Chapter X
TRANSPORTATION

INTRODUCTION

The Town of Pembroke is situated between the City of Concord and the urban area around the City of Manchester. With US Route 3 traversing the entire length of the community a large amount of regional commuting traffic travels through Pembroke every day. Added to that regional traffic are the nearly 7,000 residents of Pembroke who utilize US Route 3 and NH Route 106 to access residences, businesses, schools, and a multitude of other services and daily needs. This combination of local land uses with local and regional traffic has created two very congested major roadways in central New Hampshire. The Town of Pembroke has realized the importance of preserving these two travel corridors and has explored options for the construction of parallel roads that would help alleviate the reliance of residents on them.

NH Route 106 serves a large portion of Pembroke's commercial and industrial employers. Connecting US Route 3 with a major commercial and industrial area of Concord and other points to the north, including the Lakes Region, NH Route 106 plays a key role in both Pembroke and the region. The Town has discussed exploring connections between businesses along NH Route 106 and the creation of an access road to help preserve the transportation corridor. While US Route 3 and NH Route 106 are two vital roads in Pembroke, the transportation system includes many other types of roads and other modes of travel.

In the Community Survey distributed to all residents at the onset of the update of the Master Plan, a majority of respondents indicated that they would support the extension of Concord Area Transit into Pembroke. While an extension of Concord Area Transit would have only a small impact on the congestion on US Route 3, it would bring a service to many people who are otherwise unable to easily access services. Concord Area Transit has also expressed an interest in expanding into Pembroke and is only waiting for funding to become available and for the appropriate time as an organization.

Where many of the local roads, both major and minor, intersect with US Route 3 and NH Route 106 the Town has expressed safety concerns. Due to the sheer amount of traffic on both roads during the peak travel hours it can be extremely difficult to access the local roads. The Town of Pembroke has already sought assistance from the New Hampshire Department of Transportation for a few of these intersections, there remain many where access is an issue.

As the Town of Pembroke and the entire region continue to grow, the issues of congestion and access will only become more crucial to the residents of Pembroke. Through this update to the Master Plan the Town of Pembroke will have the opportunity to explore options and outline some steps that should be taken.

OBJECTIVES OF THE CHAPTER AND RECOMMENDATIONS

These Objectives were developed as a result of Subcommittee analysis and interpretation of the data contained within the following Chapter and from concerns raised from Pembroke residents and landowners from the Community Survey. They are listed in the beginning to give the reader the opportunity to view the results without reading through the entire Chapter.

- To provide a highway and streets system that allows for the safe and efficient movement of people and good throughout Pembroke.

  - Review the study conducted by REI, Inc. and implement steps to complete the suggested parallel road to US Route 3 along 3rd Range Road between Cross Road and Belanger Drive.

  - Determine the potential for adding a parallel road to Borough Road between North Pembroke Road and Clough Mill Road.

  - Explore possibilities for upgrading North Pembroke Road (examples would include the use of parallel roads and acquisition of easements for potential widening.)

  - Regulate and maintain safe sight distance at road intersections.

- To protect the village and historic character along Pembroke's local and major roads while maintaining their viability as travel corridors.

  - Research regulations and policies of other Towns to determine their approach to this issue.

  - Give more weight to the existing Architectural Design District by providing better definitions.

- To address safety and development concerns on Class VI roads on a priority basis.

  - Protect rights of public and private property owners to use roads and access property along them.

- To evaluate the transportation impact of any proposed development that requires subdivision or site plan review and recommend action in a timely manner.

    - Implement steps to provide safer access to main arteries.

    - Require developers to look at traffic safety issues and road network requirements.

    - Limit the number of entry points along roadways when possible (examples would include exploring options for shared driveways.)

- To sustain and enhance the opportunities for safe pedestrian activities throughout Pembroke.

    - Identify locations for additional crosswalks where warranted (such as at intersection of Dearborn and Route 3).

    - Recommend that when roads with adjacent sidewalks are rehabilitated, the sidewalks are also rehabilitated as part of the overall project.

    - Maintain the existing sidewalks and their right-of-ways to enhance pedestrian safety.

COMMUNITY SURVEY RESULTS

The March 2003 Community Survey yielded 780 replies from 2956 surveys distributed, which equals a 26.4% return rate. The following questions were pertinent to the **TRANSPORTATION CHAPTER**. The full survey results are displayed in the **APPENDIX CHAPTER**.

Please write in your estimated travel time and method of transportation to work for all employed persons (16 years old and older) in your household?

Part of the question also included a space to write in to where the employed persons were commuting. The top five responses were Concord or Penacook (36.4%), Manchester (16.3%), Other NH Town (12.3%), and Pembroke or Suncook (11.4%). The top four choices represented 76.4% of all responses.

A second part of the question was concerning the estimated travel time for each employed person. Of 1, 011 responses to this question, 22% of respondents indicated they had a commute of ten minutes or less, 35% responded in the ten to twenty minute commute, 20% answered a twenty to thirty minute commute, 19% had a commute between thirty and sixty minutes, and 5% had a commute longer than one hour.

The third portion of the question inquired about the method of transportation to work for each employed person. Of the various locations employed people in Pembroke travel to, the vast majority utilize single occupancy vehicles. The results showed that more than five commuters utilized other means of transportation to work besides single occupancy vehicles for travel to only two locations; Concord or Penacook (seven) and Pembroke or Suncook (nineteen).

In your opinion, what is the general year-round condition of the roads you travel in Pembroke?

In response to this question, 351 (46.4%) rated the condition as Good and 310 (41.0%) rated it as Fair. Only a small portion of survey respondents, 91 (12.0%), indicated that the general condition of roads was poor.

If Pembroke were to construct new roads, where should they be built?

A substantial number of respondents indicated that road construction should be directed at the Range Roads (13.9%) and at the existing roads (11.3%). Additionally, 17.2% of survey respondents did not want any new roads and 27.2% indicated a wide range of other locations around the Town of Pembroke.

Would you support an extension of the Concord Area Transit (CAT) bus service into Pembroke?

A majority of survey respondents (55.1%) indicated that they would support such an extension. An additional 18.2% were unsure and 9.4% had no opinion.

In order to help Town officials better direct their efforts, please rate each of the following municipal services?

Road maintenance was among the wide range of municipal services listed in this question. A substantial majority (78.6%) felt that road maintenance was either Good or Fair.

BACKGROUND INFORMATION

Functional Highway Classifications

A method, by which public roadways are classified, relevant to long-range planning of roadway improvements is based on primary function, type of service, or the roadway's relation to the community transportation system as a whole. These divisions are used to determine roadway design standards and to locate funds that may be used for needed roadway improvements. In order to be eligible for some types of improvement funds, highways must be a certain level of functional class. The five basic functional classifications are described below.

Principal Arterial

Principal arterial roadways form the basic framework of the State roadway system. They primarily function as the main routes for interstate commerce and traffic. In addition, they also link major geographic and urban areas to economic districts of the State. Ideally, access to these roads by abutting parcels is not permitted or is highly restricted.

Minor Arterial

These roadways serve as long distance traffic movements, and are secondary to primary arterials in that minor arterials tend to serve as links between major population areas or between distinct geographic and economic regions.

Major Collector

These roadways differ from arterials due to size and general service area. Collectors serve traffic in a specific area, whereas as arterials generally serve traffic moving through an area. Thus, average trip lengths on collectors are shorter than trips on arterial. Furthermore, collectors gather traffic from local roads and streets and distribute them to arterials.

Minor Collector

These roads provide access to smaller communities within a geographic area or economic region. They may link locally important trip generators, such as shopping centers to surrounding rural areas. They also serve as links between two or more major collectors.

Local Roads

These roads and streets primarily provide access to adjacent properties. These roads have numerous turning movements in and out of abutting driveways and curb cuts.

The State of New Hampshire Department of Transportation assigns a functional classification to all of the state roads. In addition, the Town of Pembroke has developed a functional classification system for the major roads within town which is illustrated in the ***Functional Highway Classification Map***.

State Aid Highway Classifications

Another system used to classify roadways in New Hampshire is the State Aid Highway Classification System. This system was created under the requirement set forth by RSA 229-231 to determine the responsibility for the reconstruction and maintenance of roadways located in the State. This system is also used to determine the eligibility of roads for State funding. Classifications are comprised of six categories (Class I through Class VI highways).

Class I, Trunk Line Highways

This classification consists of all existing and proposed highways on the primary state system, except all portions of such highways within the compact sections of communities, providing said sections are Class I highways. Examples nearby include Interstates 93, 89, and 393.

Class II, State Aid Highways

This classification consists of all existing and proposed highways on the secondary state systems, except those in compact sections of cities and towns. All sections of these roadways must be improved to the satisfaction of the NHDOT Commissioner and are maintained and reconstructed by the State. The Town must maintain all unimproved sections of these roadways, where no state or federal monies have been expended, until they are improved to NHDOT satisfaction. All bridges maintained with state or federal funds shall be maintained by the State, while all other bridges shall be the responsibility of the municipality.

Class III, Recreational Roads

This designation is assigned to all roads leading to, and within, state reservations designated by the NH Legislature. The NHDOT assumes all responsibility for construction and maintenance.

Class IV, Urban Highways

This designation is assigned to all highways within the compact areas of municipalities listed in RSA 229:5, V. The compact section of any city or town shall be the territory within such city or town where the frontage on any highway, in the opinion of the DOT Commissioner, is mainly occupied by dwellings or buildings where business is conducted, throughout the year. No highway reclassification from Class I or II to Class IV shall take effect until all rehabilitation needed to return the highway surface to reputable condition has be completed by the State.

Class V, Rural Highways

This classification consists of all traveled highways which the town or city has the duty to maintain regularly, paved or unpaved.

Class VI, Unmaintained Highways
Roads under this category consist of all other public ways, including highways subject to gates and bars, and highways not maintained in suitable condition for travel for more than five (5) years.

Table X-1
Summary of State Owned Roads within Pembroke

Road / Description	Maintenance	Plowing
US Route 3	State	State
NH Route 28	State	State
Academy Road	State	State
Broadway Street	State	Town
Main Street	State	Town
Buck Street	State	State – From Academy Road to NH Route 28 Town – From Main Street to Academy Road

Source: Subcommittee input

Table X-1 summarizes the roads within Pembroke owned by the State of New Hampshire and the maintenance and winter plowing responsibilities of both the Town and the State for those roads. The ownership of a road is essential when discussing options for improving pedestrian or vehicular safety, ideas concerning access management, or maintenance plans.

The Town does not receive any funds through the Block Grant Aid program to perform the plowing on state roadways. In some cases it may benefit the Town to seek assistance in reconstructing or repaving the state roads and then requesting that ownership be transferred to the town. This transfer would give the community greater control over speed limits, parking, and many other aspects of the road. The community would also receive funds through the Block Grant Aid program. However, future maintenance responsibilities would reside with the Town which would increase the financial burden. While this is certainly a drawback to having ownership of the road, it also allows the community to address the maintenance concerns as needed based on local priority instead of waiting for the State.

Traffic Counts
The New Hampshire Department of Transportation conducts traffic counts at hundreds of locations around the State on a three-year cycle. In many cases, counts at a specific location may go back ten or more years, providing a sense of how traffic has changed over the years. For some time now, the CNHRPC has conducted a municipal traffic counting program. This program enables municipalities to request traffic counts at a few specific locations around a town. Between the counts collected by the NHDOT and the CNHRPC over the years, there exists a wealth of traffic count data for the Town of Pembroke. Traffic count locations are depicted on the ***Accident Locations, Traffic Count Locations, Bicycle and Pedestrian Infrastructure Map***.

Table X-2 displays counts collected by both the CNHRPC and the NHDOT over the past several years. The counts are displayed in two different formats. Figures that are shown as rounded numbers (e.g. 700) are Annual Average Weekday totals. These counts have been processed to show the average weekday traffic over an entire year and better represent typical vehicle volumes. Figures in the table that are not rounded (e.g. 1,057) are displayed as Average Weekday totals. These counts are directly from weeklong counts and are subject to seasonal and weekly traffic flow variations.

Table X-2
Traffic Counts, 1995-2003

Site Code	Road	Location	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
361058	North Pembroke Rd.	At Ames Brook	660	780	880	-	-	1000	-	-	-	-	1272
361539	North Pembroke Rd.	At Concord TL	-	-	-	-	-	-	-	-	-	-	1669
361060	I-393	At Horse Corner Rd. Bridge Exit 3-4	13000	11000	15000	15000	16000	16000	16000	16000	-	-	-
361538	Borough Rd.	At N. Pembroke Rd.	-	-	-	-	-	-	1412	-	-	-	-
361536	N. Pembroke Rd.	At NH 106	-	-	-	-	-	-	-	-	-	-	-
361053	NH 9	At Soucook River	-	-	-	-	6800	2100	-	-	-	-	11031
361535	Bow Ln	Btw. US 3 and Nadine Drv.	-	-	-	-	-	-	-	655	-	-	-
361050	NH 106	Concord TL	-	8000	7500	-	7800	-	-	5500	-	-	13020
361531	Pembroke Hill Rd.	E of US 3	2279	-	-	-	-	-	1266	-	-	-	-
336521	Fourth Range Rd.	E. of Borough Rd.	851	-	-	-	-	-	967	-	-	-	-
361521	Eighth Range Rd.	E. of Borough Rd.	-	-	-	-	-	-	1624	-	-	-	-
361527	N. Pembroke Rd.	E. of Borough Rd.	-	-	870	-	-	-	-	-	-	-	-
361500	Academy Rd.	E. of Cross St.	-	2361	-	-	-	-	-	-	-	-	-
361513	Church St.	E. of Cross St.	-	-	-	310	-	-	-	-	-	-	-
361509	Buck St.	E. of Dudley Hill Rd.	-	-	-	2443	-	-	-	-	-	-	-
361510	Central St.	E. of Main St.	-	-	450	-	-	-	-	-	-	-	-
361537	Borough Rd.	E. of NH 106	-	1460	-	-	1681	-	-	-	-	-	1965
361505	Brickett Hill Rd.	E. of US 3	-	-	-	1329	-	-	-	-	-	-	-
361512	Church St.	E. of US 3	509	-	-	-	-	-	-	-	-	-	-
361517	Dearborn Rd.	E. of US 3	-	-	-	806	-	-	-	-	-	-	-
361540	Pembroke Hill Rd.	East of third Range Rd (school in session)	-	-	-	-	-	-	-	-	-	-	534
361052	Buck St.	East of US 3	-	-	1700	-	-	-	-	-	-	-	-
361069	Academy St.	East of US 3 (Pembroke St)	-	3100	-	-	-	-	-	-	-	-	-
361504	Brickett Hill Rd.	N. of US 3	-	-	-	-	-	-	-	-	-	-	-
361516	Dearborn Rd.	N. of US 3	-	-	-	-	-	-	-	-	-	-	-
361502	Academy Rd.	Near Black Water Bridge	-	-	-	2865	-	-	-	-	-	-	-
361065	Buck St.	Over Hartford Brook	-	1100	-	-	-	1300	1600	-	-	-	1387
361064	Old NH 28	Over Pettingill Brook	-	2000	-	-	-	2400	-	-	-	-	-
361066	Main St.	Over Suncook River	-	4600	-	-	-	6800	-	-	-	-	-
361511	Church St.	S. of Central St.	1089	-	-	-	-	-	-	-	-	-	-
361532	Turnpike St.	S. of Main St.	-	-	430	-	-	-	-	-	-	-	-
361514	Cross Country Rd.	S. of N. Pembroke Rd.	-	-	250	-	-	-	-	-	-	-	-
361534	US 3	S. of NH 106	-	13200	-	-	-	-	-	-	-	-	-
361506	Broadway St.	S. of US 3	-	3279	-	-	-	-	-	-	-	-	5139
361542	Smith Ave.	South of Dearborn Rd.	-	-	-	-	-	-	-	-	-	-	460

Site Code (cont.)	Road	Location	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
361068	Broadway St.	South of Hillcrest Ave.	-	3600	-	-	-	-	-	-	-	-	-
361048	US 3 SB	South of Meetinghouse Brook	-	-	-	-	-	-	-	-	-	8760	-
361049	US 3 NB	South of Meetinghouse Brook	-	-	-	-	-	-	-	-	-	8722	-
361059	US 3	South of Meetinghouse Brook (SB-NB)	13000	13000	-	14000	13000	-	-	12000	-	-	-
361051	US 3	South of NH 106	12000	-	-	14000	14000	-	14000	-	-	-	14045
361070	US 3 SB	South of NH 106	-	-	-	-	-	3600	-	-	-	8364	7895
361071	US 3 NB	South of NH 106	-	-	-	-	-	2800	-	-	-	8295	7596
361067	Broadway St.	South of North Main St.	-	3400	-	-	-	3800	-	-	-	-	-
361547	Smith Ave.	South of Tina	-	-	-	-	-	-	-	-	-	-	384
361530	Old Buck St.	W. of Buck St.	-	-	190	-	-	-	-	1413	-	-	-
361520	Eighth Range Rd.	W. of Country & Tobin Rds.	-	-	-	-	-	-	-	-	-	-	-
361523	Front St.	W. of Main St.	1453	-	-	-	-	-	-	-	-	-	-
361528	N. Pembroke Rd.	W. of NH 28	-	-	-	-	1005	-	-	1302	-	-	-
361508	Buck St.	W. of Old Buck St.	-	-	-	-	-	-	-	-	-	-	-
361518	Donna Drive	W. of US 3	-	-	-	-	1352	-	-	-	-	-	-
361507	Buck St.	W. of Wilkins Rd.	1547	-	-	-	-	-	-	-	-	-	-
361057	Pleasant St.	West of Broadway St.	-	-	-	-	1500	1300	-	-	-	-	-
361541	Pembroke Hill Rd.	West of third Range Rd. (school in session)	-	-	-	-	-	-	-	-	-	-	958
361056	North Main St.	West of Turnpike St.	-	-	-	-	-	-	-	-	-	-	

Source: CNHRPC and NHDOT traffic counts

Regular monitoring of sites during peak months is critical in the planning process, as accurate projections are required for logical transportation and land use planning.

Table X-3
Multi-Year Trends at Same Location

Road	Location	Years	Annual Percent Change	Total Percent Change
NH Route 106	Concord City Line	1995 to 2003	8.5%	70%
US Route 3	South of NH Route 106	1996 to 2003	0%	0%

Source: NHDOT and CNHRPC traffic counts

This data should be utilized to begin to identify corridors that may become threatened in the future by current development trends. In locations where traffic has increased significantly, land use trends and access management policies should be closely examined and modified to best maintain and promote an efficient transportation network.

Table X-3 illustrates the growth in traffic on NH Route 106 over the past several years. Over a period of nine years traffic has increased substantially at a rate that is much greater than has been observed on other major roads in this area. An annual growth rate of 2% to 4% is fairly typical of major roads in the region. The Town of Pembroke, the City of Concord, and the New Hampshire Department of Transportation should continue to monitor traffic and safety on NH Route 106.

Accident Analysis

One of the most useful and obvious methods of identifying where transportation improvements may be needed is to analyze the location, frequency, and type of accidents that occur at various locations in the community. For the period of 1998 to 2002, a total of 554 locatable accidents occurred in Pembroke. Table X-4 shows areas where ten or more accidents have occurred over that time period.

Table X-4
Traffic Accidents, 1998-2002

Road	Closest Major Location(s)	# of Accidents
US Route 3 (Pembroke Street)	Total On US Route 3	209
	Academy Road	15
	Beacon Hill Road	6
	Bow Lane	7
	Brickett Hill Road	10
	Broadway Street	17
	Main Street	6
	Pembroke Hill Road	13
	NH Route 106	19
	Sherwood Meadows	5
North Pembroke Road	Total on North Pembroke Road	47
	Borough Road	9
NH Route 106	Total on NH Route 106	41
	US Route 3	11
	Borough Road	10
NH Route 28	Total on NH Route 28	39
	North Pembroke Road	14
Academy Road		25
Buck Street		22
Glass Street		20
Main Street		16
Cross Country Road		14
4th Range Road		13
Borough Road		10
Broadway Street		10
Church Road		10

Source: Accident data – Pembroke Police reports processed by CNHRPC

Table X-4 above illustrates some of the key areas where recent accidents have occurred in Pembroke. Of particular note is the sheer volume of accidents that occur on US Route 3 in Pembroke, 209 over the five-year period which represents 38% of all accidents in Pembroke. The large number of access points on US Route 3 and the dual nature of the road, functioning as both a regional commuting corridor and a local street, undoubtedly contribute the substantial number of accidents. Accident locations are depicted on the ***Accident Locations, Traffic Count Locations, Bicycle and Pedestrian Infrastructure Map***.

The Town of Pembroke has explored options to construct an alternative parallel road to US Route 3. By helping alleviate the amount of local traffic on US Route 3 this alternative route may help reduce the number of accidents and overall amount of traffic on US Route 3.

Table X-5
Total Number of Accidents, 1998-2002

	1998	1999	2000	2001	2002
Total Accidents	95	92	125	121	120

Source: Accident data - Pembroke Police reports processed by CNHRPC

Accident data serves as one tool in identifying potential hazardous intersections; however, it is only a piece of the overall picture. Local knowledge is of key interest to understanding why intersections work the way they do and why some are more dangerous than others. While there was a jump in the numbers of accidents reported between 1999 and 2000, over the last several years the figures have remained consistent. If any large changes in the number of accidents per year are observed, the Town should investigate the causes behind them.

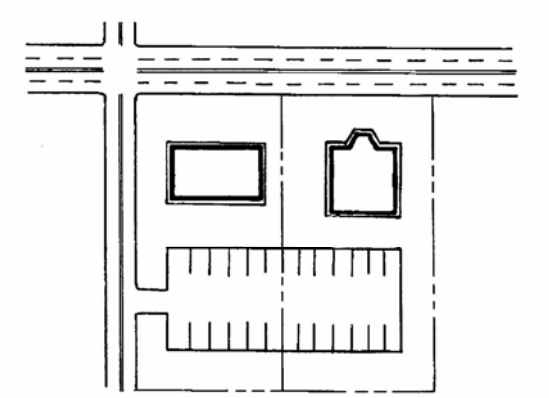
ACCESS MANAGEMENT

The goals of access management are to reduce congestion, increase safety, and implement coordinated land use and transportation plans. Often access management can be improved by focusing on smaller site improvements, like defined entryways and exits, shared driveways, and connections between adjacent subdivisions. These types of facilities are easiest to implement as part of a new development and are sometimes required by a municipality. Improvements to existing facilities can also greatly enhance the capacity and character of a roadway, but a more cooperative approach is required between the Town and the landowner to plan, fund, and complete the improvements.

Other opportunities exist to enhance access management by better coordinating planning efforts like a Master Plan, Zoning Ordinances, Subdivision Regulations, and impact fee ordinances. The Master Plan can set the stage for improvements by clearly identifying goals for the transportation network. Zoning Ordinances can further aid in the process by tailoring frontage requirements, lot sizes, signage and architectural standards, and possibly by identifying overlay districts. The Zoning Ordinance can also depart from the normal strip zoning along roadways and adopt a nodal approach. In the nodal approach, development focuses in denser areas along a roadway, with open space or less traffic-intensive development between nodes. Using Subdivision Regulations, a community can further improve access management by having provisions for shared driveways and connector roads between subdivisions.

Shared Access Points
All new site plans on heavily traveled roadways could have shared access points with abutting parcels. This will reduce the number of driveways (curb cuts) on major roadways, and improve traffic movement and safety conditions.

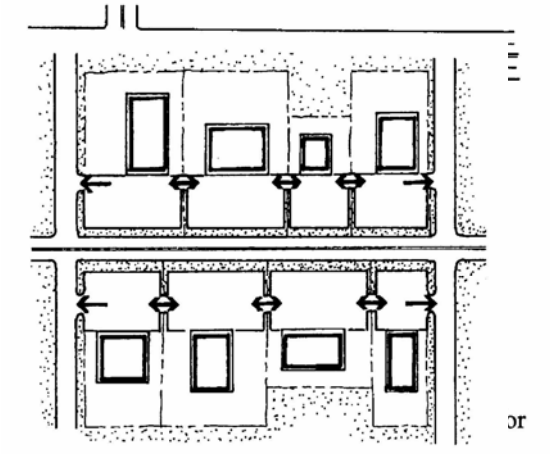
Figure X-1
Shared Access Points



A single access point from a collector road for two adjacent businesses

Interconnected Sites
Developers could provide rights-of-way to connect commercial and multi-family sites, thus creating parallel access roads along major roadways. This will help to reduce congestion and slow the need to expand highway capacity.

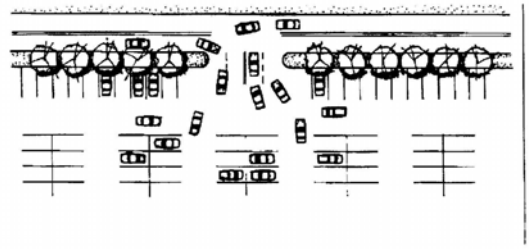
Figure X-2
Interconnected Sites



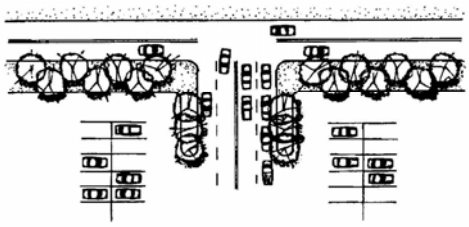
Interconnecting commercial sites

Figure X-3
Minimum Driveway Throat Lengths

Minimum Driveway Throat Lengths
A minimum driveway throat length could be defined for commercial and large multi-family developments in order to help better define internal traffic movements at those sites.



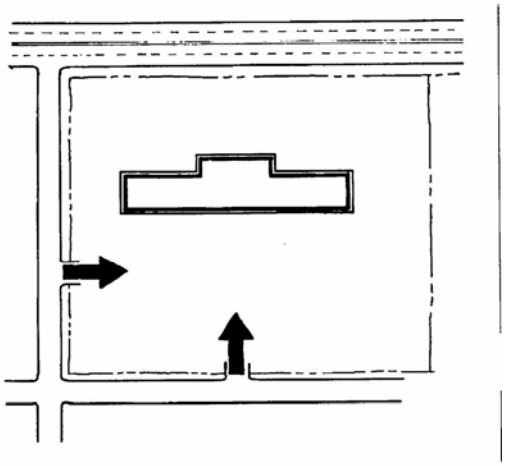
A short throat length can cause confusion and danger at the entrance to a site.



A appropriate throat length allows vehicles to enter and exit a site in an orderly and safe fashion.

Figure X-4
Corner Lot Access Points

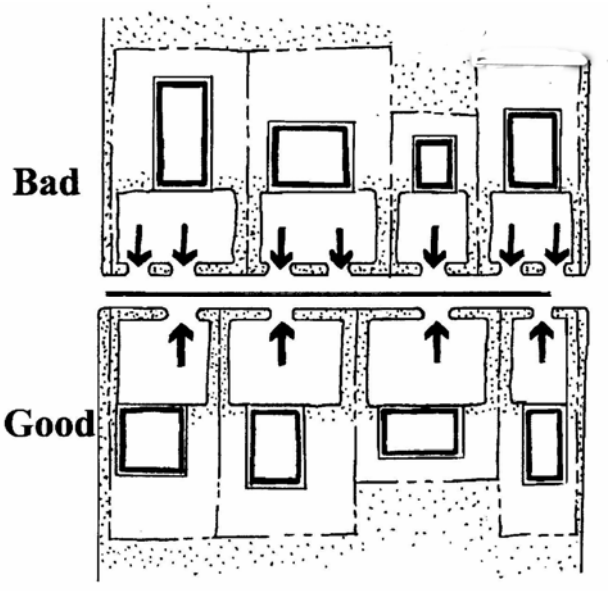
Corner Lot Access Points
All corner lots fronting a major road could be accessed from the adjacent local or collector road, not the major roadway. Again, this will reduce congestion and improve safety.



Access to a corner lot should be from a local or collector road instead of an arterial

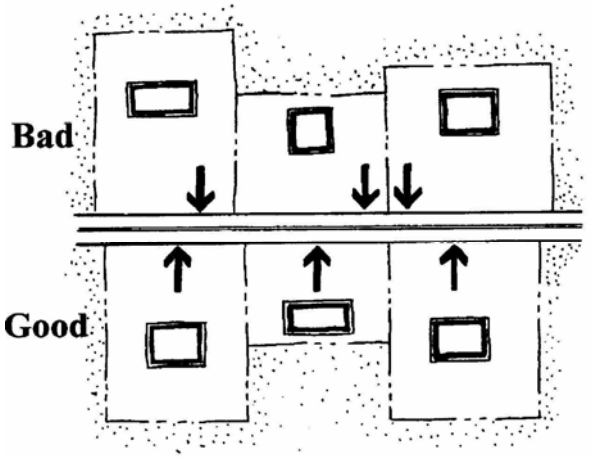
Distance Between Driveways
A minimum distance between commercial and multi-family driveways on major roadways could be set in order to better streamline turning movements and improve safety. The largest feasible distance between driveways should be encouraged.

Figure X-5
Distance Between Driveways



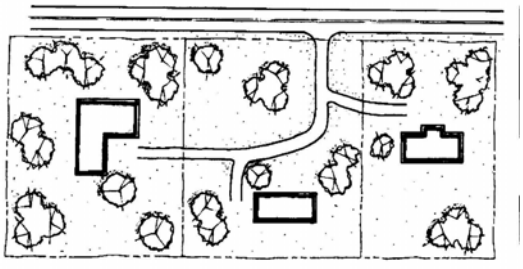
Number of Driveways Per Lot
The Planning Board should limit the number of driveways for parcels fronting major collector or arterial roadways. Furthermore, continuous, undefined driveways should be prohibited, as such driveways often confuse drivers and contribute to accidents.

Figure X-6
Number of Driveways Per Lot



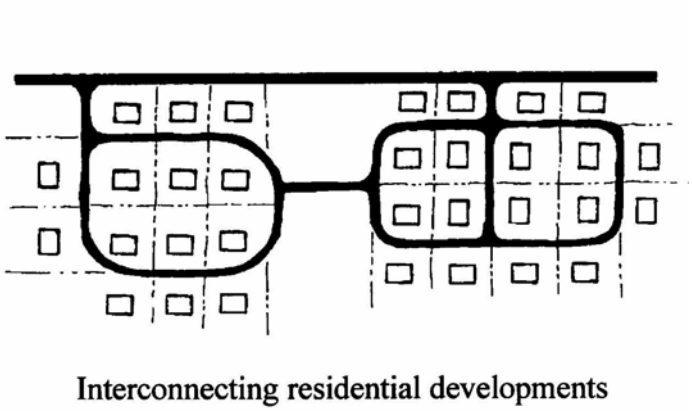
Shared Driveways
Shared driveways should be constructed for subdivisions on major roadways. This would improve traffic flow and safety conditions of the roadway. The Planning Board, when reviewing developments proposing shared driveways, should require all proper easement and maintenance agreements to be incorporated into the deed of each parcel. In some cases this arrangement can accentuate disputes between neighbors over maintenance of the driveway, however, the town has no responsibility to become involved with the dispute.

Figure X-7
Shared Driveways


A single access point for three residences

Connect Adjacent Roadways
Developers could design subdivisions to connect with other public roadways in other subdivisions.

Figure X-8
Connect Adjacent Roadways



This type of connection, while often not popular with residents who want to live on quiet streets, does provide a number of benefits to the residents and to the town in general. The interconnection helps preserve the main roadway by creating a way for neighbors to drive to one another's house without accessing the main road. The connection also provides an additional access point for emergency vehicles and can help foster an expanded neighborhood feel to the developments.

PEMBROKE'S TRANSPORTATION SYSTEM

Pedestrian Infrastructure

Pedestrian facilities, such as paved sidewalks and gravel walking paths, are critical features for roadways with high volumes of traffic or high speeds where pedestrian activities naturally occur or wish to be encouraged. The primary purpose of a sidewalk is to improve safety for pedestrians by separating them from the travel lanes of roadways. In addition to this, sidewalks can also serve as a source of recreation for residents, serve to beautify an area, or stimulate economic activity in rural and village settings.

Speed limits have been the usual method of improving pedestrian safety and other non-motorized modes of travel. In both rural and urban areas, the minimum speed limit a municipality can impose is 25 miles per hour. Limits can be made lower at intersections (RSA 265:63, (a)) and in school zones (265:60, II (a)). Crosswalks on local streets are a form of traffic regulation and therefore must be approved by the Board of Selectmen. Crosswalks located on State roads must be installed and approved by NHDOT, but are maintained by the Town.

Many communities in the United States are now exploring further means beyond sidewalks that place pedestrians and other non-motorized modes of travel on a more even level with motorized traffic. These measures, collectively called traffic calming, use the physical design of the roadway to prevent inappropriate automobile speeds. Most often they are used in residential or downtown areas where residents see the road as part of their neighborhood and a place where walking, recreation, and social interaction can safely coexist with motorized traffic.

Existing Sidewalks

The sidewalks in Pembroke are listed in Table X-6 below:

Table X-6
Existing Sidewalks

Road	Road
Academy Road	Main Street
Alexander Drive	Maple Street
Belanger Drive	Mason Avenue
Brickett Hill Road	Middle Street
Brittany Circle	Mill Falls
Broadway Street	Pembroke Street
Buck Street	Pembroke Hill Road
Central Street	Pine Street
Church Street	Pleasant Street
Crescent Street	Prospect Street
Cross Road	Riverview Way
Exchange Street	Terrace Lane
Front Street	Third Range Road
Glass Street	Turnpike Street
High Street	Union Street
Kimball Street	

Source: Action Plan For Existing Sidewalks, KNA - 2000

One issue that is common among many communities and has been expressed in Pembroke is the issue of sidewalk maintenance. In most communities, roadways are more visible and are more important to the residents. This often creates a situation where proportionally more money is directed toward road maintenance than to sidewalk maintenance. When this occurs, over time a community's sidewalks deteriorate and discourage residents from using them. To encourage walking throughout a community, the sidewalks need to be maintained with a priority similar to that of the roadway system.

The Town of Pembroke has a substantial and thorough plan for sidewalks in Town called the "Action Plan for Existing Sidewalks". To assist with creating the plan, the Town contracted with Keach-Nordstrom Associates, Inc. The Plan outlines a logical approach to maintaining existing sidewalks within the Town of Pembroke and provides a thorough inventory of each sidewalk's location and condition. The Plan did not address any expansion to the existing sidewalk system within Pembroke. Current practice of the Town is to require that sidewalks be constructed in any new developments that are near a school. The Town may also explore constructing new sidewalks to fill any current gaps in the sidewalk system.

Pedestrian Crossings

Unlike sidewalks, crosswalks need not be expensive to create and when they are constructed properly at a location chosen with care, they can improve pedestrian safety. However, crosswalks do not stop vehicles and if they are striped without the utmost caution, they can be more hazardous to pedestrians and vehicles than not having designated crossing areas at all.

The Town of Pembroke has a number of marked pedestrian crosswalks around the community. There are several located adjacent to Main Street and Glass Street in the village area, one located at the intersection of Broadway and US Route 3, one at the intersection of Academy Road and Route 3, and one on Pembroke Hill Road. Pedestrian infrastructure is depicted on the ***Accident Locations, Traffic Count Locations, Bicycle and Pedestrian Infrastructure Map***.

Bicycle Infrastructure

Planning for a bicycle network requires a different approach from that of motorized transportation planning. Bicyclists have different needs than those of motorists, including wider shoulders, more sensitive traffic control at intersections, and stricter access management. Often, roadways are designed solely with motor vehicles in mind and Pembroke is no exception to this. In some cases, consideration for bicycles may not actually be beneficial to all users.

There currently exists a Statewide and a Regional Bicycle Route System with components in the Pembroke area. The Statewide System was established to link commuting nodes throughout the State with one another; for example, connecting Concord to Hooksett to Manchester. The Regional network, of which US Route 3, NH Route 106, and NH Route 28 are part of, connects other communities to the statewide system and to one another. Bicycle infrastructure is depicted on the ***Accident Locations, Traffic Count Locations, Bicycle and Pedestrian Infrastructure Map***.

At this time there are no plans to make improvements specific to bicycles to roads that are on either the statewide or regional bicycle route system. Instead as other improvement projects and regular maintenance activities are undertaken on these roads, where practical improvements in the form of wider shoulders may be included. If a community were requesting funds through some type of funding program, like Transportation Enhancements to make improvements, a road being on either of the two systems could strengthen the project application.

Traffic Calming

Traffic calming suggests road design techniques using active or physical controls (lumps, barriers, curves, rumble strips, etc.) and passive controls such as signs and traffic regulations to reduce speeds. Traffic calming measures foster safer and quieter streets that are more hospitable to cyclists, pedestrians, and joggers. The potential benefits of traffic calming include reduced traffic speeds, reduced traffic volumes by discouraging "cut-through" traffic on residential streets, and often improved aesthetic quality of streets. An example of some traffic calming techniques include:

Speed Humps, Speed Tables, and Raised Crosswalks: All of these techniques involve raising the height of the pavement in a more subtle fashion than with a speed bump, allowing vehicles to pass over them at the intended speed of the road, but preventing excessive speeds and alerting drivers to the existence of non-motorized users.

Chicanes or Medians: These effectively narrow road width and slow down traffic by placing a physical impediment either in the middle of the road (median) or on the side of the road (chicane). These lend themselves to landscaping and improve the visual experience for all users of the road, as well as reducing speeds. Both techniques can provide additional safety for crossing pedestrians. Medians may serve as a refuge by allowing pedestrians to cross one lane of travel at a time, while chicanes provided at crosswalks (curb bulbs) reduce the overall distance from one side of the road to another and slow down traffic at those crossings.

Modern Roundabout: Not to be confused with a traditional high-speed rotary or traffic circle, this is an intersection treatment that forces motorized traffic to slow down to speeds under 25 mph in order to negotiate a center island that can be landscaped. Such speeds allow pedestrians to safely cross around the perimeter of the roundabout and cyclists to safely become a part of the circulating traffic.

Private Roads

Private roads are roads that have been constructed but, for various reasons, are not Town-owned roads. There is currently limited Town adopted policy regarding private roads, their construction, maintenance, or the Town's acceptance of them. Emergency services also have concerns about their ability and duty to respond to calls for assistance from residents on private roads. Many communities do perform minimal maintenance and/or snow removal on private and class VI roads, but the town must understand and follow the NH laws and case examples dealing with these activities.

In the NH case of *Clapp v. Town of Jaffrey* the Court supported the constitutional requirement that public funds be spent only for public purposes. The Court found that plowing of private roads would only be legal if the activity is secondary and incidental to the town and that those benefiting from the plowing reimburse the town so that no public funds are spent.

In 1994 the NH Legislature enacted RSA 231:59-a "Emergency Lanes" as a means for communities to provide snow removal and minimal maintenance to private and class VI roads. The RSA stipulates that for the town to undertake such maintenance, the road must be declared an "emergency lane". A public hearing must be held to declare any private road as such and notice be given to all those with an interest.

The ***Private, Gravel, Class V, and Scenic Roads with Bridges Map*** illustrates the locations and names of private roads known to be found in Pembroke.

Class VI Roads and Trails

Class VI roads are roads that are not maintained by the Town, may be subject to gates and bars, and are almost always gravel or unimproved dirt. A Class V road can become a Class VI road if the Town has not maintained it for five years or more.

State Statute also addresses Class VI roads and any potential building along them in RSA 674:41. Under this RSA, section I(c), for any lot whose street access (frontage) is on a Class VI road, the issue of whether any building can be erected on that lot is left up to the "local governing body" (Town Selectmen) who may, after "review and comment" by the Planning Board, vote to authorize building along that particular Class VI road, or portion thereof. Without such a vote, all building is prohibited. Even if the Board of Selectmen does vote to authorize building, the law states that the municipality does not become responsible for road maintenance or for any damages resulting from the road's use. The purpose of RSA 674:41, I(c) is to prevent scattered and premature development.

Across the State, many communities are beginning to look at Class VI roads as candidates for designation as Class A Trails because they have little or no development associated with them, are scenic, have no inherent liability concerns, public access is already allowed, and also serve to connect large areas of open space, conservation, and/or agricultural lands. By reclassifying certain roadways that meet these criteria to Class A Trails, the community could be taking a step in creating a community-wide system of greenway trails. Unlike Class VI roads that the Town does not maintain, Towns, at their option, may conduct maintenance on Class A Trails.

It is important to stress that reclassification of Class VI roads to Class A Trails will not inhibit the access rights of landowners along the roadways. In the case of a Class A trail, landowners can continue to use the trail for vehicular access for forestry, agriculture, and access to existing buildings. However, under such classification, new building development as well as expansion, enlargement, or increased intensity of the use of any existing building or structure is prohibited by New Hampshire Statute. The Town and owners of properties abutting Class VI roads are not liable for damages or injuries sustained to the users of the road or trail.

Class VI roads and Class A & B trails are an important component of a Town's transportation infrastructure because they personify the community's rural character and provide vast recreational opportunities. The ***Private, Gravel, Class V, and Scenic Roads with Bridges Map*** will provide information as to where current trails exist, where Class VI Roads are located, and which Class VI Roads may be good candidates for Class A Trail designation.

Parking

The one area of Pembroke where parking will play a key role in the future is in the village area around Main Street. There is generally enough parking to satisfy the current demand from businesses and residences, however, as the Town of Pembroke continues to work toward revitalizing the area, parking will play a key role. In a Village/Downtown environment, the availability of parking is one of the contributing factors to how well an area will do economically. Having the right amount of parking available will help the Village/Downtown flourish. Similarly, having too much available parking in this type of environment can diminish the "small town" atmosphere and "bustling" sense that will also contribute to the areas success.

Public Transportation

In 2001-2002, the Central NH Regional Planning Commission and the Concord Area Transit, with funding from the NH Department of Transportation, conducted a survey of Pembroke and Allenstown to quantify interest in an extension of Concord Area Transit to both communities. The survey results were favorable enough for everyone involved to progress to the next step in supporting the extension, searching for funding to cover the costs. Concord Area Transit applied to what was then a program that had recently been created by the New Hampshire Department of Transportation to assist rural transit operators. However, at the Federal level, the program was not deemed appropriate for the types of funds being utilized and it was not supported. Without the use of Federal funds, the State was not able to continue the program.

More recently Concord Area Transit undertook a study to explore this expansion of service as well as other extensions around the region. Again this route was identified as a favorable future extension, but was not identified as the highest priority. Concord Area Transit would like to extend service into Pembroke in the future and hopes that funding becomes available.

Bridge Network

Bridges are a vital component of the highway system, as they connect road segments across streams, lakes, rivers, and other roads. Bridges are the most expensive sections of roads and the lack of adequate bridges creates transportation bottlenecks.

Table X-7
Pembroke Bridges

Location	Crossing	Owner	Notes
Main Street	Suncook River	State	Red Listed - Scheduled for replacement (2004, 2005)
Buck Street	Hartford Brook	Town	
Interstate 393 (EB-WB)	Horse Corner Road	State	
Interstate 393 WB Ramp	NH 9	State	
Old NH 28	Pettingill Brook	State	

Source: NHDOT Mini Bridge List & NHDOT Red List Summary (2002)

RECENT STATE AND LOCAL ROAD IMPROVEMENTS

State Improvements

The NH Department of Transportation and the State as a whole has adopted a long-range planning approach to the development and funding of transportation projects throughout the State. This process and resulting document is the New Hampshire Ten Year Plan. The creation and revision of the Ten Year Plan is a comprehensive process that involves municipalities, regional planning commissions, the New Hampshire Department of Transportation, the Governor's Advisory Council on Intermodal Transportation (GACIT), the Governor and Legislature of New Hampshire, and the federal government.

The revision process typically starts at the regional planning commission level, although it is beneficial if the process is first initiated at the municipal level. All regional planning commissions within New Hampshire prepare a Regional Transportation Improvement Program (TIP) every two years based on input from local municipalities, NHDOT, and each planning commission's Transportation Advisory Committee (TAC). The NHDOT then takes the regional TIPs and incorporates the projects with the highest level of support into the NH Ten Year Plan, adding their own input and specific projects. From NHDOT, the Governor's Advisory Committee on Intermodal Transportation (GACIT), the Governor, and the Legislature review the NH Ten Year Plan. After final approval, the NH Ten Year Plan then becomes the transportation project guide for the upcoming years.

The New Hampshire Department of Environmental Services (NHDES) reviews the NH Ten Year Plan and provides comments to NHDOT. The Federal Highway Administration (FHWA), the Federal Transit Administration (FTA), and the Environmental Protection Agency (EPA) review the first three years of the of the NH Ten Year Plan, also know as the Statewide Transportation Improvement Program. Upon review of the document, these agencies verify that the projects meet all of the federal regulations and approve them for implementation. Currently the NH Ten Year Plan is nearing the conclusion of the most recent revision process. The last column in Table X-8 shows the status of projects in the most recent version of the NH Ten Year Plan, though it is not formally adopted at this time.

Table X-8
Pembroke Projects in the NH Ten Year Plan

Year	Project	Cost	Potential Revisions in 2005-2014 Ten Year Plan
2003	Main Street Pembroke/Allenstown	$1,750,000	
2006	US Route 3 Pembroke/Allenstown	$3,000,000	Revised estimated cost of $7,450,000

Source: 2003-2012 Ten Year Plan

Local Improvements
In the Town of Pembroke, the Director of Public Works traditionally discusses upcoming road improvement projects with a local Road Committee and with the Board of Selectmen. Along with regular maintenance of the roads in Pembroke, the Department of Public Works normally undertakes several more substantial projects each year. In 2004 improvements are planned to be constructed on portions of North Pembroke Road, Robinson Road, Church Road, Cross Road, and Pleasant Street. Sidewalks and their rights-of-way should be maintained for safety on a regular basis.

TRANSPORTATION FUNDING OPPORTUNITIES

Federal Programs and Resources

The Safe, Accountable, Flexible and Efficient Transportation Equity Act of 2003 (SAFETEA)
In the spring of 2004 the reauthorization of the 1998 to 2003 Transportation Equity Act for the 21st Century came into focus. SAFETEA is the new parent legislation that will fund a variety of transportation programs including the Congestion Mitigation and Air Quality (CMAQ) Improvement Program and the Transportation Enhancement (TE) Program.

Transportation Enhancement Funds (TE)
The Transportation Enhancements Program (TE) is another viable source for improving roads in communities. Funding for the TE program is slightly more than $3 million dollars in the State annually. These funds are provided in an 80/20 match, with the State paying for the majority of the project cost. Typical examples of projects eligible for TE funds include:

- Facilities for bicyclists and pedestrians;
- Safety and education activities for bicyclists and pedestrians;
- Acquisition of scenic easements and scenic or historic sites;
- Scenic or historic highway programs;
- Rehabilitation and operation of historic transportation buildings, structures, and facilities;
- Preservation of abandoned railway corridors; and
- Establishment of transportation museums.

Congestion Mitigation and Air Quality Funds (CMAQ)
The Congestion Mitigation and Air Quality program (CMAQ) is another viable source for improving roads in communities. Funding for the CMAQ program is in the vicinity of $10 million dollars in NH biennially. These funds are also provided in an 80/20 match, with the State paying for the majority of the project cost. Projects applying for CMAQ funds must demonstrate a benefit to air quality and often include sidewalk, transit, and rail projects.

Federal Aid Bridge Replacement Funds
These funds are available for the replacement or rehabilitation of Town-owned bridges over 20 feet in length. Matching funds are required and applications for funding are processed through the NHDOT's Municipal Highways Engineer.

State Funding Sources

Highway Block Grants
Annually, the State apportions funds to all cities and towns for the construction and maintenance of Class IV and V roadways. Apportionment "A" funds comprise not less than 12% of the State Highway budget and are allocated based upon one-half the total road mileage and one-half the total population as the municipality bears to the state total. Apportionment "B" funds are allocated in the sum of $117 per mile of Class V road in the community. Block grant payment schedules are as follows: 30% in July, 30% in October, 20% in January, and 20% in April. Any unused funds may be carried over to the next fiscal year.

Municipal Highway Aid
This program creates an opportunity for municipalities and the state to invest in the secondary state highway system. By providing a local match, towns can work with the state to make improvements on some of the major roads through a community. While the town is paying for a portion of the improvements to a state road, the benefits are an improved travel way for local residents and regional commuters as well as completing the project much sooner than it may have otherwise been.

State Bridge Aid
This program helps to supplement the cost to communities of bridge construction on Class II and V roads in the State. Funds are allocated by NHDOT in the order in which applications for assistance are received. The amount of aid a community may receive is based upon equalized assessed valuation and varies from two-thirds to seven-eighths of the total cost of the project.

Town Bridge Aid

Like the State Bridge Aid program, this program also helps communities construct or reconstruct bridges on Class V roads. The amount of aid is also based upon equalized assessed valuation and ranges from one-half to seven-eighths of the total cost of the project. All bridges constructed with these funds must be designed to support a load of at least 15 tons. As mandated by State Law, all bridges constructed with these funds on Class II roads must be maintained by the State, while all bridges constructed on Class V roads must be maintained by the Town. Any community that fails to maintain bridges installed under this program shall be forced to pay the entire cost of maintenance plus 10% to the State Treasurer.

Local Sources of Transportation Improvement Funds

Local Option Fee for Transportation Improvements

New Hampshire RSA 261:153 VI (a) grants municipalities the ability to institute a surcharge on all motor vehicle registrations for the purpose of funding the construction or reconstruction of roads, bridges, public parking areas, sidewalks, and bicycle paths. Funds generated under this law may also be used as matching funds for state projects. The maximum amount of the surcharge permitted by law is $5, with $0.50 allowed to be reserved for administering the program.

Impact Fees

Authorized by RSA 674:21, communities can adopt an impact fee ordinance to offset the costs of expanding services and facilities that must be absorbed when a new home or commercial unit is constructed in Town. Unlike exactions, impact fees are uniform fees administered by the building inspector and are collected for general impacts of the development, as opposed to exactions that are administered by the Planning Board and are collected for specific impacts unique to new site plans or subdivisions on Town roads. The amount of an impact fee is developed through a series of calculations. Impact fees are charged to new homes or commercial structures at the time a building permit is issued.

When considering implementing an impact fee ordinance, it is important to understand that the impact fee system is adopted by amending the Zoning Ordinance. The law also requires that communities adopting impact fees must have a current Capital Improvements Program (CIP). Lastly, State law also stipulates that all impact fees collect by a community must be used within 6 years from the date they were collected, or else they must be refunded to the current property owners of the structure for which the fee was initially collected.

Capital Reserve Funds

This is a popular method to set money aside for future road improvements. RSA 35:3 mandates that such accounts must be created by a warrant article at Town Meeting. The same warrant article should also stipulate how much money will be appropriated to open the fund, as well as identify which Town entity will be the agent to expend the funds. Once established, communities typically appropriate more funds annually to replenish the fund or to be saved and thus earn interest that will be put towards large projects or expenditures in the future.

SUMMARY

Pembroke has a number of transportation issues to consider in the future as its population grows, including an alternative to Route 3, continuation of sidewalks, opening range roads, and sharing bus service. While roadway improvement projects will continue to enhance the safety of Pembroke's roadways, many planning options for safety enhancement, presented here, can be utilized within the scope of the Planning Board regulations.