



4. Transportation

KEY FINDINGS

- + Natick's natural and man-made geography create barriers to transportation access, especially for local traffic, pedestrians, and bicyclists.
- + Traffic is concentrated onto heavily used corridors, such as Route 27, Route 135, Speen Street, and Route 9, that have high levels of congestion and crashes.
- + Transit ridership on MBTA commuter rail service from West Natick Station and Natick Center Station is rising.
- + There is good sidewalk coverage and pedestrian access in Natick Center and older neighborhoods, but limited facilities in other areas.
- + Bicycle facilities are lacking, though the Cochituate Rail Trail will improve bicycle access.
- + The most pressing parking need is for long-term week-day parking in Natick Center,

Introduction & Existing Conditions

Natick's transportation system comprises roadway and rail transportation routes that serve local needs as well as major regional connections. Many of these transportation corridors connect to other towns and destinations throughout the Boston area and New England as a whole.

Natick's long history and historic center have helped to make it an important transportation node from its early days. Natick has a robust and well-developed transportation network, especially its regional roadway network and commuter transit system. As a suburb of Boston, much of Natick's transportation system is oriented toward the Boston core. This is evident in the configuration of the regional roadways and the commuter rail line through town.

The purpose of this existing conditions assessment is to evaluate the transportation system in Natick, with a focus on summarizing the existing transportation infrastructure and traffic conditions in the Town. The study process entailed the following elements:

- + Assess the existing roadway, public transportation facilities, bicycle and pedestrian facilities in Natick.
- + Collect Traffic Impact Assessment reports, Functional Design Reports and other transportation studies in Natick and compile the data and findings.
- + Conduct an analysis of existing traffic conditions, including capacity/level of service (LOS) analysis for important signalized and unsignalized intersections in Natick.
- + Provide an assessment of existing public transit, pedestrian and bicycle, and parking conditions.
- + Provide an assessment of existing public transit, pedestrian and bicycle, and parking conditions.
- + Identify key issues, challenges, and priorities for improvements based on this review of existing conditions and other reporting.

Transportation System Context

Mode Split in Natick

Mode split is the percentage of travelers that use various types of transportation (driving alone, car-pooling, taking a bus, taking the commuter rail, etc.). Table 4.1 lists the commuting mode split observed among people who live in Natick, based on U.S. Census data from the American Community Survey, for the years 2009 through 2014.¹

YEAR	2009	2010	2011	2012	2013	2014
Travel Mode	Percent	Percent	Percent	Percent	Percent	Percent
Drove alone	78.00%	78.35%	80.12%	78.65%	77.35%	77.12%
Carpooled	5.65%	5.66%	4.86%	5.46%	5.96%	5.94%
Bus/Trolley Bus	0.49%	0.53%	0.40%	0.50%	0.51%	0.45%
Street Car/Trolley Car	0.15%	0.10%	0.08%	0.00%	0.00%	0.00%
Subway/Elevated Train	1.42%	0.80%	0.91%	0.75%	0.80%	0.95%
Railroad	4.85%	5.73%	5.81%	6.84%	7.22%	7.19%
Ferryboat	0.04%	0.05%	0.07%	0.00%	0.00%	0.00%
Taxicab	0.13%	0.06%	0.06%	0.00%	0.00%	0.00%
Motorcycle	0.13%	0.22%	0.08%	0.12%	0.09%	0.12%
Bicycle	0.26%	0.38%	0.39%	0.32%	0.57%	0.44%
Walk	1.55%	1.27%	1.14%	1.31%	1.61%	1.56%
Other	0.96%	1.20%	1.17%	1.21%	0.85%	0.76%
Worked at Home	5.45%	5.66%	4.91%	4.85%	5.03%	5.47%

TABLE 4.1: MODE SPLIT IN NATICK U.S. CENSUS JOURNEY-TO-WORK

The mode split of Natick residents for travel to work demonstrates that drive-alone travel is the dominant mode, although other modes still account for a significant 20 – 25 percent of trips. This is consistent with the characteristics of Natick’s transportation system: the transportation network is principally automobile-oriented, though there is good public transit access to the Boston core via commuter rail, as well as good pedestrian and bicycle access in many Town neighborhoods. Among households with workers 16 and over, more than 98 percent had at least one vehicle; more than 75 percent had two or more vehicles.

The proportion, or mode share, of each specific type of travel remained fairly consistent over the period from 2009 to 2014. This is true of driving modes, both drive-alone and car-pool, as well as walking and working at home. Bicycling has demonstrated a clear increase, but it remains at a very low level. The one clear trend in mode share is among travelers using some mode of public transportation (commuter rail, subway, bus, or ferry), which has increased from 6.96 percent in 2009 to 8.59 percent in 2014. The increasing trend in public transit ridership, in particular for commuter rail, paralleled the increasing service on the MBTA’s

¹ American Fact Finder, US Census, 2014 data

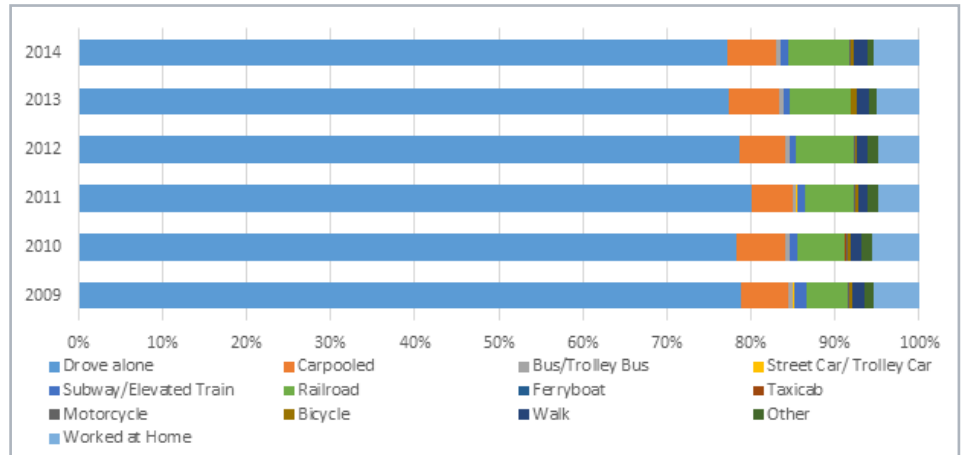


FIGURE 4.1. MODE SHARE IN NATICK

Framingham/Worcester Line (discussed below). This reflects an openness and desire for more travel options among many Natick residents, and indicates the importance of a robust multimodal transportation system analysis in order to develop a clear vision for the future Natick 2030+ Plan.

Commuting Patterns in Natick

According to the US Census “OnTheMap” application, Natick residents held 16,870 jobs as of the year 2014. The top 25 results from the application indicate that 14.8 percent of the primary jobs are within the Town of Natick and 14.3 percent of the primary jobs are in Boston (see Table 4.2).

This suggests that a significant amount of Natick’s population travels for work to Boston. With this demand for travel to Boston and the increase in utilization of public transportation shown in Figure 4.1, it is clear that public transportation and transit links to the Boston core are important for Natick’s future. The top 25 workplace destinations for Natick residents are shown below in Table 4.2.

Table 4.3 and Figure 4.2 show the commuting pattern of Natick residents by distance and direction. About 46 percent of the jobs are located within 10 miles of the Town. About 44 percent of the jobs are located in areas 10 to 24 miles from Natick. A majority of the commuters travel to and from the east, towards Boston. It is important to ensure that the transportation infrastructure in Natick, and its connections to the surrounding system, can accommodate these existing and future work related trips.

The commuting patterns of people living or working in Middlesex County are shown in Maps 4.1 and 4.2. Map 4.1 shows the commuting patterns of 14,202 workers residing in Middlesex County and travelling to other counties in Massachusetts for work. Map 4.2 shows the commuting patterns of 27,094 workers working in Middlesex County and travelling from other counties in Massachusetts. The data for this map was sourced from American Community Survey 2006-2010 Tract to Tract Data.

WORKPLACE DESTINATION OF NATICK RESIDENTS	2014	
	Count	Share
County Subdivision		
Natick t (Middlesex, MA)	2,494	14.8%
Boston city (Suffolk, MA)	2,414	14.3%
Framingham town (Middlesex, MA)	1,305	7.7%
Newton city (Middlesex, MA)	994	5.9%
Wellesley town (Norfolk, MA)	833	4.9%
Waltham city (Middlesex, MA)	700	4.1%
Cambridge city (Middlesex, MA)	508	3.0%
Needham town (Norfolk, MA)	408	2.4%
Marlborough city (Middlesex, MA)	301	1.8%
Burlington town (Middlesex, MA)	277	1.6%
Worcester city (Worcester, MA)	255	1.5%
Westborough town (Worcester, MA)	254	1.5%
Watertown Town city (Middlesex, MA)	204	1.2%
Wayland town (Middlesex, MA)	190	1.1%
Lexington town (Middlesex, MA)	184	1.1%
Woburn city (Middlesex, MA)	160	0.9%
Sudbury town (Middlesex, MA)	155	0.9%
Dedham town (Norfolk, MA)	152	0.9%
Brookline town (Norfolk, MA)	150	0.9%
Weston town (Middlesex, MA)	149	0.9%
Hopkinton town (Middlesex, MA)	142	0.8%
Canton town (Norfolk, MA)	135	0.8%
Southborough town (Worcester, MA)	125	0.7%
Norwood town (Norfolk, MA)	124	0.7%
Quincy city (Norfolk, MA)	120	0.7%
All Other Locations	4,137	24.5%

TABLE 4.2: TOP 25 WORKPLACE DESTINATIONS OF NATICK RESIDENTS

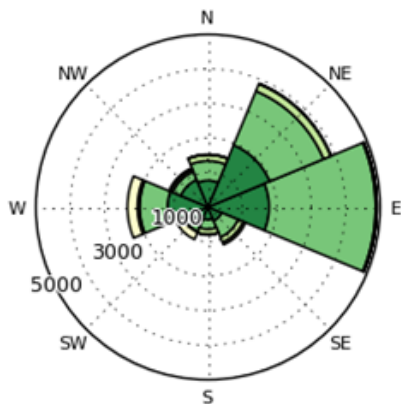
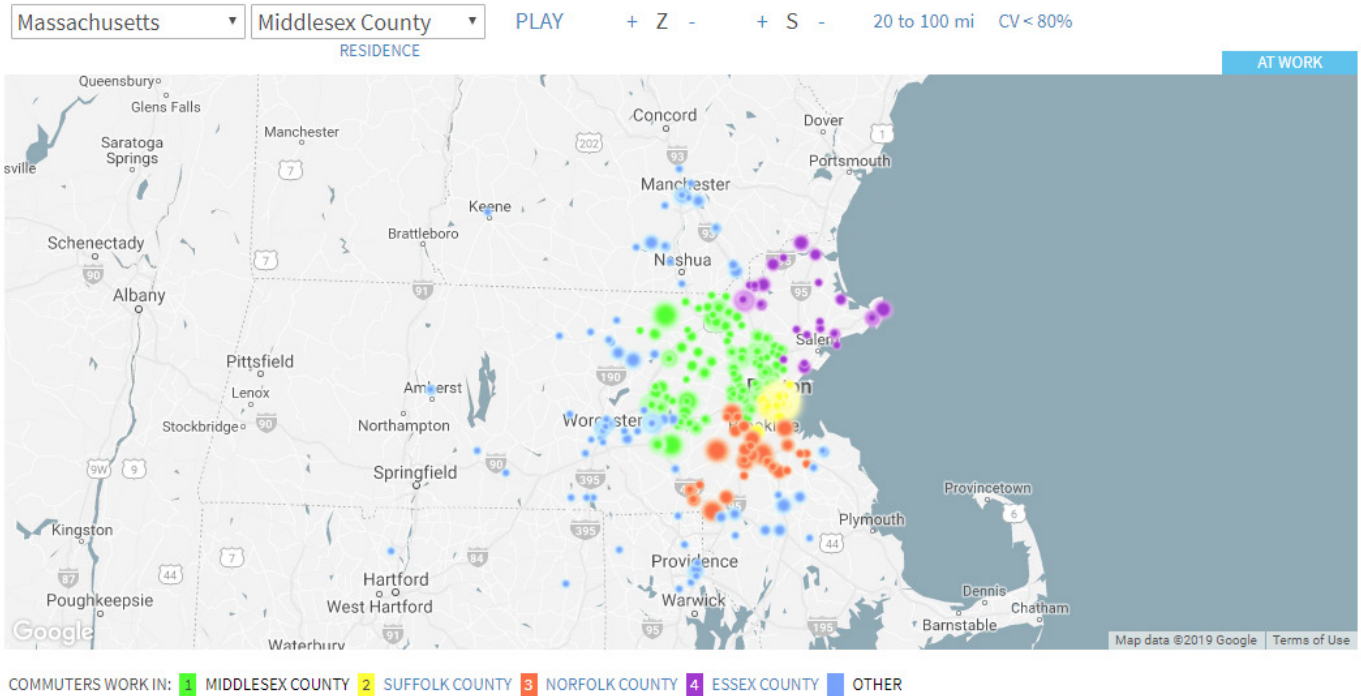


FIGURE 4.2. JOB COUNTS OF NATICK RESIDENTS BY DISTANCE AND WORK BLOCKS

Source: US Census OnTheMap for Natick

JOB COUNTS IN WORK BLOCK BY DISTANCE	2014	
	Count	Share
Total All Jobs	16,870	100.0%
Less than 10 miles	7,812	46.3%
10 to 24 miles	7,472	44.3%
25 to 50 miles	913	5.4%
Greater than 50 miles	673	4.0%

TABLE 4.3: JOBS BY DISTANCE/DIRECTION IN 2014

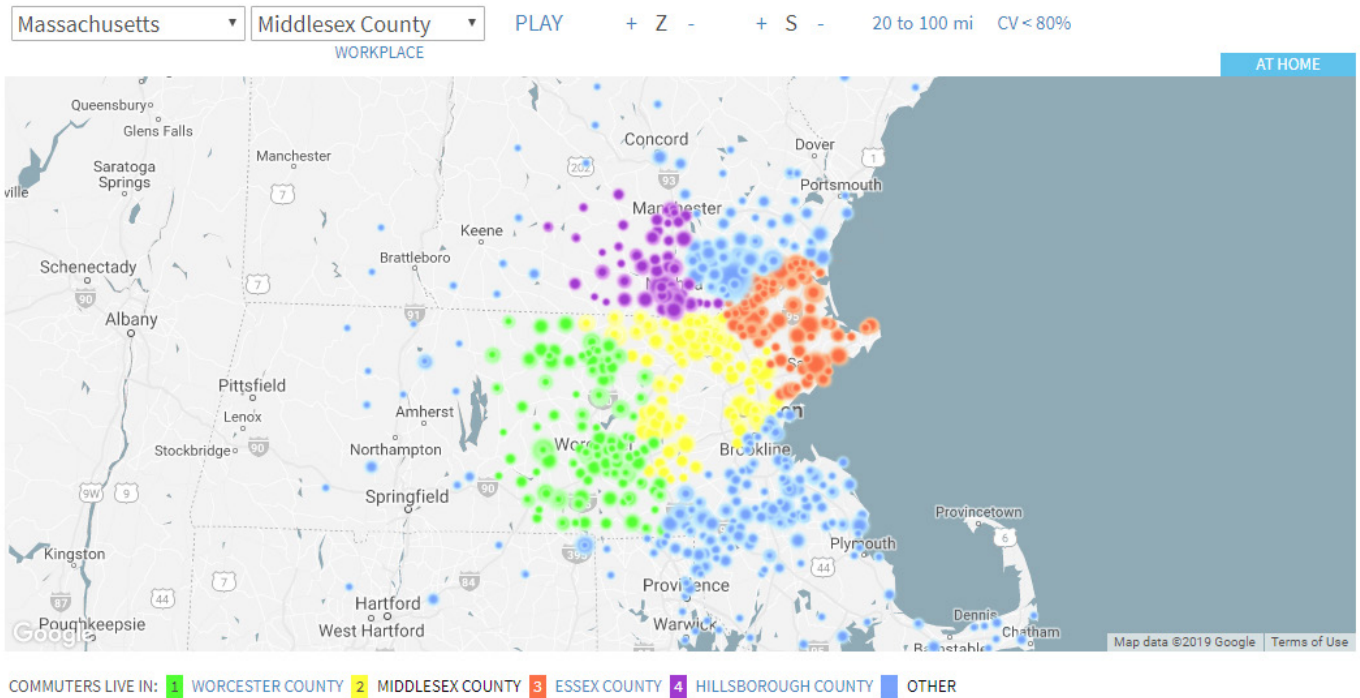


Commuter flows for workers who live in Middlesex County, Massachusetts in 174 unique census tracts, traveling between 20 miles and 100 miles, with CV < 80%.
 14,202 TOTAL ESTIMATED COMMUTERS ACROSS 540 INDIVIDUAL TRACT-TRACT FLOWS

MAP 4.1: COMMUTER FLOWS FOR WORKERS RESIDING IN MIDDLESEX COUNTY AND WORKING ELSEWHERE

Source:

<http://bigbytes.mobyus.com/commute.aspx?County=17&State=25&MinMiles=20&MaxMiles=100&MaxCoV=0.8&CountyType=home>



Commuter flows for workers who work in Middlesex County, Massachusetts in 191 unique census tracts, traveling between 20 miles and 100 miles, with CV < 80%.
 27,094 TOTAL ESTIMATED COMMUTERS ACROSS 1,124 INDIVIDUAL TRACT-TRACT FLOWS

MAP 4.2: COMMUTER FLOWS FOR WORKERS WORKING IN MIDDLESEX COUNTY AND RESIDING ELSEWHERE

Source: <http://bigbytes.mobyus.com/commute.aspx?County=17&State=25&MinMiles=20&MaxMiles=100&MaxCoV=0.8&CountyType=work>

Last accessed on: 02/08/2017

Private Development Projects and Impacts

In past years, Natick has seen significant land development. Private developers have collected significant data and executed numerous traffic studies throughout the town. Useful data and findings from these studies has been incorporated into this existing conditions review. This section summarizes the data from private developments as well as relevant transportation system improvements. The most relevant projects, with significant transportation system impacts and mitigation, are summarized below. A full listing of recent development projects is included in the appendix.

MathWorks Lakeside Campus Phase III, 3 Apple Hill Drive, Natick. This 2007 project entailed the expansion of the Mathworks Campus by an additional 142,519 square feet, which was expected to add approximately 1,380 new weekday daily vehicle trips to the roadway network, including 170 trips during the morning peak hour and 275 trips during the evening peak hour. Principal recommendations of this study included making Chestnut Street a dead end roadway with access from Beacon Street and improving pedestrian connectivity in the area by building a new sidewalk on Route 9 eastbound between eastern Apple Hill Drive Exit and Walnut Street. Most of the suggested safety enhancement recommendations have been completed during the course of this project, although some improvements have been incorporated into the Route 27 corridor project.

Parking Garage – MathWorks Lakeside Campus, 3 Apple Hill Drive Natick. This project, which was proposed in 2013, entails adding a 470-space parking garage to the existing 1,279 surface parking lot. Traffic analyses showed that the project would generate approximately 1,320 new trips on an average weekday, with 205 new trips during the weekday morning peak hour and 185 new trips during the weekday evening peak hour. In order to mitigate these impacts, the owner proposed intersection geometry improvements at Speen Street Northbound/Superior Drive, as well as traffic signal timing improvements along the Speen Street corridor. The parking garage and recommended mitigation improvements are not complete, but are going to be implemented in the near future.

Lifetime Athletic Traffic Impact Assessment Study, 490 Old Connecticut Path, Framingham. This project entails the conversion of the Sealtest industrial site to a 137,971 square foot athletic center. The athletic center added an additional 125 trips during the PM peak hour compared to the industrial use. Mitigation recommendations are installing a new traffic signal at the intersection of Old Connecticut Path/Sealtest Drive to help manage queuing and minimize congestion; widening lanes at study intersections; upgrading signal equipment; updating traffic signal timings; and improving signal coordination at select intersections. The new traffic signal at the intersection of Old Connecticut Path/Sealtest Drive has been added, while the signal timing improvements and roadway geometric improvements are not yet complete. While not located in Natick, this project has been included because it impacts traffic within and around The Golden Triangle

Sherwood Plaza South Phased Master Plan Redevelopment, Route 9, Natick. This project is planned for phased construction: Phase I: 41,000 sf fitness facility; Phase II: multilevel parking garage, 151,000 sf office space and 25,000 sf of first floor retail space. Phase I is projected to result in a net reduction in peak hour vehicular trips when compared to the prior BJ's office use. At full build-out, the project is projected to generate approximately 92 to 192 new vehicle trips during the weekday peak hours. The Saturday midday peak hour trip increase is estimated to be approximately 178 new vehicle trips per hour. The developer committed to implementing a shared use path along the project site frontage, along with well-defined curb cuts to support traffic entering and exiting the site. Some of the roadway improvements have been initiated, but the parking garage has not been built and the sidewalks near the site that are slated for improvement have not yet been constructed.

AMC South Parking Lot Redevelopment at Shoppers World, Shoppers World Drive/Ring Road near Route 9, Framingham and Natick. The proposed redevelopment of the Shoppers World Plaza parking lot calls for construction of 276 apartment units, 4,500 sf specialty retail; and 4,000 sf of retail space. The project is updated from a previously approved 136 apartment development. The project mitigation includes intersection geometric and signal improvements to accommodate traffic from the development, as well as the traffic associated with the recently approved Wegmans Project at the Natick Mall. The redesigned project proposal is at a preliminary stage. It is unclear how the redesign will change the recommendations and the extent of improvements, although the travel demand and impacts are expected to be similar to those in the original proposal.

Town of Natick Roadway System

Natick is one of the fastest growing suburbs of Boston, and it is served by a robust network of highways, arterial roadways, and local streets, with numerous signalized and unsignalized intersections. Interstate 90/Massachusetts Turnpike (MassPike) borders Natick on the north, the intersection of Hartford Street and Bishop Street marks the western boundary, while Oak Street and South Street form the eastern and southern boundaries respectively. The following is a description of Natick’s major roadways and their characteristics.

Major Roadways

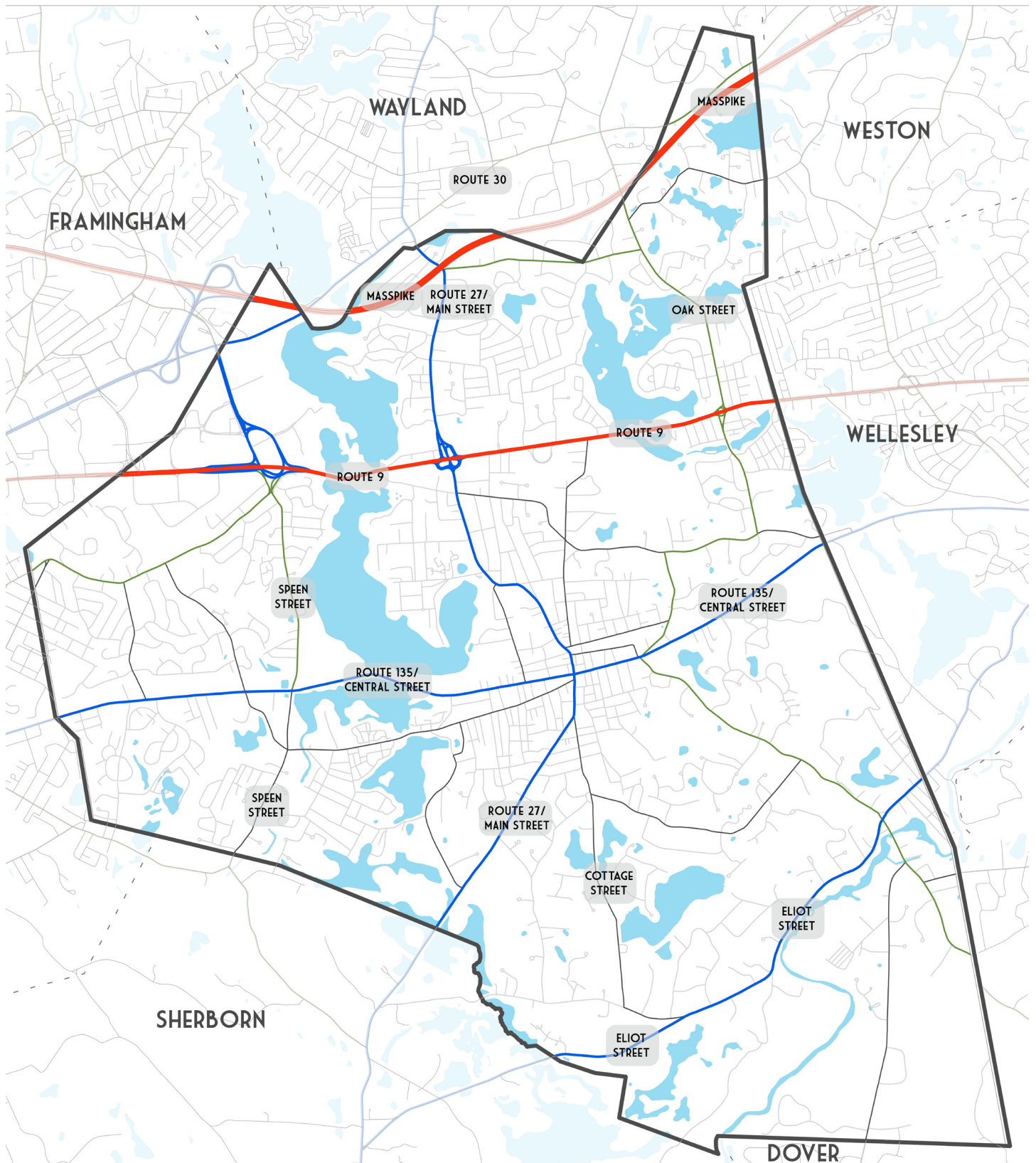
Five major state numbered routes run through Natick:, I-90 (MassPike), Route 9 (Central Street), Route 135, Route 16, and Route 27 (Main Street). Of these, all but Route 27 have an east-west orientation, connecting the MetroWest region to the Boston metropolitan core. These roadways have different design characteristics and serve different volumes and types of traffic, as shown in Table 4.4. This section describes each route and its characteristics. As shown on Map 4.3, There are very few continuous north/south or east/west roads. The jurisdiction of various roadways in the Town is shown in Map 4.3.

Each major roadway is described in the following section.

ROADWAY	LOCATION	DAILY TRAF C VOLUME	COUNT YEAR
Interstate 90	East of Exit 13 (near Route 27)	122,700	2013
Route 9	Between Shoppers World Drive and Mall Road (near Natick Collection)	57,000	2010
	East of Route 27	54,900	1999
	East of Walnut Street	57,700	1989
Route 135	West of Speen Street	18,700	2001
	East of Route 27 (at Natick Center)	18,700	2003
	East of Union Street	10,400	2010
Route 16	East of Route 27	10,000	1995
	West of Union Street / Pleasant Street	11,200	2010
Route 27	South of Cottage Street	8,791	2015
	North of Everett Street	9,400	2014
	North of South Avenue	19,000	1991
	North of Route 9	19,500	2010
Speen Street	South of Route 30	36,200	2010

TABLE 4.4: AVERAGE ANNUAL DAILY TRAFFIC VOLUMES IN THE TOWN OF NATICK

Source: MassDOT Highway Division Traffic Count Database System
(rounded to nearest 100)



MAP 4.3: ROADWAY FUNCTIONAL CLASSIFICATION MAP FOR THE TOWN OF NATICK

- Interstate
- Rural or Urban Principal Arterial
- Rural Minor Arterial or Urban Principal Arterial
- Urban Minor Arterial or Rural Major Collector
- Urban Collector or Rural Minor Collector
- Local
- Water

Interstate 90/ Massachusetts Turnpike

I-90/MassPike is the principal east-west highway in Massachusetts, and is under the jurisdiction of the Massachusetts Department of Transportation (MassDOT). It serves major commuter traffic flows to and from downtown Boston every day, along with intercity and interstate traffic connections. Running along the northern edge of Natick, I-90 is a fully access-controlled expressway that carries high traffic volumes. In and around Natick, I-90 has three lanes in each direction with wide left and right shoulders. The Average Annual Daily Traffic (AADT) in 2013 was 122,700 for both directions, while a volume count conducted by MassDOT in November 2016 showed an average volume of 133,376 in both directions, a finding that is consistent with rising statewide and national traffic volumes since 2013. Principal access to and from I-90 for Natick traffic is via Exit 13, located in Framingham just across the town line; the Natick Service Plaza is located east of Exit 13 and it services eastbound I-90 traffic.

Route 9

Route 9, also known as Worcester Street and Ted Williams Highway in Natick, is an important east-west state highway that provides connections between MetroWest and the Boston inner core, as well as among MetroWest communities and to the Natick Mall and Shoppers World in the retail zone referred to collectively as The Golden Triangle. Route 9 also carries heavy traffic volumes and provides connections to very few arterials. It runs parallel to I-90, and some travelers use it as an alternative route. In Natick, Route 9 primarily comprises two 11-12-foot lanes, with left turn lanes at major intersections, along with right-turn lanes at some locations. Route 9 has partial access control at two interchanges:

- + A complex system of ramps provides access to and from Speen Street (which also provides connections to retail destinations and I-90; collector-distributor roads in this location provide access to these ramps, as well as to the Natick Mall and Sherwood Plaza (West Natick).
- + A very compact cloverleaf interchange at Route 27 (north of Natick Center).

The balance of Route 9 through Natick is not limited access. It is a major retail artery; east of The Golden Triangle, it is lined with principally smaller-scale retail fronted by parking lots, with closely-spaced curb cuts and poor access control in some locations. As seen in Table 4.4, significant traffic volumes are carried by Route 9. Route 9 is also under MassDOT jurisdiction.

Route 135

Route 135, also known as Central Street, is an east-west state-numbered highway under shared Town of Natick and MassDOT jurisdiction. The Town of Natick has jurisdiction and maintenance responsibility for Route 135 in Natick Center, between Cemetery Street and Union Street/Marion Street, while MassDOT has jurisdiction to the east and west of this segment. Route 135 is an important mixed-use corridor that provides east – west connectivity through Natick, and carries a substantial amount of traffic as shown in Table 4.4. Most of Route 135 in Natick is residential, although Natick Center is dominated by civic and public spaces as well as small-scale retail, while Route 135 in West Natick has commercial strip development and the West Natick MBTA Station. Route 135 consists of an approximately 12-foot wide single lane in each direction separated by a double yellow centerline, with turn lanes at major intersections, parking in Natick Center, and shoulders of varying widths.

Major intersections include Mill Street and Speen Street in West Natick, and Route 27 and Union Street/Marion Street in Natick Center.

Route 16

Route 16 is a state-numbered highway under Town of Natick jurisdiction. It is oriented generally southwest – northeast and consists of a single lane in each direction separated by a double yellow line. Lane widths range from 10 feet to 12 feet. The intersection with Route 27 is one of the major junctions of Route 16, which passes through South Natick. In 2010, the AADT on Route 16 West of Union Street/Pleasant Street was 11,200 vehicles per day. Land use along Route 16 is primarily residential, with some local retail uses near major crossroads.

Route 27/Main Street

Route 27, also referred to as Main Street, runs north – south through the center of Town and is a numbered highway under the jurisdiction of the Town of Natick. It mostly consists of a single 12-foot lane in each direction separated by a double yellow centerline, with turning lanes at major crossroads. Route 27 is known as North Main Street north of Route 135 and South Main Street to the south of Route 135. The junction of Route 9 is a major interchange along Route 27. According to 2010 data, North Main Street had an AADT of 19,500 vehicles per day just north of Route 9; AADT was 8,791 vehicles per day on South Main Street close to Cottage Street in 2015. Land use is principally residential for most of the corridor, with small-scale retail in Natick Center.

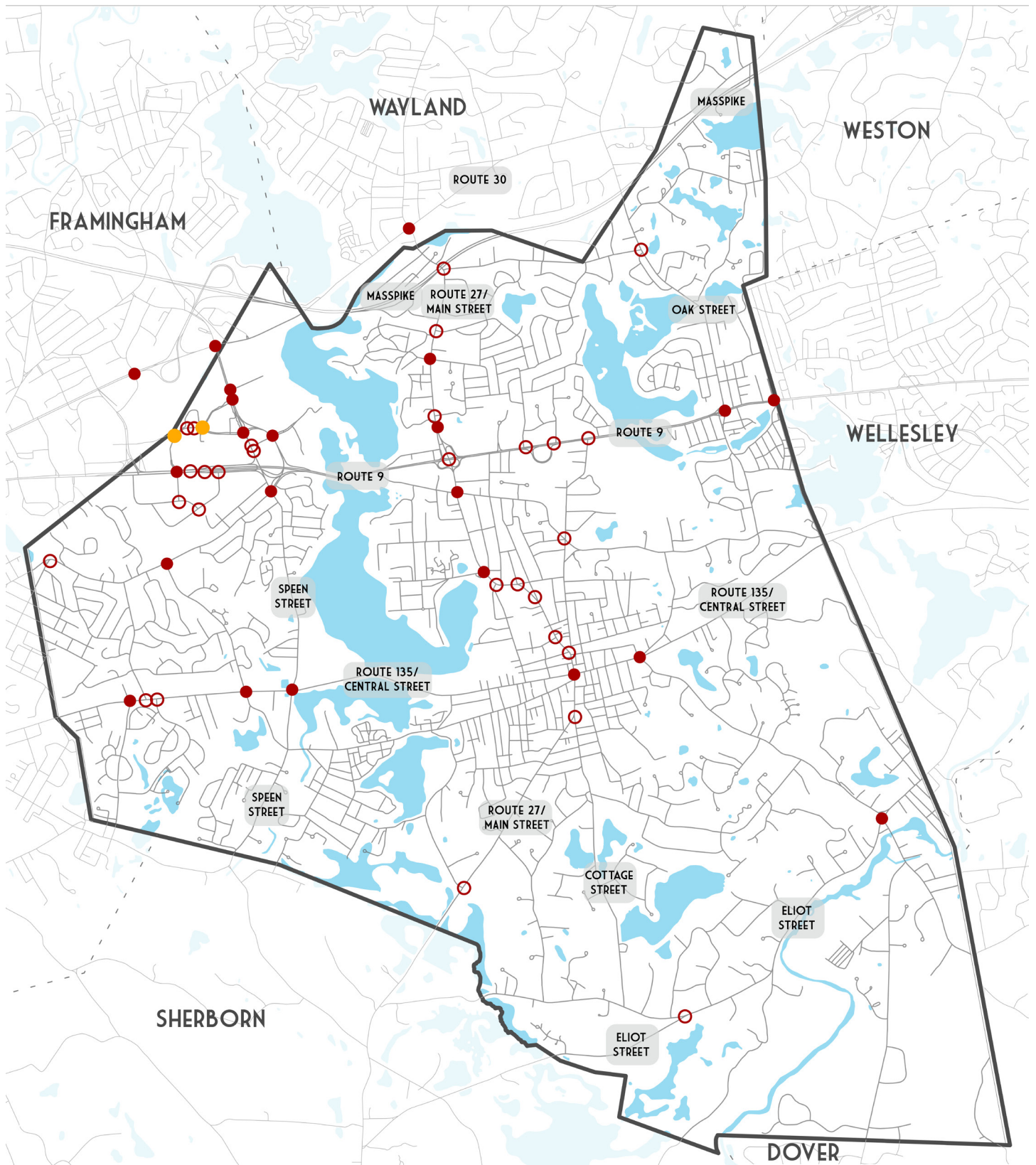
Speen Street

Speen Street is a major collector road located in West Natick. It runs north – south and consists of a single lane in each direction, separated by a double yellow line in most sections, with 11 to 12-foot lanes. Turning lanes are provided at major intersections. At the Route 9 interchange and to the north, Speen Street widens to two or three lanes in each direction. As seen in Table 4.4, it carried average daily traffic of 36,200 vehicles in 2010. Speen Street provides access to I-90 and Route 9 via an interchange. It also provides access to large malls and shopping centers, such as the Natick Mall, Shoppers World, Cloverleaf Marketplace, Crowne Plaza, and Sherwood Plaza.

Study Area Intersections

The geographic limits of the Town of Natick and the study area intersections analyzed are shown in Map 4.4. Major signalized intersections, unsignalized intersections and roundabouts were inventoried. Traffic volume counts were conducted in November 2016, and supplemented with previously collected traffic data from other sources, including transportation studies and design efforts conducted for public agencies, as well as Traffic Impact and Access Studies (TIAS) analyses conducted for private developers.

Upon consultation with Town of Natick officials, 52 intersections were selected for level of service analysis. Of these, 22 intersections were signalized, 28 were unsignalized (two-way stop controlled or all-way stop controlled) and two were roundabouts. This section summarizes the existing traffic volumes and conditions at these locations. Detailed descriptions of the intersection designs and operating characteristics are included in the Transportation Appendix.



MAP 4.4: INTERSECTIONS ANALYZED IN THE TOWN OF NATICK

- Signalized Intersections
- Unsignalized Intersections
- Roundabouts
- Water

Existing Traffic Volumes

Several traffic impact studies were obtained from the Town and the consultants that performed these studies. The studies ranged from the year 2007 to 2016. Turning Movement Counts (TMC) and Automatic Traffic Recorder (ATR) volumes that were usable were adopted from these studies. For the intersections with traffic counts that were either old or non-existent, new traffic counts were conducted to supplement the existing information. TMCs for sixteen (16) intersections were obtained on Thursday, November 10, 2016:

New TMCs were conducted at the following intersections:

- + Pine Street @ Oak Street
- + North Main Street @ Pine Street
- + North Main Street @ Evergreen Road
- + North Main Street @ General Greene Avenue
- + North Main Street @ Middlesex Avenue/South Avenue
- + South Main Street @ Cottage Street
- + Route 9 @ Oak Street
- + Route 9 @ Walnut Street
- + Walnut Street @ Bacon Street
- + Route 135 @ Kendall Lane
- + Route 135 @ Boden Lane
- + Route 135 @ Newfield Drive
- + Elliot Street @ Everett Street
- + Hartford Street @ Bishop Street
- + Mill Street @ Hartford Street
- + West Street @ Route 27

New 72-hour ATR counts were also conducted at two locations:

- + Route 27 south of Route 9 eastbound ramps from November 10, 2016 through November 12, 2016.
- + Route 135 east of Washington Avenue from November 17, 2016 through November 19, 2016.

The newly obtained TMCs and ATRs are included in the Appendix. Daily traffic volumes obtained at various locations are summarized in Table 4.5.

LOCATION	YEAR	WEEKDAY ADT ¹	AM PEAK HOUR VOL.	PM5 PEAK HOUR VOL.	SAT. ADT ¹	SAT. ² PEAK HOUR VOL.
		vpd	vph	vph	vpd	vph
Old Connecticut Path, West of Speen Street	2013	8,900	710	930	6,200	540
Dean Road, South of Route 9	2013	8,540	480	785	9,965	945
Natick Mall Road between JC Penny Garage Driveways	2015	7,500	290	680	10,100	940
Shoppers World Drive, South of Burr Street Ext.	2016	11,800	535	1035		
Flutie Pass, East of AMC South Parking Lot	2016	7,900	270	735		
Route 27, south of Route 9 EB Ramps	2016	22,781	1,626	1,660	21,640	1,597
Route 135, east of Washington Ave.	2016	10,104	641	766	9,085	728

TABLE 4.5: EXISTING TRAFFIC VOLUMES

vpd = vehicles per day

vph = vehicles per hour

1 Daily traffic expressed in vehicles per day

2 Peak hour volume expressed in vehicles per hour

Seasonal Variation and Background Traffic Growth

Supplemental counts at sixteen intersections were collected in November, 2016. Upon review of MassDOT published historic traffic data, November traffic counts are higher than average month conditions. However, to be conservative, the newly-collected traffic volumes were not reduced to reflect average month conditions. Traffic volumes from previous studies were generally adjusted for seasonal variation.

A review of the background growth rate used by the previous studies was conducted. The growth rates ranged from 0.5 percent to 1.5 percent, although the growth rates were mainly toward the lower end of this range. Based on the assumptions used in other studies reviewed and upon consultation with the Central Transportation Planning Staff (CTPS), the staff to the Boston Region Metropolitan Planning Organization, a general background growth rate of 0.5% per year was adopted. Seasonally adjusted traffic volumes obtained from previous studies were adjusted to represent 2016 base year existing volumes. Where appropriate, traffic volumes were balanced between the intersections.

The 2016 AM and PM peak hour weekday turning movement volumes are shown in the Appendix. The AM peak period ranges from 7 AM to 9 AM and the PM peak period ranges from 4 PM to 6 PM. A local, intersection-specific peak hour was used at each intersection, so the peak hour may vary from intersection to intersection.

Peak Hour Operating Conditions

The traffic operations of the study area intersections were analyzed using methodologies from the 2010 Highway Capacity Manual (HCM). Level of Service (LOS) and delays were calculated and are summarized below. Synchro 9TM software was used as the analysis tool for determining the LOS at the study area intersections. Synchro implements the methods specified in the 2010 HCM to analyze intersection capacity and determine LOS.

LOS is an index that is intended to reflect a traveler’s experience on different types of transportation facilities. LOS ranges from A (free flow, unconstrained travel) to F (severe congestion, long delays), and it serves as an indicator of driver discomfort, frustration, fuel consumption, and lost time. For operations at intersections, which are the controlling factor for Natick’s local roadway system, LOS is based on the HCM-based calculation of “control delay,” which is the average amount of time that a vehicle will spend stopped at a given intersection or intersection approach. Control delay values for different LOS are shown in Table 4.6.

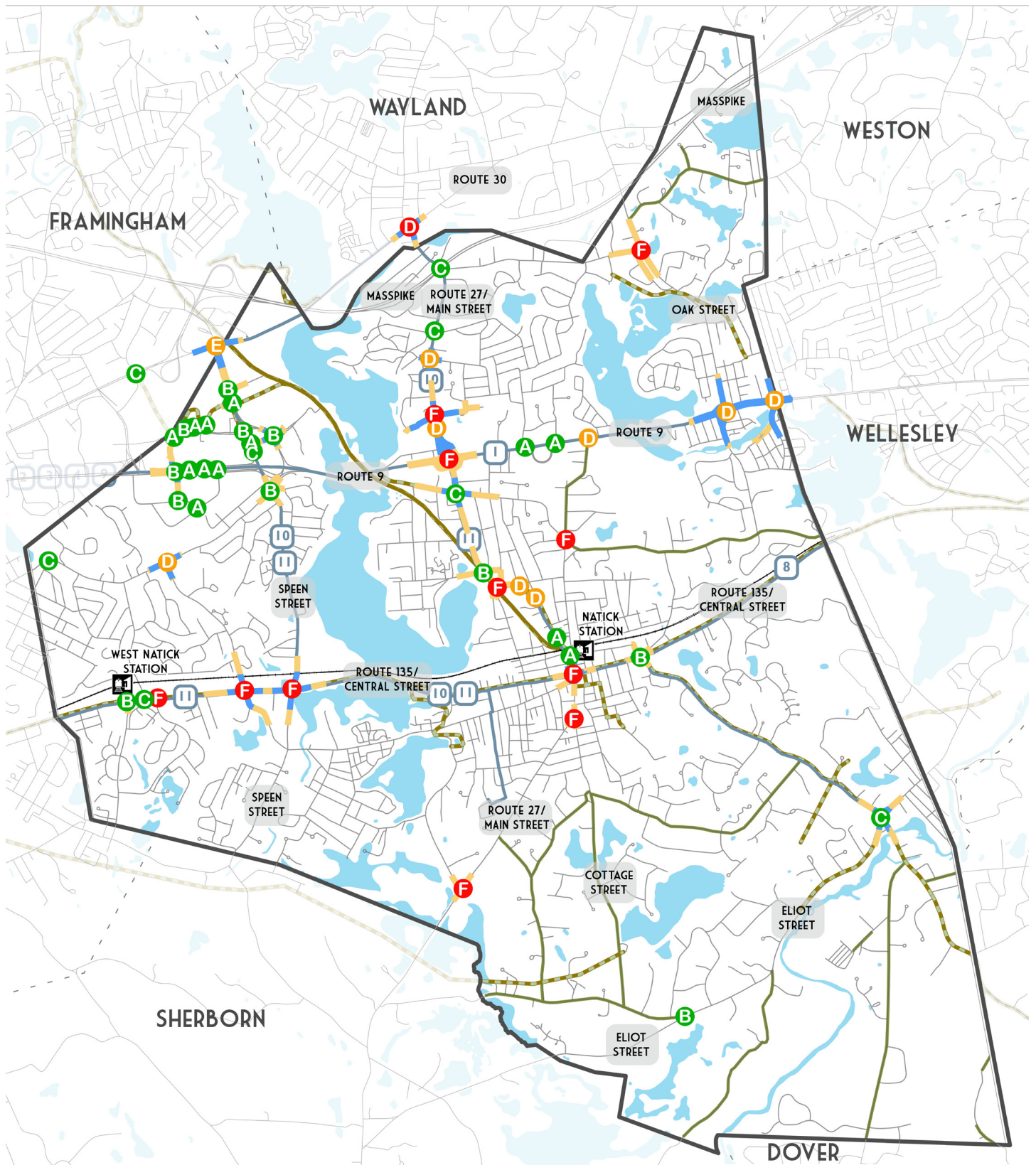
Signalized intersection analysis is based upon the capacity of each lane group and the correlating control delay associated with the intersection. Capacity is a measurement of the ability of an intersection design to accommodate all movements within the intersection. Capacity is a function of physical geometry and signalization conditions.

Level of Service	AVERAGE DELAY (SECONDS)	
	Signalized Intersections	Unsignalized Intersections
A	<= 10	<= 10
B	> 10 and <= 20	> 10 and <= 15
C	> 20 and <= 35	> 15 and <= 25
D	> 35 and <= 55	> 25 and <= 35
E	> 55 and <= 80	> 35 and <= 50
F	> 80	> 50

TABLE 4.6: EXISTING TRAFFIC DELAYS

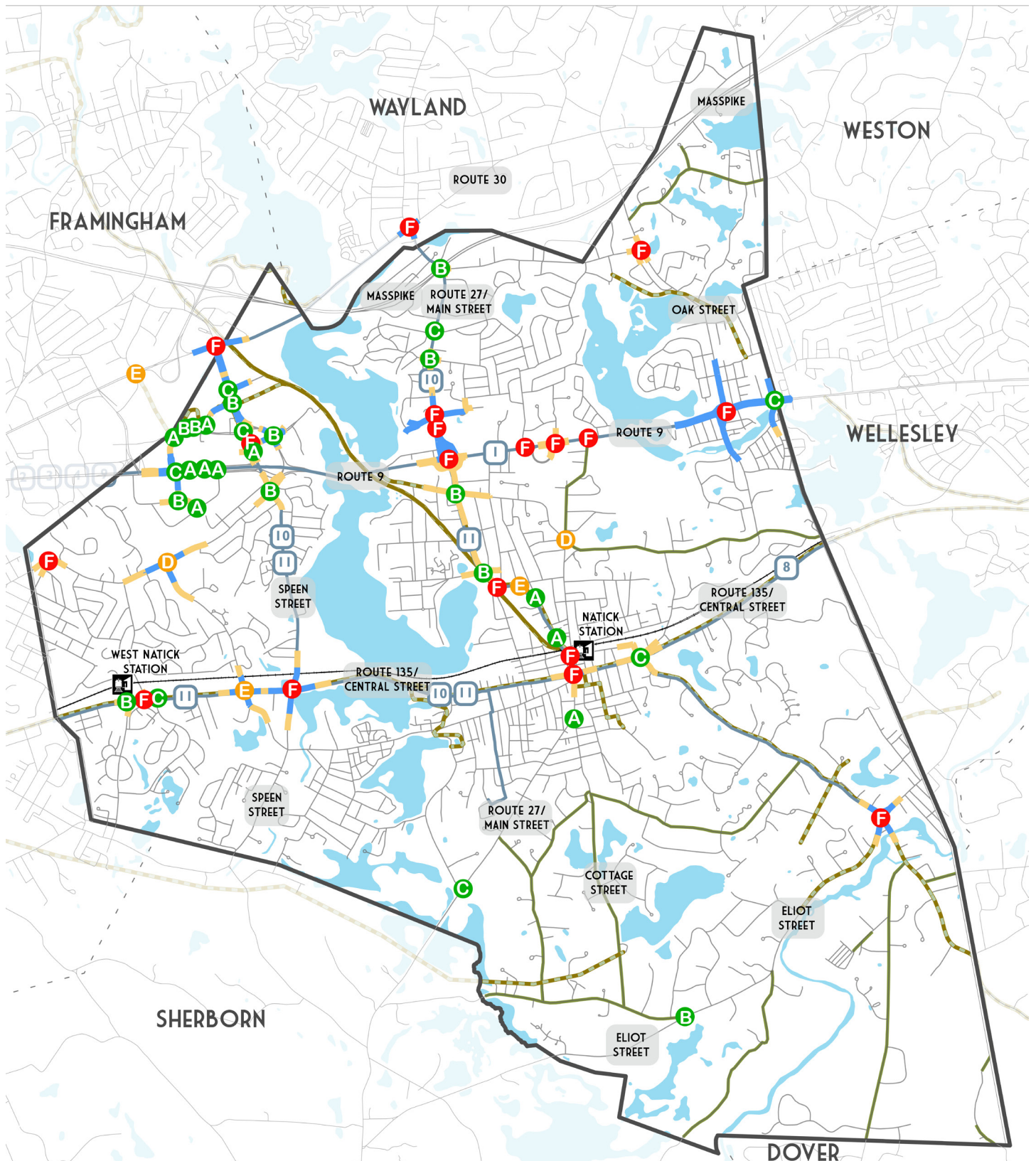
Key intersection Measures of Effectiveness (MOEs), including LOS and projected queuing, are shown in Table 4.7 and Map 4.5 for the AM peak hour and Table 4.8 and Map 4.6 for PM peak hour. During the AM peak, three out of 22 signalized intersections operated at LOS F, with high levels of delay, congestion and queuing, while seven of the 28 unsignalized intersections operated at LOS E or worse. Similarly, during the PM peak seven of the 22 signalized intersections operated at LOS F and nine of the unsignalized intersections operated at LOS E or worse. The signalized intersections with a LOS F are highlighted in the table. The maps also show the average queue length at each study intersection approach, along with the “worst case” queue; this “worst case” is the 95th percentile queue, or queues that would be expected to occur roughly 5 percent of the time.

The intersections with high levels of congestion are largely concentrated on roadways that connect through Natick, where traffic tends to be concentrated. These key congested routes include Route 27, Route 135, and Route 9.



MAP 4.5: AM PEAK INTERSECTION LOS AND TYPICAL QUEUING

- ● ● Intersection Level of Service
- ~ Average Queue
- ~ "Worst Case" Queue
- MBTA Stations
- MBTA Commuter Rail
- Bus Routes
- Bike Lanes
- Shared Use Path



MAP 4.6: PM PEAK INTERSECTION LOS AND TYPICAL QUEUING

- ● ● Intersection Level of Service
- ~ Average Queue
- ~ "Worst Case" Queue
- MBTA Stations
- MBTA Commuter Rail
- Bus Routes
- Bike Lanes
- Shared Use Path

INTERSECTION NAME	INT. TYPE	INT. LOS	50 TH PERCENTILE QUEUE	95 TH PERCENTILE QUEUE	INT. DELAY
Route 9 @ Apple Hill Drive Enter	U	A			0
Route 9 @ Apple Hill Drive Exit	U	A			0
Route 9 @ Walnut Street	U	D		42	
Route 9 @ Oak Street	S	D	~895	#1033	89.1
Route 9 @ Overbrook Drive	S	D	~1043	#1249	75.8
Route 27 @ Route 30	S	D	~373	#576	97.2
Route 27 @ Pine Street	U	C		48	19.6
PINE STREET @ OAK STREET	U	F		900	482.6
Route 27 @ Westlake Road	U	C		2	18.3
Route 27 @ East Evergreen Road	S	D	~317	317	107.4
ROUTE 27 @ RUTLEDGE ROAD	U	F		46	136.6
Route 27@ Stop N Shop Site	S	D	~739	#1306	63.1
Route 27@ Bacon Street	S	C	410	#1169	112.5
WALNUT STREET/CHESTNUT STREET @ BACON STREET	U	F		230	175.8
Route 27@ Kansas Street (General Greene Ave)	S	B	222	#756	38.1
ROUTE 27@ LAKE STREET	U	F		406	723
Route 27 @ Kinsman Place/Grove Street	U	D		14	32
Route 27 @ Charles Street	U	D		8	33.1
Route 27 @ Cochituate Street	U	A			
Route 27 @ Middlesex Avenue/South Avenue	U	A			
ROUTE 27 @ ROUTE 135	S	F	~278	#607	200.4
SOUTH MAIN STREET @ COTTAGE STREET	U	F		340	73.6
ROUTE 27 @ WEST STREET	U	F		450	394
Route 16 @ Union Street/Pleasant Street	S	C	338	#800	44
Route 135 @ Marion Street/Union Street	S	B	182	#397	27.7
Route 16 @ Everett Street	U	B		20	11.3
ROUTE 135 @ SPEEN STREET	S	F	~534	#956	249.4
ROUTE 135 @ MILL STREET	S	F	488	#1126	265.9
ROUTE 135 @ NEWFIELD DRIVE	U	F		208	87.2
Route 135 @ Boden Lane	U	C			21.7

TABLE 4.7: 2016 EXISTING AM PEAK HOUR MEASURES OF EFFECTIVENESS

S = Signalized Intersection

U = Unsignalized Intersection

R = Roundabout

m - Volume for 95th percentile queue is metered by an upstream signal

= 95th percentile volume exceeds capacity. Queue may be longer.

INTERSECTION NAME	INT. TYPE	INT. LOS	50 TH PERCENTILE QUEUE	95 TH PERCENTILE QUEUE	INT. DELAY
Route 135 @ Kendall Lane	S	B	150	353	22
Burr Street @ Cochituate Road	S	C	255	#596	276.9
Speen Street @ Cochituate Road	S	E	~648	#797	112.9
Speen Street SB @ Storage Driveway/Chrysler Road	S	B	192	#527	67.5
Speen Street @ Nouvelle Way/Retail Driveway	S	A	303	170	41.5
Mall Road @ Flutie Pass	R	A			4.5
Access Road/Flutie Pass @ JC Penny Garage	U	B		2	10.9
Flutie Pass@ JC Penny Garage East Drive	U	A			9.9
Service Drive/Nouvelle Way @ Flutie Pass/Natick Mall Rd	R	A		20	5.5
Speen Street NB/Natick Mall Road @ Speen Street SB	S	B	154	m124	44.4
Speen Street @ Superior Drive	U	A		22	2.3
Speen Street NB @ Superior Drive/Prime Parkway	S	B	298	411	35.8
Speen Street SB/ Speen Street @ Natick Mall	U	C		8	21.5
Dean Road/Natick Mall Road @ Route 9	S	B	305	#757	80.8
Sherwood Plaza Driveway & Route 9/Route 9 EB	U	A		2	9.8
Route 9 EB @ Route 9 WB	U	A			
Strathmore Road @ Route 9 EB	U	A	4	10.3	10.3
Mercer Road @ Dean Road	U	B		16	10.2
Strathmore Road @ Mercer Road	U	A		9.6	10
Speen St SB @ Hartford Street/Speen St NB & Route 9	S	B	221	#481	41.6
Hartford Street @ Bishop Street	U	C		92	18.7
Mill Street @ Hartford Street	S	D	472	515	70.1

TABLE 4.7: 2016 EXISTING AM PEAK HOUR MEASURES OF EFFECTIVENESS (CONTINUED)

S = Signalized Intersection

U = Unsignalized Intersection

R = Roundabout

m - Volume for 95th percentile queue is metered by an upstream signal

= 95th percentile volume exceeds capacity. Queue may be longer.

INTERSECTION NAME	INT. TYPE	INT. LOS	50 TH PERCENTILE QUEUE	95 TH PERCENTILE QUEUE	INT. DELAY
ROUTE 9 @ APPLE HILL DRIVE ENTER	U	F	0	195	350.8
ROUTE 9 @ APPLE HILL DRIVE EXIT	U	F	0	427	708.3
ROUTE 9 @ WALNUT STREET	U	F	0	75	20.6
ROUTE 9 @ OAK STREET	S	F	1430	m#1409	273.3
Route 9 @ Overbrook Drive	S	C	724	#1006	31
ROUTE 27 @ ROUTE 30	S	F	344	#534	89.3
Route 27 @ Pine Street	U	B	0	206	13.8
PINE STREET @ OAK STREET	U	F	0	404	227.9
Route 27 @ Westlake Road	U	C	0	0	0
Route 27 @ East Evergreen Road	S	B	74	298	11.4
ROUTE 27 @ RUTLEDGE ROAD	U	F	0	273	110.1
ROUTE 27 @ STOP N SHOP SITE	S	F	880	#1122	218.3
Route 27 @ Bacon Street	S	B	201	#921	15.6
Walnut Street/Chestnut Street @ Bacon Street	U	D	0		25.2
Route 27 @ Kansas Street (General Greene Ave)	S	B	175	630	15.5
ROUTE 27 @ LAKE STREET	U	F	0	215	345.9
Route 27 @ Kinsman Place/Grove Street	U	E	0	22	38
Route 27 @ Charles Street	U	A	0	0	0
Route 27 @ Cochituate Street	U	A	0	0	0
ROUTE 27 @ MIDDLESEX AVENUE/SOUTH AVENUE	U	F	0	0	0
ROUTE 27 @ ROUTE 135	S	F	252	#642	111
South Main Street @ Cottage Street	U	A	0	0	0
Route 27 @ West Street	U	C	0	47	23.1
ROUTE 16 @ UNION STREET/PLEASANT STREET	S	F	485	#770	172.9
Route 135 @ Marion Street/Union Street	S	C	152	#672	20.6
Eliott Street @ Everett Street	U	B	0	93	11.1
ROUTE 135 @ SPEEN STREET	S	F	646	#1100	140.2
Route 135 @ Mill Street	S	E	429	#741	75.8
Route 135 @ New Field Drive	U	C	0	49	24.9
ROUTE 135 @ BODEN LANE	U	F	0	286	69.5

TABLE 4.8. 2016 EXISTING PM PEAK HOUR MEASURES OF EFFECTIVENESS

S = Signalized Intersection

U = Unsignalized Intersection

R = Roundabout

m - Volume for 95th percentile queue is metered by an upstream signal

= 95th percentile volume exceeds capacity. Queue may be longer.

INTERSECTION NAME	INT. TYPE	INT. LOS	50 TH PERCENTILE QUEUE	95 TH PERCENTILE QUEUE	INT. DELAY
Route 135 @ Kendall Lane	S	B	130	423	17.5
Burr Street @ Cochituate Road	S	E	662	#801	73.6
SPEEN STREET @ COCHITUATE ROAD	S	F	759	#961	101
Speen Street SB @ Storage Driveway/Chrysler Road	S	C	375	491	27.1
Speen Street @ Nouvelle Way/Retail Driveway	S	B	647	#740	19.7
Mall Road @ Flutie Pass	R	A	0	0	0
Access Road/Flutie Pass @ JC Penny Garage	U	B	0	6	10.9
Flutie Pass@ JC Penny Garage East Drive	U	B	0	9	12.5
Speen Street @ Superior Drive	U	A	0	5	0.4
Service Drive/Nouvelle Way @ Flutie Pass/Natick Mall Rd	R	A	0	0	0
Speen Street NB/Natick Mall Road @ Speen Street SB	S	C	190	#256	31.2
Speen Street NB @ Superior Drive/Prime Parkway	S	B	314	418	18.7
SPEEN STREET SB/ SPEEN STREET @ NATICK MALL	U	F	0	363	396
Dean Road/Natick Mall Road @ Route 9	S	C	526	#996	25.2
Sherwood Plaza Driveway & Route 9/Route 9 EB	U	A	0	19	0.6
Route 9 EB @ Route 9 WB	U	A	0	0	0
Strathmore Road @ Route 9 EB	U	A	0	32	1.9
Mercer Road @ Dean Road	U	B	0	19	10.4
Strathmore Road @ Mercer Road	U	A	0	7	9.8
Speen St SB @ Hartford Street/Speen St NB & Route 9	S	B	209	#582	16.7
HARTFORD STREET @ BISHOP STREET	U	F	0	510	302
Mill Street @ Hartford Street	S	D	577	#1270	45

TABLE 4.8. 2016 EXISTING PM PEAK HOUR MEASURES OF EFFECTIVENESS (CONTINUED)

S = Signalized Intersection

U = Unsignalized Intersection

R = Roundabout

m - Volume for 95th percentile queue is metered by an upstream signal

= 95th percentile volume exceeds capacity. Queue may be longer.

Safety Analysis and High Crash Locations

Traffic crash records and patterns were reviewed to identify existing roadway safety issues in Natick. MassDOT data and analysis, including the most recent “Top Crash Locations Report” and “Top High Crash Intersection Locations” tool was used to identify the high traffic crash locations in Natick. Table 4.9 shows the locations in Natick that are eligible for federal Highway Safety Improvement Program (HSIP) funding, which serves as an indicator of where the crash data records indicate a crash cluster or potential safety issue. HSIP funding may be used at such locations to implement improvements that address identified safety issues.

Table 4.9 summarizes a number of key safety-related measures at these crash cluster locations for the three year period 2012 – 2014, including total crashes, fatalities, injuries, and crash rate based on level of traffic volume to enable some comparison of intersections with varying levels of traffic. Natick is located in MassDOT District 3, which has an average crash rate for signalized intersections of 0.90 crashes per million vehicle miles traveled (MVMT) and 0.65 crashes per MVMT for unsignalized intersections. Crashes at unsignalized intersections in Natick are generally lower than the District 3 average in most cases. However, signalized intersections with identified crash clusters generally have a higher rate of crashes than the District 3 average.

Three intersections (highlighted in Table 4.9) in Natick were ranked among the top 200 crash intersection locations in Massachusetts between the years 2012 and 2014. All of these crash clusters are located at signalized intersections. The intersection of Route 135 @ Speen Street was ranked 144, the intersection of Speen Street NB @ Superior Drive/Prime Parkway was ranked 158, and Route 9 @ Dean Road/Natick Mall Road was ranked 164.

Any potential improvements at these locations should include review of crash data, evaluation of safety issues, and consideration of safety “countermeasures,” or improvements with a proven record of addressing safety problems. Potential safety countermeasures include all-way stop control, traffic signal timing adjustments, sight line improvements, installation of roundabouts, narrowing of travel lanes and other “traffic calming” measures, and implementation of Complete Streets design improvements. Intersections near residential areas and village centers, which tend to have higher pedestrian and bicycle volumes, are high priority locations for providing Complete Streets accommodations. Intersections along Route 27, Route 135, and Route 30 would be appropriate for such treatments.

Unsignalized intersections with crash clusters that are operating with high levels of delay and congestion, especially those operating at LOS F, should be reviewed. Drivers at these locations may experience high levels of frustration that can lead to riskier behaviors, such as substandard gap acceptance. Review topics may include the potential for all-way stop control, roundabouts, or signal warrant analyses to assess the suitability of installing traffic signals, which can improve traffic safety in certain circumstances.

CRASH CLUSTER LOCATION	CRASH COUNT	FATALITIES	INJURIES	PROPERTY DAMAGE ONLY	CRASH RATE
Route 9 @ Route 27 east of intersection	101	0	9	92	1.74
Route 9 @ Route 27 west of intersection	87	0	7	80	1.50
ROUTE 9 @ DEAN ROAD/NATICK MALL ROAD	69	0	8	61	1.08
SPEEN ST. NB @ SUPERIOR DR./PRIME PARKWAY	66	0	9	57	1.89
ROUTE 135 @ SPEEN STREET	54	0	13	41	1.76
Route 9 @ Oak Street	51	0	3	48	0.87
Route 9 @ Route 27 north of intersection	46	0	6	40	1.39
Route 9 west of Maine Avenue	43	0	5	38	0.60
Speen Street @ Superior Drive/Natick Mall	36	0	3	33	1.51
Interstate 90 east of Oak Street	34	0	7	27	0.25
Route 9 @ Overbrook Drive	33	0	7	26	0.64
Route 135 @ Park Street/Washington Street	32	0	4	28	N/A
Route 135 @ Mill Street	30	0	6	24	1.30
Speen St. Ramp to Route 9 EB/Route 9 WB	30	0	3	27	N/A
Interstate 90 east of Indian Rock Road	29	0	4	25	0.21
Interstate 90 east of Route 27	28	0	6	22	0.21
Route 27 @ Route 30	27	0	5	22	0.98
Route 9 Ramp to Speen Street SB	27	0	4	23	N/A
Route 9 @ Walnut Street	25	0	4	21	0.39

TABLE 4.9. EXISTING CRASH INFORMATION

Roadway, Intersection, and Traffic Issues and Opportunities

The following issues have been identified through field observations, evaluation of traffic operations, review of previous planning documents (both private development analyses and publicly-funded studies), input from Town of Natick representatives, and comments from stakeholders and members of the public.

General Roadway Network Issues

- + As shown on Map 3.4, there are many physical barriers created by Natick's geography, including its many lakes and its infrastructure - limited access facilities like I-90/MassPike, Route 9, and the Boston Mainline railroad. These barriers tend to funnel traffic onto the relatively limited number of roadways that provide access to and across these barriers, such as Route 135, Route 27, Speen Street, and Oak Street. As a result, these roadways tend to experience higher levels of traffic, congestion, and crashes.
- + Natick has experienced significant growth and development in recent years. This is true of the retail centers and corridors, including The Golden Triangle and Route 9, as well as the more historic residential neighborhoods and mixed-use districts throughout the rest of the Town.
- + Based on U.S. Census data, the municipalities of Framingham and Wellesley that border Natick had a population increase of about two percent and five percent, respectively, from the year 2000 to 2010. Nearby Towns of Medfield and Holliston had a decreasing trend in population.
- + Cordon counts obtained from MassDOT's Transportation Data Management System indicate that a majority of trips from Natick are eastbound toward Boston. Traffic coming into Natick from the south is mostly on Route 27, while most traffic from the east travels on Route 135 and Route 9 from Wellesley. Traffic from the north enters Natick via Route 27 and Route 30. Traffic from the west enters the Town via I-90 and Route 135, Route 126, and Route 16.

Corridor Related Issues

Route 27

- + Route 27 is a major north - south route through Natick, and it carries heavy traffic volumes and experiences significant congestion.
- + Poor access management in some segments of Route 27, principally the sections just north of Route 135 and north of Route 9, creates conflicts with through-traffic, pedestrians, and bicyclists.

Route 9

- + Heavy commuter traffic volumes result in congestion and queuing.
- + Substandard acceleration and deceleration lengths, ramp geometry, and ramp widths create operational and safety issues.
- + Inadequate spacing between merge and diverge lanes lead to weaving of traffic.

Route 135

- + Frequent curb cuts result in poor access management and vehicular conflicts in West Natick.
- + High traffic volumes and constrained intersections result in significant congestion and queuing at major intersections.

Speen Street

- + Access to I-90/MassPike and Route 9 ramps attracts heavy traffic, resulting in congestion and queuing in spite of wide roadways and intersections.
- + This concentration of traffic is exacerbated by a lack of parallel north-south roadways in West Natick.

Issues at Intersections

Walnut Street/Bacon Street/Chestnut Street

- + This is a complex five-way intersection with awkward skewed angles.
- + Chestnut Street access could be evaluated and intersection approach angles could be reviewed to develop a more conventional intersection design.
- + On the Bacon Street westbound approach, a second stop line and center line indicate that westbound left turning vehicles are allowed to split from through traffic and turn left from the other side of opposing traffic. To improve safety and minimize driver confusion, the secondary left turn lane could be eliminated and the pavement could be replaced with a raised channelizing island, which would continue to allow the Walnut Street northbound right turns. By constructing this island, the Walnut Street northbound Stop-line could also be moved closer to the intersection.

Dean Road/Natick Mall Road/Route 9

- + The existing traffic signal system is outdated, and results in inefficient operations, congestion, and queuing.
- + The benefits of an adaptive traffic signal control system could be evaluated for the potential to ease congestion at this intersection. This could potentially improve safety and reduce driver confusion.

Speen Street/Cochituate Road

- + Ramp access to the I-90/MassPike attracts heavy traffic and results in congestion and queuing, in spite of multiple lanes and wide intersection approaches.
- + Difficult access onto and off of the MassPike interchange ramps creates weaving conflicts, which are exacerbated by frequent curb cuts and poor access management along Cochituate Road.

Route 27/ Route 135

- + This Natick Center intersection is a major focal point for community activity, as well as for the Town's traffic, resulting in congestion and queuing.
- + The yellow clearance intervals for all movements except the Main Street southbound left-turn movement do not meet the MUTCD and MassDOT minimum requirements. The all-red clearances for the East Central Street westbound and Main Street southbound left-turn phases do not meet the MUTCD and MassDOT minimum requirements. The yellow clearance intervals should be increased to 4 seconds, except for the Main Street southbound left-turn movement. The all-red clearance interval should increase to 2 seconds for the East Central Street westbound left-turn movement and the Main Street southbound left-turn movement.

Route 27/Bacon Street

- + During the evening peak, queues extend on the Route 27 southbound approach to Bacon Street and generally reach the bridge and beyond. This queue blocks the Route 27 ramp to Route 9 eastbound.
- + The queue also blocks the Route 9 eastbound ramp to Route 27 southbound, creating queue spill back onto Route 9.

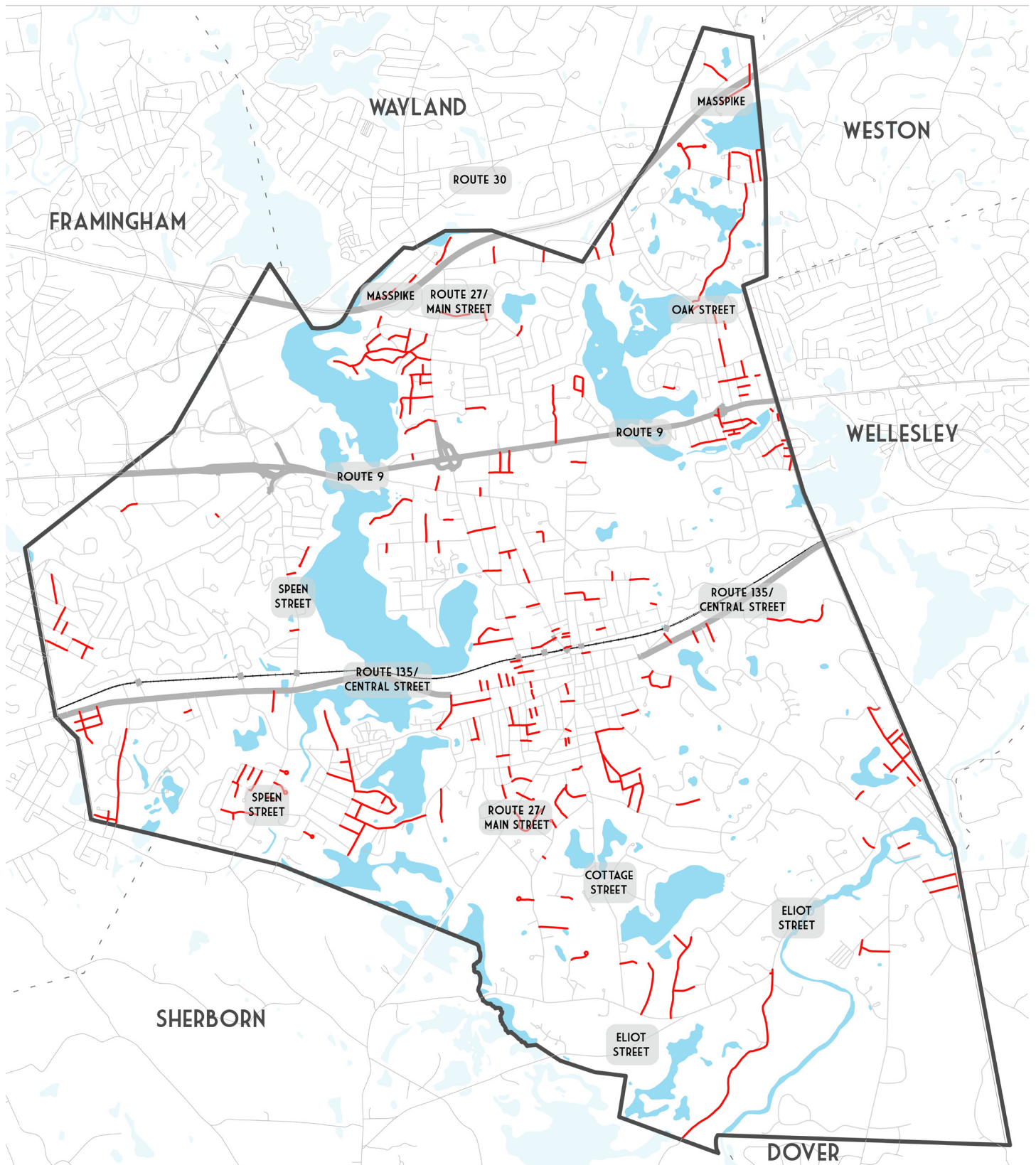
Route 27/ Route 9

- + The Route 27/Route 9 interchange has significant geometric and operational issues:
 - o Vertical sight distance issues
 - o Substandard speed transition distance
 - o Poor sight distance at merge and diverge points
 - o Poor entrance and exit ramp terminal design
 - o Limited distances between on and off-ramps, which creates weaving problems
- + Weaving traffic results in a significant number of crashes in and around the interchange.
- + Tight ramp geometries make it difficult for larger vehicles to negotiate the ramps, resulting in congestion and safety concerns.






- + Due to the heavy Route 9 eastbound traffic during the commuting peak periods, the Route 27 northbound ramp to Route 9 eastbound experiences significant operational issues. Queues spill back to Route 27, which complicates sight distance issues on the Route 27 ramp to Route 9 related to the sub-standard ramp radius configuration.

Unaccepted Roadways

Many local roads are not accepted by the Town of Natick; these are shown in red on Map 4.7. These roads do not have access to public funding for reconstruction and maintenance; as a result, they are commonly in poor repair, and could create safety and access issues for drivers that use them. The Master Plan process should consider the need and utility of certain high-priority connections, and evaluate the potential for the Town's acceptance of these high-priority unaccepted road segments.



MAP 4.7. UNACCEPTED ROADWAYS IN NATICK

-  Massachusetts Department of Transportation
-  Town Accepted Road
-  Road Not Accepted
-  MBTA Commuter Rail
-  Water

Transit

Public transportation in the study area is provided by the MetroWest Regional Transit Authority (MWRTA) for local bus service and by the Massachusetts Bay Transportation Authority (MBTA) for regional commuter rail.

MBTA

The MBTA serves the Natick area via the Framingham/Worcester Commuter Rail Line, running from South Station (Boston) to Framingham and Worcester. The line also serves the towns of Ashland, Auburndale, West Natick, Southborough, Wellesley Square, Wellesley Hills, Wellesley Farms, Westborough, West Newton, and Newtonville. The Town of Natick has two MBTA commuter rail stops: West Natick and Natick Center. Trains run every 30 to 35 minutes during the peak periods.

Table 4.10 provides general information about the two MBTA stations.

STATION	NATICK CENTER	WEST NATICK
Owner	Town of Natick	MBTA
ADA Accessible?	No	Yes
Parking Spaces	71	178
Accessible Spaces	4	4
Bicycle Spaces	12	23
Parking Fee (2019)	Town Permit Required. Annual Fee = \$825 (resident), \$1200 (non-resident)	Annual Fee = \$1260

TABLE 4.10. MBTA STATION CHARACTERISTICS

Table 4.11 shows that Natick-based ridership on the Framingham/Worcester commuter rail line increased significantly (roughly 60 percent) between 2010 and 2013. This is likely due in part to the recovering economy and increased employment in Massachusetts. It is also attributable to significant increases in train service, frequency, and capacity on the Framingham/Worcester line. In 2009, the Commonwealth of Massachusetts purchased the Boston Mainline between Worcester and Boston, which carries the Framingham/Worcester commuter rail service. Purchase of this line provided the MBTA with greater scheduling and operational control. At the same time, CSX relocated its principal freight rail operations from Beacon Park Yard in Allston Landing to improved facilities in Worcester and Westborough, significantly reducing freight traffic on the line. This has enabled the MBTA to increase commuter rail frequency on the line by about 60 percent, from 12.5 weekday round trips to 20. The MBTA also hopes to improve service and on-time performance on the line through further improvements in the vicinity of the former Beacon Park Yard, including double-tracking of a remaining single-track bottleneck.

The Natick Center Accessibility Project Study was completed in the year 2014 and is funded in the MassDOT 2017-2021 Capital Investment Plan (CIP). The project aims to support current and projected transit ridership in the Town of Natick by providing an upgraded MBTA commuter rail station that integrates universal access in accor-

dance with the Americans with Disabilities Act (ADA). A reconstructed Natick Center Station will also provide enhanced access for all modes of travel; facilitate efficient rail operations, and support community and economic development in the heart of Natick Center.

STATION	NATICK		WEST NATICK		COLLECTION MONTH	BLUE BOOK YEAR
Year	IN Boarding	Ranking	IN Boarding	Ranking		
2013	1,077	15th	1,121	12th	April	2014
2012	809		904		November	2014
2011	796		945		November	2014
2010	675		884		November	2014
2009	700		1,016		February	2014
2008	783		1,032		February	2014
2007	830		1,094		June	2014
2006	799	24th	1,067	13th	February	2010
2005	699		857		February	2010
2004	728		841		February	2010
2003	723		1,018		February	2010
2002	1,214		1,456		February	2007
2001	960		1,210		February	2007

TABLE 4.11. TYPICAL WEEKDAY INBOUND BOARDING

MetroWest Regional Transit Authority (MWRTA)

There are currently eight MWRTA bus routes – Routes 1, 2, 3, 4N, 8, 9, 10, and 11 – that serve at least some portion of Natick. These routes in turn provide connections to additional MBTA bus routes and the commuter rail system. These routes are shown on Map 4.8, and summarized in Table 4.12. Most of the MWRTA bus routes serving Natick begin and end their service at the MWRTA Blandin Hub on Blandin Avenue near Framingham Center. Routes 2, 3, 4N, and 9 provide only limited Natick service, to Natick Mall on the western edge of town via Route 9; Route 8 provides only limited Natick service, to the Natick Community-Senior Center on the eastern edge of Natick Center via Route 135.

Metro West Transportation Management Association

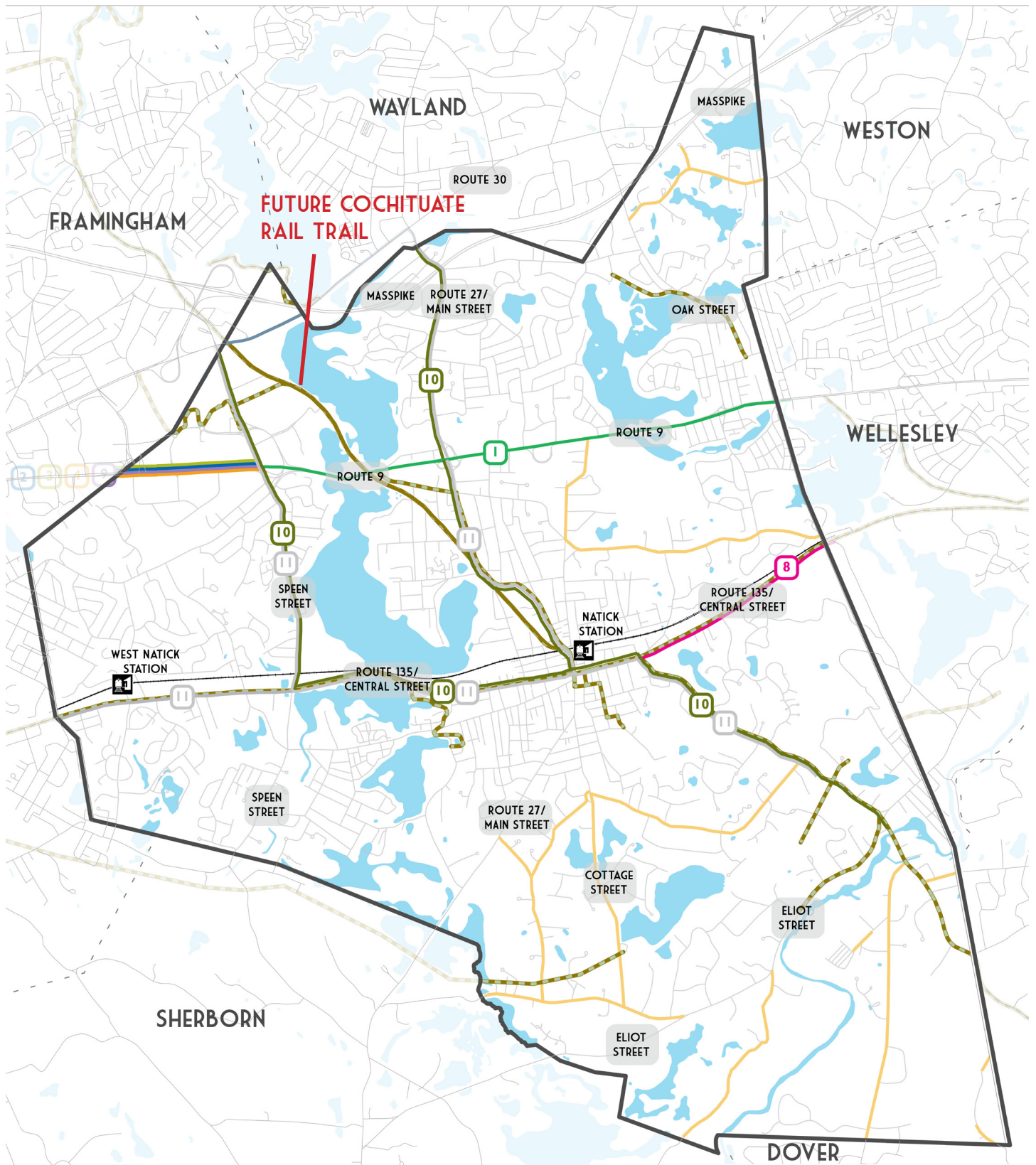
The MetroWest/495 Transportation Management Association (MWTMA) is a member-based non-profit organization that focuses on transportation-related issues in the MetroWest region and provides sustainable commuting solutions to the large employers located there. The MWTMA is a joint program of the MetroWest and Marlborough Regional Chambers of Commerce, and it also partners with the 495/MetroWest Partnership, Metro West Regional Transit Authority and MassCommute.

MWTMA serves the communities of the MetroWest region (Framingham, Natick, Marlborough, Hudson, Southborough, Ashland, Sudbury, Wayland, Holliston, Hopkinton, Sherborn, Westborough, and Northborough) including those located along Interstate 495. The MWTMA advocates the use of alternate modes of transportation, including carpooling, vanpooling, public transit, walking, and bicycling. The goal of the MWTMA is to reduce traffic congestion, improve air quality, and increase awareness of sustainable transportation. The MWTMA also advocates for sustainable transportation options in the area and collaborates with community leaders to strengthen the economic growth and quality of life for the MetroWest area. MWTMA members include many major employers in the region; Natick member employers include MathWorks and the Natick Soldier Systems Center.








ROUTE	START	PRINCIPAL ROUTE	CONNECTIONS	TERMINUS	APPROXIMATE WEEKDAY FREQUENCY
1	Blandin Hub	Route 9	Natick Mall	Woodland MBTA Station	20 minutes
2	Downtown Framingham	Loop - Route 126	Natick Mall Framingham State University	Downtown Framingham	60-75 minutes
3	Downtown Framingham	Loop - Route 126	Natick Mall Framingham State University	Downtown Framingham	65-75 minutes
4N	Blandin Hub	Loop - Bishop St. - Hartford St. - Route 126	Natick Mall MW Medical Center	Blandin Hub	60 minutes
8	Natick Community Center	Route 135	Wellesley College Wellesley MBTA Commuter Rail Wellesley Hills Commuter Rail	Woodland MBTA Station	90 minutes
9	Mass Pike Exit 12	Route 9	Natick Mall Framingham State University	Natick Mall	20-40 minutes
10	Blandin Hub	Loop - Route 135 - Route 27 - Route 30 - Speen St.	Downtown Natick Natick Center MBTA Commuter Rail Natick Mall	Blandin Hub	95 minutes
11	Blandin Hub	Loop - Route 135 - Route 27 - Route 30 - Speen St. - Route 135	Downtown Natick Natick Center MBTA Commuter Rail West Natick MBTA Commuter Rail Natick Mall	Blandin Hub	95 minutes

TABLE 4.12. METROWEST REGIONAL TRANSIT AUTHORITY BUS ROUTES

Multimodal transportation facilities for Natick are shown in Map 4.8.



MAP 4.8. MULTIMODAL TRANSPORTATION IN NATICK

-  MBTA Stations
-  MBTA Commuter Rail
-  Bus Routes
-  Bike Lanes
-  Shared Use Path
-  Scenic Road
-  Water

Public Transportation Issues

- + MBTA commuter rail service frequency has increased in recent years, but travel time and reliability on the Framingham/Worcester line are issues.
- + Natick Center MBTA station has substandard facilities and access, although the planned Natick Center Station Improvement Project (explained in the Public Capital Investment Projects section) is intended to address these issues, and make the station ADA compliant.
- + MWRTA bus routes are generally infrequent. While Route 1 and Route 9 have headways of approximately 20 minutes, most other routes serving Natick have headways of an hour or more. Many of the MWRTA routes also have very infrequent service off peak and on weekends, or cease service altogether.
- + Aside from the MWRTA bus routes, last-mile connections to and from such destinations as Natick Center and the MBTA stations are lacking for residents without cars.

Pedestrian and Bicycle Accommodations

Map 4.8 shows the existing bicycle accommodations in Natick, while Map 4.9 shows the sidewalk coverage in Natick.

Members of the public, Town of Natick representatives, and other stakeholders have expressed a strong desire to make Natick a more pedestrian and bike friendly town. The following are key issues and priorities that have been identified.

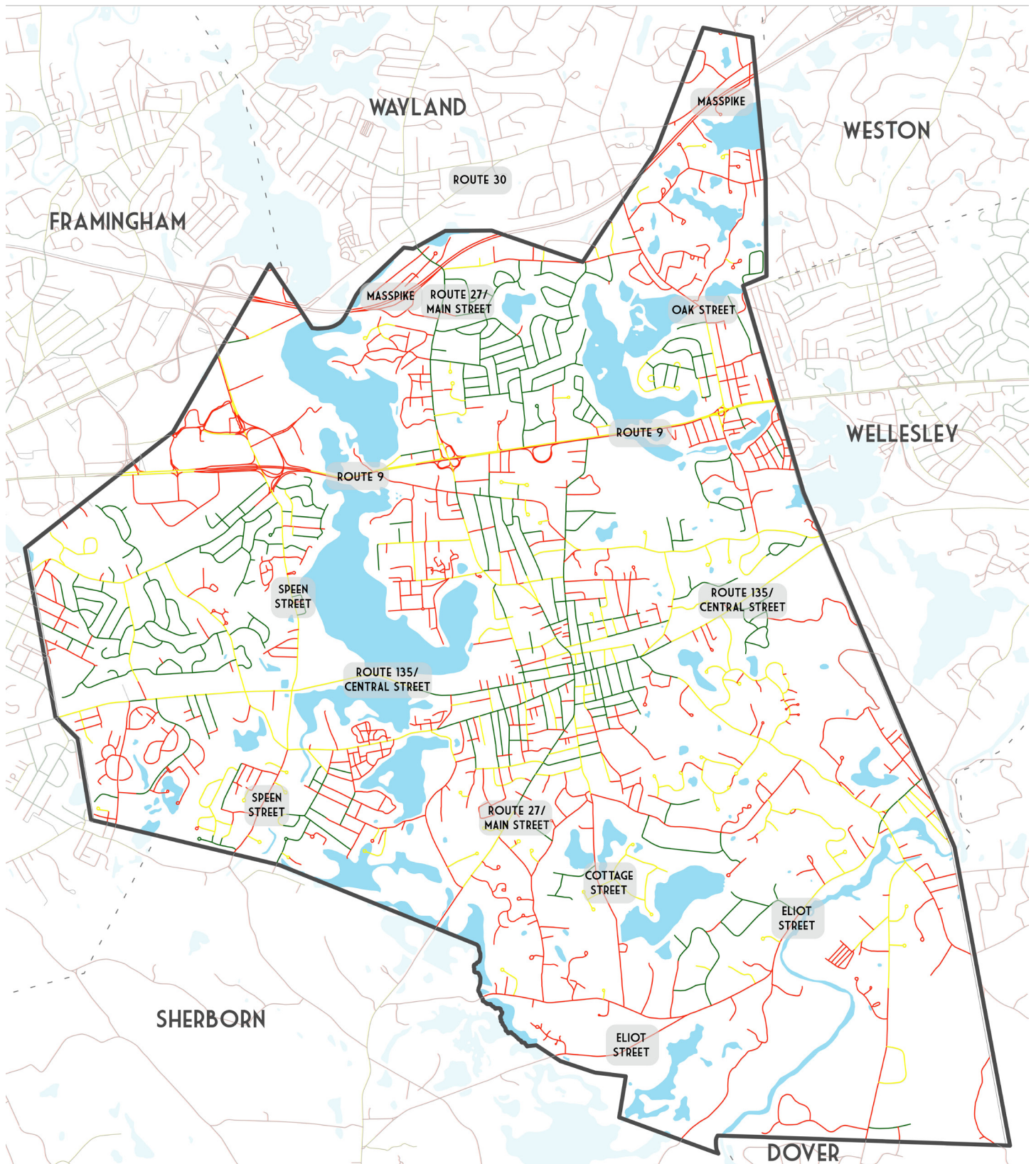
Pedestrian and Bicycle Issues

General Pedestrian Issues

- + Sidewalk coverage and pedestrian access in Natick are inconsistent.
- + There is comprehensive sidewalk coverage in Natick Center and some other older residential neighborhoods.
- + Outside of these areas, sidewalks are limited to one side of the street or are missing altogether, discouraging walking and limiting recreational opportunities.
- + ADA facilities (e.g. curb cut ramps) are missing from many older sidewalks.

General Bicycle Issues

- + Bicycle facilities are lacking in Natick.
- + The only marked bicycle facilities in Natick are bicycle lanes approximately one mile long on Oak Street, generally between Route 9 and the Wayland Town Line.
- + Due to the lack of connectivity of minor roadways across barriers such as Route 9, the Boston Mainline railroad, and Natick's lakes, bicycle trips of any distance generally require travel on Natick's high-traffic arterial roadways, such as Route 27 or Route 135.
- + Although Route 135 has bikeable shoulders on much of its length in Natick, these shoulders are of inconsistent width and connectivity; as a result, they are not marked as bike lanes.
- + The planned Cochituate Rail Trail (summarized in the Public Capital Investment Projects section) will significantly improve bicycle access between Natick Center and the northwestern quadrant of the town; however, a more robust network of on- and off-street bicycle facilities is needed to improve bicycle access for the whole of Natick.
- + Covered bicycle parking at the MBTA stations would encourage more bicycle access to commuter rail.



MAP 4.9. SIDEWALK COVERAGE IN NATICK

- Both Sides
- One Side
- None

Corridor Pedestrian and Bicycle Issues

Route 9

- + The south-side pedestrian sidewalk ends at a bus-bay area located just west of the Route 27 bridge on Route 9. There are abandoned stairways which lead to Route 27 located on the westerly side of both bridge abutments.
- + It was noted during the field visit that there is poor visibility at the crosswalk located on the North Main Street (Route 27) southbound to Route 9 eastbound ramp near North Main Street (Route 27).

Route 27

- + The sidewalk conditions at numerous locations on Route 27 are poor and in most cases wheelchair ramps and crosswalks do not meet current Americans with Disabilities Act (ADA) requirements. At some intersections wheelchair ramps exist but are substandard. At other locations there are marked crosswalks but no wheelchair ramps.
- + No bicycle accommodation is provided under the existing interchange configuration. Currently Route 27 is a difficult route for bike use due to lack of bicycle accommodations, lack of bicycle detection and signage, and heavy vehicular traffic.

Route 135

- + There are frequent curb cuts and poor access management in West Natick.
- + Mixed residential and commercial land use generate significant pedestrian traffic.
- + There are inadequate pedestrian and bicycle facilities in some locations.

Middlesex Avenue

- + Sidewalks are present on the south side of the street with no buffer zones.
- + No bike accommodations are provided.

Washington Avenue

- + Sidewalks and bike facilities are uneven or absent.
- + Pedestrian signage, curb ramps and detectable warning panels are absent.

Bacon Street

- + There are uneven or absent sidewalk and bike facilities to the west of Stillwater Circle.
- + Pedestrian signage, curb ramps and detectable warning panels are absent.
- + Crosswalk markings are substandard, poorly located, or missing.

Cottage Street

- + Cottage Street is an important walking route that connects Natick Center to neighborhoods to the south and is also the site of the Tobin School.
- + There is a sidewalk on the west side of the street between South Main Street and Farwell Street/Woodland Street.
- + The Town of Natick is getting ready to undertake a capital improvement project to extend the sidewalk on the west side of the street from the current terminus to the end of the street at Everett Street.

Speen Street

- + Multiple lanes, wide roadways, and ramp interfaces create an uncomfortable pedestrian and bicycle environment.
- + There are no bicycle facilities, and heavy volumes of relatively high-speed traffic create difficult bicycling conditions.

Intersection Pedestrian and Bicycle Issues

Route 27 / Route 135

- + There is good pedestrian infrastructure and comprehensive sidewalk coverage at this intersection, and through most of Natick Center.
- + Despite this, there are wide crossings, especially on the northern leg of the intersection, due to the head-in parking.
- + MassDOT's "Top Crash Locations" tool was used to analyze bicycle and pedestrian crash clusters in Natick. From 2005 to 2014, no bicycle-related crashes were reported in Natick. However, a major pedestrian crash cluster was observed in Natick Center near the intersection of Route 27 / Route 135. Twelve crashes were recorded, with all twelve crashes causing an injury.

Speen Street/Cochituate Road

- + Pedestrian and bicycle facilities are provided along parts of Route 30, but traffic volumes and speeds are high, and crossings are wide.
- + Alternate treatments for the crossing of the proposed Cochituate Rail Trail across Route 30 should be reviewed to enhance safety and attractiveness of the trail.
- + Poor access management and difficult access onto and off of the I-90/ MassPike Exit 13 interchange ramps.

Route 27/Bacon Street

- + Wheelchair ramps at the intersection do not meet the Americans with Disabilities Act (ADA) requirements.

- + It was noted during a field visit by VHB that pedestrian signal heads on the northwest and southeast corners have been hit and turned, and are no longer properly aligned.

Route 27/ Stop & Shop Site

- + A crosswalk is located across North Main Street (Route 27) on the northern side of the intersection, but there are no wheelchair accessible ramps.
- + The MathWorks Campus Phase III traffic study noted that some of the loop detectors in the pavement are exposed.

Route 135 / Kendall Lane

- + Sidewalks are missing from the northern part of Route 135 west of the intersection.
- + Sidewalks on the western side of Kendall Lane end approximately 30 feet south of the intersection.
- + Tactile pads are missing on the southwest and northeastern corners of the intersection.
- + Pedestrian crossings are missing from the eastbound approach of Route 135 at the intersection.

Pine Street / Oak Street

- + There are no sidewalks along Pine Street, and no crosswalks at this intersection.

Route 27/ Lake Street

- + Sidewalks are missing from the western side of Lake Street and northern side of Route 27 at the intersection.
- + Crosswalks are absent from the Route 27 approach of the intersection.



January 2016

DOWNTOWN NATICK METER & PERMIT ZONES

PARKING METER & KIOSK TIMES	
\$0.25 each 15 Min.	\$0.25 each 1 Hour
\$0.25 each 30 Min.	\$0.25 each 1 Hour
Meter & Kiosk Hours: 9 AM - 5 PM MON-SAT Free Parking ALL other times including Sunday	

PARKING PERMIT ZONES	
Town Vehicle	Town Employee
Downtown Business	Commuter Lot
Permit Parking Hours: 7 AM - 5 PM MON-FRI Free Parking ALL other times including Sat & Sun	



Kiosk Locations

C.O.A. Permit Allows FREE 2 Hour Parking in Meter & Kiosk Spaces ONLY



FIGURE 4.3. MAP OF DOWNTOWN NATICK METER & PERMIT ZONES

Parking

On-Street Parking

The Town of Natick Transportation and Parking webpage, publishes a map of Natick Center Parking as shown in Figure 4.3.

On Route 135:

From the Route 135 intersection with Kendall Street to the intersection with Maple Street there is no street parking. From the intersection with Maple Street to the intersection with Washington Street there is parking on the southern side of Route 135. From the intersection with Washington Street to the intersection with Lincoln Street at Hayes Street there is parking on both sides of Route 135. From the intersection with Lincoln Street and Hayes Street to east of the intersection with Marion and Union Street there is no parking on Route 135.

On Route 9:

From the intersection with Dean Road to the intersection with Overbrook Drive there is no street parking on Route 9.

On Route 16:

North of the intersection with Union Street and Pleasant Street and south of the intersection with Union there is parking on the east side of Route 16. South of the intersection with Union Street and Pleasant Street and north of the intersection with Mill Lane there is parking on both sides of Route 16.

On Route 27:

From the intersection with Route 135 to the intersection with South Avenue, there is angled parking along both sides of Route 27, with parking meters. From the intersection with South Avenue to the intersection with Route 30 there is no on-street parking.

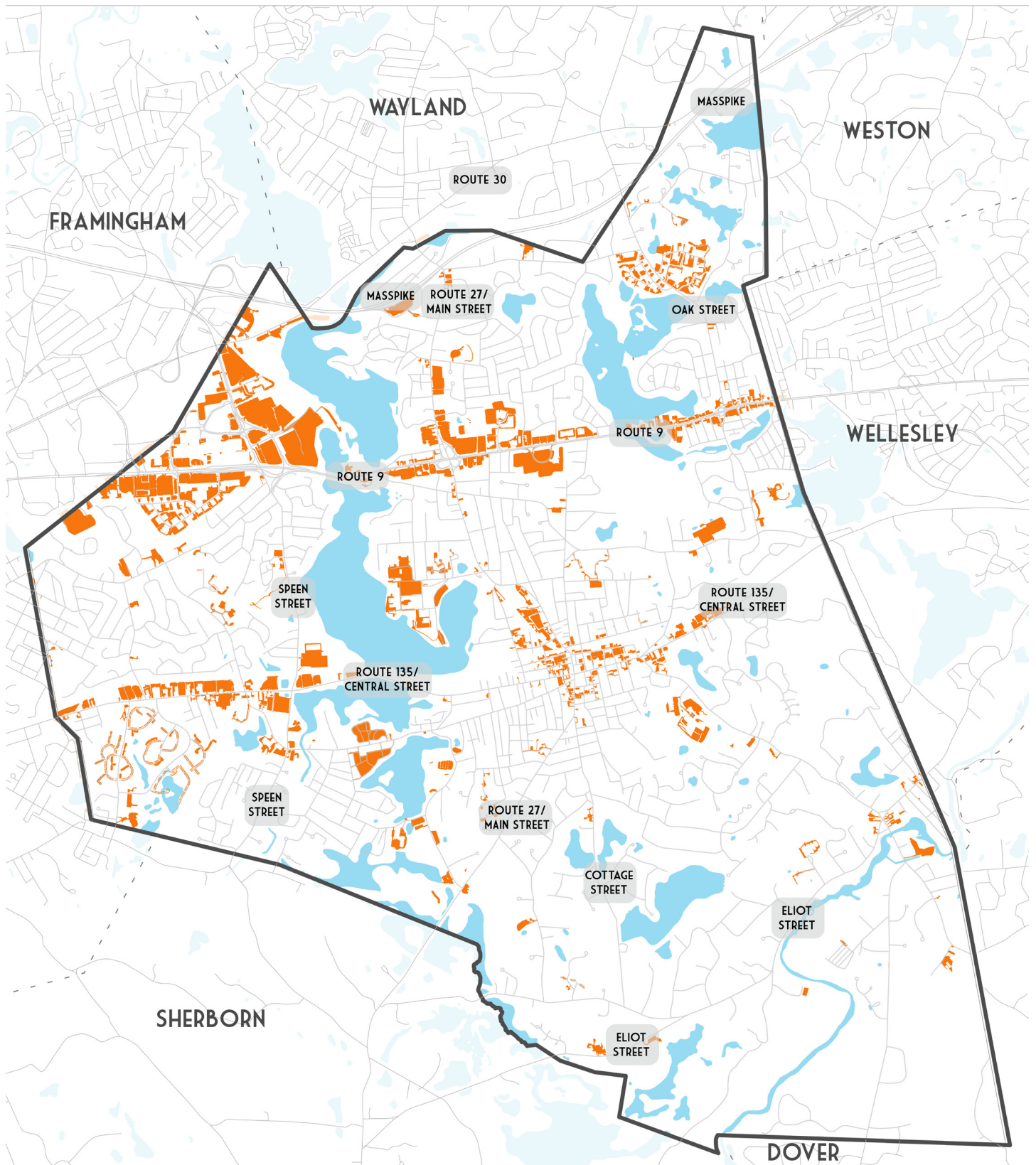
Metered on-street parking in Natick Center is also available on Park Street, Common Street, South Main Street, Pond Street, Summer Street, Middlesex Avenue, North Avenue, South Avenue, Court Street, Washington Street, and Hayes Street. Other Natick Center roads have permit parking for downtown business employees, Town of Natick employees, and Town-owned vehicles.

Off-Street Parking

All off-street parking in Natick is as shown in Map 4.10. The total area of off-street parking is 529 acres, or 5.2 percent of the total area of Natick. Approximately 171 acres are in the shopping centers area in northwest Natick. Off-street parking facilities are also distributed in commercial areas along Route 135, Route 9 and Oak Street, the Soldier Systems Center and Natick Center.

Parking Issues

- + Lack of parking near Natick Center is frequently cited as an issue by residents and visitors.
- + Review of parking demand and occupancy indicates that the most pressing parking issue is a lack of long-term weekday parking, in particular parking around the Natick Center MBTA commuter rail station.
- + The Town of Natick is investigating the potential for structured parking in Natick Center, with a preference for private investment.



MAP 4.10. NATICK OFF-STREET PARKING AREAS

Off-street Parking Area

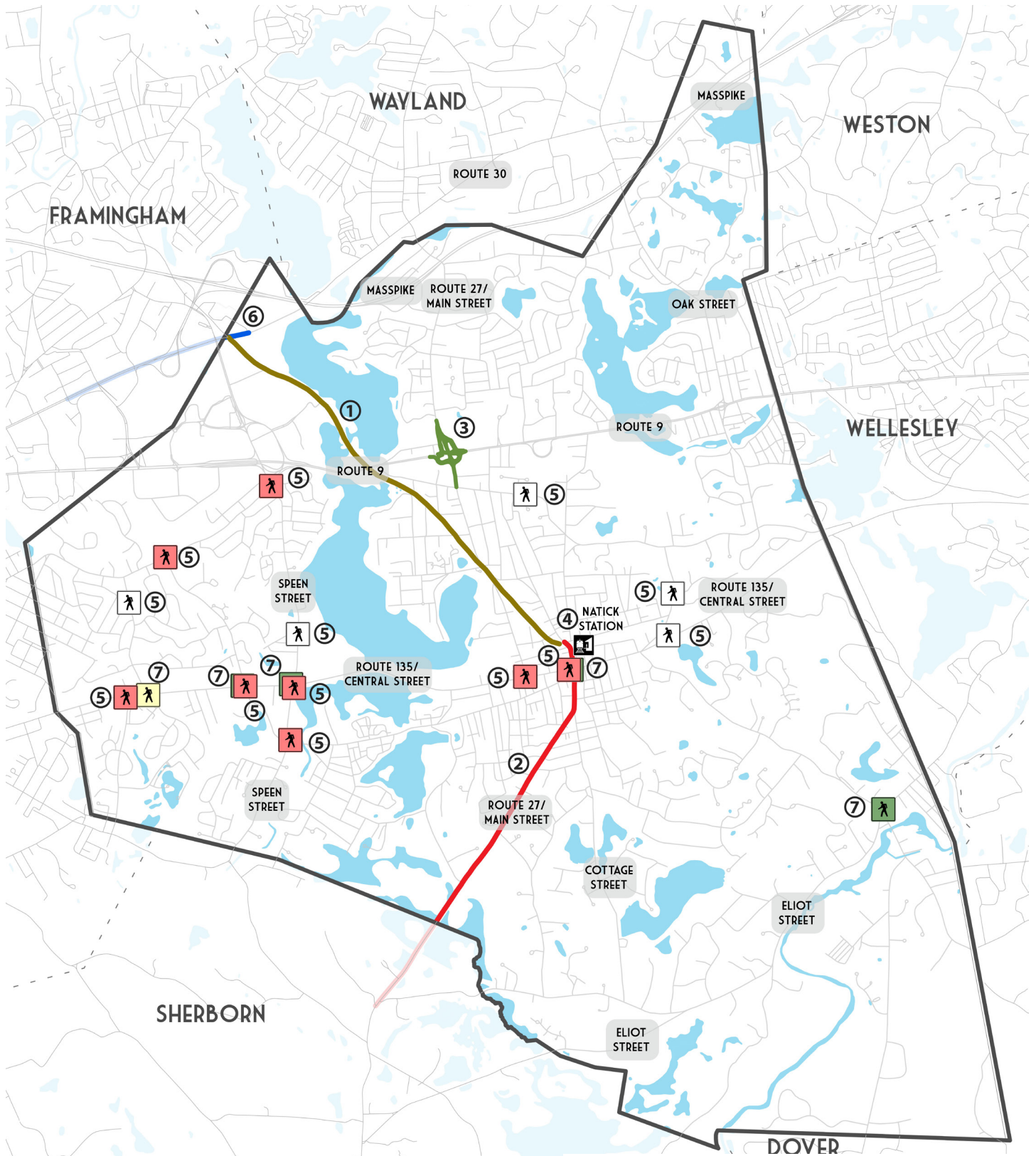
Public Capital Investment Projects

The following are planned or proposed transportation system projects that would entail investment in the transportation system using public funding. Most of the projects have funding identified, as discussed below, and therefore have a high likelihood of implementation. They will significantly improve Natick's transportation network in coming years.





There are seven Public Capital Investment Projects that have been summarized below. They are:

1. Cochituate Rail Trail (CRT)
2. Reconstruction of Route 27 (North Main Street), from North Avenue to the Wayland Town Line
3. Bridge Replacement and Interchange Improvements: Route 27 (North Main Street) Over Route 9 (Worcester Street)
4. Natick Center Station Accessibility Project
5. Natick Complete Streets Tier 3 Construction Project
6. Route 30 Arterial Segment Study in Framingham and Natick Location: Route 30 (Cochituate Road)
7. Low Cost Signal Improvements

Map 4.11 shows the locations of these projects.



MAP 4.11. PUBLIC CAPITAL INVESTMENT PROJECTS IN NATICK

- Cochichuate Rail Trail
- Reconstruction of Route 27
- Bridge Replacement and Interchange Improvements
- Route 30 Arterial Segment Study
-  MBTA Stations
-  Installation of RRFB
-  Installation of HAWK signal
-  Upgrade pedestrian signal and bicycle signs

Cochituate Rail Trail (CRT)

This \$6.7 million project entails the construction of a shared-use path with overlook areas, encompassing a 2.4-mile stretch of the abandoned Saxonville Branch of the former Boston and Albany Railroad (now CSX) and a 0.25-mile connection to Speen Street known as the Wonder Bread Spur. The project follows the existing railroad right-of-way from Commonwealth Road (Route 30) in Framingham to the Natick Center MBTA Commuter Rail Station. Other improvements include connection to the Framingham segment of the CRT via a new bridge over Route 30, replacement of an existing bridge structure over Route 9 with a prefabricated pedestrian bridge, storm water management design, and additional path access locations. The project is funded in the 2018 elements of the Boston Region Metropolitan Planning Organization (MPO) Transportation Improvement Program (TIP), with construction expected to begin winter 2018-2019.

Reconstruction of Route 27 (North Main Street), from North Avenue to the Wayland Town Line

The project entails reconstruction of Route 27 (North Main Street) beginning at North Avenue (just north of Route 135) and extends northerly 2.2 miles to the Wayland town line, excluding the Route 9 interchange (see subsequent project). The proposed improvements include minor widening of the section of roadway south of Route 9 to a more consistent cross-section; Complete Streets design improvements, including sidewalk reconstruction to provide consistent, high-quality concrete sidewalks on both sides of the roadway; and traffic signal upgrades, including improvements to existing signals and, if warrants are met, new signals at Lake Street, Rutledge Road and Pine Street. The \$10.7 million project is funded in the 2019 elements of the Boston Region MPO TIP, with construction expected to begin autumn 2019.

Bridge Replacement and Interchange Improvements: Route 27 (North Main Street) Over Route 9 (Worcester Street)

The purpose of this \$24.6 million project is to address deterioration in the Route 27 bridge over Route 9, improve roadway and ramp geometry, and improve traffic operations and safety. Proposed operational improvements include modifying the existing three quadrant cloverleaf interchange to provide a partial cloverleaf ramping system with auxiliary lanes on Route 9. It also includes bridge replacement, modification of cross-section elements to Route 9 and Route 27, consolidation of access control, additional pedestrian and bicycle facilities and crossing accommodations, traffic signal upgrades, new traffic signals, construction/reconstruction of sidewalks, as well as grading and related improvements to storm water collection facilities. The project is funded in the 2019 elements of the Boston Region MPO TIP.

Natick Center Station Accessibility Project

The primary purpose of this \$3.5 million project is to support current and projected transit ridership in the Town of Natick by providing an upgraded MBTA commuter rail station that integrates universal access in accordance with the Americans with Disabilities Act (ADA). A reconstructed Natick Center Station will also provide enhanced access for all modes of travel; facilitate efficient rail operations, and support community and economic development in Natick Center.

A reconstructed station would expand the current function of a commuter rail platform to become a multimodal transit hub integrating the existing MBTA commuter rail service, MWRTA bus service, and a potential connection to the future Cochituate Rail Trail, all within a vibrant, transit oriented, walkable Natick Center. The motivation behind this study was the lack of ADA-compliant access to the commuter rail platforms (no ramps or elevators); inadequate pick-up/drop off space for private vehicles and buses at the existing station; inadequate bicycle parking provided at the existing station; limited pedestrian access to the existing station due to steep, narrow, single point of access to platforms, and insufficient pedestrian paths from Natick Center; and lack of an established connection for the planned Cochituate Rail Trail (CRT).

Primary recommendations of this study include:

- + Design of connections between the proposed CRT and the Natick Center MBTA station is planned for street level due to safety concerns associated with a direct connection from the proposed trail to the commuter rail platform.
- + The study also recognizes the possibility of an additional long-range alternative: a future transit connection between Natick Center Station and the CRT. As a result of increased development density, MWRTA expects ridership demand to increase between Natick Center and the vicinity of the Natick Mall. Therefore, the study proposes that future options for “clean transit” use of the CRT in the future (i.e., electric vehicles so that emissions are not a concern with a multi-modal corridor), in addition to the pedestrians and bicyclists, should not be precluded.

Natick Complete Streets Tier 3 Construction Project

This \$6.7 million project entails the construction of a shared-use path with overlook areas, encompassing a 2.4-mile stretch of the abandoned Saxonville Branch of the former Boston and Albany Railroad (now CSX) and a 0.25-mile connection to Speen Street known as the Wonder Bread Spur. The project follows the existing railroad right-of-way from Commonwealth Road (Route 30) in Framingham to the Natick Center MBTA Commuter Rail Station. Other improvements include connection to the Framingham segment of the CRT via a new bridge over Route 30, replacement of an existing bridge structure over Route 9 with a prefabricated pedestrian bridge, storm water management design, and additional path access locations. The project is funded in the 2018 elements of the Boston Region Metropolitan Planning Organization (MPO) Transportation Improvement Program (TIP), with construction expected to begin winter 2018-2019.

Route 30 Arterial Segment Study in Framingham and Natick Location: Route 30 (Cochituate Road)

In 2013, the Central Transportation Planning Staff (CTPS) of the Boston Region MPO completed a corridor study of Route 30 from Ring Road in Framingham to the TJX Companies driveway in Natick. The study purpose was to address significant mobility, congestion and safety issues for pedestrians, bicycles, and motorists in the segment. The study provided alternatives to address the operational and safety issues that would need to be addressed after the completion of the Cochituate Rail Trail (CRT) project in the near future. The following issues were identified:

- + Trail crossings should follow pedestrian desire lines
- + Bicyclists should not have to walk their bikes to an intersection
- + Crossings should avoid busy driveways
- + Crossings should avoid site conditions that pose risks for trail users, e.g., crossing busy Route 30 at-grade.

The study identified three options for closing the gaps in the existing bicycle and pedestrian circulation, including recommendations for signs and markings; traffic signal retiming schemes at four signalized intersections; traffic management options for the Route 30 segment between Speen Street and the Massachusetts Turnpike on ramp; and six medium- and long-term concepts for reconfiguring the connection of Speen Street and Route 30 to the Massachusetts Turnpike, including adding a westbound traffic lane to Route 30 from the TJX driveway to the I-90 connector.

The preferred alternative for pedestrian and bicycle accommodations entails construction of new sidewalks and multiuse paths around the outer loop of the MassPike connector south of Route 30 for accessing businesses near the Route 30 and Speen Street intersection, as well as the Cochituate Rail Trail. The MPO staff also analyzed four crossing options to improve safety for trail users at the Route 30 crossing; the preferred alternative was a grade separation (overpass or underpass), though this is a very expensive option with significant property impacts. Other improvement recommendations included installing sidewalk buffers, installing countdown timers at signals to help pedestrians make informed decisions about crossing the road, shared bicycle lane markings (“sharrows”) on pavements, and fine-tuning traffic signals on Route 30 from Beacon Street to Burr Street and Speen Street. Additional lane geometry modifications to improve safety at various commercial driveways were also suggested. This project ties in with The Golden Triangle Planning Study.

Low Cost Signal Improvements

The Boston Region MPO funded a project to diagnose traffic congestion and operational issues at key intersections in Natick. The project has evaluated traffic issues at several Natick intersections, and will provide low cost traffic signal timing and phasing improvements to reduce vehicle delay and traffic congestion and ensure that intersections comply with all current State and Federal regulations. The Town of Natick selected the following intersections:

- + West Central Street (Route 135) at Mill Street
- + East Central Street (Route 135)/West Central Street (Route 135)/Main Street (Route 27)/South Main Street (Route 27)
- + West Central Street (Route 135) at Speen Street
- + Union Street/Pleasant Street/Eliot Street (Route 16)

Recommendations for these intersections focused on adjusting signal timings and updating signal equipment.