

Executive Summary

The purpose of the Winchester Traffic and Circulation Study effort is to proactively address issues brought on by residential and commercial growth in the Town. This study is designed to identify the Town’s transportation issues and develop mechanisms to protect neighborhoods, provide adequate access to businesses, improve safety and protect the residential quality of life. This report looks roughly 25 years into the future to show the transportation issues that may arise as the Town continues to grow. Over the 25 year period, average traffic growth is approximately 5%.

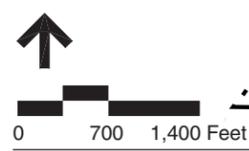
This collection of Town mapping is a visual tool that is intended to provide a comprehensive view of town-wide transportation issues. These maps will show current and anticipated traffic flows through the Town of Winchester, potential opportunities for bicycle accommodations, and potential strategies and opportunities for transportation improvements along corridors and at specific locations throughout the Town.

These recommendations were developed through collaboration with the Town of Winchester Planning Board, Town Engineers, the Police Department, and through feedback from the public.

Table of Contents

Executive Summary	i
Table of Contents	i
Winchester Town Study Area	1
Existing Traffic Flows- AM.....	2
Existing Traffic Flows- PM	3
2035 Relative Volume Growth- AM	4
2035 Relative Volume Growth- PM.....	5
Recommended Bicycle Accommodations	6
Traffic Flow Improvement Strategies	7-15
Transportation Improvements Strategies.....	16-30
Transportation Improvements Summary.....	31
Appendix	
Existing Turning Movement Counts.....	A-1

- Study Area Roadways
- Unsignalized Study Area Intersections
- Signalized Study Area Intersections



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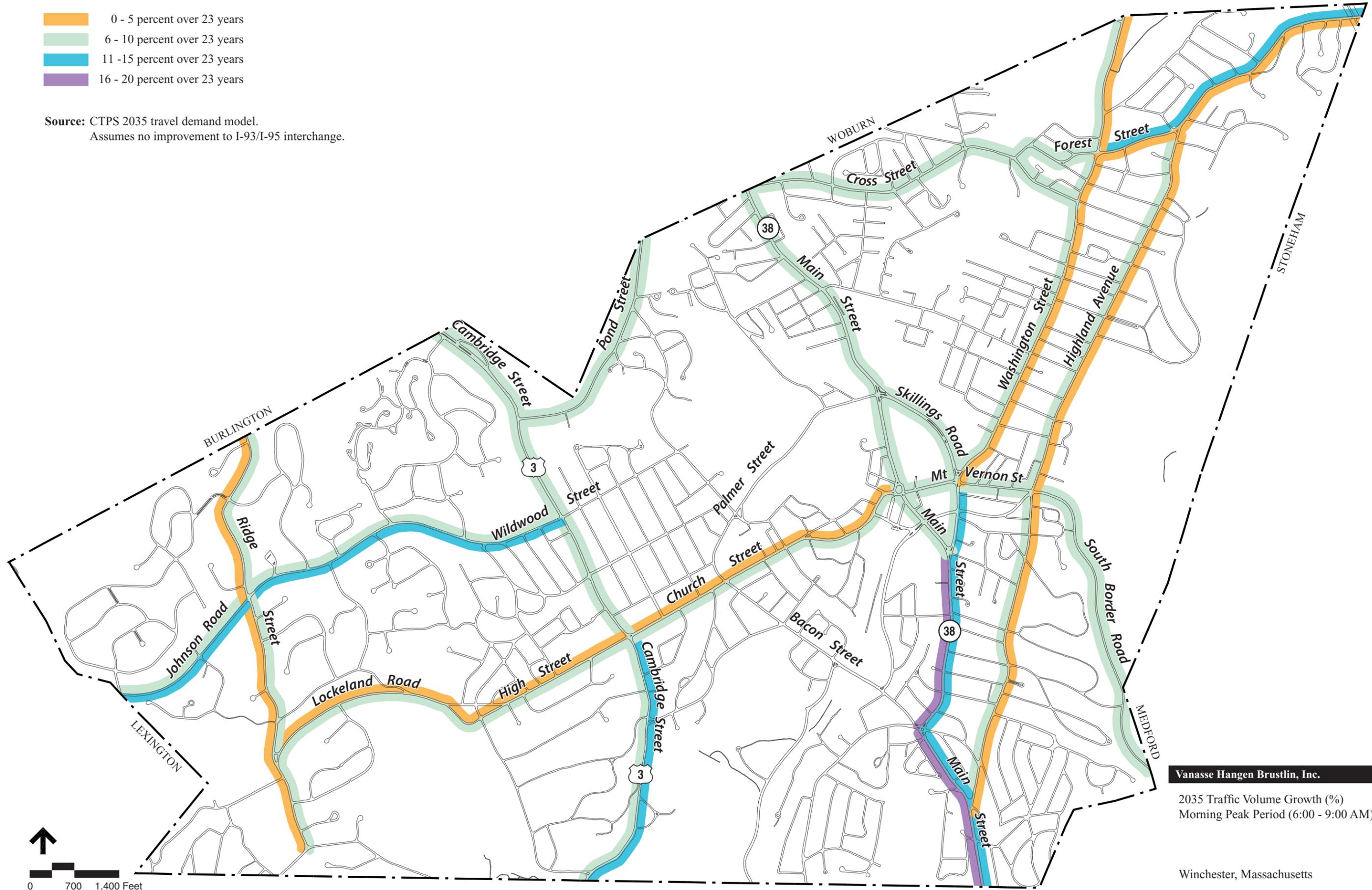
Figure

Study Area Map

Winchester, Massachusetts

- 0 - 5 percent over 23 years
- 6 - 10 percent over 23 years
- 11 - 15 percent over 23 years
- 16 - 20 percent over 23 years

Source: CTPS 2035 travel demand model.
Assumes no improvement to I-93/I-95 interchange.



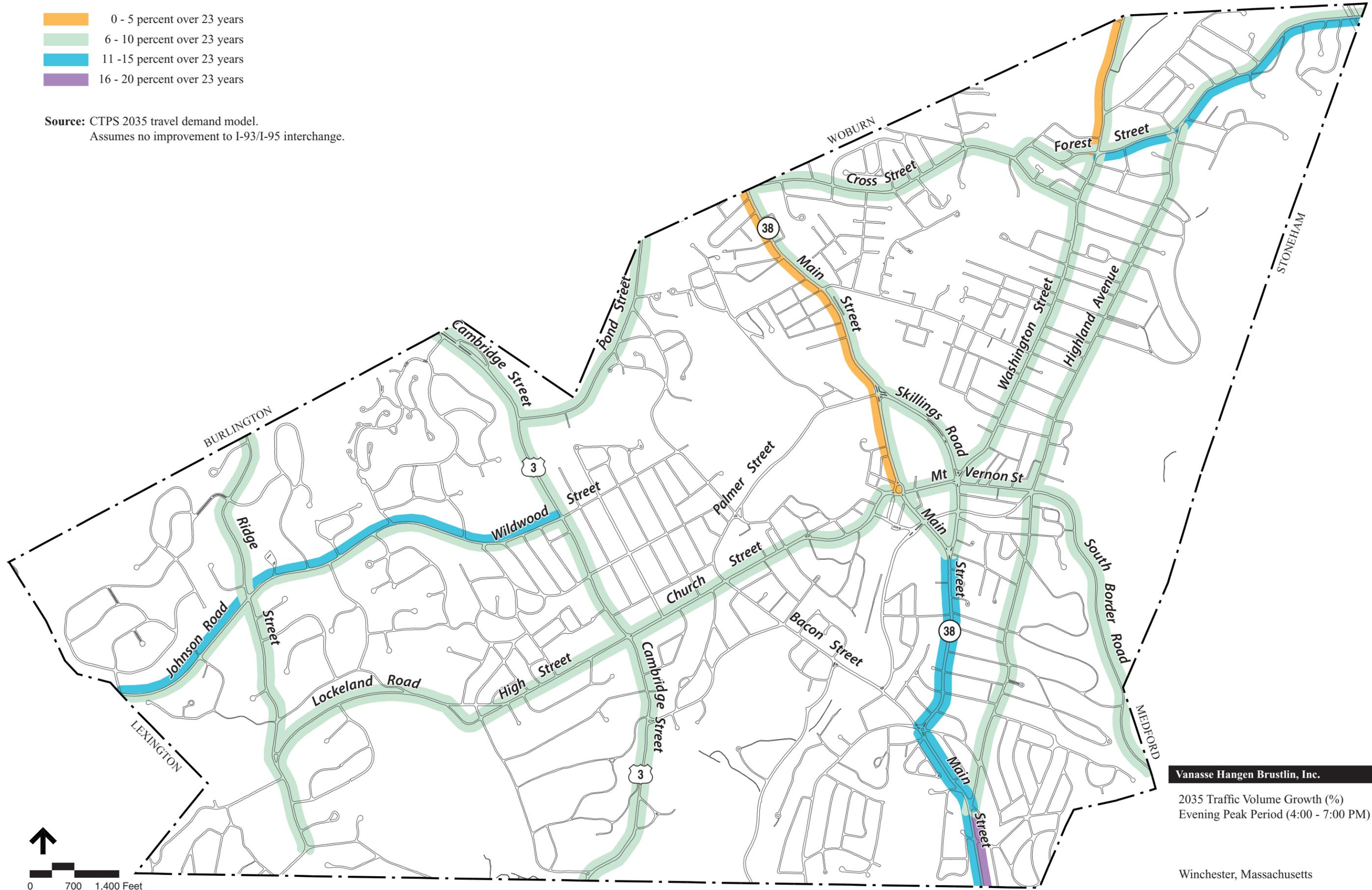
Vanasse Hangen Brustlin, Inc.

2035 Traffic Volume Growth (%)
Morning Peak Period (6:00 - 9:00 AM)

Winchester, Massachusetts

- 0 - 5 percent over 23 years
- 6 - 10 percent over 23 years
- 11 - 15 percent over 23 years
- 16 - 20 percent over 23 years

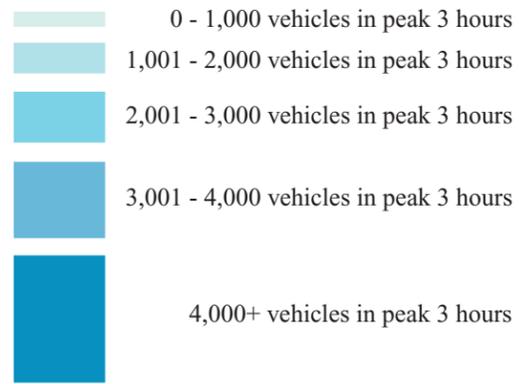
Source: CTPS 2035 travel demand model.
Assumes no improvement to I-93/I-95 interchange.



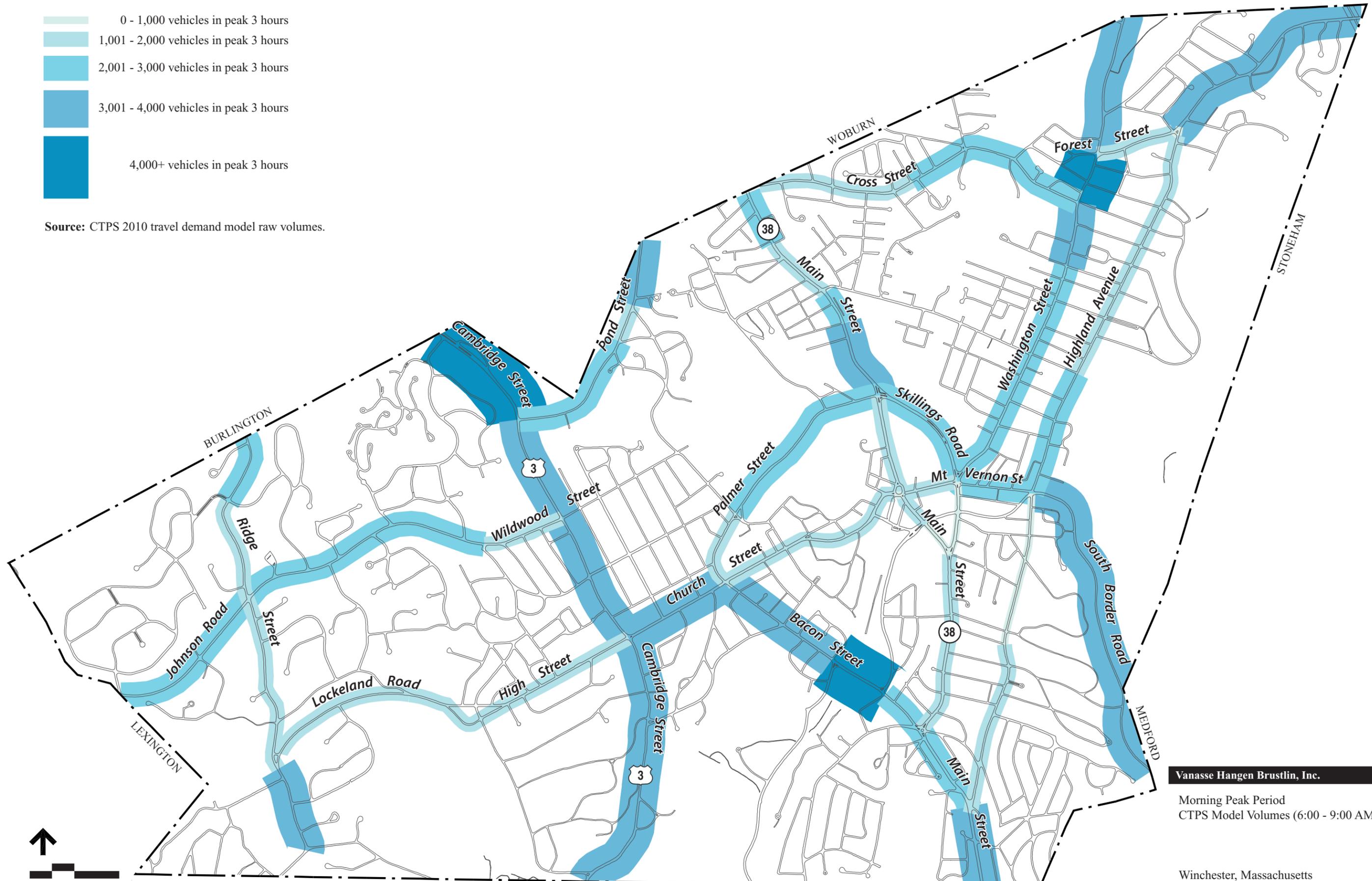
Vanasse Hangen Brustlin, Inc.

2035 Traffic Volume Growth (%)
Evening Peak Period (4:00 - 7:00 PM)

Winchester, Massachusetts



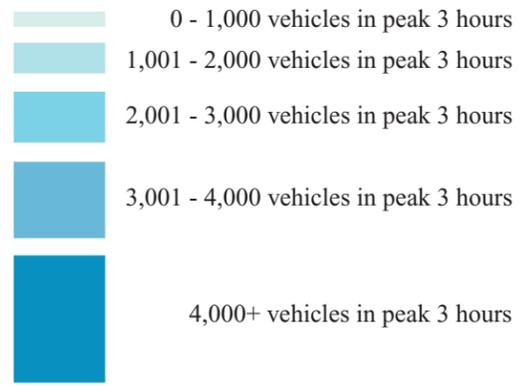
Source: CTPS 2010 travel demand model raw volumes.



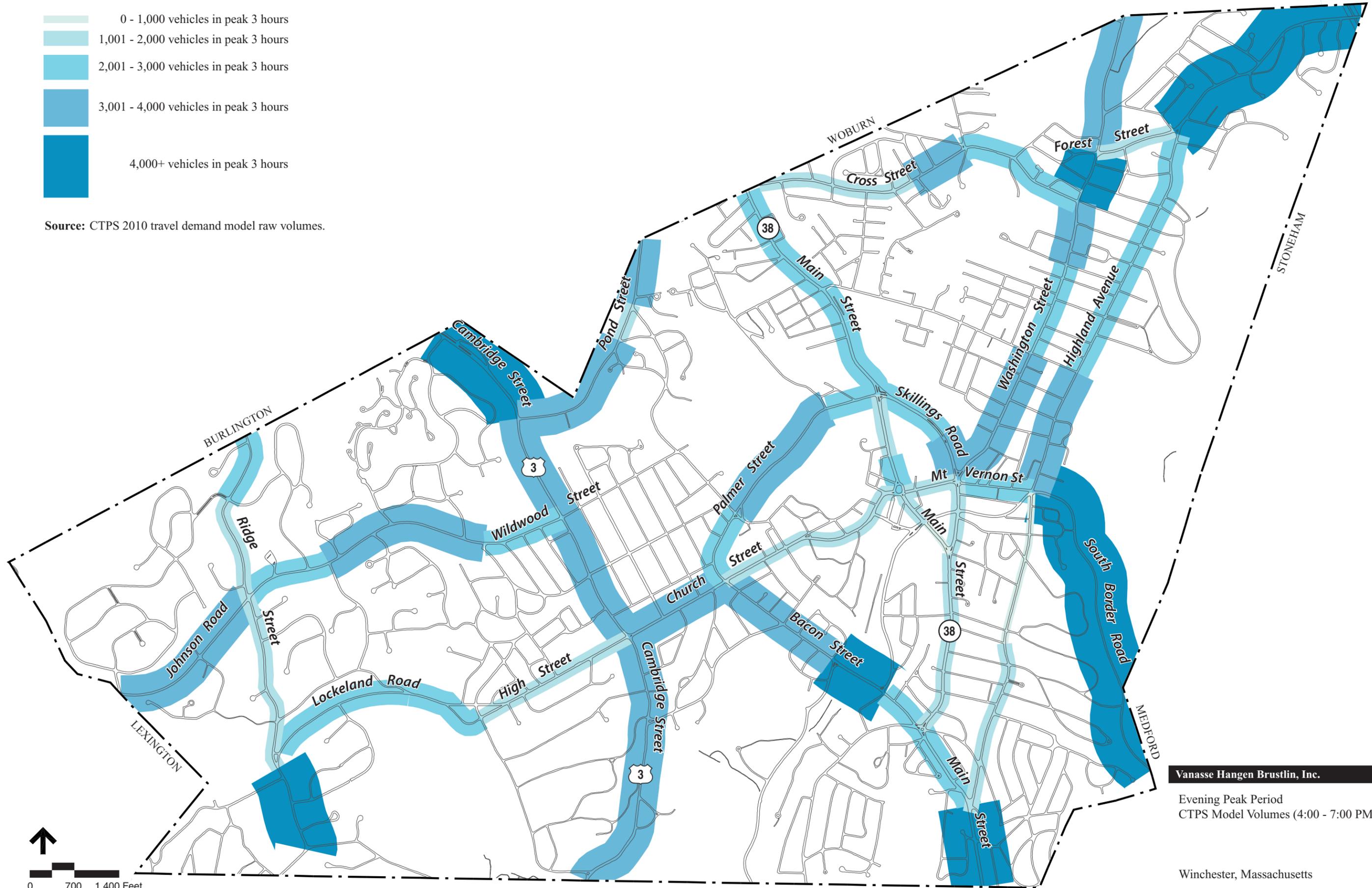
Vanasse Hangen Brustlin, Inc.

Morning Peak Period
CTPS Model Volumes (6:00 - 9:00 AM)

Winchester, Massachusetts



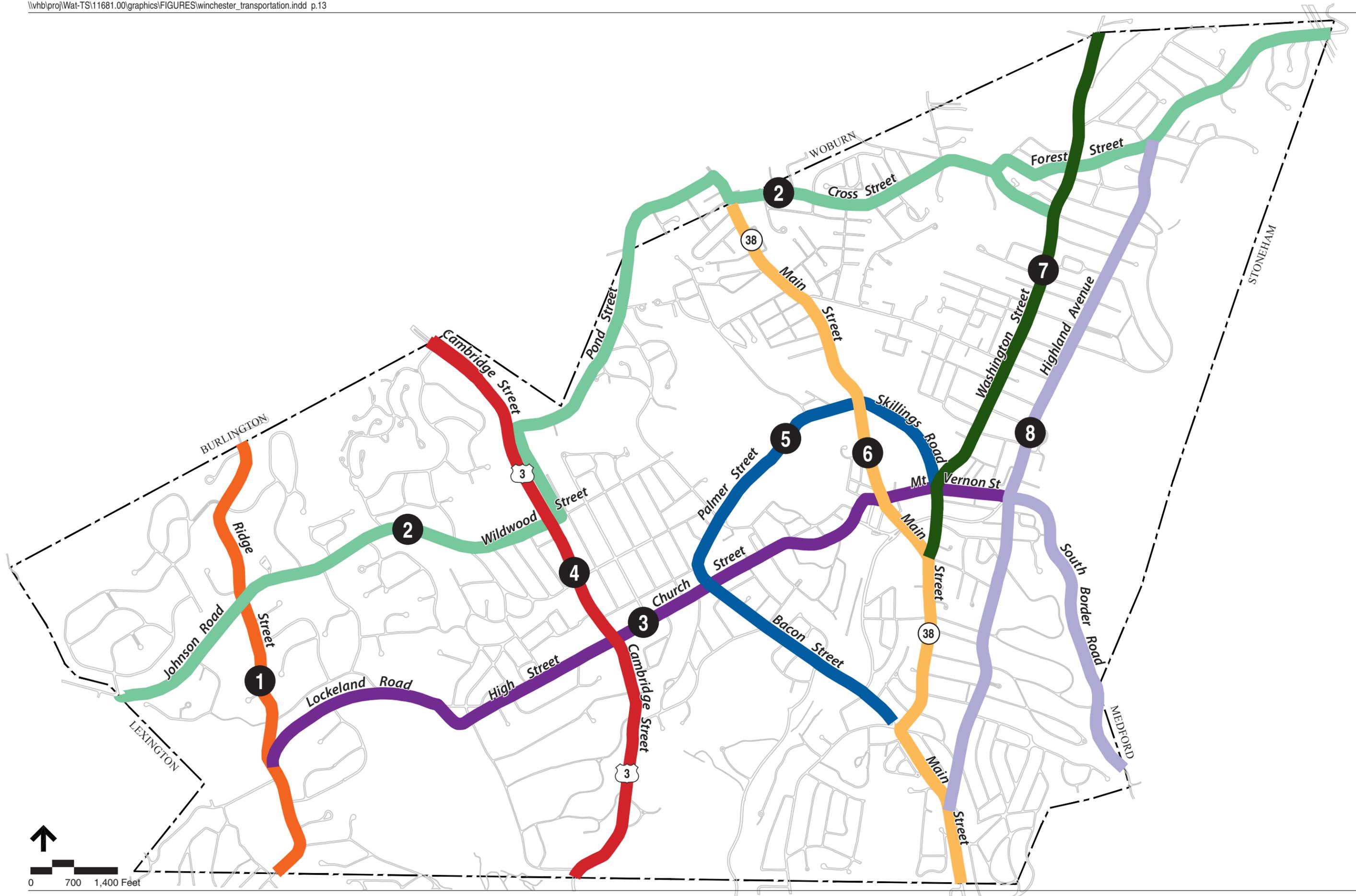
Source: CTPS 2010 travel demand model raw volumes.

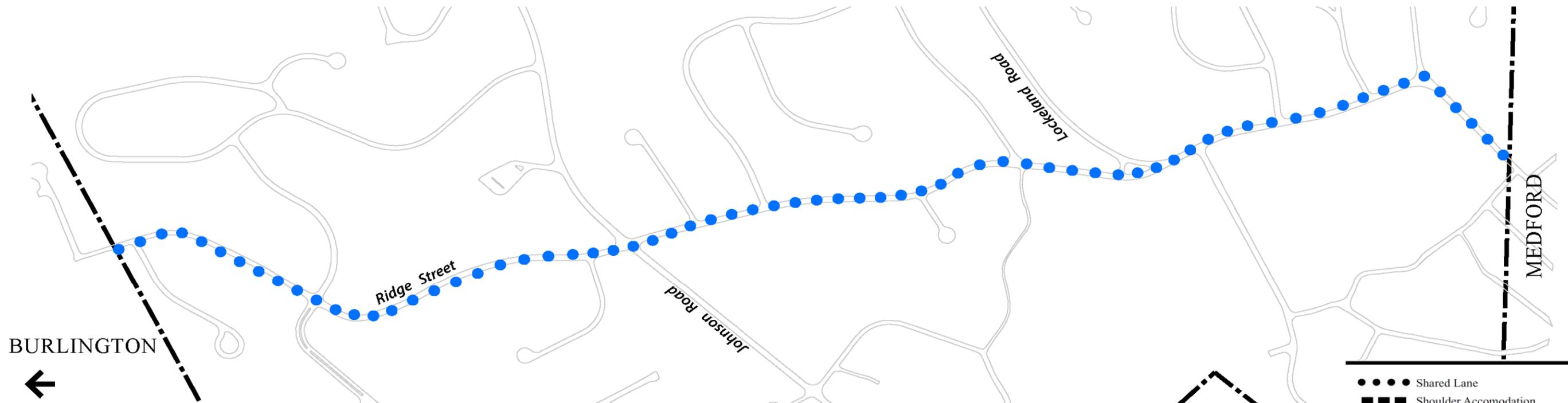


Vanasse Hangen Brustlin, Inc.

Evening Peak Period
CTPS Model Volumes (4:00 - 7:00 PM)

Winchester, Massachusetts





Current CTPS Peak Period (3-hour) Volume Level

AM Peak Period	Moderate
PM Peak Period	Moderate-High

CTPS Projected Growth

AM Peak Period Growth	6%-10%
PM Peak Period Growth	6%-10%

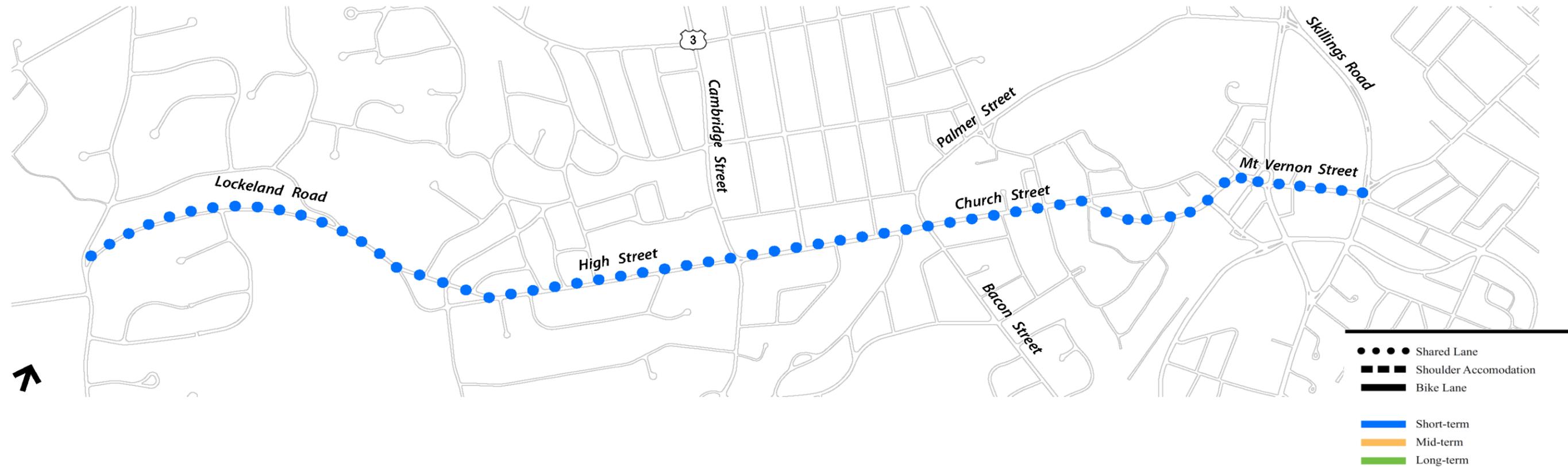
Deficiency **Next Steps**

Ridge Street: Excessive Travel Speeds Observed	<ul style="list-style-type: none"> Implement current improvement plans at Johnson Street/Ridge Street
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Bicycle Infrastructure Improvements

Ridge Street: Bike Accommodations	<ul style="list-style-type: none"> Paint Sharrows to designate shared roadway
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Low Volume: 500-1500 vehicles, peak period
 Moderate Volume: 2000-3000 vehicles, peak period
 High Volume: over 3500 vehicles, peak period
 Source: Volume and growth data provided by Central Transportation Planning Staff (CTPS)



Current CTPS Peak Period (3-hour) Volume Level

AM Peak Period	Moderate-High
PM Peak Period	High

CTPS Projected Growth

AM Peak Period Growth	6%-10%
PM Peak Period Growth	6%-10%

Deficiency **Next Steps**

Lockeland Road/High Street/Church Street/Mount Vernon Street: High Traffic Volumes, Speeds, and Operational deficiencies

- Collect volume and speed data supplement existing information
- Develop and implement improvement options
- Implement current identified crosswalk improvements
- Implement current improvement plans specifically in the Town Center

Bicycle Infrastructure Improvements

Lockeland Road/High Street/Church Street/Mount Vernon Street: Bike Accommodations

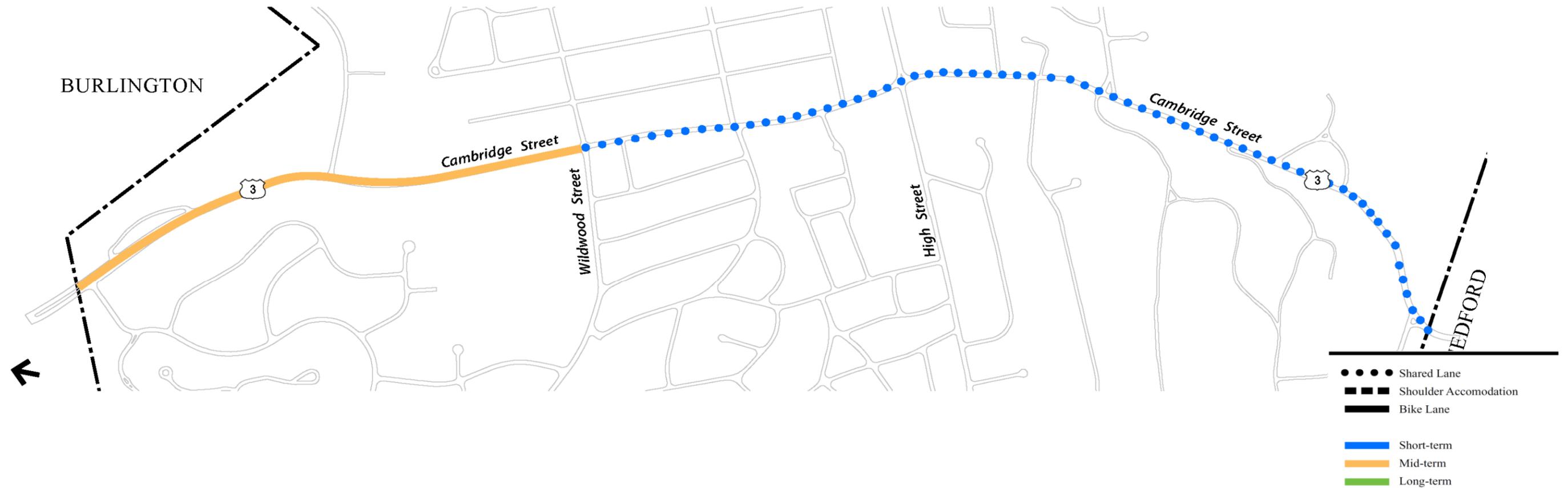
- Paint Sharrows to designate shared roadway

Low Volume: 500-1500 vehicles, peak period

Moderate Volume: 2000-3000 vehicles, peak period

High Volume: over 3500 vehicles, peak period

Source: Volume and growth data provided by Central Transportation Planning Staff (CTPS)



Current CTPS Peak Period (3-hour) Volume Level

AM Peak Period	High
PM Peak Period	High

CTPS Projected Growth

AM Peak Period Growth	6%-10%
PM Peak Period Growth	6%-10%

Deficiency **Next Steps**

Cambridge Street: High Traffic Volumes are causing operational deficiencies

- Collect volume and speed data supplement existing information
- Develop and implement improvement options
- Implement current improvement plans specifically those already programmed in the Transportation Improvement Plan (TIP)

Note: Route 3 is a state-owned roadway. The Town should coordinate with MassDOT to implement currently planned improvements and develop improvements to address additional needs.

Bicycle Infrastructure Improvements

Cambridge Street: Bike Accommodations

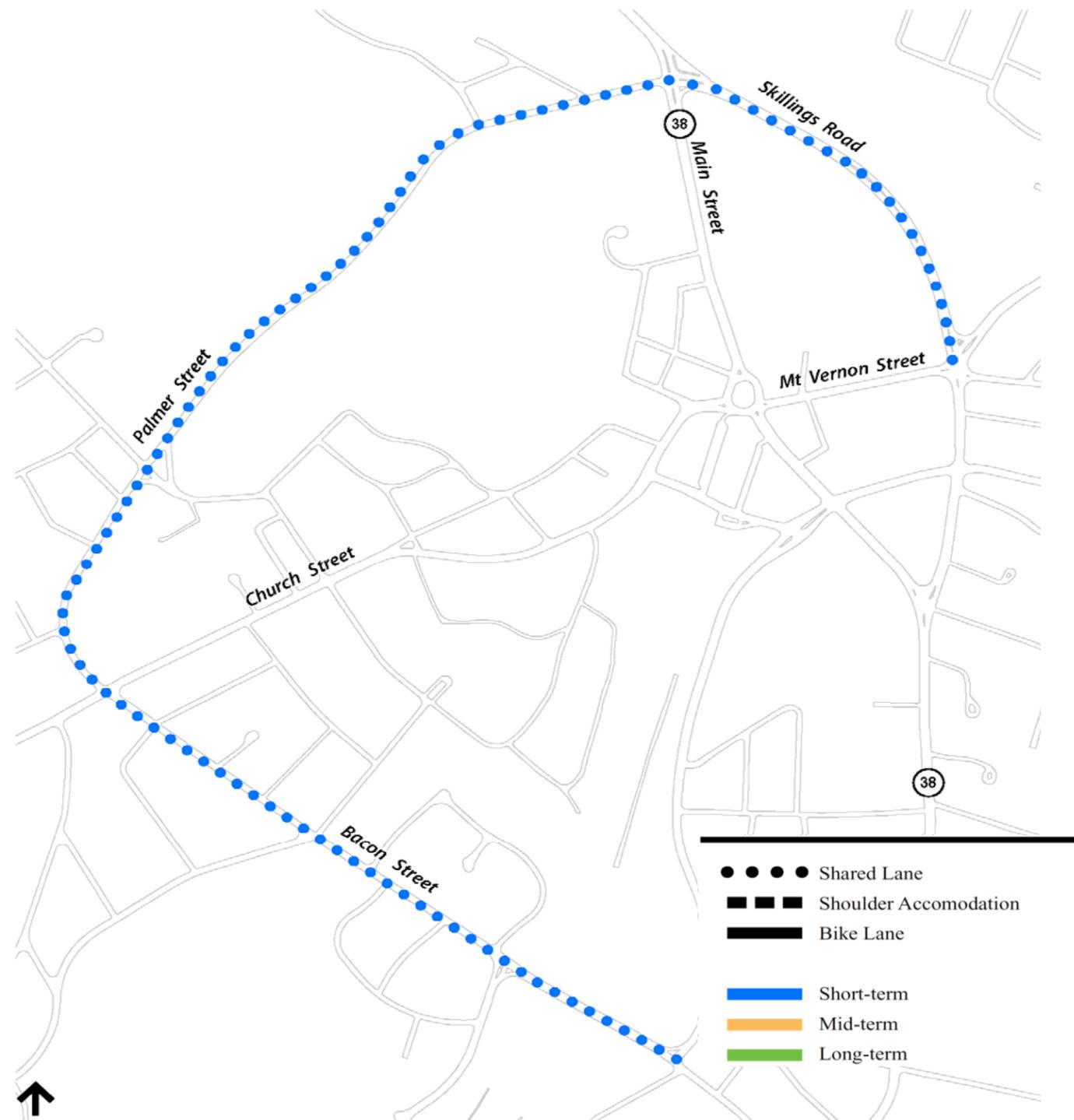
- Paint Sharrows to designate shared roadway
- Stripe Wider Shoulders

Low Volume: 500-1500 vehicles, peak period

Moderate Volume: 2000-3000 vehicles, peak period

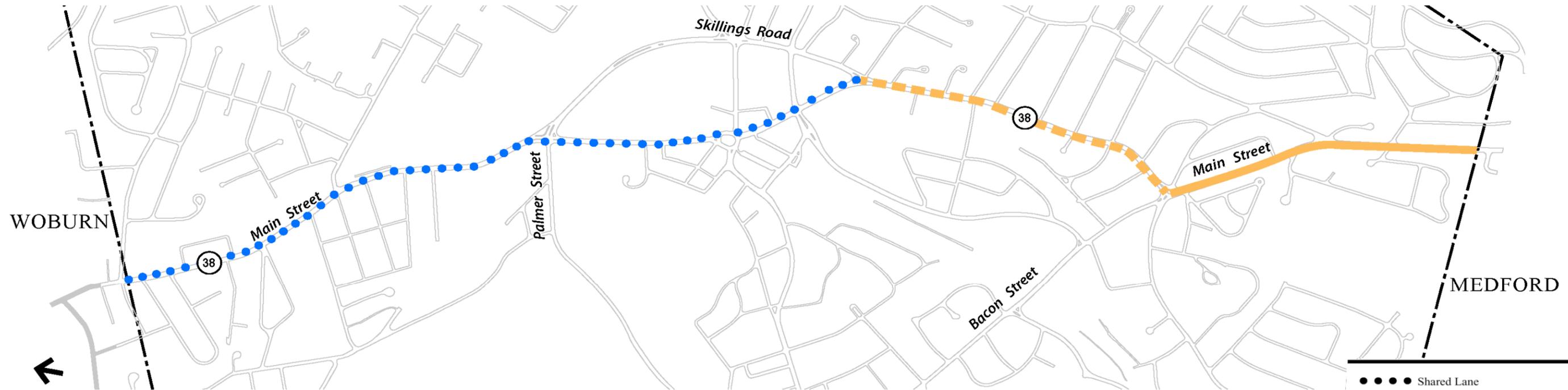
High Volume: over 3500 vehicles, peak period

Source: Volume and growth data provided by Central Transportation Planning Staff (CTPS)



Current CTPS Peak Period (3-hour) Volume Level		
	AM Peak Period	Moderate
	PM Peak Period	Moderate-High
CTPS Projected Growth		
	AM Peak Period Growth	No Data Available
	PM Peak Period Growth	No Data Available
Deficiency	Next Steps	
Excessive Travel Speeds Observed	<ul style="list-style-type: none"> Implement current identified crosswalk improvements Implement current improvement plans specifically in the Town Center Collect volume and speed data to supplement existing information Develop and implement improvement options 	
Bicycle Infrastructure Improvements		
Skillings Road/Palmer Street/Bacon Street: Bike Accommodations		
	Paint Sharrows	

Low Volume: 500-1500 vehicles, peak period
 Moderate Volume: 2000-3000 vehicles, peak period
 High Volume: over 3500 vehicles, peak period
 Source: Volume and growth data provided by Central Transportation Planning Staff (CTPS)



- ● ● Shared Lane
- ▬▬▬ Shoulder Accommodation
- ▬▬▬ Bike Lane
- ▬ Short-term
- ▬ Mid-term
- ▬ Long-term

Current CTPS Peak Period (3-hour) Volume Level

AM Peak Period	Low-Moderate
PM Peak Period	Moderate

CTPS Projected Growth

AM Peak Period Growth	11%-15%
PM Peak Period Growth	11%-15%

Deficiency **Next Steps**

Main Street: High volumes, speeds, and operational deficiencies

- Collect volume and speed data supplement existing information, specifically in the Town Center and surrounding areas
- Develop and implement improvement options
- Implement current improvement plans

Bicycle Infrastructure Improvements

Main Street: Bike Accommodations

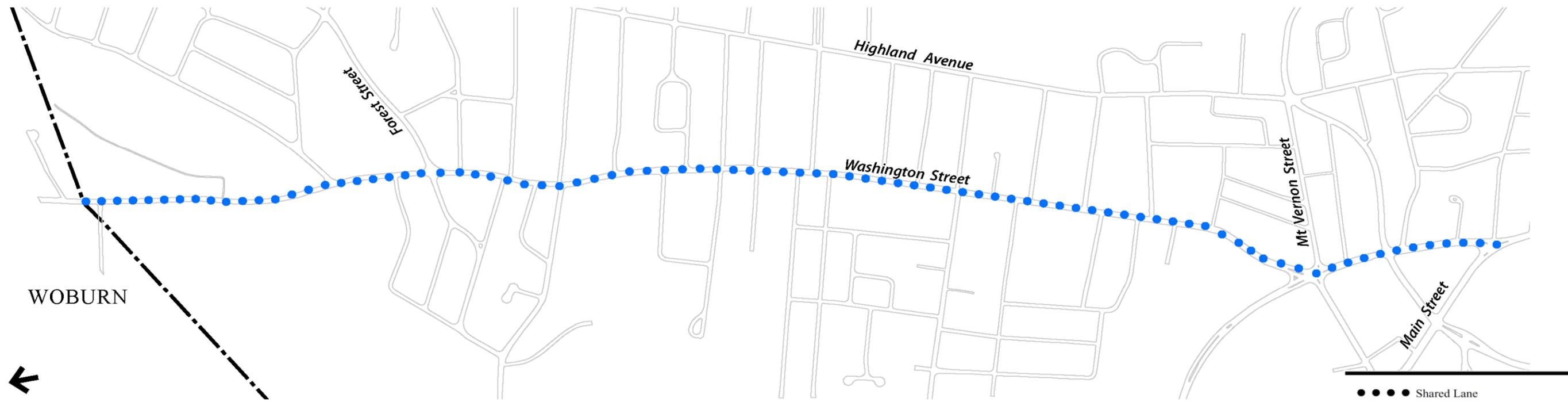
- Paint Sharrows to designate shared roadway
- Stripe Bike Lanes
- Stripe Wider Shoulders

Low Volume: 500-1500 vehicles, peak period

Moderate Volume: 2000-3000 vehicles, peak period

High Volume: over 3500 vehicles, peak period

Source: Volume and growth data provided by Central Transportation Planning Staff (CTPS)



Current CTPS Peak Period (3-hour) Volume Level

AM Peak Period	Moderate
PM Peak Period	Moderate-High

CTPS Projected Growth

AM Peak Period Growth	6%-10%
PM Peak Period Growth	6%-10%

Deficiency

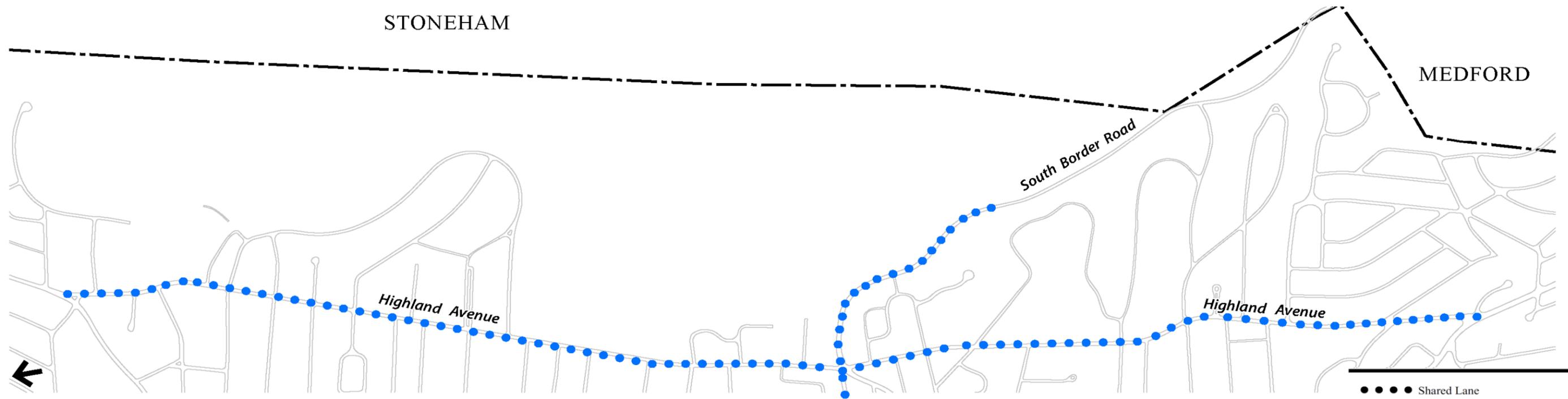
Next Steps

- Washington Street: High volumes, speeds, operational deficiencies**
- Collect volume and speed data supplement existing information, specifically in the Town Center and surrounding areas
 - Develop and implement improvement options
 - Implement current improvement plans
 - Incorporate identified intersection improvements
 - Implement current identified crosswalk improvements
 - Increase signage directing visitors to downtown from Forest Street
 - Study feasibility of a coordinated signal system to allow better traffic progression on Washington Street
 - Discourage use of neighborhood streets for through movement

Bicycle Infrastructure Improvements

- Washington Street: Bike Accommodations**
- Paint Sharrows to designate shared roadway

Low Volume: 500-1500 vehicles, peak period
 Moderate Volume: 2000-3000 vehicles, peak period
 High Volume: over 3500 vehicles, peak period
 Source: Volume and growth data provided by Central Transportation Planning Staff (CTPS)



Current CTPS Peak Period (3-hour) Volume Level

AM Peak Period	Moderate-High
PM Peak Period	High

CTPS Projected Growth

AM Peak Period Growth	6%-10%
PM Peak Period Growth	11%-15%

Deficiency

Highland Avenue: Lack of current volume data along roadway

Next Steps

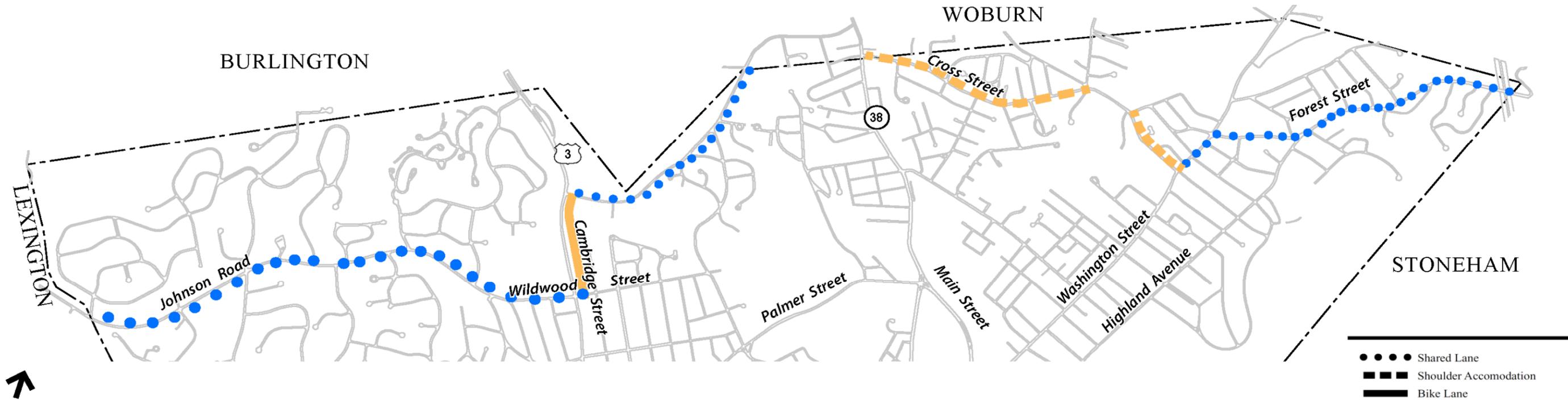
- Collect volume and speed data supplement existing information
- Develop and implement improvement options
- Implement current improvement plans
- Incorporate identified intersection improvements
- Increase signage directing visitors to downtown from South Border Road and Highland Avenue

Bicycle Infrastructure Improvements

 **Highland Avenue: Bike Accommodations**

- Paint Sharrows to designate shared roadway

Low Volume: 500-1500 vehicles, peak period
 Moderate Volume: 2000-3000 vehicles, peak period
 High Volume: over 3500 vehicles, peak period
 Source: Volume and growth data provided by Central Transportation Planning Staff (CTPS)



Current CTPS Peak Period (3-hour) Volume Level

AM Peak Period	Moderate
PM Peak Period	Moderate-High

CTPS Projected Growth

AM Peak Period Growth	6%-10%
PM Peak Period Growth	6%-10%

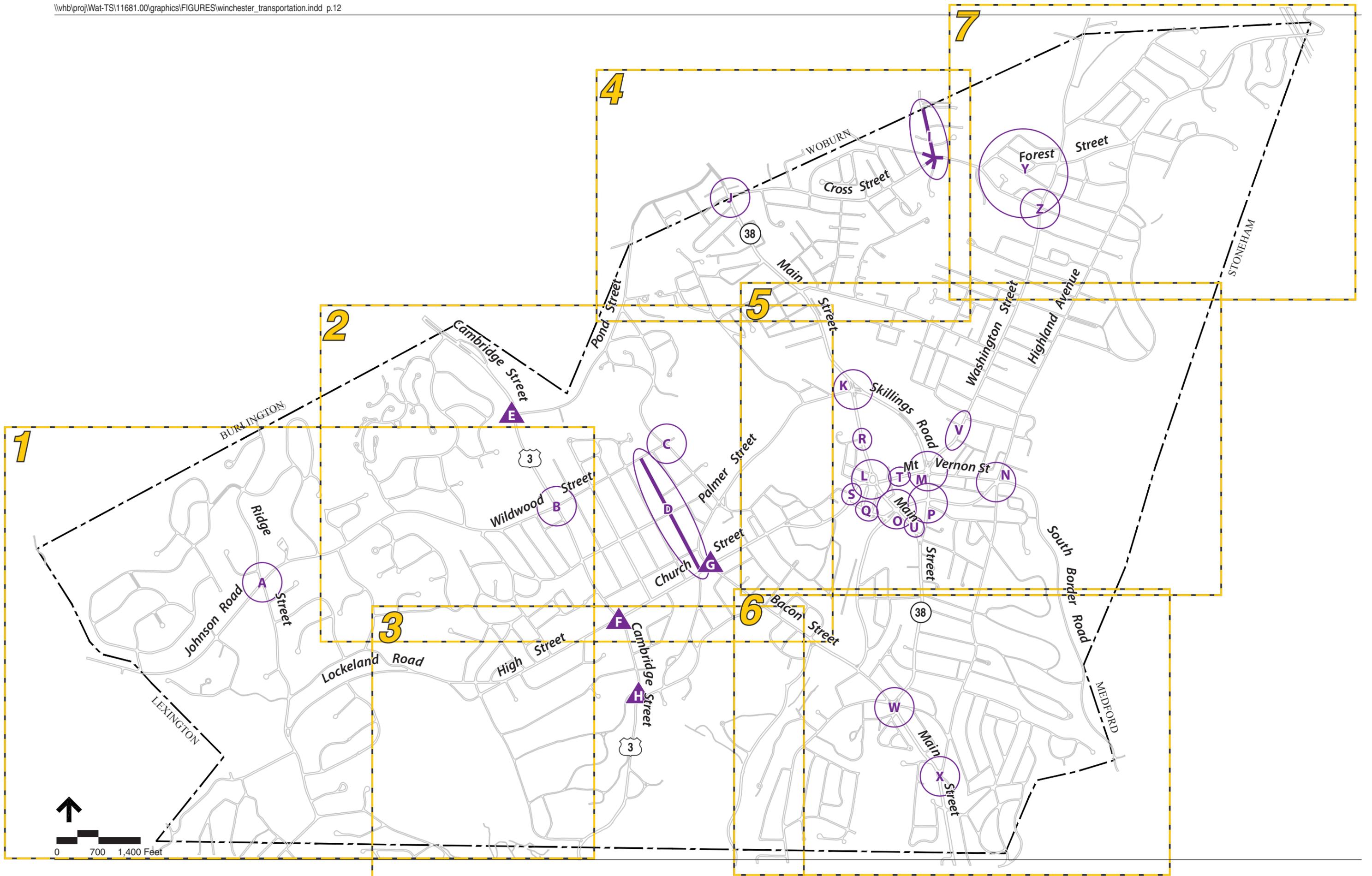
Deficiency **Next Steps**

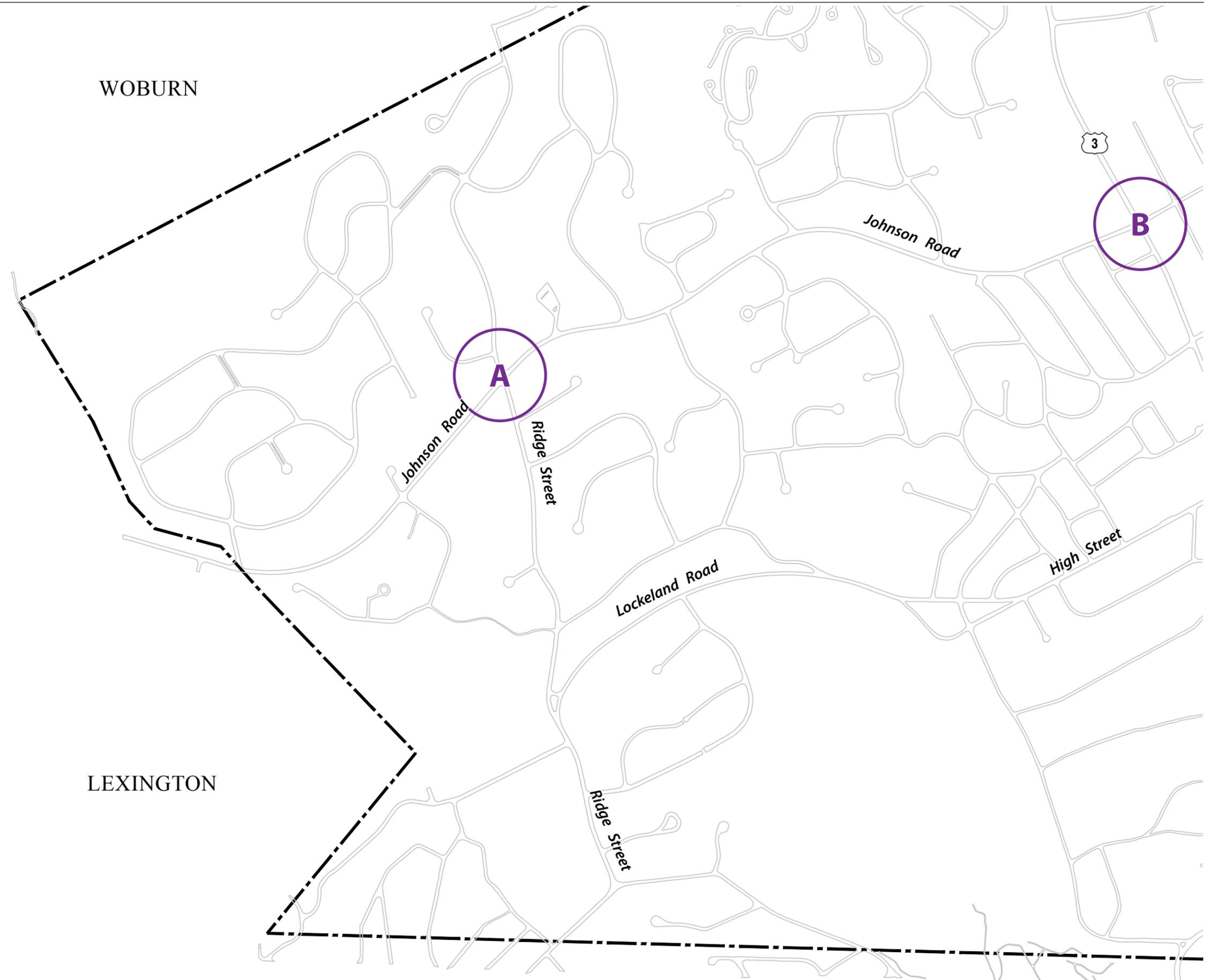
- Johnson Road: High vehicle speeds**
 - Reduce lane widths from 12 feet to 11 feet by restriping and creating a larger shoulder
- Lake Avenue/Main Street (Woburn): Poor operations**
 - Coordinate with the City of Woburn to advance improvements at Main Street/Cross Street intersection
 - Work with the Department of Transportation to progress Route 3 signal improvements
- Johnson Road/Wildwood Street/Pond Street/Cross Street/Forest Street: Lack of current volume data along roadway**
 - Collect volume and speed data supplement existing information
- Johnson Road/Wildwood Street/Pond Street/Cross Street/Forest Street: Observed "cut through" traffic**
 - Develop and implement improvement options

Bicycle Infrastructure Improvements

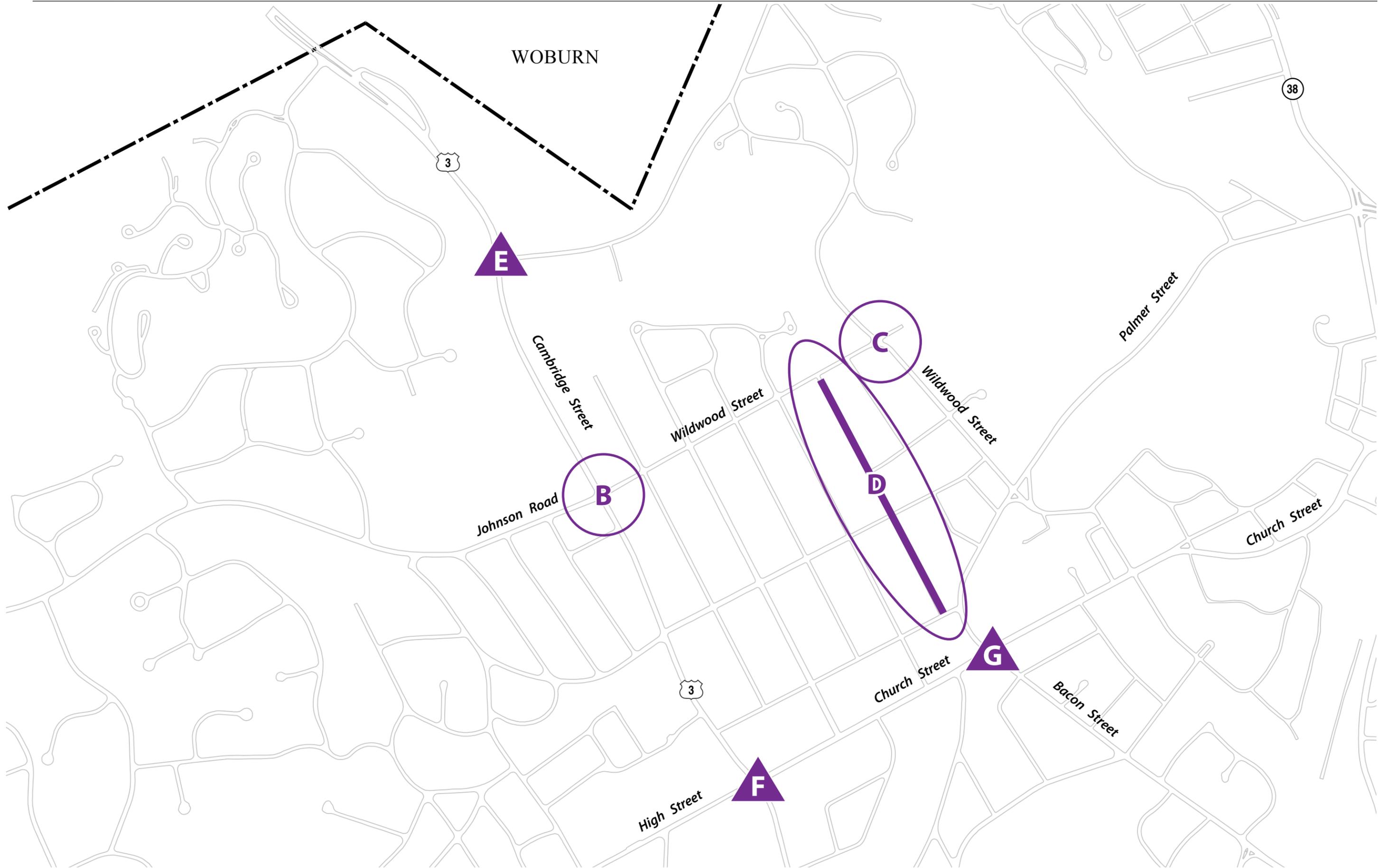
- Johnson Road/Wildwood Street/Pond Street/Cross Street/Forest Street: Bike Accommodations**
 - Paint Sharrows to designate shared roadway
 - Stripe Bike Lanes
 - Stripe Wider Shoulders

Low Volume: 500-1500 vehicles, peak period
 Moderate Volume: 2000-3000 vehicles, peak period
 High Volume: over 3500 vehicles, peak period
 Source: Volume and growth data provided by Central Transportation Planning Staff (CTPS)

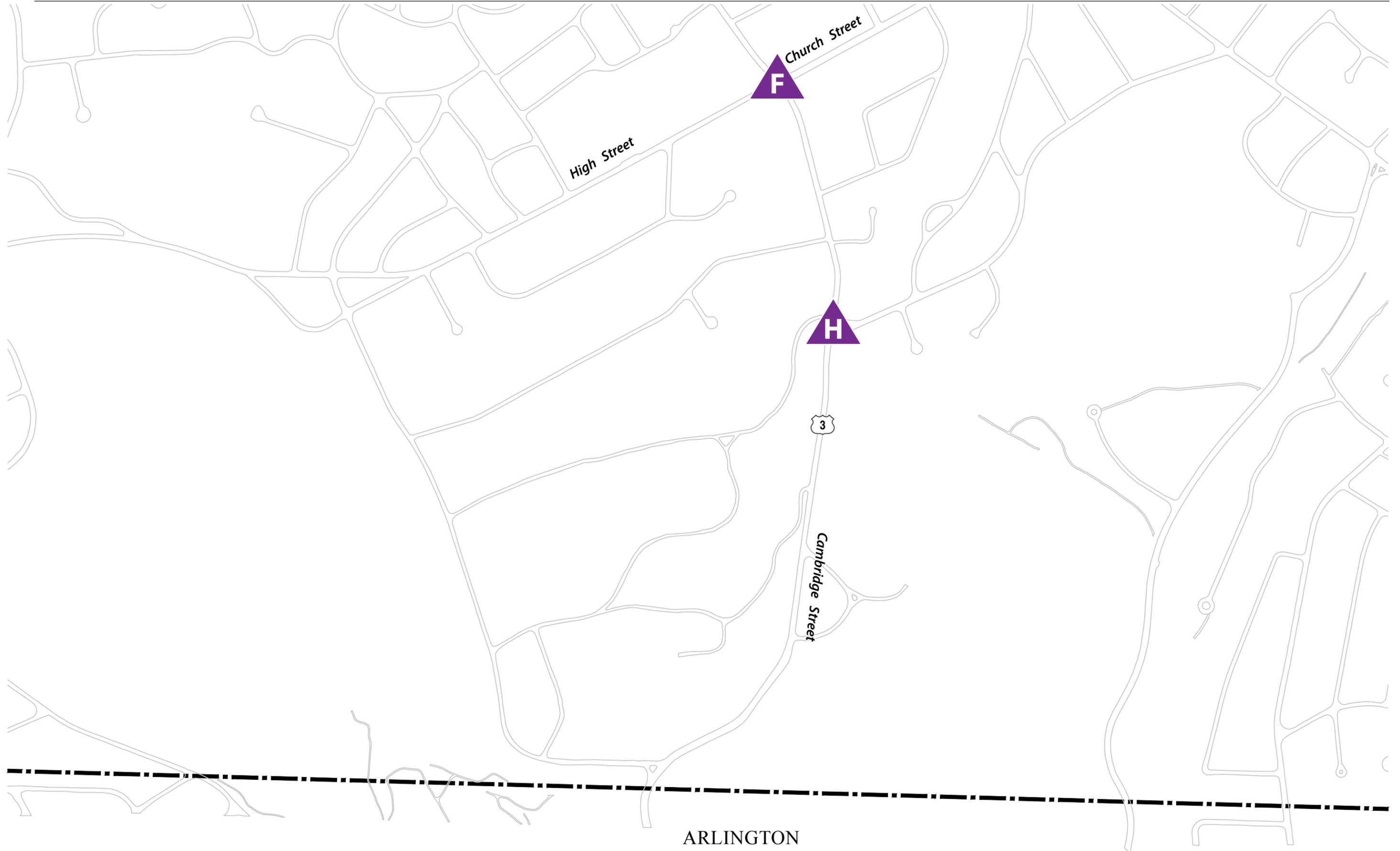




Deficiency	Short Term Improvement	Investment	Medium Term Improvement	Investment	Long Term Improvement	Investment
<p>A Johnson Street at Ridge Street: Pedestrian mobility and vehicle circulation is impacted by high levels of pick-up and drop-off activity</p>	<ul style="list-style-type: none"> ▪ Review pick-up and drop-off activity at school arrival/dismissal. Develop intersection improvements related to pedestrian mobility and vehicle circulation. 	<ul style="list-style-type: none"> ▪ \$7,000 	<ul style="list-style-type: none"> ▪ Implement recommendations developed to improve pedestrian mobility and vehicle circulation. 		<ul style="list-style-type: none"> ▪ Implement recommendations developed to improve pedestrian mobility and vehicle circulation. 	
<p>B Cambridge Street at Johnson Road/Wildwood Street: Signal and equipment does not meet current compliance standards</p>	<ul style="list-style-type: none"> ▪ Repair Loop Detectors ▪ Reset Flashing Don't Walk interval to current standards 	<ul style="list-style-type: none"> ▪ \$1,000/loop ▪ \$300 			<ul style="list-style-type: none"> ▪ Provide ADA and MUTCD complaint pedestrian push buttons and wheelchair ramps ▪ Replace traffic signal controller and cabinet 	<ul style="list-style-type: none"> ▪ \$800/push button ▪ \$1,400/wheel chair ramp ▪ \$20,000



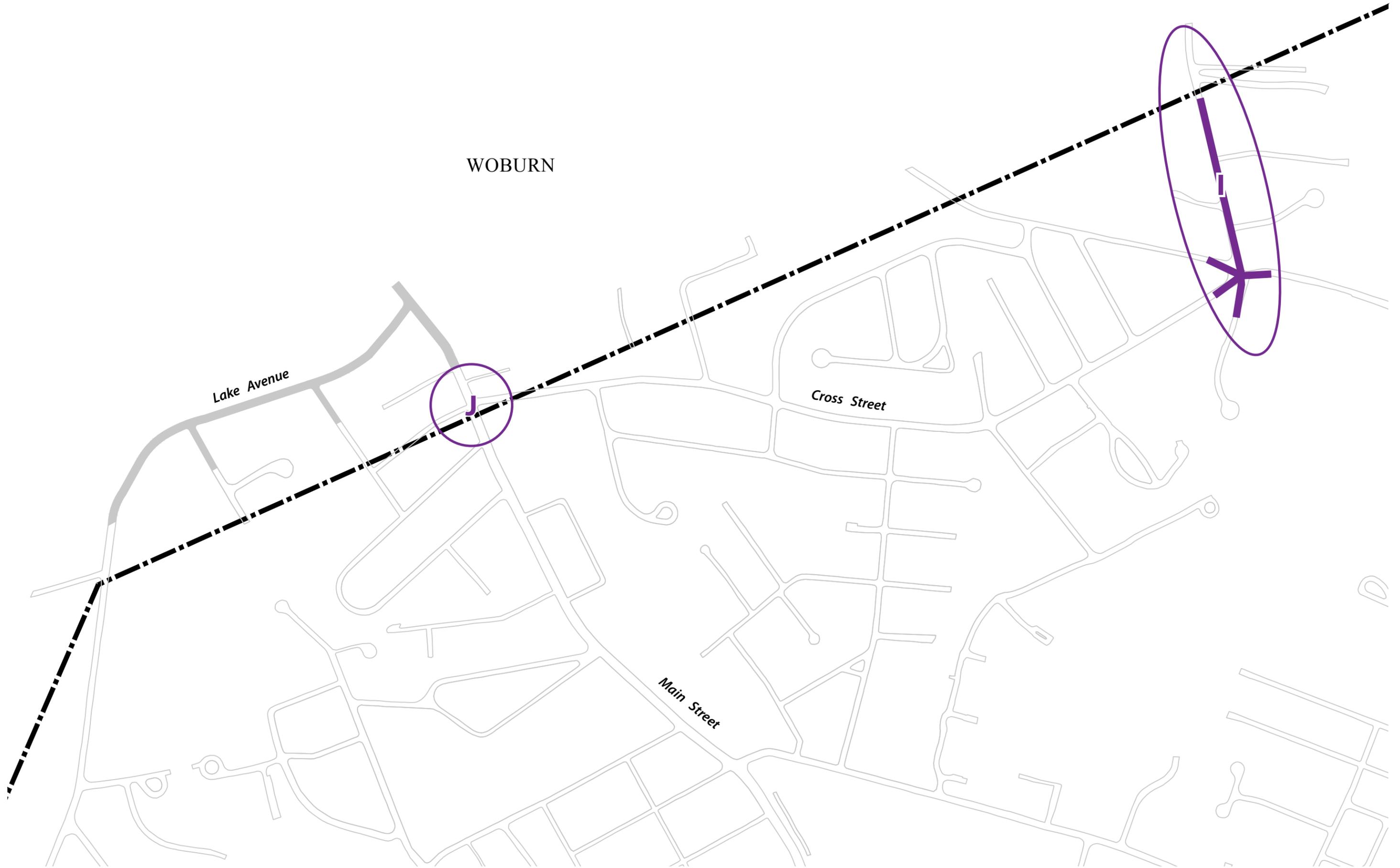
Deficiency	Short Term Improvement	Investment	Medium Term Improvement	Investment	Long Term Improvement	Investment
B Cambridge Street at Johnson Road/Wildwood Street: Signal and equipment does not meet current compliance standards	<ul style="list-style-type: none"> Repair Loop Detectors Reset Flashing Don't Walk interval to current standards 	<ul style="list-style-type: none"> \$1,000/loop \$300 			<ul style="list-style-type: none"> Provide ADA and MUTCD complaint pedestrian push buttons and wheelchair ramps 	<ul style="list-style-type: none"> \$800/push button \$1,400/wheel chair ramp
C Wildwood Street at Woodside Road: Poor sight distance and high speeds cause a safety hazard	<ul style="list-style-type: none"> Analyze existing sight distance and safety deficiencies and develop potential improvement measures. 	<ul style="list-style-type: none"> \$3,500 	<ul style="list-style-type: none"> Implement recommendations developed to improve sight distance and safety issues. 			
D Cabot Street: Address high traffic volumes and speeds	<ul style="list-style-type: none"> Identify and implement recommendations to address perceived neighborhood speeding and safety concerns. 	<ul style="list-style-type: none"> Initiated 				
E Cambridge Street at Pond Street: MassDOT has plans to convert this unsignalized intersection into a signalized intersection.						
F Cambridge Street at High Street/Church Street: MassDOT has plans to replace this traffic signal, add turning lanes, and coordinate signals on Cambridge Street	<ul style="list-style-type: none"> Repair Loop Detectors Reset Flashing Don't Walk interval to current standards 	<ul style="list-style-type: none"> \$1,000/loop \$300 			<ul style="list-style-type: none"> Full intersection reconstruction including new compliant signal equipment, wheel chair ramps, curbs, and lane reconfigurations (if necessary) 	<ul style="list-style-type: none"> \$400,000
G Church Street at Palmer Street/Bacon Street: MassDOT has plans to replace this traffic signal and add turning lanes	<ul style="list-style-type: none"> Reset Flashing Don't Walk interval to current standards 	<ul style="list-style-type: none"> \$300 			<ul style="list-style-type: none"> Full intersection reconstruction including new compliant signal equipment, wheel chair ramps, curbs, and lane reconfigurations (if necessary) 	<ul style="list-style-type: none"> \$250,000



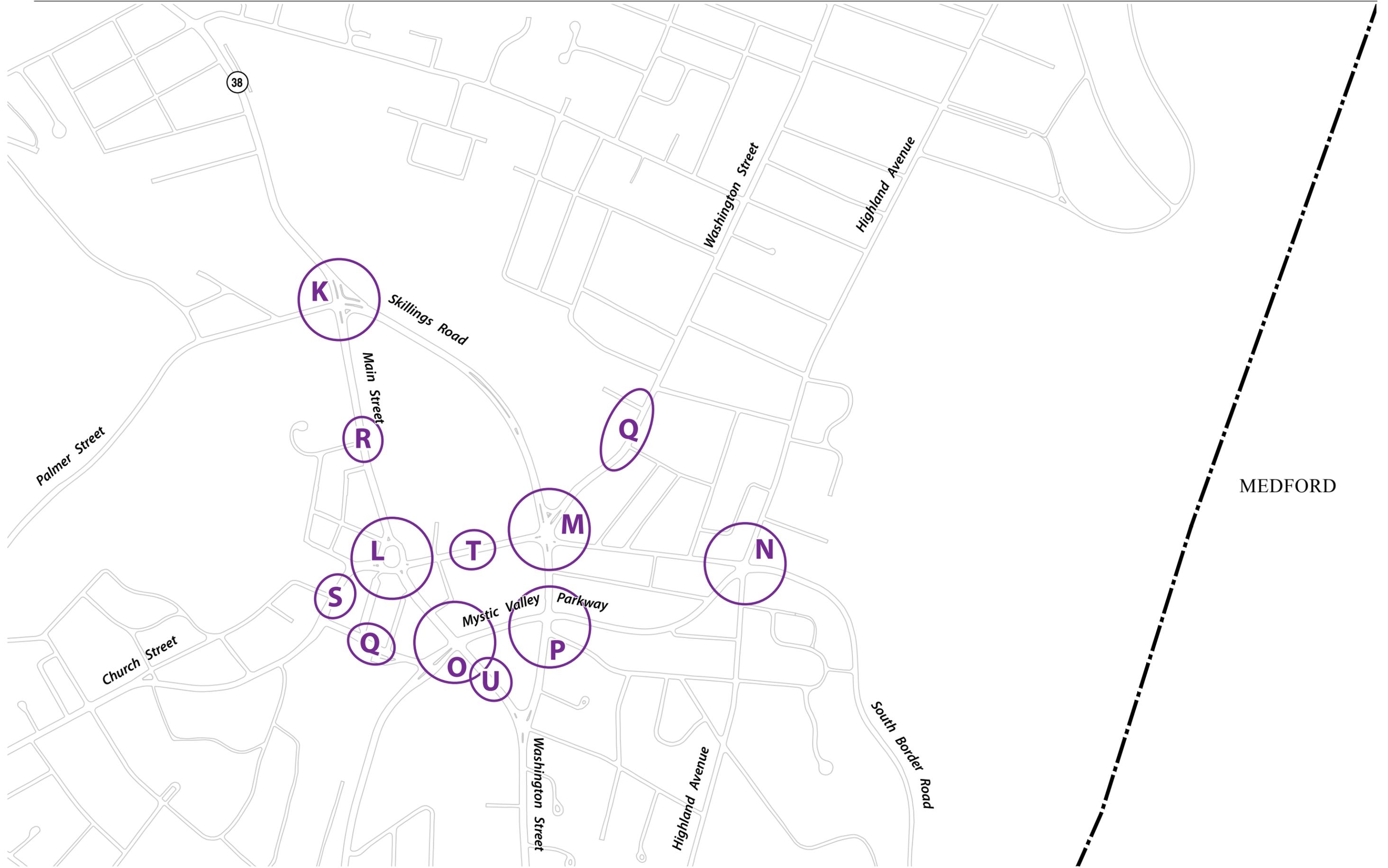
ARLINGTON

Deficiency	Short Term Improvement	Investment	Medium Term Improvement	Investment	Long Term Improvement	Investment
<p>F</p> <p>Cambridge Street at High Street/Church Street: MassDOT has plans to replace this traffic signal, add turning lanes, and coordinate signals on Cambridge Street</p>	<ul style="list-style-type: none"> ▪ Repair Loop Detectors ▪ Reset Flashing Don't Walk interval to current standards 	<ul style="list-style-type: none"> ▪ \$1,000/loop ▪ \$300 		<ul style="list-style-type: none"> ▪ Full intersection reconstruction including new compliant signal equipment, wheel chair ramps, curbs, and lane reconfigurations (if 	<ul style="list-style-type: none"> ▪ \$400,000 	
<p>H</p> <p>Cambridge Street at Everett Avenue/Myopia Road: MassDOT has plans to convert this unsignalized intersection into a signalized intersection.</p>						

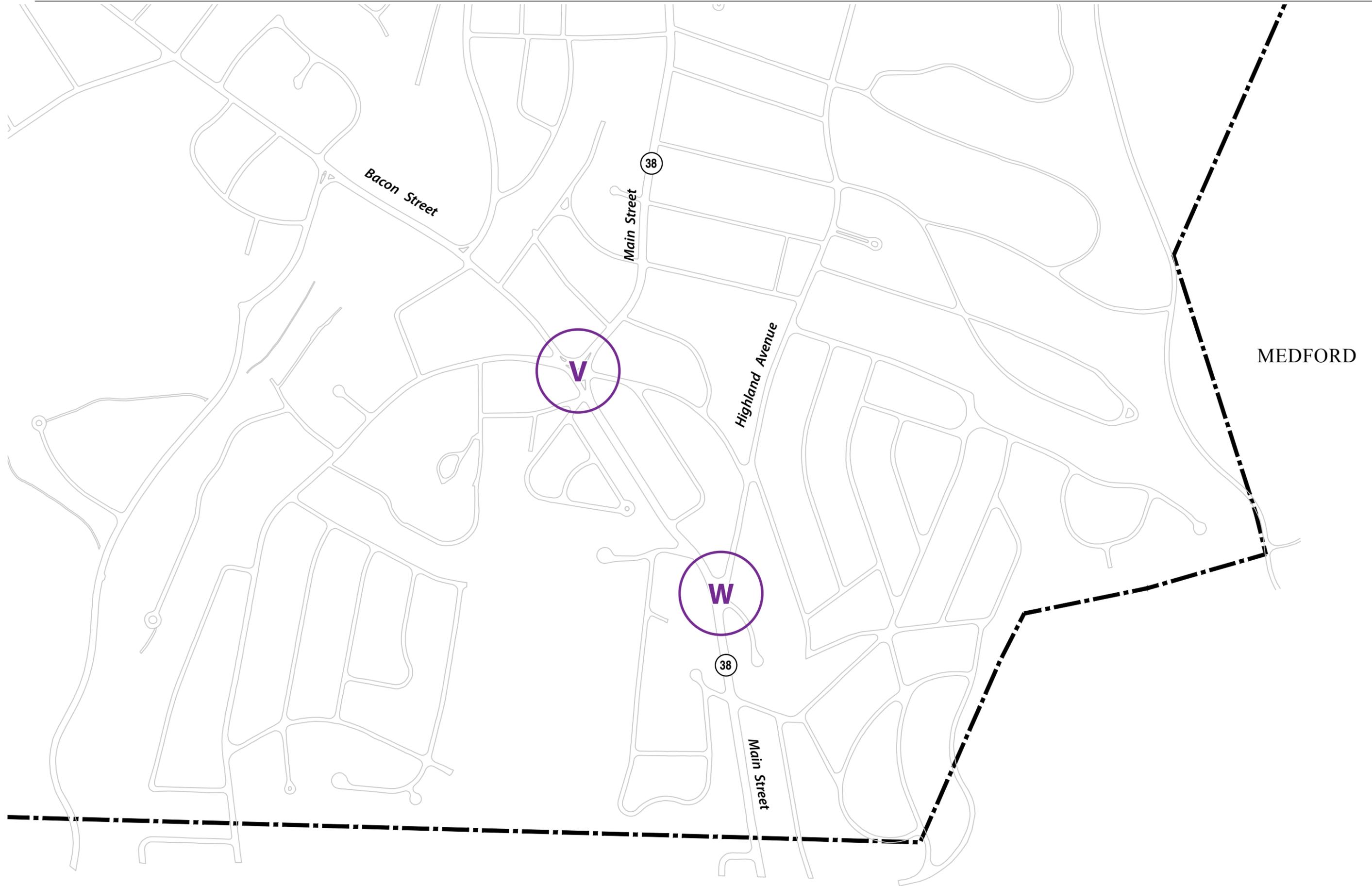
WOBURN



Deficiency	Short Term Improvement	Investment	Medium Term Improvement	Investment	Long Term Improvement	Investment
<p>I Holton Street: Development and traffic speeds have had a negative impact on the character of the neighborhood</p>	<ul style="list-style-type: none"> Develop transportation improvements to delineate right-of-way and correct intersection deficiencies. 	<ul style="list-style-type: none"> Initiated 		<ul style="list-style-type: none"> Implement recommendations transportation improvements. 		
<p>J Main Street at Cross Street: Intersection is over capacity and operates poorly</p>	<ul style="list-style-type: none"> Recommend to the City of Woburn that intersection be signalized 					

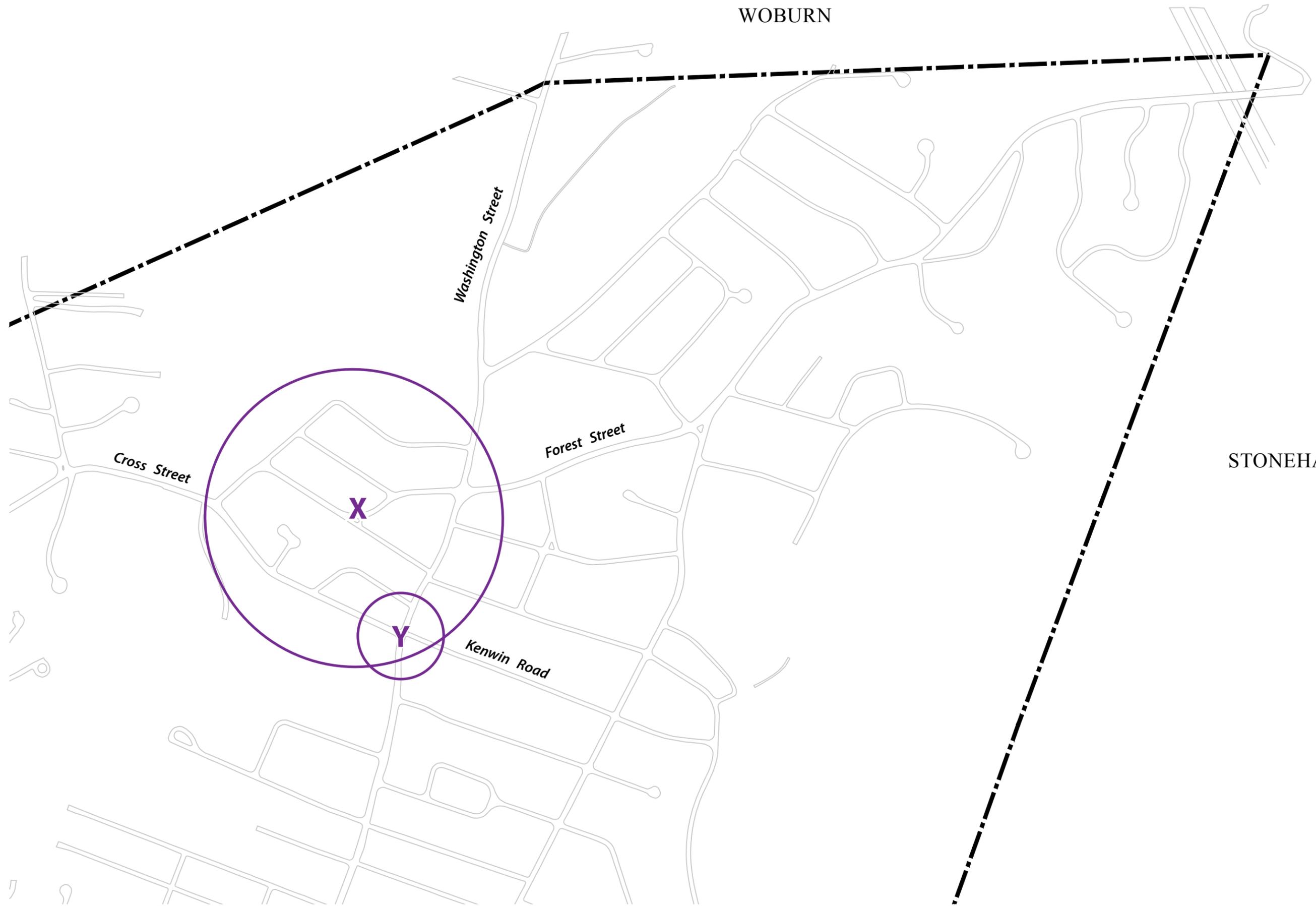


Deficiency	Short Term Improvement	Investment	Medium Term Improvement	Investment	Long Term Improvement	Investment
K Main Street at Skillings Road/Lake Street: Signal and equipment does not meet current compliance standards, and the intersection operates poorly	<ul style="list-style-type: none"> Reset controller time clock and date Reset Flashing Don't Walk interval to current standards Reset vehicle clearance intervals 	\$600			<ul style="list-style-type: none"> Provide ADA and MUTCD complaint pedestrian signal displays, push buttons, and wheelchair ramps. Change crosswalks to match stamped concrete used to define the Town Center Full intersection reconstruction 	<ul style="list-style-type: none"> \$800/push button \$1,200/Pedestrian signal head \$1,400/wheel chair ramp \$6,000/location
L Main Street at Mount Vernon Street/Church Street: Signal and equipment does not meet current compliance standards			<ul style="list-style-type: none"> Full intersection reconstruction to making pedestrian crossing compliant including relocation of the crossing. 	\$150,000		
M Washington Street at Skillings Road/Mount Vernon Street: Signal and equipment does not meet current compliance standards	<ul style="list-style-type: none"> Repair or replace green arrow indication for Washington Street northbound movement Reset controller time clock Reset Flashing Don't Walk interval to current standards Reset vehicle clearance intervals 	\$500			<ul style="list-style-type: none"> Install signal 5-section signal head with left arrow for Mt. Vernon Street eastbound 	\$1,500
M Washington Street at Skillings Road/Mount Vernon Street: Pedestrian accomodations at this intersection are poor	<ul style="list-style-type: none"> Improve signage to remind drivers to share the road with pedestrians Change signal timing to support pedestrians movements 				<ul style="list-style-type: none"> Change crosswalks to improve visibility and match stamped concrete used to define the Town Center 	\$24,000
N Highland Avenue at South Border Road/Mount Vernon Street: Signal and equipment does not meet current compliance standards	<ul style="list-style-type: none"> Reset controller time clock and date Reset Flashing Don't Walk interval to current standards 	\$600			<ul style="list-style-type: none"> Provide ADA and MUTCD complaint pedestrian push buttons and wheelchair ramps Provide proper arrow displays for movements with protected phasing 	<ul style="list-style-type: none"> \$800/push button \$1,400/wheel chair ramp \$1,000/signal head
O Main Street at Mystic Valley Parkway: Crosswalks are not easily visible and may pose a safety hazard to pedestrians					<ul style="list-style-type: none"> Change crosswalks to improve visibility and match stamped concrete used to define the Town Center 	\$6,000/location
P Washington Street at Mystic Valley Parkway: Crosswalks are not easily visible and may pose a safety hazard to pedestrians					<ul style="list-style-type: none"> Change crosswalks to improve visibility and match stamped concrete used to define the Town Center 	\$6,000/location
Q Waterfield Road and Laraway Drive: Town Center mid-block crosswalks are not well defined for drivers and may pose a safety hazard to pedestrians.	<ul style="list-style-type: none"> Change crosswalks to improve visibility and match stamped concrete used to define the Town Center 	\$6,000/location			<ul style="list-style-type: none"> Change crosswalks to improve visibility and match stamped concrete used to define the Town Center 	\$6,000/location
R Main Street: Town Center mid-block crosswalks are not well defined for drivers and may pose a safety hazard to pedestrians.			<ul style="list-style-type: none"> Install bump-outs to protect pedestirans in crosswalks 		<ul style="list-style-type: none"> Change crosswalks to improve visibility and match stamped concrete used to define the Town Center 	\$6,000/location
S Church Street: Town Center mid-block crosswalks are not well defined for drivers and may pose a safety hazard to pedestrians.	<ul style="list-style-type: none"> Change crosswalks to improve visibility and match stamped concrete used to define the Town Center 	\$6,000/location	<ul style="list-style-type: none"> Install bump-outs to protect pedestirans in crosswalks 			
T Mount Vernon Street:Town Center mid-block crosswalks are not well defined for drivers and may pose a safety hazard to pedestrians.	<ul style="list-style-type: none"> Change crosswalks to improve visibility and match stamped concrete used to define the Town Center 	\$6,000/location	<ul style="list-style-type: none"> Install bump-outs to protect pedestirans in crosswalks 			
U Main Street: Town Center mid-block crosswalks are not well defined for drivers and may pose a safety hazard to pedestrians.			<ul style="list-style-type: none"> Install bump-outs to protect pedestirans in crosswalks 			
V Washington Street: Town Center mid-block crosswalks are not well defined for drivers and may pose a safety hazard to pedestrians.			<ul style="list-style-type: none"> Install bump-outs to protect pedestirans in crosswalks 		<ul style="list-style-type: none"> Change crosswalks to improve visibility and match stamped concrete used to define the Town Center 	\$6,000/location
 Work towards implementing the recommendations of the Town Center Parking Plan such as a Parking Management Plan and changes to the current pricing strategy						
 Work towards better defining the Town Center District through policy measures such as rezoning and economic development, specifically in areas north of Mount Vernon Street						
 Continue to work with the community towards a Town Center Redevelopment Plan to encourage economic and cultural development						



Deficiency	Short Term Improvement	Investment	Medium Term Improvement	Investment	Long Term Improvement	Investment
<p>W Main Street at Bacon Street: Poor sight distance, complex geometric, and high speeds cause safety and operational hazards</p>	<ul style="list-style-type: none"> Collect traffic data, review sight distance and intersection geometry and identify possible improvements 		<ul style="list-style-type: none"> Implement short term recommendations to address cited issues 			
<p>X Main Street at Highland Avenue: Intersection is not clearly defined or used properly.</p>	<ul style="list-style-type: none"> Collect traffic data, review sight distance and intersection geometry and identify possible improvements 	<ul style="list-style-type: none"> \$3,500 	<ul style="list-style-type: none"> Implement short term recommendations to address sight distance issues 			

WOBURN



STONEHAM

X

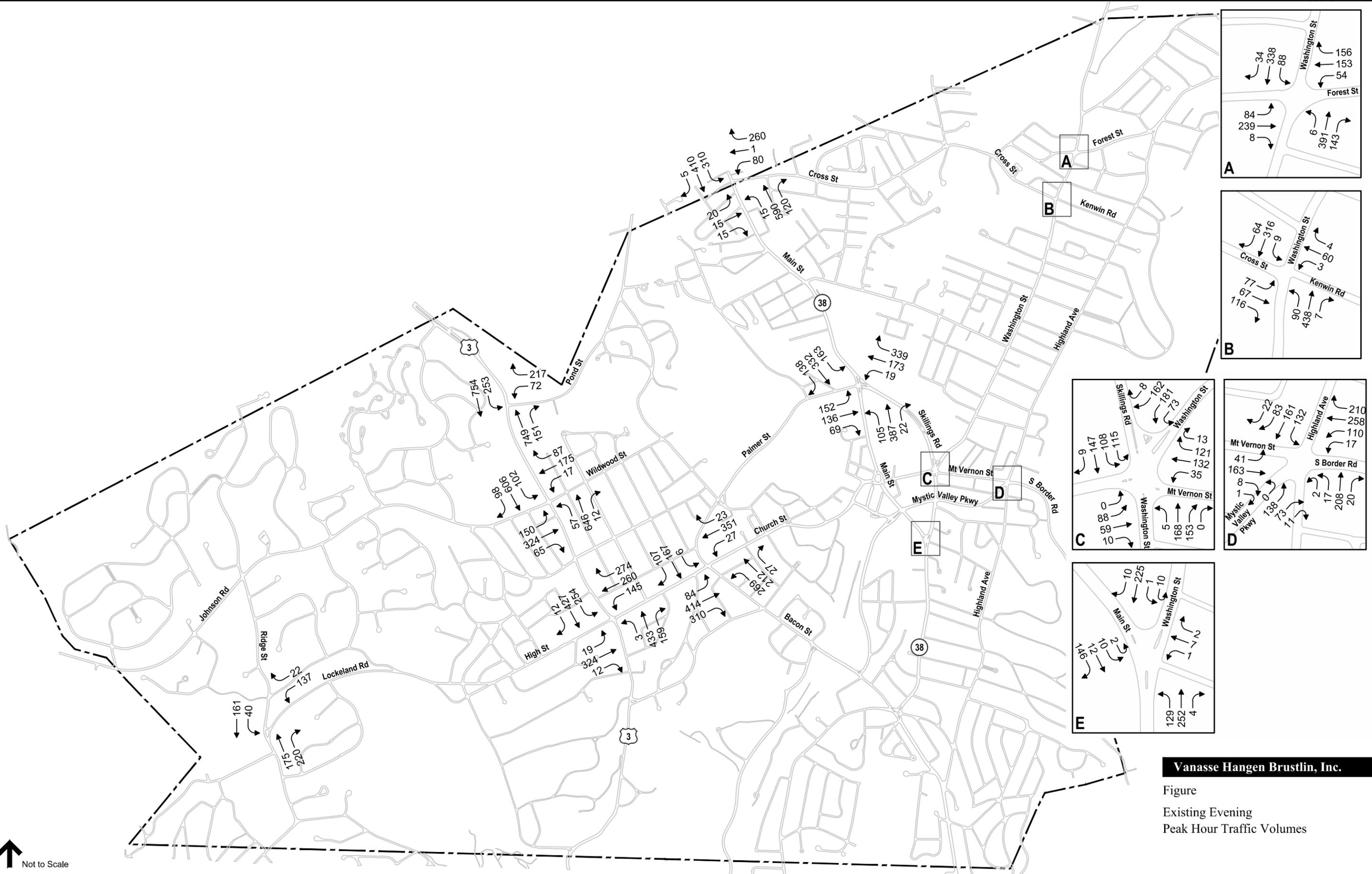
Y

Deficiency	Short Term Improvement	Investment	Medium Term Improvement	Investment	Long Term Improvement	Investment
<p>Y Brookside Avenue Neighborhood: Excessive cut through traffic has increased traffic volumes and speeds in the neighborhood</p>	<ul style="list-style-type: none"> Collect traffic data, identify existing cut through traffic routes and geometric deficiencies and identify improvement options. 	<ul style="list-style-type: none"> Initiated 	<ul style="list-style-type: none"> Implement short term recommendations to address identified deficiencies Fill in missing links in the sidewalk network 			
<p>Z Washington Street at Cross Street/Kenwin Road: Signal and equipment does not meet current compliance standards</p>	<ul style="list-style-type: none"> Reset Flashing Don't Walk interval to current standards 	<ul style="list-style-type: none"> \$300 				

Deficiency	Short Term Improvement	Investment	Medium Term Improvement	Investment	Long Term Improvement	Investment
A Johnson Street at Ridge Street: Pedestrian mobility and vehicle circulation is impacted by high levels of pick-up and drop-off activity	<ul style="list-style-type: none"> Review pick-up and drop-off activity at school arrival/dismissal. Develop intersection improvements related to pedestrian mobility and vehicle circulation. 	<ul style="list-style-type: none"> \$7,000 	<ul style="list-style-type: none"> Implement recommendations developed to improve pedestrian mobility and vehicle circulation. 		<ul style="list-style-type: none"> Implement recommendations developed to improve pedestrian mobility and vehicle circulation. 	
B Cambridge Street at Johnson Road/Wildwood Street: Signal and equipment does not meet current compliance standards	<ul style="list-style-type: none"> Repair Loop Detectors Reset Flashing Don't Walk interval to current standards 	<ul style="list-style-type: none"> \$1,000/loop \$300 			<ul style="list-style-type: none"> Provide ADA and MUTCD complaint pedestrian push buttons and wheelchair ramps Replace traffic signal controller and cabinet 	<ul style="list-style-type: none"> \$800/push button \$1,400/wheel chair ramp \$20,000
C Wildwood Street at Woodside Road: Poor sight distance and high speeds cause a safety hazard	<ul style="list-style-type: none"> Analyze existing sight distance and safety deficiencies and develop potential improvement measures. 	<ul style="list-style-type: none"> \$3,500 	<ul style="list-style-type: none"> Implement recommendations developed to improve sight distance and safety issues. 			
D Cabot Street: Address high traffic volumes and speeds	<ul style="list-style-type: none"> Identify and implement recommendations to address perceived neighborhood speeding and safety concerns. 	<ul style="list-style-type: none"> Initiated 				
E Cambridge Street at Pond Street: MassDOT has plans to convert this unsignalized intersection into a signalized intersection.						
F Cambridge Street at High Street/Church Street: MassDOT has plans to replace this traffic signal, add turning lanes, and coordinate signals on Cambridge Street	<ul style="list-style-type: none"> Repair Loop Detectors Reset Flashing Don't Walk interval to current standards 	<ul style="list-style-type: none"> \$1,000/loop \$300 			<ul style="list-style-type: none"> Full intersection reconstruction including new compliant signal equipment, wheel chair ramps, curbs, and lane reconfigurations (if necessary) 	<ul style="list-style-type: none"> \$400,000
G Church Street at Palmer Street/Bacon Street: MassDOT has plans to replace this traffic signal and add turning lanes	<ul style="list-style-type: none"> Reset Flashing Don't Walk interval to current standards 	<ul style="list-style-type: none"> \$300 			<ul style="list-style-type: none"> Full intersection reconstruction including new compliant signal equipment, wheel chair ramps, curbs, and lane reconfigurations (if necessary) 	<ul style="list-style-type: none"> \$250,000
H Cambridge Street at Everett Avenue/Myopia Road: MassDOT has plans to convert this unsignalized intersection into a signalized intersection.						
I Holton Street: Development and traffic speeds have had a negative impact on the character of the neighborhood	<ul style="list-style-type: none"> Develop transportation improvements to delineate right-of-way and correct intersection deficiencies. 	<ul style="list-style-type: none"> Initiated 	<ul style="list-style-type: none"> Implement recommendations transportation improvements. 			
J Main Street at Cross Street: Intersection is over capacity and operates poorly	<ul style="list-style-type: none"> Recommend to the City of Woburn that intersection be signalized 					
K Main Street at Skillings Road/Lake Street: Signal and equipment does not meet current compliance standards, and the intersection operates poorly	<ul style="list-style-type: none"> Reset controller time clock and date Reset Flashing Don't Walk interval to current standards Reset vehicle clearance intervals 	<ul style="list-style-type: none"> \$600 			<ul style="list-style-type: none"> Provide ADA and MUTCD complaint pedestrian signal displays, push buttons, and wheelchair ramps. Change crosswalks to match stamped concrete used to define the Town Center Full intersection reconstruction 	<ul style="list-style-type: none"> \$800/push button \$1,200/Pedestrian signal head \$1,400/wheel chair ramp \$6,000/location
L Main Street at Mount Vernon Street/Church Street: Signal and equipment does not meet current compliance standards			<ul style="list-style-type: none"> Full intersection reconstruction to making pedestrian crossing compliant including relocation of the crossing. 	<ul style="list-style-type: none"> \$150,000 		
M Washington Street at Skillings Road/Mount Vernon Street: Signal and equipment does not meet current compliance standards	<ul style="list-style-type: none"> Repair or replace green arrow indication for Washington Street northbound movement Reset controller time clock Reset Flashing Don't Walk interval to current standards Reset vehicle clearance intervals 	<ul style="list-style-type: none"> \$500 \$600 for signal timing work 			<ul style="list-style-type: none"> Install signal 5-section signal head with left arrow for Mt. Vernon Street eastbound 	<ul style="list-style-type: none"> \$1,500
M Washington Street at Skillings Road/Mount Vernon Street: Pedestrian accommodations at this intersection are poor	<ul style="list-style-type: none"> Improve signage to remind drivers to share the road with pedestrians Change signal timing to support pedestrians movements 				<ul style="list-style-type: none"> Change crosswalks to improve visibility and match stamped concrete used to define the Town Center 	<ul style="list-style-type: none"> \$24,000

Deficiency	Short Term Improvement	Investment	Medium Term Improvement	Investment	Long Term Improvement	Investment
N Highland Avenue at South Border Road/Mount Vernon Street: Signal and equipment does not meet current compliance standards	<ul style="list-style-type: none"> Reset controller time clock and date Reset Flashing Don't Walk interval to current standards 	\$600			<ul style="list-style-type: none"> Provide ADA and MUTCD complaint pedestrian push buttons and wheelchair ramps Provide proper arrow displays for movements with protected phasing 	<ul style="list-style-type: none"> \$800/push button \$1,400/wheel chair ramp \$1,000/signal head
O Main Street at Mystic Valley Parkway: Crosswalks are not easily visible and may pose a safety hazard to pedestrians					<ul style="list-style-type: none"> Change crosswalks to improve visibility and match stamped concrete used to define the Town Center 	<ul style="list-style-type: none"> \$6,000/location
P Washington Street at Mystic Valley Parkway: Crosswalks are not easily visible and may pose a safety hazard to pedestrians					<ul style="list-style-type: none"> Change crosswalks to improve visibility and match stamped concrete used to define the Town Center 	<ul style="list-style-type: none"> \$6,000/location
O Waterfield Road and Laraway Drive: Town Center mid-block crosswalks are not well defined for drivers and may pose a safety hazard to pedestrians.	<ul style="list-style-type: none"> Change crosswalks to improve visibility and match stamped concrete used to define the Town Center 	\$6,000/location			<ul style="list-style-type: none"> Change crosswalks to improve visibility and match stamped concrete used to define the Town Center 	<ul style="list-style-type: none"> \$6,000/location
R Main Street: Town Center mid-block crosswalks are not well defined for drivers and may pose a safety hazard to pedestrians.			<ul style="list-style-type: none"> Install bump-outs to protect pedestirans in crosswalks 		<ul style="list-style-type: none"> Change crosswalks to improve visibility and match stamped concrete used to define the Town Center 	<ul style="list-style-type: none"> \$6,000/location
S Church Street: Town Center mid-block crosswalks are not well defined for drivers and may pose a safety hazard to pedestrians.	<ul style="list-style-type: none"> Change crosswalks to improve visibility and match stamped concrete used to define the Town Center 	\$6,000/location	<ul style="list-style-type: none"> Install bump-outs to protect pedestirans in crosswalks 			
T Mount Vernon Street:Town Center mid-block crosswalks are not well defined for drivers and may pose a safety hazard to pedestrians.	<ul style="list-style-type: none"> Change crosswalks to improve visibility and match stamped concrete used to define the Town Center 	\$6,000/location	<ul style="list-style-type: none"> Install bump-outs to protect pedestirans in crosswalks 			
U Main Street: Town Center mid-block crosswalks are not well defined for drivers and may pose a safety hazard to pedestrians.			<ul style="list-style-type: none"> Install bump-outs to protect pedestirans in crosswalks 			
V Washington Street: Town Center mid-block crosswalks are not well defined for drivers and may pose a safety hazard to pedestrians.			<ul style="list-style-type: none"> Install bump-outs to protect pedestirans in crosswalks 		<ul style="list-style-type: none"> Change crosswalks to improve visibility and match stamped concrete used to define the Town Center 	<ul style="list-style-type: none"> \$6,000/location
W Main Street at Bacon Street: Poor sight distance, complex geometric, and high speeds cause safety and operational hazards	<ul style="list-style-type: none"> Collect traffic data, review sight distance and intersection geometry and identify possible improvements 		<ul style="list-style-type: none"> Implement short term recommendations to address cited issues 			
X Main Street at Highland Avenue: Intersection is not clearly defined or used properly.	<ul style="list-style-type: none"> Collect traffic data, review sight distance and intersection geometry and identify possible improvements 	\$3,500	<ul style="list-style-type: none"> Implement short term recommendations to address sight distance issues 			
Y Brookside Avenue Neighborhood: Excessive cut through traffic has increased traffic volumes and speeds in the neighborhood	<ul style="list-style-type: none"> Collect traffic data, identify existing cut through traffic routes and geometric deficiencies and identify improvement options. 	Initiated	<ul style="list-style-type: none"> Implement short term recommendations to address identified deficiencies Fill in missing links in the sidewalk network 			
Z Washington Street at Cross Street/Kenwin Road: Signal and equipment does not meet current compliance standards	<ul style="list-style-type: none"> Reset Flashing Don't Walk interval to current standards 	\$300				
 Work towards implementing the recommendations of the Town Center Parking Plan such as a Parking Management Plan and changes to the current pricing strategy						
 Work towards better defining the Town Center District through policy measures such as rezoning and economic development, specifically in areas north of Mount Vernon Street						
 Continue to work with the community towards a Town Center Redevelopment Plan to encourage economic and cultural development						

Appendix



Vanasse Hangen Brustlin, Inc.

Figure
Existing Evening
Peak Hour Traffic Volumes