US Route 3 Corridor Study: Phase I

Town of Boscawen &
City of Franklin,

New Hampshire

January 27, 2004

City of Franklin – Franklin Plantation

US Route 3 Corridor Study: Phase I

Boscawen & Franklin, NH

Boscawen - Historic House on King Street

For the Town of Boscawen and the City of Franklin and the NH Department of Transportation

Prepared by:

- *Local Advisory Working Group*
- *Central NH Regional Planning Commission*
- *Lakes Region Planning Commission*

With funding from:

- *NH Department of Transportation*

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Executive Summary

This Study was initiated by the Lakes Region Planning Commission (LRPC) and the Central New Hampshire Regional Planning Commission (CNHRPC) to use State Planning and Research (SPR) funding to conduct a detailed corridor study along the section of US Route 3 from NH Route 11 in Franklin to I-93 Exit 17 in Concord. In addition to this Study, the City of Franklin received a Transportation and Community and System Preservation (TCSP) grant to study the existing conditions of and design improvements to the US Route 3 and Industrial Park Drive intersection. Since the TCSP project is taking place concurrently with the US Route 3 Corridor Study, the Industrial Park Drive intersection was not included in this Study.

The overall approach of the Study was to review the existing corridor from a traffic and safety standpoint as well as from the aspect of access management and local regulations. Goals of the Study included:

- Examine the existing city and town regulations, zoning, fee schedules, and tax parcel information;
- Examine the existing access management;
- Evaluate traffic operations and driveway access points;
- Evaluate corridor aesthetics;
- Produce detailed recommendations based on all of the above criteria; and
- Work with city and town officials to develop a scheme for implementing the recommendations.

A Local Advisory Working Group (LAWG) was created that was comprised of representatives from several different municipal boards, committees, and departments. The Committee provided input and feedback to LRPC and CNHRPC staff at regularly scheduled LAWG meetings throughout the Study.

Early work on the Study focused primarily on collecting basic traffic data, including traffic counts, classification counts, turning movement counts, and accident data. The background data collected as part of this Study is available in a separate **Appendix**.

After collecting the traffic information, the study team began to explore the land use and regulatory aspects of the corridor. The Franklin and Boscawen zoning, subdivision, and Site Plan Review regulations were examined. In discussing this information and the traffic data with the LAWG, it became apparent that the issues facing the corridor dealt with land use, local regulations and transportation.

Many possible solutions and improvements were discussed with the LAWG over the course of the Study. The final recommendations were narrowed down to seven (7) General and sixteen (16) Corridor Specific recommendations. Phase II of this Study, if funding is

available, will further assist the communities in implementing the recommendations within this Report and will also continue and expand the scope of the Local Advisory Working Group.

General Recommendations

- The Town of Boscawen should continue to explore the possibilities for an expansion of Concord Area Transit (CAT) Service into Boscawen. At the same time, the City of Franklin should explore opportunities to expand Greater Laconia Transit Agency (GLTA) public transit service in Franklin. In the future, it is possible that CAT and GLTA could provide services that link along the corridor, providing transit access from Franklin to Concord via the US Route 3 Corridor.

- The Town of Boscawen and the City of Franklin should continue to review the zoning regulations for each community to help ensure any new development is of a type that is not detrimental to the surrounding area and land uses. As part of each community's review, they should also consider what the neighboring community has zoned for in abutting areas. Explore the creation of a US Route 3 Rural Corridor Zone that could be adopted by both communities to encourage uniform and harmonious development between the village area of Boscawen (the residential/commercial area along North Main Street and King Street) and the urbanized area of Franklin.

- The Town of Boscawen and the City of Franklin should review and amend land use regulations (e.g., Subdivision and Site Plan Review) to encourage harmonious development along the rural portion of the US Route 3 Corridor. Each community should also review and adopt new regulations specific to the nature and character of both Boscawen's village area and the urban area of Franklin respectively.

- To meet the desires expressed by both communities through the Local Advisory Working Group, both the City of Franklin and the Town of Boscawen should continue to work with the Lakes Region Planning Commission, the Central NH Regional Planning Commission, and the NH Department of Transportation to remain actively involved with, and supportive of, the current project in the State of NH Ten Year Transportation Improvement Plan concerning a connection to Interstate 93. Similarly, both communities should also work with the regional planning commissions and with the Towns of Northfield and Canterbury in any future dialogue or studies regarding an Interstate 93 connection.

- Both communities should continue to review permits for driveway access on town controlled roads and should adopt a standard procedure to review existing driveways when they come before the Planning Board for any changes of use. Both communities should also continue to work with the NH Department of Transportation Highway Districts to review site plans and driveway permits on state controlled roads.

- The Local Advisory Working Group (LAWG), created as part of this Study, should continue to meet on a regular basis to further discuss issues affecting both communities relative to the US Route 3 Corridor as well as the study of a connection to Interstate 93 scheduled to begin in 2006. The LAWG should also be expanded to include members from Northfield and Canterbury.

- The City of Franklin and the Town of Boscawen should work with both regional planning commissions to stay in touch with possible funding opportunities for transportation-related projects through the NH DOT Ten Year Transportation Improvement Plan process, the Betterment program, the Transportation Enhancement program, and the Congestion Mitigation and Air Quality program.

Corridor Specific Recommendations

US Route 4 from Interstate 93 to the US Route 4/US Route 3 Intersection

Summary

This portion of the Study corridor primarily serves commuting traffic from the Boscawen area and points north, including Salisbury and Franklin, traveling to Interstate I-93. A large portion of this corridor is currently being reconstructed and resurfaced as part of the construction of a new bridge over the Merrimack River. Currently, there are few land uses that access this portion of US Route 4. The majority of this portion of US Route 4 is controlled access and in many areas substantial grades prevent any future development. Travel speeds along this portion of US Route 4 are substantial (in excess of 55 MPH) and posted speeds fluctuate between 35 MPH and 50 MPH five times over approximately two miles. The portion of this segment that approaches King Street is characterized by a posted 50 MPH speed limit, twelve foot lanes, and wide (greater than 10 feet) shoulders on both sides.

Recommendations *Key agencies & municipalities required for each recommendation are in {}

- Support the development of future alternatives for the creation of a gateway to the village area of Boscawen south of the US Route 3/US Route 4 Intersection.
  {Town of Boscawen & NHDOT}

- Work with NHDOT to lower the posted speed limit from 50 MPH to 35 MPH on the section of US Route 4 between Harris Hill Road and King Street.

{Town of Boscawen & NHDOT}

- Monitor traffic speeds on a regular basis.
  {Town of Boscawen}

King Street, US Routes 3 and 4

Summary

This section of the Study Corridor is the residential/commercial village area of Boscawen and is the busiest section of the Corridor, with more than 13,000 vehicles per day traveling it. The Town of Boscawen, through this Study and the recently completed Master Plan, has reaffirmed an interest in preserving the village like feel of King Street. Due to the mix of residential and commercial uses in this area, as well as playing fields, a school, and public buildings, pedestrian safety is of particular interest. The posted speed limit is 35 MPH along this section. At both ends of King Street where the density of development is lower and where drivers begin to anticipate passing zones and speed limit increases, travel speeds have been shown to be excessive with the 85th percentile speeds well above the posted limits.

Recommendations

- Continue to support the development of safe pedestrian facilities in and around both the northern and southern US Route 3/US Route 4 intersections, particularly where they connect with other facilities.
  {Town of Boscawen & NHDOT}

- Continue to work with the NH Department of Transportation to review proposed driveway configurations when new site plans are presented to the Planning Board and to review driveway configurations when changes of use are presented.
  {Town of Boscawen & NHDOT}

- Work with the regional planning commissions on Phase II of this Study and/or with the Central NH Regional Planning Commission, if Phase II is not funded, to help implement some of the design recommendations included in the US Routes 3 and 4 (King Street) Corridor Study.
  {Town of Boscawen & CNHRPC}

- Decide as a community, with the help of the Central NH Regional Planning Commission as needed, if the northern junction of US Routes 3 and 4 should be changed. Seek additional assistance from engineering consultants and the NH

Department of Transportation, as needed.
{Town of Boscawen & CNHRPC}

US Routes 3 and 4 Northern Junction North to NH Route 127

Summary

This section of US Route 3 is a rural section of highway that currently contains no existing alternative transportation services or facilities such as transit, pedestrian, or bicycle. The roadway section contains minimal shoulders (if any) throughout making it almost impossible for a disabled vehicle to get off the traveled way in most locations. The 85th percentile speed on this section is 57 MPH with speeds ranging from 40 to 65 MPH. Although there are several intersections along this section, the major intersection of concern is Industrial Park Drive. This intersection was not examined during this Study because the City of Franklin received a Transportation and Community and System Preservation (TCSP) grant to study and design improvements to the US Route 3 and Industrial Park Drive intersection. This TCSP project is currently underway and will be completed in the Spring of 2004.

Access points throughout this section are numerous and detract from the safe and efficient flow of traffic. Traffic control signage throughout the section is fairly adequate. Based on a review of the accident data, there may be a need to review certain areas within this section of highway for the placement of signage warning of animal crossings. Along with the Industrial Park in Franklin, the Merrimack County Facilities are major traffic generators along this portion of the corridor.

Recommendations

- Review zoning requirements to ensure they reflect the rural nature of the US Route 3 corridor within Franklin and Boscawen.
  {City of Franklin & Town of Boscawen}

- Consider traffic calming techniques to reduce the speed of traffic approaching the Town of Boscawen at the northern US Route 3/US Route 4 junction.
  {City of Franklin, Town of Boscawen, and NHDOT}

- Review the section of highway near the Merrimack County Nursing Home to ensure it will meet the needs of the future expansion of the Merrimack County facility.
  {Town of Boscawen & Merrimack County}

- Review signage to provide warnings for animal crossings along the corridor.
  {NHDOT & Town of Boscawen}

- Study the use of the existing rail bed for alternative transportation opportunities.
  {City of Franklin, Town of Boscawen, CNHRPC, and LRPC}

NH Route 127 North to Central Street

Summary

This section of the Study Corridor is within the urbanized area of Franklin and the land is zoned for both residential and commercial use. The posted speed limit is 30 MPH, and the 85th Percentile measured speed was approximately 35 MPH. The majority of the accidents through this section are in the vicinity of the intersection of US Route 3/NH Route 11. From the level of service conducted as part of this Study, portions of this intersection are expected to "fail" by 2023 unless improvements are made. The principal safety consideration through the urbanized area of Franklin appears to be related to the number and location of access points to and from the corridor.

Recommendations

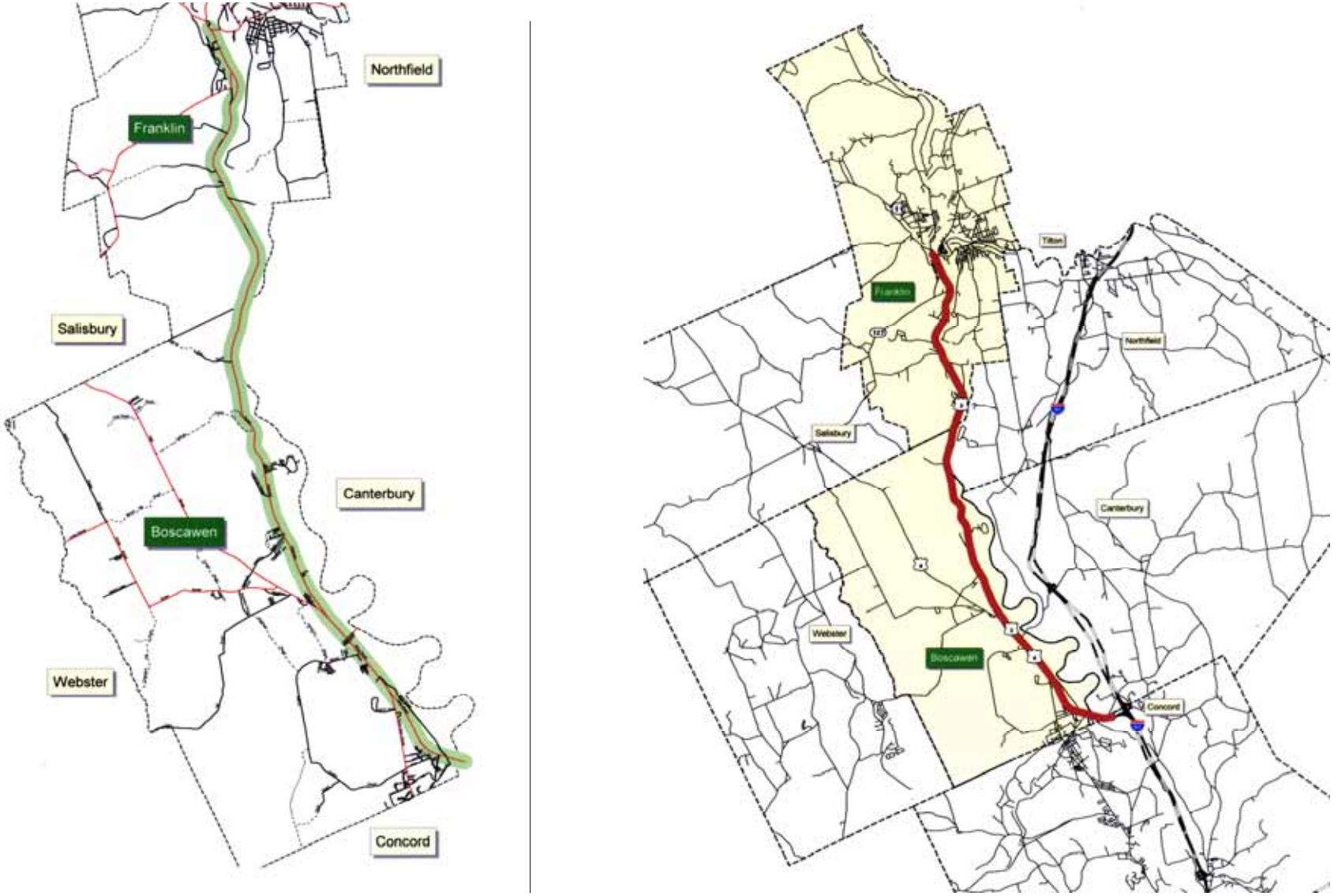
- Develop alternatives for the creation of a gateway entering Franklin from the south on US Route 3.
  {City of Franklin}

- Revise the Site Plan Review regulations to include standards and specifications for access management for the development and redevelopment of property along the corridor.
  {City of Franklin}

- Monitor traffic speeds and accidents in an effort to reduce both within this section of the US Route 3 corridor.
  {City of Franklin}

- Continue to monitor the level of service (LOS) and explore possible future improvements to the US Route 3 intersection with NH Route 11 (Central Street). In the interim, the City of Franklin should review the signal timing plan for the intersection to ensure that the signal timing is optimized.
  {City of Franklin}

Map 1: Study Corridor – Boscawen & Franklin



Introduction

The US Route 3 corridor between Boscawen and Franklin serves a number of contrasting functions for travelers and for each community. For travelers originating in the Franklin area, US Route 3 is largely viewed as a principal commercial/commuter corridor to access I-93 at Exit 17 in Concord, and points south. For Boscawen, the US Route 3 corridor principally serves local functions similar to a "Main Street" used by residents to access their basic and higher needs including work, home, shopping, services, and recreation.

Much of the corridor in both communities is heavily developed by residential and commercial uses. Traffic volumes along the corridor range from approximately 5,000 vehicles per day to 15,000 vehicles per day. While the physical characteristics (road width, shoulders, etc.) of the corridor are largely consistent, the land use patterns within the corridor vary greatly from Boscawen to Franklin, as do the needs of commuters, truckers, tourists, residents, and other users of US Route 3.

The main connection to the Study Corridor from its southern terminus is I-93 in Concord at Exit 17. The character of US Route 3 in this section is one of rural highway with very few developed land uses or intersecting roads and posted speeds that range from 30 MPH to 50 MPH. Where US Route 4 merges with US Route 3 in Boscawen, the road begins to assume a main street / village character. Along this section, locally known as King Street, land uses are commercial and historic residential with posted speeds of 35 MPH. This portion of the corridor was examined in the recent US Routes 3 and 4 (King Street) Corridor Study commissioned by the CNHRPC and completed by Vanasse Hangen Brustlin, Inc. that resulted in recommendations directed toward preserving the road's village character. As US Route 3 continues north from the village area, land uses transition to sparse residential and the character of the roadway returns to one typical of a rural highway. Two major institutional uses are located along this section of US Route 3 in Boscawen, the Merrimack County Nursing Home and the Merrimack County House of Corrections.

Commercial lots for sale in Franklin on US Route 3 in the area between NH Route 127 and Central Street. The City of Franklin has seen commercial and industrial growth as a vital aspect of Franklin's future.

This location is on King Street just north of the southern US Route 3 junction with US Route 4. The first commercial uses are visible ahead on the right (Self Storage & Restaurant).

As US Route 3 approaches the Franklin City Line from the south, it is a more rural highway with limited adjacent development and high travel speeds posted at 50 miles per hour. These characteristics continue into Franklin for several miles before changing again to reflect greater urbanization. Within this area is the Franklin Industrial Park. This Industrial Park is considered to be an important part of Franklin's current and future economic vitality, and as with any industrial park, accessibility for cargo transport is of key importance. The City of Franklin received a Transportation and Community and System Preservation (TCSP) grant from the Federal Highway Administration to study and design intersection improvements at the intersection of Industrial Park Drive and US Route 3. As the corridor continues north, the land adjacent to it becomes increasingly urbanized with dense commercial and residential land use and the road once again transitions to a local Main Street character.

The City of Franklin views this corridor as a vital economic link to I-93 and points to the south that can help ensure the community's future economic development. The Town of Boscawen views this corridor as a small town Main Street with a historic character. At a meeting convened at the NH DOT in April 2002, both communities agreed that portions of US Route 3 have more traditional issues of safety, geometry, and access management, but an equally important and challenging component will be to reach accord on the long range vision of both communities.

Boscawen and Franklin have distinct and contrasting regulatory and governing structures. These processes will guide how each community handles future growth and development. A significant need also exists for the two communities to communicate effectively about proposed new development. Future industrial development in Franklin will have direct regional impacts as will changes in development patterns in Boscawen.

This is a two-phase project. Phase I focused on the collection and analysis of detailed data as well as an initial review of the communities' regulations. Phase II of the project will complete a detailed review of the local regulations and enlist the expertise of a consultant to provide an engineering review of the corridor. Phase I created a LAWG comprised of representatives from each community to

Two views of rural portions of US Route 3 in Franklin (top) and Boscawen (bottom). At both locations, the close proximity to the abandoned Northern Line is clearly visible. The rail line would have significant impacts to the corridor if it were to become reactivated or if a large recreational investment were made.

provide project oversight. This LAWG provided public input at every stage of the Study and will be continued through Phase II.

The need to thoroughly examine this corridor and to bring the communities together to discuss the various issues surrounding the future of the corridor could not be more timely as several projects within this corridor are currently being considered and discussed. These projects include the potential Franklin/Northfield connector road to Interstate 93 Exit 19, planned shoulder improvements along US Route 3, and a proposed expansion of the Industrial Park in west Franklin. Both communities face increasing development activity; Boscawen's residential base is growing and Franklin's industrial development is increasing.

This US Route 3 Corridor Study Report will document the findings and recommendations of Phase I of the Study. The data collected as part of this Study is available in a separate **Appendix**.

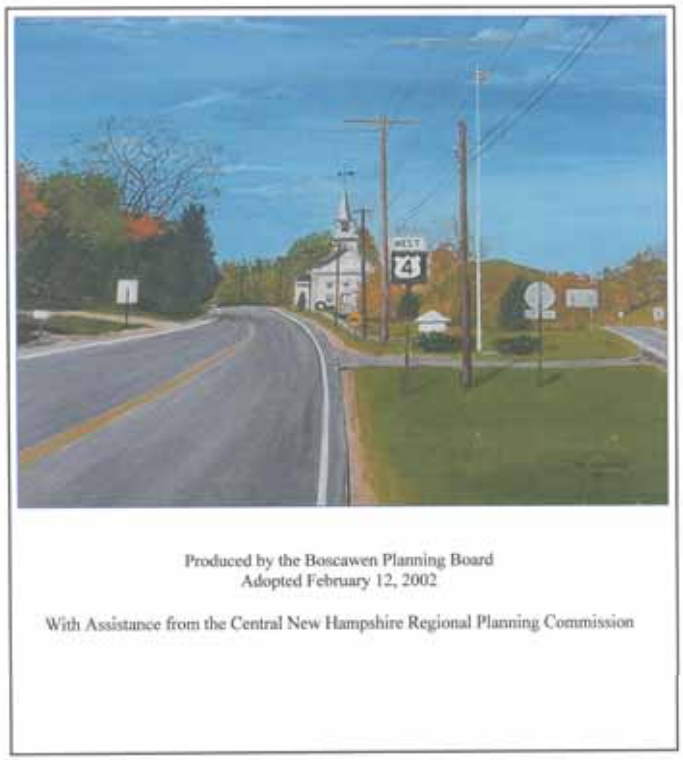
Master Plan Findings

A municipal Master Plan (RSA 674:2-4) is intended to be a guide for the current and desired conditions of a city or town. These conditions are inventoried in the elements, or chapters, of a Master Plan. Typical Master Plan elements include Transportation, Land Use, Future Land Use, Conservation and Preservation, Historical, Population and Economics, Housing, and Community and Recreational facilities. The Master Plan, when adopted by the Planning Board, is the legal basis for the Zoning Ordinance, Subdivision Regulations, and Site Plan Review Regulations of the city or town. Although state statutes do not require an updated Master Plan within a particular time frame of the last version of the Master Plan, recently enacted legislation recommends revising local Master Plans every five to ten years.

Boscawen Master Plan

The Town of Boscawen adopted a new Master Plan in 2002 and has been working since to implement many of the recommendations discussed therein. This Study is a natural extension of the Master Plan in Boscawen because many of the recommendations identified relate directly to the Study Corridor and can be examined more closely and expanded upon by this Study. Relevant goals in the Boscawen 2002 Master Plan include:

- Balance the historic and village character along King Street with the needs of incoming development and changing land use;
- Provide a highway and street system that allows for the safe and efficient movement of people and goods throughout Boscawen;
- Improve the non-motorized infrastructure and increase non-motorized safety and activity in Boscawen; and
- Protect the village and historic character along Boscawen's local and major roads while maintaining their viability as travel corridors.



Both the Town of Boscawen and the City of Franklin have recently completed new Master Plans. In both documents, the US Route 3 Corridor is described as vital to the communities.

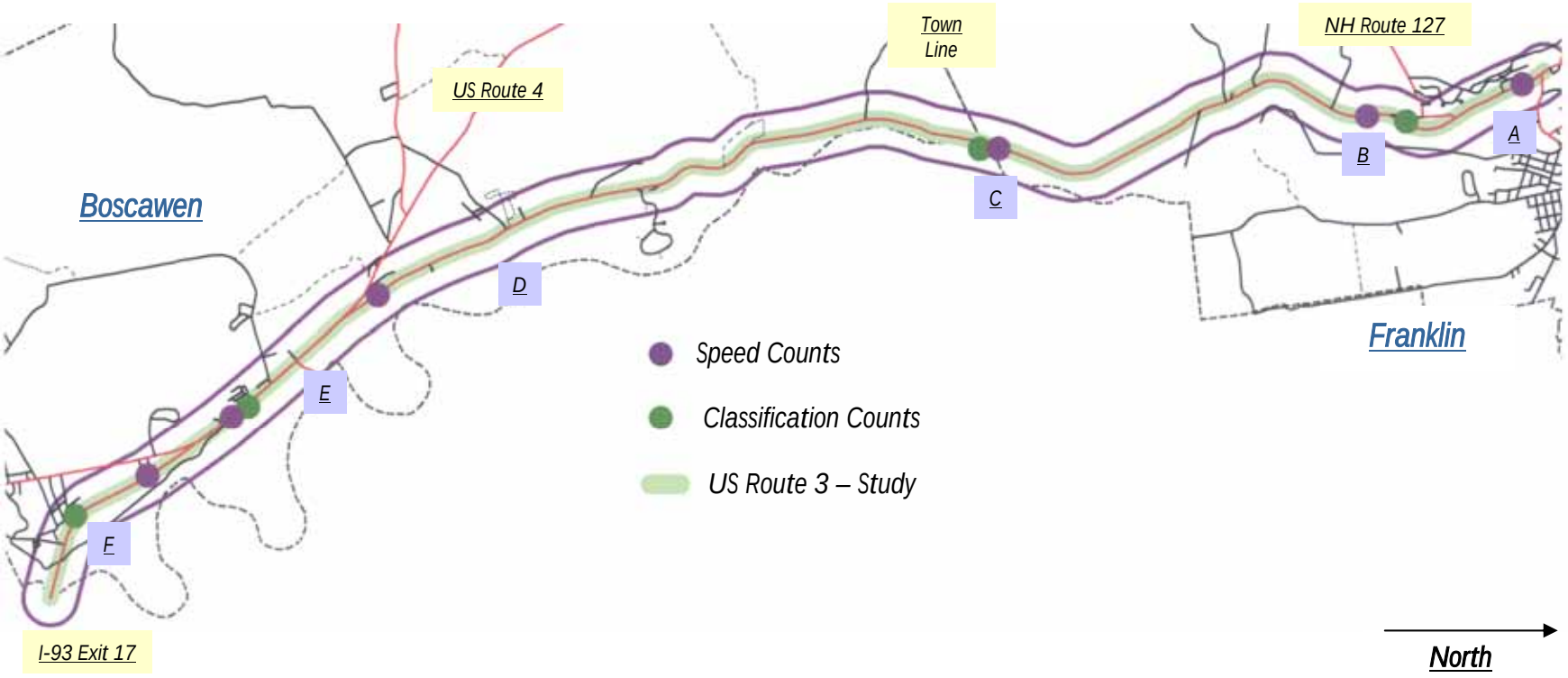
Franklin Master Plan

The City of Franklin adopted a new Master Plan in 2000 and has been working since to implement many of the recommendations discussed therein. This Study is a natural extension of the Master Plan in Franklin because many of the recommendations identified relate directly to the Study Corridor and can be examined more closely and expanded upon by this Study. The Franklin Master Plan transportation goal to "Promote the improvement of all major access ways to the City and encourage a system of transportation which will meet the mobility needs of local residents by providing for the efficient movement of people, goods and services within Franklin and throughout the region and the accessibility needs of an economically viable downtown area" is directly related to this Study and is the basis of Franklin's desire to be part of the Study.

Traffic Information & Analysis

Basic traffic information serves an important role in any corridor study as many recommendations may be based directly or indirectly on it. Existing traffic information was utilized for the Study. However, much of that data was old and had to be updated. The following is a discussion of the data collected during this Study.

Map 2: Traffic Data Collection Locations



Traffic Volumes and Capacities

Congestion, vehicular and pedestrian safety, aesthetics, and travel speeds are all characteristics of a roadway that are directly affected by the number and type of vehicles traveling along particular portions of the roadway. As such, determining the traffic counts and vehicle classifications at various key sections of the Study Corridor was one of the first steps undertaken as part of this Study.

View from the northern end of King Street (US Routes 3 and 4) looking to the southeast. The Boscawen Historical Society is the building on the left.

Vehicle Classifications

Vehicles are classified into various categories for the purposes of determining how many of the various classifications are traveling over a certain section of roadway. Once vehicles are classified, the numbers are used to determine the capacity of the roadway, to predict future traffic, and to assist in the design of the roadway. Manual classification counts were taken at the following four locations along the Study Corridor and are illustrated in **Map 2**:

- US Route 3 south of the NH Route 127 intersection in Franklin;
- US Route 3 at the Boscawen/Franklin town line;
- US Route 4 south of the junction with US Route 3 in Boscawen; and
- King Street south of Queen Street in Boscawen.

The classification counts were taken at all four locations during the AM (6:00 – 9:00 AM) and PM (2:00 – 5:00 PM) peak traffic periods. For the purposes of this Study, it was determined that traffic only needed to be categorized into the following three classifications:

- Passenger (four-wheeled passenger car, pickup, etc);
- Six-wheeled vehicles (vans, small delivery trucks, dump trucks, etc); and
- Tractor (larger than six-wheeled vehicles).

The results of the classification analysis are presented in **Table 1** below. The number of trucks, both six-wheeled and larger than six-wheeled, using the corridor ranged between 0 and 6 percent depending on the time of day and direction of travel. This percentage is considered normal for the corridor considering the mix of industrial, commercial, and residential land uses along the corridor. Passenger vehicles accounted for between 89 to 97 percent of vehicles traveling the corridor.

Table 1: Classification Data

LOCATION	PEAK PERIOD	DIRECTION	PASSENGER VEHICLES		6-WHEELED VEHICLES		LARGE TRUCKS		TOTAL	
			Count	Percent	Count	Percent	Count	Percent	Count	Percent
South of NH 127 (Franklin)	AM	North	313	90.5%	18	5.2%	15	4.3%	346	100%
		South	912	96.8%	18	1.9%	12	1.3%	942	100%
	PM	North	1,049	97.5%	14	1.3%	13	1.2%	1,076	100%
		South	494	95.9%	12	2.3%	9	1.7%	515	100%
Boscawen/Franklin Town Line	AM	North	234	88.6%	17	6.4%	13	4.9%	264	100%
		South	628	96.5%	14	2.2%	9	1.4%	651	100%
	PM	North	619	97.0%	3	0.5%	16	2.5%	638	100%
		South	316	94.3%	7	2.1%	12	3.6%	335	100%
US 4 South of Junction with US 3 (Boscawen)	AM	North	468	88.6%	27	5.1%	33	6.3%	528	100%
		South	1,468	95.4%	33	2.1%	38	2.5%	1,539	100%
	PM	North	1,067	95.8%	26	2.3%	21	1.9%	1,114	100%
		South	778	95.3%	16	2.0%	22	2.7%	816	100%
King Street South of Queen Street (Boscawen)	AM	North	656	87.4%	59	7.9%	36	4.8%	751	100%
		South	1,836	93.9%	36	1.8%	84	4.3%	1,956	100%
	PM	North	1,634	95.7%	46	2.7%	28	1.6%	1,708	100%
		South	1,075	93.6%	30	2.6%	44	3.8%	1,149	100%

Source: CNHRPC and LRPC Manual Classification Counts, 2003

AM Peak = 6:00 AM to 9:00 AM
PM Peak = 2:00 PM to 5:00 PM

Vehicle Speeds

To determine the correct speed to be posted on a roadway, the posting authority determines the 85th percentile speed of the traveling public on that particular roadway and uses that speed as the legally posted speed limit. Posted speed limits along the US Route 3 corridor between Franklin and Boscawen range from 30 miles per hour (MPH) to 50 MPH, depending on the roadway conditions (grade, curvature, rural, urban, etc).

Actual measured speeds along a corridor may be more or less than the posted speed limit because of various conditions. If there is major congestion along the corridor, the actual speed limit may be less than the posted speed limit. However, if there are open stretches of the roadway with no congestion, then the actual speed on that stretch of roadway may be higher than the posted speed limit. Tube actuated

traffic recorders were used to measure the travel speed at key locations along the Study Corridor (depicted in **Map 2**). The measured speed data is displayed in **Table 2**.

Table 2: Measured Speed Data Summary

Locations	Direction	Posted Speed (MPH)	Mean Speed (MPH)	85th Percentile Speed (MPH)
South of US 3 and NH 11 (Franklin)	North	30	29	34
	South		30	35
Between NH 127 and Industrial Park Drive (Franklin)	North	50	48	54
	South		46	56
Boscawen/Franklin Town Line	North	50	52	58
	South		42	56
North of US 3/4 Northern Split (Boscawen)	North	35	44	49
	South		42	48
US 3/4 South of Queen Street (Boscawen)	North	35	37	41
	South		36	44
US 4 South of US 3/4 Southern Split (Boscawen)	North	50	52	58
	South		54	59

*Source: CNHRPC and LRPC Tube Actuated Speed Counts, 2003 – **Appendix C***

South of the US Route 3/NH Route 11 Intersection in Franklin A

This area of US Route 3 is part of the urbanized area of Franklin and the posted speed limit is 30 MPH. The measured mean (average) speed on this section of US Route 3 was 29 MPH in the northbound lane and 30 MPH in the southbound lane. The 85th percentile speed, the speed used to post speed limits, was 34 MPH in the northbound lane and 35 MPH in the southbound lane. The slight difference in speeds may be due to the northbound traffic approaching the intersection of US Route 3 and NH Route 11. Actual measured speeds in this section ranged from 20 MPH to 40 MPH.

Between NH Route 127 and Industrial Park Drive B

This area of US Route 3 is outside of the urbanized area, but is not a typical rural section since it is a moderately heavy commercial area. The posted speed limit in this area is 50 MPH. Speeds were measured in both the northbound and southbound lanes at this location. The measured mean (average) northbound speed on this section was 48 MPH and the mean southbound speed was 46

MPH. The 85th percentile speed for the northbound lane was 54 MPH and the southbound 85th percentile was 56 MPH. Actual measured speeds in this section ranged from 40 MPH to 65 MPH with as many as seventeen (17) percent of the vehicles exceeding 55 MPH.

Boscawen/Franklin Town Line *C*

This area of US Route 3 is a rural section with a posted speed limit of 50 MPH. Speeds were measured in both the northbound and southbound lanes at this location. The measured mean (average) northbound speed on this section was 52 MPH and the mean southbound speed was 42 MPH. The 85th percentile speed for the northbound lane was 58 MPH and the southbound 85th percentile was 56 MPH. Actual measured speeds at this location ranged from 40 MPH to 65 MPH with as many as twenty-four (24) percent of vehicles exceeding 55 MPH.

North of US Routes 3 and 4 Northern Split *D*

This area of US Route 3 is on the northern fringe of the urban section of Boscawen. Posted speed limits range from 35 MPH just north of the US Routes 3 and 4 northern split and around the Merrimack County facilities to 50 MPH in areas between. Speeds were measured at the top of the hill approaching the junction with US Route 4 where the posted speed limit is 35 MPH. Speeds were also measured in both the northbound and southbound lanes for this section. The measured mean (average) northbound speed on this section was 44 MPH and the mean southbound speed was 42 MPH. The 85th percentile speed for the northbound lane was 49 MPH and the southbound 85th percentile was 48 MPH. Actual measured speeds at this location ranged from 35 MPH to 55 MPH with approximately one (1) percent of vehicles exceeding 55 MPH.

US Routes 3 and 4 South of Queen Street *E*

This area of US Route 3 is within the urbanized section of Boscawen and has a posted speed limit of 35 MPH. Speeds were again measured in both the northbound and southbound lanes at this location. The measured mean (average) northbound speed on this section was 37 MPH and the mean southbound speed was 36 MPH. The 85th percentile speed for the northbound lane was 41 MPH and the southbound 85th percentile was 44 MPH. Actual measured speeds in this section ranged from 30 MPH to 45 MPH.

The two sections of the Study Corridor where the 85th percentile speeds were excessive. The rural portion of US Route 3 near the town lines of Franklin and Boscawen (Top) and the section of US Route 4 and King Street near the southern junction of US Routes 3 and 4 (Bottom)

US Route 4 South of US Routes 3 and 4 Southern Split F

This area of US Route 3 is on the southern fringe of the urbanized section of Boscawen and has a posted speed limit of 50 MPH. Speeds were again measured in both the northbound and southbound lanes at this location which was approximately 1,500 feet south of the signal. The speed limits transition from 50 MPH to 35 MPH in the northbound direction and from 35 MPH to 50 MPH traveling southbound. The measured mean (average) northbound speed on this section was 52 MPH and the mean southbound speed was 54 MPH. The 85th percentile speed for the northbound lane was 58 MPH and the southbound 85th percentile was 59 MPH. Actual measured speeds in this section ranged from 35 MPH to 65 MPH.

The actual measured speeds along the corridor ranged from 20 MPH to 65 MPH with an average speed outside of the urban areas of 40 to 60 MPH. This is not unusual for any typical roadway because history has proven that traffic normally flows faster than the posted speed limit unless restrictions to traffic flow such as construction, congestion or weather are present.

2022 Traffic Projections

Transportation agencies use various data to determine the future needs of a roadway. One data set used most frequently is the volume of traffic on the roadway. The method normally used to determine future needs is to periodically collect traffic volume data and then, using the historical growth of traffic, project what the volume of traffic would be in a future year. Traffic is normally projected out ten (10) or twenty (20) years for planning purposes.

Along the Study corridor, traffic counts were available for past years from data collected by the regional planning commissions and the NHDOT. To update this information, traffic volumes were measured at the following locations along the corridor:

- US Route 4 South of North Main Street in Boscawen
- US Routes 3 and 4 South of Queen Street in Boscawen
- US Route 3 North of US Route 4 in Boscawen
- US Route 4 West of US Route 3 in Boscawen
- US Route 3 at the Boscawen/Franklin Town Line
- US Route 3 North of Industrial Park Drive in Franklin
- US Route 3 South of Central Street in Franklin

Using traffic volumes from 1994 to 2002 and those taken for this Study in 2003, an average traffic volume growth per year was determined. Using this average growth, the traffic for this corridor was projected out to the year 2012 and 2022. As shown in **Table 3** the 2002 traffic at the above locations along the corridor ranges from approximately 4,000 to over 13,000 vehicles per day. Projecting

those traffic figures out ten (10) and twenty (20) years results in a 25.38 percent increase over the next ten (10) years and a 57.21 percent increase over the next twenty (20) years. All numbers in *blue italics* represent estimates (1999-2002) or projections (2012 and 2022).

Table 3: Projections – Average Daily Traffic, 2012 and 2022

Location (NHDOT Counts)	1994	1995	1996	1997	1998	1999	2000	2001	2002	2012	2022	10-Year Growth	20-Year Growth
US 4 South of North Main Street (Boscawen)	4,900				7,500			8,300	***8,490***	***10,645***	***13,347***	25.38%	57.21%
US 3/4 South of Queen Street (Boscawen)	11,000		11,000					13,000	***13,297***	***16,673***	***20,905***		
US 3 North of US 4 (Boscawen)	4,415	4,722	4,576	4,673	4,649	4,974	5,034	5,182	5,270	***6,608***	***8,285***		
US 4 West of US 3 (Boscawen)	5,939	5,983	5,926	5,992	6,067	6,053	6,287	6,449	6,670	***8,363***	***10,486***		
US 3 at Boscawen/Franklin TL (Franklin)		3,600		4,100			3,900	***3,989***	***4,080***	***5,116***	***6,415***		
US 3 North of NH 127 (Franklin)				7,400			8,200	***8,388***	***8,580***	***10,757***	***13,488***		
US 3 South of Central Street (Franklin)	8,540				9,500	***9,717***	***9,940***	***10,167***	***10,400***	***13,040***	***16,349***		

Source: CNHRPC & LRPC Projections, 2003

Intersection Operations

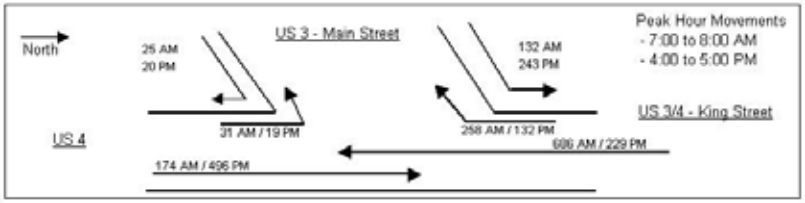
One of the ways transportation planners examine the operation of an intersection is through an examination of turning movement data. This data demonstrates turning patters in an intersection and can help to determine what, if any, intersection improvements are warranted. As part of this Study, turning movement data at the following major intersections along the Study Corridor were collected:

- US Routes 3 and 4 Intersection (South) in Boscawen
- US Routes 3 and 4 Intersection (North) in Boscawen
- US Route 3 and Industrial Park Drive Intersection in Franklin
- US Route 3 and NH Route 11 Intersection in Franklin

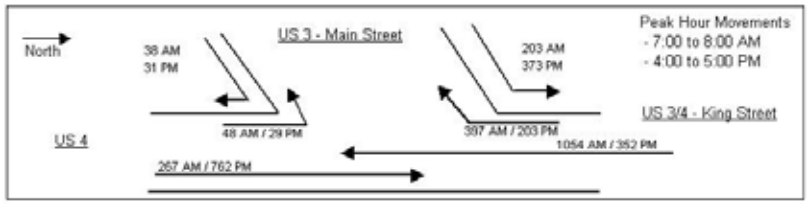
US Routes 3 and 4 Intersection (South) in Boscawen

Figures 1 & 2

2003



20-Year Projected

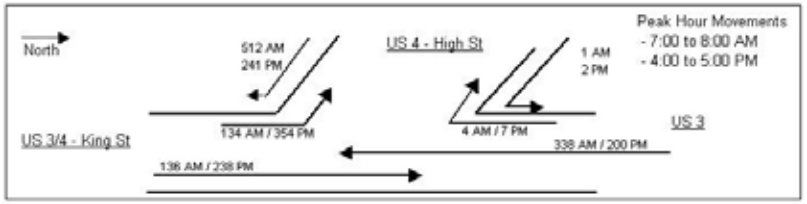


The majority of the AM peak hour traffic through this intersection is traveling south with approximately twenty (20) percent of the total traffic through the intersection in the AM traveling south on US Route 3 and fifty-three (53) percent traveling south on US Route 4. However, the PM peak period traffic pattern is not an exact reverse of the AM traffic pattern. Forty-four (44) percent of the traffic through the intersection in the PM peak is traveling north on US Route 4 with twenty-one (21) percent traveling north on US Route 3. Twenty (20) percent of the traffic is traveling south on US Route 4.

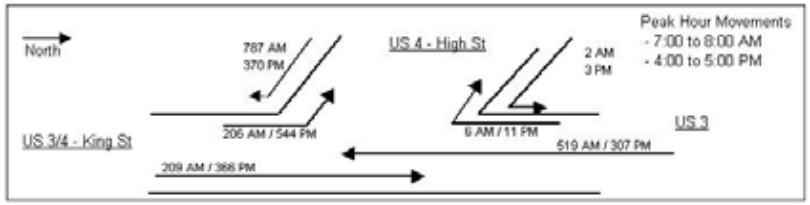
US Routes 3 and 4 Intersection (North) in Boscawen

Figures 3 & 4

2003



20-Year Projected

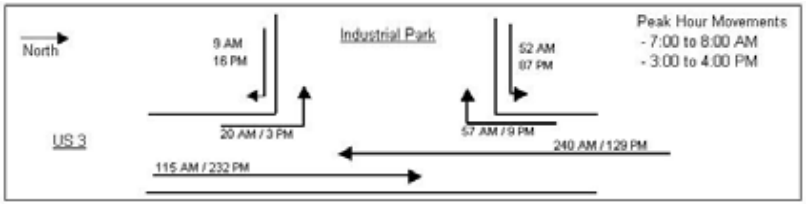


The majority of the AM peak hour traffic through this intersection is traveling south with approximately forty-six (46) percent of the total traffic through the intersection in the AM traveling south on US Route 4 and thirty (30) percent traveling south on US Route 3. The PM peak period traffic pattern is approximately split between those traveling north and south. Thirty-four (34) percent of the traffic through the intersection in the PM peak is traveling north on US Route 4 and twenty-three (23) percent is traveling south on US Route 4. On US Route 3, the north and south traffic is more closely split with twenty-three (23) percent traveling north and nineteen (19) percent traveling south.

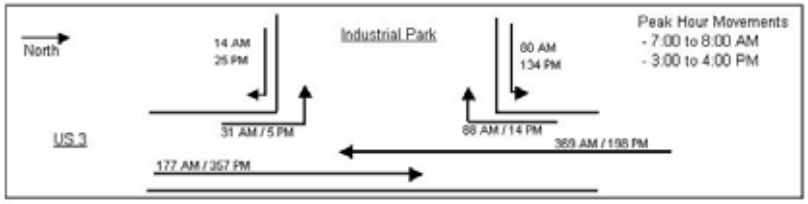
US Route 3 and Industrial Park Drive Intersection in Franklin

Figures 5 & 6

2003



20-Year Projected

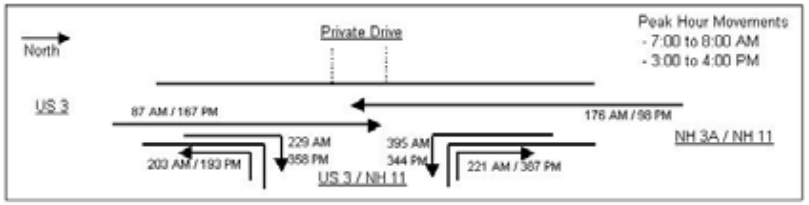


The majority of the AM and PM peak hour traffic through this intersection is traveling north and south with only a small portion of the traffic entering or exiting the Industrial Park Drive during the beginning and ending of shift times. This intersection was not analyzed during this Study because there is a concurrent study being conducted by the City of Franklin to study and design improvements to this intersection.

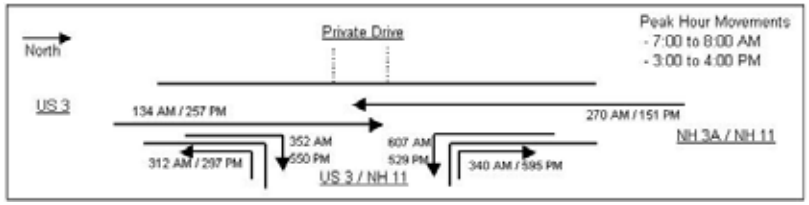
US Route 3 and NH Route 11 Intersection in Franklin

Figures 7 & 8

2003



20-Year Projected



Of the eight potential movements through this intersection, the main movement, taken by thirty (30) percent of the AM peak hour travelers, is southbound on NH Route 3A/NH Route 11 to northbound US Route 3/NH Route 11. In addition, an even percent of the traffic (fifteen (15) to seventeen (17) percent) on three legs of the intersection is traveling southbound on US Route 3/NH Route 11 to US Route 3 southbound, northbound on US Route 3 to northbound US Route 3/NH Route 11, and southbound on US Route 3/NH Route 11 to northbound on NH Route 3A/NH Route 11. Seventy (70) percent of the PM peak period traffic is evenly split (twenty-two (22) to twenty-five (25) percent) between three legs of the intersection traveling southbound on US Route 3/NH Route 11 to northbound on NH 3A/NH Route 11; southbound on NH Route 3A/NH Route 11 to northbound on US Route 3/NH Route 11; and northbound on US Route 3 to US Route 3/NH Route 11 northbound.

Analysis

Using the above turning movement data as a base, an estimation of the maximum number of vehicles that each intersection could accommodate safely within a specific time frame was determined. This is defined as the capacity of the intersection and is often expressed by what is termed Level of Service (LOS). The LOS is determined through the use of standardized computer programs which use, among other things, the volume of traffic, the timing sequence of traffic signals, the number of cycles within the traffic signal timing plan, the number of turn lanes, and traffic interruptions (i.e. pedestrians). For the purposes of this Study, LOS was calculated for the peak AM and PM hours of a typical day only and do not represent weekend conditions or off-peak conditions.

- LOS A represents free flow. Individual users are virtually unaffected by the presence of others in the traffic stream. Freedom to select desired speeds and to maneuver within the traffic stream is extremely high. The general level of comfort and convenience provided to the motorist, passenger, or pedestrian is excellent.

- LOS B is in the range of stable flow, but the presence of other users in the traffic stream begins to become noticeable. Freedom to select desired speeds is relatively unaffected, but there is a slight decline in the freedom to maneuver within the traffic stream from LOS A. The level of comfort and convenience provided is somewhat less than at LOS A, because the presence of others in the traffic stream begins to affect individual behavior.

- LOS C is in the range of stable flow, but marks the beginning of the range of flow in which the operation of individual users becomes significantly affected by interactions with others in the traffic stream. The selection of speed is now affected by the presence of others, and maneuvering within the traffic stream requires substantial vigilance on the part of the user. The general level of comfort and convenience declines noticeably at this level.

- LOS D represents high-density, but stable, flow. Speed and freedom to maneuver are severely restricted, and the driver or pedestrian experiences a generally poor level of comfort and convenience. Small increases in traffic flow will generally cause operational problems at this level.

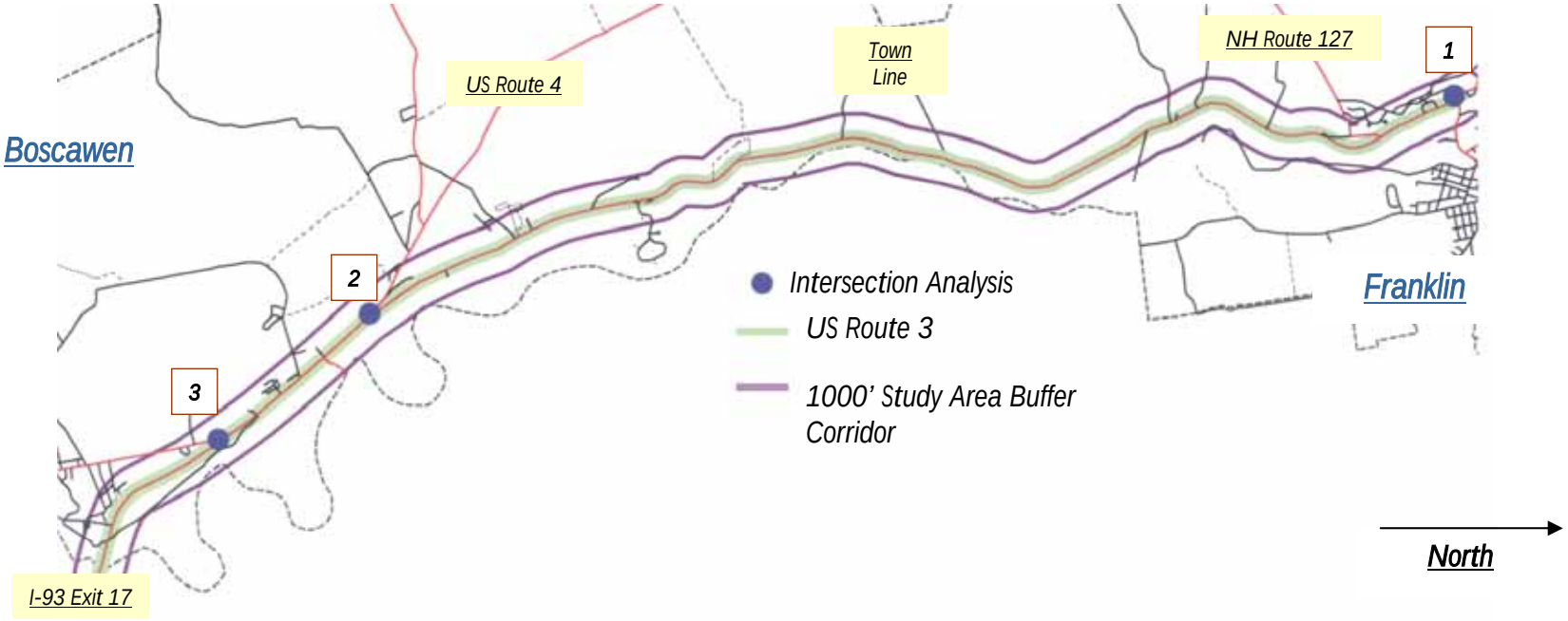
- LOS E represents operating conditions at or near the capacity level. All speeds are reduced to a low, but relatively uniform value. Freedom to maneuver within the traffic stream is extremely difficult, and it is generally accomplished by forcing a vehicle or pedestrian to “give way” to accommodate such maneuvers. Comfort and convenience levels are extremely poor, and driver or pedestrian frustration is generally high. Operations at this level are usually unstable, because even small increases in flow or minor perturbations within the traffic stream will cause breakdowns.

- LOS F is used to define forced or breakdown flow. This condition exists wherever the amount of traffic approaching a point exceeds the amount which can traverse it and queues begin to form. Operations within the queue are characterized by stopping

and starting. Over and over, vehicles may progress at reasonable speeds for several hundred feet or more, then be required to stop. LOS F is used to describe operating conditions within the queue, as well as the point of the breakdown. It should be noted, however, that in many cases once free of the queue, traffic may resume to normal conditions quite rapidly.

How well an intersection operates will dictate how well the roadway sections between intersections operate. The operation of an intersection can be affected by how well each phase of the traffic signals is timed to get the maximum number of vehicles through the intersection in one cycle of the traffic signal. Therefore, in determining the LOS for the intersections along the Study corridor, an optimal traffic signal timing plan was programmed to ensure maximum efficiency of the intersection.

Map 3: Intersection Analysis



The LOS of the major intersections, depicted in **Map 3**, along the Study corridor was determined using the latest data available. **Appendix D** contains the detailed LOS analysis for each intersection. The intersections and their LOS were:

1. US Route 3 and NH Route 11 intersection in Franklin at the northern end of the corridor

Using a sixty-two (62) second optimized signal cycle in the analysis of this intersection, the present overall LOS of this intersection during the PM peak hour is "D". In 2023, the overall LOS for both the AM and PM peak hours would still be "D". However, during the AM peak hour the westbound leg of the intersection, and during the PM peak hour the southbound leg of the intersection, would both operate at a LOS of "E".

2. The northern intersection of US Route 3 and US Route 4 in Boscawen

This intersection is an unsignalized yield-controlled intersection making direct LOS analysis more difficult than that for a regular stop-controlled intersection. Using 2003 traffic data, the overall intersection is operating at LOS "B". In 2023, the overall intersection will be operating at LOS "D".

3. The southern intersection of US Route 3 and US Route 4 in Boscawen

In 2003, a sixty-second (60) optimized signal cycle would be needed to clear all legs of the intersection. In 2023, a ninety-second (90) optimized signal cycle will be needed to clear the legs of the intersection. Using a sixty (60) second optimized signal cycle, the present overall LOS of this intersection is "C" in the AM peak and LOS "B" in the PM peak. In 2023 the overall LOS would be "D" for the PM peak.

Study Corridor Capacity Analysis

Although a capacity analysis was performed for the corridor using a standard computer program, it should be noted that analyzing an entire corridor is not a normal practice since the efficiency of intersections will ultimately control the LOS of the corridor. In addition, any computer program used to analyze a corridor is very conservative in determining LOS. Even though determining the LOS of the corridor would only provide general information, an analysis of the LOS of the corridor was determined. The calculated LOS for the corridor was found to be "E". To illustrate the point of the reliability of this analysis, it was noted that the traffic on the corridor would have to be reduced to more than half of the existing volume to obtain a LOS of "D". Therefore, the LOS of the intersections is a better determination of the LOS to be expected over the entire corridor. Assigning an overall corridor a LOS does provide some information about current and future conditions, however, exploring some of the inputs into a LOS determination may be more insightful.

The capacity of a corridor is one of the key factors in determining a LOS. How many lanes, what are the speeds, how many access points, and what are the intersections like are all questions that affect the capacity of this corridor. In Franklin, near Central Street, the corridor has a distinct urban/downtown feel with on-street parking, crosswalks, and many access points. All of these features reduce the capacity from a standard rural two-lane highway. Similar conditions exist along King Street in Boscawen. The section between these two downtown/village areas is much more rural with few access points and higher travel speeds allowing for much easier flow of traffic between them. However, if development continues to expand from the village/downtown centers and additional access points are created or if existing ones are more heavily utilized, then the capacity of this section will also degrade and travel times between the two communities will increase.

Safety Analysis

Traveler safety along a corridor is always one of, if not the most important attribute of, a roadway. While many factors contribute to how safe a particular section of road or intersection is, before they can be discussed the accident history of a corridor must be understood. As part of this Study, accident reports from both the City of Franklin and the Town of Boscawen were collected for the last several years and the locations of the accidents mapped. This information and the factors that contributed to why these accidents occurred were then explored.

Vehicle Accident Information

Detailed crash data for the full length of the Study Corridor was collected as part of this Study for the last six years (1997 – 2002). For each crash site, these data consisted of the location, date and time, number of vehicles involved, type of accident, road condition, lighting condition, and point of impact of the vehicles. Data sets are summarized in **Table 4** and accident locations are visible on **Map 4** and **Map 5**.

In the six year time span (1997 – 2002), there were 123 reported vehicular crashes in the City of Franklin and 209 vehicular crashes in the Town of Boscawen for a total of 332 vehicular crashes along the corridor. The 332 vehicular crashes resulted in 83 injuries in Franklin and an unknown number of injuries in Boscawen. There was also one fatality reported during this timeframe along the corridor. The majority of the vehicle accidents reported were a result of collisions with other vehicles, wildlife, or fixed objects. In Franklin, the average number of crashes per year has been consistent over the last six years at around 21. While in Boscawen, there appears to be a gradual increase in the average number of accidents along the corridor from 28 in 1997 to 55 in 2002, representing an increase of about fifteen (15) percent per year (**Chart 1**).

Data concerning the type of crash did not reveal any surprises. At many of the intersections, the majority of reported accidents were characterized by rear-end collisions. While along the more rural stretches of the corridor, most accidents involved drivers colliding with animals or losing control of the vehicle and veering off the road. The data was analyzed to determine where along the corridor crashes were happening. This analysis revealed seventeen (17) hot spots along the corridor where either a significant number of crashes occurred or the type of accident merited further review. The seventeen (17) locations are shown in **Table 5**.

Map 4: Accident Locations (Franklin)

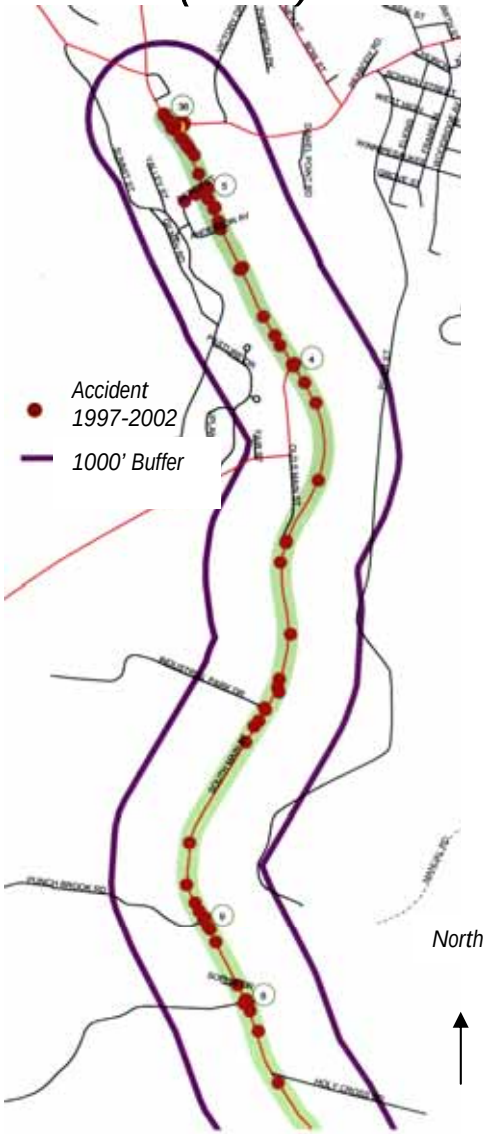
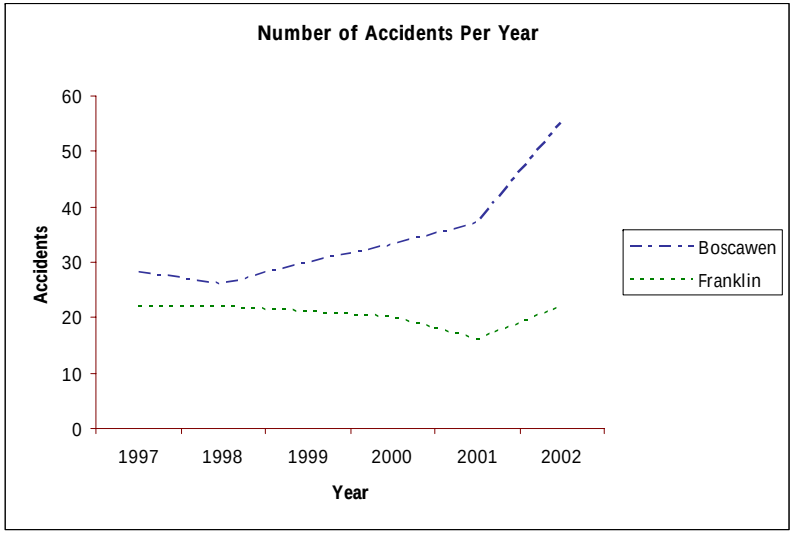


Table 4: Summary of Accident Data

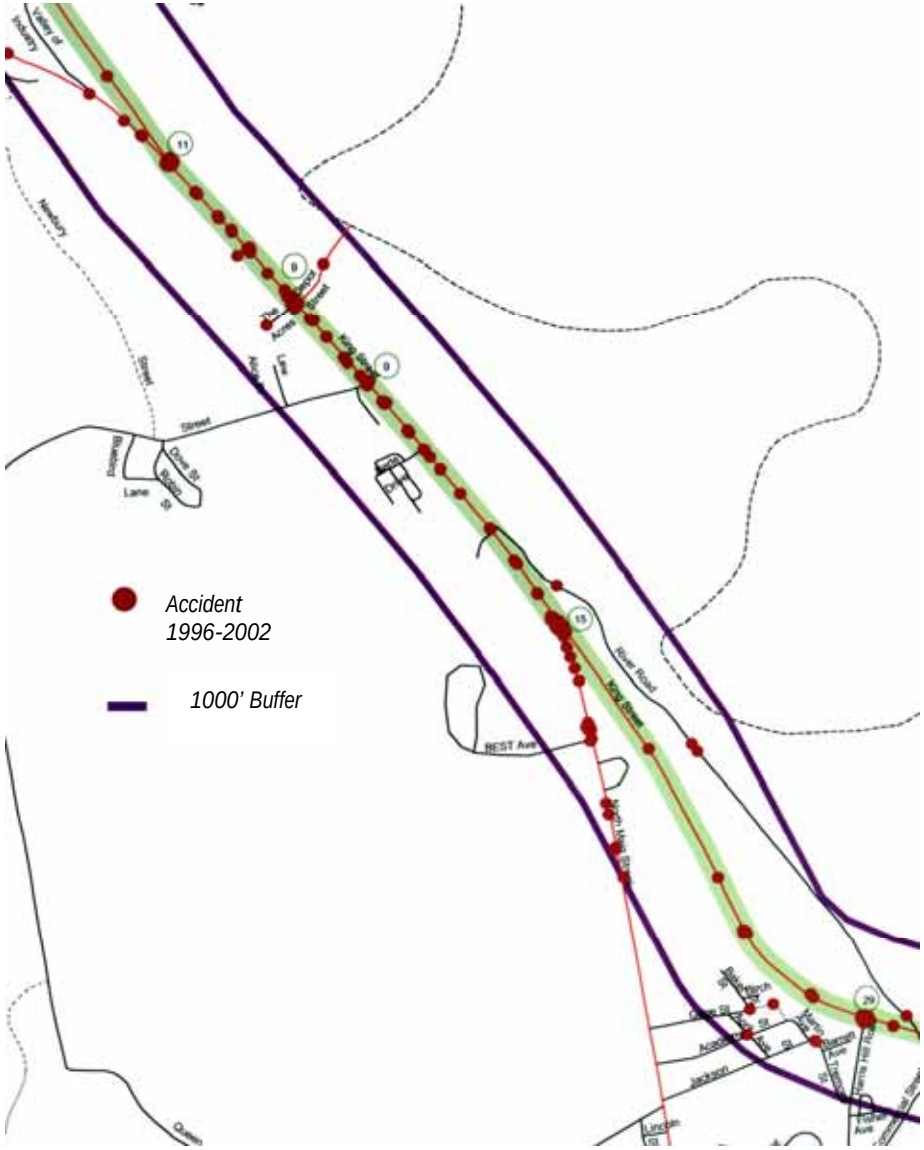
	Boscawen		Franklin	
	Accidents within 1000' for Corridor	Percent Change	Accidents within 1000' for Corridor	Percent Change
1997	28	-	22	-
1998	26	-7.1%	22	0.0%
1999	30	15.4%	21	-4.5%
2000	33	10.0%	20	-4.8%
2001	37	12.1%	16	-20.0%
2002	55	48.6%	22	37.5%
Total	209	-	123	-
Average Per Year	35	15.8%	21	1.6%

Source: Accidents Mapped by CNHRPC & LRPC, 2003

Chart 1: Accident Trends



Map 5: Accident Locations – King Street (Boscawen)



Source: Accidents Mapped by CNHRPC & LRPC, 2003

Table 5: Select Areas of Concern

LOCATION (From Franklin South to Boscawen)	NUMBER OF ACCIDENTS (1997-2002)	OBSERVATIONS
Central Street	36	Most rear end, daylight, dry pavement crashes No substantial difference in number over the years Right turn west to north may be problem
Depot Street	5	Few crashes, two large access points To the northwest is a Plaza with 3 access points Access closed at some point - no crashes after 1998
Abandoned Irving Service Station	3 (2000 and earlier)	Expanse of access point considered a problem
NH Route 127	4	Five crashes in 1998; two in 1999
North of Industrial Park Drive Entrance	4	Auto repair business Approximately 400' access point Crashes not a problem
Punch Brook Road	9	Crashes are largely fixed object and animal collisions
Smith Hill Road	8	Mix of crashes at the intersection
Flat Area North of Stirrup Iron Road	8	Five loss of control; two collision with deer Need deer crossing sign? Possible false sense of security when wet/slush/snow
Flat Area North of Merrimack County Nursing Home	19	Appears to be an issue of collisions with deer
Northern US Routes 3 & 4 Junction	11	Mostly rear-end collisions Issues appear to be northbound US 3 and southbound US 4
At Cumberland Farms	5	Three of the accidents in parking lot
Queen Street	9	Possible turning issue with rear-end collisions Design of intersection possible contributor
Construction Equipment Establishment South of Queen Street	4	All rear-end collisions
Southern US Routes 3&4 Split	15	Rear-end collisions appear to be problem Recently improved section May need traffic calming at this location
North of Harris Hill Road	8	Crashes are loss of control
Harris Hill Road and US 4 Intersection	29	Slated for improvement with bridge reconstruction Turning and rear-end collisions Fourteen accidents in last two years
At Merrimack River Bridge and Park N' Ride Lot	6	Rear-end collissions Will be improved with bridge project

Source: Boscawen & Franklin Accident Reports Summarized by RPC Staff, 2003

Access Point Inventory

Access points along a corridor can affect the overall operation of the corridor. Each access point that intersects a highway provides a point of potential conflict as a vehicle turns off or on the highway. As a result, traffic slows down and the efficiency of the highway is reduced, the potential for crashes increases. If access points are controlled and kept to a minimum, the traveling public will have less interference from traffic entering and leaving the highway and thus will operate more efficiently and have less potential for crashes. On the other hand, the more access points that exist along a corridor, the more interference the traveling public will encounter, the efficiency of the corridor will decline, and the potential for crashes increases.

In addition to the number of access points, the width and type of access point will also affect the efficiency of the corridor. Those access points with a well-defined or channelized entrance/exit allow for more efficient operation of the corridor because approaching vehicles will more clearly be able to determine where vehicles will be entering or leaving those access points. Those access points which do not have a well-defined entrance/exit, or are very wide, allow entering and exiting vehicles to make many different movements which an approaching vehicle cannot anticipate. The wide-open unchannelized access point has been shown to be detrimental to the efficient operation of a corridor.

There are many varying types of access points along the Study corridor. To better define the various types of access points along the corridor, an inventory of all access points was performed using a Global Positioning System (GPS) (**Maps 6 and 7**). The inventory consisted of the location and width of the access point. This information was then mapped for discussion and study purposes. There were a significant number of access points along the corridor which were wide open and contained no channelization.

Map 6: Access Points (Franklin)

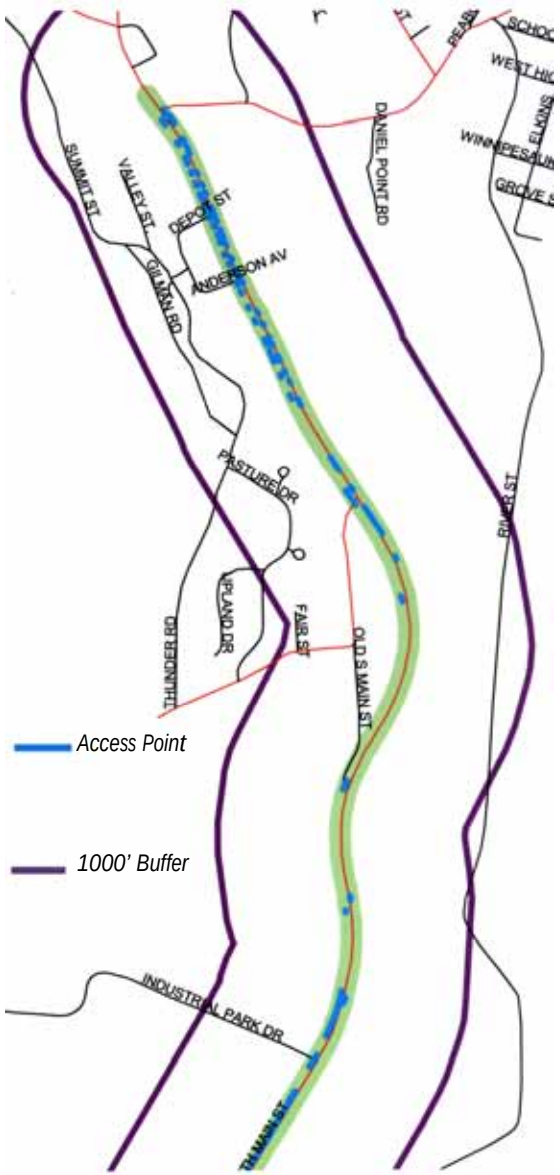


Table 6: Access Point Summary

Section of US Route 3	Number of Access Points	Maximum Length of Access Points (ft)	Minimum Length of Access Points (ft)	Average Length of Access Points (ft)	Median Length of Access Points (ft)	Length of Section (ft)	Number of Access Points per 100 feet
Southern US Route 3/4 Split to Northern US Route 3/4 Split (Boscawen)	74	94	8	30	23	7,118	1.0
Northern US Route 3/4 Split north to Boscawen/Franklin T/L (Boscawen)	91	253	8	36	27	25,719	0.4
NH Route 127 South to Boscawen/Franklin T/L north to NH Route 127 (Franklin)	53	325	8	50	28	19,205	0.3
NH Route 127 north to US Route 3 and NH Route 11 Intersection (Franklin)	58	123	8	30	23	3,433	1.7

Source: Access Point Inventory Conducted by CNHRPC & LRPC, 2003

Access Management

Access management is the control and regulation of the spacing and design of driveways, intersections, and other points of access to and from the highway system and the land that abuts it. For communities, access management usually means controlling the number and spacing of driveways along a roadway, as well as the construction of new roads which access onto the existing highway system. In addition, access management also involves the creation of right and left turning lanes, medians, and median openings.

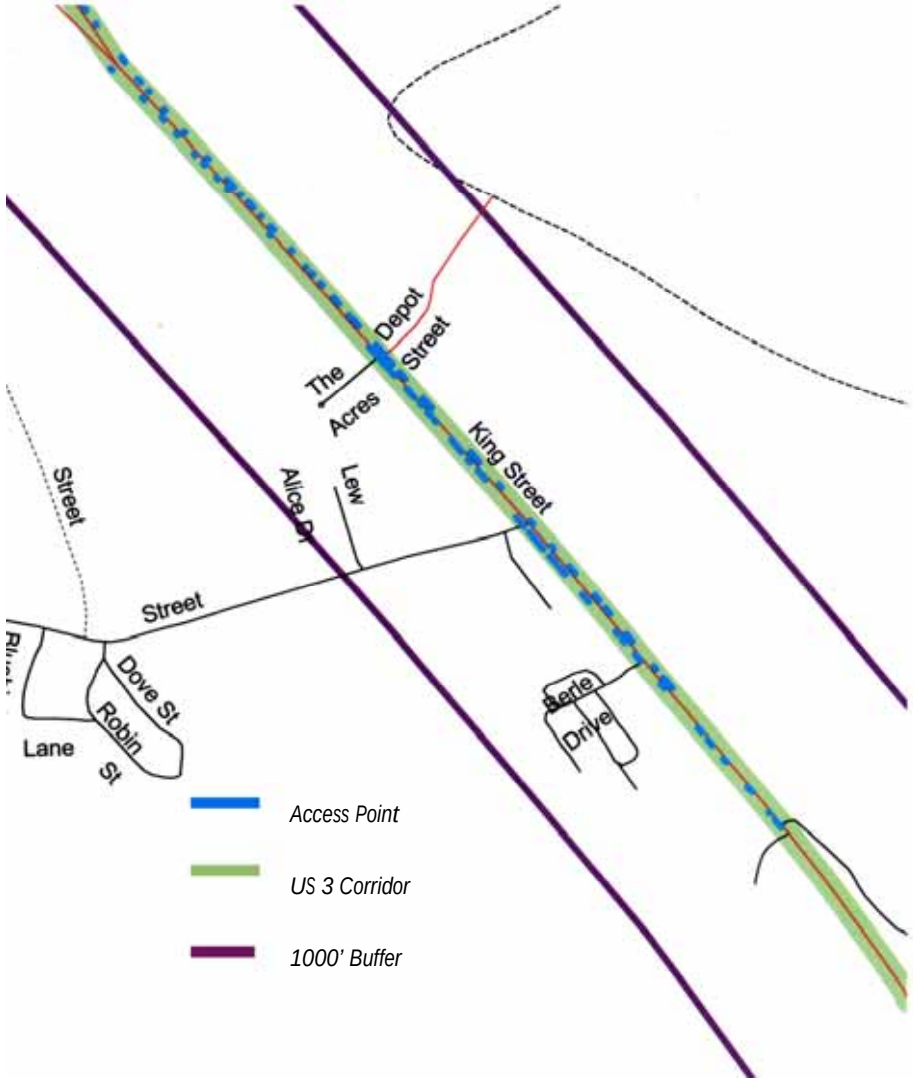
The purpose of access management is to preserve the capacity of roadways and improve traffic safety by limiting turning movements and ensuring that the design of access points allows for the safe and efficient movement of people and goods. There are a variety of techniques that can become a part of a local access management program. These techniques include:

- Ensuring adequate distance between driveways to reduce the number of access points that a driver must be aware of.
- Ensuring that corner lots have access from the lowest traveled road or side street.
- Limiting the number of access points per lot.

- Encouraging, and at times requiring, the use of shared driveways between two or more adjacent lots.
- Providing interconnections between non-residential sites to allow employees and customers to move from site to site without repeatedly entering and exiting the highway system.
- Ensuring that driveways have an adequate throat length (i.e. depth) to prevent vehicles from backing up on the highway system as they wait to access a site.
- Providing right-turn deceleration and acceleration lanes as warranted.
- Providing dedicated left turn lanes where warranted.
- Defining driveway openings clearly to eliminate wide open access points to a site that creates confusion and an unsafe situation.
- Ensuring that access points are adequately set back from intersections to ensure that vehicles accessing a site do not interfere with the operation of the intersection.
- Providing medians to limit left turn possibilities on busy stretches of road where left turns from sites onto the highway system are unsafe.
- Providing traffic signals where traffic volumes and situations warrant them.

In order to obtain a better understanding of what currently exists for access points along the corridor each access point was mapped using a Global Positioning System (GPS). **Table 6** summarizes the numbers and characteristics of the access points along the corridor. The "Number of Access Points per 100 feet" column in **Table 6** provides a very good indicator of the density of access points in a given section. A higher number of access points per 100 feet will lower the capacity of that section, causing travel speeds to be reduced and congestion to be increased. As would be expected, when the number of access points decreases, vehicles are able to flow more freely and travel times decrease. As every access point creates an additional opportunity for an accident, traveler safety for all modes,

Map 7: Access Points - King Street (Boscawen)



including bicycle and pedestrian, also increases as the number of access points decrease and as the quality increases.

Access point quality is also a key feature in access management. Ten (10) well defined and signed access points are substantially safer and have smaller impacts to the corridor then ten (10) poorly defined ones. Two columns in **Table 6** "Maximum Length of Access Points" and "Average Length of Access Points" clearly describe at least one feature of access point design, length. Even the largest trucks have a turning radius of only 47 feet and most delivery trucks do not exceed 30 feet. Access points should be constructed to easily accommodate typical vehicles and should accommodate, though not necessarily with ease, an infrequent larger delivery vehicle. For properties with more than one access point, one-way entrances and exits can also assist traffic flow, increase safety, and allow for reductions in the size of the access points. Signage for all access points and in particular multiple access points, is vital for safe and efficient traffic flow.

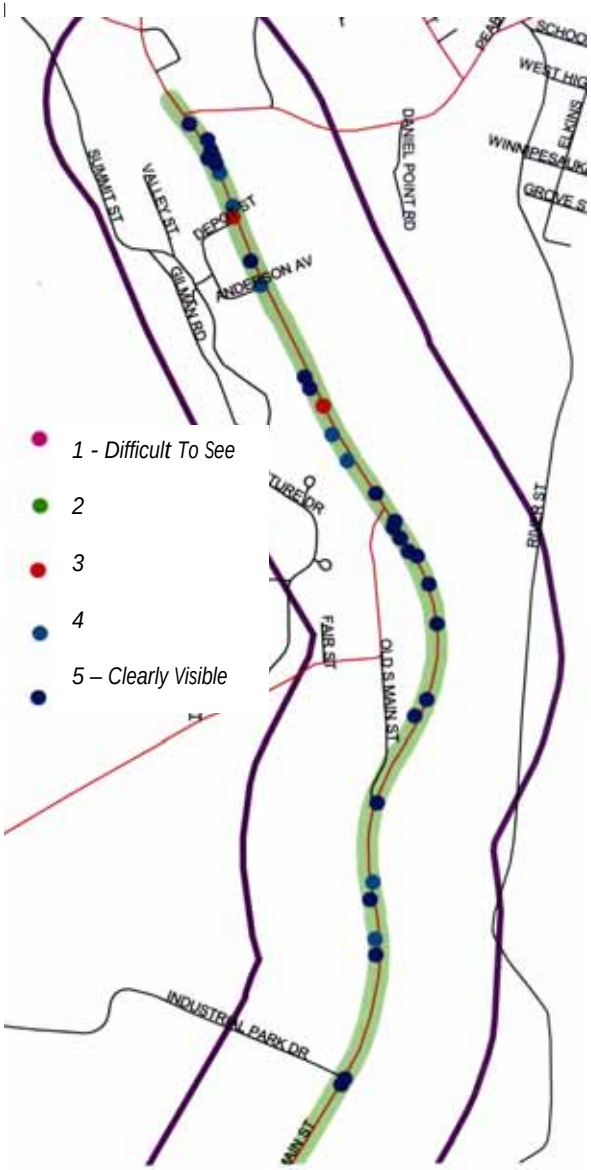
The construction of access points is controlled both by the New Hampshire Department of Transportation through the Highway District Engineer's Offices and by communities. Both the District Engineer and the community can work cooperatively to ensure that access points are constructed in the best location and to safe standards.

Sign Inventory

Signs, along with traffic signals, are traffic control devices used to assist motorist in traversing our highways. Traffic control devices are important because they serve to optimize traffic performance, promote uniformity nationwide, and help improve safety by reducing the number and severity of traffic crashes. It is important that the number of signs along a corridor is of sufficient number but not overburdening to the driver.

State and local governments control the installation of traffic control and guidance signage along a highway. However, over time there can become a proliferation of signs which add confusion to the traveler. To ensure that signage along the corridor was adequate, a complete sign inventory was performed along the corridor using a Global Positioning System (GPS). The sign inventory was limited to traffic control or guidance signs. Non-travel related signs, such as billboards, advertising signs and commercial signs, were not inventoried. The sign location,

Map 8: Sign Visibility - Franklin

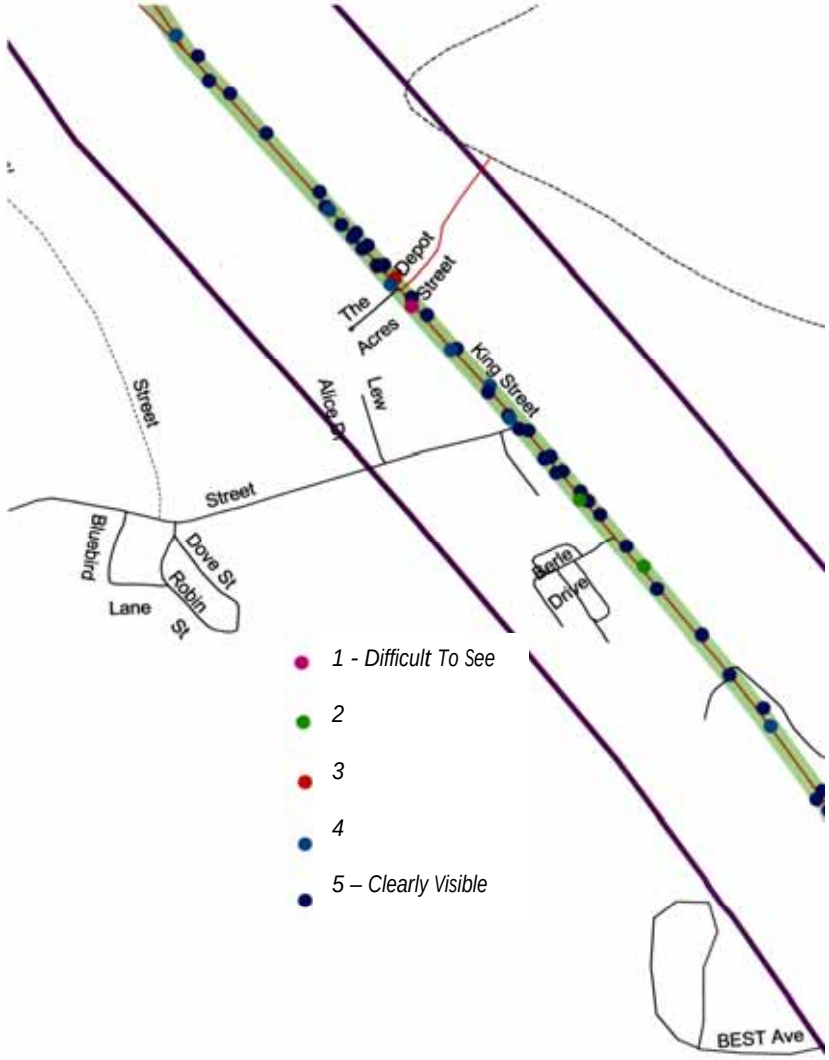


height, condition, visibility (**Map 8 and 9**) and appropriateness of the message were included in the inventory.

The inventory indicated that the traffic control signage along the corridor was sufficient for the conditions existing within the corridor. Street signs, which are considered guidance signage, were missing for some cross streets. Street signs indicating the names of different portions of US Routes 3 or 4 were usually not used by either community.

The Manual on Uniform Traffic Control Devices (MUTCD) contains the requirements for all traffic control devices, including street designation signage. With the issuance of the latest version of the MUTCD there was a change in the requirements for street designation signs. The requirement for street designation signage to be reflective or illuminated has changed from an advisory to a mandatory requirement. In addition, the letter size for street designation signs on roads with speed limits of 25 miles per hour (MPH) or greater should be six (6) inch uppercase letters, four and a half (4 ½) inch lowercase letters and three (3) inch letters for street abbreviations (i.e. Avenue, street, road). It is still optional to use the different lettering for roads with speed limits lower than 25 MPH. Local governments have until January 9, 2012 to bring their street designation signage up to the new standard for reflectivity and letter sizes.

Map 9: Sign Visibility - King Street



Traffic Calming

What is Traffic Calming?

The term "traffic calming" is used to describe methods of altering the behavior of drivers to suit the character of the area they move through. As concern over safety and the desire for improved pedestrian and bicycle safety increases, communities across the country are using traffic calming measures for improving safety and reducing vehicle speeds in school zones, neighborhoods, and more urbanized areas.

The overriding purpose of traffic calming is to discourage non-local motorists from driving at excessive speeds through neighborhoods and village areas. There are several other benefits to the process as well. Because many traffic-calming strategies reduce vehicle speeds for all vehicle traffic on the street, safety on that street is increased. Because many traffic-calming strategies use landscaping and pavement treatments, these may serve to enhance the aesthetic look of the neighborhood. Slower moving traffic and a more pleasant street environment also encourage greater bicycle and pedestrian activity, reducing the number of vehicles on the roadway and automobile-related congestion.

The need for traffic calming normally stems from an increase in complaints about traffic on neighborhood streets. Increased traffic through neighborhoods threatens the integrity and character of the neighborhood and places non-motorized users at risk. Limited resources of communities do not always allow for comprehensive enforcement on all neighborhood streets, including the US Route 3 corridor itself. The increase in traffic along the corridor, through the City of Franklin and the Town of Boscawen is likely due to several factors, including:

1) New development in adjacent neighborhoods creating increased traffic;
2) Increased residential and commercial development along the US Route 3 corridor; and
3) Increased commuter traffic seeking a direct route to and from Interstate 93.

A view of US Route 3 in the densely developed urban area of Franklin near Central Street. Sidewalks have been constructed along both sides of the street.

Franklin Urban Area

The South Main Street area of Franklin exhibits all of the above factors that generally lead to a need for traffic-calming strategies. The speed data collected, however, as well as the public input received so far in this Study, does not indicate that traffic-calming is

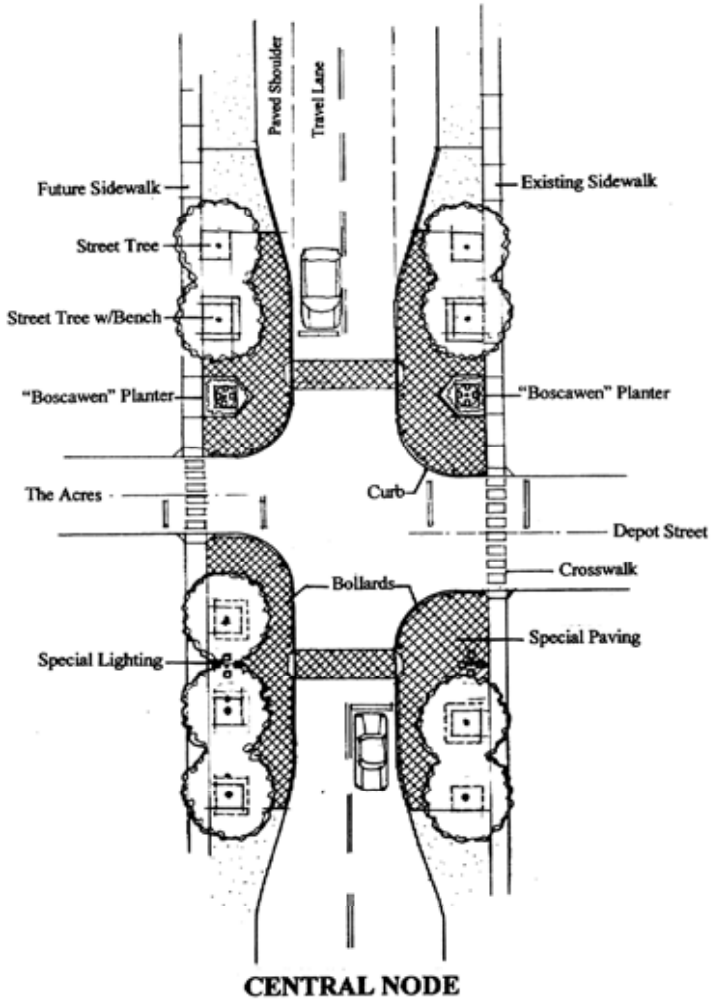
currently needed. Relatively slow traffic speeds may be a result of several unique characteristics of South Main Street. On-street parking, for example, can have the effect of narrowing the roadway and calming the speeds of traffic. The provision of sidewalks along both sides of South Main Street provides protection for pedestrians, and the few areas where pedestrians cross have well-marked crosswalks and good sight distance for pedestrians and vehicles alike.

The City of Franklin should closely monitor speeds in this area as development changes occur and traffic volumes increase. Increased commuter traffic, for example, may result in increased speeds that are unacceptable to the local users of the transportation system, including automobilists, bicyclists, and pedestrians. Because there is a significant width of roadway along South Main Street, one of the more cost-effective treatments may be to eliminate parallel parking in some areas and replace it with permanent curb extensions which physically narrow the travel way. These curb extensions would be best used at pedestrian crossings since they would provide a raised, curbed area from which a pedestrian can view oncoming traffic as well as decrease the amount of pavement for a pedestrian to cross.

Boscawen Village Area

The previously mentioned US Routes 3 & 4 (King Street) Corridor Study in Boscawen included significant recommendations towards implementing traffic-calming measures through the village area. The input received through this Study, as well as the speed data collected over the past year, reinforce this need. Traffic calming in village area of Boscawen, however, is not limited to treatments solely within the area itself. Instead, travel speeds must be reduced outside of the village area on US Route 3 to the north and on US Route 4 to the south. Unfortunately, the recently reconstructed US Route 4 to the south of the village area presents a challenge to reducing the speed of traffic, since that section of roadway is designed to accommodate speeds in excess of 55 MPH. Since US Route 4 in this area is a limited access highway, traditional traffic calming strategies may not work here, and the town will have to work with the New Hampshire Department of Transportation (NHDOT) to develop innovative and creative ways to slow the traffic down before it even reaches the village area.

Graphic created by Vanasse Hangen Brustlin, Inc. (VHB) for the US Routes 3 and 4 (King Street) Corridor Study in Boscawen. The image illustrates the use of plantings, bump-outs, lighting, and paving to create a safer atmosphere for pedestrians while slowing down vehicles.



Alternative Transportation

Bicycle Facilities

The portion of US Route 3 from the northern limit of the Study Corridor (junction of US Route 3 and NH Route 11 in Franklin) southerly to the northern split of the intersection of US Route 3 and US Route 4 in Boscawen does not have any formally marked or signed bicycle facilities. In addition, there are areas within this section which do not have sufficient shoulders to support bicycle traffic. This section is also not on either the State of New Hampshire statewide bicycle route system or either the LRPC or CNHRPC bicycle route system.

The portion of the Study Corridor from the northern split of the intersection of US Route 3 and US Route 4 in Boscawen to the southern limit of the Study Corridor (US Route 3 and Interstate 93 Exit 17) does not have formally marked or signed bicycle facilities, but does have sufficient shoulder widths to accommodate bicycle traffic. This section of the Study Corridor is on the State of New Hampshire statewide bicycle route system and the CNHRPC bicycle route system.

Pedestrian Amenities

The only pedestrian opportunities in the US Route 3 Study Corridor are within the Boscawen and Franklin central downtown business areas. Outside of the centralized downtown business areas few pedestrian opportunities exist.

Sidewalks

In the centralized downtown business area of Franklin sidewalks exist on both sides of the roadway and are in very good condition at this time. Although a sidewalk also is located within the village area of Boscawen, it is only on the eastern side of the roadway. Ample shoulders exist along some portions of the corridor for pedestrian use. However, with the speeds and volume of traffic along the corridor, pedestrian safety is a concern wherever sidewalks are not available.

An example of a well designed sidewalk in a downtown environment. The lighting and trees are both appropriately scaled to the surrounding buildings as are the merchant signs.

A portion of the sidewalk along King Street. This section is particularly inviting to pedestrians during sunny days as the trees provide substantial shade.

The Town of Boscawen is seeking assistance to create a sidewalk link between North Main Street (US Route 3) and King Street (US Routes 3 & 4). If the Town is able to construct this section it will link two distinct commercial/residential areas together greatly increasing the pedestrian amenities and safety in Boscawen.

Crosswalks

Formal crosswalks along the corridor exist only within the Franklin central downtown business area. The US Route 3 and NH Route 11 intersection at the northern end of the Study Corridor in Franklin is signalized with a walk cycle activated by pedestrian push buttons. There are no formalized crosswalks within the residential/commercial village area of Boscawen within the Study Corridor. However, if the sidewalk described above is constructed, a pedestrian crossing would be needed at or near the southern US Routes 3 & 4 junction.

Transit Opportunities

Currently, there is limited transit availability in both the City of Franklin and the Town of Boscawen. Though there is no fixed-route regularly scheduled transit service in either community, special needs transit is available on an on-call basis. Fixed-route service could help reduce congestion on the corridor and provide easier access to services for those with limited means of travel. Concord Area Transit (CAT) is currently considering options for an expansion of service into the King Street area of Boscawen. In the future, a link between Concord Area Transit and the Greater Laconia Transit Agency (GLTA) would be ideal for travelers.

Greater Laconia Transit Agency (GLTA)

The GLTA provides scheduled service on Monday through Friday from 8:00 AM to 3:00 PM between Franklin and Tilton, Belmont and Laconia. The schedule of service can be accessed through GLTA's web page at http://www.gltabus.org/.

Community Action Program (CAP) of Belknap-Merrimack County

The CAP Rural Transit System provides services for seniors (aged 60 and over) and disabled individuals. Vehicles are routed through the community with service tailored to offer door-to-door service and assistance in loading and unloading. Rides are available Monday through Friday by contacting the Franklin Senior Center or CAP directly.

Concord Area Transit (CAT)

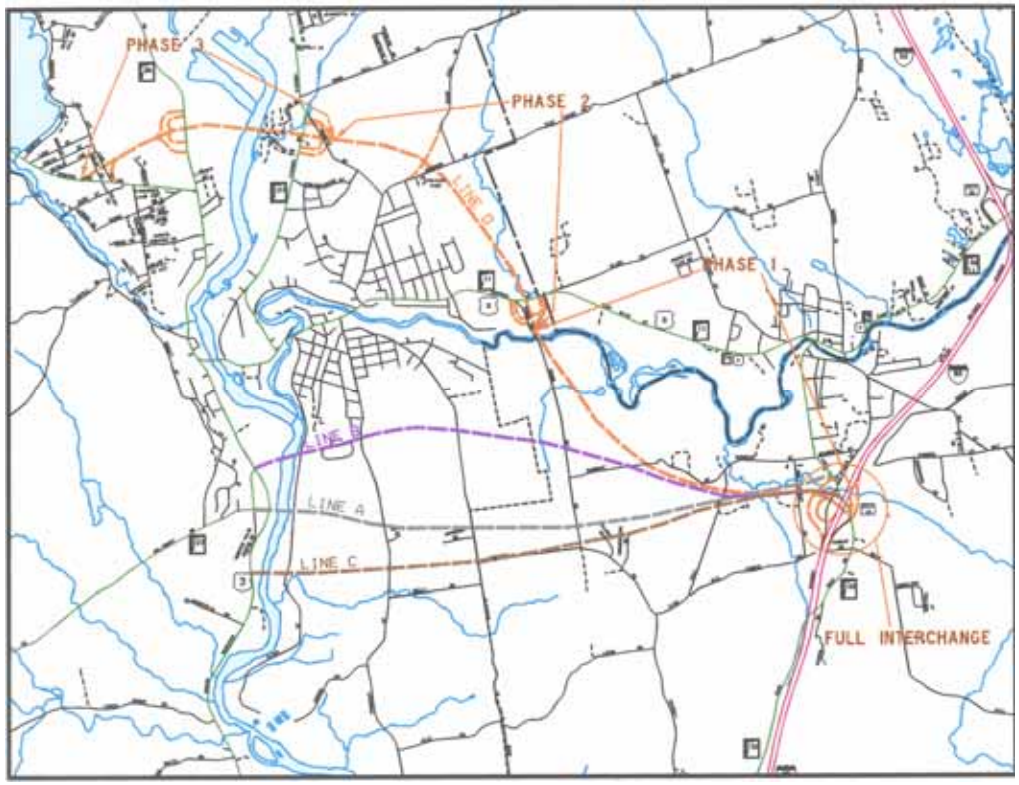
Concord Area Transit provides scheduled fixed-route service throughout most of Concord with a route extending to areas of Penacook just south of Boscawen. The "Concord Area Transit Expansion Study" completed in September 2003 by TranSystems Corp. recommended expanding service to include North Main Street and King Street in Boscawen. Overall, the Study recommended several incremental changes to the CAT system to offer expanded and improved service to the area.

Interstate 93 Connection

Background and Discussion

In January 1994, a year long study of the US Route 3/NH Route 11 Corridor between Franklin and Laconia was completed. Transportation projects, including the widening of US Route 3/NH Route 11 and select intersection improvements along the existing alignment were identified as necessary to accommodate projected traffic growth for twenty years. In addition, ten interim projects were identified as having local and regional significance and were recommended for inclusion in the NH DOT Ten Year Plan. These interim projects were not intended to be ultimate solutions, and additional in-corridor and off-corridor efforts were recommended.

Figure 9: Interstate 93 – US Route 3 Connection Alternatives



The focus of the 1994 study was, by legislative mandate, on developing transportation improvements within the US Route 3/NH Route 11 corridor. As the study progressed, it was recognized that off-corridor improvements may be the most effective long term solution for accommodating increasing traffic demands. As such, the study incorporated an off-corridor modeling effort to examine alternatives that would take traffic away from the US Route 3/NH Route 11 corridor. Although consensus was not reached regarding the best off-corridor alternative, a major recommendation of the 1994 study was for the NHDOT and Lakes Region Planning Commission to engage in further studies to assess the feasibility of a larger scale alternative route to US Route 3/NH Route 11 that would connect Franklin with Interstate 93, perhaps at the existing Exit 19 Interchange in Northfield.

With significant local support for an alternate route to US Route 3/NH Route 11, the New Hampshire Legislature in 1996 passed House Bill HB-1339-FN-A which established "a committee to conduct a feasibility study relative to the construction of an alternate highway for Route 3 South in Franklin to Exit 19, making Exit 19 a four-way interchange, and continuing East to NH Route 140. A Legislative Committee was established comprising of one member of the NH House of Representatives from each of Franklin, Belmont, and

Northfield, as well as two members of the NH Senate. The New Hampshire Department of Transportation was designated to provide input as requested, and the Lakes Region Planning Commission was to provide administrative and technical support to the Legislative Committee.

Four alternative routes for a Connector Road between Franklin and Exit 19 in Northfield were examined (**Figure 9**). The first, labeled Alternative A, was the recommendation that was developed in the US Route 3/NH Route 11 Corridor Study. The Corridor Study acknowledged that this alternative had significant grade restrictions, environmental impacts, and a limited projected usage. Despite these finding, the proposal received widespread local support, and the Legislative Committee determined that it should be looked at again because of the potential benefits to the existing US Route 3/NH Route 11 Corridor, improved access to and from Franklin, development potential for Northfield, and the provision of a second major river crossing in Franklin.

In addition to the alternative developed in the 1994 US Route 3/NH Route 11 Corridor Study, three other alternatives were developed and assessed in an attempt to find a better connector road solution. At the completion of its work, the Legislative Committee concluded that Alignment D was the preferred alternative and recommended the following:

"A project to accomplish the preliminary engineering and environmental studies for a connector road from Exit 19 to Franklin should be added to the state's Ten Year Transportation Improvement Program."

The proposed project for preliminary engineering and environmental analysis of the proposed connector road was first included in the NHDOT Ten Year Transportation Improvement Plan in 2000, and is currently scheduled to occur in 2006. The estimated cost of the study portion of the project is estimated at $1.0 million and would be completed in 2006. The project is currently described as a "New connector road from NH 3A in Franklin to Exit 19 in Northfield." The scope of the project, however, is subject to change, and other alternate routes should be examined when the study portion of the project begins in 2006. The Local Adivsory Working Group would like to be involved in the scoping process and recommends that all communities affected be invited to participate in the evaluation of alternatives for a Connector Road to and from Interstate 93 and Franklin.

Land Use and Aesthetics

Land use and aesthetics play an important role in defining the character of a community. They can also directly impact how well a transportation corridor functions. Interestingly, these are two areas where a community has a significant amount of influence, both through local regulations and the local review process. The most important local regulation that governs development is a municipal zoning ordinance.

Zoning Ordinances

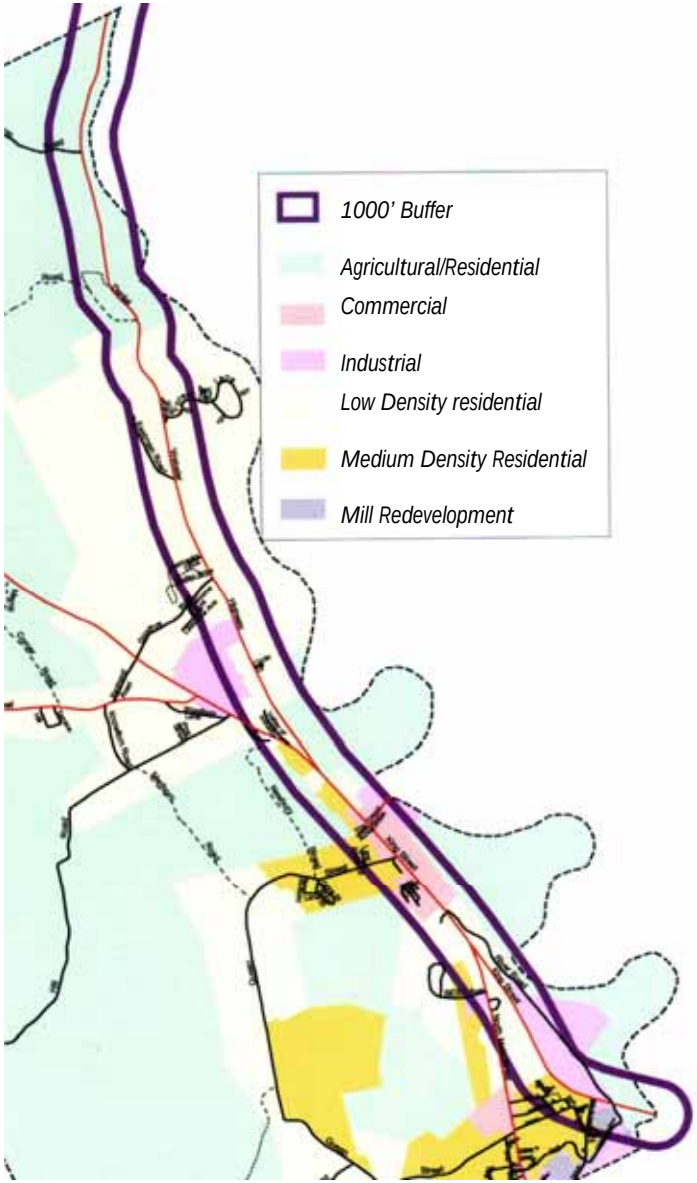
Boscawen Zoning

The Zoning Ordinance for the Town of Boscawen was last revised in March 1999. The ordinance, in accordance with a comprehensive plan, is designed to provide for the health, safety, and general welfare of the community. The ordinance is intended to lessen congestion in the streets; to secure safety from fires, panic, and other dangers; to provide adequate light and air; to prevent the overcrowding of land; to avoid undue concentration of population; to provide adequate facilities for transportation, solid waste, water, sewage, parks, schools and day care; and to assure the proper use of natural resources and all other public requirements. The ordinance was developed to conserve the value of buildings and encourage the most appropriate use of land throughout the various areas of Boscawen.

The Town of Boscawen is divided into six (6) zoning districts (**Map 10**):

- Agricultural-Residential
- Residential-Low Density
- Residential-Medium Density
- Commercial
- Industrial
- Mill Redevelopment District

Map 10: Boscawen Zoning



The restrictions and regulations applicable to each of the zoning districts is contained in **Appendix A**, The Town of Boscawen, Summary of Regulations.

Franklin Zoning

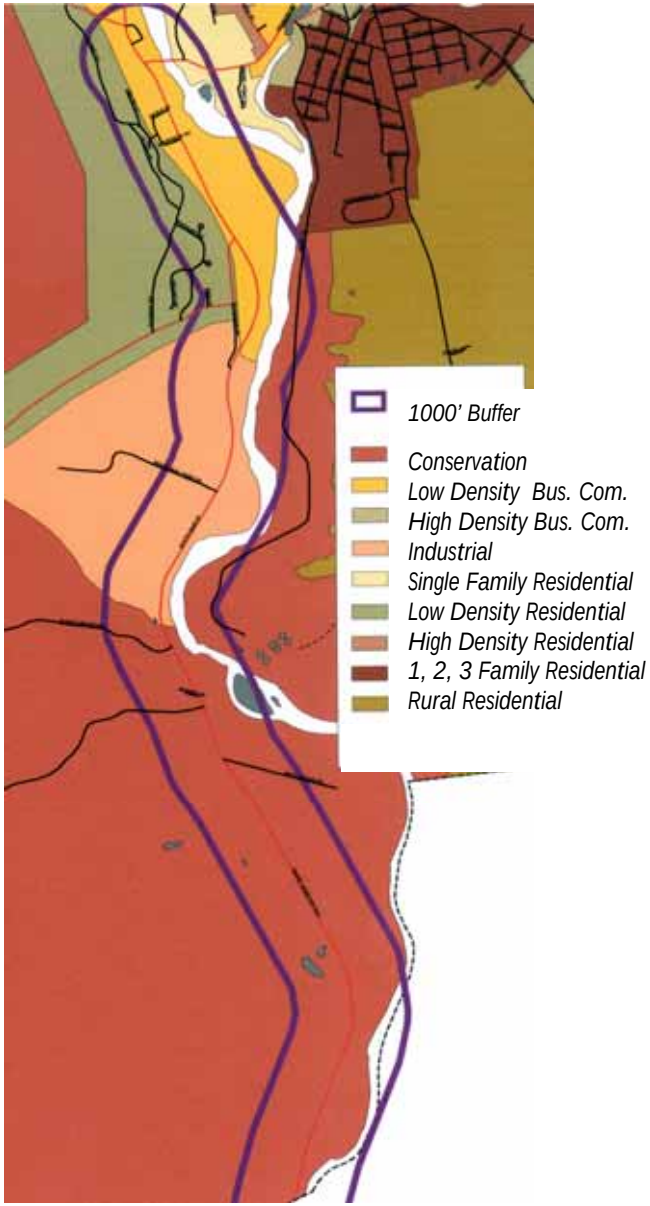
The Zoning Ordinance for the City of Franklin was last revised in January 2002. The ordinance is designed to carry out the goals of encouraging the most appropriate use of land throughout the city; promoting traffic safety; providing safety from fire and other elements; providing adequate light and air; preventing overcrowding of real estate; promoting a wholesome home environment; preventing housing development in unsanitary areas; providing an adequate street system; promoting the coordinated development of unbuilt areas; encouraging the formation of community units; providing an allotment of land area in new development for all requirements of community life; conserving natural resources; and providing for adequate public services.

The City of Franklin is divided into eleven (11) zoning districts:

- Rural Residential
- Single-Family Residential
- Low Density Residential
- High Density Residential
- One-, Two- and Three-Family Residential
- Low Density Business and Commercial
- High Density Business and Commercial
- Industrial
- Light Industrial
- Conservation
- Lake Protection

The restrictions and regulations applicable to each of the zoning districts is contained in **Appendix B**, The City of Franklin, Summary of Regulations.

Map 11: Franklin Zoning

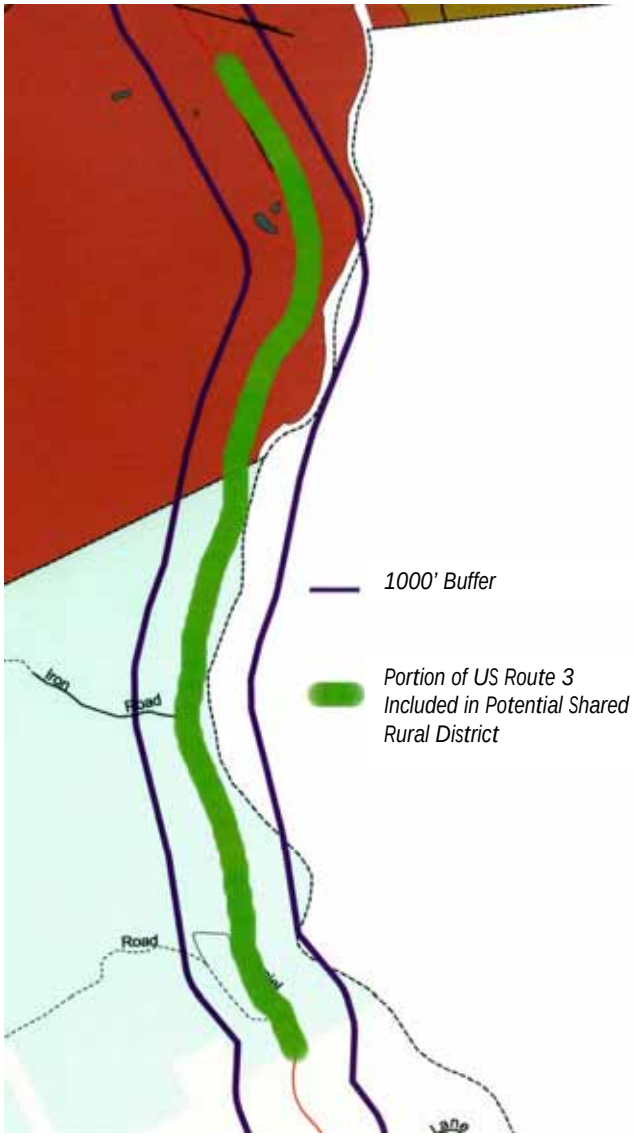


Comparison Analysis & Uniformity

The way land is zoned and ultimately developed will have a tremendous impact on the safety and efficiency of the US Route 3 corridor. For Franklin and Boscawen, land within 1,000 feet of the Study Corridor is separated into ten (10) zoning districts. There are four districts in Franklin: Low Density Business and Commercial, Low Density Residential, Industrial, and Conservation. In Boscawen there are currently six (6) districts within 1,000 feet of the Study Corridor which are: Mill Redevelopment District, Medium Density Residential District, Industrial District, Commercial District, Low Density Residential District, and Agricultural/Residential District.

There exists an opportunity for both communities to work together to provide for continued preservation of the rural section of the US Route 3 corridor. Each community shares a portion of the rural section. In Franklin, this section runs roughly from Punch Brook Road south to the town line. In Boscawen, the rural portion of the Study Corridor is, for the most part, from the town line south to Forest Lane. To be effective in preserving this transportation corridor, the communities should work together to discourage urban-style development through this corridor, encouraging that future development only occur in the urban area of Franklin and in the village area of Boscawen. As mentioned below, setbacks, roadside vegetative buffers, and other regulations should all be consistent between the two communities through the rural part of the Study Corridor, while each of the more built-up areas can have regulations unique to their individual context and current built environment.

Map 12: Potential Shared Rural District



Build-Out Analysis

As an element of the US Route 3 Corridor Study, an analysis of future build-out based upon today's Zoning Ordinances in Boscawen and Franklin has been developed. The goal of the project was to estimate the number of potential residential lots as well as the amount of available commercial and industrial acreage. In the future, a build-out analysis could be used to model potential changes to each community's Zoning Ordinance.

The Build-Out Process

The analysis included all parcels within 1,000 feet of either side of the Study Corridor. For the purposes of the Study, LRPC staff digitized the City of Franklin's parcels, while CNHRPC staff updated the Town of Boscawen's digitized parcels. Franklin land use data were provided by the City of Franklin. Boscawen land use data from the 2001-2002 Master Plan were updated by CNHRPC staff.

In addition to the parcel information, other data used in the analysis include the National Wetlands Inventory, Federal Emergency Management Agency (FEMA) Flood Insurance Rate maps that delineate the 100-year and 500-year floodplain, and information related to conservation lands from Town and regional planning commission files.

To initiate the build-out process, those areas that could be deemed as "built-out" were identified. These include areas that likely will not be developed due to their ownership or use (Veterans Cemetery, municipal lands, schools, Merrimack County Nursing Home, County Jail, and adjacent lands), as well as previously developed areas.

After identifying the built-out lands, the next step was to estimate the number of potential residential lots in the districts that permit residential uses and the developable commercial/industrial acreage in districts that allow commercial and/or industrial uses. As several districts allow a variety of uses, calculations of potential housing units and commercial/industrial acreage were made for the same parcels in a number of cases.

Several rules were developed to complete these calculations. First, all built-out parcels were taken out of the analysis. Following this step, all parcels or sections of parcels not constrained by wetlands, floodplains (for residential lots) and steep slopes were identified. As the minimum lot size in a particular zone determines the number of potential residential lots that can be developed, a series of calculations were performed to determine the gross developable area by parcel.

For all lots in residential zones with a developable area of 5 acres or more, this number was then multiplied by a factor of 0.75 to give the estimate a measure of reality, as it would be expected that design issues and required rights-of-way in a larger subdivision will often result in a fewer overall number of lots created than the maximum allowed. This factor was based upon previous projects undertaken by

CNHRPC staff. The number was not factored for smaller lots as there are fewer design issues in minor subdivisions. Finally, the number of potential residential lots was reduced by one, if a residence already existed on that lot.

For the commercial/industrial acreage calculations, the total available acreage after the various constraints were eliminated was tallied. This number was not factored by the minimum underlying lot size, but was simply an estimate of the overall available acreage.

Results of the Build-Out Analysis

The results of the analysis, portrayed in **Table 7**, provide an interesting look at the future along US Route 3 in Boscawen and Franklin. In the districts that permit residential uses, there is a potential for 815 lots in Boscawen and 436 lots in Franklin, for a total of 1,251 single family residential lots within the Study Corridor.

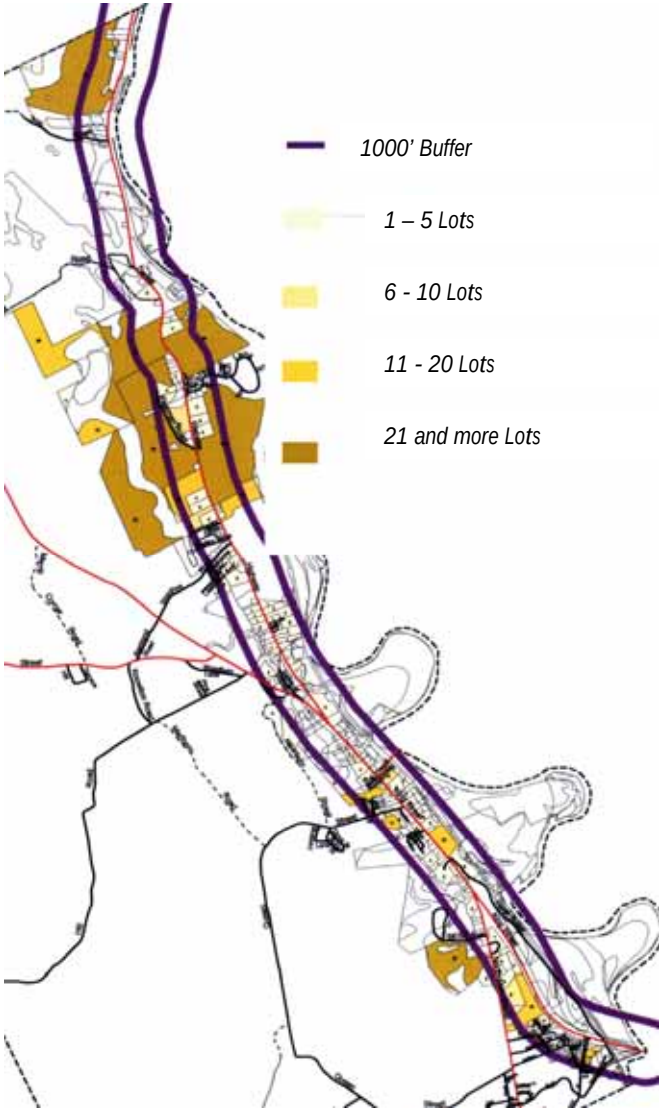
On the commercial/ industrial side of the equation, the majority of estimated developable acreage is located in the City of Franklin (605 acres of a total of 791 commercial/industrial acres in the Study Corridor). A total of 185 acres were identified in Boscawen.

Table 7: Build-out Analysis Summary

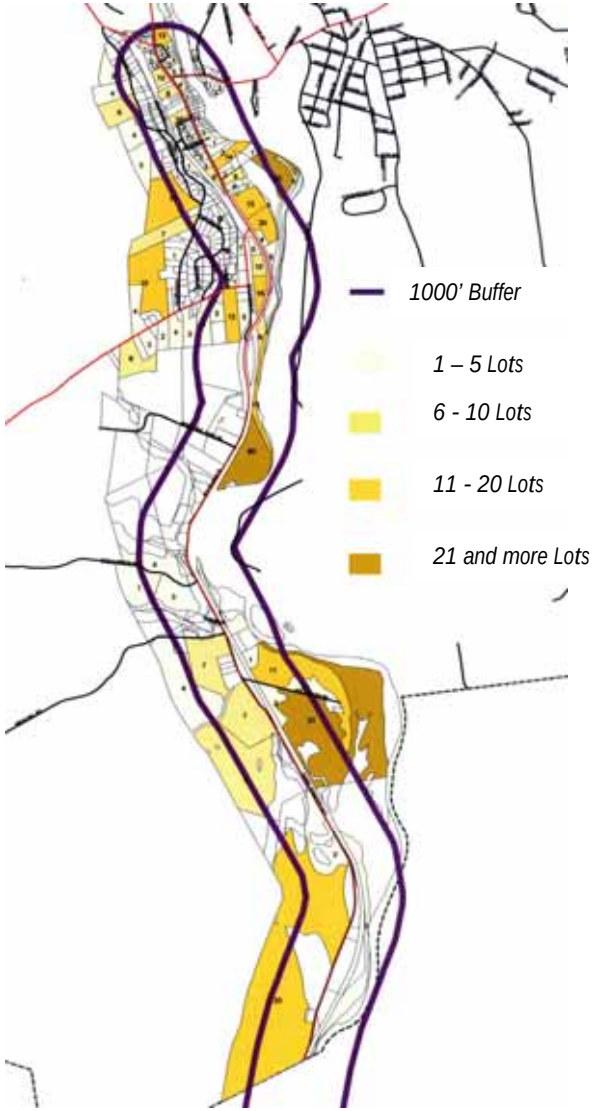
Zoning District	Potential Single Family Residential Lots	Estimated Commercial / Industrial Acreage
Town of Boscawen		
Agricultural-Residential (A-R)	0	0
Commercial (C)	67	1.7
Industrial (I)	0	179.9
Mill Redevelopment District (MRD)	26	4.2
Residential-Low Density (R-1)	641	0
Residential-Medium Density (R-2)	81	0
Total	**815**	**185.8**
City of Franklin		
Low Density Business (B-1)	230	6.2
Conservation (C)	104	513.3
Industrial (I-1)	0	85.7
Low Density Residential (R-1)	102	0
Single Family Residential (R-S)	0	0
Total	**436**	**605.2**
Total - Study Corridor	**1,251**	**791.0**

Map 13 & 14: Potential Single Family Lots

Boscawen

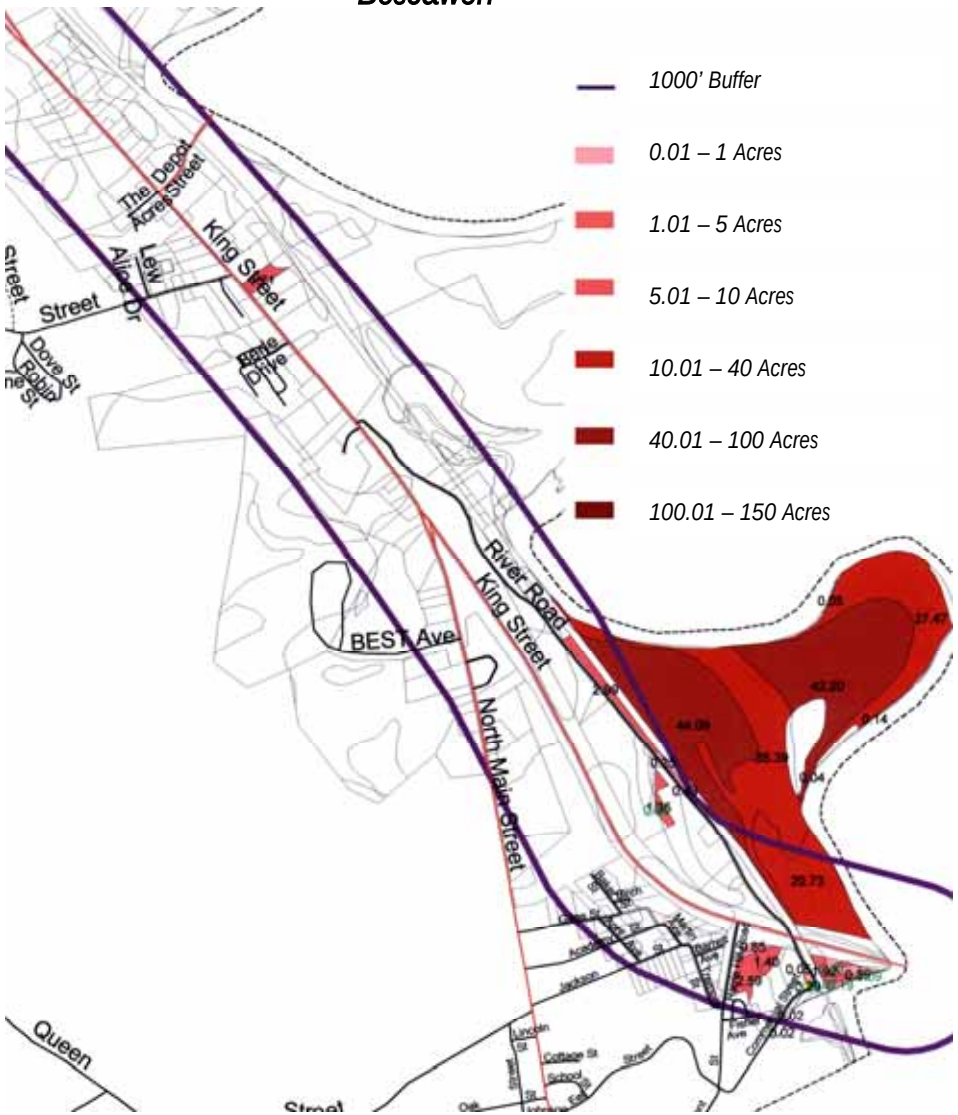


Franklin

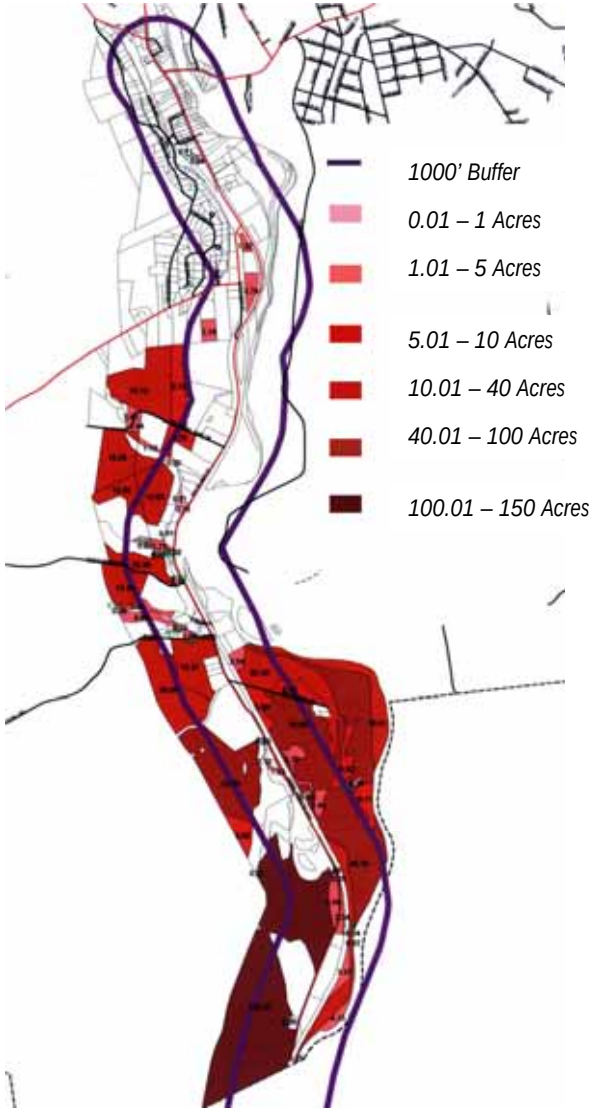


Map 15 & 16: Estimated Commercial / Industrial Acreage

Boscawen



Franklin



Nodal Development

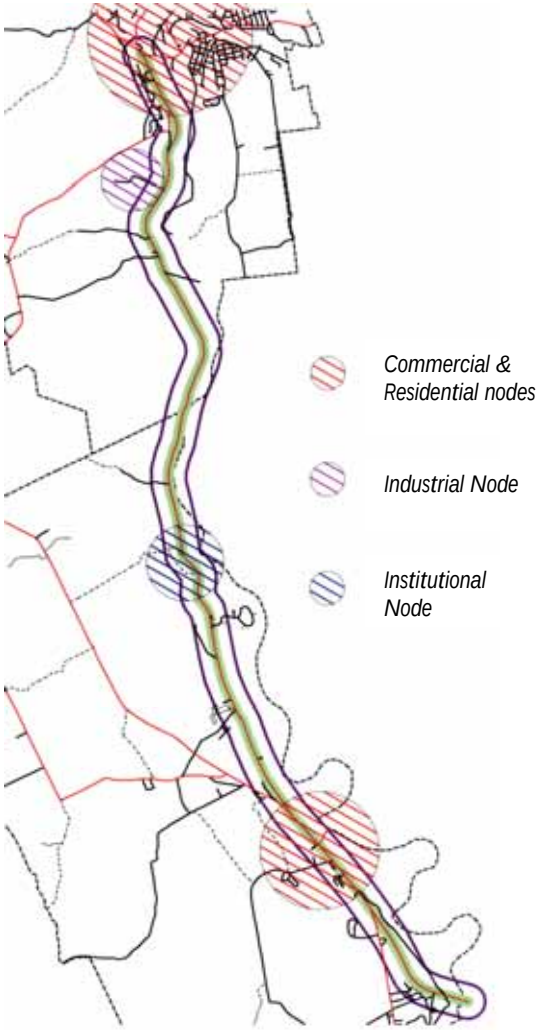
Under traditional zoning, commercial zones were placed along the busiest roadways and as such, have promoted an era of "strip" commercial development where businesses line a busy street, often for miles. This type of development has an enormous impact on the road where it occurred as every new shopping plaza has a driveway and every individual store also has an access point. With the magnitude of traffic entering and exiting commercial establishments at each access point, the original road becomes severely congested. Many communities have been trying to build a way out of such "strip" commercial zones with everything from bypasses to dividing the road.

The focus of nodal development is to create "nodes" where commercial and even mixed-use development can be concentrated. This dense type of development allows driveways and access road to be shared much more easily than under a "strip" type of development. The density of development also provides additional opportunities for walking between commercial establishments. These two features benefit the road by eliminating access points and vehicles. Undoubtedly there is still congestion at a node, however, traffic is able to flow much more freely from one node to the next instead of the continuous congestion observed under "strip" conditions.

Compact Urban Form

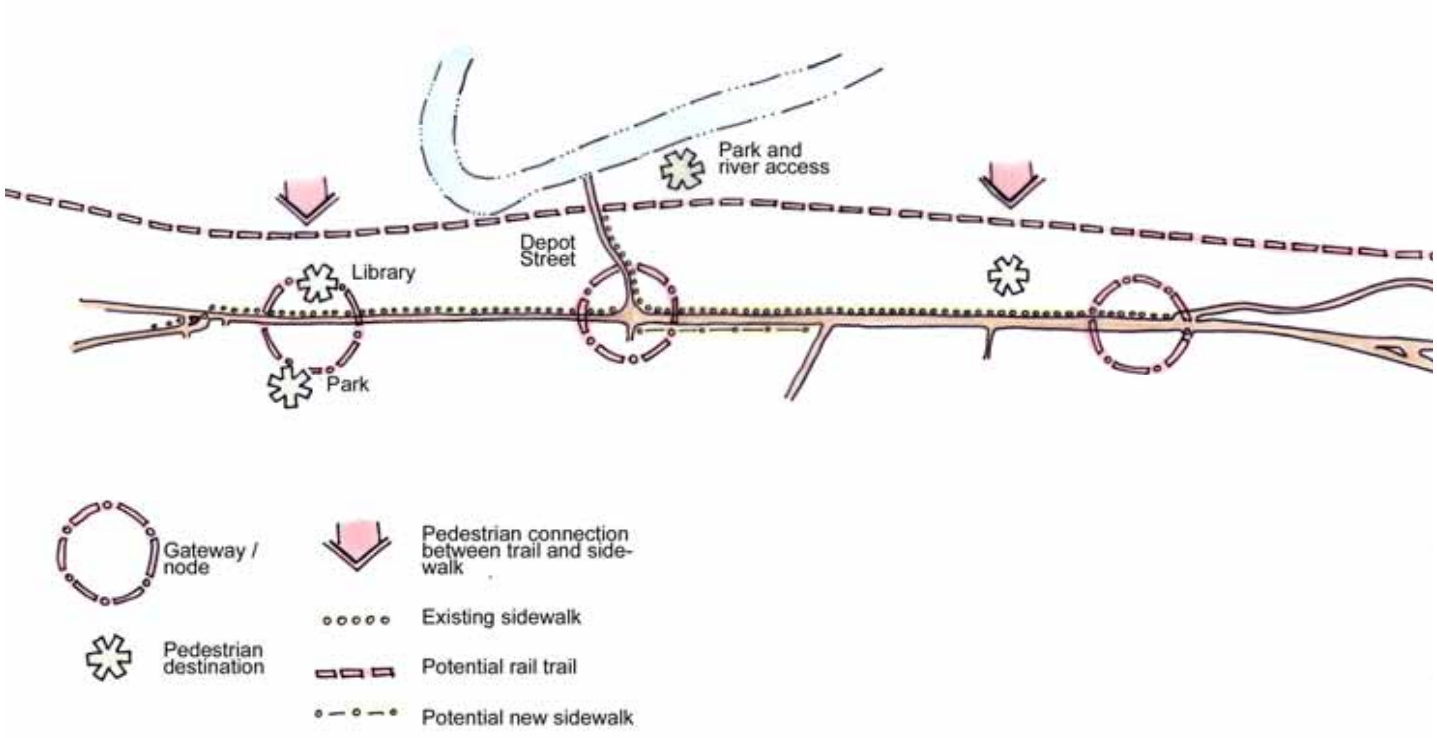
As a means of preserving valuable rural land and open space, many communities are looking toward revising their ordinances and regulations to encourage new development and redevelopment in existing urban areas. Within the US Route 3 Study Corridor, the obvious areas to encourage compact urban form are in the village area of Boscawen and in the area surrounding South Main Street in Franklin. Compact urban form can be achieved in a variety of ways, first and foremost being zoning. Techniques utilized within the Zoning Ordinance are to ensure and encouraged increased densities in the urban areas by allowing smaller lot sizes; reduce frontage requirements, and where possible, allow for on-street parking; allow for opportunities for shared parking to reduce parking areas and to encourage more development and green space.

Map 17: Nodal Development



The illustration above shows areas where development of different types is already concentrated. The goals of nodal development would encourage both communities to continue focusing development in those nodes while discouraging it in other areas along the corridor.

Figure 10: King Street Nodal Development



The diagram above (VHB), from the US Routes 3 and 4 (King Street) Corridor Study, illustrates nodal development on a specific section of the US Route 3 Study Corridor. As the diagram shows, the goal of nodal development is to concentrate development at specific locations instead of allowing it to spread in a linear direction. While the greatest benefits from nodal development may be realized when development is constrained to nodes at a larger, corridor-wide scale (illustrated on previous page), there are still benefits to implementing nodal development at a smaller scale. Practicing nodal development in areas that are already largely built-out could help a community realize changes that should be made to zoning ordinances and other regulations and it can help focus attention on areas of vital importance.

Compact urban form in appropriate areas can be effectively combined with other tools such as shared driveways, mixed use development (see below), shared parking, and the provision of safe and efficient bicycle and pedestrian facilities. Encouraging compact urban form in appropriate areas can also be complemented with discouraging inappropriate development in other areas, such as the rural portion of the Study Corridor. Using techniques that encourage compact development can ultimately promote commercial and economic development in areas where it is most suited, while preserving the rural areas of the Study Corridor where development may be undesirable.

Mixed Use Development

Where compact urban form is encouraged, so too can mixed use development. Mixed use zoning encourages and allows more than a single category of use to be developed on a single parcel or within an area of a community, such as downtown. Many traditional New England towns historically have contained a mixture of uses in their urban centers. This mix of land uses created an environment where the number of vehicle trips were reduced by allowing residents to bike and walk to access their needs and wants. One of the advantages of having a mixed use area is the atmosphere of liveliness and activity that is often present.

Mixed use zoning can encourage the vertical mixing of uses (within the same structure), the horizontal mixing of uses (throughout an area), or both. Communities should be careful to ensure that only compatible uses are permitted in a zone that allows mixed uses. For mixed use zoning to be effective, many communities have found the need to offer incentives to developers. Such incentives might include density bonuses and decreased requirements for off-street parking. Some communities have gone as far as mandating mixed use development in certain districts in town.

Aesthetics

Signage

The US Route 3 corridor is characterized by a variety of land uses, including significant commercial and industrial development in Boscawen's village area and the urban area of Franklin. When signage is done well, it can contribute to a safer highway for motorists trying to find a destination and can enhance the character of the neighborhood in which they are located. Poor signage, however, can be distracting to motorists, block important sightlines at intersections and driveways, and contribute to the visual blight within an area. Both communities need to ensure that future signage provide positive impacts along the corridor for businesses, travelers, and the communities as a whole.

In referring to signage, this section of the report will focus primarily on signs related to advertising, as opposed to those serving traffic control and safety functions. Signage in both the Town of Boscawen and the City of Franklin is primarily controlled through provisions in

their Zoning Ordinances. Each community regulates signs based on a variety of criteria, including size, height, illumination, and type. Both the City of Franklin and the Town of Boscawen require Site Plan Review for all new and expanded non-residential signs.

Currently there are large differences in how each community regulates signs. In the more built-up areas of each community, this is understandable. Boscawen, for example, is a more historic village setting, while Franklin is more urban. Proper and safe signage is of utmost importance along the rural portion of the corridor especially since the traffic tends to be through traffic which moves at higher speeds. Along the more rural stretch of the US Route 3 corridor, it may be advantageous for each community to adopt similar regulations to ensure that future signage is relatively consistent. For example, Boscawen currently allows signs within ten (10) feet of the property line along the Study Corridor. Franklin on the other hand, requires that signs follow building setback requirements. In the Conservation Zone, this equates to a sign setback of 50 feet. Consistency in the size of signs, and prohibiting illumination, banners, balloons, etc., are some considerations each community could take when developing sign controls for the rural stretch of the corridor.

Both communities should ensure through zoning and site plan control that advertising signs do not distract from directional and traffic signs. Although advertising signs serve an important purpose for businesses along the corridor, they should not result in information overload for the traveler. This is especially the case regarding large signs, billboards, flags, banners, balloons, etc. Both communities should similarly restrict the occurrence of these types of signs along the corridor to promote better corridor aesthetics and improved traffic safety.

The ability for each community to control the size of signage should be used to protect and enhance the corridor. Rather than simply establishing sign size limits (as in Boscawen), or allowing signs of a size proportional to the building size (as in Franklin), consideration should be given to the context in which the signs are located. Travelers are traveling at much slower rates of speed in the village/downtown areas, and therefore smaller signs may be more appropriate. Although this might imply that larger signs would be needed along the rural portion of the corridor, this is not necessarily the case. Signs should be permitted along the rural corridor which are legible to the passing motorist, but not so large as to distract the driver from the road. Allowing smaller signs closer to the roadway is one way in which large signs can be avoided in the rural area while still allowing for some advertising along the rural stretch of the corridor.

A recent addition to King Street in Boscawen, Franklin Savings Bank landscaped the front of the property, created a clearly marked entrance and exit, and kept the building reasonably close to the road.

This development in Franklin has a substantial well-landscaped setback from US Route 3 and has a well constructed driveway.

The requirements for signage are summarized is **Appendix A** and **B** for the Town of Boscawen and the City of Franklin, respectively.

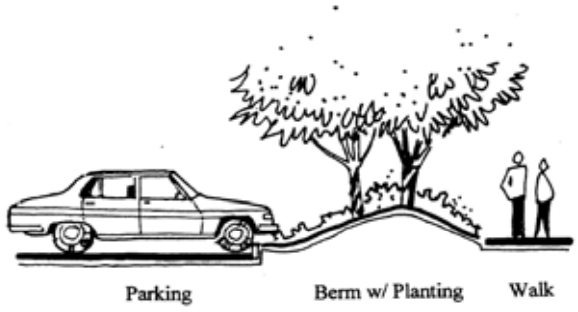
Lighting

Lighting can have a tremendous impact on the visual characteristics and traffic safety of the corridor. Both Boscawen and Franklin currently control lighting through site plan regulations, which provides for control at the discretion of the Planning Board on a case-by-case basis. Neither regulations contain specific requirements for lighting, but instead contain general requirements that lighting be directed away from roadways and abutting properties. Both communities should consider adopting lighting ordinances which provides uniform control over the types of lighting that may be used along the corridor. The former Office of Energy and Planning, now the Office of Energy and Planning, released Technical Bulletin #16 on Outdoor Lighting in 2001, which provides more specific information relating to how each community can better regulate lighting in the future through local zoning and site plan control.

Buffers

Buffering involves separating land uses and highway facilities with landscaping, grassed areas, earth berms, fences, and other similar features to reduce impacts on each other. Both Boscawen and Franklin provide for the requirement of buffers, and each community should recognize that by requiring buffers in appropriate situations, the aesthetic and scenic qualities of the US Route 3 Study Corridor can be protected, and in certain circumstances, enhanced. Care should be taken, however, to ensure that there remains flexibility in the requirement of buffers. For example, the buffers between land uses and the highway that might be encouraged along the rural portion of US Route 3 would not be appropriate in the more built up areas of Boscawen and Franklin, where a traditional village atmosphere may be encouraged.

The picture above illustrates an alternative lighting option for communities. The landscaping of the adjacent property is reasonable and there is an entry off the main street increasing accessibility to pedestrians.



PARKING LOT SCREENING

The above diagram, generated by VHB, shows an example of landscaping being designed to screen parking lots from view. This approach can create a more attractive and comfortable atmosphere for pedestrians and motorists.

Landscaping

Landscaping is an integral part of any building site and of key importance when considering the character of a roadway. Landscaping can help shield less attractive features of physical development from the roadway, such as parking lots and the buildings themselves. This creates a more attractive setting for travelers, and can also assist in calming the speed of traffic through built-up neighborhoods.

Appropriate landscaping is difficult to enforce throughout the building process because many plans reviewed have a similar green radius around plantings that rarely depict what will actually grow there. Through regulations and the Site Plan Review process, both Boscawen and Franklin can identify specific plant and tree species and sizes that they want to encourage. Another approach to assist in maintaining a high quality of visual appeal of the Study Corridor is to require land clearing standards that are aimed at protecting the existing natural vegetation on a site. Unfortunately, land clearing standards are a more difficult regulation to enforce since they are not normally triggered until an application has been made to the Planning Board. However, each community can specify in their landscaping and buffering requirements that that it may be cost effective for developers to leave intact existing vegetation rather than risk having to replace it as part of the Site Plan Review requirements.

Both communities currently require landscaping of building sites through Site Plan Review. They do not, however, specify the requirements, but rather indicate that landscaping will be provided. Franklin's regulations require the Planning Board to ensure that adequate landscaping has been provided, but does not specify any minimum thresholds that define "adequate". Similarly, Boscawen identifies that landscaping must be shown on the plan, but does not have any specific requirements or standards to be met. Both communities should consider improving their Site Plan Review regulations and establish standards to be met by all development that occurs along the corridor. This is especially important in each of the urban areas, where the regulations could specify the nature and type of vegetative material to be used to ensure consistency in each area.

Driveway Permitting & Regulations

Boscawen Process

The NHDOT Policy for Permitting of Driveways and Other Accesses to the State Highway System governs access to a state highway within the borders of the Town of Boscawen. However, the process is a cooperative process between the town and the NHDOT District Engineer. Once the permit is approved by the State, the town's Director of Public Works will work with the property owner to locate the driveway on the ground.

The town Public Works Director and the Planning Board handle access to non-state highways within Boscawen. The Planning Board approves driveway requests.

Franklin Process

The NHDOT Policy for Permitting of Driveways and Other Accesses to the State Highway System governs access to a state highway within the borders of the City of Franklin. However, the process is a cooperative process between the City and the NHDOT District Engineer. Once the permit is approved by the State, the City's Municipal Services Director will work with the property owner to locate the driveway on the ground.

Permits for an access point within the City that is not on the State Highway System are handled through an application process. The applicant would have to complete the City's application and submit it to the City. Once the permit is reviewed, the Municipal Services Director, prior to the approval of the permit, schedules a pre-construction field visit.

State Regulations

The NHDOT has a Policy for Permitting of Driveways and Other Accesses to the State Highway System, which each municipality and property owner must follow to apply for an access to the state highway system. In addition, the NHDOT is working to finalize a Memorandum of Understanding (MOU) that could be entered into by a community and the appropriate NHDOT Highway District. The MOU identifies what each party, the city or town and the District, will be responsible for through the driveway permitting process. While still in draft form, the MOU, as it currently exists, outlines a number of provisions that the city or town must follow as well as these guidelines for the NHDOT:

- The NHDOT shall provide information, technical assistance, and advice to the city or town in the development of local access management standards and site or parcel level access management plans;

- The NHDOT District Engineer shall notify the city or town upon receipt of any application for a driveway access permit and shall transmit a copy of such application to the Planning Board of the city or town;

- The NHDOT District Engineer shall withhold final action on any driveway access permit application for a proposed development, to the extent possible and consistent with NHDOT policies, until the city or town has formally approved the access plan for that development.

To an extent, some of the provisions within the draft MOU currently occur between the Town of Boscawen, the City of Franklin and the NHDOT District Engineer. The finalization of the MOU will enhance the coordination efforts in the future.

Implementation

Turning the recommendations of this Study into tangible results is primarily the responsibility of the Town of Boscawen and the City of Franklin. The two regional planning commissions and the NHDOT also have key roles to play in helping the communities realize the potential changes to this corridor. Phase II of this Study, if funded, will further help communities through the implementation of the recommendations.

Step 1
The City of Franklin and the Town of Boscawen need to review the recommendations of this Study and determine which they would like to see implemented. Some recommendations should be identified to be implemented in the short-term and others somewhat later. All recommendations within this Study must have local support before regional, county, or state agencies will become more involved.

Step 2
Each community, after identifying specific recommendations and formulating a rough plan, should work with the local, regional, county, or state agency/department that would most likely be able to assist with the specific recommendation. Working with that agency/committee, the community can begin to focus the rough plan into a more refined form. For some recommendations, it is likely that additional expertise beyond that of the local, regional, or state agencies will be required to refine the rough plan into a workable solution. At this point, the community and the contact agency(ies) should begin to identify potential funding sources for the project.

Step 3
The communities should work with the contact agency(ies) and with the regional planning commissions to complete any required applications for the identified funding source(s) and submit them and/or become involved in a process to get the project into a funding cycle.

For projects that may be funded and completed locally (e.g. regulation revisions) the community should identify the required timeframe to have the project ready for a future Town or Council Meeting since it can be a target future date (e.g. 2007). The community should begin working on making the revisions as soon as possible and include substantial amounts of public input.

Step 4
The community needs to continue showing support for the project and stay involved with its journey through funding cycles that may be in excess of five years (for smaller projects), ten years (for medium projects), or twenty years (for Interstate 93 changes) and be prepared to act when the project is ready to move forward.

Study Phase II

This Study has always been viewed as having two phases. Phase I included the collection of various traffic and safety information, mapping the features of the corridor, reviewing the local regulations, and creating the Local Advisory Working Group. As of the publication of this report, Phase I of the Study is complete.

Phase II of the Study is planned to be a continuation of Phase I. The original intent of Phase II was to provide assistance to both communities for the implementation of the recommendations identified in Phase I. As part of Phase II the regional planning commissions would be able to help the communities outline detailed implementation plans/schedules for the recommendations and assist the communities in writing language for revised regulations. Provided that the communities demonstrate a good faith commitment to implement the recommendations (e.g. local or state intersection improvements), professional engineering assistance could be included as part of Phase II to assist them with visualizing and choosing an alternative. Additionally, Phase II would provide the opportunity for the Local Advisory Working Group to continue meeting, with regional planning commission and state agency support, and would allow for the incorporation of the Towns of Canterbury and Northfield. This would help lay the groundwork for the project currently in the New Hampshire Ten Year Transportation Improvement Plan to explore a connection between US Route 3 and Interstate 93 at Exit 19.

Phase II of this Study will be presented as a State Planning and Research, Special Studies project to a review committee in the Spring of 2004. The application process is competitive statewide and there is the possibility that Phase II will not be funded.