Bicycle/Pedestrian Path Master Plan

City of Keene, New Hampshire

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Prepared by

City of Keene Bicycle/Pedestrian Path Advisory Committee
and
City of Keene Planning Department

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In Memory of
William H. Appel

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LIST OF ABBREVIATIONS

PFK	Pathways for Keene, Inc.
NH DOT	New Hampshire Department of Transportation
FY	Fiscal Year
BPAC	Bicycle/Pedestrian Path Advisory Committee
NPTS	Nationwide Personal Transportation Survey
TBGT	Total Bicycle Generated Trips
PNBT	Potential Number of Bicycle Trips
TBT	Total Number of Daily Bicycle Trips
TPGT	Total Pedestrian Generated Trips
TPPT	Total Potential Pedestrian Trips
TPT	Total Pedestrian Trips
AASHTO	American Association of State Highway Officials
CIP	Capital Improvement Program
ISTEA	Intermodal Surface Transportation Efficiency Act
NTS	National Highway System
CMAQ	Congestion Mitigation & Air Quality Improvement Program
NRTA	National Recreational Trails Fund
W11-1	Warning Sign
FOP	Friends of Pisgah, Inc.
ARTA	Ashuelot Rails to Trails Association
TEA-21	Transportation Equity Act for the 21st Century
TIP	Transportation Improvement Program
ADA	Americans with Disabilities Act
LWCF	Land & Water Conservation Fund

I. Introduction

A. Mandate for a Bicycle/Pedestrian Path Master Plan

The increasing popularity of walking and bicycling coupled with growing traffic congestion in Keene has created the need to develop a coordinated city-wide public bicycle/pedestrian path system for the community. This plan serves to guide the City in the planning and development of such a system. It also aims to address the facility design, management, and maintenance needs of such a system.

Bicycle/pedestrian path facilities offer multiple public benefits and, in fact, are often cited as a key element of successful cities, both large and small. The development of a city-wide bicycle/pedestrian path system will not only provide safe passage across Keene for the many children, youth and adults walking and bicycling along some of Keene's busy streets, but it will also reduce accidents and have a positive impact on the economic health, environmental quality and transportation efficiency of Keene. Whether used as a shortcut to downtown or for commuting to work, bicycle/pedestrian paths serve as important transportation corridors connecting different parts of the community.

A dedicated city-wide public path system will also make walking, bicycling and other alternative forms of transportation an attractive option for residents and visitors to Keene alike. Providing opportunities for alternative forms of transportation will benefit Keene by decreasing automobile usage and relieving traffic congestion, reducing parking requirements, minimizing air pollution, and offering a means for improved physical and emotional health, fitness and inexpensive recreation.

Experience in other cities has demonstrated that, once constructed, bicycle/pedestrian paths become popular multi-use trails serving a wide variety of different users including pedestrians, walkers, bicyclists, roller and in line skaters, joggers, cross country skiers, snowmobiles, people in wheelchairs, hikers, birdwatchers, and parents with baby strollers. Unlike backcountry hiking trails or designated bicycle routes, bicycle/pedestrian paths invite various users to share a trail corridor collectively.

Bicycle/pedestrian paths use public space unlike any other transportation or recreational use. The linear corridors from which these paths are formed are generally flat and frequently run along rivers, streams and abandoned railroad corridors. Because of the continuous, linear nature of these corridors, they link abundant resources to each other, preserve open space, and enhance recreational opportunities. They also offer unexpected historical riches. Not only can these trails save irreplaceable corridor systems, but they can also preserve a significant portion of a community's heritage. The "newness" of a public path facility is in fact a reflection of history - and they should be planned and designed with this in mind.

B. Background

In the fall of 1993, the City Planning Department facilitated a series of public meetings at the Keene Public Library to gauge citizen interest and to obtain suggestions for developing a system of public pathways throughout Keene. Out of these meetings, an informal Pathway Advisory Committee was formed representing an assortment of City residents with a wide variety of interests. City staff from the Public Works and the Parks and Recreation Department also provided assistance. This informal Pathway Advisory Committee held a series of ten (10) meetings addressing public participation, community-wide concerns, goals and objectives, and facility needs and routes among other issues. On December 7, 1993, the following vision statement was drafted which reads, in part:

> "We, the participants believe that the health, safety, environmental, recreational and transportation needs of this City and surrounding towns can be enhanced by the development of a bicycle trail system, which, in conjunction with the development of other kinds of trails, will make our community a more open, accessible and aesthetic environment for people seeking alternatives to automobile traffic....We also have begun to formulate long (bicycle/pedestrian) routes and to install new ones, particularly along the railroad property and riverbank corridors....Finally we ask the (City) to initiate inquiries into opportunities for state and federal (bicycle/pedestrian path) funding."

With this vision statement in hand, the City Planning Department proceeded to draft a city-wide bicycle/pedestrian master plan as a requirement of a proposed application for federal transportation enhancement funding through the New Hampshire Department of Transpiration (NHDOT). The Institute for Community Environmental Management at Antioch New England Graduate School assisted the City in the preparation of these documents.

On January 4, 1994, the Advisory Committee forwarded a summary of these recommendations to the City Council seeking support in the planning, design and implementation of a comprehensive bicycle/pedestrian transportation system for the City.
These recommendations were incorporated into a *Draft Bicycle/Pedestrian Pathways Master Plan* which was distributed to the public on January 15, 1994. The recommendations centered on the former Cheshire Branch railroad corridor owned by the City. This corridor was given the highest priority in the plan for implementation.

Faced with an application deadline of February 1, 1994, the City Council voted unanimously on January 20, 1994, to carry out the intent of the *Draft Bicycle/Pedestrian Pathways Master Plan*, and to authorize the City Manager to apply for the requested federal transportation enhancement funds. This action was approved by City Council with a condition that the local 20% match for these funds be raised by the Keene community. With this requirement in place, it became imperative that the community raise the necessary local contributions for the project. In March, 1994, the City of Keene Conservation Commission created a Bicycle/Pedestrian Path subcommittee to begin to address this fundraising task. A group of citizens responded to the members of this subcommittee by forming ***Pathways for Keene, Inc.*** (PFK). This new non-profit organization's sole mission was to raise and solicit funds for the 20 % match requirement and to seek final approval of the project by NHDOT.

Within less than a year, local funds amounting to $49,964 were raised by PFK and on May 4, 1995, the City Council adopted a resolution to take all appropriate steps necessary to implement a Downtown Bike Path project along the former Cheshire Branch railroad corridor. On July 11, 1995, the project was approved by the Federal Highway Administration with an award of $250,000, enabling the City to proceed to contract with NHDOT to design and construct the project in FY 97/98.

In early 1995, the City was informed by NHDOT that additional transportation enhancement funds would be available for other eligible projects in fiscal year (FY) 98/99. The PFK Board voted to continue their mission to raise additional funds so that a transportation enhancement application for the Keene Industrial Heritage Trail could be submitted. On September 21, 1995, the City Council voted unanimously to authorize the City Manager to proceed with this application.

The Keene Industrial Heritage Trail project was approved by the State and it is now scheduled in the Statewide Transportation Improvement Program (TIP) for design in 1998 and construction in 1999. In a recent letter to the City dated May 22, 1997, PFK has confirmed that it has raised the required 20% local match for the project.

On March 25, 1996, Pathways for Keene, Inc. approached the Planning Board with a Resolution requesting that the *Draft Bicycle/Pedestrian Pathways Master Plan* be amended by reordering the priorities of the plan. The Planning Board reviewed this request and recommended that it be scheduled for review by the

Master Plan Steering Committee. On July 24, 1996, the Master Plan Steering Committee recommended that a new Bicycle/Pedestrian Path Advisory Committee be established by the City Council to update the *Draft Bicycle/Pedestrian Pathways Master Plan* and to facilitate making it an official part of the City Master Plan.

To implement these recommendations, the Planning Department drafted a City Council ordinance to establish an official Bicycle/Pedestrian Path Advisory Committee (BPAC). The purpose of the BPAC is "to coordinate, study and recommend comprehensive bicycle/pedestrian pathway improvements, facilities, programs, plans and projects to the City Council and other appropriate boards and committees for consideration and implementation within the community". This Ordinance (No# 0-96-29) was approved by the City Council on November 21, 1996 (see copy in Appendix).

Subsequently, Mayor, Patricia T. Russell nominated and then appointed seven residents of the City representing a cross-section of bicycle clubs, organizations and other similar interests to be voting members of BPAC. At the first regular meeting on April 2, 1997, BPAC agreed that it should act quickly to update the *Draft Bicycle/Pedestrian Pathways Master Plan,* and to assist the Planning Department and the Planning Board in the adoption of this plan as an official element of the City Master Plan.

C. Organization of the Plan

The City of Keene Bicycle/Pedestrian Path Master Plan is divided into the following sections:

- Introduction.

- Goals and Objectives. These statements reflect the visions of the citizens of Keene as expressed during the early public participation process. They also reflect the goals and objectives of the City's Bicycle/Pedestrian Path Advisory Committee.

- The Pathway Users. This section identifies the users of the public pathway system in Keene and how these users can coexist along various parts of the system.

- Pathway Design, Management & Funding. This section summaries facility design considerations and offers recommendations for path maintenance, safety and enforcement. It also identifies and discusses necessary funding sources.

- The Pathway System. This section includes a description of the major elements of the plan -- the Keene Bicycle/Pedestrian System; and, the Regional Trails System. Also included are guidelines for establishing priorities and project implementation.

- The Master Plan. This section identifies and describes all the pathways of the plan, including recommendations for facility development and design.

Appendix.

- Guidelines & Suggestions for Creating a Bicycle Friendly Community
- Project Implementation Table
- Bicycle/Pedestrian Path Master Plan Map
- Statewide Bicycle Route Map
- City Council Ordinance O-96-29
- City Codes & State Statutes Regulating Bicyclists and Pedestrians

II. Goals & Objectives

A. Goals:

1. To establish a system of public bicycle/pedestrian paths in the City of Keene for transportation enhancement and recreation use;
2. To assure active community participation in the planning process; and in the implementation of projects;
3. To prioritize public bicycle/pedestrian pathway projects for development to meet alternative transportation needs;
4. To develop a system of bicycle/pedestrian pathways as the hub of a City-wide as well as a regional system;
5. To assure the integrity of the former railroad corridors are developed for transportation enhancement and recreational use; and,
6. To pursue an orderly system of both private, quasi public and public funding in formulating projects for transportation enhancement and recreational purposes.

B. Objectives:

1. To identify needs of the public for bicycle/pedestrian paths including routes for bikers and pedestrians;
2. To use citizen knowledge in selection of bicycle/pedestrian pathway routes for alternative transportation and recreation uses;
3. To combine bicycle and pedestrian routes for both user groups wherever possible;
4. To incorporate existing paths, paths approved for construction and former railroad corridors into a city-wide network of bicycle/pedestrian paths;
5. To identify major destination points and provide routes to these sites by a system of bicycle/pedestrian routes;
6. To assure the use of safety standards and measures on all paths;
7. To comply with City Ordinance 0-96-29 and the approved Bicycle/Pedestrian Path Master Plan;
8. To link the City with neighboring towns, states and regional routes into a network of bicycle/pedestrian paths;
9. To promote broad community advocacy in bicycling and pedestrian activities;
10. To establish a priority system to rank pathways projects;
11. To obtain community support to formulate project proposals;
12. To maintain completed pathways for public use; and,
13. To hold public forums and informational meetings when needed to obtain community assistance in the form of volunteers and contributions.

III. The Pathway Users

A bike/pedestrian path can attract a great many different users who have a wide variety of expectations and needs. Conflicts between different users often can be a sign of success indicating where a path is most heavily used. However, conflicts among users on particular paths or in certain locations can also be a safety and management problem, if not properly identified and addressed in advance. This section addresses this issue by identifying the users of the public pathway system and how these different users can coexist.

A. Bicyclists

Bicycling is a tremendously popular activity for many people of all ages in Keene. Although there is no local survey of actual bicycle ridership conditions in the community, it has been estimated that 0.9% of all modes of transportation within the State of New Hampshire are bicycle related trips (New Hampshire Statewide Planning Study, Household Travel Survey Transportation Mode by Trip Purpose). This percentage is slightly higher than the national rate of 0.83% (NPTS - Nationwide Personal Transportation Survey, 1990).

Distance, or its companion factor, time is often cited as a reason for not bicycling or walking. The 1990 NPTS found that the average length of a travel trip was 0.6 miles for walking and 2.0 miles for bicycling.

It has been estimated that during a 24 hour period (based upon 31,593 people within the Keene/Swanzey urban area) that there are a total of 2,373 daily bicycle trips under ½ mile in length. This number is obtained by multiplying the total estimated population of the urban area by the national average daily rate of bike trips/per person (0.83) to obtain an estimate of the total number of bicycle generated trips (TBGT). The TBGT is then multiplied by the national percentage of all known trips under 2 miles in length (12.07%) to obtain the potential number of bicycle trips (PNBT) of the area. The PNBT is then multiplied by the national percentage of known bicycle trips under ½ mile (7.5%) to obtain an estimate of the total number of daily bicycle trips (TBT) under ½ mile in length.

Local sales trends in Keene also show that bicycle sales and bicycle use within the community is on the increase. According to local bicycle shops, family-oriented riding is very popular and there is now increased demand for higher quality bicycle products such as trailers and tag-a-long tandems.

As shown in the table below, annual sales of bicycles in Keene (between 1995 and 1997) continues to grow with juvenile and mountain bikes dominating the market. The sale of road bikes appears to be fairly constant.

Annual Percentage Sale Trends of Bicycles in Keene
City of Keene, NH

	1995	1996	1997 (1/1 to 6/1)
Mountain	80%	82%	75%
Hybrid	10%	9%	7%
Road	1%	1%	1%
Juvenile	9 %	8%	17%
Totals:	100%	100%	100%

Source: Banagans Cycling Company, Norms Ski & Bike, Joe Jones Ski & Sports, Andy's Cycle Shop and Summers Backcountry Sports.

While the use and sales of bicycles is increasing, bicycle registrations within the City are drastically decreasing (see following table). The steady decline of bicycle registrations in Keene is due mostly to the lack of public knowledge and awareness. Efforts to improve public awareness are needed to increase bicycle registration. Section 1603.1 of the City Code states that "no resident of the City of Keene shall operate or use a bicycle on any of the public ways of the City without first having obtained a registration from the Police Department." Bicycle registration is mandatory for residents of Keene only

Total Annual Number of Bicycle Registrations
City of Keene, NH

	1993	1994	1995	1996	1997 (1/1 to 6/1)
Total Registrations	872	366	186	238	39

Source: City Police Department

The City Code also requires that all bicyclists in Keene must follow the rules for operation of bicycles on public ways or public property as set forth in the New Hampshire Revised Statutes Annotated (City Code Section 1603.4, see copy in Appendix). State law requires that 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 those provisions which by their nature can have no application (see Appendix for a Summary of State Laws Regulating Bicycles and Pedestrians).

Further, no person shall ride a bicycle on the public ways or public property of the City of Keene unless it is equipped as required by New Hampshire Revised Statutes Annotated (City Code Section 1603.5, see copy in Appendix). Generally, these traffic laws require the rider of a bicycle to:

- Ride on the right, in the same direction as other moving traffic,
- Obey all traffic signs and signals, including stop and yield signs and one-way directional signs,
- Use hand signals to communicate intended movements,
- Yield to pedestrians and emergency vehicles,
- Equip the bicycle with a front lamp visible from 300 feet and a rear reflector or lamp which is visible from a distance of 200 feet at night; and,
- Have a horn or bell or other device to produce audible warning to pedestrians or vehicles.

Because most bicycle/pedestrian paths are designed to serve primarily bicyclists, it is advisable that of the State's traffic rules for bicyclists be required and enforced on the City's public path system. This should also include enforcement of the City's bicycle registration laws.

As the popularity of biking continues to grow, the City of Keene should also consider adopting and enforcing a mandatory bicycle helmet law for children and adults. Although there is currently no mandatory bicycle helmet law in the State of New Hampshire, the safety benefits of wearing a helmet and the need to prevent head injuries can not be overlooked.

According to the Police Department, between 1990 and June 1, 1997, there have been a total of 126 bicycle and 78 pedestrian accidents involving motor vehicles within the City of Keene. This represents an average annualized accident rate of 19 bicycle and 12 pedestrian accidents per year.

B. Pedestrians

It is anticipated that most pedestrians using Keene's public path system will be families, adults with children under 15 years old, the elderly, and teenagers who have a higher propensity to walk, skate or bike

than most adults. Additionally, the disabled, lower income residents, and recreational activists (including runners and joggers) will be high volume users of the pedestrian system (this estimate is based upon research of other public path systems contained in the NPTS Report Series Travel Mode Special Report, Non-Motorized Transportation, 1994). Because of the personal nature of walking and running, it is difficult to estimate the number of actual or potential pedestrian users of Keene's public path system. Surveys and actual counts should be conducted in the future as the City begins to develop more facilities.

It has been estimated that 5.4% of all modes of transportation within the State of New Hampshire are daily pedestrian related trips (New Hampshire Statewide Planning Study, Household Travel Survey Transportation Mode by Trip Purpose). This percentage is less than the national rate of 6.33% (Nationwide Personal Transportation Survey, 1990).

Generally, many people walk because they simply have to. Individuals who do not own cars must rely on walking, transit and biking for all of their travel. Many children walk to school and other destinations because walking and biking are the only independent forms of transportation available to them. Visually impaired people cannot obtain a driver's license and must walk for their economic needs and particular lifestyle. Some people choose to walk because of convenience and because of health benefits. If a trip is short or if it involves several stops in close proximity, walking can be the most logical choice for transportation. Many people walk because they enjoy it and gain benefit from it. They get exercise, fresh air and can observe many features of interest. A substantial portion of these trips are recreational in nature and they are generally longer than an average transportation-related walking trip.

Walking is usually more prevalent in higher density areas where trip lengths tend to be shorter. People tend not to consider walking as an option for trips more than one mile in length. Most pedestrian trips are less than ¼ mile in length. Seventy-three percent of all pedestrian trips are under ½ mile (see NPTS Report Series Travel Mode Special Report, Non-Motorized Transportation, 1994). Based upon this study, most pedestrian trips under ½ mile in length are to family and friends, school, church and other social/recreational destinations (see table below).

Pedestrian Trip Destinations Under ½ Mile in Length

	< 1/2 Mile
To Work	11.97%
Family/Personal Business	34.37%
School/Church	20.22%
Social/Recreation	32.46%
Other	0.97%
Total	99.02%

Source: NPTS Report Series Travel Mode Special Report, Non-Motorized Transportation (1994)

There are also a number of well sponsored running events and races held annually in Keene. These events include a Run/Walk for Aids 5K Loop, the 5K Run for the Gold, the Four on the 4th, the Elm City Triathlon, the Demar Marathon, a 5K Halloween Race, and the Cranberry Run. These events can draw anywhere between 50 to upwards of 300 people.

It has also been estimated that during a 24-hour period (based upon 31,593 people within the Keene/Swanzey urban area) that there are a total of 10,692 daily pedestrian trips under ½ mile in length. This estimate has been obtained by multiplying the total population by the national average daily rate of pedestrian trips/per person (6.33) to obtain the total generated pedestrian trips (TPGT) of the urban area. The TPGT is than multiplied by the national percentage of all trips under ½ mile in length (13.56%) to

obtain the total potential pedestrian trips (TPPT). The TPPT is than multiplied by the national percentage of all known walking trips under ½ mile in length (39.43%) to obtain the total number of pedestrian trips (TPT) of the area.
While there are no specific City Ordinances restricting walking, the Police Department is responsible for the enforcement all state laws regarding pedestrians within the City limits. These laws set forth the pedestrian's right of way within designated crosswalks, and crossing at other than crosswalks (see Appendix for a Summary of State Laws Regulating Bicycles and Pedestrians).

C. Other Users

1. In-Line Skaters/Skateboards 

The City of Keene currently allows in-line skaters, skateboards, scooters, bikes and other similar unmotorized wheeled or unwheeled vehicles or devices used for recreation or transportation to ride on all public sidewalks and public parking areas in the City of Keene, except for the following locations: Washington Street from Vernon Street to Central Square; Central Square; Main Street from Central Square to Winchester Street on the west side; Main Street from Central Square to Marlboro Street on the east side; the upper and lower levels of the parking area located behind the Keene City Hall; Gilbo Avenue from Main Street to the entrance to the City-owned parking lots; Railroad Street from Main Street to 93rd Street; Church Street from Main Street to 93rd Street; Central Square Common; and Railroad Square (City Code Section 1603.6).

In-line skaters and skateboards are also permitted uses on the City's existing and proposed paved bicycle/pedestrian path facilities, and at the City's recently constructed new Skateboard Park. located on Gilbo Avenue in Downtown Keene. In fact, these facilities are more preferable for this kind of activity than city sidewalks, parking lots, and streets. In downtown locations where the City's new bicycle/pedestrian path is currently under construction adjacent to Main Street, Gilbo Avenue and the Railroad Square, additional signage and enforcement of these City Code requirements may be necessary.

2. Cross Country-Skiers 

Cross country skiing and snowshoeing are pedestrian activities which are primarily pursued for a variety of health, fitness, and recreational purposes. However, there are exceptions particularly during harsh winter conditions when cross country skiing and snowshoeing may be done for transportation reasons, such as commuting to work and accessing shopping areas.

The Public Works Department has indicated that they will not be clearing snow off the City's existing and proposed bicycle/pedestrian path facilities, except in downtown locations where sidewalk conditions prevail. If this policy remains in effect, cross country skiing and snowshoeing can and should be a permitted use of the City's public pathway system. However, these users may find that snow conditions on the pathway system will not always be suitable for these activities, due to pedestrian traffic and ungroomed conditions.

There are presently no City ordinances which restrict cross country skiing or snowshoeing within the city limits. These activities are also permitted on the state-owned rail-trail corridors leading up to and within the city limits, and along public right-of-ways where pedestrian access is not restricted.

3. Snowmobiles

There are a number of very active and well supported snowmobile organizations in Cheshire County. Data provided by the New Hampshire Snowmobile Association indicates that in 1994-95, there were a total of 3,775 snowmobiles registered in Cheshire County. Presently, there are 9 Snowmobile Clubs in Cheshire County with a membership of 691 as of January 4, 1996, and only one club in Keene, the Keene Sno'Riders. In 1997, the Sno'Riders total annual membership was approximately 39 people.

The Keene Sno'Riders maintain several primary snowmobile trails within the City of Keene. Most of these trails are located in West Keene utilizing private property and the state-owned Cheshire Branch rail bed. There are also a number of snowmobile routes which parallel NH Rts. 9, 10, 12 and 101, and other state roads and highways within the City. The State Trails Bureau has assigned the Keene Sno'Riders maintenance responsibility of the Ashuelot Branch rail bed from Rt. 101 south of the Bypass through Keene to the Swanzey/Winchester town line.

City Code Section 1904.5 Snow Traveling Vehicles states: "no snow traveling vehicles as defined in NHRSA 215-A:1, XIII, shall be operated or permitted in Hickey-Desilets Park, Edgewood Park, Ellis-Harrison Park, on the Central Square Common, in the designated areas in Wheelock Park and Robin Hood Park, or on any City land unless authorized by the City Council." This ordinance indicates that snowmobiles are not permitted on any city-owned land, including sidewalks, public rights-of-way and bicycle/pedestrian paths in Keene. However, this ordinance does not apply to state-owned land, state rights-of-way and state highways. Nor does it apply to the state-owned rail trail corridors which exist within city limits.

A primary interest and concern of the Keene Sno'Riders and the New Hampshire Snowmobile Association is that snowmobiles have a legal right to use and access the state-owned former railroad corridors within the region, and that a safe connection between the Cheshire Branch and the Ashuelot rail beds be provided as an integral part a public pathway system in Keene.
The City of Keene is the hub of the region's rail-to-trail system, and these trails converge in Keene along the former railroad lines. However, in order to complete this regional trail system, a safe and legal connection between the existing Ashuelot and the Cheshire Branch (North and South) rail beds is needed. To achieve this connection, the Keene Sno'Riders and the New Hampshire Snowmobile Association have requested that a tunnel be provided under NH Rt. 9 at Ash Swamp Brook, and that a separate off-road multi-use path (which can be used by snowmobiles) be built parallel and adjacent to NH Rts. 9, 10, 12 and 101 from Ash Swamp Brook to the Ashuelot Branch and the Cheshire Branch (North and South) rail beds.

While NHDOT has agreed to construct this parallel off-road multi-use path as part of the proposed Keene/Swanzey Bypass Project, they are unwilling to widen the multi-use path from 10 feet to 16 feet in width to accommodate equestrian and snowmobile use. As a result, only a 10 foot wide paved bicycle/pedestrian path facility will be built as opposed to a true multi-tread and multi-use path.

Generally, snowmobiles and equestrians can not adequately or safely use the proposed path along the Bypass system without damaging the asphalt surface. The proposed multi-use path will be owned and maintained by NH DOT. During the Keene/Swanzey Bypass Public Hearings, NH DOT agreed to build a 10 ft. wide off-road multi-use path parallel to NH Rts. 9, 10, 12 and 101 extending a distance of roughly 5.4 miles. NH DOT also stated that they would support widening the multi-use path to (20 ft. in width) to provide an adjacent graded or gravel area to accommodate equestrians or snowmobiles provided these groups work with the State to find funding to construct the additional width. During the Public Hearings, the City Council passed a Resolution (R-98-3) in support of adding this additional width to the path. Also, NH DOT stated that they would support the feasibility of providing a safe legal crossing or tunnel for equestrians and snowmobiles under NH Rt. 9 at Ash Swamp Brook.

Additionally, the Keene Sno'Riders and the New Hampshire Snowmobile Association have requested that safe and legal access be provided to the commercial food and gas service facilities located on West Street and on Winchester Street within the City of Keene. In order to access these services, several "all season" pedestrian bridges (designed to safely accommodate pedestrians, bicyclists, snowmobiles and equestrians) would need to be built over NH Rt. 101 at the Ashuelot and the Cheshire Branch (North and South) rail bed locations.

While NHDOT has agreed to build a pedestrian bridge at the Ashuelot Branch rail bed as part of the Keene/Swanzey Bypass Project, NH DOT has not agreed to build pedestrian bridges at the Cheshire Branch (North and South) rail bed locations which are needed to access the state-owned rail beds located within Keene. Also, the City of Keene prohibits snowmobiles on city-owned property and sidewalks.

As a result, snowmobiles will not be allowed to use the sidewalk to cross under the existing West Street/NH Rt. 9, 10 and 12 bridge. Also, snowmobiles will not be able to access existing businesses and services at the Riverside Shopping Plaza, unless the pedestrian bridge to be built by NH DOT at the Ashuelot rail bed location will be an "all season" bridge designed for snowmobile use. Given these constraints, NH DOT has a responsibility of determining where snowmobiles will be permitted or not permitted along the proposed Keene-Swanzey Bypass multi-use path. This plan will help assist the State in addressing this issue.

4. Equestrians

There are no known estimates of the number of horseback riders existing within the City of Keene or within Cheshire County. The number of Coggins tests used to determine the presence of equine encephalitis is usually a good indicator of the number of equestrians. However, while there were 750 Coggins tests conducted in various parts of Cheshire County in 1997, these tests were not conducted on every horse within the County, but at each location where horses exist. As a result, an accurate number of equestrians can not be determined.

However, there is an active group of horseback riders located in Keene who have joined together to educate the equestrian community, and to solicit input as to how equestrians may be represented and their needs served as many of the region's former railroad corridors are converted to public trail use. These riders are also members of the New Hampshire Horse Council and they have recently published a newsletter the "Trail Horse News".

One of the primary interests of the equestrian community is that they have legal access to and use of the former railroad corridors within the region and that a trail connection between the Cheshire Branch and the Ashuelot rail beds be provided as part of the Keene-Swanzey Bypass Project and the future development of a public pathway system in Keene. To achieve this goal, the equestrian community has requested that a safe, legal crossing be provided for horse back riders under NH Rt. 9 at Ash Swamp Brook, and that a separate off-road path parallel and adjacent to NH Rts. 9, 10, 12 and 101 be provided from Ash Swamp Brook to the Cheshire Branch (North and South) and the Ashuelot Branch rail beds which can be safely used by equestrians.

During the public hearings for the Keene/Swanzey Bypass Project, NHDOT agreed to build a 10 ft. wide off-road multi-use path parallel to NH Rts. 9, 10, 12 and 101. NH DOT also stated that they would support widening the multi-use path to (20 ft. in width) to provide an adjacent graded or gravel area to accommodate equestrians or snowmobiles provided the City works with the State to find funding to construct the additional width. Also, NH DOT is currently reviewing the feasibility of providing a safe legal crossing or tunnel under NH Rt. 9 for equestrians and snowmobiles.

North of NH Rt. 9 and adjacent to Ash Swamp Brook, the State Trails Bureau is proceeding to obtain a 30 ft. wide public trail easement for pedestrians, horseback riders and snowmobiles through property owned by Mr. George T. Kingsbury. However, a significant portion of this property is under the protection of the Society for the Protection of New Hampshire Forests, and it contains significant wetlands. If the details for this trail can be worked out, this path would enable equestrians and snowmobiles to access the Cheshire Branch (North) rail bed which is located on the west side of NH Rts. 9, 10 and 12.

However, the exact location of this path has not been determined. It could be located either along the west or east bank of Ash Swamp Brook. Both NHDOT and the City of Keene should cooperatively work with the State Trails Bureau to identify which side of the bank this path should be located on before the Keene/Swanzey Bypass Project enters final engineering design. Also, there could be other affected property owner(s) who may need to grant permission for this trail to be located within the existing 50 foot wide City drainage ditch easement which exists along both sides of Ash Swamp brook.

Additionally, the City of Keene Bicycle/Pedestrian Path Advisory Committee will need to draft a policy for City Council which identifies where horse back riding may be allowed as a permitted use on the city-wide public pathway system. This plan will assist the City in drafting this policy. Similarly, the State Trails Bureau will need to draft a state policy regarding the sharing of state-owned paths for pedestrians, bicycles, snowmobiles and equestrians. This policy will be significant as applied to the state-owned rail trails which will become part of the City of Keene's public path system.

IV. Pathway Design, Management & Funding

This section of the plan addresses the important design and management needs for pathway development, maintenance, and use.

A. Urban Pathway Design

While multi-use paths may be undesirable due to the mixing of bicycles and pedestrians and other users, in reality, most paths are multi-use to some extent. The degree of incompatibility generally between bicyclists and pedestrians and other users is a function of density, speed, congestion and the presence of crossing and turning opportunities. The design of a multi-use path should reflect consideration of each of these factors. Further, the more pedestrian traffic a path receives, the less suitable it will be for bicycle traffic. In most situations, a multi-use path with significant pedestrian traffic should not be designated as a bicycle route.

If higher pedestrian volumes are expected on a multi-use path, as is the case in urban areas, consideration should be given to providing a separate pedestrian trail adjacent to, but separated from, the bicycle path. In some cases, a simple stripe between the pedestrian and bicycle areas on the path may suffice. In others, providing a physical barrier and/or unpaved shoulder between each trail may be necessary.

In areas with considerable congestion and diffuse patterns of pedestrian cross-traffic, a more appropriate design may be necessary. College campus "quads," for example, are very difficult situations in which to incorporate a bicycle facility. With pedestrians crossing in many places and at many different angles, it is impossible to provide sufficient protection for the bicycle facility. In such situations, it is more appropriate to direct bicycle traffic around the congested area and to discourage fast bicycling within the campus area.

Using a single path for both bicycles and horses creates an unsatisfactory and potentially dangerous mix. Horses startle easily and may kick out suddenly if they perceive bicyclists as a danger. A bicycle path and a bridle path are also incompatible in their surface design requirements. Bicycles function best on hard surfaces; horses function best on soft surfaces. A compromise to accommodate both would result in a less than adequate surface for both. Two parallel paths within the same corridor have been found to work well if there is a visual barrier and adequate separation between the two.

This reasoning also applies well with regard to cross country skiers and snowmobiles. While both can operate safely within the same multi-use path corridor, snowmobiles should not be allowed on an asphalt surface.

B. Sidewalk Bicycle Paths

Another issue that is not so clear cut is the use of sidewalks for bicyclists. Most communities permit only children and inexperienced bicyclists to use public sidewalks while discouraging their use by experienced cyclists. Encouraging and providing a sidewalk bicycle path is unsatisfactory for a variety of reasons. Sidewalks are typically designed for pedestrian speeds and maneuverability and they are not safe for higher speed bicycle use. Conflicts are common between pedestrians traveling at low speeds and bicyclists traveling at high speeds. Also, there can be conflicts with fixed objects (e.g., parking meters, utility poles, sign posts, bus benches, trees, fire hydrants, mail boxes, etc.). Also, walkers, joggers, skateboarders, and roller skaters can, and often do, change their speed and direction almost instantaneously leaving bicyclists insufficient time to react to avoid collisions.

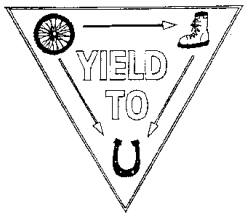
Similarly, pedestrians often have difficulty predicting the direction an oncoming bicyclist will take. At intersections, motorists are often not looking for bicyclists (who are traveling at higher speeds than pedestrians) entering the crosswalk area, particularly when motorists are making a turn. Sight distance is often impaired by buildings, walls, property fences, and shrubs along sidewalks, especially at driveways.

However, bicyclists riding on sidewalks can be expected especially in residential areas with young children and near schools. With lower bicycle speeds and lower motor vehicle speeds, potential conflicts are somewhat lessened, but still exist. This type of sidewalk bicycle use is generally accepted, but it is inappropriate to sign a sidewalk as a bicycle path or bicycle route. To do so would prohibit bicyclists from using an alternate facility that might better serve their needs. But, more importantly, signing a public sidewalk as a designated bike route or bike path would create an absolute liability for the city. Also, it is important to recognize that the development of extremely wide sidewalks does not necessarily add to the safety of sidewalk bicycle travel. Wider sidewalks encourage higher speed bicycle use and can increase the potential for conflicts with motor vehicles at intersections, as well as with pedestrians and fixed objects.

C. Multipurpose Trails

In some instances, it may be appropriate to develop multipurpose recreational trails - for hikers, joggers, equestrians, bicyclists, snowmobiles, etc. Generally, these trails will not be paved and as a result they will not meet the standards for bicyclist paths, except by mountain bikes. As such, these facilities should not be signed as bicycle paths. Rather, they should be designated as recreational trails (or other similar designation), along with all the regulatory signing to restrict motor vehicles, as appropriate. If recreational trails are to serve primarily bicycle travel, they must be developed in accordance with American Association of State Highway Officials (AASHTO) *Guide for the Development of Bicycle Facilities*. Currently, the 1991 AASHTO Bicycle Facility Guide is being updated and a new 1998 Guide is forthcoming.

Based upon information received from AASHTO, the 1998 Bicycle Facility Guide will recommend that the paved width for a two-directional shared use path under most conditions be 3.0 meters (10 ft.) and that in rare instances, a reduced width of 2.4 meters (8 ft.) can be adequate. This width however should be used only where the following conditions prevail: (1) bicycle traffic is expected to be low, even on peak days or during peak hours, (2) pedestrian use of the facility is not expected to be more than occasional, (3) there will be good horizontal and vertical alignment providing safe and frequent passing opportunities, and (4) during normal maintenance activities the path will not be subjected to maintenance vehicle loading conditions that would cause pavement edge damage. Additionally, the 1998 Guide will recommend that under certain conditions, it may be necessary or desirable to increase the width of a shared use path to 3.6 meters (12 ft.), or even 4.2 meters (14 ft.), due to substantial use by bicycles, joggers, skaters, and pedestrians, use by large maintenance vehicles, and steep grades.



D. Pathway Rules & Regulations

Another important step in preventing user conflicts besides design considerations is to specify allowable users on various paths and to create and adopt user regulations. Generally, these regulations should be developed in conjunction with the user groups and they should spell out the rules governing public conduct on the path. They should also state the methods by which they will be enforced and the civil penalties imposed for noncompliance. Lastly, the regulations should be posted at each trailhead and they should be included on all trail brochures and maps.

The most common regulation for all multipurpose recreational trails and all multi-use paths is "wheels yield to heels" (See sign above). The typical protocol for yielding right-of-way is as follows: bicyclists yield to all path users, and pedestrians yield to equestrians. This protocol also applies to bicycle/pedestrian paths and multipurpose recreational trails and multi-use paths where cross country skiing and snowmobiling is permitted.

For most of all the existing and proposed paths to be developed in the City of Keene, the following minimum pathway rules and regulations should be considered:

* Hours of operation (dawn to dusk)
* No motorized vehicles, including snowmobiles (except for multi-use paths)
* No alcoholic beverages
* No destruction of property, including landscaping
* No hunting
* No camp fires
* All pets must be kept on a short leash
* Stay to the right except when passing
* Travel at reasonable speeds
* Pass slower traffic on the left; yield to oncoming traffic when passing
* Move off the path when stopped to allow others to pass
* Yield to other users when entering and crossing the path

Public awareness and enforcement of these regulations is critical for safety and successful pathway management and development. This is particularly true when a new path facility first opens. In the beginning, many users of the path will be unfamiliar with these rules and early enforcement establishes the proper operation of the path. Many managers of successful paths have developed an ethic of trial-use etiquette as a way to encourage compliance with regulations and cooperation among users. A key function of the City's Bicycle/Pedestrian Path Advisory Committee will be to promote courtesy and the safe use and enjoyment of the public path system. To achieve this objective, a city-wide educational program will need to be developed. There are several methods by which this can be achieved.

(1) Signs. Safety signs are one of the simplest and most effective ways to promote pathway etiquette because they convey important information quickly. A uniform system of pathway operating and advisory signs will need to be developed and these signs will need to be posted at regular intervals throughout the public path system.

(2) Printed Materials. Brochures, pamphlets, and newsletters displayed along the path, at trailheads and other key locations can help cultivate a positive user ethic. Trail maps can also be an effective tool for encouraging proper etiquette by suggesting that faster speed users who may have "outgrown" the path find other alternative streets faster and more satisfying.

(3) Safety Days/Presentations. Conducting pathway safety days can also be successful in promoting safety and etiquette. Generally, these events will require volunteers with safety equipment and printed materials. Presentations to community schools, clubs and other organizations can be just as useful.

E. Security & Safety

In addition to the adoption and enforcement of user rules and regulations, a risk management program and an emergency services plan should be developed. An emergency management plan, prepared in conjunction with police and medical personnel, should define points of access, safe and effective routes for emergency vehicle travel, load limits on bridges and trestles, distance in minutes and miles from trail head to local hospitals and other medical facilities, and the jurisdictional responsibilities of police, sheriff, fire and medical agencies.

There should also be a centralized telephone number to call at City Hall for all maintenance repair needs and trail-related problems. Also, all parts of the pathway system must be accessible by emergency and maintenance vehicles. If feasible, on-site emergency call-boxes (telephones that dial directly to 911 and/or Mutual Aid) should be placed along the public pathway system at one mile intervals in urban areas and two miles in rural areas. Also, trail markers should be placed every 1/2 mile to aid in site identification and locating problems and accidents.

F. Maintenance & Liability

An on-going maintenance and liability program is critical to ensure long-term success of the City's public pathway system. Once completed, the public pathway system will create a unique combination of linear parks, greenways and sidewalks throughout the City. It is critical that these facilities be maintained and that the City develop an ongoing maintenance program with identified department roles and responsibilities. It is also critical that the public use of these facilities and trails be covered under the City's existing policies governing the use of parkland and public spaces and that the City exercise reasonable care in the design and construction of these facilities to reduce hazardous, public nuisance and life threatening situations.

The City's public path system should be available for public use under a defined Hours of Operation Policy and any individual found using the pathway system outside of the normal hours of operation should not be covered by the City's liability policies governing public use. As a result, all city-owned and maintained paths must be appropriately signed and maintained in a clean and safe manner.

Ideally, the Parks, Recreation & Cemetery Department should be responsible for all the short-term maintenance needs of the City's bicycle/pedestrian path system, while the Public Works Department should be responsible for the long-term maintenance and repair of these facilities. Ultimately, all organizational decisions regarding maintenance needs and responsibilities must be determined by these departments and the City Manager. However, an ongoing maintenance program should address routine and remedial maintenance tasks, as well as set-up funding strategies for long-term maintenance needs. Generally, this maintenance strategy should be in place and operating resources identified before trail development begins. The routine, week-to-week maintenance activities of weed control, trash disposal and debris removal should be supplemented with a regular schedule for repairing potholes, patching asphalt, controlling vandalism, maintaining public access, parking areas, and checking signage, bridges and other facilities. Other more expensive work and more labor intensive tasks, which can include repairing bridges, railings, decking, fencing, resurfacing trails, enhancing landscaping, and completing other major repairs can be included in the program. These work tasks also need to be integrated into a Capital Improvement Plan (CIP) for the overall public pathway system.

A safety checklist (shown on the following page) has been developed to provide a description of the most common maintenance concerns that are present along a typical path. This checklist should be used in the field, as an inspection report of the current condition of the trail corridor, by checking the appropriate box that defines the safety problem and circling the specific concerns.

Funding needs for maintenance on asphalt paths and most rail-trails is usually minimal, as these trails are typically routed through natural, low-maintenance landscapes. Routine maintenance activities such as mowing, fertilizing, trimming and sweeping must be frequently conducted during the spring, summer and

fall along the typical bicycle/pedestrian path. For reference purposes, the typical costs to maintain the City's existing Wheelock Park/Court Street bike path is shown below.

BIKE PATH MAINTENANCE

Activity	Frequency*	Cost Per Mile/Wk
Mowing	3 hrs. per week	$ 65 per mile
Sweeping	1.5 hrs twice per week	$ 45 per mile
	total	$110 per mile

*Note: Summer Months Only
Source: City Parks & Recreation Department

As the City of Keene's public system of bicycle/pedestrian paths expand in the future, the Bicycle/Pedestrian Path Advisory Committee has recommended that the City Manager and the City Council appoint a staff person to serve as the City's Bicycle/Pedestrian Coordinator. This position should serve as a focal point for managing the operating and maintenance responsibilities of the pathway system, coordinating future system planning and development, addressing public complaints, seeking funding and fiscal support, and coordinating safety and security needs with the Police Department and local neighborhood bike patrol associations.

City of Keene
Path System Safety Checklist

_____ **Vegetation clearing and management:** overhanging limbs and weedy growth obstruct views, "widow-makers" in trees, poisonous vegetation near trail, debris on trail surface.

_____ **Streams:** stream banks near trail eroding, drainage pipes clogged with debris cause stream overwash - leave standing water and mud on trail, water quality of stream is substandard.

_____ **Roadway Crossings:** sight lines for motorists and path users obstructed, caution signs not located on trail and roadway, pavement markings for crossing inadequate.

_____ **Trail Tread Surfaces:** hard surfaced pavement cracked and uneven, soft surface tread rutted, weedy vegetation encroaching into tread, standing water and mud in tread.

_____ **Trail Bridges:** hand rails loose, bridge decking warped, loose or missing, bridge footings, exposed from erosion, rotting structural timbers, approach rails missing.

_____ **Roadway Overpasses/Underpasses:** tread surface wet or full of litter and debris, lighting systems inoperable, light bulbs burned out, fencing inadequate to protect users.

_____ **Safety Railings:** not located in areas of need, post and footings loose, handrails missing, rotting timbers, corroded steel, not long enough, not high enough for all users.

_____ **Boardwalks:** rotting timber, handrails missing, bench seating vandalized, post and footings loose or sinking, decking warped, loose or missing.

_____ **Signage Systems:** regulatory and warning signs missing or improperly located, information signs vandalized or missing, sign posts corroded or rotting, signs vandalized.

_____ **Public Parking:** pavement surface littered with broken glass and debris, parking spaces not defined, handicap spaces not provided, trailer parking not provided, entry drive has poor site lines, vegetation obscures trail head.


G. Funding Opportunities

Community based funding for bicycle/pedestrian facilities can be found in the form of private grants, donations, contributions and local property taxes. There are also a number of local and national foundations which may award limited funding for planning community trails and greenways. These entities include the Timken Foundation and the Monadnock Community Foundation locally and the Conservation Fund's American Greenways DuPont Awards Program, which offers grants from $500 to $2,500 as seed monies for larger projects. The City of Keene has been very fortunate that Pathways for Keene, Inc. was organized and has been very successful in seeking private donations and sponsoring fund raising events and activities.

The best source of federal funding for bicycle and pedestrian facilities is the Intermodal Surface Transportation Efficiency Act of 1991 (ISTEA). ISTEA provides funding for a number of eligible "Transportation Enhancement Activities". Ten percent of each State's Surface Transportation Program (STP) funds must be set aside for these activities. In New Hampshire, between 1992 and 1997, the amount of enhancement funding was about $3.0 million per year.

It is anticipated that this program will be continued with the re-authorization of ISTEA in 1998. In New Hampshire, the federal share for this program is 80%. The applicant is responsible for supplying a 20% match. This match, with few exceptions, must be a hard match , i.e. the applicant must supply the match in dollars.

ISTEA enhancement funds may be used to construct facilities for pedestrians and bicycles and to preserve abandoned railway corridors (including conversion and use thereof for pedestrian or bicycle trails). Other eligible activities include the construction of new sidewalks, improvements to shared roadways by installing paved shoulders, striping or signage for bicycles, and producing support materials, such as bicycle route maps, bicycle parking, and education materials. It is important to address more than just bike paths when applying for such funds.

All ISTEA enhancement funds are administered by the NH DOT and there is a competitive statewide project application and selection process. The last round of applications for enhancement funding was scheduled for FY 97/98. Applications for this round of funding were due to the NH DOT by September 12, 1997. Approved projects in the FY 97/98 round of applications will not be eligible for federal enhancement funding until FY 2001/2002. This of course is pending the reauthorization of ISTEA by Congress in 1998. After the FY 97/98 applications, the next round of applications is scheduled for FY 1999/2000. Projects approved in FY 1999/2000 round will not be eligible for federal enhancement funding until FY 2002/2003.

On June 9, 1998, the Transportation Equity Act for the 21st Century (TEA-21) was signed into law replacing ISTEA. Authorized at $217 billion, TEA-21 is the nation's largest ever public works law, with even greater financial clout than ISTEA thanks to an annual minimum allocation of federal transportation funds. Just over $200 billion is guaranteed through 2003; $165 billion for highway and multimodal surface transportation, $35 billion for transit, and the rest for highway safety and motor carrier freight programs.

There are two relatively small but popular programs which have been carried over to TEA-21, at much higher levels than in the old law. The transportation enhancmen program, which supports community projects (from historic preservation of transportation facilities to habitat preservation and rail-to-trail conversion) was continued with significantly increased funding levels and only minor changes to the eligible program activities. Initial estimates by the Federal Highway Administration indicate that annual

apportionments for the transportation enhancement program will average $630 million, a 40 percent increase over ISTEA, which allocated approximately $430 million a year for the program.

Several new activities and categories have become eligible for enhancement funding in TEA-21. A new category was inserted into the bill making the establishment of transportation museums an eligible activity, an action which was reflected in the list of demonstration projects included in the bill which earmarked funds for several transportation museums in different parts of the country. Also language making the provision of safety and educational activities for pedestrians and bicyclists was also inserted into the transportation enhancement program as a new eligible activity.

Modifications to existing categories included making the development of tourist and welcome centers an eligible activity under the scenic or historic highways program, and language enlarging the scope for the mitigation of highway runoff, to include projects that reduce vehicle-caused wildlife mortality while maintaining habitat connectivity for threatened or endangered species. Finally, new language was adopted which encourages states to utilize youth conservation or service corps in contracts or cooperative agreements to perform work involved with developing enhancement projects, a situation which is already occuring on many rails-to-trails projects across the country.

Also a new transit enhancements program was created which requires transit agencies in urbanized areas with population over 200,000 to set aside one percent of their urban formula funds – which finance capital investment in big-city public transportation – for projects to enliven transit facilities: public art, historic preservation, landscaping, and better pedestrian and bicycle access, access for people with disabilities, and transit connections to local parks.

The Congestion Mitigation and Air Quality Improvement Program (CMAQ), which funds efforts to curb congestion and to encourage transit use and other alternatives to cars was also preserved as part of TEA-21. CMAQ has been increased in funding from roughly $6 billion under the old law to $8 billion through 2003. In addition, about $150 million, or 50% of CMAQ funds over FY 1997 CMAQ funding levels, can be transferred to other programs at the discretion of the states. Also, TEA-21 expands the areas eligible for CMAQ funds, including new non-attainment areas for ozone, carbon monoxide and particulate matter. Previously, only ozone and carbon monoxide non-attainment areas were eligible. The City of Keene was not eligible for CMAQ funding under ISTEA, however if Cheshire County is included within an existing non-attainment area in the future, City's eligibility for this funding could change.

In addition to the enhancement program, the NH DOT can also authorize the use of National Highway System (NTS), Surface Transportation Program (STP), Congestion Mitigation and Air Quality Improvement Program (CMAQ), and Bridge Replacement and Rehabilitation Program funds for bicycle and pedestrian improvements. The safe accommodation of pedestrians and bicyclists must be given full consideration during the design, development, and construction of all federally aided transportation projects. All the bicycle/pedestrian improvements proposed for the Keene/Swanzey Bypass Project as identified in this plan will be funded in this fashion. These improvements are independent of the transportation enhancement program and do not require local matching funds or the submittal of separate transportation enhancement applications.

The NH State Trails Bureau also administers another source of funding for trail development - the National Recreational Trails Fund grants. The National Recreational Trails Act (NRTA) is a component of ISTEA and it has been continued in TEA-21 with annual funding beginning at $30 million for FY 1998, $40 million for FY 1999, and rising to $50 million per year for the remaining years of the bill. This program provides for the transfer of federal gas tax money paid on fuel used in off-highway vehicles for recreational purposes. The NRTA requires that 30% of program funds be reserved for motorized trail projects, 30% for nonmotorized trail projects, and 40% for combination projects. These grants are currently available for a minimum of $1,000 and a maximum of $10,000 annually. The program requires a 50% match in the form of cash, materials, labor and in-kind services.

National Recreational Trails Fund grants are provided mostly to non-profit groups and organizations for the following purposes: development of trail linkages near homes and workplace; maintenance of existing recreational trails, including the grooming and maintenance of trails across snow; restoration of areas damaged by usage or recreational trails and back country terrain; construction of new trails; acquisition of land or easements for trails; development of trail-side or trail-head facilities; provision of features which improve accessibility to people with disabilities; and relocation, redesign or reconstruction of existing trails to minimize environmental impact. Over the past several years, a number of grants have been awarded to several snowmobile clubs, the Friends of Pisgah, Inc. and Pathways for Keene, Inc. for the purpose of constructing new bridges and decking former railroad trestles along the existing rail-to-trail corridors in the region.

In addition to the recreational trails grants, the State Division of Parks and Recreation administers the federal Land and Water Conservation Fund (LWCF) program which can be used for land acquisition and the development of parks. This source of funding should be more fully explored, particularly for the development of key trail head facilities adjacent to the City's bike path system.

Although all of the above federal programs have provided new sources of funds for pedestrian and bicycle improvements in Keene, it is important that local municipal and private financial support be committed and provided both in matching funds for federal grants and in case federal funding is not available. The best source of local funds are property tax revenues, bond issues, and possibly tax increment finance districts. However, authorization for municipal funding must be requested and approved by the City Council, and scheduled in the City's Capital Improvement Program (CIP).

Also, the State of New Hampshire has recently adopted H.B. 648, which establishes a local option fee for local or regional transportation improvements. This bill allows municipalities to implement a local option fee to fund a capital reserve fund to be used for transportation improvements at the local or regional level. Bicycle and pedestrian facilities can be funded through this capital reserve fund.

In the long term the development of a successful public path system in the City of Keene is dependent on federal, state and local funding working sources and the vision that alternative modes of transportation, are equally as important as automobiles, when it comes to making decisions about prioritizing and funding community projects.

H. Trailside Amenities

This section offers general recommendations and guidelines for addressing requests both public and private for specific improvements and trail side amenities along the public path system.

While there are no city-wide standards at the present time for park benches and bike racks on city-owned land, the installation of these amenities should be coordinated through the City's Parks and Recreation Director and the Director of Public Works. These departments ultimately have the overall maintenance responsibilities for these improvements.

There are currently not many bike racks located within the City. To help improve this situation, the installation of new bike racks should be carefully determined. The City's Bicycle/Pedestrian Path Advisory Committee has selected the following locations: the Transportation Center along Gilbo Avenue, the City's new parking garage along Railroad Street, Railroad Square and the Pearl Street trail head park. Suggested locations for park benches and trail head signs should also include the same locations. As the City's pathway system expands, other appropriate locations will need to be identified and determined.

Additionally, as the City's public pathways expand consistent signage will need to be developed and implemented which clearly identifies the name of the path and its location within the City.

Concurrently, as the City's public pathways expand, landscaping must be viewed as a key element in the overall design, appearance and functionality of the system. Landscaping and tree planting efforts must be encouraged and facilitated by the City. There will be numerous locations where landscaping will provide or enhance effective screening, beautify the pathway setting, and increase the overall success and popularity of the public path system. Community and volunteer groups also need to coordinate closely with City officials to ensure that their landscaping projects will be effective and easy to maintain. Similarly, the City should be actively planning and pursuing landscape treatments. For example, the existing gravel strip of land located between the downtown bike path and the adjacent parking meters on Gilbo Avenue should be loamed and seeded. This area has been neglected by the City over the years and it is a key spot in need of effective landscaping.

Generally, it is the recommendation of the Bicycle and Pedestrian Path Advisory Committee that a carry on/carry off trash policy be implemented as part of the pathway rules and regulations. This policy should be clearly stated on all trail brochures and trail maps. It should also relieve the City Public Works Department of any obligation or responsibility for trash collection and the installation of trash containers along the pathway system. The removal of trash and any wind blown litter found along the path however must be programmed as a regular maintenance responsibility of the City.

V. The Pathway System

This Master Plan is composed of two elements: (1) the Keene Bicycle/Pedestrian Path System consisting of bike paths, bike lanes and "Share the Road" signs; and, (2) the Statewide System of Bike Routes, Multi-Use Paths, and Rail-to-Trail Recreational Corridors. These facilities and improvements are identified and shown on the Bicycle/Pedestrian Path Master Plan map which is included in the Appendix.

This two-tiered approach to pathway development is recommended as a guide for both the City officials and the State agencies responsible for creating a safe, functional, complete, and efficient network of public pathway facilities within Keene and the surrounding region. These facilities must be interconnected to enable all nonmotorized forms of transportation, including bicyclists, pedestrians, equestrians, and snowmobiles the ability to travel to various parts of Keene; to key destination points both inside and outside the State Bypass system; and, to adjoining towns, and other regional destinations both within and outside of the state. Keene's historic railroad corridors provide an underutilized resource and opportunity to begin the development of a significant public pathway system, which can form the backbone of a safe alternative transportation system in and surrounding Keene.

This Master Plan is the result of the involvement of citizens representing a wide range of user groups. A comprehensive analysis of the needs of each user group was conducted to ensure that the City public pathway system would reflect the goals and objectives of each group within the community. Although the resulting pathways system is designed primarily to meet these needs within the City, the plan also takes into account the regional system, and how Keene's system will become a link in the overall regional plan.

A. The Keene Bicycle/Pedestrian Path System

1. Bicycle Path Network -- The City of Keene's network of bicycle/pedestrian paths serves as the primary transportation plan for bicycles within both downtown Keene and connections to surrounding areas outside of the State Bypass system. This network is composed of existing facilities, facilities with approved funding, facilities proposed for new funding, and a new program to establish "Share the Road" signs within the City. The resulting Bicycle Path network will provide a means for east-west and north-south access through the central urban core of the City as well as a means of access to the regional system of statewide routes and the regional rail-to-trail corridors leading up to the State Bypass system surrounding the City. Each facility is more fully described within the Master Plan.
2. Bike Lanes -- There are also a number of streets within the community, which may be suitable for the installation of dedicated bike lanes. Bike lanes are designated portions of a roadway, a minimum of four feet wide (excluding curb and gutter), that are signed, striped, and marked specifically for bicycle use. To improve bicycle safety, bike lanes are recommended for the following streets: Maple Avenue from the intersection of Rt. 12 A to Summit Road, South Main Street from the Rt. 12, 101 intersection to Rt. 32, Lower Winchester Street from the Bypass south to Matthews Road, and Rt. 101 east from Optical Avenue to the Marlborough town line. These facilities also provide a direct link to the Keene Bicycle/Pedestrian Path Network and the regional system of statewide bike routes and rail-trail corridors leading up to the City.

Bike lanes are most warranted where significant bicycle demand is desired or expected on streets which have adequate right-of-way, high traffic volumes, and average motor vehicle speeds exceeding 30 mph. Bike lanes are also warranted on streets which are not complicated by frequent roadway intersections and commercial driveways, and where it is desirable to delineate the right-of-way assigned to bicyclists and motorists for more predictable movements by each.

3. Share the Road Signs – The installation of "Share the Road" signs in combination with the W11-1 warning sign (see example below) is recommended as an effective way to alert motorists to high levels of bicycle traffic on specific roadways in Keene where relatively hazardous conditions for bicycling exist (such as narrow shoulders, narrow lanes, on-street parking and/or high traffic volumes). The streets identified for the installation of these signs are as follows: Main Street, Washington Street, West Street, Roxbury Street, Winchester Street, Marlboro Street, Court Street, Old Walpole Road, West Surry Road, Maple Avenue, Hastings Avenue, Arch Street, Park Avenue, Hurricane Road, Stearns Road, Bradford Avenue, Base Hill Road and Summit Road. Share the road signs can be installed on these streets without designating the roadway as a signed or preferred bike route.

B. Statewide System of Bike Routes, Multi-Use Paths, and Rail-to-Trail Recreational Corridors

1. Statewide Routes -- In January 1995, the NH DOT developed a plan for establishing rural bicycle routes within the state. NH Routes 9, 10, 12, and 101 (located outside of the Keene Urban Compact - the urban area surrounding the City of Keene used to determine state-aid for road maintenance) are identified as bike routes. These shared roadways are designated as official statewide bicycle routes because of the availability of outside paved shoulders (at least a four foot width), which function as bike lanes (see Appendix for Statewide Bike Route Plan). Although these roadways have not yet been signed by the NH DOT as official bicycle routes within the region, NH DOT has not posted the roads nor have they restricted pedestrian access or bicycle use.

2. Rail-to-Trail Corridors -- At a cost of 5.9 million dollars, the State of New Hampshire acquired 186 miles of abandoned railroad lines within the state for recreational trail use and possible future rapid transit development. A total of 76 miles or 40% of all the abandoned railroad lines purchased on July 9, 1995 by the state are located within Cheshire County alone.

On January 23, 1996, the NH DOT and the NH Department of Resources and Economic Development, Parks Division executed a cooperative agreement to grant authority to the State Trails Bureau to use, manage and maintain the railroad corridors for recreational trail purposes. Since 1996, the State Trails Bureau has worked extensively with a number of local and regional snowmobile clubs, and the Friends of Pisgah, Inc. (FOP) -- who have been designated by the Statewide Trails Advisory Committee as the lead local coordinating group -- for developing these rail-trails within the region.

Also in 1993, a number of citizens from Keene, Swanzey, Winchester, and Hinsdale formed the Ashuelot Rails to Trails Association (ARTA) in order to formulate a plan for the preservation of the 23 miles of the Ashuelot rail line. On May 20, 1993, the City Council adopted a Resolution (R-93-13) in support of these efforts and in 1996, ARTA completed their mission by implementing a detailed survey of abutters and users of the proposed multi-use trail on the Ashuelot Branch rail line (see Survey of Abutters and Users of Proposed Multi-Use Trail on Ashuelot Branch Rail Line, April, 1996).

In 1997, primarily as a result of the award of three (3) New Hampshire snowmobile registration grants and three (3) federal Recreational Trail grants, several new pedestrian bridges have been constructed along Ashuelot and Cheshire Branch rail beds where former rail bridges had been previously removed or deemed to be unsafe. As a result of these local efforts, rail-trail corridor access is now possible to Keene from the Massachusetts border through the towns of Fitzwilliam, Troy and Swanzey, and from the Connecticut River through the towns of Hinsdale, Winchester and Swanzey. Continuous access has also been completed north of Keene to Walpole through the towns of Westmoreland and Surry.

However, to complete this regional rail-to-trail corridor system within the City of Keene, a culvert is needed under Hurricane Road and three (3) pedestrian bridges are needed at the Ashuelot rail bed and at the Cheshire rail beds (North & South) to safely and legally cross Rts. 9, 10, 12 and 101. While it is the goal of

this Plan and the State Trails Bureau to connect these railroad grades in Keene, these pedestrian bridges can not be constructed without the approval of NH DOT and federal transportation enhancement funding.

At this time, NHDOT has agreed to build as an integral part of the Keene/Swanzey Bypass Project only one of the three necessary pedestrian bridges. This pedestrian overpass will cross Rt. 101 at the Ashuelot rail bed. To build the other two remaining pedestrian bridges at the Cheshire Branch (North) rail bed and at the Cheshire Branch (South) rail bed near the existing Stone Arch Bridge, the City of Keene will need to obtain federal transportation enhancement funds (working in conjunction with the NH DOT and the State Trails Bureau).

C. Guidelines for Priorities

To assure that proposed bicycle/pedestrian paths, bike lanes and share the road signs fit as smoothly as possible into the community over an extended period of time, the City of Keene's Bicycle/Pedestrian Path Advisory Committee recognizes that priority ranking must be an essential part of the Master Plan. The guidelines used by the Advisory Committee to systematically select projects for implementation are described below. Projects are rated Priority A, B or C depending on their location and importance in the development of the overall public path system.

Priority A Corridors fall mostly within "The Central Core" of the City. They also are located directly adjacent to or are a key part of the State Bypass system, except for the new "Share the Road" sign program which has been given a high priority by the City's Bicycle/Pedestrian Path Advisory Committee. Most of all the State Bypass system facilities will be constructed by NH DOT as part of the statewide Transportation Improvement Program (TIP).

Priority B Corridors include the existing river and rail-trail corridors extending beyond the State Bypass System to the City limits. Priority C Corridors mostly consist of the proposed bike lane facilities to be carried out by the City. Basically, these projects are given a lower priority because they may require the acquisition of right-of-way and/or local municipal funding.

In addition to this priority ranking system, the Advisory Committee considered other factors in prioritizing routes including usage, access, directness, the existence of natural and manmade barriers, continuity, delays in travel, traffic safety, use conflicts, truck traffic, on-street motor vehicle parking, intersection conditions, traffic volumes and speeds, environmental impacts, social and economic impacts, aesthetics, security, maintenance, pavement surface quality, cost/funding, and ease of implementation among others. In this fashion, leap-frogging and/or selecting facilities in isolation of each other was avoided.

1. Priority A Corridors - "The Central Core & Bypass System"

Downtown Keene is considered to be the hub of the Keene Bicycle/Pedestrian Path System and as such it should receive primary consideration for project development. Also, the multi-use paths proposed by NHDOT to be built parallel and adjacent to, and as a part of the Keene/Swanzey Bypass Project are key elements in this system. Together, these facilities form a circumferential pathway network in and around the central core of the City.

The primary "Priority A Corridor" is the east-west axis that follows the Cheshire Branch rail bed from Main Street east to the Bypass and from Main Street west to Rts. 9, 10, and 12 at the Bypass. Another primary "Priority A Corridor" is the north-south axis which follows the Ashuelot River north of West Street to the Bypass and the Ashuelot rail bed which extends south to the Bypass from the former Round House located between Gilbo and Emerald Street in downtown Keene. The City Bicycle/Pedestrian Path Advisory Committee recommends that the east-west axis (consisting of the Downtown Cheshire Trail - Phase I and II, and the Keene Industrial Heritage Trail - Phase I and II) be given the highest priority for project development, funding, and construction in this plan. This route can best meet the alternative

transportation needs of the community as much of the land making up this axis is owned by the City and is central to it.

The Advisory Committee also recommends that the north-south axis (identified as Phase I of the Ashuelot Rail Trail and Phase I of the Ashuelot River Trail) be assigned the next highest priority for project development. Although the Ashuelot rail bed is owned by the State of New Hampshire, the middle section of this corridor (located between Winchester Street and the Ashuelot River) will be developed by Keene State College, Pathways for Keene, Inc., and the State Trails Bureau through Recreational Trail grant funds and donated inkind services provided by Keene State College.

The Advisory Committee also envisions that additional improvements to this corridor (between the Ashuelot River and the Bypass) can be coordinated with the NH DOT, the State Trails Bureau, and the City when the new pedestrian bridge is installed as part of the Keene/Swanzey Bypass Project. Additionally, Pathways for Keene, Inc. and the City Parks & Recreation Department have been active in making spot improvements to the existing Ashuelot River Trail north of West Street within the Ashuelot River Park and the Advisory Committee anticipates that this relationship will continue.

The Downtown Cheshire Trail, the Keene Industrial Heritage Trail (Phase I and II), the Ashuelot Rail Trail (Phase I), the Ashuelot River Trail (Phase I), and the bicycle/pedestrian path facilities to be build by NH DOT as part of the Keene/Swanzey Bypass Project are all public path facilities which have been approved for trail development by the City and/or the State. As such, these facilities are rated as "Priority A Corridors" in this master plan.

Also included in the Priority A Corridors are the Cheshire Branch Trail North crossing of Rt. 9, 10 & 12, and the Cheshire Branch Rail Trail South crossing of Rt. 101. While these proposed pedestrian bridges have not been included nor approved by NH DOT as part of the Keene/Swanzey Bypass Project, the Advisory Committee has determined that these facilities are necessary elements the overall public path system and that they should be included as "Priority A Corridor" projects in this plan.

2. Priority B Corridors - " Beyond the Bypass"

The Advisory Committee recommends that the next priorities in project development be given to the existing rail bed corridors and the Ashuelot River which extends beyond the Bypass and the center of the City, but which form critical connections to the regional trail system. For the most part, these "Priority B Corridors" include the Cheshire Branch Rail Trail North which extends west of Rts. 9, 10 & 12 to the Keene/Surry town line, including the installation of a pedestrian culvert under Hurricane Road, the Ashuelot Rail Tail - Phase II which extends south of Rt. 101 to the Keene/Swanzey town line, and the Cheshire Branch Rail Trail South which also extends south of Rt. 101 to the Keene/Swanzey town line. Also identified as a "Priority B Corridor" is the Ashuelot River Trail – Phase II and NH DOT's proposed culvert for multi-purpose recreational trail use under Rt. 9 at Ash Swamp Brook.

All of these projects have been approved for trail development pending future funding approval.

3. Priority C Corridors "Bike Lane Connectors"

To complete the Keene Bicycle/Pedestrian Plan system and to enhance bicycle safety between key destination points, such as city parks, schools, recreation centers, and businesses within the City, the Advisory Committee recommends that bike lanes be installed on specific collector and inter-City connector streets. Since these facilities will be new projects for the City and may require the acquisition of additional right-of-way City Council approval will be required.

VI. The Bicycle/Pedestrian Path Master Plan

The Master Plan consists of an interconnected network of bicycle/pedestrian paths, multi-use paths, bike lanes and share the road signs designed to enhance bicycle/pedestrian safety and provide essential corridors for nonmotorized travel within the City. To successfully develop this system and to provide system continuity with the statewide bike routes, the Bypass multi-use paths, and rail-trail recreational trail corridors leading up to and around the City, two pedestrian highway crossings at the Cheshire Branch (North and South) are also required. These pedestrian bridges are needed to ensure safe bicycle and pedestrian mobility and access over the major state highways which Bypass the City. All of the Master Plan facilities are more fully described below under the following headings: existing facilities, facilities with approved funding, facilities proposed for new funding, State of New Hampshire Projects, and the proposed new City "share the road" signs.

A. Existing Facilities

1. Wheelock Park/Court Street Bike Path -- This facility is an existing eight (8) foot wide asphalt bicycle/pedestrian path which connects Court Street, south of the Rt. 9, 10 overpass to Wheelock Park, for a distance of approximately 1.0 mile. This bike/ped path was constructed by NHDOT in the early 1980's as part of the bypass improvements to the Rt. 9, 10, 12 interchange. It is now owned by the City of Keene and is maintained by the City Parks, Recreation & Cemetery Department. It provides an alternative means of east-west access through the existing Rt. 9, 10 & 12 trumpet interchange north of downtown Keene. It is open for use to pedestrians, bicycles, cross country skiers, and skaters, but it is not handicapped accessible as defined by the Americans With Disabilities Act (ADA).

2. NH Rt. 9, 10, 12 & 101 Bypass System -- Routes 9, 10, 12 & 101 are existing shared roadways which have (4) foot wide paved bike lanes located along both shoulders. These roadways are owned and maintained by NH DOT and they are designated as official statewide bicycle routes. The routes presently extend along Route 9 from the Keene/Chesterfield town line east to the Keene/Roxbury town line; Route 10 from the Keene/Swanzey town line north to the Gilsum/Keene town line; Route 12 from the Keene/Swanzey town line north to the Keene/Surry town line; and, Route 101 from the Junction of Routes 9, 10, 12 and 101 easterly to the Keene/Marlborough town line. These bike lanes are not ADA accessible.

3. Ashuelot Railroad Bridge -- This existing former Ashuelot Railroad Bridge has been recently decked and is now opened to the public. The project was coordinated by Pathways for Keene, Inc., Keene State College, and the State Trails Bureau. A federal National Recreational Trails Grant in the amount of $3,989 (Project No# 97-046) was awarded to Pathways for Keene, Inc. to rehabilitate and deck this former railroad truss bridge located at the Ashuelot River near the Keene State College campus. This bridge is located between Winchester Street to the north and Rt. 101 to the south. Keene State College provided the inkind labor and services necessary to meet the 50% grant match. The new bridge was opened to the public in July, 1997, and it is now an existing public pathway facility for pedestrians, bicyclists and cross country skiers. The bridge is not ADA accessible.

4. Ashuelot River Trail - Phase I -- This existing earthen/hard pack surface multi-use path is presently 4 to 6 feet wide. It is located on City-owned property within the Ashuelot River Park. The path follows along the east bank of the Ashuelot River and the existing Fitness Course. It provides a linkage between the Downtown Cheshire Branch Trail and the existing Wheelock Park/Court Street Bike Path. The City of Keene and Pathways for Keene, Inc. have recently improved and graded various sections of the path with hard pack material. Future improvements to the path will need to be coordinated with the City Parks, Recreation & Cemetery Department, and the Trustees of the Ashuelot River Park. This path is rated as a Priority 1 "Central Core" Corridor facility. It is not ADA accessible, but it is open for use by pedestrians, mountain bikes, and cross country skiers.

B. Facilities With Approved Funding

1. Downtown Cheshire Trail - Phase I -- This bicycle/pedestrian path is currently under construction. It will be paved to a minimum width of 10 feet, except for short sections which will range from 8 to 12 feet in width. The path is located primarily on City-owned property and on donated easements to the City. It extends a distance of 0.833 miles between Main Street and School Street and Island Street and West Street along the former Cheshire Branch railroad corridor in downtown Keene. The project was awarded $299,351.60 in federal transportation enhancement funds through the NH DOT. The project is estimated to cost a total of $374,189.50. Pathways for Keene, Inc. and the City of Keene both contributed toward the $74,837.90 local 20% match requirement. The path is scheduled to be completed and opened to the public by June 26, 1998. It is rated as a Priority A "Central Core" Corridor facility. It will be ADA accessible and open for use by pedestrians, bicyclists, skaters, and cross country skiers.

2. Keene Industrial Heritage Trail – Phase I – This bicycle/pedestrian path is scheduled for design and construction in 1998 and 1999. It will be paved to a minimum width of 10 feet and constructed on City-owned property between Main Street and Eastern Avenue along the former Cheshire Branch railroad corridor a distance of 0.97 miles. The project has been awarded to date $125,000 in federal transportation enhancement funds through the NH DOT. The project was originally estimated to cost $155,056, however a more recent updated estimate prepared by the Keene Planning Department now places the cost closer to $346,759. Pathways for Keene, Inc. has agreed to assist the City in raising the local 20% match requirement. This match could approach a total of $69,351.80. The path is scheduled to be completed and opened to the public in 1999. It is rated as a Priority A "Central Core" facility. It will be ADA accessible and open for use by pedestrians, bicyclists, skaters, and cross country skiers.

3. Downtown Cheshire Trail - Phase II -- An asphalt bicycle/pedestrian path 8 to 10 feet wide located on City right-of-way and easements donated to the City of Keene. Phase II will complete the middle section of the Downtown Cheshire Trail by connecting Island Street and School Street a distance of approximately 0.64 of a mile. This project is approved for planning and design and will require federal transportation enhancement funds to complete. This path, including the northern leg of the Ashuelot Rail Trail (Phase I) between Emerald Street to the north and Winchester Street to the south is estimated to cost approximately $480,712.50 based on preliminary plans which were prepared by NHDOT as part of Phase I of the Downtown Cheshire Trail project. It is estimated that a City match of $96,142.50 will be needed for this project. Pathways for Keene, Inc. has agreed to assist the City in raising the local 20% match

requirement. The Downtown Cheshire Trail -- Phase II is rated as a Priority A "Central Core" Corridor facility and it is included in the City of Keene's 1997/98 transportation enhancement funding application. Recently, this application was approved by the State and this project has been included and scheduled in the Statewide Transportation Improvement Program (TIP) for design and construction in the year 2000. It will be ADA accessible and open for use by pedestrians, bicyclists and skaters.

C. Facilities Proposed For New Funding

1. Ashuelot Rail Trail - Phase I -- An asphalt bicycle/pedestrian path 10 feet wide located on the State-owned former Ashuelot River railroad bed between Winchester Street to the north and the Bypass (Rt. 101) to the south. This path will provide a link between the Downtown Cheshire Branch Trail (Phase II) and the state-owned Ashuelot Rail Trail (Phase II) to the south of Rt. 101. This project is approved for planning and design. It is anticipated that this project will be developed in coordination with the State Trails Bureau, Keene State College, NHDOT, Pathways for Keene, Inc. and the City of Keene. Keene State College has indicated a willingness to construct the path between Winchester Street and the Ashuelot River bridge with a possible National Recreational Trail grant. It is envisioned that NH DOT can complete the path between the Ashuelot River bridge and the proposed pedestrian bridge to be constructed over Rt. 101 as part of the Keene/Swanzey Bypass Project. This facility is rated as a Priority A "Central Core" Corridor. Pending funding approval, this path could be scheduled for design and construction in the year 2000/2001. It will be ADA accessible and open for use by pedestrians, bicyclists, skaters and cross country skiers

2. Cheshire Branch Rail Trail North Crossing of Rt. 9, 10 & 12 -- To provide a direct connection between the Downtown Cheshire Trail and the Cheshire Branch Rail Trail North, a safe grade-separated pedestrian overpass is needed over Rt. 9, 10 & 12. This bridge should be designed for pedestrians and bicyclists as the primary user groups. It should also be designed to meet ADA standards. In order for this overpass to be built, federal transportation enhancement funds will need to be obtained through the submittal of an application to NH DOT. It is estimated that this facility will cost $500,000 with a City match requirement of $100,000. Presently, NH DOT has agreed to build a parallel off-road bicycle/pedestrian path along the west side of Rt. 9,10 & 12 which would allow the connection of the Cheshire Branch Rail Trail North to a widened sidewalk (10 ft. wide) under the Rt. 9, 10 & 12/West Street bridge. While this 10 ft. wide sidewalk will provide access to the City's Downtown Cheshire Trail at West Street, there are safety concerns regarding pedestrian/bicycle access through this interchange. The BPAC has recommended that this project be the City's next transportation enhancement application to be submitted in 1999 in anticipation of construction in the year 2001/2002. This project is rated as a Priority A Corridor in the master plan.

3. Cheshire Branch Rail Trail South Crossing of Rt. 101 -- To link the Keene Industrial Heritage Trail (Phase II) to the existing Stone Arch Bridge (crossing the Ashuelot River) and the Cheshire Branch Rail Trail South located on the south side of Route 101, a pedestrian bridge over Route 101 is needed. A former railroad bridge previously existed at this site, but it was removed by NH DOT in 1986. This project is approved for future planning and design in this master plan, but it will require federal transportation enhancement funds to complete. It is estimated to cost $375,000 with a City match of $75,000. The bridge should be designed for pedestrians and bicyclists as the primary user groups. It should also be designed to meet ADA standards. The BPAC has recommended that this project be the City's next following transportation enhancement application to be submitted to NH DOT in the year 2000 with construction estimated to occur in the year 2002/2003. This facility is rated as a Priority A Corridor in the master plan. The BPAC has also recommended that the Stone Arch Bridge be designated and listed in the National Register of Historic Places and that the City of Keene consider developing a trail head and recreational park at this location. This could be accomplished as a Land and Water Conservation Fund (LWCF) project.

4. Keene Industrial Heritage Trail – Phase II -- An asphalt bicycle/pedestrian path to be paved to a minimum width of 10 feet and constructed along the former Cheshire Branch railroad corridor which is owned by the State of New Hampshire. The project will complete the Keene Industrial Heritage Trail from Eastern Avenue south to the Bypass (Rt. 101) a distance of ¾ of a mile. It is estimated to cost $350,000 and it is anticipated that Pathways for Keene, Inc. will assist the City in raising the local 20% match requirement. This match is estimated to be $70,000. The project should be scheduled as the City's 2001 transportation enhancement application with construction to occur in the year 2003/2004. It is rated as a Priority A "Central Core" facility. It should also be ADA accessible and open for use by pedestrians, bicyclists, skaters, and cross country skiers.

5. Cheshire Branch Rail Trail North -- An earthen/hard pack multi-use recreational path 10 to 12 feet wide located on the State-owned former Cheshire Branch rail bed between Rts. 9, 10 & 12 at West Street in Keene to the Keene/Westmoreland town line a distance of approximately 5.5 miles. This regional rails-to-trail corridor currently indirectly ties into the City of Keene's Downtown Cheshire Trail to points west and north of the City. This project is approved for future planning and design by the State Trails Bureau and it will require a combination of federal recreational trail and transportation enhancement funds to complete. Project development and coordination is the responsibility of the State Trails Bureau, the regional Rails-to-Trails Advisory Committee of FOP, and the City of Keene. Working in concert with BPAC, Pathways for Keene, Inc. is considering applying for a National Recreational Trail Grant in the amount of $10,000 to repair an existing landslide and washout along the path near Stonewall Farms. There is the possibility that assistance from the US Army Reserve could be obtained for this and other emergency trail improvements in the future. It is estimated that the installation of a hard pack/stone surface along this section of the trail would require at least $175,000 to complete. Additionally, BPAC has recommended that a portion of this rail-trail from Bradford Road to the Bypass be paved in the future and that a pedestrian culvert be installed under Hurricane Road. This rail-trail is rated as a Priority B Corridor in the master plan, and it is should be open for pedestrians, mountain biking, cross country skiing, equestrians and snowmobiles.

6. Cheshire Branch Rail Trail South -- An earthen/hard pack multi-use recreational path 10 to 12 feet wide on the State-owned former Cheshire Branch rail bed located south of Route 101 at the Stone Arch Bridge. This regional rails-to-trail corridor directly links the Keene Industrial Heritage Trail to points south and east of the City. A new pedestrian bridge crossing Rt. 101 will be required for this connection. Project development and coordination is the responsibility of the State Trails Bureau, the regional Rails-to-Trails Advisory Committee of the Friends of Pisgah, Inc., and the City of Keene. This project is approved for future planning and design in this master plan, and it may require federal transportation enhancement funds to complete. It is estimated that the installation of a hard pack/stone surface south of the Stone Arch Bridge may require $5,000 to complete. There is the possibility that assistance from the US Army Reserve can be obtained for this and other emergency trail improvements in the future. This project is rated as a Priority B Corridor in the master plan, and it is should be open for pedestrians, mountain biking, cross country skiing, equestrians and snowmobiles.

7. Ashuelot Rail Trail - Phase II -- An earthen/hard pack multi-use recreational path 10 to 12 feet wide located on the State-owned former Ashuelot River railroad bed between Rt. 101 to the north and the Keene/Swanzey town line to the south. This path is a key north/south corridor in the overall public pathway system and consideration should given to an asphalt surface directly south of the Ashuelot Rail Trail Crossing of Rt. 101 to the Keene State College sports facility. Project development and coordination is the responsibility of the State Trails Bureau, the regional Rails-to-Trails Advisory Committee of the Friends of Pisgah, Inc., the City and Keene State College. This facility has been approved for planning and design by the Trails Bureau and it may require federal transportation enhancement funds to complete. It is estimated that the installation of a hard pack/stone surface along various sections of the trail may require $30,000 to complete. There is the possibility that assistance from the US Army Reserve can be obtained for this and other emergency trail improvements in the future. This path is rated as a Priority B Corridor in the master plan and it is should be open for pedestrians, mountain biking, cross country skiing, equestrians and snowmobiles.

8. Ashuelot River Trail - Phase II -- An earthen/hard pack multi-use path 4 to 6 feet wide located on City-owned property north of the Ashuelot River Park. This path follows the existing Ashuelot River Trail north from where it crosses underneath the Rt. 9, 10 & 12 trumpet interchange to Jonathan Daniels Elementary School. It is located on the west bank of the Ashuelot River. An easement may be needed from Tanglewood Estates to extend the path to Jonathan Daniels Elementary School. Future improvements must be coordinated with the City Parks, Recreation & Cemetery Department, and the Trustees of the Ashuelot River Park. This path may require federal transportation enhancement funds to complete. It is estimated that the installation of a hard pack/stone surface along various sections of the trail may require $20,000 to complete. This project is rated as a Priority B Corridor in the master plan and it is should be open for pedestrians, mountain biking, cross country skiing, and equestrians.

9. Maple Avenue Bike Lanes -- It is recommended that Maple Avenue be widened to accommodate four foot wide bike lanes or paved outside shoulders. Maple Avenue is heavily used by both pedestrians and bicyclists and it also serves as a critical connector between Hastings Avenue, West Surry Road and the Ashuelot River Trail. Maple Avenue also provides an important means of access through the Rt. 12 interchange in West Keene. Presently, the road right-of-way is not wide enough on the north side to install a sidewalk along the entire length of the street from Rt. 12 A to Summit Road. If additional right-of-way can be obtained, the City should consider widening the road and installing a sidewalk and bike lanes. A sidewalk for Maple Avenue is already scheduled on the City Council's list for sidewalk improvements and this project could be amended to include bike lanes. It could also be considered as part of a future street resurfacing project. Federal enhancement funding could also be sought. This facility is rated as a Priority C Corridor project in the master plan.

D. State of New Hampshire Department of Transportation Projects

1. Ashuelot Rail Trail Crossing of Rt. 101 -- To connect Phase I and II of the Ashuelot Rail Trail, a safe grade-separated pedestrian overpass structure is needed over Rt. 9,10,12 and 101. This pedestrian overpass structure is planned to be located on the State-owned former Ashuelot rail bed and it should be designed for pedestrians, bicyclists, and snowmobiles as the primary users. It should also be designed to ADA standards, which requires a maximum slope of 12:1 and a maximum rise of 30 inches between landings. The NH DOT has agreed to build this pedestrian overpass as part of the Keene/Swanzey Bypass Project and to build it as an "all season" bridge to accommodate snowmobiles. It has been estimated that 500 feet of paved approach ramps will be needed on both sides of the bridge. NH DOT has estimated that this overpass will cost approximately $500,000 to build. No City match is required. The City of Keene has requested that this pedestrian bridge be constructed as early in the construction sequencing of the Bypass project as possible. It is anticipated that this could occur by the year 2000/2001. This project is rated as a Priority A Corridor in the master plan.

2. Rt. 101 Bypass Path (Ash Swamp Brook to Cheshire Branch South Trail) -- NH DOT has proposed as part of the Keene/Swanzey Bypass project that an asphalt multi-use path (10 ft. in width with 2 ft. wide gravel shoulders) be built south of and parallel to Rt. 9,10,12 and 101 between Ash Swamp Brook and Production Avenue to Optical Avenue. From Optical Avenue, NH DOT is considering providing a graded shelf for equestrians and snowmobile use. This path would allow pedestrians, bicyclists, equestrians, and snowmobiles east-west access through the City. It would also provide a connection to the Ashuelot Rail Trail and the Cheshire Branch Trail South. When the Keene/Swanzey Bypass Project is completed, bicyclist/pedestrian access along the Bypass between Production Avenue and Main Street will be posted and restricted. It is anticipated that this multi-use path will be completed by the year 2004/2005. This project is rated as a Priority A Corridor in the master plan.

3 Rt. 9, 10 & 12 Bypass Path (Ash Swamp Brook to Wheelock Park and Rt. 12) -- NH DOT has proposed as part of the Keene/Swanzey Bypass project that an off-road multi-use asphalt path (10 ft. in width with 2 ft. wide gravel shoulders) be built on the north side of Rt. 9 and the west side of Rt. 9, 10 & 12 between Ash Swamp Brook and Wheelock Park./Rt. 12 to the north. This path would allow pedestrians, bicyclists, equestrians, and snowmobiles north south access around the City. It would also provide a connection to the Cheshire Branch North Rail Trail and the City's existing bike path at Wheelock Park.

When the Keene/Swanzey Bypass project is completed, bicyclist/pedestrian access to the highway will be posted and restricted. It is anticipated that this multi-use path will be completed by the year 2005/2006. This project is rated as a Priority A Corridor in the master plan.

4. Rt. 12/South Main Street Bike Lanes -- Rt. 12/South Main Street is presently a two lane state highway. The construction of bike lanes on state highways is the responsibility of the NH DOT. There is adequate right-of-way for the installation of bike lanes or four foot wide paved shoulders from the Rt. 9, 10, 12 and 101 intersection to Rt. 32. Although Rt.12/South Main Street presently experiences high traffic volumes, it is anticipated that this traffic will be reduced when the proposed Optical Avenue connector is constructed as part of the Keene/Swanzey Bypass Project. As part of the construction of the Keene/Swanzey Bypass Project, Rt. 12/ South Main Street will be downgraded from a minor arterial to an urban collector street, and Rt. 32 will be extended to Optical Avenue. As a result, there is an opportunity for the installation of bike lanes along this section of the road. The installation of bike lanes could be accomplished as part of the Keene/Swanzey Bypass Project pending NH DOT approval. This project is rated as a Priority C Corridor in the master plan.

5. Rt. 10/Lower Winchester Street Bike Lanes -- NH DOT has proposed as part of the Keene/Swanzey Bypass Project that Rt. 10/Lower Winchester Street from Matthews Road to the proposed new interchange with Rt. 101 be widened from three to five lanes with four foot wide paved bicycle lanes on each side. Although Rt. 10 is not officially designated as a statewide bike route, provisions for bicycle safety have been deemed to be necessary by NH DOT when the highway is widened. This project is rated as a Priority C Corridor in the master plan.

6. Rt. 101/Marlborough Bike Lanes -- Rt. 101 from Optical Avenue to the Marlborough town line is very hazardous for bicycle and pedestrian travel although this section of the highway is designated as an official statewide bicycle route. East of the Stone Arch Bridge, traffic volumes are high and there are limited or no paved shoulders. Rt. 101 from Branch Road west 0.9 miles is presently scheduled for reconstruction in the statewide ten-year transportation improvement plan. Also, the Southwest Region Planning Commission and NH DOT are presently preparing a regional transportation study of the Rt. 101 corridor. It is critical that bike lanes be designed and installed by NH DOT as a part of these transportation improvement projects.

E. Proposed New "Share the Road" Sign Program

It is recommended that the following collector streets in the City of Keene be signed with "Share the Road" signs in combination with the W11-1 warning sign. It is recommended that the development and installation of these signs be accomplished as a CIP project. Individual signs could also be purchased and installed as part of the City's resurfacing and/or traffic sign maintenance program at little additional cost. A description of each street follows:

1. Main Street & Washington Street -- Main Street and Washington Street provide a direct north south route of travel through downtown Keene. As primary entrances into the City, these streets experience high traffic volumes. As such, they are not appropriate in design and function to be signed as preferred bike routes. Given high traffic volumes and the existence of onstreet parking, share the road signs should be installed every one half mile in distance to warn motorists and bicyclists of the need for caution.

2. West Street & Roxbury Street -- West Street and Roxbury Street provide a direct east west route of travel through downtown Keene. As primary entrances into the City, these streets experience high traffic volumes. As such, these streets are not appropriate in design and function to be signed as preferred bike routes. Given high traffic volumes, share the road signs should be installed every one half mile in distance to warn motorists and bicycles of the need for caution.

3. Winchester Street & Marlboro Street -- Winchester Street and Marlboro Street provide a direct east west route of travel through downtown Keene. As primary entrances into the City, these streets experience high traffic volumes. Winchester Street also has narrow travel lanes east of Island Street. As such, these streets are not appropriate in design and function to be signed as preferred bike routes. Given high levels of traffic and narrow travel lanes, share the road signs should be installed every one-half mile to warn motorists and bicyclists of the need for caution.

4. Court Street & Old Walpole Road -- Court Street and Old Walpole Road are narrow two lane roads which provides a direct north south route of travel to downtown Keene. Given high traffic volumes and narrow shoulders, share the road signs should be installed every one-half mile to warn motorists and bicyclists of the need for caution.

5. West Surry Road -- West Surry Road is a narrow two lane road north of Keene. It is a scenic road which is frequently used by local bicycle clubs for organized rides leaving and entering Keene. Given narrow travel lanes and narrow shoulders, share the road signs should be installed every one-half to one mile to warn motorists and bicyclists of the need for caution.

6. Maple Avenue & Hastings Avenue -- Maple Avenue and Hastings Avenue provide an important east west route of travel through West Keene. These narrow two lane residential collector streets are heavily used by pedestrians and bicyclists. Given narrow travel lanes and narrow shoulders, share the road signs should be installed every one-half mile to warn motorists and bicyclists of the need for caution.

7. Arch Street & Park Avenue -- Arch Street and Park Avenue are narrow two lane collector streets which provide important east west routes of travel in West Keene. Given narrow travel lanes and shoulders, share the road signs should be installed every one-half mile to warn motorists and bicyclists of the need for caution.

8. Hurricane Road -- Hurricane Road is a narrow two lane road with limited shoulders. It is a scenic road which is frequently used by local bicycle clubs for organized rides leaving and entering Keene. Hurricane Road also crosses the Cheshire Branch Trail North at a most inhospitable junction. Given narrow lanes and shoulders and frequent turns in the road, share the road signs should be installed every one-half mile to warn motorists and bicyclists of the need for caution.

9. Stearns Road -- Stearns Road is a narrow two lane road with limited shoulders. Given narrow lanes and shoulders, share the road signs should be installed every one-half mile to warn motorists and bicyclists of the need for caution.

10. Bradford Road & Base Hill Road -- Bradford and Base Hill Road are narrow two lane roads with limited shoulders. These roads are frequently used by local bicycle clubs for organized rides leaving and entering Keene. Given narrow lanes and shoulders, share the road signs should be installed every one-half mile to warn motorists and bicyclists of the need for caution.

11. Summit Road – Summit Road from Maple Avenue to where it presently dead-ends at NH Rt. 12 is a two lane road with limited shoulders. The road is frequently used by pedestrians and bicyclists for short recreational trips. The BPAC has recommended that the City evaluate the possibility for bicycle access from Summit Road to Rt. 12. Given the narrow shoulders of the road, share the road signs should be installed every one-half mile to warn motorists and bicyclists of the need for caution.

Appendix

A. Creating a Bicycle/Pedestrian Friendly Community

There are many arguments for making Keene a bicycle/pedestrian friendly community. Non-motorized trips don't pollute and they don't contribute to sprawl. Accommodating both bicyclists and pedestrians in Keene can also reduce traffic congestion, traffic fatalities, and promote a healthier and more vital community.

In promoting bicycling and walking as a safe and convenient option for personal transportation, the City of Keene must continue to strive to enhance cyclist and pedestrian mobility through all parts of the community. The easier it is for children and adults to walk or bike around their neighborhoods, the more likely they will avail themselves of these forms of mobility. The methods the City can use to achieve this goal include: signage, pathway development, facility improvements, community design enhancements, regulatory, and educational efforts. The key to successful implementation of this Pathways Master Plan will be in integrating various aspects from each of these methods into City policies, plans and ordinances.


Bicycle & Pedestrian Planning

This plan must be part of an active and ongoing planning process that continually seeks to integrate bicycle and pedestrian considerations into all areas of planning and project development. Many local and regional projects and planning initiatives affect the bicycling and pedestrian environment. To be truly supportive of these forms of travel, the City of Keene must begin with its essential planning building blocks - the City Master Plan and site plan/subdivision review processes.

The planning basis for ensuring that Keene is a bicycle/pedestrian friendly community starts with the adoption of this plan as an official element of the City Master Plan. This step will aid in institutionalizing bicycle/pedestrian planning within the City's comprehensive planning and regulatory functions. Land use and zoning, street design, open space and park planning, as well as capital investment decisions, all affect a community's fitness for bicycling and walking.

The development of transportation plans and the Capital Improvement Plan (CIP) also offer opportunities for improvements for bicyclists and pedestrians. Bicycle and pedestrian facility decisions are affected by the planning and programming decisions of a number of City departments, as well as those of adjacent communities, regional, state and federal agencies. Thus, successful bicycle/pedestrian planning requires an unusual degree of governmental coordination. It also requires recognition and pursuit of the following recommendations:

- Bicycling and walking are legitimate modes of transportation that should be encouraged and fostered.
- The City of Keene should be committed to providing better facilities for cyclists and pedestrians, educational programs for cyclists and motorists, and incentives to encourage bicycling and walking as viable modes of transportation.
- Bicycling and walking should become a standard element of all transportation planning and comprehensive planning for the City of Keene, and these elements should be considered and included in all relevant street, sidewalk, recreation and other relevant public capital improvement and maintenance projects.
- City and State policies and plans for bikeway projects must be coordinated.

- City transportation plans, capital improvement projects, and routine maintenance projects should include bicycle and pedestrian accommodations where feasible.
- Street designs which encourage lower motor vehicle speeds or provide extra space through a bike lane, paved shoulder, or widened outside curb lane should be encouraged to accommodate shared use for most cyclists.
- City street standards and policies should be augmented by traffic calming designs and techniques which slow traffic and "reclaim" street space in neighborhoods.
- A Bicycle Parking Ordinance should be developed that will tie bicycle parking requirements to land use and the amount of automobile parking required.
- Land development patterns which also support options to walk and bicycle, that allow for shorter trips, including mixed use, higher densities, and connections between land uses should be encouraged.


Education and Encouragement

Bicycle and pedestrian safety programs and educational efforts are essential elements of a successful program. Schools, Keene State College, the City Police Department, local employers, and private groups can all play key roles in providing bicycle/pedestrian safety and encouragement. The City of Keene should continue to:

- Encourage bicycle/pedestrian safety training and education as part of all school curriculum.
- Engage and support the City Police Department's bicycle/pedestrian safety training programs and events.
- Engage and support the City Police Department's bike patrol program.


Public Awareness & Community Support

The City of Keene is fortunate to have several local citizen-based organizations dedicated to improving the quality of bicycle and pedestrian activities within the community. These groups include: the Heart of New England Cycling Club, Pathways for Keene, Inc., Team Frank, and the Keene Crime Watch Bike Patrol. These groups are actively engaged in encouraging and educating the community about bicycle/pedestrian safety, pathway development, fundraising, as well as sponsoring a number of special events, including road and mountain cycling, in-line skating and other activities. Good relations between the City and these citizen-based groups is vital to the continued success Keene has experienced to date. Some areas where future involvement could occur include:

- Courteous and cooperative interaction between bicyclists, pedestrians and automobile drivers could be stressed and taught.
- Maps and brochures which include information regarding laws and regulations concerning bicycle operation and safety are needed to promote the City's bicycle facilities.
- Improvements to the City's existing bicycle registration system which can provide enhanced opportunities for public education, should be considered.

Bicycle Facility Development

An important step in making Keene a bicycle/pedestrian friendly community is to ensure that all existing and future streets are safe for bicycling. The American Association of State Highway Officials (AASHTO) 1991 *Guide for the Development of Bicycle Facilities* states:

> "To varying extents, bicycles will be ridden on all highways where they are permitted. All new highways, except those where bicyclists will be legally prohibited, should be designed and constructed under the assumption that they will be used as a ***bicycle street***." (page 11)

For bicycling to be a safe and convenient form of personal transportation, access and mobility through all parts of Keene must be enhanced. Presently, all public roads and streets in Keene can be legally used by bicyclists, including the State Bypass system consisting of NH Rt. 9,10,12 & 101. However, not all of these streets are safe for bicycling, especially in areas where increasing motor vehicle traffic pose potential safety risks, and unsignalized intersections present serious challenges to both bicycle and motor vehicle operators. In these areas, the development of dedicated bicycle/pedestrian facilities are needed.

The long-term viability of bicycling in Keene can also be impacted by some types of highway 'improvements' which actually result in "barriers" to bicycling (e.g., limited access facilities, reductions in outside travel lane width, lack of overpasses and bridges, and multiple fee-flowing right turn lanes at interchanges). The result of all this is a system of streets and highways with conditions that are frequently demanding of, if not dangerous for, the cyclist. Safety is the primary concern of people riding bikes, and it is the basis of support in Keene for bikeway planning and development.

- Street designs must take into account the needs of cyclists and pedestrians.
- The City needs to evaluate the impact on pedestrians and bicyclists when designing, engineering, rehabilitating, signalizing, striping or modifying a roadway.
- The City should adopt street design standards that give priority to and enhance the safety of pedestrians and bicyclists, and that minimize conflicts with motorists.
- The City should provide adequate signing of bikeways and paths throughout the City as recommended by the Bicycle/Pedestrian Path Advisory Committee.
- Pedestrian and bicycle facilities should be constructed with appropriate amenities: such as drinking fountains, benches, parking, garbage disposal, where feasible.
- Secure bicycle parking is vital to improve the viability of bicycle transportation in the City. Areas of highest priority include parks, schools and Keene State College, shopping centers, places of employment, and business areas.
- An inventory of existing bicycle parking racks, as well as additional bike parking needs throughout the City should be undertaken.

Shared Roadways

The majority of bicycling within the City of Keene occurs on ordinary streets and roads with no dedicated space for cyclists. This function is termed a Shared Roadway. A shared roadway is any street or highway which contains no special provisions for bicyclists (such as bike lanes or wide curb lanes). Shared roadways may be legally used by bicycles, regardless of whether the street or highway is specifically designated as a bikeway or preferred bike route.

Shared roadways typically feature 12 foot wide travel lanes or less with no shoulders which allow cars to pass only by crossing the center line or moving into another traffic lane. Generally, bicycle and pedestrian travel on a shared roadway is safe on local streets in residential areas with low motor vehicle traffic volumes and speeds. However, on larger and busier collector streets and arterials, 12 foot wide travel lanes and no shoulder presents a safety concern to both the cyclist and the motorist.

- The City should assess widening some roadways to provide additional operating room for cyclists, thus increasing the safety for both motorists and bicyclists. Both paving shoulders on rural roadways, and 14 foot wide outside curb lanes in urban situations should be considered.
- To alert motorists to high levels of bicycle traffic on specific roadways where relatively hazardous conditions for bicycling exist (such as narrow shoulders, narrow lanes and/or high traffic volumes), "Share the Road" signs should be installed as recommended in this plan. This can be achieved without designating the signed roadway as a preferred bike route.

Bicycle Paths, Lanes & Routes

One of the goals of a truly multimodal transportation plan is to encourage more people to ride bicycles for short-distance personal, business, social, and recreational trips. To realize this increase in use, it is desirable to provide facilities which act as a "host" to bicycling activities. Bicycle paths, lanes and routes are recommended for this purpose. Also, in situations where shared roadways are not safe -- on streets with high traffic volumes and speed, as well as areas where no on-street facilities are available -- dedicated bicycle paths, lanes and routes should be developed. The benefit of these facilities is particularly important for causal or infrequent cyclists, including children who are not adept at riding in traffic.

Bicycle paths are physically separated from motor vehicle traffic. These facilities are capable of being significant generators of bicycle and pedestrian traffic, and serve to provide system continuity and linkage in areas where no on-street facilities exist. Once discovered, the use and popularity of bike paths can become overwhelming, particularly during the peak weekend periods when strollers and skaters take to the paths.

However, bicycle paths are also an expensive option - $300,000 to $400,000 per mile - because of the cost of acquiring right-of-way and the need for building new bridges. In contrast, a bike lane costs $3,000 to $30,000 a mile, depending on the need to provide access to corridors that may not have been previously open to the public. Yet properly planned and designed, bike paths can enhance a community's quality of life and provide enjoyable recreational opportunities as well as desirable commuting routes. The City of Keene should consider developing bike paths and multi-use paths:

- In areas where it is too hazardous to have shared roadways due to traffic or safety issues. These paths should be part of an overall bike/pedestrian plan and should allow for system continuity.
- In appropriate transition areas when continuity is needed between separated bike paths and on-street bikeways.

On-street bicycle lanes offer a designated and visible space for cyclists and can be a significant factor in route choice. These facilities are designated by striping, signing, and pavement markings. The advantages of designating bike lanes include encouraging increased bicycle use, as well as safety on a given roadway. In developing bike lanes, the City should:

- Reconsider the need for parking along roadways that could otherwise be used as bike lanes. In some cases, parking may only be needed on one side to accommodate residences and business needs. Narrowing parking needs to seven feet should also be assessed.
- Assess widening some roadways to provide additional operating room for cyclists, thus increasing the safety for both motorists and bicyclists. Both paving shoulders on rural roadways, and wide curb lanes in urban situations should be considered.
- Bike lanes should be considered an important element in designing and laying out a City-wide bicycle map.

Bicycle routes are the least expensive choice. The requirements are much simpler: a shoulder that is at least 12 feet wide and bike route signs at all major intersections. However, bike routes are recommended only in residential areas with little traffic, or as short connectors between bike lane segments. Experienced riders often prefer bike routes over paths and lanes. They feel more comfortable riding with traffic than on facilities that are designed for less-experienced riders.


Hazard Removal

Except where prohibited, all new roadways and existing roadways in Keene need to be planned and/or retrofitted to eliminate hazards. From a pedestrian and bicyclist's standpoint, the sidewalk and roadway factors that most affect the safety of walking and cycling are as follows:

- The condition of the roadway surface: is it smooth and free of debris? are there potential hazards such as utility poles, signs, inlet grates and railroad crossings?
- The space available for riding: is the right-most travel lane wide enough to accommodate shared-use by bicycles and motor vehicles? is the shoulder paved?
- The traffic mix and operating speed: is there a lot of truck and bus traffic? is the adjacent traffic high speed?
- And other factors including sight distance, the number of intersections and driveways.

Hazard removal should include the replacement of worn out sidewalks, parallel bar drainage gates, unresponsive traffic signals, and elimination of dangerous crossings through the implementation of spot improvements and enhanced maintenance practices. It can also be helpful to:

- Seek aggressive enforcement of traffic laws for both vehicular and non-vehicular traffic is a critical step in enhancing the bicycle and pedestrian safety system.
- Identify and replace all parallel-bar drainage grates on roadways within Keene.
- Install pedestrian activated traffic control signals and devices at all signalized intersections to better accommodate bicycles and pedestrians. At existing signalized intersections, signal timing with a yellow/red time that will allow adequate pedestrian crossing time should be considered a priority. Markings can be made on the pavement at intersections to indicate the best places for cyclists to ride to trigger the signal.
- Routine attention to pavement sidewalk and road surface irregularities including potholes and gaps in paving joints, as well as removal of roadway debris will greatly add to safety.
- Adequate lighting along existing sidewalks and urban paths should be made a priority for safety considerations.
- A hazard reporting system that invites the public to help identify roadway and sidewalk risks should be implemented.

Pedestrian Facilities

It goes without saying that walking is the cornerstone to all other forms of transportation. Every trip begins and ends with walking. The basis for walking as a viable means of transportation within the City is providing continuity to the pedestrian circulation system. Lack of sidewalks or gaps in the sidewalk system are significant obstacles to pedestrians. Some of the worst obstacles for safe pedestrian circulation are as follows:

- No sidewalks or poorly designed, poorly maintained sidewalks.
- No safe places to cross busy arterial highways.
- Signal timings that are inappropriate for the walking speed of an average person trying to cross the street.
- Confusing or insufficient information on how to use the street system or traffic signals.
- Inadequate lighting along sidewalks at night.
- Inadequate treatments for pedestrians with disabilities.
- No consideration given to walking amenities, such as benches, protection from sun or wind, and landscaped plantings.
- Overly long trip distances between residential, commercial or employment areas.
- Interruption in sidewalk service to common destinations, including bus stops. Utility poles, low trees or other barriers placed in the sidewalk.

Presently, there are 51 miles of existing sidewalks within the City of Keene. Most of these sidewalks exist in the downtown area and along the City's major collector and arterial streets. The City of Keene is fortunate to have an extremely pedestrian-friendly downtown. However, as you leave the downtown area there are many streets which have no sidewalks at all. The last sidewalk study completed for Keene was conducted in 1986/87. This study identified almost 30 streets in the City needing sidewalks. As a result, the CIP now provides for $50,000 per year for the construction of new sidewalks in Keene and new sidewalk projects have been recently completed along Ralston, Park and Island Street.

The Public Works Department is responsible for sidewalk construction and maintenance and it has recently prepared rating criteria for scheduling future sidewalk construction work. These criteria include level of pedestrian and vehicle traffic, proximity to schools and parks, existence of sidewalks on streets, and safety issues. Additional criteria related to the availability of right-of-way and ease of construction will be added to the list.

The City's construction standards require sidewalks to be built on both sides of new streets in residential areas and one side in commercial areas. These standards also require sidewalks to be 6 feet in width with a surface of either 4 inches of concrete or 2 inches of asphalt.

Sidewalks and dedicated bicycle path facilities eventually will form the bulk of the pedestrian circulation system in Keene. These facilities need to be planned to connect with existing trails and paths, with major points of origins and destinations, with public transit, and with future park-and-ride lots. A high priority should also be given to creating improved pedestrian connections between high-density residential areas and local employers and businesses. Pedestrians need facilities that will not force them either to be dependent on automobiles or to take the risk of walking in unsafe circumstances; they need convenient and low risk linkages between areas of destination. Particularly, they need safe linkages between residential and commercial areas. Walking must be recognized as not only a safety issue, but also as a health and access issue.

As the City's roads get bigger and wider and more motor vehicles travel faster, people make less walking trips and are either forced to make short auto trips or jeopardize their safety with mid-block crossings due to the great distances between intersections. Designing the right pedestrian system encourages people to make walking trips instead of short vehicle trips. A well designed pedestrian system will also reduce air pollution generated at the beginning and end of each auto trip

- In developing and implementing a community wide pedestrian circulation system, sidewalk continuity throughout Keene should be given a priority.
- Development within Keene that enhances the pedestrian experience should be encouraged: easy access to buildings, shelter from the elements (shade trees and awnings), visual interest and security.
- The need for sidewalks should be included as an integral part of the site plan review process. Also, the need for crosswalks and mid-block crossings as a result of development need to be considered.
- Funding for sidewalk, crosswalk and other infrastructure standards should updated and increased.

- All sidewalks within the City should meet or exceed the *Americans with Disabilities Act* standards and the New Hampshire *State Barrier Free Design Code*.
- Vegetative buffers in the form of trees and planting strips should be provided where feasible between the sidewalk and the street, for safety purposes.
- Also, utility poles and signs should be restricted from being located or placed directly within the sidewalk.

B. Project Implementation Table

C. Bicycle/Pedestrian Master Plan Map

D. Statewide Bike Route Plan

E. City Ordinance 0-96-29

F. Summary of State Laws Regulating Bicycles & Pedestrians