

# Chapter 5 Transportation



# Chapter 5 Transportation

## 1.0 INTRODUCTION



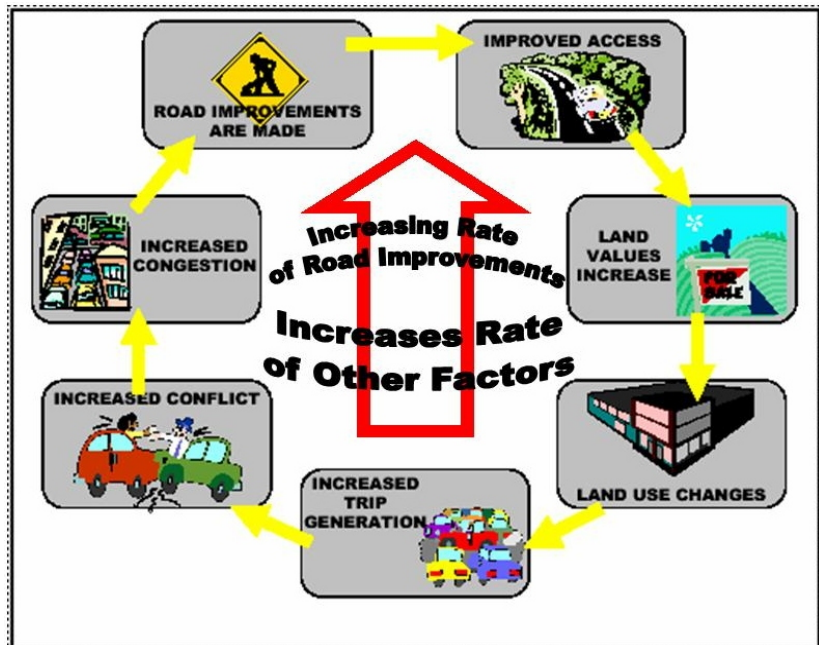
Rindge’s transportation system directly affects the quality of life and economic vitality of the community and the region. This is most evident in Rindge’s regulation of land use and in its investments in the expansion of its infrastructure, both of which play an important role in the evolution of development patterns, as illustrated in Figure 5.1, below. Therefore, attention must be given to the impact that public policies have on the interconnected land use and transportation systems. This was explored during the US Route 202 Corridor Study and serves as a model for the other major

corridors in the community. This chapter provides guidance, recommendations and context 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 enhancing the environment and a quality of life for the community. The transportation infrastructure must be designed to serve local needs, must be compatible with local land use and community character, while also accommodating the transportation needs of the region.

Rindge has a number of transportation systems operating within its borders. While dominated by the automobile, much of the Center Village is conducive to walking and bicycling. West Rindge Village is dominated by Route 202, but

Figure 5.1 Land Use Transportation Cycle



within the village core there are opportunities for pedestrians and bicyclists. East Rindge is bicycle- and pedestrian-friendly because of the low traffic volume and lack of non-residential activity. Residents' and visitors' inter-regional transportation needs are served by automobiles, the State Highway system, and local roadways.

## **2.0 EXISTING TRANSPORTATION FACILITIES**

### **2.1 Classification of Highways and Roads**

#### **2.11 Ownership and Maintenance Responsibility**

The State Aid classification system, which is identified by RSA 229-231, establishes responsibility for construction, reconstruction and maintenance as well as eligibility for use of State Aid funds. 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. In Rindge Class I Highways include Route 202 and Route 119 (east of Route 202).
- **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 Rindge this includes New Hampshire Route 119 (west of Route 202) and Cathedral Road (Route 119 to Squantum Road).

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. This includes Cathedral Road (Squantum Road to Jaffrey Town Line) in Rindge.

- **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. Rindge 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 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 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 trees or disturbance of a stone wall must go through the hearing process and written approval of local officials. (See RSA 231:157). Fitzgerald Road in Rindge has been designated as a Scenic Road.

The approximate road mileage of these road categories and their respective surface types are indicated in Table 5.2. The table presents New Hampshire DOT mileage figures for state maintained roads and SWRPC mileage figures for town maintained roads, by road classification, in Rindge.

**Table 5.2 Approximate Road Mileage by Road Classification and Surface Type**

Classification	1990 #Miles	2006
Class I:		
Route 202	5.90	5.90
Route 119 (east of Rt. 202)	6.65	6.65
<b>Total</b>	<b>12.55</b>	<b>12.55</b>
Class II:		
Route 119 (west of Rt. 202)	2.79	2.79
Cathedral Road (RT 119 to Squantum Rd.)	1.67	1.67
<b>Total</b>	<b>4.46</b>	<b>4.46</b>

Class III:		
	<u>Cathedral Road (Squantum Rd. to Jaffrey Town Line)</u>	<u>1.23</u>
Class V:		
	<u>1990</u>	<u>2006</u>
	Paved Surface	63.0
	<u>Gravel Surface</u>	<u>12.89</u>
Total	<b>57.40</b>	<b>75.89</b>
Class VI:		
	<u>Total (unpaved)</u>	<u>17.28</u>
	<b>TOTAL</b>	<b>111.41</b>

Source: *New Hampshire Department of Transportation and the Southwest Region Planning Commission*

*Rindge should classify and define the purpose of the various roadways throughout the community, and the stated purpose of each road classification should be the basis for its design, use, and maintenance requirements.*

**2.12 Function and Design** Rindge needs to classify and define the purpose of the various individual town roads. This can be a difficult task, as many of them serve two or more functions. Nonetheless, distinctions should be made between arterials, collectors, and local roads. Further, local roads should be 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 access roads serving smaller residential developments could easily be reduced in scale to enhance neighborhood character, distinguish traffic speeds, reduce construction and maintenance

costs, and still provide safe access.

Section 4.1 of this chapter describes the classification of each roadway in Rindge. Section 4.2 then shows the existing Rindge Road Dimensional Standards, and a series of suggested street design standards. On state routes the Town of Rindge 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 users beyond motor vehicles.

## 2.2 Existing Traffic Volumes and Trends

Traffic circulation within and through Rindge is probably the most important transportation issue facing the community. The structure of the local roadway network requires local and regional travelers to share, to a significant degree, the major arterials in Rindge. According to the US Route 202 Corridor Study, the majority of traffic on Route 202 is passenger vehicles. Truck traffic is a fairly small percentage (2-4 percent). Local traffic in Rindge consists mainly of trips from residential areas to the village and commercial areas in Rindge and neighboring

communities. The commercial districts in Rindge, such as Route 202, are also attracting more short and long-range trips each year.

These multiple destination commercial trips generate substantial turning movements in the portion of the community with the highest traffic volume. 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 2004 traffic volumes increased from an average of 4,200 vehicles per day on Route 202 at the Jaffrey Town Line to an average of 8,698 vehicles per day. Just south of Route 119 on Route 202 traffic volumes in 2004 were reported to equal 9900 vehicles per day. This is a 50% increase from the 6600 vehicles per day reported at this location in 1994.

*Traffic volumes on Route 202 at the Jaffrey town line more than doubled from 1982 -2004*

Overall, traffic in Rindge has grown as the community’s role regionally has increased over the past twenty years. Traffic volumes vary somewhat over the course of a year in Rindge due to the impact of the tourism and college. Table 5.3 illustrates Annual Average Daily Traffic (AADT) counts for Rindge in greater detail.

**Table 5.3 Average Annual Daily Traffic Volumes**

<b>Location</b>	<b>1982</b>	<b>1990</b>	<b>% Change 1982 - 1990</b>	<b>2004</b>	<b>% Change 1990 - 2004</b>
<b>NH 119 East of US 202</b>	2400	4100	71%	5700	39%
<b>NH 119 at Fitzwilliam Town Line</b>	1400	3000	114%	3900	30%
<b>US 202 at Jaffrey Town Line</b>	4200	5800	38%	8698	50%
<b>US 202 at Massachusetts State Line</b>	2200	3300	50%	5800	76%
<b>NH 119 at New Ipswich Town Line</b>	1300	2300	77%	3000	30%
<b>NH 119 East of North Street</b>	NA	NA	NA	3100	NA
<b>NH 119 East of Gen. I.D. White Highway</b>	NA	NA	NA	4100	NA
<b>US 202 South of NH 119</b>	NA	NA	NA	9900	NA

Source: New Hampshire Department of Transportation

According to the US Route 202 Corridor Study, the majority of vehicles recorded by speed were traveling at or near posted speed limits. One of the locations with the highest number of vehicles traveling at 55 mph or higher was Route 202 near the Jaffrey/Rindge town line. Thirty-one percent of the vehicles were recorded traveling 55 mph or higher at this location. The majority of vehicles (94 percent) traveling at 55 mph or higher were passenger vehicles.

**2.3 Pavement Condition**

**The Road Service Management Plan is in the beginning stages of planning. It is anticipated that the plan will be incorporated into the Capital Improvements Plan for funding.**

## 2.4 Bridge Data

See the Hazard Mitigation Plan.

Two major bridges (Wellington Road and Converseville Road) in Rindge are in poor condition. Most box culverts in Rindge are in good condition with only 1 needing repair.

**Table 5.4 Rindge’s Bridges**

Bridge Location	Maintenance Responsibility
North Street -over North Branch Millers River	Town
Wellington Road -over North Branch Millers River	Town (twin culverts to be replaced)
Route 119 -over North Branch Millers River	State
Converseville Road - -over North Branch Millers River	Town (to be replaced)

## 2.5 Crash Data

In 1995 there were 88 crashes on Rindge’s roadways (see Table 5.5). By 1999, the annual number of crashes increased to 118 throughout Rindge, and as of 2002 132 accidents were recorded annually. The crash data shows that the largest number of crashes annually were on Routes 202 and 119, but crashes were reported on many roadways throughout Rindge. The location with the highest number of crashes annually is the intersection of Routes 202 and 119. There was one fatal accident from 1995 to 2002, and the location of that accident was the intersection of Route 119 and Cathedral Road.

*The largest number of crashes annually were on Routes 202 and 119.*

**Table 5.5 Rindge Crash Data 1995, 1999 & 2002 - 2005**

Rindge Crash Data						
	1995	1999	2002	2003	2004	2005
Total Accidents	88	118	132	98	142	130
Fatalities	1	0	0	2	1	0

Source: NH Department of Transportation and Town of Rindge Police Department

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 Rindge 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 state maintained and numbered routes, based on 2004 traffic data. To ensure uniformity, the traffic volumes utilized for comparison purposes were current weekday PM peak hour volumes (normally an example of a high recurring peak condition) throughout the state. In Rindge Route 202 was evaluated and received a moderate rating (LOS C and D) indicating a moderate amount of congestion on this stretch of highway. Route 119 in Rindge was also evaluated and received a mix of moderate ratings (LOS C and D) for a section to the east of the Route 202 intersection, and for a section just to the east of the Fitzwilliam town line. Elsewhere on Route 119 a higher rating (LOS A and B) was awarded. Level of Service calculations for the intersection of Routes 202 and 119 were calculated during the US 202 Corridor Study and found the intersection to be operating at a Level of Service C in 2001.

As the LOS drops traffic will be pushed onto available local roads to avoid the congestion and other problems related with the roadway. As the LOS on Route 202 drops there is concern over the amount of traffic that may begin using the following local roads:

- South Main Street
- Todd Hill, Hunt Hill Roads
- Forristall Road
- Wellington Road
- Robbins, Perkins and Thomas Roads
- Payson Hill Road
- School Street
- Cathedral Road
- Cutter Hill Road

The concern over the increased use of these roads is related to the potential volumes of additional vehicle traffic, and the speed of vehicles traveling on these roads. Traffic calming will be one of the techniques that may need to be employed to control the impact of additional vehicles on the community's roadways.

## 2.7 Land Use Implications

Rindge's existing transportation facilities are a critical resource for area residents and visitors, and for commerce in the region. In the last twenty years, these transportation facilities have experienced an increase in demand, as Rindge's role in the region has increased. Here are a few items to consider related to the existing transportation facilities in Rindge:

1. **Rindge'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. **Strip development, increasing numbers of high volume intersections, and 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.
3. **Rindge's roadways should not be designed for motor vehicle traffic alone.** Incorporating "Context Sensitive Solutions" into Town and State roadway projects should help preserve some of the scenic, historic, and environmental features within the project areas.

## 2.8 Actions

*There are arrays of possible actions the Town may want to consider pursuing as it evaluates and improves the existing transportation facilities in Rindge. This section will be used to identify the specific actions for Rindge to take upon completion of the Master Plan.*

1. **There is currently a need for more comprehensive traffic count data in Rindge.** This is especially true for the local roadways. The Town should work with the Southwest Region Planning Commission and the NHDOT as they plan the location and timing of future traffic counts in Rindge. The 202 Highway corridor plan should be updated.
2. **Roadway improvements and future road construction should be designed to control the flow of traffic and the number of access points to the roadway.** This will help preserve the capacity of Rindge's roadways without making them unnecessarily large, and will reduce the number of conflict points where crashes can occur.
3. **Work with the NHDOT on Context Sensitive Solutions** for roadway improvements in Rindge. Particular emphasis should be placed on the highway access points as shown on the Future Land Use Plan, as these are proposed to be the focus of nodal type development within the adjacent land areas.

### 3.0 SPECIAL TRANSPORTATION ISSUES

#### 3.1 Workforce Commuting

*The mean travel time for Rindge residents commuting to work is 26.5 minutes.*

According to New Hampshire Employment Security, Rindge has 2,759 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 Rindge workers is 26.5 minutes according to the US Census. This is very similar to the New Hampshire average of 25.3 minutes, and the national average of 25.5 minutes. One aspect of the population that this does not reflect is the “long distance commuter.” The number of people traveling an hour or more to work is considered to be significant according to residents, and it is a number that appears to be growing. Table 5.6 shows the distribution by mode of transportation. Of Rindge’s total workforce, 24 percent commute to another state which is no surprise for a border community.

**Table 5.6 Transportation Modes**

<i>Mode of Transportation</i>	<i>Percent of Rindge Workers</i>	<i>Percent of New Hampshire Workers</i>	<i>Percent of U.S. Workers</i>
Drive Alone	74.3%	81.8%	75.7%
Carpool	12.2%	9.8%	12.2%
Public Transportation	.4%	.7%	4.7%
Walk	6.8%	2.9%	2.9%
Work at Home	5.4%	4.0%	3.3%
Other Means	.9%	.8%	1.2%

Source: *US Census*

Rindge’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 Rindge’s figures for public transportation would be lower than the national average, considering the lack of public transportation in the Rindge area compared to other regions of the U.S. that are more conducive to mass transit. It is encouraging, however, to see that Rindge is well ahead of the New Hampshire and U.S. averages for the number of commuters that walk to work. It is unclear where this is currently taking place in Rindge, but it may be activity at Franklin Pierce College. Either way this demonstrates the need for the maintenance and creation of pedestrian facilities discussed further in Section 3.2 of this chapter.

#### 3.2 Bicycle & Pedestrian Facilities

There is a need to develop new bicycle and pedestrian facilities that provide improved connections within Rindge. This should include connecting the three villages to the rail trail, and to Franklin Pierce College using a series of sidewalks, bike routes, and multi-use paths.

### 3.21 Sidewalks

The only significant sidewalk network in Rindge occurs in the Center Village and on the Franklin Pierce Campus. Pedestrian movement in the village is an important mode of transportation. It is a key to the quality of life, and physical health of the community. To support this, Rindge's streets and intersections should be designed to provide for safe and convenient pedestrian access.

There are numerous safety issues associated with specific segments of sidewalk found within the community, including minimal separation from travel lanes, multiple and wide curb cuts, and handicapped accessibility constraints. Navigating the strip commercial and undeveloped areas along Route 202 as a pedestrian can be a dangerous undertaking. A lack of crosswalks at major intersections, such as the Route 202/119 intersection, has also been identified as an important pedestrian issue. As land uses change in the West Rindge area there will be a need for sidewalks and better connections to other portions of the community.

*Walking and biking are the keys to the quality of life, and physical health of the community.*

### 3.22 Bicycle Routes

The State Bicycle Map designates the Route 202 and 119 corridors as regional bike routes. However, due to the amount of vehicle traffic and turning movements, these corridors are not always friendly for bike riders of all abilities. A network of formal bicycle lanes along major roads would greatly enhance rider safety and use, and should serve riders of varying abilities. This network should include both of the roadways identified above. In order to create such a network, the Town of Rindge will have to work closely with the NHDOT, which is responsible for both of these corridors.

The placement of bicycle racks within the village area and at retail and employment locations throughout Rindge is important. There is a need to provide a safe location for bicycles to be secured. The availability of changing rooms and showers also helps to encourage the use of bicycles for commuting to work.

### 3.3 Multi-use Trails and Paths

There are a multitude of trails and paths in Rindge serving walkers, hikers, mountain bikers, horseback riders, cross-country skiers, and snowmobilers. Much of this network is informal and privately owned, with no formal agreements for continued use or signage. The community has been considering a formal multi-use trail along the old railroad bed which runs adjacent to the Route 202 corridor. A multi-use trail could also be constructed from the intersection of 202 and 119 west to Franklin Pierce College, and to the east to Center Village and East Rindge to make a more complete network.

Existing and proposed trails provide recreational opportunities and encourage healthy activity, and can also factor into the transportation system of the community by providing additional mode choices and connections between destinations.

The only formal motorized use trails in Rindge are the snowmobile and ATV corridors. The State of New Hampshire has established a network of trails connecting communities and financially supplements the efforts of local snowmobile clubs to groom and maintain these trails.

### **3.4 Signage and Way-finding**

Rindge's signage and way-finding 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 way-finding (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 Rindge's transportation and economic development infrastructure. The following are fundamental objectives of a signage and way-finding system for Rindge:

- Identify the routes and destinations that travelers need to get to;
- Identify important decision points along each route that will be important to travelers;
- Provide accurate information, in a legible and consistent format, at key locations along each route.

Most of the existing signs in Rindge are in good to fair condition, but having effective signage requires a commitment to repairing and replacing signage regularly. Signage is not a one time purchase. It is also important to ensure that signs can be clearly viewed upon approach to avoid confusion and crashes.

### **3.5 Dead-End Roads**

Rindge has been discussing the merit of requiring streets in new subdivisions to provide for continuation into adjoining subdivisions. At the same time these new regulations should suggest that the design minimize "drive-thru-traffic." Where possible, connections should be made between new roads and existing dead-end roads.

There are several advantages to this, including dispersal of traffic, encouraging transportation alternatives, 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. 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.

## **3.6 Public Transportation Facilities**

### **3.61 Buses**

#### *Fixed Route and Demand Response Service*

There is currently no fixed route or demand response bus service within Rindge to provide access to public transportation. The only shuttle service is operated for students by Franklin Pierce College. This service circulates on campus and provides limited trips to shopping destinations on Route 202. This service could be expanded with support from the Town to provide additional circulation within Rindge for all residents. Another possible shuttle route to consider developing would be service from Rindge to Peterborough through Jaffrey. This would be a service for the region and would serve Peterborough, Jaffrey, and Rindge residents.

Montachusett Regional Transit Authority provides service from Winchendon to points south in Massachusetts.

- *Vermont Transit Lines*

Offering service to Montreal, New York and Boston with stops in Greenfield, Northampton and Springfield, Mass.; Brattleboro, Bellow Falls, White River Junction, Ascutney, Montpelier, and Burlington, Vt.; Hartford, Connecticut; and Keene and Hanover, NH. Eight trips daily leave from Keene Transportation Center.

- *Thomas Transportation Services, Inc.*

Offers transportation service to airports throughout the Northeast. Service is available 24 hours, including private vehicle service, courier service, charter and connections. Thomas Transportation provides approximately 20,000 round trips annually.

- *Monadnock Transportation*

Offers door-to-door service to any city or airport in the Northeast including limited courier services. Currently 400 to 500 trips are provided monthly. Clients are business and corporate with some medical trips to regional hospitals (Dartmouth-Leahy-Hitchcock and Boston General Hospital). Regarding the future, Monadnock Transportation cited possible expansion into the low-income market which is not currently served by public transportation or by private carriers.

- *Laidlaw Transit, Inc.*

Provides service for public schools (6,000 children, 68 routes, 90 buses) in Cheshire County (excluding Westmoreland) including special transportation for handicapped students (20 vehicles), sports and extra-curricular activities. Other services for Keene State and Franklin-Pierce Colleges include 12 to 15 trips daily (1600 to 2000 annually).

### **3.62 Taxis**

There is taxi service available in Rindge through two companies based in Jaffrey and Peterborough. Transportation is available on demand and service is provided on a 24-hour-a-day basis to any location in New England.

### **3.63 Rail**

Originally known as the Monadnock Railroad and then the Boston and Maine Railroad, the rail corridor through Rindge stretches from South Ashburnham, MA to Peterborough, NH. It is now referred to as the Monadnock Branch. Now inactive, the corridor has been preserved by the State of New Hampshire.

There is limited passenger rail service in the Southwest Region of New Hampshire. Rail transportation is limited to Amtrak service from Brattleboro and Bellows Falls, VT with connections north to Burlington, VT and Montreal and south to New York, Philadelphia, and Washington. Of this system, known as the Connecticut River Main Line, only 24 miles of track are located in New Hampshire, extending from the Vermont border in Walpole to the Vermont border in Cornish. There is commuter rail from Fitchburg, MA to Boston, MA.

### **3.64 Regional and Local Airports**

There are two public airports in the Southwest Region – the Dillant-Hopkins Airport located in Keene and the Silver Ranch Airport in Jaffrey. Fixed passenger service is not provided for at either of these airports, but the return of commercial flights to Keene would be an important resource for Rindge. There are a number of airports within a short drive of the Southwest Region providing extensive fixed passenger service, including the Manchester Boston Regional Airport; the Lebanon Airport; Worcester Regional Airport in Worcester, MA; Bradley International Airport in Hartford CT; T.F. Green in Providence; and the Logan International Airport in Boston, MA.

- *Manchester Airport*

The Manchester Airport is the closest major facility, 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 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.

### **3.7 Other Special Transportation Issues**

The trends in commuting and transportation that have emerged for the Rindge region reflect many of the transportation trends found nationwide. The numbers 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 of sprawling strip commercial development. It is important to remember the strong relationship that exists between Rindge'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 and bicycle connections, coordinate bus service, and create shuttle service to the Industrial Park to further improve how Rindge's existing transportation system functions.

### 3.71 Access Management

*The speed, volume, and safety of traffic on an arterial becomes greatly reduced by vehicles entering and exiting side streets and driveways.*

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 do. 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, consolidation of existing driveways, the design of roadway improvements needed to accommodate new driveway traffic, the use of alternative facilities such as frontage roads, and the creation of internal street networks. The US Route 202 Corridor Study completed in conjunction with Southwest Region Planning Commission in 2002 resulted in a change to the local regulations that now require the conceptual layout of an access/service road along the 202 limited access corridor.

### 3.72 Traffic Calming

When traffic congestion reaches a saturation point, usually during the peak hour, motorists often seek alternative routes along town roads which often pass 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. In Rindge this may include crosswalks and other structures.

### 3.8 Land Use Implications

Rindge'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 Rindge:

1. **Signage and wayfinding are important components of the transportation system and can be instrumental in directing traffic.** 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.** Rindge'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 over time.

3. **Park and ride lots could be an important component of demand management** and encouraging alternative modes of transportation and carpooling in Rindge.
4. **Local public transportation is very limited across New Hampshire.** Nodes of development that generate a higher number of potential riders at one location (such as the village and mixed use developments) are more conducive to public transportation than 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.
5. **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.
6. **Traffic calming techniques would provide an option to the community** for protecting the safety and congeniality of Rindge's backroads and neighborhoods, without excluding traffic.

### **3.9 Actions**

*There are many possible actions the Town may want to consider pursuing as it evaluates existing and future transportation modes and infrastructure in Rindge and their land use implications. This section will be used to identify the specific actions for Rindge to take upon completion of the Master Plan.*

1. **Evaluate the quality and effectiveness of the existing signage and way-finding 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. **Walking and biking should be considered important modes of transportation** in Rindge. Follow the format of a local "Road Improvement Plan" to evaluate the location and condition of existing sidewalks, paths and trails in Rindge to determine ownership, future improvements and possible connections.
3. **Include provisions for bicycle and pedestrian pathways** in the land use regulations.
4. **Apply for Transportation Enhancement Funds**, through the NH Department of Transportation, for the construction of additional sidewalks and multi-use paths in Rindge.

5. Work with the New Hampshire Department of Transportation to **establish park and ride facilities**, in existing parking lots, at key locations in Rindge.
6. **Promote alternative means of transportation between developed areas and connect centers (nodes) of development** through minor service roads, public transport, and pedestrian/bicycle pathways.
7. **Coordinate small transit providers** to better educate the public on how they can access public transportation and pursue alternative transportation options, and all of the economic, social, and environmental benefits of such decisions.
8. **Consider requiring access management in the zoning and subdivision 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.
9. **Consider traffic calming techniques** on new roadway projects and on existing roadways when possible.
10. **Identify old lanes and roadways** of potential historic and cultural interest, ensure consideration of these as new developments are proposed.
11. **Consider requiring dead end streets to connect to adjacent developments** where practical.
12. When adopting changes to Rindge's land use regulations **consider allowing 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, village, and commercial corridor locations.

## 4.0 TRANSPORTATION SYSTEM

### 4.1 The Network

In the Appendices is an inventory of all of Rindge's roadways by functional classification. The standards that were used for this classification can be found in Table 4-2 Street Design Standards in Section 4.2 of this chapter. As Rindge'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. 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.

*As Rindge's roadways are maintained, improved, or expanded it is important to recognize their function in the overall transportation system.*

## Inventory of Rindge's Roadways by Functional Classification (Appendices)

### 4.2 Design Standards

Currently Rindge's road design standards, for Class V roads, are appropriate for handling the necessary traffic volumes without excessive pavement. The road classification shown above should serve as the basis for flexible design standards that are more appropriate to the surroundings and the function of the road. Rindge's existing standards can be found below in Table 5.7.

**Table 5.7 Rindge Road Dimensional Standards**

<b>Average Daily Traffic (ADT)</b>	<b>0-50 vehicles</b>	<b>50-200 vehicles</b>	<b>200-750 vehicles</b>	<b>750-1500 vehicles</b>	<b>1500 vehicles &amp; over</b>
Pavement Width (ft)	18	20	20	22	24
Shoulder Width (ft)	2	2	4	4	8-10
Surface	Gravel	Asphalt	Hot Bituminous	Hot Bituminous	Hot Bituminous

Generally, roadway standards are established to ensure that new roads are safe in every situation. According to Rindge's roadway standards, as found within the subdivision regulations, minimum roadway widths range from 18 to 24 feet.

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 include elements such as unnecessarily wide pavement widths, as well as sidewalks and curbing which are generally suited for more urban and higher density locales. On the next page are a set of street design standards that could serve as a model for future changes to Rindge's standards.

**Table 5.8 Street Design Standards**

<b>Standard</b>	<b>Minimum Local Street</b>	<b>Minor Local Street</b>	<b>Major Local Street</b>	<b>Collector Street</b>	<b>Arterial Street</b>
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
Multi-use Trail Facility	n.a.	Yes	Yes	Yes	Yes

**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).

### 4.3 Land Use Implications

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

- 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.

### 4.4 Actions

*There are a few possible actions the Town may want to consider pursuing as it evaluates the classification of roadways in Rindge and the design standards for each class. This section will be used to identify the specific actions for Rindge to take upon completion of the Master Plan.*

1. **Consider revising the existing street design standards** to include greater detail for a hierarchy of roads in Rindge.

## 5.0 SUMMARY AND CONCLUSIONS

In order for Rindge to create a transportation system whose function and safety will be improved and whose life will be extended, for all modes, the community must embrace the following town-wide: revised street design standards; access management principles; traffic calming techniques; provisions for all modes; and public transportation services.

Each of these items can be addressed in the Rindge Zoning and Subdivision Regulations. They can also 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.