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***NEW HAMPSHIRE
STATEWIDE
BICYCLE
AND
PEDESTRIAN
PLAN***



PREPARED BY

**NH DEPARTMENT OF TRANSPORTATION
BUREAU OF TRANSPORTATION PLANNING**

IN COOPERATION WITH

**US DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION**

May 2000



**THE STATE OF NEW HAMPSHIRE
DEPARTMENT OF TRANSPORTATION**

**LEON S. KENISON
COMMISSIONER**

May 25, 2000

As Commissioner of the New Hampshire Department of Transportation, I am pleased to adopt the updated New Hampshire Statewide Bicycle and Pedestrian Plan, as an element of the State's Long Range Statewide Transportation Plan.

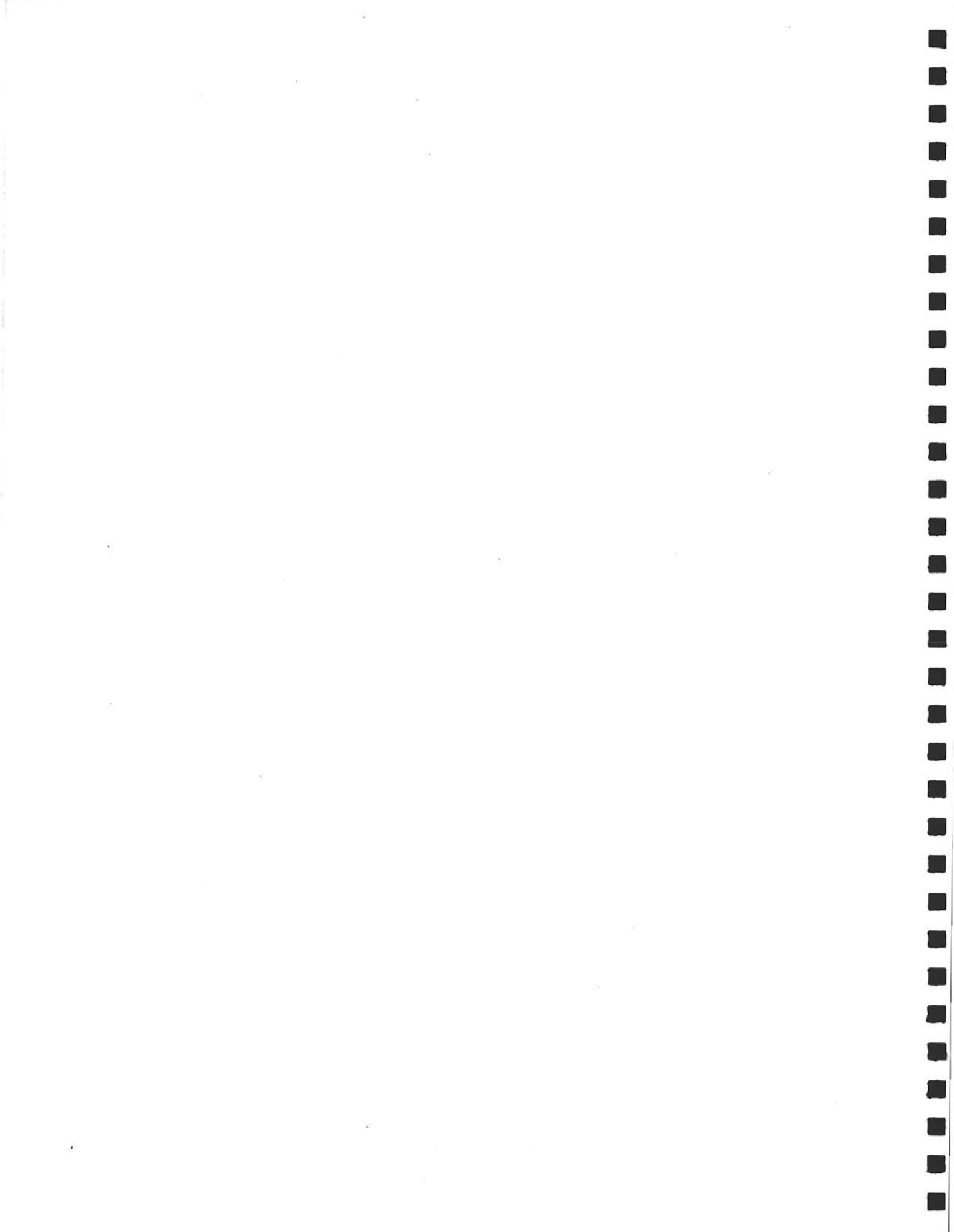
Through its policies and practices, the Department recognizes and supports bicycling and walking as modes of transportation, and will work towards providing and maintaining suitable facilities.

This plan was developed through public input and the recommendations of the Bicycle Pedestrian Transportation Advisory Board. I wish to thank the Bicycle Pedestrian Transportation Advisory Board for its efforts in advising the Department during the preparation and finalization of the Plan. The Department looks forward to continuing its cooperative efforts with the Advisory Board in order to provide the best feasible intermodal transportation system and follow through with the objectives outlined in this plan.

Sincerely,

A handwritten signature in cursive script, appearing to read "Leon S. Kenison".

Leon S. Kenison, PE
Commissioner

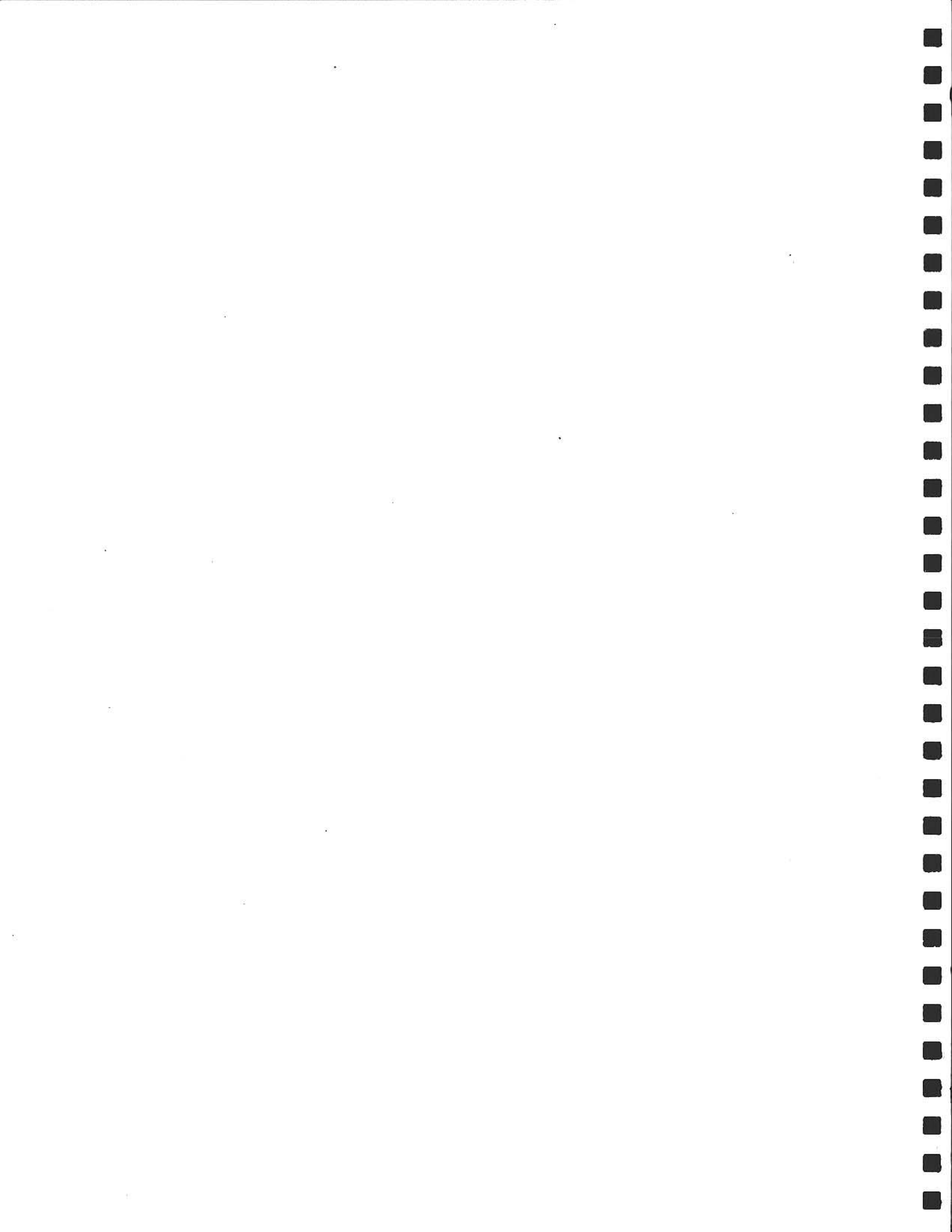


New Hampshire Statewide Bicycle and Pedestrian Plan

Table of Contents

MAY 2000

<i>Executive Summary</i>	2
<i>Chapter 1</i>	
<i>Introduction and Purpose</i>	3
<i>Chapter 2</i>	
<i>Goal and Objectives</i>	4
<i>Chapter 3</i>	
<i>Background</i>	5
<i>Chapter 4</i>	
<i>Planning and Design Considerations</i>	8
<i>Chapter 5</i>	
<i>Development Process</i>	13
<i>Chapter 6</i>	
<i>Funding Categories, Levels, and Availability</i>	14
<i>Chapter 7</i>	
<i>Implementation</i>	16
<i>Chapter 8</i>	
<i>Safety and Enforcement</i>	17
<i>Chapter 9</i>	
<i>Maintenance</i>	19
<i>Chapter 10</i>	
<i>Pedestrian Specific Considerations</i>	20
<i>Appendix A</i>	
<i>Resources and Contacts</i>	23
<i>Appendix B</i>	
<i>Bicycle Facility Planning Criteria</i>	27
<i>Appendix C</i>	
<i>Project Selection Process</i>	30
<i>Appendix D</i>	
<i>State Laws Regulating Bicycles and Pedestrians</i>	32
<i>Appendix E</i>	
<i>Definition of Terms</i>	37
<i>Appendix F</i>	
<i>Glossary of Acronyms</i>	38
<i>Appendix G</i>	
<i>Pedestrian Crosswalk Sign</i>	39



This document was prepared in cooperation with the Federal Highway Administration, with the assistance of the State's regional planning commissions, metropolitan planning organizations, and the Bicycle and Pedestrian Transportation Advisory Board.

The contents of this document reflect the views of the New Hampshire Department of Transportation and the Bicycle and Pedestrian Transportation Advisory Board. The contents do not necessarily reflect the views of the Federal Highway Administration, regional planning commissions, and metropolitan planning organizations.

EXECUTIVE SUMMARY

This plan was originally developed in response to Federal requirements, which require each state to adopt and periodically update a long-range transportation plan. This "Bicycle and Pedestrian Plan" is one element of the state's overall transportation plan.

This current plan is an update to that which was adopted in 1977 and updated in 1995. It was developed in concert with New Hampshire's Bicycle and Pedestrian Transportation Advisory Board (BPTAB) (see Appendix A).

One of the goals of the New Hampshire Department of Transportation -- and the overriding goal of the New Hampshire Statewide Bicycle/Pedestrian Plan -- is to recognize, support and encourage bicycling and walking as alternatives to motorized forms of transportation.

Inasmuch as bicycling and walking are most appropriate for short, intra-regional trips, bicycling and walking are most appropriately a focus of the regional planning commissions. Thus, it is the policy of the Department of Transportation to recognize them as important partners in meeting its goal.

Nevertheless, the NHDOT recognizes its responsibility to aggressively provide safe and enjoyable facilities for the state's bicyclists and pedestrians. To that end, this plan includes a "Statewide Bicycle Route System," which was adopted as the most suitable network of existing roads and other special facilities to serve the needs of inter-regional bicycle trips. The system was developed by the BPTAB with much input from bicycling enthusiasts and public officials from throughout the state.

The NHDOT recognizes that the system is not universally ideal for bicyclists and pedestrians and improvements have to be made. These improvements will be identified and scheduled within the context of other Department priorities and available funds.

The NHDOT has adopted for its use, and will continue to use, design criteria published by the American Association of State Highway and Transportation Officials (AASHTO). The NHDOT also adopted the Manual on Uniform Traffic Control Devices (MUTCD) for guidance on traffic operations related to signs, signals and pavement markings.

The Department's Bicycle and Pedestrian Coordinator, working under the guidance of the Bicycle and Pedestrian Transportation Advisory Board, will implement the principles outlined in this plan.

CHAPTER 1

INTRODUCTION AND PURPOSE

New Hampshire's 1995 Statewide Bicycle & Pedestrian Plan is being updated to include the goals and take advantage of the opportunities created by the Intermodal Surface Transportation Efficiency Act (ISTEA) of 1991 as continued and expanded by the Transportation Equity Act for the 21st Century (TEA-21) of 1998. The policy of the ISTEA is, "...to develop a National Intermodal Transportation System that is economically efficient and environmentally sound, provides the foundation for the nation to compete in the global economy, and will move people and goods in an energy-efficient manner." TEA-21 emphasizes innovative planning and flexibility in project funding based on intermodal transportation plans that address all modes of transportation, including bicycling and walking. TEA-21 funding sources and suggested techniques for implementing bikeways are examined and expanded. The distribution of funds is the responsibility of the states.

TEA-21, like ISTEA, is very broad ranging legislation. It affirms the Federal Highway Administration's priorities: improving safety, protecting public health and the environment and creating opportunity for all Americans. It is about more than asphalt, concrete and steel; it's about people and about providing them with the opportunity to lead more fulfilling lives.

The NHDOT, in cooperation with metropolitan planning organizations (MPOs), and regional planning commissions (RPCs) develops transportation plans and programs. These plans and programs must provide for the development of intermodal transportation networks, which will function as the transportation system for the state, and the nation as a whole. In addition, the planning agencies must develop long-range plans for bicycle and pedestrian transportation, which are incorporated into the long-range intermodal transportation plans for their regions. Once the long-range plan for bicycle and pedestrian transportation is incorporated into the long-range transportation plan for each region, they are then consolidated and coordinated to produce a long-range intermodal transportation improvement plan for the entire state.

An increase in bicycle usage in recent years has created a demand for suitable and accessible facilities. This increase is due in part to a heightened awareness of health and fitness and the advantage of the mobility and efficiency of the bicycle. There is also a growing interest in pedestrian facilities. This document responds to that growing interest in bicycle and pedways throughout the state. One advantage of bicycling and walking as an alternative mode of transportation is related to environmental quality. It assists in maintaining and improving our living environment by reducing air pollution and general congestion throughout the transportation network.

This 2000 plan is intended to continue where the 1995 plan left off and includes an updated system of connected bicycle routes throughout the state. The plan will be coordinated statewide with each regional planning commission's bicycle/pedestrian plan.

CHAPTER 2

GOAL AND OBJECTIVES

GOAL:

The NHDOT recognizes, supports and encourages bicycling and walking as alternatives to motorized forms of transportation and as an element of the state's intermodal transportation system.

OBJECTIVES:

1. The NHDOT will promote bicycling and walking as viable modes of transportation.
2. The NHDOT will cooperate with other state agencies in initiating, developing and implementing programs that encourage bicycling and walking and that enhance bicyclist and pedestrian safety.
3. The NHDOT adopts the enclosed interconnected network of existing roads and bicycle facilities as its primary network of routes for inter-regional bicycle travel. The NHDOT will produce and maintain the map and will develop standards through a pilot project for appropriate signage of the network.
4. The NHDOT will provide a safe and efficient means of bicycle travel throughout the State. The NHDOT will identify deficiencies and initiate appropriate corrections within financial constraints for routes on the network in its overall transportation planning effort. The NHDOT will work with the towns and cities, through the regional planning commissions, to identify, fund, design, construct, and maintain appropriate bicycle and pedestrian facilities where feasible.
5. The NHDOT adopts and will use bicycle facility design guidelines as issued by the American Association of State Highway and Transportation Officials (AASHTO). The NHDOT also adopts the Manual on Uniform Traffic Control Devices (MUTCD) for guidance on traffic operations. The NHDOT will actively provide for the needs of bicyclists and pedestrians in all highway projects where possible.
6. The NHDOT in cooperation with Department of Resources and Economic Development (DRED) will propose a statewide plan for the integration of recreational trails with other bicycle/pedestrian facilities; set standards for their development; encourage and support their improvement to all season condition.

7. The NHDOT will, as part of its normal road striping operations on resurfaced roads, restripe roads to allow for paved shoulders where none exist now, as long as travel lanes meet width requirements.
8. The NHDOT will consider bicycle/pedestrian concerns in all projects.

CHAPTER 3

BACKGROUND

In January 1977, the NHDOT prepared the "Shared Roadway Bike Lane Study" as a proposed plan for rural bicycle routes in New Hampshire. The report outlined a program that was divided into two phases. The first phase defined immediate actions, while the second phase involved an in-depth analysis of bicycle crash statistics, analysis of proposed projects, and public involvement.

Phase I

- A. Develop an overall plan for "shared roadway" bicycle routes throughout the state.
- B. Develop standards for design and maintenance of routes.
- C. Establish primary objectives.

Phase II

- A. Monitor bikeway projects upon completion.
- B. Solicit input from public and private agencies to aid in the continuous planning and development process consistent with the overall plan.
- C. Investigate methods of controlling and policing the designated routes.
- D. Assist in the establishment of complementary facilities in cooperation with other public and private agencies.
- E. Investigate the establishment of public education programs relating to bicycle safety through the cooperation of other public and private agencies.
- F. Investigate methods of full public awareness of bicycle facilities and encourage the use of them.

With the cooperation of representatives from the NH Department of Resources and Economic Development (DRED) and bicycling organizations (such as the Granite State Wheelmen), as well as the regional planning agencies, a network of bicycle routes was established, taking into account factors of population, recreational areas, services, and availability of existing

paved shoulders. Design criteria recommended a minimum shoulder width of four feet for shared roadway bicycle lanes and eight feet for two-way bicycle paths. Sections within the established system that did not meet the minimum four foot shoulder width were then identified. Follow-up maintenance, signing, and striping of routes upon completion were also addressed.

Under this plan, a handful of projects were built. These projects include shared roadway bicycle lanes on U.S. Route 3 from Hooksett to Pembroke, a combined shared roadway and bicycle path along NH Route 1A in Rye leading into and through Odiorne Point State Park, a bicycle path along NH Route 49 in the center of Waterville Valley, and bicycle lanes on a short section of U.S. Route 4 in Lebanon.

Other existing facilities on the statewide system included bicycle paths along I-89 in Concord and Enfield, I-93 through Franconia Notch, and the Spaulding Turnpike at Dover Point. Though the Hooksett to Pembroke project was the longest, signing and striping were never done because it was not a completed route from Manchester to Concord. The 1977 plan, however, remained in effect until revised in 1995, and the original report was considered the official document of the NHDOT regarding bicycle facilities.

With the enactment of the ISTEA in 1991, each state was required to develop a bicycle and pedestrian plan or revise and update any existing plans. Also, each state was required to establish or assign the position of bicycle/pedestrian coordinator. The NHDOT assigned the bicycle/pedestrian coordinator and developed a process to revise its existing bicycle/pedestrian plan.

To assist in the process, a Bicycle and Pedestrian Transportation Advisory Board was established as a means of determining pertinent issues and items to be addressed in the plan and developing a statewide bicycle-route system, as well as providing overall guidance to the program in general. In addition to the coordinator, the Board consists of representation from the following agencies and organizations:

- Bureau of Transportation Planning (NHDOT)
- Bureau of Highway Design (NHDOT)
- Bureau of Highway Maintenance (NHDOT)
- Bureau of Traffic (NHDOT)
- NH Office of State Planning
- NH Department of Resources and Economic Development
- NH Department of Safety
- Federal Highway Administration
- Metropolitan Planning Organizations
- Regional Planning Commissions
- Dartmouth-Hitchcock Injury Prevention Center
- American Automobile Association
- Audubon Society of New Hampshire
- Granite State Wheelmen
- Seacoast Area Bicycle Routes

Since the establishment of the previous Statewide Bicycle and Pedestrian Plan of January, 1995, many bicycle and pedestrian related projects have taken place through the Transportation Enhancement (TE) and Congestion Mitigation and Air Quality (CMAQ) programs. In addition, many miles of shoulders have been upgraded or added.

Examples of previously selected Bicycle/Pedestrian projects through TE funding include: construction of a sidewalk across the Connecticut River on US 2 from Lancaster, NH to Guildhall, VT, construction of 2.7 miles of bicycle lanes in Conway, design and construction of pedestrian bridges to link 2.5 miles of the Heritage Trail in Bedford, rehabilitation of sidewalks in the Canaan Village area, and the construction of Pedestrian/Bicycle path and bridge over Spaulding Turnpike connecting Portsmouth and Pease International Tradeport.

Examples of Congestion Mitigation and Air Quality (CMAQ) funded bicycle/pedestrian projects include: construction of a system of multi-use pathways in Derry connecting schools, recreation facilities, businesses, and residential areas, rehabilitation of an existing railroad bridge for pedestrian/bicycle use on a former railroad corridor in Raymond, construction of sidewalks in residential areas in Nashua to eliminate bus routes and reduce automobile trips to neighborhood schools.

Along Route 1A/1B Coastal route where there is limited possibility of shoulders, some roadway striping has been done and share-the-road signs installed.

In addition, NHDOT hosted its first annual Statewide Bicycle/Pedestrian Conference in May 1999. This conference was very successful and provided input to the development of bicycle/pedestrian facilities and programs in New Hampshire. A new pedestrian crosswalk sign available to communities was unveiled at this conference.

The bicycle/pedestrian transportation advisory board (BPTAB) is focussed on initiatives related to safety, infrastructure, information systems, and education. The safety subcommittee developed a safety survey through which the public can identify areas of safety concern. This information can be used in identifying/planning future projects.

After four years, the advisory board recognized a need to update the Statewide Plan and the Statewide Bicycle Route System and incorporate certain changes in policy and strategy. In the fall of 1999, a series of eleven workshops were held around the State in order to receive input from officials, representatives of bicycling interests and the public on preferences for an updated Statewide Bicycle Route System. From these workshops, a draft version of the system was developed. In January 2000, a subcommittee of the advisory board was established, and efforts began on updating the Bicycle and Pedestrian Plan. In the spring of 2000, a series of informational meetings was held to receive public input on the Bicycle Route System, and the Bicycle/Pedestrian Plan. This document reflects the culmination of all these efforts, and demonstrates the commitment of NHDOT to continue to work toward promoting and facilitating the needs of bicyclists and pedestrians.

CHAPTER 4

PLANNING AND DESIGN CONSIDERATIONS

Bicycle/Pedestrian facilities may be integrated into highway projects or developed as independent projects. Both types have been successfully implemented in the past. Initial planning considerations for bicycle/pedestrian facilities include the following:

1. Determine if there is project support at the local, state, and federal levels, and whether the project relates to other priorities in the local master plan, regional plans, the Statewide Bicycle and Pedestrian Plan, and/or the Statewide Transportation Improvement Program (STIP).
2. Determine the operation and maintenance responsibilities both now and in the future.
3. Determine the cost of the bicycle facility, including design, construction and any necessary right-of-way acquisition as well as future maintenance costs. (A sample program estimate is shown in Exhibit 1 to assist communities in determining cost estimates for proposed bicycle facilities.)
4. Design of the project should follow current design criteria as required by the funding.

A detailed set of guidelines for bicycle facility planning is contained in Appendix B.

During the preliminary design phase of a bicycle facility, investigating and gathering data on existing conditions is necessary. Local bicycling practices need to be observed. In some cases, it may need to be determined whether the directness or the quality of the trip is more important. Planning will be required to forecast future bicycle trip demand. All the above information will be used to determine if shared roadway or separate bicycle path is appropriate. Finally, continued public participation is essential during this preliminary phase so that all pertinent information is made available for comment and input.

The design of bicycle facilities should follow the most current information available. The NHDOT has used and will continue to use the design guidelines set forth in the "Guide for the Development of Bicycle Facilities" prepared by the AASHTO in 1999. This reference document discusses the planning, design, and maintenance of these facilities. The guide discusses both shared-roadway bicycle lanes and separate bicycle-path facilities. The NHDOT also adopted the Manual on Uniform Traffic Control Devices (MUTCD) for guidance on traffic operations.

The Federal Highway Administration published a report entitled "Selecting Roadway Design Treatments to Accommodate Bicycles," which gives the designer a correlation between shared lane width and annual average daily traffic (AADT), vehicle-operating speeds, and type of bicyclist. This can be used to determine how safe an existing facility is and what, if any, corrective measures are needed.

The primary element of design for the shared roadway portion of the statewide bicycle route system involves the construction of paved shoulders. It has to be assumed that automobiles will be crossing the bicycle lanes, and at times automobiles and maintenance vehicles will utilize them. For this reason, shoulders should be constructed to adequately support the heavier loads.

Soil conditions will be carefully investigated where bicycle lanes are to be added to existing sections of highway. Differential settlement could occur between the new shoulder and old traveled way during periods of freezing and thawing. In most instances, it would be desirable to match the shoulder sub-base depth to that of the existing roadway. This would include a minimum of six inches of crushed gravel under the additional pavement. In cases where a stable sub-base exists under the roadway, a minimum of eight inches of gravel and six inches of crushed gravel will be used. Additional sand and/or gravel may be needed to match the subsurface depth of existing roadway. In all cases, three inches of hot bituminous pavement will be provided for a minimum of four feet in width (Exhibit 2). Two-way bicycle travel adjacent to the traveled way on one side of the highway is not permitted under New Hampshire Motor Vehicle Laws, therefore a minimum four-foot shoulder would be required on both sides of the highway. Where there is curbing, five-foot shoulders should be used.

Bicycle paths would carry two-way bicycle traffic. Under most circumstances, motor vehicle traffic will be excluded from bicycle paths except for maintenance vehicles and snowmobiles. It is recommended that this type of facility have a width of at least eight-feet (Exhibit 3).

There are two types of surface treatments for paths: a paved surface treatment consisting of two-inches of bituminous pavement and an unpaved surface treatment consisting of two-inches of stone dust or crushed gravel*. The paved surface will be the surface of choice for these paths. Each surface treatment needs to have a stable sub-base consisting of a minimum of eight-inches of gravel and six-inches of crushed gravel (Exhibit 3).

* Other unpaved surfaces can be used subject to NHDOT's approval.

EXHIBIT 1

STATE OF NEW HAMPSHIRE
 DEPARTMENT OF TRANSPORTATION
 PROGRAM / PRELIMINARY ESTIMATE

Fed. Proj. No.
 State No.

Town of: _____ Date: _____
 Length: _____ Miles
 County of: _____ Pavement: _____ Ft. Wide
 Name of Road: _____
 Type: SPECIAL BIKEWAY PROJECT Shoulders: _____ Ft. Wide

ITEM NO.	ITEM DESCRIPTION	UNIT	QUANTITY	PRICE	AMOUNT
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Major "Bikeway/Bikepath" Construction Items:

-----List of Typical items.....

Clearing and Grubbing
 Common Excavation and/or Borrow
 Rock Excavation
 Crushed Gravel
 Gravel
 Sand
 Hot Bituminous Pavement
 Curbing
 Guardrail
 Uniformed Officers or Flaggers

Permanent Signs (\$1000/mi.)
 Fine Grading ; 12' wide (\$8000/mi.)
 Maintenance of Traffic
 Construction Signs and Warning Devices (\$1000/mi.)

SUB-TOTAL #1

Misc. Items (15-20%)

SUB-TOTAL #2

Drainage (15-25%) rural/urban

SUB-TOTAL #3

Water Pollution Control (5-10%)
 Mobilization (5-10%)

SUB-TOTAL #4
 CONTRACT TOTAL

Additional Project Costs:
 Preliminary Engineering (P.E.) 10%-20%
 Right-of-Way (R.O.W.)
 Construction Engineering (C.E.) 15%

SUB-TOTAL #5
 PROJECT TOTAL

Additional Special items
 Lighting, Signal Control
 Bridges
 Field Office

GRAND TOTAL

Round Total to nearest \$5,000

Name _____ Date _____

Computed by:
 Checked by:
 Estimate Apprv. _____

SHARED ROADWAY BIKEWAY TYPICAL SECTION

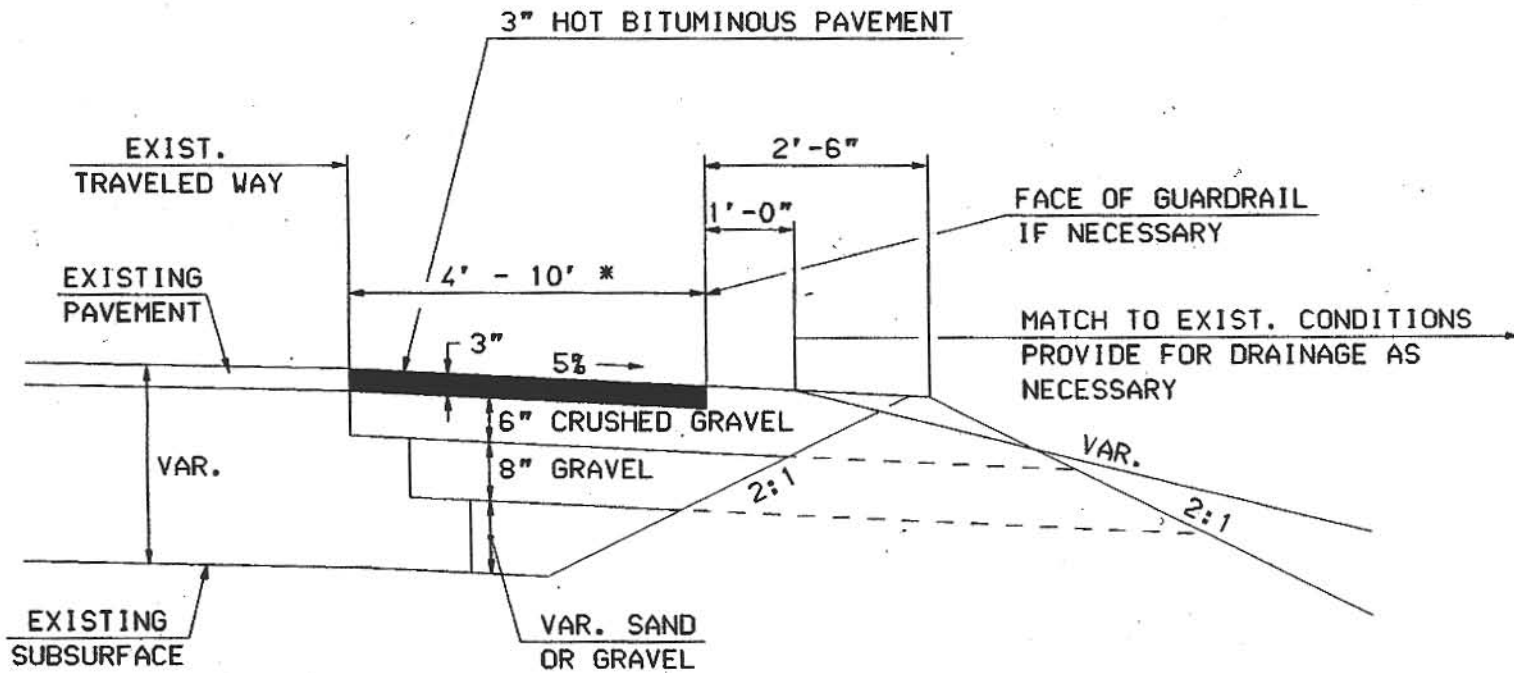
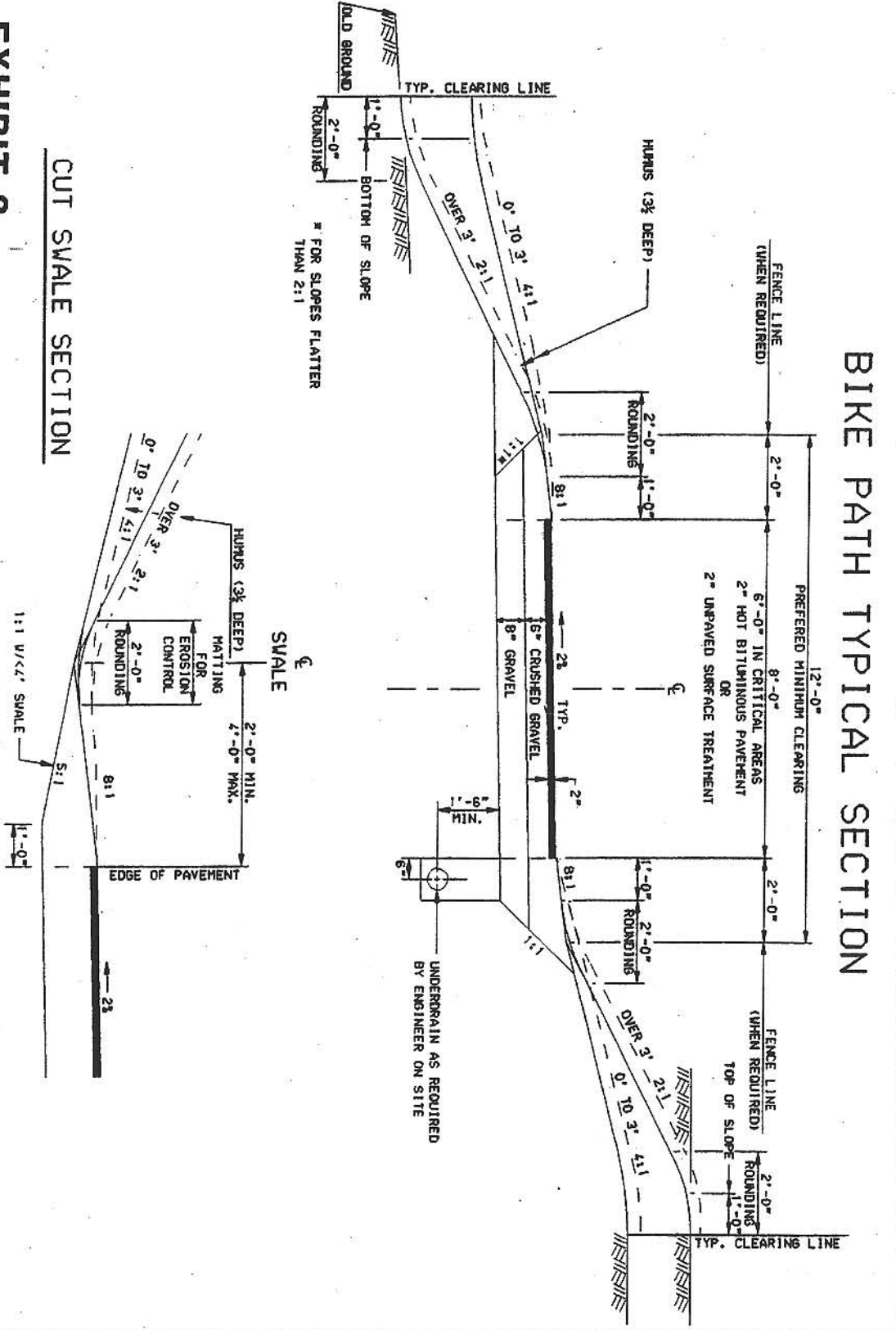


EXHIBIT 2

* VARIES, DEPENDS ON AADT
 (SEE "SELECTING ROADWAY
 DESIGN TREATMENTS TO
 ACCOMMODATE BICYCLES,
 FHWA, JAN. 1994)

EXHIBIT 3

CUT SWALE SECTION



BIKE PATH TYPICAL SECTION

CHAPTER 5

DEVELOPMENT PROCESS

The Bicycle/Pedestrian Plan was developed through a series of regional workshops that the NHDOT Bicycle/Pedestrian Program held as part of its effort to update the Statewide Bicycle Network.

The concept of holding regional workshops came from the State Bicycle/Pedestrian Infrastructure Subcommittee. Their goal is to create a primary state bicycle network that may provide bicyclists with a safe means for inter-regional travel, and serve as a basis for the state to consider spending on bicycle infrastructure improvements. The NHDOT Bicycle/Pedestrian Program shares this goal. The development of this network is not intended to replace regional networks that have been developed by regional planning commissions, nor will it prevent or discourage regional priorities from being funded.

The regional planning commissions developed earlier versions of the Statewide Bicycle Route System independently. The NHDOT and the Bicycle and Pedestrian Advisory Committee then assembled the parts into the statewide plan. The RPCs approached their tasks without much specific guidance and with varying degrees of public and user input. The resulting map did not lend itself to use as an aid to navigation. Thus, it was not very useful to bicyclists. Further, the routes chosen were often not the best or safest ones. In many cases, the adopted system guided bicyclist over heavily traveled highways when less heavily traveled routes existed. There was never a systematic review of the adopted system with the aim of improving safety.

The current Bicycle Route System was developed using a modified version of standard, widely accepted transportation planning principles.

First, the Infrastructure Subcommittee (a subcommittee of the Bicycle and Pedestrian Advisory Board) identified statewide inter-regional destinations that would be served by an interconnected system of existing roads.

Second, in a series of eleven public meetings, the subcommittee invited local officials and experienced, knowledgeable bicyclists to recommend the best routings for bicyclists to travel between these destinations. The overriding consideration in selecting such routes was bicyclist safety. Traffic volumes, shoulder widths and the perceptions of the individuals who attended the meetings, measured relative safety. Secondary considerations included grades (hilliness), road surface condition, etc.

Third, the recommendations from those meetings were put together into a draft system and released to the public again, for comment. Three more public meetings were held in which bicyclists and local officials were invited to comment on the draft system. The subcommittee reviewed the comments and the final system was adopted by the NHDOT.

The NHDOT will examine the individual routes on the system and identify deficiencies that can be corrected to make the system safer. Safety improvement projects will be planned in a continuing process to upgrade the system and make it safer and more suitable for bicycle travel.

As stated above, the statewide system was developed to serve bicycle travel desires to major inter-regional destinations. The RPCs will follow processes similar to that identified above to identify other suitable road networks to serve intra-regional bicycle travel. Whereas the statewide system connects cities, towns and major tourist destinations, the regional systems will connect town centers, libraries, schools and locally important recreational destinations.

As the regional systems become finalized and adopted, they will be merged into the state system. Inclusion in the resulting system will be a consideration in future projects selection.

The NHDOT has been purchasing abandoned railroad rights of way using federal/state funds for the preservation of rail corridors for future transportation needs. One of the identified uses for these rail beds is for bicycle and pedestrian use. A Rails to Trails program to convert abandoned railroad corridors to usable trails is being developed. The New Hampshire Statewide Bicycle and Pedestrian Plan does not incorporate many of these trails since the trails are still under development. To find out more information about the Rails to Trails program contact the Department of Resources and Economic Development (DRED).

CHAPTER 6

FUNDING CATEGORIES, LEVELS, AND AVAILABILITY

TEA-21 provides each state with flexibility in the use of Federal-aid highway funds. It was the intent of Congress to allow the states to develop transportation programs which provide opportunities to develop alternatives to the use of automobiles while maintaining a transportation system to meet the needs of the traveling public.

TEA-21 allows the use of National Highway System (NHS), Surface Transportation Program (STP), Congestion Mitigation and Air Quality (CMAQ), Federal Lands, Scenic Byways and Recreational Trails Funds for the planning, design, and construction of bicycle and pedestrian facilities. While these funds are eligible for this use, these types of facilities will be in competition with other permitted uses for these funds.

The NHS consists of approximately 155,000 miles nationally and is made up of the Interstate system and other selected principal arterial roads. In New Hampshire, the NHS is 794 miles in length. Under TEA-21, the NHDOT will receive approximately \$ 31.4 million in NHS funds each year. These funds may be used for construction, reconstruction, resurfacing, restoration, and rehabilitation of segments of the system. In addition, these funds are eligible for use for certain transit activities, transportation planning, highway research, fringe and corridor parking facilities, start-up costs for traffic management and control activities,

development of management systems, highway safety improvements, carpool and vanpool projects, bicycle transportation, and pedestrian walkways.

Surface Transportation Program funds can be used for basically the same types of projects as the NHS monies. STP funds can be used on any roadway except those classified as local (urban or rural) or rural minor collectors. Under TEA-21 the NHDOT receives approximately \$ 31.8 million in federal funds annually for the STP. Within the program, 10 percent of the funds are required to be used for Transportation Enhancements (\$ 3.2 million each year) and these funds can be used on local roads. There are twelve eligible types of projects that this portion of the STP funds can be used for:

1. Bicycle and Pedestrian facilities
2. Scenic or historical highway programs
3. Historic preservation
4. Rehabilitation and operation of historic transportation facilities
5. Preservation of abandoned railway corridors
6. Control and removal of outdoor advertising
7. Archaeological planning and research
8. Mitigation of water pollution due to highway runoff
9. Safety and educational activities for bicyclists and pedestrians
10. Establishment of transportation museums
11. Landscaping and other scenic beautification
12. Acquisition of scenic easements and scenic or historic sites

The NHDOT has established an application procedure for the use of the Transportation Enhancement monies, utilizing the regional planning commissions as the clearinghouse for the applications. Applicants should keep in mind that these are not grants, and the applicant must supply the matching funds (20 percent). Projects under the Transportation Enhancement program are not limited to construction of bicycle lanes or paths or pedestrian walkways. These funds can also be used to provide shelters, lockers, and other amenities to accommodate bicyclists or pedestrians. In addition, these funds can be used for bicycle/pedestrian planning activities.

Another ten percent of STP funds must be spent on certain types of safety related projects. Bicycle and pedestrian projects could be among them. The remaining 80 percent may be spent on many types of highway and other intermodal transportation projects, including bicycle and pedestrian facilities. Thus, all classes of STP funds can be used for bicycle/pedestrian projects.

Congestion Mitigation and Air Quality (CMAQ) funds are limited in use to those areas that are classified as non-attainment for ozone or carbon monoxide under the Clean Air Act. Currently in New Hampshire, there are no ozone non-attainment areas. However, it is expected that in the near future, EPA will designate non-attainment areas in New Hampshire. Applicants must demonstrate that their projects are likely to contribute to the attainment of a national ambient air quality standard. Projects such as shared-ride programs, transit activities, traffic management, intersection projects, signalization, demand-management programs,

inspection/maintenance programs, and bicycle/pedestrian programs are eligible for funding under this category. NHDOT receives approximately \$ 7.7 million annually under this program. The CMAQ program is administered by application, in the same manner as described for the Transportation Enhancement program.

Federal Lands, Scenic Byways and Recreational Trails Funds are competed for annually on a national level. Funding levels are not established on a state-by-state basis.

The question of availability of funds is often raised. Currently, programs such as CMAQ and Transportation Enhancements under the STP programs are selected under an application process. Eligible applicants apply for these projects every two years. In general the RPC's in the development of their regional plans and programs will include bicycle and pedestrian projects and request that they be included within the STIP. Parties interested in having projects involving bicycles and pedestrians included in the regional plans and programs and eventually in the STIP need to participate in the public involvement process within the individual planning commission regions to bring their proposed projects forward.

A pamphlet entitled "Bicycle and Pedestrian Provisions of the Federal-Aid Program" is available. It briefly explains the program and funding sources.

The New Hampshire Department of Transportation (NHDOT) is also encouraging the Municipal Management of TE and CMAQ projects by Communities. Through this process, the communities can get involved and develop the projects according to their needs.

It should be kept in mind that transportation needs identified within the State of New Hampshire far exceed the availability of funds to meet those needs. The competition between highway, transit, bicycle, pedestrian, and other projects is intense.

CHAPTER 7

IMPLEMENTATION

As stated in Chapter 2, one of the objectives of the NHDOT is to provide a safe and efficient means of bicycle/pedestrian travel throughout the state. In addition, bicycling/walking is a viable option for alternative transportation and by providing resource information, is promoted and encouraged.

The bicycle and pedestrian provisions of TEA-21 require the State to address these issues and work toward developing a plan which would be suitable for implementation. The prioritization of bicycle, pedestrian, and other projects will take place in the STIP. Bicycle/Pedestrian lanes or paths will be considered with any future highway projects that fall within the statewide bicycle route system network. Consideration will be given to providing shoulders in projects on other roads that are not on the bicycle route system network as well.

Implementation of the proposed program will involve continued coordination among the NHDOT, RPCs, MPOs, municipalities, and other agencies and organizations. Also, the NHDOT will continue to rely on its Bicycle and Pedestrian Transportation Advisory Board throughout the implementation process. Possible refinements to the program will be considered in the future as necessary.

The selection of individual projects must comply with federal, state, and metropolitan planning regulations, as well as the requirements of the 1990 Clean Air Act Amendments, and Chapter 283 of the 1994 Laws of New Hampshire. This has resulted in a project selection process as described in Appendix C. Projects, with the exception of Transportation Enhancement (TE) and Congestion Mitigation and Air Quality (CMAQ), will go through this selection process. In the case of TE and CMAQ projects, applications are submitted to the regional planning commissions in odd numbered years (2001, 2003....). The regional planning commissions review the applications to make recommendations to the TE and CMAQ Advisory Committees respectively. The advisory committees submit a recommended list of projects to the NHDOT Commissioner. In turn, the Commissioner submits the recommendations to the Governor's Advisory Commission on Intermodal Transportation (GACIT) by April/May of even numbered years (2002, 2004....). From that point on, the process is the same as outlined in Appendix C.

It is extremely important that communities, special interest groups, or individuals wishing to have bicycle or pedestrian projects included in the process work closely with their respective regional planning commissions. In addition, they should take advantage of the numerous opportunities to supply input into the process. Opportunities exist at the local, regional, and statewide level to have public input into the development of the regional Transportation Improvement Program (TIP) and the STIP. For further details on the public input opportunities, refer to the *Public Involvement Process for Transportation Improvement Projects* guide available through the RPCs, MPOs, or the NHDOT.

As mentioned in Chapter 5, projects included within the adopted state and regional bicycle route network will receive consideration in future project selection.

CHAPTER 8

SAFETY AND ENFORCEMENT

While bicycles have always been a popular form of transportation and recreation with children, a growing popularity in bicycle use among adults creates increased exposure to the risks associated with riding both on and off the roadway. According to statistics compiled by the Dartmouth Medical School Injury Prevention Center, there are over 900 bicycle fatalities nationally each year, with 20,000 bicyclists being admitted to hospitals and 580,000 receiving emergency-room treatment. Since 1932, the National Center for Statistics and Analysis has recorded more than 44,000 bicyclist fatalities. Other facts about bicycle crashes are as follows:

- Motor vehicles are involved in about 90 percent of bicycle fatalities and 12 percent of injuries.
- One-third of bicycle fatalities occur on roads with speed limits of 55 M.P.H. or higher.
- Bicycle head injuries account for three-quarter of all bicycle-related deaths to school-aged children.
- Bicycle helmets have been shown to reduce the risk of head injury by 85 percent and brain injury by almost 90 percent.

Bicycle helmets made for sale in the USA must meet the ANSI, ASTM or Snell standard. Those made after March 1999 must meet the Consumer Product Safety Commission (CPSC) Standard.

An organization that serves as the resource center for injury prevention in New Hampshire is the Injury Prevention Center at Dartmouth Medical School. Some of the services provided there include:

- Providing an audiovisual loaning library
- Offering brochures and informational handouts
- Building coalitions throughout the state on specific issues
- Collecting and analyzing injury-related data
- Supporting community projects

The Injury Prevention Center, with funding from the New Hampshire Department of Education, has developed a bicycle safety and bicycle helmet use program geared toward third-grade students. The NH B.I.K.E.S. (Biking Includes Keeping Educated and Safe) program has been distributed to every elementary school in New Hampshire. Materials include handouts for students and parents, an observational survey form, a bicycle-safety quiz, coupons for discounted helmets, and a curriculum for teachers.

The New Hampshire Department of Safety is very concerned with the safety of bicyclists and pedestrians using our highways. The fact that both motorists and bicyclists/pedestrians have to share our public ways means that each must recognize and respect the concerns of the other party. Much of this could be accomplished through safety education in Driver Education classes and bicycle/pedestrian clubs.

The Department of Safety has expressed a willingness to promote bicycle and pedestrian safety by incorporating material in editions of the state driver's manual, as well as providing distribution areas in Motor Vehicle substations for any bicycle safety publications. Also under consideration is the addition of bicycle and pedestrian safety questions in driver written exams.

Since, under state law, bicycles basically follow the same rules of the road as motor vehicles, they are also subject to the same type of enforcement. Unfortunately, enforcement efforts

over the years have focused primarily on motor vehicles. However, in many cases, crashes with bicycles involve bicyclists who either do not know or who willfully disregard traffic regulations. Appendix D contains state laws regulating bicycles and pedestrians.

One means of increasing awareness and compliance among riders is through police bicycle patrols. In areas where they have been implemented, bicycle patrols have been found to be highly successful. Through their presence, bicycle use is promoted and safety and regulatory awareness is heightened, not to mention the fact that they have proven to be a very effective public relations and crime-fighting tool. There are several communities in the state that currently operate police-bicycle patrols, with several more considering them.

CHAPTER 9

MAINTENANCE

Maintenance of bicycle facilities, once they are in place, is an essential element of the overall plan. If facilities are not maintained, bicyclists will tend to avoid those facilities which were specifically designated for them. On sections of highway that already have paved shoulders, improvements would include such items as drainage adjustments, repairing ragged edges, pavement shimming, and resurfacing. Many of these situations are normally taken care of under the NHDOT's highway resurfacing program. It is the Department's policy except in unusual circumstances that travel lanes and shoulders be resurfaced the full-roadway width. In the past, resurfacing on some of these sections only included the travel lanes themselves or one or two feet into the shoulders, mostly due to budgetary constraints. It is standard practice for the NHDOT not to resurface beyond the existing edge of the paved surface unless an adequate base can be constructed prior to resurfacing. Any widening of the roadway or the addition of paved shoulders is accomplished through reconstruction projects. It is the NHDOT's objective to add new shoulder mileage annually as budgets allow.

It is important that bikeways be clear of debris. Sand, stones, and other types of debris create hazardous bicycling conditions, and make the facility undesirable to the bicyclist. Although, on shared roadways, the wind action created by moving motor vehicles keeps the portion of the shoulder immediately adjacent to the traveled way relatively clean, this natural sweeping action has less effect further onto the shoulder. Therefore, NHDOT bicycle lanes, shoulders and paths should be periodically inspected throughout the bicycling season.

Separate bicycle paths should be clearly delineated at access points. Shared roadway facilities designated on the state plan should be signed, or striped if appropriate, whenever the segment between major destinations is complete.

CHAPTER 10

PEDESTRIAN SPECIFIC CONSIDERATIONS

Prior to the age of automobiles and other mechanized means of transportation, walking was the primary means of transportation. Over time it has also become a leisure activity. Travel by foot serves a fundamental link between various other modes of transportation, i.e., walking to the car, the bus stop and other destinations. Almost every trip begins and ends with a pedestrian segment. Thought of in these terms, walking serves as a true intermodal means of travel.

Commuting bicyclists are willing to regularly travel five or ten miles to reach their destination. Pedestrian travel, on the other hand, is generally short in length, local in nature, and predominant in urban settings. Walking as a form of transportation is based primarily on convenience. Certain segments of the population, such as the young and elderly, however, depend on walking as the primary opportunity for mobility in their everyday life. The average pedestrian trip length is less than one mile, before other transportation options are chosen. In areas where several stops can be accomplished easily, it is the main form of transportation.

Commitment to pedestrian travel is also influenced by several elements. Accessibility of services, weather, sidewalk or crosswalk locations, traffic, crime, air quality and crash occurrence are several pedestrian considerations. A pedestrian-friendly environment as well as pedestrian rights and concerns have become overshadowed. Most motor vehicle laws protect the pedestrian right-of-way. However, many drivers do not recognize this. At many intersections, traffic-signal timing is inadequate for pedestrians, leaving the pedestrian vulnerable to vehicular conflicts. Drivers often encroach upon pedestrian crosswalks. Drivers often become impatient and irritated when a pedestrian takes longer than expected to cross the road. Of all pedestrian crashes, 90 percent occur in urban areas. Safety is a primary concern for pedestrians of all ages. Education of safe pedestrian practices must begin at an early age.

Pedestrians are allowed on public facilities throughout the state that motor vehicles and bicycles travel on with the exception of certain limited-access highways. Pedestrian education and road condition awareness are concerns that the pedestrian must consider when travelling along these facilities in a proper manner when pedestrian facilities are not available.

Pedestrian trips are categorized into four primary categories: work, school, personal business (shopping, doctors appointments, etc.), and recreational. Nationally, approximately one-third of pedestrian travel is for school purposes for those age 14 or more according to the report *Planning and Implementing Pedestrian Facilities in Suburban and Developing Rural Areas*, June, 1987, prepared by the Transportation Research Board. That is why pedestrian education at an early age is essential to provide basic safety principles to those who will continue utilizing pedestrian and other intermodal transportation facilities in the future. As referenced in Chapter 8, education efforts through the appropriate agency are under consideration.

Pedestrian facilities in New Hampshire include adequate sidewalks, crosswalks, and specific walking areas that provide access to services from parking facilities. Sidewalks provide a safety zone for pedestrians from vehicles. Sidewalks should be of a width to accommodate the amount of expected pedestrian traffic. As the health benefits of walking are emphasized, the enjoyment of walking is spreading as a leisure activity. Indoor and outdoor shopping areas are seeing an increase of pedestrians enjoying exercise, fresh air, and visual benefits. Walking areas are often provided for access to available services and ease of exercise. As awareness of the benefits of walking increase, a parallel increase in walking as a form of transportation, will also increase.

Pedestrians are not yet as formally organized or represented as bicyclists. The number of people that choose walking as a means of commuting, recreation, and fitness, is on the rise. Travel by foot is the most basic form of transportation, and links people to all other modes. It is, therefore, important that adequate pedestrian facilities be provided and maintained. Ongoing programs, such as the construction of sidewalk ramps and curb cuts at intersections in conjunction with the Americans with Disabilities Act, have been successful in enhancing physically impaired individuals mobility.

Communities in New Hampshire need to examine their zoning ordinances and subdivision regulations closely and make conscious decisions as to how the pedestrian will be accommodated. Local land-use regulations should be modified to accommodate pedestrian travel including: sidewalks in subdivisions, commercial zones, to bus stops, and paths to community facilities such as schools and libraries. Communication between the NHDOT and local and regional planning agencies is essential in the provision of safe, effective pedestrian facilities. Communities can emphasize pedestrian needs through regional planning efforts, and through the establishment of a foundation for linking pedestrian travel to other modes of transportation.

Pedestrian projects among other funding sources are eligible for funding under the TE and CMAQ programs.

Examples of projects funded with TE funds include: construction of a sidewalk across the Connecticut River on US 2 from Lancaster, NH to Guildhall, VT, design and construction of pedestrian bridges to link 2.5 miles of the Heritage Trail in Bedford, rehabilitation of sidewalks in the Canaan Village area, and the construction of Pedestrian/Bicycle path and bridge over Spaulding Turnpike connecting Portsmouth and Pease International Tradeport.

Examples of Congestion Mitigation and Air Quality (CMAQ) funded pedestrian projects include: construction of a system of multi-use pathways in Derry connecting schools, recreation facilities, businesses, and residential areas, rehabilitation of an existing railroad bridge for pedestrian/bicycle use on a former railroad corridor in Raymond, construction of sidewalks in residential areas in Nashua to eliminate bus routes and reduce automobile trips to neighborhood schools.

One example of pedestrian facilities planning is the New Hampshire Heritage Trail that follows the Merrimack River through Bedford, Manchester, and Hooksett. Although initially

recreational in nature, the Heritage trail can be linked to schools, residences, and other associated pedestrian facilities. Efforts have been made through alternative financing measures such as Transportation Enhancement (TE) and Congestion Mitigation and Air Quality (CMAQ) programs through ISTEA to extend or further link the Heritage Trail to other community areas and provide greater intermodal use of this facility in the future. Additional planning of pedestrian facilities is essential to the development of this network in conjunction with alternative bicycle opportunities.

Agencies involved in transportation, including the NHDOT, must consider the safety of pedestrians in transportation project design. NHDOT developed crosswalk signs are presently available to communities at a 20% of the cost. These signs were unveiled at the first annual Bicycle/Pedestrian conference in May 1999 and have been purchased by many communities. The crosswalk sign is as shown in Appendix G.

Providing pedestrian transportation options becomes increasingly important as air quality and congestion issues continue to require attention. Like other alternate modes of travel, funding is restricted and limited. It should be noted that maintenance of sidewalks is almost always a local responsibility.

For further details on pedestrian facilities and programs in local areas, refer to the local, regional bicycle and pedestrian plans.

APPENDIX A

RESOURCES AND CONTACTS

The NHDOT wishes to acknowledge and thank the Bicycle and Pedestrian Transportation Advisory Board for its efforts in guiding the development of the Statewide Bicycle and Pedestrian Plan. The assistance of the Board, in combination with input from other various organizations, city, town, and regional planning officials, as well as individual citizens, was critical to the development of a realistic plan that addresses the current needs of bicyclists and pedestrians and promotes bicycling and walking as viable and important alternative modes of transportation. The following is a directory of resource and contact agencies, organizations, and individuals involved in various aspects of bicycle and pedestrian related activities.

BICYCLE AND PEDESTRIAN TRANSPORTATION ADVISORY BOARD

Ram Maddali, P.E. Bicycle/Pedestrian Transportation Coordinator NH Department of Transportation	Ansel Sanborn, P.E. Administrator Transportation Planning NH Department of Transportation
James A. Marshall, P.E. Bureau of Highway Design NH Department of Transportation	Edward Kyle, P.E. Assistant Administrator, Bureau of Highway Maintenance NH Department of Transportation
Karen Gola, P.E. Assistant Administrator, Bureau of Traffic NH Department of Transportation	Carol Barleon Principal Planner NH Office of State Planning
Robert Spoerl Trails Specialist NH Dept. of Resources and Economic Development	Virginia Beecher Director, Division of Motor Vehicles NH Department of Safety
Richard Lemieux, P.E. Transportation Planner Federal Highway Administration	Maura S. Carriel, David Pelletier Seacoast MPO
Jason Rasmussen Regional Planner Upper Valley-Lake Sunapee RPC	Nick Wallner Director of Public/Government Relations American Automobile Association
Terri Lapan Program Director Dartmouth-Hitchcock Injury Prevention Center	Julian Zelazny Environmental Affairs Director Audubon Society of NH
Fred McLaughlin President Granite State Wheelmen	Cameron Wake President Seacoast Area Bicycle Routes

OTHER RESOURCES

Bob and Linda Harvey Granite State Wheelmen	Linda Chestney Nicolin Fields Publishing, Inc.
Jody Young Plymouth Bike Group	Dick MacKay Friends of Northern Rail Trail
Bob Sammon Principal Planner Office of State Planning	

BICYCLE/PEDESTRIAN PROGRAM

NH Department of Transportation
Bureau of Transportation Planning
John O. Morton Building
P.O. Box 483
Concord, NH 03302-0483
(603) 271-3344

Federal Highway Administration
Bicycle/Pedestrian Program Office
400 7th St., SW
Washington, D.C. 20590
(202) 366-5007

Federal Highway Administration
NH Division Office
279 Pleasant Street
Room 204
Concord, NH 03301
(603) 225-1605

BICYCLE AND PEDESTRIAN SAFETY

NH Department of Safety
Division of Motor Vehicles
James H. Hayes Building
10 Hazen Dr.
Concord, NH 03305
(603) 271-2251

National Highway Traffic Safety Administration
400 7th St., SW
Washington, D.C. 20590
(202) 366-2121

National Highway Traffic Safety Administration
Region I Office
Transportation Systems Center
Kendall Square, Code 903
Cambridge, MA 02142
(617) 494-3427

American Automobile Association
2 Capital Plaza, Main Street
Concord, NH 03301-4911

Dartmouth-Hitchcock Injury Prevention Center
Dartmouth Medical School
Hanover, NH 03755
(603) 650-1780

BICYCLING ORGANIZATIONS

Bicycle/Pedestrian Federation of America
1506 21st St., NW, Suite 200
Washington, D.C. 20036
(202) 463-6622
www.bikefed.org

League of American Bicyclists
1612 K St., NW, Suite 401
Washington, D.C. 20006
(202) 822-1333
www.bikeleague.org

Granite State Wheelmen
PMB 216
215 South Broadway
Salem, NH 03079-3309
(603) 898-9926
www.granitestatewheelmen.org

Seacoast Area Bicycle Routes
P.O. Box 412
Durham, NH 03824
(603) 431-2983

REGIONAL PLANNING COMMISSIONS

<p>Sharon Penney Regional Planner North Country Council 107 Glessner Road Bethlehem NH 03574 (603) 444-6303 ✉ nccinc@moose.ncia.net</p>	<p>Peer Kraft Lund Principal Planner Lakes Region Planning Commission Humiston Building, 103 Main St., Suite 3 Meredith, NH 03253-9287 (603) 279-8171 ✉ lrpc@lakesrpc.org</p>
<p>Jason Rasmussen Regional Planner Upper Valley-Lake Sunapee Regional Planning Commission 77 Bank Street Lebanon, NH 03766-1704 (603) 448-1680 ✉ uvlsrpc@sover.net</p>	<p>Jeffry Porter Planner Southwest Region Planning Commission 20 Central Square, 2nd Floor Keene, NH 03431 (603) 357-0557 ✉ swrpc@top.monad.net</p>
<p>Michael Tardiff Executive Director Central New Hampshire Planning Commission 12 Cross Street Penacook, NH 03303 (603) 753-9374 ✉ mtardiff@cnhrpc.org</p>	<p>Manindra Sharma Executive Director Southern New Hampshire Planning Commission 438 Dubuque Street Manchester, NH 03101 (603) 669-4664 ✉ email@snhpc.org</p>
<p>Matt Waitkins Transportation Planner Nashua Regional Planning Commission 115 Main St. Nashua, NH 03061 (603) 883-0366 ✉ mwaitkins@nashuarpc.org</p>	<p>Maura Carriel Transportation Planner Rockingham Planning Commission 156 Water St. Exeter, NH 03833-2487 (603) 778-0885 ✉ email@rpc-nh.org</p>
<p>Stephen Pesci Assistant Director Strafford Regional Planning Commission 259 County Farm Rd., Unit I Dover, NH 03820-6015 (603) 742-2523 ✉ stp@strafford.org</p>	

APPENDIX B

BICYCLE FACILITY PLANNING CRITERIA

The factors to consider in bicycle planning depend upon the situation and the primary purpose of the facility. The most important considerations are described below. The following criteria can be used in determining the type, location, and priority of facilities.

1. **Usage** - Bikeways should be located in areas where use can be maximized. Generally, they should be located within the same corridors as arterials and collectors since bicyclists have the same origins and destinations as motorists. The following factors should be considered:

- Location of employment centers - large employers or concentrations of employment.
- Location of commercial facilities - shopping centers, malls, and large retailers.
- Location of mode transfer - major points of mode transfer such as transit hubs, railroad stations, park and ride lots, and connecting bicycle routes.
- Location of community and regional facilities - schools, libraries, community centers, governmental offices, stadiums, conservation areas, fairgrounds, beaches, historic and cultural resources, tourist attractions, and recreation areas.
- Demographics - population, density, age, household size and type (single family, multi-family), and economic data.
- Trip lengths - between likely origins and designations.

2. **Access** - In locating a bikeway, consideration should be given to the provision of frequent and convenient bicycle access.

3. **Directness** - For utilitarian bicycle trips, facilities should connect traffic generators, and should be located along a direct line convenient for users. Cyclists, like motorists, prefer a direct route. This is less important for recreational bicycle trips, where often there is no specific destination.

4. **Barriers** - In some areas, there are physical barriers to bicycle travel caused by topographic features (steep slopes or gullies), rivers, large water bodies, wetlands, freeways, bridges, railroads, or other impediments. In some cases, designing the facility to overcome such barriers can create new opportunities for bicycling.

5. **Continuity** - A planned bicycle route system should be free of missing links or gaps.

6. **Delays** - Bicyclists have a strong desire to maintain momentum. If bicyclists are required to make frequent stops, they may tend to avoid the route or disregard traffic controls.

7. **Traffic Safety** - The reduction and prevention of bicycle related crashes along proposed routes are important considerations.

8. **Use Conflicts** - Different types of facilities introduce different types of conflicts. For example, shared-roadway facilities can result in conflicts between bicyclists and motorists. Bicycle paths can involve conflicts between bicyclists, roller skaters, and pedestrians, and between bicyclists and motorists at highway and driveway intersections.

9. **Truck and Bus Traffic** - Because of their aerodynamic effects and width, high-speed trucks, buses, motor homes, and trailers can cause special problems for bicyclists. Where bus stops are located along a route, conflicts with bus loading and discharge and pavement deterioration may also be problems.

10. **On-Street Motor Vehicle Parking** - The turnover and density of on-street parking can affect bicyclist safety.

11. **Intersection Conditions** - A high proportion of bicycle crashes occur at intersections. Facilities should be selected so as to minimize the number of crossings.

12. **Traffic Volumes and Speed** - For facilities on roadways, traffic volumes and speeds must be considered along with the roadway width.

13. **Environmental Impacts** - In defining a corridor, the environmental impacts associated with air quality, noise, wetlands, water resources, soils erosion, endangered species, wildlife habitat, and historic and cultural resources should be taken into account.

14. **Social and Economic Impacts** - In defining a corridor, the social impacts associated with development of the bikeway project, such as neighborhood opposition, residential security, privacy, and ethnic discord, should be considered. The economic benefits of bicycle paths in terms of stimulating economic development and bringing revenue to a community or region should not be overlooked.

15. **Aesthetics** - While not a primary consideration, the scenic qualities and attractiveness of a bicycle route should be a consideration, especially in selecting bicycle routes for recreational purposes or through tourism regions.

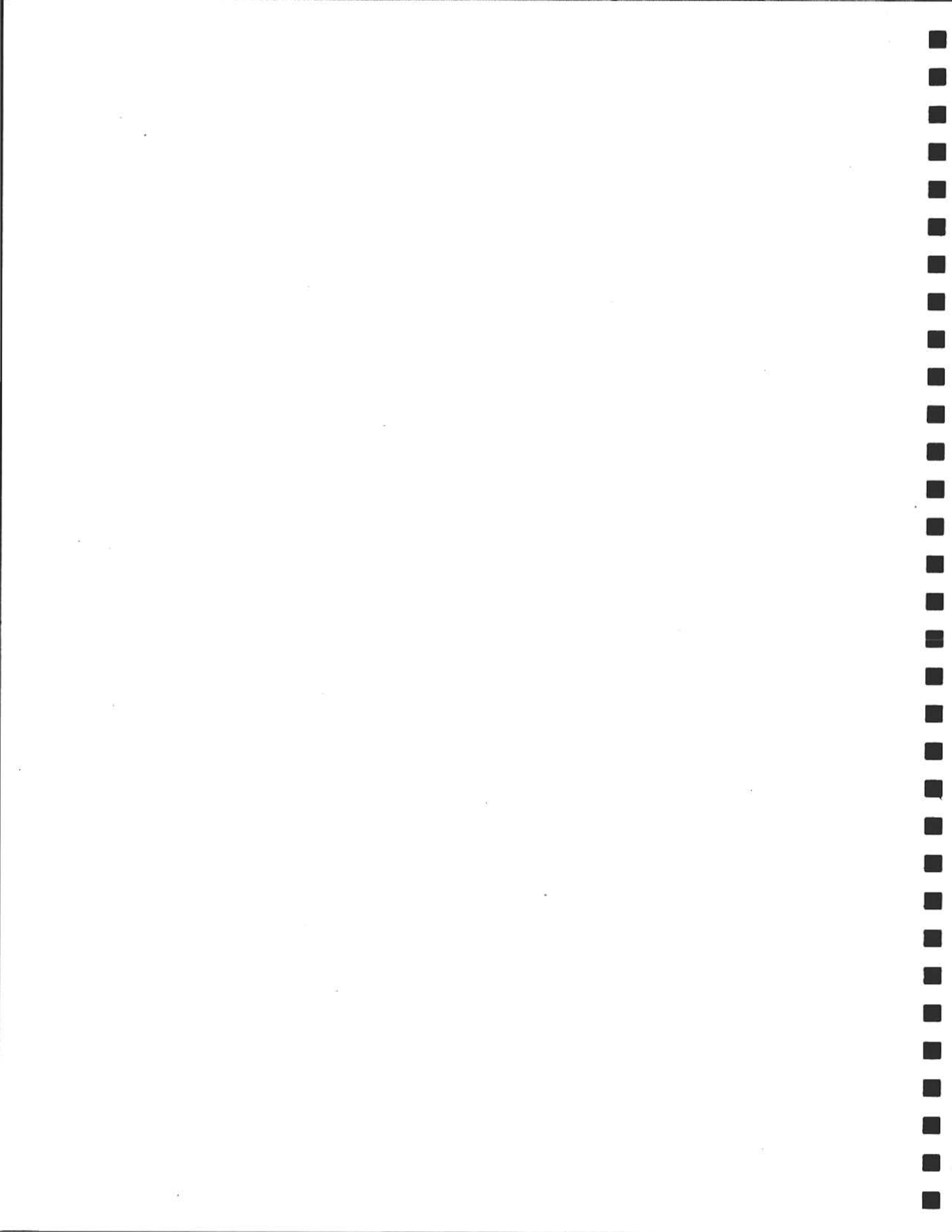
16. **Security** - The potential for criminal acts against bicyclists in remote areas or high crime neighborhoods should be a consideration. Also, the possibility of theft or vandalism at parking lots should be taken into account.

17. **Maintenance** - Thorough routine maintenance is an important design feature. Bicyclists in favor of a properly maintained roadway will often shun an improperly maintained bikeway.

18. **Pavement Surface Quality** - Bikeways must be free of bumps, holes, and other surface irregularities. Utility covers and drainage grates should be at grade, and, if possible, located outside the expected area of bicycle travel. A smooth surface is required for efficiency and comfort.

19. **Cost/Funding** - Location selection typically involves a cost analysis of alternatives. The lack of funding or budget constraints may limit the choice of alternatives.

20. **Ease of Implementation** - Based on existing traffic operation/ conditions, presence of parking, neighborhood politics, the amount of space, right-of-way availability, and laws and regulations, the overall feasibility of constructing the bikeway should be considered.



APPENDIX C

PROJECT SELECTION PROCESS

By October 1 of even numbered years, the NHDOT will submit the ten-year Transportation Program to the RPCs/MPOs (as approved by Legislature on June 1). The NHDOT will omit the first two years of projects since they will be under design or construction during the development of the next STIP. The NHDOT will provide suggestions for projects for years nine and ten. Those projects will act as a guideline for the monies available for use in developing both the regional long-range transportation plan and the regional TIP. The RPC or MPO public involvement processes during the development of the RPC or MPO TIPs are followed at this time.

By April 1 of odd numbered years, each RPC and MPO develops and submits their recommended ten-year Transportation Improvement Program (Ten Year TIP) to the NHDOT. The NHDOT will combine the TIPs into the STIP. The STIP must continually go through financial constraint analysis and the CAAA conformity process for improvement projects in non-attainment areas. In addition, the STIP shall meet Long Range Statewide Transportation Plan (LRSTP) goals and objectives.

By July 1 of odd numbered years, the NHDOT will submit a financially constrained ten-year STIP to the GACIT. The GACIT will conduct a series of public hearings to afford the public an opportunity to comment on the proposed Ten Year STIP. A legal notice of these meetings will be published in a newspaper of general circulation to inform the public of the opportunity for public input. A record of the comments received and the responses to those comments will be kept on file at NHDOT headquarters in Concord and will be available for public review.

By December 1 of odd numbered years, the GACIT will submit its recommendations for the ten-year STIP to the Governor for review and comment.

By January 15 of even numbered years, the Governor will submit the recommendations to the Legislature. The Legislature will conduct the normal committee hearings which afford the public an opportunity for input.

By June 1 of even numbered years, the Legislature will take the necessary action to approve a financially constrained ten-year STIP.

By June 15 of even numbered years, the NHDOT will submit the legislatively approved Ten Year STIP to the RPC/MPOs to review the GACIT/Governor/Legislative changes in each of their region's projects.

By July 30 of even numbered years the RPC/MPOs will approve the final three-year TIPS. (the first three years of the Ten Year STIP). The public involvement process established by the RPC/MPO is followed at this time. When the three-year TIP is in CAAA conformance, the MPO will formally approve the three-year TIP and submit it to the NHDOT.

By August 1 of even numbered years, the NHDOT will submit the MPO three-year TIPS, along with the conformity analysis, to the FHWA and the FTA for their review. The FHWA and FTA must make a determination of conformity after receiving comments from the Environmental Protection Agency (EPA). During this review period, the NHDOT will submit the record of MPO approved TIPS, to the Governor or designee for approval.

By September 1 of even number years, the NHDOT will submit the three-year STIP to the FHWA and FTA for review and approval by October 1.

October 1 of even numbered years, the TIP/STIP development process begins again.

Transportation Enhancement (TE) program is a major source of funds for Bicycle/Pedestrian projects. Congestion Mitigation and Air Quality (CMAQ) program is also used for funding Bicycle/Pedestrian projects. Both of these categories of projects are selected through an application process. Cities, towns, state agencies, private industry and special interest groups can all apply for TE and CMAQ funds. Federal funds will pay for up to 80% of the cost of a project. The applicant must supply the remaining funds. Once the applications are submitted to the RPC, and then the RPC examines them for completeness and accuracy. The projects are then rated and prioritized by each RPC. The projects and their ratings are then submitted to the New Hampshire Department of Transportation (NHDOT) for distribution to the Transportation Enhancement or CMAQ Advisory Committee as applicable. The responsibility of this committee is to recommend a list of projects and to monitor ongoing projects.

The Advisory Committees conducts a public hearing on all of the project applications during the winter of even numbered years (2002, 2004....). After the public hearing, members of the Advisory Committee rate and prioritize the projects and send a list of recommended projects within anticipated funding constraints, to the NHDOT.

The NHDOT then sends a recommended list of projects to the Governor's Advisory Commission on Intermodal Transportation (GACIT). Once the projects are approved by the GACIT they are placed in the State's Ten-Year Transportation Improvement Program.

APPENDIX D

STATE LAWS REGULATING BICYCLES AND PEDESTRIANS

RULES OF THE ROAD

§ 265:36 Crossing at Other Than Crosswalks.

- I. Every **pedestrian** crossing a roadway at any point other than within a marked crosswalk or within an unmarked crosswalk at an intersection shall yield the right of way to all vehicles upon the roadway.
- II. Any **pedestrian** crossing a roadway at a point where a **pedestrian** tunnel or overhead **pedestrian** crossing has been provided shall yield the right of way to all vehicles upon the roadway.
- III. Between adjacent intersections at which traffic control signals are in operation **pedestrians** shall not cross at any place except in a marked crosswalk.
- IV. No **pedestrian** shall cross a roadway intersection diagonally unless authorized by traffic-control devices; and, when authorized to cross diagonally, **pedestrians** shall cross only in accordance with the official traffic control devices pertaining to such crossing movements.

§ 265:35 Pedestrian's Right of Way in Crosswalks.

- I. When traffic control signals are not in place or not in operation the driver of a vehicle shall yield the right of way, slowing down or stopping if need be to so yield, to a **pedestrian** crossing the roadway within a crosswalk when the **pedestrian** is upon the half of the roadway upon which the vehicle is traveling, or when the **pedestrian** is approaching so closely from the opposite half of the roadway as to be in danger.
- II. No **pedestrian** shall suddenly leave a curb or other place of safety and walk or run into the path of a vehicle which is so close as to constitute an immediate hazard.
- III. Paragraph I shall not apply under the conditions stated in RSA 265:36.
- IV. Whenever any vehicle is stopped at a marked crosswalk or at any unmarked crosswalk at an intersection to permit a **pedestrian** to cross the roadway, the driver of any other vehicle approaching from the rear shall not overtake and pass such stopped vehicle.

§ 265:39 Pedestrians on Roadway.

- I. Where sidewalks are provided it shall be unlawful for any **pedestrian** to walk along and upon an adjacent roadway.
- II. Where a sidewalk is not available, any **pedestrian** walking along and upon a way shall walk only on a shoulder, as far as practicable from the edge of the roadway. Where neither a sidewalk nor a shoulder is available, any **pedestrian** walking along and upon a way shall walk as near as practicable to an outside edge of the roadway, and if on a two-way roadway, shall walk only on the left side of the roadway.
- III. Except as otherwise provided in this chapter, any **pedestrian** upon a roadway shall yield the right of way to all vehicles upon the roadway.

§ 265:34 Pedestrians Subject to Traffic Signs and Regulations.

A **pedestrian** shall obey the instructions of any traffic sign or regulation specifically applicable to him, unless otherwise directed by a police officer. **Pedestrians** shall be subject to traffic and **pedestrian** control signals as provided in RSA 265:9 unless required by local ordinance to comply strictly with such signals. At all other places, **pedestrians** shall be accorded the privileges and shall be subject to the restrictions stated in this chapter.

§ 265:143 Application of Motor Vehicle Laws to Bicycles.

Every person propelling a vehicle by human power or riding a **bicycle** shall have all of the rights and be subject to all of the duties applicable to the driver of any other vehicle under the rules of the road, except as to special regulations in this subdivision and except as to those provisions which by their nature can have no application.

§ 265:144 Riding on Bicycles.

- I. A person propelling a **bicycle** shall not ride other than upon or astride a permanent and regular seat attached to the **bicycle**.
- II. No **bicycle** shall be used to carry more persons at one time than the number for which it is designed and equipped.
- III. No person riding upon any **bicycle**, coaster, roller skates, skateboard, sled or toy vehicle shall attach the same or himself to any vehicle upon a roadway.
- IV. No person operating a **bicycle** shall carry any package, bundle or article which prevents the driver from keeping at least one hand upon the handlebars.
- V. Persons riding **bicycles** 2 or more abreast shall not impede the normal and reasonable movement of traffic and, on a laned roadway, shall ride within a single lane.
- VI. Bicyclists intending to turn right or left shall not be required to give a continuous hand or arm signal if the hand is needed in the control or operation of the **bicycle**.
- VII. A person propelling a **bicycle** may pass a slower-moving vehicle in the same lane provided such movement can be made with reasonable safety.
- VIII. Any bicyclist shall stop upon demand of a peace officer and permit his **bicycle** to be inspected.
- IX. No **bicycle** shall be operated unless the steering, brakes, tires and other required equipment are in safe condition.

§ 265:78 Competitive Bicycle or Moped Races.

No person shall conduct or participate in any competitive **bicycle** or moped race on any class I, class III, or class III-a highway or on the state-maintained part of any class II highway, unless such race is sponsored by a recognized **bicycle** or moped organization and the sponsor of such race has obtained, prior to such race, the written approval of the commissioner and of the police department of each city, town or place in which such race is to be held. In the case of a competitive **bicycle** or moped race on a class III-a highway, the sponsor of the race shall also obtain the approval of the executive director of the fish and game department. The commissioner and the executive director of the fish and game department may require

insurance, police coverage or other regulations to insure the safety and protection of the public, and the permit may exempt competitors from such requirements of this chapter relative to rules of the road as are not inconsistent with public safety.

§ 266:89 Sirens Prohibited.

No **bicycle** or moped shall be equipped with a siren, nor shall any person on a **bicycle** or moped use a siren.

§ 266:88 Brake Required.

Every **bicycle** and moped shall be equipped with a brake or brakes which will enable its driver to stop the **bicycle** or moped within 25 feet from a speed of 10 miles per hour on dry, level, clean pavement.

§ 266:86 Headlamp Required at Night.

Every **bicycle** operated upon any way during darkness shall be equipped with a lamp emitting a white light visible from a distance of 300 feet in front of the **bicycle** and with a red reflector on the rear of a type approved by the director, which shall be visible from a distance of 300 feet to the rear when directly in front of the lawful upper beams of headlamps on a motor vehicle. A lamp emitting a red light visible from 300 feet to the rear may be used in addition to the red reflector. Every moped driven upon any way during darkness shall be equipped with one headlamp which meets the specifications for headlamps established in RSA 266:31. Taillamps and stop lamps are required on mopeds.

§ 266:87 Pedal Reflectors Required.

On or after August 23, 1983, no person shall sell a new **bicycle** or moped or pedal for use on a **bicycle** or moped either separately or as part of a new **bicycle** or moped, unless that pedal is equipped with a reflector of a type approved by the director, which conforms to 49 CFR 571.108 Table 2 and which is visible from the front and rear of the **bicycle** or moped from a distance of 200 feet during darkness.

§ 265:152 Bicycle Parking.

- I. A person may park a **bicycle** on a sidewalk unless prohibited or restricted by an official traffic control device.
- II. A **bicycle** parked on a sidewalk shall not impede the normal and reasonable movement of pedestrian or other traffic.
- III. A person shall not park a **bicycle** on a roadway in such a manner as to obstruct the movement of a legally parked motor vehicle.
- IV. In all other respects, **bicycles** parked on a way shall conform with provisions of law regulating the parking of vehicles

§ 265:149 Ordinances and Bylaws.

Any city or town shall have the power to make ordinances, bylaws or regulations respecting the use and equipment of **bicycles**, except mopeds as defined in RSA 259:57, on its ways, provided that any such ordinances, bylaws or regulations enacted with respect to such equipment shall be at least as stringent as the requirements of RSA 266:85-89. Any city or town may require that **bicycles**, except mopeds as defined in RSA 259:57, be licensed and may charge reasonable fees for such licensing.

§ 265:146 Permits.

The mayor of a city, or selectmen of a town, may, in their discretion, upon any special occasion, grant permits to any persons to ride **bicycles** or mopeds, at any rate of speed, for a time not exceeding one day upon specified portions of the public ways of such city or town, and may annex such other reasonable conditions to such permits as they may deem proper.

§ 265:145 Clinging to Vehicles Prohibited.

No person riding a motorcycle, **bicycle**, moped, coaster, sled, skateboard, or toy vehicle, or wearing roller skates, shall hold fast to or hitch onto any streetcar, or any other vehicle moving upon a way.

§ 259:100 Sidewalk.

"Sidewalk," as used in the provisions of this title relative to **bicycles**, shall mean all sidewalks laid out as such by a city, town or village district, or reserved by custom for the use of pedestrians, that are within the compact part of a city, village or district. It shall not include crosswalks, nor footpaths outside the compact part of towns and cities that are worn only by travel and not improved by towns or cities or the abutters, nor any paths or walks that are built for the exclusive use of bicyclists.

§ 259:6 Bicycle.

"**Bicycle**" shall mean every pedalled vehicle propelled solely by human power upon which any person may ride, except child's tricycles and similar devices

§ 259:92 Roadway.

"Roadway" shall mean that portion of a way improved, designed or ordinarily used for vehicular travel, exclusive of the sidewalk, berm or shoulder even though such sidewalk, berm or shoulder is used by persons riding **bicycles** or other human powered vehicles. In the event a way includes 2 or more separate roadways, the term "roadway" as used herein shall refer to any such roadway separately but not to all such roadways collectively.

§ 259:65 Motor-driven Cycle.

"Motor-driven cycle" shall mean any motorcycle or motor scooter with a motor which produces not to exceed 5 horse-power, and any **bicycle** with motor attached, but not including mopeds.

259:122 Vehicle.

"Vehicle" shall mean:

- I. Except as provided in paragraphs II and III, every mechanical device in, upon or by which any person or property is or may be transported or drawn upon a way, excepting devices used exclusively upon stationary rails or tracks;
- II. [Repealed.]
- III. When used in the provisions of RSA 264, the same as paragraph I of this section, but not including **bicycles** and mopeds

§ 266:85 Application of Chapter to Bicycles.

No preceding provision of this chapter shall apply to **bicycles** nor to equipment for use on **bicycles** unless a provision has been made specifically applicable to **bicycles** or their equipment.

§ 265:150 Penalty.

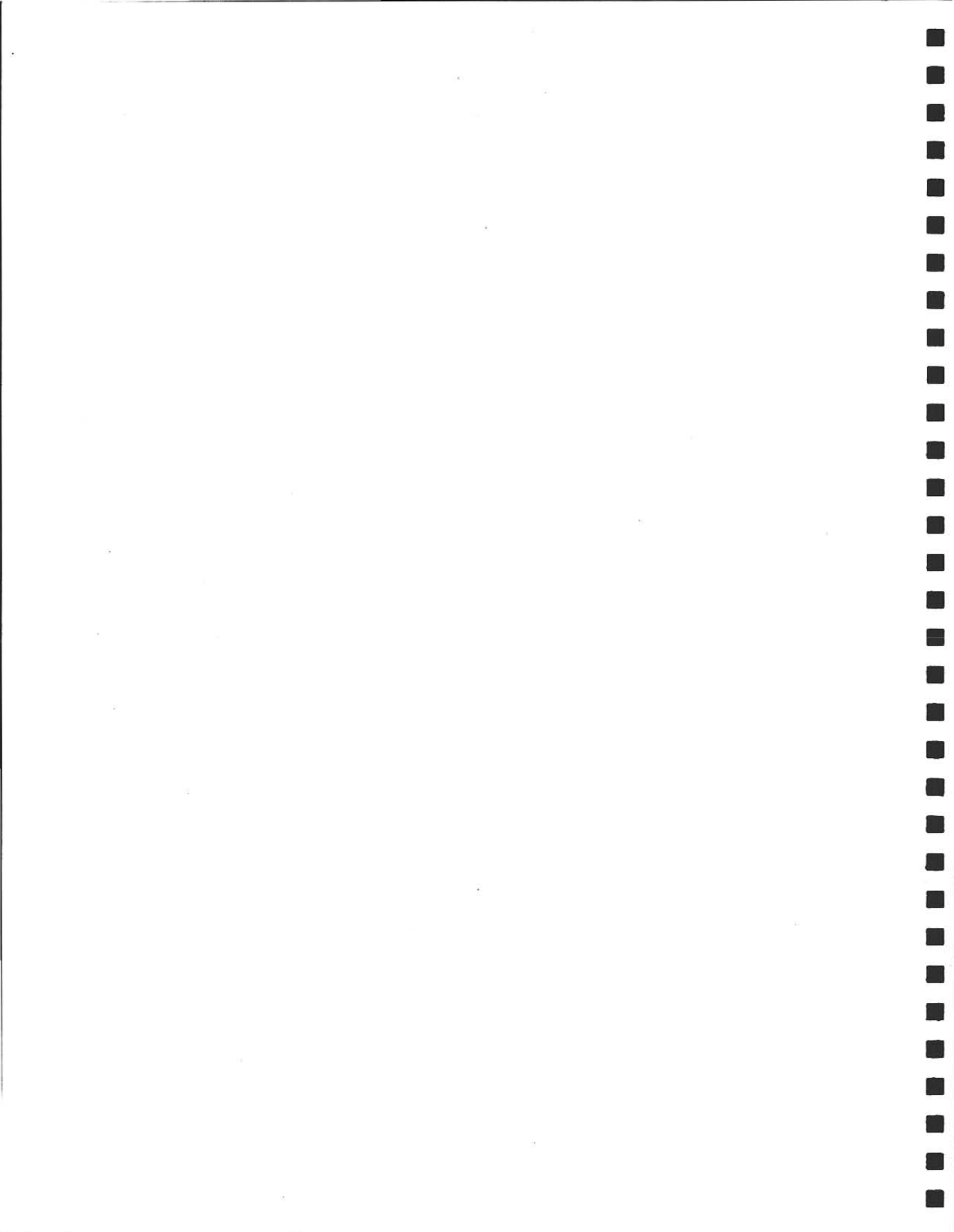
Any person violating the provisions of RSA 265:145 or any ordinance, bylaw, or rule made under the provisions of RSA 265:149, shall be deprived of his **bicycle** or moped by the law enforcement agents until such provisions and requirements have been complied with.

§ 265:153 Penalty.

Any person violating the provisions of this subdivision or of any ordinance, bylaw or rule made under the provisions of this subdivision shall be guilty of a violation.

§ 265:151 Limitation of Prosecution.

Prosecutions under this subdivision shall be instituted within 60 days from the time the offense was committed.



APPENDIX E

DEFINITION OF TERMS

BICYCLE - A vehicle having two tandem wheels, propelled solely by human power, upon which any person or persons may ride.

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

BICYCLE PATH - A bikeway physically separated from motorized vehicular traffic by an open space or barrier, and either within the highway right-of-way or within an independent right-of-way.

BICYCLE ROUTE - A segment of a system of bikeways designated by the jurisdiction having authority, with or without a specific bicycle route number and/or markers.

BIKEWAY - Any road, path, or way, which in some manner is specifically designated as being open to bicycle travel, regardless of whether such facilities are designated for the exclusive use of bicycles or are to be shared with other transportation modes.

HIGHWAY - A general term denoting a public way for purposes of vehicular travel, including the entire area within the right-of-way.

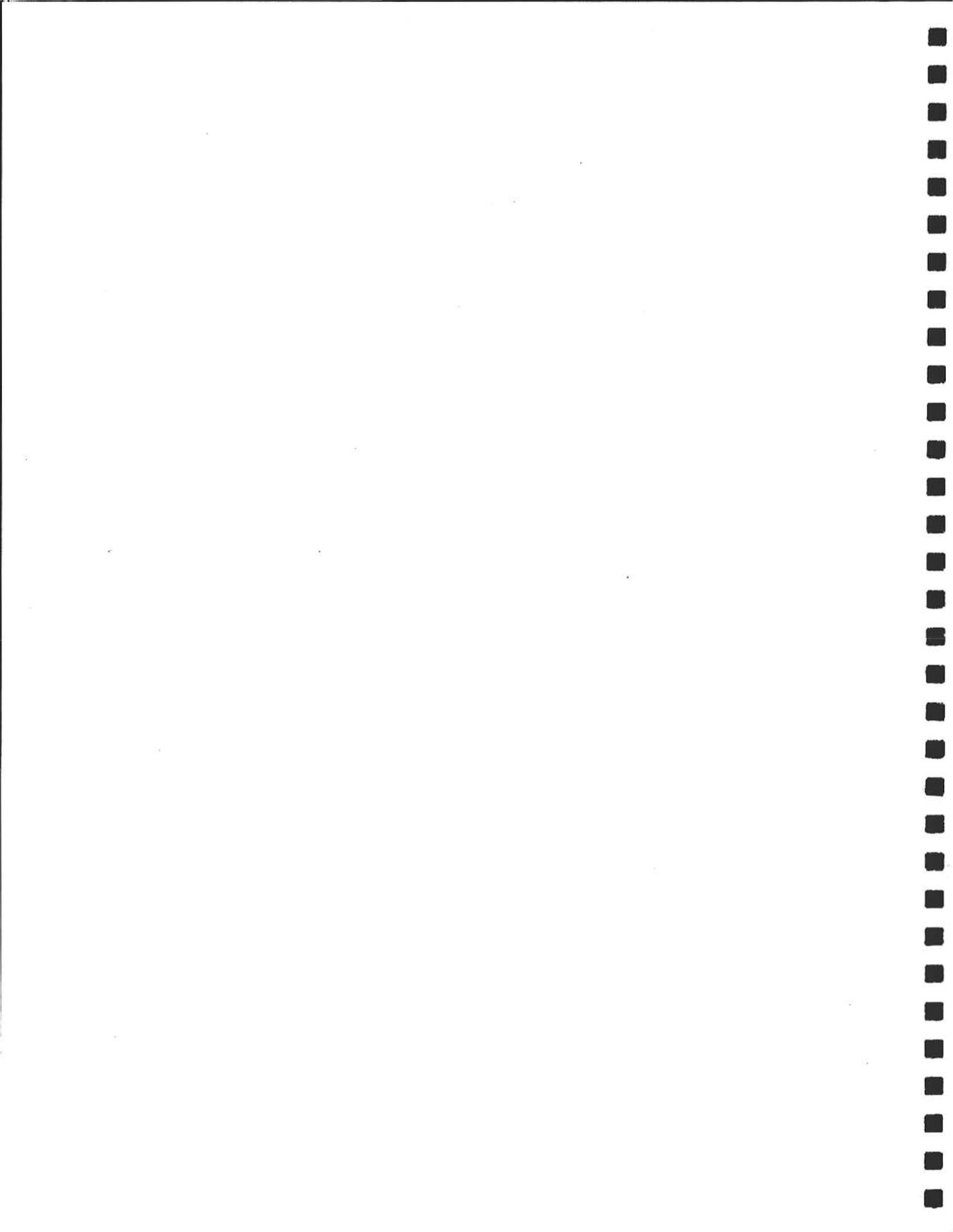
PEDESTRIAN - Any person afoot or in a wheelchair.

RIGHT-OF-WAY - A general term denoting land, property, or interest therein, usually in a strip, acquired for or devoted to transportation purposes.

ROADWAY - The portion of the highway, including shoulders, for vehicle use.

SHARED ROADWAY - Any roadway upon which a bicycle lane is not designated and which may be legally used by bicycles, regardless of whether such facility is specifically designated as a bikeway.

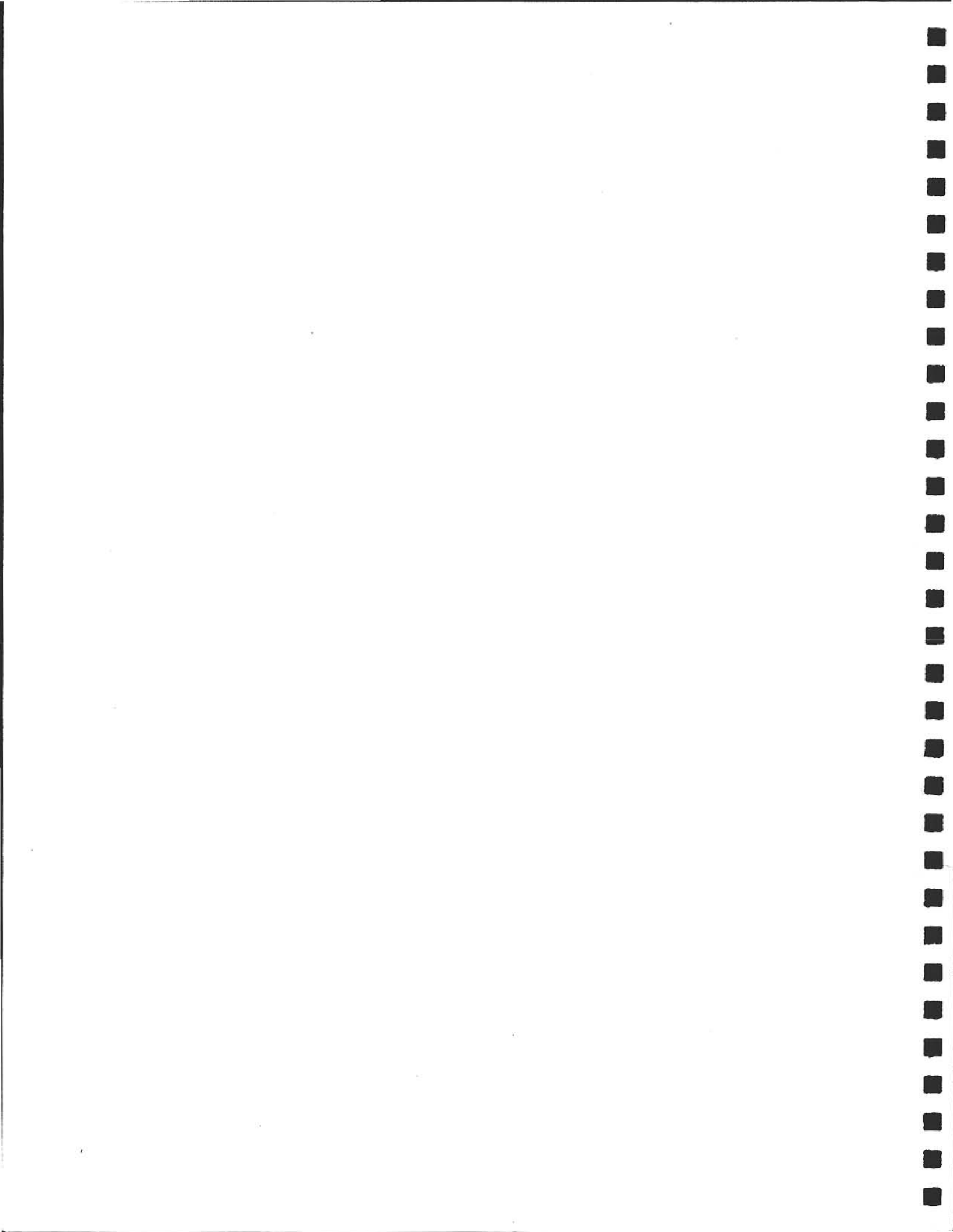
STATE BICYCLE ROUTE SYSTEM - Network of existing roads and other special facilities to serve the needs of inter-regional bicycle trips.



APPENDIX F

GLOSSARY OF ACRONYMS

AADT - Annual Average Daily Traffic
AASHTO - American Association of State Highway and Transportation Officials
B.I.K.E.S. - Biking Includes Keeping Educated and Safe
CAAA - Clean Air Act Amendments
CMAQ - Congestion Mitigation and Air Quality
DRED - Department of Resources and Economic Development
EPA - Environmental Protection Agency
FHWA - Federal Highway Administration
FTA - Federal Transit Administration
GACIT - Governors Advisory Commission on Intermodal Transportation
ISTEA - Intermodal Surface Transportation Efficiency Act
LRSTP - Long Range Statewide Transportation Plan
MPO - Metropolitan Planning Organization
NHDOT - New Hampshire Department of Transportation
NHS - National Highway System
RPC - Regional Planning Commission
STIP - Statewide Transportation Improvement Program
STP - Surface Transportation Program
TE - Transportation Enhancement
TEA-21 - Transportation Equity Act for the 21st Century
TIP - Transportation Improvement Program



APPENDIX G – PEDESTRIAN CROSSWALK SIGN

