



Executive Summary

Framingham has embarked on the development of a Transportation Master Plan (TMP). Given the size of Framingham and its complexity, this process has been subdivided into different phases with the first phase, completed in 2017. The second phase, detailed herein, focuses on the future 2040 conditions and recommends improvements and policy changes for the City to consider.

In 2016, a Framingham Special Town Meeting resolution requested the completion of a comprehensive study of traffic and other impacts from possible future development projects. The Transportation Master Plan (Phase I), which focused on existing conditions, was completed in 2017 and an economic development strategy (Phase I) was completed in 2019. Phase II of the Framingham TMP is intended to identify the short, medium and long-term transportation actions needed to progress the City's transportation vision. The plan is meant to be a living document and roadmap for the City's decision making on transportation planning and implementation from now into the future.

A current challenge for the City of Framingham is to identify and provide the transportation infrastructure needed to enhance existing and active businesses; support and enhance the downtown area; and improve the economy and quality of life for residents of the City. The plan presents five focus areas that set the framework for the implementation plan, which will assist the City in meeting the goals and objectives that are presented in this document. The recommendations are organized into the following focus areas:



Traffic Management



Multimodal Corridor Improvements



Pedestrian & Bicycle Infrastructure



Transportation Demand Management



Public Transportation



Traffic Management

Initiatives

Improve Operational and Safety Conditions at Selected Intersections

Implementations

Intersections

Edgell Road at Edmands Road/Water Street

Provide a northbound right-turn lane when/if right of way is available and volumes necessitate the additional capacity.

Route 30 (Pleasant Street) at Temple Street/Woodmere Road

Re-align Temple Street to form a four-legged intersection with Woodmere Road

Salem End Road at Badger Road/Gates Street

Design and construct a single-lane roundabout to replace the current configuration.

Salem End Road at Temple Street

Re-stripe the Salem End Road eastbound approach to provide a single lane wide enough to allow vehicles to maneuver around left-turning vehicles

Install overhead signals with backplates to replace the existing signal poles

Construct a crosswalk across Temple Street with ADA ramps

Salem End Road at Winter Street

Optimize the signal timings and provide a northbound leading phase

Re-align the intersection to provide separate northbound left-turn, through and channelized right-turn lanes and reduce the existing offset

Route 30 (Cochituate Road) at Beacon Street

Provide a second westbound receiving lane on Route 30 as well as a tightened northwest corner radius

Route 30 (Cochituate Road) at Whittier Street/Shoppers World Drive

Redesignating the Whittier Street and Shoppers World Drive approach lanes

Move the median island in the southwest corner of the intersection slightly to the west to make room for two southbound receiving lanes

Re-align the crosswalk on the west leg of the intersection

Irving Street at Leland Street/Western Avenue & Irving Street at Herbert Street/Loring Drive

Work closely with any developer of the existing MCI-Framingham Site to redefine this neighborhood, considering the following recommendations:

- Construct an east-west roadway connecting Loring Drive and Western Avenue

- Close off the Irving Street westbound approach to the intersection of Irvin Street at Herbert Street/Loring Drive, creating a three-legged intersection

Bishop Street at Howard Street, Route 135 (Waverly Street) at Bishop Street/Beaver Street & Beaver Street at Blandin Avenue

Extend the length of the double right-turn lanes on Howard Street eastbound approach to Bishop Street

Coordinate with MBTA to ensure that these locations are improved as part of the Triple Track project and not impacted negatively

Leland Street at Beaver Street/Kendall Avenue

Tighten up the intersection to reduce the pavement width & pedestrian crossing distance across Leland Street and decrease the right-turn turning radius

Evaluate signaling the intersection, provided additional data collection confirms that volumes meet an eight-hour warrant

Route 135 (Waverly Street) at Winthrop Street

Provide additional traffic signal post on the southwest corner and separate existing signal heads to provide back plates

Fully upgrade the signal with overhead mast arms for better visibility

Clusters

Village Green Cluster

Apply treatments from updated traffic calming policy

Evaluate whether a raised crosswalk on Vernon Street and/or a raised intersection at Edgell Road / Auburn Street should be implemented

Construct a raised crosswalk at the existing midblock crosswalk along Vernon Street, if deemed appropriate

Construct a raised intersection at the intersection of Edgell Road at Auburn Street, if deemed appropriate

Central Street at Simpson Park Cluster

Dead-end Fenwick Street at its northern terminus and tee up the resulting three-legged intersection of Central Street at Haynes Road

Signalize the intersection of Central Street at Summer Street, if signal meets and eight-hour warrant



Multimodal Corridor Improvements

Initiatives

Identify "ideal" cross-sections to implement bicycle accommodations at selected corridors using MassDOT's design guidelines

Implementations

Corridors

Edgell Road, Route 9 to Sudbury Town Line

Add sharrow pavement markings and signage along the roadway

Construct sidewalks on both sides of the roadway for the entire corridor length

Implement a cross-section that provides fully separated bicycle lanes when/if the additional right-of-way is acquired

Edmunds Road, Southborough Town Line to Grove Street

Add sharrow pavement marking and signage along the roadway

Construct a sidewalk on one side of the roadway for the entire corridor length

Implement a cross-section that provides fully separated bicycle lanes when/if the additional right-of-way is acquired

Route 126, Irving Street to Ashland Town Line

Majority of this corridor is MassDOT roadway and future improvement should be initiated as a TIP project

Construct a sidewalk on one side of the roadway for the entire corridor length

Implement a cross-section that provides fully separated bicycle lanes when/if the additional right-of-way is acquired

Route 30, Route 9 to Natick Town Line

Add sharrow pavement marking and signage along the roadway, in both the northeast and southwest segments

Provide buffered bicycle lanes within the southwest segment

Construct a shared use path along the northeast segment to accommodate bicycles

Implement an adaptive signal system along the corridor



Pedestrian and Bicycle Infrastructure

Initiatives

Update crosswalk and traffic calming policies

Address missing sidewalk connections

Update Framingham's Bicycle and Pedestrian Plan

Implementations

Sidewalk Connections

Complete missing links in the sidewalk network within the downtown neighborhood

Add connections to Existing and Future trails that interact with the roadway network

Install sidewalks for street segments throughout the City where sidewalks are not provided on at least one side

Bicycle Mobility

Identify “key bike corridors” throughout City

Work with MassDOT and the Route 9 project to ensure bicycle mobility needs are incorporated into their improvements

Provide adequate bicycle parking in public spaces within the downtown and village centers

Coordinate with the MBTA to provide adequate sheltered parking at the commuter rail station

Secure appropriate bicycle protection at crossings and access to future trails in a way that best serves area residents

Coordinate with MassDOT and adjacent municipalities to plan for increased bicycle infrastructure to/from surrounding communities



Transportation Demand Management

Initiatives

Implement a more consistent and robust TDM requirement

Implementations

TDM Requirements

Require for all developments over a certain size, regardless of the district the Site is located within

TDM Plans should identify clear and measurable goals

Projects located within 0.5-miles of an MBTA Commuter Rail Station should be providing a transit subsidy of at least 50%

TDM Plans should include investing in infrastructure for bike lanes, bus lanes, etc.

All TDM Plans need to consider how to include people with disabilities and language barriers

Implemented TDM plans should be monitored at least every other year for up to five years post occupancy



Public Transportation

Implementations

The City should identify a transportation liaison that would be responsible for coordination with MWRTA

Identify high needs areas within the community where MWRTA services could be expanded

Outreach to neighborhoods where MWRTA is underutilized to spread the word

Develop a travel training program for corporate busses/shuttles and coordination with a transportation manager role

The Planning Board should keep MWRTA involved in the approval process for large development projects

Developments that have opportunities to be added along a MWRTA route should be required to reserve space for a bus stop

MWRTA & the City should monitor the existing Catch Connect pilot program & expand beyond the pilot area as needed

The City should explore adding a rideshare system that could be implemented for key locations within the City of Framingham

Coordinate with MBTA to ensure that adjacent intersections are improved as part of the Triple Track project and not impacted negatively

Identify opportunities to construct a multi-modal station to serve Commuter Rail, MWRTA routes and regional buses

Work with MassDOT to provide bus pull outs and shelters along Route 9 and Route 30

Work with MassDOT to incorporate transit into all infrastructure projects

Evaluate transit routes, headways, stop locations, amenities, and pedestrian connections to potential destinations periodically

Recommended Action Plan

Each recommendation has been prioritized as a short-term, medium-term or long-term item for implementation. The timeline utilized for these recommendations is as follows:

- | | | |
|--|--|---|
| » Short-Term Action:
1-5 Years | » Medium-Term Action:
5-10 Years | » Long-Term Action:
10+ Years |
|--|--|---|

The prioritization of project timeline was established based on the complexity of the proposed action, the potential need for federal, state, or local permitting, property impacts, and cost.

The implementation table below presents the details of the Action Plan, including construction cost estimates, potential funding sources, the responsible facilitating organizations, the implementation timeframe, and specific next steps.

Each of the projects will need to follow the multi-step process outlined below. Depending on the project, some of the early steps may have already been completed either as part of this study or in other studies.



Some recommendations are not anticipated to require environmental review and permitting. More complex recommendations, such as corridor improvements, will likely require more in-depth design, permitting, and environmental documentation. When projects are slated for the long-term, these initial steps would begin in the immediate- or short-term timeframes. Right-of-way acquisition is anticipated for some of the recommendations, as noted.



Recommended Action Plan—Commitment Matrix and Implementation Timeframe

Traffic Management

Recommended Action	Construction Cost ^{1,2}	Possible Funding Source(s) ³	Facilitating Organizations				Implementation Timeframe (Years)											Notes
			City of Framingham	MassDOT	MBTA	MWRTA	Short-Term					Medium-Term					Long Term	
							1	2	3	4	5	6	7	8	9	10	10+	
Intersections																		
Edgell Road at Edmands Road/Water Street																		
Northbound Right-turn Lane	\$\$	<ul style="list-style-type: none"> City funds Chapter 90 One Stop for Growth 	●														Must be warranted and right-of-way to construct it must be secured	
Route 30 (Pleasant Street) at Temple Street/Woodmere Street																		
Re-align Temple Street to form a four-legged intersection (full realignment)	\$\$\$	<ul style="list-style-type: none"> City funds State TIP One Stop for Growth 	●	●													Route 30 (Pleasant Street) is under MassDOT jurisdiction. Any future design must adhere to MassDOT design guidelines.	
Salem End Road at Badger Road/Gates Street																		
Design and construct a single-lane roundabout	\$\$\$	<ul style="list-style-type: none"> City funds State TIP Chapter 90 One Stop for Growth 	●															
Salem End Road at Temple Street																		
Restripe Salem End Road eastbound approach	\$	<ul style="list-style-type: none"> City funds Chapter 90 One Stop for Growth 	●															
Install overhead signals with backplates	\$	<ul style="list-style-type: none"> City funds Chapter 90 One Stop for Growth 	●															
Construct a crosswalk across Temple Street with ADA ramps	\$	<ul style="list-style-type: none"> City funds Chapter 90 One Stop for Growth 	●															
Salem End Road at Winter Street																		
Optimize signal timings and provide a northbound leading phase	\$	<ul style="list-style-type: none"> City funds Chapter 90 One Stop for Growth 	●															
Re-align the intersection and provide formal northbound left-turn lane	\$	<ul style="list-style-type: none"> City funds Chapter 90 One Stop for Growth 	●															
Route 30 (Cochituate Road) at Beacon Street																		
Provide a second westbound receiving lane on Route 30 and tighten northwest corner radius	\$	<ul style="list-style-type: none"> City funds Chapter 90 One Stop for Growth HSIP 	●															

Recommended Action	Construction Cost ^{1,2}	Possible Funding Source(s) ³	Facilitating Organizations				Implementation Timeframe (Years)											Notes
			City of Framingham	MassDOT	MBTA	MWRTA	Short-Term					Medium-Term					Long Term	
							1	2	3	4	5	6	7	8	9	10	10+	
Route 30 (Cochituate Road) at Whittier Street/Shoppers World Drive																		
Redesignate the Whittier Street and Shopper World Drive approach lanes, move the median island in the southwest corner of the intersection and re-align the crosswalk on the west leg of the intersection	\$	<ul style="list-style-type: none"> City funds Chapter 90 One Stop for Growth HSIP 	●															
Route 30 (Cochituate Road) at Burr Street																		
Evaluate access to Burr Street	\$	<ul style="list-style-type: none"> Chapter 90 One Stop for Growth HSIP 	●														Improvements at this location should be coordinated with MassDOT given the proximity of the I-90 ramp.	
Irving Street at Leland Street/Western Avenue & Irving Street at Herbert Street/Loring Drive																		
Work closely with any developer to redefine this neighborhood through the following improvements	\$\$\$	<ul style="list-style-type: none"> Private Developer 	●															
Bishop Street at Howard Street, Route 135 (Waverly Street) at Bishop Street/Beaver Street & Beaver Street at Blandin Avenue																		
Extend the length of the double right-turn lanes on Howard Street eastbound approach to Bishop Street	\$	<ul style="list-style-type: none"> City funds Chapter 90 One Stop for Growth HSIP 	●															
Work with MBTA to ensure that these locations are improved as part of the Worcester Triple Track project and not impacted negatively	\$	<ul style="list-style-type: none"> City funds Chapter 90 One Stop for Growth HSIP 	●		●													
Leland Street at Beaver Street/Kendall Avenue																		
Collect additional data to confirm that this location meets eight-hour signal warrant	\$	<ul style="list-style-type: none"> City funds One Stop for Growth 	●															
Implement geometric changes	\$	<ul style="list-style-type: none"> City funds Chapter 90 One Stop for Growth 	●														Includes reducing the pavement width across Leland Street at the intersection, reducing the pedestrian crossing, and decreasing the turning radius from Leland Street to Kendall Ave	
Signalize the intersection	\$\$	<ul style="list-style-type: none"> City funds Chapter 90 One Stop for Growth 	●														Additional data collection must confirm that volumes meet eight-hour signal warrant	
Route 135 (Waverly Street) at Winthrop Street																		
Provide back plates on signal heads, where missing	\$	<ul style="list-style-type: none"> City funds Chapter 90 One Stop for Growth 	●															
Fully upgrade the signal with overhead mast arms	\$\$	<ul style="list-style-type: none"> City funds Chapter 90 One Stop for Growth 	●															



Recommended Action Plan—Commitment Matrix and Implementation Timeframe

Multimodal Corridor Improvements

Recommended Action	Construction Cost ^{1,2}	Possible Funding Source(s) ³	Facilitating Organizations				Implementation Timeframe (Years)										Notes	
			City of Framingham	MassDOT	MBTA	MWRTA	Short-Term					Medium-Term						Long Term
							1	2	3	4	5	6	7	8	9	10		10+
Edgell Road, Route 9 to Sudbury Town Line																		
Add sharrow pavement markings and signage along the roadway	\$	<ul style="list-style-type: none"> City funds Chapter 90 Complete Streets One Stop for Growth 	●															
Construct sidewalks on both sides of the roadway for the entire corridor length	\$\$	<ul style="list-style-type: none"> City funds Chapter 90 Complete Streets One Stop for Growth 	●															
Implement a cross-section that provides fully separated bicycle lanes	\$\$\$	<ul style="list-style-type: none"> City funds State TIP Complete Streets One Stop for Growth 	●															Additional right-of-way must be secured
Edmunds Road, Southborough Town Line to Grove Street																		
Add sharrow pavement markings and signage along the roadway	\$	<ul style="list-style-type: none"> City funds Chapter 90 Complete Streets One Stop for Growth 	●															
Construct a sidewalk on one side of the roadway for the entire corridor length	\$\$	<ul style="list-style-type: none"> City funds Chapter 90 Complete Streets One Stop for Growth 	●															
Implement a cross-section that provides fully separated bicycle lanes	\$\$\$	<ul style="list-style-type: none"> City funds State TIP Complete Streets One Stop for Growth 	●															Additional right-of-way must be secured
Route 126, Irving Street to Ashland Town Line																		
Construct a sidewalk on one side of the roadway for the entire corridor length	\$\$	<ul style="list-style-type: none"> City funds State TIP Complete Streets One Stop for Growth 	●	●														
Implement a cross-section that provides fully separated bicycle lanes	\$\$\$	<ul style="list-style-type: none"> City funds State TIP Complete Streets One Stop for Growth 	●	●														Additional right-of-way must be secured

Recommended Action	Construction Cost ^{1,2}	Possible Funding Source(s) ³	Facilitating Organizations				Implementation Timeframe (Years)											Notes
			City of Framingham	MassDOT	MBTA	MWRTA	Short-Term					Medium-Term					Long Term	
							1	2	3	4	5	6	7	8	9	10	10+	
Route 30, Route 9 to Natick Town Line: Northeast Segment																		
Add sharrow pavement markings and signage along the roadway	\$	<ul style="list-style-type: none"> City funds Chapter 90 Complete Streets One Stop for Growth 	●															
Construct a shared use path	\$\$\$	<ul style="list-style-type: none"> City funds State TIP Complete Streets One Stop for Growth 	●															
Route 30, Route 9 to Natick Town Line: Southwest Segment																		
Add sharrow pavement markings and signage along the roadway	\$	<ul style="list-style-type: none"> City funds Chapter 90 Complete Streets One Stop for Growth 	●															
Provide buffered bicycle lanes	\$\$\$	<ul style="list-style-type: none"> City funds State TIP Complete Streets One Stop for Growth 	●														The cross-section will be reduced to one vehicular travel lane in each direction as well as a northbound parking lane	
Route 30, Entire Corridor																		
Install adaptive signal system along the corridor	\$\$\$	<ul style="list-style-type: none"> City funds Chapter 90 Complete Streets One Stop for Growth 	●															

¹ Construction cost estimates in 2021 dollars. Estimates do not include survey, design fees, right-of-way (ROW) acquisition, permitting, drainage improvements, or utility modifications (if necessary).

² Cost ranges include the following tiers:

\$—up to \$500,000

\$\$—\$500,000 to \$1,000,000

\$\$\$—over \$1,000,000

³ State TIP = State Transportation Improvement Program; HSIP = Highway Safety Improvement Program



Recommended Action Plan—Commitment Matrix and Implementation Timeframe

Pedestrian and Bicycle Infrastructure

Recommended Action	Construction Cost ^{1,2}	Possible Funding Source(s) ³	Facilitating Organizations				Implementation Timeframe (Years)											Notes
			City of Framingham	MassDOT	MBTA	MWRTA	Short-Term					Medium-Term					Long Term	
							1	2	3	4	5	6	7	8	9	10	10+	
Policy Updates																		
Update the City's Crosswalk Policy	\$	• City funds	●				////											
Update the City's Traffic Calming Policy	\$	• City funds	●				////											
Update the City's Bicycle & Pedestrian Plan	\$	• City funds	●				////				////						To be updated every five years.	
Sidewalk Connections																		
Downtown Missing Links	\$\$	• City funds • Complete Streets • One Stop for Growth • Safe Routes to Schools	●				////	////	////	////	////						Prioritize completing the missing links in the sidewalk network within the downtown neighborhood.	
Existing Rail Trail Crossings	\$\$	• City funds • Complete Streets • One Stop for Growth	●				////	////	////	////	////	////	////	////			Consider adding connections to the Cochituate Rail Trail and existing Aqueduct trails connections to the roadway network.	
Future Rail Trail Crossings	\$\$	• City funds • Complete Streets • One Stop for Growth	●				////	////	////	////	////	////	////	////	////	////	Plan for future connections to the Bruce Freeman Rail Trail, future Aqueduct trails and Upper Charles Trail	
Citywide Missing Sidewalks	\$\$\$	• City funds • Complete Streets • One Stop for Growth • Safe Routes to Schools	●				////	////	////	////	////	////	////	////	////	////	Develop a plan and schedule for installing sidewalks for street segments throughout the City where sidewalks were not provided on at least one side.	

¹ Construction cost estimates in 2021 dollars. Estimates do not include survey, design fees, right-of-way (ROW) acquisition, permitting, drainage improvements, or utility modifications (if necessary).

² Cost ranges include the following tiers:

\$—up to \$500,000

\$\$—\$500,000 to \$1,000,000

\$\$\$—over \$1,000,000

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Recommended Action Plan—Commitment Matrix and Implementation Timeframe

Transportation Demand Management

Recommended Action	Construction Cost ^{1,2}	Possible Funding Source(s) ³	Facilitating Organizations				Implementation Timeframe (Years)										Notes		
			City of Framingham	MassDOT	MBTA	MWRTA	Short-Term					Medium-Term						Long Term	
							1	2	3	4	5	6	7	8	9	10		10+	
Implement a more consistent and robust TDM requirement	\$	• City funds	●					////											

¹ Construction cost estimates in 2021 dollars. Estimates do not include survey, design fees, right-of-way (ROW) acquisition, permitting, drainage improvements, or utility modifications (if necessary).

² Cost ranges include the following tiers:

\$—up to \$500,000

\$\$—\$500,000 to \$1,000,000

\$\$\$—over \$1,000,000

³ State TIP = State Transportation Improvement Program; HSIP = Highway Safety Improvement Program



Recommended Action Plan—Commitment Matrix and Implementation Timeframe

Public Transit

Recommended Action	Construction Cost ^{1,2}	Possible Funding Source(s) ³	Facilitating Organizations				Implementation Timeframe (Years)											Notes		
			City of Framingham	MassDOT	MBTA	MWRTA	Short-Term					Medium-Term					Long Term			
							1	2	3	4	5	6	7	8	9	10	10+			
Identify a transportation liaison	\$	• City funds	●			●	1													
Keep MWRTA involved in the review process for large developments	\$	• N/A	●			●	1													
Monitor the existing Catch Connect pilot program & expand beyond the pilot area as needed	\$	• City funds • MWRTA funds	●			●	1	2	3	4										
Explore adding a rideshare system	\$	• City funds	●			●	1	2	3											
Consider implementing additional MWRTA connections to the north and south	\$	• City funds • MWRTA funds				●	1	2	3	4	5	6								
Construct a multi-modal station that could serve Commuter Rail, MWRTA routes and regional buses at one location	\$\$	• City funds • MBTA funds • MWRTA funds	●		●	●	1	2	3	4	5	6	7	8	9	10				
Ensure that the intersections located directly adjacent to the Worcester Line Track and Stations Accessibility Improvements project are improved as part of the project and not impacted negatively	\$	• MBTA funds	●		●		1	2	3	4	5	6								
Work with MassDOT to provide bus pull outs and shelters along Route 9 and Route 30 & incorporate transit into all infrastructure projects	\$	• City funds • MBTA funds • MWRTA funds	●	●	●	●	1	2	3	4	5	6								
Evaluate transit routes, headways, stop locations, amenities, and pedestrian connections to potential destinations periodically	\$	• City funds	●				1	2	3	4	5	6								

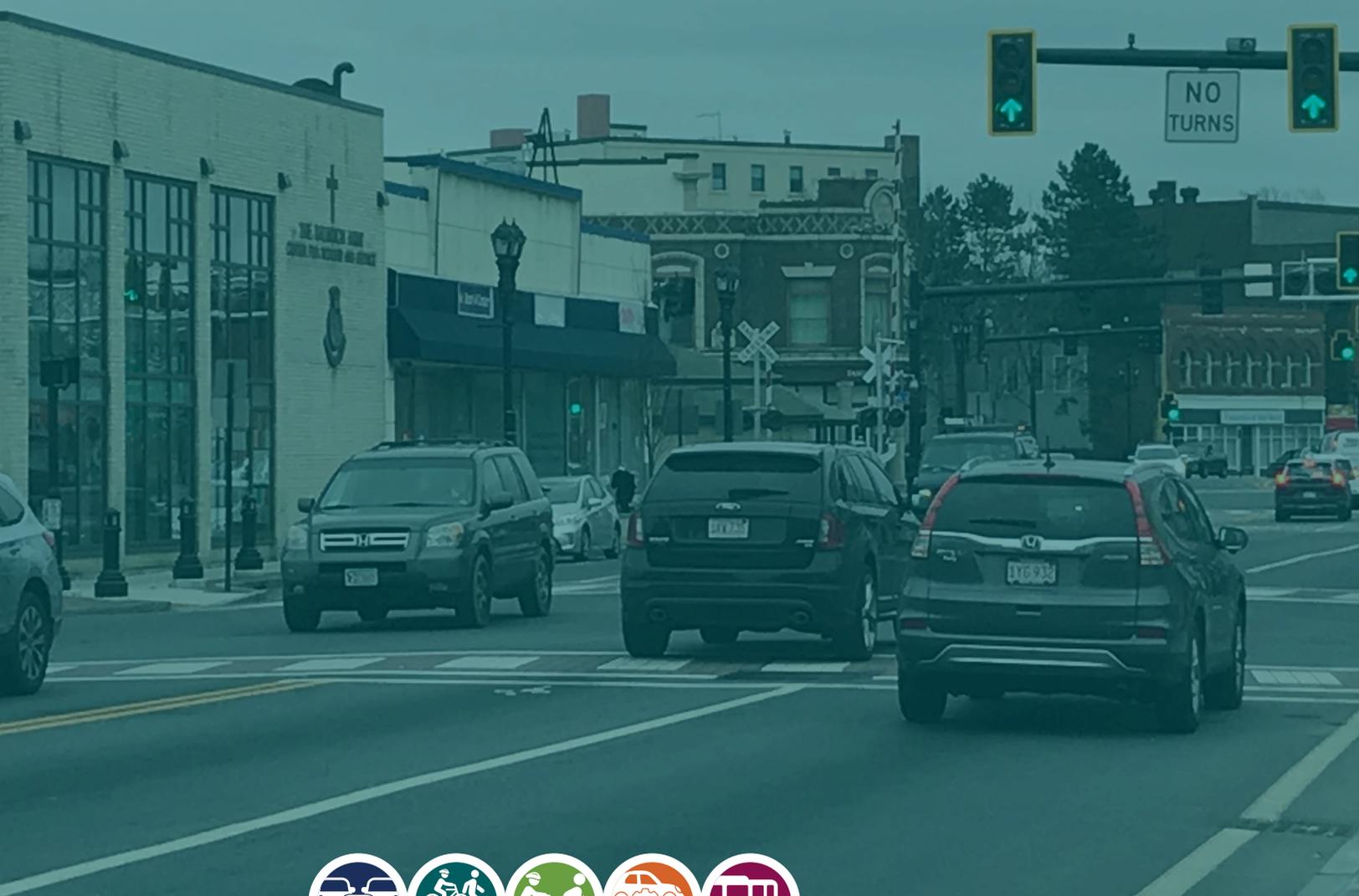
¹ Construction cost estimates in 2021 dollars. Estimates do not include survey, design fees, right-of-way (ROW) acquisition, permitting, drainage improvements, or utility modifications (if necessary).

² Cost ranges include the following tiers:
 \$—up to \$500,000
 \$\$—\$500,000 to \$1,000,000
 \$\$\$—over \$1,000,000

³ State TIP = State Transportation Improvement Program; HSIP = Highway Safety Improvement Program

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PREPARED BY



Transportation Master Plan—Phase II

Framingham, Massachusetts

DECEMBER 2021

Transportation Master Plan Phase II

Framingham, Massachusetts

PREPARED FOR

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DECEMBER 2021

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1

Introduction

Establishing a Transportation Master Plan is more than accommodating the needs of a transportation system’s users—it’s also about addressing issues such as congestion, active transportation, traffic calming, roadway capacity, and safety. A successful plan must identify solutions that evaluate current and future needs, present strategies that will enhance the community’s transportation system over the next 20+ years, and provide a detailed roadmap with action-oriented, measurable goals for implementation. Given the size of Framingham and its complexity, this process has been subdivided into different phases with the first phase, completed in 2017, documenting the existing conditions of Framingham’s transportation network. The second phase, detailed herein, focuses on the future 2040 conditions and beyond with improvements and policy changes for the City to consider.

Project History

In 2016, a Framingham Special Town Meeting resolution requested the completion of a comprehensive study of traffic and other impacts from possible future development projects. The Transportation Master Plan (Phase I), which focused on existing conditions, was completed in 2017. An Economic Development Strategy (Phase I) was completed in 2019, and the Economic Development Strategy (Phase II) is currently in development.

What is a Transportation Master Plan?

A Transportation Master Plan (TMP) is a document that summarizes the process of analyzing and prioritizing the current and future needs of a transportation system, including all modes and abilities. The first step to creating a favorable TMP is to collect and synthesize data to be used in prioritizing and goal setting. The next step is to identify opportunities to improve the existing system and to suggest updates to local policies and set performance measures. A TMP is also used to prioritize project expenditures and establish an action plan, with goals and objectives, that help to implement the final adopted Plan.

Project Goals and Objectives

The Transportation Master Plan is a policy guide for future development describing what the community is like today and what direction it chooses to go in the future. Framingham's Division of Planning and Community Development crafted a vision statement with goals and policies for the Framingham Master Plan Phase I that has been carried through in the recommendations presented herein.

The following transportation elements were included in this vision statement:

- » Establish Framingham's Downtown as a walkable, vibrant center with easy access to parking, the rail station and other public transportation
- » Establish connections that provide a pleasant linkage to and enhance the experience of the downtown. Additionally, have connections to surrounding neighborhoods, the hospital and institutions of higher education
- » Establish walkable and safe communities
- » Establish connections to public amenities forming a system of open spaces linked together by a network of walking and biking trails
- » Provide accessible and affordable transportation for both the elderly population and the City's youth
- » Actively provide, support and pursue alternative modes of transportation, including the use of public transportation and walking and biking by providing the necessary infrastructure including sidewalks and bike lanes

Purpose

Phase II of the Framingham TMP is intended to identify the short, medium and long-term transportation actions needed to realize the City's transportation vision. The plan is meant to be a living document and roadmap for the City's decision making on transportation planning and implementation from now into the future.

The following tasks were undertaken in the preparation of the Phase II TMP:

- » Develop future 2040 conditions and an understanding of anticipated future needs
- » Establish recommendations for core locations (16 intersections and 6 roadway corridors) identified by the working group
- » Evaluate future conditions
- » Identify existing and future deficiencies
- » Develop potential alternatives and make recommendations for each study area location
- » Prepare TMP Phase II report

The TMP Phase II report was developed in coordination with the Framingham Department of Public Works (DPW) with input from the Division of Planning and Community Development. This TMP plans for growth and mitigating impacts as well as identifies future transportation investments to be included in the City's Capital Improvements Plan.

Collaboration

In order to help ensure that the City's future transportation system aligned with the community's needs and goals, it was important to gather public feedback when developing the Plan. There were multiple opportunities for public input throughout the planning process

- › **Understanding**
 - Working Group Meetings (February 1st, March 8th, March 9th, March 30th, April 21st)
 - Public Meeting (April 26th)
- › **Future Conditions Analysis and Alternatives Considered**
 - Working Group Meetings (June 1st, July 20th, August 6th, August 10th)
 - Public Meeting (August 11th)
- › **Alternatives Analysis**
 - Working Group Meetings (September 15th, October 5th)
 - Public Workshop (October 21st)

› **Prioritization and Final Report**

- Working Group Meetings (November 22nd)
- Public Meeting (December 8th)

Public Workshop

A virtual public workshop was held on October 21, 2021. Attendees were informed on the project and were able to provide their thoughts and concerns in a workshop setting. The workshop was organized into three categories: bicycle and pedestrian connectivity, traffic congestion and crash locations, and neighborhood connections, public transit and traffic calming.

Public Informational Meeting

Three virtual public informational meetings were held for Phase II of the TMP. VHB presented relevant updates and summaries of work complete at each meeting. The public provided feedback during and after the meeting. A virtual meeting room was established for residents to have access to meeting recordings, project-related data, and to provide feedback outside of a formal meeting setting.

Working Group

A city staff working group was formed in order to receive input from various city departments representing city organizations and residents. The working group met twelve times throughout the planning process and included the following members.

Table 1-1 Working Group Members

Name	City Department
Simon Alexandrovich	Department of Public Works
Erika O. Jerram	Department of Planning & Community Development
Allyssa Jewell	Department of Public Works
Eric Johnson	Department of Public Works
Adam Kiel	Department of Public Works
Blake Lukis	Department of Public Works
William Sedewitz	Department of Public Works

The goal of the working group was to promote collaboration and community input throughout the development of the plan, and to help produce a TMP that aligns with the community’s vision.

Along with the working group meetings, workshop, and informational meetings, VHB conducted informational meetings with other stakeholder groups within the City of Framingham. These briefings provided valuable perspectives about the project and potential improvements. In addition to the groups represented by the Working Group, these meetings included:

- › Framingham State University
- › MetroWest Regional Transit Authority (MWRTA)

Data Sources

This TMP leverages several outside data efforts and ongoing city projects, including:

- › Bicycle & Pedestrian Plan, 2017
- › Central Transportation Planning Staff (CTPS)
- › Crosswalk Policy and Design Guidelines, 2020
- › Golden Triangle Study, November 2018
- › Route 126 Corridor Study, December 2011
- › Strategic Economic Development Plan, Saxonville & Nobscot, September 2015
- › Traffic Calming Measures Policy, 2013



2

Phase I TMP

The 2017 Phase I TMP highlighted a number of short-term improvements anticipated to be constructed over a five-year timeframe. As a living document, this Phase II TMP updates those initiatives.

Study Area

The Mass Pike (I-90) and four state-numbered roads, Route 9 (Worcester Road), Route 30 (Pleasant Street/Cochituate Road), Route 126 (Hollis Street/Concord Street) and Route 135 (Waverly Street), traverse the City. Exits 111 and 117 (previously exits 12 and 13) on the Mass Pike serve as focal points for large-scale commercial retail and business park developments. Routes 9 and Route 30 also provide east-west access through the City and are significant regional retail corridors with convenient access to the Mass Pike, while Route 135 serves as a primary east-west arterial through downtown Framingham. Route 126 connects Framingham in a north-south direction and functions as downtown’s “Main Street”.

Representative intersection locations and corridors were selected throughout the many Framingham neighborhoods to determine typical traffic operations within the City. This study area was determined in consultation with City staff to ensure that it covers all major corridors and areas of concern. The results of the analyses at these specific locations are used to determine high-level issues citywide. Figure 2.1 illustrates the Phase I study intersections and corridors.

Figure 2.1: Phase I Study Area Intersections and Corridors

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- Signaled Intersection
- Unsignaled Intersection
- ▬ Corridors

Intersection Improvements

The following is a list of Phase I study area intersections that have been improved since 2016 or where improvements are currently underway:

- › **Salem End Road at Badger Road/Gates Street:** The four-way intersection of Salem End Road at Badger Road/Gates Street east was changed into two T-intersections. The entire interchange now is three intersections:
 - Salem End Road at Gates Street west: unchanged
 - Salem End Road at Badger Road: northbound through movement no longer allowed, must turn left onto Salem End Road then right onto Gates Street west
 - Salem End Road at Gates Street east: island added to force cars exiting Gates Street to approach Salem End Road perpendicularly, pavement markings to define travel lanes, and no southbound through movement with grass area between Gates Street east and west extended to the east
- › **Central Street at Summer Street:** Summer Street was realigned to intersect Central Street perpendicularly. Summer Street channelized right-turn lane eliminated.
- › **Route 126 (Concord Street) at Old Connecticut Path:** Bike lanes added to Route 126. Pedestrian ramps improved. Crosswalk on Route 126 northbound channelized right-turn moved further north.
- › **Route 126 (Concord Street) at Summer Street:** Triangular intersection made into T-intersection. Route 126 northbound left-turn lane added.
- › **Route 30 (Cochituate Road) at Speen Street:** Route 30 widened to two through lanes per direction to the east of Speen Street.
- › **Route 135 (Waverly Street) at Bishop Street/Beaver Street:** Westbound turn lane lengths increased as part of repaving.
- › **Beaver Street at Blandin Avenue/Plaza Driveway:** Northbound left-turn lane restriped as shared left-turn/through lane.
- › **Old Connecticut Path at Speen Street/Driveway:** Old Connecticut Path eastbound right-turn lane restriped as shared through/right-turn lane with longer storage length.
- › **Cochituate Rail Trail:** The Cochituate Rail Trail is open to the public, including the new pedestrian bridge at Route 30 that connects Natick and Framingham.
- › **Edgell Road at Edmands Road/Water Street:** The intersection is being reconstructed in 2021-2022 with a new eastbound left lane and signal timing improvements. Sidewalks will be brought into ADA compliance.
- › **Edgell Road at Central Street:** The intersection is under design as a signalized T-intersection. Turn lanes for the northbound right-turn, southbound left-turn, and channelized westbound right-turn will be provided.
- › **Central Street at Water Street:** This is currently in design, specific improvements have not yet been identified.
- › **Elm Street at Central Street:** This is currently in design; no improvements could be modeled yet.

- › **Union Avenue:** The proposed improvements include full depth pavement reconstruction, sidewalk reconstruction, traffic signal improvements, streetscape improvements, bicycle accommodation, warning and regulatory signage, and pavement markings.

In addition to the Phase I study area location updates presented above, the following noteworthy project is outside of the Phase I study area is currently in design.

- › **Fountain Street at Dudley Road:** This project includes pedestrian and traffic safety improvements, replacement of the temporary traffic signal and drainage improvements. This project is currently in final design stage.

Improvement Updates

The City has provided an update of the Short-Term Improvements Recommendations listed in the Phase I TMP, summarized in Table 2-1.

Table 2-1 Short-Term Improvement Recommendations Update

Improvement Category	Issue	Improvement	City Status Update
Citywide			
Transit	Limited night and weekend service provided	Evaluate/monitor transit demand to determine if need is present	Under MBTA & MWRTA jurisdiction
Transit	Lack of bus stop amenities at most frequently used stops	Provide ADA accessible amenities including shelters, sidewalks, bicycle racks, posted schedules, etc.	Ongoing in some locations
Transit	Lack of schedule consistency between MBTA and MWRTA services	Review and modify schedules to allow for timely connections between services	Under MBTA & MWRTA jurisdiction
Transit	MBTA commuter rail Framingham/Worcester Line trains are approaching capacity on several peak period trips	Explore opportunities to provide service adjustments and/or higher capacity trains during peak periods	Under MBTA jurisdiction
Transit	Limited MBTA commuter rail Framingham/Worcester Line service in non-peak directions during peak periods	Explore opportunities to provide increased service for non-peak directions during peak periods	Planned by MBTA
Transit	Limited services provided by the MetroWest/495 TMA	Work with MetroWest/495 TMA and local employers to provide services and incentives for employees, including shuttles, subsidized transit passes, etc.	Under MetroWest/495 TMA jurisdiction
Pedestrian	Missing sidewalk segments and non-ADA compliant and "missing" pedestrian ramps	Connect missing sidewalk segments and install/reconstruct wheelchair ramps to be ADA compliant	Ongoing
Pedestrian	Narrow sidewalks or having obstructions	When reconstructing sidewalks, build at an appropriate width and relocate obstructions.	Ongoing
Bicycle	Lack of facilities along/adjacent to major corridors and limited connectivity between facilities	Construct/expand bicycle facilities	Ongoing in some locations
Bicycle	Limited information along some roads and trails	Conduct data collection efforts with a focus of capturing both bicycle commuter peak and recreational times	Ongoing in some locations

Table 2-1 Short-Term Improvement Recommendations Update (continued)

Improvement Category	Issue	Improvement	City Status Update
Citywide, continued			
Pedestrian/ Bicycle	Poor condition/lack of accommodations at intersections	Recommend future intersection improvement projects to incorporate pedestrian and bicycle accommodations	Ongoing in some locations
Parking	Parking location and supply not aligned with community goals	Designate a Parking Task Force to prioritize and implement parking strategies and plan for long-term growth	Planned
Route 9 (Worcester Road)			
Auto/Safety/ Transit	Congestion during peak commuter periods, a high number of crashes, and low on-time performance for MWRTA bus routes	Evaluate signal enhancements to improve progression along the corridor and reduce congestion, including expanding the adaptive signal system to additional locations	Route 9 adaptive signals is complete (by MassDOT)
Safety	High number of crashes	Conduct RSAs at HSIP-eligible locations to identify safety enhancements, and at locations where RSAs have been conducted, implement short-term safety enhancements.	Resurfacing and Related Work on Route 9 planned by MassDOT as part of 2026 TIP
Route 30 (Cochituate Road)			
Pedestrian/ Bicycle/Safety	Gaps in accommodations	Connect sidewalk segments and provide connections to the Cochituate Rail Trail	Connection to CRT complete
Auto/Safety	Congestion during peak commuter periods and a high number of crashes	Retime/optimize traffic signal timings; Evaluate driveway access/spacing	City pursuing funding for adaptive signals.
Safety	High number of crashes	Conduct RSAs at HSIP-eligible locations to identify safety enhancements	Need MassDOT involvement

Table 2-1 Short-Term Improvement Recommendations Update (continued)

Improvement Category	Issue	Improvement	City Status Update
Northwest Framingham			
Transit	No MWRTA service provided	Evaluate the need and desire line(s)	Under MWRTA jurisdiction
Pedestrian/Safety	Limited sidewalk connectivity	Evaluate the need and desire line(s)	City constructing improvements in Nobscot neighborhood
Auto/Safety	Speeding	Develop traffic calming strategy	Part of TMP Phase II
Saxonville			
Bridge	Bridge F-07-038 (C1-12), Potter Road over Sudbury River, has a close to poor bridge rating	Conduct maintenance including; install membrane waterproofing, repave, eliminate deck joint at pier, clean & paint steel bearings, and seal beam ends	City working with Wayland, currently designed, construction planned for 2023
Bridge	Bridge F-07-022 (C2-3), School Street over Cochituate Brook, is narrow with poor utility condition	Seek funding through the State Transportation Improvement Program (STIP) or MassDOT Small Bridge Program to replace the bridge	Planned, funding requested
Framingham Centre/Edgell Road			
Auto/Pedestrian/Bicycle	Congestion during peak commuter periods	Complete improvements to intersections along the corridor and incorporate pedestrian and bicycle accommodations	Edgell Road/Edmands Road/Water Street intersection under construction, Edgell Road at Central Street intersection under design as part of MassDOT STIP

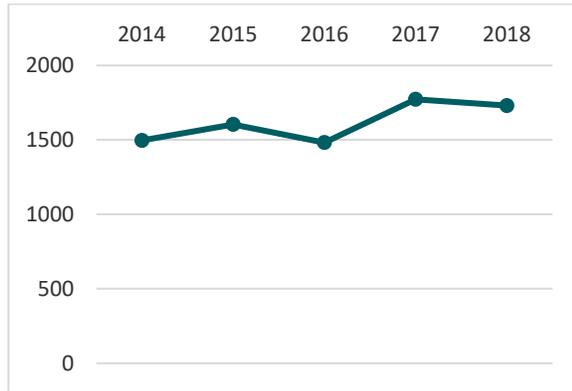
Table 2-1 Short-Term Improvement Recommendations Update (continued)

Improvement Category	Issue	Improvement	City Status Update
Salem End			
Pedestrian	Limited sidewalk connectivity and pedestrian accommodations at signalized intersections	Evaluate the need and desire line(s)	Pedestrian demands have not been identified. This improvement will be further evaluated if a more complete sidewalk network in this area is considered in the future.
Auto	Poor intersection operations and atypical intersection geometry at Salem End Road/Gates Street/Badger Road	Seek funding through the STIP to complete intersection improvements	Partial improvements at Salem End Road/Gates Street/Badger Road completed in 2019
Bridge	Bridge F-07-022 (C1-1), Salem End Road over Reservoir #1 (Stearns), has a close to poor bridge rating	Rehabilitate bridge	Complete
Downtown			
Bicycle	Lack of facilities and limited connectivity with high bicycle usage	Construct/expand bicycle facilities	Waverly Street bike lanes complete, Union Avenue bike accommodations planned as part of 2021 TIP
Safety	High number of crashes	Conduct RSAs at HSIP-eligible locations to identify safety enhancements	Reconstruction of Union Avenue planned as part of 2021 TIP

Safety Updates

The most recent five years of crash data (2014-2018) from MassDOT were reviewed. Out of the 8,083 crashes reported in Framingham in the five-year period, 13 resulted in fatalities while 267 involved pedestrians (183) or bicycles (84). Graphic 2-1 shows the number of crashes per year for the years 2014 through 2018. Figure 2.2 illustrates the location of these crashes. The citywide crash data is included in the Appendix.

Graphic 2-1 Crashes Per Year



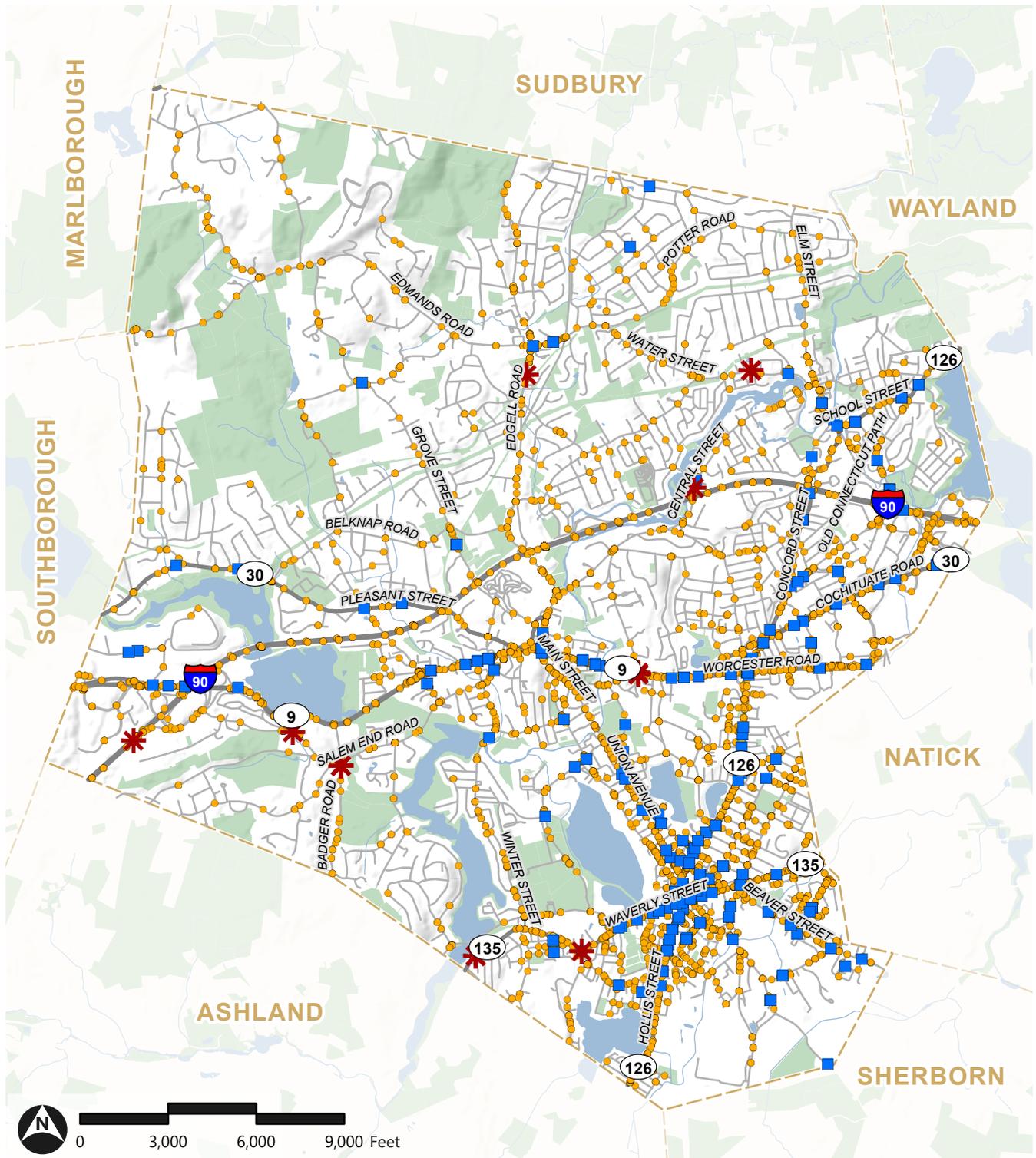
Source: MassDOT crash data, accessed Sept 2021.

Figure 2.2: Crashes

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- Crash Locations 2015-2018
- ✱ Fatal Crash
- Bicyclist/Pedestrian Involved

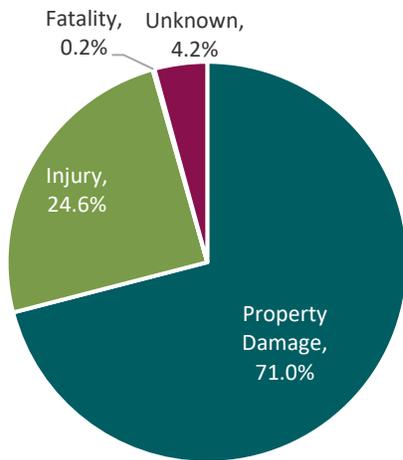
Source: MassDOT Crash Database.

Hot Spots

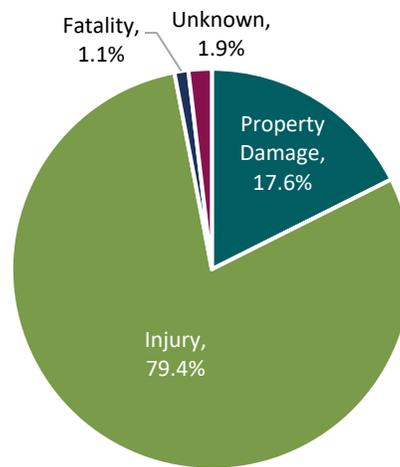
Figure 2.3 shows the locations which experienced a high concentration of crashes (“hot-spots”). As can be seen, Downtown experienced the most crashes, followed by the higher volume roadways and interchanges, including Route 9, Route 30, Route 126 and Route 135.

While crashes involving bicycles account for approximately 1% of all crashes and those involving pedestrians for approximately 2%, the much greater likelihood of injury to these users makes eliminating these crashes, consistent with Vision Zero¹, a high priority. Graphic 2-2 shows the crash severity for all crashes, while Graphic 2-3 shows the crash severity for bicycle and pedestrian crashes.

Graphic 2-2 Crash Severity – All Crashes



Graphic 2-3 Crash Severity – Bicycle and Pedestrian



Sources: MassDOT crash data, accessed Sept 2021.

Although less than 25% of all crashes resulted in injury and 0.2% resulted in a fatality, almost 80% of crashes involving pedestrian and bicycles resulted in injury and 1.1% in a fatality. Figure 2.4 illustrates where pedestrian and bicycle crashes were reported in Framingham. The highest concentration of pedestrian and bicycle crashes occurred in the Downtown area.

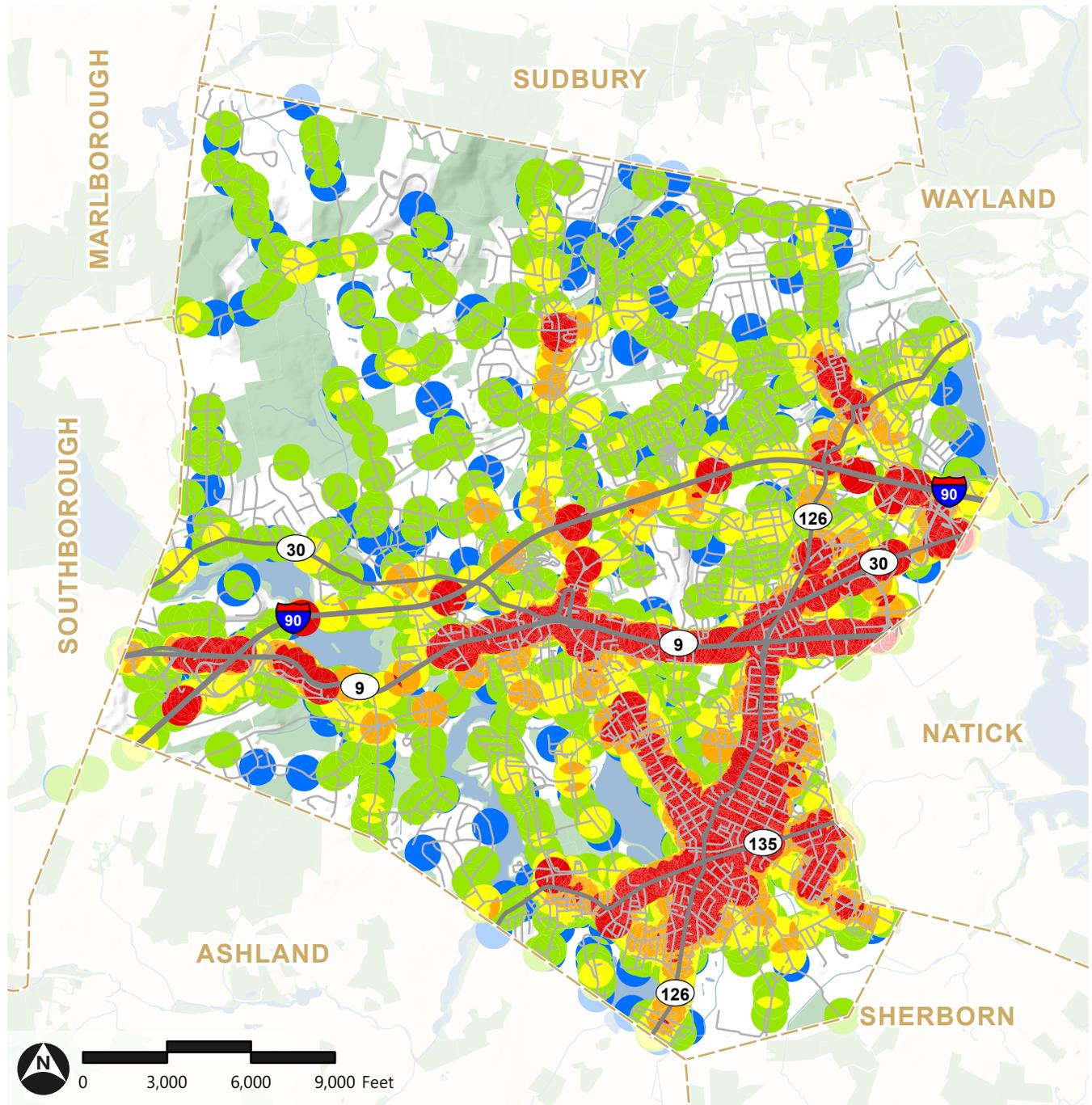
¹ “Vision Zero is a strategy to eliminate all traffic fatalities and severe injuries, while increasing safe, healthy, equitable mobility for all.”
Source: www.visionzeronetwork.org.

Figure 2.3: Crash Hot Spots

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All Motor Vehicle Crashes within 650 feet, 2015-2018

- 1
- 2 - 10
- 11 - 25
- 26 - 50
- >50

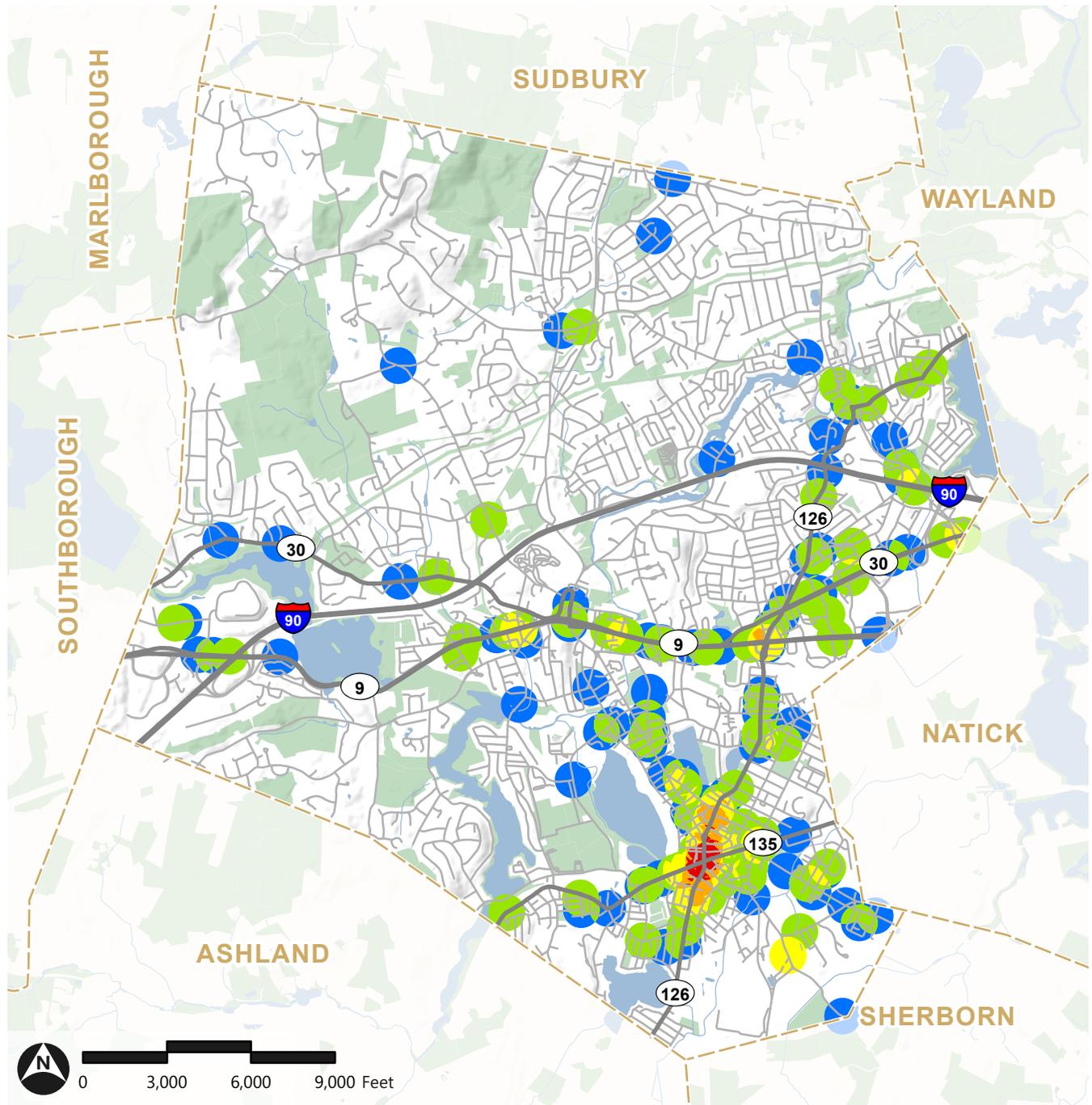
Source: MassDOT Crash Database.

Figure 2.4: Crashes Involving Bicyclists and Pedestrians

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All Motor Vehicle Crashes Involving Bicyclists, Pedestrians within 650 feet, 2015-2018

- 1
- 2 - 5
- 6 - 10
- 11 - 15
- >15

Source: MassDOT Crash Database.

Top 200 Crash Locations

MassDOT uses the crash data reported by the MassDOT Registry of Motor Vehicles (RMV) to identify the top 200 crash locations throughout the state. Locations are ranked by the number of equivalent property damage only (EPDO)² crashes contained within the cluster for the most recent three years of crash data available. Top pedestrian and bicycle locations lists are also published using the most recent ten years of crash data available. Figure 2.5 illustrates the Top 200 crash locations within Framingham.

Highway Safety Improvement Program (HSIP)

The Highway Safety Improvement Program (HSIP) is a Federal-aid program to achieve a significant reduction in traffic fatalities and serious injuries on all public roads, including non-state-owned roads³. The grant program is administered in Massachusetts by MassDOT and locations eligible for the funding program are those where the total number of EPDO crashes in the area is within the top 5% of all clusters in that region. Figure 2.5 illustrates the HSIP clusters within Framingham.

Road Safety Audits (RSAs) investigate safety issues and identify potential safety mitigation. The Commonwealth of Massachusetts, through HSIP, requires an RSA for HSIP-eligible locations. Within Framingham, RSAs have been completed at the following locations:

- › Route 9 at Maynard Road
- › Route 9 at Prospect Street and Main Street
- › Route 126 Downtown Corridor (Lincoln Street to Irving Street) – this corridor was recently reconstructed and safety improvements included in the RSA were incorporated where appropriate.
- › Union Avenue at Lincoln Street/Myrtle Street and Union Avenue at Mt. Wayte Avenue/Buckminster Street – as part of the Reconstruction of Union Avenue project⁴, geometric and traffic signal phasing/timing improvements as well as pedestrian and bicycle accommodations are being proposed along the corridor, which are consistent with some of the recommendations included in the RSA.

An RSA report is completed for each location and includes detailed safety recommendations for short-, medium-, and long-term timeframes.

2 “Equivalent property damage only” is a method of combining the numbers of crashes with the severity of the crashes based on a weighted scale. Crashes involving property damage only are reported at a minimal level of importance (1), while fatal or injury crashes are weighted at a high level of importance (21).

3 FHWA website: www.safety.fhwa.dot.gov/hsip. Accessed November 2021.

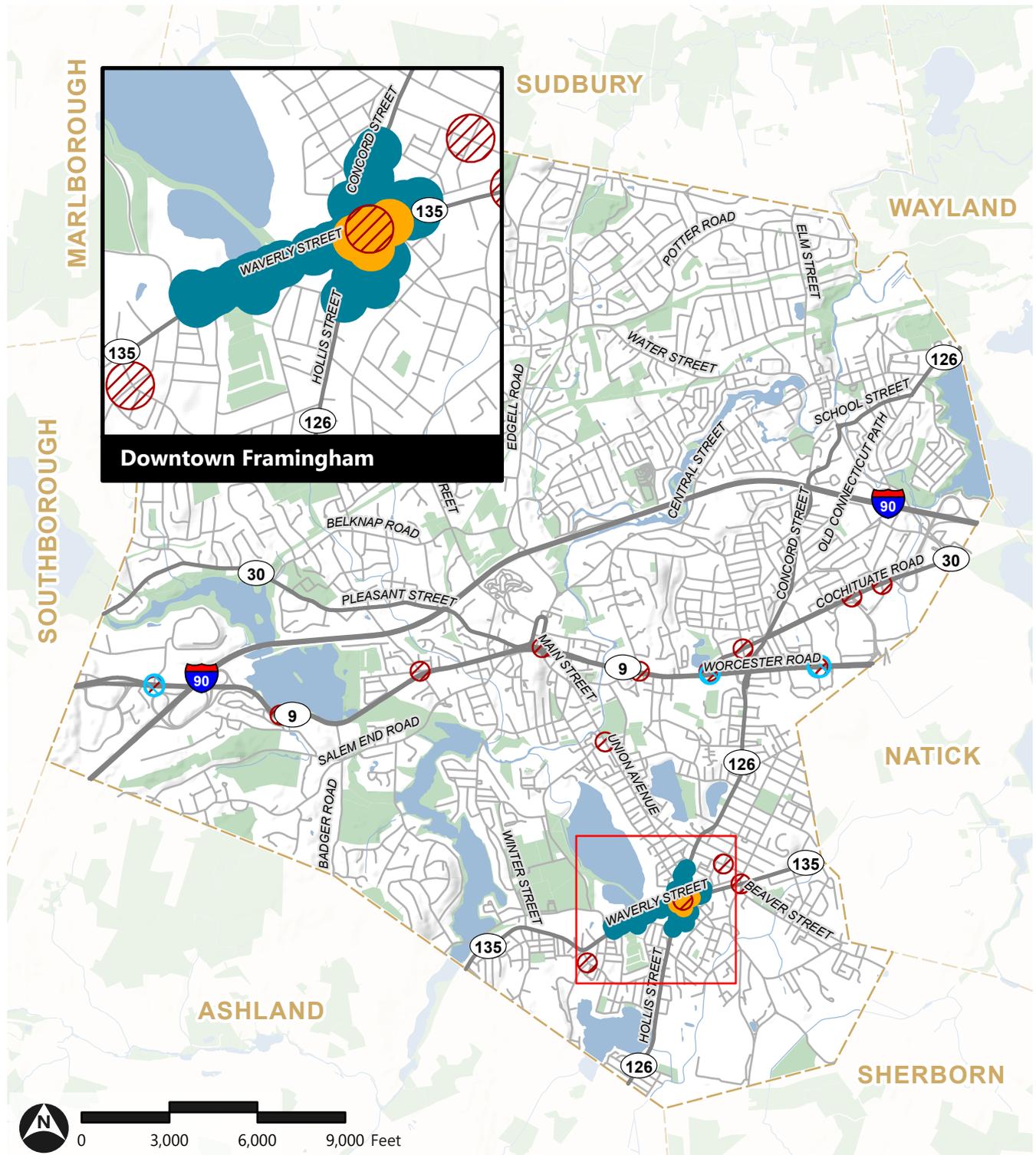
4 The project is on the Massachusetts Transportation Improvement Program (TIP) for 2021. Contractor award documents approved by FHWA in August 2021.

Figure 2.5: HSIP Clusters & Top 200 Intersection Crash Locations

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- Top 200 Crash Intersections (2015-2017)
- HSIP Crash Clusters (2015-2017)
- HSIP Bicycle Crash Clusters (2007-2016)
- HSIP Pedestrian Crash Clusters (2007-2016)

Source: MassDOT Crash Database.



3

Future 2040 Conditions

This stage of the Study establishes the framework for evaluating the transportation impacts and developing improvement alternatives. Specific travel demand forecasts were assessed, including future traffic demands on the study area roadways resulting from projected background traffic growth and proposed area developments. The year 2040 was selected as the future year for analysis.

Defined Neighborhoods

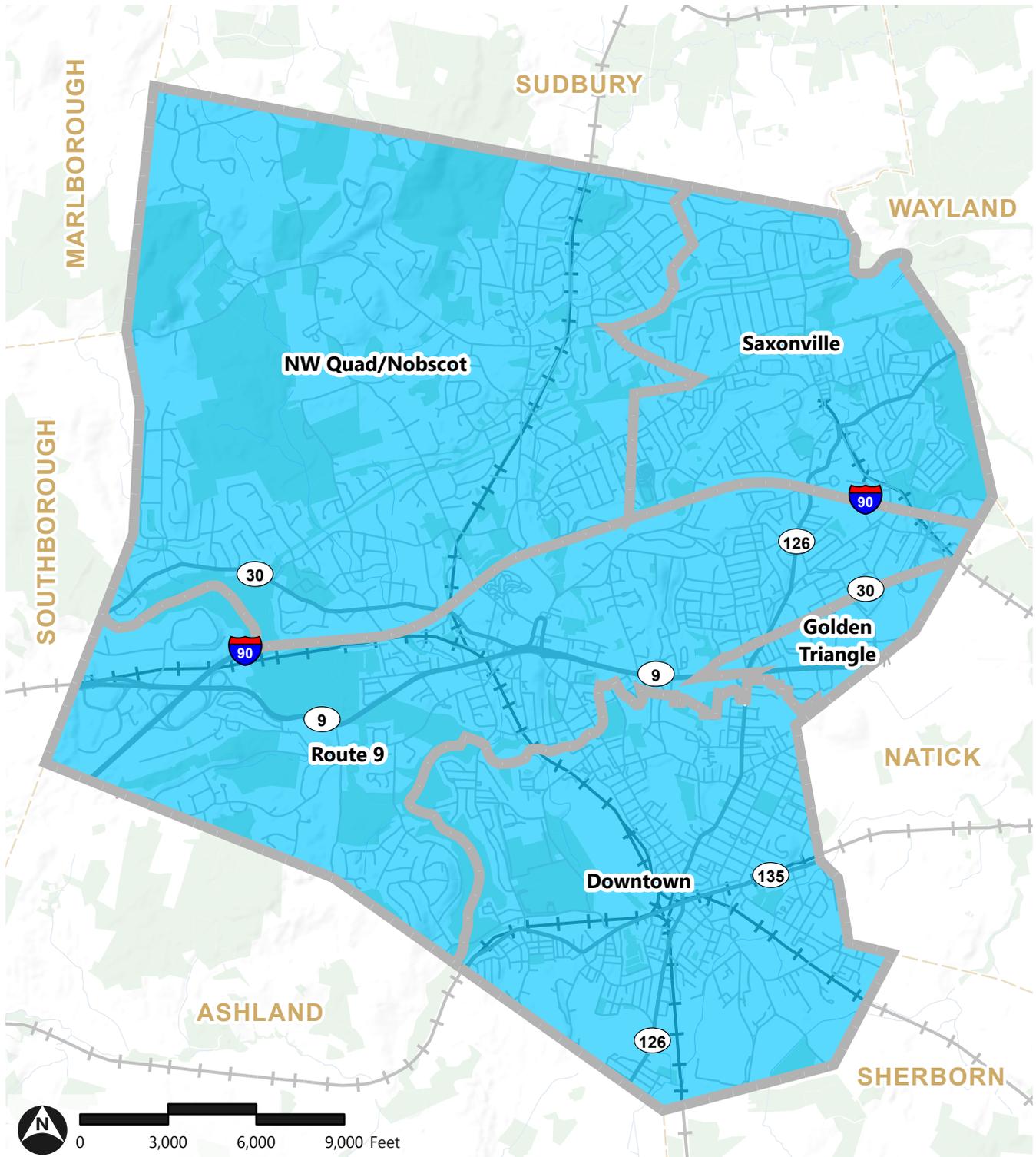
VHB divided the City into five (5) neighborhoods as part of the growth development process. Separating the City into areas based on census tract areas allowed us to group tracts with similar characterizes and growth projections to accurately project future year 2040 conditions. The breakdown of these neighborhoods is shown in Figure 3.1.

Figure 3.1: Framingham Neighborhoods

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Future Growth

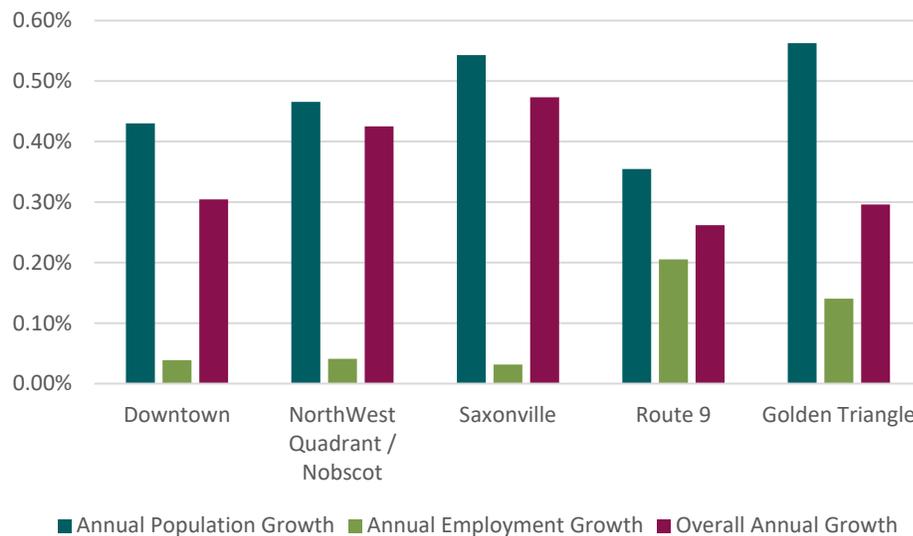
Traffic growth on area roadways is a function of the expected land development, economic activity, and changes in local and regional demographics. A frequently used procedure is to estimate the historical annual percentage increase in traffic volumes and apply that increase to the study-area traffic volumes. An alternative procedure involves the estimation of traffic generated by specific planned major developments that would be expected to affect traffic volumes on the study area roadways. For the purpose of this assessment, *both* methods were utilized to present a conservative analysis.

Historic Traffic Growth

Central Transportation Planning Staff (CTPS) historical data and growth projections were reviewed to establish a rate at which traffic volumes can be expected to grow. CTPS historical data and growth projections indicate that the population in Framingham is expected to grow at an overall rate of 0.44-percent per year over the next 20 years while employment in Framingham is expected to grow at an overall rate of 0.15-percent per year over the next 20 years.

Instead of using these overall growths and applying them to entire City, the growth has been broken down by neighborhood, with the following projections accounted for in each neighborhood growth. Graphic 3-1 summarizes the annual population and employment growths as well as the overall annual growths calculated for each neighborhood. The overall annual growth was calculated as a weighted average of the CTPS projected population and employment growths.

Graphic 3-1 Annual Growth



The annual growth rates shown in Graphic 3-1, above, were applied to study area intersections based on which neighborhood that intersection is located within. CTPS projected traffic growth data for Framingham is included in the Appendix.

Site-Specific Growth

In addition to accounting for background growth, the traffic associated with planned/approved developments in and around Framingham was considered. The project team coordinated with the City of Framingham as well as all abutting communities to develop a comprehensive list of development projects that should be considered in the growth projections. The following communities were included in the outreach efforts:

- › Ashland
- › Southborough
- › Marlborough
- › Sudbury
- › Wayland
- › Natick

Projected traffic volumes expected to be generated by each project were obtained from the published traffic studies associated with each project. Some smaller developments were identified by the communities but assumed to be included in the analysis as part of the background growth. The development list presented below was provided by the City of Framingham and its neighboring communities and was current as of March 2021.

Other Communities

One planned development located outside of Framingham was added to the analysis:

- › **Residences at Park Central:** The development, located at 4 Park Central Drive in Southborough, proposes 180 units of housing.

Framingham

Many planned developments were identified in Framingham, listed below by neighborhood. The projects located within Framingham are shown in Figure 3.2, including some smaller developments assumed to be included in the analysis as part of the background growth.

The projected traffic volumes expected to be generated by each project below was added to the analysis:

Downtown

- › **Self-Storage, 71 Bishop Street:** The development proposes 183,700 sf of commercial space for a self-storage facility. This project is currently in construction.
- › **Residential Development, 59 Fountain Street:** This redevelopment proposes 240 apartment units. This project is currently in construction.
- › **Mt. Wayte Plaza Redevelopment, 444-480 Franklin Street:** The redevelopment includes demolishing an existing vacant plaza and constructing 210 residential units and a 2,800 sf sit-down restaurant. This project is recently completed but has been included as the existing count data predates the development.

- › **Residential Development, 266 Waverly Street:** This development proposes 270 apartment units. This project is currently in construction.
- › **Alta Union House, 55 Concord Street:** The redevelopment includes demolishing three existing buildings and constructing a five-story, 197-unit apartment building with a six-story parking garage. This project is currently in construction.

Northwest Quadrant/Nobscot

- › **The Village at Nobscot, 770 Water Street:** The redevelopment of Nobscot Shopping Plaza proposes a 14,815 sf CVS, 158 residential units, and 11,234 sf retail.
- › **Gas Station & C-Store, 876 Edgell Road:** The development proposes to demolish an existing 1,450 sf convenience store and gas station and construct a 3,870 sf convenience store and gas station.
- › **Millwood Ridge, 175 Millwood Street:** The project proposes the redevelopment of a golf course into a 135-unit age-restricted housing development with a 30-acre town park. This project is currently in construction.

Saxonville

- › **Pinefield Plaza Expansion, 11 Nicholas Road:** The expansion proposes adding an 1,800 sf Dunkin' with drive-thru, a 1,500 sf walk-in bank, and 1,500 sf retail. This project is recently completed but has been included as the existing count data predates the development.

Route 9

- › **Hotel, 1800 Worcester Road:** The development proposes an 88,000 sf and a 152 room, six-story hotel.
- › **Office Expansion, 33 New York Avenue:** The redevelopment proposes expanding an existing 88,000 sf building into 107,000 sf of office/R&D.

Golden Triangle

- › **AMC South Parking Lot Redevelopment, 19 Flutie Pass:** The development proposes a 17,500 sf full-service restaurant, 175 apartment units, and 13,000 sf retail.

In addition, two instances of broader development were considered by growing volumes in the appropriate neighborhoods:

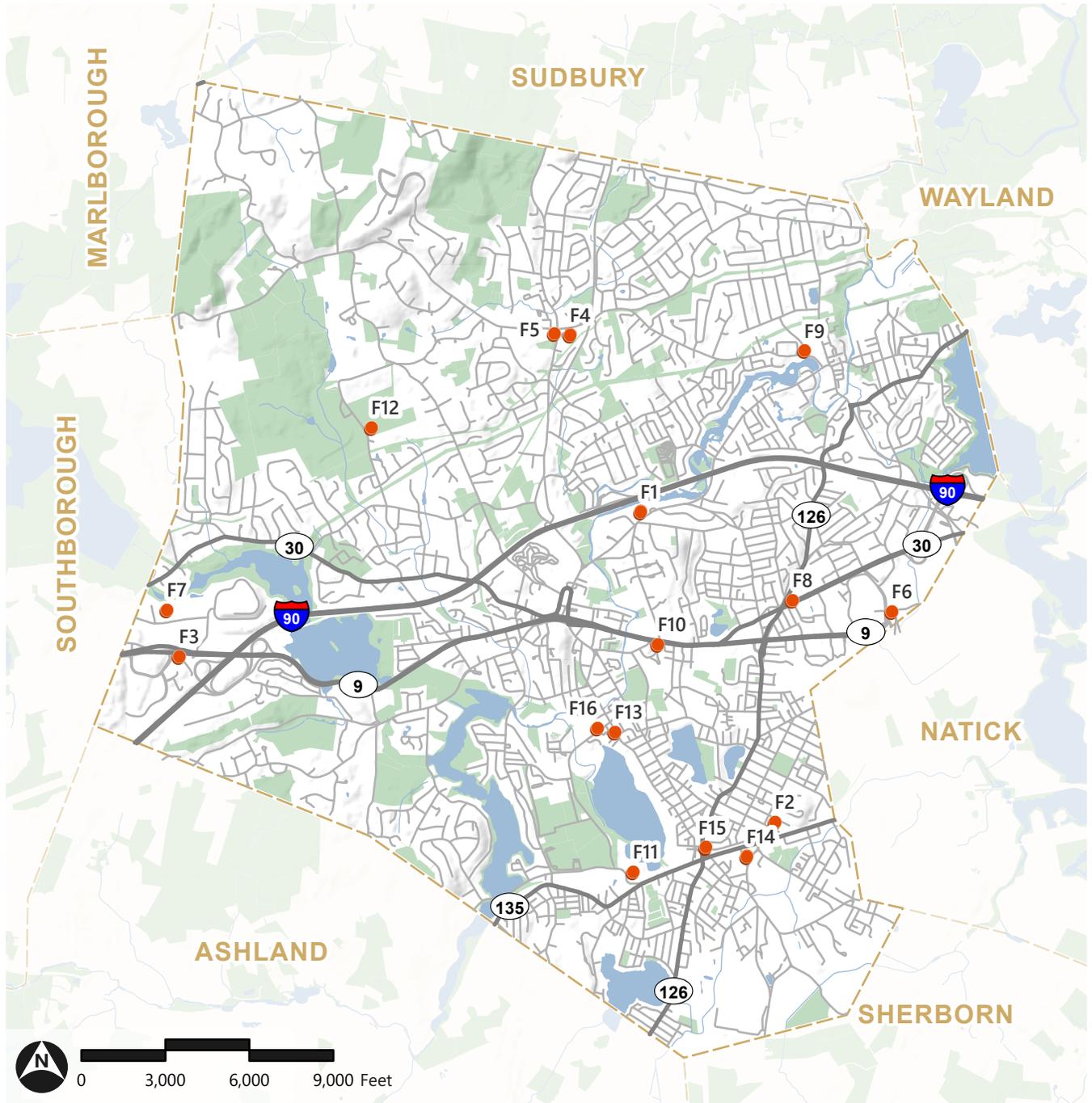
- › **MassBay Community College Health Science Campus, 89 Mt. Wayte Avenue:** The project proposes redeveloping a parking lot into a health science campus. This project is currently in construction. The traffic impacts associated with the project were estimated by increasing all volumes in the Downtown and Route 9 neighborhoods by one-percent.
- › **Potential Northwest Development:** As the Northwest Quadrant/Nobscot neighborhood is expected to be an area of development in the future, varying percentages were applied to intersections in the neighborhoods. Volumes on Edmands Road were grown by six-percent, while volumes on intersecting and nearby roadways were grown by three-percent. Volumes at intersections closer to Route 9 were grown by one-percent.

Figure 3.2: Framingham Background Development

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- | | |
|--|--|
| F1 - Residential Development | F9 - Pinefield Plaza Expansion |
| F2 - Commercial Development | F10 - Marijuana Dispensary |
| F3 - 1800 Worcester Road | F11 - Residential Development |
| F4 - The Village at Nobscot | F12 - Millwood Ridge |
| F5 - Gas Station & C-Store | F13 - Mt. Wayte Plaza Redevelopment |
| F6 - AMC South Parking Lot Redevelopment | F14 - Residential Development |
| F7 - Office Expansion | F15 - Alta Union House |
| F8 - Medical Office Building | F16 - MassBay CC Health Science Campus |

2040 Traffic Volumes

The year 2040 Future traffic volume networks were developed by applying the calculated CTPS-based growth rates to the existing volume networks and adding the traffic volumes associated with the background developments described above.

Phase II Study Area

Study Area Selection

The study area was developed in coordination with the VHB project team and the working group committee. The team evaluated each study area location included within Phase I, along with a few additional locations that working group recommended, under 2040 future conditions. The increase in delay, queue and overall LOS from Existing to future 2040 conditions was considered, along with safety deficiencies, and existing pedestrian and bicycle infrastructure. Some locations that have recently been improved or are currently part of a separate planning study or design were excluded from the final study area since resources are already dedicated to improving those locations. The final study area is described below and shown in Figure 3.3. Roadway and intersection descriptions for the following study area locations are included in the Appendix.

Study Area

Corridors and Clusters

The following six (6) corridors and clusters are included in the study area.

- › Edgell Road, Edmands Road/Water Street to Vernon Street
- › Edmands Road, Southborough Town Line to Grove Street
- › Route 126, Irving Street to Ashland Town Line
- › Route 30, Route 9 to Natick Town Line
- › Village Green Cluster:
 - Vernon Street at Grove Street
 - Edgell Road at Auburn Street
 - Edgell Road at Vernon Street
 - Vernon Street Split at Edgell Road
 - Vernon Street at Pleasant Street
- › Central at Simpson Park Cluster:
 - Central Street at Summer Street
 - Central Street at Fenwick Street/Haynes Road

- Summer Street at Fenwick Street
- Central Street at Crosswalk to Simpson Park

Intersections

The following sixteen (16) intersections are included in the study area.

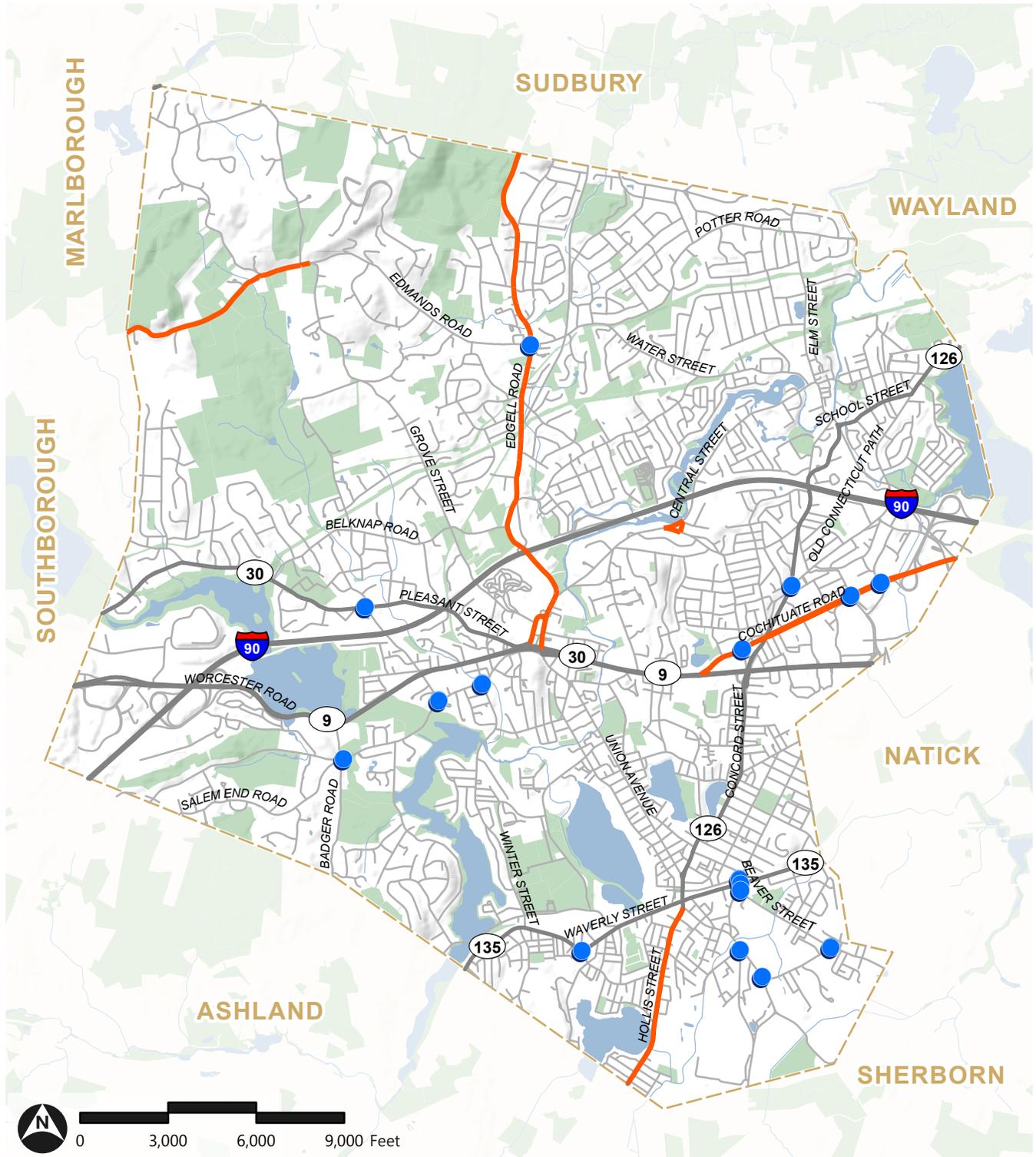
- › Edgell Road at Edmands Road/Water Street
- › Route 30 (Pleasant Street) at Temple Street/Woodmere Road
- › Salem End Road at Badger Road/Gates Street
- › Salem End Road at Temple Street
- › Salem End Road at Winter Street
- › Route 126 (Concord Street) at Old Connecticut Path
- › Route 30 (Cochituate Road) at Beacon Street
- › Route 30 (Cochituate Road) at Whittier Street/Shoppers World Drive
- › Route 30 (Cochituate Road) at Burr Street
- › Irving Street at Leland Street/Western Avenue
- › Bishop Street at Howard Street
- › Route 135 (Waverly Street) at Bishop Street/Beaver Street
- › Beaver Street at Blandin Avenue
- › Irving Street at Herbert Street/Loring Drive
- › Leland Street at Beaver Street/Kendall Avenue
- › Route 135 (Waverly Street) at Winthrop Street

Figure 3.3: Phase II Study Area Intersections and Corridors

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- Intersection
- Corridors / Clusters

Safety Deficiencies

Table 3-1 identifies that safety issues at the study intersections listed above. These issues include intersections with a calculated crash rate higher than the district average, ranked as an HSIP cluster, and/or had one or more fatal crash or crash involving a non-motorist (bicyclist/pedestrian). None of the study area intersections showed up as a Top 200 Intersection, so that classification is not shown in the table. Crash data has been compiled and is included in the Appendix

Table 3-1 Safety Deficiencies

Location	Crash Rate Higher than District Average ¹	HSIP Cluster ²	Fatal Injury ³	Non-Motorist Crash ⁴
Edgell Road at Edmands Road/Water Street	✓			
Route 30 (Pleasant Street) at Temple Street/Woodmere Road	✓			✓
Salem End Road at Badger Road/Gates Street				
Salem End Road at Temple Street				
Salem End Road at Winter Street				
Route 126 (Concord Street) at Old Connecticut Path				✓
Route 30 (Cochituate Road) at Beacon Street		✓		
Route 30 (Cochituate Road) at Whittier Street/Shoppers World Drive		✓		
Route 30 (Cochituate Road) at Burr Street		✓		✓
Irving Street at Leland Street/Western Avenue				✓
Bishop Street at Howard Street		✓		
Route 135 (Waverly Street) at Bishop Street/Beaver Street	✓	✓		✓
Beaver Street at Blandin Avenue				
Irving Street at Herbert Street/Loring Drive				
Leland Street at Beaver Street/Kendall Avenue				✓
Route 135 (Waverly Street) at Winthrop Street			✓	✓

Source: MassDOT crash portal, accessed September 2021

- 1 Intersection crash rates are calculated based on number of crashes and intersection volume.
- 2 Clusters are determined based on a combination of factors including crash incidence and severity.
- 3 At least one crash at the intersection resulted in a fatality.
- 4 At least one crash at the intersection involved a non-motorist.



4

Improvement Alternatives

A detailed future conditions analysis was conducted for the study area established by the project team and working group. This chapter details the alternatives considered at each of these locations and make definitive recommendations where appropriate.

Intersections

The following section details the improvement alternatives considered for each of the study area intersections and provides conceptual level illustrations for a number of suggested recommendations. These concepts reflect preliminary recommendations developed on existing aerial base mapping for the purposes of understanding large-scale benefits/impacts of individual recommendations. All concepts will require further evaluation including a full ground survey, drainage, utility, and grading considerations before advancing the design. Capacity analyses (2021 Existing Conditions, 2040 Future Conditions, and 2040 Future Conditions with Improvements) are included in the Appendix. In addition, for locations that are currently unsignalized but a signal was analyzed, preliminary signal warrants were conducted and are included in the Appendix.

Edgell Road at Edmands Road/Water Street

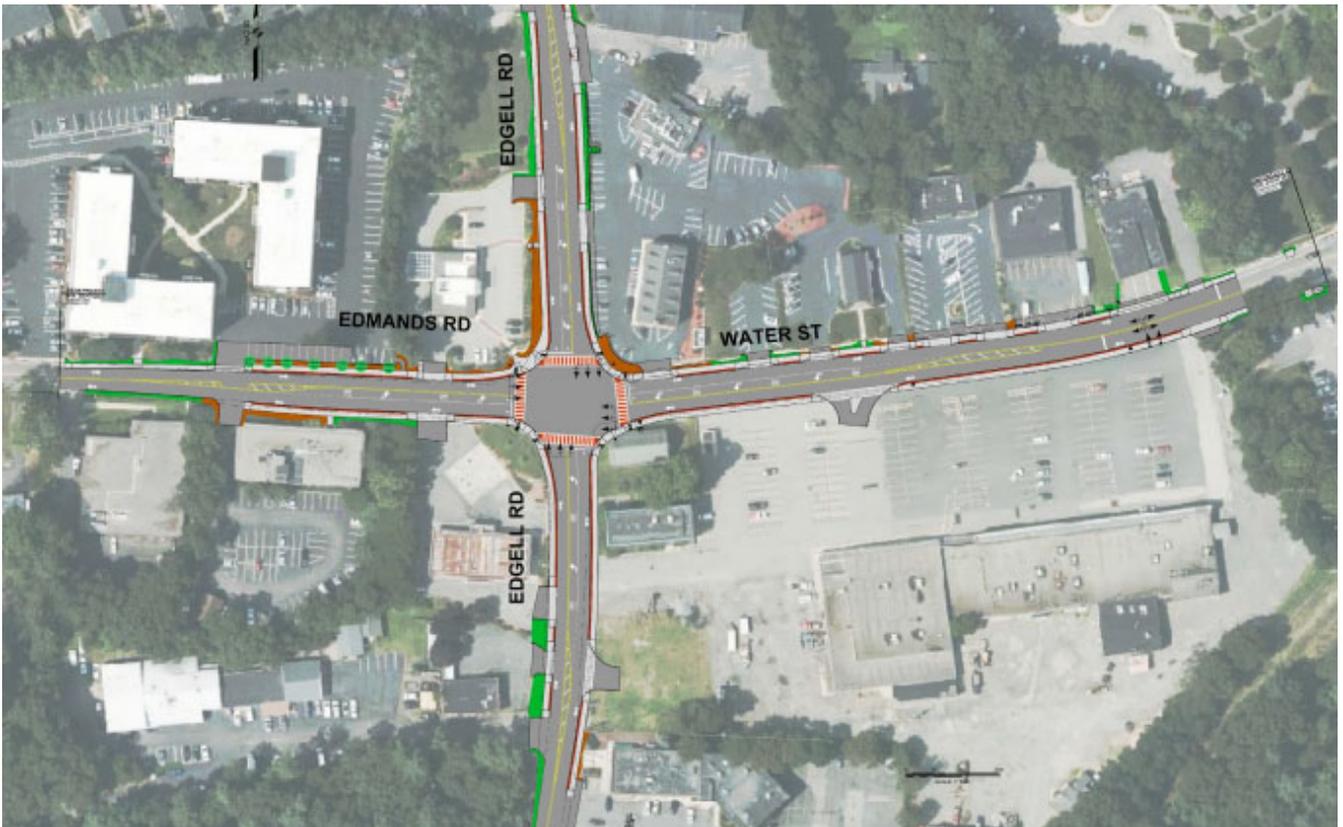
Under future 2040 conditions, this location is projected to operate at poor levels of service with an increase in queue and delay. This location is currently under construction, with anticipated completion by the end of 2022, which improves operations over existing conditions; however, the projected increase in vehicular volume over the next 20 years may result in the end of the usable life of the current improvements. This location was identified

in the Framingham Villages report as a priority for improvement with regards to vehicle circulation and pedestrian safety improvements.

Current Construction

Following completion of the current construction, the cross-section of Edgell Road will consist of 13-foot travel lanes in both directions and 10-foot exclusive left-turn lanes for each approach to Edmands Road/Water Street. Bicyclists are accommodated via SHARE-THE-ROAD pavement markings and stop line detection. Pedestrian accommodations include 8-foot sidewalks and an exclusive pedestrian phase. Permanent Roadway Easements were required for the project for roadway widening, sidewalk construction, and utilities. There is limited right-of-way beyond the future sidewalk, therefore the addition of on- or off-road bicycle lanes would require additional easement/takings from abutters and/or the narrowing of the roadway/sidewalk cross-section.

Figure 4.1 Edgell Road at Edmands Road/Water Street: Current Construction



Source: Second Community Meeting for Nobscot Intersection Improvements Project, June 10, 2021

Northbound Right-Turn Lane

One long-term improvement that VHB has considered is the addition of a northbound right-turn lane. While the right-turn lane is not needed under current or near-future conditions, the future 2040 condition analysis indicated that a right-turn lane may be beneficial under future conditions. VHB’s assessment of the right-turn lane as part of the current construction

project⁵ determined that the right-turn lane would need to be over 350 feet long to avoid being constantly blocked by a queue in the through lane, and the available right-of-way to accomplish this length was not available. Additionally, the resulting widening of the approach to a four-lane cross-section (three approach lanes and one receiving lane) would require longer crossing times for pedestrians, which would result in additional delay for all users of the intersection and partly offset the operational benefits of the right-turn lane. Finally, vehicles shifting into the additional turn lane would introduce more potential conflicts.

The implementation of a northbound right-turn lane was conceptualized for the intersection during the design process for the current improvements; however, while the right-turn lane would have some operational benefits, there are multiple reasons why it was not ultimately included in the current design. The right-turn lane would require additional easements/takings however may not be possible due to impacts. The drive-thru for the recently opened CVS on the southeast corner of the intersection is located within 10 feet of the sidewalk. Shifting the roadway west to avoid impacting the drive-thru could be limited by the planned redevelopment of the gas station on the southwest corner of the intersection that relocates the building close to the roadway. Any shift in alignment would require modification to the southbound approach as well which could severely impact on-site parking for the businesses along both sides of the roadway. While providing a northbound right-turn lane was determined to not be feasible or needed as part of the current construction project at the intersection, VHB recommends that it still be considered as a long-term potential improvement, when and if, the right-of-way to construct it could be secured.

Route 30 (Pleasant Street) at Temple Street/Woodmere Street

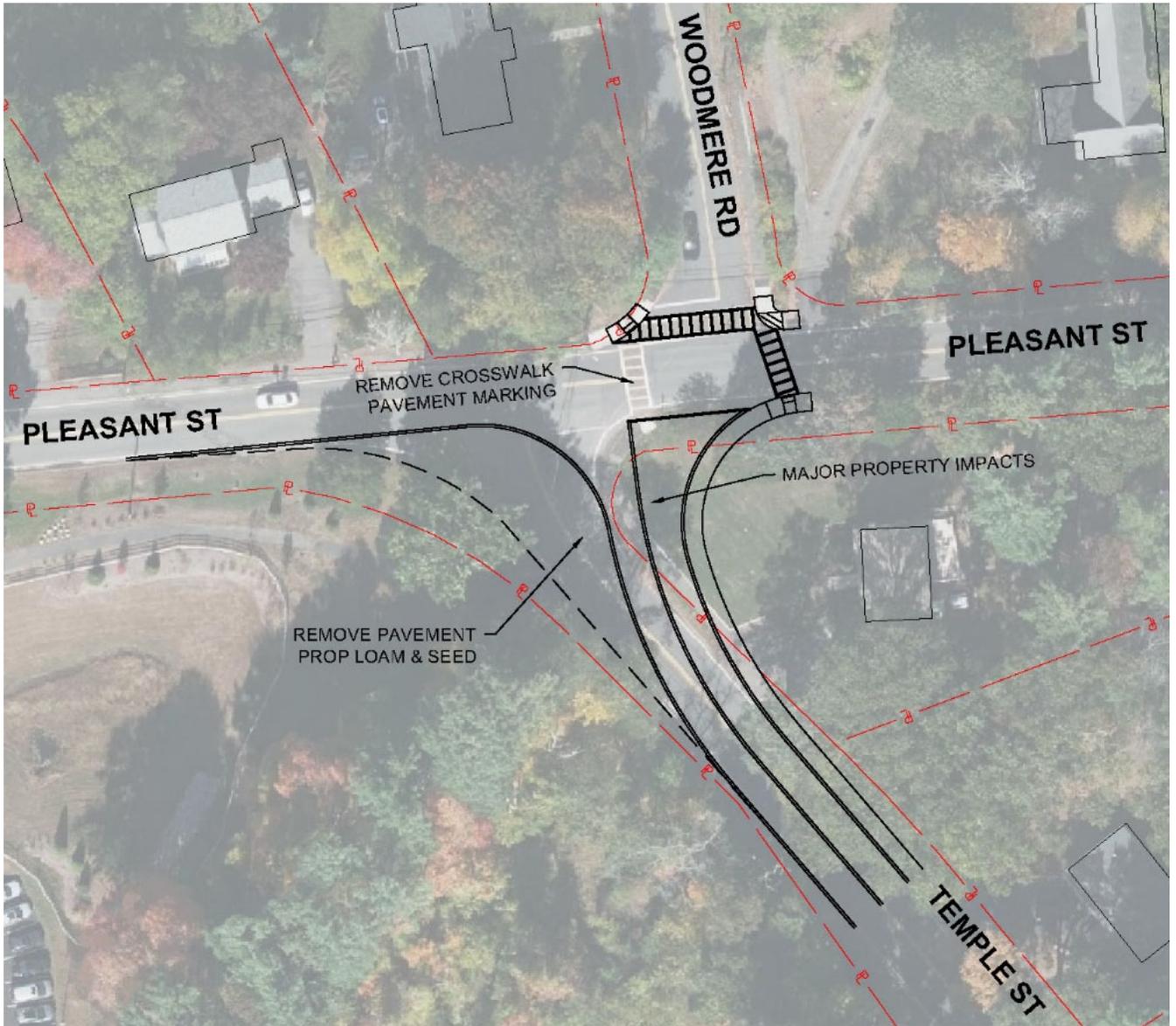
The Temple Street and Woodmere Street approaches have limited sight distance when looking to the east on Pleasant Street due to a small hill. Additionally, the intersection is projected to operate poorly under 2040 future conditions with LOS D and LOS F in the morning peak and evening peak periods, respectively. This location is under MassDOT jurisdiction and any improvements or updates would need to be approved by MassDOT and meet MassDOT design standards.

Four-Legged Intersection

Realigning the Temple Street approach to create a standard four-legged intersection was considered. Analysis indicates that this modification would likely not improve intersection operations but would provide safety improvements by simplifying vehicular maneuvers at the intersection. With this modification, vehicles traveling between Temple Street and Woodmere Street would no longer have to turn right and then quickly turn left. It should be noted that this alternative would have major property impacts to the property in the southeast corner of the intersection. Signalization was also considered, but volumes would not warrant a traffic signal based on current regulations.

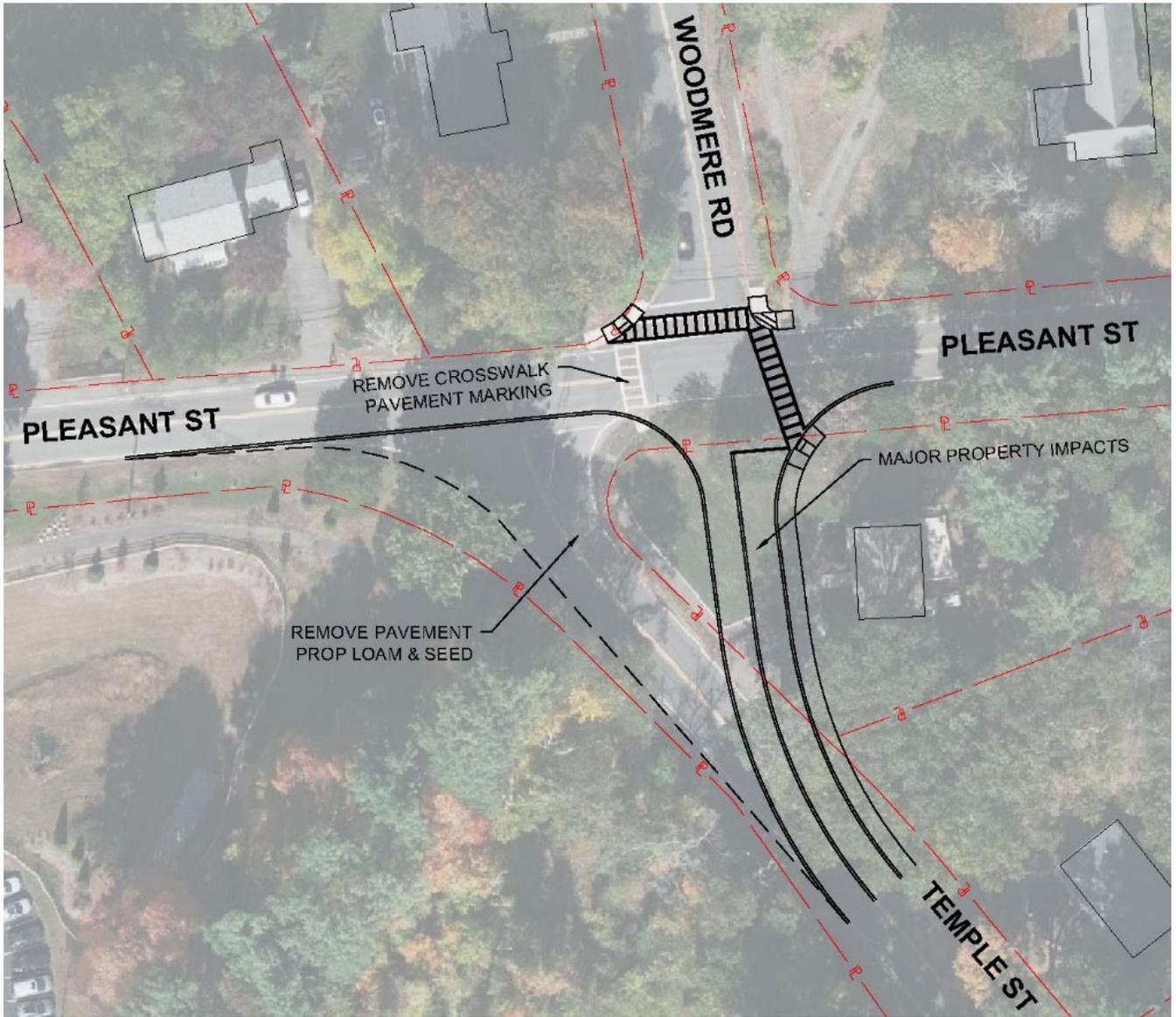
5 Edgell Road at Edmands Road/Water Street Intersection (PW-429) Community Feedback Memorandum; VHB, Inc.; May 21, 2021.

Figure 4.2 Route 30 (Pleasant Street) at Temple Street/Woodmere Street: Partial Realignment



Source: VHB, Nearmap

Figure 4.3 Route 30 (Pleasant Street) at Temple Street/Woodmere Street: Full Realignment



Source: VHB, Nearmap

Westbound Left-Turn

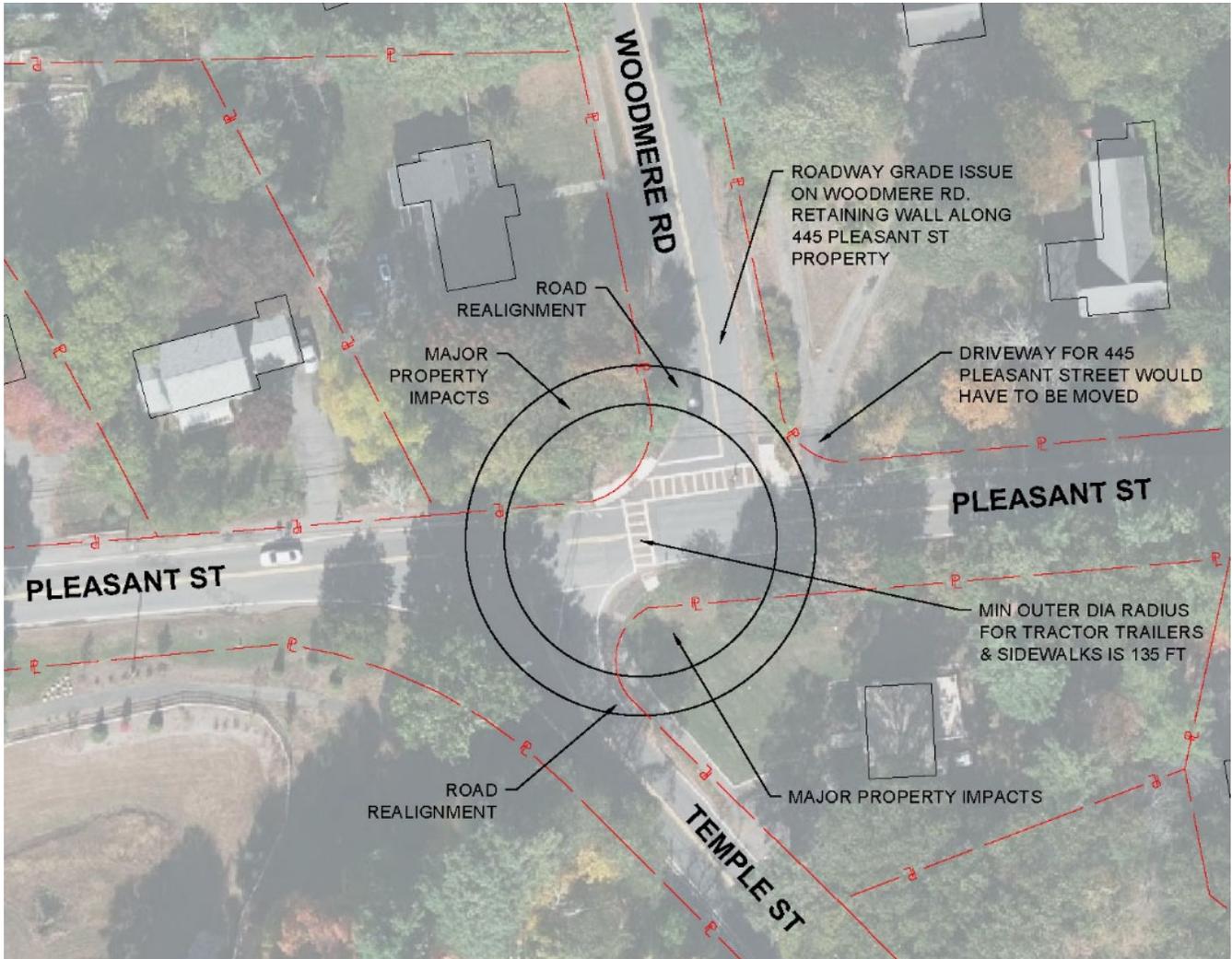
Providing a westbound left-turn lane for vehicles turning onto Temple Street has been considered; however, similar to many of the solutions discussed, right-of-way acquisitions would be required.

Single-Lane Roundabout

Analysis indicated that a single-lane roundabout would operate well in the peak hours while simplifying the intersection. It would be expected to operate at LOS A in the weekday peak hours, a significant improvement from projected 2040 future conditions. However, the

alternative has significant considerations such as major property impacts, grading issues, and driveway relocation.

Figure 4.4 Route 30 (Pleasant Street) at Temple Street/Woodmere Street: Roundabout



Source: VHB, Nearmap

Salem End Road at Badger Road/Gates Street

The intersection currently has poor operations during the peak hours and requires circuitous traffic patterns. In addition, the sight distance for Badger Road is limited. Although the intersection was recently improved by Framingham, it can still be further improved with more significant long-term changes.

Four-Legged Intersection

Many different alternatives were considered to simplify the intersection to a four-legged intersection. A simple four-way intersection with either two-way or four-way stop control would result in significant delay in the peak hours. A channelized westbound right-turn lane

would reduce the delay, but both the channelized westbound right-turn lane and a dedicated southbound left-turn lane would result in acceptable operations in the peak hours for a four-legged intersection.

A signal was also considered at this intersection, but the intersection would most likely fail to meet volume-based signal warrants.

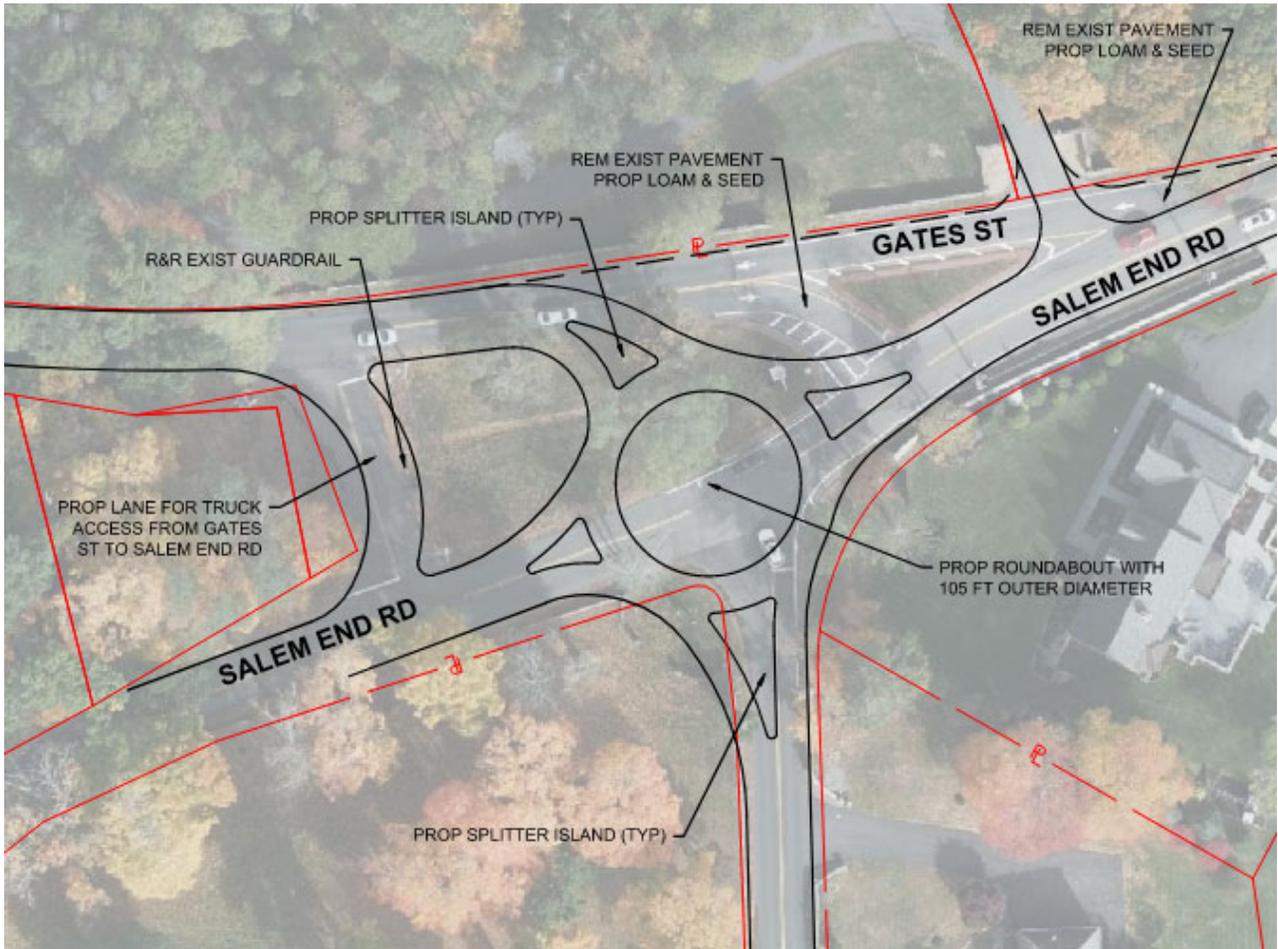
Single-Lane Roundabout

The analysis indicated that a single-lane roundabout would operate best in the peak hours while simplifying the intersection. It would be expected to operate at LOS A in the weekday morning peak hour with 7-8 seconds of delay for each approach and LOS B in the weekday evening peak hour with 6-11 seconds of delay for each approach. In addition, the 95th percentile queues would be less than six vehicles long. This alternative has the benefit of providing deflection for vehicles traveling westbound from Salem End Road to Gates Street, slowing vehicles. Pedestrian safety features can also be incorporated.

The single-lane roundabout could be fit to have minor property impacts if a slip lane for Gates Street eastbound to Salem End Road westbound is provided. While the volumes for this movement are very small, large trucks would need the slip lane to be able to maneuver the intersection with a smaller roundabout.

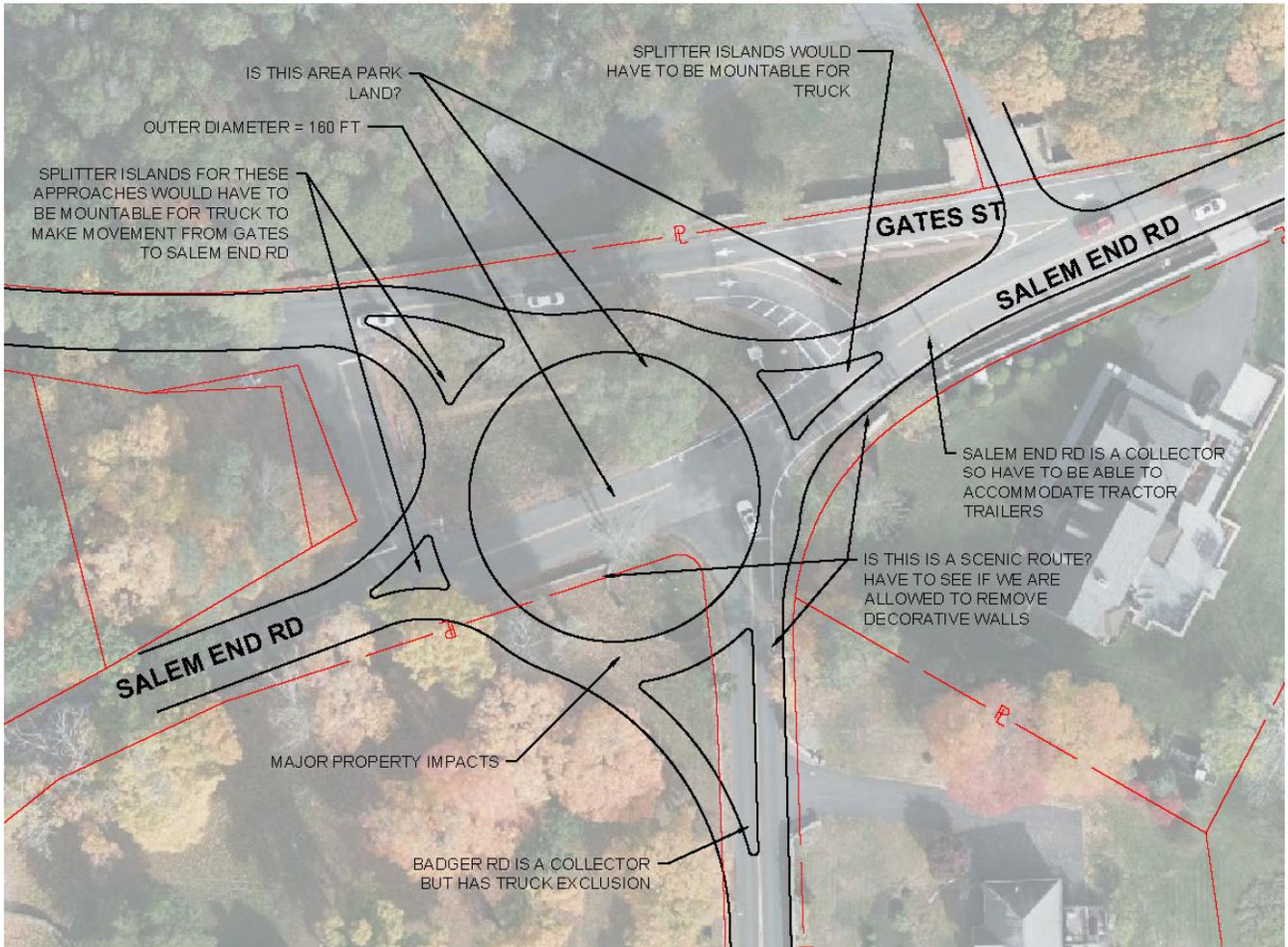
The single-lane roundabout could also be enlarged to eliminate the need for any slip lanes. This alternative has more substantial property impacts to the property in the southwest corner of the intersection. This layout is not ideal, as there is a stone wall along the south side of Salem End Road and along both sides of Badger Road.

Figure 4.5 Salem End Road at Badger Road/Gates Street: Small Roundabout



Source: VHB, Nearmap

Figure 4.6 Salem End Road at Badger Road/Gates Street: Larger Roundabout



Source: VHB, Nearmap

Salem End Road at Temple Street

Multiple alternatives were considered for the intersection, which is projected to operate at failing levels of service during the peak hours under future 2040 conditions. Adding an eastbound left-turn lane would substantially improve intersection operations. However, the spatial constraints make many intersection configurations unattainable, including any formal turn lanes. However, the lanes could be restriped, so the eastbound approach lane is wider, giving vehicles traveling through an opportunity to go around vehicles waiting to take a left turn.

Figure 4.7 Salem End Road at Temple Street



Source: VHB, Nearmap

A roundabout was also briefly considered, but the spatial constraints also make that unattainable. It was also noted that the signal poles are black and located on the sidewalk. To increase visibility of the intersection and the signals, it would be suggested to install overhead signals with yellow backplates. It is also suggested to provide a crosswalk across Temple Street with appropriate curb ramps, as the sidewalk on the north side of Salem End Road ends shortly west of the intersection.

Finally, a mini roundabout was considered, but the volumes at the intersections would result in unacceptable operations.

Salem End Road at Winter Street

This location is projected to operate at failing levels of service during the peak hours under future 2040 conditions.

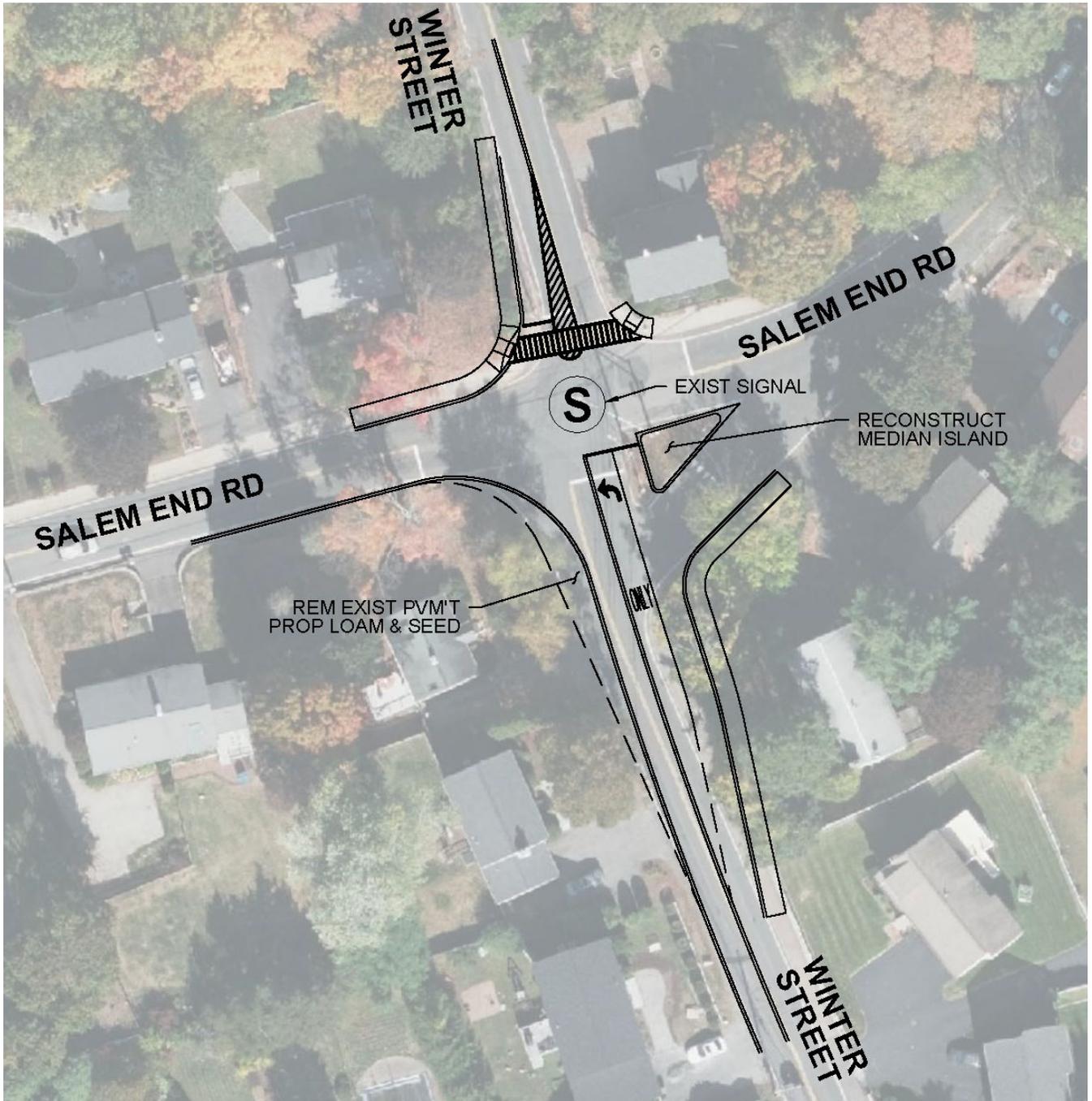
Signal Phasing

As the intersection is under spatial constraints, split or leading phasing was considered for the northbound and southbound approaches at the intersection. The approaches are offset, and members of the public noted that it can be difficult to find appropriate opportunities for southbound through movements due to the high demand for northbound left-turn movements. Leading northbound and leading southbound phasing was considered as well as split phasing for the Winter Street approaches. Even with optimized timings, the intersection would still operate at failing levels of service, despite the leading northbound phase slightly improving overall intersection operations in both peak hours. Therefore, geometric improvements had to be considered.

Intersection Realignment

Suggested improvements revolve around providing an exclusive northbound left-turn lane as well as realigning the northbound and southbound approaches to reduce offset. Currently, the northbound and southbound approaches are offset and the traffic from both approaches run concurrently. This introduces more possibilities of collision as drivers wait to turn left in the middle of the intersection. To provide the recommended exclusive left-turn lane, a through lane, and a channelized right-turn for the northbound approach, the existing median island in the southeast corner of the intersection will need to be reconstructed. For the southbound approach, a median would be striped to align the northbound and southbound approaching and receiving lanes. Overall, realigning the intersection would be expected to enhance safety at the intersection. With the new geometry and timing optimization, the intersection would operate at an acceptable LOS C in the morning peak hour and improve to LOS E in the evening peak hour. It should be noted that this concept would have property impacts including the southeast corner of the intersection.

Figure 4.8 Salem End Road at Winter Street: Proposed Improvements



Source: VHB, Nearmap

Route 126 (Concord Street) at Old Connecticut Path

It is suggested that the intersection of Route 126 at Old Connecticut Path could be simplified to result in better pedestrian accommodations. Currently, pedestrians attempting to cross the east leg of the intersection must utilize a total of four crosswalks (one lane each), two of which are unsignalized. The remaining two crosswalks are on channelized right-turns, which are under yield control. In particular, pedestrians utilizing the crosswalk across the channelized northbound right turn will encounter high-speed vehicles due to the lack of deflection for turning vehicles. The City should consider reconstruction of the intersection such that the unsignalized crosswalks are eliminated, either through consolidation of the pavement area or by control of the traffic signal. By simplifying the intersection and bringing crosswalks under traffic signal control, pedestrian delay can be reduced and safety improved. There would be an operational impact to this location if the improvements are made. The benefits to pedestrians should offset that impact.

Figure 4.9 Route 126 (Concord Street) at Old Connecticut Path



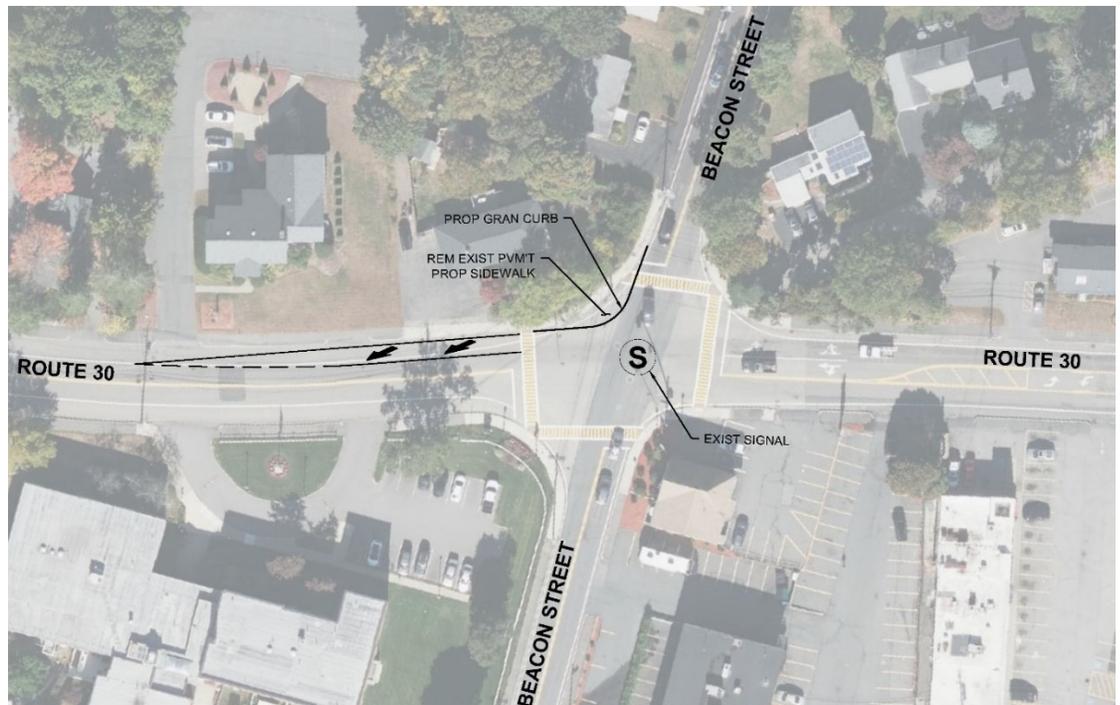
Source: Nearmap. June 2021

Route 30 (Cochituate Road) at Beacon Street

The intersection of Route 30 at Beacon Street has a few areas of concern. First, there are two westbound approach lanes, but only one departing lane. Second, the intersection is wide due to the skewed geometry. Finally, the intersection is listed as an HSIP location, meaning safety is a concern.

Suggested improvements for the intersection include a second westbound receiving lane on Route 30 as well as a tightened northwest corner radius. The second westbound receiving lane would merge shortly after the intersection. The tightened northwest corner radius would force vehicles to take slower southbound right turns and potentially reduce pedestrian crossing distances, improving safety at the intersection.

Figure 4.10 Route 30 (Cochituate Road) at Beacon Street: Proposed Improvements



Source: VHB, Nearmap

Route 30 (Cochituate Road) at Whittier Street/Shoppers World Drive

Concerns at this intersection include poor operations in the evening peak hour, safety concerns as it is listed as an HSIP location, and long pedestrian crossings.

The potential improvements for the intersection include redesignating the Whittier Street and Shoppers World Drive approach lanes as well as reconstructing the median islands. The Shoppers World Drive northbound approach would be restriped from LT|T|R to L|T|R, while the Whittier Street southbound approach would be restriped from L|LT|T|R to L|L|T|TR. The median island in the southwest corner of the intersection would be moved slightly west to

make room for two southbound receiving lanes and square up the crosswalk on the west leg of the intersection. The median island for the south leg would be reconstructed to align with the new through lanes on the southbound approach. While these improvements may not drastically change the overall intersection delay, they will simplify the different movements and allow the northbound and southbound through movements to be uninterrupted by left-turning traffic.

While it is noted that the westbound left-turn sees high delays in the peak periods, there is limited right-of-way and pedestrian and bicycle improvements are more of a priority in the area.

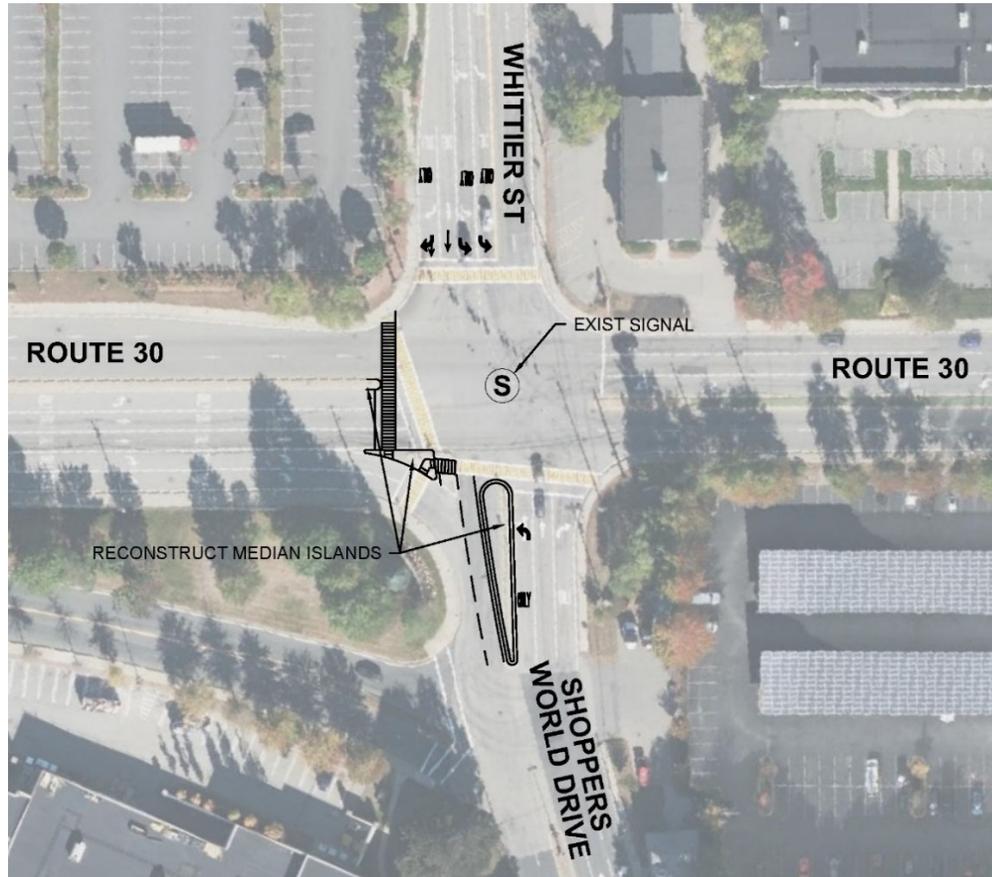
Finally, during the public workshop meeting, members of the public noted that the dual eastbound right-turn seems underutilized, and the eastbound right-turning volumes may not warrant two lanes. VHB recommends collecting updated volume data at the intersection as the effects of the COVID-19 pandemic lessen to confirm if the dual eastbound right-turn is needed.

Figure 4.11 Route 30 (Cochituate Road) at Whittier Street/Shoppers World Drive: Existing Queues



Source: Nearmap. September 2019

Figure 4.12 Route 30 (Cochituate Road) at Whittier Street/Shoppers World Drive: Proposed Improvements



Source: VHB, Nearmap

Route 30 (Cochituate Road) at Burr Street

Due to an office park located in the northeast corner of the intersection, there is a strong westbound right-turn movement in the morning peak hour and strong southbound movement in the evening peak hour. There are no movements with significant volumes entering the south leg; however, there is a strong northbound right-turn movement exiting the south leg, presumably due to the proximity of the I-90 ramps shortly to the east of the intersection.

It could be considered to limit access on the Burr Street south leg to make the roadway one-way in the northbound direction. However, this change would shift all southbound traffic to Shoppers World Drive intersection and likely move the congestion concern rather than fixing it. VHB recommends that the City consider the potential benefits and detriments to alternative traffic patterns.

Figure 4.13 Route 30 (Cochituate Road) at Burr Street



Source: Nemap, October 2021

Irving Street at Leland Street/Western Avenue & Irving Street at Herbert Street/Loring Drive

These intersections are located just north and east of the MCI-Framingham campus, which is one of the oldest women’s prison in the country and may be taken out of service in the future. When and if the prison is closed, the large campus property has potential to be redeveloped. These locations are the gateways to the current campus and any potential future developments.

As part of any potential redevelopment, VHB recommends that the City work closely with the developer to redefine this neighborhood through the following improvements:

- › Consider constructing an east-west roadway connecting Loring Drive and Western Avenue. This could be located to the north of or directly through the campus.
- › Close off the Irving Street westbound approach to the intersection of Irving Street at Herbert Street/Loring Drive, creating a three-legged intersection.

These changes would provide a new east-west access to the development while improving operations at the Irving Street/Loring Drive at Herbert Street intersection. Figures 4.14 and 4.15 illustrate potential options the City can consider when working with prospective developers. Simplification to the intersection of Irving Street, at Hebert Street/Loring Drive should be a priority in any developer sponsored project.

Figure 4.14 Loring Drive/Western Avenue Connector



Source: VHB, Nearmap

Figure 4.15 Irving Street at Herbert Street/Loring Drive: Proposed East Leg Closure



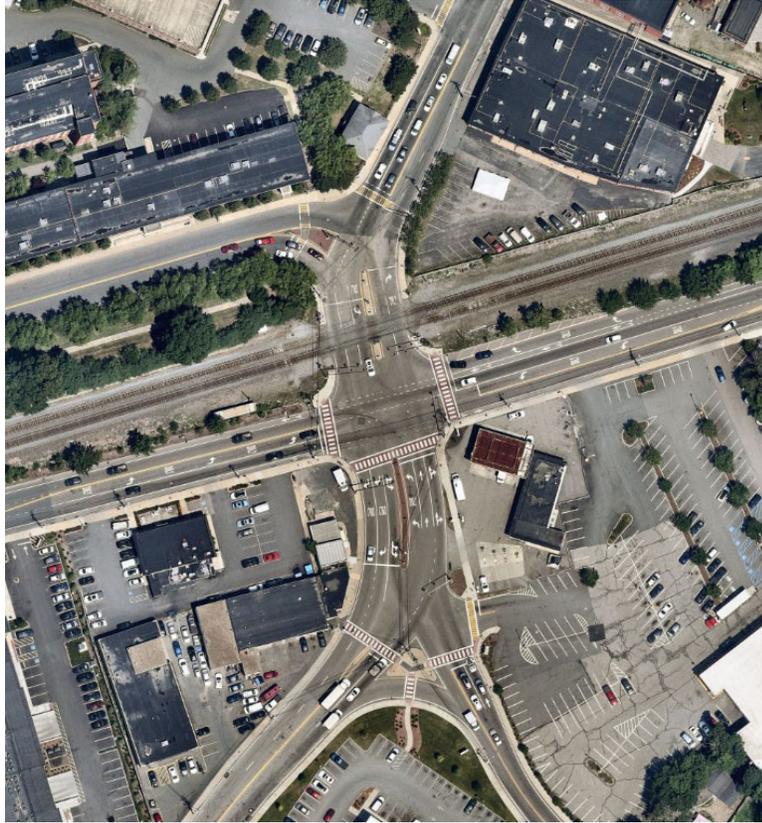
Source: VHB, Nearmap

Bishop Street at Howard Street, Route 135 (Waverly Street) at Bishop Street/Beaver Street, and Beaver Street at Blandin Avenue

The MBTA's Worcester Line Track and Stations Accessibility Improvements project consists of implementation of a new third track section and system upgrades on an approximately 10-mile long corridor on the Framingham/Worcester Line, from east of Framingham Station to west of Auburndale Station, including reconstruction of four passenger rail stations – West Natick, Wellesley Square, Wellesley Hills, and Wellesley Farms. The project will improve passenger rail operational capacity and flexibility for a mix of express and local services on the Framingham/Worcester Line, improve reliability, and bring the four passenger rail stations in Natick and Wellesley into full accessibility compliance. The limits of this project extend through this cluster of coordinated intersections and may require geometric changes to the intersections.

VHB considered multiple alternatives that rerouted traffic within the vicinity of these locations and/or converting two-way roadways into one-way roadways to streamline vehicular movements. VHB also considered extending the length of the double right-turn lanes on Howard Street approaching Bishop Street. This would improve the operations at the intersection but would require a reduction in on-street parking spaces along Howard Street. VHB recommends that the City work with the MBTA to ensure that these locations are improved as part of the project and not impacted negatively.

Figure 4.16 Bishop Street at Howard Street, Route 135 (Waverly Street) at Bishop Street/Beaver Street, and Beaver Street at Blandin Avenue



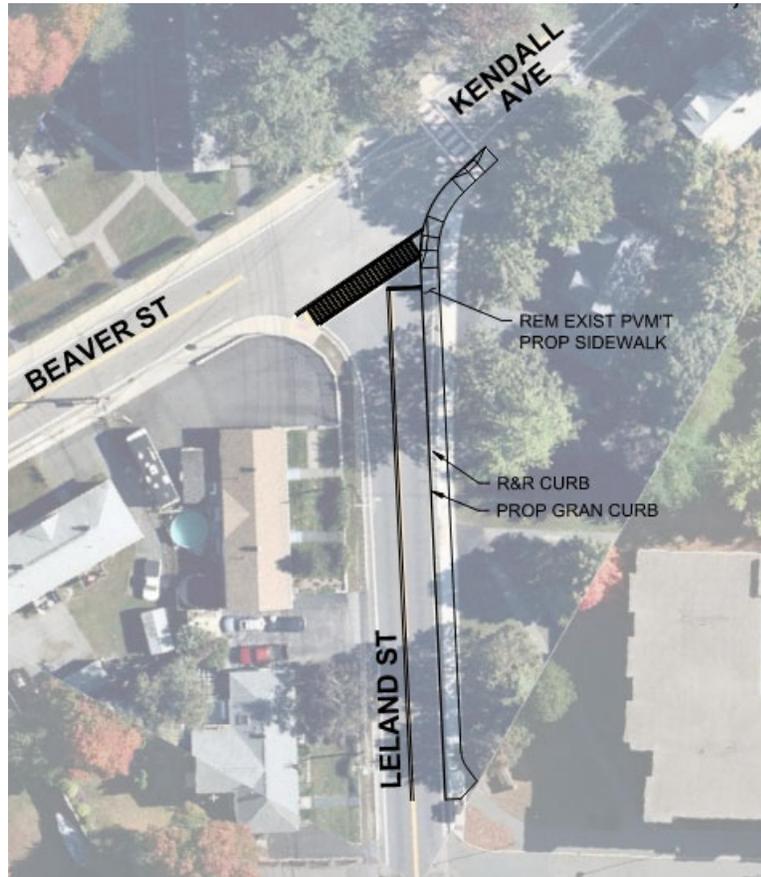
Source: Nearmap. June 2021

Leland Street at Beaver Street/Kendall Avenue

This location is projected to operate at failing levels of service during the peak hours under future 2040 conditions and has a long pedestrian crossing across the Leland Street approach. The long pedestrian crossing is especially concerning because the Wilson Elementary School is located on the southeast corner of the intersection. VHB recommends that geometric changes be implemented to reduce the pavement width across Leland Street at the intersection, reducing the pedestrian crossing, and decreasing the turning radius from Leland Street to Kendall Ave requiring vehicle to decrease their speed as they turn the corner and approach the crosswalk on Kendall Ave.

Additionally, the intersection appears to meet signal warrants for the peak hours. Additional data collection should be conducted to confirm this location meets the full eight-hour warrant for a signal.

**Figure 4.17 Leland Street at Beaver Street/Kendall Avenue:
Proposed Improvements**



Source: VHB, Nearmap. Image includes recent upgrades from City.

Route 135 (Waverly Street) at Winthrop Street

This intersection is the only intersection in the study area to have a fatal crash within the last five years. The fatal crash involved a single vehicle traveling at a high rate of speed. While cars speeding excessively cannot be wholly avoided, some measures can be made to increase visibility of the intersection. Due to the curvature of Route 135 and the proximity of the Monnick Supply building to the street, vehicles traveling westbound toward the intersection may not see the entire intersection until shortly before it. It is suggested that more signals could be considered, such as one in the southeast corner for the westbound approach. Alternatively, a full reconstruction of the traffic signal system could be completed to provide overhead mast arms for better visibility.

Figure 4.18 Route 135 (Waverly Street) at Winthrop Street



Source: Nearthmap. June 2021

Clusters

Village Green Cluster

The Village Green is bounded by Vernon Street, Edgell Road, and Oak Street. As this is a significant pedestrian and bicyclist area and the Village Green hosts many events throughout the year, counts were collected at these intersections to determine the highest-volume crossings and whether they could be improved. The counts were collected on a Thursday afternoon during a farmer’s market in Summer 2021 to represent peak volumes. The two highest-volume crossing areas were identified as the mid-block crosswalk on Vernon Street north of Oak Street, and the intersection of Edgell Road at Auburn Street.

It is expected that Traffic Calming Policy and Crosswalk Policy recommendations located in the Policy Improvements chapter of this report can be applied to this area to improve pedestrian and bicycle accommodations as appropriate. Two potential considerations that were discussed during the public workshop are to install a raised crosswalk at the midblock crosswalk on Vernon Street and a raised intersection at the intersection of Edgell Road at Auburn Street. While the raised crosswalk and intersection would benefit pedestrian safety, further evaluation should be considered to identify whether there are any potential impacts to operations along Edgell Road, specifically with the close proximity to Route 30 and Route 9, that should be considered in the decision to move forward with a raised crosswalk or intersection. Raised crosswalks and intersections have a number of challenges to consider as well, including drainage considerations and impacts to vehicular flow along the roadway.

Figure 4.19 Village Green Pedestrian and Bicycle Volumes During Thursday Afternoon Farmers Market



Source: VHB, Nearmap, Google Street View

Central at Simpson Park Cluster

The Central Street/Summer Street/Fenwick Street/Haynes Road triangular cluster allows significant cut-through volumes on Fenwick Street. In addition, a member of the public raised concerns that there is no crosswalk to Simpson Park. The City is currently investigating installation of a crosswalk across Central Street to access Simpson Park.

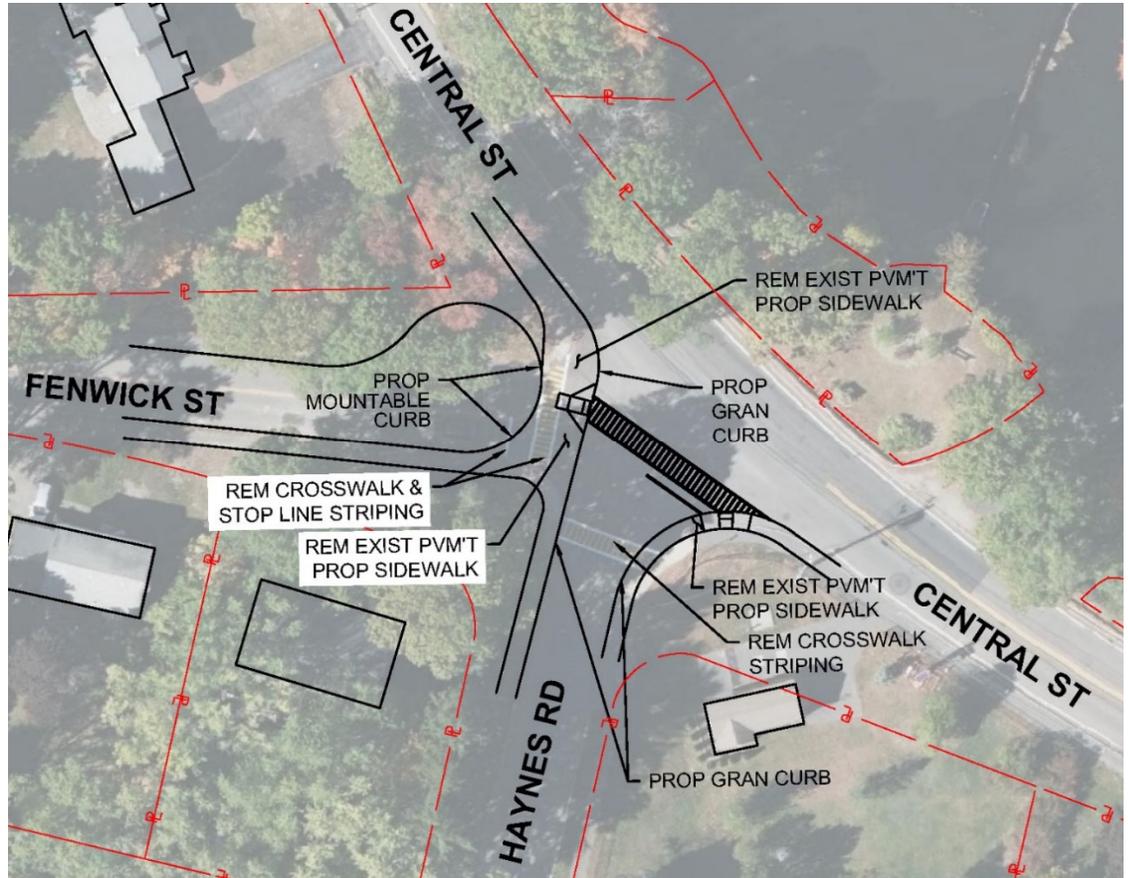
Recommended improvements include dead-ending Fenwick Street, teeing up the Central Street/Haynes Road intersection, and signaling the Central Street at Summer Street intersection. Dead-ending Fenwick Street could be achieved through a mountable curb for emergency vehicles, which has no private property impacts, or by providing a turn-around, which would result in minor property impacts. Central Street at Haynes Road would be simplified to a T-intersection, simplifying vehicular movement near the Simpson Park crossing location. At the Central Street at Summer Street intersection, the additional volumes of previous cut-through traffic would most likely warrant a signal, although further volume data would need to be collected as traffic volumes rebound from COVID-related impacts. The potential improvements would improve flow, streamline vehicular volume at the Simpson Park crossing location, and reduce the number of conflict points.

Figure 4.20 Fenwick Street Cut-Through



Source: Nearmap. June 2021

Figure 4.21 Central Street/Summer Street/Fenwick Street/Haynes Street: Fenwick Street Dead-End with Mountable Curb



Source: VHB, Nearmap

Technology Alternative

In addition to developing the future 2040 conditions in a traditional manner of utilizing a background growth rate and applying known development projects, VHB also considered the potential future condition where our society experiences substantive changes in mode shifts and technological advances in automated vehicles and signal systems.

Based on the Metropolitan Area Planning Council (MAPC)'s return to work surveys, companies within Massachusetts are anticipating that up to 32-percent of employees will remain fully or mostly working remotely beyond the COVID-19 pandemic. For comparison, prior to COVID-19, just 6-percent of these employees were primarily working remotely. There is a large variation in industry telework potential with the most likely sectors including education services, healthcare services, government and administrative services, professional and technical services and finance and insurance. Based on the LODES 2019 & McKinsey

Future of Work Report, approximately one-third of the City of Framingham's residents are potential teleworkers, up to 25,000 people.

This anticipated permanent mode shift for both residents and employees in Framingham has the potential to greatly decrease peak hour vehicular volumes in the future. If these projections are accurate, then the benefit of any implemented improvements within Framingham will last far beyond typical expectations.

The shift to more telework opportunities will increase demand for local sidewalk and bicycle infrastructure within Framingham's neighborhoods and increase economic opportunities throughout the City.

With this shift, it is of increasing importance to plan for more robust sidewalk and bicycle improvements as part of this Master Plan.

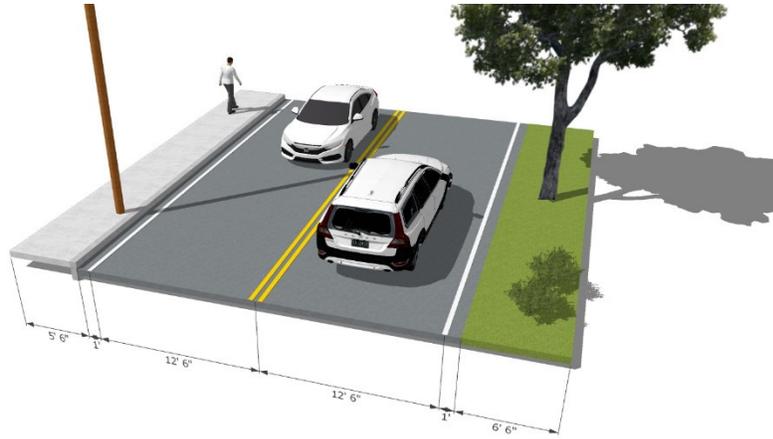
Corridors

The following section details the improvement alternatives considered for each of the study area intersections. Each corridor cross-section was analyzed with the existing available Right-of-Way (ROW) width to determine the potential accommodations that could be provided within the available ROW. Additionally, each corridor was assessed for its desired cross-section if ROW was no issue. For these cross-sections MassDOT's Engineering Directive E-20-001 (Controlling Criteria and Design justification Process for MassDOT Highway Division Projects) and MassDOT's Separated Bike Lane Planning and Design Guide were used to determine the need and appropriate type of bicycle facilities that should be provided. All existing cross-sectional widths in this section are approximations based on aerials. Ground survey would be required to determine the actual available roadway cross-section. While the cross-section analysis and recommendations provide for better multimodal accommodations, the changes are not anticipated to substantively affect operations of the corridor.

Edgell Road, Route 9 to Sudbury Town Line

Existing Cross-Section

Edgell Road is a two-lane, two-way minor arterial that provides access from Route 9 in Framingham to the Sudbury Town line. The roadway width and sidewalk accommodations vary along its length. The ROW along Edgell Road is typically 39 feet. The ROW width provides for a 5.5-foot sidewalk, 25-foot roadway width (12.5-foot lanes and 1-foot shoulders) and approximately 6.5 feet of green space.



Edgell Road Existing Cross-Section

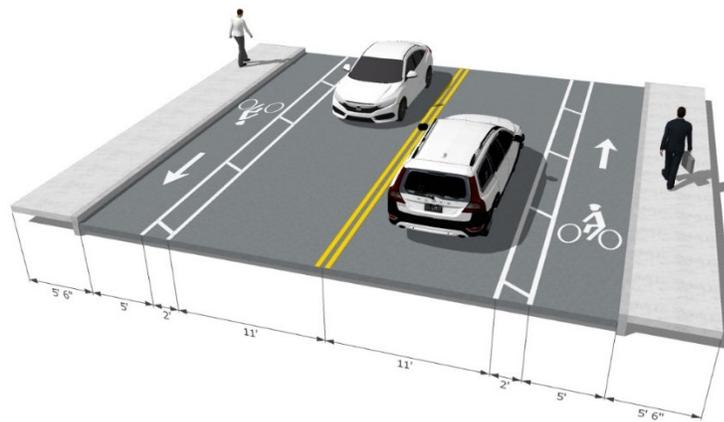
Existing Conditions	
Classification	Minor Arterial
Jurisdiction	City Accepted
Weekday AADT	15,600 vpd ⁶
Weekday Truck ADT	550 vpd
Posted Speed Limit	25-35 mph
Sidewalks	Varies – neither side, one side, or both sides
Public Transit	MWRTA Routes 2 & 3

Desired Cross-Section

Based on MassDOT’s Separated Bike Lane Planning and Design Guide⁷, Edgell Road should provide a minimum 5-foot bike lanes with 2-foot buffers. The guide recommends a 6-foot buffer width in all cases, and as such a wider buffer should be considered where possible. However, the 39-foot ROW width only allows for a single 5-foot bike lane in one direction. In general, the ROW needed to accommodate two travel lanes, two sidewalks, and two bike lanes would be 47 feet. The majority of the Edgell Road corridor does not provide this cross-sectional width.

6 Existing AADT as presented in Framingham Master Plan Phase I Report

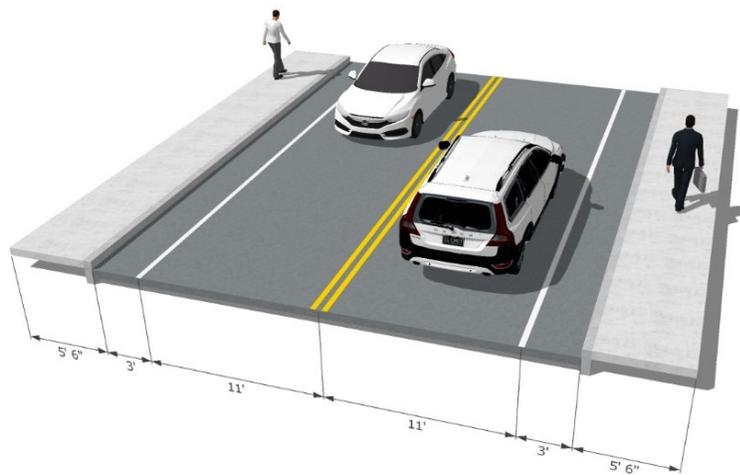
7 Separated Bike Lane Planning and Design Guide, MassDOT, 2015, pages 34-37.



Edgell Road Desired Cross-Section

Available Right-of-Way Option

The existing ROW for the Edgell Road corridor allows for the roadway widths to be reduced from 12 feet to 11 feet while providing 5.5-foot sidewalks on both sides. In addition, a second alternative would be to provide a 5-foot-wide climbing bike lane on one side of the road in lieu of providing a 5-foot sidewalk on that side of the roadway (not shown).

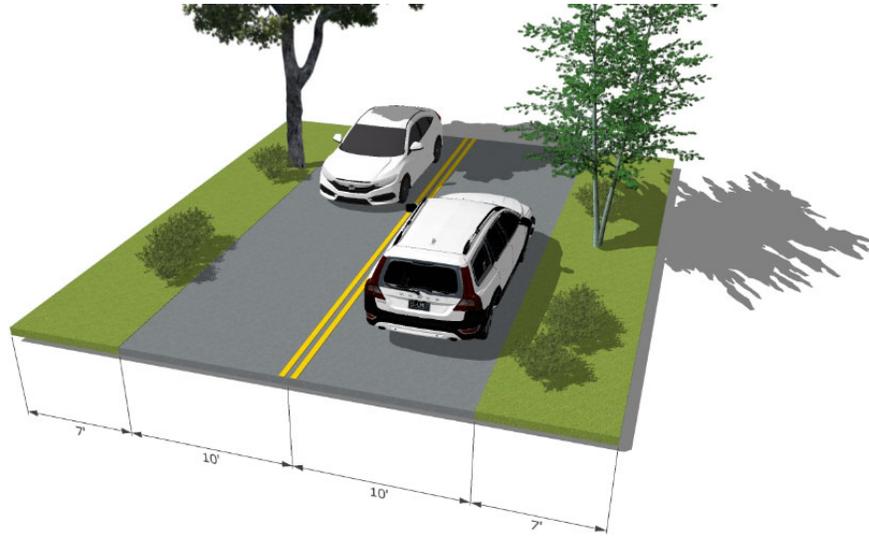


Edgell Road Available ROW Cross-Section

Edmands Road, Southborough Town Line to Grove Street

Existing Cross-Section

Edmands Road is a two-lane, two-way urban collector that provides access from Southborough Town line to Edgell Road. The roadway is considered a scenic route within the City of Framingham. The roadway width is typically 20 feet with no pedestrian or bicyclist accommodations along its length. The ROW along Edmands Road varies significantly but has long stretches that is typically 34 feet. The ROW width provides for 20 foot of roadway width (10 foot lanes and minimal shoulders) and approximately 7 feet of green space on both sides. Sidewalks and bike lanes are not provided on Edmands Road.



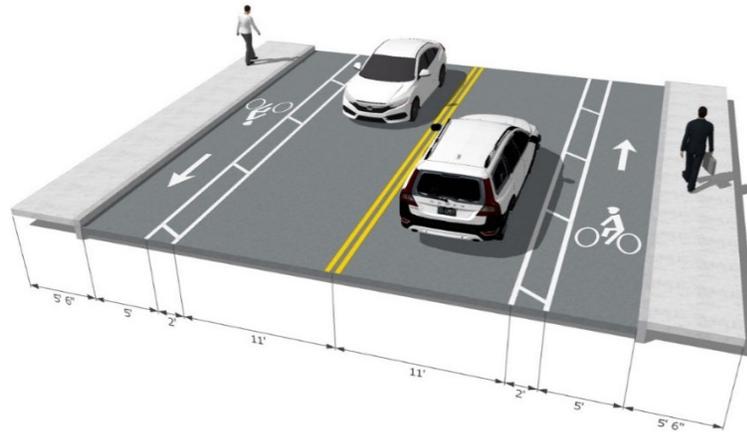
Edmands Road Existing Cross-Section

Existing Conditions	
Classification	Urban Collector
Jurisdiction	City Accepted
Weekday AADT	9,900 vpd ⁸
Weekday Truck ADT	350 vpd
Posted Speed Limit	20-30 mph
Sidewalks	None
Public Transit	None

Desired Cross-Section

The existing AADT on Edmands Road is just below MassDOT’s threshold for providing separated bicycle lanes; however, with projected background growth the corridor is expected to meet the minimum thresholds under future conditions. Based on MassDOT’s Separated Bike Lane Planning and Design Guide, Edmands Road should provide a minimum 5-foot bike lanes with 2-foot street buffers and 5.5-foot sidewalks. The guide recommends a 6-foot buffer width in all cases, and as such a wider buffer should be considered where possible.

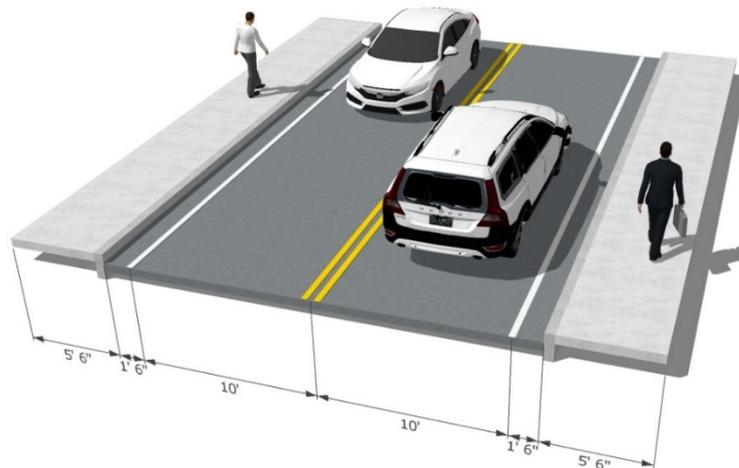
⁸ Existing AADT as presented in Framingham Master Plan Phase I Report



Edmands Road Desired Cross-Section

Available Right-of-Way Options

The existing ROW for Edmands Road allows for a 5.5-foot sidewalk and 1.5-foot shoulders on both sides of the roadway. Additionally, an alternative would be to provide a 5.5-foot-wide sidewalk on one side of the roadway with 4-foot-wide shoulders on both sides.



Edmands Road Available ROW Cross-Section

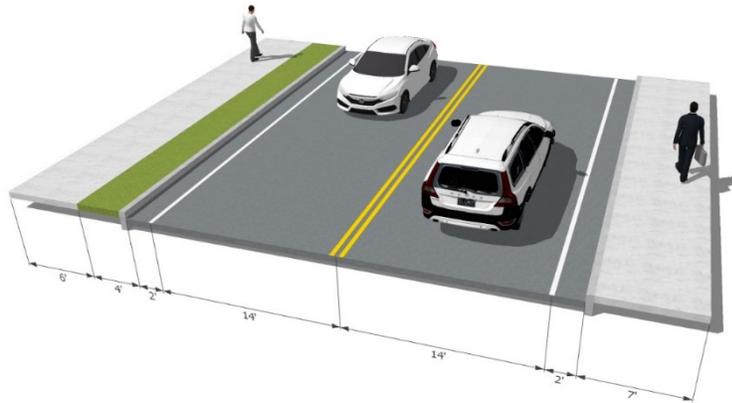
Route 126, Irving Street to Ashland Town Line

Existing Cross-Section

Route 126 (Hollis Street) is a two-lane, two-way principal arterial that provides access from Ashland Town line to Route 130. A portion of this corridor is under MassDOT jurisdiction and any improvements or updates would need to be approved by MassDOT and meet MassDOT design standards.

The roadway width is typically 32 feet with sidewalks on both sides of the roadway along its length. The ROW along Route 126 is typically 49 feet for the majority of the corridor. The ROW width provides for 32-foot roadway width (14-foot lanes and 2-foot shoulders) and

approximately 6 feet of sidewalk and 4.5 feet of grass strip on one side and 7 feet of sidewalk on the other side. Bike lanes are not provided on Route 126.



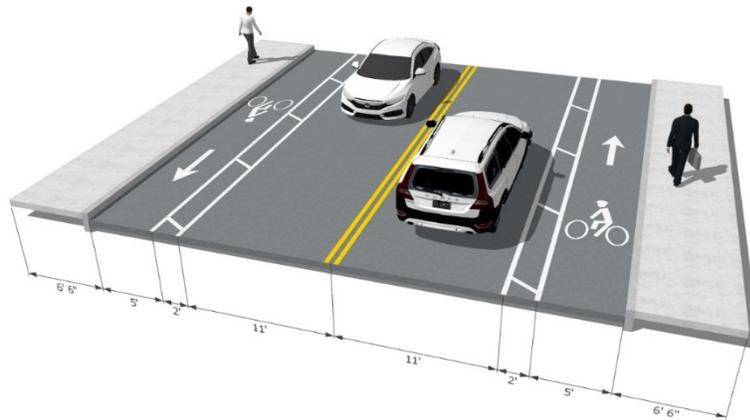
Route 126 Existing Cross-Section

Existing Conditions	
Classification	Urban Principal Arterial
Jurisdiction	Varies: MassDOT & City Accepted
Weekday AADT	24,200 vpd ⁹
Weekday Truck ADT	1,100 vpd
Posted Speed Limit	30-35 mph
Sidewalks	Both sides of roadway
Public Transit	MWRTA Routes 4 South & 6

Desired Cross-Section

Based on MassDOT’s Separated Bike Lane Planning and Design Guide, Route 126 should provide a minimum 5-foot bike lanes with 2-foot buffers. The guide recommends a 6-foot buffer width in all cases, and as such a wider buffer should be considered where possible. This can be provided within the available ROW as two 11-foot travel lanes and 5-foot bike lanes with 2-foot buffers can be accommodated on Route 126. An additional alternative is to provide a 10-foot shared use path on one side with buffered bike lanes on the other side (not shown).

⁹ Existing AADT as presented in Framingham Master Plan Phase I Report



Route 126 Desired Cross-Section

Route 30, Route 9 to Natick Town Line

Existing Cross-Section

Route 30 (Cochituate Road) is an urban arterial that provides access from Natick town line to Route 9. There are two distinct cross-sections along its length that is separated at Route 126 (Concord Street). The northeast segment limits run from Concord Street to the I-190 ramps, while the southwest segment limits are from Concord Street to the Route 9 access point.

Northeast Segment

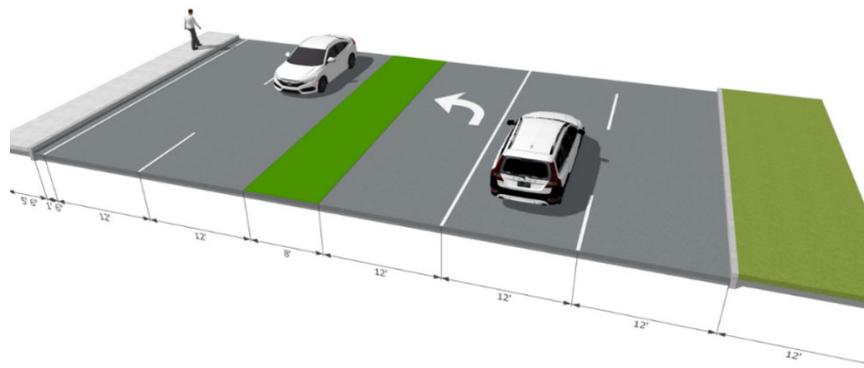
The northeast segment provides two lanes in both directions and turn lanes at intersections with a sidewalk on one side of the roadway along its length. The ROW along Route 30 for the northeast segment is at least 85 feet. The ROW width provides for 69.5-foot roadway width (five 12-foot travel lanes, 8-foot median buffer, and a 1.5-foot shoulder on the north side) and approximately 5.5 feet of sidewalk on the north side with 10-foot of grass buffer on the south side. Bike lanes are not provided on Route 30.

Southwest Segment

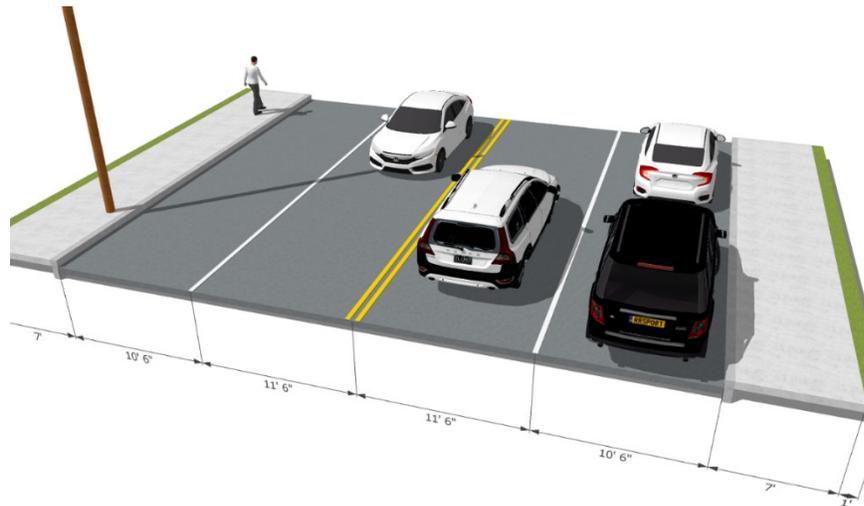
The southwest portion provides a 44-foot roadway cross-section with a parking aisle in one direction and sidewalks on both sides. The ROW along Route 30 for the southwest segment is typically 60 feet. The ROW width provides for 44-foot roadway width (11.5-foot lanes and 10.5-foot parking shoulders) and approximately 7 feet of sidewalk and 1 foot of grass strip on both sides. Bike lanes are not provided on Route 30.

Existing Conditions

Classification	Varies: Urban Principal Arterial & Urban Minor Arterial
Jurisdiction	City Accepted
Weekday AADT	27,500 vpd ¹⁰
Weekday Truck ADT	700 vpd
Posted Speed Limit	30-40 mph
Sidewalks	Varies between none at the I-90 ramps to both sides
Public Transit	MWRTA Routes 2, 3 & 4 North



Route 30 (NE) Existing Cross-Section



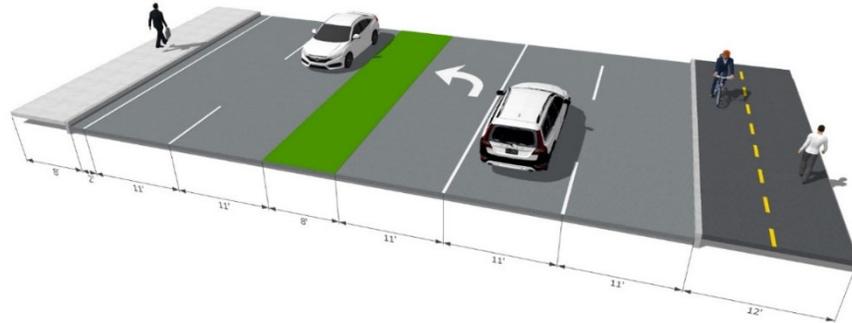
Route 30 (SW) Existing Cross-Section

¹⁰ Existing AADT as presented in Framingham Master Plan Phase I Report

Desired Cross-Section

Northeast Segment

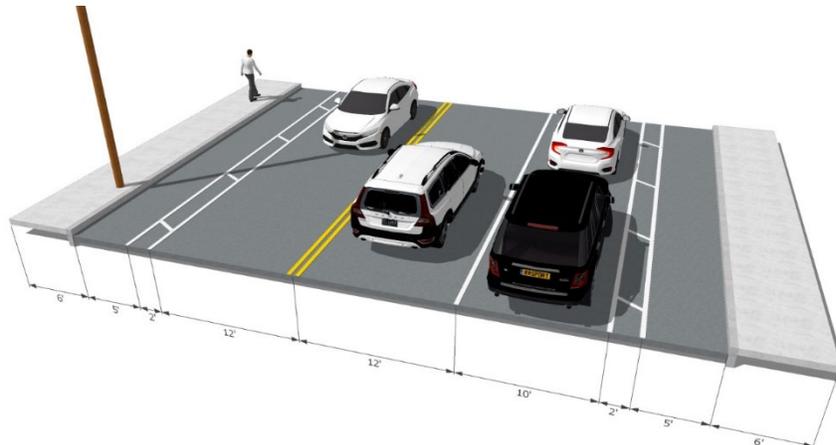
Based on MassDOT ED, the northeast segment of Route 30 should provide a shared-use path or side path in lieu of bike lanes due to prevailing vehicular travel speeds. The available cross-section is wide enough to provide the desired dimensions for full bicycle accommodations.



Route 30 (NE) Desired Cross-Section

Southwest Segment

Based on MassDOT's Separated Bike Lane Planning and Design Guide, the southwest segment of Route 30 should provide a minimum 5-foot bike lanes with 2-foot buffers. The guide recommends a 6-foot buffer width in all cases, and as such a wider buffer should be considered where possible. This can be provided without moving curb lines as two 11-foot travel lanes and 5-foot bike lanes can be accommodated on Route 30. This would require losing the parking aisle for the eastbound direction. Vertical deflections can be provided in the buffered area. The available cross-section is wide enough to provide the desired dimensions for full bicycle accommodations.



Route 30 (SW) Desired Cross-Section

Adaptive Signal System

While the focus of the corridor analysis is providing a multi-modal cross-section, improvements to the signal system along the Route 30 corridor was previously discusses as part of the Phase I TMP. VHB recommends that an adaptive signal system along this corridor continue to be considered as a long-term improvement plan.



5

Policy Improvements

In addition to reviewing specific intersections and corridor locations throughout the City, VHB has reviewed and made recommendations on a number of policies within Framingham, including existing formal traffic calming and crosswalk policies, as well as policy recommendations for transportation demand management and sidewalk connections.

Traffic Calming Policy

VHB reviewed the City of Framingham's 2012 Policy on Traffic Calming Measures and recommended alterations to make it a more effective and stronger policy. To do so, VHB reviewed not only Framingham's policy but those from three peer communities in Massachusetts and three from communities outside of Massachusetts. The intent was to highlight well-organized implementation programs and policies that included effective review criteria for prioritization. The six municipalities included cities and towns with residential populations similar to Framingham, i.e. no more than 200,000. For geographic diversity, municipalities throughout the Commonwealth and in different regions of the U.S. were selected. The peer communities included:

Massachusetts-based:

- › Lowell Neighborhood Traffic Calming Policy Flowchart & Request Form (2019)
- › Northampton Traffic Calming Program (2020)
- › Wayland Traffic Calming Policy (2011)

Other U.S. Cities:

- › Burlington, Vermont Traffic Calming Manual (2020)
- › Fayetteville, Arkansas Traffic Calming Policy (2021)
- › Vancouver, Washington Neighborhood Traffic Calming Program (2021)

Recommendations for revisions to Framingham’s traffic calming (TC) policy are also based on VHB’s experience planning walkable and bikeable communities and designing roadway corridors that promote multi-modal access and safety. While the City of Framingham has worked to improve safety using traffic calming measures, these recommendations are intended to provide a more-effective process to achieve transportation accessibility and safety for “all ages and abilities” of road users. The City of Framingham’s current Traffic Calming Policy can be found in the Appendix of this report.

Recommendations

General

- › Framingham’s policy is very thorough but includes a level of detail that can make it difficult for some residents to fully understand the requirements of the policy and the criteria for potential implementation of TC in their neighborhoods.

Graphic 5-1 Temporary traffic calming mini-roundabout in Arlington

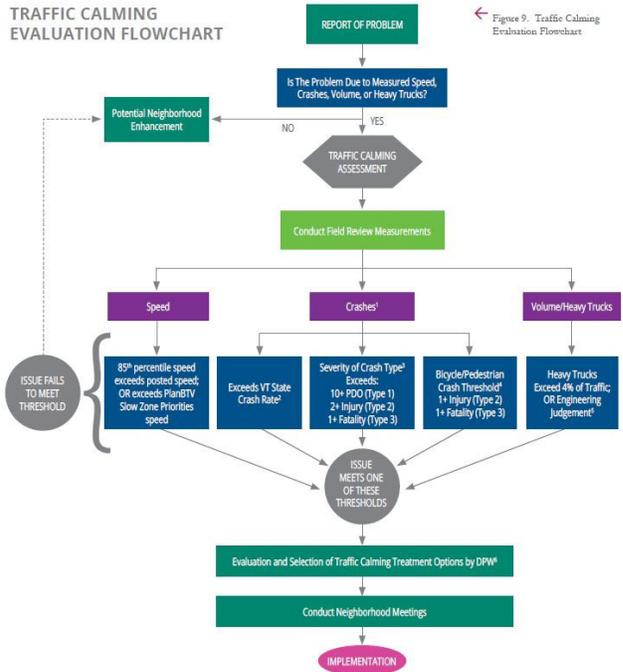


- › Because it is difficult to decipher the specific steps that define the TC request process, we recommend including the definitions, goals, special terms, policy language, and toolkit of TC measures in a designated section A. Section B—or possibly an Appendix—should include the process for requesting a TC measure and the evaluation criteria used to move the proposal forward.
- › Besides experimental TC measures installed by the City, consideration should be made for community-initiated temporary or pilot projects that offer low-cost measures that can be evaluated for short periods of time—typically one to six months—to test concepts at full scale.
- › The TC policy should include either internet links, or an appendix with maps indicating roadway classification, posted traffic speed, and designated emergency routes (avoiding the need for residents to search for that information on the City’s web site).
- › If available, providing an approximate dollar amount available for TC projects for a given fiscal year will help set expectations for the probability that a given project can be funded.

Community Request Process

- › Many of the peer communities’ policies include a flowchart to outline the steps in the request process. In Framingham, this would help residents—and even city staff—understand the sequence of steps required for planning, design, evaluation, and implementation.
- › The flowchart referenced above can explicitly make less-costly programs—such as enforcement, signage, and road markings—as options when the preliminary evaluation of the TC request results in “no further action”. These programs currently reside on page 9 but are somewhat hidden.
- › The recommended flowchart should also clarify the timeline from start to finish, i.e. the number of weeks or months required for each step in the process.

Graphic 5-2 Example flowchart from Burlington VT’s Traffic Calming Manual



← Figure 9. Traffic Calming Evaluation Flowchart

Evaluation Method

- › Although the criteria used in Framingham’s “Needs Assessment” is similar to Wayland’s, the latter’s policy includes a Criteria for Ranking of Traffic Calming Projects Table. We recommend replicating this sophisticated method for scoring and ranking proposed TC projects in Framingham.
- › More detail about the evaluation method for removal of TC measures is needed, especially potential criteria to determine if/when the project creates a “hazardous” condition.
- › Clarity related to which TC measures are available for a given roadway classification is needed, as some of the language used on page 12 of the current TC Policy is unclear.

Toolkit of Traffic Calming Measures

- › The List of Traffic Calming Elements (pg. 4-6 of the current TC Policy) should include broader categories to differentiate horizontal vs. vertical deflection, and roadway narrowing; also, example photographs will improve the community’s understanding of available TC measures.

Graphic 5-3 Bump outs and median islands calm traffic by narrowing the width of the roadway at critical locations such as crosswalks (photo: Medford MA)



- › Information related to the effectiveness of a given TC measure and its approximate cost will temper community expectations for speedy implementation.
- › While the City has expressed a specific interest in using speed-feedback signs (SFS) as a TC measure, none of the other communities reviewed include it as an option. It could perhaps be included with Police Enforcement within a “Programs” category, since neither SFS nor police enforcement are typically considered a traffic calming measure per se (though they can both be effective).

Crosswalk Policy

VHB reviewed the City of Framingham DPW’s 2020 Crosswalk Policy and Design Guidelines and recommended alterations to make the document more effective (see Appendix for a copy of the policy and design guidelines document). Recommended revisions are based on VHB’s experience developing safety-related manuals and designing roadway corridors with an emphasis on pedestrian access and safety. We recognize the City of Framingham’s recent steps to providing well-designed road crossings for pedestrians; the intent is for the following recommendations to help improve the crosswalk policy and to strengthen policy’s accompanying guidelines.

Recommendations

General

- › A cover page would introduce the document more effectively and provide a place for a Table of Contents and any misc. acknowledgements (e.g. current Mayor, etc.)
- › In various locations, reference should be made about further guidance related to pedestrian safety counter measures found in the FHWA "STEP Guide"¹¹
- › Example photographs or graphics are needed to show the variety of crosswalk-related improvements

Introduction

- › Besides reference to MUTCD and the ADA Accessibility Guidelines for Buildings and Facilities, mention of the Public ROW Accessibility Guidelines (PROWAG) and Architectural Access Board (AAB) is needed.
- › Attention should be paid to some of the language used, for example:
 - is there really "strong evidence" or is anecdotal evidence more accurate?
 - "this type of aggressive pedestrian behavior" uses very judgmental language
 - "accident" should be replaced with the more-neutral "crash" in many places
 - pedestrian safety enhancements shouldn't be considered "special treatments"
 - Engineering studies can't "ensure" pedestrian safety, but they can enhance it

Design Features of Marked Crosswalks

- › Since a number of the city's crosswalks have been implemented with decorative crosswalk designs that feature white longitudinal lines, gradually phasing-out yellow lines should be considered. Consistency of color treatment citywide would be more effective.
- › The narrative describes use of epoxy or mechanically-heated synthetic compound for striping, whereas the graphics reference potential use of water-borne roadway paint.
- › Add a section related to use of in-street pedestrian crossing signs (MUTCD R1-6) as an option for mid-block and uncontrolled crosswalk locations.

Graphic 5-4 In-street Pedestrian Crossing Sign



¹¹ See FHWA's Guide for Improving Pedestrian Safety at Uncontrolled Crossing Locations at https://safety.fhwa.dot.gov/ped_bike/step/docs/STEP_Guide_for_Improving_Ped_Safety_at_Unsig_Loc_3-2018_07_17-508compliant.pdf

Marked Crosswalks at Intersections (Signalized and Unsignalized)

- › The descriptions of 3.1.2 Pavement Marking Patterns (PMP), and 3.1.3 Crosswalk Marking Width and Color (CMWC) match the text in 2.1 and 2.2. The same goes for multiple PMP and CMWC sections throughout the document. For brevity and to avoid the need to revise multiple sections to ensure consistency and accuracy, its best for all latter sections to simply reference 2.1 and 2.2 rather than repeating the same text.
- › Although it is not directly related to crosswalk design, a new section describing Leading Pedestrian Intervals at signalized intersections should be included.
- › Yield Line setbacks from unsignalized or uncontrolled crosswalks need to consider posted speed limit, rather than stating 4' minimum for all roadways. Crosswalk signs should be located no less than 100' and no more than 200' from an unsignalized or uncontrolled crosswalk (not 650' maximum).
- › An ADT of 3,000 vehicles per day should be removed as a requirement for crosswalk installation at unsignalized intersections or at uncontrolled approaches.

Graphic 5-5 Leading pedestrian intervals provide a 3-5 second head start for pedestrians to start crossing the street before the green light, improving their visibility to drivers.



Marked Crosswalks at Mid-block Locations

- › Thresholds to include additional pedestrian safety treatments at crosswalks near schools need to be lowered to accommodate a higher number of safer crossings used by children.
- › Criteria for Installation should reference the potential to use a Pedestrian Hybrid Beacon

Pedestrian Hybrid Beacon and RRFB's

- › Since these two beacon options are included in the current policy and guidelines, guidance related to other crosswalk-related safety measures should be included—median islands, curb extensions, and raised crosswalks—and presented in a matrix format to indicate applicability for use depending on traffic volumes and speed conditions.

Marking Crosswalks at All Legs of an Unsignalized Intersection

Even without a marked crosswalk, all legs of an uncontrolled intersection are considered legal crossings. To provide a direct path of travel for pedestrians, all legs of the intersection should include a marked crosswalk. However, in some circumstances it is best to encourage

crossing of a busy street at a particular leg of the intersection for safety purposes. Omitting a marked crosswalk should be considered if at least one of the following criteria is met:

- › Paved sidewalks are not present or provided on one side of one or more intersecting side streets.
- › Horizontal or vertical curves on at least one approach reduce visibility of the crosswalk and sight lines for both motorists and pedestrians.
- › Complex intersection geometry that results in one crossing of the major roadway to be significantly longer than the other, increasing the exposure time for pedestrians.
- › The presence of, or planned installation of, a left turn lane on one major-street approach to the uncontrolled intersection; this increases the exposure time for pedestrians and creates a dual-lane threat to crossing pedestrians (if left turn lanes are present on both approaches, engineering judgement is needed to determine which leg or legs of the intersection should include marked crosswalks).

Public Transit

The existing public transit infrastructure within the City of Framingham was evaluated as part of the Phase I TMP. During this phase, we coordinated with the MWRTA and the City of Framingham to identify gaps within the transit network. The recommendations below are intended to address the concerns that were raised. The MWRTA system map is included in the Appendix.

Recommendations

- › The City should identify a transportation liaison. This person would be responsible for coordination with MWRTA. The transportation liaison and an identified lead from MWRTA would be responsible for the following:
 - Identify high needs areas within the community where MWRTA services could be expanded.
 - Outreach to neighborhoods where MWRTA is underutilized to spread the word.
 - Develop a travel training program for outreach to corporate busses/shuttles and coordination with a transportation manager role at large companies and campuses.
- › The Planning Board should keep MWRTA involved in the review process for large development projects, MWRTA should be considered an abutter for projects that are located along MWRTA routes. Developments that have opportunities to be added along an existing or future MWRTA route should be required to reserve space for a bus stop.
- › MWRTA & the City should monitor the existing Catch Connect pilot program & expand beyond the pilot area as needed.
- › The City should explore adding a rideshare system like NewMo¹² in Newton that could be implemented for key locations within the City of Framingham. NewMo is a city-sponsored ridesharing service in Newton, where riders can book rides straight from their

12 NewMo; <https://www.newtonma.gov/government/planning/transportation-planning/newmo>

phone for just \$2 a ride. Local businesses and organizations have the option to cover the cost of rides for their members.

- › MWRTA should consider implementing additional connections to the north and south.
- › The City, MWRTA and MBTA should work together to identify opportunities to construct a multi-modal station that could serve Commuter Rail, MWRTA routes and regional buses at one location.
- › As previously mentioned, VHB recommends that the City work with the MBTA to ensure that the intersections located directly adjacent to the Worcester Line Track and Stations Accessibility Improvements project to ensure that these locations are improved as part of the project and not impacted negatively.

In addition, the following improvements were presented in the Golden Triangle report that should be re-iterated:

- › Property owners will need to become major players in transit improvements, including lobbying MassDOT and the MWRTA for improvements, providing employee incentives for commuting by transit and providing on-site transit amenities.
- › Work with MassDOT and the legislative delegation to secure funding for the infrastructure that is needed to reach the desired growth. Specifically, MassDOT should be approached regarding:
 - Providing bus pull outs and shelters along Route 9 and Route 30 in order to encourage use of transit.
 - Incorporating the transit accommodations into any infrastructure projects.
- › Evaluate transit routes and headways, stop locations and amenities, and pedestrian connections to potential destinations periodically to ensure that transit is a viable alternate mode for employees, residents, and visitors to The Triangle.

Transportation Demand Management

Currently, the City does not have formal TDM requirements for developers, other than for projects located within the Technology Park District requiring a special permit for increased Floor Area Ratio (FAR), Site Plan Review and/or Off-Street Parking. Reducing vehicle trips is essential to reducing parking demand, congestion and improving safety throughout the City. VHB recommends that the City consider implementing a more consistent and robust TDM requirement as outlined below.

Recommendations

- › A TDM plan should be required for all developments over a certain size (either by square footage, number of residents, or number of employees), regardless of the district the Site is located within.
 - TDM Plans should identify clear and measurable goals (i.e.: reducing vehicular volume by a certain percent or attaining a specific mode share percentage).
 - Developments and companies who fall under that threshold should still be provided a template and guidance to start implementing TDM measures at a smaller scale.

- Projects located within 0.5-miles of an MBTA Commuter Rail Station should be providing a transit subsidy of at least 50%.
- TDM Plans should include investing in infrastructure for bike lanes, bus lanes, etc.
- › All TDM Plans need to consider how to include people with disabilities and language barriers.
- › Implemented TDM plans should be monitored at least every other year for up to five years post occupancy.

Sidewalk Connections

As mentioned in Phase I, a sidewalk inventory was completed that involved certain segments in the City that analyzed the overall condition, based on the wear, cracking and distortion present on each sidewalk section. Existing conditions from the Phase I inventory are shown in Figure 5.1. Phase II expanded on Phase I work and further investigated missing sidewalk connections in the downtown, rail-trail connectivity, and the missing sidewalk segments throughout the City.

Downtown Sidewalk Gap Analysis

While Phase I focused on the selected segments condition, the focus for Phase II was identifying missing sidewalk links in the Downtown area. While the majority of the street segments in the Downtown region have sidewalks, there are certain high-pedestrian activity locations that were highlighted as missing gaps in the overall sidewalk network. The gaps identified demonstrate where there is a sidewalk on either side of the gap with a missing connection. The gap analysis did not consider if sidewalks were provided on the other side of the street, as it is expected that full sidewalks would be provided in the downtown region. A map showing these gaps is provided in Figure 5.2.

Citywide Sidewalk Network

The final task for the sidewalk analysis involved identifying the street segments throughout the city where sidewalks are not provided on at least one side of the roadway. This differs from the previous task where we only looked at missing gaps of sidewalk on both sides in the downtown area. This task was completed with the help of MassDOT's Road Inventory¹³. A map showing the missing sidewalk segments for the City is shown in Figure 5.3.

As shown in Figure 5.3, there are long segments of roadway that do not provide a sidewalk on either side of the street. Constructing full sidewalks for these segments is important for neighborhood mobility and to reduce dependency on automobiles. These improvements are considered to be long-term recommendations, due to the cost associated with completion of the sidewalk network throughout the city, including the potential need for property acquisition. A plan to implement sidewalks at missing locations should be developed for each neighborhood that could have a potential desire for sidewalks.

13 <https://geo-massdot.opendata.arcgis.com/>

Figure 5.1: Existing Sidewalk Conditions

Transportation Master Plan Phase II | Framingham, Massachusetts



| December 2021



- Condition**
- Excellent
 - Good
 - Fair
 - Poor

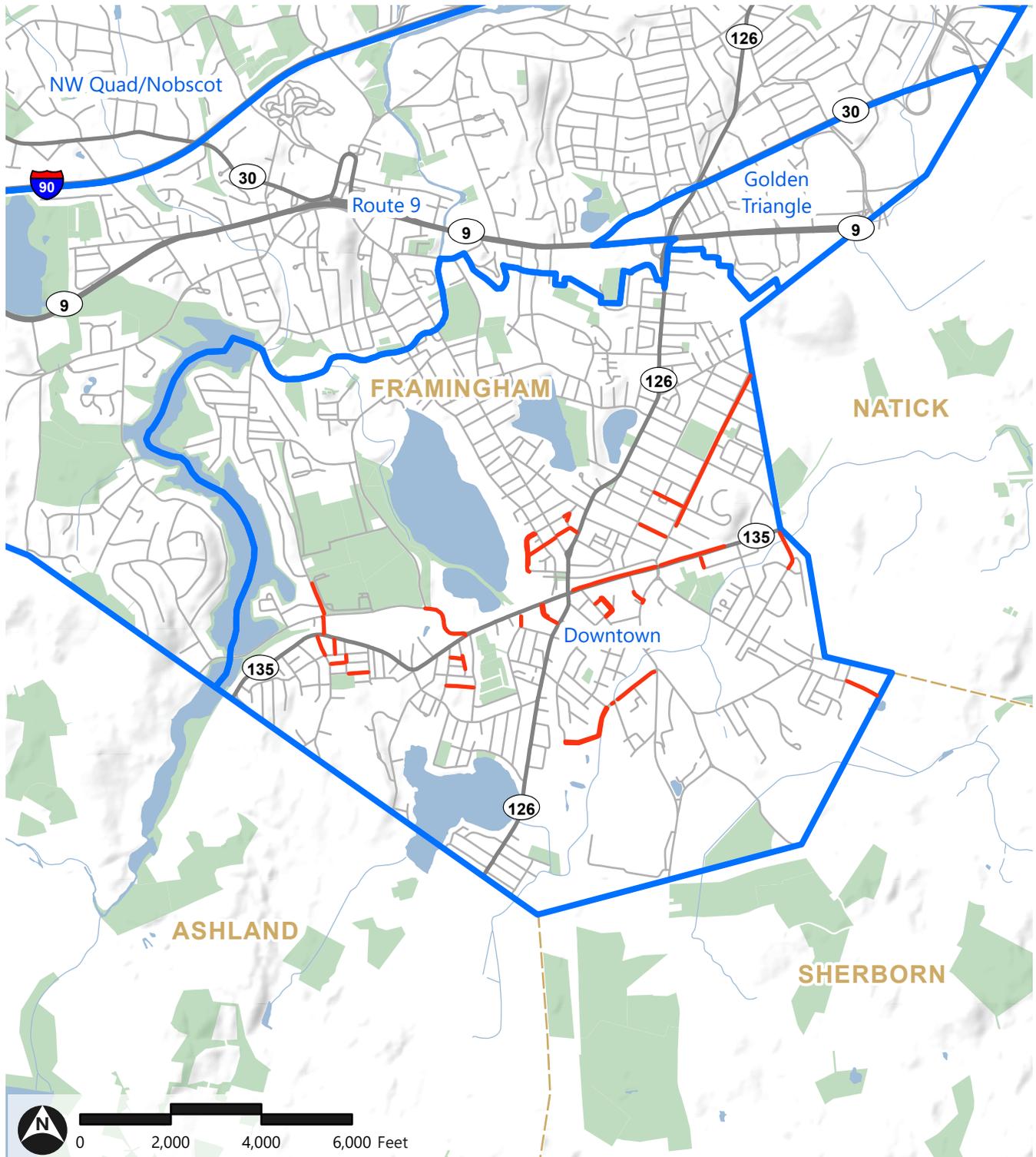
Source: Town Sidewalk Accessibility Study, March 2016

Figure 5.2: Missing Sidewalk Links

Transportation Master Plan Phase II | Framingham, Massachusetts



| December 2021



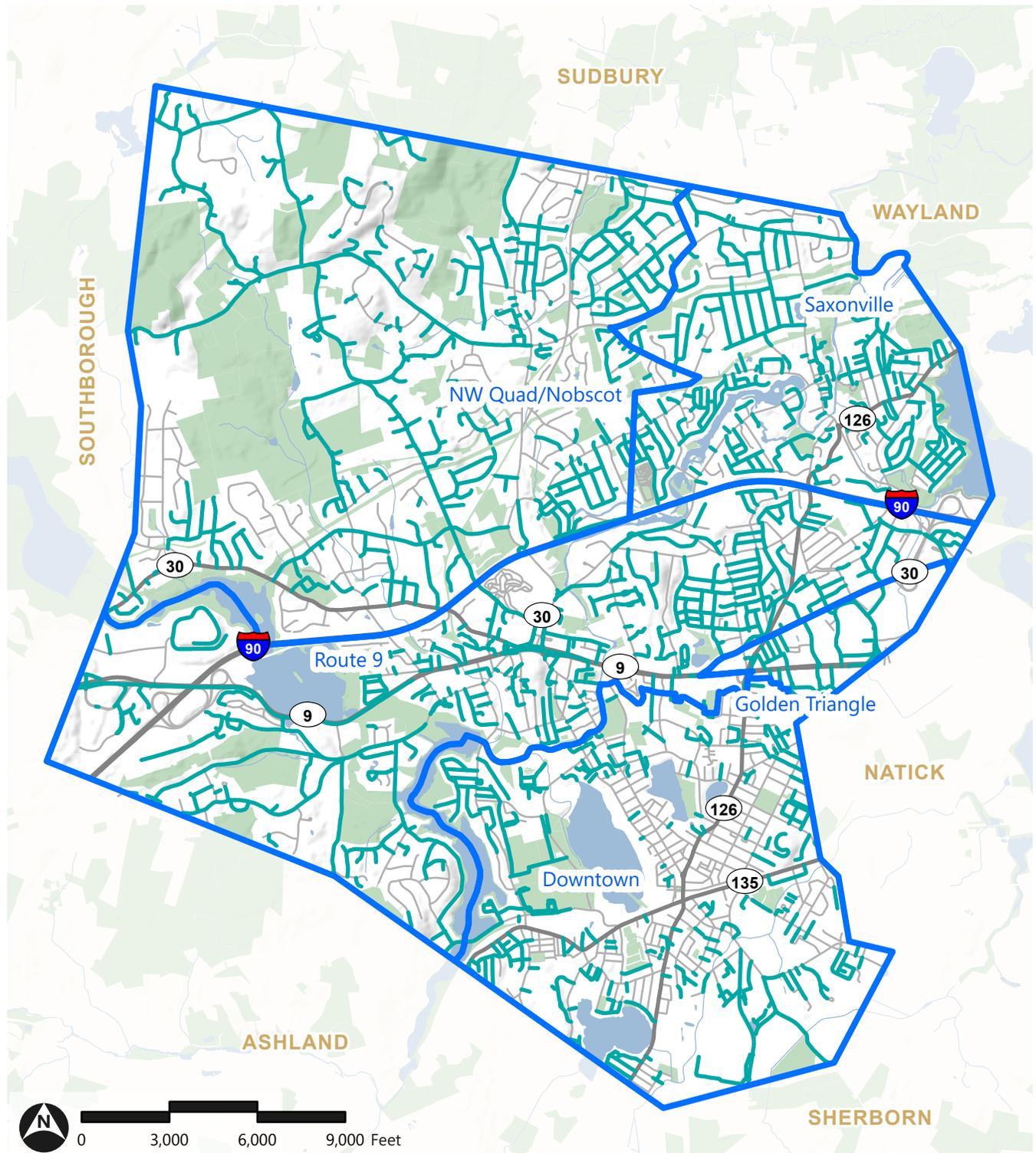
— Sidewalk Gaps - Downtown

Figure 5.3: Missing Sidewalk Segments

Transportation Master Plan Phase II | Framingham, Massachusetts



| December 2021



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— Missing Sidewalks

Source: MassDOT Road Inventory

Trails Connectivity

During discussions with the City and residents, some residents expressed concern that there has not been enough of a focus on trails. While this plan did not analyze existing or future potential trails, connectivity to trails with the adjacent infrastructure was investigated.

There are three (3) rail trails that currently exist or are planned for the City: the Cochituate Rail Trail, the Bruce Freeman Rail Trail, and the Upper Charles Rail Trail. The Cochituate Rail Trail is a recently constructed rail trail with access from the Saxonville neighborhood into Natick with a potential extension to the Natick Center Commuter Rail Station. The Bruce Freeman Rail Trail is a planned rail trail that would provide access from points near Framingham State University up north to Lowell. The trail segments from Concord to Westford are nearing completion with the segments located in Sudbury and Lowell nearing Final Design stage. A priority of the Bike and Pedestrian Plan report is to acquire the CSX corridor and design and construct Phase 3 of the regional Bruce Freeman Rail Trail. The Upper Charles Rail Trail has completed segments in Milford, Holliston, and Sherborn with a potential terminus at Framingham Centre with connections from both Ashland and Sherborn.

Aqueduct Trails

In May 2012, the Massachusetts Water Resources Authority (MWRA) have approved a policy to create trails on inactive aqueducts that would provide open space for the public and connections with existing trails. There are 3 aqueducts located in Framingham: Weston Aqueduct; Sudbury Aqueduct, and Hultman Aqueduct. These trails are intended to be unimproved paths but interact with the local roadway network.

While the design and permitting of the rail trails and the aqueduct trails discussed takes years and a variety of stakeholders, providing localized connections (i.e., sidewalks, crosswalks, and ramps) is a process that can be done relatively quickly. A priority of the Bike and Pedestrian Plan report is to continue to increase public access to the aqueduct system.

A map showing the existing and proposed trails in Framingham and the associated crossings/connections is shown in Figure 5.4.

Miscellaneous Trails

In addition to the rail and aqueduct trails in the City, there are shorter segment trails scattered through the City.

- › The Dudley Multipath trail is a trail that runs along the east side of Dudley Road from Fountain Street to Mt Wayte Avenue.
- › The Farm Pond trail follows along the west side of Farm Pond and connects to the Dudley Multipath trail. There have been discussions of extending the Farm Pond trail to complete the trail around Farm Pond.
- › The Bay Circuit Trail is a permanent recreation trail that extends through 37 towns in Eastern Massachusetts, linking parks and open spaces in fifty-seven Boston area communities. In Framingham, the trail follows the western perimeter of Framingham.

- › The Carol Getchell Nature Trail is an existing trail that runs north to south along the west side of the Sudbury River.
- › The Chris Walsh Trail is a proposed trail that would provide direct access to residents in the Downtown area to the recreational corridor.

When evaluating the number of potential trails through Framingham, it is easy to imagine the City becoming the MetroWest Trails Hub, especially considering the potential for the East Coast Greenway, a 3,000-mile trail that could connect 15 eastern states, to be routed through Framingham via the aforementioned Bruce Freeman Rail Trail and Upper Charles Trail.

Safe Routes to Schools

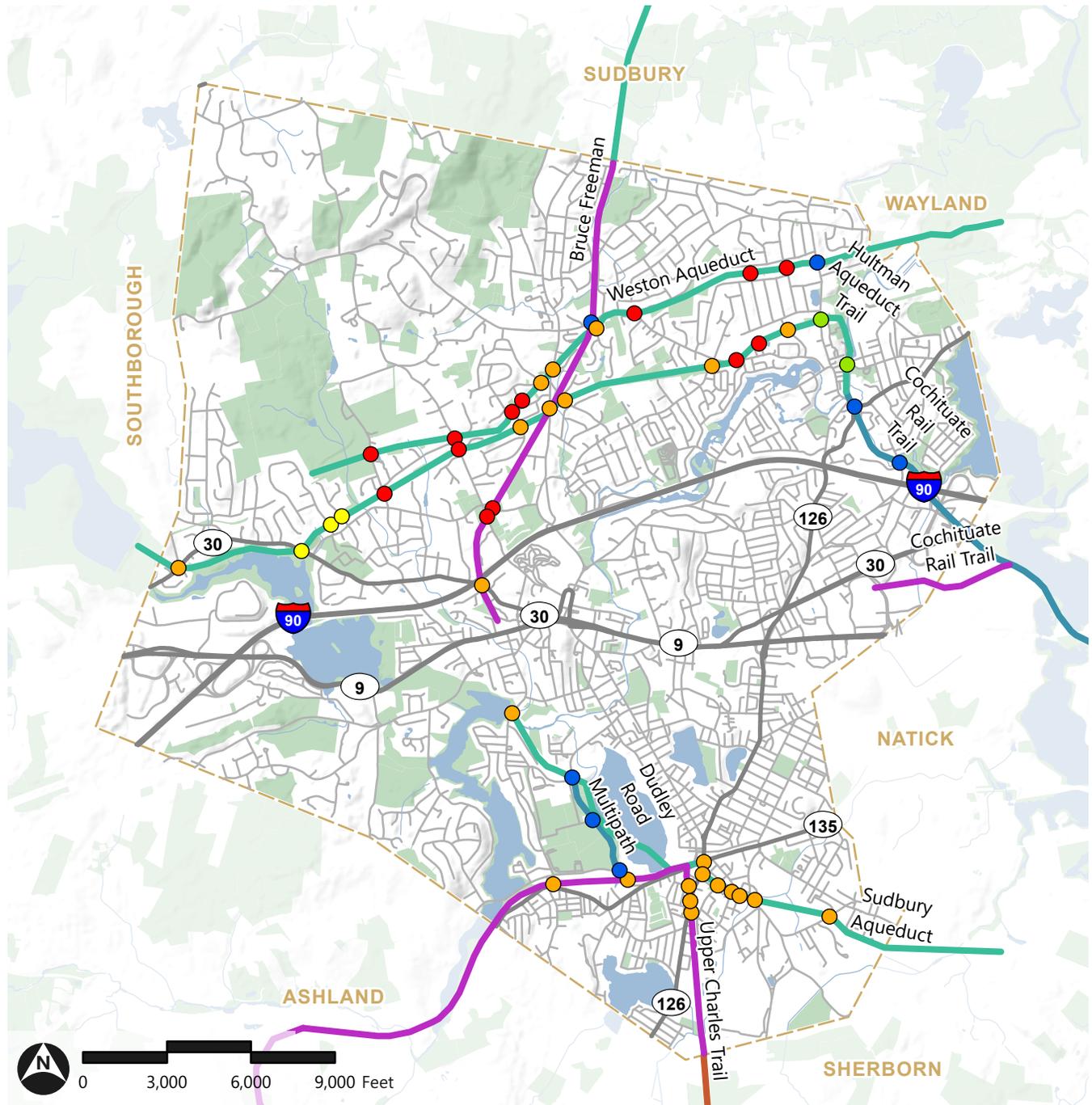
The City of Framingham is proud to have several schools that partner with the Massachusetts Safe Routes to Schools (SRTS) program. The SRTS mission of promoting active, and healthy transportation options regardless of a student's level of mobility, socio-economic level, and/or race aligns with the City's priorities. The City envisions this partnership as a means of supporting our students' overall health and wellness by improving walkability to schools.

Figure 5.4: Existing & Proposed Trails

Transportation Master Plan Phase II | Framingham, Massachusetts



| December 2021



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- | Sidewalks, Ramps, Crosswalks | | Trail Status | |
|------------------------------|--------------------|--------------|------------|
| ● | No Accommodations | — | Existing |
| ● | Sidewalks Only | — | Underway |
| ● | No Crosswalks | — | Potential |
| ● | No Ramps | — | Considered |
| ● | All Accommodations | | |

Source: MAPC, MWRA, and City of Framingham

Bicycle Improvements

As a compliment to stronger pedestrian connections, improved bicycle mobility and infrastructure will strengthen neighborhood connections and reduce dependency on automobiles. The City will have to balance the needs of the bicycling community with the realities of property implications and roadway jurisdictional entities.

VHB recommends that the City review all roadway corridors under the City's jurisdiction and identify "key bike corridors" on which to facilitate improvements. This includes evaluating public spaces within the downtown and village centers to ensure that adequate bicycle parking is provided. The Bike and Pedestrian Plan report indicated to prioritize arterial roadways and secondary roadways for bike & pedestrian implementation.

There are a number of MassDOT owned roadways within the City that could benefit from improved bicycle treatments but require coordination with the State. The City should work with MassDOT through their ongoing Route 9 project to ensure bicycle mobility needs are considered and incorporated into their improvements per MassDOT's Healthy Transportation Policy. Additionally, the City should continue to coordinate with MassDOT and adjacent municipalities to appropriately plan for increased connected bicycle infrastructure in the city and to/from surrounding communities.

Similar to the sidewalk connections at existing and future rail trails within Framingham discussed above, the City should advocate for appropriate bicycle protection at crossings and access to the trails in the design of any future rail trails in the City.



6

Recommendations and Implementation Plan

This chapter provides a complete description of each of the recommended actions. The review of existing and future transportation conditions in Framingham helped to clarify the City’s physical and operational transportation needs. In addition, throughout the planning process, the project team received input from the public to develop a clear understanding of the issues. The Recommended Action Plan includes various alternative approaches to address the transportation needs identified.

Recommendation Plan

Goals

Each recommendation has been prioritized as a short-term, medium-term or long-term item for implementation. The timeline utilized for these recommendations is as follows:

- › **Short-Term Action:** 1-5 Years
- › **Medium-Term Action:** 5-10 Years
- › **Long-Term Action:** 10+ Years

Currently, the challenge for the City of Framingham is to identify and provide the transportation infrastructure needed to enhance existing and active businesses; support and

enhance the downtown area; and improve the economy and quality of life of the residents of the City. The proposed recommended actions identify potential enhancements of intersection and roadways, parking, pedestrian paths, and bicycle connections. The recommendations are organized in the following manner:



Traffic Management

- › Operations
- › Safety



Multimodal Corridor Improvements

Pedestrian & Bicycle Infrastructure



- › Crosswalk Policy Updates
- › Sidewalk Connections
- › Traffic Calming Policy Updates



Transportation Demand Management



Public Transit

Evaluation Criteria

The aggregate recommended alternative categories presented above have been evaluated against the following criteria, as shown in Table 6-1 through 6-5:

- › Mobility/Accessibility
- › Safety
- › Environmental Effects
- › Community Effects
- › Environmental Justice
- › Cost



Traffic Management

The first portion of the traffic management recommendations focuses on intersections that were reviewed for conceptual improvements. More general traffic management strategies are also presented.

Improve Operational and Safety Conditions at Selected Intersections

The list of intersections that were reviewed as part of this study was developed in consultation with City officials. The intersections listed were chosen for potential improvement alternatives based on existing and projected operations and safety characteristics at these intersections. The intersection improvements have been subdivided into short-term, medium-term and long-term improvements and can be funded through both City and state funding sources. In addition, intersections affected by private development could be funded as part of the mitigation package for the development.

Edgell Road at Edmands Road/Water Street

Long-Term Actions:

- › Provide a northbound right-turn lane, if needed in the future, when and if, the right-of-way to construct it can be secured.

Route 30 (Pleasant Street) at Temple Street/Woodmere Road

Long-Term Actions:

- › Consider re-aligning Temple Street to form a four-legged intersection with Woodmere Road.

Salem End Road at Badger Road/Gates Street

Long-Term Actions:

- › Design and construct a single-lane roundabout to replace the current configuration.

Salem End Road at Temple Street

Short-Term Actions:

- › Re-stripe the Salem End Road eastbound approach to provide a single lane wide enough to allow vehicles traveling through an opportunity to go around vehicles waiting to take a left turn onto Temple Street.

Medium-Term Actions:

- › Install overhead signals with backplates to replace the existing signal poles.
- › Construct a crosswalk across Temple Street with ADA ramps.

Salem End Road at Winter Street

Short-Term Actions:

- › Optimize the signal timings and provide a northbound leading phase.

Long-Term Actions:

- › Re-align the intersection to provide separate northbound left-turn, through and channelized right-turn lanes as well as realigning the northbound and southbound approaches to reduce the existing offset.

Route 30 (Cochituate Road) at Beacon Street

Medium-Term Actions:

- › Provide a second westbound receiving lane on Route 30 as well as a tightened northwest corner radius.

Route 30 (Cochituate Road) at Whittier Street/Shoppers World Drive

Medium-Term Actions:

- › Redesignating the Whittier Street and Shoppers World Drive approach lanes.
 - Shoppers World Drive northbound approach would be restriped from LT|T|R to L|T|R
 - Whittier Street southbound approach would be restriped from L|LT|T|R to L|L|T|TR.
- › Move the median island in the southwest corner of the intersection slightly to the west to make room for two southbound receiving lanes.
- › Re-align the crosswalk on the west leg of the intersection.

Irving Street at Leland Street/Western Avenue & Irving Street at Herbert Street/Loring Drive

Long-Term Actions:

- › As part of any potential redevelopment at the current MCI-Framingham Site, VHB recommends that the City work closely with the developer to redefine this neighborhood through the following improvements:
 - Consider constructing an east-west roadway connecting Loring Drive and Western Avenue. This could be located to the north of or directly through the campus.
 - Close off the Irving Street westbound approach to the intersection of Irving Street at Herbert Street/Loring Drive, creating a three-legged intersection.

Bishop Street at Howard Street, Route 135 (Waverly Street) at Bishop Street/Beaver Street & Beaver Street at Blandin Avenue

Short-Term Actions:

- › Consider extending the length of the double right-turn lanes on Howard Street eastbound approach to Bishop Street, requiring a reduction in on-street parking spaces along Howard Street.

Medium-Term Actions:

- › VHB recommends that the City work with the MBTA to ensure that these locations are improved as part of the project and not impacted negatively.

Leland Street at Beaver Street/Kendall Avenue

Short-Term Actions:

- › Collect additional data to confirm that this location meets the full eight-hour warrant for a signal.

Long-Term Actions:

- › Implement geometric changes including reducing the pavement width across Leland Street at the intersection, reducing the pedestrian crossing, and decreasing the turning radius from Leland Street to Kendall Ave.
- › Signalize the intersection, provided additional data collection confirms that volumes meet an eight-hour warrant.

Route 135 (Waverly Street) at Winthrop Street

Short-Term Actions:

- › Provide additional traffic signal post on the southwest corner and separate existing signal heads to provide back plates, to improve visibility.

Long-Term Actions:

- › Fully upgrade the signal with overhead mast arms for better visibility.

Village Green Cluster

Short-Term Actions:

- › Consider appropriate treatments that could be applied to this area from the updated traffic calming policy, when completed.
- › Collect additional data to evaluate whether a raised crosswalk on Vernon Street and/or a raised intersection at Edgell Road/Auburn Street can be achieved without significant traffic implications.

Medium-Term Actions:

- › Construct a raised crosswalk at the existing midblock crosswalk along Vernon Street and/or a raised intersection at the intersection of Edgell Road at Auburn Street, if deemed appropriate.

Central Street at Simpson Park Cluster

Short-Term Actions:

- › Collect additional data to confirm that the intersection of Central Street at Summer Street meets/will meet the full eight-hour warrant for a signal.

Long-Term Actions:

- › Dead-end Fenwick Street at its northern terminus.
- › Tee up the resulting three-legged intersection of Central Street at Haynes Road.
- › Signalize the intersection of Central Street at Summer Street, provided additional data collection confirms that volumes meet an eight-hour warrant.

Table 6-1 Traffic Management Evaluation

Goals	Objectives	Impact
Mobility & Accessibility 	Decrease congestion and reduce delays	●
	Improve bike and pedestrian connections	●
	Coordinate existing transit services	●
	Promote active transportation	●
Safety Improvements 	Identify, eliminate, or mitigate locations and situations that pose hazards	●
	Address current design standard deficiencies	●
Environmental Effects 	Support smart growth, anti-sprawl initiatives	●
	Avoid/minimize/mitigate impacts to the natural environment	●
	Minimize greenhouse gas emissions	●
	Reduce pollutants and particulate matter impacts	●
	Minimize transportation-related noise impacts along the corridor	●
Community Effects 	Support existing and protected economic development	●
	Improve connectivity between neighborhoods	●
	Incorporate healthy community design features	●
Environmental Justice 	Benefit environmental indicators (e.g., air quality, noise, water quality, etc.) in areas where EJ populations and other marginalized groups reside	●
	Improve non-motorized access and connectivity between business centers and employment centers	●
	Avoid/minimize/mitigate social equity impacts	●
Cost 	Identify solutions that are cost-effective in the context of state transportation planning	●
	Consider constructability and expected project lifespan	●

- Positive Impact
- Neutral Impact
- Negative Impact



Multimodal Corridor Improvements

The existing corridor cross-sections have been reviewed, and Chapter 4 explored the recommended “ideal” cross-sections which provide fully separated bicycle accommodations, based on MassDOT’s design guidelines for the daily vehicular volume experienced along each corridor. In many cases, the cross-sections that can accommodate separated bicycle lanes will require more roadway with than is currently available. Alternatively, a second recommended cross-section has been provided to demonstrate what

Edgell Road, Route 9 to Sudbury Town Line

Short-Term Actions:

- › Add sharrow pavement markings and signage along the roadway.

Medium-Term Actions:

- › Construct sidewalks on both sides of the roadway for the entire corridor length.

Long-Term Actions:

- › Implement a cross-section that provides fully separated bicycle lanes when, and if the additional right-of-way required has been secured.

Edmands Road, Southborough Town Line to Grove Street

Short-Term Actions:

- › Add sharrow pavement marking and signage along the roadway.

Medium-Term Actions:

- › Construct a sidewalk on one side of the roadway for the entire corridor length.

Long-Term Actions:

- › Implement a cross-section that provides fully separated bicycle lanes when, and if the additional right-of-way required has been secured.

Route 126, Irving Street to Ashland Town Line

Since a large portion of this corridor is owned by MassDOT, any improvement must adhere to the design guidelines and provide fully separated bicycle lanes in both directions. No short-term recommendations have been provided, since any installation of separated bicycle lanes would require additional time for planning, design and funding prior to construction.

Medium-Term Actions:

- › Construct a sidewalk on one side of the roadway for the entire corridor length.

Long-Term Actions:

- › Implement a cross-section that provides fully separated bicycle lanes when, and if the additional right-of-way required has been secured.

Route 30, Route 9 to Natick Town Line

Short-Term Actions:

- › Add sharrow pavement marking and signage along the roadway, in both the northeast and southwest segments.

Medium-Term Actions:

- › Provide buffered bicycle lanes within the southwest segment, with one vehicular travel lane in each direction as well as a northbound parking lane.
- › Construct a shared use path along the northeast segment to accommodate bicycles.

Long-Term Actions:

- › Consider an adaptive signal system along the corridor.

Table 6-2 Corridor Evaluation

Goals	Objectives	Impact
Mobility & Accessibility 	Decrease congestion and reduce delays	●
	Improve bike and pedestrian connections	●
	Coordinate existing transit services	●
	Promote active transportation	●
Safety Improvements 	Identify, eliminate, or mitigate locations and situations that pose hazards	●
	Address current design standard deficiencies	●
Environmental Effects 	Support smart growth, anti-sprawl initiatives	●
	Avoid/minimize/mitigate impacts to the natural environment	●
	Minimize greenhouse gas emissions	●
	Reduce pollutants and particulate matter impacts	●
	Minimize transportation-related noise impacts along the corridor	●
Community Effects 	Support existing and protected economic development	●
	Improve connectivity between neighborhoods	●
	Incorporate healthy community design features	●
Environmental Justice 	Benefit environmental indicators (e.g., air quality, noise, water quality, etc.) in areas where EJ populations and other marginalized groups reside	●
	Improve non-motorized access and connectivity between business centers and employment centers	●
	Avoid/minimize/mitigate social equity impacts	●
Cost 	Identify solutions that are cost-effective in the context of state transportation planning	●
	Consider constructability and expected project lifespan	●

- Positive Impact
- Neutral Impact
- Negative Impact



Pedestrian and Bicycle Infrastructure

VHB recommends that the City update the crosswalk and traffic calming policies and address missing sidewalk connections as described in Chapter 5 and outlined below.

Short-Term Actions:

- › Update the City's Crosswalk Policy based on the recommendations outlined in Chapter 5, to provide a more-effective process to strengthen the policy and its's accompanying guidelines.
- › Update the City's Traffic Calming Policy based on the recommendations outlined in Chapter 5, to achieve transportation accessibility and safety for "all ages and abilities" of road users.
- › Update the City's Bicycle and Pedestrian Plan.

Sidewalk Connections

As previously described an inventory of the existing sidewalk network was conducted as part of Phase I. During the current TMP efforts, a number of gaps and missing links within this network were identified as well.

Short-Term Actions:

- › Downtown Missing Links – Prioritize completing the missing links in the sidewalk network within the downtown neighborhood.

Medium-Term Actions:

- › Existing Rail Trail Crossings – Consider adding connections to the Cochituate Rail Trail and existing Aqueduct trails connections to the sidewalk network.

Long-Term Actions:

- › Future Rail Trail Crossings – Plan for future connections to the Bruce Freeman Rail Trail, future Aqueduct trails and Upper Charles Trail
- › Citywide Missing Sidewalks – Develop a plan and schedule for installing sidewalks for street segments throughout the City where sidewalks were not provided on at least one side.

Bicycle Mobility

As a compliment to stronger pedestrian connections, improved bicycle mobility and infrastructure will strengthen neighborhood connections and reduce dependency on automobiles. The City will have to balance the needs of the bicycling community with the realities of property implications and roadway jurisdictional entities.

Short-Term Actions:

- › Review all roadway corridors under the City's jurisdiction and identify "key bike corridors" on which to facilitate improvements.

- › Work with MassDOT through their ongoing Route 9 project to ensure bicycle mobility needs are considered and incorporated into their improvements per MassDOT's Healthy Transportation Policy.
- › Provide adequate bicycle parking in public spaces within the downtown and village centers. Coordinate with the MBTA to provide adequate sheltered parking at the commuter rail station.

Medium-Term Actions:

- › Future Rail Trail Construction – Engage with appropriate planning officials to represent Framingham residents in the design of any future rail trails in the City; with a focus on securing appropriate bicycle protection at crossings and access to the trails in a way that best serves area residents.

Long-Term Actions:

- › Continue to coordinate with MassDOT and adjacent municipalities to appropriately plan for increased connected bicycle infrastructure in the city and to/from surrounding communities. Advocate for the needs that best serve City residents.

Table 6-3 Pedestrian & Bicycle Evaluation

Goals	Objectives	Impact
Mobility & Accessibility 	Decrease congestion and reduce delays	●
	Improve bike and pedestrian connections	●
	Coordinate existing transit services	●
	Promote active transportation	●
Safety Improvements 	Identify, eliminate, or mitigate locations and situations that pose hazards	●
	Address current design standard deficiencies	●
Environmental Effects 	Support smart growth, anti-sprawl initiatives	●
	Avoid/minimize/mitigate impacts to the natural environment	●
	Minimize greenhouse gas emissions	●
	Reduce pollutants and particulate matter impacts	●
	Minimize transportation-related noise impacts along the corridor	●
Community Effects 	Support existing and protected economic development	●
	Improve connectivity between neighborhoods	●
	Incorporate healthy community design features	●
Environmental Justice 	Benefit environmental indicators (e.g., air quality, noise, water quality, etc.) in areas where EJ populations and other marginalized groups reside	●
	Improve non-motorized access and connectivity between business centers and employment centers	●
	Avoid/minimize/mitigate social equity impacts	●
Cost 	Identify solutions that are cost-effective in the context of state transportation planning	●
	Consider constructability and expected project lifespan	●

- Positive Impact
- Neutral Impact
- Negative Impact



Transportation Demand Management

VHB recommends that the City update the TDM requirements for residential and commercial developments as described in Chapter 5 and outlined below.

Short-Term Actions:

- › Implement a more consistent and robust TDM requirement
 - Require a TDM plan for all developments over a certain size (either by square footage, number of residents, or number of employees), regardless of the district the Site is located within.
 - TDM Requirements should include the following:
 - TDM Plans should identify clear and measurable goals.
 - Projects located within 0.5-miles of an MBTA Commuter Rail Station should be providing a transit subsidy of at least 50%.
 - TDM Plans should include investing in infrastructure for bike lanes, bus lanes, etc.
 - All TDM Plans need to consider how to include people with disabilities and language barriers.
 - Implemented TDM plans should be monitored at least every other year for up to five years post occupancy.

Table 6-4 TDM Evaluation

Goals	Objectives	Impact
Mobility & Accessibility 	Decrease congestion and reduce delays	●
	Improve bike and pedestrian connections	●
	Coordinate existing transit services	●
	Promote active transportation	●
Safety Improvements 	Identify, eliminate, or mitigate locations and situations that pose hazards	●
	Address current design standard deficiencies	●
Environmental Effects 	Support smart growth, anti-sprawl initiatives	●
	Avoid/minimize/mitigate impacts to the natural environment	●
	Minimize greenhouse gas emissions	●
	Reduce pollutants and particulate matter impacts	●
	Minimize transportation-related noise impacts along the corridor	●
Community Effects 	Support existing and protected economic development	●
	Improve connectivity between neighborhoods	●
	Incorporate healthy community design features	●
Environmental Justice 	Benefit environmental indicators (e.g., air quality, noise, water quality, etc.) in areas where EJ populations and other marginalized groups reside	●
	Improve non-motorized access and connectivity between business centers and employment centers	●
	Avoid/minimize/mitigate social equity impacts	●
Cost 	Identify solutions that are cost-effective in the context of state transportation planning	●
	Consider constructability and expected project lifespan	●

- Positive Impact
- Neutral Impact
- Negative Impact



Public Transit

VHB recommends that the City explore the following public transit recommendations as described in Chapter 5 and outlined below.

Short-Term Actions:

- › The City should identify a transportation liaison. This person would be responsible for coordination with MWRTA.
 - Identify high needs areas within the community where MWRTA services could be expanded
 - Outreach to neighborhoods where MWRTA is underutilized to spread the word
 - Develop a travel training program for outreach to corporate busses/shuttles and coordination with a transportation manager role at large companies and campuses.
- › The Planning Board should keep MWRTA involved in the review process for large development projects, and developments that have opportunities to be added along an existing or future MWRTA route should be required to reserve space for a bus stop.
- › MWRTA & the City should monitor the existing Catch Connect pilot program & expand beyond the pilot area as needed.
- › The City should explore adding a rideshare system like NewMo in Newton that could be implemented for key locations within the City of Framingham.
- › VHB recommends that the City work with the MBTA to ensure that the intersections located directly adjacent to the Worcester Line Track and Stations Accessibility Improvements project to ensure that these locations are improved as part of the project and not impacted negatively.

Medium-Term Actions:

- › The City, MWRTA and MBTA should work together to identify opportunities to construct a multi-modal station that could serve Commuter Rail, MWRTA routes and regional buses at one location.
- › Work with MassDOT and the legislative delegation to secure funding for the infrastructure that is needed to reach the desired growth. Specifically, MassDOT should be approached regarding:
 - Providing bus pull outs and shelters along Route 9 and Route 30 in order to encourage use of transit.
 - Incorporating the transit accommodations into any infrastructure projects.
- › Evaluate transit routes and headways, stop locations and amenities, and pedestrian connections to potential destinations periodically to ensure that transit is a viable alternate mode for employees, residents and visitors to Framingham.

Table 6-5 Public Transit Evaluation

Goals	Objectives	Impact
Mobility & Accessibility 	Decrease congestion and reduce delays	●
	Improve bike and pedestrian connections	●
	Coordinate existing transit services	●
	Promote active transportation	●
Safety Improvements 	Identify, eliminate, or mitigate locations and situations that pose hazards	●
	Address current design standard deficiencies	●
Environmental Effects 	Support smart growth, anti-sprawl initiatives	●
	Avoid/minimize/mitigate impacts to the natural environment	●
	Minimize greenhouse gas emissions	●
	Reduce pollutants and particulate matter impacts	●
	Minimize transportation-related noise impacts along the corridor	●
Community Effects 	Support existing and protected economic development	●
	Improve connectivity between neighborhoods	●
	Incorporate healthy community design features	●
Environmental Justice 	Benefit environmental indicators (e.g., air quality, noise, water quality, etc.) in areas where EJ populations and other marginalized groups reside	●
	Improve non-motorized access and connectivity between business centers and employment centers	●
	Avoid/minimize/mitigate social equity impacts	●
Cost 	Identify solutions that are cost-effective in the context of state transportation planning	●
	Consider constructability and expected project lifespan	●

- Positive Impact
- Neutral Impact
- Negative Impact

Recommended Action Plan

Table 6-6 presents the details of the Action Plan, including construction cost estimates, potential funding sources, the responsible facilitating organizations, the implementation timeframe, and specific next steps.

Each of the projects will need to follow a multi-step process as shown below. Depending on the project, some of the early steps may have already been completed either as part of this study or in other studies.

- › Step 1: Problem/Need/Opportunity Identification
- › Step 2: Project Planning
- › Step 3: Project Initiation
- › Step 4: Environmental Review and Permitting/Design/Right-of-way Acquisition
- › Step 5: Funding/Programming on the Regional and State Transportation Improvement Programs
- › Step 6: Advertise/Bid and Contract Award
- › Step 7: Construction

Some recommendations are not anticipated to require environmental review and permitting. More complex recommendations, such as corridor improvements, will likely require more in-depth design, permitting, and environmental documentation. These initial steps would begin in the immediate- or short-term timeframes. Right-of-way acquisition is anticipated for some of the recommendations, as noted. The conceptual cost estimates are included in the Appendix.

Funding Sources

Although not an exhaustive list, Table 6-6 provides possible funding sources for each of the alternatives recommended. The funding sources noted were chosen based on the anticipated size, scope, and cost of a particular project. It was assumed the city would consider state and/or federal funding assistance for higher cost projects. In these cases, the city is generally responsible for any permitting and design associated with the improvement and the state provides funding for certain construction elements. City and private developer funds can come from a variety of sources and were not specifically delineated for the purposes of the Recommended Action Plan. Three state funding sources were identified. It should be noted that Chapter 90 funding (discussed below) may also be used discretionally by the City to cover project design costs.

- › **Complete Streets Funding:** The state currently offers up to \$400,000 of construction funding per year to eligible communities to implement Complete Streets infrastructure elements. These can include enhancements or dedicated accommodations for bicycle, pedestrian, and transit use, upgrading existing infrastructure to meet current ADA standards, and constructing “missing links” in roadway infrastructure that would improve access for non-automobile users. To be eligible for funding, the city must have a MassDOT approved Complete Streets policy and prioritization plan. Additional

information on this funding source can be found at <https://gis.massdot.state.ma.us/completestreets>.

- › **Chapter 90 Funding:** The state currently provides reimbursement funding for projects that create or extend the life of capital facilities under Section 34 of Massachusetts General Law (MGL) Chapter 90. Within all applicable allowances, municipalities have discretion on how the funding can be used. The funding amount allocated is based on the municipality's accepted road miles, population, and employment. For the fiscal year 2022, Framingham received \$1,828,602 of Chapter 90 funds to cover 217 lane miles. This is on par with allocations from previous years. Additional information on this funding source can be found at <https://www.mass.gov/chapter-90-program>.
- › **Transportation Improvement Plan Funding:** Each Metropolitan Planning Organization (MPO) within the state has a rolling, five-year capital funding program. Eligible transportation projects can receive federal and state roadway funding if the project is selected by the MPO. Selection is based on an evaluation and prioritization of all eligible projects and includes municipal and public feedback. Additional information on this funding source can be found at <https://www.ctps.org/tip>.
- › **Highway Safety Improvement Program Funding:** The HSIP provides federal funding for eligible improvements that reduce fatalities and serious injuries on all public roads. An HSIP eligible cluster is one in which the total number of "equivalent property damage only" crashes is within the top 5% in the region. An HSIP-eligible project is any strategy, activity or project that corrects or improves a hazardous public road location or addresses a highway safety problem. Additional information on this funding source can be found at <https://www.mass.gov/service-details/highway-safety-improvement-program>.
- › **Community One Stop for Growth:** The Community One Stop for Growth is a single application portal and review process of at least ten community grant programs that make targeted investments. This streamlines the process for the applicant and allowing communities to apply for multiple funding sources on a single timeline. Grants available as part of this process include grants from the Executive Office of Housing and Economic Development, Department of Housing and Community Development and MassDevelopment. Additional information on this funding source can be found at <https://www.mass.gov/guides/community-one-stop-for-growth>.
- › **Safe Routes to Schools Infrastructure Project Funding Program:** The Safe Routes to Schools program is a federally funded initiative that works with schools, communities, students and families to increase active transportation among elementary and middle school students in Massachusetts. The infrastructure component of the program facilitates bicycle and pedestrian infrastructure improvements to benefit students in kindergarten through eighth grade. Additional information on this funding source can be found at <https://www.mass.gov/doc/safe-routes-to-school-infrastructure-application-guidance/download>.

Recommended Action	Construction Cost ^{1,2}	Possible Funding Source(s) ³	Facilitating Organizations				Implementation Timeframe (Years)											Notes
			City of Framingham	MassDOT	MBTA	MWRTA	Short-Term					Medium-Term					Long Term	
							1	2	3	4	5	6	7	8	9	10	10+	
Clusters																		
Village Green Cluster																		
Consider appropriate treatments that could be applied to this area from the updated traffic calming policy	\$	<ul style="list-style-type: none"> City funds State TIP One Stop for Growth 	●	●			///	///	///	///	///							
Construct a raised crosswalk at the existing midblock crosswalk along Vernon Street and a raised intersection at the intersection of Edgell Road at Auburn Street, if deemed appropriate	\$	<ul style="list-style-type: none"> City funds State TIP One Stop for Growth 	●	●			///	///	///	///	///	///	///	///				
Central Street at Simpson Park Cluster																		
Collect additional data to confirm that the intersection of Central Street at Summer Street meets/will meet eight-hour signal warrant	\$	<ul style="list-style-type: none"> City funds Chapter 90 One Stop for Growth 	●				///	///										
Dead-end Fenwick Street at its northern terminus (mountable curb option), Tee up the resulting three-legged intersection of Central Street at Haynes Road and signalize the intersection of Central Street at Summer Street	\$\$	<ul style="list-style-type: none"> City funds Chapter 90 One Stop for Growth 	●						///	///	///	///	///	///	///	///	///	

¹ Construction cost estimates in 2021 dollars. Estimates do not include survey, design fees, right-of-way (ROW) acquisition, permitting, drainage improvements, or utility modifications (if necessary).

² Cost ranges include the following tiers:

- \$—up to \$500,000
- \$\$—\$500,000 to \$1,000,000
- \$\$\$—over \$1,000,000

³ State TIP = State Transportation Improvement Program; HSIP = Highway Safety Improvement Program



Recommended Action Plan—Commitment Matrix and Implementation Timeframe

Multimodal Corridor Improvements

Recommended Action	Construction Cost ^{1,2}	Possible Funding Source(s) ³	Facilitating Organizations				Implementation Timeframe (Years)										Notes	
			City of Framingham	MassDOT	MBTA	MWRTA	Short-Term					Medium-Term						Long Term
							1	2	3	4	5	6	7	8	9	10		10+
Edgell Road, Route 9 to Sudbury Town Line																		
Add sharrow pavement markings and signage along the roadway	\$	<ul style="list-style-type: none"> City funds Chapter 90 Complete Streets One Stop for Growth 	●															
Construct sidewalks on both sides of the roadway for the entire corridor length	\$\$	<ul style="list-style-type: none"> City funds Chapter 90 Complete Streets One Stop for Growth 	●															
Implement a cross-section that provides fully separated bicycle lanes	\$\$\$	<ul style="list-style-type: none"> City funds State TIP Complete Streets One Stop for Growth 	●															Additional right-of-way must be secured
Edmunds Road, Southborough Town Line to Grove Street																		
Add sharrow pavement markings and signage along the roadway	\$	<ul style="list-style-type: none"> City funds Chapter 90 Complete Streets One Stop for Growth 	●															
Construct a sidewalk on one side of the roadway for the entire corridor length	\$\$	<ul style="list-style-type: none"> City funds Chapter 90 Complete Streets One Stop for Growth 	●															
Implement a cross-section that provides fully separated bicycle lanes	\$\$\$	<ul style="list-style-type: none"> City funds State TIP Complete Streets One Stop for Growth 	●															Additional right-of-way must be secured
Route 126, Irving Street to Ashland Town Line																		
Construct a sidewalk on one side of the roadway for the entire corridor length	\$\$	<ul style="list-style-type: none"> City funds State TIP Complete Streets One Stop for Growth 	●	●														
Implement a cross-section that provides fully separated bicycle lanes	\$\$\$	<ul style="list-style-type: none"> City funds State TIP Complete Streets One Stop for Growth 	●	●														Additional right-of-way must be secured

Recommended Action	Construction Cost ^{1,2}	Possible Funding Source(s) ³	Facilitating Organizations				Implementation Timeframe (Years)											Notes
			City of Framingham	MassDOT	MBTA	MWRTA	Short-Term					Medium-Term					Long Term	
							1	2	3	4	5	6	7	8	9	10	10+	
Route 30, Route 9 to Natick Town Line: Northeast Segment																		
Add sharrow pavement markings and signage along the roadway	\$	<ul style="list-style-type: none"> City funds Chapter 90 Complete Streets One Stop for Growth 	●															
Construct a shared use path	\$\$\$	<ul style="list-style-type: none"> City funds State TIP Complete Streets One Stop for Growth 	●															
Route 30, Route 9 to Natick Town Line: Southwest Segment																		
Add sharrow pavement markings and signage along the roadway	\$	<ul style="list-style-type: none"> City funds Chapter 90 Complete Streets One Stop for Growth 	●															
Provide buffered bicycle lanes	\$\$\$	<ul style="list-style-type: none"> City funds State TIP Complete Streets One Stop for Growth 	●														The cross-section will be reduced to one vehicular travel lane in each direction as well as a northbound parking lane	
Route 30, Entire Corridor																		
Install adaptive signal system along the corridor	\$\$\$	<ul style="list-style-type: none"> City funds Chapter 90 Complete Streets One Stop for Growth 	●															

¹ Construction cost estimates in 2021 dollars. Estimates do not include survey, design fees, right-of-way (ROW) acquisition, permitting, drainage improvements, or utility modifications (if necessary).

² Cost ranges include the following tiers:

\$—up to \$500,000

\$\$—\$500,000 to \$1,000,000

\$\$\$—over \$1,000,000

³ State TIP = State Transportation Improvement Program; HSIP = Highway Safety Improvement Program



Recommended Action Plan—Commitment Matrix and Implementation Timeframe

Pedestrian and Bicycle Infrastructure

Recommended Action	Construction Cost ^{1,2}	Possible Funding Source(s) ³	Facilitating Organizations				Implementation Timeframe (Years)											Notes
			City of Framingham	MassDOT	MBTA	MWRTA	Short-Term					Medium-Term					Long Term	
							1	2	3	4	5	6	7	8	9	10	10+	
Policy Updates																		
Update the City's Crosswalk Policy	\$	• City funds	●				////											
Update the City's Traffic Calming Policy	\$	• City funds	●				////											
Update the City's Bicycle & Pedestrian Plan	\$	• City funds	●				////				////							To be updated every five years.
Sidewalk Connections																		
Downtown Missing Links	\$\$	• City funds • Complete Streets • One Stop for Growth • Safe Routes to Schools	●				////	////	////	////	////							Prioritize completing the missing links in the sidewalk network within the downtown neighborhood.
Existing Rail Trail Crossings	\$\$	• City funds • Complete Streets • One Stop for Growth	●				////	////	////	////	////	////	////	////				Consider adding connections to the Cochituate Rail Trail and existing Aqueduct trails connections to the roadway network.
Future Rail Trail Crossings	\$\$	• City funds • Complete Streets • One Stop for Growth	●				////	////	////	////	////	////	////	////	////	////	////	Plan for future connections to the Bruce Freeman Rail Trail, future Aqueduct trails and Upper Charles Trail
Citywide Missing Sidewalks	\$\$\$	• City funds • Complete Streets • One Stop for Growth • Safe Routes to Schools	●				////	////	////	////	////	////	////	////	////	////	////	Develop a plan and schedule for installing sidewalks for street segments throughout the City where sidewalks were not provided on at least one side.

¹ Construction cost estimates in 2021 dollars. Estimates do not include survey, design fees, right-of-way (ROW) acquisition, permitting, drainage improvements, or utility modifications (if necessary).
² Cost ranges include the following tiers:
 \$—up to \$500,000
 \$\$—\$500,000 to \$1,000,000
 \$\$\$—over \$1,000,000
³ State TIP = State Transportation Improvement Program; HSIP = Highway Safety Improvement Program



Recommended Action Plan—Commitment Matrix and Implementation Timeframe

Transportation Demand Management

Recommended Action	Construction Cost ^{1,2}	Possible Funding Source(s) ³	Facilitating Organizations				Implementation Timeframe (Years)										Notes		
			City of Framingham	MassDOT	MBTA	MWRTA	Short-Term					Medium-Term						Long Term	
							1	2	3	4	5	6	7	8	9	10		10+	
Implement a more consistent and robust TDM requirement	\$	• City funds	●				////												

¹ Construction cost estimates in 2021 dollars. Estimates do not include survey, design fees, right-of-way (ROW) acquisition, permitting, drainage improvements, or utility modifications (if necessary).

² Cost ranges include the following tiers:

\$—up to \$500,000

\$\$—\$500,000 to \$1,000,000

\$\$\$—over \$1,000,000

³ State TIP = State Transportation Improvement Program; HSIP = Highway Safety Improvement Program



Recommended Action Plan—Commitment Matrix and Implementation Timeframe

Public Transit

Recommended Action	Construction Cost ^{1,2}	Possible Funding Source(s) ³	Facilitating Organizations				Implementation Timeframe (Years)											Notes		
			City of Framingham	MassDOT	MBTA	MWRTA	Short-Term					Medium-Term					Long Term			
							1	2	3	4	5	6	7	8	9	10	10+			
Identify a transportation liaison	\$	• City funds	●			●	1													
Keep MWRTA involved in the review process for large developments	\$	• N/A	●			●	1													
Monitor the existing Catch Connect pilot program & expand beyond the pilot area as needed	\$	• City funds • MWRTA funds	●			●	1	2	3	4										
Explore adding a rideshare system	\$	• City funds	●			●	1	2	3											
Consider implementing additional MWRTA connections to the north and south	\$	• City funds • MWRTA funds				●	1	2	3	4	5	6								
Construct a multi-modal station that could serve Commuter Rail, MWRTA routes and regional buses at one location	\$\$	• City funds • MBTA funds • MWRTA funds	●		●	●	1	2	3	4	5	6	7	8	9	10				
Ensure that the intersections located directly adjacent to the Worcester Line Track and Stations Accessibility Improvements project are improved as part of the project and not impacted negatively	\$	• MBTA funds	●		●		1	2	3	4	5	6								
Work with MassDOT to provide bus pull outs and shelters along Route 9 and Route 30 & incorporate transit into all infrastructure projects	\$	• City funds • MBTA funds • MWRTA funds	●	●	●	●	1	2	3	4	5	6								
Evaluate transit routes, headways, stop locations, amenities, and pedestrian connections to potential destinations periodically	\$	• City funds	●				1	2	3	4	5	6								

¹ Construction cost estimates in 2021 dollars. Estimates do not include survey, design fees, right-of-way (ROW) acquisition, permitting, drainage improvements, or utility modifications (if necessary).

² Cost ranges include the following tiers:

\$—up to \$500,000

\$\$—\$500,000 to \$1,000,000

\$\$\$—over \$1,000,000

³ State TIP = State Transportation Improvement Program; HSIP = Highway Safety Improvement Program