anywhere but US 6 - 13 comments

Put bicycle trails in natural areas (for views/scenery) - 7 comments

Do not put trails in natural areas (do not remove vegetation or pave sand roads) - 26 comments

Do not use town roads - 7 comments

Do not encourage more bicycle use - 10 comments

Good idea to have more bike trails - 22 comments

More study - 8 comments

Do not put trail on . . . .

Depot Road - 3 comments

North Pamet Road - 17 comments (plus 37-signature petition)

South Pamet Road - 8 comments (plus 37-signature petition)

Higgins Hollow Road - 9 comments

Small Hill/Ball estate sand road - 9 comments

Longnook Road - 3 comments

Old Kings Highway (includes Collins Road) - 10 comments (plus 37-signature petition referring to Collins Road)

No parking at Long Pond (2 comments) or on North Pamet Road (6 comments)

## APPENDIX C: DESIGN GUIDELINES

### GENERAL CONSIDERATIONS

Each trail segment will be one of the following three types (see following sketch):

bike route--the designation of an existing roadway for bicycle use with signs and directional markers denoting their use by bicycles and vehicles (segments 1, 2, 3, 4, and parts of 5 and 6).

bike lane--a portion of a roadway that has been designated by signing and pavement markings for the preferential or exclusive use of bicyclists (segment 7 and part of segment 6).

bike path--a bikeway physically separated from motorized vehicular traffic by an open space or barrier and within the highway right-of-way or within an independent right-of-way (segment 8 and parts of segments 5, 6, and 7).

Signs, signals, and markings for the bicycle trail will conform with required standards and guidelines. Bike trails should be designed or redesigned and constructed or reconstructed to meet the following guidelines:

<u>Trail Width</u>	<u>Preferred</u>	<u>Minimum</u>
bike path	10 feet	8 feet
bike lane	4 feet (each side of roadway)	3 feet

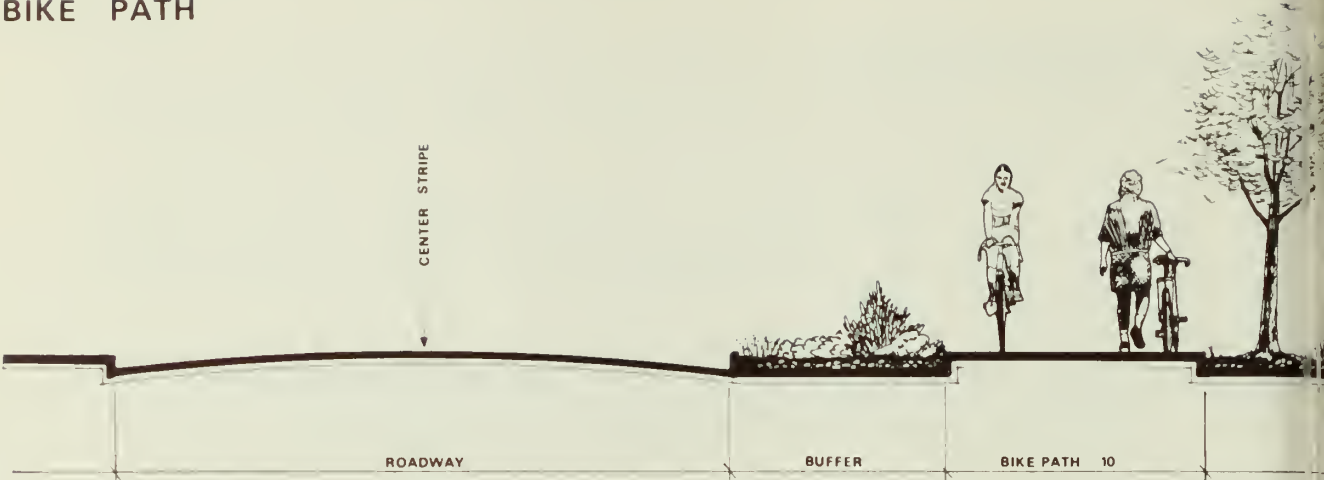
Horizontal clearance (either side of trail thread): 3 feet main stem, 2 feet elsewhere. This can be decreased in areas, if necessary, such as between US 6 and Main Street in Wellfleet. Three feet is designated as minimum clearance on the main stem because the Rail Trail (to which the main stem extends) is a mixed-use trail (bikers, hikers, and horseback riders).

Vertical clearance: 10 feet minimum

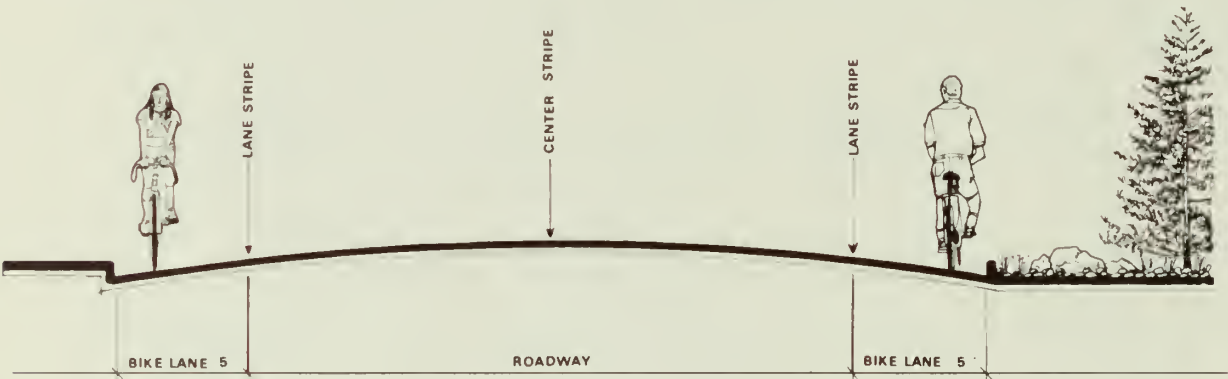
Design speed: 20 mph  
30 mph on grades exceeding 5%

Gradient: less than 5% - preferred  
10% - for short distances grades over 5% require increasing design speed to 30 mph and additional widening of path on curves

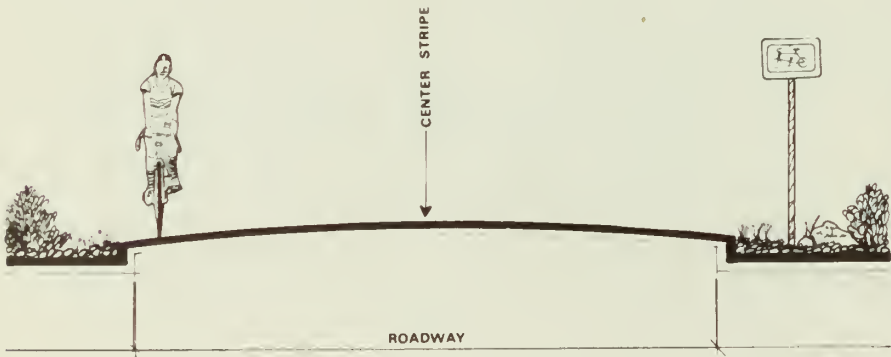
BIKE PATH



BIKE LANE



BIKE ROUTE



Stopping sight distance: 50 feet minimum  
100 feet preferred (See American Association of  
State Highway and Transportation Officials  
(AASHTO) standards)

Lateral clearances on horizontal curves: 10 feet minimum  
20 feet preferred

Shrubs over 2 feet high should be cleared. Trees can remain if trunks are of size and density not to block line of sight. (See AASHTO standards.) Lateral clearances should be a factor of design speed, gradient, and sloping sight distance.

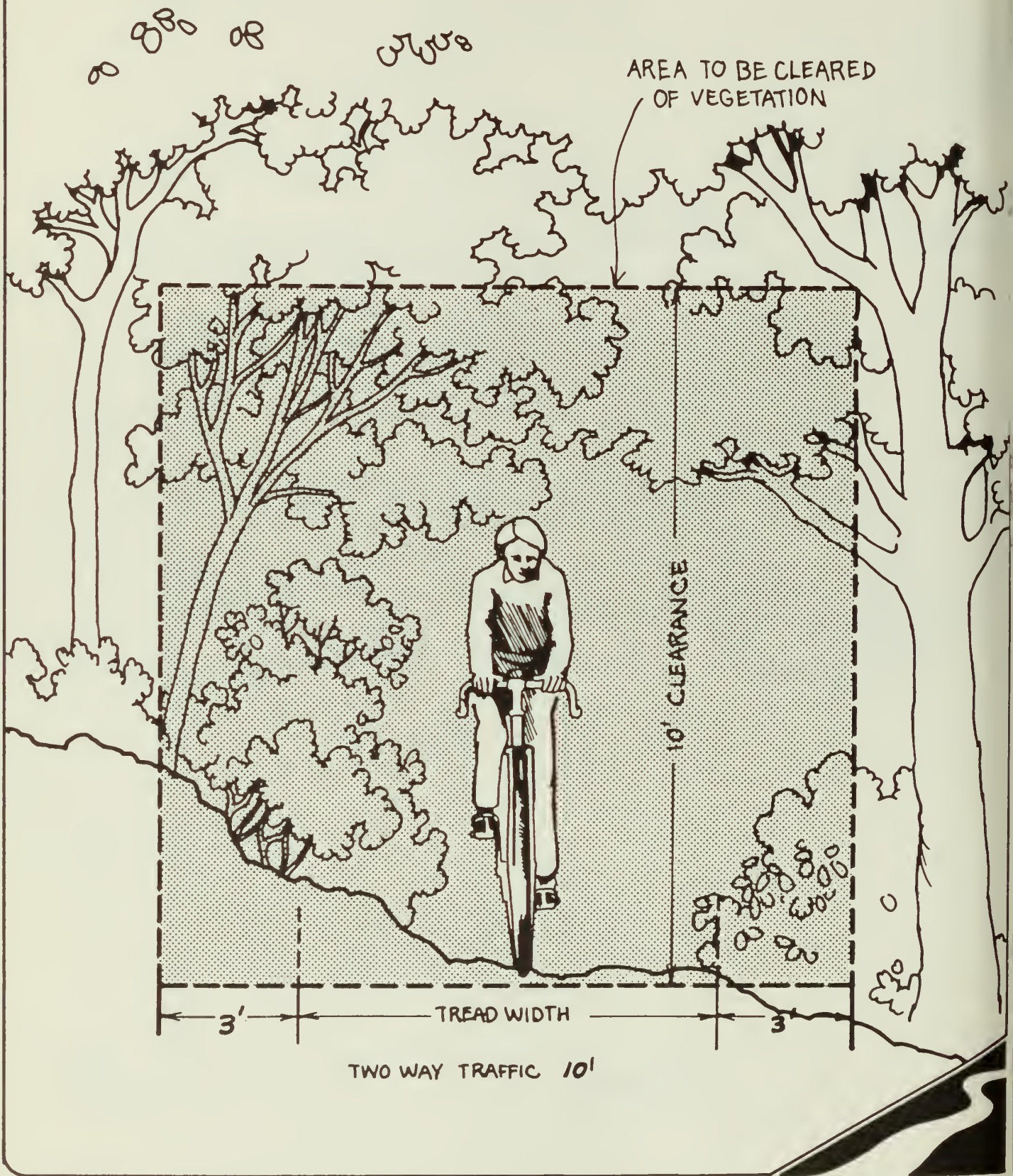
Bridges: smooth planking, straight approaches, should accommodate maintenance equipment - minimum 10 feet inside clearance.

Signing: In addition to the general application of traffic control devices as described in the Manual on Uniform Traffic Control Devices, mileposts should be at one-half mile intervals on paths, lanes, or routes. Because of the length of bike trails to be developed, pinpointing locations of accidents and required maintenance is necessary.

Intersections: Signing has not been effective to slow bicyclists at road crossings. Rumble strips are recommended to warn bicyclists of approaching road crossings and possible hazards.

Trail corridors will not impact improved properties, which are defined in Cape Cod National Seashore legislation.

# BICYCLE TRAIL



## APPENDIX D: DESIGN CHANGES TO PROVINCE LANDS AND NAUSET BIKE TRAILS

Specific improvements to existing NPS bike trails (reducing grades and changing curves and alignments) for the Nauset and Province Lands trails are as follows:

### PROVINCE LANDS BIKE TRAIL

The following recommendations have been established from review of the accident reports occurring on the Province Lands Bike Trail during the years 1982-85. Where possible the accidents were mapped and their causes reviewed to determine (1) high accident locations, (2) cause, and (3) possible improvement of those locations by physical design.

Most of the bike accidents occurring at Province Lands were the result of inexperienced riders or unfamiliar equipment (rented bikes). Many of these accident situations were aggravated by steep grades that were followed by sharp curves. (Limited sight distance was only a minor problem on this trail.) The steep grades and sharp turns combined with the native sand that blows onto the trail make certain areas of the bike trail particularly hazardous. The number and severity of accidents could, however, be greatly reduced by reductions in speed. The following recommendations for decreasing bike speed are listed in priority order to minimize unnecessary costs and environmental impact. (They are recommended for the areas indicated on the following map.)

1. Increase Surface Friction -- Increasing surface friction increases perceived speed; therefore, riders have a tendency to slow down. This could be implemented by either resurfacing or possibly scoring the existing surface at regular intervals. If this proves successful, it should also be used at hazardous intersections.
2. Increase Frequency of Maintenance -- Increasing the frequency of sweeping and maintenance would help the situation, but has long-term costs and could have very sporadic results because of wind and storms.
3. Redesign -- Redesign the trail in the areas indicated on the following map to add more, gentler curves and length to encourage speed reduction. This would be costly and have environmental impacts.

In addition to these general recommendations, the tunnel from the visitor center toward Herring Cove needs to be raised to provide additional clearance and protection from flooding. This may require an adjustment to the surface elevation of the Province Lands Road to allow sufficient clearance in the tunnel.

## NAUSET BIKE TRAIL

As with the Province Lands trail, these recommendations have been established from review and evaluation of the Nauset Bike Trail accident reports. The majority of the accidents occurring on the Nauset Bike Trail were again the result of inexperienced riders and unfamiliar equipment. Grades and curves are an additional problem (less, however, than on the Province Lands trail), but are greatly aggravated by limited sight distances, which is further aggravated by sand on the trail.

The number and severity of these accidents could be greatly reduced by increasing visibility and reducing speed. Recommendations are listed below. The areas to apply these recommendations are indicated on the following map.

1. Increase Sight Distances -- All curves should have a minimum sight distance of 20 feet from the pavement on the inside edge of the curve. Low shrubs may stay, along with deciduous trees that are pruned to prevent visual interference. Tall shrubs and evergreens should be removed.
2. Increase Surface Friction -- Roughen or score the surface in locations where steep grades occur in conjunction with curves.

In addition to these general recommendations, the intersection of the bike trail with the parking lot at the Salt Pond visitor center needs to be converted to mountable curbing.

BEACH PROTECTION NOW UNDER CONSTRUCTION IN THIS AREA

PAINT STRIPING

HERRING COVE  
BEACH

38+00 G

G

RACE POINT BEACH  
PARKING AREA

ROAD WORK NOW IN PROGRESS IN THIS AREA

BICYCLE PARKING AREA (SEE DETAIL SHEET 3)

144+00 A

123+50 A = 0+00 B

1054 AT-GRADE CROSSING

A

B

+00 E

22+00 B

PROVINCE LANDS  
VISITOR CENTER SITE

BICYCLE PARKING AREA (SEE DETAIL-SHEET 3)

ROAD WORK NOW IN PROGRESS IN THIS AREA

AT-GRADE CROSSING

50+00 E = 0+00 F

F

16+00 F

ROAD WORK NOW IN PROGRESS IN THIS AREA

E

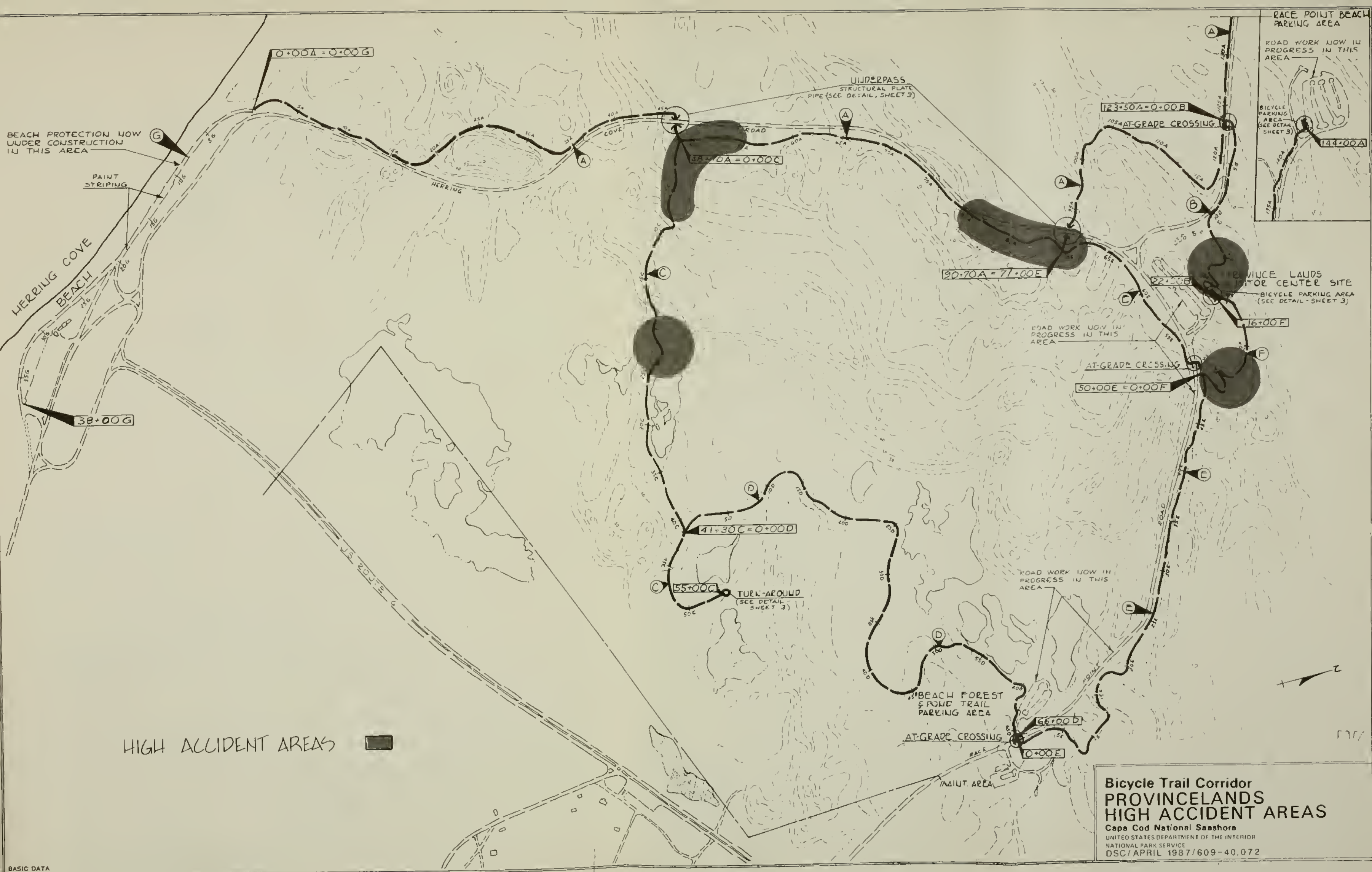
66+00 B

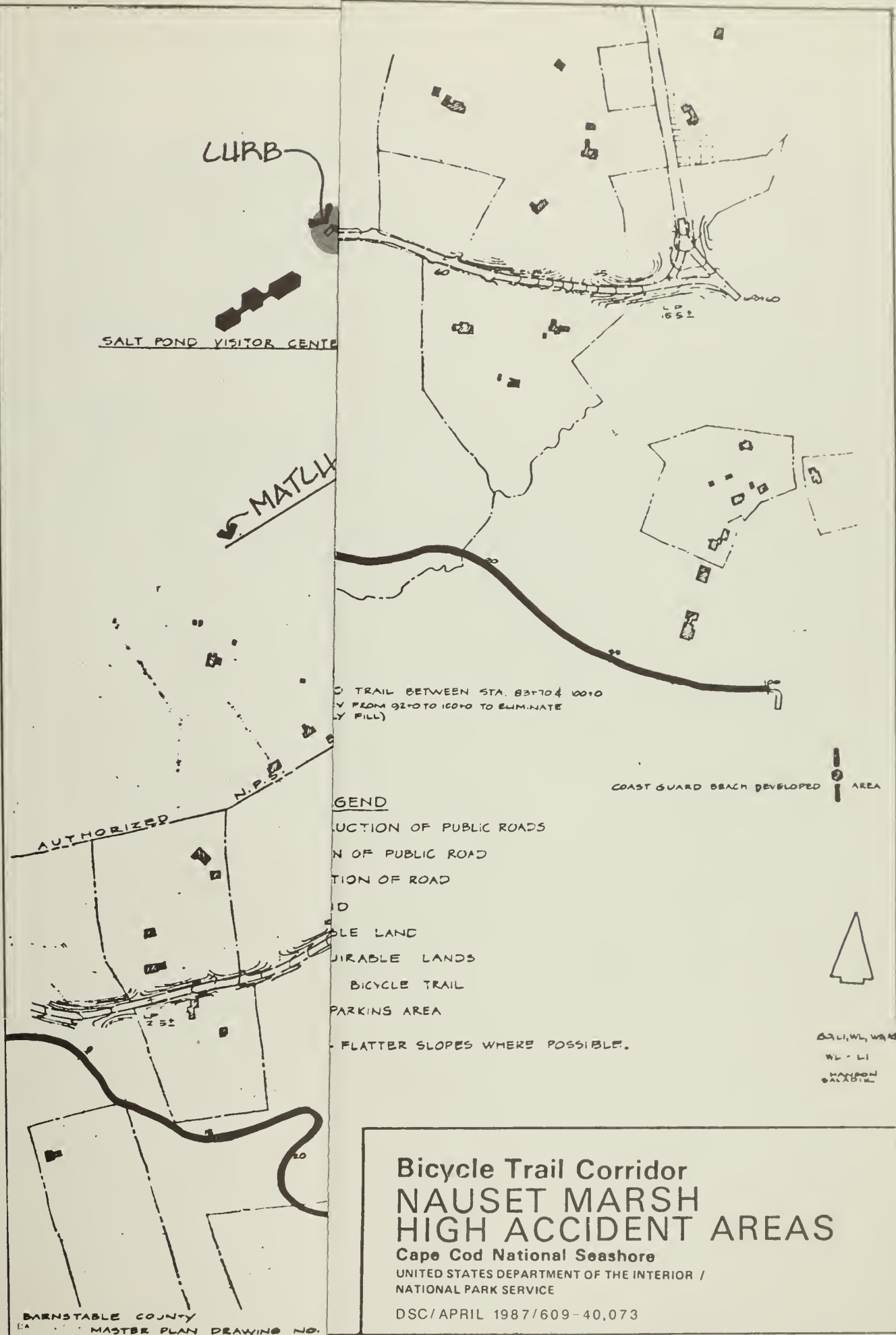
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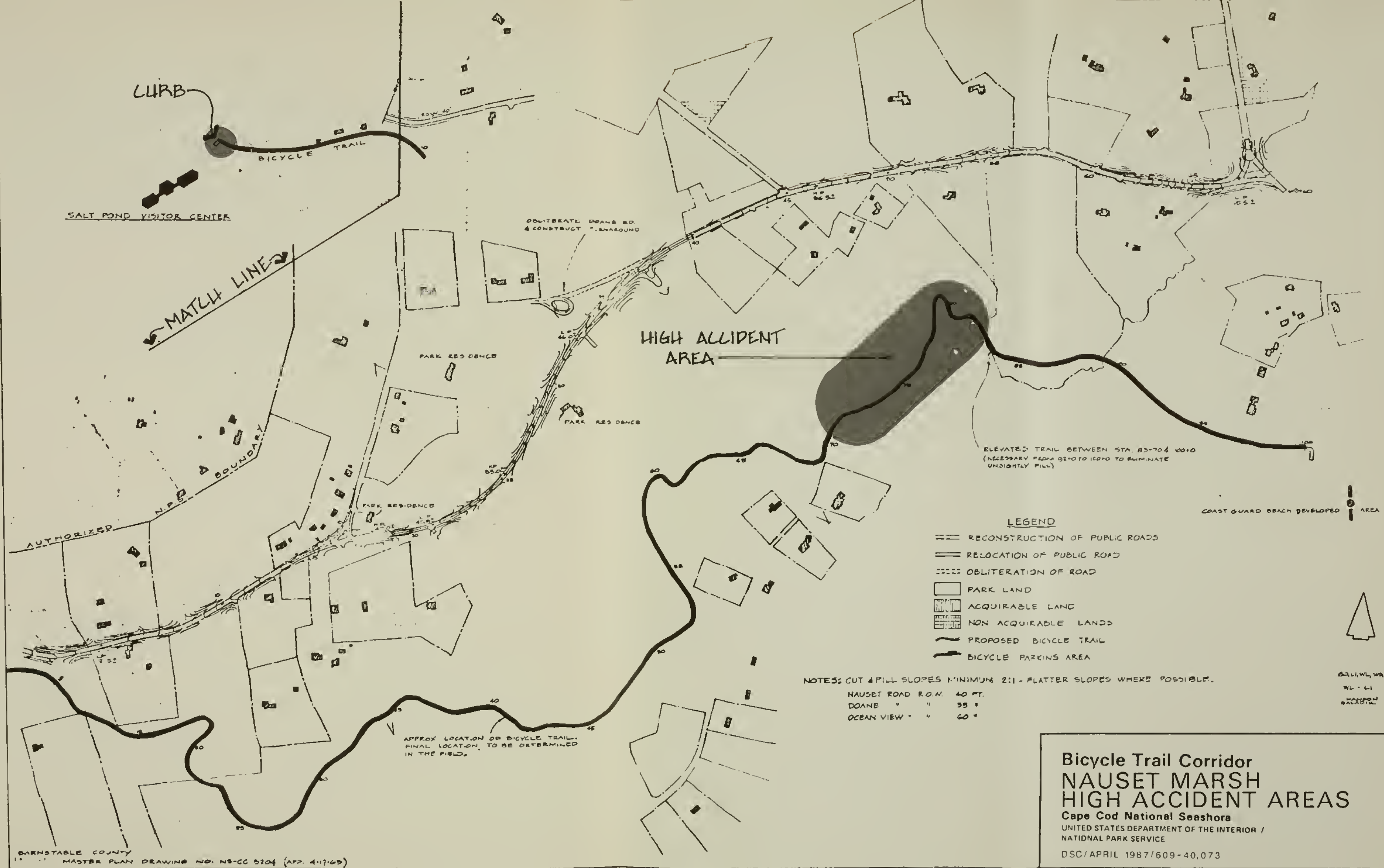
HIGH ACCIDENT

# Bicycle Trail Corridor PROVINCELANDS HIGH ACCIDENT AREAS

Cape Cod National Seashore  
UNITED STATES DEPARTMENT OF THE INTERIOR  
NATIONAL PARK SERVICE  
DSC/APRIL 1987/609-40.072







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