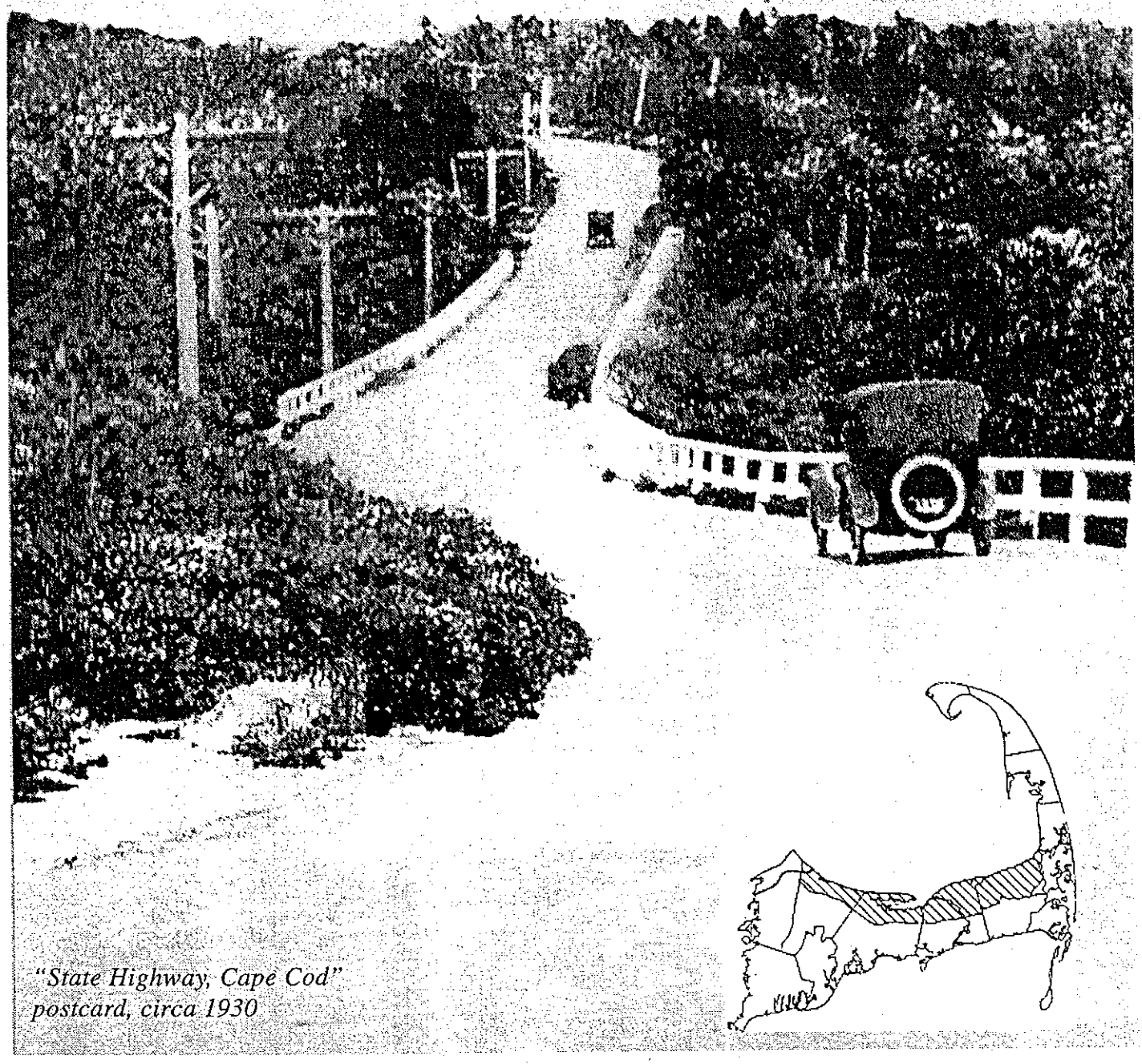
TRANSPORTATION

Old King's Highway/Route 6A

CORRIDOR MANAGEMENT PLAN

CAPE COD COMMISSION

JANUARY, 1995



"State Highway, Cape Cod" postcard, circa 1930

OLD KING'S HIGHWAY/ROUTE 6A

CORRIDOR MANAGEMENT PLAN

Prepared by the

Cape Cod Commission
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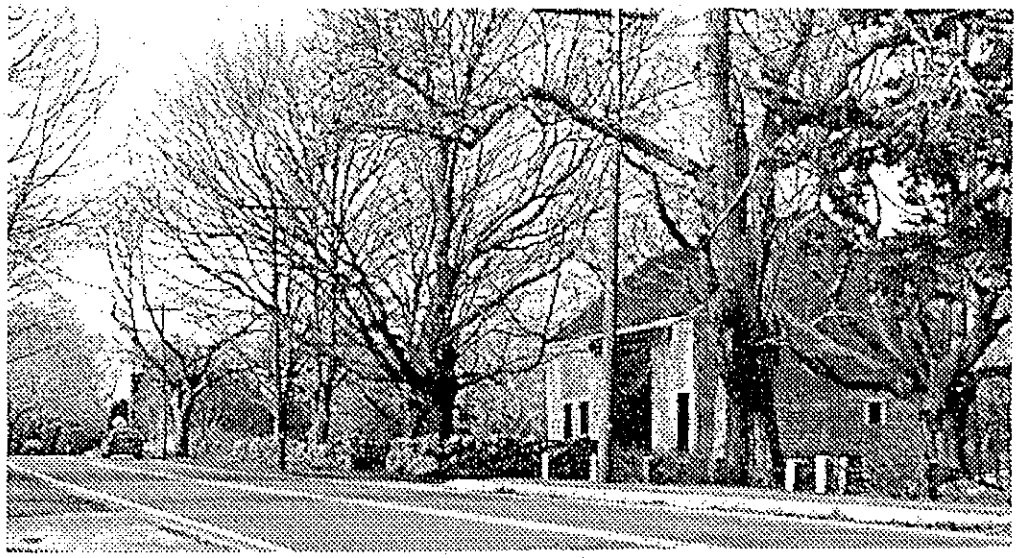

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EXECUTIVE SUMMARY

I. INTRODUCTION

History

Route 6A, known as the Old King's Highway, consists of approximately 34 miles of state highway that extends along the Cape Cod Bay shoreline, from the village of Sagamore in Bourne to the U.S. Highway Route 6 rotary in Orleans. The route is believed to have begun as a Native American trail known as the Cape Cod Bay Trail, which stretched from Plymouth to Provincetown. The roadway developed as the major east-west thoroughfare for early settlers on Cape Cod during the 1600's and was officially described in town documents as early as 1684. As such, it developed as a narrow, winding road through agricultural and undeveloped lands typical of the period. Residences, farms and small villages were later established along the roadway during the agricultural period of the 17th and 18th centuries. With the rise of maritime activities in the 18th century, captains' homes and commercial activities also developed along the route.

Until the mid-1900's, Route 6A was the primary state highway on Cape Cod for motorized long-distance travel. It was ultimately replaced by the current U.S. Highway Route 6, also known as the Mid-Cape Highway, in the 1950's. In 1973, the Old King's Highway Regional Historic District was created, establishing historic districts in the towns of Sandwich, Barnstable, Yarmouth, Dennis, Brewster and portions of Orleans. The districts included the entire area north of Route 6 in these towns, with Route 6A forming its backbone. Route 6A was designated as a Regional Road with Scenic and Historic Values in 1991 under Barnstable County's *Regional Policy Plan*, which stresses the use of non-structural solutions to traffic problems as a means of preserving community character. As a further effort to protect its unique resources, Route 6A was designated a scenic road by the State legislature in 1992.

Today, hundreds of early homes and other historic structures still line the highway, with minimal setbacks from the roadway. Scenic vistas of Cape Cod Bay, Sandy Neck barrier beach and numerous salt marshes are found in many locations along the corridor. A large number of mature shade trees and stone walls exist along the roadway, reflecting 18th and 19th century landscape plantings and agricultural uses. The roadway is a major tourist attraction due to its scenic attributes, and is a major recreational resource as well, providing access to a large number of visitor amenities both on and directly adjacent to the corridor. Property values along Route 6A are among the highest for each town on Cape Cod, a reflection of the value of maintaining the historic character of the area.

Although Route 6A is classified by the State as a secondary rural road, it is more similar to a secondary or primary urban roadway based upon comparative average daily traffic volumes. Presently, traffic volumes along some sections of Route 6A

exceed 15,000 vehicles per day in the summer and drivers experience poor operating conditions during peak times. Bicyclists and pedestrians are also frequent summer users of the roadway, with sections of Route 6A designated as part of the Boston to Cape Cod Bikeway. Despite this designation, the combination of limited areas with sidewalks or shoulders, heavy traffic, and the winding nature of the roadway create significant safety problems for bicyclists and pedestrians.

Purpose

The Intermodal Surface Transportation Efficiency Act (ISTEA) of 1991 provided funds for many types of transportation projects and programs. One of the special programs created under ISTEA included the National Scenic Byways Program. This program emphasizes conservation of a scenic byway's intrinsic qualities while addressing transportation and tourism needs common to such designated roadways.

Route 6A was one of two roadways in the Commonwealth of Massachusetts to be eligible for funding under the state's Interim Scenic Byways Program due in part to its designation as a scenic road by the State legislature in June, 1992. The goal of the study under the Interim Scenic Byways program is to develop a Corridor Management Plan for Route 6A that will guide the protection of the corridor's unique resources while addressing necessary transportation and safety issues. Without such a plan, the road is likely to face increasing transportation and growth pressures and will incrementally lose the character-defining features that currently support its designation as a scenic road. A secondary purpose of the program is to assist in the development of the State's Scenic Byways program for other scenic roadways on Cape Cod and throughout the Commonwealth. The Corridor Management Plan for Route 6A is therefore designed to inform this developing program.

Roadway Management

Route 6A is a state highway which traverses seven Cape Cod communities. The Massachusetts Highway Department (MHD) maintains and implements all improvements on Route 6A except from Old Jail Lane to Hyannis Road in Barnstable village, which is under the jurisdiction of the Town of Barnstable.

Although a state highway, there are many organizations and interests which guide development along Route 6A. If any single element stands out in the effort to protect the character of Route 6A, it is the need for solid communication and coordination between the various agencies which have different roles and responsibilities. This plan seeks to identify any conflicts between the different jurisdictions, and to establish a shared vision of what the future of Route 6A will hold.

II. HISTORIC, SCENIC AND ENVIRONMENTAL RESOURCES

ENVIRONMENTAL RESOURCES

The goal of this section is to identify sensitive environmental resources that occur along the Route 6A corridor and to describe the level of protection afforded to these resources. To the extent that other sections of the Corridor Management Plan discuss possible improvements to the roadway, these protected resources act as constraints which must be considered during the planning process.

Existing Conditions/Problem Identification

Environmental resources along Route 6A were divided into five categories based on the level of protection afforded to resources found throughout the corridor. Areas with the highest level of protection include Areas of Critical Environmental Concern and Rare Species Habitat. These areas are protected by strict performance standards at the state level which would affect any roadway-related projects. Areas of lower protection, such as zones of contribution to public water supplies, are of equal significance. However, state and local requirements in these areas are less likely to affect any proposed improvements along Route 6A.

Numerous wetlands of varying types and sizes are also found along Route 6A. Many of these are in close proximity to the roadway and/or serve as receiving waters for drainage from the roadway. There are protections for wetlands at the state, regional and local levels. Watch areas are those where critical environmental features, such as wetlands or rare species habitat are located nearby, but not immediately adjacent to the Route 6A corridor on the GIS maps. In these areas it will be particularly important to assess field conditions prior to planning any improvements or other activities. Finally, areas designated not sensitive are those where GIS maps do not indicate the presence of any critical environmental features immediately adjacent to roadways.

Recommendations

Corridor-wide recommendations are designed to enhance the protection of sensitive environmental resources which contribute to the character of Route 6A:

- Upgrade local wetlands bylaws
- Complete a survey of needed drainage improvements
- Conduct a detailed field survey of site conditions
- Maintain vegetated buffers along the roadway

HISTORIC RESOURCES

Route 6A maintains an enormous amount of integrity to its historical development patterns, and the corridor contains hundreds of historic structures. Preservation of the specific historic resources along the corridor as well as their overall context are important goals of the Route 6A Scenic Byways Program. In addition, the study should increase public awareness of the significance of these historic structures and districts, thereby working to promote their preservation. Perhaps the primary goal is to establish performance standards for roadway improvements and new development to preserve the roadway's character.

Problem Identification

A diversity of historic resources exists along the Route 6A corridor. Threats to the historic character of the corridor relate primarily to the loss of specific resources and the alteration of those aspects which define the historic context. The loss of individual structures, of elements which help to define historic districts, and of the larger environment which provides the setting for an historic district would all degrade the character and significance of the Route 6A corridor. Existing mechanisms provide limited protection for the diversity of historic resources.

Development pressures and infrastructure improvements pose a threat to the character of this historic and scenic corridor in their potential to alter the scale of the roadway and to introduce to it elements which are inconsistent with the distinct character of the district. Many resources which contribute to the historic character of the corridor are not currently identified and thus receive not protection. In order to maintain the corridor's character and significance as it develops over time, historic resources must be recognized and alternatives must be identified to protect and preserve these resources from unnecessary change.

AASHTO and current Highway Design Manual standards are often inconsistent with character and context preservation in historic areas. Road improvements such as widening and road realignment can alter the human scale of roadways with rural qualities, or change the relationships between historic structures built close to the road edge. Road improvements through historic districts often involve the introduction of inconsistent elements such as steel guardrails, chain link fencing, and high curbing. While safety is important on all roadways, alternative means of achieving safe transportation should be considered where sensitive resources are present. Several states have already identified means of achieving this balance and their examples should be pursued in Massachusetts.

Preservation restrictions and agricultural preservation restrictions exist on the corridor but are not widely used or understood. As a means of balancing historic resource regulation, incentives to maintain and re-use historic resources should be encouraged. Information on these and other incentive programs which allow

families to retain large historic properties more easily should be made available in order to encourage their use. In addition, tax or development incentives to preserve and re-use historic structures in character should be developed to encourage further preservation, especially in areas where demolition and alteration of historic structures is not regulated.

Recommendations

The following are recommendations which will further the goals of preservation of historic structures and resources along the roadway, as well as preservation of the historic context.

- Update historic resource inventories to recognize all historic character-defining elements of the roadway, including historic landscapes

- Provide historic architectural review throughout the corridor

- Research and develop an historic resource nomination for Route 6A

- Develop alternative road standards to protect historic resources on designated scenic roadways

- Establish design guidelines for compatible roadway appurtenances

- Create a preservation incentives program for the corridor

- Provide zoning incentives for preservation and re-use of historic structures

- Create a network of historic walking tours to convey the history of the corridor

- Clarify historic district committee review of non-traditional historic resources

SCENIC RESOURCES

A major goal of the scenic resources section of the Corridor management Plan is to improve the quality of the visual experience for all users of the scenic byway. An additional goal is to develop a consistent wayfinding system in order to guide users of the scenic byway and to educate them about its resources.

The important scenic characteristics of the roadway are divided into several categories: major scenic views, detailed scenic resources, and tree canopy. Features which detract from the road's scenic quality are divided into the categories of overhead utilities and visual intrusions. A corridor-wide inventory of these resources and intrusions serves to identify concentrations and prevalence of the various resource types.

Existing Conditions/Problem Identification

Major Scenic Views. Many of the major scenic views identified in the inventory are afforded some measure of protection from alteration or destruction. However, the introduction of inconsistent design elements such as steel guardrails or chain link fencing, as well as future development, could significantly impact major scenic views. There is a need for vista pruning in specific locations, as well as a need for enhancement of major views of the gateways to historic villages.

Detailed Scenic Resources. Incomplete resource inventories which fail to include smaller-scale historic elements or acknowledge the significance of smaller-scale scenic elements leave these resources vulnerable to alteration. Roadway maintenance activities or improvements could significantly impact these resources, which often lie within a few feet of the roadway edge. Two major gateways to the corridor lack detailed scenic elements and need special treatment.

Tree Canopy. The existing tree canopy is partially protected through scenic road designation. However, no guidelines for replanting of the existing tree canopy are currently available. The majority of distinctive trees found along Route 6A are at a very mature stage of development. Few trees have been planted in the past several years to eventually replace this mature canopy. In addition, numerous mature trees have been severely impacted by pruning to maintain clearance for overhead utility lines. Entrances to several existing commercial plazas or village centers were found to be lacking any tree canopy.

Overhead Utilities. The hazards to vehicles and pedestrians as well as the visual impact created by overhead utilities on Route 6A is significant. Only one small stretch of the Route 6A corridor does not contain overhead utility lines and poles, while several sections of the corridor, in particular village centers, contain utilities on both sides of the roadway. Utility lines and poles are often immediately adjacent to the edge of pavement due to the narrow right-of-way and therefore highly visible.

A lack of tree canopy, or trees which have been extensively pruned to maintain clearance, also does not provide an effective visual screen from these utilities. Relocating utilities, in conjunction with other pedestrian enhancements, may offer the greatest opportunity for visual improvement of village centers.

Visual Intrusions. Inappropriate land use and strip development detract from the visual integrity of the Route 6A corridor. Current zoning bylaws contain a number of allowed or special permit uses which are out of scale with other land uses along the scenic byway and are not well-screened from the roadway. Signs are a significant design element, affecting both the visual experience and directional needs of users of the Route 6A corridor. Key issues include the quantity, placement, color and materials used for state highway signs. While the Old King's Highway Regional Commission sets general guidelines for commercial signs which are consistent with the character of Route 6A, there is a tremendous variation in the size, type and material of signs permitted by each community's bylaws. In addition, some signs may be grandfathered from compliance with more recent bylaws. These issues have resulted in areas with significant visual clutter from oversized or improperly placed signs. In addition, steel guardrails, chain link fencing and drainage swales create a significant visual impact on Route 6A. There are currently no approved alternatives to the use of steel guardrails or chain link fencing for state highways in Massachusetts.

Recommendations

A range of options to enhance the scenic qualities of the Route 6A corridor are developed for each resource category, as well as general recommendations for corridor-wide application. Priority recommendations include the following:

- Develop design plans to enhance the visual gateways to the corridor

- Establish scenic easements to protect important landscapes

- Expand Surveys of Historic Districts to include detailed historic/scenic elements

- Develop a tree canopy management plan for the corridor

- Conduct a feasibility study to determine short and long-term costs and benefits of undergrounding overhead utilities

- Develop Distinctive Guide Signs for Route 6A

- Work to revise AASHTO standards and the *Highway Design Manual* to contain special design standards for scenic roadway appurtenances such as signage, guardrails, fencing and drainage

III. LAND USE AND ZONING

This section examines current land uses and zoning requirements along the Route 6A corridor. It includes information on the areas of the corridor that are likely to experience the greatest amount of new development and highlights useful zoning techniques for the communities along Route 6A.

The two primary goals of the land use and zoning section of this study are: 1) to review and suggest amendments to zoning bylaws to ensure that zoning reinforces, rather than undermines, the historic and scenic character of Route 6A; and 2) to review and suggest amendments to zoning bylaws to reduce traffic congestion on Route 6A.

Existing Conditions

Land Use

The land use inventory reveals that most of the commercial development along Route 6A is small-scale, low-intensity land use, with much of this development located in structures that are residential in character. Typical business/commercial land uses that are found continuously along the roadway include inns, motels and cottages, restaurants, antique shops, galleries and gift shops, community services such as gas stations, video stores, banks, small markets, and small professional offices. The rest of the roadway is dominated by residential uses, including numerous home occupations, mixed with churches, municipal buildings and open land.

Zoning

The zoning inventory includes a town-by-town summary of zoning districts along the Route 6A corridor, as well as the provisions of each town's zoning bylaws and subdivision regulations which have the greatest impact on character and traffic along the Route 6A corridor. Major factors examined include the following: use table, street trees/landscaping requirements, parking, site distance, access standards, signs, front setbacks, miscellaneous provisions, use variances, and subdivision requirements. In particular, the section on miscellaneous provisions includes a discussion of provisions in each town's zoning bylaws relating to site plan review, development phasing, growth controls and other innovative features relating to traffic control and community character.

Problem Identification

The land use inventory indicates that there are a number of areas along Route 6A with the potential for a large amount of future commercial/business development and/or redevelopment which could change the character of the roadway and dramatically increase traffic generation. The effectiveness of current regulations are examined, and obstacles and opportunities to zoning reformed are discussed.

Recommendations
Recommendations focus on techniques to reduce the build-out along Route 6A, to maintain traditional uses that are characteristic of the corridor, and to ensure high quality commercial development.

- Complete a Build-out study to quantify growth potential in the Route 6A corridor

- Establish Districts of Critical Planning Concern (DCPC's) to reduce build-out, traffic congestion or to maintain the character of the roadway

- Limit high traffic generating uses along the corridor

- Reduce commercial square footage allowed by right to decrease traffic generation

- Revise zoning bylaws and subdivision regulations to improve access and reduce auto traffic on Route 6A

- Limit incompatible uses which have an adverse impact on roadway's character

- Rezone linear general or highway business districts to residential or residential business with identified nodes zoned for village business to ensure development which is compatible with the existing character of the corridor

- Develop improved performance standards for parking lots, access, landscaping, building design and signage

- Adopt mixed use development bylaws to reinforce traditional village settings

- Adopt incentives for improvements to strip developments

IV. TRANSPORTATION

Transportation characteristics evaluated include roadway systems, alternate transportation, pedestrian facilities and bicycle facilities. Problem areas and issues have been identified and potential alternatives have been recommended.

Route 6A Characteristics

Roadway System

Evaluation of the existing roadway system revealed deficiencies due to heavy summer daily traffic volumes, poor levels-of-service at peak times, and heavy turning conflicts at intersections and driveways along the corridor. These poor operating conditions are a result of inadequate access control, lack of alternate transportation modes, inadequate links between land use and the transportation system, and a diversion of vehicles from other congested roadways onto Route 6A.

The failure of a roadway system inevitably leads to a higher accident rate. Although accident rates on Route 6A are below the statewide average, there remains a need to improve specific problem locations. The main cause of accidents are high traffic volumes at areas of uncontrolled curb cuts. Accidents on Route 6A generally occur during the summer months when traffic volumes are highest (28% of accidents occur in July and August). Curb cuts produce conflict points due to turning movements entering/exiting driveways and intersections. The most frequent (37%) accident type was angular which typically is a result of heavy turning movements.

Alternate Modes

Lack of alternate modes of transportation has increased automobile dependency on Route 6A. Without other choices of transportation, tourists are forced to experience the road in their own vehicles. Convenient and efficient transportation alternatives to discourage automobile trips are essential to reducing congestion on the corridor.

Pedestrian Accessibility

Although specific areas along Route 6A generate high volumes of pedestrian traffic, walking on Route 6A is generally limited. Reported pedestrian accidents along the corridor over a 3- year period totaled 11. Limited use of the corridor by pedestrians is a result of poor sidewalk conditions, including poorly defined sidewalks, overgrown vegetation, lack of contiguous sidewalk, and lack of, or worn crosswalk markings.

Bicycle Accessibility

Bicycle use on Route 6A varies from town to town based on available services and accessibility. Over a three year period there was a total of 13 reported bicycle accidents on the Route 6A corridor. These accidents are mainly a result of inadequate bicycle accessibility. Factors that contribute to poor bicycle accessibility on Route 6A include narrow road widths, poor shoulder maintenance, isolated problem areas, man-made and natural obstructions, high travel speeds, and lack of vehicle/bicycle awareness.

Alternatives
Improvements to alleviate the corridor wide problems are limited due to sensitive resource constraints. Preservation of scenic and historic character and the environment must be considered with the implementation of the Corridor Management Plan. Possible alternatives for the corridor are discussed below.

Speed Zoning
Reduced and more uniform speed limits can increase safety for all forms of transportation on Route 6A. Proper enforcement is necessary to ensure the reduction of speed limits. An advantage of this alternate is it's low cost of implementation. Possible disadvantages include the need for special legislation, enforcement requirements, and a possible reduction in roadway capacity.

Non-Route 6A Improvements
Improvements not directly related to Route 6A such as redesigning the Sagamore Rotary, providing direct access to Nickerson State Park, and providing driver information strategies (variable message signs, low-watt radio station, or telephone lines) can help alleviate traffic problems on Cape Cod roadways. Alleviating congestion on Route 6 and other major roadways will, in turn, reduce traffic volumes on Route 6A. Possible disadvantages of these alternatives are the high cost of construction, and the operational cost for informational strategies.

Alternate Transportation Modes
Offering bus and rail service as an alternate mode of transportation can reduce the dependency on automobiles and enhance visitor accessibility to Cape Cod. Possible disadvantages of this alternative are finding a funding source and identifying ways to encourage the use of alternate modes.

Improved Access Management
Improving access management along Route 6A can have positive impacts for all transportation modes on the roadway system. Access management techniques can reduce conflict points, reduce accidents, improve traffic flow, and enhance safety for vehicular, pedestrian, and bicycle traffic. Potential obstacles for this alternative are finding a funding source, providing incentives for owners to improve driveways, and required coordination between state, local and private interest groups.

Zoning Changes
Zoning controls, such as those adopted in Brewster, can greatly enhance a transportation system. Brewster's regulations require developers to share driveways and parking areas, and find ways to reduce traffic entering/exiting businesses. These regulations help improve traffic flow while minimizing conflict points that cause accidents. By alleviating traffic congestion, the need for new roadway improvements (widening) is minimized. Zoning controls offer a low cost alternative. This alternative required coordination between state and town

agencies. These regulations may restrict land use.

Widen Shoulders to Improve Bicycle Lanes
Providing widened shoulders will enhance bicycle safety on Route 6A. Widening will also provide more room to accommodate bicycles and automobiles. Disadvantages of this alternative include the drivers perception of wider road, increased vehicle speeds, increased traffic volumes, loss of scenic/historic character, and increased storm water runoff.

Other Bicycle Accessibility Improvements
Other improvements to enhance bicycle accessibility include modifying or eliminating existing berms for use of a bicycle lane, providing better shoulder maintenance, improving signage, and offering educational programs. These alternatives can improve bicycle safety, encourage bicycle use, lessen the impact on the scenic/historic character and environment, improve vehicular/bicyclist behavior and decrease vehicle speeds and congestion. These improvements are a low cost alternative. These alternatives do not provide increased bicycle surface.

Recommendations
Based on the above alternatives, the following improvements have been recommended for the Route 6A Corridor Management Plan. For town specific recommendations, see the main text of the transportation component.

- Improve coordination between the state, town, and local officials
- Investigate Speed Zoning for the corridor
- Explore the possibility of local jurisdiction of Route 6A
- Develop an access management plan
- Develop a sidewalk maintenance plan and identify new sidewalk locations
- Perform detailed evaluation of methods to improve bicycle accessibility and safety
- Develop Route 6A Shuttle Bus service
- Consider increased use of seasonal rail service
- Improve problem intersections
- Pursue replacement of Sagamore Rotary
- Consider direct interchange to Nickerson State Park

V. VISITOR FACILITIES

Many features draw visitors to the Route 6A corridor. A wide variety of themes relating to the natural and cultural history of Cape Cod are represented along the corridor, though many are not widely recognized. An objective of this study is to identify means to convey the significance and history of the Route 6A corridor which have a limited impact on its individual resources. Visitor facilities planning must be included in the overall strategies designed to protect and preserve scenic and environmental resources along the corridor. An appropriate balance between attracting new visitors and directing information and services toward residents or others who may have less physical impact on the corridor must be found.

Analysis/Problem Identification

Visitor facilities provide a link to the corridor's economic development, helping to support its commercial enterprises and its recreational and visitation sites. Also important to the corridor's economic development is preservation of the distinct characteristics which draw both residents and visitors to the area. Any proposed visitor facilities, like any improvements along the roadway, should be sympathetic with the existing character and not jeopardize the historic, scenic and environmental resources of the corridor.

The Route 6A corridor currently experiences a significant amount of tourism, especially during the summer and fall seasonal peaks. As noted in the transportation section of this plan, the corridor many not be able to accept significantly higher visitation numbers and still retain its character if visitors remain dependent on the automobile. Increasing tourism promotion could serve to only exacerbate traffic pressures facing the roadway. Any promotional program to attract visitors should therefore include provisions to discourage the use of car travel and instead to promote use of alternative modes of transportation.

For promotion of the corridor as a whole, visitor activities should continue to focus on their relationship to the corridor's intrinsic resources. In general, "soft" solutions such as informational brochures and community cultural activities, rather than "hard" solutions involving new structures, should be pursued. In this way, the corridor would not need to be packaged through additional signage and services, but would rather encourage visitors to find and use existing services, and encourage them to discover opportunities on their own.

Recommendations

The following recommendations are made with the goal of better conveying the significance and history of the Route 6A corridor and its attributes while having a limited impact on those values which make it attractive.

•Establish a network of walking tours to encourage pedestrian travel and provide links to activity centers along the corridor

•Provide interpretive facilities to encourage appreciation of corridor resources

•Develop partnerships with existing facilities to disseminate visitor information

•Create a brochure to convey the history and significance of the roadway

•Provide site furnishings consistent with the character of the area

•Develop pedestrian, bicycle and alternate transportation mode linkages to encourage non-auto visitation of Route 6A

VI. ACTION PLAN

The purpose of this section of the plan is to set priorities and identify strategies for the Corridor Management Plan's implementation. Over one hundred recommendations for general application are included in the Corridor Management Plan for Route 6A, along with numerous location-specific recommendations. Implementation of these recommendations will require the cooperation of many public and private organizations charged with protecting Route 6A.

A summary of actions is included in the plan, designed to achieve the primary goal of guiding the protection of the corridor's unique resources while addressing transportation and safety issues. While the actions listed do not accomplish each and every one of the recommendations in the Plan, they represent priorities for each subject area.

I. INTRODUCTION

A. ROUTE 6A, THE OLD KINGS HIGHWAY

Route 6A, known as the Old King's Highway, consists of approximately 34 miles of state highway that extends along the Cape Cod Bay shoreline, from the village of Sagamore in Bourne to the U.S. Highway Route 6 rotary in Orleans. The route is believed to have begun as a Native American trail known as the Cape Cod Bay Trail, which stretched from Plymouth to Provincetown. The roadway developed as the major east-west thoroughfare for early settlers on Cape Cod during the 1600's and was officially described in town documents as early as 1684. As such, it developed as a narrow, winding road through agricultural and undeveloped lands typical of the period. Residences, farms and small villages were later established along the roadway during the agricultural period of the 17th and 18th centuries. With the rise of maritime activities in the 18th century, captains' homes and commercial activities also developed along the route.

The original route followed much of what is currently designated Route 6A, though it followed a slightly different course in several locations. Many of the original roadway segments still exist, some as separate roads by other names, and others as sections of dirt road which indicate the route before it was straightened in a series of mostly 20th century improvements.

Until the mid-1900's, Route 6A was the primary state highway on Cape Cod for motorized long-distance travel. It was ultimately replaced by the current U.S. Highway Route 6, also known as the Mid-Cape Highway, in the 1950's. In 1973, the Old King's Highway Regional Historic District was created, establishing historic districts in the towns of Sandwich, Barnstable, Yarmouth, Dennis, Brewster and portions of Orleans. The districts included the entire area north of Route 6 in these towns, with Route 6A forming its backbone. Route 6A was designated as a Regional Road with Scenic and Historic Values in 1991 under Barnstable County's *Regional Policy Plan*, which stresses the use of non-structural solutions to traffic problems as a means of preserving community character. As a further effort to protect its unique resources, Route 6A was designated a scenic road by the State legislature in 1992.

Today, hundreds of early homes and other historic structures still line the highway, with minimal setbacks from the roadway. Scenic vistas of Cape Cod Bay, Sandy Neck barrier beach and numerous salt marshes are found in many locations along the corridor. A large number of mature shade trees and stone walls exist along the roadway, reflecting 18th and 19th century landscape plantings and agricultural uses. The roadway is a major tourist attraction due to its scenic attributes, and is a major recreational resource as well, providing access to a large number of visitor amenities both on and directly adjacent to the corridor. Property values along Route 6A are

among the highest for each town on Cape Cod, a reflection of the value of maintaining the historic character of the area.

Although Route 6A is classified by the State as a secondary rural road, it is more similar to a secondary or primary urban roadway based upon comparative average daily traffic volumes. Presently, traffic volumes along some sections of Route 6A exceed 15,000 vehicles per day in the summer and drivers experience poor operating conditions during peak times. Bicyclists and pedestrians are also frequent summer users of the roadway, with sections of Route 6A designated as part of the Boston to Cape Cod Bikeway. Despite this designation, the combination of limited areas with sidewalks or shoulders, heavy traffic, and the winding nature of the roadway create significant safety problems for bicyclists and pedestrians.

While many scenic roads designated in the U.S. were specifically designed as parkways or limited-access highways to incorporate scenic elements or to provide continuous vistas of geological formations and natural features, the scenic character of Route 6A is directly related to its incremental development as an historic route. The numerous small-scale scenic attributes in close proximity to the edge of the roadway testify to the historical development patterns along Route 6A and provide evidence of the original scale of the roadway and its surroundings. The human scale and winding nature of Route 6A is not uncommon in New England, where many early roadways remain in their original configuration but contain very different uses from the past. The diverse needs of the corridor's many users requires careful consideration in order to successfully balance preservation of Route 6A's character with transportation needs.

Despite the attention that has been focused on Route 6A in the past, including the creation of the Old King's Highway Regional Historic District and designation as a scenic road by the State legislature, the best means to maintain Route 6A's historic and scenic character while addressing transportation and safety issues has not been addressed in a comprehensive fashion.

B. PURPOSE

The Intermodal Surface Transportation Efficiency Act (ISTEA) of 1991 provided funds for many types of transportation projects and programs. One of the special programs created under ISTEA included the National Scenic Byways Program. This program emphasizes conservation of a scenic byway's intrinsic qualities while addressing transportation and tourism needs common to such designated roadways.

Route 6A was one of two roadways in the Commonwealth of Massachusetts to be eligible for funding under the state's Interim Scenic Byways Program due in part to its designation as a scenic road by the State legislature in June, 1992. The goal of the

study under the Interim Scenic Byways program is to develop a Corridor Management Plan for Route 6A that will guide the protection of the corridor's unique resources while addressing necessary transportation and safety issues. Without such a plan, the road is likely to face increasing transportation and growth pressures and will incrementally lose the character-defining features that currently support its designation as a scenic road. A secondary purpose of the program is to assist in the development of the State's Scenic Byways program for other scenic roadways on Cape Cod and throughout the Commonwealth. The Corridor Management Plan for Route 6A is therefore designed to inform this developing program.

C. ROADWAY MANAGEMENT

Route 6A is a state highway which traverses seven Cape Cod communities. The Massachusetts Highway Department (MHD) maintains and implements all improvements on Route 6A except from Old Jail Lane to Hyannis Road in Barnstable village, which is under the jurisdiction of the Town of Barnstable.

Although a state highway, there are many organizations and interests which guide development along Route 6A, including planning boards, the Old King's Highway Regional Historic District Committee, utility companies, conservation commissions, local Public Works Departments, bicycle advocates, civic associations, chambers of commerce, and Boards of Selectmen. If any single element stands out in the effort to protect the character of Route 6A, it is the need for solid communication and coordination between the various agencies which have different roles and responsibilities. For example, the MHD issues curb cut permits for new uses along the roadway, but the local planning boards and boards of appeals grant the land use permits. In addition, the Old King's Highway Historic District Committees and local planning boards are in place to protect the character of the roadway, but MHD, utility companies and their contractors perform tree and vegetation pruning and roadway maintenance. This plan seeks to identify any conflicts between the different jurisdictions, and to establish a shared vision of what the future of Route 6A will hold.

D. METHODOLOGY

Establish Study Area

The study area for the Corridor Management Plan includes the Route 6A roadway, right-of-way, adjacent land areas and viewsheds, from the Sagamore Bridge overpass in Bourne to the rotary at the Orleans/Eastham town line. The eastern and westernmost portions of Route 6A are not designated as part of the Old King's Highway Regional Historic District, but they are included in the study because they

serve as the roadway's entry points or gateways. Following establishment of the study area, the general steps in completing the Corridor Management Plan are outlined below.

Resource review
A wide range of scenic byways program materials and related projects across the country were collected and reviewed. These programs provided guidance in developing the Plan and covered a variety of issues, many of which were relevant to Route 6A. Among the most helpful information gathered from these materials were: guidelines for developing and evaluating a scenic resource inventory, protection techniques for scenic resources, creative management strategies, and roadway design standards which respond to surrounding environmental and cultural resources.

Establishing Plan components/Goals and objectives
Critical resources to be protected along the corridor were first identified. Goals and objectives for each section of the Corridor Management Plan were then established. Critical resource sections of the Plan included historic, scenic, and environmental resources. Next, land use and zoning issues were identified as both providing the regulatory framework for the corridor and a measure of future traffic potential. Identification of transportation issues naturally follows from the previously established constraints provided by critical resources and the local regulatory framework. Finally, visitor facilities are discussed in the context of preserving existing resources and addressing transportation concerns.

Existing Conditions
Information on existing roadway conditions and the variety of historic, natural, cultural and scenic resources which are inherent to Route 6A were collected, along with land use and zoning information for all of the towns along the corridor. All inventories corresponded to Massachusetts Highway Department mile markers located along the corridor. This information was incorporated into the Cape Cod Commission's Geographic Information System (GIS) or an overlay map format as appropriate. Resulting maps included the following: historic resources, detailed scenic resources and scenic views, tree canopy, visual intrusions, overhead utilities, current and projected traffic volumes, accident information, bicycle facilities, and curb and sidewalk locations. Other existing data layers in the Commission's GIS system were updated and examined in combination with the above maps, including critical environmental features, protected open space, land use, and visitor attractions.

Problem Identification
Problem identification consisted of an analysis of existing gaps in current regulations, as well as potential conflicts between land uses, proposed transportation improvements and protection of the corridor's resources.

An analysis was conducted using overlay maps of inventory information, as well as by conducting meetings with town boards and the public. The analysis component identified potential alternatives to conventional transportation improvements which would have less impact on resources along the roadway. It also acknowledged land use/zoning opportunities and constraints, as well as existing resource protection methods.

Public Participation
Public input was gathered through two public meetings on the project, one in June, 1993 and also in January, 1994, as well as numerous meetings with specific town boards and community groups throughout preparation of the Plan to discuss the project as a whole or specific elements of the study. In addition, written and oral comments were solicited through local and regional newspaper articles, resulting in substantial input from individuals. The June, 1993 meeting was attended by approximately 80 people and identified concerns regarding key resources along the roadway as well as specific issues of concern in each town. Elements that contribute to or detract from the roadway character were identified along with transportation problems and measures to improve the road for bicycles and pedestrians. The January, 1994 public meeting discussed conflict points identified in the analysis and sought public input on how to address conflicts between resource protection, land use/zoning and transportation issues. This meeting was attended by approximately 60 people. Detailed summaries of those ideas expressed in the public meetings can be found in the Appendices.

A Route 6A Advisory Committee, made up of representatives of each town in the study area, the Old King's Highway Historic District, a bikeways group, Mass Highway Department, Executive Office of Transportation and Construction, a Cape Cod Commission member, the Joint Transportation Committee, and Cape Cod Chamber of Commerce was formed in the Spring of 1994. The Committee was formed to help evaluate priority recommendations for the roadway expressed in the Corridor Management Plan. This Committee reinforced the need to address both safety and character preservation issues in the Corridor Management Plan. It also identified the need to develop performance standards for future development on the roadway as a priority recommendation. The Advisory Committee will continue to direct the Scenic Byways Study in its future phases.

Recommendations
Recommendations for each section of the study were developed and listed in order of priority. Recommendations range from revisions to zoning bylaws and subdivision regulations to reduce traffic generation and address character and design issues, making design improvements and reducing visual intrusions along the corridor, development of an access management plan for Route 6A, evaluating methods to improve bicycle accessibility and safety, and development of alternate

modes of transportation. All of the recommendations consider constraints posed by critical resources, current land use and zoning. Some recommendations require approval or action at various levels of government. All require foresight and cooperation between the various agencies which have different roles and responsibilities for the protection of the Route 6A scenic byway.

II. HISTORIC, SCENIC AND ENVIRONMENTAL RESOURCES

A. ENVIRONMENTAL FEATURES

1. Introduction
2. Existing Conditions/Problem Identification
    a. Highest Protection: ACECs and Rare Species Habitat
    b. Medium Protection: Wetlands and Waterbodies
    c. Least Protection: Zones of Contribution
    d. Watch Areas
    e. Not Sensitive
3. Recommendations

B. HISTORIC RESOURCES

1. Introduction
2. History of the Roadway
3. Existing Conditions
    Resource Inventory
        Settlement Patterns
        Historic Resources
4. Problem Identification
    Existing Resource Protections
    Current and Projected Threats
5. Recommendations

C. SCENIC RESOURCES

1. Introduction
2. Existing Conditions
    a. Major Scenic Views
    b. Detailed Scenic Resources
    c. Tree Canopy
    d. Features Detracting from Scenic Quality
        Overhead Utilities
        Visual Intrusions
3. Problem Identification
    a. Major Scenic Views
    b. Detailed Scenic Resources
    c. Tree Canopy
    d. Overhead Utilities
    e. Visual Intrusions
4. Recommendations

A. ENVIRONMENTAL FEATURES

1. INTRODUCTION

As Route 6A winds its way through the historic villages on the north side of Cape Cod, it allows travelers to experience a variety of environmental resources. In turn, these resources contribute to the scenic character of Route 6A by providing scenic views, recreational opportunities and wildlife habitat.

The goal of this section is to identify sensitive environmental resources that occur along the Route 6A corridor and to describe the level of protection afforded to these resources. To the extent that other sections of the Corridor Management Plan discuss possible improvements to the roadway, these protected resources act as constraints which must be considered during the planning process.

2. EXISTING CONDITIONS/PROBLEM IDENTIFICATION

Environmental resources along the Route 6A corridor were first compiled from several sources, including the Association for the Preservation of Cape Cod's *Critical Habitats Atlas*, and Geographic Information System (GIS) maps produced by the Natural Heritage and Endangered Species Program and the Cape Cod Commission. It is important to note that no comprehensive field study was conducted for the purpose of specifically delineating wetlands and identifying wildlife habitat along the roadway. The type and level of existing resource protections were then examined. This section did not attempt to recommend substantial changes to environmental regulations as existing protections were determined to adequately protect environmental resources.

Level of Resource Protection
Environmental resources along Route 6A were divided into five categories based on the level of protection afforded to resources found throughout the corridor. Areas with the highest level of protection include Areas of Critical Environmental Concern and Rare Species Habitat. These areas are protected by strict performance standards at the state level which would affect any roadway-related projects. Areas of lower protection, such as zones of contribution to public water supplies, are of equal significance. However, state and local requirements in these areas are less likely to affect any proposed improvements along Route 6A.

The Critical Environmental Features along Route 6A have been divided into five categories on the Critical Environmental Features Map as follows:

Route 6A Scenic Byways Program
Critical Environmental Features

Data Sources:

Basemap features: MassGIS and Cape Cod Commission GIS staff (Coastline, town boundary, ponds, and roads)

Wetlands: Combination of MacConnell * wetlands and Mass. DEP wetlands restriction maps.

* MacConnell landuse is described in an appendix to this report.

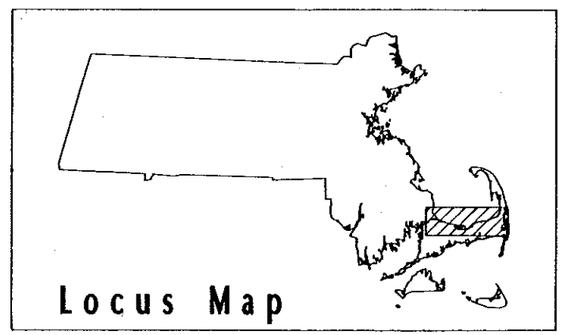
Area of Critical Environmental Concern (ACEC): Mass. CZM

Rare Species Habitats (Plant and Animal): Updated 1994. Based on the APCC Critical Habitats Atlas, 1990 and the Mass. Natural Heritage/Endangered Species Program 1990-1993 maps.

Public Supply Well Zones of Contribution: CCC and private firms

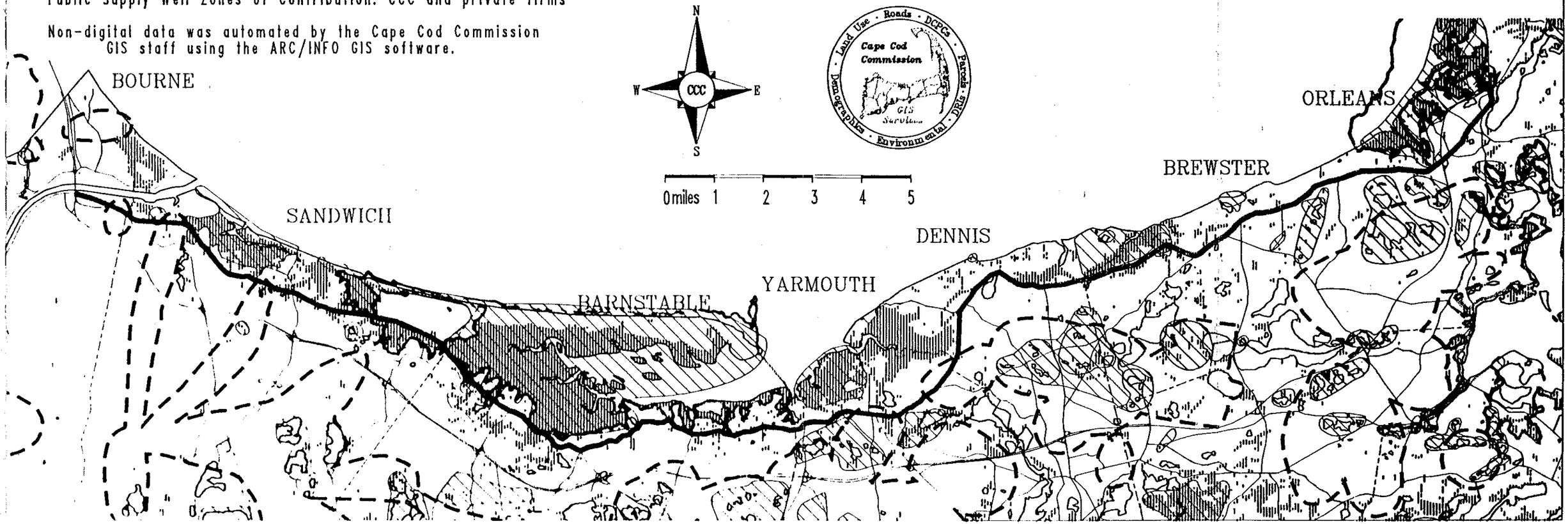
Non-digital data was automated by the Cape Cod Commission GIS staff using the ARC/INFO GIS software.

Plot file created on August 4, 1994



Route 6A
Area of Critical Environmental Concern (ACEC)
Zone of Contibution to Public Supply Well

Salt and Freshwater Wetland
Rare Plant and Wildlife Habitat + Priority Natural Communities (APCC + NHESP)



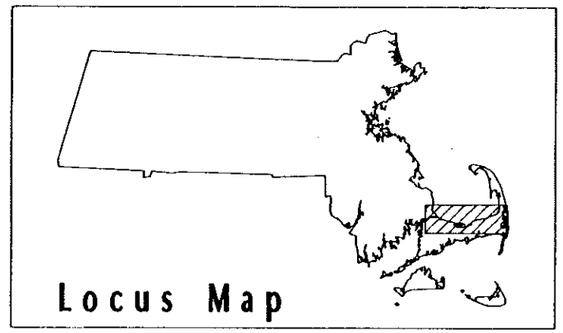
Route 6A Scenic Byways Program
Protected Open Space

DATA SOURCES AND OTHER INFORMATION:

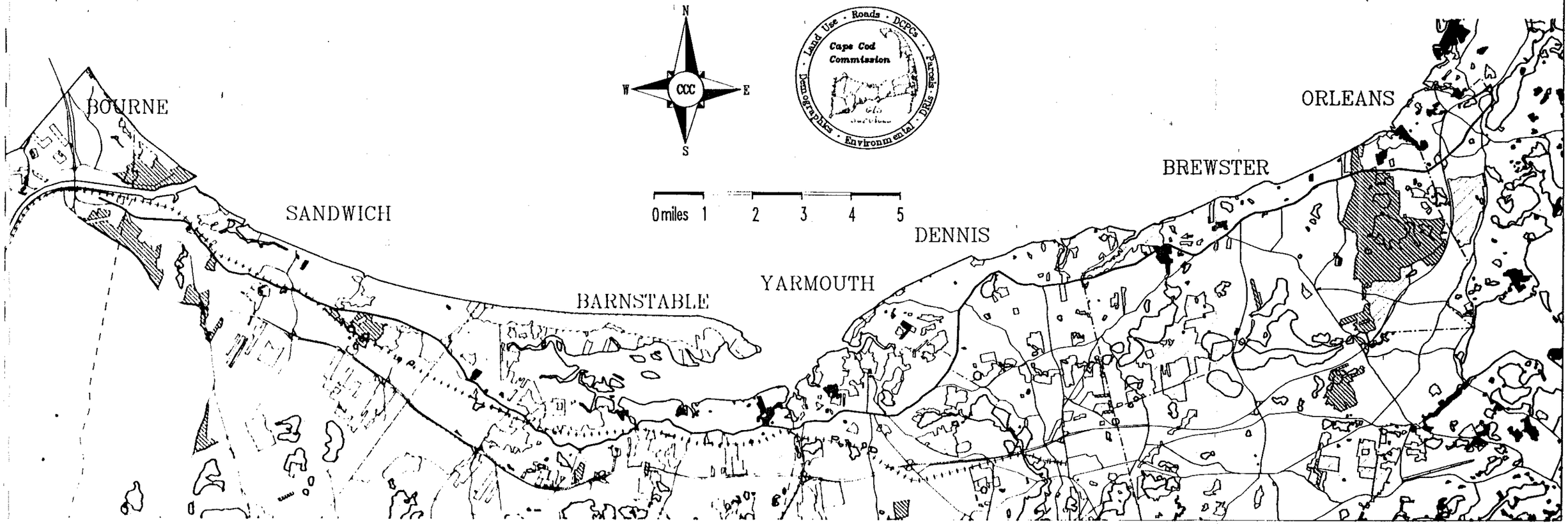
Protected Open Space: MassGIS, 1990

Basemap features: MassGIS, 1988, Includes ponds, major roads, railroads, coastline, town boundaries.

Plot file created on August 12, 1994



- Federal Government
- State Owned
- Town Owned
- Private Ownership



a. Highest Protection: *AREAS OF CRITICAL ENVIRONMENTAL CONCERN AND RARE SPECIES HABITAT*

AREAS OF CRITICAL ENVIRONMENTAL CONCERN

There are two Areas of Critical Environmental Concern (ACEC's) along the Route 6A corridor:

> *Sandy Neck/Barnstable Harbor ACEC* consists of 8850 acres along the north shore of Cape Cod in Sandwich and Barnstable. Several stretches of Route 6A between East Sandwich and the Yarmouth town line lie within or adjacent to the boundary of the ACEC. The boundary extends to the 10.5 elevation above mean sea level and encompasses thousands of acres of salt marsh and barrier beach with abundant wildlife. The marsh and dunes are feeding and nesting areas for the endangered diamondback terrapin. Several other rare species also reside here.
>
> *Inner Cape Cod Bay ACEC* consists of 2550 acres in Brewster, Orleans and Eastham along Cape Cod Bay. The boundary of the ACEC is adjacent to the Orleans-Eastham Rotary at the intersection of Route 6 and 6A. This area includes extensive salt marsh and shellfish beds. It also provides feeding and nesting habitat for the endangered diamondback terrapin and well as habitat for a variety of wildlife.

Existing Regulations

Massachusetts Environmental Protection Act. Areas of Critical Environmental Concern are areas containing concentrations of highly significant environmental resources that have been formally designated by the Secretary of Environmental Affairs. This designation directs state environmental agencies to take actions to preserve, restore and enhance the resources of an ACEC. For example, the MEPA regulations require MEPA review for projects in an ACEC at more sensitive thresholds than outside of the ACEC. For state agencies, MEPA requires an ENF "for any agency action necessitating physical alteration within an ACEC." A MEPA filing is also required for any state permits within an ACEC (curb cut permit, superseding order of conditions, etc.).

Wetlands Protection Act. The Wetlands Protection Act also contains high standards for projects within an ACEC. For projects affecting coastal wetlands, the Wetlands Protection Act regulations contain a performance standard of "no adverse impact" on the interests of the Act. A higher performance standard also applies to inland wetlands within an ACEC, generally prohibiting alteration of bordering vegetated wetland. Fill within wetlands is also more strictly regulated in ACEC's under the Chapter 91 program. Nearly all surface water bodies within ACEC's in Massachusetts have been designated as Outstanding Resource Waters (ORW's) under the Massachusetts Surface Water Quality Standards. In ACEC's, stringent

antidegradation standards exist. Existing discharges to these waters must be discontinued or must provide the highest and best method of treatment available. New or increased discharges are prohibited unless a variance is obtained.

RARE SPECIES HABITAT

There are more than half a dozen areas where Route 6A lies in or adjacent to rare species habitat. Rare species whose habitat lies along Route 6A include the endangered diamondback terrapin, least tern and others.

Existing Regulations

Massachusetts has a patchwork of laws and regulations providing protection to rare species. Three categories of rare species are defined: endangered (in danger of extinction); threatened (likely to become endangered) or of special concern (declining or occurring in small numbers or with a highly restricted distribution so that they are likely to become threatened). The principal protections for rare species include the Massachusetts Wetlands Protection Act, Massachusetts Endangered Species Act and the Barnstable County Regional Policy Plan.

Wetlands Protection Act (Ch. 131, s. 40) protects the habitat of rare wetland wildlife. These areas are shown on Estimated Habitat Maps published annually by the Natural Heritage and Endangered Species Program. The Estimated Habitat areas are also shown on the Route 6A maps. Anyone proposing to do work within one of these Estimated Habitat Areas must prepare a wildlife habitat assessment and demonstrate that the proposed work will not cause any temporary or permanent damage to the rare species habitat characteristics of the area. The Natural Heritage and Endangered Species Program makes this determination and permits are issued by the town conservation commissions. The Wetland Protection Act does not protect plant species or rare species not contained in wetlands subject to the jurisdiction of the Act.

Massachusetts Endangered Species Act (Ch. 131A) protects state-designated significant habitat areas for endangered and threatened species. Alteration of such areas generally requires a permit from the Division of Fisheries and Wildlife. The Act applies to habitat of vertebrates, invertebrates and plants. Although regulations implementing the Act have been developed, no significant habitat areas have yet been designated on Cape Cod.

Regional Policy Plan. The Cape Cod Commission's Regional Policy Plan contains as a goal "to prevent loss or degradation of critical wildlife and plant habitat..." Rare species habitat areas are designated as "Critical Wildlife and Plant Habitat" by the Regional Policy Plan and required performance standards for developments in these areas include review by the Natural Heritage and Endangered Species Program, development of management plans (where necessary) and limitations on clearing of vegetation.

b. Medium Protection: WETLANDS AND WATERBODIES

Numerous wetlands of varying types and sizes are found along Route 6A. Many of these are in close proximity to the roadway and/or serve as receiving waters for drainage from the roadway. There are protections for wetlands at the state, regional and local levels. These are summarized below:

Existing Regulations

Wetlands Restriction Acts. Many of Cape Cod's inland and coastal wetlands are subject to protective deed restrictions placed under the Coastal and Inland Wetland Restriction Acts. These restrictions regulate, restrict or prohibit certain activities or uses in restricted wetlands. Most of the towns along Route 6A had wetlands restricted in 1980 and 1981. If any improvements to Route 6A are proposed that could alter restricted wetlands, the language of these restrictions will need to be examined to determine whether they will affect such improvements.

Wetlands Protection Act. The Wetlands Protection Act regulates any work within a coastal or inland wetland resource area and any work within a 100' buffer zone that is likely to affect a wetland as defined in the Act. The Act is administered by local conservation commissions through a permit process which requires a public hearing and allows conditions to be placed on proposed work. The Act generally limits the amount of bordering vegetated wetland that can be filled to 5000 square feet except in certain circumstances. One of these exceptions is for the "maintenance and improvement of existing public roadways, but limited to less than a single lane, adding shoulders, correcting substandard intersections, and improving inadequate drainage systems." An unlimited amount of alteration <u>may</u> be permitted by the local conservation commission under the Wetlands Protection Act for such purposes as long as it does not have an adverse impact on rare species habitat. The commission may require mitigation for any permitted alteration. In addition, some bridge and approach road work (repair, reconstruction, demolition, replacement) conducted by the Massachusetts Highway Department is regularly exempted from the Act under Transportation Bond language.

Local Wetlands Bylaws. Most Cape communities have passed local wetlands bylaws that regulate activities within wetlands more stringently than the Wetlands Protection Act and/or zoning bylaws that establish construction setbacks to wetlands. All of the towns along Route 6A have such bylaws. Most bylaws contain a broader definition of wetlands than is contained in state law. These bylaws and their associated regulations should be consulted prior to considering wetland alteration for improvements along Route 6A since they may not contain the same

Wetland Bylaw Provision	Bourne	Sandwich	Barnstable	Yarmouth	Dennis	Brewster	Orleans
Broader definition than state law	YES	YES	YES	YES	YES	YES	YES
Wetland fill permitted (maximum amount)	YES	YES (2500 sq. ft.)	YES (2500 sq. ft.)	NO	NO	NO	NO
Required buffer setback from work (in feet)	None found	None found	50'	35'	35'	50' (coastal areas)	None found
Roadway Exemption	NO	NO	NO	NO	NO	NO	NO

Table E-1: Wetland Bylaw Provisions in Route 6A Towns

exemptions as the state law and often regulate additional areas that are not protected under state law. Table E-1 summarizes the provision in local bylaw and regulations most likely to affect work on Route 6A. None of the bylaws contain limited project provisions for roadway widening mirroring those in the state Act.

Regional Policy Plan. The Regional Policy Plan contains a broader definition of vegetated wetlands than state law and prohibits alteration of such wetlands as well as requiring a 100' undisturbed buffer. Exceptions are made only for water dependent uses, pedestrian paths and vista pruning. These policies currently apply only to projects reviewed by the Cape Cod Commission as Developments of Regional Impact, but will ultimately be incorporated into Local Comprehensive Plans and town development regulations.

c. Least Protection: *ZONES OF CONTRIBUTION*

There are several Zones of Contribution to public water supplies which intersect the Route 6A corridor. These are located in Sandwich and Yarmouth. In several cases, the wells are located close to Route 6A.

Existing Regulations
Each of the towns has zoning overlay districts that provide a measure of protection for these zones of contribution. In these areas particular attention should be paid to drainage and drainage improvements. The "Least Protection" rating for this category should not be taken to mean that these areas are not vulnerable to impacts, but that there are relatively few restrictions on Route 6A-related roadwork when compared with the areas above.

d. Watch Areas: ***Areas where one or more Critical Environmental Features are Present but may be sufficiently distant from the road so as to be outside the immediate area affected by any improvements.***

These are areas where critical environmental features, such as wetlands or rare species habitat are located near, but not immediately adjacent to the Route 6A corridor on the GIS maps. In these areas it will be particularly important to assess field conditions prior to planning any improvements or other activities. Based on such assessment, the extent to which state, regional and local regulations apply can be determined.

e. Not Sensitive: *No Critical Environmental Features*

These are areas where the GIS maps do not indicate the presence of any critical environmental features immediately adjacent to roadways. However, in all cases, a final determination, particularly with regard to the presence or absence of wetlands,

should be based on a site visit since these features may not appear on regional maps.

3. RECOMMENDATIONS

The following corridor-wide recommendations are designed to enhance the protection of sensitive environmental resources which contribute to the character of Route 6A:

Upgrade local wetlands bylaws
Towns should upgrade local wetlands bylaws where needed to increase protection for wetland resources. The Cape Cod Commission's Regional Policy Plan recommends that towns adopt local wetland bylaws or ordinances that provide for the following: protection of vernal pools and isolated wetlands, a policy of no alteration/replication of wetlands for both public and private applicants, expansion of jurisdiction beyond 100 feet where appropriate, improved enforcement authority, and the ability to hire consultants to review applications at the applicant's expense.

Complete survey of needed drainage improvements
A survey should be conducted of Route 6A to identify locations where improvements to drainage are needed to eliminate or mitigate direct discharges to wetlands and ponds.

Conduct detailed field survey
A detailed field survey of site conditions including wetlands, waterbodies and wildlife habitat should be conducted prior to designing any improvements to Route 6A.

Maintain vegetated buffers
Vegetated buffers should be maintained along the roadway wherever possible to protect sensitive environmental resources by reducing noise and mitigating runoff. It should be noted, however, that such buffers may not be desirable where they would interfere with scenic views that may enhance the character of Route 6A (see Scenic Resources section).

B. HISTORIC RESOURCES

1. INTRODUCTION

Route 6A maintains an enormous amount of integrity to its historical development patterns, and the corridor contains hundreds of historic structures. Numerous National Register properties and areas determined eligible for listing on the National Register are located within the Route 6A corridor. In addition, the corridor contains concentrations of historic resources and individual structures which may be eligible for National Register District or local historic district status. Most of the corridor is included in the Old Kings Highway Regional Historic District, created in 1973, which encompasses six towns. The eastern and western ends of the roadway, however, are outside of the regional historic district and are not protected by any other local historic district regulation.

Development pressures and infrastructure improvements pose a threat to the character of this historic and scenic corridor in their potential to alter the scale of the roadway and to introduce to it elements which are inconsistent with the distinct character of the district. Many resources which contribute to the historic character of the corridor are not currently identified and thus receive no protection. In order to maintain the corridor's character and significance as it developes over time, historic resources must be recognized and alternatives must be identified to protect and preserve these resources from unnecessary change.

Preservation of the specific historic resources along the corridor as well as their overall context are important goals of the Route 6A Scenic Byways Program. In addition, the study should increase public awareness of the significance of these historic structures and districts, thereby working to promote their preservation. Perhaps the primary goal is to establish performance standards for roadway improvements and new development to preserve the roadway's character. In order to achieve these goals, objectives of the study include: identification of the variety of historic resources in the corridor; establishment of the corridor's historic context and the significance of its historic resources; identification of means to further protect the various historic resource types along the corridor; and development of performance standards which address the conflicts between increased development, transportation improvements and historic character.

2. HISTORY OF THE ROADWAY

Route 6A/The Old King's Highway is believed to have begun as a Native American trail known as the Cape Cod Bay Trail, which stretched from Plymouth to Provincetown. Its approximate layout through the study area, at the time of

Route 6A Scenic Byways Program
Designated Historic Areas

Plot file created on August 4, 1994

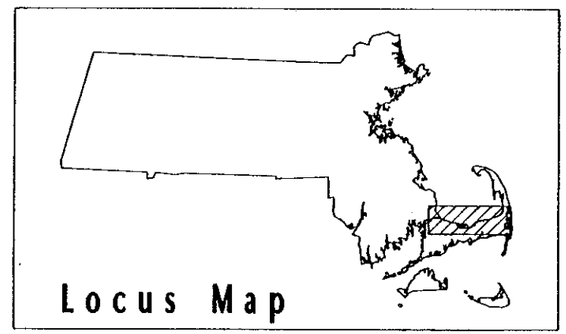
Data Sources:

Historic Resources: Inventoried by CCC staff during the Route 6A Scenic Byways Program, 1994

National and State Historic Sites, Districts and Regions: Massachusetts Historic Commission

Basemap features: MassGIS, includes ponds, major roads, coastline, town boundaries.

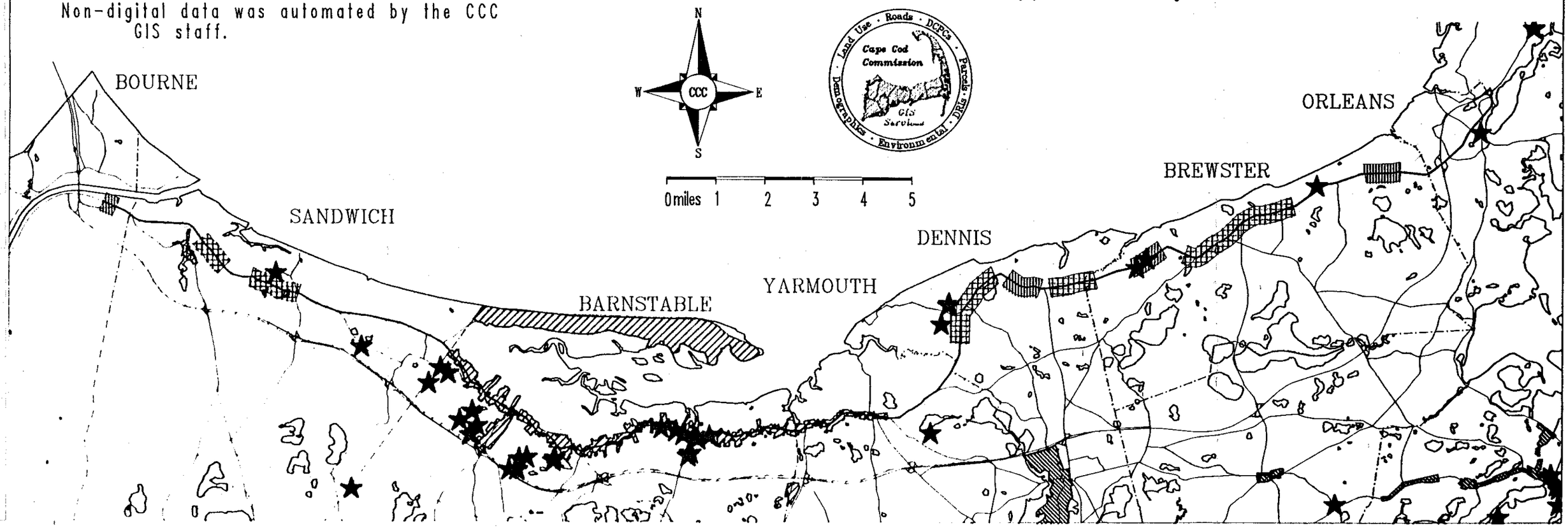
Non-digital data was automated by the CCC GIS staff.



- National Register Historic District
- Local Historic District
- Old Kings Highway Regional Historic District

Specific Route 6A Historic Resources:
(1000 feet back from edge of Route 6A)

- Eligible for National Register
- Areas of Moderate Historic Integrity
- ★ National Register Individual Site



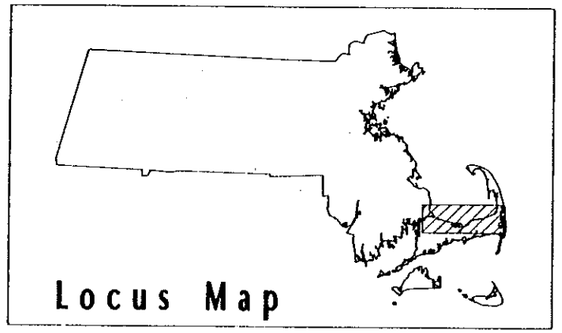
Route 6A Scenic Byways Program
Original Route of Old King's Highway

Data Sources:

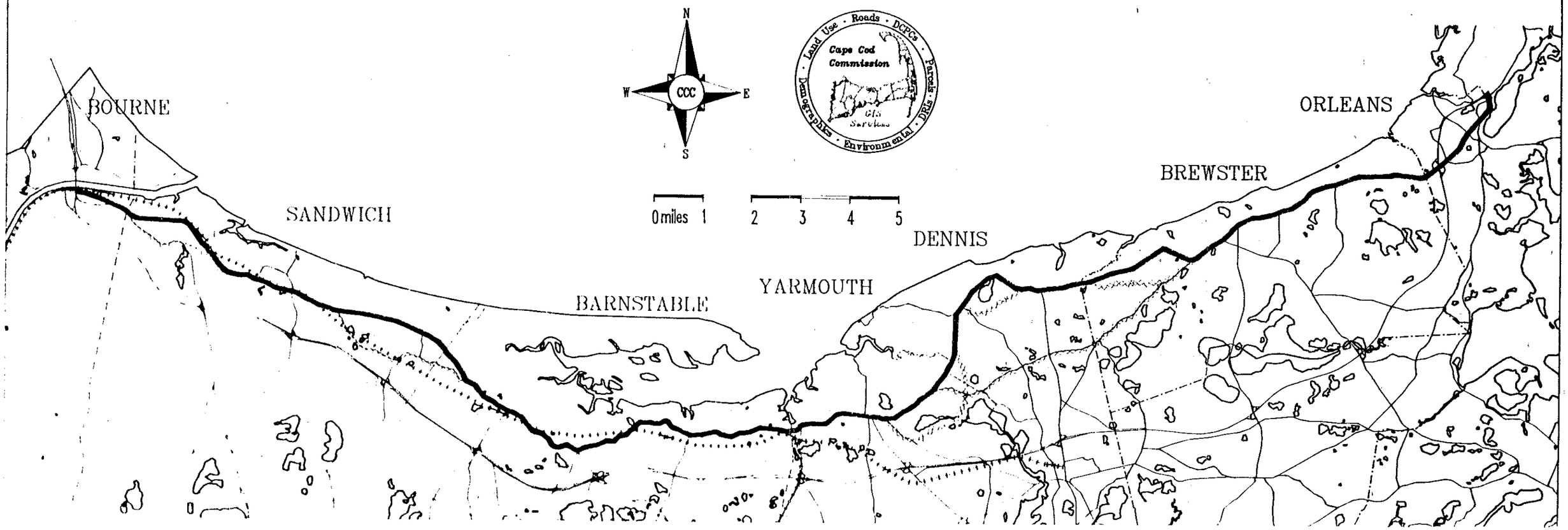
Basemap features: MassGIS, (digital), 1988, from 1:100,000 scale sources. Includes coastline and town boundary.

Non-digital data was automated by the Cape Cod Commission GIS staff using Arc/Info software.

Plot file created on August 12, 1994



Route 6A
Early Route of King's Highway
Other major routes



European contact, is identified in the Massachusetts Historical Commission's *Historic and Archaeological Resources of Cape Cod and the Islands*, published in 1987. "The... trail, which ran from Orleans west along the Cape Cod Bay shoreline, was probably the major regional trail for the mid-Cape area. This trail likely extended from the Town Cove or Namskaket area of Orleans westward along the Cape Cod Bay coastline through the Stoney Brook area of Brewster, Dennis, and along the southern extreme of Barnstable Harbor in the Yarmouth, Barnstable, and Sandwich areas (Mattacheese). The trail then passed through the Shawme and Scusset areas of Sandwich, and off the Cape northerly to the Plymouth area." (p. 58) As settlement increased on the Cape, native trails were commonly upgraded to cartpaths and roadways. The roadway which gradually developed through the county likely followed much of this established path.

There has been much speculation over the development of the Old Kings Highway and the origin of its name. Henry David Thoreau, in his visit to the outer Cape in 1849, heard the road's history from the Wellfleet Oysterman.

> "'King George the Third,' said he, 'laid out a road four rods wide and straight the whole length of the Cape,' but where it was now he could not tell." (*Cape Cod*, p. 89)

A more definitive history of the road's name begins with primary documents, to weed out information which may have evolved erroneously over the centuries. The Plymouth town records of 19 December 1698 state: "We whose names are under written being chosen by the Town of Plymouth and sworn in the year of our Lord 1684 to lay out the King's Highway throughout our township have laid them out as followeth....(a description through Plymouth follows)." Plymouth thus sworn to establish a road on which the colony could carry out the King's business, the same designation was likely given to the roadway as it extended to Barnstable and Yarmouth, the Cape villages which Plymouth had spawned. A description of the road as it crosses Barnstable is found in the Barnstable town records of 1686, indicating a likelihood that this section of the road was laid in response to a similar directive to the colonies. The description begins:

> "The county road or highway laid out by the jury in March and April 1686 leading through Barnstable is as followeth: Beginning at the bounds between Sandwich and Barnstable, running for the most part easterly at a rock lying in Ralph Jones' his fence on the north side of the said way, and a heap of stones on the south side of said way, from thence to a red oak marked tree on the south side of said way upon the land that was Capt. Fullers...."

Twenty-three years later, records from the town of Eastham describe a further continuation of the Kings Highway: "June the 19th 1721 it was voted and granted

and allowed by the town then met, that the way which now goes through said Town of Eastham from the bounds of Harwich... to the bound of Truro on the north part of the Town of Eastham... is and shall be allowed to be King's Highway and common road through the Town of Eastham... this aid way to be forty feet wide the whole length through the Town from the south to the north." This serves to establish that the name "King's Highway" was in use during the 17th and 18th centuries on Cape Cod, though the origin of the name is not completely clear. It must be remembered that the King of England remained the monarch to colonists at this time and that actions were still carried out in his name.

The character of the "Kings Highway" was described by Timothy Dwight in his travels at the turn of the 19th century. Many of his comments relate to the thinness of the soil and its lack of richness, likey assumed because of the scarcity of trees at that time. He described the stretch from Sandwich to Barnstable as "hilly and bleak for lack of trees" with the road worn through the soil to deep and heavy yellow sand, making for laborious travel over the many hills. In Barnstable, he noted the many "superior" houses located along the roadway. On the distance from Barnstable to Yarmouth, he again described the road as "deep and heavy", noting the many Cape Cod houses in Yarmouth. In Dennis, he remarked on seeing few houses, noting that "a considerable part of the road from Yarmouth to Orleans... is hilly and unpleasant." He stated that forests in Dennis extended along the road for three miles in one place, with few tidy houses and views of the bay. "On the northern shore," he states, "the soil is said to be better." He also describes Scargo Hill as the highest land in the County of Barnstable. On traveling through Brewster (still part of Harwich at that time), he stated that it "presents a handsomer aspect than any other town after Barnstable." He leaves little description of Orleans. (pp. 76-86, *Travels in New England and New York*, Vol. 3, 1822.)

Apparently, the name Kings Highway was not used regularly through the centuries, for an interesting conflict arose when an act of the General Court in 1920 officially designated the route "the Kings Highway." The *History of Barnstable County* and newpaper articles from the period reveal that some local residents were not happy with this name since the signing of the Declaration of Independence. Orleans and other towns adopted resolutions stating their concern, and in 1937 the Governor signed a law designating the road "the Grand Army of the Republic Highway." With the creation of the Old Kings Highway Regional Historic District in 1973, the name Kings Highway became familiar again.

3. EXISTING CONDITIONS

Resource Inventory

The historic resource inventory includes a written outline of historical development patterns along the roadway in each town, followed by a discussion of

existing historic districts and resources in each area. Included in the discussion is a description of the original route of the Old Kings Highway, noting where it deviated from the current Route 6A corridor. A map of the Original Route of Old Kings Highway identifies the early paths of the roadway.

A map of Designated Historic Areas indicates the location of local, regional, and National Register historic districts within the Route 6A corridor. It also identifies areas determined eligible for listing on the National Register, and areas with moderate historic integrity which may be eligible for either National Register or local historic district status.

Bourne

Settlement Patterns

The town of Bourne was incorporated from Sandwich in 1884. While still part of Sandwich in the 16th and early 17th century, the Cape Cod Bay Trail passed through the town, crossing Scusset Creek (now the Cape Cod Canal) between Williston Road and Pleasant Street, and continuing east along Pleasant Street and Sandwich Road to the town line. As settlements developed to the east in Sandwich and Barnstable in 1630s, this trail became more significant and more heavily used. By the early 19th century, a small hamlet had developed on the roadway at Scusset (now Sagamore) where an inn was located. The settlement continued to develop along the road in the mid-19th century, also stimulated by its location on the railroad. By the late 1800s, industrial development was strong in Sagamore with the Keith Freight Car Manufacturing Company, begun as a blacksmith shop in 1826. Factory-owned worker housing made up much of the new residential development along the roadway. The car works was the hub of Sagamore for more than a century, with a car manufacturing building over a mile long. The company closed in 1930 and the building was demolished for the canal construction in the 1930s, along with other parts of Sagamore. By 1940, after the canal and bridges were constructed, the Route 6 bypass was completed through the town.

Historic Resources

Bourne is not part of the Old Kings Highway Regional Historic District and has not completed a survey of its historic resources, yet historical information is available to document the village of Sagamore's industrial development. An area of moderate historic integrity is centered around the Keith Mansion, surrounding historic homes, and the industrial housing located near the Sagamore bridge. This area may be eligible for nomination as an historic district because of its architectural integrity and industrial history, including the impact of the Cape Cod Canal on the village.

The canal also had an impact on the history of Bourne Village, located south of the Bourne Bridge rotary. Though not located along the designated Route 6A, Bourne Village is linked to the study area physically by Sandwich Road. Bourne Village became the town's civic focus after separation from Sandwich in 1884 and

has significant historic integrity. The area may be eligible for nomination as an historic district, and one structure, the Briggs-McDermott House, is currently listed on the National Register.

Sandwich

Settlement Patterns

Sandwich was established in 1638, near the intersection of two regional Native American trails leading east-west and north-south past Shawme Pond. The east-west Cape Cod Bay route served as the primary local roadway, following what is now Main Street, Route 6A, and Old County Road. The trail was improved in the 17th century as settlement spread along its length. A mid-17th century Quaker settlement was located at Spring Hill on the corridor, while agricultural settlement in the 17th and 18th centuries concentrated along the northern portion of the corridor. Throughout most of the 19th century, the Boston and Sandwich Glass Company was an important influence in the town. Jarves Village developed north of the roadway with glass-worker housing spreading southward to the road, while agricultural development continued to concentrate along the road elsewhere in the town. By the mid-1920s, the east-west roadway was designated Interstate Route 6. A bypass was built north of Sandwich Village in the mid-1930s and another was later constructed through the agricultural lands north of Old County Road.

Historic Resources

The portion of Sandwich in the study corridor is located within the Old Kings Highway Regional Historic District. A National Register Historic District (dating to 1975) is located in the town center, just off the Route 6A corridor and encompassing Main Street, the original east-west route of the roadway. Sandwich recently completed an inventory of historic resources and recommended several nominations to the National Register of Historic Places within the Route 6A corridor. Route 6A from Jarves Street to Charles Street was determined eligible as part of a Jarvesville Historic District. The area of Route 6A encompassed by Spring Hill Road was also determined eligible as the Spring Hill Historic District. The Sandwich Fish Hatchery and eight other buildings on Route 6A were determined individually eligible for the National Register: #379 - Holway House, c1789 and Nye House ell, c1700; #361 - Shady Pines Cabins, c1940; #390 - Wing Holway House, c1742; #404 - East Sandwich Railroad Station, c1885; #405 - Thomas Nye House, c1764 (all between Quaker Meetinghouse Road and Old County Road); #432 - Thomas Treeman House, c1800; #594 - Commercial property, c1930; #663 - Solomon Hoxie House, c1705 (all between Ploughed Neck Road and the Barnstable town line).

Barnstable

Settlement Patterns

Barnstable was incorporated in 1639. Town records indicate the roadway now designated Route 6A was officially laid out in Barnstable in 1686. Prior to then, the route was known as the Cape Cod Bay Trail. Scorton Hill, Sandy Neck and

Cummaquid were inhabited by local Native American tribes such as the Mattakesset when the first settlers arrived. Early settlers were attracted to the area because of available resources and developed large farms and cranberry operations in the West Barnstable area. The land north of the roadway, from Hinckley Pond to the courthouse area, comprised houselots of 6 to 12 acres each, while the land south of the highway was common land used for planting crops and wood lots, not divided until c1703. Many of the house lots in the town were occupied by 1639 or soon after. During the mid to late 1800s, several homes in the village were owned by sea captains because of the proximity to Barnstable Harbor and the shipyards. Both business and social activities were centered around the County Courthouses built within what is now Barnstable Village. Public houses grew up around the courthouses, and the first jails for the county were also located in this area. In 1854, the railroad arrived in Barnstable and the village depot and express office were built to serve the needs of a growing community. With the exception of the far western portion of Route 6A in Barnstable, the route follows approximately the same path as when it was first laid out. High Street, connecting to Old County Road in Sandwich, is likely the original route of the roadway.

Historic Resources

The town of Barnstable has completed a survey of historic resources along Route 6A. In addition to being included in the Old Kings Highway District, all structures along Route 6A in Barnstable are included in National Register Historic Districts. 459 properties have been inventoried and included in ten districts from the Sandwich town line to the Yarmouth town line. The inventory includes sites of early structures, land purchases, wharf locations, shipyards, salt works and burial grounds, creating a full picture of the historical development of the area. In addition to the inventory of historic resources, the Barnstable Draft Local Comprehensive Plan describes unique areas of growth and development. Those areas described which are along Route 6A are: Scorton Hill, West Barnstable Village Center, Proctor's Crossing, Pond Village, Lothrop Hill, Barnstable Village Center, Barnstable Harbor, Cobb's Hill, Dimmock's Great Lot and Cummaquid. The Comprehensive Plan identifies Route 6A as a Scenic Corridor for its entire length, and identifies Sandy Neck and the Great Marshes as a scenic area visible from Route 6A. Barnstable's section of the corridor contains one of the highest concentrations of historic resources in the study area.

Yarmouth

Settlement Patterns

Yarmouth was founded in 1639, with agricultural settlements concentrated on the north side of town throughout the 17th and 18th centuries. The town evolved from a farming community to one dependent on maritime industries and the natural harbor to the North. In the early 1800s, Yarmouthport and Yarmouth Village, both located along the corridor, were the commercial and civic focus of the town. The railroad's terminus in Yarmouthport from 1854 to 1863 further

stimulated local development. As the harbor began to fill in, commercial shipping left the area and maritime industry stagnated, leaving behind the business section of Yarmouthport. A village improvement society was established in the 1840s under the leadership of Amos Otis. Under his direction, a mile of elm saplings was planted on either side of Route 6A (Hallet Street) in Yarmouth Port (Donald Wood, *Cape Cod: A Guide*). The original route of the roadway likely followed the current route in the western portion of the town, branching southeast at Weir Road and leading to a settlement south of Mill Pond and north of Follins Pond. The road may then have connected to the so-called Setucket route laid out through Dennis and Brewster in 1686, forming a bypass of the sandy, more coastal route to Dennis.

Historic Resources

The Route 6A corridor in Yarmouth is included in the Old Kings Highway District. In addition, a National Register Historic District was established in 1987 from the Barnstable town line to White's Brook, comprising 309 structures. The structures date to the 17th, 18th and 19th centuries and convey the evolution of the town. The nomination also notes that Elm Trees were a major feature of Route 6A in Yarmouth for several generations. The western portion of Yarmouth contains one of the highest concentrations of historic resources in the study area. Few intrusions exist within the district boundaries, thus having a minimal effect on the integrity of the area. The eastern portion of Route 6A in Yarmouth contains limited historic integrity, possibly because it does not follow the primary path of the historic roadway.

Dennis

Settlement Patterns

Dennis separated from Yarmouth in 1793. The town's early development was primarily agricultural, and was spread sparsely through the town's northern region. Native American settlements in Dennis had some influence on the layout of the early colonial roadways. The coastal route originally passed south of Scargo Lake, possibly along Scargo Hill Road, because the area north of the lake was held by Native Americans until circa 1700. The laying out of Setucket Road in 1686 also influenced the town's development. Setucket Road passed through Dennis south of the current Route 6A corridor, bypassing the village of Dennis and the deep, sandy soil of the northern coastal route which made travel difficult; likely reconnecting with the coastal route in what is now Brewster. Shipbuilding and salt manufacture became important in the 18th century, increasing settlement significantly. Dennis was the only town in the region to engage in large-scale shipping.

Historic Resources

The Route 6A corridor in Dennis is included in the Old Kings Highway District. Though Dennis does not currently have any National Register Districts along the corridor, several areas are eligible for nomination. The Dennis Historical Commission has surveyed the buildings along Route 6A and considered creating a

National Register District stretching along the entire length of the roadway. The area from South Yarmouth Road to the eastern end of Scargo Lake, including part of the 18th century militia training ground as Old Bass River Road and New Boston Road, and the area from Route 134 to the Brewster Town line appear eligible as National Register Districts because of their high integrity. The stretch from the eastern end of Scargo Lake to Route 134 has moderate integrity, with few structures. The view to Sesuit Harbor over town conservation land in Dennis is considered historically significant because Sesuit Harbor was the only bayside shipyard on Cape Cod where Clipper ships were built. The area of Route 6A north of Scargo Lake is particularly archaeologically sensitive because of the extent of the Native American occupation in that area.

Brewster

Settlement Patterns

Native settlement by the Sauguatucketts was concentrated in what is now northwest Brewster. The first permanent colonial settlement was established nearby c1650. Brewster separated from Harwich in 1803 with a small population devoted primarily to agriculture. By the early 1800s, mercantile development and salt manufacture fueled development along the roadway corridor, where civic and religeous activities were focused. Large summer estates were developed along the eastern part of the corridor at the turn of the 20th century. The original path of the Old Kings Highway through Brewster followed Stoney Brook Road and Setucket Road, avoiding the marshes associated with Quivett Creek and Stoney Brook. The portion of Route 6A which bypasses this section dates to circa 1850. The intersection of Stony Brook Road and Setucket Road is likely where the alternate Setucket route intersected with the "Kings Highway."

Historic Resources

The town of Brewster's Route 6A corridor is within the Old Kings Highway District. In addition, the town recently conducted a survey of the Route 6A corridor and determined an area which is eligible for listing on the National Register. This area is identified approximately from Doran Drive to Foster Road and possesses high integrity of location, design, setting, materials, workmanship, feeling, and association. A National Register Historic District nomination is currently being prepared. The Ocean Edge Resort/Nickerson Mansion is individually listed on the National Register. Two other areas along the corridor in Brewster possess moderate integrity and could be considered for local historic district nomination. These areas stretch from A. Pierce Newcomb Road to Stoney Brook, and from Linnel Landing Road to Mitchell Road, defining the area protected by Nickerson State Park and containing limited development.

Orleans

Settlement Patterns

Orleans separated from the town of Eastham in 1797. The earliest colonial

settlement in the area began c1642 in the Skaket Creek area west of the Route 6A corridor. Settlement remained dispersed until the early 1800s, when a maritime focus developed at Rock Harbor, west of the corridor, and civic and religious activities focused south of Town Cove area. Extension of the railroad to this area in 1865 sparked commercial growth in the vicinity. In the early 1900s, summer resort development along Pleasant Bay spurred commercial growth along the previously undeveloped Route 6A corridor, significantly changing its character.

Historic Resources

The town of Orleans segment of Route 6A is largely outside of the Old Kings Highway District. Several individual structures along the roadway in Orleans are eligible for listing on the National Register. In addition, others may be eligible as local landmarks. The lack of integrity of a district in this area is largely due to its significant development during the past few decades, as well as the fact that most early historic development in Orleans focused in areas east and west of the current Route 6A corridor.

4. PROBLEM IDENTIFICATION

A diversity of historic resources exists along the Route 6A corridor. Threats to the historic character of the corridor relate primarily to the loss of specific resources and the alteration of those aspects which define the historic context. The loss of individual structures, of elements which help to define historic districts, and of the larger environment which provides the setting for an historic district would all degrade the character and significance of the Route 6A corridor. Existing mechanisms provide limited protection for the diversity of historic resources, especially where these resources have not been adequately identified and inventoried.

Existing Resource Protections

Old Kings Highway Regional Historic District Regulations. These regulations provide for review of all new construction, alteration and demolition of historic structures within the Route 6A corridor in the towns of Sandwich, Barnstable, Yarmouth, Dennis, Brewster, and the westernmost portion of Orleans. Towns are given the power to identify areas which are exempt from this review because of limited historic integrity. Review is conducted by individual town historic district committees, who must issue a certificate of appropriateness before building permits can be issued for the project. A certificate of appropriateness or exemption must also be received for construction of signs, fences, decks, and stone walls.

National Register of Historic Places - Districts and Individual Properties. Listing on the National Register provides limited protection for historic properties through a review process described in Section 106 of the National Historic Preservation Act.

Section 106 provides for Massachusetts Historical Commission review of federally-funded projects which impact registered historic structures or resources. The review process requires identification of adverse impacts to registered properties and initiates a process of consultation with the Massachusetts Historical Commission and the Advisory Council on Historic Preservation to identify means of avoiding or mitigating adverse impacts.

State Register of Historic Places. Listing on the State Register of Historic Places provides limited protection through Chapter 254 of Massachusetts General Laws. Chapter 254 requires Massachusetts Historical Commission review of state-funded or permitted projects which will have an adverse impact on listed historic resources. The State Register is composed of all resources listed on the National Register of Historic Places, all resources officially determined eligible for listing on the National Register, all resources listed in regional or local historic districts, and all resources protected through preservation restrictions or similar restrictive covenants.

State Scenic Roadway Designation. This designation, given to Route 6A in June 1992 through an Act of the state legislature, provides for limited protection of existing stone walls and trees through Old Kings Highway Committee or Planning Board review of state actions which would result in demolition of these features.

Wetland Protection Bylaw (Barnstable, Brewster). These towns have bylaws which provide protection of historical and archaeological resources through Conservation Commission and Massachusetts Historical Commission review of activities within 100 feet of any surface water body, vegetated wetland, or unvegetated wetland.

Preservation Restrictions (Sandwich Town Hall, 130 Main St; Barnstable Old Jail, 3365 Main St; Crocker Tavern, 3095 Main St, Barnstable; U.S. Custom House, 3353 Main St, Barnstable; "Tom Sailor" Howes House, New Boston Road, Dennis). A preservation restriction has been placed on these historic properties by the owner and donated or sold to an agency which enforces the restriction. Preservation restrictions protect historic structures and sites through an agreement that no alterations to specified historic characteristics can be made without permission of the holder of the restriction.

Burial Grounds and Markers. Burial grounds are protected under Chapter 114 of the Masachusetts General Laws (MGL), requiring burial grounds over 100 years old to remain in that use, communities to maintain burial grounds without removing or destroying fences, tombs, monuments or other structures, and any person who willfully destroys or defaces any burial ground to be imprisoned for up to 5 years and fined $3,000. Section 73A of Chapter 272, MGL, also protects burial grounds by requiring that permits be issued by the Massachusetts Historical Commission before repairs are made to gravestones.

Agricultural Preservation Restriction (Barnstable County Farm). This is a voluntary program created by the Agricultural Preservation Restriction Act of 1977 and administered through the State Department of Food and Agriculture. It allows the state to compensate landowners willing to place a permanent restriction on their property prohibiting all non-farm development and allowing only agricultural uses. Owners of at least 5 acres of agricultural land which have produced at least $100 per acre gross sales annually and have been in farming for two consecutive years prior to application are eligible. A farmer may sell development rights to the Commonwealth and restricted farmland to another farmer as an alternative to selling the farm to a developer. A farmer may also sell development rights as a means of obtaining funds necessary to continue farming the land.

Current and Projected Threats

Limits to Existing Protections

Existing protection mechanisms leave several gaps in addressing the significant resources along the corridor. In Bourne and most of Orleans, Route 6A is not included in the Old Kings Highway Historic District, and these areas are also not protected by National Register or other historic district status. Remaining historic resources in these areas are threatened by alteration and demolition, and the character of the corridor itself is threatened by the limited protection at its eastern and westernmost gateways.

Barnstable and Brewster are the only towns along the corridor which provide protection to archaeological resources through a wetlands bylaw. Though the entire length of the corridor is known to have had significant Native American settlements, no other towns provide protection for these resources.

The State Scenic Roadway designation limits protection to trees and stone walls. It does not address other resources which may be located in close proximity to the roadway, or the potential impacts of roadway improvements which may not result in demolition of trees or stone walls.

Incomplete Inventories

Many historic resources which contribute significantly to the character of the corridor are not included on inventory forms because they are not conventional resource types. Without inclusion in the historic resource inventory, these resources receive limited protection. Over the past decade, an increasing awareness of the significance of unusual historic resources which represent the lives and livelihoods of a broad population has been recognized. However, existing historic research in the corridor has focused on historic buildings with limited research on other types of structures or historic landscapes. Historic landscapes, outbuildings, maritime structures, burial grounds, markers and stone walls have been identified in few communities, yet they are prevalent through much of the corridor and contribute significantly to its special character. [See Scenic Resources section, where

some of these attributes have been inventoried.]

An historic landscape inventory is needed to identify the existing resources in the corridor, and to add these resources to the State's cultural resource inventory. The National Register of Historic Places recognizes three categories of landscapes: designed historic landscapes, rural historic landscapes, and landscapes that are the historic setting of significant buildings, sites, and structures. Landscapes which provide the setting for significant structures are the most common type of historic landscape found along Route 6A. These landscapes should be identified in historic district nominations for their associative value in establishing the historic setting and boundaries of important properties. Historic open landscapes are also common along Route 6A, representing the agrarian history of the region. These landscapes should be inventoried individually and as parts of historic districts.

Conflicts with Transportation Improvements

AASHTO and current Highway Design Manual Standards are often inconsistent with character and context preservation in historic areas. Road improvements such as widening and road realignment can alter the human scale of roadways with rural qualities, or change the relationships between historic structures built close to the road edge. Road improvements through historic districts often involve the introduction of inconsistent elements such as steel guardrails, chain link fencing, and high curbing. The increasing number of highway department signs, including warning, directional and other signage such as adopt-a-highway signs, is also beginning to threaten the character of some areas.

While safety is important on all roadways, alternative means of achieving safe transportation should be considered where sensitive resources are present. ISTEA authorizes waivers of AASHTO standards in scenic and historic areas, provided that pubic safety is not jeopardized. Several states have already identified means of achieving this balance. Legislation in Connecticut, Arizona and Maine addresses the need to protect special roadway features. Virginia has established a Committee on Highway Safety and Design Standards in Scenic and Historic Areas to look at tort liability issues, federal restrictions on highway funds, and other matters affecting the state's ability to make road standards more sensitive to historic areas. Rhode Island has passed a law authorizing lower speed limits through historic districts to limit roadway improvements which would impact historic character. [Further information on these programs is found in Appendix B.] Programs such as these should be considered in Massachusetts to allow the defining characteristics of historic areas to be maintained.

Development in Previously Undeveloped Areas

Areas which have been used historically for agricultural purposes or other sparse forms of development are vulnerable to change because of increasing development pressures along the corridor. Open spaces between village centers, and

the vistas often associated with these open spaces, are character-defining elements in most towns and essential to the area's historic context. Development in these locations threatens to eliminate the disperse nature of historic development which is still visible along parts of the corridor. Where portions of these open areas are not already protected from development, means should be considered to acquire these lands or to guarantee their continued agricultural or undeveloped status.

The increasingly intensive use of buildable parcels on Route 6A, often including extensive alteration of historic buildings, is a threat to historic character in several areas. Parking and landscaping standards should be considered where historic structures are adapted to new uses or new structures are added to existing lots in order to maintain as much of the traditional character as possible. Subdivisions and other non-traditional development patterns can also change the context of historic districts. These develoments should be constructed in a way that maintains existing stands of vegetation with structures sited so that they are screened from the roadway.

Lack of Incentives to Preserve Resources

Though preservation restrictions and agricultural preservation restrictions are used on the corridor, these programs are not well understood by many property owners and thus are rarely used. As a means of balancing historic resource regulation, incentives to maintain and re-use historic resources should be encouraged. Information on these and other incentive programs which allow families to retain large historic properties more easily should be made available in order to encourage their use. In addition, tax or development incentives to preserve and re-use historic structures in character should be developed to encourage further preservation, especially in areas where demolition and alteration of historic structures is not regulated.

Consistency with Disability Requirements

The Americans with Disabilities Act of 1990 and the Massachusetts Architectural Access Board (AAB) are intended to provide physically handicapped persons full and free use of facilities. AAB requires all construction, reconstruction, alteration, remodeling and changes of use of public buildings or other facilities open to the public to meet accessibility guidelines. For registered historical buildings or districts, owned or protected by the government, the AAB may allow alternate accessibility. The provision of access to historic structures can usually be achieved successfully without substantially altering the character-defining features of the structure.

When sidewalks or curbs on streets are constructed, reconstructed or repaired, sidewalk ramps or tactile warning textures are required at each corner of each intersection, no less than 36 inches in width. Sidewalks on streets are required to be at least 48 inches wide, with their slope determined by the natural topography of the

ground, blending to a common level where they intersect with vehicular ways. Because of the lack of sidewalks in many sections of the Route 6A corridor, as well as the nature of many narrow dirt footpaths in other sections of the corridor, the provision of sidewalks which meet accessibility requirements may be more difficult to achieve without altering the historic character of the corridor. It appears that an accessible sidewalk on one side of the roadway may be sufficient to provide access in residential areas and where commercial and public buildings are primarily located on one side of the street. A narrow footpath of different material could likely be maintained on the other side of the street. In order to preserve the scale of historic districts, new sidewalks should be constructed to meet the required accessibility width, but not exceed it. Stone dust parking areas and walkways have met accessibility requirements in some Cape developments and should be considered for historic districts.

There is very little information on accessibility in the landscape and how to marry it with historic landscape/district concerns. The National Park Service's Cultural Resource Department has acknowledged that historic landscapes, like buildings, are composed of character-defining features and thus careful consideration must be given to avoiding alterations to those features. The Park Service policy states that "access modifications for disabled persons will be designed and installed to least affect the features of a property that contribute to its significance. Some impairment of some features will be accepted in providing access." Though these guidelines deal with historic landscapes rather than historic districts, they provide a basis in which to develop guidelines for historic districts. An important component of the process is to determine what areas of the historic district can be altered, and to what extent, without causing loss of significance or integrity.

Conclusion

Some threats may be traced to incomplete resource inventories, while others indicate that certain aspects of resource protection have received more attention than others. Overall, there is a need to recognize those resources of high or moderate historic integrity which are particularly sensitive to change, whether they are individual structures or districts. All resources listed or eligible for listing on the National Register or Historic Places must possess integrity of location, design, setting, materials, workmanship, feeling and association. Any substantial change in the context of these high integrity areas can impact both the character of the district, and the area's eligibility for listing. Areas of moderate integrity, which may not be eligible for National Register listing but are eligible as local or regional historic districts, retain enough historic intrgrity to clearly convey their development patterns and significance. Change in these areas may alter the road's character and limit the area's ability to convey its historical past. Within these sensitive districts, it is necessary to acknowledge and respect the significance of the many elements which define their character and context, including winding road patterns, narrow lanes, open landscapes and wooded areas.

5. RECOMMENDATIONS

The following are recommendations which will further the goals of preservation of historic structures and resources along the roadway, as well as preservation of the historic context.

Update Historic Resource Inventories
Expand and update historic resource surveys/inventories in the towns to include historic sites, landscapes, outbuildings, stone walls, workplaces, barns, stores, wharves, landscape features, etc. so these resources are recognized as character-defining elements of the roadway and then protected.

Architectural Review Throughout Corridor
Establish a means to protect against demolition and alteration of historic structures outside of existing historic district jurisdiction (Bourne, Orleans). Focus on addressing the major issues of massing, materials and siting of new development in these areas through zoning overlays, architectural review or other means.

Historic Resource Nomination for Roadway
Include the roadway itself in inventories of historic districts along the corridor to provide for Chapter 254 review by the Massachusetts Historical Commission if state or federally funded projects propose substantial changes to the roadway's defining features.

Alternative Roadway Standards
Work with the Massachusetts Highway Department and other agencies to develop state regulations which allow alternative road standards to protect historic and scenic resources while still meeting safety requirements. Alternatives to consider include limits on the use of guardrails, alternative guardrail materials, reduced or alternative signage options, and alternative speed limits.

Design Guidelines for Road Appurtenances
Establish consistent design guidelines for roadway appurtenances, including sidewalks, guardrails, drainage areas, etc. which will have limited impact on the character and resources of the roadway while meeting safety requirements. Road appurtenances should take their design themes from adjacent human development and use materials which are compatible with the corridor whenever possible.

Preservation Incentives Program
Establish a preservation incentives program to educate the public about preservation restrictions and other preservation tools to preserve important structures and landscapes along the corridor.

Identify Historic Landscapes
Identify large open space tracts, farmsteads, commons, etc. which define the character of the roadway and pursue preservation restrictions, conservation easements or land purchase options in these locations.

Historic Walking Tour Network
Create a network of walking tours to convey the history of the corridor to residents and visitors, and to teach people about the area's resources and the importance of their preservation.

Maintain Traditional Development Patterns
Develop design guidelines to ensure that new subdivisions follow traditional patterns which respect the character and capacity of Route 6A.

Encourage Adaptive Re-use Through Zoning
Eliminate inconsistencies between zoning bylaws and the goal of preserving historic resources along the corridor. Zoning bylaws should encourage maintenance of existing structures through adaptive re-use, and require site development which is consistent with the character of the area (ie. parking requirements, landscaping, setbacks, etc.).

Clarify Review of Non-Traditional Resources
Clarify the Old Kings Highway Regional Historic District statement of purpose to reflect the comprehensiveness of the historic resources along the roadway - landscapes, sites, structures, roadways.

Expand National Register Designations
Encourage further National Register district designation to provide additional protection of historic resources which could be impacted by state and federally-funded projects. Inventory the roadway itself and include it as a contributing element in the district.

Improve Scenic Road Database
Develop a site-specific inventory of those historic and aesthetic elements that are important to the road's character. Create an inventory of stone wall details, types of fencing, bridge designs, lighting, tree types and surrounding vegetation, views and vistas, and photographic records of the roads.

Interpretation and Maintenance Information
Develop a pamphlet or other resource which could be used to guide the maintenance and interpretation of all historic resources along the corridor.

C. SCENIC RESOURCES

1. INTRODUCTION

Route 6A contains of a variety of distinct elements, both large and small, which contribute to its scenic character. These elements include the panoramic views of Cape Cod Bay, Sandy Neck and other open water views; the historic structures and villages which developed along the early route; features such as stone walls, town pumps and hitching posts often found along the roadway; and the winding roadway itself, which is lined with a variety of mature shade trees. Taken together, these elements provide the context or setting for all users of the byway. Current pressure to alter this setting by activities such as road widening or other improvements, increased development, and tree canopy maintenance, threaten to undermine Route 6A's scenic character.

Maintaining or improving the quality of the visual experience, whether it be on bike, on foot or in a car or bus, is a major goal of the Route 6A Scenic Byways program. An additional goal is to develop a consistent wayfinding system in order to guide users of the scenic byway and to educate them about its resources.

To achieve these goals, scenic resources objectives include: identifying those elements which contribute to the scenic character of Route 6A; identifying areas along the roadway which are most sensitive to alteration; identifying opportunities for improvement in scenic quality; developing mechanisms to protect major scenic viewsheds that are otherwise unprotected; maintaining or enhancing the tree canopy on Route 6A; reducing the number of visual intrusions which detract from scenic quality through measures such as developing a consistent signage system, reducing the impact of overhead utilities, and reinforcing harmonious design elements throughout the Route 6A corridor.

2. EXISTING CONDITIONS

Character-defining scenic resources of the Route 6A corridor and major intrusions to those resources were identified through public meetings, windshield surveys and photo documentation. Scenic resources were divided into the following categories: major scenic views, detailed scenic resources, and tree canopy. Those features detracting from scenic quality were also divided into two categories: overhead utilities, and visual intrusions. The above resources and intrusions were inventoried for the length of the corridor. The methodology used in completing inventories for each category is described below.

Route 6A Scenic Byways Program
Scenic Resources

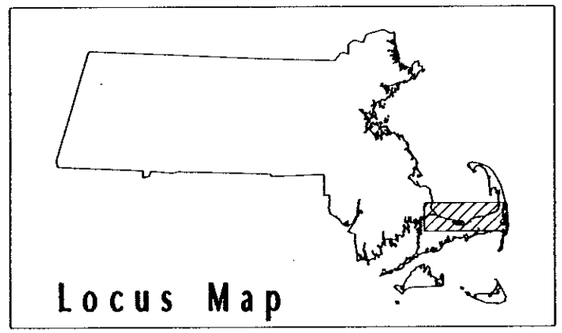
Data Sources:

Major Scenic Views and Concentration of Scenic Elements: Inventoried by CCC Staff for the Route 6A Scenic Byway Program, 1994

Basemap features: MassGIS, (digital), 1988 Includes ponds, major roads, railrods, coastline, town boundaries.

Non-digital data was automated by the CCC GIS staff using ARC/INFO software.

Plot file created on August 12, 1994

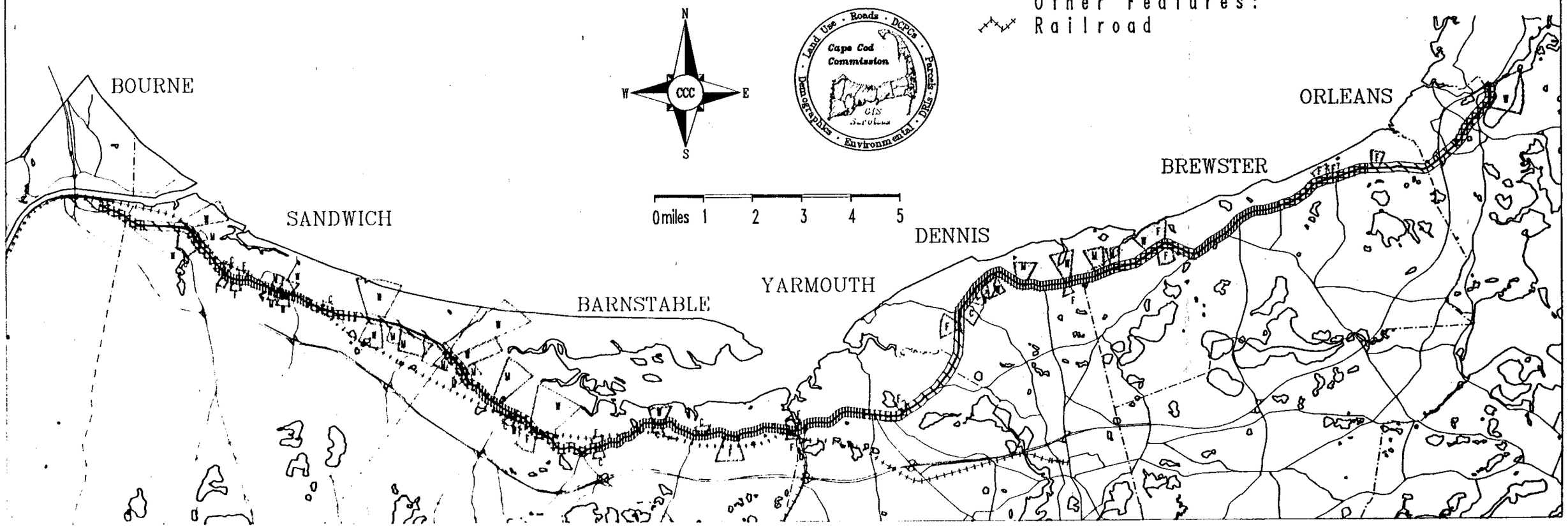


Major Scenic Views:
- W = Open Water
- M = Open Marsh
- F = Open Field
- C = Cultural Feature

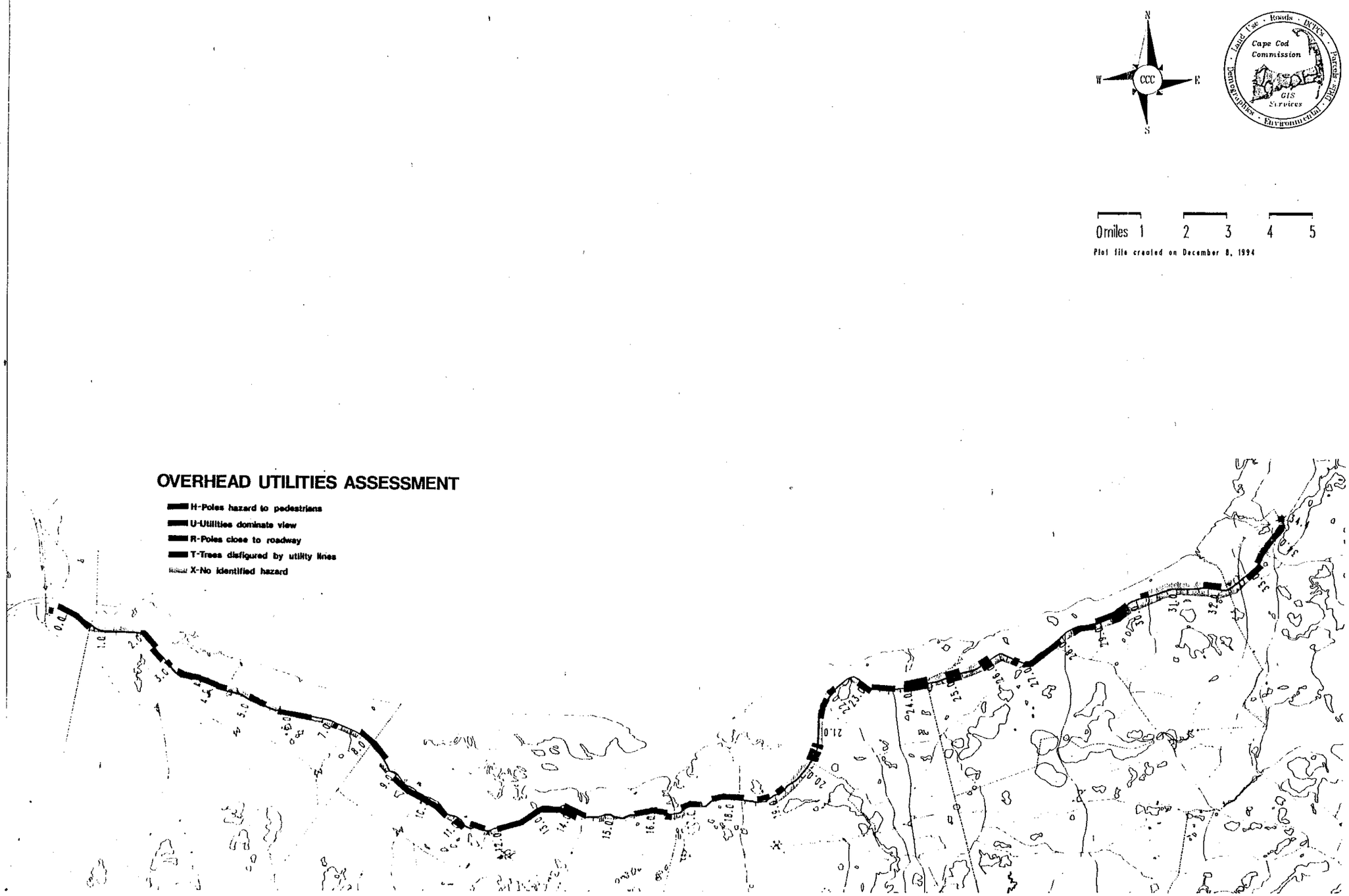
Obstructed View

Concentration of Scenic Elements:
- High
- Medium
- Low

Other Features:
- Railroad



Route 6A Scenic Byways Program



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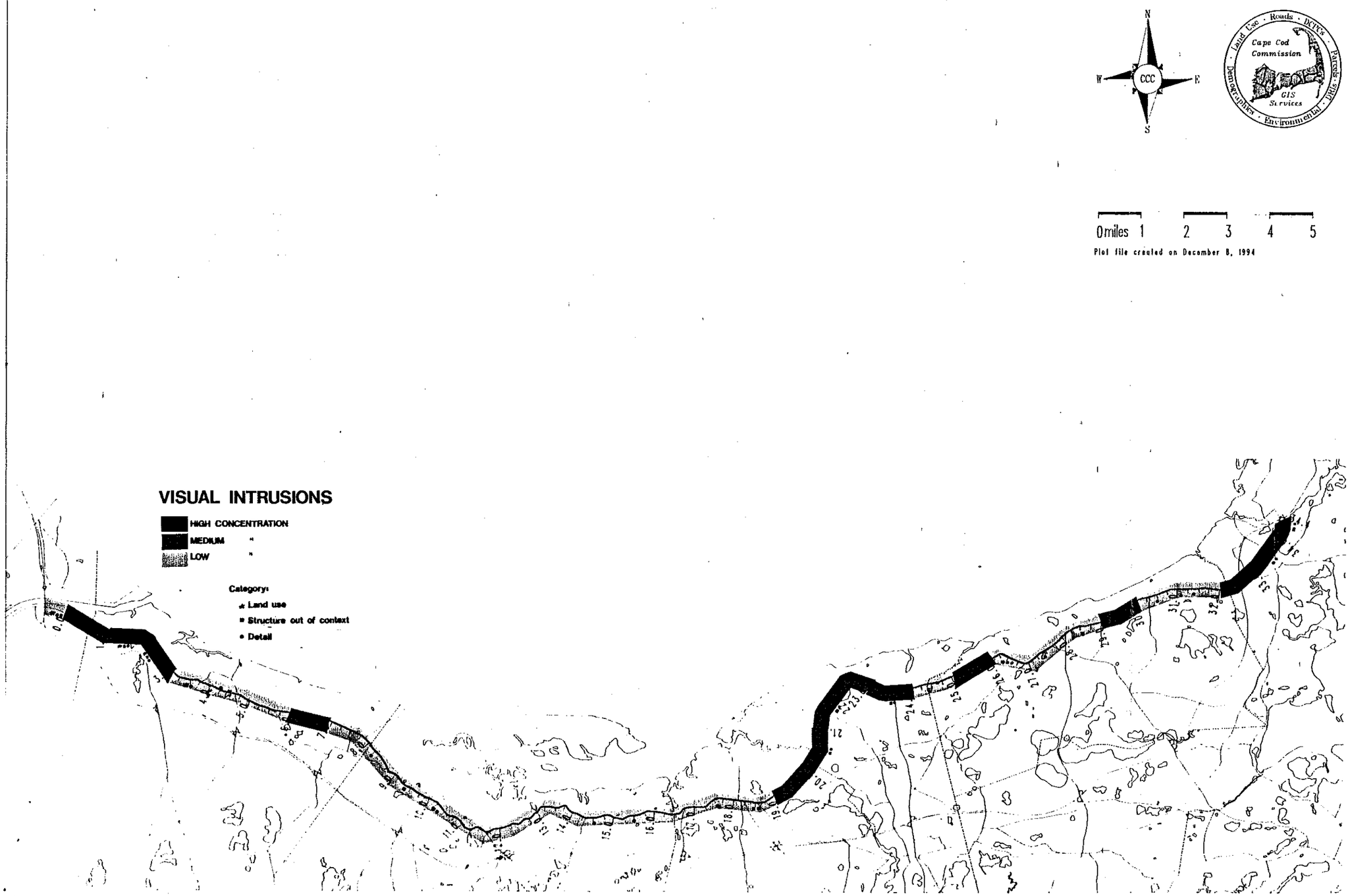
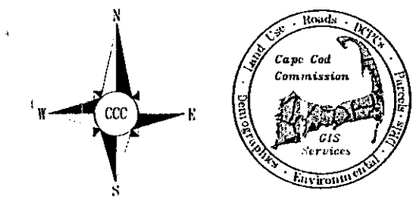
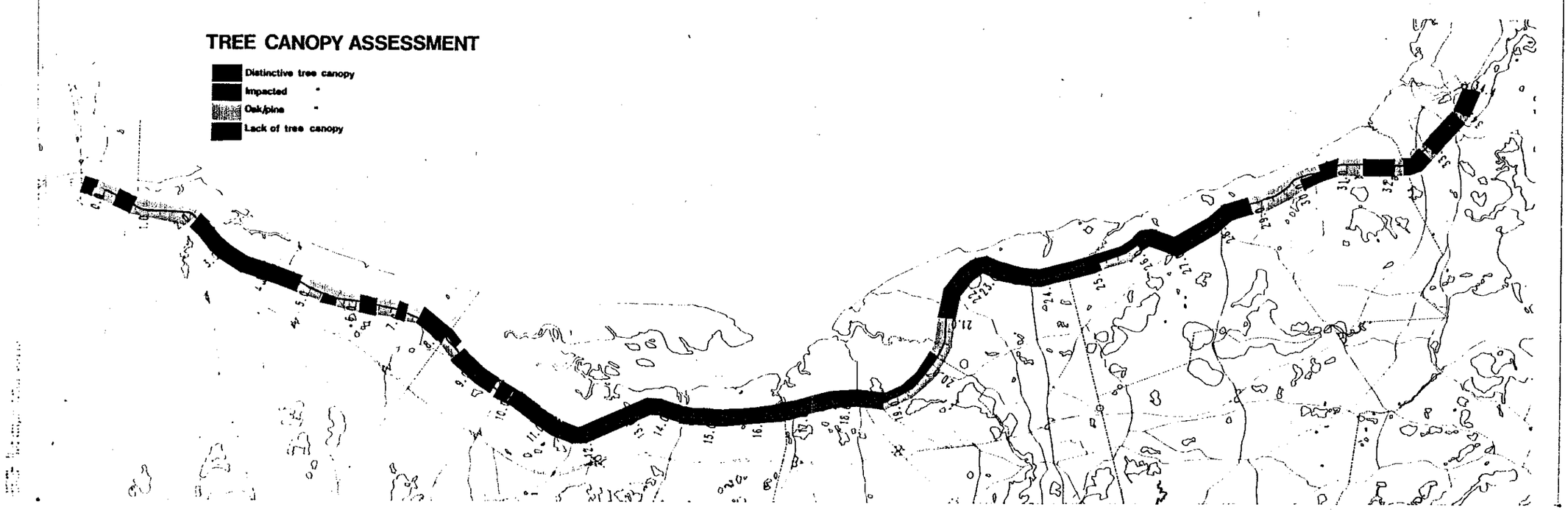


Route 6A Scenic Byways Program



0 miles 1 2 3 4 5

Plot file created on December 8, 1994



a. Major Scenic Views

The panoramic views of Cape Cod Bay, Sandy Neck and numerous salt marshes are a primary scenic resource of the Route 6A corridor. The historic and cultural resources of Route 6A also offer scenic views of a smaller scale. In identifying the major scenic views for this study, one or more of the following characteristics were found: views which dominate a sequence of views along the roadway; views which contain a concentration of cohesive physical objects or structures providing contrast from rural areas; or views which contain a structure which is unique to the region or community, such as Ocean Edge or the Scargo tower. These same characteristics were also important in the completion of the detailed scenic elements inventory.

A windshield survey of the entire corridor was completed in two directions, with major viewsheds placed into one of four categories. Each successive category represents a decreasing size or scale of the scenic view:

1) expansive scenic views such as open water
2) open fields or other natural areas framed with trees or other vegetation
3) historic villages
4) major cultural features such as cemeteries.

Survey methodology was based on the *Lexington-Frankfort Scenic Corridor Scenic Landscapes Assessment*, Fayette, Scott & Woodford Counties, Kentucky, February 1990. This study based the criteria for a "visually significant" designation on visual elements which were "typical" or characteristic of the landscape, rather than comparing or rating landscapes. The Lexington-Frankfort study identified four types of public views which were comparable to the types of views found along Route 6A.

Major scenic views of open water were most frequent between miles 3-13 in the communities of Sandwich and Barnstable where the Sandy Neck barrier beach is often visible from the roadway, and miles 21-26, located in the towns of Dennis and Brewster, where views of Cape Cod Bay are found. These views also possess the greatest depth of view along the corridor. Open fields and cemeteries were also located primarily in Sandwich and Barnstable, with scenic views of historic villages found in nearly every community along the route.

b. Detailed Scenic Resources

Following the identification of major scenic views, a more detailed inventory of scenic resources was completed. The methodology for completing this inventory was developed from several sources, including: *Vermont's Scenic Landscapes*, Vermont Agency of Natural Resources, Vermont Transportation Board; U.S. Dept. of Transportation, FHA *Final Case Study for the National Scenic Byways Study; Brandywine Valley Scenic River and Highway Study*, New Castle County, Delaware;

and National Register Bulletin #30, *Guidelines for Evaluating and Documenting Rural Historic Landscapes.*

The Vermont Scenic Landscapes inventory was particularly useful in developing the methodology for the Route 6A inventory. Vermont's inventory, which was used to help designate scenic roads in that state, divided positive landscape values and negative criteria into categories consisting of natural and man-made elements. Positive and negative features were then tabulated for each mile of the roadway, with negative features subtracted from the roadway segment's "positive" scenic value. Adapting this approach to Route 6A provided an opportunity to document the wide variety of natural and man-made detailed scenic resources found along the Route 6A corridor.

In addition, National Register listing could provide a tool for protecting the scenic landscapes of Route 6A. Therefore, inventory methodology was also developed from guidelines established by *National Register Bulletin #30*, prepared by the National Park Service. *Bulletin #30* recommends developing the historic context and surveying the landscape as initial steps in nominating a landscape to the National Register of Historic Places. Based on these studies, the Route 6A detailed scenic resources inventory examined the following:

- Regional Context
  The detailed scenic resources inventory included identifying the corridor's key natural and cultural settings. Traditional settings for Route 6A include the dense village pattern created by historic structures lining many sections of the roadway; agricultural land use patterns; clusters of small businesses or shops in traditional Cape structures; areas of scattered residential development surrounded by wooded areas; or recreational uses.

- Landscape Context
  The natural and man-made landscapes found along the Route 6A corridor were also identified. These included town commons, cranberry bogs, field and forest edge, and marshes.

- Details
  Specific features that contribute to the richness of the scenic character of Route 6A were also identified. These included: churches or other institutions, cemeteries, specimen trees, curbstones, stone walls or fences, bridges, historic markers/monuments, town pumps, and hitching posts.

For an example of the inventory format used in the field, see Appendix C, table 1.

Windshield surveys and photo documentation were completed for each mile of the corridor. The quantity of detailed scenic elements per mile were then tabulated for

the Landscape Context and Details categories. The totals were ranked into a low (0-9 elements), medium (10-19 elements), or high (20 or more) concentration of scenic elements (see Appendix C, table 2). These areas were mapped together with the major scenic viewsheds.

In general, miles 12-17 (Barnstable - Yarmouth) had the highest concentration of detailed scenic elements when using this method, with other pockets of high concentrations also found in miles 21-24 in Dennis, and miles 27-28 in Brewster. The lowest concentrations tended to be located at either end of the Route 6A corridor, in the towns of Bourne and Orleans, with a low concentration also found in miles 19-20 in Dennis. In several cases, areas with low concentrations of detailed scenic elements had outstanding scenic views, due to their location adjacent to marshes and other coastal resources. However, the towns of Bourne and Orleans, gateways to the scenic byway, had both low concentrations of detailed scenic elements and few major scenic views.

c. Tree Canopy

The distinctive tree canopy which lines many sections of Route 6A has contributed greatly to the scenic character of the corridor. Many of these mature trees were planted around the turn of the century as part of early shade tree planting programs. Elms, maples, beech and oak were commonly planted. The dense canopy created by these mature trees provides a sense of enclosure along the roadway, with a variety of species unmatched elsewhere on Cape Cod. Residents attending a June, 1993 meeting urged the Commission to consider protection of the tree canopy along Route 6A as one of its priorities in the development of the corridor management plan.

In order to establish priorities for future protection and enhancement of the tree canopy on Route 6A, a windshield survey was completed. Four categories representing conditions found along the route were used: 1) areas of distinctive tree canopy, which included locations where specimen tree species were found, or where a dense canopy of trees provided enclosure along the roadway; 2) areas where the tree canopy was impacted by overhead utility lines; 3) locations where oak/pitch pine tree canopy were found, which is vegetation relatively common to Cape Cod; and 4) areas where tree canopy was absent. Areas without canopy were in some cases defined by native shrubs, hedges, or completely open due to wetlands adjacent to the roadway.

With the exception of Orleans, each community along the Route 6A corridor includes substantial areas of distinctive tree canopy. The following are the largest intact segments of distinctive tree canopy along Route 6A:

- miles 3.0-4.75 - Sandwich

- miles 10.75-18.75 - Barnstable/Yarmouth
- miles 22.0-25.0 - Dennis/Brewster
- miles 26.0-28.75 - Brewster

It should be noted that the distinctive canopy found in miles 10.75-18.75 in Barnstable/Yarmouth also contained a significant number of trees which were impacted by pruning for overhead utilities. Tree canopy was absent in several areas of Sandwich and West Barnstable, which often contained open water or marsh views. The most notable area without tree canopy was from mile 32.5 to the end of the corridor in the town of Orleans.

d. Features Detracting from Scenic Quality

Included in the inventory of scenic resources was an examination of features which detract from the scenic quality of Route 6A. These features were divided into two major categories: overhead utilities and visual intrusions. A discussion of methodology and major findings is presented below.

Overhead Utilities

It was noted in public meetings that the scenic beauty of Route 6A is often reduced by overhead utility lines and poles and that the location of utility poles in close proximity to the roadway edge poses a safety hazard. As a first step in determining the feasibility of undergrounding or relocating these utilities for all or a portion of the roadway, an assessment of utilities identified the following: 1) locations where utility poles are a hazard to pedestrians; 2) locations where utility lines and poles have created a significant visual impact; 3) locations where these lines or poles may pose a hazard to vehicles due to their proximity to the roadway; 4) locations where the lines have impacted the tree canopy; and 5) locations where overhead utilities posed no identified hazard.

Multiple hazards or impacts from overhead utilities, such as visual impacts and hazards to pedestrians, exist at the following locations:

- mile 1.75-2.25 - Sandwich
- mile 13.25-14.0 - Barnstable village
- mile 15.5-16.25 - Barnstable
- mile 20.25-20.5 - Dennis
- mile 21.25-21.75 - western approach to Dennis village
- miles 33-Orleans rotary - Orleans

In addition, singular impacts such as hazards to pedestrians, visual impacts or impacts to the tree canopy can be found at locations throughout the corridor. Areas where no identified hazards were found included the following:

- miles 18.75-20 - Dennis
- miles 20.5-21.25 - Dennis
- miles 29.75-32.75 - Brewster/Orleans

Some of these locations were less developed or consisted of a less mature tree canopy, thereby limiting the potential hazards as noted above.

Visual Intrusions

Achieving the goal of developing a consistent wayfinding system for Route 6A depends to a large extent on establishing visual cues to help the user identify the road as a scenic byway. While consistent signage is a key component of such a wayfinding system, other design elements, if consistently applied, will also guide the user along the byway and help reinforce its historic and scenic character.

Visual intrusions are design elements which do not contribute positively to the scenic character of Route 6A due to their scale, massing, poor siting or materials. These elements were identified in the scenic resources inventory in order to explore methods of reducing their impact on the scenic character of Route 6A.

Intrusions were placed into one of three categories. As in major scenic views, each successive category represents a decreasing size or scale of intrusion: 1) inappropriate land uses, such as industrial uses, junkyards, and auto repair; 2) structures out of context, including commercial strip development and gas stations having facades and/or canopies which are out of character with their surroundings; and 3) details such as excessive signage, steel guardrails, or chain link fencing.

Signage has been noted by participants in public meetings as contributing to visual clutter. State highway signs on Route 6A consist of regulatory, warning and guide signs such as those denoting the byway as Old King's Highway. All state highway signs are of metal construction and each sign is on a separate steel post. Numerous commercial signs are also found along Route 6A. These signs vary greatly in terms of size, materials and placement. In some locations, both state highway and commercial signs create visual clutter and detract from the scenic quality of the corridor.

The number of visual intrusions per mile were ranked into low (0-4), medium (5-9), or high (10+) concentrations and mapped separately from scenic resources. Intrusions were most frequent between miles 0-3 in Bourne/Sandwich, where the Canal Electric power plant is most visible and where a large commercial area is located; miles 19-24 in Yarmouth/Dennis where strip development and steel guardrails are frequent; and in Orleans, from mile 32 to the end of the corridor where strip development is predominant.

3. PROBLEM IDENTIFICATION

Route 6A is a state highway which traverses seven communities, with an overlapping jurisdiction of the Old King's Highway Regional Historic District. Each jurisdiction has its own standards and requirements which may or may not allow for consistent protection of scenic resources or has resulted in the visual intrusions described in this section. In addition, a lack of protection for some major scenic views and many detailed scenic elements may result in impacts to these resources which could affect the scenic character of Route 6A. Specific problems related to each resource described in the inventory are identified below.

a. Major Scenic Views

Existing Resource Protection

Many of the open water views identified in the inventory are afforded some measure of protection from alteration or destruction. The highest form of protection is for those viewsheds that are also identified as Areas of Critical Environmental Concern (ACEC) or areas of Rare Species Habitat. In these areas, scenic views may be protected through existing environmental review and permitting by various state, county and local agencies. The Wetlands Protection Act, Cape Cod Commission's Regional Policy Plan and local wetlands bylaws also offer these views some protection from alteration to the extent that they fall within the Act's jurisdiction (see also Critical Environmental Features section).

Scenic views which contain cultural features such as burial grounds are protected under Chapter 114 and Section 73A of Chapter 272 of the Massachusetts General Laws. Other cultural features such as Ocean Edge in Brewster are listed on the National Register of Historic Places and within the Old King's Highway Regional Historic District. National Register listing provides for Section 106 review by the Massachusetts Historical Commission if federal funds are involved and Chapter 254 review by the Massachusetts Historical Commission if state funds are involved. Both review processes determine whether the proposed activity will affect historic properties in the surrounding area and work to mitigate adverse effects.

Most historic villages, included as major scenic views for their concentration of cohesive structures providing contrast from rural areas, are within the Old King's Highway Regional Historic District. Alterations to structures within this district are reviewed by the Old King's Highway District Committee in each community.

Current and Projected Threats

Maintenance activities and roadway improvements to Route 6A such as adding shoulders, improving drainage or correcting substandard intersections may be permitted by the local conservation commission under the Wetlands Protection Act. While these activities represent a minor threat to the viewsheds themselves,

as most are located at some distance from the roadway, the addition of inconsistent elements such as steel guardrails or chain link fencing, which often accompany road improvements, could significantly impact major scenic views. Major scenic views could also be threatened by future development which could obscure or eliminate many panoramic views of coastal resources which are located behind and off the roadway itself.

In addition, several major scenic views appear to not be afforded any special environmental protection as noted above. In particular, open fields which are remnants of previous farmsteads and which add to the diversity of the Route 6A landscape are typically not part of an ACEC, rare species habitat or within Wetlands Protection Act jurisdiction. These and other views should be considered as priorities for protection through scenic easements, preservation restrictions or National Register listing as historic landscapes. These views are found at the following locations:

- mile 3 - view to Sandwich center
- mile 8 - Sandwich marsh view
- mile 11.8 - Barnstable open field
- mile 16.2 - open field - Barnstable
- mile 21.8 - Dennis town common
- mile 24.2 - open water/field - Dennis
- mile 29.5 - Ocean Edge - Brewster
- mile 31.5 - open field - Brewster

Other Design Issues

Several major scenic views could be enhanced through vista pruning of vegetation adjacent to the roadway. Consultation with appropriate environmental agencies would be required prior to any alteration of these areas.

Alterations to buildings within most historic villages are reviewed by the Old King's Highway Regional Historic District Committee in each community. Committee review ensures that the historic character of historic structures in the district is preserved. However, the scenic character of many villages along Route 6A are threatened by the inconsistent treatment of landscape elements such as sidewalks, curbs, pedestrian lighting and tree planting. Major views of the entrances or "gateways" to these valuable historic and scenic resources could be greatly enhanced through appropriate treatment.

b. Detailed Scenic Resources

Existing Resource Protection

The State scenic road designation requires the prior consent of the Old King's Highway Regional Historic District Committee or the local planning board before

completing any repair, maintenance, reconstruction or paving of the road that involves demolition or destruction of stone walls or trees.

In addition, the Old King's Highway Regional Historic District Committee in each community is authorized to review alterations to or removal of detailed scenic elements where they are recognized by Old King's Highway as structures. Old King's Highway recognizes stone walls, flagpoles, hedges, gates and fences as structures. However, most communities along Route 6A do not have a complete inventory of detailed scenic elements. Several communities have indicated that the scenic resources methodology may be used to help the local historical commission include these elements in their inventories for eventual nomination to the National Register of Historic Places.

Current and Projected Threats

Detailed scenic elements are vulnerable to alteration where they are not included on town inventories of historic structures. Roadway maintenance activities and improvements such as adding shoulders or drainage swales on Route 6A could significantly impact these elements, which often lie within a few feet of the roadway edge. In addition, inconsistent elements such as steel guardrails or chain link fencing could significantly impact detailed scenic elements either directly or indirectly by altering the scenic context of Route 6A. The following sections of roadway, where the highest concentrations of detailed scenic elements were found, present the greatest sensitivity to alteration:

- miles 3-4-Sandwich
- mile 9-Barnstable
- miles 12-17-Barnstable
- miles 21-24-Dennis
- miles 27-28-Brewster

Other Design Issues

Two of the major entrances or "gateways" to the Route 6A corridor in Bourne and Orleans contain both a low concentration of detailed scenic resources and major scenic views. These gateways could benefit through special treatment such as signage or tree planting that clearly identifies these locations as the starting points of the scenic byway.

c. Tree Canopy

Existing Resource Protection

Scenic Road designation. Route 6A was designated as a scenic road in June, 1992 by the Massachusetts Legislature. This designation requires the prior consent of the Old King's Highway Regional Historic District Committee or local planning board before doing any repair, maintenance, reconstruction or paving of the road that

involves cutting or removal of trees or demolition or destruction of stone walls. It appears that no guidelines are available to these boards and committees to help set priorities for preservation of the existing canopy or to ensure that the most appropriate species and sizes are replanted when tree removal is necessary.

Old King's Highway Regional Historic District Commission regulations. As noted above, tree and stone wall removal require Old King's Highway District Committees' consent. In addition, Old King's Highway regulations may protect the tall hedgerows that help define the roadway edge. However, as in scenic road designation, no guidelines for preservation or replanting of the tree canopy currently exist. In addition, Old King's Highway regulations do not contain specific landscaping or tree planting requirements for new development, although a District Committee may request that a landscape plan be included before issuing a Certificate of Appropriateness. Review of landscape design issues, however, is inconsistent among the town committees.

Local Planning Board rules and regulations. Subdivision rules and regulations generally contain tree planting requirements. These requirements will have a direct impact on the character of the roadway where they intersect with Route 6A. Therefore, a review of signage and entry planting requirements would be valuable.

Local zoning bylaws. Most zoning bylaws contain landscaping requirements for new development on Route 6A such as screening, tree retention, and in some cases, limitations on tree removal. Most bylaws also contain tree planting requirements for parking lots.

Current and Projected Threats

The majority of distinctive trees found along Route 6A are at a very mature stage of development. Few trees have been planted in the past several years to eventually replace this mature canopy. While scenic road designation and existing regulations provide a certain amount of protection for the existing tree canopy along Route 6A, current regulations and bylaws do not provide for new or replacement tree planting unless a development is proposed. In these cases, zoning bylaws, which are applied town-wide, do not directly serve to enhance the variety of distinctive trees found along Route 6A. Without a tree replacement program, much of the scenic character created by this distinctive tree canopy will eventually be lost.

In addition, numerous mature trees have been severely impacted by pruning to maintain clearance for overhead utility lines. Current pruning practices have weakened the structure of these trees, increasing their susceptibility to storm damage and thus hastening their decline. Pruning for utility line clearance has also destroyed the form of many otherwise distinctive trees. Many mature trees are within a few feet of the roadway edge, causing a potential hazard to motorists and bicyclists, although these same trees often give the roadway its special character.

Areas where oak/pitch pine are the predominant tree canopy exhibit less of the sense of enclosure created by other more notable species and may be susceptible to storm damage.

Other Tree Planting Issues

Entrances to existing commercial plazas or village centers are often lacking any tree canopy. These locations will require reducing the width or number of curb cuts in order to create opportunities for tree planting or other landscape treatment. A narrow right-of-way and overhead utility lines along Route 6A present limitations on the amount or type of new tree planting that could be provided within the state highway layout. These limitations may make it necessary to obtain permission to plant trees on private property.

d. Overhead Utilities

Scenic Quality Issues

The hazards to vehicles and pedestrians as well as the visual impact created by overhead utilities on Route 6A is significant. Only one small stretch of the Route 6A corridor does not contain overhead utility lines and poles, while several sections of the corridor, in particular village centers, contain utilities on both sides of the roadway. Utility lines and poles are often immediately adjacent to the edge of pavement due to the narrow right-of-way and therefore highly visible. A lack of tree canopy or trees which have been extensively pruned to maintain clearance also do not provide an effective visual screen from these utilities.

The undergrounding of all overhead utilities along Route 6A presents a major financial undertaking. Environmental constraints such as high groundwater or wetlands may make this option infeasible in some areas. However, the cost of frequent tree pruning required to maintain clearance from utility lines and the cost of repairs after wind and snow storms is also considerable. Under M.G.L. Chapter 166, towns may work with state agencies or public utilities to place existing utilities underground when roadway improvements or replacement of other infrastructure is planned. Property owners may also individually or cooperatively request and pay for replacement of utilities underground at locations where poles and lines connect to their homes.

Some communities have expressed an interest in undergrounding utilities for sections of the roadway, especially in village centers as other road work or pedestrian improvements are undertaken. Relocating above-ground utilities behind structures may be a feasible alternative where undergrounding is not otherwise possible. Relocating utilities, in conjunction with other pedestrian enhancements, may offer the greatest opportunity for visual improvement of village centers.

e. Visual Intrusions

Design issues:
Land Use/Structures out of context. Visual intrusions such as inappropriate land use and strip development detract from the visual integrity of the Route 6A corridor. Current zoning bylaws contain a number of allowed or special permit uses such as junkyards, mobile home parks, and contractor's yards which are out of scale with other land use along the scenic byway and are not well-screened from the roadway. In addition, older commercial strip development, which may pre-exist the creation of the Old King's Highway Regional Historic District Commission, often lacks landscaping and could benefit from facade improvements.

Signs. Signs are a significant design element, affecting both the visual experience and directional needs of users of the Route 6A corridor. Signs can either add to or detract from the experience of the scenic byway.

State highway sign design and placement is governed by standards set by the *Manual on Uniform Traffic Control Devices* (MUTCD) developed by the Federal Highway Administration and *Standard Drawings for Signs and Supports* by the Massachusetts Highway Department. Scenic byway signage required to meet the same standards as all other streets or highways in the U.S.

While the purpose of uniform traffic control devices is to help insure highway safety, the application of national standards to scenic byways often creates a significant impact on the qualities for which they are designated. Key issues for Route 6A include the quantity, placement, color and materials used for state highway signs. The MUTCD contains a procedure for modifications to the system based on unique situations. A request for permission to test or evaluate alternative traffic control devices can also be made to the Federal Highway Administration.

Commercial or residential signs along Route 6A are regulated by the Old King's Highway Regional Historic District Commission as well as by each town's bylaws. While Old King's Highway sets general guidelines for signs which are consistent with the character of Route 6A, there is a tremendous variation in the size, type and materials of signs permitted by each community's bylaws. In addition, some signs may be grandfathered from compliance with more recent bylaws. These issues have resulted in areas with significant visual clutter from oversized or improperly placed signs.

Guardrails, Fencing, Drainage. Steel guardrails, chain link fencing and drainage swales create a significant visual impact on Route 6A. In particular, the color of these materials stands in stark contrast with vegetation which lines the roadway. Construction materials are governed by Massachusetts Highway Department standards for all state highways. There are currently no approved alternatives to the

use of steel guardrails or chain link fencing for state highways in Massachusetts, although the use of wooden posts with steel guardrails is permissible. Other states and federal government holdings such as national parks do allow other types of guardrails. The state of Connecticut is currently testing the maintenance requirements of alternative guardrail finishes and materials for possible use on the Merritt Parkway.

4. RECOMMENDATIONS

The following are a range of options to enhance the scenic qualities of the Route 6A corridor. Each resource category contains recommendations given in order of priority. In addition, general recommendations are for corridor-wide application.

a. Corridor-wide Recommendations

Gateway Improvements
Develop design plans to enhance the visual gateways to the corridor through design improvements such as tree planting, relocation of utilities, pedestrian enhancements, lighting and signage. Design improvements should be coordinated with any proposed transportation improvements for these areas and should be designed to reflect the historic and scenic character of the roadway. The following locations should be considered priorities for improvements:

Mile no.	Location
Bourne	
pre-0	Sagamore Bridge area- Adams St.
0	Route 6 on-ramp (Texaco Station)
Sandwich	
2	Tupper Road intersection
2	Jarves St. intersection
4	Quaker Meetinghouse Rd.
Barnstable	
10	Route 149 intersection
11	Route 132 intersection
14	Barnstable village center
Yarmouth	
17	Yarmouthport village ctr.
17	Willow Street intersection
18	Union Street intersection
Dennis	
21	western approach to Dennis village
23	Route 134 intersection

Brewster

27	Route 124 intersection
29	Underpass Road

Orleans

34	Route 28-rotary

In addition, the following locations should be considered for possible town common or square improvements:

- mile 2 - Main Street - Sandwich
- mile 14.5 - Braggs Lane - Barnstable
- mile 18 - Church Street - Yarmouth
- mile 27 - Stonybrook Road - Brewster

b. Recommendations to Protect Major Scenic Views

Scenic Easements

Establish scenic easements or a preservation restriction program to ensure protection of important landscapes along the corridor, including farmsteads and other large open space tracts of land. Priority should be given to the following views:

- mile 3 - view to Sandwich center
- mile 8 - Sandwich marsh view
- mile 11.8 - open field - Barnstable
- mile 16.2 - open field - Barnstable
- mile 21.8 - Dennis town common
- mile 24.2 - open water/field - Dennis
- mile 29.5 - Ocean Edge - Brewster
- mile 31.5 - open field - Brewster

An additional means of protection for these views is to improve surveys of historic districts to include landscapes so that these resources can be better protected through designation on the National Register of Historic Places.

Acquisition

Identify potential land areas for acquisition with federal or state funding in order to protect scenic views where consistent with other town or regional open space planning efforts.

Vista pruning

Work with local conservation commissions to consider vista pruning of vegetation to enhance view corridors to open water at the following locations:

- mile 2.0-2.5 - Sandwich
- mile 7.0-7.75 - Sandwich
- mile 8.25 - Barnstable
- mile 9.5 - Barnstable
- mile 13.5 - Barnstable
- mile 16.5 - Barnstable
- mile 22.5 - Dennis
- mile 23 - Dennis
- mile 24.75 - Brewster
- mile 25 - Brewster
- mile 26 - Brewster

Increased lot frontage/rezoning
Work with local boards to consider increased lot size and lot frontage requirements for the corridor where appropriate to protect major scenic views. Additional measures to protect scenic views could include rezoning of linear general business or highway business zones to village business nodal development with restrictions in allowed square footage to help maintain scenic views (see also Land Use and Zoning recommendations).

Expand Old King's Highway purpose
Expand the definition of "preservation and protection of buildings, settings and places" in the purpose section of the Old King's Highway guidelines to encompass major scenic views on Route 6A so that these resources may be better protected.

c. Recommendations to Protect Detailed Scenic Resources

Improve surveys of historic districts
Improve surveys of historic districts to include detailed historic/scenic elements so that improved protection for these resources can be provided through the local Old King's Highway Regional Historic District Committee or by National Register listing. The following locations should be considered as priorities for completion of surveys due to their high concentrations of detailed scenic elements:

- miles 3-4 - Sandwich
- mile 9 - Barnstable
- miles 12-17 - Barnstable
- miles 21-24 - Dennis
- miles 27-28 - Brewster

d. Recommendations to Protect and Enhance Existing Tree Canopy

Tree canopy management plan
Develop a tree canopy management plan which includes guidelines for tree

preservation, tree maintenance including alternative pruning techniques, and replanting for the corridor when tree removal is necessary or where tree canopy is absent. The plan should include a program which requires either the state arborist or local tree wardens to oversee any state tree pruning activities on Route 6A.

Purchase trees
Create a corridor-wide purchase program for trees and/or plantings. Work with local tree wardens, civic associations and garden clubs to obtain permission to plant trees on private property where right-of-way limits planting of new street trees.

Overlay district
Work with communities through development of Local Comprehensive Plans to develop an overlay district to provide special street tree planting requirements for Route 6A not covered by existing regulations.

Strengthen buffer requirements
Work with communities through development of Local Comprehensive Plans to improve front buffer, parking lot and entry planting requirements for new development through revisions to zoning bylaws, subdivision regulations, and Old King's Highway guidelines (see Land Use and Zoning recommendations). Include specific landscaping planting requirements (specifying size and number of trees/shrubs as well as spacing). Increase the ratio of street trees to parking spaces to reflect most subdivision regulations (1 street tree every 40 feet or 1 street tree for every four parking spaces). Shrubs and flowering trees should be required to enhance the planting islands and should be in addition to street trees. Develop advisory information on historic landscape design and use of traditional plant materials for use in historic settings.

Establish tree preservation/replanting priorities
Work with local planning boards and Old King's Highway Historic District Committees to establish priorities for preservation of the existing tree canopy and to ensure that the most appropriate tree species and sizes are replanted when tree removal is necessary.

e. Recommendations to Reduce the Impact of Overhead Utilities

Relocate when planning roadway improvements
Assist towns in working with state agencies or public utilities to place existing utilities underground when roadway improvements or replacement of other infrastructure is planned.

Feasibility study
Conduct a feasibility study to determine short and long-term costs and benefits of undergrounding overhead utilities. The following village centers should be

considered priorities for undergrounding utilities:

- Sagamore village (Bourne gateway)
- Barnstable village center
- Yarmouthport village center
- Dennis village
- Orleans gateway

Consider relocating utilities away from the roadway edge but keeping above ground where environmental considerations limit underground placement, such as behind structures. Plant trees to the roadway side of relocated above-ground utilities where possible.

f. Recommendations to Reduce Visual Intrusions Along the Corridor

For Land Use/Structures out of Context:
Incentives/loan program
Develop incentives or establish a loan program to encourage business owners to make facade and other design improvements to existing strip development. Work with business owners to consolidate curb cuts where possible to allow for the creation of additional areas for tree and/or shrub planting. Incorporate sidewalks and develop improved standards for parking lots, shared access, landscaping and signage.

For Details such as signs:
Develop distinctive guide signs
Complete an inventory of all Massachusetts Highway Department signs along Route 6A. Use this information to develop distinctive signage guidelines for Route 6A and other scenic byways in the Commonwealth. In particular, special consideration should be given to the following issues on scenic byways:

- distinctive guide signs denoting scenic byways, with particular attention to color and materials
- smaller regulatory and warning signs, combining signage on a single post
- alternative materials and/or locations for state highway signs and posts, including pavement or curb markings
- "share the road" signage for bicyclists on guide signs

Separate scenic byways sign standards
Work with the Federal Highway Administration and Massachusetts Highway Department to provide separate consideration of scenic byways in existing regulatory and warning sign standards. Consider applying to the Federal Highway Administration to test alternative signs and/or materials.

Coordinate local sign bylaws

Coordinate and strengthen sign bylaws for new development on Route 6A to provide consistency with the Old King's Highway sign guidelines. Provide for the replacement of existing non-conforming signs over time to meet these new requirements.

For Details such as Guardrails/Fencing/Drainage:

Revise AASHTO standards

Work with the state scenic byways program and Massachusetts Highway Department to revise AASHTO standards and the Highway Design Manual to contain special design standards for scenic roadway appurtenances such as guardrails, fencing and drainage. Work towards testing alternative guardrail materials or colors to reduce the visual impact of these structures.

III. LAND USE AND ZONING

A. Introduction

B. Existing Conditions
   1. Land Use
   2. Zoning
      - Zoning Districts Summary
      - Town Bylaws/Regulations
        - a. Use Table
        - b. Street Trees and Landscaping Requirements
        - c. Parking, Site distance and Access Requirements
        - d. Signs
        - e. Setbacks/Commercial Zones
        - f. Miscellaneous Bylaw Provisions
        - g. Use Variances
        - h. Subdivision Requirements
   3. Zoning Reform: Obstacles and Opportunities

C. Problem Identification
   1. Future Development Potential
   2. Effectiveness of Current Regulations
      - a. Use Table
      - b. Street Trees/Landscaping
      - c. Parking, Site Distance, and Access Requirements
      - d. Signs
      - e. Front Setbacks
      - f. Miscellaneous Provisions
      - g. Use Variances
      - h. Subdivision Requirements

D. Recommendations
   1. Corridor-wide Recommendations
   2. Zoning Bylaw and Subdivision Regulation Revisions to Reduce Traffic Generation
   3. Zoning Bylaw and Subdivision Regulation Revisions to Address Character and Design Issues

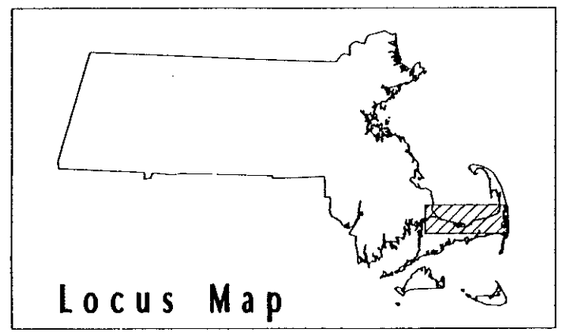
Route 6A Scenic Byways Program
1990 Land Use

Data Sources:

MacConnell landuse is from June 1990 aerial photo interpretation (1:25,000 scale). University of Massachusetts.

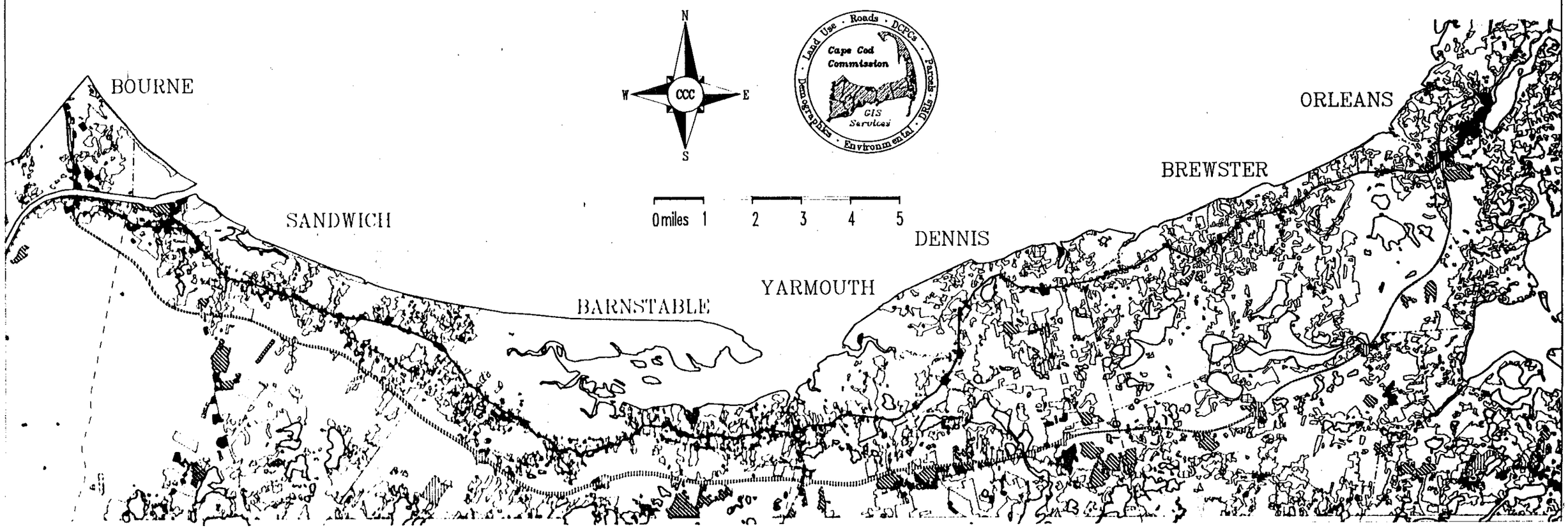
Basemap features: MassGIS (railroads)

Plot file created on August 12, 1994



MacConnell Land Use

- Residential
- Commercial
- Industrial
- Agricultural
- Open Space, Wetlands, or Undeveloped Land
- Transportation

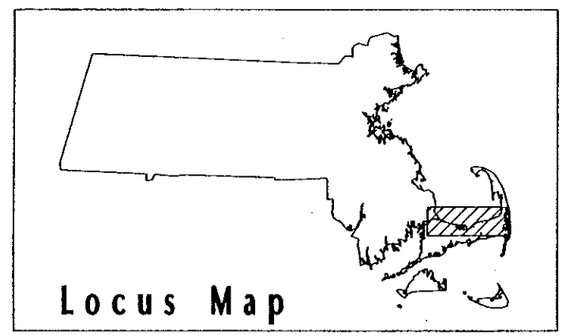


Route 6A Scenic Byways Program
Land Use Change 1971 - 1990

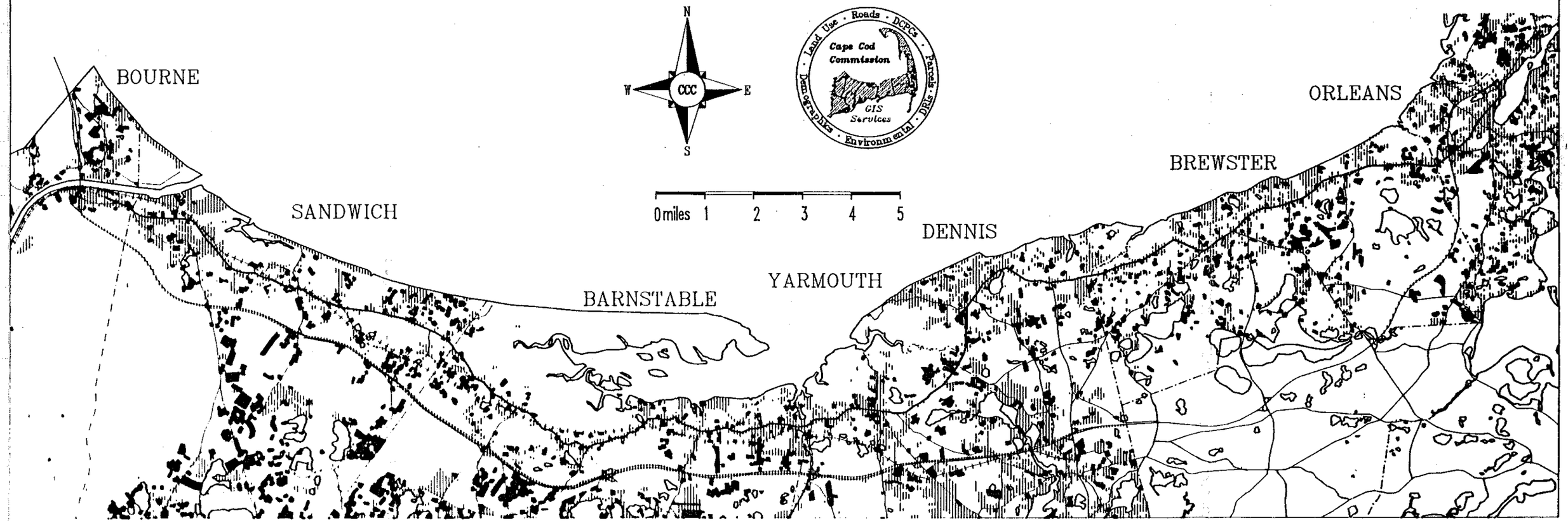
MacConnell landuse is from 1971 and 1990 aerial phot interpretation (1:25,000 scale). University of Massachusetts.

Basemap features: MassGIS (ponds, roads, coast, railroads).

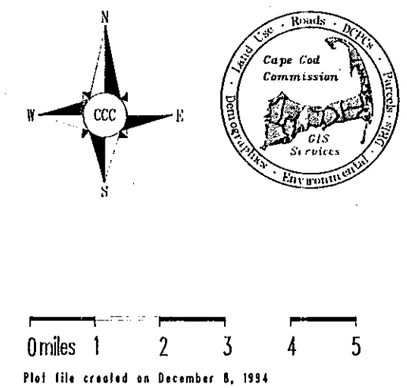
Plot file created on August 12, 1994

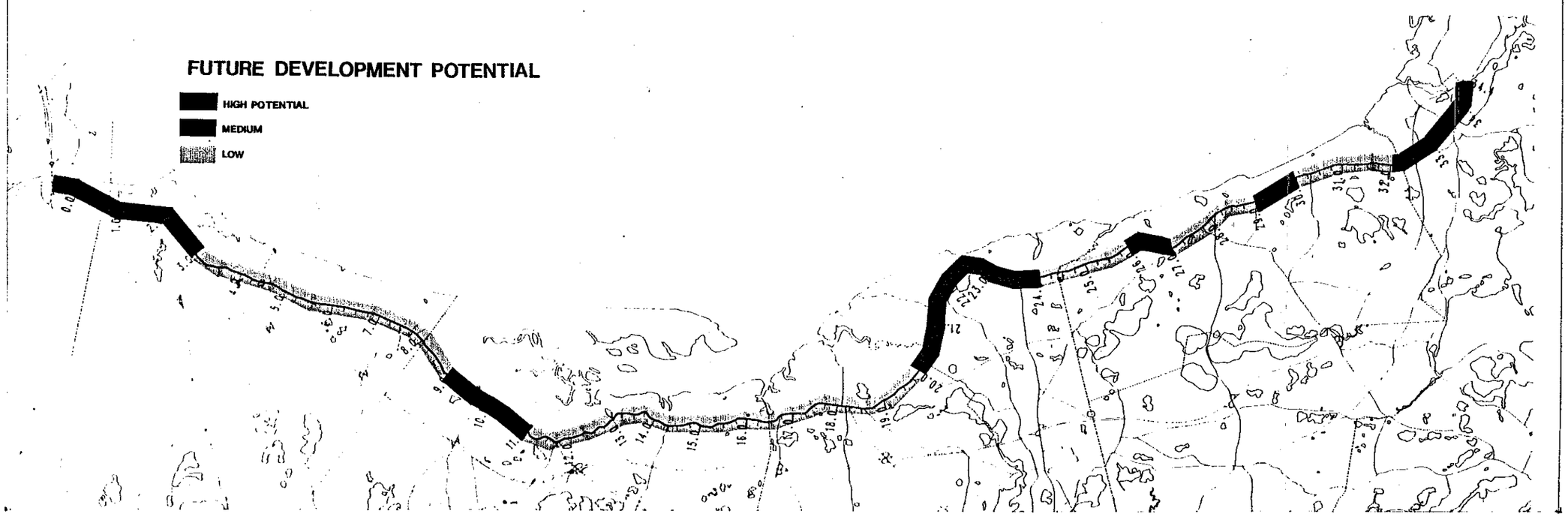


Developed Land 1971
Newly Developed Land 1971 - 1990



Route 6A Scenic Byways Program





III. LAND USE AND ZONING

A. INTRODUCTION

From the Sagamore Bridge in Bourne to the Orleans-Eastham Rotary, Route 6A winds through village centers, conservation land and historic landscapes. The land uses along the roadway have been determined through a combination of historic settlement patterns and zoning. Historically, commercial and residential uses were interspersed throughout the corridor with small setbacks to the roadway. Today, zoning dictates a different pattern of land use, with new commercial development concentrated in nodes. As noted in the inventory, however, existing scattered commercial uses continue in virtually every town along Route 6A.

The present blueprint provided by zoning along the Route 6A corridor will determine, in part, how this scenic roadway looks and functions in the future. Although some towns have attempted to tailor their zoning to Route 6A, others have placed sections of the corridor in residential and business zones that are not unique to the corridor and may lead to inappropriate land uses which will adversely affect the scenic character of the roadway or generate large amounts of traffic.

The two primary goals of the land use and zoning section are: 1) to review and suggest amendments to zoning bylaws to ensure that zoning reinforces, rather than undermines, the historic and scenic character of Route 6A; and 2) to review and suggest amendments to zoning bylaws to reduce traffic congestion on Route 6A.

To achieve these goals, land use and zoning objectives include: identifying characteristic land uses along Route 6A, identifying areas with the greatest potential for land use change; identifying the primary elements of zoning that have an impact on character and traffic issues; maintaining transitions between villages and outlying areas, reducing the potential for strip development and incompatible land uses, and understanding the link between land use and roadway capacity.

This section examines current land uses and zoning requirements along the Route 6A corridor. It includes information on the areas of the corridor that are likely to experience the greatest amount of new development and highlights useful zoning techniques for the communities along Route 6A.

B. EXISTING CONDITIONS

1. Land Use

On Cape Cod, more than 35,500 acres of forest and agricultural land were lost to

development between 1971 and 1990. The majority of this land (29,212 acres) was developed for residential purposes. The remainder was used for recreational development (1723 acres), commercial development (1612 acres), industrial purposes (1116 acres), public land/urban open space (1110 acres), waste disposal (536 acres) and transportation (311 acres). Barnstable County's Regional Policy Plan notes that:

> "a significant problem on Cape Cod has been the land consumptive pattern of development. Residents and visitors alike have expressed concern about the loss of community character on the Cape. Sprawling subdivisions and strip development along major roads have blurred the boundaries between village centers and rural areas. In some cases, existing zoning and subdivision regulations have contributed to the problem. Such regulations often require large lot sizes and setbacks, excessively wide roadways and large amounts of off-street parking, and prohibit mixed-use developments that integrate residential and commercial development."

The rate of land use change has likely been slower along Route 6A than for the rest of Cape Cod, but similar trends are evident. Moreover, impacts to historic and community character are far more noticeable along this scenic roadway due to the small scale of existing development.

Information for the land use inventory was collected through a windshield survey of the Route 6A corridor and a review of zoning maps for each town. Existing businesses were identified, as were vacant businesses and developable land within business and commercial zones. The inventory is summarized below. The appendix includes a mile-by-mile land use inventory for each community along Route 6A.

The land use inventory reveals that most of the commercial development along Route 6A is small-scale, low-intensity land use, with much of this development located in structures that are residential in character. Typical business/commercial land uses that are found continuously along the roadway include inns, motels and cottages, restaurants, antique shops, galleries and gift shops, community services such as gas stations, video stores, banks, small markets, and small professional offices. The rest of the roadway is dominated by residential uses, including numerous home occupations, mixed with churches, municipal buildings and open land. These settlement patterns help define the character of Route 6A.

2. *Zoning*

Zoning Districts Summary

The following is a town-by-town summary of zoning districts along the Route 6A

corridor:

Bourne

Route 6A (Sandwich Road) through the Sagamore area is zoned primarily R-40 Residential, with two areas of B-2 Business zoning near the Sagamore Bridge and at the intersection of Route 6A and the Route 6 access road. The purpose of the B-2 zone is "to accommodate general business development in areas serviced by major traffic arteries, and where conflict with residential development will not be substantial." The eastern half of Route 6A in Bourne passes through the South Sagamore Water Resource District, which is an overlay district on both the residential and business zones and further limits permissible uses.

Sandwich

From the Bourne town line to Main Street, the southern side of Route 6A is zoned BL and the northern side is zoned Industrial Limited (Ind). Between Main Street and Tupper Road (approximately), both sides of Route 6A are zoned BL (Business Limited). East of this point a small section is zoned R-1 (Medium Density Residential). All of Route 6A east of approximately Chipman Road is zoned R-2 (Low Density Residential).

Barnstable

All of Route 6A in Barnstable is zoned for one-acre residential uses (RF and RF-2) with the exception of two Village Business nodes (VB-A, VB-B) in West Barnstable and Barnstable Village. The West Barnstable VB district requires 1 acre lots, whereas only 10,000 sq. ft. lots are required in Barnstable Village.

Yarmouth

With the exception of two small limited business districts at the easternmost (Yarmouth) and westernmost (Yarmouthport) ends of the Route 6A corridor and a scattering of small limited business nodes at various points along Route 6A, all land along the Route 6A corridor in Yarmouth is zoned R-40.

Dennis

Zoning along Route 6A in Dennis is a mix of Rural Residential, Low Density Residential (R-40), and Limited Business. There are four separate limited business areas from 350 to 600' deep. The stated purpose of these districts is to provide for "small scale business development for local and transient services...within park-like settings which through landscaping and design or through preservation enhance the natural landscaping and historic environs; at the same time protecting any existing marsh views, minimizing the visibility of parked cars, avoiding the appearance of commercial strips ...and retaining the character and the quality of life in a rural New England seaside village." In addition, the Rural Residential zone has as its goals "encouraging open space, preserving or enhancing marshes and marsh views, protecting the character of the historic environs, preserving or enhancing

visual landscapes."

Brewster

There are four Village Business nodes at the intersections of Lower Road, Snow Road, Old Colony Road, and at the easternmost edge of town. Small Commercial High Density zones exist at the intersection of 6A and Thad Ellis Road. A Rural Residential zone is located in the vicinity of Nickerson State Park. The remainder of Route 6A in Brewster is zoned Residential Medium Density. Brewster's Corridor Overlay Protection District, adopted in September, 1994, includes all of Route 6A.

Orleans

Almost all of Route 6A in Orleans is zoned for General Business except for a small area in the center of town which is zoned Limited Business. The town has a Village Center Overlay District which restricts certain uses and has specific requirements to protect historic character and limit traffic generation.

Town Bylaws/Regulations

This section highlights the provisions of each town's zoning bylaws and subdivision regulations with regard to the following subject areas which represent major factors affecting character and traffic on the Route 6A corridor:

a. Use Table - Allowed Uses
b. Street Trees/Landscaping Requirs.
c. Parking, Site Distance, Access Standards
d. Signs
e. Front Setbacks
f. Misc. Provisions
g. Use Variances
h. Subdivision Requirements

a. Use Table - Allowed Uses

The Use Table Summary (Table Z-1) highlights eighteen different land uses of varying intensity. Each of the these uses is permitted by right (P) or by special permit (SP/Z (zoning board of appeals), SP/P (planning board), SP/S (selectmen)) or is prohibited (N) in each of the zoning districts found along the Route 6A corridor.

Land Use	Bourne	Bourne	Sandwich	Sandwich	Sandwich	Barnstble	Barnstble	Barnstble	Barnstble	Yarmouth	Yarmouth
	R-40	B-2	R-1/R-2	BL	IND.	RF	RF-2	VB-A	VB-B	R-40	LB
Single Family Home	P	P	P	SP/Z	N	P	P	P	P	P	P
Home Occupation	P	P	P	P	P	SP/Z	N	SP/Z	SP/Z	SP/Z	P
Apartments/Multifamily	N	N	SP/Z	SP/Z	N	N	N	N	N	N	N
Mobile Home Park	N	SP/P	N	N	N	N	N	N	N	N	N
Nursing Home	SP/P	SP/P	SP/Z	SP/Z	N	N	N	N	N	SP/Z	SP/Z
Drive-Thru Restaurant	N	SP/P	N	SP/Z	N	N	N	N	N	N	P
Convenience Stores	N	SP/P	N	SP/Z	N	N	N	P	P	SP/Z	SP/Z
Outdoor Commercial Recreation	N	SP/Z	N	N	N	N	N	N	N	N	SP/Z
Gas Stations	N	SP/S	N	SP/Z	SP/Z	N	N	P	P	N	SP/Z
Auto Sales	N	SP/P	N	SP/Z	N	N	N	N	N	N	SP/Z
Car Wash	N	SP/P	N	SP/Z	SP/Z	N	N	N	N	N	SP/Z
Motel	N	SP/P	N	SP/Z	N	N	N	N	N	N	N
Flea Markets	N	SP/S	N	SP/Z	SP/Z	N	N	N	N	-	-
Retail (>5000 sq. ft.)	N	P	N	SP/Z	SP/Z1	N	N	P	P	N	P
Junkyards	N	SP/Z	N	N	N	N	N	N	N	N	N
Contractor's Yards	N	P	N	SP/Z	SP/Z	N	N	SP/Z	N	N	N
Storage/Warehousing	N	P	N	N	SP/Z	N	N	N	N	N	N
Radio Tower	-	-	N	N	P	N	N	N	N	SP/Z	SP/Z
KEY											
1 NOT > THAN 20% FOR RETAIL											
2 SOME RETAIL USE ALLOWED											
3 < 2500 SQ FT, > IS SP/Z											

TABLE Z-1: Table of Uses of Route 6A Towns

Land Use	Dennis	Dennis	Dennis	Brewster	Brewster	Brewster	Brewster	Orleans	Orleans
	RR	R-40	LB	RMD/O	RR/O	VB/O	CHD/O	GB	LB
Single Family Home	P	P	P	P	P	P	N	N	P
Home Occupation	P	P	P	P	P	P	P	N	P
Apartments/Multifamily	SP/Z	SP/Z	SP/Z	N	N	N	SP/P & Z	SP/Z	SP/Z
Mobile Home Park	N	N	N	N	N	N	N	N	N
Nursing Home	SP/Z	SP/Z	SP/Z	SP/P & Z	SP/P & Z	N	SP/P	P	P
Drive-Thru Restaurant	N	N	N	N	N	SP/P & Z	SP/P & Z	N	N
Convenience Stores	N	N	SP/Z	N	N	SP/P	SP/P	P3	SP/Z
Outdoor Commercial Recreation	SP/Z	N	SP/Z	SP/P &Z	SP/P &Z	N	SP/P	N	N
Gas Stations	N	N	N	N	N	N	SP/P	P	N
Auto Sales	N	N	N	N	N	N	SP/P	P3	SP/Z
Car Wash	N	N	N	N	N	N	N	P3	SP/Z
Motel	P	N	N	N	N	N	SP/P & Z	P3	P3
Flea Markets	N	N	SP/Z	N	N	N	N	P3	SP/Z
Retail (>5000 sq. ft.)	SP/Z2	N	SP/Z	N	N	SP/P	SP/P	P3	SP/Z
Junkyards	N	N	N	N	N	N	N	-	-
Contractor's Yards	N	N	N	N	SP/P & Z	N	N	-	-
Storage/Warehousing	N	N	N	N	N	N	N	N	N
Radio Tower	SP/Z	SP/Z	SP/Z	SP/Z	SP/Z	N	SP/Z	-	-
1 NO MORE THAN 20% FOR RETAIL									
2 SOME RETAIL USE ALLOWED									
3 < 2500 SQ FT, > IS SP/Z									

TABLE Z-1: Table of Uses of Route 6A Towns

b. Street Trees and Landscaping Requirements
Table Z-2 summarizes the street tree and landscaping requirements contained in the zoning bylaws of each of the towns along the Route 6A corridor.

c. Parking, Site Distance and Access Requirements
Table Z-3 summarizes the parking, site distance and access requirements contained in the zoning bylaws for each of the towns along the Route 6A corridor.

d. Signs
Table Z-4 summarizes the sign bylaw requirements of each town. Sign requirements may be contained in either a town's zoning bylaw or general bylaws. In addition to the town's requirements, the Old King's Highway Regional Historic District Commission contains sign guidelines. These guidelines encourage signs to be consistent with other signs in the area regardless of larger limits set by local zoning bylaws and sign codes.

Landscaping Requirements	Bourne	Sandwich	Barnstable	Yarmouth	Dennis	Brewster	Orleans
Restrictions on removal of existing vegetation	>6"	Not Found	Not Found	>4"	>4"	YES	Not Found
Required planting size of trees (caliper)	3"	2"	2"	2"	3"	YES	2"
Specific number of plantings required	YES	Not Found	Not Found	Limited	Limited	YES	Not Found
Sight distance setbacks for fences and plantings required	YES	YES	YES	Not Found	YES	YES	YES
Screening requirements for outdoor storage areas	YES	Not Found	>6' in height	Not Found	Not Found	YES	Not Found
Minimum size of planting islands required	Not Found	Not Found	15' in width	10' in width	10' in width	10' in width	40' sq.ft.
Restrictions on lot area rendered impervious	Not Found	YES	Not Found	Not Found	YES	YES	Not Found
30% of lot area required to be left in natural state	Not Found	YES	Not Found	Not Found	YES	Not Found	Not Found
Standards on the types of plants used for screening	YES	Not Found	YES	YES	Not Found	YES	Not Found
Required ratio of trees to the number of parking spaces	1 to 4	1 to 6	1 to 8	1 to 8	1 to 5	1 to 5	1 to 8
Bond on the landscaping required	Not Found	Not Found	Not Found	Not Found	YES	Not Found	Not Found
Size of parking area trips additional planting islands	Not Found	Not Found	Not Found	Not Found	Not Found	YES	YES

Table Z-2: Street Tree and Landscaping Requirements

PARKING REQUIREMENTS	Bourne	Sandwich	Barnstable	Yarmouth	Dennis	Brewster	Orleans
Minimum front yard setback	15'	20'	Not found	10'	10'	15'	10'
Parking space size requirements	9'x20'	9'x18'	9'x20'	10'x20'	Not Found	200 sq.ft.	Not Found
Shared Parking Provisions	YES w/in 300'	by SP	YES w/in 300'	Not Found	YES w/in 300'	by SP	SP w/in 300'
Paved surface required	YES	Not Found	Not Found	YES	Non-Dusting	>10' YES	Non-Dusting
Number of spaces specified by use	YES	YES	YES	YES	YES	YES	YES
Company sponsored car-pooling provision	YES	Not Found	Not Found	Not Found	YES	Not Found	Not Found
Max. distance from use to parking areas	<350'	Not Found	Not Found	<200'	Not Found	Not Found	Not Found
Loading requirements/location	YES/unspecified	YES/unspecified	Not Found	YES/unspecified	YES/rear	YES/rear	Not Found
Min. dist. from drive to other intersections (same/opp)	>125'	>125'/>200'	Not Found	>250'	>50'	>120'	>150'
On-site standing/queueing requirements		YES	Not Found	Not Found	Not Found	Not Found	Not Found
Max. width of curb-cut	20'	24'	Not Found	24'	Not Found	Not Found	30'
Min. sight line distance	225'	400'	Not Found	250'	Not Found	YES (AASHTO)	200'
Parking location on lot	Not Found	Not Found	Not Found	Side or rear	Side or rear	Side or rear	Not Found
Lighting requirements	Not Found	Not Found	No glare	No glare	Not found	No glare	Not Found
Discretion to reduce the # of spaces required	SP	Not Found	SP	By recom.	SP	SP	SP
Bike storage requirements	Not Found	Not Found	Not Found	Not Found	Not Found	YES	1/20 spaces
Drainage requirements (design storm)	Not Found	Not Found	Not Found	Not Found	YES (25 yr)	YES	YES
Bumpers or curbing required	Not Found	Not Found	Not Found	Not Found	Not Found	YES	Not Found
Trip reduction requirements	Not Found	Not Found	Not Found	Not Found	Not Found	YES	YES

Table Z-3: Parking, Site Distance and Access Requirements

Sign Requirements	Bourne	Sandwich	Barnstable	Yarmouth	Dennis	Brewster	Orleans
Exterior illuminated signs only	not found	yes	not found	no neon	no neon	> 1 sq.ft.	yes
Alteration of existing signs to conform w/by-law	yes	yes	yes	yes	yes	yes	yes
Repairs of existing signs to conform w/by-law	if >1/3 value	yes	yes	if >35% value	no	no	no
Sign Permits issued by	Building Insp.	Sign Insp.	Building Insp.	Building Insp.	Building Insp.	Sign Com.	Building Insp.
Sign matter must relate exclusively to that property	yes	yes	yes	yes	yes	yes	not found
Violations removed at owners expense	after 30 days	not found	after 60 days	not found	after 30 days	after 60 days	after 10 days
Moving /flashing signs prohibited	yes	yes	yes	yes	yes	yes	yes
Limit on the projection of signs from building	24 inches	6 inches	not found	not found	not found	not found	4 feet
Limit on the height of free standing signs	15 feet	20 feet	8 to 10 feet	12 feet	20 feet	10 feet	12 feet
Attached signs above the bldg line or roof allowed	no	no	no roof signs	no	yes	yes	not found
Scenic road size limitations (commercial)	yes	not found	not found	not found	not found	not found	not found
Maximum size for free standing signs	80 sq. ft.	24 sq. ft.	10 to 24 sq.ft.	18 sq. ft.	60 sq.ft.	8 sq.ft.	60 sq.ft.
Limitation on the # of signs per business	2 signs	2 signs	2 signs	2 signs	not found	2 signs	3 signs
Attached sign limitation (% of roof or wall area)	.15 to .5	0.75	0.1	0.33	0.1	not found	not found
Limitation of total sign area in Village District	40 sq. ft.	20 sq.ft.	50 sq.ft.	not found	not found	16 sq.ft.	not found
Off-Premise directional signs allowed (type)	yes (town)	yes (private)	yes (private)	yes (town)	not found	yes (town)	yes (private)
Inclusion of Historic Districts requirements	not found	yes	yes	not found	not found	yes	not found
Trailer/portable signs prohibited	not found	yes	yes	yes	not found	not found	not found

Table Z-4: Sign Requirements of Route 6A Towns

e. Front setbacks/Commercial Zones
The table below summarizes front setbacks requirements for each of the land use zones along Route 6A:

TABLE Z-5
Front Setbacks in Commercial Zones Along Route 6A

Town	Zone	Setback
Bourne	B-2	30' (but shall not exceed the avg. setback on adjacent lots within 50' of the subject lot)
Sandwich	BL/Ind	60' (on arterial streets must be maintained with vegetation)
Barnstable	VB-A (Barns. Vill.)	10'
Barnstable	VB-B (W. Barns.)	40'
Yarmouth	LB	30'
Dennis	LB	75' (or avg. of existing setbacks on abutting lots)
Brewster	VB/CH	30'
Orleans	LB/GB	25'
Orleans	VC	15' minimum, 25' maximum

f. Misc. Bylaw Provisions
This section includes a discussion of provisions in each town's zoning bylaws relating to site plan review, development phasing, growth controls and other innovative features relating to traffic control and community character.

Bourne
The bylaw establishes a procedure for *site plan review* by the Planning Board for mobile home parks, campgrounds, and all other developments resulting in 6 or more parking spaces if the development entails alteration to the number of parking spaces or the configuration of parking, egress, utilities, drainage or lighting. The Planning Board considers issues such as internal circulation and egress, visibility of parking areas from public ways, lighting, and alteration of topography. The Planning Board can withhold site plan approval for applications in violation of the zoning bylaw.

The bylaw also contains a *development phasing* provision limiting development within contiguous subdivisions and mobile home parks to 24 units or 20% in 24 months. Overall development within the town cannot exceed 200 units in 24 months. The Planning Board may grant a special permit authorizing more rapid development. Subdivision lots may also be exempted by the Planning Board. In considering special permits, the Board can examine pedestrian and vehicular flow and safety, adequacy of utilities/public services, impact on the natural environment, impact on nearby developed premises, and visual compatibility with the surroundings.

Sandwich

Site plan review is required for all applications requiring special permits which involve existing/proposed parking for six or more cars or more than 2000 square feet of floor area of new construction other than single family residential use. Site plan review covers a variety of issues including vehicular circulation, parking, landscaping, drainage, signs, lighting and screening. Site plan review is conducted by the Zoning Board of Appeals with recommendations by the Planning Board and Town Engineer.

The bylaw contains a *development scheduling* provision to control growth rates with a building permit cap of 170 residential dwelling units per calendar year. The bylaw is activated upon the vote of town meeting and is not currently active.

Barnstable

The zoning bylaw contains a provision for *site plan review* for business, professional, commercial, public recreation and other uses. The site plan review provisions apply to construction, demolition, grading, clearing, alteration of structures (except detached single and two family dwellings), parking lots, and signs. The bylaw specifies site plan requirements. Standards include conservation of natural features, drainage, lighting. Site plan review is coordinated by the Building Commissioner with review by Planning, Public Works and Health departments.

Yarmouth

The bylaw prohibits the outdoor display of items such as clothing and household furnishings for sale. The town requires *site plan review* for new construction or additions of greater than 1,000 sq ft. of new ground coverage or paving including cluster development, mobile home parks, motels and guest houses, and other nonresidential use requiring 5 or more parking spaces. This review is conducted by a site plan review team comprised of representatives of various town departments. Site plan review covers scenic views, open space, landscaping, and natural and historic features.

Dennis

The Zoning Board of Appeals may grant special permits for *multiple*

dwellings. Each building may not contain greater than 16 families or exceed 140 feet in any dimension and 75% of the lot area must be maintained as open space. The Zoning Board of Appeals also grants special permits for nursing homes with a limit of 8 beds per 40,000 sq. ft. of upland.

The bylaw provides for *site plan approval* by special permit from the Planning Board. This section applies to the following uses or expansions which require five or more additional parking spaces: multi-family, motels, and all commercial, industrial, and transportation uses. The Planning Board must approve, or approve with conditions. Design objectives in this section relate to: preserving natural landscape and topography, interior circulation, surface water drainage, building location and design, screening of objectionable features, and safety.

Brewster

Multifamily dwellings are permitted by special permit from the Planning Board in the CH zone only and are subject to requirements including lot coverage, open space, sewage disposal, and access. The bylaw also permits *planned business development and row commercial development* for lots meeting certain size requirements in the VB and CH zones. These uses are allowed by special permit and are subject to standards in the bylaw on building coverage, open space, access, parking, water and sewage disposal.

In 1992 the town adopted a one year *moratorium* on Route 6A within the Commercial High Density and Village Business districts, as well as within a 400' corridor on each side of Route 6A. The purpose of the moratorium was to give the town time to respond to a transportation study that indicated the potential for serious congestion and safety problems as a result of development along Route 6A. The moratorium prohibited the creation of new building lots and the issuance of building permit for new construction or expansions within the corridor. It also prohibited subdivisions of more than 5 lots in the entire town. It did not apply to construction of individual dwellings. Exceptions were provided by special permit in limited instances. This provision expired in November, 1993.

In 1994, the town adopted a *Corridor Overlay Protection District* and related zoning changes for all residential and business districts along Route 6A, as well as within a 400' corridor on each side of the roadway. The purpose of the overlay is to reduce the potential number of vehicle trips along the town's road system, thereby reducing congestion and improving safety, as well as to maintain the visual and historic character of Route 6A. The Corridor Overlay Protection District includes a number of innovative features which are not otherwise incorporated into the tables in this section. These include the following:

- a special permit requirement for all uses (other than single- and two- family dwellings) with an increase in floor area (new, accessory and additions)

greater than 500 square feet
• level of service and trip reduction requirements
• access requirements including curb cut restrictions, setback reductions as an incentive to share driveways, and a 120' separation between curb cuts
• shared parking and provisions for bicyclists and pedestrians
• landscaping, design and appearance standards
• a maximum percentage of interior floor area to a lot's buildable upland area in business zones

The town has also adopted a warrant article requesting the town to petition the Massachusetts legislature to establish the Brewster Board of Selectmen as the agency responsible, after consultation with the Massachusetts Highway Department, for issuance of curb cut or access permits along Route 6A within the town.

The Brewster zoning bylaw also includes a *development plan review* provision which requires a special permit for any project subject to development plan review within the Corridor Overlay Protection District. Plan review is conducted by a Development Plan Review Committee (DPRC) which includes representatives of the Police and Fire Department, Planning Board, Board of Health, Conservation Commission, Department of Public Works, and Old King's Highway Regional Historic District Commission. Opportunity for joint hearings before the Planning Board and DPRC on projects is provided. The bylaw also authorizes the DPRC to apply the transportation, trip reduction, access, parking, landscaping and appearance performance standards of the Corridor Overlay Protection District in its review.

Orleans

The bylaw contains *site plan review* requirements for all special permit applications and all building permits except for single and two family dwellings and for all uses involving ten or more new or existing parking spaces. The bylaw lists plan submittal requirements. Site plan review is conducted by a Plan Evaluation Board (made up of the Building Inspector, two planning board members, one member of the traffic study committee and one architect/landscape architect) who must approve a plan prior to granting a special permit or building permit.

The bylaw also contains provisions for architectural review conducted by an Architectural Review Committee appointed by the Board of Selectmen. *Architectural review* is required for all building permit and special permit applications (alterations, renovations, demolitions, relocations or additions). Exceptions are made for single and two family dwellings, development in the Old King's Highway Regional Historic District, and work not visible from the exterior of a structure. There is a two step (preliminary and final) review process. Design criteria are included in the bylaw.

The bylaw contains detailed requirements for motels, inns, etc. which includes site

plan review and architectural review. The bylaw also includes requirements for conversion of existing dwellings to multiple dwellings, cottage colonies, time shares, apartment development, and dwellings in commercial structures.

There is a *floor area ratio* of 1.0 in the Village Center district and .4 elsewhere. Up to 75% of the lot area (except in the VC district) may be rendered impervious. In addition, the front yard area in the VC district may contain pedestrian areas, terraces, landscaped area, and required driveways. Dwellings are allowed by right in commercial buildings subject to lot area, parking, open space, screening, and site plan review requirements.

The bylaw contains unusual *commercial regulations* that set forth standards for commercial uses subject to special permits. These standards are designed to develop uses which minimize the impact on the environment, enhance pedestrian access and are compatible with surrounding structures. Site design, activity type and mix, and facility design are considered in granting special permits for these uses.

g. Use variances

Use variances allow a property owner to petition a Zoning Board of Appeals for permission to use a property for a different use than is normally allowed by the zoning bylaw. Use variances are prohibited unless specifically authorized by a zoning bylaw. With the exception of the town of Bourne, all communities along Route 6A permit use variances as follows:

TABLE Z-6
Use Variance Provisions

• Sandwich -	Permitted
• Barnstable -	Permitted except within 300' of Route 149, Route 132 and other specified roads
• Yarmouth -	Permitted
• Dennis -	Permitted
• Brewster-	Permitted
• Orleans-	Permitted

h. Subdivision Requirements

Table Z-7 summarizes the subdivision rules and regulations that have the most direct impact on the character of Route 6A. These include the following: street trees, curbing, roadway width, and subdivision entrance signs (generally contained in zoning bylaws). This table also notes those communities which can require applicants to prepare an environmental impact report or to pay for consultants to review their proposed development.

Subdivision Regulations	Bourne	Sandwich	Barnstable	Yarmouth	Dennis	Brewster	Orleans
Environmental impact report required	> 20 lots	not found	not found	not found	not found	>8 lots	> 10 lots or 7 acres
Street trees size requirement	2"	2.5"	2.5"	2"	2.5"	not found	not found
Tree spacing in feet	every 40'	every 50'	not found	every 40'	every 50'	not found	not found
Berms	cape cod	bit.con.	bit.con./gran.	cape cod	machined	pre/b.c./gran	not found
Subdivision signs	permitted	permitted	permitted	permitted	not found	not found	permitted
Consultant fees for project review	not found	not found	not found	yes	not found	not found	not found
Roadway Width (pavement)	20-30'	20-24'	16-28'	20-26'	18-24'	22-24'	14-20'
Radius requirements at entrance	30' minimum	30' minimum	30-50'	50'	50'	50'	20' minimum

Table Z-7: Subdivision Regulations in Route 6A Towns

C. PROBLEM IDENTIFICATION

As can be seen from the Existing Conditions section above, Route 6A is made up of seven different communities with very different approaches to their zoning and land use policies. Most of the towns have not specifically tailored their zoning bylaws to address protection of the scenic, cultural and historical resources found along Route 6A. In addition, in most of the towns the current zoning has "programmed" a level of development that may create traffic impacts on Route 6A that cannot be accommodated on the existing roadway. This section attempts to point out areas where zoning can be modified and strengthened to address issues relating to Route 6A. However, even where there is a desire to modify local zoning to address these concerns, the grandfathering and nonconforming use provisions of state law present significant obstacles to modifications of local zoning. These issues are discussed below.

1. *Future Development Potential*

The land use inventory indicates that there are a number of areas along Route 6A with the potential for a large amount of future commercial/business development and/or redevelopment which could change the character of the roadway and dramatically increase traffic generation. These include the following roadway segments:

Mile	Town
0	Bourne/Sandwich
1	Sandwich
10	Barnstable (West)
20	Yarmouth/Dennis
23	Dennis
29	Brewster
33	Orleans

Several additional miles appear capable of a moderate amount of new commercial/business development and/or redevelopment. These include the following:

Mile	Town
2	Sandwich
9	Barnstable (West)
21-22	Dennis
26	Brewster
32	Brewster/Orleans
34	Orleans

The remaining miles have little to no future business development potential (other than modification of existing non-conforming development) under current zoning since they are primarily zoned for residential uses.

Mile	Town
3-7	Sandwich
8	Barnstable
11-15	Barnstable
16	Barnstable/Yarmouth
17-19	Yarmouth
24	Dennis/Brewster
25	Brewster
27	Brewster
30	Brewster

This study did not attempt to quantify the amount of development possible along the Route 6A corridor through a build-out analysis. However, the magnitude of possible future commercial development is clearly indicated by the TAMS study [TAMS Consultants, Inc. 1992. Route 6A Corridor Study] conducted for the town of Brewster. That study examined the Route 6A corridor from Route 134 in Dennis to its intersection with Route 6 at Exit 12 in Orleans and found the potential for an additional 4 million square feet in nonresidential development within this area, or an increase of 71% in nonresidential square footage. The majority of this development was identified as redevelopment and expansion of existing developed lots.

With regard to residential development, the study identified a potential 41% increase (or 758 new dwellings) in Brewster and a 2% increase (or 64 new dwellings in the portion of Dennis studied). The study notes that "the majority of increased residential development is possible due to the conversion or expansion of single family residences to two-family units."

The TAMS study concluded that the portion of the Route 6A corridor studied "cannot sustain the level of development which is currently programmed through local zoning . . . [without] significant decreases in level of service, traffic operation and roadway safety." (p. ix)

2. *Effectiveness of Current Regulations*

The following is a summary of current regulations for all Route 6A communities which have a direct impact on the character of new development along Route 6A.

a. Use Table

The Use Table in the Zoning inventory identifies a number of uses which could

have an adverse impact on character or traffic safety along Route 6A, particularly if not well-screened. These include mobile home parks, drive-through restaurants, car washes, junkyards, contractor's yards and radio towers. All of these uses are allowed by special permit in at least one zone along the Route 6A corridor, and some are allowed by right. For example, Sandwich and Dennis allow apartments and multifamily housing in residential zones along Route 6A, Yarmouth allows convenience stores, and Dennis allows outdoor commercial recreation. Bourne allows fast food restaurants and flea markets by special permit. Barnstable has the most restrictive residential zones with only home occupations allowed by special permit. Home occupations are permitted by right in most zones along the corridor. Since such uses have the potential to add traffic to residential areas along the roadway, towns may want to consider taking Barnstable's lead and requiring a special permit that allows an examination of traffic impacts where appropriate.

b. Street Trees/Landscaping

The towns differ somewhat in their approach to landscaping and screening requirements. Most towns prescribe the number and size of new trees required in parking lots. However, less than half limit the clearing of existing vegetation. About half of the towns specify the types of plantings that may be used for screening. Brewster's Corridor Overlay Protection District provides for additional front landscaped buffers including tree planting on Route 6A. Most of the towns would benefit from an updating of landscaping requirements for development on Route 6A such as additional front buffers and limitations on the clearing of existing vegetation.

c. Parking, Site Distance and Access

Local parking requirements address landscaping and screening, placement of parking, number of required spaces and provisions for shared parking. In some cases, revisions to these requirements could serve to improve the visual qualities, safety, and efficiency of parking areas along Route 6A. For example, several communities currently do not specify maximum curb cut widths or require that parking be located to the rear of buildings. The town of Barnstable appears most in need of a revision to this section of the bylaw to add these and other missing items. Innovative approaches to meeting parking requirements should also be considered. For example, the Orleans Village Center district (of which Route 6A is a part) allows parking requirements to be satisfied through paying an annual access fee to the town in lieu of providing some or all of the required on-site parking spaces. Brewster's Corridor Overlay Protection District also allows relaxed parking requirements and shared parking for developments on Route 6A.

d. Signs

Commercial signs on Route 6A are regulated by the Old Kings Highway Regional Historic District Commission as well as by local bylaws (for an analysis of state highway signs, see Scenic Resources). The Old King's Highway Historic District

Committee sets general guidelines for signs with more specific (but not necessarily more stringent) local requirements. Old King's Highway guidelines encourage the placement of one sign per premise and include guidelines on materials and colors to be used for signs. The guidelines discourage signs on high poles, projections above roof ridge lines or off-premises locations. Placement within the silhouette of the building or erection of free-standing signs is encouraged. The guidelines state that signs should not be internally illuminated "except where demanded by established insignia of a nationwide company and then only with minimum intensity."

The variation in the size and type of signs permitted by local bylaws along the corridor is tremendous. For example, free-standing signs in Bourne can be a maximum of 80 sq. ft. as compared to 8 sq. ft. in Brewster. One method of bringing greater cohesiveness to signage along Route 6A would be for towns to adopt the guidelines of the Old Kings Highway Committee with regard to signage along Route 6A.

e. Front Setbacks

Front setbacks permitted by the towns in their zoning bylaws range from 10' to 75'. In general, setbacks along Route 6A should reflect existing land uses. For example, front setbacks in the villages of Yarmouthport and Barnstable should be small, whereas larger setbacks might be appropriate in Brewster, West Barnstable, or portions of Sandwich where development placed close to the roadway could obscure or eliminate many panoramic views. If large setbacks are required, parking should be prohibited in front or screening/buffering required if not currently specified.

f. Miscellaneous Provisions

Most of the towns have provisions for site plan review, although this provision ranges from a non-binding advisory evaluation to a required review where reasonable terms and conditions can be imposed on as-of-right or special permit uses. In addition, communities such as Orleans and Brewster have developed creative zoning techniques designed to protect community character or limit traffic impacts. For example, within the Orleans Village Center District, uses such as drive-through or fast food restaurants are restricted. In addition, at least one-third of the area of the first floor of non-residential buildings are required to permit visibility of the building interior or window displays in order to maintain pedestrian visual interest. Brick sidewalks and planting areas along the street edge are also encouraged.

Brewster's Corridor Overlay Protection District, which includes Route 6A, provides careful regulation of development activities within the district. The overlay district contains performance standards for transportation such as maintaining level-of-service, trip reduction, access requirements such as limits on the number of curb cuts, relaxed parking requirements, and shared parking. Landscaping and appearance are also considered.

g. Use Variances
All of the towns with the exception of Bourne allow use variances. This policy should be reconsidered, since it may result in additional traffic and community character impacts which would not normally be permitted by the underlying zoning.

h. Subdivision Requirements
Specific provisions of subdivision regulations such as roadway width, street trees, and subdivision entrance signs will have a direct impact on the character of the roadway where subdivision roads intersect with Route 6A. For example, all of the towns except Dennis and Brewster explicitly permit subdivision entrance signs, and subdivision roadway requirements vary from as little as 14 feet to as great as 30 feet wide for towns along Route 6A.

In addition, subdivisions intersecting with Route 6A have the potential to create significant traffic impacts on the roadway. Only the Yarmouth regulations reference MGL Ch. 44, Section 53E-1/2 which allow a Planning Board to establish revolving funds for review of subdivisions by consultants to determine the adequacy of the definitive plan, and few towns require the preparation of an environmental impact report which would examine the potential traffic impacts of the project.

3. Zoning Reform: Obstacles and Opportunities

The land use and zoning section of the Corridor Management Plan includes many recommendations for local zoning changes to protect the scenic and historic character of Route 6A and reduce the traffic impacts of new growth and development along the roadway. It must be recognized, however, that zoning changes alone may not be sufficient to accomplish the objectives of the Corridor Management Plan.

First, zoning changes can be difficult to accomplish, requiring a 2/3 vote of town meeting. Even where zoning changes are adopted, towns are hampered in their ability to manage growth effectively by the current system of "grandfathering" or vested rights in Massachusetts contained in Massachusetts General Laws Chapter 40A (Zoning Act) and Chapter 41 (Subdivision Control Law). There are a variety of different types of zoning freezes available. For example, current law provides for a freeze on existing zoning on a given parcel (both use and dimensional requirements) for eight years from the time of endorsement of a subdivision plan for the parcel. In addition, a Planning Board's endorsement of an 81-P Plan (or Approval Not Required - ANR plan) or a perimeter plan confers three years protection from changes in allowable uses. This provision would not apply to changes in dimensional requirements or other regulations (such as off-street parking) not related to use. Often, plans are submitted just prior to town meeting to

take advantage of these grandfathering provisions.

A number of unsuccessful attempts have been made in the legislature to modify or eliminate these freeze provisions, with a recent Massachusetts Special Commission on Growth and Change debating this issue at length. No substantive changes have resulted, however. The courts have noted the obstacle that zoning freezes pose to towns in a recent Falmouth case (*Long v. Board of Appeals of Falmouth,* 32 Mass. App. Ct. 232 (1992)) where it was stated:

> "We recognize, however, that, in general, the right to obtain a three-year zoning freeze by submitting a plan for ANR endorsement is very broad. As we interpret the statute, it has the potential for permitting a developer, or at least a sophisticated one, to frustrate municipal legislative intent by submitting a plan not for any purpose related to subdivision control and not preliminary to a conveyance or recording, but solely for the purpose of obtaining a freeze. Any overbreadth in the protection afforded by the statute, however, will have to be cured by the Legislature."

A second obstacle is the protection afforded to nonconforming uses by MGL Ch. 40A, Section 6 and local zoning bylaws. In general, nonconforming uses and structures are those that were lawfully in place prior to a change in zoning which made them nonconforming. Under Massachusetts law, towns may adopt zoning bylaws which confer additional protection on nonconforming uses, but they may not be more restrictive than state statute. For example, a town may not specify a time period after which nonconforming uses must cease. There is extensive (and sometimes conflicting) case law governing various issues relating to nonconforming uses including change in use, abandonment, expansion and alteration of nonconforming uses. Many of the cases involve Cape Cod towns. In general, nonconforming uses and structures may be extended or altered (subject to local bylaw provisions) provided that the town Zoning Board of Appeals finds that the change, extension or alteration is not substantially more detrimental to the neighborhood than is the existing nonconforming structure or use. This is known as the "Section 6 Finding." As a result, depending on the standards applied by local Zoning Boards of Appeals, there is the potential for expansion of uses not currently permitted by zoning which could have an impact on community character and traffic generation.

A more complete discussion of both nonconforming uses and structures and zoning freezes can be found in the *Massachusetts Zoning Manual* edited by Martin R. Healy and Robert W. Mack and published by Massachusetts Continuing Legal Education, Inc.

One tool available to towns through the Cape Cod Commission Act which may help minimize the effect of the zoning freeze provisions in state law is the designation of Districts of Critical Planning Concern (DCPC). A DCPC designation allows for

creation and adoption of special local rules and regulations (called Implementing Regulations) to govern development within a defined area. The area may include land in one or more towns and may be designated for a variety of purposes including the presence of architectural, historic, economic, ecological and/or recreational resources or the presence of a major capital public facility or area of public investment (such as a roadway or airport).

Projects which are grandfathered from changes in local zoning and regulation under state enabling statutes are no longer grandfathered under new Implementing Regulations. In addition, notice of the nomination of a DCPC may suspend the issuance of development permits within the boundaries of the nominated area. DCPC nominations may be made by local boards of selectmen, historical commissions, planning boards, boards of health and conservation commissions, as well as the Cape Cod Commission, Barnstable County Commissioners and Assembly of Delegates. Additional information regarding Districts of Critical Planning Concern is available from the Cape Cod Commission.

D. RECOMMENDATIONS

Both the Land Use analysis and TAMS study indicate that there is significant potential for future development along Route 6A. Therefore, the following recommendations focus on techniques to reduce the build-out along Route 6A, to maintain traditional uses that are characteristic of the corridor and to ensure high quality commercial development.

1. *Corridor-wide Recommendations*

Complete Build-out study

A build-out study should be completed for the Route 6A corridor outside of those areas already studied in the TAMS report using a similar methodology to quantify growth potential in the Route 6A corridor. Such a study might be conducted with a combination of state and regional grants as well as local funds.

Establish DCPC's

Establish Districts of Critical Planning Concern (DCPC's) for key segments of the Route 6A corridor where necessary to reduce build-out, traffic congestion or to maintain the character of the roadway. This is a tool available under the Cape Cod Commission Act that provides an opportunity for the detailed study and development of regulations for regional resources on Cape Cod. Nomination of DCPC's places restrictions on the grandfathering provisions of state law, which would otherwise hamper the ability of towns to manage growth and traffic through zoning revisions.

Changes to local bylaws
Integrate recommended changes to local bylaws and regulations into the Local Comprehensive Plans for each community, such as landscaping and parking requirements, downzoning to reduce build-out, reduced setbacks where appropriate, elimination of use variances, and sign consistency with Old King's Highway guidelines.

Land acquisition programs
Develop land acquisition and/or easement programs to protect land in areas necessary to reduce build-out and traffic generation concerns.

Zoning enforcement
Establish a program to provide consistent enforcement of zoning and subdivision regulations along the corridor.

2. ***Zoning Bylaw and Subdivision Regulation Recommendations to Reduce Traffic Generation***

Limit high traffic generating uses
Review the table of use regulations to consider changing from "permitted" to "special permit" or "prohibited" high traffic-generating uses such as convenience stores and gas stations. The special permit approach could allow the towns to address traffic mitigation issues.

Reduce allowed commercial square footage
Reduce the square footage allowed for commercial and office projects by right, establish floor-area ratios, or limit such uses to the first floor of structures, with residential uses above to encourage mixed use development and reduce traffic generation. (Note: The TAMS study recommended commercial square footage limitations of 2,500 sq. ft. to 8,000 sq. ft. depending on the district or 10% building coverage per lot.)

Revisions to bylaws to improve access/reduce traffic
Revise zoning bylaws and subdivision regulations to improve access and reduce auto traffic on Route 6A as follows:

- create a roadway access by-law that includes provisions for curb cut approval for new development and curb cut consolidation when existing properties are expanded or redeveloped. Adopt or revise maximum driveway or curb cut widths
- require submittal of traffic studies for development projects that meet or exceed specific trip generation or size thresholds. The Cape Cod Commission is currently developing a trip generation threshold, with current research suggesting a threshold of 25 vehicles per hour
- establish traffic mitigation requirements which are consistent with

maintaining the character of the 6A corridor
- establish loading and standing requirements for development on Route 6A
- establish minimum sight distance requirements based on AASHTO standards or revise existing requirements to reflect actual conditions found on Route 6A

Reduce parking requirements
Reduce parking requirements for projects that offer shared parking, on/off-site transit, and pedestrian or bike improvements in order to encourage reduced trip generation and improved access management.

3. *Zoning Bylaw and Subdivision Regulation Revisions to Address Character and Design Issues*

Limit incompatible uses
Review the table of use regulations to consider changing from "permitted" to "special permit" or "prohibited" those uses that could have an adverse impact on the character of Route 6A such as junkyards, manufacturing and other more industrial uses. The special permit approach could allow the towns to address design-related issues.

Rezoning to residential business
Rezone linear general or highway business districts to residential or residential business (small-scale businesses with residential character or mixed use development) with identified nodes zoned for village business to ensure development which is compatible with the existing character of the corridor. Consider establishing Districts of Critical Planning Concern (DCPC's) for key segments of the Route 6A corridor where grandfathering of existing incompatible uses is a major concern.

Develop improved performance standards
Develop improved performance standards for parking lots, access, landscaping, building design and signage. Particular attention should be paid to increased screening/open space requirements for the front yard area where permitted uses could have a negative impact on community character. Revise town bylaws to increase buffer and street tree requirements for all uses along Route 6A. Increase ratio of trees/parking spaces to reflect most subdivision regulations (See Scenic Resources section).

Allow mixed use
Adopt mixed use development bylaws in order to reinforce traditional village settings in appropriate areas.

Improve sign codes
Coordinate and strengthen local zoning requirements to be consistent with the Old

Kings Highway sign guidelines.

Review accessory uses
Review accessory uses and/or home occupation uses in residential areas to ensure protection of Route 6A's character. Examine use variance provisions to ensure that approvals of such variances do not have an adverse impact on character and traffic generation.

Develop lighting standards
Develop standards for parking lot lighting to address pole height, recommended lighting levels, cut-off luminaires, distance from property lines, hours of operation, security lighting, and relationship with tree canopies.

Incentives for improvements to strip developments
Adopt a zoning bylaw which would give the Zoning Boards of Appeals the ability to recommend design improvements on reuse, rehabilitation or expansions of existing properties which need variances. Develop zoning incentives (such as modifications in height, setbacks etc.) for projects which undertake recommended design improvements.

Revisions to bylaws for gateways
Revise zoning bylaws and develop incentives to enhance the visual gateways to the corridor in both Orleans and Bourne. These gateways should reflect the historic and scenic character of the roadway (see Scenic Resources section).

Increase lot size/frontage
Increase lot size and lot frontage requirements along Route 6A where appropriate, such as in Brewster, West Barnstable, or portions of Sandwich to protect the scenic and historic character of the corridor.

Redesign subdivision roadway widths
Design subdivision roadway widths that are scaled to reflect the intensity of use. Alternatives to consider for low density residential streets include pavement widths between 20 - 22 feet (10-11 foot lanes) depending on the projected traffic volume. Avoid curbing where possible, or consider using Cape Cod berms. Minimize clearing and grading for subdivision roadways intersecting with Route 6A and reduce radius requirements. Replant cleared areas with new street trees.

IV. TRANSPORTATION

A. ROADWAY SYSTEM

1. Introduction
2. Existing Conditions
3. Existing Characteristics and Geometry
4. Traffic Operations
5. Future Conditions
6. Problem Identification
7. Constraints
8. Improvements and Recommendations

B. ALTERNATE TRANSPORTATION

1. Introduction
2. Existing Service
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5. Corridor Recommendations

C. PEDESTRIAN FACILITIES

1. Introduction
2. Existing Conditions
3. Problem Identification
4. Pedestrian Constraints
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D. BICYCLE FACILITIES

1. Introduction
2. Existing Conditions
3. Problem Identification
4. Constraints
5. Recommendations

Route 6A Scenic Byways Program
Location of Accidents on Route 6A

Data Sources:

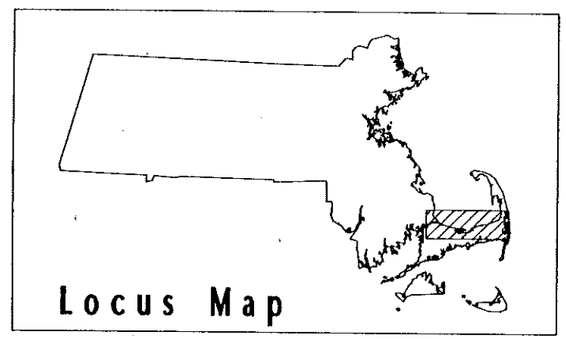
Basemap features: MassGIS, (digital), 1988, from 1:100,000 scale sources. Includes coastline and town boundary. Ponds and roads are from 1:25,000 scale sources automated by Massgis and CCC GIS.

Non-digital data was automated by the Cape Cod Commission GIS staff using the ARC/INFO GIS software.

Accident data: Obtained by Mass Highway Department through Registry of Motor Vehicles files. 1989-1991

Specific Route 6A data were collected by the Cape Cod Commission Traffic staff for use in the GIS (such as distances, traffic volumes, etc.)

Plot file created on December 9, 1994



- 1-9 accidents
- 10-14 accidents
- 15-19 accidents
- 20-25 accidents

This map was produced by the Cape Cod Commission's Geographic Information System Department for the Route 6A Historic Byways Project. The map is illustrative and all depicted boundaries are approximate. It is not intended for survey or legal purposes.

Corrections to this map are welcome at the office of the Cape Cod Commission.

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Cape Cod Commission · Land Use · Roads · DCPCs · Parcels · DRIs · Environmental · Demographics · GIS Services

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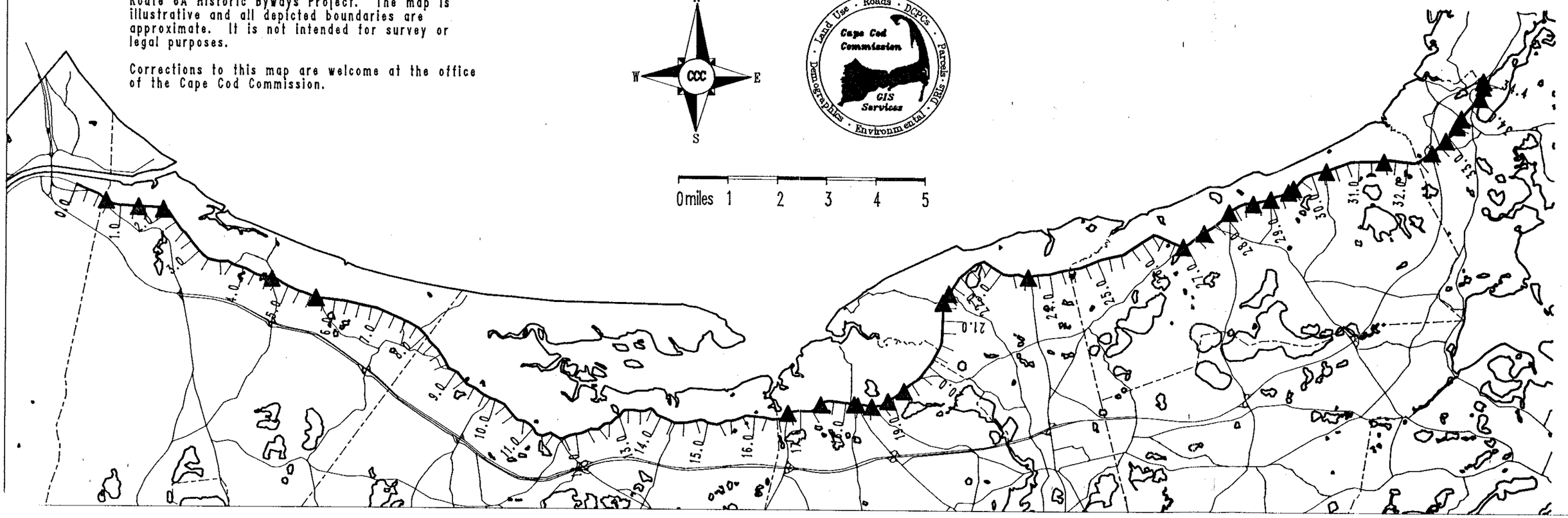
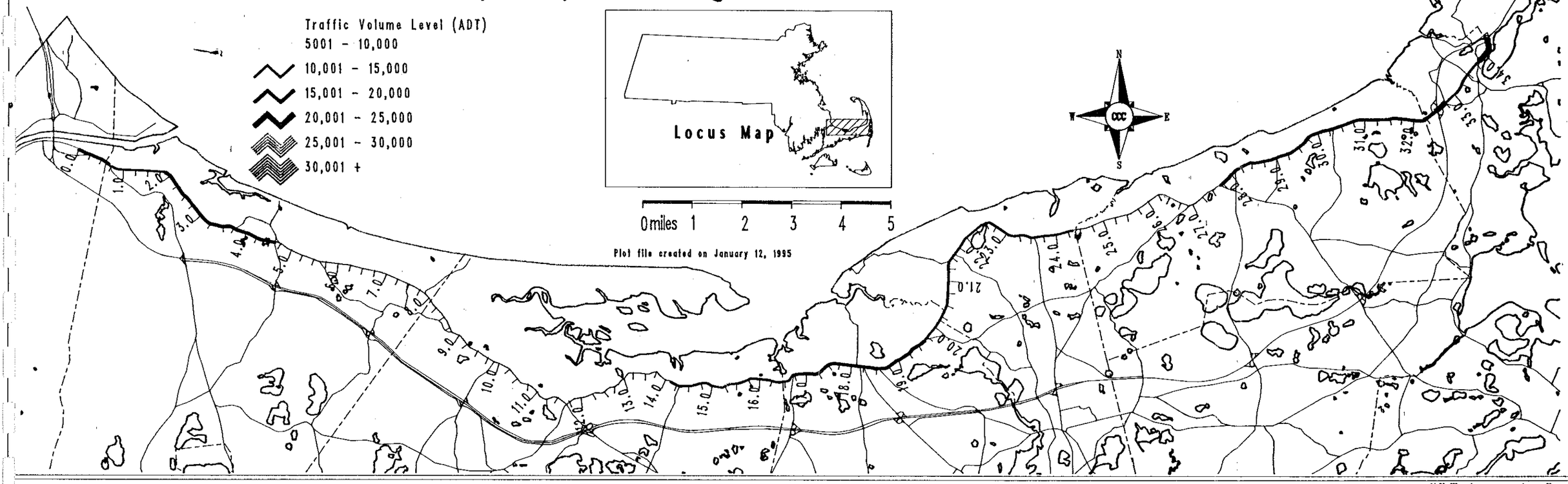
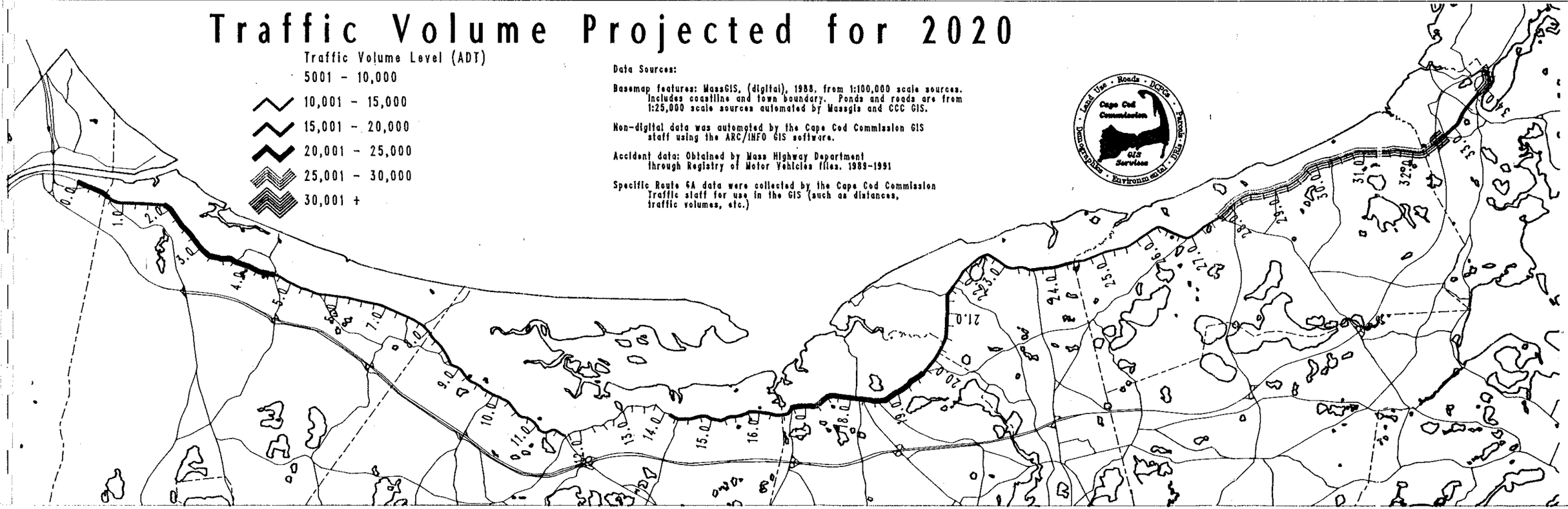


Route 6A Scenic Byways Program: Traffic Volume for 1993



Traffic Volume Projected for 2020



Data Sources:

Basemap features: MassGIS, (digital), 1988, from 1:100,000 scale sources. Includes coastline and town boundary. Ponds and roads are from 1:25,000 scale sources automated by Massgis and CCC GIS.

Non-digital data was automated by the Cape Cod Commission GIS staff using the ARC/INFO GIS software.

Accident data: Obtained by Mass Highway Department through Registry of Motor Vehicles files. 1989-1991

Specific Route 6A data were collected by the Cape Cod Commission Traffic staff for use in the GIS (such as distances, traffic volumes, etc.)

A. ROADWAY SYSTEM

1. INTRODUCTION

Route 6A is a state highway which has been recognized for its scenic and historic character. It has been the backbone of Old King's Highway Regional Historic District since the 1970's and was designated a Scenic Road by the state legislature in 1992. Barnstable County's *Regional Policy Plan* also classifies Route 6A as a road with scenic and historic value. The *Regional Policy Plan* classifies roads on Cape Cod in four separate categories: Class A roads are Major Regional Roadways, Class B roads are Regional Roadways with Scenic and Historic Values, Class C roads are Local Roadways of Regional Significance, Class D roads are Other Local Roadways. Route 6A is classified as a Class B roadway, indicating that it has scenic and historic values inherent to Cape Cod which must be preserved. On Class B roadways, the *Regional Policy Plan* encourages alternatives to automobiles and non-structural mitigation to address transportation impacts created by development without harming scenic or historic values.

Although Route 6A is generally classified as a rural roadway in the state highway system, it more resembles an urban roadway due to it's high volumes and activity areas. Land uses along Route 6A vary from residential to commercial, and the road is intersected by numerous major regional roads, with traffic volumes varying considerably along its length.

This section of the Corridor Management Plan identifies existing and future problem areas along Route 6A and summarizes both corridor-wide and location specific recommendations to address the issue of roadway capacity and safety while respecting the historic, scenic and environmental constraints posed by the road.

2. EXISTING CONDITIONS

Data was collected for both daily and peak hour traffic volumes for roadway links and intersections on Route 6A. These volumes were collected to determine average daily traffic and intersection operations at critical intersections on the corridor.

Link Volumes

Roadway link volumes were conducted to determine areas of low, moderate, and high daily traffic volumes. These volumes for sections along the corridor are shown in Table R1. An extensive breakdown of daily traffic volumes on Route 6A is shown in Appendix E, Table 1.

Table R1: Existing and Future Route 6A Average Daily Traffic Volumes

Town	Location	1993 ADT
Bourne/Sandwich	Town Line	17,948
Sandwich/Barnstable	Town Line	7,211
Barnstable	East of Route 132	6,210
Barnstable/Yarmouth	Town Line	11,291
Yarmouth	East of Union Street	16,161
Dennis	East of Corporation Road	10,667
Dennis/Brewster	Town Line	8,780
Brewster/Orleans	Town Line	18,708
Orleans	West of West Road	24,042
Orleans	East of Route 28	16,315

Table R2: Route 6A Intersection Approach Volumes (Total)

Town	Route 6A Intersections	Intersection pproach Volumes (Peak Hour)
Sandwich	Route130 & Tupper Rd [1]	1,904
Sandwich	Quaker Meetinghouse Rd [2]	1,267
Barnstable	Route 132	985
Yarmouth	Willow St	1,503
Yarmouth	Union St & Playground	1,409
Brewster	Route 137 [3]	1,124
Brewster	Route 124 [4]	1,439
Orleans	Route 6 Westbound Ramp	2,026
Orleans	Route 6 Eastbound Ramp	2,314
Orleans	Route 28	2,201
Dennis	Route 134 [5]	1,659

Source:

1. AM Wilson Assoc., Inc., Costco Wholesale DEIR, 12/92
2. Cape Cod Commission, 1993
3. Villages Dev. Co., Inc., The Village at Ocean Edge FEIR, 3/90
4. Tams Consultant, Inc., Route 6A Corridor Study - Brewster, 6/92
5. CCC, Route 28: Yarmouth/Orleans Study, 3/92

Intersection Volumes
Traffic volumes were collected and evaluated at eleven intersections along the Route 6A corridor. These intersections were chosen based upon operating conditions and roadway classification. Intersections selected met a criteria that included level of service conditions of LOS D or worse, and were classified as either a Class A (Major Regional Roadway), Class B (Regional Roadway with Scenic and Historic Values), or Class C (Local Roadways of Regional Significance). The eleven intersections essentially represent high congestion and problem areas, and are therefore considered critical intersections on the corridor. Turning movement counts were performed at seven of the intersections to represent actual 1993 traffic volumes. Traffic volumes for the remaining four intersections were obtained from previous studies. Volumes used from previous reports were adjusted to represent 1993 conditions. All traffic volumes represent the highest peak hour during the day. The intersection locations and corresponding traffic volumes are shown in Table R2.

Accident Data
Accident data was obtained from the Massachusetts Highway Department. The latest individual accident reports for 1989, 1990, and 1991 were reviewed at each location and are noted in Table R3. They are also shown on the Map of Accident Locations. Accident locations in Table R3 are only shown where the frequency of accidents was ten or greater over the three year period. As shown in the table, Route 6A at Tupper Road in Sandwich had the highest accident rate with a total of 24 accidents over a three year period. A breakdown of intersections with five or more accidents on Route 6A can be seen in Appendix E in Table 2.

Most accidents on Route 6A occurred during the summer months of June, July, and August. Fourteen percent (14%) of all accidents occurred in August; whereas, a low of 5 percent occurred during January. Seventy-six percent (76%) of all accidents occurred during the daytime. Thirty-seven percent (37%) of accidents were angular (turning vehicles). Saturday was the most frequent day accidents occurred, with 19 percent, while Wednesday was the least frequent with 12 percent. The majority (74%) of accidents involved 2 vehicles, while a low of .76 percent involved 4 or more vehicles. Further information on Route 6A accident rate characteristics is shown in Table 3 in Appendix E.

Table R4 shows a comparison of the Route 6A accident rates and the average statewide accident rates of three similar roads (based upon roadway classification and average daily traffic volumes). Although Route 6A may be classified as a secondary rural road, the table shows that it is more similar to a secondary or primary urban road based upon comparative average daily traffic volumes. The table also shows that the average accident rate per million vehicle miles (mvm) on Route 6A is below the state average for all three roadway classifications. The true exposure to accidents is measured by the number of miles travelled by vehicles on

Table R3: Route 6A Intersection Accident Data (1989-1991) [1]

Town	Intersection	Number of Accidents
Sandwich	Tupper Road	24
Yarmouth	Union Street	19
Orleans	Canal Road	18
Orleans	Route 6 Ramps	18
Brewster	Route 124	13
Yarmouth	Willow Street	13
Orleans	Main Street	12
Eastham	Orleans Rotary	11
Orleans	West Road/Eldredge Park Way	11
Dennis	New Boston Road	10
Sandwich	Old County Road	10

1. Represents intersections that had 10 or more accidents over 3 years.

Table R4: Route 6A and Statewide Accident Rates

Town	Road Miles	Average Daily Traffic	Accidents Per MVM [1]	Average Accidents Per Mile	Total Accidents Per Year
Bourne	0.63	15,472	6.00	33.86	21
Sandwich	7.50	13,483	1.54	7.60	57
Barnstable	8.40	8,559	0.76	2.38	20
Yarmouth	3.70	13,808	4.00	20.18	75
Dennis	4.30	7,445	2.94	7.98	34
Brewster	7.80	14,867	2.00	10.85	85
Orleans	2.10	19,312	3.67	25.87	54
Route 6A	34.43	13,278	2.08	10.06	346
State Average [2]					
Primary Urban	203.73	14,130	2.67	13.78	2,808
Secondary Urban	211.11	13,578	3.74	18.54	3,915
Secondary Rural	313.61	5,427	2.26	4.48	1,402

1. Million Vehicle Miles
2. Based on 1988 statewide accident data.

the roadway (i.e., million vehicle miles). There were 2.08 accidents per million vehicle miles on Route 6A compared to the statewide average of 3.74 on secondary urban roads, 2.67 on primary urban roads, and 2.26 on secondary rural roads, which is the Route 6A classification. It is important to note that some towns have much higher rates than the Route 6A average, such as Bourne (6.0 per mvm) and Yarmouth (4.0 per mvm). A detailed analysis of Route 6A accident rates compared to statewide accident rates is shown in Appendix E in Table 4.

3. EXISTING CHARACTERISTICS AND GEOMETRY

Inventory of roadway characteristics and geometry were collected for the Route 6A corridor. Data collection included the location, length, type, and condition of: curbs, sidewalks, roadway, and guardrails. Traffic volume data and accident data were also collected.

Route 6A Geometry
The Route 6A corridor is generally a two-lane roadway. The width of the road ranges from 20 feet to as much as 46 feet where exclusive turn lanes are provided at intersections. Approximately 26 miles of the 34.5 mile corridor consists of 24 feet of pavement width.

Traffic Controls
Traffic Signals - Traffic signals are located at the following seven locations along the Route 6A corridor. These signals are operated on both actuated and pre-timed signal systems.

- Ben Abbey Road - Bourne
- Jarves Street - Sandwich
- Hyannis Road - Barnstable
- Route 134 (Bridge St/East-West Dennis Road) - Dennis
- West Eldridge Street - Orleans
- Main Street - Orleans
- Canal Street - Orleans

Flashing beacon signals are located at the following three intersecting streets along the corridor:

- Route 149 (Meetinghouse Way) - Barnstable
- Union Street - Yarmouth
- Summer Street - Yarmouth
- Stoney Brook Road - Brewster

Speed Zoning
The speed limit along the corridor varies depending on the roadway geometry and land uses. The rolling terrain, narrow lane widths and sharp curves serve as a natural speed control. The speed posted limit on the corridor ranges from 25 mph to 40 mph.

Guardrails
Data was collected for the location and length of guardrails on the corridor. With the exception of Bourne, all the Route 6A towns have guardrail sections along Route 6A. The guardrails are generally in locations that require protection from a hazardous roadside environment (e.g., fixed object, steep grade, environmentally sensitive areas). Most guardrails on Route 6A are designed with a corrugated steel face with wood post. Yarmouth has the highest percent (9.8%) of guardrail use due primarily to the recent construction of new guardrails along this section. Bourne has no guardrails along Route 6A. A breakdown of guardrail use by town is shown in Appendix E in Table 5.

Curb Summary
Existing curb data was collected on Route 6A. The placement of curbs on the roadway serve the following purposes: drainage control, pavement delineation, right-of-way reduction, aesthetics, delineation of pedestrian walkways, reduction of maintenance operations, and assistance to orderly roadside development. Orleans has the highest percent (90%) of curb length on Route 6A due to recent roadway improvements made along the commercial zone. Table 6 in Appendix E shows the curb lengths of each town along the corridor.

Curb Cuts
Curb cut density has a major influence on the operations on Route 6A. Data was collected for all curb cuts on the corridor. Curb cuts include driveways (residential and commercial) and streets intersecting Route 6A. Barnstable has the highest number of curb cuts (460) and it encompasses the longest span of Route 6A. Bourne (73 per mile) and Orleans (69 per mile) have the most curb cuts per mile due to their built up commercial zones on Route 6A. Brewster has the least (49 per mile) amount of curb cuts. Table 7 in Appendix E displays the existing curb cut conditions along the corridor for each town.

Roadway Jurisdiction
Route 6A is a state highway except for a small segment of roadway in Barnstable. The Massachusetts Highway Department maintains and implements all improvements on Route 6A except for the segment from Old Jail Lane to Hyannis Road in Barnstable village which is under the jurisdiction of the Town of Barnstable. Town Departments of Public Works maintain the sidewalks along the highway, though they are constructed by the Massachusetts Highway Department. Both the Massachusetts Highway Department and Utility Companies contract out

tree and vegetation pruning work along the roadway.

4. EXISTING TRAFFIC OPERATIONS

The peak hour traffic volumes shown in Table R2 were used to analyze the existing conditions. The efficiency of traffic operations at a location (or changes to traffic operations) is measured in terms of Level of Service (LOS). LOS refers to the quality of traffic flow along roadways and at intersections. It is described in terms of levels A through F, where A represents the best possible conditions and F represents forced-flow, or failing conditions. LOS C or better is generally considered acceptable under the *Regional Policy Plan.*

At signalized intersections, LOS is defined in terms of average delay. Average delay is a measure of the mean stopped delay experienced by vehicles entering a signalized intersection. Average delay is determined for each approach and for the intersection as a whole. The LOS deteriorates as average delay increases. For unsignalized intersections, reserve capacity (available vehicle capacity at the intersection approach) is used to determine LOS. An unsignalized intersection operating at LOS F would be at or beyond the capacity of a roadway.

As discussed earlier, eleven critical intersections were chosen for evaluation based upon level of service operations (LOS D or worse) and roadway classification (Class A-C). These eleven intersections were analyzed using the methods described above. The results of the LOS analysis for these intersections is summarized in Table R5. Nine of the eleven intersections operate near, at or below intersection capacity (LOS E-F). The remaining two intersections operate at LOS D. Failures at the unsignalized intersections are a result of heavy mainline volumes reducing the amount of sufficient gaps allowed for minor street vehicles entering the mainline. Delays at the signalized intersection are a result of inappropriate signal timing and/or phasing. Pre-timed signals allocate set green times for each approach which may be inappropriate for the demand of the approaching vehicles.

5. FUTURE CONDITION PROJECTIONS

Traffic volumes were projected to the year 2020 to determine the impacts of future traffic growth on the Route 6A corridor. Traffic volumes were projected using a traffic model and then were analyzed using the level of service procedures to determine future intersection operations. These future traffic volumes are projected volumes and may not represent actual 2020 volumes.

Traffic Model
A traffic simulation model was used to determine future traffic growth on Cape Cod

Table R5: Route 6A Existing Intersection Levels of Service [1]

Unsignalized

Town	Route 6A Intersections	Existing LOS	Existing RC [2]
Sandwich	Route130 & Tupper Rd	F	-224
Sandwich	Quaker Meetinghouse Rd	E	-64
Barnstable	Route 132	E	91
Yarmouth	Willow St	F	-45
Yarmouth	Union St & Playground	E	63
Brewster	Route 137	D	145
Brewster	Route 124	E	82
Orleans	Route 6 Westbound Ramp	E	34
Orleans	Route 6 Eastbound Ramp	F	-26
Orleans	Route 28	E	11

Signalized

Town	Intersection	LOS	Delay [3]
Dennis	Route 134	D	25.7

1. Criteria for selected intersections were 1. LOS D or worse, and 2. roadway classification A-C.
2. Available reserve capacity per hour at unsignalized intersections.
3. Average delay per vehicle in seconds at signalized intersections.

for the year 2020. TMODEL2 is a mathematical, peak hour traffic distribution and assignment model. The model was developed to account for peak hour street and intersection congestion in the development of travel times.

The model used information on housing units, employment, residential acreage, and undeveloped acreage to develop the future growth patterns. Using the existing model calibrations, future projections of growth were used to develop future vehicle trips and project future peak hour traffic volumes.

Future 2020 Traffic Volumes
Projected 2020 traffic volumes assigned to Route 6A using the model are shown in Table R6. The existing traffic volumes are included to show the estimated increase in traffic at each location. A detailed breakdown of other traffic volume increases along Route 6A is shown in Appendix E in Table 8. As shown in the Table R6, projected traffic volume increases range from 9% to 96% over a 27 year period. The average increase is 43%, which results in traffic growth of approximately 1.15% per year.

Future Traffic Conditions
Using the projected 2020 traffic volumes, a level of service analysis was performed at the eleven critical intersections on Route 6A. Table R7 shows the existing and future LOS summary. If growth continues as anticipated, the increase in traffic from 1993 to 2020 will have a substantial impact on intersection operations. Under the 2020 conditions, ten intersections operate below capacity (LOS F) and one approaches capacity (LOS E).

6. PROBLEM IDENTIFICATION

Traffic data collected along Route 6A serves to determine current and future operational deficiencies on the corridor. The data also leads to observations identifying transportation inadequacies along Route 6A. Transportation-related problems on the corridor are identified as: numerous conflict points, poor intersection operation, and poorly defined and inconsistent roadway network. Corridor-wide problem areas are discussed in the following paragraphs.

Accident Conflicts
Route 6A had a total of 1,050 accidents over a three year period (1989-1991), including 11 pedestrian and 13 bicyclist accidents. There were a total of 5 fatal accidents during this period. Accidents are a result of many inadequacies of a roadway system, but a main cause of vehicular accidents is turning vehicles at intersections and access drives. Potential accident causes on Route 6A are discussed below.

Table R6: Existing and Future Route 6A Average Daily Traffic Volumes

Town	Location	1993 ADT	2020 ADT	Percent Increase
Bourne/Sandwich	Town Line	17,948	21,393	19%
Sandwich/Barnstable	Town Line	7,211	14,135	96
Barnstable	East of Route 132	6,210	8,916	44
Barnstable/Yarmouth	Town Line	11,291	18,191	61
Yarmouth	East of Union Street	16,161	20,592	27
Dennis	East of Corporation Road	10,667	14,105	32
Dennis/Brewster	Town Line	8,780	14,686	67
Brewster/Orleans	Town Line	18,708	28,470	52
Orleans	West of West Road	24,042	30,415	27
Orleans	East of Route 28	16,315	17,783	9

Table R7: Route 6A Existing and Future Intersection Levels of Service [1]

Unsignalized

Town	Route 6A Intersections	Existing LOS	Existing RC [2]	2020 Future LOS	2020 Future RC [2]
Sandwich	Route130 & Tupper Rd	F	-224	F	-322
Sandwich	Quaker Meetinghouse Rd	E	64	F	-79
Barnstable	Route 132	E	91	F	-311
Yarmouth	Willow St	F	-45	F	-440
Yarmouth	Union St & Playground	E	63	E	45
Brewster	Route 137	D	145	F	-95
Brewster	Route 124	E	82	F	-24
Orleans	Route 6 Westbound Ramp	E	34	F	-14
Orleans	Route 6 Eastbound Ramp	F	-26	F	-81
Orleans	Route 28	E	11	F	-30

Signalized

Town	Intersection	LOS	Delay [3]	LOS	Delay [3]
Dennis	Route 134	D	25.7	F	300+

1. Criteria for selected intersections were 1. LOS D or worse, and 2. roadway classification A-C.
2. Available reserve capacity per hour at unsignalized intersections.
3. Average delay per vehicle in seconds at signalized intersections.

Access Management
Inadequate access management, or lack thereof has been an important factor behind the deterioration of Route 6A in terms of safety and traffic flow. There are numerous conflict points (the point where vehicle movements intersect) on Route 6A due to poor control of access (excessive site drives, lack of curb delineation and channelization, and excessive width of driveways).

It has been identified that there is a correlation between accidents and conflict points. Studies have proven that accident rates are higher where multiple access drives and lack of curb cut control are present on roadways. Numerous curb cuts and conflict points along the Route 6A corridor appear to have the same result on the accident rates. Table R8 shows a relationship between the number of curb cuts and accident rates on Route 6A.

Intersection Operations
High traffic volumes along the corridor result in vehicle delays and intersection congestion which increases the potential for accidents. Eleven critical intersections being studied in this report operate at or near failing conditions. These intersection operations will be exacerbated with the addition of future growth.

Driver Confusion
Poorly defined roadway characteristics and geometry result in driver confusion along Route 6A. Inadequate channelization, signage, lane markings, and lack of directions confuse the drivers as they make driving decisions. In addition, inconsistent roadway characteristics along the corridor increase driver uncertainty which results in accidents.

Visual Constraints
Poor sight distance along the Route 6A, particularly at intersections, increases the potential for accidents. Visual obstructions such as overgrown vegetation and structures encroaching on the road also interfere with the drivers ability to identify potential hazards.

Poor Traffic Controls
Lack of STOP and YIELD signs and inadequate signal control reduce consistency and driver expectancy, disturbing the proper flow of vehicles along Route 6A and at intersecting roadways.

Speed Changes
Lack of uniform speeds on Route 6A increases driver uncertainty. Natural speed controls (narrow road width, sharp curves, rolling terrain) and frequently changing posted speed limits constantly alter a drivers vehicle speed which, in turn, increases the potential for rear-end accidents.

Table R8: Relationship Between Traffic Volumes, Curb Cuts, and Accident Rates

Town	ADT Volumes	Curb Cuts Per Mile Businesses	Intersections	Total	Accidents Per Mile
Orleans	19,312	52	10	62	26
Bourne	17,948	25	10	35	34
Brewster	14,667	22	6	28	11
Yarmouth	13,808	15	9	24	20
Sandwich	13,483	24	8	32	8
Dennis	10,943	18	8	26	8
Barnstable	8,559	12	8	20	2

7. CONSTRAINTS

Transportation related improvements on Route 6A are limited due to many constraints along the corridor. Historic, scenic, environmental, and right-of-way issues are some constraints impeding improvements to the corridor. These constraints, along with others, are discussed below.

Right-of-Way
Narrow Right-of-Way (ROW) on Route 6A limits the width of potential improvements. Roadway construction and upgrades for bicyclist and pedestrian facilities require safety features such as adequate lane and shoulder width, smooth pavement, and curb setbacks. Without adequate space within the ROW, improvements would not be possible without the taking of land or acceptance of easements by property owners.

Scenic/Historic Resources
Scenic and historic elements such as stone walls, mature shade trees, and historic structures which are close to the roadway edge could be jeopardized by improvements which include widening, and the character of the corridor could be compromised by the introduction of new materials and transportation-related structures.

Environmental Features
Some improvements to roadway facilities require cut and fill sections which would endanger wetlands and other sensitive areas adjacent to the roadway. In addition, the presence of side slopes could involve vegetation removal for grading.

Grandfathered Businesses
Improvements along the corridor related to access management and curb cut consolidation may be limited due to a grandfather clause that allows property owners with pre-existing conditions to remain as they are until substantial improvements are proposed.

8. IMPROVEMENTS AND RECOMMENDATIONS

Corridor Wide Recommendations

Evaluating improvements to the transportation system on the Route 6A corridor provides a unique challenge that requires implementation of transportation enhancement measures while preserving the delicate surroundings. With the success of modern transportation mitigation techniques, improvements on corridors can be accomplished without the need to substantially alter the roadway environment. The following paragraphs discuss techniques that can improve the

Route 6A transportation system.

Road Jurisdiction and Municipal Coordination

Consider changing Route 6A jurisdiction to increase local control, but maintain regional perspective. This would create a better link between land-use and highway access. Municipalities should coordinate all projects on Route 6A to address related conflicts and provide a smooth sequence of improvements throughout implementation stages.

Local jurisdiction and coordination on Route 6A would offer an opportunity for towns to implement access management policies that are consistent with the character and needs of each town and all of Route 6A. Brewster's Route 6A Corridor Overlay Protection District is an example of the town's authority to implement access management techniques. The Overlay District requires developers to share driveways and parking areas where feasible, find ways to reduce traffic in and out of businesses, place parking and loading areas to the rear of buildings, and provide adequate landscaping so that development fits the character of Route 6A. Relatedly, Brewster is pursuing the authority to grant curb cut permits on the roadway through the state legislature. These techniques establish measures to improve safety and traffic flow while preserving the character of the corridor.

Speed Limit Reduction

Implement speed zoning controls along the corridor to minimize accidents and improve safety for all transport modes. Successful speed zones require proper enforcement of the speed limit.

Access Management

The intent of access management on Route 6A is to provide access to development while simultaneously preserving the flow of traffic on the surrounding roadway system in terms of safety and capacity needs. Implementation of an access management plan should not compromise the natural beauty, historic qualities, and rural charm of Route 6A. Access management measures that can improve safety and the flow of traffic on Route 6A are discussed below. These measures generally apply to commercial driveways and intersecting roads.

Limit the number of conflict points - These techniques reduce the frequency of conflicts or areas of conflict at driveways on the roadway by limiting certain kinds of maneuvers. Techniques include: preventing left-turn ingress/egress movements, preventing uncontrolled access along property frontages, limiting the number of driveways, limiting the width of driveways, and installing access driveways on minor streets instead of on Route 6A.

Separate basic conflict areas - These techniques reduce the number of driveways or increase the spacing between driveways and between driveways and

intersections. They reduce the frequency of conflicts by separating turning vehicles at adjacent access points, and by increasing the decision-time for through drivers between successive conflict points. Techniques include: maximizing spacing of driveways, consolidating access for adjacent properties, and maximizing property clearance.

Limit speed adjustment problems - These techniques reduce the severity of conflicts by increasing turning speeds, by decreasing through highway speeds, or by increasing driver perception time. Techniques include: avoiding parking on Route 6A near driveways, installing visual cues at driveways, improving driveway sight distance, and installing channelizing islands at site drives to prevent vehicles from backing onto Route 6A. Careful attention must be made to preserving the character of the roadway when implementing some of these measures.

Remove turning vehicles from the through travel lanes - These techniques reduce both the frequency and severity of conflicts by providing separate paths and storage areas for turning vehicles. Techniques include: installing supplementary one-way right-turn access at commercial driveways where width permits, installing supplementary access on minor streets, and developing adequate internal site design and circulation.

Pedestrian Improvements

Improve the pedestrian environment by making sidewalks more attractive and safer for people wishing to experience Route 6A by foot. See Pedestrian Facilities for details on pedestrian enhancements.

Traffic Calming

Traffic calming uses techniques to reduce the dominance and speed of vehicles. The objectives of traffic calming are to prioritize walking, bicycling, and public transportation, improve safety for all users, and improve the overall quality of life and environment in the effected area. Studies conducted following the implementation of traffic calming measures have shown considerable success, resulting in reductions in speed, accidents, noise, and pollution while showing an increase in pedestrian volumes. Traffic calming techniques for the Route 6A corridor are limited due to the scenic, historic, and environmental characteristics of the existing corridor. Potential traffic calming techniques that should be explored for Route 6A include but are not limited to: prohibiting undesirable turns, improving bicyclist and pedestrian facilities, reducing corner radii for pedestrian safety, better management of parking along streets, speed reduction, and encouraging alternate transportation modes.

Bicycle Improvements

Provide safety and improved accessibility for bicyclists. Streets should provide safe

routes for bicyclists that reduce conflicts between bicycles and vehicles. See Bicycle Facilities for details on bicycle enhancements.

Consistent Roadway Design

Design a consistent roadway system to reduce driver uncertainty along the Route 6A corridor. Design elements that need to remain consistent include pavement markings, signage, speed, and curbing.

Proper Signage

Improve signage on all roadways to direct tourists to popular attractions while minimizing congestion and delays on critical roadways. It is important to provide travellers with adequate signage without detracting from the character of the roadway. Proliferation of signage should be discouraged. Directional signage with historical or scenic designs should be considered as an alternative to traditional signage.

Improve Traffic Control

Improve signal timing and install new signals, STOP signs or YIELD signs where warranted to minimize traffic delays and conflicts at intersections.

Improve Sight Distance

Remove obstructions (overgrown vegetation, signs, and other fixed objects) where possible to improve visibility at driveways and intersections.

Designate Parking Locations

Designate parking locations along the corridor to allow people to park their vehicles and travel Route 6A by alternate transportation modes. Parking areas will also provide slow drivers with a place to turn off Route 6A to let other vehicles pass. This will reduce driver frustration along the corridor.

Guardrail Improvements

Condition of existing guardrail and placement of potential guardrail should be evaluated. Guardrail should be minimized without compromising safety. Where guardrails are warranted, the design should consider alternatives which are more consistent with the character of the corridor such as steel-backed timber and steel coreten with timber posts.

Remove Utilities

Remove utility poles to provide safe and more aesthetically pleasing travel for all transportation modes along Route 6A, or relocate them to provide adequate separation from the roadway with limited disturbance to tree canopy and other resources.

Location Specific Recommendations

Specific problem areas for each town have been identified along the Route 6A corridor. The problems include: inadequate sight distance, traffic control, curb delineation, lane configuration and access control, inappropriate signal timing, worn or insufficient pavement markings, and poor intersection alignment. Improvements to the areas described below should be coordinated with implementation of recommendations such as gateway improvements and traffic calming discussed in other parts of the corridor management plan.

Bourne

- Signage - Signage in Bourne needs to be improved to direct drivers to destination points on the Cape while diverting them from congested areas. As the gateway to the Cape, Bourne needs clear signs to all major routes on and off the Cape.

- Cranberry Highway/Regency Road - This wide intersection has numerous conflict points. Driver confusion needs to be minimized by reducing driveways widths and constructing channelizing devices to control traffic.

- Vehicle Queuing - Vehicle backups on Route 6A at commercial site drives are a potential accident problem. Advance store signs or exclusive right turn lanes into site drives should be considered.

Sandwich

- Route 130/Tupper Road (West) - High traffic volumes at this intersection result in poor levels of service (LOS F). Exclusive right turn lanes from Route 6A with no traffic control (stop or yield signs) conflict with other movements from Route 6A. Better traffic control, advance signage for Route 130 and pavement reduction should be considered.

- Tupper Road (East) - This wide open intersection has the highest number of accidents (24) over a three period on Route 6A. Poor alignment and multiple access driveways at this intersection cause driver uncertainty. Better access management and reconfiguration are needed at this intersection.

- Quaker Meetinghouse Road - Vehicle delays at this intersection result in poor operating conditions (LOS E). Sight distance on both the Quaker Meetinghouse Road and Spring Hill Road approaches to Route 6A need to be improved.

- Old County Road - High traffic volumes and inadequate internal traffic flow at adjacent site drives reduce safety at this location. Better access control at the site drives and this angular intersection need to be addressed.

Barnstable

- Route 132 - This wide open intersection results in driver confusion at this congested (LOS E) location. Reconfiguration, pavement reduction, and channelization should be evaluated at this location.

- Hyannis Road - This pre-timed signal needs to be optimized or upgraded to an actuated signal system.

Yarmouth

- Railroad Avenue - This heavily utilized connector road from Willow Street has inadequate sight distance which needs to be improved.

- Willow Street - Poor operating conditions (LOS F), steep slopes, inadequate sight distance, no advance warning sign for Route 6, worn pavement markings, and inadequate access control all contribute to the high accident rate (13 in three years) at this location. Although sight distance is not easily remedied, other conflicts should be addressed.

- Union Street/West Yarmouth Road/Playground Road/Church Street - This section of Route 6A is characterized by high traffic volumes, poor levels of service (LOS E), and frequent accidents (19 in three years). Improved access control, pavement markings, curb delineation, intersection realignment, channelization, and turn restrictions need to be evaluated at this intersection.

- Weir Road - This "Y" intersection with a large island and two lanes contributes to accidents (9 in three years) at this location. Realignment and improved channelization should be considered.

Dennis

- New Boston Road - Uncontrolled access at commercial site driveways, poor sight distance and poor alignment of three connecting intersections increases the potential for accidents at this location. Realignment and controlled access need to be evaluated in order to reduce accidents at this location (10 in three years).

- Route 134 - Uncontrolled access, worn and confusing pavement markings, and inappropriate signal timings contribute to conflicts at this location. Improved channelization, lane striping, and signal timing will enhance safety and reduce conflict points.

Brewster

- Route 137 - High traffic volumes, limited sight distance, and building encroachment attribute to problems at this location. Improved sight distance from commercial driveways adjacent to this intersection need to be addressed.

- Route 124 - Inadequate control of access, poor operating conditions (LOS E), and limited sight distance at drives in the vicinity of Route 124 result in driver confusion at this location. Traffic flow improvements should be considered.

- Thad Ellis Road - Turning movement conflicts need to be reduced at this location.

- Millstone Road - Sight distance needs to be increased at this location.

Orleans

- Route 6 Ramps - The Westbound and Eastbound Ramps operate at poor levels of service (LOS E-F). Improved traffic control and/or signalization with coordination to nearby signals should be evaluated at these locations. These improvements, combined with recent improvements at the ramps, would enhance traffic flow and safety.

- West Road - Signal optimization and lane reconfiguration should be evaluated at this location.

- Main Street - Signal optimization and lane reconfiguration should be evaluated at this location.

- Route 28 - This intersection has numerous conflict areas and access drives resulting in driver confusion. Poor operating conditions (LOS E), add to driver frustration. Improved access management to reduce conflict points is needed at this location.

- Canal Street - This intersection is in close proximity to the rotary, making it difficult for vehicles to enter Route 6A due to vehicles exiting the rotary at high speeds. Improved sight distance from this intersection to the rotary is needed.

B. ALTERNATE TRANSPORTATION

1. INTRODUCTION

The development of alternate modes of transportation is an important aspect of the Scenic Byways Program. It is a way of providing access to visitors and residents without further stressing the capacity limits of the road. Alternate modes allow for increased travel on the roadway without impacting resources through traditional structural enhancements. The main purpose behind increasing alternative transportation along Route 6A is to reduce the existing congestion without altering the character of the roadway. Two potential alternate modes which parallel the roadway and provide access to many of the villages are rail and bus service.

2. EXISTING SERVICE

Rail Service
Currently there is no passenger rail service providing access between the villages along Route 6A. There is, however, the rail infrastructure to serve the Route 6A villages of Barnstable, West Barnstable, Sandwich and Bourne. Cape Cod Rail Road currently operates a scenic service along this area, with trips originating and ending in Hyannis and Sagamore. The service operates 6 one-way trips per day during the summer season, not including the Dinner Train. Longer term, the owner of Cape Cod Railroad does expect to operate passenger service.

Bus Service
Currently, there is bus service along Route 6A from Yarmouth to Orleans and service to the County Complex from Hyannis. The Sea-Line recently extended its Woods Hole to Cape Cod Community College run to the Barnstable County Complex. The service operates 10 one-way trips per weekday. Plymouth and Brockton runs bus service from Orleans to Yarmouth, operating 4 one-way trips per day. Most riders use the Plymouth and Brockton service to connect to another mode of transportation in Hyannis or continue on to Boston. A listing of the summer 1994 bus schedule may be found in the Appendix.

3. PROBLEM IDENTIFICATION

The current lack of frequent and accessible alternative transportation requires visitors and residents to use private automobiles for all trip purposes along Route 6A. Traffic volumes and traffic congestion along the corridor reflect some need for expanded transportation, yet environmental and cultural resources pose constraints to providing increased roadway capacity. Therefore, it is important to develop

alternative modes of transportation that address the needs of both visitors and year-round residents without stressing the roadway capacity. Please refer to the Roadway System section for further discussion on existing problems dealing with traffic.

4. CONSTRAINTS

The Route 6A corridor is limited in providing alternative transportation. The existing rail line does not traverse the entire corridor and the cost to implement rail service back to the Outer Cape is prohibitive. Therefore, train transportation probably could not serve the entire corridor, however service should be explored as a meaningful solution to traffic problems on the west end of the Route 6A corridor.

The lack of year-round population base to support year-round alternative facilities does impact the amount of service that may be provided year round. However, the fluctuation of population on the Cape does provide the possibility of many different types of service. Alternative facilities could operate more frequently in the summer and fall, and focus around the commuter during the off-season. Shuttle service has proven very successful elsewhere on the Cape. During the summer of 1994, three towns ran experimental shuttle services that were very successful. The Cape Cod Regional Transit Authority believes that the success of the previous shuttles can be applied to other services.

One of the most viable ways to address this problem would be to improve access along the corridor during the summer season by providing a summer shuttle service. A Route 6A summer shuttle would provide an alternative to automobile travel along Route 6A for visitors and residents during the times when car traffic is heaviest on the roadway.

5. CORRIDOR RECOMMENDATIONS

Developing bus and rail service to serve the Route 6A corridor is an important way of preserving the road infrastructure while increasing accessibility. The following are the recommendations for alternate modes:

<u>Route 6A Summer Shuttle</u>
For Phase 2 of the Scenic Byways Program, develop a proposal for a Route 6A summer shuttle that addresses the issues described below. Work towards obtaining all necessary approvals and funding to implement a summer shuttle during the summer of 1995.

> The concept of a summer shuttle was discussed with the Cape Cod Regional Transit Authority (CCRTA) and the Boards of Selectmen/Town Managers or

their representatives in the seven Route 6A communities. In general there was support for the proposal, although numerous issues arose that need to be resolved prior to implementing such a service. These include:

Parking locations - the purpose of the service is to allow people to travel Route 6A without using their automobile. Parking may be necessary for those not within walking distance of the service.

Bus stops/flag stops - Designated bus stops off of Route 6A were preferred in some towns to avoid interference with the flow of Route 6A traffic. Other towns preferred flag stops to maximize convenience. A combination of both, determined by town, may be possible.

Destinations served - suggestions were made to extend the service to the Rail Road Bridge in Bourne to provide access to the Cape Cod Canal bicycle path. Also to be considered are deviations from Route 6A into some areas, such as Historic Sandwich Center.

Cost & fares - pricing structure needs to be determined. Perhaps free introductory service, then a fare.

Street rights/provider - Street rights may be necessary from each of the seven towns as well as the CCRTA. Competitive bids by operators may be also necessary.

Time of Service/Frequency of service/ Days of Service - to be determined; suggestions included late buses to serve restaurant business.

Type of buses - trolley, open-air or other unique buses preferred

Other amenities - bicycle racks on buses desirable, allowing bicyclists to take shuttle to established bike paths along Cape Cod Canal and Cape Cod Rail Trail.

Passenger Rail Service

Work with Cape Cod Rail Road to explore opportunities for passenger rail for visitors serving the villages along Route 6A from Barnstable to Bourne. Check the feasibility of extending the service to Yarmouth and Dennis on the existing rail line. Identify environmental concerns associated with dieseling of the locomotive engines. Work with the various towns in addressing other concerns associated with more frequent rail service in the area.

Enhance Multimodal Opportunities

Both services should enhance multimodal opportunities between bicycles, buses,

trains, and automobiles. In developing a new service, efforts should be concentrated on better coordinating schedules of all modes of transportation and to encourage bicycle travel by providing any new service with the capability of carrying and transporting bicycles.

Van Pool Service

Investigate the possibility of establishing a van pool service that would link the bus and train station and the airport to the motel, hotel and bed and breakfast inns along Route 6A.

C. PEDESTRIAN FACILITIES

1. INTRODUCTION

Pedestrian travel represents an important component of the transportation system along the Route 6A corridor. Numerous shops, inns, and activity centers on the corridor encourage pedestrian activity and provide an opportunity to experience the Route 6A environment by walking. Pedestrian facilities can provide recreational opportunities and work in conjunction with alternative transportation efforts to discourage short automobile trips. Existing pedestrian facilities, however, do not provide access to all resources on the corridor, and some facilities are poorly maintained and inaccessible to handicapped individuals. Sidewalks and other facilities contribute to the scenic character of the roadway, and new facilities should be designed for specific locations to be sensitive to the existing character without compromising safety.

2. EXISTING CONDITIONS

Pedestrian Activity Areas
Scenic and historic character along the Route 6A corridor attracts large volumes of pedestrian traffic during the summer season. Activity areas such as historic districts and antique shops provide an opportunity for the tourist to travel on foot as they venture along Route 6A. Pedestrian activity areas (town villages, historic districts, store fronts) identified as high pedestrian generators on the Route 6A corridor include the following locations:

1. Sagamore Post Office area
2. Sandwich commercial area from Tupper Road to Liberty Road
3. W. Barnstable Elementary School from Colonial Way to Aunt Hatches Ln.
4. Barnstable Village from Pine Lane to Braggs Lane
5. Cummaquid Post Office area from Bone Hill Road to Setter Way
6. Yarmouthport Village from Wharf Lane to Pine Street
7. Yarmouth playground from Yarmouth Road to Union Street
8. Dennis commercial area from New Boston Road to Corporation Road
9. Brewster General Store area from Alden Road to Breakwater Road
10. Brewster Ocean Drive to Underpass Road
11. Orleans Village Center from Brewster Cross Road to Cove Road
12. Orleans commercial area from Route 28 to Canal Road

Pedestrian Accessibility
Pedestrian accessibility on Route 6A varies from town to town. Sidewalks are generally more prevalent in activity areas than residential areas along Route 6A.

Orleans has the highest percentage (57%) of sidewalk length per roadway of all the towns on Route 6A. This is due to Orlean's dense commercial district on Route 6A. Sandwich has the lowest percentage (7%) of sidewalk due to it's low activity areas and marshlands along the corridor. A detailed summary of sidewalk characteristics are shown in Appendix E in Table 9.

Sidewalks generally exist on the north side of Route 6A and on both sides in commercial areas. Sidewalk characteristics were collected to determine sidewalk widths and curb setbacks (distance from curb to sidewalk, usually a grass strip). When provided, sidewalk widths range from 2-6 feet with curb setbacks of 2-10 feet. Table 10 in Appendix E shows a breakdown of existing sidewalk characteristics for each town.

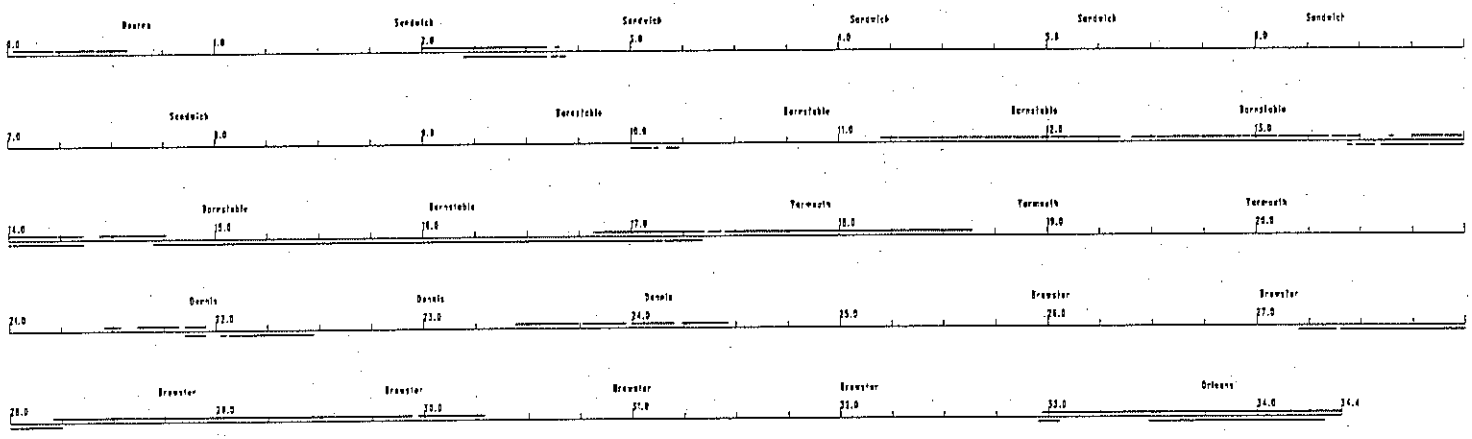
Accident Summary

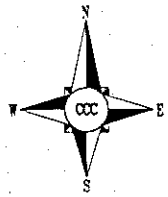
As part of the Route 6A Corridor Management Plan, pedestrian accident location data summaries were prepared using accident data from the Massachusetts Highway Department. Accident data was analyzed for the period from 1989 to 1991. Accidents along Route 6A have been separated into two categories: accidents recorded at intersections, and accidents recorded on roadway segments. Table P1 shows pedestrian accidents for the two categories over the 3 year period. As the table shows, 3 pedestrian accidents occurred at intersections and 8 accidents occurred at roadway segments on the Route 6A corridor.

Table P1: Route 6A Pedestrian Accident Summary (1989-1991)

Town	Location	Pedestrian Accidents
Sandwich	Route 6A (roadway segment)	3
Barnstable	Route 6A (roadway segment)	1
Yarmouth	Route 6A (roadway segment)	1
	Route 6A/Yarmouth Rd	1
Brewster	Route 6A/Point of Rocks Rd	1
Orleans	Route 6A (roadway segment)	3
	Route 6A/Bridge Road	1
	Total	11

Route 6A Scenic Byways Program
Location of Side Walks on Route 6A





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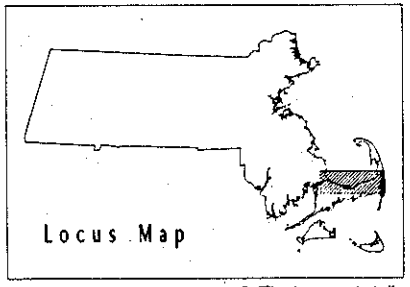
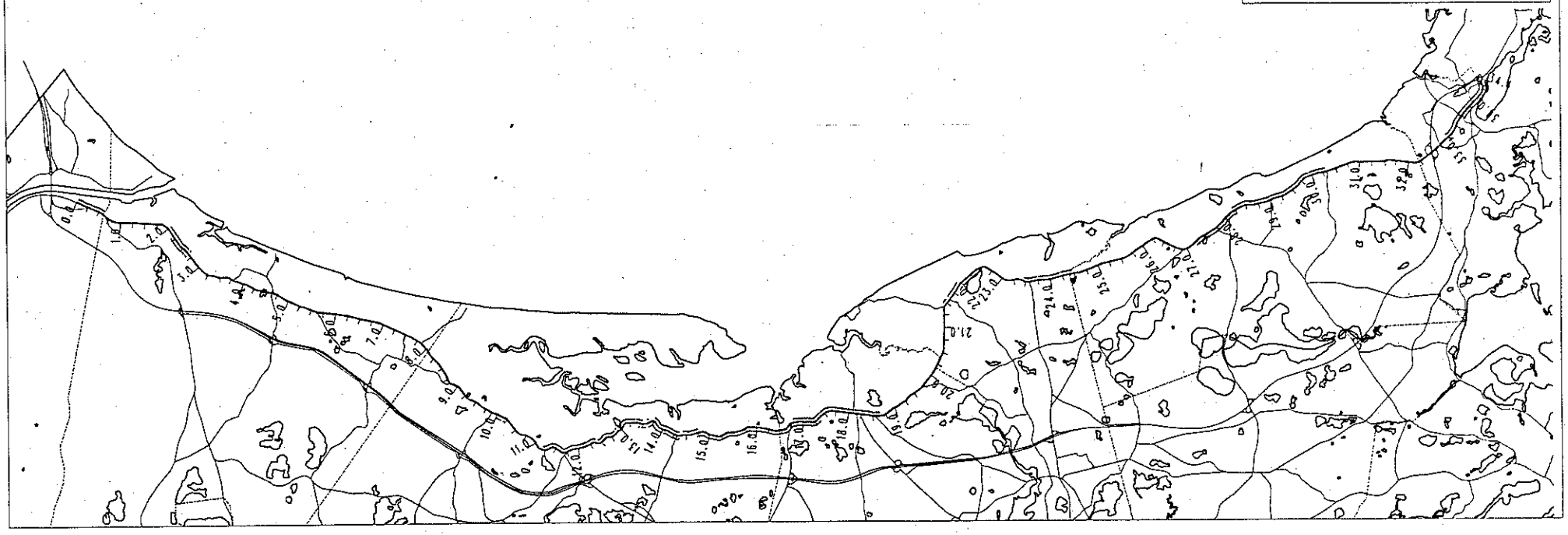
Plot file created on January 13, 1994

Side walk on North Side
Side walk on South Side
Route 6A
Major Road





Orleans had the highest number of pedestrian accidents (4) over the three year period. The high frequency of pedestrian accidents in Orleans is most likely due to the dense commercial area which has high volumes of pedestrian and vehicular traffic and numerous conflict points from multiple driveways.

3. PROBLEM IDENTIFICATION

At a public meeting on June 10, 1993, the Cape Cod Commission gathered comments from town officials, board members, and residents about issues surrounding Route 6A. Pedestrian concerns expressed at this meeting are noted below:

- Establish more crosswalks and pedestrian signs.
- Maintain a footpath or rural character.
- Improve sidewalks/footpaths in a aesthetically pleasing manner.
- Remove utility poles.
- Provide public restrooms in appropriate places.

Observations were also made of the pedestrian environment along Route 6A. Inadequacies pertaining to pedestrian facilities were identified as: deteriorating sidewalks, limited accessibility to activity centers, unfriendly pedestrian areas, multiple vehicular driveways, and inadequate pedestrian designs. These corridor wide pedestrian problems are discussed below.

Pedestrian Accidents
There were a total of 11 pedestrian accidents on Route 6A over a three year period (1989-1991). Pedestrian accidents are a result of inadequate pedestrian facilities.

Deteriorating Sidewalks
Poor sidewalk conditions on Route 6A reduce pedestrian safety. Unkempt sidewalks force pedestrians to walk outside of pedestrian areas and closer to the road, which increases potential pedestrian/vehicular conflicts. Poor sidewalk conditions observed during the collection of inventory include: overgrown vegetation encroaching on walkways, narrow and cracked sidewalks, impeded access, and limited setback from the curb or roadway.

Accessibility
Lack of sidewalk accessibility to activity centers discourages people from walking on Route 6A. Inadequate accessibility and inconvenient walking paths to shops and centers endanger pedestrians by forcing them into vehicular areas. Discontinuous pedestrian flow, caused by obstacles such as poles or trees in pedestrian paths, and a lack of sidewalks and crosswalks are not conducive to a pedestrian environment.

Multiple Driveways
Multiple access driveways on Route 6A increase pedestrian crossing locations and add to driver confusion at commercial sites, resulting in numerous conflict points. Conflict points at pedestrian crossings increase the potential for pedestrian/ vehicular accidents. In addition, wide open access without defined pedestrian areas also increases pedestrian hazards.

Inadequate Facilities
Inadequate and poorly maintained facilities reduce pedestrian safety and increase accident potential. Worn pavement markings (pedestrian and vehicular), inadequate on-street parking, poorly defined roadway and pedestrian areas, and a lack of site furnishings and lighting make for an unsafe pedestrian environment and discourage walking.

4. PEDESTRIAN CONSTRAINTS

There are numerous constraints to providing pedestrian facilities along all of Route 6A. Historic, scenic and environmental resources, as well as limited right-of-way, are constraints that prevent contiguous pedestrian accessibility along the corridor. These constraints are discussed below.

Cost
The construction of new sidewalks can be costly when including expenses for administration, implementation plan, and maintenance following sidewalk construction.

Right-of-Way
Right-of-Way (ROW) constraints on Route 6A limit the widening and construction of sidewalks. On some sections of Route 6A, the roadway has consumed the majority of ROW, prohibiting sidewalk construction without the taking of land of granting of easements.

Environmental Features
Because Route 6A borders many natural resources, sidewalk construction could potentially impact sensitive environmental areas such as wetlands and wetland buffers. Coastal resources, wetlands and wildlife habitats must be considered when new sidewalk construction is considered.

Scenic/Historic Resources
Scenic and historic elements such as stone walls, mature shade trees, and historic structures exist very close to the roadway edge along much of Route 6A. These resources could be impacted by the construction of pedestrian facilities. In addition, use of standard sidewalk design could impact the distinctive character of an area.

Preserving the values of the corridor while implementing design standards presents a conflict. Design standards need to be consistent throughout the corridor, but should not compromise the character of the roadway. Careful attention is required is when accommodating pedestrian facilities in these sensitive resource areas.

Current Design Standards
Pedestrian improvements incorporated into Route 6A's corridor management plan must comply with all applicable engineering standards and state laws such as those in the AASHTO Greenbook, the MHD Highway Design Manual, and the Achitectural Access Board Rules and Regulations. AASHTO's general design guidelines and standards for pedestrian facilities are shown in Appendix E; the Architectural Access Board Rules and Regulations are shown in Appendix E.

As noted above, current design standards may pose a conflict with sensitive areas and limited ROW along the corridor. Design standards that require widening, such as those for curbs and handicapped treatments, are limited due to narrow ROW. In addition, widening may impact existing resources such as trees, and may be inconsistent with the character of some areas which are currently defined by narrow footpaths. Barrier curbs may also be inconsistent with the character of some areas because they introduce an urban element to the corridor.

Due to constraints on Route 6A, some improvements may not be possible using current design standards. Where conflicts arise between current standards and existing resources, alternative solutions should be explored, including changes to current design standards. Any change to pedestrian facility design standards must not compromise the safety of pedestrian and vehicular traffic.

5. IMPROVEMENTS AND RECOMMENDATIONS

Walking is an ideal form of transportation on the Route 6A corridor. Pedestrian transportation is non-polluting, reduces vehicle congestion, and does not have parking requirements. Improvements to pedestrian facilities can encourage pedestrian travel, stimulate commercial areas and enhance the overall walking environment on Route 6A. Creating pedestrian facilities however, requires balancing many concerns. Improvements to pedestrian facilities must consider impacts on the character and resources of the roadway. Therefore, pedestrian facilities will need to be designed for specific locations.

In many cases, staged development of sidewalks will be required. This can entail replacing trees in locations which will not conflict with construction of the new facility, pruning and thinning street trees to encourage a canopy over the roadway, monitoring development and redevelopment, acquiring right-of-way or easements, and constructing temporary gravel paths where people walk. Eventually, as mature

trees die, the permanent facility can be constructed. Staged development, however, will require a long term commitment.

Accommodating pedestrians is an important aspect of the Route 6A Corridor Management Plan. The pedestrian's foremost need is safety, while comfort and convenience and level of service are also factors in designing for pedestrians. It is particularly important to provide pedestrian accessibility to the high generating pedestrian areas as identified earlier.

Corridor Wide Recommendations

Recommendations and potential improvements to alleviate the above concerns as well as other pedestrian-related problems are discussed in the paragraph below.

Alternative Design
Investigate techniques to implement alternative design standards that are consistent with the character of Route 6A and that will not compromise the safety of pedestrian and vehicular traffic.

Maintenance Plan
A sidewalk maintenance plan to prune trees encroaching on the sidewalk area, remove overgrown vegetation, and maintain general sidewalk conditions should be implemented by each town along the corridor.

Crosswalks
At pedestrian activity areas, intersection crosswalks should be installed. School locations deserve particular attention. At commercial areas or locations with infrequent intersections, midblock crosswalks should be considered. Safety measures such as lighting and parking restrictions to improve visibility at school crossings and midblock crosswalks should be considered.

Village Linkage
Provide accessible sidewalks and paths to link popular areas within the communities. Gradually develop walkways that connect to circulation systems within, around, and between villages. Walkways should be provided at the pedestrian activity areas, identified earlier, where feasible.

Recreational Links
Link open spaces with pedestrian circulation networks to provide recreational opportunities such as walking, running, and biking. Increase pedestrian access to the coast by connecting public beaches to the path system.

Traffic Calming
The implementation of traffic calming measures (discussed in the Roadway System

section) enhances the safety and movement of pedestrians and should be considered in high pedestrian activity areas. Traffic calming aims to reduce the use and speed of motor vehicles, resulting in improved conditions for a pedestrian environment.

Landscaping
Provide landscaped buffers where possible to clearly delineate between the roadway and pedestrian paths. The use of trees, shrubs and other devices will provide pedestrians more security which will, in turn, encourage the use of walkways.

Sidewalk Surface
Construct and repair sidewalks with materials similar to the existing materials. Maintain the existing width of sidewalks where possible unless current pedestrian needs, Architectural Access Board and Americans With Disabilities Act (ADA) requirements call for alterations. In rural areas, gravel or stone dust walkways may provide a practical alternative to pavement. This alternative should be further explored in future stages of the Route 6A Scenic Byways Study and also in the development of a State Scenic Byways Program.

Outdoor Lighting
Outdoor lighting has a significant impact on the safety, security and visual quality of a development and the community. At areas of high pedestrian use, such as village centers, provide sufficient illumination to encourage walking during the night. Lighting should be consistent with the historic setting, and may include lanterns such as those used on Martha's Vineyard.

Rest Area Accommodations
Provide rest areas for pedestrians, with appropriate furnishings, where appropriate along the corridor.

Access Management
As detailed in the Roadway System section, access management at existing and new development can enhance pedestrian facilities. Consolidation of curb cuts and access control (e.g. landscaped buffers, delineation, channelization, pavement markings) at site drives provide additional safety for pedestrians, especially in commercially developed areas.

Pedestrian Signals
Signal phases, at existing lights, which favor the pedestrian may be desirable. Both pedestrian-actuated signals and exclusive pedestrian signal phases should be considered. When warranted, new pedestrian signals should be considered.

Utility Pole Removal
The removal of utility poles will greatly enhance the scenic character while also improving pedestrian accessibility along Route 6A. The current location of many

existing utility poles within sidewalks constrains potential improvements and reduces the accessibility of these facilities. Underground utilities should be considered, especially in village centers along Route 6A.

Location Specific Problems

Pedestrian related conflicts and problem areas have been identified along the Route 6A corridor for each town. Generally speaking, all towns need to repaint crosswalk and pedestrian markings. Other improvements needed include: new crosswalk locations, increased pedestrian accessibility, reduced driveway widths, better defined sidewalks, vegetation removal and selective pruning. Identified problem areas and potential improvements for each town are listed below.

Bourne

- Post Office - Pedestrian accessibility and safety need to be enhanced surrounding this high pedestrian generator. Crosswalks and pedestrian facilities should be considered.

Sandwich

- Sandwich - A midblock crosswalk should be considered on Route 6A along the commercial strip.

- Jarves Street - Crosswalks need to be repainted at this location.

- A midblock crosswalk should be considered near mile marker 8.12, connecting the commercial area.

Barnstable

- Route 149 - Crosswalks should be considered at this location.

- Route 132 - Crosswalks should be considered at this location.

- A crosswalk is needed to connect the sidewalk on the north and south sides at mile marker 14.75.

- The sidewalk/footpath along the north side of Route 6A from mile marker 14.75 to the Cummaquid area is a good example of the need for selective pruning and vegetation maintenance to keep the pedestrian path clear.

Yarmouth

- Union Street - Sidewalk improvements should be implemented at this location to be consistent with the recommended intersection improvements. Particular attention should be given to pedestrian traffic crossing the road near the playground.

- Hallet's to Thatcher Street - The sidewalk is poorly defined and is almost an extension of the road surface. Additional granite curbing or other alternatives should be considered to improve pedestrian safety and provide an additional level of comfort for pedestrians.

Dennis

- New Boston Road - A pedestrian crosswalk in this vicinity should be considered to provide safer access to the market and surrounding shops.

Brewster

- Route 137 - The sidewalks need to be clearly defined at this location. There appears to be adequate distance to install a planted strip between the travelled way and the sidewalk in short sections in this area.

D. BICYCLE FACILITIES

1. INTRODUCTION

Bicycle transportation is a major element of the Scenic Byways Program. One of the goals of the Scenic Byways Program is to safely accommodate all modes of transportation on the corridor, including bicycles. Route 6A's historic and environmental concerns make conventional solutions, such as widening, undesirable. Therefore, it is the goal of the corridor management plan is identify improvements for bicyclists on the roadway without damaging its historic, scenic, and environmental attributes.

Route 6A is not only a scenic roadway for motorists, but also an important link for bicyclists. Bicyclists travel on Route 6A for many of the same reasons that most motorists drive the route: it is a scenic and relatively flat ride, and it provides access to many destination points. In addition, Route 6A is often the most direct route for bicyclists. When automobile volumes are high, however, bicycle travel along the roadway can be difficult in some areas. Efforts should be made to improve access for bicyclists along the route where possible, but not to damage the scenic, historical, and environmental aspects of the roadway that attract bicyclists and motorists alike.

2. EXISTING CONDITIONS

Roadway Geometrics
Route 6A is generally a two lane highway with two 10' travel lanes and 1 - 2' shoulders. The narrow existing roadway width forces most bicyclists to travel within the travel lane, and this requires vehicles on Route 6A to cross over the double yellow line into opposing traffic in order to overtake a bicycle. In addition, the presence of obstructions (e.g. trees and telephone poles) along some sections of the roadway requires bicyclists to shy away from the edge of the roadway.

Bicycle Volume Counts
During the month of August 1993, several counts were taken along Route 6A in order to determine the number of bicyclists who use the road during the weekdays. The estimates were taken during August 1993 on three typical weekdays between 10 am and 3 pm, using a modified "moving vehicle study" method to estimate total volumes. These studies indicate that typical bicycle activity on Route 6A is not very high and that pockets of activity exist along the roadway, with the highest concentration of bikers found near Nickerson State Park in Brewster and the playground in Yarmouthport. The average number of bikes per hour (bph), broken down by town, is shown in Table B1.

Table B.1: Average Bicycle Volumes per Hour

Town	Bicycle Volume (bph)
Bourne	0
Sandwich	2
Barnstable	5
Yarmouth	4
Dennis	2
Brewster	12
Orleans	2
Total	27

Based on field observations in Barnstable Village, bicycle count estimates for the PM peak hour (4:00 - 5:00 pm) are 10% higher than the average hour. Also, estimates for weekend bicycle traffic are between 5 and 10% higher than average weekday hour counts.

Although difficult to document, bicycle volumes on Route 6A may be low due to the avoidance and reluctance of most bicyclists to using Route 6A. It is possible that if Route 6A were more bicycle friendly, the volumes would be significantly higher.

In addition to the regular commuter and recreational bicycle usage, Mad About Cycling (MAC, a Cape Cod bicycle advisory group) cites several major cycling events that are held on portions of Route 6A throughout the year. These include the Pan Mass Challenge, Boston to Provincetown Double Century, Plymouth to Provincetown, and charity rides to benefit the Heart Association, the Lung Association, and Multiple Sclerosis.

Accidents

An analysis of accidents involving bicycles and motor vehicles was conducted by using the Registry of Motor Vehicles computerized records supplied by the Massachusetts Highway Department (MHD). These records include the most current data available, January 1, 1989 through December 31, 1991, and include all accidents for which a state police accident report was filed. These include all accidents that involve property damage of at least $1,000 or resulted in an injury or fatality, regardless of the extent of injury or monetary amount of damage.

Based on these records, the following statistics were tabulated in Table B2.

Table B.2: Accidents involving Bicycles and Motor Vehicles

Year	Number
1989	0
1990	5
1991	8

During this three year time period, 13 of the 220 bicycle accidents on Cape Cod occurred on Route 6A. The police accident records for these accidents are summarized in Table 11 in Appendix E. In discussions with bicycle groups, it appears that many accidents that happen on all roadways go unreported because the property damage and/or personal injury is minor. It is recognized by bicycle groups that accident reporting needs to be improved by bicyclists in order to more accurately reflect the number of accidents.

Existing Bicycle Facilities
There are relatively few existing bicycle facilities along Route 6A. Few businesses provide storage for bicycles, and there are no advertised public restrooms along the route, though some towns make restrooms in town buildings informally available to the public. Nickerson State Park is the only public facility along the route.

Existing Bicycle Paths and Alternate Routes
Presently, several bicycle paths exist that intersect and/or parallel Route 6A. These are:

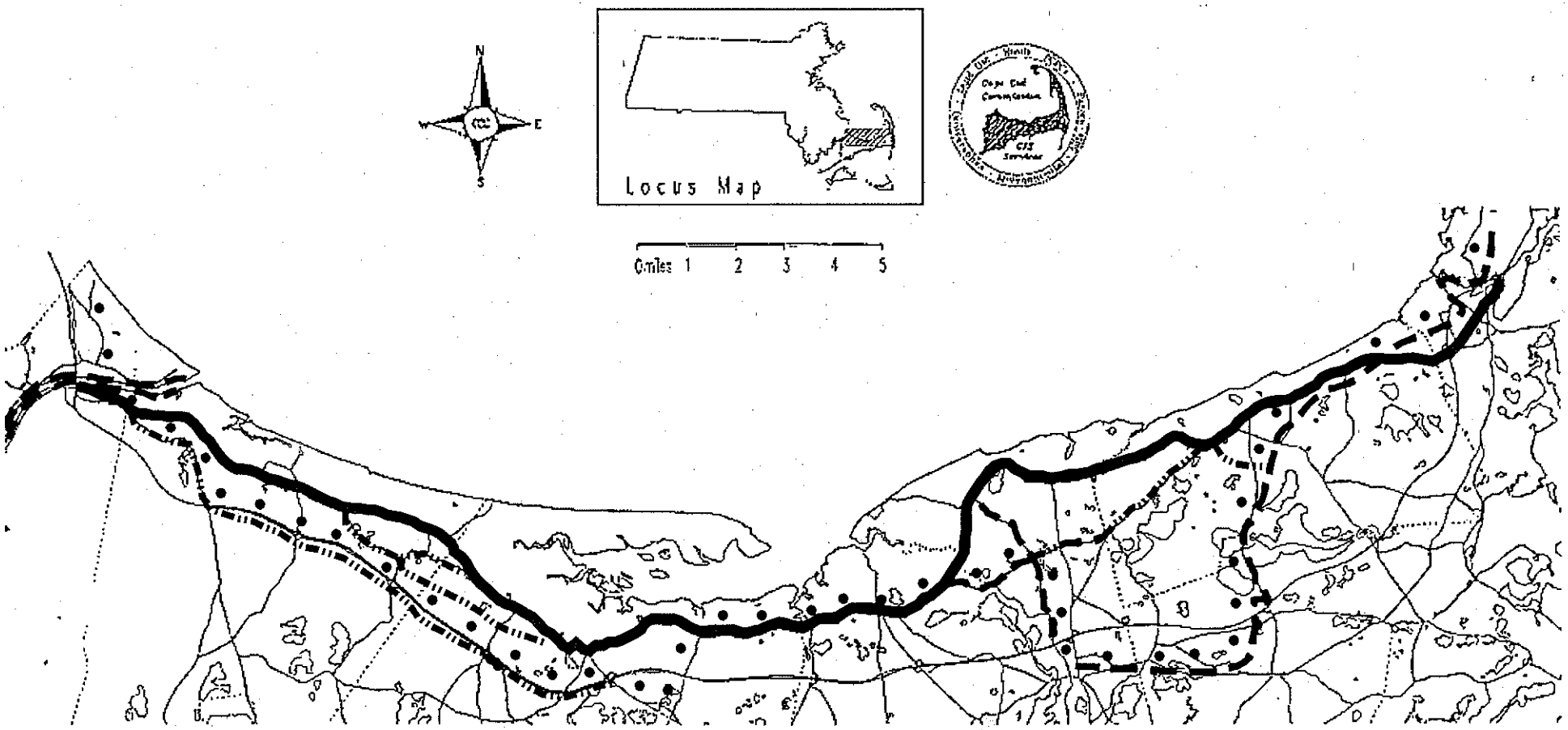
a) Cape Cod Rail Trail - from Rt 134 in Dennis to Eastham (presently being extended to Wellfleet) [The trail follows roadways through Orleans Center]
b) Cape Cod Canal Bike Trail - from Buzzards Bay to Sandwich
c) Old Bass River Road Bike Path - from Route 6A to Route 6 in Dennis
d) Setucket Road Bike Path - from Route 6A in Yarmouth to Old Bass River Rd in Dennis, and from Route 134 in Dennis to Brewster town line

In addition to existing designated bicycle paths, several bicycle routes have been designated along roadways in the corridor. The Claire Saltonstall Bikeway (Boston to Provincetown) bicycle route follows Route 6A from Sandwich Road in Bourne to Rt 130 in Sandwich, and from Phinneys Lane in Barnstable to Setucket Road in Yarmouth.

Several alternative roadways have been suggested by members of MAC as bicycle routes through the corridor in lieu of Route 6A. These include:

a) Rt 130 to Service Rd to Route 132 in Sandwich/Barnstable
b) Old County Rd to High St in Sandwich/Barnstable

Route 6A Bicycle Facilities
Existing Bicycle Paths and Alternate Bicycle Routes



Route 6A

Existing Bicycle Paths

Alternate Bicycle Routes

Claire Saltonstall Bikeway

c) Old County Rd to W. Meetinghouse Way to Cedar St to Church St to Parker Rd in Sandwich/Barnstable
d) Setucket Rd in Yarmouth/Dennis/Brewster
e) Rt 137 or Tubman Rd to Cape Cod Rail Trail in Brewster

3. PROBLEM IDENTIFICATION

Field observations, a review of accidents, and discussion with bicyclists have revealed several problems along Route 6A. In general, the narrow pavement width creates numerous conflicts between automobiles and slower moving bicycles. Drivers find it difficult to overtake bicyclists and often crowd a bicyclist while passing. Many of the accidents documented have indicated that bicyclists are at greatest danger when a car is overtaking them or while the vehicle is turning across the bicyclists path.

Other problems include natural and man-made obstructions alongside the road, including trees, utility poles, mailboxes, vertical curbing, storm drains, and poor shoulder maintenance. Many of these problems are found throughout the corridor. The railroad crossings in East Sandwich create an additional hazard because the tracks cross at oblique angles and the track is wide enough for the bicycle wheels to become caught, often throwing bicyclists off their bikes and onto the ground.

Truck traffic and other motor vehicle traffic also pose dangers to the bicyclist. Often when vehicles attempt to pass a bicyclist, vehicles tend to squeeze the bicyclist onto the shoulder or adjoining grass. Vertical curbing "traps" bicyclists. Frequently, when a bicyclist is forced from the road, they must exit the road and go onto the shoulder or grass strip. A vertical curb does not allow the bicyclist to easily, safely, and quickly leave the road.

The lack of connections between existing bicycle paths can also pose problems for bicyclists. There are no direct connections to Route 6A from the Cape Cod Canal bicycle path in Sandwich, the Old Bass River Road bicycle path in Dennis, or the Cape Cod Rail Trail in Brewster. In addition, there is a lack of signage or public awareness programs along the corridor to inform bicyclists of other possible routes and to inform drivers about sharing the road with bicycles.

4. CONSTRAINTS

The goal of this project is to safely accommodate alternative modes of transportation along the corridor, including bicycles and pedestrians, while maintaining the character and charm of the existing roadway and right of way. Due to the limited right-of-way and the historic and scenic nature of the road, the alternatives to

improve bicycle accessibility may be limited. The existing paved roadway width averages between 22 and 26 feet along Route 6A and the overall right-of-way is limited throughout the corridor. Full width bicycle lanes (4~5' on each side) could not be provided without acquiring additional right-of-way, encroaching on environmental features, removal of some historic features such as stone walls, and altering the scale of the roadway itself, which contributes to the corridor's historic and scenic character. Narrow lanes or shoulders free from obstructions may, however, be feasible.

A bicycle path running parallel to the roadway is not recommended due to the high number of residential curb cuts and, in certain areas, constraints and impacts on existing resources. Frequent curb cuts increase conflict points between bicycles and vehicles turning into and out of residential and commercial developments. In certain areas on Route 6A, constraints and impacts on resources may not make bicycle paths not viable.

It is important to accommodate bicycles on Route 6A, however, it may not be appropriate to try to accommodate and attract all bicyclists. The Federal Highway Administration (FHWA) has identified three types of bicycle user, Group A - Advanced Bicyclist, Group B - Basic Adult Bicyclists, and Group C - Children. Each group has unique requirements in order to safely operate a bicycle on the roadway. FHWA suggests that Group B/C riders, who are the preferred design group, are best served by identifying key travel corridors and by providing designated bicycle facilities through these corridors (e.g. separate bike paths, bike lanes, or side-street routes). Group A riders are best served by making streets "bicycle friendly" through means such as minimizing speed differentials between bicycles and motor vehicles, and providing usable shoulders along roadways. It is important to look at several different possible solutions for accommodating bicycles through the Route 6A corridor.

5. CORRIDOR WIDE RECOMMENDATIONS

Improving safety for bicyclists on Route 6A is an important aspect of the Scenic Byways program. Bicyclists have the same right to use the road as automobiles, and thus efforts need to be made to identify means of accomodating them safely. Some recommendations can be implemented immediately, while others require additional careful evaluation. For example, public awareness campaigns and improved maintenance should occur immediately and be ongoing. As part of the next phase of the Scenic Byways Program, the feasibility of shoulder widening should be fully evaluated. The evaluation should address the impacts of additional road width on automobile speeds, vehicular safety, pedestrian and bicyclist mobility, and natural and historic resources. The goal of this evaluation is to provide adequate information on the benefits and impacts so that an informed decision can

be made. If widened shoulders can be demonstrated to improve bicycle safety with limited impacts to existing resources and vehicle travel speeds, they may be a viable alternative.

Improvements that can be implemented immediately to improve bicycle safety:

Safety/Education Programs

- Assertive motorist awareness and education programs
- Aggressive law enforcement - motorists and cyclists alike
- Signage telling motorists to yield to cyclists; "Share the road" signage
- Minimize on-street parking
- Encourage safe cycling

Oversize Vehicle Restrictions

Evaluate the benefits of oversize vehicle restrictions for the roadway corridor.

Alternate Bicycle Routes

Identify and develop alternate bicycle routes and/or paths that bicyclists would prefer as an alternative to Route 6A.

- Develop bicycle map of the corridor and adjacent areas to publicize alternative routes
- Develop an alternate bicycle path for recreational/family riders in addition to commuter bicyclists, possibly along the Railroad Right-of-Way
- Include bicycle safety and "share the road" information in visitor brochures and literature
- Identify possible alternative routes for large cycling events

Shoulder Maintenance

Improve maintenance of road shoulders, including patching and sweeping. Pursue funding sources for roadway maintenance programs (e.g. through ISTEA Enhancements)

Railroad Crossing Improvements

Install rubberized rail fillers to reduce the obstacle posed by railroad crossings.

Improvements that can be implemented with resurfacing/reconstruction projects:

Possible Paved Shoulder

Possible paved shoulder for bicyclist (to be evaluated as part of Phase 2 Scenic Byway Study).

Railroad Crossing Improvements

Install bicycle friendly railroad crossings and storm grates.

Limit Bicycle Obstructions

Improve roadway amenities for bicyclists by limiting obstructions at road edges.

- No thermal plastic markings
- Eliminate drop-offs on shoulder edge
- Minimize use of vertical curbing
- Provide grass shoulder for emergency maneuvers
- Locate utilities underground or move utility poles back from road surface
- Tree replacement should occur an adequate distance from the road surface
- Minimize the use of guardrails

Other recommended action:

Coordinate with Rail Trail Corridor Development

Phase 2 efforts should focus on coordination with the recently finished EPA feasibility study for the design of a bicycle path within the railroad right-of-way from Barnstable to Dennis. The study recommended the continued development of a shared use bicycle path with the active railroad right-of-way and the continued development of a logical terminus point in Barnstable Village with parking and other amenities, in addition to a possible connection to Barnstable Harbor. The study identified possible alignment of the bicycle path from the Community College in West Barnstable to Route 134 in South Dennis, connecting to the existing Rail Trail. This alignment is anticipated to attract a number of new riders and provide an alternative to Route 6A for less experienced riders.

V. VISITOR FACILITIES

A. Introduction

B. Existing Attractions and Facilities
   - Educational Facilities
   - Recreational Facilities
   - Other Facilities and Attractions

C. Analysis and Problem Identification

D. Recommendations

Route 6A Scenic Byways Program
Heritage Attractions

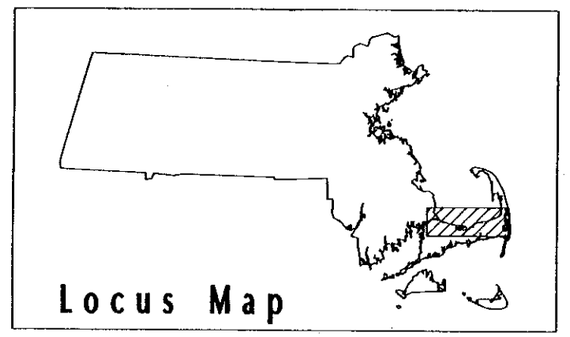
DATA SOURCES AND OTHER INFORMATION:

Heritage attractions: CCC Heritage Attractions Map, 1992; with some additions for the Historic Byways program, November 1993.

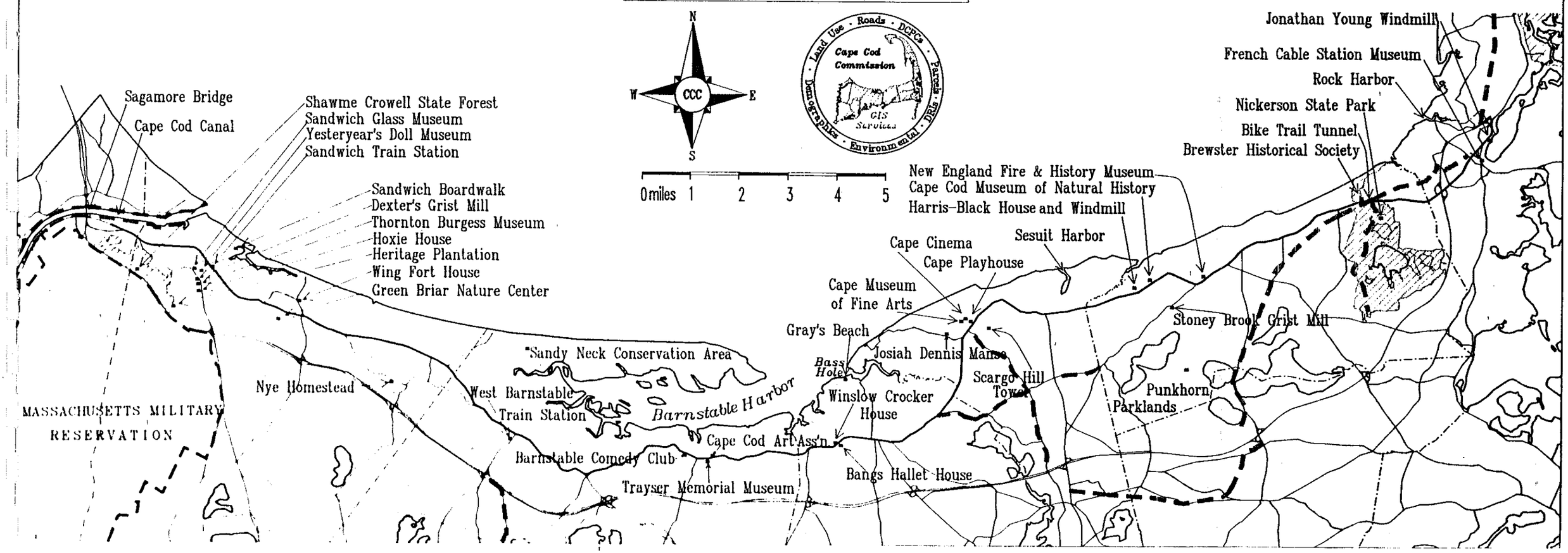
Bike Paths: Massachusetts Bicycle Map, 1987, automated by CCC GIS staff

Basemap features: MassGIS, (digital), 1988; Includes ponds, major roads, coastline, and town boundaries.

Plot file created on August 12, 1994



Parks
Heritage Attraction
Existing Bike Path



V. VISITOR FACILITIES

A. INTRODUCTION

Many features draw visitors to the Route 6A corridor, from its historic districts and scenic qualities, to its environmental features and recreational areas. A significant number of attractions are located immediately adjacent to Route 6A, and many others are located within the corridor area, only a short distance from the roadway. A wide variety of themes relating to the natural and cultural history of Cape Cod are represented along the Route 6A corridor, though many are not widely recognized.

Visitor facilities along the corridor include those directed to pedestrians and bicyclists, as well as many for the motorist. A large number of bed and breakfasts and inns have developed along the corridor, as well as restaurants and shops, primarily to service those who wish not only to visit the attractions found along the Route 6A corridor but also to stay and experience the environment created by them.

By attracting visitors to an area, development pressure may increase and result in the degradation of those resources for which the area is well known. For Route 6A, the goal is to find an appropriate balance between attracting new visitors and directing information and services toward residents and others who may explore the area but have less physical impact. Visitor facilities planning must therefore be included in the overall strategies designed to protect and preserve scenic and environmental resources along the corridor. An objective of this study is to identify means to convey the significance and history of the Route 6A corridor which have a limited impact on its individual resources.

B. EXISTING RESOURCES AND FACILITIES

There are numerous visitor attractions and facilities located along the Route 6A corridor, both immediately adjacent to Route 6A and accessed directly off of the roadway. Many attractions are associated with the corridor's intrinsic qualities, enumerated in the historic, scenic and environmental resources sections of the Corridor Management Plan. Some of these attractions may not provide facilities for visitors because they are private structures and lands, but they are still important resources exhibiting unique characteristics which draw sightseers and cultural historians, among others. Educational facilities, which interpret and teach about the corridor's significant resources, and recreational facilities which provide access to these resources, are predominant attractions. Traveler facilities in the form of restaurants, inns, galleries and shops have developed along the corridor, many in existing historic structures, serving both visitors and residents.

Educational Facilities
Educational facilities along the corridor focus on several themes. Historic architecture, maritime and cultural history are explored at a number of sites, including the Sandwich Glass Museum, Heritage Plantation in Sandwich, the Trayser Museum in Barnstable, the Bangs Hallet House in Yarmouth, the Josiah Dennis Manse in Dennis, the New England Fire and History Museum in Brewster, the Brewster Historical Society Museum, and the French Cable Station Museum in Orleans. Many of these attractions not only contribute to the roadway's character, but also depend upon that historic character to provide their context. Natural resources and the environment are themes interpreted at the Green Briar Nature Center in Sandwich and the Cape Cod Natural History Museum in Brewster. Additional interpretation of natural resources is also found at several open space and recreational sites along the corridor. Many of these sites comprise large land holdings and thus contribute significantly to the rural character of the corridor.

Recreational Facilities
Recreational opportunities along the corridor range from beachgoing to bicycling to camping or sightseeing. Sites include Shawme Crowell State Forest and Nickerson State Park, which provide access to large natural areas with trails and, in the case of Nickerson State Park, also camping and boating. Recreational boating facilities are also found at the Sandwich Marina, Barnstable Harbor, Gray's Beach in Yarmouth, Sesuit Harbor in Dennis, and Rock Harbor in Orleans. Public access to the water is provided by numerous town beaches to the north of Route 6A. Smaller scale recreational sites such as the Sandwich Boardwalk, the Dexter Grist Mill in Sandwich, Scargo Tower in Dennis, the Harris-Black House and Windmill in Brewster, the Stoney Brook Grist Mill in Brewster, and the Jonathan Young Windmill in Orleans also provide recreational opportunities and access to open space.

Other Facilities and Attractions
Bicycle trails, with restroom facilities, are located along the corridor at the Cape Cod Canal and Nickerson State Park. In addition, a section of the Cape Cod Rail Trail runs along the Route 6A corridor through Brewster. A separate bike trail runs along Setucket Road in Yarmouth and Dennis, roughly paralleling and accessed directly off of Route 6A. Other bicycle facilities are described in the Bicycle Facilities section of the Corridor Management Plan.

Other unique attractions are located along the roadway, such as the Barnstable Comedy Club, the Cape Cinema, Playhouse, and the Cape Museum of Fine Arts in Dennis. In addition, a number of towns host special festivals and celebrations during certain seasons which highlight the special qualities of each community. Examples of this are the Brewster in Bloom festival, the Sandwich Daffodil festival, and Holiday Strolls in many of the historic villages along the route.

C. ANALYSIS AND PROBLEM IDENTIFICATION

Parking, pedestrian and bicycle needs have been addressed in the transportation section of this plan. In addition, some means of addressing the preservation and interpretation of historic and scenic resources along the corridor have been addressed in the resource protection sections. This section will focus on interpretive facilities and visitor needs beyond what is covered in other sections of the Corridor Management Plan.

Visitor facilities provide a link to the corridor's economic development, helping to support its commercial enterprises and its recreational and visitation sites. Also important to the corridor's economic development is preservation of the distinct characteristics which draw both residents and visitors to the area. Any proposed visitor facilities, like any improvements along the roadway, should be sympathetic with the existing character and not jeopardize the historic, scenic and environmental resources of the corridor.

Service Improvements
A variety of suggestions were made during public hearings and through written testimony regarding possible improvements to visitor facilities. A need for public restrooms along 6A was described, as well as a need for public parking, pedestrian and bicycle ways in some areas, and alternate transportation opportunities. The possibility of constructing pull-offs for slow drivers or for sight-seeing was also considered. In addition, information that would allow visitors to better understand the special features of the roadway was suggested.

Impact on Resources and Character
The Route 6A corridor currently experiences a significant amount of tourism, especially during the summer and fall seasonal peaks. As noted in the transportation section of this plan, the corridor may not be able to accept significantly higher visitation numbers and still retain its character if visitors remain dependent on the automobile. The question of how much additional tourist development should occur on the corridor is a difficult one because of the potential for further development to threaten the character and charm which has made this area so attractive to visitors. Increasing tourism promotion could serve to only exacerbate traffic pressures facing the roadway. Any promotional program to attract visitors should therefore include provisions to discourage the use of car travel and instead to promote use of alternative modes of transportation.

Promotional Efforts
Tourist information along the corridor primarily takes the form of small scale signage and local advertising that appears informal, as if it were directed toward residents of the corridor and surrounding Cape towns. Several simple brochures

highlighting local businesses exist, as well as a quarterly newspaper devoted to local advertising and attractions along the corridor. The neighborhood and non-commercialized feel of this information is part of the corridor's appeal to visitors and residents alike, and preservation of this character is important.

One means of continuing this informal focus is to encourage visitors to experience the corridor through personal exploration, rather than through guided activities. Visitor information which serves as an education tool, focusing on the significance of the resources along the route and how to reach them, could help to encourage this. For those who wish to follow guided programs, a number of opportunities currently exist at individual sites. For promotion of the corridor as a whole, however, visitor activities should continue to focus on their relationship to the corridor's intrinsic resources. In general, "soft" solutions such as informational brochures and community cultural activities, rather than "hard" solutions involving new structures, should be pursued. In this way, the corridor would not need to be packaged through additional signage and services, but would rather encourage visitors to find and use existing services, and encourage them to discover opportunities on their own.

D. RECOMMENDATIONS

The following recommendations are made with the goal of better conveying the significance and history of the Route 6A corridor and its attributes while having a limited impact on those values which make it attractive. Numerous recommendations from previous sections of the Corridor Management Plan will also increase public visibility and awareness.

Site Furnishings
Provide site furnishings in natural gathering areas for both residents and visitors. Functional seating should be consistent with the character of the area and reflect local craftsmanship.

Network of Walking Tours
Distribute walking/hiking maps at kiosks or other information centers to encourage use of the walkways along and adjacent to Route 6A. The maps should provide information on pedestrian links to other activity centers. Work should be coordinated with the Cape Cod Pathways program of the Barnstable County Commissioners, and the Heritage Tourism Network initiative in order to integrate the Route 6A corridor into the cape-wide walking path network. Connections to parking facilities and linkages to transportation networks should be addressed in conjunction with this project.

Pedestrian, Bicycle and Alternate Transportation Linkages
Encourage pedestrian connections to facilities both on and off Route 6A, and work to connect harbors, beaches, heritage sights and other visitor facilities to a pedestrian hiking and bicycle network to encourage non-auto visitation of Route 6A. Encourage businesses to cater to visitors using this form of transportation.

Public Restrooms
Provide public restrooms or directions to existing facilities at various points along the corridor. Include this information on walking tour maps or other relevant brochures.

Interpretive Facilities
Pursue development of interpretive facilities and amenities to encourage appreciation of the corridor's resources. Investigate the potential of developing former train stations or other portions of vacant buildings as visitor information locations. Explore the potential of working with libraries and existing museum facilities along Route 6A to provide information on the roadway to visitors and residents.

Interpretive Partnerships
Consider developing interpretive partnerships with existing facilities and organizations along the corridor to include information about resources of the Route 6A corridor in existing interpretive programs. This would allow for added information dissemination without requiring additional signage or contributing to visual clutter. Potential partnerships could be formed with libraries located along the roadway, existing museums, and recreational areas such as Nickerson State Park in Brewster and the Army Corps of Engineers property in Bourne.

Corridor Brochure
Develop a brochure to convey the history and significance of the corridor, and to further appreciation of its intrinsic resources and character. Encourage use of the corridor for walking or other non-automobile travel in the brochure, identifying appropriate parking locations and other necessary amenities.

Extend Corridor Interpretation to Areas Beyond Route 6A
Extend the interpretive programs regarding Route 6A to other historic areas connected to the corridor, including Bourne Village.

VI. ACTION PLAN

The purpose of this section is to set priorities and identify strategies for the Corridor Management Plan's implementation. Over one hundred recommendations for general application are included in the Corridor Management Plan for Route 6A, along with numerous location-specific recommendations. Implementation of these recommendations will require the cooperation of many public and private organizations charged with protecting Route 6A.

The following is a summary of actions designed to achieve the major goal of the Corridor Management Plan, which is to guide the protection of the corridor's unique resources while addressing transportation and safety issues. While the actions listed will not accomplish each and every one of the recommendations in the Plan, they do represent priorities for each subject area.

Actions are divided into those to be implemented in the next one to two years (short-term actions), and those to be implemented in three or more years (long-term actions). The Corridor Management Plan identified several issues requiring further study. Therefore, several short-term actions require the completion of specific studies or plans which will guide subsequent actions. For each action, the following are identified: the agency or party responsible for implementation; the anticipated sources of funding to carry out the action; a timetable for completion; and, the product to be delivered.

SHORT-TERM ACTIONS
(1994 - 1995)

1. Conduct shared railway/bicycle corridor study
Responsible agency: Cape Cod Commission/consultant
Source of funding: U.S. Environmental Protection Agency grant
Timetable for completion: completed September 1994
Product: Feasibility study, cost estimates

2. Assessment of bicycle safety/access
Responsible agency: Cape Cod Commission/consultant
Source of funding: FHA ISTEA funds
Timetable for completion: April, 1995
Product: Bicycle accommodation study

3. Develop preliminary traffic flow improvements
Responsible agency: Cape Cod Commission
Source of funding: FHA ISTEA funds
Timetable for completion: April, 1995
Product: Conceptual design plans at select locations, cost estimates

4. Assessment of alternate modes of transportation
Responsible agency: Cape Cod Commission
Source of funding: FHA ISTEA funds
Timetable for completion: April, 1995
Product: Ridership projections, proposed service schedule, stops, cost estimates, approvals required, funding sources

5. Increase public visibility and awareness of corridor
Responsible agency: Cape Cod Commission
Source of funding: FHA ISTEA funds
Timetable for completion: April, 1995
Product: Map/brochure of corridor

6. Develop gateway design improvements
Responsible agency: Cape Cod Commission/consultant
Source of funding: FHA ISTEA funds
Timetable for completion: April, 1995
Product: Preliminary Design plans for select locations, cost estimates

7. Conduct visitor facility feasibility study
Responsible agency: Cape Cod Commission
Source of funding: FHA ISTEA funds
Timetable for completion: April, 1995
Product: Feasibility report, facility recommendations, cost estimates

8. Incorporate Corridor Management Plan into local planning efforts
Responsible agency: Cape Cod Commission/town boards and committees
Source of funding: FHA ISTEA funds
Timetable for completion: April, 1995
Product: Strategy pamphlet for distribution to town boards and committees

9. Prepare tree canopy management plan
Responsible agency: Cape Cod Commission/consultant
Source of funding: FHA ISTEA funds
Timetable for completion: April, 1995
Product: Tree Canopy Management Plan

10. Evaluate resource protection options
Responsible agency: Cape Cod Commission
Source of funding: FHA ISTEA funds
Timetable for completion: April, 1995
Product: Feasibility report, proposed protection program

SHORT-TERM ACTIONS
(1995 - 1996)

1. Develop access management plan
Responsible agency: Cape Cod Commission
Source of funding: FHA ISTEA funds
Timetable for completion: April, 1996
Product: Access management plan

2. Increase public awareness of corridor's resources
Responsible agency: Cape Cod Commission
Source of funding: Department of Environmental Management grant
Timetable for completion: April, 1996
Product: Establish volunteer tree planting groups

3. Implement tree canopy management plan
Responsible agency: Cape Cod Commission
Source of funding: FHA ISTEA funds
Timetable for completion: April, 1996
Product: Tree planting at select locations

4. Implement short-term bicycle feasibility study recommendations
Responsible agency: Cape Cod Commission
Source of funding: FHA ISTEA funds
Timetable for completion: April, 1996
Product: Maps, signage, minor shoulder improvements if appropriate, bicycle education programs

5. Enhance pedestrian access to corridor
Responsible agency: Cape Cod Commission
Source of funding: FHA ISTEA funds
Timetable for completion: April, 1996
Product: Pedestrian tour network/guidebook, signage, site furnishings

6. Develop traffic calming strategies
Responsible agency: Cape Cod Commission/consultant
Source of funding: FHA ISTEA funds
Timetable for completion: April, 1996
Product: Implementation and construction plan

7. Complete build-out study
Responsible agency: local boards/consultant/Cape Cod Commission
Potential sources of funding:
- Executive Office of Communities and Development

• Planning study conducted with local university assistance
Timetable for completion: 1996
Product: Build-out study for communities along Route 6A

LONG-TERM ACTIONS
(1997 - 2004)

1. Construct traffic flow improvements
Responsible agency: Cape Cod Commission
Potential source of funding: FHA ISTEA funds
Timetable for completion: 1997
Product: Final design plans and construction of improvements at select locations

2. Construct gateway improvements
Responsible agency: Cape Cod Commission
Potential source of funding: FHA ISTEA funds
Timetable for completion: 1997-1999
Product: Final design plans and construction of improvements at select locations

3. Implement summer shuttle service
Responsible agency: Cape Cod Commission
Potential source of funding: FHA ISTEA funds
Timetable for completion: 1997-1999
Product: Summer daily shuttle service

4. Implement resource protection options
Responsible agency: Cape Cod Commission
Potential source of funding: FHA ISTEA funds
Timetable for completion: 1997-1999
Product: Revolving fund for acquisition, maintenance/easement program

5.Implement long-term bicycle feasibility study recommendations
Responsible agency: Cape Cod Commission
Potential source of funding: FHA ISTEA funds
Timetable for completion: 1997-1999
Product: Bicycle access improvements/alternate route

6. Update historic/scenic resource inventories
Responsible agency: Local historical commissions, planning committees
Potential source of funding: Massachusetts Historical Commission
Timetable for completion: 1997-1999
Product: Historic/scenic road database for Route 6A

7. Develop alternative roadway/signage standards
Responsible agency: MHD, FHA, Cape Cod Commission
Potential source of funding: not applicable
Timetable for completion: 1997-1999
Product: Alternative standards for scenic byways including distinctive signage

8. Implement Corridor Management Plan zoning recommendations
Responsible agency: local boards with assistance from Cape Cod Commission
Potential source of funding: not applicable
Timetable for completion: 1997-1999
Product: Revisions to local bylaws and regulations, establish Districts of Critical Planning Concern

9. Implement visitor facility study recommendations
Responsible agency: Cape Cod Commission
Potential source of funding: FHA ISTEA funds
Timetable for completion: 1997-1999
Product: Visitor/interpretive facilities

10. Relocate utilities underground
Responsible agencies: Commonwealth Electric, other utility companies with local planning boards, Old King's Highway Regional Historic District Comm.
Potential source of funding: FHA ISTEA Enhancements program, M.G.L. Chapter 166 funds
Timetable for completion: 1999-2004
Product: Placement of utilities underground/relocated utilities in designated areas

11. Increase local roadway jurisdiction
Responsible agency: local boards, MHD
Potential source of funding: not applicable
Timetable for completion: 1999-2004
Product: Increased local curb cut permit control

12. Implement access management plan
Responsible agency: local boards, MHD
Potential source of funding: FHA ISTEA funds
Timetable for completion: 1999-2004
Product: Improved access management

VII. APPENDICES

APPENDIX A

State Legislative Act Designating Route 6A a Scenic Roadway
Public Meeting Summaries

THE COMMONWEALTH OF MASSACHUSETTS

In the Year One Thousand Nine Hundred and Ninety-two

AN ACT DESIGNATING STATE HIGHWAY ROUTE 6A AS A SCENIC ROAD.

Be it enacted by the Senate and House of Representatives in General Court assembled, and by the authority of the same, as follows:

Notwithstanding the provisions of section fifteen C of chapter forty of the General Laws, state highway route 6A is hereby designated as a scenic road; provided, however, that it shall be subject to all of the provisions of said section fifteen C of said chapter forty for the purposes of repair, maintenance, reconstruction or paving of said highway. The Old King's Highway Regional Historic District committee of each town within Barnstable county abutting said route 6A and, in such towns within Barnstable county abutting said route 6A not having such committee, the planning board is hereby designated as the governmental body whose prior written consent must be obtained in accordance with the provisions of said section fifteen C for any proposed alterations within the respective towns.

House of Representatives, June 3, 1992.

Passed to be enacted, , Speaker.

In Senate, June 3, 1992.

Passed to be enacted, Acting President.

10 June, 1992.

Approved,

1:24 PM

William F. Weld

Governor.

CAPE COD COMMISSION

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On June 10, 1993, the Cape Cod Commission hosted a public meeting to explain the goals of a year-long planning study to develop a corridor management plan for Route 6A. The study will address the length of Route 6A from the Sagamore Bridge to the Orleans/Eastham rotary, and identify ways to protect its scenic and historic character while addressing traffic safety concerns. The public meeting provided an opportunity to gather comments from town officials, board members, and residents about the issues surrounding Route 6A. It also prompted discussion of existing and proposed efforts to address these issues.

The participants were divided into groups by town and asked to discuss and provide answers to four questions regarding the character and development of Route 6A. The groups then presented their answers to all meeting participants. Many areas of common concern were identified, as were issues that were particular to each town. A summary of the responses is listed below. The information generated at the meeting will help to direct the Cape Cod Commission's study of Route 6A. It also marks the beginning of a dialogue between the Commission and numerous boards and town residents involved and interested in the protection of Route 6A's character and safety.

Following are the participants responses to questions presented at the Route 6A Meeting on June 10, 1993.

Question 1: When you travel Route 6A, what do you see that detracts from its scenic and historic character?

- Metal guardrails
- Signage - lack of continuity, excessive state signage
- Visual clutter - signs and in yards
- Overhead wires and utility poles
- Telephone poles
- Newspaper vending machines
- Playground in Yarmouth
- Oversized signs at gas stations, canopies
- Shopping center in East Dennis
- Inadequate bicycle/pedestrian safety
- Absense of continuous sidewalks
- Too many cars

Question 2: What and where are the greatest transportation problems along Route 6A?

Union Street/Route 6A/Yarmouth playground congestion
Inadequate enforcement of speed limits
Lack of sidewalks, especially for school children
Need for sidewalk maintenance
Utility poles too close to the road
Overgrown hedges that reduce visibility
North-South intersections with Route 6A
Willow Street intersection
Parking at Willow Street intersection
Need to standardize the speed limit
High number of curbcuts
Lack of alternate routes in Brewster
Conflicts between those going too fast and too slow
Need for turnoff areas for slow drivers to allow cars to pass
Need for a minimum speed limit
Bicycle traffic conflicts - causing automobile back-ups
Tupper Road and Route 6A intersection in Sandwich
Merchants Square area in Sandwich
Dennis Public Market intersection
Players Plaza at Route 6A and Route 134 in Dennis
People going the wrong way at the Yarmouth Post Office exit/entrance
Curve on Route 6A at Sesuit Road
Airline Road and Route 6A intersection in Dennis
Bicycle/Pedestrian safety
Need to make paved aprons cobblestone
Oversized commercial vehicles on the roadway

Question 3: How would you improve the Route 6A area for pedestrians and bicyclists?

Create an alternate bicycle/jogging path along the railroad track - off 6A
Map alternate bicycle routes and connect them to the existing network
Encourage summer bicyclists to use an alternate route
Establish more crosswalks with signs
Maintain a footpath of rural character
Provide bicycle and walking paths for commuters and errand running
Improve sidewalks/footpaths in an aesthetically pleasing manner
Remove ulitity poles
Enforce single file rule for bicyclists
Provide public restrooms in appropriate places
Widen the road where possible to create a path for bikes & pedestrians
Have towns take ownership of the road in village center areas
Create another exit off Route 6 at Freemens Way in Brewster to access Nickerson State Park

Question 4: What valuable features of Route 6A are you concerned about losing?

- Historic and rural character of the roadway
- Street trees
- Stone walls and ancient walls
- Open space
- Vistas such as the one across the Drummer Boy Museum
- High quality maintenance of buildings
- Ambiance
- Non-commercial prevalence
- Historic architecture
- Winding roadway
- Specific scenic views on private property
- Historic intersections
- Village character
- 2-lane roadway
- Town water pumps
- Road topography
- Walking features
- Residential/business mix
- Control of the road's development to interests outside neighborhoods, to excessive summer traffic, and to detrimental state improvements such as high speed features

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On January 27, 1994, the Cape Cod Commission hosted a public meeting to present the results of several resource inventories conducted by Commission staff as part of the Route 6A Scenic Byways Study. This meeting was the second of three in a planning study being conducted with the goal of developing a corridor management plan for Route 6A.

Information was presented on transportation volumes, accident locations, zoning classifications, environmental resources, historic resources, tree canopy, scenic resources, and intrusions along the roadway. Following this, information layers were overlaid in order to demonstrate potential areas of conflict between resources and transportation or development pressures. Several conflict areas were highlighted as representative samples of the various types of conflicts found along the roadway. Participants were broken up into groups, each with a different conflict area, and asked to address potential conflicts and to answer a particular question about the area. The following is a list of the areas discussed and the solutions presented by each group:

Sandwich

1. The Sandwich group explored the area from Route 130 to Chipman Road, an area which encompasses scenic vistas to Cape Cod Bay and the village center, rare species habitat, and historic resources. This region also includes commercial strip areas, many views of the Canal power plant, poor tree canopy, and high accident locations. The group was asked how they would diminish the impact of the power plant and improve the character of this area in general. The following are their ideas:

Develop the tree canopy to reduce the visual impact of the power plant
Update signals at Jarvis Street and possibly install a brick crosswalk
Narrow the roadway from Liberty St. to Mill Creek Bridge to create a tree and sidewalk belt
Replicate the feel and character of the original roadway segments in this area
Increase definition for left hand turns at Jarvis Street and Tupper Road
Modify curb cuts at Purity and along Route 6A to Jarvis Street
Improve bicycle and pedestrian crossings
Define a paved shoulder for safe bicycle passage
Extend the sidewalk on the south side of the road
Bury utilities or set them back from the road
Remove trees in hazardous locations and replace them nearby
Enforce existing bylaws and regulations in the area
Create bicycle route on Tupper Rd-Dewey Ave-Spring Hill Rd-Old County Rd

Barnstable

2. Barnstable residents focused on the area from Old Jailhouse Lane to Mary Dunn Road. This area is rich in historic and scenic resources and allows access to Barnstable Harbor. Prevalent issues include pedestrian needs, a lack of tree canopy in some areas, and the intrusion of utility lines. This group was asked how they would improve pedestrian facilities in the village and improve the connection to the harbor. The group made the following suggestions:

Install a brick sidewalk through the village during Route 6A reconstruction
Plant trees through the village
Place utilities underground where feasible
Construct a better sidewalk along Mill Way, from Route 6A to the harbor
Establish a pedestrian and bicycle way through the marsh behind the tavern, over the ancient dike, to Freezer Road and the harbor
Consider means to accommodate bicycles in the village
Create a uniform and reduced posted speed and enforce it
Take measures to reduce traffic volumes - pursue District Courthouse in Falmouth, alternative routes and transportation modes
Enforce parking regulations in the village
Improve publicity re: cooperative parking possibilities between owners

[note made regarding West Barnstable: establish a walkway between Rt 149 and Church Street - narrow, without curbs, and separated by a green strip]

Yarmouth

3. Yarmouth residents addressed the area from Willow Street to Setucket Road, an area with significant scenic and historic resources. Issues in this area include bicycle and pedestrian concentrations, as well as accident locations. The group was asked how to reduce accidents in the area. Their suggestions included:

Reduce the speed limit from 25 to 30 mph throughout the area
Remove the passing lane in front of the Bank of Boston
Maintain trees along the roadway (they protect houses) and plant more
Find alternatives to signal lights and concrete islands
Encourage and improve use of Route 6 for large trucks
Underground utilities if federally funded by grants
Limit State Highway Dept. signage (32 signs from Willow St. to Summer St.)
Locate off-street parking in the area around Hallet's Store
Replace rest areas on Route 6 to encourage drivers to use that route
Make the b-bus work

Dennis

4. Residents of Dennis explored the area from Tobey Farm to Seaside Avenue, an area with scenic, historic and environmental resources, as well as

accident locations, pedestrian needs, and a lack of tree canopy. This group was asked specifically for suggestions about what to do with the vacant gas station near the intersection with New Boston Road. They suggested the following:

Have the town or county purchase the gas station and convert it into a tourist information center for all of Route 6A, incorporating toilet facilities (existing bathrooms murals were painted by local artist Peter Hunt)
Plant trees in front of station and remove concrete
Improve pedestrian access to this building and connect to surrounding areas
Install crosswalk at the group of antique shops to address pedestrian needs
Improve signage to address the accident situation

Brewster

5. The Brewster group considered the area from Satucket Road to Millstone Road and was asked to suggest ways to protect the historic and scenic resources of this segment which addressing traffic concerns of high accident locations and traffic volumes. The following was suggested:

Address the potential traffic increase from residential growth in this area
Find ways to encourage mixed use so that pedestrian circulation is increased
Encourage less automobile dependency in this area
Identify certain areas where tree canopy is needed and does not hide vistas
Remove vegetation in some areas to open views to the marsh

Bicyclists

6. Cyclists who attended the meeting were asked to suggest means of improving the Route 6A corridor for bicycling. To protect the resources located immediately adjacent to the roadway, the group was asked to focus in particular on non-structural solutions. Their suggestions were as follows:

Develop an assertive motorist awareness program
Install bicycle-friendly drainage grates
Remove curbs
Establish a good road maintenance program
Educate both cyclists and motorists about sharing the roadway
Enforce laws for both cyclists and motorists
Lower and enforce speed limits
Make railroad crossings bicycle-safe
Consider signage establishing the rules for bikes and cars
Eliminate thermo-plastic road markings
Support paved shoulders for bicycling
Decrease on-street parking
Identify ways to accommodate large groups of cyclists
Establish scenic alternative routes off Route 6A for casual bikers

APPENDIX B

State Programs with Alternative Standards for Historic Areas

91-S 879

STATE OF RHODE ISLAND

IN GENERAL ASSEMBLY

JANUARY SESSION, A.D. 1991

Chapter 187
Signed 6/16/9

AN ACT

RELATING TO HISTORICAL PRESERVATION

91 - S-0879

Introduced By: Senators Ruso and Flynn

Date Introduced: February 14, 1991

Referred To: Committee on Corporations

It is enacted by the General Assembly as follows:

SECTION 1. Findings and purpose. The General Assembly finds and declares that many streets and roads in the state were laid out before the automobile became the dominant mode of transportation in the United States and that preserving the pre-twentieth character of the most outstanding examples of these pre-automobile era streets and road benefits the public health and welfare by maintaining vital links with Rhode Island's past.

The General Assembly further finds and declares that rebuilding these pre-twentieth roads to accommodate higher speed automobile traffic can adversely affect the character and public amenity value of the streets and roads.

The purpose of this Act is to provide for the preservation of the historical character of certain pre-twentieth streets and roads by authorizing the Rhode

Island Department of Transportation to design improvements to them at speed limits less than the prima facie limits.

SECTION 2. Chapter 31-14 of the general laws entitled "Speed restrictions" is hereby amended by adding the following section:

31-14-4.1. Reduction of the prima facie limits in historic districts and on scenic highways. -- Whenever the state traffic commission shall determine that any prima facie limit hereinbefore set forth is greater than is reasonable in any historic district listed on the National Register of Historic Places or on any road duly recognized as a scenic highway by the Scenic Highway Board in accordance with the provisions of chapter 24-14, said commission shall determine and declare a reasonable and safe prima facie limit, in the manner set forth in section 31-14-4 above, in order to provide for the preservation of the historical character of such district or the scenic quality of such highway, provided, however, that such reduced prima facie limit shall be for a length of road not to exceed one (1) mile or the distance between the boundaries of the district, which ever distance is the lesser, and provided further that such reduced prima facie limit shall not result in traffic congestion.

SECTION 3. Section 24-15-9 of the general laws is hereby amended to read as follows:

24-15-9. Rules and standards. -- The board shall promulgate rules and establish standards for the maintenance, identification, construction, use and preservation of the scenic highway system. The board may establish rules and standards for regulating and limiting the construction or establishment of a highway which is

inconsistent with the purpose of this chapter. No rule or regulation may be adopted or promulgated which affects any provision of the general laws of the state of Rhode Island or any federal statutory provision without the prior approval of the general assembly.

SECTION 4. This act shall take effect upon passage.

HY33 REV. 1/77

IMPORTANT: Read Instructions on bottom of Certification Page before completing this form. Failure to comply with instructions may cause disapproval of proposed Regulations.

STATE OF CONNECTICUT
REGULATION
OF

NAME OF AGENCY
Department of Transportation

Concerning

SUBJECT MATTER OF REGULATION
Designation of Scenic Roads

SECTION _____

The Regulations of Connecticut State Agencies are amended by adding new sections 1 through 9 as follows:

Designation of Scenic Roads

Sec. 1. (New) Definitions.

(a) "Advisory Committee" means the Scenic Road Advisory Committee established pursuant to these regulations.

(b) "Commissioner" means the Commissioner of the Department of Transportation (DOT).

(c) "Department" means the Department of Transportation (DOT).

(d) "Improvement" means actions or activities initiated by the Department of Transportation which alter or improve a designated scenic road in one or more of the following ways: (1) widening of the right-of-way or traveled portion of the highway, (2) installation or replacement of guide railing, (3) paving, (4) changes of grade, and (5) straightening and removal of stone walls or mature trees.

(e) "Scenic Road" means any state highway or portion thereof that (1) passes through agricultural land or abuts land on which is located an historic building or structure listed on the National Register of Historic Places or the state register of historic places, compiled pursuant to section 10-321 of the general statutes, or (2) affords vistas of marshes, shoreline, forests with mature trees or notable geologic or other natural features.

(f) "State Highway" means a highway, bridge or appurtenance to a highway or bridge designated as part of the state highway system within the provisions of chapter 237 of the Connecticut General Statutes, or a highway, bridge or appurtenance to a highway or bridge specifically included in the state highway system by statute.

Sec. 2. (New) Administration, Advisory Committee, Composition and Duties.

(a) The Commissioner shall establish a Scenic Road Advisory Committee. This Committee will include representation from the Departments of Transportation, Environmental Protection and Economic Development.

(b) The Advisory Committee shall meet quarterly, unless there is no business, or as necessary to:

(1) Develop a method to systematically evaluate requests for scenic road designation.

(2) Review and evaluate the requests submitted to the Commissioner to designate a State highway, or portion thereof, as a scenic road.

(3) Prepare recommendations to the Commissioner as to those highways, or portion thereof, appropriate for designation as a scenic road.

(4) Review Department proposals to evaluate whether the proposed improvement will have an effect upon or alter the characteristics that qualified the highway as scenic.

(5) Recommend alternate courses of action which could avoid, mitigate or minimize adverse effects of the improvement on the scenic road, without compromising the safety of the traveling public.

(6) When conditions of development, zone change or other local action occur they may review the designated scenic road and recommend to the Commissioner any changes in designation.

Sec. 3. (New) Request to Designate a Highway as Scenic.

(a) Requests to designate a state highway as a scenic road may be made to the Commissioner by any agency, municipality, group or individual.

(1) Requests for consideration must include a report providing pertinent information on the proposed designated highway. This report shall be prepared by the requesting agency, municipality, group or individual and submitted to the Commissioner. The report shall include the following:

(A) Highway segments or areas to be included.

(B) Description of natural and cultural resources and features of scenic interest.

(C) Existing land use.

(D) Photographs of outstanding and representative scenery.

(E) Properties listed on the National Register of Historic Places and/or state register of historic places.

(b) The Advisory Committee shall make a systematic evaluation of the extent and quality of historic or scenic, natural and cultural resources for the proposed designated scenic road.

(c) The Advisory Committee may review any reports, letters, articles, etc. or any other document which it deems necessary to assist in its recommendation. It may also request additional information from the applicant to clarify any information provided in the report.

(d) Within 90 days of its meeting, the Advisory Committee shall, based on the review of the submitted information report and systematic evaluation of the resources, forward recommendations to the Commissioner for approval or denial of designation. This recommendation will include the identification of the specific features or characteristics which would qualify it as scenic or the reasons why a scenic designation is not considered appropriate.

(e) Within 45 days after receiving the Advisory Committee's recommendation, the Commissioner will approve or deny the request for scenic road designation.

(f) Within 15 days of the Commissioner's determination, the requesting agency, municipality, group or individual shall be informed in writing of the decision and the basis for it.

Sec. 4. (New) Reconsideration of Requests to Designate a Highway.

(a) State highways which do not receive a recommendation for designation or are recommended for deletion will receive no further consideration until additional information is presented to the Commissioner. This additional data is limited to the specific item or items which resulted in the denial or deletion of scenic designation. Within 60 days of its meeting to reconsider, the Advisory Committee shall forward its recommendation to the Commissioner for a final decision.

(b) Within 45 days after receiving the Advisory Committee's recommendation, the Commissioner shall render a final decision on the requested designation.

(c) Within 15 days of the Commissioner's final determination, the requesting agency, municipality, group or individual, shall be informed in writing of the final decision and the basis for it.

Sec. 5. (New) Qualifications for a Scenic Road.

(a) In order to qualify for scenic road designation, the state highway under consideration must have significant natural or cultural features along its borders such as agricultural land, an historic building or structure which is listed on the National Register of Historic Places or the state register of historic places or affords vistas of marshes, shoreline, forests with mature trees or notable geologic or other natural features which singly or in combination set this highway apart from other highways as being distinct.

(b) The proposed scenic road shall have a minimum length of 1 mile.

(c) The proposed scenic road shall have development which is compatible with its surroundings and must not detract from the scenic, natural character and visual quality of the highway area.

Sec. 6. (New) Determination of Effect Upon Designated Scenic Roads.

(a) Determination of effect: Improvements proposed to scenic roads shall be reviewed by the Advisory Committee to evaluate whether the improvements will have a significant effect upon or alter the specific features or characteristics that qualified it to be designated as scenic.

(1) No adverse effect: If the Advisory Committee finds that the proposed improvement will not significantly affect these features or characteristics, the undertaking may proceed as proposed.

(2) Adverse effect: If the Advisory Committee finds that the proposed improvement will have a significant adverse impact on the features or characteristics of the scenic road, it shall:

(A) Notify the Commissioner of their finding.

(B) Return the project to the designer with recommended alternate courses of action that could avoid, mitigate or minimize adverse effects of undertaking on the scenic road. These recommendations could include, but are not limited to, consideration of a waiver of Department or Federal standards, the use of tinted pavements, stone wall replacements and tree or shrub replacements.

(C) If alternatives or waivers are not considered to be feasible by the designer, the Advisory Committee shall make recommendations to the Commissioner as to whether the project should be constructed as proposed.

(D) In all cases, the Commissioner shall make the final determination as to whether to approve or deny the proposed improvements or alterations.

Sec. 7. (New) Public Notification of Proposed Improvements or Alterations to a Designated Scenic Road.

(a) For those highway construction or maintenance activities that a majority of the Advisory Committee determines to constitute an "improvement" to a designated scenic road within the meaning of Section 1(d) of this regulation, the Department shall publish, in a newspaper of general circulation in the area of the proposed improvements, a notice describing the alteration or improvement. There shall be a thirty (30) day comment period following this notice during which interested persons may submit written comments.

(b) The Advisory Committee shall review and evaluate all written comments. A report of findings will be prepared outlining the resolution of the various comments and forwarded to the Commissioner.

(c) In all cases, the Commissioner shall make the final determination as to whether to approve or deny the proposed improvements or alterations.

Sec. 8. (New) Special Improvement and Maintenance Standards for Scenic Roads.

(a) At the time a highway is officially designated as scenic, the characteristics responsible for this designation shall be clearly identified and recorded. Any alteration to a scenic road shall maintain these characteristics, if practical.

(b) Improvements to scenic roads shall be developed in conformity with current Department design and/or maintenance standards for the type road unless it is determined that using such standards will have a significant adverse impact upon the roadway's scenic characteristics. In which case, exemption from Department or Federal standards may be considered to preserve the roadway's scenic qualities.

(c) In designing improvements to and/or preparing for maintenance on a designated scenic road, special consideration should be given to the following:

(1) Widening of the Right of Way: The Department may not purchase additional property along a designated scenic road unless the Commissioner has first determined that property acquisition is necessary. The area purchased should be kept to a minimum with the need and use outlined in a detailed report to the Commissioner.

(2) Widening of the Traveled Portion: Wherever possible and as safety allows, roadway widening should be kept to a minimum width and accomplished within the existing highway right-of-way. The Department may not widen or issue a permit to allow others to widen any portion of a designated scenic road unless the Commissioner has first determined, after review and approval of a traffic engineering report, that such an improvement is necessary to improve an existing or potential traffic problem.

(3) Guide Rails (Guardrails): Guide rails should be replaced in kind in accordance with current Department standards unless the Commissioner determines after review and approval of a traffic engineering report, that a safety problem exists and another type of guard rail system is necessary for more positive protection.

(4) Paving: Paving is to be accomplished in accordance with current Department standards. The pavement type, drainage appurtenances and curbing

installation will be accomplished as required with consideration given to the characteristics of the scenic road. The width of paving should not extend more than 12 inches beyond the existing shoulder.

(5) Changes of Grade: Wherever possible, proposed changes in grade should be designed to a minimum to restrict the impact on the scenic features. Changes of grade must be approved by the Commissioner after review and approval of a traffic engineering report where it has been determined that such an improvement is necessary to improve an existing or potential traffic problem.

(6) Straightening or Removal of Stone Walls: The Commissioner may approve the straightening or removal of a stone wall after review and approval of a traffic engineering report that has determined that such action is necessary to improve an existing or potential safety hazard, improve a sight line restriction, for installation of drainage appurtenances or for other sound reason. The Department will attempt, if practical, to relocate the stone wall within the highway right-of-way or on private property of the abutting property owner. The stone wall should be reconstructed in a manner consistent with its former appearance.

(7) Removal of Mature Trees: Wherever possible and as safety allows, mature trees within the highway right-of-way should not be removed. If roadway widening is approved, the alignment should be such as to restrict its impact on mature trees. The Commissioner may approve the removal of mature trees after review of an engineering report which outlines the need.

(8) General Maintenance: All scenic roads shall receive the level of maintenance necessary for safe public travel.

(9) Road Bed Maintenance: Necessary improvements, as determined by the Director of Maintenance, may be made to improve safety, drainage or reduce a maintenance problem, but shall not disturb the scenic characteristics for which the roadway was designated.

(10) Cross Drainage Maintenance: Cross drainage shall be maintained where necessary to prevent damage to the highway, possible washouts and other problems which may be detrimental to the safety of the traveling public.

(11) Vegetation Maintenance: Where necessary for the safety or protection of the traveling public, tree branches and shrubs may be trimmed. Mowing shall be performed as necessary in accordance with Department standards for health and safety requirements.

(12) Sign Maintenance: All informational, regulatory, warning and identification signs shall be erected and maintained as necessary or provided for by the State Traffic Commission.

(13) Winter Maintenance: Winter maintenance procedures shall be conducted in accordance with standard Department policy. Snow and ice control shall be performed in accordance with the latest Department policy.

Sec. 9. (New) Emergency Repairs.

Should the Commissioner declare an emergency, as specified under Section 13b-26(f) of the General Statutes, repairs will be made in a manner which will minimize, as much as reasonably possible, the effect upon the features for which the highway was designated as scenic.

STATEMENT OF PURPOSE: To provide regulations for the designation of State highways as scenic roads in accordance with Public Act No. 87-280.

APPENDIX
LAWS AND RULES

ESTABLISHMENT AND DESIGNATION OF PARKWAYS, HISTORIC, AND SCENIC ROADS

The Law: ARS 41-512 through ARS 41-518

41-512 Definitions

In this article, unless the context otherwise requires:

1. **"Director"** means the director of the Department of Transportation.

2. **"Historic road"** means a highway, street, road or route that is of historical or cultural importance in the settlement and development of Arizona and is established or designated as a historic road by the Transportation Board.

3. **"Historical Society"** means the Arizona Historical Society.

4. **"Parks Board"** means the Arizona State Parks Board.

5. **"Parkway"** means an area along either or both sides of a highway, street, road or route acquired in fee or by easement by the governmental body having jurisdiction over the highway, street, road or route for the protection of geographic, natural flora or scenic values, and established or designated as a parkway by the transportation board.

6. **"Scenic road"** means a highway, street, road or route through a scenic area that is established or designated as a scenic road by the Transportation Board.

7. **"Transportation Board"** means the Transportation Board of the Department of Transportation.

41-513 Cooperation With Other Agencies

The Department of Transportation may cooperate and enter into agreements with other federal, state, county or private agencies in carrying out the purposes of this article.

41-514 Administration, Advisory Committee, Composition, Duties, Designation of Parkways and Historic and Scenic Roads.

A. There is established an Advisory Committee to the Director consisting of eleven members. The Directors of the Parks Board, the Department of Transportation, the Office

of Tourism and the Historical Society shall each appoint to the Advisory Committee one employee from their respective agencies who serves at the pleasure of the appointing authority. The Tourism Advisory Council shall appoint one of its members to the Advisory Committee who shall serve at the pleasure of the council. The Governor shall appoint, for a term of three years to begin and end on June 30 or until the successor is appointed and qualified, the remaining six members from the public, with no more than two public members from any one county. The Governor may appoint a public member to an additional term.

B. The Advisory Committee shall:

1. Review requests to establish or designate a highway or area as a parkway or historic or scenic road.

2. Prepare recommendations to the Transportation Board as to those highways or areas appropriate for establishment or designation as parkways or historic or scenic roads.

3. Review established or designated parkways or historic or scenic roads and recommend to the Transportation Board their continuation or deletion as parkways or historic or scenic roads.

C. Any agency, group or individual may submit requests for consideration by the Advisory Committee for the establishment or designation of a highway or area as a parkway or historic or scenic road.

D. Upon recommendation from the Advisory Committee, the Transportation Board may designate or establish a parkway or historic or scenic road or delete a previous designation or establishment.

E. If the parkway or historic or scenic road to be established or designated is not a state highway or route, the establishment or designation is not effective unless the board or body exercising jurisdiction over such road agrees to such establishment or designation.

F. Access roads intersecting parkways shall be spaced no closer than one mile apart, except where a county, state, or federal highway or city street intersects the parkway. No public agency may approve a subdivision bordering a parkway unless either:

1. The subdivision plat provides internal access to the one mile access roads across the parkway and would accommodate access to such access roads from unsubdivided adjoining lands.

2. The subdivision plat provides access to the general systems of public roads and streets by some means other than through or across the property devoted to parkway purposes.

G. Access roads across parkways which are legally established shall not be closed unless the owner of the land serviced by such access road has agreed to such closure.

41-515 Acquisition of Land for Parkways and Scenic and Historic Roads, Acquisition of Scenic Easement

A. The Director may acquire title to or easements over lands within parkways for the purpose of protecting and administering those areas for the enjoyment of the citizens of the state.

B. The state may acquire any land or scenic easement for the establishment or improvement of a state highway designated as a parkway or historic or scenic road by expenditures of state highway user revenues or other funding sources. Local authorities may acquire any land for the establishment or improvement of county highways or roads or city streets designated as parkways or historic or scenic roads within that jurisdiction by expenditures of local highway user revenues or other funding sources. Maintenance of the right-of-way of a parkway or a historic or scenic road is the responsibility of the governmental body that has jurisdiction over such highway.

C. The interest in land acquired under this article may be a fee simple or lesser estate. The acquisition may be by gift, agreement, purchase, lease, exchange or other legal means, but shall not be accomplished by exercising the power of eminent domain.

41-516 Exemption from Standards for Parkways and Historic and Scenic Roads

To ensure the protection and enhancement of the special features for historic roads, parkways, and scenic roads. the Department of Transportation, the Federal Highway Administration, the county or the city may allow an exemption from the standards normally applied to the construction and maintenance of the roads and parkways. Revised construction and maintenance procedures for such designated roads and parkways may be developed to reasonably provide for the safety and service of the traveling public.

41-517 Limitation

Notwithstanding any act of Congress or any federal rule or regulation to the contrary, nothing contained in this article and no official action taken pursuant to this article by any federal, state, county or municipal agency shall be deemed the establishment of a public park, recreation area. wildlife or waterfowl refuge or any historic site of national, state or local significance.

41-518 Rules and Regulations

The Director shall adopt rules, regulations, and guidelines to implement the purposes of this article.

THE RULES

Rule No. R17-3-801 through R17-3-809

Precis

These rules present information regarding Arizona State Law ARS 41-512 through 41-518 for providing procedures to establish and designate those highways, streets, roads or routes of this state which feature certain special qualities that should be protected and enhanced. The rules define the criteria and the process for the establishment and designation of parkways, historic, and scenic roadways, as well as the construction, maintenance, and signing requirements to protect and to enhance the designated road or area resource features.

The Advisory Committee will follow these rules and establish a process to provide recommendations to the Director for his concurrence and presentation to the Transportation Board as to those highways or areas appropriate for the establishment and designation as parkways, historic or scenic roads. The Transportation Board may then establish or designate a highway, street, road or route as a parkway, historic or scenic road.

Rules Adopted

The Arizona Department of Transportation, pursuant to ARS 41-512 through 41-518, as approved by the Legislature in 1982, adopts these rules to implement the aforementioned legislation.

R17-3-801 General Provisions

Definitions

In ARS 41-512 through 41-518 and these rules, unless context otherwise requires, the following definition shall apply:

1. "Advisory Committee" means the Arizona Parkways, Historic and Scenic Roads Advisory Committee;

2. "Department" means the Arizona Department of Transportation (ADOT).

3. "Historic road" means a highway, street, road or route that is of historical importance in the settlement and development of Arizona and is established or designated as a historic road by the Transportation Board.

4. "Parkway" means an area along either or both sides of a highway, street, road or route acquired in fee or by easement by the governmental body having jurisdiction over the highway, street, road or route for the protection of geographic, natural flora or scenic values, and established or designated as a parkway by the Transportation Board.

5. "Resources" means the cultural, natural, scenic and historic qualities significant to the designation. A parkway, historic or scenic road may contain one or more of these qualities.

6. "Scenic road" means a highway, street, road or route through a scenic area that is established or designated as a scenic road by the Transportation Board.

7. "Transportation Board" means the transportation board of the Department of Transportation.

R17-3-802 Meetings and Organization of the Advisory Committee

A. Advisory Committee meetings shall be held at least once each six months at a time and place designated by the chairman. The chairman, the vice-chairman with the chairman's approval, or any six members of the Advisory Committee may call such other meetings as necessary to conduct the business of the Advisory Committee. A quorum shall consist of six or more members of the Advisory Committee members present at a legally convened meeting.

1. All meetings shall be noticed as provided in the Open Meeting Law.

2. At the first meeting of the fiscal year, the Advisory Committee shall elect a chairman and vice-chairman. They shall assume the duties of their offices at the close of the meeting.

B. If an Advisory Committee chairman or vice-chairman resigns or vacates his or her position prior to expiration of office, the Advisory Committee may elect a replacement to serve the remainder of the year.

R17-3-803 Duties of Officers

The chairman shall preside at all meetings, appoint subcommittees of the Advisory Committee, and perform all duties pertaining to the office of chairman. The vice-chairman shall, in the absence or incapacity of the chairman, exercise the duties of the chairman.

R17-3-804 Request to Establish or Designate a Highway or Area

A. Requests to establish or designate a highway or area as a parkway, historic or scenic road may be made to the Advisory Committee by any agency, group or individual who shall submit requests for consideration by the Advisory Committee. The following criteria shall be met:

1. All requests submitted for establishment or designation of highways, streets, roads or routes, other than those on the Arizona state highway system, shall require the body having jurisdiction to provide written notice of concurrence for such an establishment or designation. Upon the receipt of endorsement the

Advisory Committee shall initiate the process for designation of a parkway, historic or scenic road.

2. A report to provide pertinent information on the proposed designated road, including the benefits and impacts, shall be prepared by the requesting agency, group or individual, as approved by the agency having jurisdiction. The report shall be submitted as information to the Advisory Committee. Reports for highways under the jurisdiction of the Department of Transportation shall be prepared by the Department.

The report shall include the following:

a. Road segments or areas to be included;
b. Inventory of resources;
c. Adjacent land ownerships;
d. Existing major land use areas;
e. Area zoning;
f. Still photos of outstanding and representative scenery;
g. Information and recommendations defining the desirable zone of influence, the area to either side of the roadway, which would be required to protect the resources of the areas along the proposed designated road.

B. The Advisory Committee shall make a systematic evaluation of the extent and quality of the resources for the proposed establishment and designation of parkways, historic or scenic roads. The factors which may be considered in the process of providing recommendations to the Transportation Board shall include the following:

a. Vividness, memorability of the visual impression
b. Intactness, integrity of the visual order
c. Unity, forms a harmonious, composite visual pattern
d. Historical or cultural impact to the area, state or nation
e. Proximity to the highway or area
f. Sufficient land area for parkways to accommodate facilities for visitor needs
g. Evaluation by the Arizona Historical Advisory Committee.

C. The Advisory Committee shall, based on review of the prepared information report and systematic evaluation of the resources according to the procedures established for evaluation, forward approved recommendations to the Director for his or her concurrence and presentation to the Transportation Board as to those highways or areas that have been considered and determined appropriate for designation as parkways, historic or scenic roads. The Advisory Board's decision-making procedures include the following:

1. Discussion and approval or denial of recommendations shall be made at

public, open meetings. Recommendations shall be made if passed by vote of the Advisory Committee of a majority of members in attendance and when a quorum is present.

2. The accepted recommendation for designation shall be sent to the Director for his or her concurrence and presentation to the Transportation Board for consideration.

3. Highways or areas proposed for designation which receive less than a majority of the votes of the Advisory Committee shall have no recommendation sent to the Director. They may be reconsidered at a later date.

R17-3-805 Reconsideration of Requests to Establish or Designate a Highway or Area

A. Only highways receiving favorable recommendation shall be forwarded for designation. Those receiving a non-favorable recommendation or those recommended for deletion by the Advisory Committee shall be reconsidered upon presentation of additional substantive information to the Advisory Committee by the agency having jurisdiction.

B. Additional substantive information shall be presented to the Advisory Committee within 60 calendar days of its decision and shall include the development of data that would affect the Committee's evaluation of the extent and quality of the resources being considered. Emphasis shall be placed on the road's unique features or special qualities that could be protected or enhanced. If no additional information is submitted, no further consideration shall be made on the proposal.

C. Reconsideration of the request for a recommendation to establish or designate a highway or area as a parkway, historic or scenic road shall conform to information and evaluation procedures of R17-3-80.

R17-3-806 Review of Existing Designated Parkway, Historic or Scenic Road

A. The Advisory Committee may, review established or designated parkways, historic or scenic roads because of changes in the extent and quality of the resources. The review may be initiated by the Committee or at the request of the agency having jurisdiction. The Advisory Committee shall compare the present or modified conditions with the information report and other criteria of certain special qualities that were to be protected or enhanced which resulted in the highway or area being designated.

B. The decision to recommend continuation or deletion of a designation of a parkway, historic or scenic road shall be made at a public, open meeting. The body having jurisdiction of a designated parkway, historic or scenic road recommended for deletion may appeal as per R17-3-805.

C. A recommendation for deletion shall be sent to the Director for his or her concurrence and presentation the Transportation Board. The Transportation Board shall then vote on the recommendations of the Advisory Committee for deletion of an established or designated parkway, historic or scenic road.

The committee's decisions shall have the following impact:

1. A decision for continuation shall require no action by the Department or the agency having jurisdiction.

2. A decision for deletion shall require the Department to cancel the agreement with the board or body having jurisdiction over the designated road.

R17-3-807 Approvals and Agreements Between Agencies for Designation.

A. Prior to consideration by the Advisory Committee, proposals for establishment or designation of a parkway, historic or scenic road which is not a state highway or route shall require the body having jurisdiction to provide notice of interest for such establishment or designation. Such notice shall be provided in writing.

B. Establishment or designation by the Transportation Board shall not become effective until an interagency agreement between the Department and the agency body having jurisdiction has been completed and is filed with the Secretary of State.

C. The interagency agreement may include the following:

1. The resource information included by the Advisory Committee in its recommendations to the Director for his or her concurrence and presentation to the Transportation Board.

2. Requirements or recommendations for protection of unique features and resources.

3. Provisions for Parkway, Historic or Scenic Road Designation Signing approved by the Department for established or designated roads.

4. Restrictions for access roads intersecting parkways and bordering subdivisions approval requirements as provided in ARS 41-514.

5. Statements to clarify the conditions of the establishment or designation.

6. Requirements in the event of a decision for deletion and cancellation of the agreement by the Transportation Board.

7. Provisions that neither the Arizona Department of Transportation, the Arizona State Parks Board, nor the Arizona Historical Society undertakes or assumes any financial or legal responsibilities of other agencies or units of government by the establishment or designation of a highway or areas as parkways, historic or scenic roads.

R17-3-808 Acquisition of Land for Parkways, Historic, and Scenic Roads

A. The Director may acquire title, either in fee simple or a lesser estate, over lands for the establishment or improvement of a state highway designated as a parkway, historic or scenic road. Acquisitions shall be accomplished in accordance with ARS 28-1865 and rules and procedures established by the Department, including the following:

1. Land other than state highway may be acquired for designated parkways, historic or scenic roads by the body having jurisdiction. Acquisitions shall be accomplished in accordance with the applicable state laws and its established rules and procedures.

2. Acquisitions by the Department or other body having jurisdiction may not be accomplished by exercising the power of eminent domain.

R17-3-809 Construction and Maintenance With Protection and Enhancement of Special Features

A. Established or designated parkways, historic or scenic roads may allow exemptions from standards normally applied to the construction and maintenance of the route to ensure the protection and enhancement of the special features or unique resources. Parkway, Historic or Scenic Roads Designation Signing shall be provided as a means of identification of established or designated parkways, historic or scenic roads. The following construction and signing standards shall apply, based on professional engineering discretion:

1. Exemptions allowed to ensure the protection and enhancement of special features or unique resources shall be specified for those features or resources. The revised construction procedures may be allowed if approved by the Department of Transportation, the Federal Highway Administration, the county, city or other body having jurisdiction or improvement in the design, construction or maintenance of the road.

2. Revisions from standards for construction and maintenance for designated parkways, historic or scenic roads shall be accomplished using procedures, standards, and practices to reasonably provide for the safe use and service of the traveling public.

3. Established or designated parkways, historic or scenic roads or areas, shall be signed using Parkway, Historic or Scenic Road Designation Signing approved by the Department on state, county or city rights-of-way of the route,

in accordance with the following criteria:

a. Locations shall be selected which neither will cause visual interference with or distraction from adjacent traffic control devices, nor detract from the historic or scenic quality of an area.

b. Signing of the established or designated parkway, historic or scenic road or area should be as close as practicable to the established termini. Interterminal signing may be installed at not less than five mile intervals. Where the termini are less than ten miles apart, interterminal signing shall not be installed.

c. Where a parkway, historic or scenic road has a terminal at a junction or intersection of state or other route, signing for such designated routes shall normally be located beyond the junction and beyond the normal complement of signing installed immediately after the junction or intersection.

   Where appropriate, such signing may be incorporated with or into advance guide signing for the junction or intersection.

d. Where an intersecting roadway is established or designated a parkway, historic or scenic road and such facility has a designated terminal not immediately adjacent to the junction or intersection, signing may be installed only on the designated road.

e. Parkway, historic or scenic road designation signing for an established or designated parkway or historic or scenic road shall conform to the Arizona Department of Transportation approved design, color, and mounting standards and shall be reflectorized. Other signing shall be approved by the Parkways, Historic, and Scenic Roads Advisory Committee and the Director.

f. Historical markers and other related signing shall be in accordance with the Arizona Department of Transportation policies, guides, and procedures of the governmental entity having jurisdiction and are available from the Department upon request.

g. Roads deleted as established or designated parkways, historic or scenic roads shall have all designation signing removed.

JUNE/JULY 1994

HISTORIC PRESERVATION NEWS

The Statehouse

IDAHO USES MODIFIED ROAD-DESIGN STANDARDS

One of the things people like most about historic districts is the fact that they are pleasant and easy to walk around in. Tree-lined streets, sidewalks, and narrow, easy-to-cross streets all contribute to pedestrian friendliness.

Thanks to road-design standards promulgated by the American Association of State Highway and Transportation Officials (AASHTO) and applied by the states, however, it is illegal to create or maintain streetscapes that encourage walking. Modern roads are designed almost exclusively for the safety of people in cars; the safety of people on foot—and the value of walking as a transportation mode—are generally ignored. That's one of the main reasons why suburban areas are unwalkable.

Under the Intermodal Surface Transportation Efficiency Act (ISTEA) of 1991 states have the legal authority to write different standards for roads that are not part of the National Highway System. Idaho is one of the few states that so far has chosen to exercise this authority. Under Idaho's revised road-design standards lane widths in lightly traveled rural roads may be two to four feet narrower than the lanes required by AASHTO. This standard may make it easier for communities to preserve trees lining scenic roads. On the other hand, roads being repaired *must be widened* if the state has plans for reconstructing adjacent roadways within the next 20 years. (State plans generally don't consider reducing auto dependence through more creative land-use patterns, better urban design, or better development of alternatives to the automobile.)

The Idaho standards send out mixed signals when it comes to tree preservation. On the one hand, the standards refer to trees as "off-roadway obstacles . . . that might seriously damage out-of-control vehicles." The trees "should be removed from the roadside whenever feasible," say the standards. On the other hand, the standards acknowledge the "adverse effects" tree removal may have on the roadside environment and say they "should be removed only when necessary for reasons of safety." Highway officials frequently express concern that they will be held liable for highway accidents if drivers run into trees and are injured or killed.

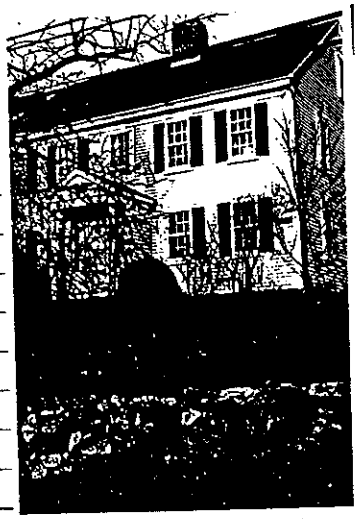
Although some of the Idaho standards illustrate problems that exist nationwide, in general Idaho's standards represent a positive attempt to deal with inappropriate design rules.

APPENDIX C

Table 1 - Scenic Inventory Format
Table 2 - Concentration of Scenic Elements

Route 6A Scenic Byways Program

SCENIC/CULTURAL FEATURES		MILE NO. 3 Lanes Eva rd. to Nye Rd.
REGIONAL CONTEXT		DIRECTION west
Dense village pattern ✓		
Agricultural patterns-field, meadow ✓		GENERAL DESCRIPTION
Small businesses ✓		Concentration of historic buildings in one section mixed with wooded areas - some scattered residential
Scattered residential pattern ✓		
Recreation		
LANDSCAPE CONTEXT		
Gateway/crossroad		
Tree canopy/allee ✓ lowest ? ✓		
Town common		
Ocean/harbor		
Winding roadway		
Cranberry bog		
Pond or stream		
Wetland/marsh		
Forest/wooded ✓✓		
Field and forest edge		COMMENTS
Road conforming to landscape ✓		Some undeveloped areas wooded
Hedge ✓✓		
DETAILS		
Church/other institutional		
Cemetary ✓✓		
Specimen trees		
Curbstones		
Stone wall or fencing ✓✓✓✓✓✓✓✓		
Bridge		
Historic marker/monument		RECORDED
Town pump		
Hitching post ✓		
Conc. Oval trail ✓✓		
VISUAL INTRUSIONS		
Strip development		
Overhead utility lines		
Junkyard		
Structure out of context		
Steel guardrail ✓✓		
Chain link fencing		
Gas station/auto repair ✓ auto body		
Large or inappropriate signs		
Road not conforming to landscape		

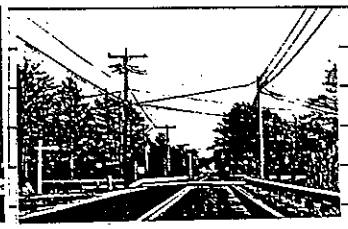


Route 6A Scenic Byways Program

SCENIC/CULTURAL FEATURES		MILE NO. 14 (Sturgis Lib.)
REGIONAL CONTEXT		DIRECTION
Dense village pattern ✓ village center		
Agricultural patterns-field, meadow		GENERAL DESCRIPTION
Small businesses ✓		Dense village pattern
Scattered residential pattern		with most buildings
Recreation		in conformance with
		historic styles.
LANDSCAPE CONTEXT		
Gateway/crossroad		
Tree canopy/allee ✓		
Town common		
Ocean/harbor		
Winding roadway ✓		
Cranberry bog		
Pond or stream		
Wetland/marsh ✓		
Forest/wooded		
Field and forest edge		COMMENTS
Road conforming to landscape ✓		Stone walls a very prominent
		feature.
DETAILS		
Church/other institutional ✓✓✓		
Cemetary ✓✓		
Specimen trees ✓✓		around courthouse, Bacon farm
Curbstones ✓		
Stone wall or fencing ✓✓✓

Route 6A Scenic Byways Program

SCENIC/CULTURAL FEATURES		MILE NO. 24 (Palmer Lane)
REGIONAL CONTEXT		DIRECTION
Dense village pattern		
Agricultural patterns-field, meadow, wetlands ✓		GENERAL DESCRIPTION
Small businesses		
Scattered residential pattern ✓		
Recreation		
LANDSCAPE CONTEXT		
Gateway/crossroad		
Tree canopy/allee ✓✓		
Town common		
Ocean/harbor ✓		
Winding roadway		
Cranberry bog		
Pond or stream		
Wetland/marsh ✓✓✓		
Forest/wooded		
Field and forest edge ✓		COMMENTS Potential for views along Quivett Creek area
Road conforming to landscape ✓		
		Very different feel - open land w/ wetlands, marred only by steel guardrails
DETAILS		
Church/other institutional		
Cemetary		
Specimen trees		
Curbstones ✓		
Stone wall or fencing ✓✓✓✓✓✓✓		
Bridge		
Historic marker/monument ✓✓✓ Indian Springs		
Town pump		
Hitching post		
hedge ✓		
VISUAL INTRUSIONS		
Strip development		
Overhead utility lines		
Junkyard		
Structure out of context		
Steel guardrail ✓✓✓ surrounding town line area.		
Chain link fencing		
Gas station/auto repair		
Large or inappropriate signs		
Road not conforming to landscape		



— note airline drive intersection wooded look so much more w/ wooden guardrails

Route 6A Detailed Scenic Inventory

Mile no.	Scenic Elements	Detailed Scenic Rank	Comments	Visual Intrusions	Intrusions Rank	Comments
Sag. Bridge-0	7	Low		3	Low	elec. plant
0	16	Medium		7	Medium	"
1	7	Low	C.C. Bay views	10	High	elec. plant, strip dev.
2	16	Medium	see vis. intrusions	10	High	strip devel., elec.
3	20	High	stone walls	3	Low	
4	20	High	maj. water views	1	Low	
5	12	Medium		0	Low	
6	8	Low	maj. marsh views	5	Medium	gas stations
7	7	Low	marsh views	0	Low	
8	14	Medium	maj. views	1	Low	
9	21	High		2	Low	
10	11	Medium		4	Low	
11	18	Medium		0	Low	
12	26	High	stone walls	0	Low	
13	37	High	"	0	Low	
14	45	High	"	1	Low	
15	23	High	"	2	Low	
16	42	High	"	0	Low	
17	40	High	"	2	Low	
18	19	Medium		4	Low	
19	6	Low		7	Medium	guardrails
20	9	Low		10	High	guardrails, strip dev.
21	38	High	see intrusions	5	Medium	probs. @ Dennis mkt.
22	27	High		8	Medium	guardrails
23	20	High	see intrusions	12	High	intrus. @ Rt. 134
24	23	High		3	Low	
25	12	Medium		5	Medium	
26	15	Medium	major views	4	Low	trailer park use
27	23	High		3	Low	
28	26	High		1	Low	
29	13	Medium		5	Medium	strip development
30	14	Medium		1	Low	
31	6	Low		4	Low	
32	4	Low		6	Medium	conc. plant, hwy.
33	12	Medium	see intrusions	14	High	hwy. , strip devel.
34	10	Medium	see intrusions	12	High	strip dev.

APPENDIX D

Land Use Inventory

Mile-by-mile Land Use Inventory

Sagamore Bridge to Mile 0 - Bourne

This area is the western gateway to the Route 6A corridor. The mile segment stretches from the Sagamore Bridge to Ben Abbey Road in Bourne. It contains a mixture of commercial uses and single and multifamily housing. Uses also include the Christmas Tree Shops retail store, a glass works, repair shop, moving van company, ballfield, gas station, restaurant and church.

Mile 0 to Mile 1 - Bourne/Sandwich

This mile, from approximately Ben Abbey Road in Bourne to Tyler Road in Sandwich, contains scattered commercial uses in an area that is primarily residentially zoned, with a small commercial zone at the intersection of Route 6A and the Route 6 access road at the Texaco station. Commercial uses include several eateries, a gas station, junkyard, offices, motel, cottages, and the Sagamore Inn. There is a great deal of potentially developable land within this segment, some of it currently for sale, that could significantly impact the character of this area.

Mile 1 to Mile 2 - Sandwich

This area is zoned for business uses. It extends from Tyler Road to the intersection of Tupper Road. It contains a large number of retail, office, institutional, and service establishments, the most notable of which is the Purity Shopping Center and Merchant's Square Mall. Also included are cottages, a motel, bar, post office, nursing home, ice cream shop, and a small office park. There is a large amount of developable business-zoned land in this area, including a 12-acre vacant farm (currently for sale), another small vacant lot (currently for sale), and several homes that could be redeveloped as businesses under current zoning.

Mile 2 to Mile 3 - Sandwich

This area includes Sandwich Village and extends from Tupper Road to Charles Street. It is zoned for business development and is dominated by a wide variety of business and office development mixed with municipal uses. There appears to be limited opportunity for new development in this area due to limited land availability and wetlands, although some redevelopment is possible. Existing uses are primarily convenience, services, office and retail in nature and include Route 6A's only miniature golf course.

Mile 3 to Mile 4 - Sandwich

This area, stretching from Charles Street to Nye Road, is zoned for residential use and is primarily residential in character. Several nonconforming businesses are scattered throughout this area including an auto body shop, farm stand, antique shops, galleries, a motel and inn. New business development is unlikely due to the present zoning.

Mile 4 to Mile 5 - Sandwich

This area includes Nye Road to Manor Drive and the intersection of Route 6A and

Quaker Meetinghouse Road. It is zoned for residential use and is residential in character. It contains scattered business uses primarily in the eastern portion of this mile such as gift shops, a motel, cottages, an Agway garden center and an office. New business development is unlikely due to the present zoning.

Mile 5 to Mile 6 - Sandwich
Although residentially zoned, this area contains a large number of nonconforming businesses and includes the area from Manor Drive to June Lane. Included are several inns and motels, antique shops, gift shops, restaurants, professional offices, a convenience store and bookshop. New business development is unlikely due to the present zoning, however there is an opportunity for existing nonconforming uses to continue or change.

Mile 6 to Mile 7 - Sandwich
This area stretches from June Lane to Longhill Drive just east of Scorton Creek. It is residentially zoned, but contains a cluster of business uses in East Sandwich including two gas stations, a package store, gift shops, offices, a school, animal hospital, auto sales, gallery and other services. New business development is unlikely due to the present zoning, however there is an opportunity for existing nonconforming uses to continue or change.

Mile 7 to Mile 8 - Sandwich
This is the final mile of Route 6A in Sandwich, reaching from Longhill Drive to just west of the Sandwich town line. It is zoned for residential use and contains a modest number of nonconforming business uses primarily clustered at the intersection with Sandy Neck Road, including motels and inns, restaurants, gift and antique shops and a bookstore. New business development is unlikely due to the present zoning, however there is an opportunity for existing nonconforming uses to continue or change.

Mile 8 to Mile 9 - Sandwich/Barnstable
This area, stretching from the Sandwich town line to High Street is zoned for residential use and is almost exclusively residential in character. One business use was noted in this mile as well as one vacant business. New business development is unlikely due to existing zoning.

Mile 9 to Mile 10 - Barnstable
This mile reaches from High Street to Route 149 in West Barnstable Village. It is primarily residentially zoned, however the easternmost section is zoned Village Business. This segment includes scattered business uses that are residential in character including gift, antique shops and lodging. The village includes a tire shop and ice cream shop. In addition, the West Barnstable village store is located just off Route 6A on Route 149. The former train station is currently for sale and a vacant shop is located adjacent to the village store. There is some vacant business-zoned land available for development behind Route 6A frontage lots in this area as well as some opportunity for redevelopment.

Mile 10 to Mile 11 - Barnstable
This area stretches from West Barnstable Village (Rt. 149) to just west of Parker Road. The western portion of this mile is zoned Village Business and the eastern portion is zoned residential. A variety of business uses are clustered in West Barnstable Village including a small plaza, offices, kennels, gifts, a bank, post office and a variety of businesses with residential character. There is a large amount of vacant land zoned for business development including a number of lots with frontage on Route 6A and directly behind frontage lots, as well as several lots off White Cap Lane (a commercial subdivision). Wetlands pose development limitations in some areas.

Mile 11 to Mile 12 - Barnstable
This mile which stretches from west of Parker Road to just east of Route 132 is residentially zoned and primarily residential in character, with several scattered businesses including galleries, gift and antique shops. There is one vacant business at the intersection of Route 132 and Route 6A. Future business development opportunities are limited by current zoning.

Mile 12 to Mile 13 - Barnstable
This area is residentially zoned and primarily residential in character. It stretches from just east of Route 132 to the railroad overpass near Scudder Lane. This area contains a handful of business uses with residential character including a dentist, inn, farm, and TV repair shop. This mile also contains an elementary school. Future business development opportunities are limited due to existing zoning.

Mile 13 to Mile 14- Barnstable
This mile is also residentially zoned and residential in character. It stretches from the railroad overpass to Pine Lane in Barnstable village and includes two inns and an antique shop. Future business development opportunities are limited due to existing zoning.

Mile 14 to Mile 15 - Barnstable
This mile stretches from Pine Lane to Commerce Road at the east end of Barnstable village. A portion of this area is zoned for Village Business and includes a large number of business establishments including two small commercial plazas, a post office, gift and antique shops, real estate offices, a news store, restaurants and sandwich shops, and law offices. Barnstable Village also includes the Barnstable County Courthouse complex which contains offices, a jail, courthouses and registry of deeds. Much of this development is hidden from view behind storefronts. Barnstable village contains little developable land with some potential for redevelopment.

Mile 15 to Mile 16 - Barnstable
This area extends from Commerce Road to east of Bone Hill Road in Cummaquid. It is primarily residential, but also includes inns, businesses within Cummaquid

village. These businesses include a post office, antique shops, gallery, a restaurant and several other small businesses with a residential character, as well as the Barnstable County farm. The area is zoned for residential use, limiting new business development.

Mile 16 to Mile 17 - Barnstable/Yarmouth
This mile includes the area east of Bone Hill Road in Barnstable to Vesper Lane in Yarmouth. It includes a number of businesses with residential character including antique shops, several inns, a restaurant and a Christmas Tree shops retail store. This area is zoned for residential use, limiting further commercial development opportunities.

Mile 17 to Mile 18 - Yarmouth
This area, extending from Vesper Lane to Pine Street, includes numerous businesses within the village of Yarmouthport. Despite the prevalence of business development, the commercial zones in this area are small and offer limited opportunity for new development. One vacant business was observed in this mile. This mile includes banks, antique shops, restaurants, professional offices, flower shop, grocery store, inns, a bookstore, post office, library, fire department and grocery store.

Mile 18 to Mile 19 - Yarmouth
This mile extends from Pine Street to just east of Weir Road. It includes a commercial node near the intersection of Union Street and Route 6A which includes a gas station and professional offices. Also included in this mile are an inn, restaurant, antique shop, and rod and gun club. There are five very small areas zoned for business within this mile, however future development possibilities are limited.

Mile 19 to Mile 20 - Yarmouth
This mostly residential area also includes a strip commercial plaza, pizza shop, and a residential resort development. It extends from just east of Weir Road to Trophy Lane. There is a small business node 180' in depth near the midpoint of this mile, however there is little to no future commercial development potential in this area.

Mile 20 to Mile 21 - Yarmouth/Dennis
This mile stretches from Trophy Lane in Yarmouth to Tobey Hill Drive in Dennis. This mile contains the largest limited business zone within the Yarmouth section of Route 6A as well as a 600' deep limited business zone on the southeast side of Route 6A in Dennis. The Yarmouth portion contains a cluster of commercial development including a small supermarket/pharmacy/package store, restaurant and a large office/commercial complex of buildings containing professional offices, services, and a nursery school. Within Dennis, there are two motels, antique shops, a law office and a commercial farm/farmstand. There are several large vacant lots within this mile as well as vacant land behind existing businesses, opportunities for redevelopment of existing residences and several vacant frontage lots. In general, it

appears that there is a high amount of development potential within this mile.

Mile 21 to Mile 22 - Dennis
This area stretches from Tobey Hill Drive to just east of Corporation Road. It includes Dennis village, an area with extensive commercial development. Within this mile are several restaurants and other eateries, antique shops, galleries, offices, a grocery store, bank, bakery, liquor store, gas station, post office, and the Dennis Playhouse. Much of this area is zoned for limited business use. There is a moderate amount of development and redevelopment potential in this mile including a few vacant lots and a vacant gas station.

Mile 22 to Mile 23 - Dennis
This mile extends from just east of Corporation Road to the east of Scargo Hill Road. Both sides of the road are zoned for limited business use near the eastern end of this mile. This mile includes a restaurant, inn, professional offices, cottages, a gallery, gas station, paper company, and tennis center. There are a number of houses in this area that are for sale as well as some vacant frontage lots. There is a moderate amount of development and redevelopment potential in this mile.

Mile 23 to Mile 24 - Dennis
This area, stretching from east of Scargo Hill Road to west of Palmer Lane, includes East Dennis village at the intersection of Route 134 and Route 6A. Most of this mile is zoned for limited business use on both sides of the road. Included in this mile are scattered business uses such as a motels, restaurant, office, bank, antique shop and inn, as well as a concentrated node of development at the intersection of Route 134. There is a large vacant lot for sale, as well as other vacant frontage providing opportunities for new business development. Redevelopment of existing homes for business use is also possible.

Mile 24 to Mile 25 - Dennis/Brewster
This mile extends from Palmer Lane in Dennis, across the town line, to just west of Candlestick Lane in Brewster. This area is predominantly residential in character and includes several antique shops and a gallery. This mile is zoned for residential uses, limiting commercial development potential.

Mile 25 to Mile 26 - Brewster
This mile reaches from just west of Candlestick Lane to Ridgewood Drive. It includes scattered business uses primarily in residential structures such as antique and craft shops, a motel, gallery, bike shop, inns, cottages, a book store and real estate office. This area is zoned for residential uses and has limited commercial development potential. The former Cape Cod Aquarium is currently vacant.

Mile 26 to Mile 27 - Brewster
This mile stretches from Ridgewood Drive to Briar Lane. It includes the Brewster Museum of Natural History, a bookstore, antique shops, a strip commercial plaza,

market, offices, motel, trailer park, ice cream shop, and clothing store and kitchen shop. This area is zoned for residential use, with the exception of a small village business node at the sharp bend at Lower Road. There is a small amount of development and redevelopment potential here, including the potential for redevelopment of the trailer park.

Mile 27 to Mile 28 - Brewster
This mile, stretching from Briar Lane to just west of Route 124, includes gallery, craft and antique shops, an inn, offices, municipal buildings, a market, and a campground. The entire mile is zoned for residential use, limiting commercial development potential.

Mile 28 to Mile 29 - Brewster
This area reaches from just west of Route 124 to Stonehenge Road. It includes scattered businesses and municipal buildings with a node of commercial development at the intersection of Route 124. Businesses in this mile include the Brewster General Store, several inns, professional offices, antique shops, restaurants and other eateries, galleries and gift shops, and a gas station. Municipal buildings include Brewster Town Hall, a library, and senior center. This area is zoned for residential development, limiting future commercial development potential.

Mile 29 to Mile 30 - Brewster
This mile extends from Stonehenge Road to the Ocean Edge resort complex on the north side of Route 6A. It includes numerous businesses stretching the length of the mile such as a bank, two florists, restaurants, offices, an inn, craft shop, gas station, hardware store, small plaza, bookstore, salon, professional offices, a bank, market, and gallery, as well as the Ocean Edge Resort. Almost the entire mile is zoned for business development and there is a great deal of development and redevelopment potential within this area.

Mile 30 to Mile 31 - Brewster
This mile stretches from the Ocean Edge complex to just east of Millstone Road. It includes some commercial development such as the Ocean Edge conference center on the north side of Route 6A, Cape Cod Sea Camps, an antique shop, studio, historic museum, and summer restaurant. The area is zoned for residential use, thereby limiting future commercial development potential.

Mile 31 to Mile 32 - Brewster
This mile stretches from just east of Millstone Road to Owl's Pond Road. The area includes scattered commercial development such as a theatre, antique shops, liquor store, restaurant, cottages, two galleries, and a craft shop. Nickerson State Park is also located within this mile. This area is zoned for residential development, thereby limiting future commercial development.

Mile 32 to Mile 33 - Brewster/Orleans
This mile reaches from the Owl's Pond Road in Brewster to Eldridge Parkway in

Orleans. On the Brewster side, the area is zoned for village business development and includes several businesses such as a nursery, animal rescue, auto body shop, concrete plant and office complex. The Orleans section is zoned for General Business and includes a truck service, oil change shop, office building, professional offices, two medium-size strip plazas (including a supermarket), a motel and a restaurant. The intersection of Route 6 at Exit 12 is located within this mile. The area has a moderate amount of commercial development and redevelopment potential.

Mile 33 to Mile 34 - Orleans
This mile reaches from Eldridge Parkway to just northeast of Main Street in downtown Orleans. It includes virtually continuous commercial development along Route 6A such as strip plazas, motels, gas stations, offices and other small businesses. The area is zoned for a mix of General Business, Limited Business and Village Center development and has limited vacant land availability, but has the potential for a moderate amount of redevelopment.

Mile 34 to Mile 35 - Orleans
This is the final mile of Route 6A stretching from northeast of Main Street in Orleans to its junction with Route 6 at the Rotary at the Orleans/Eastham line. This mile is an extension of the commercial development in the previous mile and includes inns and a motel, restaurants (including fast food), a liquor store, a medium-sized supermarket plaza, and other businesses. There are a few parcels of vacant land along this mile as well as opportunities for redevelopment. The area is zoned for Village Center development in the western portion and General Business in the eastern portion.

APPENDIX E

Table 1 - Average Daily Traffic Volumes
Table 2 - Intersection Accident Data
Table 3 - Accident Rates and Characteristics
Table 4 - Route 6A and State Annual Accident Rates
Table 5 - Guardrail Lengths
Table 6 - Curb Lengths
Table 7 - Curb Cut Summary
Table 8 - Existing and Future Average Daily Traffic Volumes
Table 9 - Sidewalk Lengths
Table 10 - Sidewalk Characteristics
Table 11 - Bicycle Accident Characteristics
AASHTO Design Guidelines for pedestrian facilities
Massachusetts Architectural Access Board Regulations for pedestrian facilities

Table 1: Existing Route 6A Average Daily Traffic Volumes

Town	Location	1993 ADT
Bourne/Sandwich	Town Line	17,948
Sandwich	West of Tuppper Road	13,045
Sandwich	East of Tupper Road	15,727
Sandwich/Barnstable	Town Line	7,211
Barnstable	East of Route 149	6,991
Barnstable	East of Route 132	6,210
Barnstable	West of Hyannis Road	11,094
Barnstable/Yarmouth	Town Line	11,291
Yarmouth	East of Union Street	16,161
Yarmouth/Dennis	Town Line	13,974
Dennis	East of Corporation Road	10,667
Dennis	East of Route 134	10,352
Dennis/Brewster	Town Line	8,780
Brewster	East of Route 124	17,115
Brewster/Orleans	Town Line	18,708
Orleans	West of West Road	24,042
Orleans	West of Route 28	14,548
Orleans	East of Route 28	16,315
Orleans	South of Orleans/Eastham Rotary	22,948

Table 2: Route 6A Intersection Accident Data (1989-1991)

Town	Intersection	Number of Accidents
Sandwich	Tupper Road	24
Yarmouth	Union Street	19
Orleans	Canal Road	18
Orleans	Route 6 Ramps	18
Brewster	Route 124	13
Yarmouth	Willow Street	13
Orleans	Main Street	12
Eastham	Orleans Rotary	11
Orleans	West Road/Eldredge Park Way	11
Dennis	New Boston Road	10
Sandwich	Old County Road	10
Brewster	Stony BrookRoad	9
Brewster	Underpass Road	9
Sandwich	Merchants Square	9
Yarmouth	Weir Road	9
Brewster	Point of Rocks Road	7
Brewster	Thad Ellis Road	7
Brewster	Millstone Road	6
Dennis	Old Bass River Road	6
Dennis	Route 134	6
Sandwich	Route 130	6
Yarmouth	Church Street	6
Yarmouth	Hookanom Road	6
Brewster	Holly Avenue	5
Brewster	Ocean Edge Drive	5
Brewster	Swamp Road	5
Orleans	Brewster Cross Road	5
Orleans	Stop and Shop Drive	5
Sandwich	Quaker Meetinghouse Road	5
Yarmouth	Kings Way	5
Yarmouth	West Yarmouth Road	5

Table 3: Route 6A Accident Rates and Characteristics

Breakdown by Month				
Month	6A Total	6A %	Cape Total	Cape %
January	55	5.24%	1025	6.61%
February	46	4.38%	1023	6.60%
March	73	6.95%	939	6.06%
April	69	6.57%	942	6.08%
May	84	8.00%	1294	8.35%
June	122	11.62%	1476	9.52%
July	145	13.81%	2028	13.08%
August	149	14.19%	1923	12.40%
September	72	6.86%	1254	8.09%
October	87	8.29%	1187	7.66%
November	83	7.90%	1234	7.96%
December	65	6.19%	1179	7.60%

Light Conditions				
Light	6A Total	6A %	Cape Total	Cape %
Day	782	74.48%	10445	67.37%
Dawn	30	2.86%	757	4.88%
Night	140	13.33%	2300	14.83%
Dusk	68	6.48%	1446	9.33%
Unreported	30	2.86%	556	3.59%

Accident Type				
Type	6A Total	6A %	Cape Total	Cape %
Other	257	24.48%	4669	30.11%
Rear End	365	34.76%	4047	26.10%
Angle	384	36.57%	6071	39.16%
Head On	44	4.19%	706	4.55%
Unreported	0	0.00%	11	0.07%

Breakdown by Day				
Day	6A Total	6A %	Cape Total	Cape %
Sunday	134	12.76%	1894	12.22%
Monday	143	13.62%	2016	13.00%
Tuesday	146	13.90%	2113	13.63%
Wednesday	126	12.00%	2045	13.19%
Thursday	140	13.33%	2083	13.44%
Friday	166	15.81%	2684	17.31%
Saturday	195	18.57%	2669	17.21%

Number of Vehicles Involved				
Number	6A Total	6A %	Cape Total	Cape %
1	167	15.90%	3127	20.17%
2	775	73.81%	11050	71.27%
3	76	7.24%	833	5.37%
4	8	0.76%	102	0.66%
5+	0	0.00%	16	0.10%
Pedestrians	11	1.05%	156	1.01%
Bicycles	13	1.24%	220	1.42%

Age of Drivers Involved in Accidents				
Age	6A Total	6A %	Cape Total	Cape %
Unreported	153	8.01%	2702	9.83%
< 19	218	11.42%	3183	11.58%
20 - 34	590	30.91%	9644	35.07%
35 - 54	483	25.30%	6540	23.79%
55 - 64	171	8.96%	2055	7.47%
65 <	294	15.40%	3372	12.26%
Ave. Age	41.3		38.8	

Table 4: Route 6A and State Annual Accident Rates

Town	Road Miles	Average Daily Traffic	Million Vehicle Miles [1]	Accidents Per MVM [2]	Fatal Accidents Per 100 MVM	Injury Accidents Per MVM	% Property Damage Accidents	Average Accidents Per Mile	Avg # of Fatal Accidents	Avg # of Injury Accidents	Avg # of PDO [3] Accidents	Annual Avg # of Accidents
Bourne	0.63	15,472	3.56	6.00	9.37	2.06	64.06	33.86	0.33	7.33	13.67	21
Sandwich	7.50	13,483	36.91	1.54	0.90	0.63	58.48	7.60	0.33	23.33	33.33	57
Barnstable	8.40	8,559	26.24	0.76	1.27	0.32	56.67	2.38	0.33	8.33	11.33	20
Yarmouth	3.70	13,808	18.65	4.00	0.00	1.48	62.95	20.18	0.00	27.67	47.00	75
Dennis	4.30	7,445	11.68	2.94	2.85	1.11	61.17	7.98	0.33	13.00	21.00	34
Brewster	7.80	14,867	42.33	2.00	0.79	0.83	58.27	10.85	0.33	35.00	49.33	85
Orleans	2.10	19,312	14.80	3.67	0.00	1.80	50.92	25.87	0.00	26.67	27.67	54
Route 6A	34.4	13,278	166.86	2.08	1.00	0.85	58.71	10.06	1.67	141.33	203	346
State Avg [4]												
Primary Urban	204	14,130	1,050.71	2.67	1.24	1.00	62.25	13.78	13	1,047	1,748	2,808
Secondary Urban	211	13,578	1,046.25	3.74	0.48	1.39	62.81	18.54	5	1,451	2,459	3,915
Secondary Rural	313	5,427	620.01	2.26	1.29	0.83	62.84	4.48	8	513	881	1,402

1. Vehicle miles are estimated and do not represent actual numbers
2. Million Vehicle Miles
3. Property Damage Only accidents
4. Based on 1988 statewide data.

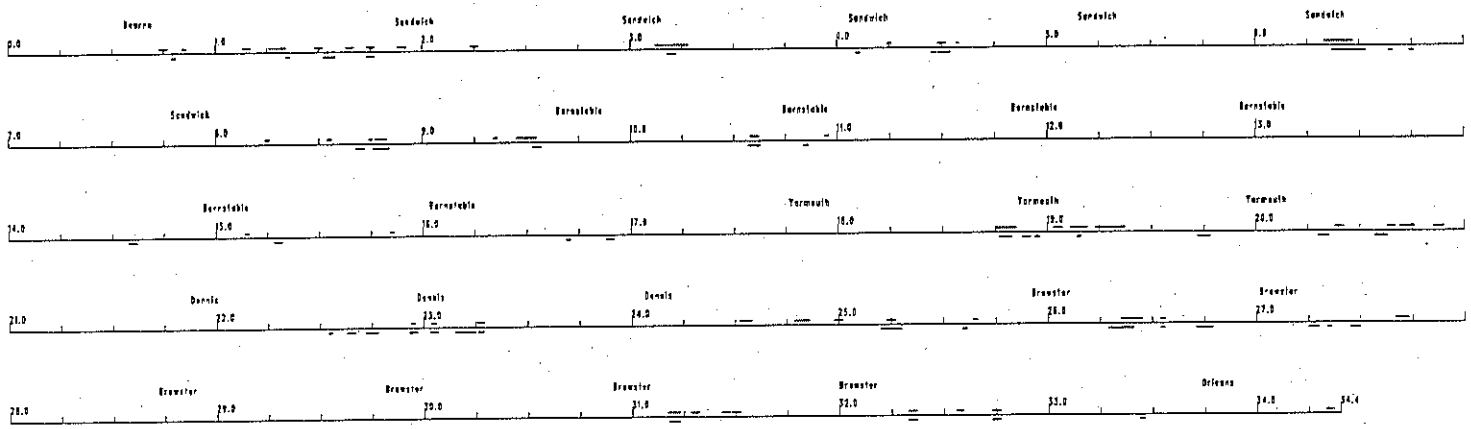
Table 5: Route 6A Guardrail Lengths (in feet)

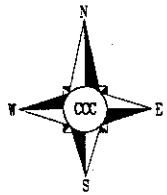
Town	Guardrail Length Northside of Route 6A	Guardrail Length Southside of Route 6A	Total	Route 6A Roadway Length (Both Sides)	Percent Guardrail
Bourne	0	0	0	6,653	0.0
Sandwich	4,060	2,551	6,611	79,094	8.4
Barnstable	1,917	1,663	3,580	88,810	4.0
Yarmouth	1,871	1,971	3,842	39,283	9.8
Dennis	1,374	2,140	3,514	44,986	7.8
Brewster	3,114	2,209	5,323	82,157	6.5
Orleans	569	379	948	22,282	4.3
Route 6A Total	12,905	10,913	23,818	363,265	6.6

Table 6: Route 6A Curb Lengths (in feet)

Town	Curb Length Northside of Route 6A	Curb Length Southside of Route 6A	Total	Route 6A Roadway Length (Both Sides)	Percent Curb
Bourne	2,785	1,848	4,633	6,653	69.6
Sandwich	16,686	21,268	37,954	79,094	48.0
Barnstable	22,760	21,029	43,789	88,810	49.3
Yarmouth	13,362	13,920	27,282	39,283	69.4
Dennis	12,757	11,501	24,258	44,986	53.9
Brewster	24,879	26,146	51,025	82,157	62.1
Orleans	10,654	9,340	19,994	22,282	89.7
Route 6A Total	103,883	105,052	208,935	363,265	57.5

Route 6A Scenic Byways Program
Location of Guard Rails on Route 6A





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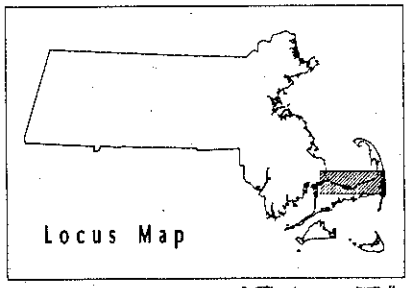
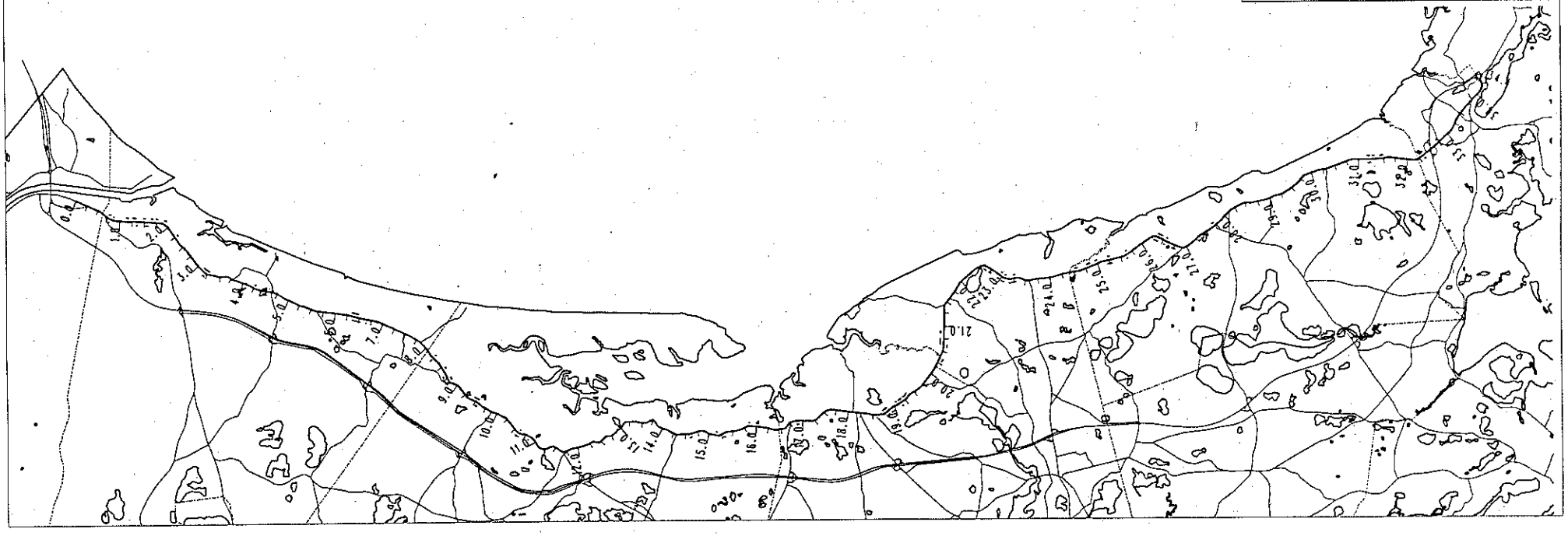
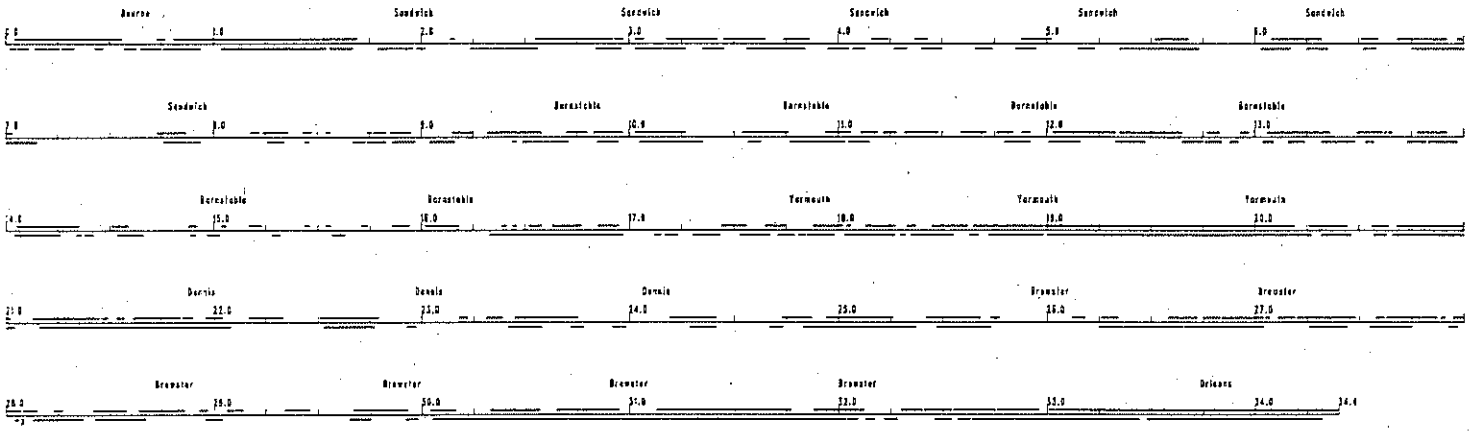
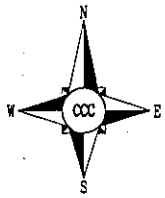
- Guard Rail on North Side
- Guard Rail on South Side
- Route 6A
- Major Road





Route 6A Scenic Byways Program
Location of Curbs on Route 6A





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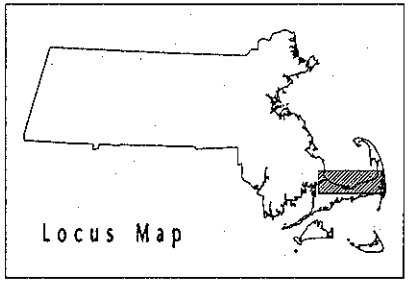
Plot file created on January 13, 1994

Curb on North Side
Curb walk on South Side
Route 6A
Major Road



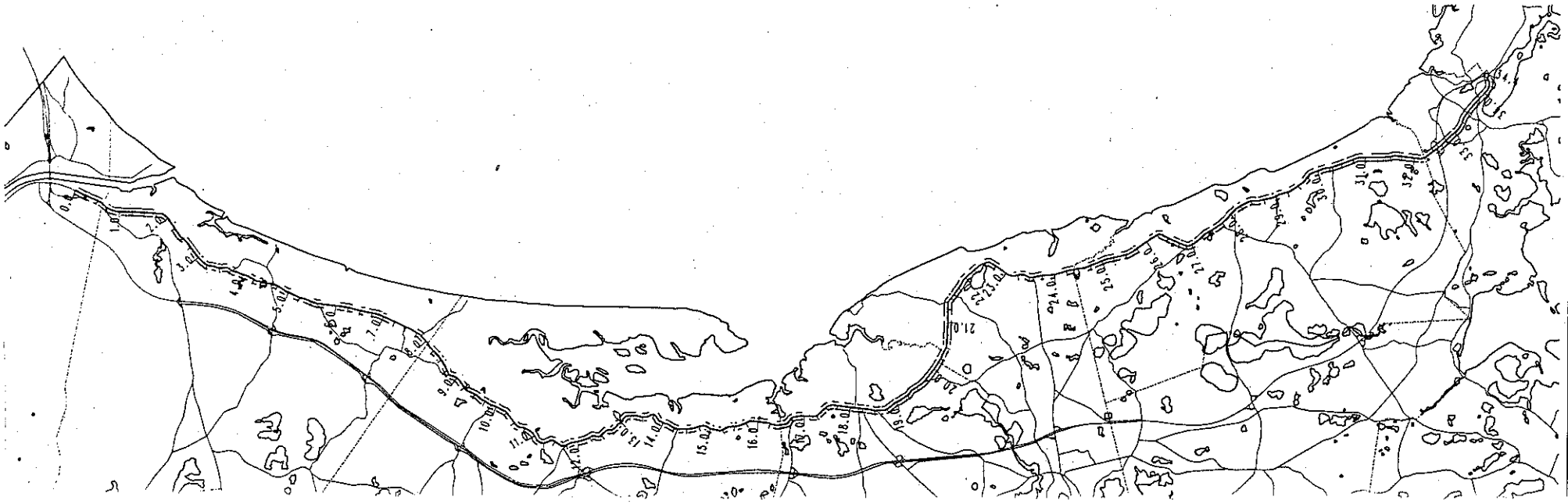


Table 7: Route 6A Curb Cut Summary

Town	Roadway Length	Curb Cut Type[1] Streets	Residential	Commercial	Total	Curb Cuts Per Mile Streets	Residential	Commercial	Total
Bourne	0.63	6	24	16	46	9.46	37.85	25.24	72.56
Sandwich	7.49	58	144	181	383	7.74	19.23	24.17	51.13
Barnstable	8.41	64	292	104	460	7.61	34.74	12.37	54.72
Yarmouth	3.72	35	141	54	230	9.41	37.9	14.52	61.83
Dennis	4.26	36	109	75	220	8.45	25.59	17.61	51.64
Brewster	7.78	48	160	173	381	6.17	20.57	22.24	48.97
Orleans	2.11	22	14	109	145	10.43	6.64	51.66	68.72
Total	34.4	269	884	712	1865	8.47	26.07	23.97	58.51

1. Curb cut type includes all intersecting streets, residential driveways and commercial site drives.

Table 8: Existing and Future Route 6A Average Daily Traffic Volumes

Town	Location	1993 ADT	2020 ADT	Percent Increase
Bourne/Sandwich	Town Line	17,948	21,393	19%
Sandwich	West of Tuppper Road	13,045	15,510	19
Sandwich	East of Tupper Road	15,727	22,984	46
Sandwich/Barnstable	Town Line	7,211	14,135	96
Barnstable	East of Route 149	6,991	12,783	83
Barnstable	East of Route 132	6,210	8,916	44
Barnstable	West of Hyannis Road	11,094	15,935	44
Barnstable/Yarmouth	Town Line	11,291	18,191	61
Yarmouth	East of Union Street	16,161	20,592	27
Yarmouth/Dennis	Town Line	13,974	17,745	27
Dennis	East of Corporation Road	10,667	14,105	32
Dennis	East of Route 134	10,352	17,301	67
Dennis/Brewster	Town Line	8,780	14,686	67
Brewster	East of Route 124	17,115	26,803	57
Brewster/Orleans	Town Line	18,708	28,470	52
Orleans	West of West Road	24,042	30,415	27
Orleans	West of Route 28	14,548	17,083	17
Orleans	East of Route 28	16,315	17,783	9
Orleans	South of Orleans/Eastham Rot	22,948	27,022	18

Table 9: Route 6A Sidewalk Lengths (in feet)

Town	Northside Sidewalk	Southside Sidewalk	Total	Route 6ARoadway Length (Both Sides)	% of Town Total
Bourne	2,841	0	2,841	6,696	42
Sandwich	3,147	2,378	5,525	79,094	7
Barnstable	16,034	17,466	33,500	88,768	38
Yarmouth	9,407	1,893	11,300	39,283	29
Dennis	6,822	2,873	9,695	44,986	22
Brewster	10,860	5,377	16,237	82,157	20
Orleans	7,696	5,023	12,719	22,282	57
Total	56,807	35,010	91,817	363,266	25

Table 10: Route 6A Sidewalk Characteristics (in feet)

Town	Sidewalk Width	Curb Setback
Bourne	4	6.5
Sandwich	4 to 6	6 to 10
Barnstable	2.5 to 6	3 to 17
Yarmouth	2 to 5	2 to 6
Dennis	2 to 4	3 to 7
Brewster	3 to 4	3 to 6
Orleans	4 to 5	NA

Table 11: Bicycle Accident Characteristics

Town	Intersecting Street	Date	Time	Weather	Accident Type
Bourne	Sandwich Rd	5/6/91	8:00 pm	Overcast	Angle
	Res. driveway on 6A	8/4/91	1:00 am	Overcast	Angle
Sandwich	Res. driveway on 6A	7/23/90	4:00 pm	Overcast	Angle
Yarmouth	Setucket Rd	11/3/91	7:00 pm	Overcast	Angle
Dennis	Rt 134	8/28/91	10:00 am	Clear	Rear-end
	Airline Rd	7/13/91	8:00 pm	Rain	Angle
	Old County Way	11/11/90	3:00 pm	Clear	Angle
Brewster	Millstone Rd	5/27/91	2:00 pm	Clear	Angle
	Res. driveway on 6A	6/27/91	Unknown	Unknown	Rear-end
	Res. driveway on 6A	6/17/90	1:00 pm	Clear	Head-on
Orleans	Route 6 Exit 10 Ramp	8/20/91	2:00 pm	Overcast	Angle
	Route 28	8/23/90	7:00 pm	Overcast	Rear-end
	Res. driveway on 6A	7/5/90	12:00 pm	Clear	Rear-end

AASHTO Design Guidelines and Standards for pedestrian facilities

The implementation of improved pedestrian facilities must not compromise the design standards and infrastructure of other facilities along the corridor. Pedestrian improvements incorporated into the Route 6A CMP will comply with all applicable engineering standards and state laws such as those in the AASHTO Greenbook and the MHD Highway Design Manual.
Due to constraints on Route 6A, some improvements may not be possible under design guideline standards. It is important to note that pedestrian facility improvements altering design standards must not compromise the safety of pedestrians and vehicular travel.

Factors that need to be considered when upgrading sidewalk locations include type of abutting land use, amount of pedestrian activity, speed and volume of traffic on street, and proximity to facilities such as historic sites, parks, beaches, and shopping locations. The design of sidewalks include width placement within the right-of-way, relationship to Route 6A, grades, and treatment at intersections. The following paragraph will discuss design standards that will be taken into consideration with the implementation of improved pedestrian facilities.

Width Considerations
Widths of new sidewalks should be 4-6, feet especially in areas of high pedestrian activity. Sidewalks are normally placed near the right-of-way line with a nominal width of 1 foot reserved for fences, utility poles, etc. Curb setbacks of at least 5 feet are desirable to provide pedestrian safety, reduce splashing of pedestrians by passing vehicles, provide space for utilities, traffic control devices, parking meters, etc., and minimize effect of pavement warping for driveway grades or the sidewall.

Grades
Maximum grades for sidewalks should be 5% which is the limit handicapped pedestrians can negotiate. When grades above 8% are required, handrails should be provided.

Intersections
Care should be taken to maintain a clear curb cut environment at intersections. Light poles, traffic signals, mailboxes, and other roadside furniture should be located away from the curb where the sidewalks meet at the intersection.

Crosswalks
Wherever possible, right angle crossings at the street should be used to minimize exposure to vehicles. Crosswalk widths should be a minimum of 6 feet and as great as 8 feet.

Curbs
Current design standards call for a barrier curb to keep vehicles off the sidewalk to

protect pedestrians. The installation of this barrier would necessitate roadway widening to provide "shy distance" for motorists.

Provisions for the Handicapped

Design of new sidewalks must include provision for handicapped pedestrians. The following guidelines address design and location of ramps for handicapped pedestrians:

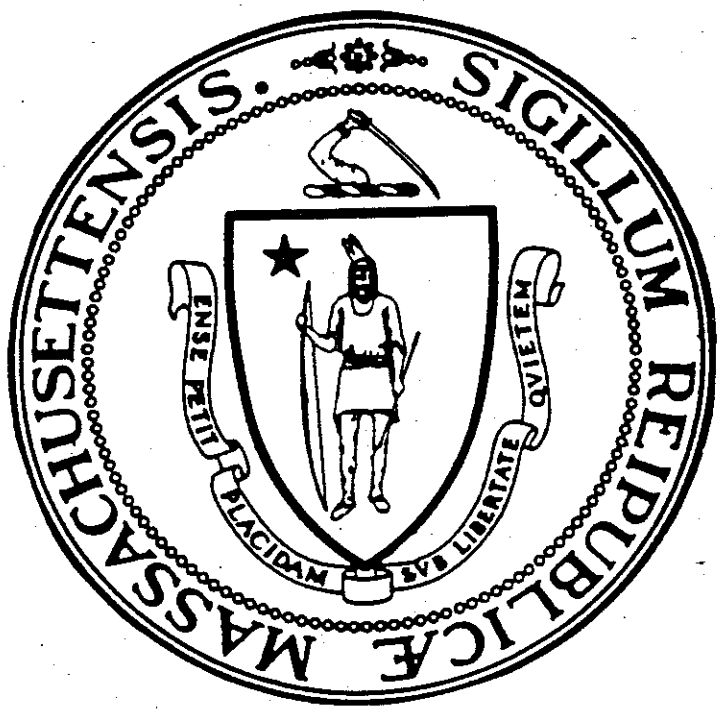
1. Curb ramps should match at all intersection connections to provide maximum accessibility.

2. Utilities, drainage inlets, signs, traffic control boxes and other fixed objects should not obstruct the path of the defined curb ramp.

3. Curb ramps should only be provided where sidewalks exist.

4. Handicapped facilities should comply with the American Disabilities Act (ADA) and the Massachusetts Architectural Access Board (AAB) regulations.

RULES AND REGULATIONS OF THE ARCHITECTURAL ACCESS BOARD

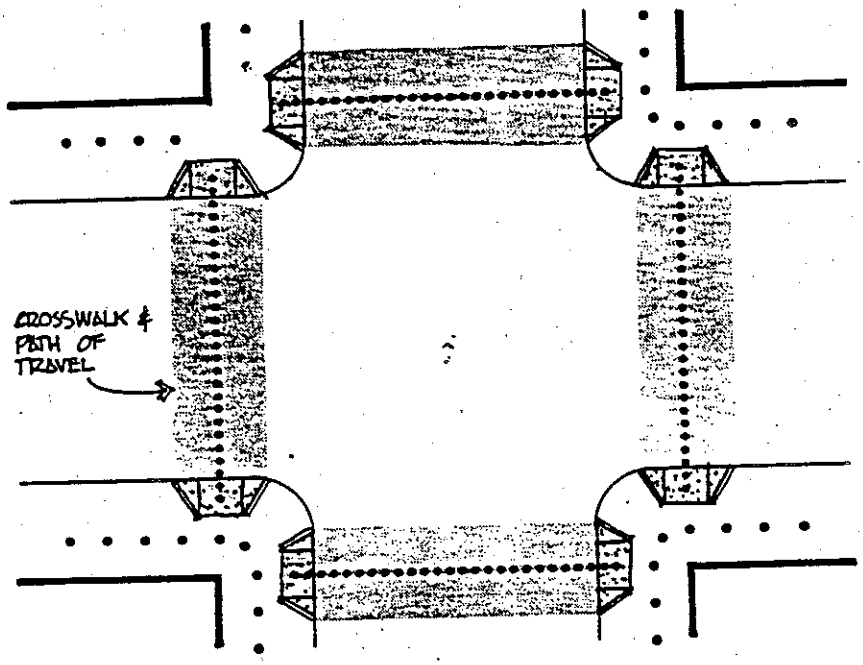


THE COMMONWEALTH OF MASSACHUSETTS EXECUTIVE OFFICE OF PUBLIC SAFETY

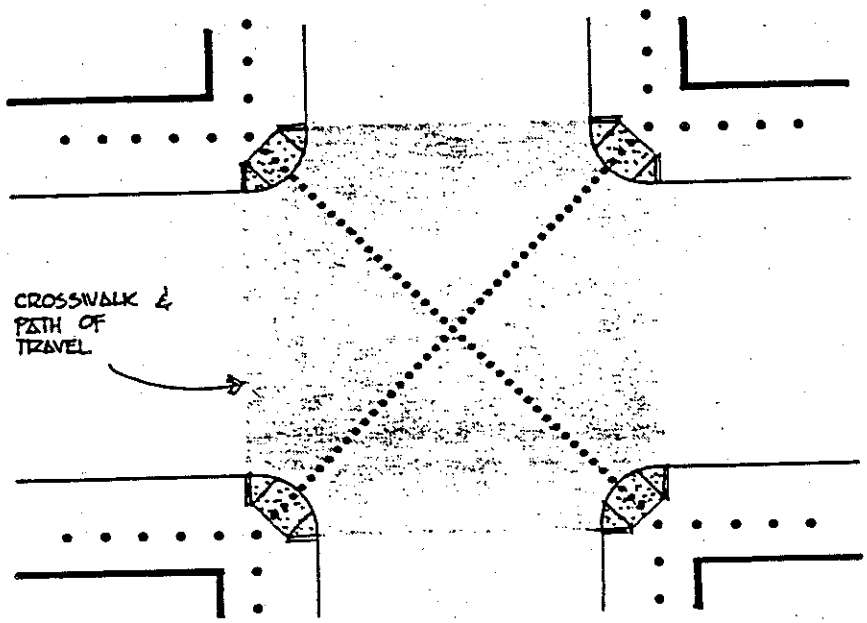
21 CURB CUTS

21.1 Curb cuts (sidewalk ramps): Whenever sidewalks or curbs on streets and ways are constructed, reconstructed or repaired, curb cuts are required. Curb cuts shall comply with the following:

21.1.1 Location: There shall be curb cuts at each corner of each intersection, located within the crosswalk and/or the pedestrian path of travel.

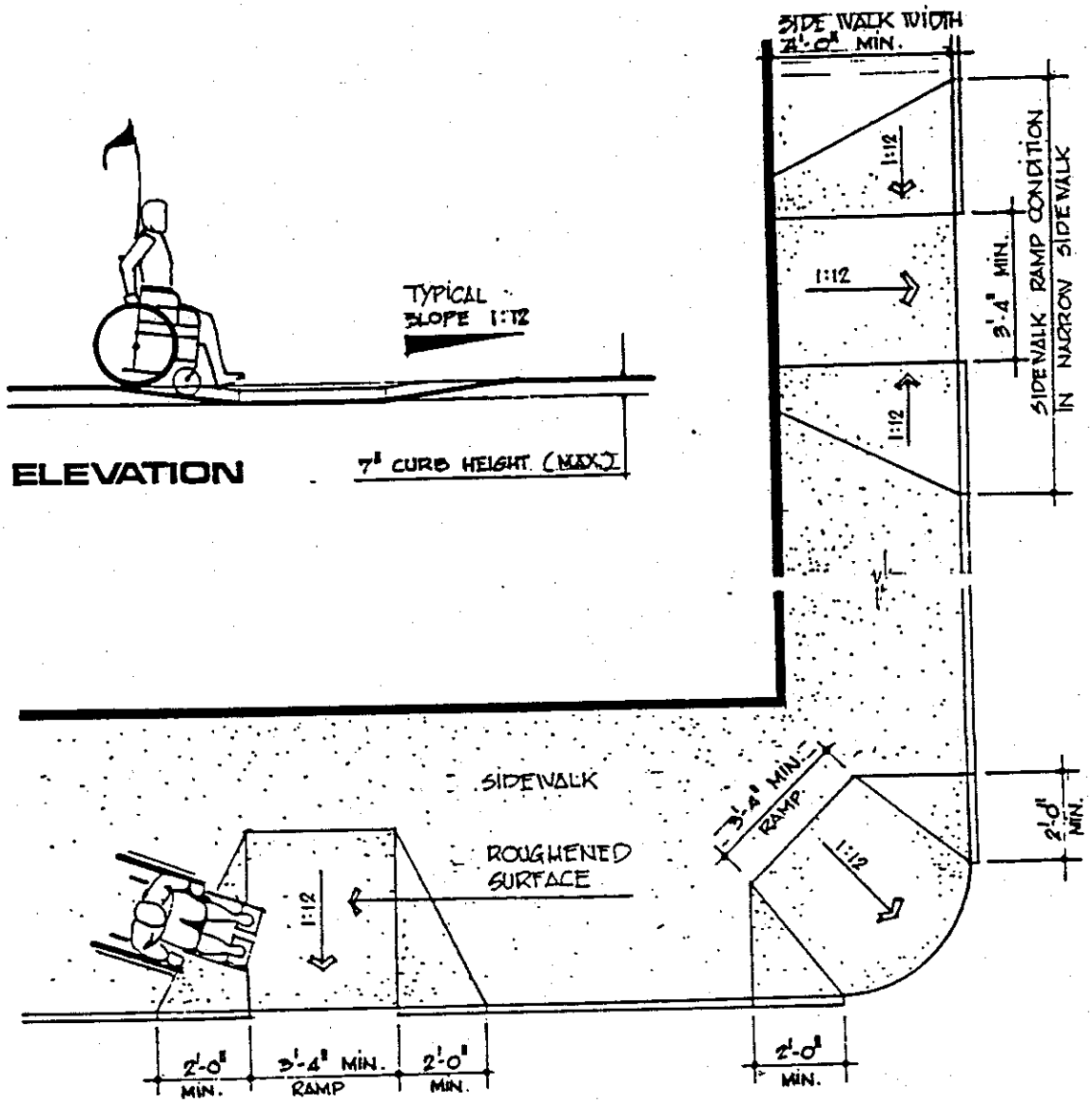


PLAN - CROSSWALK



PLAN - PATH OF TRAVEL

21.1.2 When curbs or sidewalks are constructed or reconstructed on one side of the street, curb cuts shall also be installed on the opposite sides of the street, where there is a pedestrian path of travel.



21.1.3 If driveways intersecting sidewalks have side curbs, curb cuts shall also be provided therein.

21.1.4 Slope of curb cuts shall not exceed one-in-twelve (1:12) and shall blend to meet the roadway gutter with a one-half (1/2) inch maximum lip for drainage. Where sidewalks are too narrow to install a straight-line curb cut at a slope of one-in-twelve (1:12), the sides of the curb cut shall slope at one-in-twelve (1:12).

21.1.5 Width of curb cuts shall be no less than thirty-six (36) inches, not including sloped sides.

21.1.6 Sides of curb cuts shall extend no less than twenty-four (24) inches at the curb. There shall be no vertical curbing at the side of the curb cut.

21.1.7 Curb height at intersections shall not exceed seven (7) inches.

21.1.8 Texture of curb cut surface, including sloping sides, shall be roughened in the direction of the slope, or shall be painted yellow.

21.2 Sidewalks on streets and ways shall be at least forty-eight (48) inches in width, and their slope shall be determined by the natural topography of the ground. Section 25, (Ramps) of these Regulations need not apply to such sidewalks except as provided under Section 22.1. Slope cross section of walks shall not exceed three percent (3%).

21.3 Islands: Any raised islands in crossings shall be cut through level with the street, or shall have curb cuts at both sides and a level area at least forty-eight (48) inches long in the part of the island intersected by the crossings.

21.4 Uncurbed intersections: If there is no curb at the intersection of a walk and an adjoining street, parking lot, or driveway, the walk shall have a tactile warning texture or be painted yellow at the edge of the vehicular way.

WALKS, OVERPASSES 22

22.1 Width of walks and walkways shall be not less than forty-eight (48) inches. Where the slope of walks exceed one-in-twenty (1:20) or five percent (5%) it shall be treated as a ramp and the Regulations applicable to ramps shall apply.

22.2 Such walks and walkways shall have continuous common surfaces, not interrupted by steps or abrupt changes in level greater than one-half (1/2) inch. Such surfaces shall be non-slip.

22.3 Only a non-slip finish material may be applied to any walk or walkway.

22.4 Wherever there is an intersection of walks or walkways, streets, public ways, driveways or parking lots, each shall blend to a common level.

22.5 Pedestrian bridges, underpasses and overpasses shall be considered as walkways or ramps and shall comply with Sections 22 and 25.

APPENDIX F

Resource List

Route 6A Scenic Byways Study
Resources Summary
Annotated

Scenic Byways General Issues and Protection Programs:
Application Procedures for Designation of Parkways, Historic and Scenic Roads in Arizona, Arizona Department of Transportation, June 1993. Establishes an in-depth inventory process for identifying the characteristics of roadways. Includes some standards for protection of special roadway features. The state allows scenic roads to be exempt from some road engineering standards.

A Bibliography: Roads in the Landscape, Environmentally Sensitive Location and Design, International Federation of Landscape Architects, July 1987. Includes some sources that apply to scenic roads.

Cultural Resources from the Recent Past, Rebecca A. Shiffer, vol. 16, no. 6, National Park Service, Cultural Resource Management. Includes four articles as follows: Developing Survey Methodology for Roadside Resources; Where the Planner Meets the Road - the NPS Route 66 Study; Historic Highway Preservation - Not a Dead End Street; Made for Motoring (Merritt Parkway).

Designating Scenic Roads: A Vermont Fieldguide. The appendix describes a variety of "scenic elements" which contribute to or detract from the quality of a scenic road.

Final Case Study for the National Scenic Byways Study, 8 vols. September 1990, U.S. Department of Transportation Federal Highway Administration. Eight volumes as follows:

- Recommendations for a Scenic Byways Program - specific analysis of a particular byway; example of written summary of inventory
- New Hampshire's Scenic Byways: Economic Impacts (Kancamangus & Lake Sunapee regions) - summary of tourist survey
- Scenic Resource Protection Techniques and Tools - includes example of a scenic easement deed and scenic highway district ordinance
- Safety, Traffic and Cost Considerations on Scenic Byways - * cost data for improvements to scenic byways
- Safety Impacts, Design Standards and Classification Systems for Scenic Byways - roadway standards, impact of additional tourist activity
- Creative Landscape Design Solutions on Scenic Byways - pavement alternatives, rest areas, planting of course and case studies
- Roles of Local Planning Agencies in Scenic Byways Programs - comprehensive planning process, local input on inventory
- The History of AAA's Scenic Byways Program - AAA's evaluation criteria for scenic roads

HABS/HAER - Moving Forward with the Past, National Park Service, Cultural Resource Management, vol. 16, no. 3. Discussion of National Park Service roads and bridges.

Historic Resources Study for the Carriage Road System, Acadia National Park - Mount Desert Island, ME, 2 vols., by William D. Rieley and Roxanne S. Brouse for the National Park Service, May 1989. Volume 1 contains a history of the development of the park, with inventory survey methodology. Volume 2 includes costs and specifications.

Massachusetts Zoning Manual, edited by Martin R. Healy and Robert W. Mack, et. al. Massachusetts Continuing Legal Education, Inc., Boston, 1992.

The Protection of America's Scenic Byways, National Trust for Historic Preservation, 1992. Includes an evaluation of existing scenic byways programs, threats to the character of scenic roads, developing a corridor management plan, and several techniques for protecting scenic byways.

"Roadways Recovered," Landscape Architecture, April 1989. Describes several road construction projects designed to be sympathetic to the surrounding character and natural environment.

Routes of History: Recreational Use and Preservation of Historic Transportation Corridors, National Trust for Historic Preservation, 1985. Discusses land protection techniques, management issues, and interpretation methods for historic road corridors.

Scenic America publications:

- "Designation of State Scenic Byways" summarizes the attributes of various state scenic byway programs and make recommendations to improve their effectiveness;
- "Corridor Management Plans for Scenic Byways" enumerates the various elements of a corridor management plan;
- "Transportation Design Standards for Livable Communities" identifies the potential conflicts between uniform roadway design standards and community character.

Scenic Byways: Preparing Corridor Management Plans: A Scenic Byways Guidebook. Draft. U.S. Department of Transportation, Federal Highways Administration, June 1994. Includes information on the development of goals, objectives and strategies for protecting scenic byways.

Scenic Roadway Character Guidelines:
Draft Proposed Merritt Parkway Guidelines, July 1993, prepared by Merritt Parkway Working Group. Summary of history of parkway development and current traffic operations; includes guidelines for the following: landscaping, roadway improvements (curbing, pavement), guardrails* (Dept. presently evaluating 8 alternatives), bridges, visitor facilities, signs, lighting, traffic signals, maintenance, and review procedures.

Park Road Standards, National Park Service, 1984. Classification of park roads and design standards for roadways.

Recommended Guidelines for the Restoration, Maintenance and Use of the Carriage Roads at Acadia National Park, National Park Service, May 1989. Includes recommendations for roads, walls, drainage, vista pruning and maintenance activities.

Road Character Guidelines - Sequoia and Kings Canyon National Parks, April 1990, National Park Service. Contains analysis of park roads and design details such as walls, curbs, drainage, guardrails, signs, turnouts and parking areas.

Scenic Landscape Guidelines:
The Brandywine Valley Scenic River and Highway Study, September 1987; The Lexington-Frankfort Scenic Corridor: Protecting a World Class Landscape, February 1990; The Red Clay Valley Scenic River and Highway Study, August 1989. All are studies by the Brandywine Conservancy, PA. Each study contains a series of resource maps for the area, as well as study methodology and management strategies.

Draft Guidelines for the Treatment of Historic Landscapes, National Park Service, may 1992. Includes recommended and not recommended actions for the protection and preservation of roadways.

Guidelines for Evaluating and Documenting Rural Historic Landscapes, National Register Bulletin 30. Provides information on the identification and evaluation of historic landscapes.

Management of Cultural Landscapes, Chapter 7, National Park Service, Cultural Resource Management. Types of cultural landscapes with evaluation and management techniques.

Vermont's Scenic Landscapes: A Guide for Growth and Protection, The Vermont Agency of Natural Resources, April 1991. Describes a method of evaluating scenic landscapes, identifying the landscape's sensitivities, and prescribing protections for the area.

Information on various scenic and historic corridor development efforts: America's Industrial Heritage Project, Hollidaysburg, PA; Cuyahoga Valley National Recreation Area, OH; Ohio and Erie Canal Corridor Study, OH; Ashley River Road Corridor, SC; Illinois and Michigan Canal National Heritage Corridor, IL; Lower Rio Grande Heritage Corridor, TX; Loess Hills Scenic Byway, IA.

Historical Information:
Barnstable Town Records; Road Book 12. Description of the County road or highway laid out in March and April 1686.

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Cape Cod: A Guide, Donald Wood. Little, Brown and Company, Boston, 1973. Includes anecdotal historical and tourist attraction information.

History of Barnstable County, Massachusetts, 1620-1890, Simeon L. Deyo. H. W. Black, New York, 1890.

Historic and Archaeological Resources of Cape Cod and the Islands, Massachusetts Historical Commission, Office of the Massachusetts Secretary of State, April 1987.

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Seventeenth and Eighteenth Century Highways: Cape Cod, William D. Hershey, National Park Service, 1962. Research paper exploring the history of the Old Kings Highway, including the origin of the name, focusing on the lower cape.

Specs on steel-backed timber guardrails and grass paving systems collected by the Rhode Island Historical Preservation Commission.

Travels in New England and New York, Volume III, Timothy Dwight. S. Converse, New Haven, 1822. The author describes the road and landscape between Plymouth and Provincetown, following a substantial portion of the original Old Kings Highway route.

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Manual on Uniform Traffic Control Devices, U.S. Department of Transportation, Federal Highway Administration. 1988 edition.

Mass Highway curb detail specs: Bituminous concrete berm - Type A; Bituminous concrete curbs; Method of setting vertical curb; Method of setting granite faced

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Selecting Roadway Design Treatments to Accomodate Bicycles, William C. Wilkinson, et al. FHWA grant, Nov. 1992. Discusses different types of bicycle users and various ways of accomodating them on or along roadways. Includes a chart system to identify appropriate bicycle facilities along certain roadway types.

Traffic Calming, Auto-Restricted Zones and Other Traffic management Techniques - Their Effects on Bicycling and Pedestrians, Andrew Clarke and Michael J. Dornfeld. FHWA Study 19.