

Chapter 8

Transportation



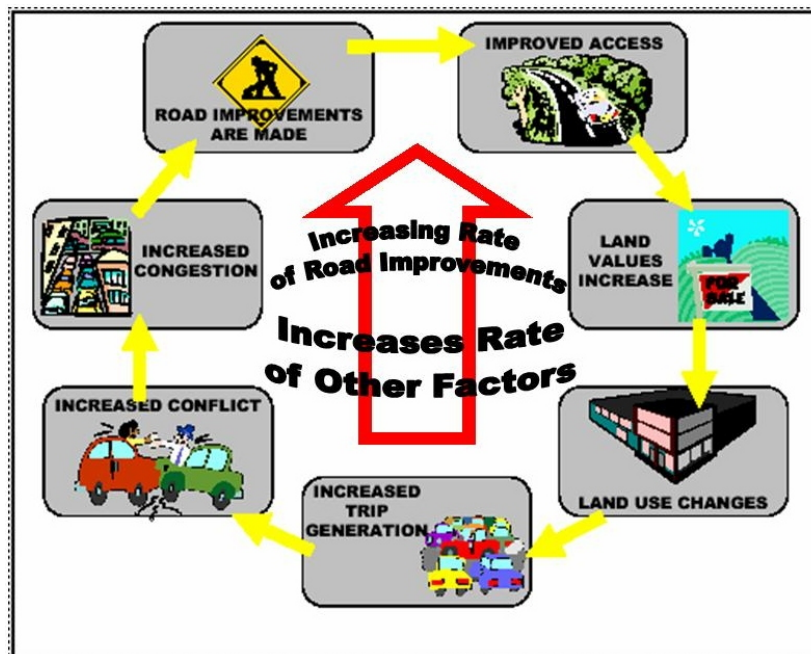
NH Route 11

Chapter 8

Transportation

1.0 INTRODUCTION

Farmington's transportation system is an important component of the quality of life and economic vitality of the community and the region. This is evident in Farmington's regulation of land use and in its investments in the maintenance and expansion of its infrastructure, both of which play an important role in the evolution of development patterns. Therefore, attention must



be given to the impact that public policies have on the interconnected land use and transportation systems. This chapter provides guidance, context, and recommendations for addressing current and future transportation needs.


To be consistent with the community's vision, the goal in this section is to strive to meet all of the various transportation needs, while still maintaining and even enhancing the environment and quality of life of Farmington. The transportation infrastructure must be designed

to serve local needs, and be compatible with local land use and community character while also accommodating regional transportation needs.

Farmington has a number of transportation systems operating within its borders. While the automobile dominates, much of the downtown is conducive to walking and bicycling. A walkable community is a healthy community for residents, and supports a social and neighborly environment that promotes positive interactions between members of the community. Walkable communities also benefit from a reduced number of automobile trips because some daily tasks can be accomplished as a pedestrian.

Residents' and visitors' inter-regional transportation needs are served by automobiles and limited bus service. NH Route 11 passes through the center of Farmington and serves a great deal of the local traffic in the community, but it is also a significant state and regional transportation route.

2.0 EXISTING TRANSPORTATION FACILITIES

There are approximately 68 miles of roads within Farmington, of which 30 miles are municipally-maintained, 30 miles are private roads, and 8 miles are state-maintained. Of the 30 miles of municipally-maintained roads, 17 miles are paved and 13 miles are gravel. There are also approximately 9 miles worth of Class VI unmaintained roadways in Farmington. The Farmington roadway system can be found on Map  Farmington Base Map.



Main Street - Farmington, New Hampshire

The major arteries of the road network in Farmington are NH Routes 11, 153, and 75. NH Route 11 was the subject of a major corridor study that explored the relationship between land use and transportation activities along the entire roadway in Rochester, Farmington, and New Durham. The NH Department of Transportation and Strafford Regional Planning Commission coordinated this effort in 2001, and Farmington was an active participant. The major findings in this effort included:

- An Understanding of the relationship between land use and transportation activities; and
- An identified need to promote Access Management;

The final report, *Route 11 Access Management Study*, is available at the Farmington Town Hall, and some of the findings have been included in this chapter.

One tool the Town seems to be missing currently is a “transportation improvement plan.” This is a comprehensive document which includes information on the current system of roadway and sidewalk infrastructure in the community, the condition of these facilities, and a multi-year framework to prioritize and complete the necessary improvements while eliminating spikes in funding requests. This tool could be a major source of information for a capital improvement plan.

2.1 Classification of Highways and Roads

2.1.1 Ownership and Maintenance Responsibility

The State Aid classification system, which is identified in RSA 229-231, establishes responsibility for construction, reconstruction, and maintenance (as well as eligibility for use of State Aid funds) between State and Federal agencies, and local municipalities. This classification system also provides a basic hierarchy of roadways. The following is a description of the State Aid system:

Class I, Trunk Line Highways, consist of all existing or proposed highways on the Primary State Highway System, excepting all portions of such highways within the compact sections of cities and towns. The state assumes full control and pays all costs of construction, reconstruction and maintenance of these sections. The portions of the system in compact areas are controlled by the cities and towns under Class IV highways. There are no Class I Highways in Farmington.

Class II, State Aid Highways, consist of all existing or proposed highways on the Secondary State Highway System, excepting portions of such highways within the compact sections of cities and towns, which, again, are classified as Class IV highways. In Farmington this includes New Hampshire Routes 11, 75, and 153.

All sections improved to the satisfaction of the Commissioner are maintained and reconstructed by the State. All unimproved sections, where no state and local funds have been expended, must be maintained by the city or town in which they are located until improved to the satisfaction of the Commissioner of Transportation.

All bridges improved to state standards on Class II highways are maintained by the State. All other bridges on the Class II system shall be maintained by the city or town until such improvement is made. Bridge Aid funds may be utilized to effect such improvements.

Class III, Recreational Roads, consist of all such roads leading to, and within, state reservations designated by the Legislature. The NH Department of Transportation assumes full control of reconstruction and maintenance of such roads. There are no recreational roads within Farmington.

Class IV, Town and City Streets, consist of all highways within the compact sections of cities and towns. Extensions of Class I (excluding turnpikes and interstate portions) and Class II highways through these areas are included in this classification. Municipalities with compacts are listed in RSA 229:5. Farmington does not have a designated Urban Compact area at this time.

Class V, Rural Highways, consist of all other traveled highways which the city or town has the duty to maintain regularly.

Class VI, Unmaintained Highways, consist of all other existing public ways, including highways discontinued as open highways and made subject to gates and bars, and highways not maintained and repaired in suitable condition for travel thereon for five (5) successive years or more. However, if a city or town accepts from the state a Class V highway established to provide a property owner or property owners with highway access to such property because of a taking under RSA 230:14, then notwithstanding RSA 229:5, VII, such a highway shall not lapse to Class VI status due to failure of the city or town to maintain and repair it for five (5) successive years, and the municipality's duty of maintenance shall not terminate, except with the written consent of the property owner or property owners.

Scenic Roads, are special town designations of Class IV, V and VI highways where cutting or removal of a tree, or disturbance of a stone wall, must go through the hearing process and written approval of local officials (See RSA 231:157). Farmington has three designated Scenic roads at this time, Poor Farm Road, Reservoir Road, and River Road.

Scenic Byways, The New Hampshire Scenic and Cultural Byways Program was established in 1992 under RSA 238:19, "... to provide the opportunity for residents and visitors to travel a system of byways which feature the scenic and cultural qualities of the state within the existing highway system, promote retention of rural and urban scenic byways, support the cultural, recreational and historic attributes along these byways and expose the unique elements of the state's beauty, culture and history." There are no Scenic Byways in Farmington at this time.

New Hampshire's Scenic and Cultural Byways program is one of many now in place nationwide, and is eligible for Federal Highway Administration Scenic Byway funds. The only regulation attached to Scenic and Cultural Byways designation is "no new billboards."

2.1.2 Function and Design

Section 4.1 of this chapter describes the classification of each roadway in Farmington. Section 4.2 then shows the existing Farmington Road Dimensional Standards, and a series of suggested street design standards. Local roads have been defined as major local, minor local, and minimum local. The stated purpose of each road type should be the basis for its design, use, and maintenance requirements. Local roads serving smaller residential developments could be reduced in scale to enhance neighborhood character, slow traffic speeds, reduce construction and maintenance costs, and still provide safe access.

On state routes the Town of Farmington should work with the NHDOT to ensure that the designs of any proposed improvements are "Context Sensitive Solutions" (CSS). The intent of CSS is to ensure that roads are not designated solely by the requirements of motor vehicle traffic. Transportation should preserve the scenic, historic, and environmental resources of the places it serves, and allow for a variety of modes beyond motor vehicles.

2.2 Existing Traffic Volumes and Trends

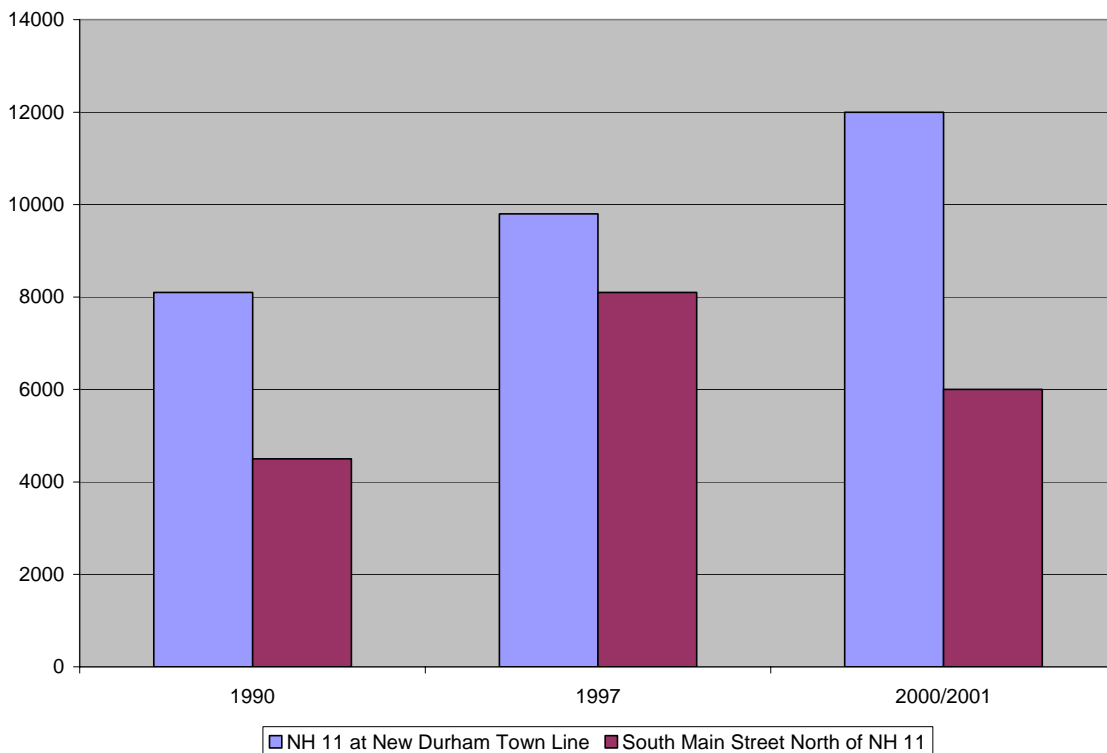
Traffic circulation within and through Farmington is probably the most important transportation issue facing the community. Congestion during peak periods is widely known to residents. The structure of the local highway network requires local and regional travelers to share, to a significant degree, the major arterials in Farmington. Local traffic consists mainly of trips from residential areas in and around downtown Farmington and neighboring communities to local businesses and services. These commercial trips generate substantial turning movements. The combination of local trips and through trips on the major arterials often results in slow traffic, capacity constraints, delays, and an increase in vehicle collisions.

From 1982 to 2001 traffic volumes increased from an average of 5,000 vehicles per day on Route 11 at the New Durham town line to an average of 12,000 vehicles per day. This represents

a 140% increase in traffic volume. Meanwhile, traffic volumes on Route 11 at the Mad River Bridge are lower with only 8,800 vehicles per day reported in 2000. This suggests that each portion of Route 11 in Farmington is serving a different purpose in the daily traffic patterns of residents and commuters. Central Street experienced a 63% increase in daily traffic volumes from 1993 to the year 2000. South Main Street experienced a 20 – 30% increase in average daily traffic at two locations during the 1990s. On the majority of Farmington’s roadways traffic volumes have remained fairly stable over the past 20 years with some net increases. Figure 8-1 and Table 8-2 illustrate these and other increases in traffic volumes.



Figure 8-1 Traffic Counts



Overall, traffic in Farmington has grown as the population in the region has increased over the past 20 years. Traffic volumes vary somewhat over the course of a year in Farmington due to seasonal fluctuations that affect the tourism industry. There are several peaks in annual traffic

volume, which generally fall within mid-summer, and fall. These peaks correspond to the summer vacation period, and fall foliage. Table 8-2 show Annual Average Daily Traffic (AADT) counts for Farmington in greater detail.



Main Street – Farmington, New Hampshire

Table 8-2 Average Annual Daily Traffic Counts for the Farmington Area

LOCATION	1982	1988	1990	1993	1996	1997	2000	2001	2002
NH 11 (HENRY WILSON HWY) AT NEW DURHAM TL	5000	6600	8100	7200		9800		12000	
NH 75 (TAPPAN ST) NORTH OF NH 11			1800	1500		1700	1600		
NH 75 (CENTRAL ST) SOUTH OF MAIN ST				3000		4400	4900		
SOUTH MAIN ST EAST OF PLEASANT ST					8100				9700
MEETING HOUSE HILL RD AT RATTLE SNAKE RIVER					630				840
NH 11 (HENRY WILSON HWY) AT MAD RIVER BRIDGE				7500		9200	8800		
OLD BAY RD OVER COCHECO RIVER				440		460	530		
SPRING ST OVER COCHECO RIVER				660		830	780		
NH 75 (CENTRAL ST) OVER COCHECO RIVER				3600		3500	3800		
NH 153 (SOUTH MAIN ST) NORTH OF NH 11			4500	6100		8100	6000		
RIVER RD OVER MAD RIVER				200		480	130		
NH 75 (ELM ST) OVER DAMES BROOK				2600				3400	
WATSON CROSS RD OVER COCHECO RIVER				1400		1500	2000		

*Source: NH Department of Transportation

2.3 Pavement Condition

The New Hampshire Department of Transportation evaluates all state roadways and the Interstate System using a Ride Comfort Index (RCI) of 1 to 5. The rating is based on the roughness of the surface and the amount of work needed to correct it. A majority of NH Route 11, NH Route 75, and NH Route 153 are classified by the RCI as needing some work, but are generally considered to be in good condition. Several small sections on all three routes are classified by RCI as needing no work at all, and a few small sections are classified as needing major work. These improvements are handled by the NHDOT.

2.4 Bridge Data

There are seventeen major bridges within the public road network in Farmington, and three bridges on privately maintained roads. The Old Bay Road Bridge and the Paulson Road Bridge were repaired during the summer of 2004 and will be inspected by the NHDOT. The other bridges range in size and condition. There is one box culvert in Farmington located on Elm Street for the Dames Brook.

Table 8-3 Municipal and State Maintained Bridges

Bridge Location	Waterbody	Condition
Central Street	Cocheco River	Unknown
Cocheco Road	Cocheco River	Unknown
Flagstone Ave.	Mad River	Unknown
Hornetown Road	Mad River	Unknown
Old Bay Road	Cocheco River	Excellent
Paulson Road	Pokomoonshine Brook	New Deck, Poor Structure
Reservoir Road	Berry's River	Unknown
River Road	Mad River	Good
Route 11	Mad River	Unknown
Route 11 @ UPS Store	Rattlesnake Brook	Unknown
Sheepsboro Road	Berry's River	Good
South Main Street	Cocheco River	Unknown
Spring Street (Lower)	Cocheco River	Unknown
Spring Street (Upper)	Ela River	Unknown
Tappan Street	Mad River	Unknown
Ten Rod Road	Mad River	Good
West Milton Road	Dame Brook	Replaced in 2002 or 2003

Table 8-4 Privately Owned and Maintained Bridges

Bridge Location	Waterbody	Condition
Entrance to Pike Industries	Cocheco River	Unknown
Skyview Drive	Kicking Horse Brook	New (2004)
Farmington Ridge	Dames Brook	Unknown

2.5 Crash Data

In 1995 there were more than 102 crashes on Farmington’s roadways (see Table 8-5). There were two accidents in 1995 that resulted in fatalities, and two accidents that injured pedestrians. By 1999, the annual number of crashes decreased slightly to 97 throughout Farmington, and no fatal accidents were recorded, but a pedestrian was injured on Central Street. The crash data for 1999 shows that the largest number of crashes were still on NH Route 11, but crashes were reported on roadways throughout Farmington. In 2002 at least 135 crashes occurred in Farmington, and four crashes resulted in fatalities. Three of these fatalities took place on NH Route 11. From 1995 through 2002 nine people were killed on Farmington’s roadways. A pedestrian was also injured on Hornetown Road in 2002.

Table 8-5 Farmington Crash Data 1995, 1999 & 2002

Farmington Crash Data			
	1995	1999	2002
Total Accidents	102	97	135
Pedestrian Accidents	2	1	1
Fatalities	2	0	4

* Source: NH Department of Transportation

Roadway safety is determined by a number of factors, such as road condition, traffic volume and speed, the number of access points and intersections, driver behavior, and vehicle condition. All of these factors are used to evaluate potential for accidents. Referred to as crashes by the Department of Transportation, crash data is commonly used to identify hazardous situations and plan for necessary improvements. In New Hampshire a reportable crash is an incident that causes over \$1,000 of damage or results in a personal injury. As a result the crash data reported in this section will not reflect every crash that has occurred in Farmington in a given year. Local police records may contain some additional crash data from minor incidents.

2.6 Level of Service

Traffic congestion in New Hampshire is measured in terms of Level of Service (LOS) with LOS A being free flowing and LOS F being heavily congested. Level of Service is determined by

comparing the volume of traffic on a roadway section to the roadway's capacity to handle the volume (based on traffic engineering procedures outlined in the Highway Capacity Manual). The capacity is based on roadway factors that affect congestion, including alignment, lane and shoulder width, and the number of access points, among others.

NHDOT has calculated the LOS for the major state highways, including many of the state maintained and numbered routes, based on 2002 traffic data. To ensure uniformity, the traffic volumes utilized for comparison purposes were current weekday evening peak hour volumes (normally an example of a high recurring peak condition) throughout the state. In Farmington NH Route 11 was evaluated and received a low rating (LOS E and F) indicating that congestion is a major issue on this stretch of highway. NH Route 75 received a high rating (LOS A and B) indicating little if any congestion on this roadway. NH Route 153 has not been evaluated as part of this program.

In addition to traditional highway improvements, a number of non-highway related transportation projects are being implemented incrementally to address congestion and to achieve the overall goal of moving people, goods, and services more efficiently throughout New Hampshire. NHDOT, in cooperation with Maine DOT and the Vermont Agency of Transportation, is leading an effort to implement Intelligent Transportation System (ITS) technologies in the Northern New England region. According to the US Department of Transportation, "ITS represents the next step in the evolution of the nation's entire transportation system. As information technologies and advances in electronics continue to revolutionize all aspects of our modern-day world, from our homes and offices to our schools and even our recreation, they are also being applied to our transportation network. These technologies include the latest in computers, electronics, communications and safety systems."

The goal is to manage and operate the highways more efficiently and provide timely information to the motorists about travel conditions, delays, and tourism opportunities. Such ITS technologies will assist in addressing congestion, and will extend the life of many roadways by preserving their capacity. According to the NHDOT thirty-one ITS stations will be deployed throughout New Hampshire within the next few years. This network will help regulate inform and direct travelers passing through the Farmington region.

2.7 Land Use Implications and Potential Actions

Land Use Implications

Farmington's existing transportation facilities are a critical resource for area residents and visitors, and for commerce in the region. Here are a few overall considerations related to the existing transportation facilities in Farmington:

- 1) Farmington's roadways should be designed and constructed based on the role they fill in both the local road system and the regional system. Roads should provide the necessary access while controlling the speed of vehicles. If the role of the road changes over time then the design of that roadway should change accordingly.

2) High traffic volumes on Farmington's major routes often push traffic onto other local streets that have not been designed to handle extra capacity or control the speed of this thru traffic.

3) Strip development and extensive curb cuts along major roadways cause friction and conflict points for through traffic. This reduces the ability of the roadway to handle the level of traffic it was designed to carry, and often leads to safety deficiencies, and the need for expensive roadway expansion earlier than expected.

4) Farmington's roadways should not be designed for motor vehicle traffic alone. Incorporating Context Sensitive Solutions into Town and State roadway projects, to the extent practical, should help preserve some of the scenic, historic, and environmental features within the project areas.

Potential Actions

There are an array of possible actions the Town may want to consider pursuing as it evaluates and improves the existing transportation facilities in Farmington. This section will be used to identify the specific actions for Farmington to take upon completion of the master plan.

1) There is currently a need for more comprehensive traffic count data in Farmington. This is especially true in the downtown area. Data on the volume of trucks on Farmington's roadways would also help identify the number, frequency, and destination of these vehicles. The Town should work with the Strafford Regional Planning Commission and the NHDOT as they plan the location and timing of future traffic counts in Farmington.

2) Roadway improvements and future road construction should be designed to control the flow of traffic, to reduce the number of access points to the roadway, and to promote connections between adjacent commercial properties. This will help preserve the capacity of Farmington's major roadways without making them unnecessarily large, and will reduce the number of conflict points where crashes can occur.

3) The Town of Farmington should work with the NHDOT on Context Sensitive Solutions for roadway improvements in the community to ensure that roads are not designated solely by the requirements of motor vehicle traffic, but also preserve the significant resources of the places it serves, and allow for a variety of modes beyond motor vehicles.

4) The Town of Farmington should develop a "transportation improvement plan" to guide future improvements to the Town maintained portions of the transportation system. This comprehensive document includes information on the current system of roadway and sidewalk infrastructure in the community, the condition of these facilities, and a multi-year framework to prioritize and complete the necessary improvements while eliminating spikes in funding requests. All of the suggested improvements should also be consistent with other transportation objectives in the community.

- 5) The Town of Farmington should determine the condition of municipally maintained bridges, and design a plan for bridge maintenance.
- 6) Consider posting bridges on Class VI roads as “Pass at your own risk.”
- 7) Consider posting Class VI roads as “Unmaintained Road. Pass at your own risk.”

3.0 SPECIAL TRANSPORTATION ISSUES

3.1 Workforce Commuting

According to the 2000 Census, Farmington has 2,741 residents over the age of 16 that are part of the work force. When looking at the commuting data for these workers we see that the mean travel time for Farmington workers is 27.6 minutes. This is comparable to the New Hampshire average of 25.3 minutes, and the national average of 25.5 minutes. Table 8-6 shows the distribution of workers by mode of transportation.

Table 8-6 Modes of Transportation

<i>Mode of Transportation</i>	<i>Percent of Farmington Workers</i>	<i>Percent of New Hampshire Workers</i>	<i>Percent of U.S. Workers</i>
Drive Alone	79.5%	81.8%	75.7%
Carpool	15.2%	9.8%	12.2%
Public Transportation	.3%	.7%	4.7%
Walk	1.6%	2.9%	2.9%
Work at Home	2.0%	4.0%	3.3%
Other Means	.1%	.8%	1.2%

Source: US Census 2000

Farmington’s distribution of commuters by mode of transportation is very similar to the national averages in all categories except public transportation and walking. It is understandable that Farmington’s figures for public transportation would be lower than the national average, considering the limited public transportation in the Farmington area compared to other regions of the U.S. that are more conducive to mass transit. The number of residents that walk to work is also low, but the higher percentage of residents carpooling indicates a very positive trend.



Coast Bus –Farmington, NH

3.2 Bicycle & Pedestrian Facilities

3.2.1 Sidewalks

The only significant sidewalk network in Farmington occurs in the downtown. Pedestrian movement in the downtown is a critical mode of transportation, and a form of recreation. It is key to the quality of life, economic, and physical health of the community. Increased pedestrian activity removes vehicle trips from the roadways, improves air quality, reduces demand for parking, and promotes social interactions.

To support this, Farmington's streets and intersections should be designed to provide for safe and convenient pedestrian access. Below is an example of a crosswalk that includes a "bump out" or "neck down" area within the on-street parking strip that allows the pedestrian to be seen more clearly by motorists, and shortens the distance that must be crossed. Neck downs are also ideal for intersection applications.

There are numerous safety issues associated with specific segments of sidewalks throughout the community, including minimal separation from travel lanes, multiple and wide curb cuts, and handicapped accessibility constraints. Navigating the strip commercial areas of Farmington as a pedestrian is an even greater safety concern. The Town should create guidelines for the design and construction of sidewalks. These guidelines can be used for improvements in the downtown area, in new subdivisions near the downtown, and in developments that are not served by the school bus.



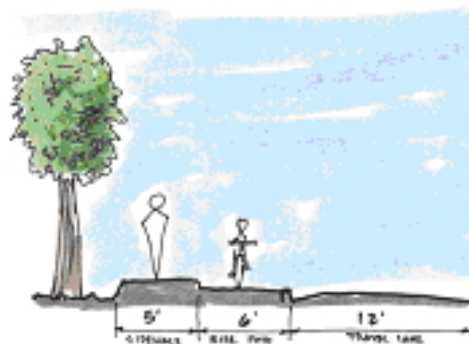
Pedestrian Crossing

3.2.2 Bicycle Routes

State designated bicycle routes are located along portions of Old Bay Road, Middleton Road, Chestnut Hill Road, Meeting House Hill, and Ten Rod Road. However, none of the designated routes directly access the downtown area. This should be changed to welcome and encourage bicyclists into the downtown. Over the years there have been accidents involving bicycles and cars. A network of bicycle lanes along major roads would greatly enhance rider safety and use,

and should serve riders of varying abilities. In the downtown area the bicycle lanes could be incorporated into the existing roadway as a travel lane between the on-street parking area and the motor vehicle travel lane. This will also provide traffic calming benefits in the downtown area. In order to create such a network, the Town of Farmington will have to continue to work closely with the NHDOT, which is responsible for the state maintained corridors and the creation of the designated bicycle routes in New Hampshire. Bicycle traffic could also be accommodated on multi-use paths through the downtown area.

The placement of bicycle racks or lockers within the downtown area, and at retail and employment locations throughout Farmington should be encouraged. There is a need to provide a safe location for bicycles to be secured if the community wishes to encourage this form of transportation and recreation.



*Roadway Profile with no
On-street Parking*

3.3 Signage and Wayfinding

Farmington's signage and wayfinding systems should direct travelers to their destination safely and efficiently, and contribute to the identity of the community. There are several layers of signage, (including statewide, regional, and local) and multiple layers of wayfinding (e.g., directional, informational, vehicle-oriented). Each of these levels and layers must be well coordinated in order to effectively serve visitors to the community. These signs should be integrated with Farmington's transportation and economic development infrastructure. The following are fundamental objectives of a signage and wayfinding system for Farmington:

- Identify the routes and destinations that travelers need to get to;
- Identify important decision points along each route that will be important to travelers; and
- Provide accurate information, in a legible and consistent format, at key locations along each route.
- Construct attractive signs that are consistent in size, materials, and design depending on character of the area they are located in.

3.3.1 Signage Along Major Routes

Signage along state routes (NH Routes 11, 75, and 153) provide the necessary information to keep travelers on the routes and to direct travelers to many destinations.

3.3.2 Local Wayfinding

A variety of signage is used in Farmington, including:

- Street signs;

- Welcome/Gateway signs;
- Downtown Farmington signs; and
- Directional signs.

Most of the signs are in fair to good condition, but having effective signage requires a commitment to repairing and replacing signage regularly.

3.4 Dead-End Roads

Farmington’s land use boards discourage the use of cul-de-sacs unless there is a physical constraint on the site that makes it necessary. Overall, the town encourages connections to existing roadways, or the provision for future connections.



There are several advantages to this, including dispersement of traffic, improvement of emergency access, and the ability to loop utility systems. Provisions should be made in the town’s land use regulations to facilitate these connections where feasible through easements for future use or actual construction. Connections should also be encouraged on existing dead-end streets where possible. In order to mitigate this improved access, the town should consider the value of traffic calming design features such as narrower roads, street trees, and speed tables to name a few. These features help control the thru traffic by controlling speeds, and can enhance the character and function of the roadway as a feature of the neighborhood.

3.5 Multi-use Trails and Paths

There are a multitude of trails and paths in Farmington serving walkers, hikers, mountain bikers, horseback riders, cross-country skiers, and snowmobilers. Some of this network is within the Blue Job State Forest, but much of the network is informal and privately owned, with no formal agreements for continued use or signage.

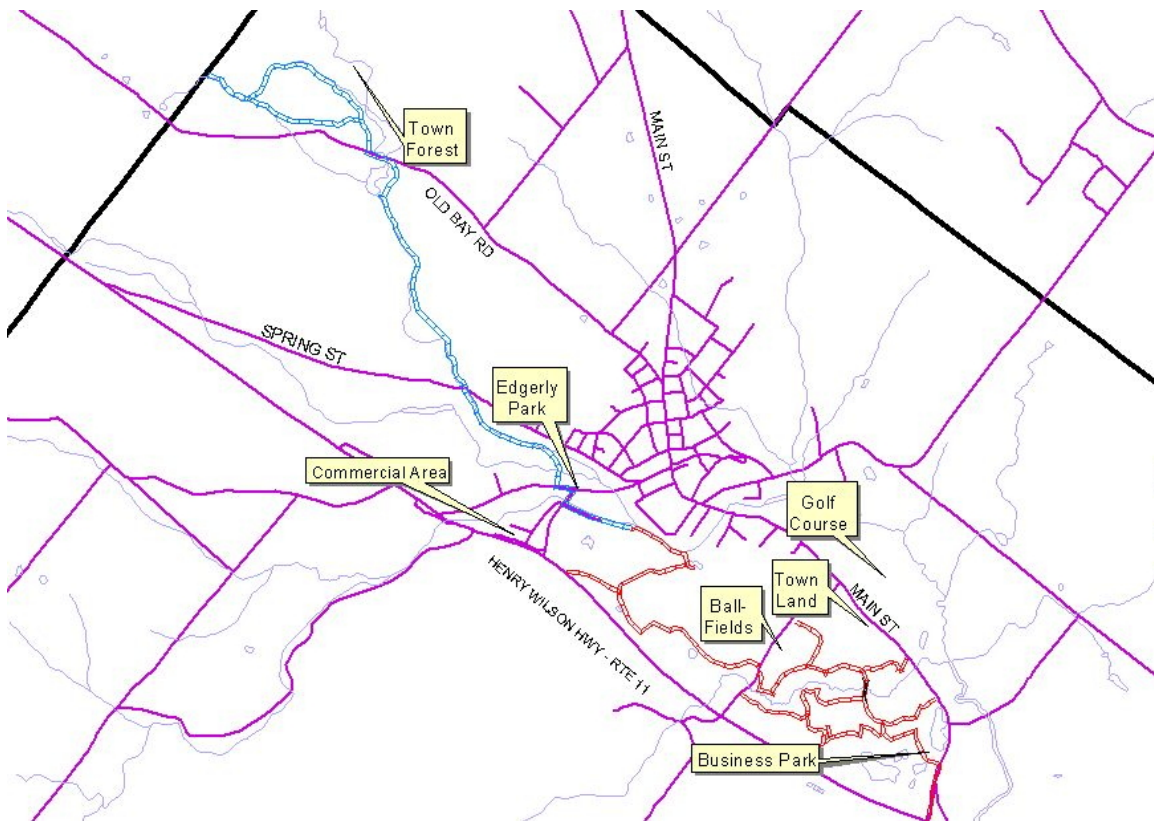


State Multi-Use “Rail Trail”

One of the State’s multi-use “rail trails” heads north, within inactive and abandoned segments of the rail corridor, along NH Route 11 on the old Boston and Maine rail line. A trailhead exists on Meetinghouse Hill Road, and on Route 11 near Coastal Materials.

The Farmington Downtown Greenbelt is an initiative in the community that has been planned to connect the downtown area to the Paulson Road fields and the business park. The network of trails and protected land could eventually connect to the Town Forest and commercial areas on

Route 11. This would provide a range of transportation and recreation options that also support natural resource protection, public health benefits, and build a sense of community.



Farmington Downtown Greenbelt Plan

The only formal motorized use trails in Farmington are snowmobile corridors. The Powder Mill Snowmobile Club and the Evergreen Valley Snowmobile Club manage and maintain these trails.

3.6 Public Transportation Facilities

Public transportation service in Farmington benefits the entire community. Public transportation reduces the number of vehicles on the road, and offers an alternative to individuals that may otherwise not have adequate transportation. Transportation alternatives assist in improving the regional air quality by encouraging the reduction of exhaust emissions through the reduction of the number of vehicles on the road.

3.6.1 Buses

Fixed route bus service is provided within Farmington, and to points south, by the Cooperative Alliance for Seacoast Transportation (Coast). The current route provides access to a number of

communities including Dover and Portsmouth where access to the Northeast rail service and other bus services is available.

3.6.2 Taxis

There is taxi service provided in Farmington by a company out of Rochester, NH. Transportation is available on demand and service is provided on a 24-hour-a-day basis to any location in New England.

3.6.3 Rail

There is one rail right-of-way in Farmington. The Boston to Maine right-of-way passes through Farmington to points north and south. The right-of way is now owned by the State of New Hampshire and the rails have been removed, but it was active on a limited basis until 1988. The Town should do all that it can to preserve the integrity of this corridor. The right-of-way is now used as a year round multi-use trail, but its protection preserves the possibility of restoring rail to this region if it becomes a viable option again in the future.

3.6.4 Regional and Local Airports

There is no regularly scheduled air service in Farmington. The region relies on commercial and private aircraft providing service through a variety of airports in New Hampshire and Maine.

Skyhaven Airfield

Located in Rochester, three miles southeast of the downtown area, this facility contains one 4,000 foot long asphalt runway that is 100 feet wide. The Airfield has limited services available to pilots including fuel, equipment service, and tie downs.

Manchester Airport

The Manchester Airport is one of the closest major facilities, with a wide range of airlines operating regularly scheduled flights. This facility has two runways; one is 9,000 feet and 150 feet wide, and the other is 7,700 feet long and 150 feet wide. Both runways were recently extended to these lengths and the facility is growing quickly. Manchester is also one of New England's largest cargo airports, with FedEx, UPS, and Airborne Express facilities on site. The FAA operates a 24-hour Air Traffic Control Tower on site. The Airport is owned by the City of Manchester, and is operated by the City of Manchester Department of Aviation. The airport is currently handling 3.4 million passengers a year, and is projected to handle 6 million passengers annually within ten years' time.

Pease International Tradeport

Pease International Tradeport is located at the former Pease Air Force Base in Portsmouth and Newington, New Hampshire. It encompasses 3,000 acres and has one runway 11,321 feet long

and 150 feet wide. The Pease Development Authority operates the Tradeport. The Tradeport handles cargo, corporate, general aviation, and limited passenger service. Pan American Airlines began scheduled passenger service to the Orlando, Florida area from the Tradeport in 1999. The Pease Development Authority is actively seeking to encourage international passenger charter travel, based on its runway length and proximity to recreational and cultural amenities.

Portland International Jetport

The Portland International Jetport, like many community airports, had its beginnings as a flying fan's private field. Today, the facility serves nearly 1.4 million passengers a year, flying on the most modern equipment of most of the major airlines. The primary runway is 6,800 feet long and 150 feet wide, and the secondary runway is 5,001 feet long and 150 feet wide. The City of Portland recently spearheaded a master planning effort for the Jetport, because of its economic development value for the City and southern Maine, that will guide the growth of this facility into the future.

3.7 Other Special Transportation Issues

The trends in commuting and transportation that have emerged for the Farmington region reflect many of the transportation trends found nationwide. The number of cars on the road and the vehicle miles traveled have increased at a greater rate than the general population. The cumulative impacts of this increased automobile dependence include: traffic congestion, air pollution, noise pollution, and higher taxes and tolls to pay for new highway projects. Social and aesthetic impacts include: less cohesive neighborhoods, lost open space, and an increase in sprawling strip commercial development. It is important to remember the strong relationship that exists between Farmington's land use and transportation systems. Action within one system will have a direct impact on the other. Focusing on the community's strengths presents opportunities to improve pedestrian connections, coordinate existing bus links, and create shuttle service to points south to further improve how Farmington's existing transportation system functions.

During the NH Route 11 Corridor Study the following topics were considered of great importance to the safety and functionality of the transportation system.

3.7.1 Access Management

Access Management is the process of managing the placement of driveways on roadways, especially on those roadways classified as arterials. Arterial highways are similar to limited access freeways in that their primary function is to move people and goods over long distances quickly and efficiently; however, arterials do not have the benefit of strict access controls to adjacent parcels that limited access highways have. The speed, volume, and safety of traffic on an arterial is greatly reduced by vehicles entering and exiting side streets and driveways. In general, access management policies involve the regulation of the number of driveways, the design and placement of driveways, and the design of any roadway improvements needed to accommodate driveway traffic.

3.7.2 Traffic Calming

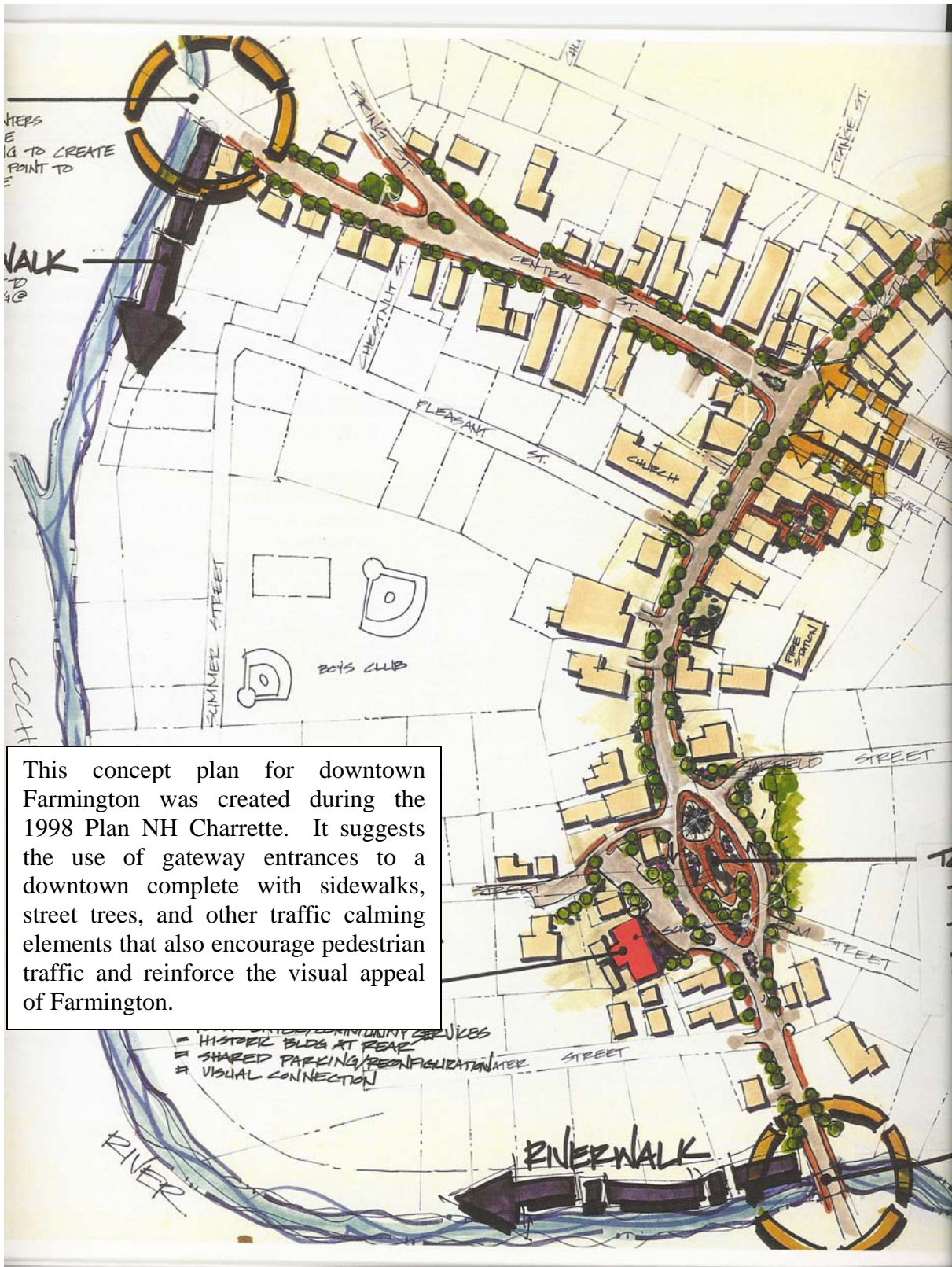
When traffic congestion reaches a saturation point, usually during the peak hour, motorists often seek alternative routes through neighborhoods. Traffic calming techniques can be utilized to slow down and control traffic on streets where it is necessary for traffic and pedestrians to co-exist. The term traffic calming is often described as the combination of mainly physical measures that reduce the negative effects of motor vehicle use on a roadway. However, the term "traffic calming" also applies to a number of transportation techniques developed to educate the public, and provide awareness to unsafe driver behavior.



Traffic calming techniques often include police enforcement and education, speed humps and other devices, narrow and curved streets, and landscaping. Farmington is already employing a series of traffic calming techniques in the downtown including on-street parking, crosswalks, and narrow back streets. There are still opportunities for traffic calming improvements throughout the downtown, and along many of the rural roads in the community. This gateway traffic calming sketch is from the 1998 Farmington Design Charrette sponsored by Plan NH. This image shows the roadway to create a gateway to the downtown area combined with narrower travel lanes and landscaping. The driver is given a message that they are entering a very different and special place. The Farmington Charrette also provided some ideas on pedestrian circulation, street trees, gateway landscaping, and other techniques that also provide traffic calming benefits. The image below shows some of the possibilities for the downtown area.



*Gateway Traffic Calming Concept for
Downtown Farmington – Plan NH Charrette 1998*



This concept plan for downtown Farmington was created during the 1998 Plan NH Charrette. It suggests the use of gateway entrances to a downtown complete with sidewalks, street trees, and other traffic calming elements that also encourage pedestrian traffic and reinforce the visual appeal of Farmington.

3.8 Land Use Implications and Potential Actions

Land Use Implications

Farmington's transportation modes and infrastructure play an important role in the quality of life of the community. An interconnected transportation system provides travelers with options as they navigate between destinations. This allows traffic to disperse, allows alternative transportation modes, and may reduce the number of vehicle miles traveled by area residents. Here are several items to consider related to the various transportation resources in Farmington.

- 1) Signage and wayfinding are important components of the transportation system and can be instrumental in directing traffic to available parking resources. Poor signage leads to confusion and missed opportunities for visitors, and has an impact on the safety and efficiency of the roadway network.
- 2) Pedestrian and bicycle trips reduce traffic on the roadways, promote public health, and have less impact on the environment. Farmington's current sidewalks, paths and trails play a limited role in the community's transportation system, but have the potential to accommodate a greater number of trips within the community.
- 3) Local public transportation services are limited. Nodes of development that generate a higher number of potential riders at one location (such as downtown) are more conducive to public transportation than low density strip development. Site design guidelines for developments that include provisions for pedestrian circulation and public transportation can effectively enhance the use of alternative transportation and reduce the use of single occupant automobiles.
- 4) Access management techniques benefit adjacent land uses and can enhance the character and safety of the corridor. The primary goal of implementing access management policies is to prevent the loss of roadway capacity due to development along arterials by reducing turning movements that conflict with through traffic.
- 5) Traffic calming techniques would provide an option to the community for protecting the safety and congeniality of Farmington's neighborhoods, without excluding traffic.

Potential Actions

There are an array of possible actions the Town may want to consider pursuing as it evaluates existing and future transportation modes and infrastructure in Farmington and their land use implications. This section will be used to identify the specific actions for Farmington to take upon completion of the master plan.

- 1) Evaluate the quality and effectiveness of the existing signage and wayfinding systems. Provide visible and high quality signage with accurate information in a consistent format to direct travelers to the routes and destinations the community has identified. Commit to an ongoing program of signage repair and replacement.

2) Accommodate walking as a key mode of transportation in the downtown by maintaining and enhancing existing sidewalks, adding new sidewalks to the network, and requiring sidewalks in new developments.

3) Include required provisions for bicycle and pedestrian facilities in the zoning, site plan review, and subdivision regulations.

4) Apply for Transportation Enhancement Funds, through the NH Department of Transportation, for the construction of additional sidewalks and multi-use paths along state routes and elsewhere in Farmington.

5) Work with local transit providers to educate the public on how they can better access public transportation, and all of the economic, social, and environmental benefits of public transportation.

6) Require access management in the Town land use ordinances and regulations. Discuss these requirements with the NH Department of Transportation and consider signing a Memorandum of Understanding with the Department. This will ensure better coordination over future curb cuts. Implement access management improvements through municipal roadway projects, and the voluntary efforts of property owners to:

- Reduce the number of curb cuts along arterials by increasing frontage requirements or the required distance between driveways, and encourage the use of common driveways.
- Encourage the development of service roads parallel to arterials that allow for access to adjacent commercial developments. Depending on the roadway, determine whether buildings, parking, and signs should be set back from the road sufficiently to allow for a future parallel frontage road, or moved closer to the roadway with all access from the rear of the lots.
- Require connections to adjacent developments and other local roads, not just the collector or arterial roadway to allow employees and customers to move from site-to-site without repeatedly entering and exiting the arterial.
- Require developers to consider their plans within the context of the community and regional roadway system.
- Place parking behind or beside buildings and screen parking when possible to make the building the focal point of the destination. Reduce the front setback for these commercial structures, and use green spaces to articulate the differences between driveways, parking, and pedestrian areas.
- Allow for pedestrian access between commercial developments. Crossing points for pedestrians should be across driveways rather than through parking areas.

- Orient sites to accommodate pedestrian patterns efficiently, especially in pedestrian intensive areas like the downtown, rather than forcing pedestrians to conform to the design.
- Non-residential driveway entrances should be designed to prevent vehicles on the arterial from backing up while waiting to access the site. By providing adequate depth or driveway throat length at the curb cut access, vehicles are allowed sufficient maneuvering space on-site to move away from the entrance and allow other vehicles to efficiently and safely enter or exit the site.
- Vehicular and pedestrian traffic should be separated as much as possible. Foot traffic should be permitted to access buildings without crossing driveways or excessive parking areas.

7) Implement traffic calming techniques on new roadway projects and on existing roadways when possible. This includes:

- Narrowing streets – Wide streets often encourage motorists to drive faster. Extending curbs, eliminating multiple lanes, and adding bicycle lanes can help reduce speeds on existing roadways. Farmington’s street design standards should incorporate these traffic calming elements.
- Breaking up straight-aways – Straight-aways on roads encourage speeding. On existing roadways reductions in speed can be obtained by making physical alterations such as speed humps, speed tables, rumble strips, and traffic circles that require motorists to deviate from a straight line.
- Re-aligning and re-designing intersections to be more pedestrian friendly should also be considered. “Neck downs” can be added to decrease the width of road required by pedestrians to cross, and at signalized intersections the timing can be changed to add more walk time while traffic is stopped.

8) Changes to Farmington’s land use regulations should allow more mixed-use development so that daily activities are integrated rather than separated. Activities that are separated require vehicle trips between zones. Mixed-use development can be successful in downtown and commercial corridor locations.

9) Work with local employers to encourage Transportation Demand Management (TDM) programs for employment centers. (i.e. staggering shifts and creating car pools)

4.0 TRANSPORTATION SYSTEM

4.1 The Network

As Farmington's roadways are maintained, improved, or expanded, it is important to recognize their function in the overall transportation system. The design of the roadway should then reflect its function. Below is an inventory of all of Farmington's roadways by functional classification. The standards that were used for this classification can be found in Table 8-9 Street Design Standards in Section 4.2 of this chapter. These standards include five roadway classifications (Minimum Local, Minor Local, Major Local, Collector Street, and Arterial Street) that each meet the needs of the roadway network by serving a specific number of dwelling units and daily traffic needs. Based on the number of cars using the roadway, and its role in the network, there are specific design specifications that reflect its function. These include surface width, design speed, grade, sight distance, and other specifications identified in Table 8-9. Over time, as development continues and traffic patterns shift, some roadways will begin to function in very different ways and this inventory will need to be revisited.

Table 8-7 Inventory of Farmington's Roadways by Functional Classification

Arterial

NH RT 11
NH RT 153

Collector

CENTRAL ST
CHARLES ST
CHESTNUT HILL RD
ELM ST
GOVERNORS RD
MAIN ST
MEADERBORO RD
SPRING ST
TEN ROD RD

Major Local Street

BAY RD
BUNKER ST
CAMELOT SHORE DR
CIVIC ST
COCHECO RD
CROSS ST
DICK DAME LN
DAVIDSON DR
DODGE CROSS RD
GLEN ST

Major Local Street

HORNETOWN RD
LONE STAR AVE
MAPLE ST
MEETINGHOUSE HILL RD
MOONEY ST
ORANGE ST
PAULSON RD (east)
POOR FARM RD (Scenic)
RESERVOIR RD (Scenic)
RIDGE RD
SARAH GREENFIELD
WAY
SCHOOL ST
SHEEPBORO RD (Partially)
TAPPAN ST
WALDRON RD
WINTER ST

Minor Local Street

BALDWINS RD
BERRY CT
BEAVER POND RD
BLAINE ST
BLOUIN AVE
BRANSON RD
CAMERON DR
CHERUB DR
CHURCH ST
COLONIAL CIR
COURTLAND ST
CRESCENT ST
CROWLEY ST
DOLAN ST
DREAM HILL RD
DUMP RD
FREEDOM DR
FLAGSTONE AVE
FLOWING BROOK RD
FOXTROT DR
GARFIELD ST
GOLDEN CIRCLE DR
GRANT ST
GREAT PINE CIR
GREEN ST
GRONDIN DR
GROVE ST

Minor Local Street

HANCOCK ST
HAWTHORNE HILL RD
HEMLOCK DR
HERSOM DR
HOLLY LN
HUNTER LN
IVY LN
JERRY LN
LAWRENCE LN
LEPENE DR
LILAC ST
LINCOLN ST
LITTLE CITY RD
LORING AVE
MECHANIC ST
MEMORIAL DR
ORCHARD CIR
PARK DR
PAULSON RD (west)
PEARL LN (Partially a shared driveway)
PERKINS AVE
PINE KNOLL DR
PLEASANT ST
PROSPECT ST
RIVER RD (Scenic)
SILVER ST
SPRUCE DR
SUMMER ST
SYCAMORE BLVD
TALL PINE RD
THAYER DR
TROTting PARK RD
UNION ST
WEBSTER ST
WHITE BIRCH LN
WILSON ST
WORSTER ST

Minimum Local Street

ACORN CT
AIKEN RD (Partially)
APRIL LN
ASPEN DR
AVALON RD
BALSAM DR
BEECHWOOD AVE
BLUE HILLS VW

Minimum Local Street

BLUEBERRY DR
BRAMBLEBUSH RD
BROOKS DR
BROWN RD
BRUCIC HILL RD
BUTLER CT
CEMETERY RD
CANAL ST
CHIPMUNK LN
COMMERCE PKY
CORNWALL PL
COTTAGE CT
CURTIS RD
DEER COVE CIR
ELLIOTT LN
EVERGREEN LN
EXCALIBUR RD
GALAHAD PL
GARLAND DR
GEORGIA PINE LN
GRAY AVE
GREGOIRE DR
HICKORY CT
HILLVIEW TER
HUMMINGBIRD DR
JACKSON DR
JAMES CT
JESTERS WAY
KING ARTHUR DR
KNOTTY KNOLL CIR
LANCELOT RD
LILLY DR
MARSTON CT
MELODY LN
MERLIN RD
MONTGOMERY DR
MORNING DOVE LN
MOUNT VERNON ST
OAKWOOD RD
PEACEFUL PINES CIR
POLLIWOG LN
PRINCIPAL LN
RAND ST
RUSSELL LN (Partially)
SEYMOUR CT
SMITH CT
STONEWALL DR
TOWN RD

Minimum Local Street

TRISTAN DR
 VACHON RD
 VIVIANA DR
 WATER ST

4.2 Design Standards

Currently Farmington's road design standards, for Class V roads, are generally appropriate for handling the necessary traffic volumes without excessive pavement. The road classification shown in this section should serve as the basis for flexible design standards that are more appropriate to the surroundings and the function of the road. Farmington's existing standards can be found below in Table 8-8.

Table 8-8 Farmington Road Design Standards

Design Specification	Local Road Requirements
Right of Way	50 feet
Minimum width of pavement	20 feet
Minimum grade	5%
Maximum grade	10%
Maximum grade at intersections	3 % within 50' of intersection
Minimum angle of intersection	60%
Width of shoulders	3 feet (') minimum
Width of shoulders on rural roads	4 feet (') minimum
Minimum center-line radii on curves	200 feet (')
Minimum tangent length between reverse curves	100 feet (')

Generally, roadway standards are established to ensure that new roads are safe in every situation. According to Farmington’s roadway standards, as found within the subdivision regulations, minimum roadway widths start at 20 feet. This does not ensure a road system hierarchy. In an effort to create safe roads, often an unforeseen result of roadway design standards has been the over-design of rural and lower density residential streets. Typically, over-design of these streets includes elements such as unnecessarily wide pavement widths, as well as sidewalks and curbing which are generally suited for more urban and higher density locales. Below are a set of street design standards created during the US Route 2 Corridor Study in Northern New Hampshire that could serve as a model for future changes to Farmington’s standards.

Table 8-9 Street Design Standards

Standard	Minimum Local Street	Minor Local Street	Major Local Street	Collector Street	Arterial Street
Number of Dwellings	2-6 dwellings	7-40 dwellings	41-150 dwellings	151-500 dwellings	>500 dwellings
ADT	20-60 vehicles	60-400 vehicles	400-1500 vehicles	1500-5000 vehicles	>5000 vehicles
Surface Width	16 feet	18 feet	20 feet	20 feet	varies
Shoulder Width	n.a.	2 feet	2 feet	4 feet	varies
Minimum Right of Way	36 feet	50 feet	50 feet	50 feet	varies
Design Speed	15 mph	15 mph	20 mph	25 mph	varies
Minimum Length of Vertical Curve	80 feet	80 feet	115 feet	155 feet	varies
Minimum Horizontal Curve radii	45 feet	45 feet	90 feet	165 feet	varies
Minimum Grade	0.5%	0.5%	0.5%	0.5%	0.5%
Maximum Grade	12%	10%	10%	8%	8%
Site Distance (both directions)	150 feet	200 feet	200 feet	250 feet	400 feet

FOOTNOTES:

[1] Shall be future anticipated traffic. (Assuming 10 trips per day per dwelling unit).

[2] All cross-section horizontal distances shall be measured perpendicular to straight-line sections and radii to curved sections.

[3] All season safe sight distance is defined as a line which encounters no visual obstruction between two (2) points, each at a height of three feet nine inches (3'-9") above the pavement and allowing for a snow window and /or seasonal vegetation. The line represents the critical line of sight between the operator of a vehicle using the access (point 1, ten feet (10') back from the road pavement) and the operator of a vehicle approaching from either direction (point 2).

4.2.1 Gravel Roads

Gravel roads are generally the lowest service provided to the traveling public in the hierarchy of roadways, and are usually considered greatly inferior to paved roads. Yet, in many rural regions, the volume of traffic is so low that paving and maintaining a paved road is not economically feasible, and the character that the unpaved roadways contribute to the community is highly valued. In some cases gravel roads exist to provide access only to our farm and forest resources. Many gravel roads now serve rural residents as well, however, many of these roads will remain unpaved due to very low traffic volume and/or lack of funds to adequately improve the subgrade and base before applying pavement layers.

Change is constant in almost every aspect of this modern world and maintaining gravel roads is no exception. There are new ways of stabilizing roads, new methods of dust control, new and different kinds of equipment available for maintenance/ rehabilitation of gravel roads, and even new surface materials such as recycled asphalt being used. Not all of these innovations may be available or practical for Farmington, but the community is encouraged to take an objective look at each of them. Then an informed decision can be made about changing the way gravel roads are designed and maintained within Farmington.

When evaluating the possibility of improvements to a specific roadway the community should consider the roads status in the road system hierarchy or road improvement plan. Each roadway evaluation will be different, but all of the pros and cons must be weighed. These include the existing conditions, current and future levels of use, the character of the traffic, construction and maintenance costs over the life of the road, roadway safety, community character, and public opinion. In all cases Best Management Practices (BMPs) should be used, the rural character of the roadway should be preserved, and every effort should be made to calm traffic speeds by preserving the adjacent features and vegetation and limiting the width of the roadway. Scenic road designation, cutting restrictions, and restrictions on the minimum distance between driveways could all be used to help manage the roadway and adjacent land uses.

4.2.2 Scenic Roads

This designation can be applied to paved and gravel roads to provide additional oversight at the local level. The character of the roadway and its roadside attributes can be better protected if this tool is used appropriately. The application of this tool takes a strong commitment by the municipal boards and departments, and the public.

4.3 Land Use Implications and Potential Actions

Land Use Implications

Farmington's network of roadways form the primary transportation system for the community and most transportation modes rely on this system. Here are a few considerations related to the network and the design standards that will be used as the basis for future improvements and new roadways in Farmington.

- 1) Roadways should be designed and constructed based on the role they fill in the local road system. Roads should provide the necessary access while controlling the speed of vehicles.
- 2) Reducing roadway widths reduces the amount of impervious surface in the town. This is much better for stormwater management and calms traffic.

Potential Actions

There is one possible action the Town may want to consider pursuing as it evaluates the classification of roadways in Farmington and the design standards for each class. This section will be used to identify the specific action for Farmington to take upon completion of the master plan.

- 1) Review the existing street design standards and include greater detail to ensure a hierarchy of roads in Farmington.
- 2) Create an evaluation process for gravel roads that are being considered for paving.
- 3) Create a transportation improvement plan that documents future maintenance and construction needs for all roadways and associated transportation infrastructure.

5.0 SUMMARY AND CONCLUSIONS

In order for Farmington to create a transportation system where function and safety will be improved, and longevity of the system will be ensured for all modes, the community must recognize the connection between land use decisions and transportation improvements. Many of the items discussed in this chapter can be addressed in the Farmington Land Use Regulations. Others can be pursued simultaneously in a non-regulatory process of outreach and education. Business owners may choose to apply access management and traffic calming elements into proposed changes to their properties, and may wish to work with their employees on reducing and reshaping demand on the transportation system. Organizations within the community can then be encouraged to partner on transportation services that meet the needs of their clients as well as the broader community.