ROUTE 139 CORRIDOR STUDY, STOUGHTON, MA

Mobility
Safety
Efficiency
Sustainability
Plan for the Future

Old Colony Planning Council
Prepared Under MassDOT Contract Number 123116
and Unified Planning Work Program Number 3400
September, 2024

Acknowledgements and Title VI Notice of Protection

The preparation of this report has been financed in part through grant[s] from the Federal Highway Administration, U.S. Department of Transportation, under the State Planning and Research Program, Section 505 [or Metropolitan Planning Program, Section 104(f)] of Title 23, U.S. Code.
This report was funded in part through grant[s] from the Federal Highway Administration [and Federal Transit Administration], U.S. Department of Transportation. The views and opinions of the Old Colony Planning Council expressed herein do not necessarily state or reflect those of the U. S. Department of Transportation.

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Arabic: إذا كانت هناك حاجة هذه المعلومات في أخرى لغة في، يرجى بات الاتصال Ciaramella في 508-583-1833 امتداد.

Acknowledgements:

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Contents

Introduction and Study Purpose

The purpose of the Route 139 Corridor Study is to identify traffic congestion and circulation problems, safety deficiencies, and mobility and access impediments to all users in the Route 139 corridor in the Town of Stoughton (between Route 27 at Central Square and northern town line boarding with Randolph). This study was funded utilizing federal planning funds as part of the Old Colony Metropolitan Planning Organization (MPO) Federal Fiscal Year 2024 Unified Planning Work Program (UPWP). In addition, through the planning process, this study will help determine system needs by coordinating recommended improvements that support state and regional objectives and local plans and land use development. The study will help to develop short-term and long-term recommendations and strategies, including potential Transportation Improvement Program (TIP) projects that focus on transportation equity and access, improved traffic circulation and mobility, reduced collisions, improvements in air quality, and improved access and safety for all transportation modes, including bicycle, pedestrian, and transit accommodation.

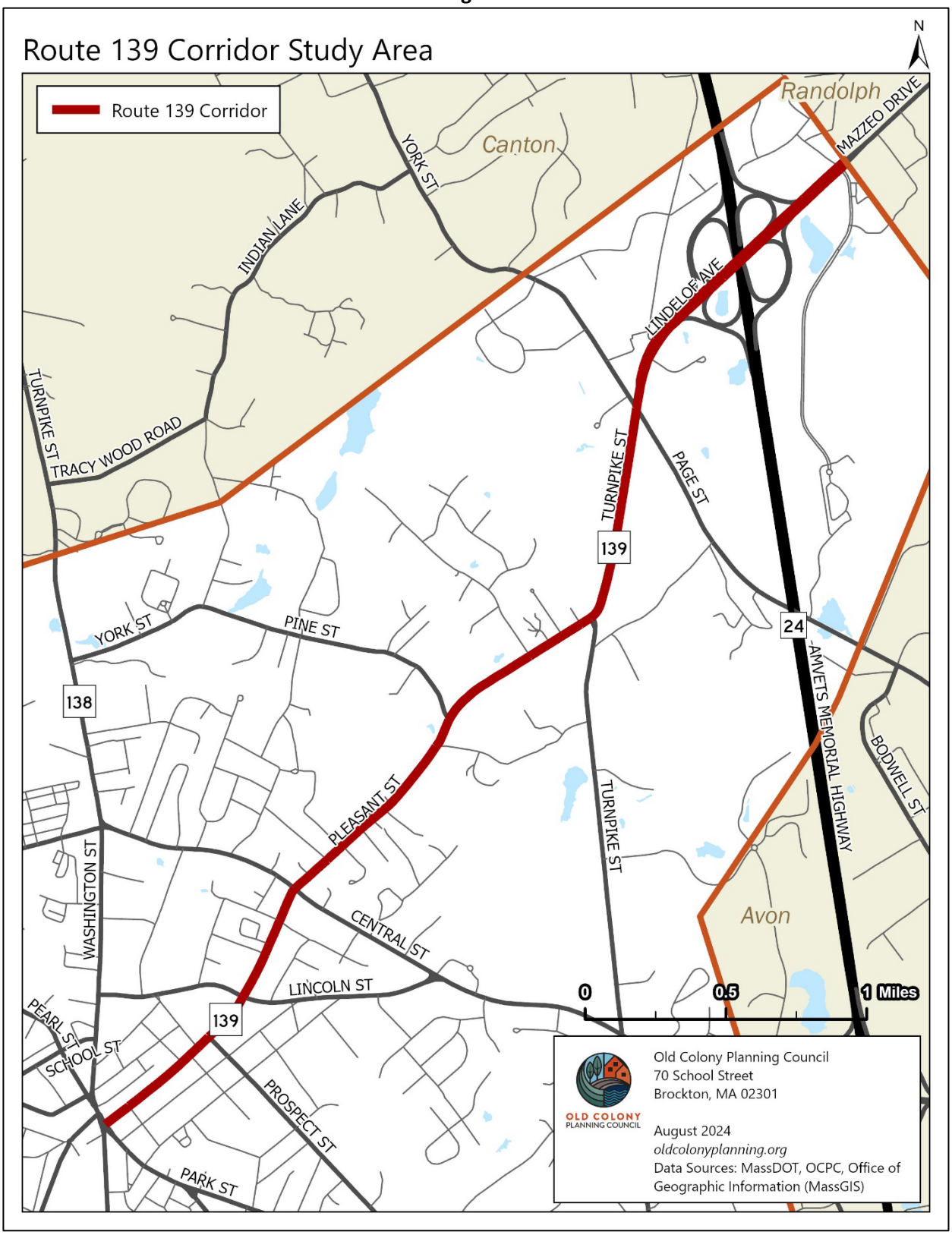
A public participation plan was developed to provide a cooperative study effort between OCPC, MassDOT, the Town of Stoughton, and the public. Periodic updates on the study progress were provided to the Old Colony Joint Transportation Committee (JTC) and the Old Colony Metropolitan Planning Organization (MPO). OCPC staff held several meetings with Stoughton officials to garner information on Stoughton's plans and projects specific to the Route 139 corridor. In addition, OCPC developed a public survey to garner opinion and information from the public on their perceptions of problems and potential solutions.

Route 139 is a major arterial road providing regional east-west connections in southeastern Massachusetts from Stoughton connecting east to Route 24 and to Route 3 in Pembroke. This study focusses on key intersections along the Route 139 corridor in Stoughton. Figure 1 shows the geographic scope of the study area.

Study Methodology and Scope

This study includes traffic data collection (average daily traffic for a 24-hour period at specific locations along the Route 139 corridor and peak hour turning movements at key Route 139 intersections), an inventory of physical conditions (pavement width, lane use, posted speed limits, traffic control, etc.), a review of land use and community goals, pavement conditions, pedestrian and bicycle accommodations, and a review and analysis of crash data within the corridor. In addition, traffic forecasts and level-of-service analyses for existing and future (five-year horizon) peak hour conditions were performed for this study. Traffic analyses were completed utilizing standard practices published in the Institute of Transportation Engineers' *Highway Capacity Manual.* Traffic analysis software was used to complete this study including SYNCHRO, and SimTraffic. In addition to data collection, crash information was obtained from both the Town of Stoughton Police Department and the Massachusetts Department of Transportation (MassDOT) IMPACT Crash Portal. The "Complete Streets" concept, (designing roads for all road users), traffic calming, access management, and local and state plans are considered in the development of specific improvement projects and are key to defining a long-term vision for the study corridor. OCPC staff held stakeholder meetings in the Town of Stoughton to provide input opportunities for the public and public officials. Improvement alternatives, suggestions, and needs of the local communities, based on the stakeholder meetings have been incorporated in the final report.

Figure 1


Route 139 Corridor Study Area
N
Route 139 Corridor
Canton
Randolph
YORK ST
INDIAN LANE
MAZZEO DRIVE
LINDELOF AVE
TURNPIKE ST
TRACY WOOD ROAD
PAGE ST
139
YORK ST
PINE ST
24
138
AMVETS MEMORIAL HIGHWAY
BODWELL ST
PLEASANT ST
TURNPIKE ST
Avon
WASHINGTON ST
CENTRAL ST
LINCOLN ST
0
0.5
1 Miles
PEARL ST
SCHOOL ST
139
PROSPECT ST
PARK ST
Old Colony Planning Council
70 School Street
Brockton, MA 02301
August 2024
oldcolonyplanning.org
Data Sources: MassDOT, OCPC, Office of Geographic Information (MassGIS)

Public Outreach

Public Survey

OCPC developed a public survey questionnaire to gather information on the concerns and issues important to all road users. This survey helped to identify and prioritize transportation problems and improvements within the study area. The survey was developed using Survey Monkey and was available via link online at several websites, including the OCPC website and the Town of Stoughton website. The survey assisted in raising awareness about the study and in giving the public the opportunity to participate anonymously. Participating individuals were encouraged to leave contact information to keep them updated regarding additional information or public meetings and personal information was kept confidential. The survey was available via the OCPC E-newsletter and on social media and was available in English, and translated into Haitian Creole, Spanish, Portuguese, Simplified Chinese, and Traditional Chinese language in compliance with Title VI requirements. The following section summarizes the survey questions and responses.

Survey Results

The survey consisted of a number of questions regarding the purpose of trips, the modes used, and the experience of people regarding congestion and safety. It also asked users for their ideas regarding potential improvements. The survey provided choices but also included opportunities for open ended answers (such as "other"). The survey questions were as follows (the full questionnaire is provided in the appendix):

1. What city/town are you currently living in?
2. Are your trip destinations located along the Route 139 Corridor or are you passing through?
3. Why do you travel along Route 139 (select all that apply)?
4. What mode(s) do you use to travel along Route 139 (select all that apply)?
5. What time periods do you think are the most congested time along the Route 139 Corridor (select all that apply)?
6. Do you feel that Route 139 is a congested corridor (select all that apply)? (if yes, which are the top 3 most congested locations?)
7. Do you feel that Route 139 is an unsafe corridor (select all that apply)? (if yes, which are the top 3 most unsafe locations?)
8. If available, would you consider using any of the following modes to travel along Route 139?
9. What would you like to see for the future of Route 139 Corridor (select all that apply)?
10. What are your main concerns regarding Route 139 Corridor?
11. Which infrastructure investments do you think should be considered to improve access, mobility, and/ or safety along Route 139?
12. Would you like to participate in future meetings for Route 139 Corridor Planning Study?

The survey was conducted between February 2024 to May 2024 and yielded 127 responses. The responses to each of the questions are summarized as follows:

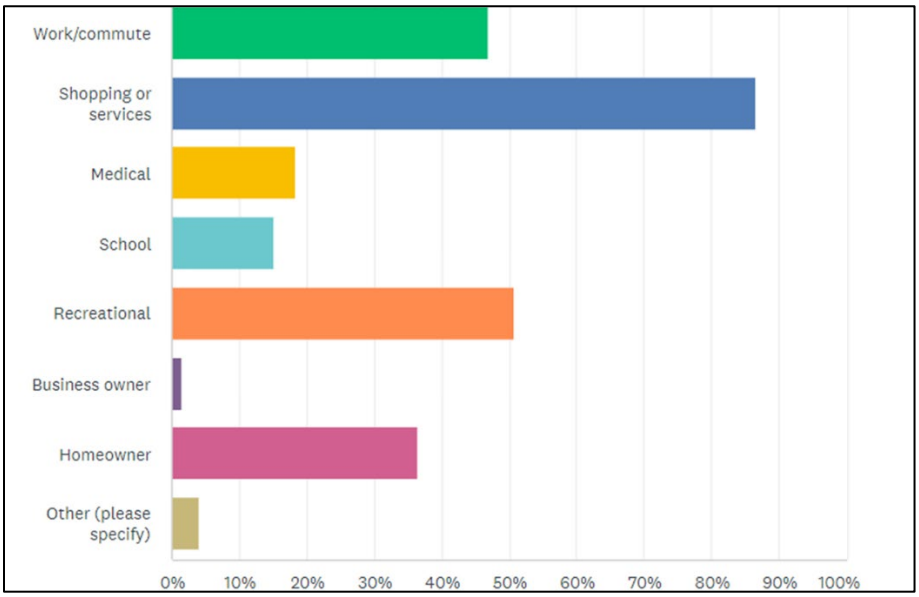
Question 1. What city/town are you currently living in? – The overwhelming number of responses were from Stoughton, 122 responses from Stoughton, with two from Easton, two from Milton, and one from Brockton.

Question 2. Are your trip destinations located along the Route 139 Corridor or are you passing through? – Most motorists on Route 139 were passing through and had a destination along Route 139, 72.5

percent, 16.5 percent were just passing through, ten percent had a specific destination, and one person had none of the above.

Question 3. Why do you travel along Route 139 (select all that apply)? – Figure 2 summarizes the results of this questions. Most people use Route 139 for shopping and services. The second highest use was for recreational purposes, and working and commuting came in third.

Figure 2



Question 4. What mode(s) do you use to travel along Route 139 (select all that apply)? – The overwhelming response was by vehicle with 125 responses. Twenty respondents indicated that they also travel by walking, and nine respondents indicated that they also bike along Route 139.

Question 5. What time periods do you think are the most congested time along the Route 139 Corridor (select all that apply)? Most respondents stated that the morning and afternoon peak hours were the most congested with 71 percent choosing mornings and 87 percent choosing afternoon peak hours. Twenty-six percent chose Saturdays, and 18 percent chose Sundays as having the most congestion.

Question 6. Do you feel that Route 139 is a congested corridor (select all that apply)? (if yes, which are the top 3 most congested locations?) The Pleasant Street (Route 139) & Central Street intersection was cited as the most congested by 67 percent of the respondents. The Pleasant Street (Route 139) and Washington Street (Route 138) / Park Street (Route 27) intersection was second with 44 percent of the responses, and the Pleasant Street (Route 139) & Lincoln Street intersection was third with 40 percent of the responses.

Question 7. Do you feel that Route 139 is an unsafe corridor (select all that apply)? (if yes, which are the top 3 most unsafe locations?) The intersections cited as the most unsafe were Pleasant Street (Route 139) and Lincoln Street with 66 percent, Pleasant Street (Route 139) and Central Street with 37 percent, and Washington Street (Route 138)/Park Street (Route 27) with 36 percent.

Question 8. If available, would you consider using any of the following modes to travel along Route 139? (choose more than one) Nineteen percent indicated Public Mass Transit, 17 percent indicated Micro transit (for example, flexible routes, small scale, on demand transit services), 52 percent indicated Walking, 20 percent indicated on-road bicycling, and 19 percent indicated off-road bicycling.

Question 9. Do you find yourself seeking alternate routes to avoid Route 139 congestion on a regular basis? Thirty-one percent answered yes, and 61 percent answered no.

Question 10. What would you like to see for the future of Route 139 Corridor (select all that apply)? Fifty-eight respondents answered with more sidewalks, 37 percent wanted more signals, 21 percents wanted slower vehicle speeds, 18 percent wanted more bicycle facilities, 18 percent wanted lower commercial development, 17 percent wanted more mixed-use development, 17 percent wanted more roundabouts and 8 percent wanted better access management.

Question 11. What are your main concerns regarding Route 139 Corridor? This was an open ended question. Many people raised concerns for pedestrian safety, excessive congestion, speeding, and safety at the Route 139/Lincoln Street intersection.

Question 12. Which infrastructure investments do you think should be considered to improve access, mobility, and/ or safety along Route 139? This question was an open ended question. Many people answered with more sidewalks, traffic calming, and a signal at the Route 139 and Lincoln Street intersection.

Meetings and Events

Kick-off and Scoping Session

OCPC held a remote kick-off and scoping session with local officials on January 29, 2024. The discussion focused on discerning the town's planned improvements for Route 139 and fulfilling the town's vision for the corridor. This included enhanced pedestrian and bicycle safety, as well as reducing vehicle collisions. The meeting participants reviewed the Route 139 Corridor scope, objectives, process, work plan and project development timeline. The Stoughton Police Department's Safety Officer provided an overview of locations along the corridor that had the highest frequency of crashes and collisions. Participants provided their input on priorities and issues including prioritizing enhancements and improvement of safety through engineering design by considering both long-term and short-term infrastructure improvements. Elements of previous road safety audits and the identification of countermeasures for short, medium, and long-term were cited for inclusion in the development of recommended projects for this study, especially at the Pleasant Street (Route 139)/Lincoln Street intersection.

The meeting participants included the following in their priorities:

- Promotion of safe speeds along Route 139.
- Improvement in bicycle and pedestrian accommodation, accessibility, connectivity, and safety. The corridor needs more sidewalks and sidewalk connections.
- Improvement to student drop offs and pickups. The corridor needs more infrastructure to allow students to walk safely to and from all schools.

- Stoughton to leverage funding opportunities and grants applications through Safe Routes to School, Complete Street Program, TIP and other various resources (with the assistance of OCPC and MassDOT).

The meeting participants also discussed current and planned projects along the Route 139 Corridor including:

- Lowe Avenue at Pleasant Street (Route 139) improvements (coming in the summer of 2024), which include crosswalks, signage, and traffic calming improvements such as a Rapid Rectangular Flashing Beacon.
- The re-design of the Pine Street at Pleasant Street (Route 139) intersection.

In addition, meeting participants expressed willingness to aid in distributing Route 139 Corridor Study Public Surveys through various social media channels and the town channels.

Field Visit, February 8, 2024

On February 8, 2024, OCPC met with the Stoughton Engineering Department, the Stoughton DPW, and the Safety Officer from the Stoughton Police Department at the Stoughton Police Department meeting room to further discuss issues and concerns at specific locations along Route 139. The meeting began at the Stoughton Police meeting room followed by a visit to each of the key intersections in the field along Route 139. The purpose of the field visit was to observe operations and conditions in the field and discuss in detail the problems and concerns and the potential improvements at specific intersection locations along Route 139.

Meeting with MassDOT, May 22, 2024

OCPC staff met with MassDOT District 5 officials to review the findings and conclusions of the Route 139 Corridor Study, review the planned improvements for existing TIP projects and other potential MassDOT projects in the corridor, and to collaborate and coordinate potential corridor improvements. OCPC also presented the findings of the Route 139 Corridor Study Survey. The discussion focused on safety in the corridor, delay and congestion, potential growth in traffic due to developmental growth, and the need for sidewalks, bicycling and alternative modes. The meeting participants reviewed the Turnpike Street Project (Project Number 607214) and the restoration of Route 139 Turpike Street, as well as a number of planned improvements proposed by the Town of Stoughton for various locations within the Town jurisdiction section of Route 139.

Public Meeting, July 18, 2024

OCPC led a meeting hosted by Stoughton for the public to present the findings and conclusions of the Route 139 Corridor Study on July 18, 2024, at the Public Meeting Room at Stoughton Police Department Headquarters in Stoughton Center. OCPC staff presented the observations and findings of the study to the public. The meeting was held in person at the police station and held remotely to allow the public to interact at the meeting live online via the internet. The discussion at the meeting varied after the presentation and focused on the issues specific to each of the intersections and locations included within the Route 139 study area in Stoughton. In addition, the preliminary improvement plans for specific locations targeted by the Town of Stoughton were discussed by the public including the plans for the Route 139/Pine Street intersection. Other issues discussed at the meeting included the potential safety improvements at the Route 139/Lincoln Street intersection and the improvements for Route 139 Turnpike Street currently planned in the TIP (MassDOT Project Number 607214), the reconstruction of Route 139 Turnpike Street.

Previous Studies

OCPC Route 139 Corridor Study, 2010

The purpose of the Route 139 Corridor Study completed in 2010 was to study traffic operations and safety within the Route 139 corridor in the communities of Stoughton, Abington, and Pembroke in the Old Colony Region to identify traffic flow and circulation problems, safety deficiencies, and general concerns, and to develop long-term and short-term improvements to address the problems and deficiencies. In Stoughton, specifically within the Route 139 corridor, the study's conclusions and recommendations included:

Pleasant Street (Route 139) at Prospect Street

- The corridor study recommended clearing roadside vegetation and overhanging vegetation to increase sight lines and monitor volumes and delays for worsening of conditions and/or satisfying of traffic signal warrants.

Pleasant Street (Route 139) at Lincoln Street

- Enhanced speed enforcement was recommended to reduce collisions between oncoming northbound and southbound vehicles at this intersection. In addition, it was recommended that traffic signals be installed at the intersection with left turn protection.
- It was recommended that the intersection be reconstructed with geometric improvements (along with the installation of the traffic signals) to reduce angle type collisions between southbound and westbound vehicles.
- It was recommended that delineation of travel lanes be enhanced with improved roadway striping to reduce driver confusion. In addition, it was recommended that access management strategies be implemented including the consolidation of adjacent curb cuts at the store on the southeast corner of the intersection.

Pleasant Street (Route 139) at Central Street

- Recommendations at this intersection for reducing collisions between oncoming eastbound and westbound vehicles included enhanced speed enforcement for the short-term and the reconstruction of the intersection with dedicated left-turn lanes and left-turn signal protection for the long-term. This included modifying the signals for lead and lag phasing to allow for left turn protection.
- Recommendations for reducing angled collisions between northbound and westbound vehicles at the intersection included increasing intersection all-red clearance time, restricting right turns on red, installing back plates on signal heads to increase visibility of the signals and prevent redlight running, and replacing bulbs with brighter LED bulbs to increase the visibility of signals.
- Enhancing roadway striping at the intersection was recommended to reduce driver confusion. This included lane assignment markings and turning movement guidelines.
- Recommendations included improving sight lines through clearing of roadside vegetation and overhanging vegetation.
- Recommendations included the implement access management strategies, including the consolidation of adjacent curb cuts.

Pleasant Street (Route 139) at Central Street

- Reconstruction of the intersection to include geometric improvements with the installation of traffic signals was recommended for the intersection.
- Enhanced speed enforcement on Pleasant Street was recommended to help reduce collisions between oncoming eastbound and westbound vehicles.
- The installation of guardrails with reflectors and roadway lighting was recommended to reduce run-off-the-road collisions.
- Recommendations for reducing driver confusion included enhanced roadway striping with retroreflective street paint.
- Recommendations to improve sight lines at the intersection include clearing of roadside and overhanging vegetation.

Pleasant Street (Route 139) at Turnpike Street

- It was determined that rear-end and sideswipe collisions were recurring safety issues at this intersection, along with poor pavement conditions, and resurfacing and restriping the intersection with clear lane delineation and stop lines were recommended as improvements. In addition, it was recommended to widen the approaches of Turnpike Street (westbound, northbound) to accommodate left turn storage lanes.
- The study recommended evaluating any intersection improvements including annual level-of-service and crash rate analysis to monitor the intersection.

Road Safety Audit Canton St. (Route 27) at School St./Summer St. and the Intersection of Pleasant St. (Route 139) at Lincoln Street, 2018

OCPC conducted a Road Safety Audit (RSA) in June of 2018 for the intersection of Pleasant Street (Route 139) at Lincoln Street at the request of the Town of Stoughton. A separate RSA was also conducted for the Canton Street (Route 27) at School Street intersection in Stoughton. The results of the RSA included a number of safety improvements for Pleasant Street (Route 139) at Lincoln Street. These included:

- Relocate the westbound stop sign farther forward in the intersection, remove a tree that interferes with sight lines, restripe pavement markings at the intersection, and relocating the utility poles further back from the travel way.
- Install temporary barriers along Pleasant Street on the east side of the northbound approach and on Lincoln Street to channel vehicles and keep traffic on the road and out of the parking lot.
- Reconstruct the roadside to include curbing and better define the shoulder.
- Provide advanced warning signs on Pleasant Street northbound and southbound approaches.
- Install radar driver speed feedback signs on the northbound and southbound Pleasant Street (Route 139) approaches.
- Improve intersection visibility by installing overhead flashing beacons; flashing red facing the Lincoln Street eastbound and westbound approaches and flashing yellow facing Pleasant Street (Route 139) northbound and southbound approaches.
- Review all speed permits issued for Pleasant Street (Route 139) and Lincoln Street and post speed limits where appropriately permitted.
- Reconstruct the intersection (and realign if necessary), reconstructing all curbing on all four approaches and install traffic signals.

- Vehicles on the eastbound approach experience limited visibility due to the sun glaring in motorists' eyes. Install back plates to the signals if signals are installed.

Road Safety Audit (Pedestrian and Mobility) Pleasant St. (Route 139) at Lowe Ave. and Dawe Elementary School, 2022

OCPC completed a Road Safety Audit focusing on pedestrian safety and mobility for the Pleasant Street (Route 139) at Lowe Avenue and Dawe Elementary School in Stoughton in November 2022. The RSA Included the Pleasant Street (Route 139)/Lowe Avenue intersection as well as Lowe Avenue. Improvement recommendations to the Pleasant Avenue (Route 139)/Lowe Avenue intersection as a result of the RSA included:

- Realign the crosswalk across Pleasant Street at 90 degrees to shorten the walking distance across Pleasant Street from Bento Street to Lowe Avenue.
- Install Rapid Rectangular Flashing Beacon across Pleasant Street from Bento Street to Lowe Avenue. Include improvements to sidewalks with ADA compliance where needed.
- Initiate a "Pleasant Street Improvement Plan" to develop corridor wide improvements including sidewalks, bicycle lanes, signage, pavement markings, lighting, and geometric, traffic control, and traffic flow intersection improvements.
- Consider installing curb bump-outs at the intersection to tighten the curb radii, increase waiting area for pedestrians and shorten the crossing distance.
- Add curbing to the intersection to better define intersection turning radii, add ADA curb ramps where necessary.
- Restripe the intersection with stop lines and necessary pavement markings and improve street lighting.
- Add curbing to Lowe Avenue sidewalks.

Consultant Memorandum – Pleasant Street (Route 139) and Pine Street Intersection Improvements, 2024

A Technical memorandum was completed for The Town of Stoughton in January of 2024 for an analysis of existing conditions, determining deficiencies, and developing improvements at the Pleasant Street (Route 139)/Pine Street intersection. The memo included traffic counts (Turning Movement and Automatic Traffic Recorder counts), crash analyses, intersection levels-of-service, and lane use analyses for determining appropriate lane assignment. The memo included the following recommended improvements and a conceptual design to illustrate the recommendations (The conceptual design is included in the recommendations section of this report):

- Widening Pleasant Street (Route 139) towards the west to construct an auxiliary northbound left turn lane.
- Formalizing the Pleasant Street (Route 139) southbound flare into a right-turn only lane.
- Reducing the width of the Pine Street eastbound approach while maintaining a right-turn only lane and a left-turn only lane.

Planned Projects

Information on projects already planned and or in design was compiled from different sources. OCPC obtained information on Stoughton planned improvement projects based on its meetings with Stoughton officials regarding their plans for the corridor. In addition, MassDOT Highway provides online tracking for TIP funded projects in Massachusetts communities. Table 1 summarizes the planned

projects, and their status based on the MassDOT on-line system and information from the Town of Stoughton.

Table 1 Planned Projects and Improvements

Planned Project	MassDOT Project Number	Description	Type	Status	Funding
Intersection of Pleasant Street (Route 139) at Lincoln Street	(pre-Project Review Committee approval)	Improvements from previous Road Safety Audit. Add curbing to separate the store parking on the southeast corner from the travel way. Improve pedestrian amenities and safety (crosswalks), Improve radius for truck turns. Evaluate warning signs on the Pleasant Street SB approach. Possible signalization or all way stop sign.	Intersection improvements	Planned – in design with consultant	Local
Intersection of Pleasant Street (Route 139) at Central Street	(pre-Project Review Committee approval)	Relocate loops on the Southbound approach so vehicles can trip the change in the signal phase. Add a bicycle lane, shorten the pedestrian crossing, and evaluate location of the signal arm.	Intersection improvements signal upgrades	Planned in design with consultant	TIP Funding
Intersection of Pleasant Street (Route 139) at Pine Street	(pre-Project Review Committee approval)	Geometric improvements to the intersection of Pleasant Street (Route 139) at Pine Street. Improvements include tightening of the northwest corner radius, adding granite curbing, a center island, pedestrian amenities. Remove painted island and improve safety access to the historic Capen-Reynolds house and parking.	Safety and access improvements	Under design (Summer 2024)	Local
Intersection of Pleasant Street (Route 139) at Turnpike Street	Included as part of 607214	Faded striping and no crosswalks at the intersection. The Turnpike Street southbound has a protected left turn but no striping for the left turn lane required for the phase. This approach might need to be widened. The intersection in general lacks adequate striping and paving markings. Signal equipment upgrade, restripe lanes for assignment and channelize traffic on the southbound approach.	Intersection improvements	Developer on Turnpike Street offered timing/phasing changes as relief of traffic impacts	Local and TIP
Reconstruction of Turnpike Street just north of Pleasant Street/Stoughton Street intersection.	607214	Roadway reconstruction on Turnpike Street in Stoughton from Pleasant Street northerly for 1,000 feet. This project is intended to provide a permanent solution to the historical problem of roadway settlement caused by of a vast depth of decomposing subsurface material (peat) which over time has compromised the structural stability of the roadway surface of this segment of Turnpike Street.	Roadway reconstruction	75% Package received 01/31/2023	Pre - TIP

Existing Conditions

Route 139 is a state highway within Stoughton running between Stoughton center and the Stoughton/Randolph town line. It is mostly a two-lane cross section within the study area except for a four-lane section in the vicinity of the Route 24 interchange between Page Street and the Randolph/Stoughton town line. Route 139 within Stoughton is classified as an urban principal arterial and is under the jurisdiction of the Town of Stoughton except for a portion of the corridor between Hawes Way and Technology Drive (in the vicinity of Route 24 Exit 38 Interchange) where it is under the

jurisdiction of Massachusetts. Route 139 is eligible for both state and federal funding. Route 139 is an important east-west highway corridor in southeastern Massachusetts that extends from Stoughton center to Marshfield. It connects Route 24 in Stoughton to Route 3 in Pembroke. Important trip generators within the corridor include Stoughton center, the commercial/ industrial area on Page Street, and the commercial/industrial area on Technology Drive in the vicinity of the Route 24 interchange.

Average Daily Traffic

OCPC utilized automatic traffic recorders (ATR) to determine the average daily traffic (ADT) at specific locations on Route 139. In addition, automatic traffic counters were placed on key roads intersecting the Route 139 corridor. The traffic recorders were installed for a minimum 48-hour period and recorded traffic in both directions in one-hour intervals. The average daily traffic (ADT) represents a 24-hour average of the data collected within the 48-hour data collection period. The traffic recorders were programmed to record vehicle speeds and the number of heavy vehicles in the traffic stream, as well as the traffic volumes. Table 2 shows the average daily traffic (24-hour traffic total for both directions of travel), the percentage of heavy vehicle traffic in the traffic flow, and the 85th percentile speeds for the Route 139 study area at the study count locations. Figure 3 Shows the locations of the traffic counts within the Route 139 corridor. There were 19 count locations. The automatic traffic recorder count reports with the one-hour interval breakdowns are included in the appendix to this study.

Table 2

	Route 139 Count Locations	Date	Average Daily Traffic	85th Percentile (MPH)	Percent Heavy Vehicles
1	Pleasant St Rt 139 E of Washington Street	12/2023	5,605	38	4.7%
2	Pleasant St Rt 139 N of Lincoln Street	11/2023	8,754	39	4.8%
3	Pleasant St Rt 139 N of Central Street	11/2023	13,615	40	8.9%
4	Pleasant St Rt 139 N of Pine Street	12/2023	16,520	40	7.2%
5	Turnpike St Rt 139 N of Pleasant Street	12/2023	17,859	45	11.6%
6	Turnpike St Rt 139 S of Hawes Way	11/2023	18,286	35	N/A*
7	Mazzeo Drive Rt 139 E of Technology Center Drive	11/2023	19,279	35	6.5%
	Roads Intersecting Route 139 Count Locations				
8	Washington St Rt 138 N of Pleasant Street Rt 139	12/2023	21,225	25	N/A
9	Lincoln St E of Pleasant St Rt 139	11/2023	4,383	39	10.2%
10	Lincoln St W of Pleasant St Rt 139	11/2023	5,237	38	8.7%
11	Pine Street W of Pleasant St Rt 139	12/2023	4,277	37	8.5%
12	Central St E of Pleasant St Rt 139	11/2023	12,144	40	10.9%
13	Central St W of Pleasant St Rt 139	11/2023	17,042	39	13.1%
14	Turnpike St S of Pleasant St Rt 139	12/2023	8,536	40	10.2%
15	Page St E of Turnpike St Rt 139	12/2023	8,832	39	N/A
16	Page St W of Turnpike St Rt 139	12/2023	6,445	38	8.6%
17	Hawes Way E of Lindelof Rt 139	11/2023	6,868	24	10.3%
18	Kay Way N of Lindelof Rt 139	11/2023	9,817	31	8.9%
19	Technology Center Dr S of Lindelof Rt 139	11/2023	9,468	36	9.0%

*N/A = Not Available

The Average Daily Traffic (ADT) varies on Route 139, depending upon the traffic count location. The highest ADT on Route 139 in the study area was 19,279 vehicles per day at the Route 139 count location east of Technology Center Drive. This is a four-lane cross section east of the Route 139/Route 24 interchange ramps at the Stoughton/Randolph town line. The second highest ADT on Route 139 was recorded at the traffic count location southwest of Hawes Way, which is also in the four-lane cross section but southwest of the Route 139/Route 24 interchange ramps. There were 17,859 vehicles per day on Route 139 north of the Pleasant Street/Turnpike Street intersection where Route 139 provides

two lanes of travel, and 16,520 vehicles per day north of the Pleasant Street/Pine Street intersection, also in a two-lane cross section of Route 139. The lowest ADT was recorded on Pleasant Street (Route 139) northeast of Washington Street (Route 138) with 5,605 vehicles per day.

Figure 3

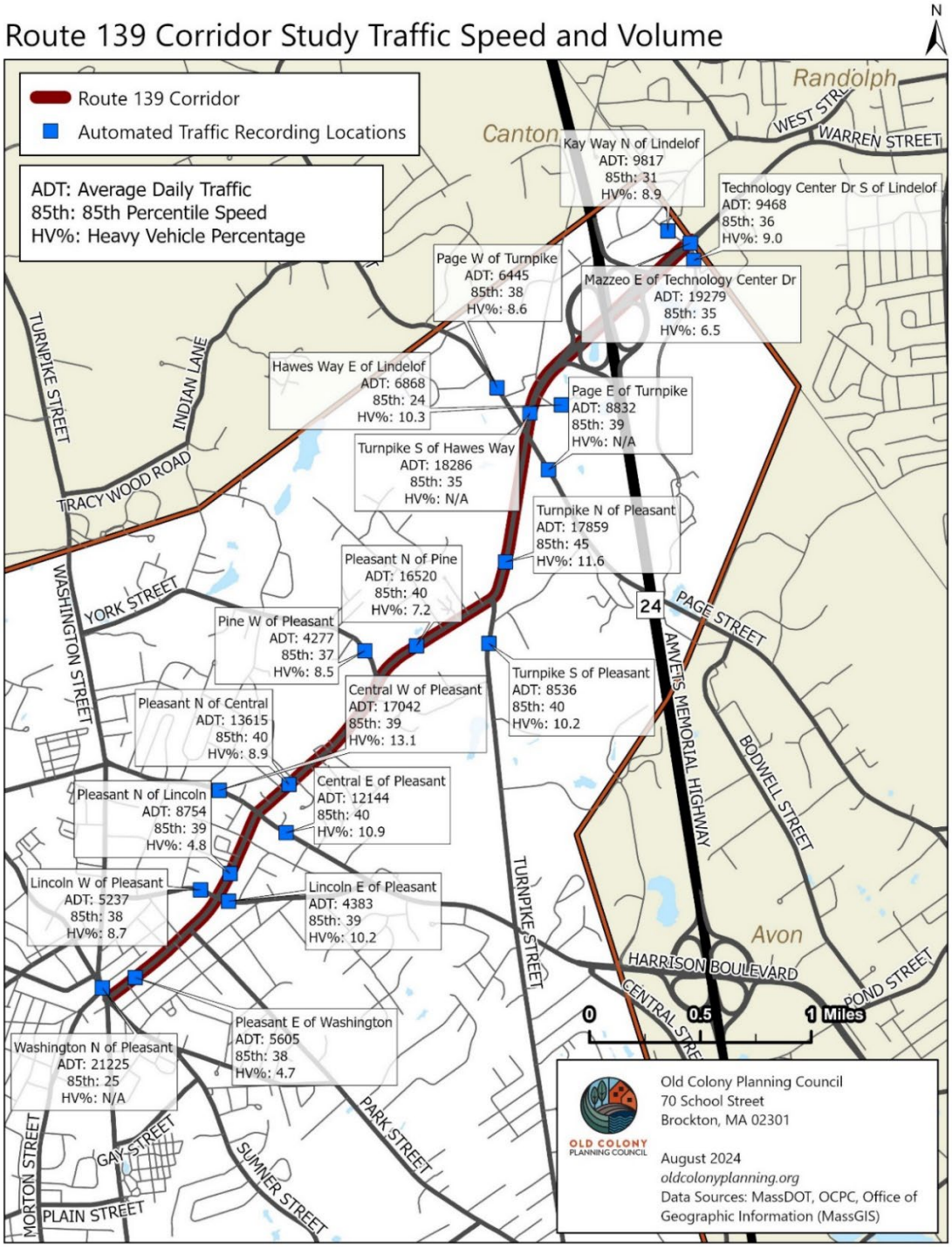


Table 2 shows that the highest 85th percentile speed recorded on Route 139 was recorded at 45 MPH at the Route 139 count location north of the Pleasant Street (Route 139)/Turnpike Street intersection, (a two-lane cross section). The 85th Percentile speeds on Route 139 were between 38 and 40 miles per hour except in the vicinity of Page Street, Hawes Way, and Technology Center Drive where it was recorded at 35 MPH due to the proximity of signalized intersections. The percentage of truck traffic in the vehicle volumes varied between 4.7 percent and 11.6 percent within the Route 139 corridor. The Turnpike Street (Route 139) north of Pleasant Street count location had the highest percentage of trucks in the vehicle flow with 11.6 percent.

Route 139 Trip Characteristics

The trip characteristics representing a 24-hour snapshot of a typical weekday for traffic on Route 139 were estimated based on the data set available to OCPC through a consultant (REPLICA), which specializes in creating data sets of vehicle trips from sampling motorist trips in real time. The data sets are created through calibrated model simulation representing travel patterns for different parts of the country. OCPC obtained the trip characteristics for a cross section of Route 139 just north of the Pleasant Street/Turnpike Street intersection. This location is shown in Figure 4.

The REPLICA trip characteristics of this Route 139 location are illustrated in Figures 5 through 9. Figures 5 through 9 show the characteristics of trips on Route 139 including the Number of Out of State Trips, Trip Duration, Trip Purpose, Primary Mode, and the Trip Distance. According to the data, 77.44 percent of the trips on this section on Route 139 originate in Stoughton and Norfolk County (Norfolk County includes communities adjacent to Stoughton) and 98.73 percent of trips on this section of Route 139 originate in Massachusetts.

Rhode Island had the most trips from outside the state with over 300 trips originating in Rhode Island. New Hampshire had over 100 trips and there were just under 50 trips from Maine. There were just under 50 trips from other parts of the country outside of New England. Most of the trips were over 20 minutes with 45 percent being between 20 and 40 minutes, 25.4 percent being between 40 and 80 minutes, and 1.84 percent being over 80 minutes. The trip purposes were for home and work related, or for eating, shopping, or social purposes. Freight trips made up 5.58 percent of the total trips. The primary mode was by motor vehicles with a very small percentage of walking and biking, under one percent for each. Despite the low numbers of walkers and bicyclists, the high vehicle volumes and high speeds with very few walking and biking amenities create conditions that compromise safety for vulnerable road users. Most trips were over 8 miles with 36.5 percent being between 8 and 16 miles long.

Figure 4

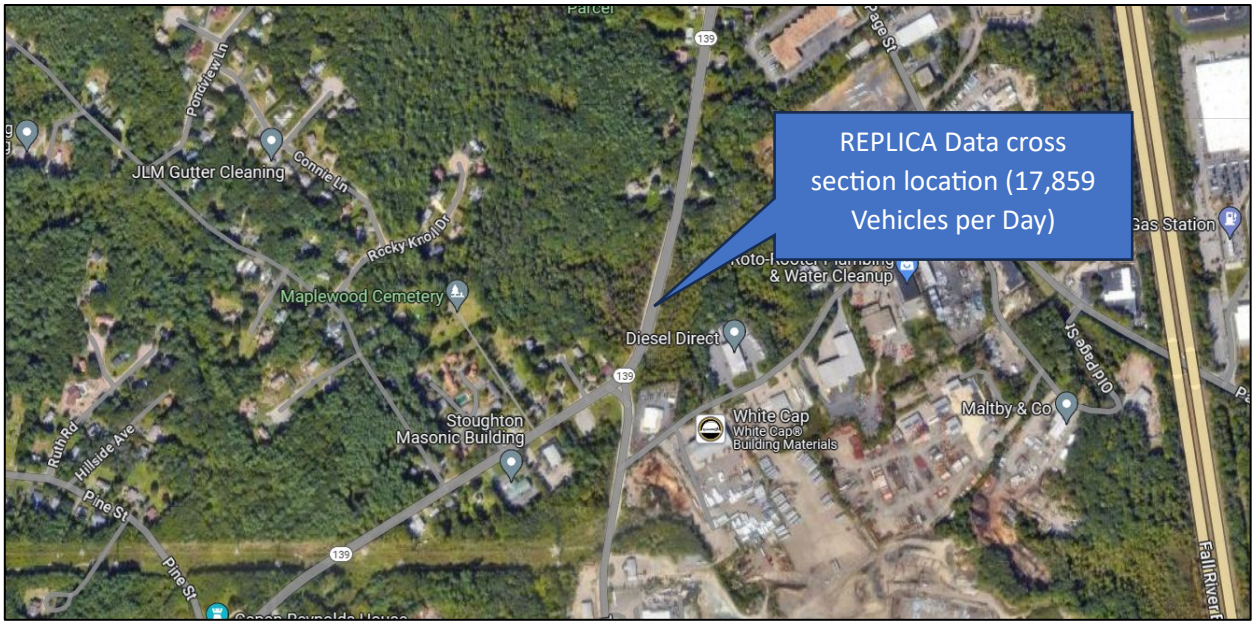


Figure 5

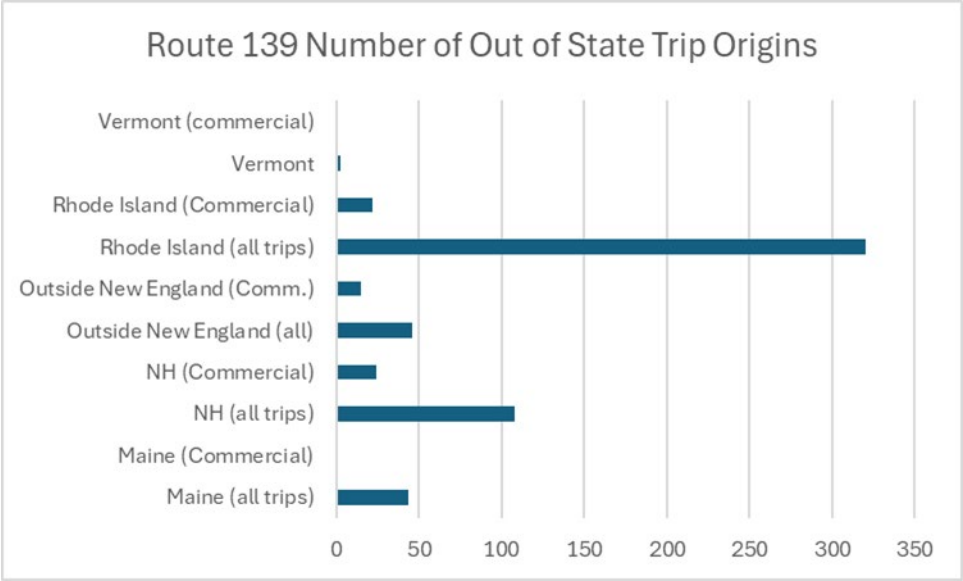


Figure 6

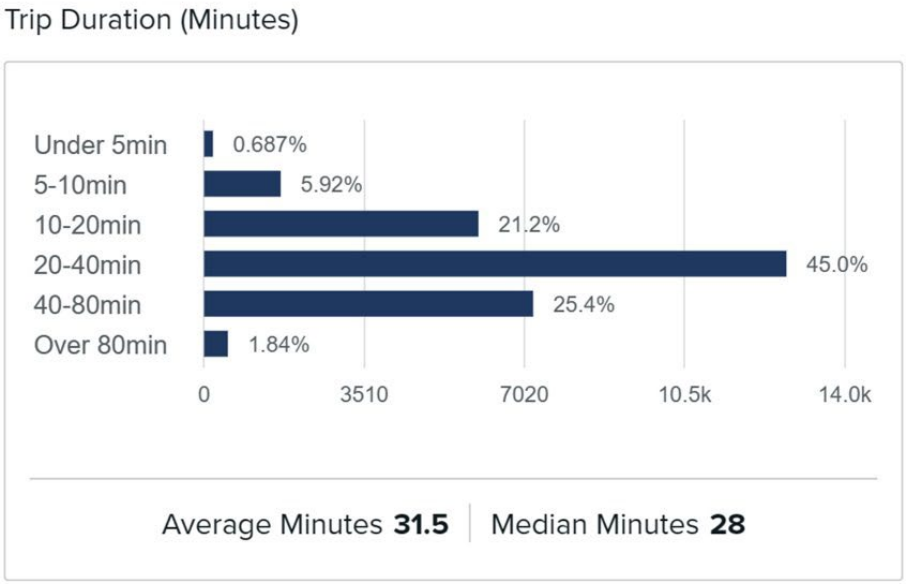


Figure 7

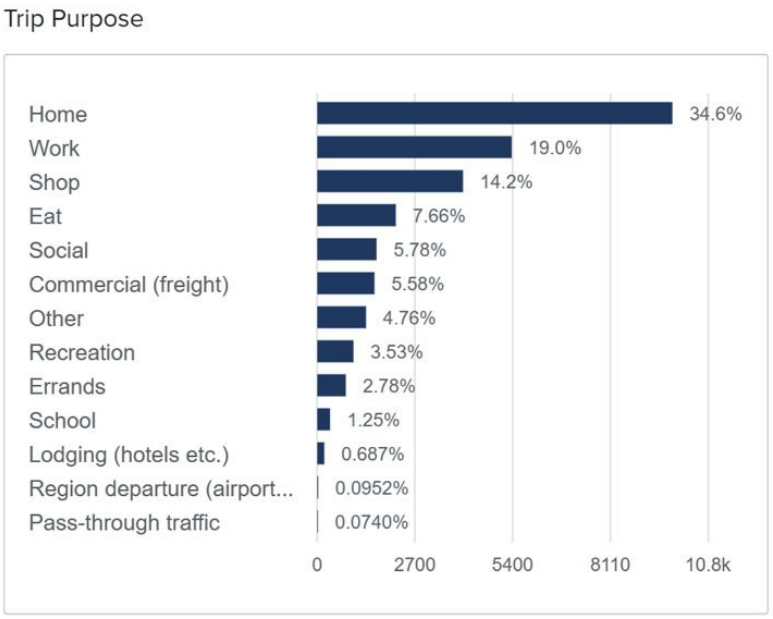


Figure 8

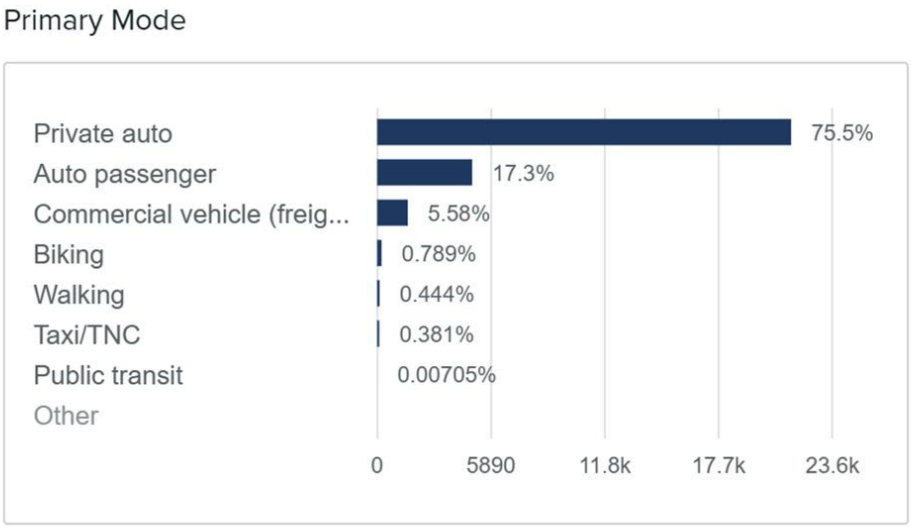
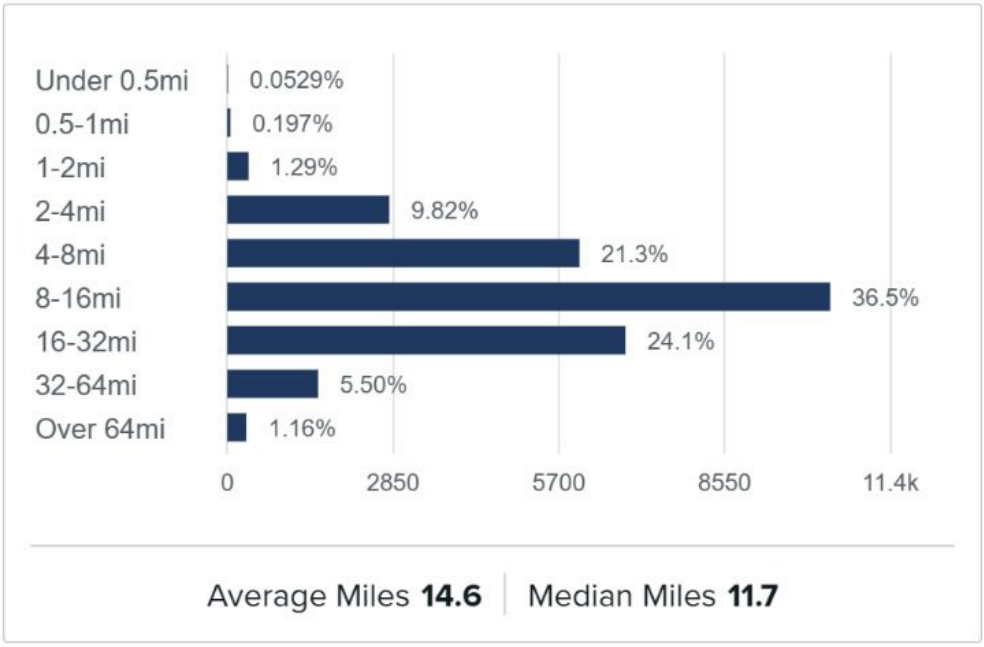


Figure 9



Pavement Conditions

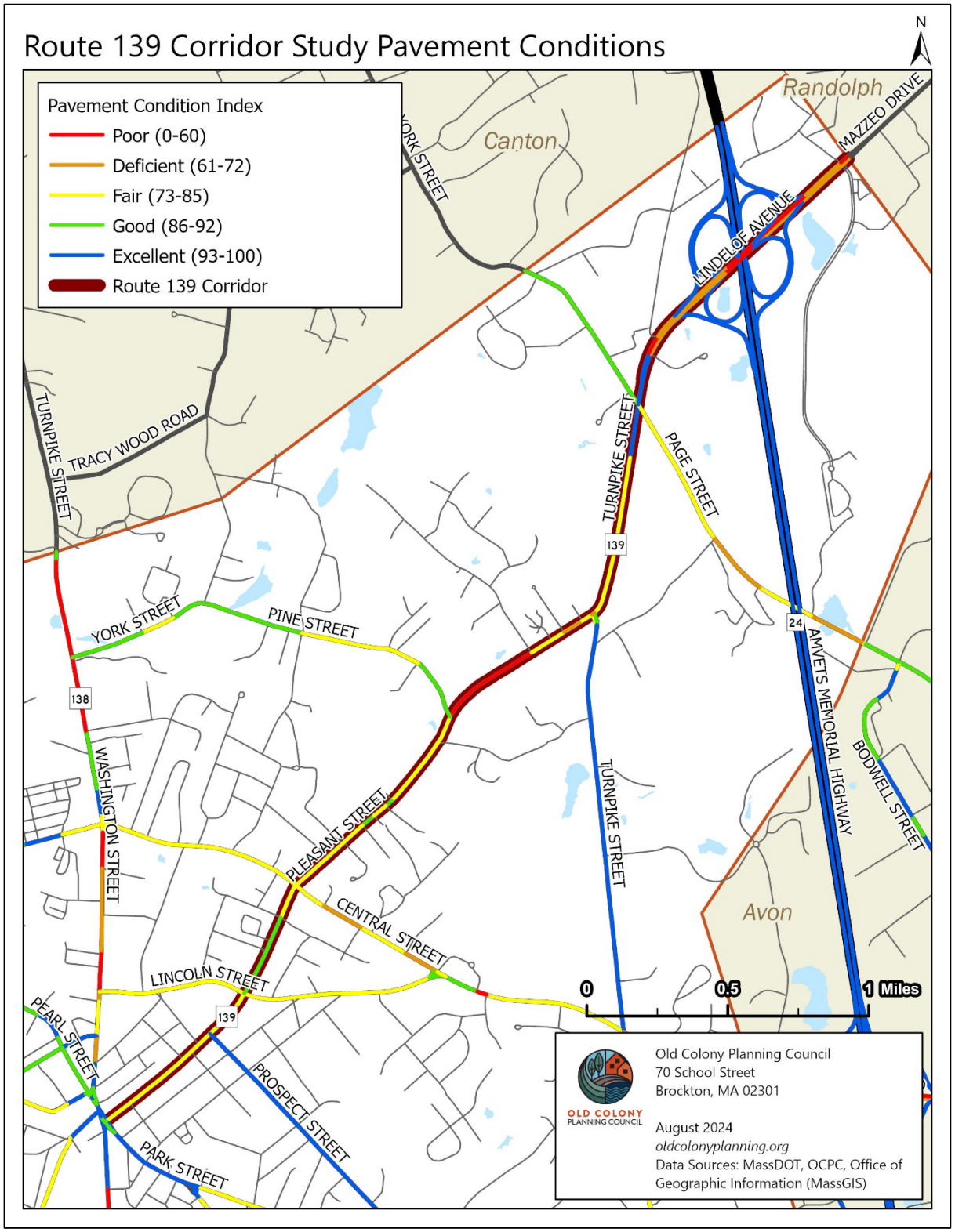
OCPC uses a Pavement Management System (PMS) software (Cartegraph) to assist in maintaining region-wide pavement conditions that are conducive to safe and efficient movement of people and goods. The PMS includes pavement deterioration curves that demonstrate the rate of deterioration of pavement and the implications for cost of maintenance of roads in the system. The PMS calculates a score called the Pavement Condition Index (PCI) for the road segments, which is derived from an evaluation of pavement distress factors, average daily traffic, and roadway classification. The evaluations of the road surface are conducted visually through windshield surveys with the observations documented in the PMS software.

The PCI is based on a scale of 1 to 100, with 100 indicating a flawless road surface. PCI scores of 95 or higher indicate that the road surface is in excellent condition. PCI scores between 85 and 94 indicate that the road has some distresses but is in good condition. Roads with scores between 65 and 84 are in fair condition and are in need of maintenance or mill and overlay repairs. Roads with scores below 65 need base rehabilitation or reconstruction and overlay.

OCPC conducted a windshield survey of the Route 139 corridor in Stoughton to determine the condition of the surface pavement. The road was segmented for analysis purposes. Figure 10 shows the results of the survey and the road conditions for each segment as determined by the PMS.

As shown in Figure 10, the Route 139 corridor study is in mostly Fair to Good condition, except for a few short sections that are poor to deficient. The poor and deficient portions are limited between the Route 139/Pine Street intersection to the Route 139/Turnpike Street intersection. The other poor to deficient sections are a short section just north of Hawes Way and a section of Route 139 over Route 24 to the Randolph line. The recommendations for the Poor to Deficient sections are rehabilitation and reconstruction. The recommendations for Fair and Good condition include maintenance (crack seal) or mill and overlay.

Figure 10


Route 139 Corridor Study Pavement Conditions
N
Pavement Condition Index
Poor (0-60)
Deficient (61-72)
Fair (73-85)
Good (86-92)
Excellent (93-100)
Route 139 Corridor
Canton
Randolph
Avon
YORK STREET
MAZZEO DRIVE
LINDELOF AVENUE
TURNPIKE STREET
TRACY WOOD ROAD
PAGE STREET
139
YORK STREET
PINE STREET
138
24
AMVETS MEMORIAL HIGHWAY
BODWELL STREET
WASHINGTON STREET
PLEASANT STREET
CENTRAL STREET
LINCOLN STREET
PEARL STREET
PROSPECT STREET
PARK STREET
0
0.5
1 Miles
Old Colony Planning Council
70 School Street
Brockton, MA 02301
August 2024
oldcolonyplanning.org
Data Sources: MassDOT, OCPC, Office of Geographic Information (MassGIS)

Existing Peak Hour Intersection Levels-of-Service

Manual turning movement counts were conducted at key intersections (signalized and unsignalized) within the Route 139 corridor during the morning and afternoon (7:00 AM to 9:00 AM and 4:00 PM to 6:00 PM) to determine the peak hours of operation. The turning movement counts include a count of pedestrians, bicyclists, and heavy vehicles entering intersections as well as passenger cars and school buses. The turning movement counts are included in the appendix to this study.

Existing Traffic Operations Level-of-Service analyses (LOS) were completed for the study area intersections to determine the operating conditions during the morning and afternoon peak hours. Level-of-Service analysis is a qualitative and quantitative measure based on the analysis techniques published in the *Highway Capacity Manual* by the Transportation Research Board. Level-of-Service is a general measure that summarizes the overall operation of an intersection or transportation facility. It is based upon the operational conditions of a facility including lane use, traffic control, and lane width, and considers such factors as operating speeds, traffic interruptions, and freedom to maneuver.

Level-of-Service (LOS) represents a range of operating conditions and is summarized with letter grades from “A” to “F”, with “A” being the most desirable. Level-of-Service “E” represents the maximum flow rate or the capacity on a facility. The following describes the characteristics of each Level-of-Service:

- LOS "A" represents free flow. Individual users are virtually unaffected by the presence of others in the traffic stream.
- LOS "B" is in the range of stable flow, but the presence of other users in the traffic stream begins to be noticeable. Freedom to select desired speeds is still relatively unaffected.
- LOS "C" is in the range of stable flow but marks the beginning of the range of flow in which the operation of individual users becomes significantly affected by interactions with others in the traffic stream. Occasional backups occur behind turning vehicles.
- LOS "D" represents high-density, but stable, flow. Speed and freedom to maneuver are restricted, and the driver experiences a below average level of comfort and convenience. Small increases in traffic flow will generally cause operational problems at this level. LOS “D” is considered acceptable in urban areas.
- LOS "E" represents operating conditions at or near the capacity level. All speeds are reduced to a low, but relatively uniform level. Freedom to maneuver within the traffic stream is extremely limited, and generally requires forcing other vehicles to give way. Congestion levels and delays are very high.
- LOS "F" is representative of forced or breakdown flow. This condition exists wherever the amount of traffic approaching a point exceeds the amount that can traverse the point, resulting in lengthy queues and delays.

The LOS definitions describe conditions based on several operational parameters. There are certain parameters utilized as measures of effectiveness for specific facilities. In the case of intersections, two-lane highways, and arterials, which represent the physical conditions that typify the study area corridor, time delay, average stop delay, and average travel speed are used as measures of operational effectiveness to which Levels-of-Service are assigned. Table 3 shows the delay criteria for each Level-of-Service for both un-signalized and signalized intersections.

Table 3

Level-of-Service	Stop Sign	Traffic Signal
A	0 to 10	0 to 10
B	>10 to 15	>10 to 20
C	>15 to 25	>20 to 35
D	>25 to 35	>35 to 55
E	>35 to 50	>55 to 80
F	>50	>80

Table 4 shows the signalized and unsignalized Levels-of-Service for the Route 139 study area intersections under Existing peak hour conditions. Congestion at intersections in Table 4 (LOS E and F) is shown in shaded blocks. Table 4 shows that 3 of the study area intersections are stop sign controlled and 7 of the study area intersections are signal controlled. Four of the intersections experience LOS E or F conditions during the morning peak hour or afternoon peak hour, or during both peak hours. The LOS for signalized intersections in Table 4 is based on an average delay for the entire intersection. The LOS for un-signalized intersections in Table 4 represents the average delay for the critical movement, which is the left turn movements from the side street.

Table 4

Intersection Location	Traffic Control	AM Peak	PM Peak
Pleasant Street (Route 139) & Washington Street (Route 138) / Park Street (Route 27)	Signal	D	D
Pleasant Street (Route 139) & Prospect Street Prospect St all moves	Stop	C	E
Pleasant Street (Route 139) & Lincoln Street EB WB all movements	Stop	D	F
Pleasant Street (Route 139) & Central Street	Signal	D	D
Pleasant Street (Route 139) & Pine Street (Left and Right Turn LOS)	Stop	F	F
Pleasant Street (Route 139) & Turnpike Street	Signal	C	C
Turnpike Street (Route 139 at Dunkin Donuts	Signal	A	A
Turnpike Street (Route 139) & Page Street	Signal	E	D
Turnpike Street (Route 139) & Hawes Way	Signal	B	C
Lindelof Avenue (Route 139) & Technology Center Drive / Kay Way	Signal	D	D

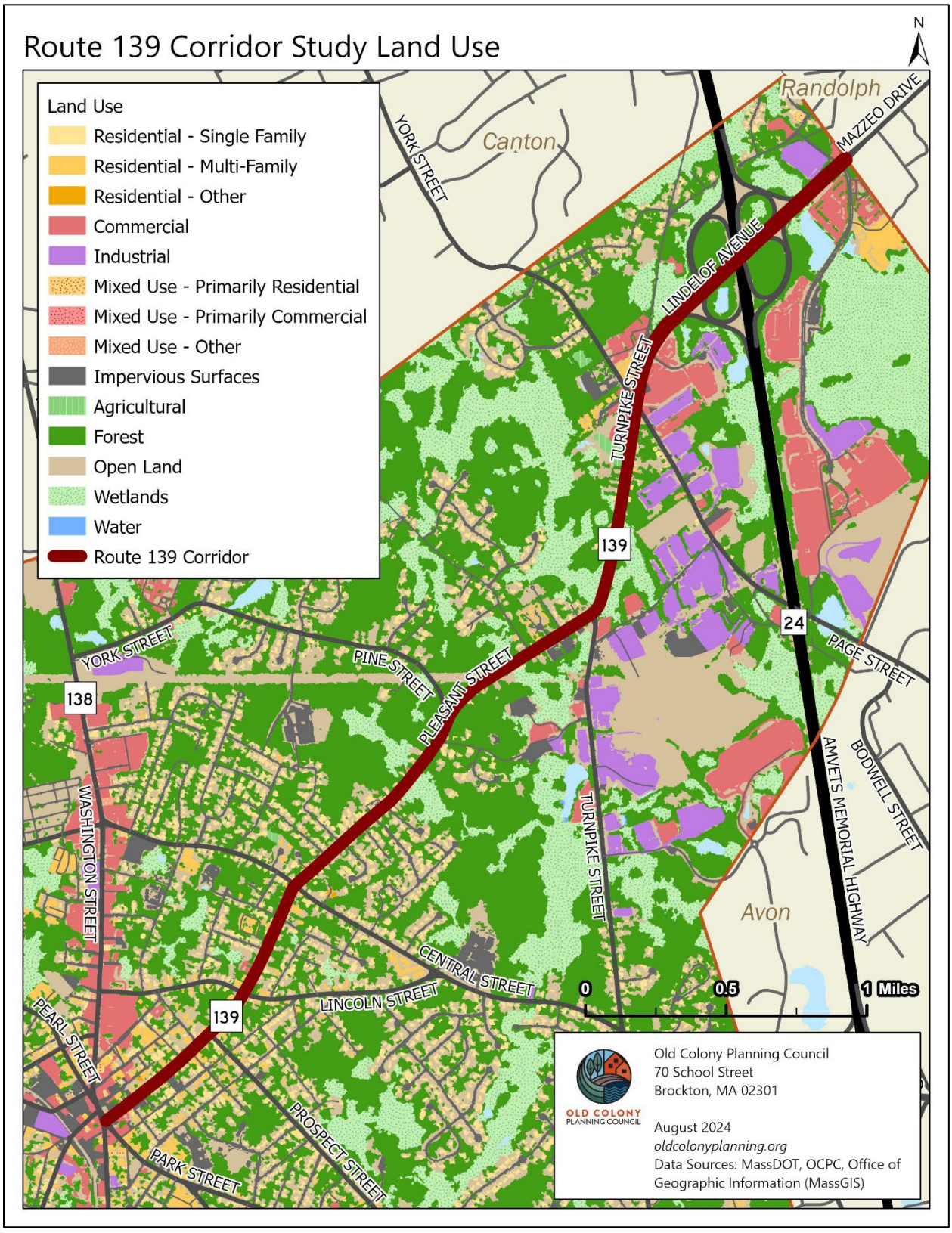
The poor LOS at the un-signalized intersections is mainly due to the heavy traffic flow on Route 139 during the peak hours, which is so heavy in both directions that there are very few gaps sufficient for the side street left turns to enter the mainstream traffic safely or without very long delays. Subsequently, side street traffic often forces its way into the main flow on Route 139, forcing Route 139 traffic to slow down, or worse, causing crashes. In addition, the critical movement from Route 139, vehicles turning left from Route 139 into the side streets, also lacks sufficient gaps in Route 139 through traffic. These left turns block traffic behind them on Route 139 if there is no room for vehicles behind them to perform a bypass maneuver.

Land Use, Zoning, and Environmental Resources

Land Use

Land use along Route 139 through Stoughton is mainly residential; however, commercial retail areas and industrial areas are located primarily on Route 139 north of the Pleasant Street/Turnpike Street intersection. The proximity of retail centers and industrial centers to residential homes along Route 139 provides some opportunity for non-motorized trips by residents for work, goods, and services; however, the high volumes and high speeds of vehicles on this section of Route 139 along with the lack of pedestrian and bicycle amenities create conditions where safety is compromised for vulnerable road users. Figure 11 shows the land use along Route 139 in Stoughton with the commercial areas in the north in the vicinity of the Route 24/Route 139 interchange. Major generators include retail and commercial locations on Hawes Way as well as lodging, warehousing, and industrial locations along Page Street. In addition, major generators are located on Technology Center Drive off of Route 139, which includes apartments, medical offices, and retail.

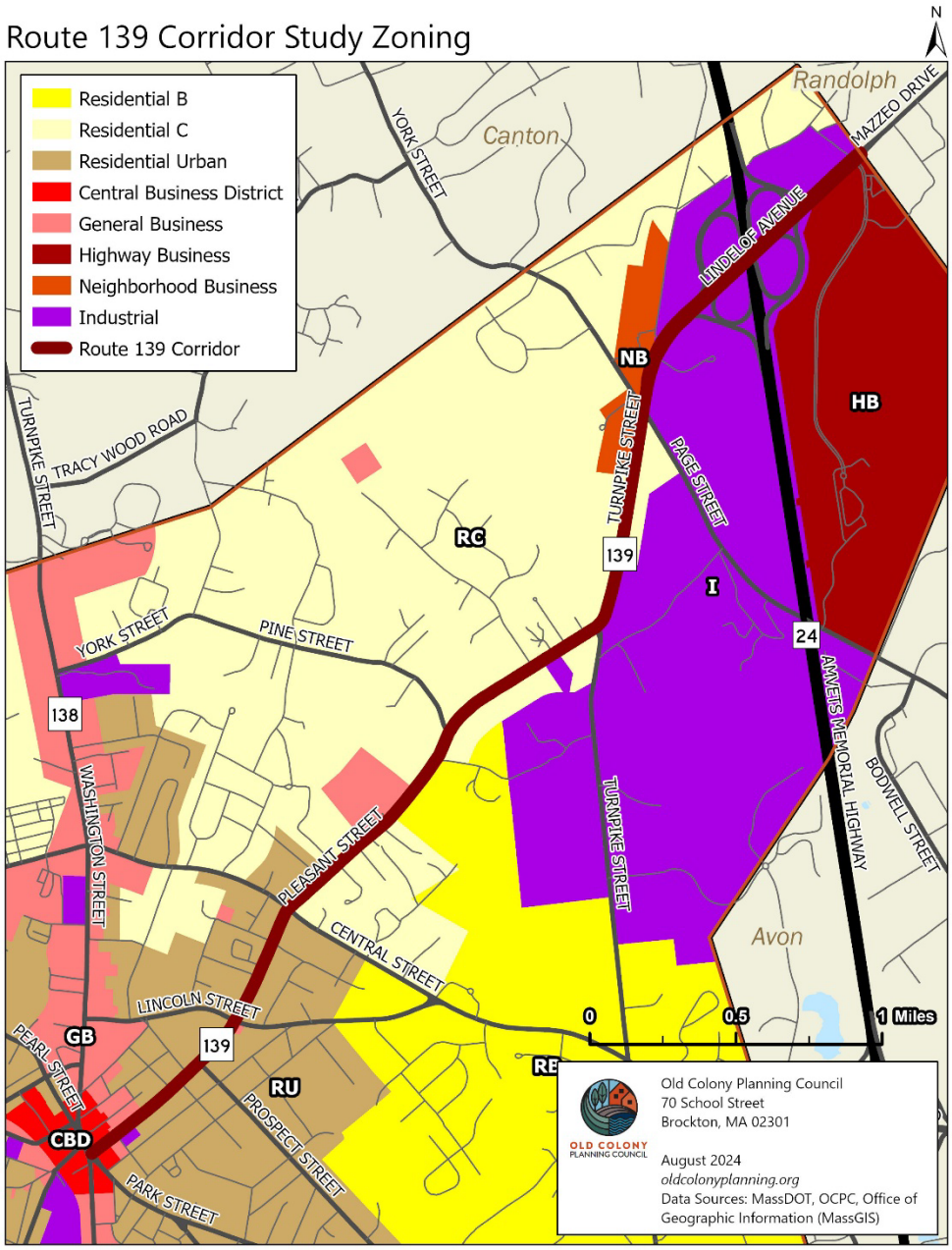
Figure 11


Route 139 Corridor Study Land Use
N
Land Use
Residential - Single Family
Residential - Multi-Family
Residential - Other
Commercial
Industrial
Mixed Use - Primarily Residential
Mixed Use - Primarily Commercial
Mixed Use - Other
Impervious Surfaces
Agricultural
Forest
Open Land
Wetlands
Water
Route 139 Corridor
Randolph
Canton
Avon
YORK STREET
MAZZEO DRIVE
LINDELOF AVENUE
TURNPIKE STREET
PINE STREET
PLEASANT STREET
PAGE STREET
BODWELL STREET
AMVETS MEMORIAL HIGHWAY
WASHINGTON STREET
CENTRAL STREET
LINCOLN STREET
PEARL STREET
PROSPECT STREET
PARK STREET
138
139
24
0
0.5
1 Miles
OLD COLONY PLANNING COUNCIL
Old Colony Planning Council
70 School Street
Brockton, MA 02301
August 2024
oldcolonyplanning.org
Data Sources: MassDOT, OCPC, Office of Geographic Information (MassGIS)

Zoning

The zoning of the land use adjacent to the corridor was discerned based on the latest zoning map from the Town of Stoughton. The zoning along the corridor is shown in Figure 12. As shown in Figure 12, beginning at Stoughton Center, a portion of Pleasant Street (Route 139) is in the Stoughton Center District overlay. Much of Pleasant Street (Route 139) is in a residential district from the town center to Turnpike Street. From Turnpike Street to the northeast, the parcels are zoned Industrial on the southeast side of the corridor and residential to the north of the corridor. In addition, east of Route 24 and south of the Route 139 corridor, the parcels are zoned as Highway Business.

Figure 12



Environmental Resources

Traffic and transportation improvements for safety and/or to relieve congestion should consider the diversity of environmental features in a particular study area. The study area along Route 139 in Stoughton is urban and developed. Nevertheless, there are some places within the study area where environmental issues are a concern especially within the section of Turnpike Street (Route 139) beginning at the Pleasant Street (Route 139)/Turnpike Street intersection. This section of Route 139, which is Turnpike Street, was built on a peat bog and due to the instability of the subsurface beneath the road, the road and structures associated with the road, such as utility poles, are shifting and sinking. The peat bog is south of Glen Echo Pond and Conservation Area located 3,800 feet to the northwest. The wetlands located east and south of the pond stretch beneath Route 139.

Currently, there is a MassDOT project (Project number 607214) for reconstruction of this section of Turnpike Street (Route 139). The MassDOT project description includes, "Roadway reconstruction on Turnpike Street in Stoughton from Pleasant Street northerly for 1,000 feet, to provide a permanent solution to the historical problem of roadway settlement caused by of a vast depth of decomposing subsurface material (peat), which over time has compromised the structural stability of the roadway surface of this segment of Turnpike Street." The project is currently in design stage with 75 percent of the design plans submitted for review to MassDOT.

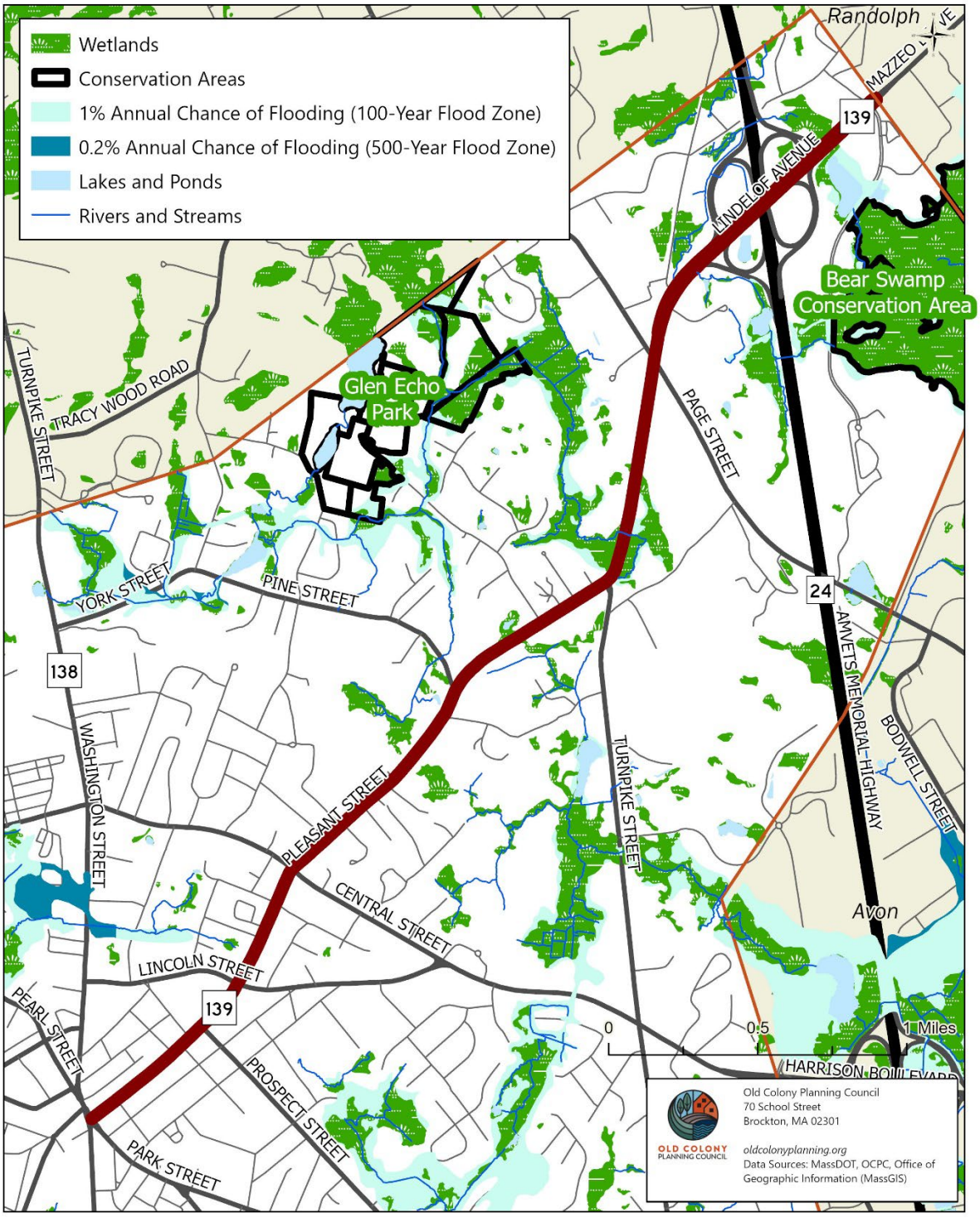
Figure 13 shows the Environmental Resources within the Route 139 corridor study area. Figure 13 also shows wetlands beneath Route 139 just south of its intersection with Pine Street and Bear Swamp Conservation wetlands beneath Lindelof (Route 139) just north of the Route 24 interchange. This conservation swampland is also beneath Technology Center Drive.

Based on information from the Massachusetts Bureau of Geographic Information (Mass GIS data Layers), Route 139 falls into the Taunton and the Neponset watersheds. The area surrounding Glen Echo Pond and stretching to Route 139 includes high-quality individual vernal pools, clusters of pools that likely function as habitat complexes, and surrounding uplands. The uplands, often forested, provide supporting habitat for wildlife populations, and facilitate connectivity among vernal pools. This same area is designated a Core Habitat, an area critical for the long-term persistence of rare species, natural communities, and resilient ecosystems in Massachusetts. Maps of the watersheds, vernal pools, and Core Habitat are included in the appendix to this report.

Figure 13 shows a number of conservation lands in the vicinity of Route 139. These parcels are declared conservation lands under Chapter 97 of Massachusetts law for the conservation of natural resources, which cannot be used for other purposes or disposed of without legislative approval. In addition to conservation land, Route 139 traverses Public Water Supply Watersheds. There are a number of wells for private and public water adjacent to and in the vicinity of Route 139. The map layer showing the public water supplies, and the location of wells is included in the appendix to this report.

Figure 13

Environmental Resources



Environmental Justice

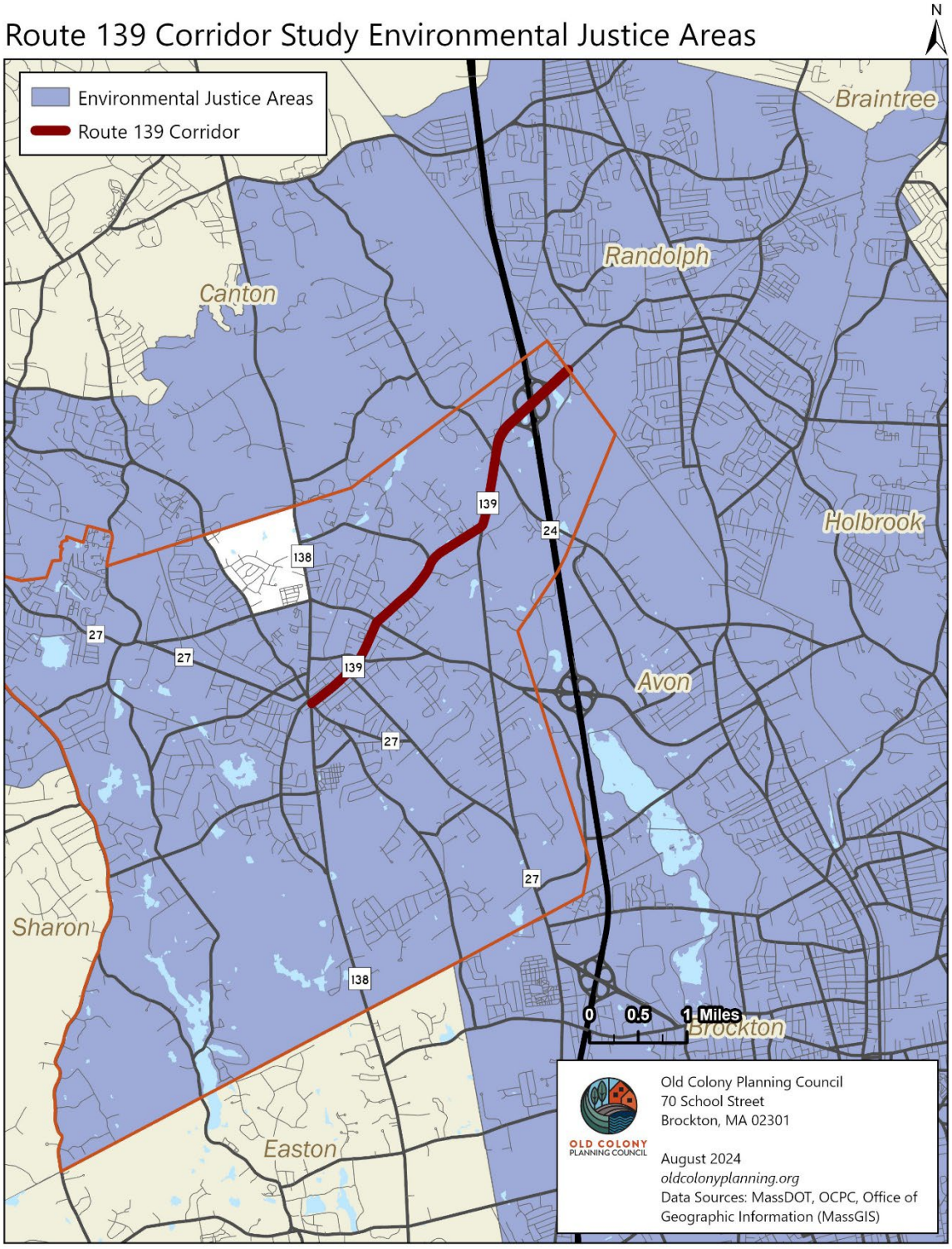
Environmental Justice Populations in the OCPC region were identified from MassDOT's interactive online map, which is based on US Census Bureau data (released in October 2021 and March 2022, and updated on November 12, 2022). Environmental Justice areas are identified based on federal aid guidelines and utilizing census blocks and block groups that have high minority populations, high populations of low income, and high populations with limited English proficiency and foreign-born populations. Figure 14 shows the Environmental Justice areas in the Route 139 study area based on US Census data for block groups. Figure 14 shows that the entire Route 139 corridor in Stoughton is within the Environmental Justice Area.

There are three fundamental Environmental Justice principles:

1. To avoid, minimize, or mitigate disproportionately high and adverse human health or environmental effects, including social and economic effects, on minority populations and low-income populations.
2. To ensure the full and fair participation by all potentially affected communities in the transportation decision-making process.
3. To prevent the denial of, reduction in, or significant delay in the receipt of project benefits by minority populations and low-income populations.

Public involvement is an integral part of transportation planning and project development decision-making. MassDOT directs greater access to information and opportunities for public participation in matters that may affect human health and the environment for minority populations and low-income populations. The objective of Environmental Justice is to ensure that there is equity (fairness) in the distribution of transportation resources and services for low income and minority communities and neighborhoods. As part of this objective, Metropolitan Planning Organizations (MPOs) are required to provide full and fair participation for all socio-economic groups throughout their planning and decision-making processes. OCPC, through its public outreach process for this study, has identified Environmental Justice stakeholders and has actively sought out their participation in the study process through our public survey, which was translated into languages to target underserved communities.

Figure 14


Route 139 Corridor Study Environmental Justice Areas
N
Environmental Justice Areas
Route 139 Corridor
Braintree
Randolph
Canton
Holbrook
Avon
Sharon
Easton
Brockton
139
24
138
27
27
139
27
27
138
0
0.5
1 Miles
Old Colony Planning Council
70 School Street
Brockton, MA 02301
August 2024
oldcolonyplanning.org
Data Sources: MassDOT, OCPC, Office of Geographic Information (MassGIS)

Collision Analysis

The Pleasant Street (Route 139) at Lincoln Street Intersection is included on the MassDOT Top 200 Crash cluster locations for the time period between 2018-2020. The methodology used to determine the top 200 crash cluster locations includes the development of a weighted scale for each crash cluster location. Each cluster consists of multiple crashes within a 25-meter distance. The weighted scale, Equivalent Property Damage Only (EPDO), is based on assigning any type of injury crash (including fatal, incapacitating, non-incapacitating and possible injury) a weighting of 21 compared to property damage only crash, which has weighting of one. Every intersection or crash location is assigned 21 points for each injury or fatal crash and 1 point for each crash without injury or property damage only. The Pleasant Street (Route 139) at Lincoln Street Intersection ranked 29 within the top 200 in the state with the highest EPDO for the time period 2018 to 2020.

Intersection Crash Experience

Crash data for the study area intersections within the Route 139 corridor in Stoughton was obtained for the latest available three-year period (2021-2022-2023) based on crash reports from the Town of Stoughton Police Department. The data was supplemented with crash information obtained from the Massachusetts Department of Transportation (MassDOT) on-line IMPACT portal. The crash data on the IMPACT portal is made available by the Massachusetts Registry of Motor Vehicles and then compiled by MassDOT. The data was analyzed by OCPC in accordance with the standard practices published by the Institute of Transportation Engineers (ITE) in the *Manual of Traffic Engineering Studies.* Intersection crash rates were calculated and compared with the average crash rates for Massachusetts and for MassDOT District 5.

Crash rates are used, according to the *Manual of Traffic Engineering Studies*, to characterize the crash exposure of a facility. Crash rates for intersections are calculated based on the average number of crashes per million entering vehicles (MEV). The statewide average crash rates are 0.78 MEV for signalized intersections and 0.57 MEV for un-signalized intersections. The MassDOT District 5 average crash rates are 0.75 MEV for signalized intersections and 0.57 MEV for un-signalized intersections.

The purposes for analyzing crash data include:

- To define and identify high crash locations.
- To justify the installation of traffic control devices.
- To evaluate the geometric design (including lane use) and proposed changes in traffic regulations.
- To justify expenditures for improvements that offer crash reduction or prevention.
- To identify a need for traffic enforcement.
- To identify needs in pedestrian and bicycle safety and certain actions causing crashes that can be prevented through driver and/or public education.

The number of crashes often increases as traffic volumes increase. Traffic growth creates more opportunities for crashes and therefore increases vehicle exposure to crashes. A particular condition that causes crashes at an intersection can become exacerbated with increased traffic, and crash frequency will therefore rise. The intersection crash rate, (per million entering vehicles), is the average number of accidents per year (over three years) times one million, divided by the number of vehicles entering the intersection in a year.

Table 5 summarizes the number of crashes, severity (fatal, injury, non-injury), and corresponding crash rates for the study area corridor intersections for the three-year history 2021, 2022, and 2023. Crash

rates that exceed the MassDOT statewide and MassDOT District 5 crash rate averages are shaded in Table 5.

Table 5 Crash Rate Summary (2021-2022-2023)

	Intersection	Property damage only	Injury Crashes	Fatal Crashes	Unknown	Total	Crash Rate
1	Pleasant Street (Route 139) & Washington Street (Route 138) / Park Street (Route 27)	21	3	0	4	28	1.13
2	Pleasant Street (Route 139) & Prospect Street	0	0	0	1	1	0.08
3	Pleasant Street (Route 139) & Lincoln Street	19	14	0	12	45	2.97
4	Pleasant Street (Route 139) & Central Street	15	2	0	5	22	0.88
5	Pleasant Street (Route 139) & Pine Street	5	2	0	0	7	0.85
6	Pleasant Street (Route 139) & Turnpike Street	4	4	0	1	9	0.40
7	Turnpike Street (Route 139) at Stoughton Crossing	2	2	0	0	4	0,20
8	Turnpike Street (Route 139) & Page Street	11	3	0	4	18	0.63
9	Turnpike Street (Route 139) & Hawes Way	16	3	0	7	26	0.90
10	Lindelof Avenue (Route 139) & Route 24 On/Off Ramps	7	4	1	2	14	0.29
11	Lindelof Avenue (Route 139) & Technology Center Drive / Kay Way	10	8	1	12	31	0.74

Table 5 shows that the Pleasant Street (Route 139) and Lincoln Street intersection had the highest number of crashes in the corridor with 45 crashes within the study area time period. The majority of these crashes resulted in property damage only. The Lindelof Avenue (Route 139) & Technology Center Drive / Kay Way intersection had the second most crashes with 31. The Pleasant Street (Route 139) and Washington Street (Route 138)/Park Street (Route 27) intersection in the downtown had the third most crashes with 28, followed by the Turnpike Street (Route 139) and Hawes Way intersection with 26. Table 5 shows the intersection that had the highest crash rate with 2.97 crashes per million entering vehicles (MEV) was the Pleasant Street (Route 139)/Lincoln Street intersection. The second highest crash rate occurred at the Pleasant Street (Route 139) & Washington Street (Route 138) / Park Street (Route 27) intersection with 1.13 MEV. Table 5 shows that there were two fatal crashes on Lindelof (Route 139). One occurred in the northbound direction between the Route 24 off-ramp and the Kay Way intersection involving three vehicles. The other fatal crash occurred in the opposite direction in the vicinity of the Route 24 off ramp between a vehicle and a pedestrian jogger.

Table 6 shows the manner of collision at each of the study area locations for the three-year crash history 2021, 2022, and 2023. Table 6 shows that the Pleasant Street (Route 139) and Lincoln Street intersection, a stop sign controlled intersection, had an overwhelming number of angle type crashes with 42 angle crashes out of a total number of 45 crashes within the study area time period.

Table 6 Crash Summary Manner of Collision (2021-2022-2023)

		Angle	Rear-End	Single Veh Crash	Head on	Sideswipe same direction	Sideswipe opposite direction	Hit Ped	Bicycle	Other	Total
1	Pleasant Street (Route 139) & Washington Street (Route 138) / Park Street (Route 27)	10	5	7	0	4	1	1	0	0	28
2	Pleasant Street (Route 139) & Prospect Street	1	0	0	0	0	0	0	0	0	1
3	Pleasant Street (Route 139) & Lincoln Street	42	1	0	0	1	1	0	0	0	45
4	Pleasant Street (Route 139) & Central Street	9	10	0	1	0	2	0	0	0	22
5	Pleasant Street (Route 139) & Pine Street	1	2	1	1	1	1	0	0	0	7
6	Pleasant Street (Route 139) & Turnpike Street	3	5	1	0	0	0	0	0	0	9
7	Turnpike Street at Stoughton Crossing	2	0	0	0	2	0	0	0	0	4
8	Turnpike Street (Route 139) & Page Street	5	3	1	0	6	2	0	0	1	18
9	Turnpike Street (Route 139) & Hawes Way	4	5	3	0	12	2	0	0	0	26
10	Lindelof Avenue (Route 139) & Route 24 On/Off Ramps	1	4	6	0	2	0	1	0	0	14
11	Lindelof Avenue (Route 139) & Technology Center Drive / Kay Way	16	5	3	1	2	4	0	0	0	31

Future Assessment

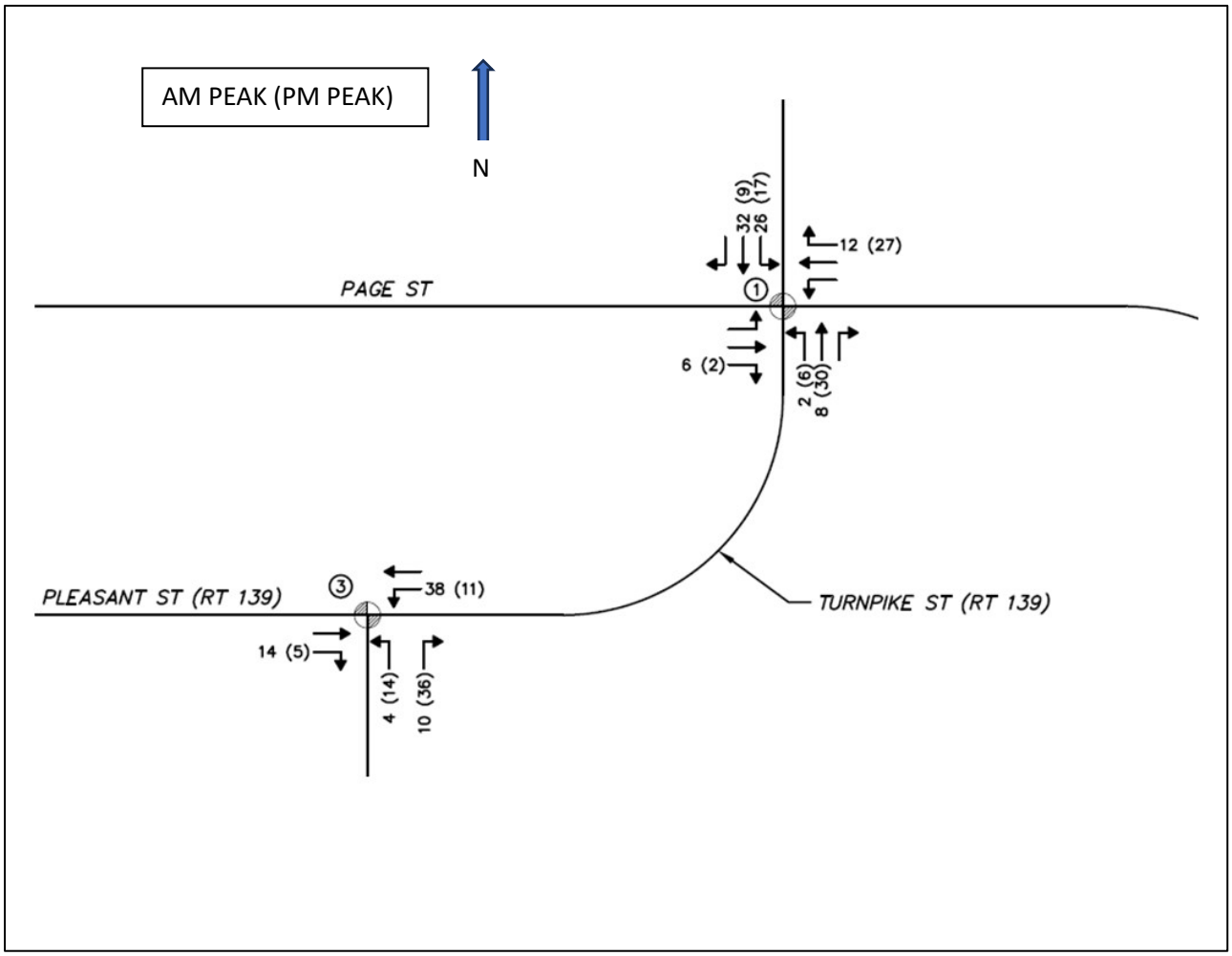
Background growth and Future Trips Based on Potential Development

A five-year time horizon has been chosen for analysis of estimated future conditions, (No-Build and Build turning movement traffic volumes at study area intersections), which is consistent with state guidelines for traffic studies. A review of traffic growth rates within the Old Colony Region, (based on archived automatic traffic counts), shows that there has been traffic growth in some corridors and little or no growth on other highways. Those areas showing traffic growth reflect the impact of retail development or other uses such as offices within specific highway corridors. A review of traffic counts for the Route 139 corridor, compiled by OCPC in the Old Colony Traffic Volumes Report, shows that there has been traffic growth in the corridor in the vicinity of Route 24; however, growth has been static. In order to account for potential development, and a potential upswing in commuter trips in the corridor, an annual growth rate of one percent projected over a five-year horizon has been applied to the existing turning movement volumes in order to discern the future peak hour turning movements at study area intersections for No-Build and Build peak hour conditions.

In addition to the one percent per year increase in background traffic growth, additional trips were added to the existing peak hour traffic turning movements at study area intersection due to developmental growth. These were focused on the north portion of Route 139 specifically due to the

proposed warehouse development at 25 Maple Street in Stoughton. This development is a proposed 880,000 square foot warehouse. The project site is 61.11 acres and is currently occupied by an asphalt quarry. The proposed development is expected to be in operation by 2027. Figure 15 shows the future morning and afternoon peak hour trips added to the future No-Build and Build analyses at the study area intersections due to the warehouse in addition to one percent background increase in traffic.

Figure 15



No-Build Peak Hour Levels-of-Service

No-Build conditions assume there are no improvements made to the intersections within the next five years (to horizon year 2029). The No-Build turning movement volumes at study area intersections were determined by increasing existing turning movement volumes by the background growth rate (one percent increase per year for five years) and adding in the trip generation due to the planned development (warehouse development at 25 Maple Street). Level-of-Service analyses were then conducted for each of the study area intersections for the morning and afternoon peak hour conditions assuming no improvements had been made at the intersections (traffic control and operating conditions

the same as Existing conditions). Table 7 summarizes the future No-Build conditions compared to the Existing conditions for each of the study area intersections. Failed traffic operations in Table 7 (LOS E and F) are shown in shaded cells.

Table 7

Intersection Location	Traffic Control	Existing AM Peak	Existing PM Peak	No Build AM Peak	No Build PM Peak
Pleasant Street (Route 139) & Washington Street (Route 138) / Park Street (Route 27)	Signal	D	D	D	D
Pleasant Street (Route 139) & Prospect Street Prospect St all moves	Stop	C	E	C	E
Pleasant Street (Route 139) & Lincoln Street EB WB all movements	Stop	D	F	D	F
Pleasant Street (Route 139) & Central Street	Signal	D	D	E	E
Pleasant Street (Route 139) & Pine Street (Left and Right Turn LOS)	Stop	F	F	F	F
Pleasant Street (Route 139) & Turnpike Street	Signal	C	B	C	B
Turnpike Street (Route 139 at Dunkin Donuts	Signal	A	A	A	A
Turnpike Street (Route 139) & Page Street	Signal	E	D	E	D
Turnpike Street (Route 139) & Hawes Way	Signal	B	C	B	C
Lindelof Avenue (Route 139) & Technology Center Drive / Kay Way	Signal	D	D	D	D

Potential Improvements and Build Conditions

The recommendations in this study were developed based on stakeholder meetings and discussions, public survey and outreach, and the Level-of-Service and crash analyses. Build peak hour turning movement conditions (future 2029 turning movement volumes) were developed by increasing existing turning movement volumes by the background growth rate (one percent increase per year for five years) and adding in the trip generation due to the planned development (warehouse development at 25 Maple Street) and assuming that potential improvements at each of the intersections is in place.

Table 8 shows the recommended potential improvements for the Route 139 intersections. The estimated costs of the improvements are categorized as Low, under $10,000, Medium, between $10,000 and $50,000, and high, greater than $50,000.

Table 8

Intersection	Existing Condition	Potential Improvements	Estimated costs
1. Pleasant Street (Route 139) & Washington Street (Route 138) / Park Street (Route 27)	• Central Business District, heavy Peak Hour Traffic, Excessive queue length SB left turn at peak hours. • Inadequate width of sidewalk on NE side of Washington Street. sidewalk on the northeast with utility poles and impediments to wheelchairs. • The utility pole on the NE corner is hit by heavy vehicles due to tight turning radius. • Signal display blockage by the utility pole. • Pedestrian crossing safety in the area.	• Widen the sidewalk on the NE side (move the fence with permission of the church landowner). • Relocate the utility pole.	Medium
2. Pleasant Street (Route 139) & Prospect Street	• Poor LOS (E) for vehicles exiting Prospect Street during the pm peak hour	• Restripe pavement markings, including stop line, clear roadside vegetation to increase sight lines, and monitor volumes and delays for satisfying traffic signal warrants.	Low
3. Pleasant Street (Route 139) & Lincoln Street	• Poor LOS (E) for vehicles from the Lincoln Street minor street during the pm peak hour. • High crash experience (Top 200 state hazardous location). • High pedestrian crossing location. • Speeding issues along Route 139(Pleasant Street). • No defined curbs along Route 139(Pleasant Street) in front of the store. • Vehicles not stopping at the Stop Sign. • The slope along Pleasant and Lincoln Street (westbound) increases speed and cuts down on sight distance, worsening the safety conditions. • No defined crosswalk.	• All way stop control with a red flashing beacon on all sides or install traffic signals. • Reconstruct portions of the intersection to include curbing along the front of the store and to improve turning radius on the eastbound Lincoln Street approach. • The town has made multiple improvements to the location and currently has a consultant to help re-design the intersection. • Advanced warning on the Lincoln Street westbound approach to improve visibility.	High
4. Pleasant Street (Route 139) & Central Street	• Speeding issues along Route 139 (Pleasant Street). • Slope along Pleasant Street is not ideal for safety. • No bicycle lanes. • Crosswalk too long for pedestrian crossing safety.	• Improve signal timing and phasing. (The Town of Stoughton completed signal system upgrades in 2016.)	Medium
5. Pleasant Street (Route 139) & Pine Street	• Poor intersection design. • No formal curbs. • No bicycling and pedestrian accommodations.	• The Town of Stoughton has plans to reconstruct the intersection and add lanes, a consultant working on the redesign of intersection.	High

Table 8 (Continued)

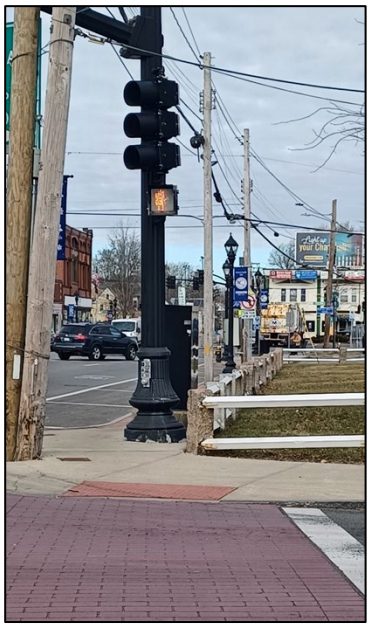
6. Pleasant Street (Route 139) & Turnpike Street	• Lack of pavement markings and lane width for southbound left turn. • Pedestrian safety.	• Update signal equipment. • Restripe pavement and lane markings. • Widen southbound left turn storage lane.	Medium
7. Turnpike Street (Route 139 at Dunkin Donuts	• Intersection operates at an acceptable LOS, although Route 139 has two lane approaches NB and SB, there is no protection for left turn in movement on the Route 139 NB approach.	• Optimize and upgrade signal timing plan to improve safety and capacity. • Consider traffic calming treatments to reduce travel speed. • Refresh striping.	Low
8. Turnpike Street (Route 139) & Page Street	• Speeding along Route 139. • Poor intersection Alignment. • Bicycle and Pedestrian Safety. • Heavy vehicle traffic volumes with industrial, warehouse, commercial on Page Street.	• Signal timing and phasing adjustments to ameliorate impacts from traffic due to development. • Alignment problems, the acute angle of the intersection compromises safety. • Long term improvements include realignment or possible roundabout (determine roundabout feasibility). • Reduce speeds by design. • Exclusive lane analysis to determine need for protected phase.	High

Table 8 (continued)

9. Turnpike Street (Route 139) & Hawes Way	• Speeding along Route 139. • High volume and turning movement during peak hour and busy shopping seasons. • Lack of bicycling and pedestrian accommodations. • Excessive long crosswalk without refugee island. • Declining slope to the north direction and tight horizontal curvature noted.	• Intersection redesign, construct raised median on the NB and SB approaches. • Consider roundabout. • Speeding enforcement. • Consider providing exclusive left turn lanes on NB and SB approaches. • Consider pedestrian crossing refuge islands, and implementation of Access Management Plan to reduce turning conflicts for Turnpike Street and Gas station lot. • Long-term re-alignment of intersection with a right-angle intersection; straighten the horizontal and reduction of slope (both directions Route 139) and reduce of vertical curvature. • Traffic calming by design. • Bicycle and pedestrian accommodations.	High
10. Lindelof Avenue (Route 139) & Technology Center Drive / Kay Way	• Speeding along Route 139. • Lack of bicycling and pedestrian accommodations. • Pavement marking, striping needed. • Inadequate road width for an exclusive right turn from Kay Way. • Noted older signal system, smaller signal displays. • Lacks proper striping and road width for an exclusive right turn from Kay Way. The intersection in general lacks striping. No sidewalk connection to Technology Drive.	• Improvements to Kay Way including geometric (turning radius), widening the approach, and lane markings. • Traffic signal upgrades to standard, signal display, timing and phasing, hardware, signage and pavement markings. • Bicycle and pedestrian accommodations. • Pedestrian islands for safety.	High

Pleasant Street (Route 139) at Washington Street (Route 138)-Stoughton Center

The traffic signal at the Pleasant Street (Route 139)/Washington Street (Route 138) intersection is part of the Stoughton Center system with the emphasis on northbound and southbound progression through the center. The Town center traffic progression through the two signalized intersections (Pleasant Street (Route 139) at Washington Street (Route 138) and the Washington Street (Route 138)/Pearl Street/Canton Street (Route 27) has been the subject of several studies. The changes to the Pleasant Street (Route 139) at Washington Street (Route 138) intersection instituted a number of years ago included lane assignment on the southbound approach with a through lane and a left turn lane have improved peak progression through Stoughton center.



The Pleasant Street (Route 139)/ Washington Street (Route 138) intersection, showing the utility pole close to the curb and inadequate sidewalk width for pedestrians and wheelchairs.

This intersection experiences heavy peak hour volumes, as it is in the Central Business District (CBD), although the LOS is "D" during both the morning and afternoon peak hours, which is acceptable in urban areas. The LOS is expected to stay at "D" under future 2029 peak hour operations. This intersection also experiences foot traffic as part of the CBD. The intersection experiences long queue lengths on the southbound approach during the peak hours; however, the storage lane is limited due to the width of Washington Street through Stoughton center. Field observations and stakeholder comments identified a number of problems for this intersection including inadequate width of the sidewalk on northeast side of Washington Street (Rout 138), with utility poles and impediments to wheelchairs. In addition, the utility pole on the northeast corner has been hit by heavy vehicles turning right from Pleasant Street (Route 139) due to a tight turning radius. These utility poles also block the signal display for vehicles on Route 138 entering the intersection. Recommendations for this intersection include widening the sidewalk on the northeast side (requesting that the landowner move the white fence back) and relocating the utility poles at the northeast corner.

Pleasant Street (Route 139) at Prospect Street

Pleasant Street (Route 139) and Prospect Street meet approximately 1,880 feet northeast of Stoughton Center to form a "T" type intersection. The intersection is stop sign controlled on the Prospect Street approach. Pleasant Street (Route 139) provides a single lane shared approach (left, through, right) on the northbound and southbound approaches. Prospect Street also provides a single lane shared approach (left, through, right) on the westbound stop controlled approach. The LOS for the Prospect Street westbound approach is LOS "C" for the morning peak hour and LOS "E" for the afternoon peak hour. The long delays on the Prospect Street approach (LOS "E") during the afternoon peak hour are due to the continuous flow of traffic on Pleasant Street (Route 139) with few adequate gaps in the flow for side street traffic to enter during this time period. The LOS for the morning and afternoon peak hours is expected to remain the same under future 2029 conditions. It is recommended that the pavement markings, including stop line, be repainted at this intersection. In addition, as recommended in previous studies, clearing roadside vegetation and overhanging vegetation is recommended to increase sight lines and monitor volumes and delays for worsening of conditions and/or satisfying of traffic signal warrants.

Pleasant Street (Route 139) at Lincoln Street

The Pleasant Street (Route 139) at Lincoln Street intersection has been the subject of a previous Road Safety Audit due to the high numbers of crashes at this intersection. This intersection is on the state's Top 200 Crash Clusters and Top 5% Intersection Crash Clusters list for the years between 2019 - 2021. The crash rate for this intersection is the highest in the corridor at 2.97 crashes per million entering vehicles. The Pleasant Street (Route 139) at Lincoln Street intersection is a four-way stop sign controlled intersection with stop sign control on the Lincoln Street approaches. There is a variety store located on the southeast corner of the intersection with a lack of curbing in and out of the parking lot, which is located on both the Pleasant Street (Route 139) and Lincoln Street side. There is poor LOS ("E") for vehicles from the Lincoln Street minor street during the PM peak hour. This intersection is also a high pedestrian crossing location. In addition, there are speeding issues along Pleasant Street (Route 139) and there is a curve and a slight ascending grade on the Lincoln Street westbound approach that hinders visibility of the intersection. Warrant analyses were conducted by OCPC for this intersection for the previously completed RSA. The intersection satisfies Warrants one and two for the installation of a traffic signal and the Warrant for an All-Way stop control. Table 9 shows the Existing, No-Build, and Build scenario peak hour LOS. The Build scenario has two alternatives, an all-way stop alternative and a signalized alternative. Table 9 shows that the Build signal alternative yields the best LOS with LOS "A" during the morning peak and LOS "B" during the afternoon peak hour.

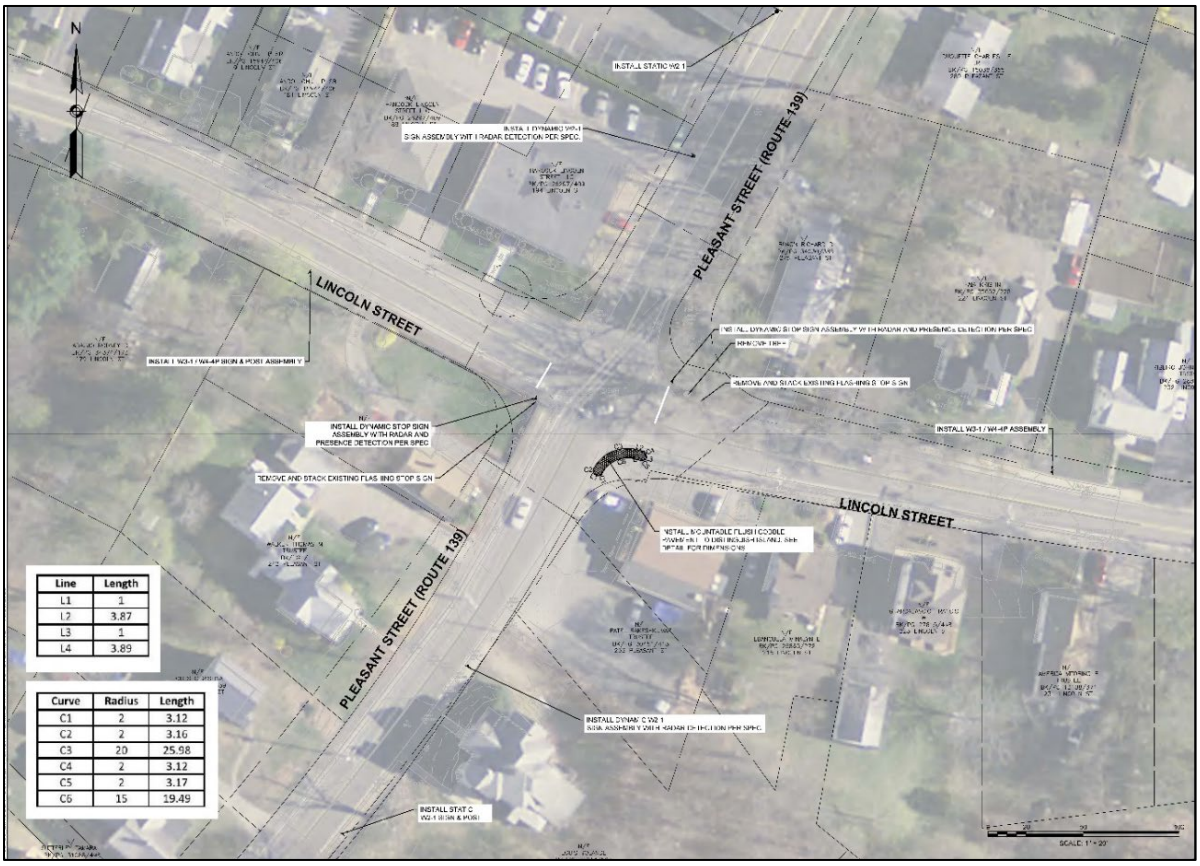
Table 9

Intersection Location	Existing AM Peak	Existing PM Peak	No Build AM Peak	No Build PM Peak	AM Build All-Way Stop	PM Build All-Way Stop	AM Build Signal	PM Build Signal
Pleasant Street (Route 139) & Lincoln Street	D	F	D	F	C	F	A	B

The Town of Stoughton has plans for improvements at this intersection and contracted a consultant to draw up the design plans, which were completed in 2020. The plans are shown in Figure 16. The consultant design plans are for the following improvements:

- Removing a tree at the northeast corner of the intersection to increase sign visibility.
- Install a mountable flush cobble pavement on the southeast corner to channel traffic and separate the travel way from the convenience store parking lot.
- Install advanced warning Stop ahead (W3-1) on the Lincoln Street eastbound and westbound approaches to the intersection with "Cross Traffic Does Not Stop" (W4-4P) plaques.
- Install stop signs on all four approaches as an interim measure.
- Install traffic signals as a long-term improvement.

Figure 16



Pleasant Street (Route 139) at Central Street

Pleasant Street (Route 139) and Central Street intersect to form a four-way signalized intersection. Pleasant Street (Route 139) provides a single shared lane (left, through, right) on the northbound and southbound approaches. Central Street provides an exclusive left turn storage lane on the eastbound and westbound approaches to the intersection. A sidewalk is provided on the west side of Pleasant Street (Route 139) and the north side of Central Street. The issues at the intersection include speeding along Pleasant Street (Route 139) and no bicycle lanes. In addition, the crosswalk is too long for pedestrian crossing safety. The Town of Stoughton completed improvements to the signal system in 2016. The existing LOS is LOS "D" during the morning peak hour and LOS "D" during the afternoon peak hour. The future No-Build is expected to drop to LOS "E" during the morning and afternoon peak hour. Increasing the green time on the Central Street approach (and increasing the overall cycle length) results in an overall LOS "D" under Build conditions during the morning and afternoon peak hours, as shown in Table 10.

Table 10

Intersection Location	Existing AM Peak	Existing PM Peak	No Build AM Peak	No Build PM Peak	AM Build	PM Build
Pleasant Street (Route 139) & Central Street	D	D	E	E	D	D

Pleasant Street (Route 139) at Pine Street

Pleasant Street (Route 139) at Pine Street intersect in Stoughton to form a "T" type intersection with stop sign control on the Pine Street minor street approach. The Pine Street approach to the intersection is not at a 90 degree angle and the intersection has a painted island that separates Pine Street left turns from the right turn lane. Vehicles turning left from Pine Street are put in conflict with vehicles turning left from Pleasant Street to Pine Street as they move up to the stop line. The vehicles turning left from Pleasant Street to Pine Street enter Pine Street to the right-side passenger side of Pine Street left turns instead of passing around these vehicles into Pine Street.

The Route 139 at Pine Street intersection existing conditions.

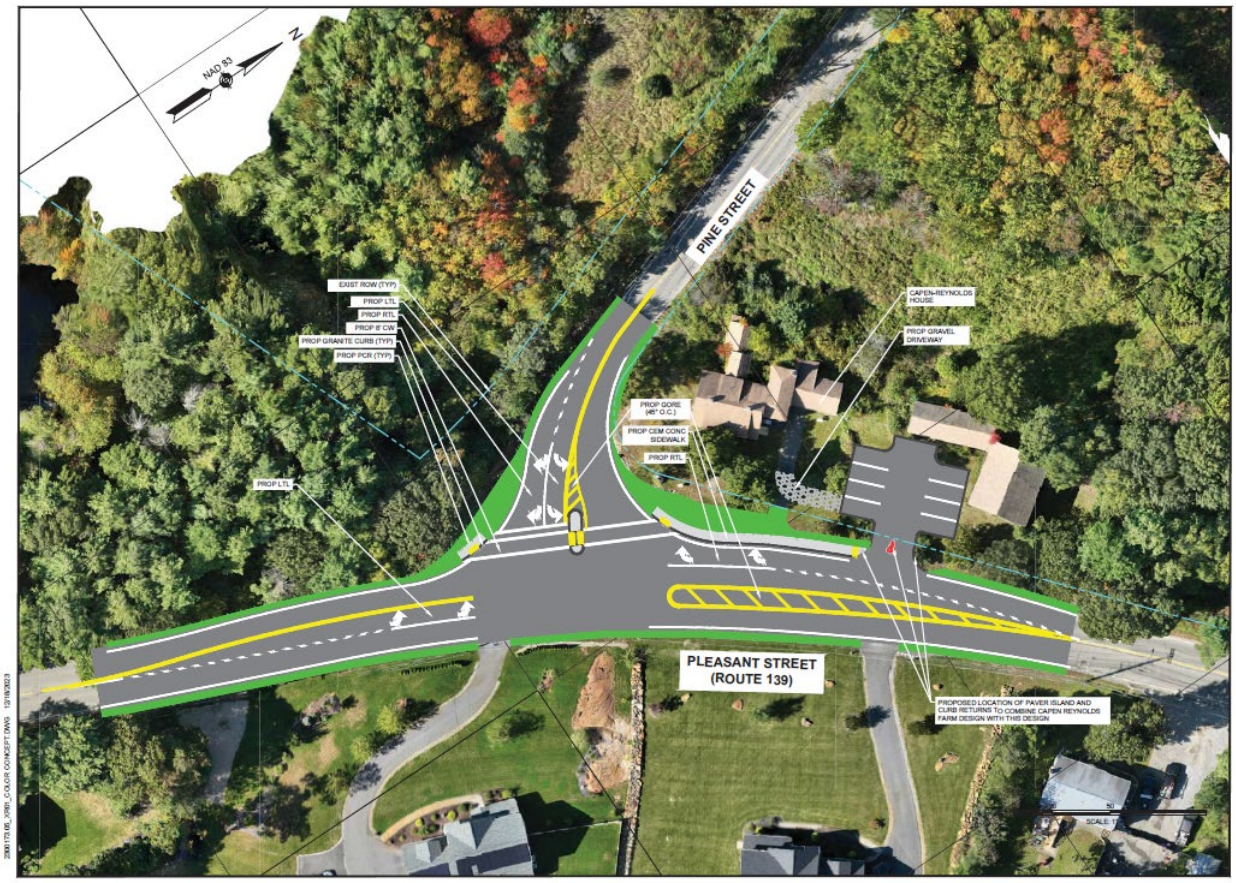
Table 11

Intersection Location	Existing AM Peak	Existing PM Peak	No Build AM Peak	No Build PM Peak	AM Build	PM Build
Pleasant Street (Route 139) & Pine Street (Left and Right Turn LOS)	Left F, Right F	Left F, Turn F	Left F, Right F	Left F, Right F	Left D, Right B	Left F, Right B

The Town of Stoughton has plans to reconstruct the intersection and add lanes, a consultant completed a traffic study and design of improvements for intersection. These improvements include widening Pleasant Street (Route 139) towards the west to construct an auxiliary northbound left turn lane, formalizing the Pleasant Street (Route 139) southbound flare into a right-turn only lane and reducing the width of the Pine Street eastbound approach while maintaining a right-turn only lane and a left-turn only lane.

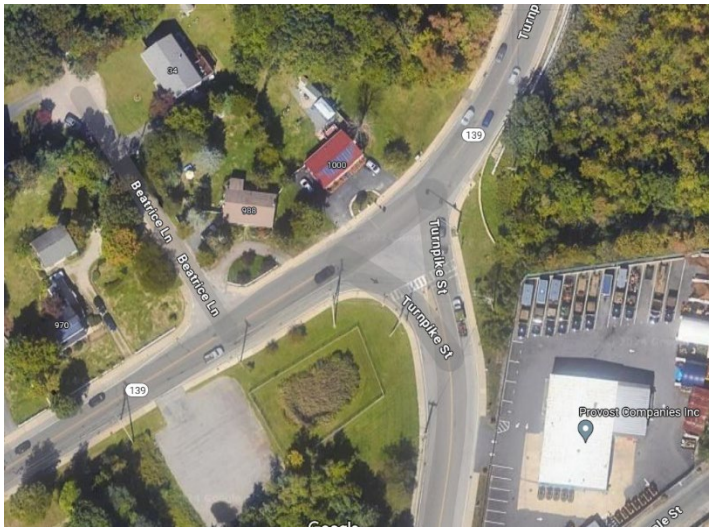
Table 11 shows the summary of the Existing, No-Build, and Build conditions morning and afternoon peak hour LOS. The redesign of the intersection, which adds separate right and left turns from Pine Street, and exclusive left lane from Pleasant Street northbound, and exclusive right turn lane from Pleasant Street southbound, improves the LOS at the intersection from LOS "F" for all Pine Street moves to LOS "D" for left turns and "B" for right turns during the morning peak hour. The improvements also improve the LOS for right turns from Pine Street to LOS "B" during the afternoon peak hour. Figure 17 shows the consultant's proposed preliminary redesign of the Pleasant Street (Route 139)/Pine Street intersection.

Figure 17



Pleasant Street (Route 139) at Turnpike Street

The Pleasant Street (Route 139) and Turnpike Street intersection in Stoughton is a "T"-type intersection that is not at a 90 degree angle. This intersection is signalized with a tight right turn from Pleasant Street to Turnpike Street on the northbound approach due to the skewed intersection. During the morning and afternoon peak hours, there are excessive queue lengths on the southbound left turn. In addition, the pavement markings denoting this exclusive left turn storage lane are faded. The storage length and lane widths are inadequate for the through movement and left turns on this approach.



The Route 139 at Turnpike Street intersection existing conditions.

The recommendations for this intersection include update signal equipment and signage, restriping the pavement markings and lane markings, and widen the southbound left turn storage lane. Table 12 shows the summary of the Existing,

No-Build, and Build conditions morning and afternoon LOS for the Route 139 at Turnpike Street intersection. The current MassDOT project is MassDOT Project number #607214, Highway Reconstruction, Restoration, and Rehabilitation. Its design status is 75 percent design. Work on this project will consist of roadway reconstruction on Turnpike Street in the Town of Stoughton. The project limits are from Pleasant Street northerly (including the Pleasant Street (Route 139)/Turnpike Street intersection) for approximately 1,000 feet. This project is intended to provide a permanent solution to the historical problem of roadway settlement caused by of a vast depth of decomposing subsurface material (peat) which over time has compromised the structural stability of the roadway surface of this targeted segment of Turnpike Street. The estimated total cost of the project is $41,007,661.

Table 12

Intersection Location	Existing AM Peak	Existing PM Peak	No Build AM Peak	No Build PM Peak	AM Build	PM Build
Pleasant Street (Route 139) & Turnpike Street	C	B	C	B	C	B

Turnpike Street (Route 139) at Stoughton Crossing (Dunkin Donuts)

The Turnpike Street (Route 139)/Stoughton Crossing intersection is located approximately 500 feet south of the Turnpike Street (Route 139)/Page Street intersection. This intersection is a signalized "T" Type intersection that operates at an acceptable LOS during the morning and afternoon peak hours. Although Route 139 has two lane approaches northbound and southbound, there is no protection for left movements turning in on the Route 139 NB approach.

There is a potential for a 30,000 square foot commercial building within the Dunkin Donuts plaza, but no action has been forthcoming toward development. The signalized intersection at the Dunkin Donuts has faded markings and could use signal adjustments to improve safety. In addition, the ascending slope in the southern direction on Route 139 exacerbates speeding on Route 139 through the intersection.

The recommendations for this intersection include reevaluating and optimizing the signal timing and phasing plan to improve safety and capacity, increase yellow clearance and red clearance times, and consider enhanced speeding enforcement and possible traffic calming treatments to reduce travel speeds through the intersection on Route 139.

Turnpike Street (Route 139) at Page Street

Page Street intersects Turnpike Street (Route 139) at an acute angle, which creates short and extended turning radii at the intersection depending on the approach. The Turnpike Street (Route 139) approaches include multiple lanes to provide for heavier peak hour and 24-hour volumes experienced on this section of Route 139 (the Route 24 ramps are approximately 1,500 feet to the east of the intersection). In addition to heavy peak hour volumes due to commuter traffic, there is heavy commercial and industrial land use located on Page Street southeast of the intersection. There is also commercial development (Target) east of the intersection with access off Hawes Way.

The Turnpike Street (Route 139) approaches (northbound and southbound) provide a right turn channeled island, two through lanes and an exclusive left turn lane. The Page Street westbound approach provides an exclusive left turn land a through lane and a shared through and right turn lane. The Page Street eastbound approach provides a shared right turn and through lane, and an exclusive left

turn lane. The left turn from Page Street to Route 139 north is short due to the acute intersecting angle of the two roads. This intersection experiences alignment problems due to the acute angle of the intersection, which compromises safety.

There is a building (Murray Construction) located facing the intersection with a parking entrance that accesses the intersection especially the southeast Page Street approach. In order for vehicles to enter and exit the parking area, they must jump the curb and drive over the sidewalk. There is no curb cut access to the parking area behind this building; however, vehicles use the lot for parking.

The Route 139/Page Street intersection.

This intersection is expected to be impacted by traffic to and from the 880,000 sq. ft. warehouse planned for construction on Page Street. A consultant traffic study for the warehouse completed for the proponent was submitted to the Town and signal timing adjustments were recommended to ameliorate potential warehouse traffic impacts.

Other land use development on Page Street southeast of Route 139 includes an addition to the Hampton Inn hotel at the southeast side of the intersection and an 80,000 sq. ft. expansion of an existing factory. Recommendations for this intersections include considering signal timing and phasing adjustments to ameliorate impacts from traffic due to development.

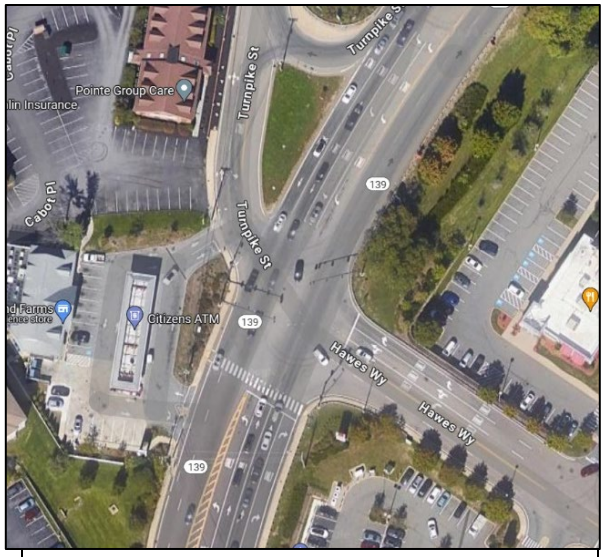
The long-term improvements for this intersection include realignment and exclusive lane analysis to determine need for protected phases or, as an alternative, the installation of a roundabout. As part of the improvements, an engineering study should include determining the feasibility of installing a roundabout. In either case, speeds through the intersection on Route 139 should be addressed through traffic calming by design and enhanced speed enforcement.

Table 13 shows the summary of the Existing, No-Build, and Build conditions morning and afternoon LOS for the Route 139 at Page Street intersection. The Build conditions represent the No-Build peak hour volumes assuming a roundabout is installed at the intersection.

Table 13

Intersection Location	Existing AM Peak	Existing PM Peak	No Build AM Peak	No Build PM Peak	AM Build Roundabout	PM Build Roundabout
Turnpike (Route 139) & Page Street	E	D	E	D	A	B

Lindelof Avenue (Route 139) at Turnpike Street and Hawes Way Intersection



The Lindelof (Route 139)/Turnpike Street/Hawes Way Intersection.

Northeast of its intersection with Hawes Way, Route 139 is called Lindelof Avenue. Turnpike Street continues northwest as part of this signalized four-way intersection. At this intersection, the Turnpike Street northwest leg intersects Route 139 at an acute angle. Hawes Way provides access to a Target Department Store and office and commercial space to the southeast of Route 139. The Route 139 southbound approach provides two exclusive left turn storage lanes for access to the Target and other commercial establishments. In addition, the southbound approach provides an island to channel right turns to Turnpike Street as well as two through lanes for heavy traffic exiting off of the Route 24 ramps, which are located approximately 600 feet north of the intersection. The northbound Route 139 approach has an exclusive left turn lane, two through lanes, and an exclusive right turn lane. The Hawes Way westbound approach has an exclusive left turn lane, a shared left turn/through lane, and an exclusive right turn lane. The Turnpike Street eastbound approach has an exclusive left turn lane and a shared right turn/through lane. The access drive to a gasoline station/convenient store is located on the Turnpike Street eastbound approach about 25 feet from the intersection, which interferes with traffic operations and turning movements through the intersection. A second drive to this gas station is located on the Route 139 approach, also in close proximity to the intersection about 90 feet south of the intersection.

There is a sidewalk along both sides of the northbound approach to the intersection and into Hawes Way, but sidewalks are limited, and the intersection lacks ADA compliance. This intersection is a high volume intersection with high volume turning movements especially during the peak hours and peak shopping hours. The intersection lacks bicycling and pedestrian accommodations with excessive long walks across the intersection for pedestrians with no refuge island. In addition, there is a declining slope to the north and Route 139 curves to the Route 24 ramps.

Recommendations for the intersection include adding a raised medians to the intersection approaches, and engineering design analyses for improvements for the turning radius to and from Kay Way. In addition, the traffic signal equipment needs upgrading to industry standards, (signal display, timing and phasing, hardware, as well as upgrades to signage and pavement markings). This intersection lacks bicycle and pedestrian accommodations and islands for pedestrian refuge. Traffic calming design should be considered to reduce speed at this location.

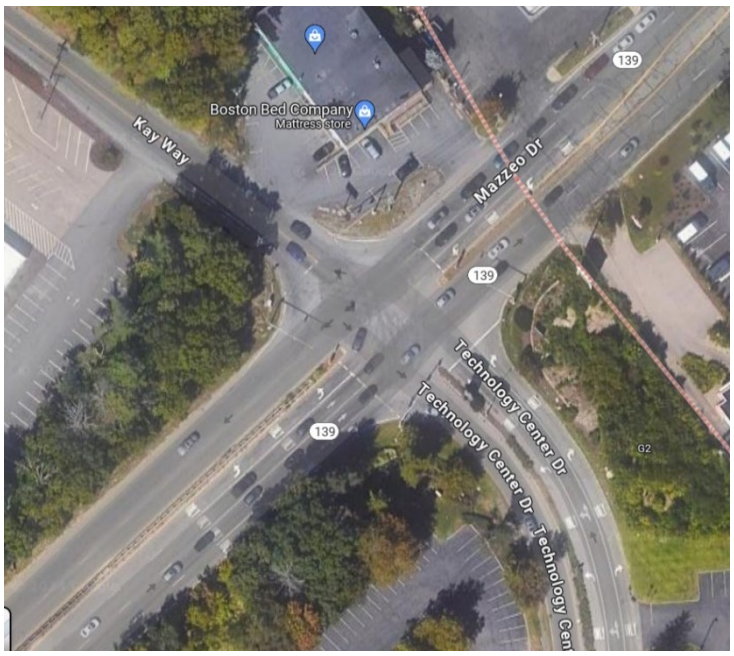
Table 14 shows the summary of the Existing, No-Build, and Build conditions morning and afternoon LOS for the Route 139 at Hawes Way and Turnpike Street intersection. The Build conditions represent the No-Build peak hour volumes assuming a roundabout is installed at the intersection.

Table 14

Intersection Location	Existing AM Peak	Existing PM Peak	No Build AM Peak	No Build PM Peak	AM Build Roundabout	PM Build Roundabout
Turnpike St. (Route 139) & Hawes Way	E	D	E	D	A	C

Mazzeo Drive (Route 139) at Kay Way and Technology Center Drive

Lindelof Avenue (Route 139) becomes Mazzeo Drive (Route 139) at the intersection with Kay Way and technology Center drive. This intersection is located to the northeast of the Route 24 ramps and 90 feet west of the Randolph Town Line. This intersection is on the state's Top 200 Crash Clusters and Top 5% Intersection Crash Clusters list for the years between 2019 - 2021. Kay Way to the west of the intersection provides access to some commercial industrial uses and residential uses. It provides a single left/through/right turn lane on its approach to Route 139. Technology Center Drive's westbound approach provides an exclusive left turn lane, a shared left/through lane, and an exclusive right turn lane to the Route 139 intersection.



The Lindelof (Route 139)/Mazzeo (Route 139/Kay Way/Technology Center Drive Intersection.

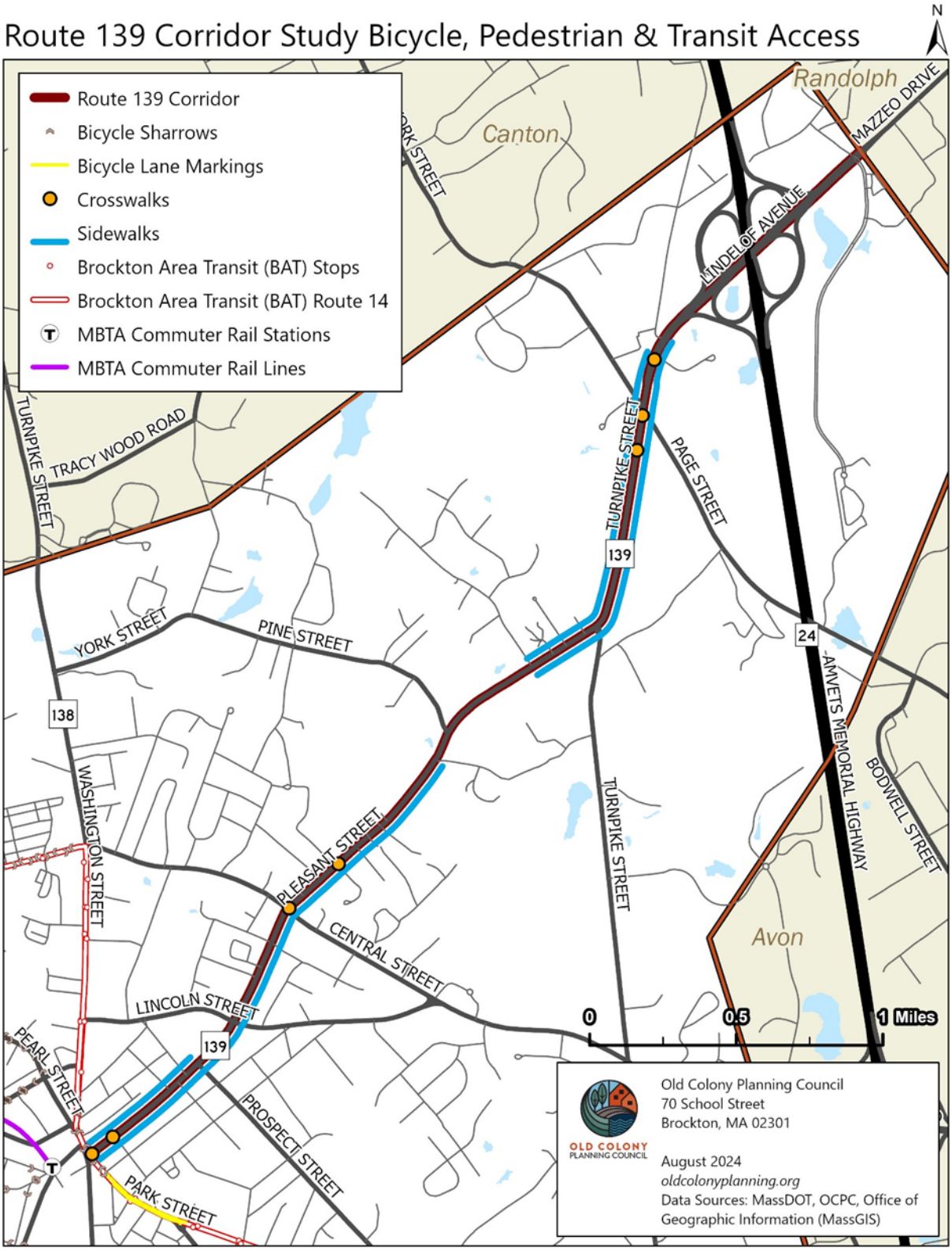
The Lindelof (Route 139) northbound approach provides an exclusive left turn lane, two through lanes and an exclusive right turn lane to Technology Center Drive. The Mazzeo Drive (Route 139) southbound approach provides an exclusive left turn lane, an exclusive through lane, and an exclusive right turn lane. Safety issues at this intersection include sidewalk accessibility and ADA compliance, and crosswalk safety with excessive distances for pedestrians to travel when crossing the street with a lack of refuge islands. The pavement markings are faded, and the traffic signal equipment is antiquated with undersized signal heads. The intersection lacks proper striping and road width for the right turns from Kay Way. This approach is wide enough to provide a de facto right turn lane. The intersection in general lacks striping and there is a lack of sidewalk connection from Route 139 to the sidewalks on Technology Center Drive. Recommended improvements to this intersection include improving the turning radius at Kay Way, widening this approach to two lanes with lane markings, traffic signal upgrades to standard, including signal display, timing and phasing, hardware, and upgrades to signage and pavement markings. In addition, bicycle accommodations are recommended as well as refuge islands for pedestrian crossing safety.

Corridor Wide Improvements

The following is a list of overall corridor wide improvements for the Route 139 corridor in Stoughton. As the jurisdiction of Route 139 in Stoughton is shared between MassDOT and Stoughton, it is recommended that the improvements be coordinated to develop an overall collaborative vision for the future of the Route 139 corridor. Figure 19 shows the sidewalks along the Route 139 corridor. The long-term goal of the Town of Stoughton, as discussed in stakeholder meetings, is to close the gaps in the sidewalks along Route 139, especially in the town jurisdiction sections of Route 139 south of the Turnpike Street intersection to Pine Street (which is also within the residential area of land use).

1. Review and ensure enforcement of speed limit regulation for the entire corridor.
2. Consider traffic calming treatments at locations along Route 139 Corridor where they are determined warranted by engineering studies.
    a. Consider constructing roundabouts at the intersections while stop signs or signals are no longer safe or effective for the locations.
    b. Consider narrowing lane width to 10 or 10.5 feet for traffic calming.
    c. Consider lowering the speed limit at segments along Route 139 Corridor. (Process to request speed zoning is available at: https://www.mass.gov/how-to/request-speed-zoning.
3. Enhance bicycling and walking safety and mobility.
    a. Consider constructing and expanding continuous sidewalks along Route 139 Corridor.
    b. Consider connecting existing sidewalks to the regional bicycle and pedestrian network.
    c. Consider providing bicycle lanes, signages and pavement marking where appropriate. The bicycling facilities in general should consider safety and effectiveness, including on-road and off-road systems.
    d. Consider providing and improving safe crossings on Route 139 Corridor.
4. Consider providing and expanding non-auto-dependent transportation modes opportunities, such as Public Mass Transit (for example, fixed routes, fixed schedule buses, usually with larger capacity) and Micro transit (for example, flexible routes, small scale, on demand transit services).

Figure 18


Route 139 Corridor Study Bicycle, Pedestrian & Transit Access
N
Route 139 Corridor
Bicycle Sharrows
Bicycle Lane Markings
Crosswalks
Sidewalks
Brockton Area Transit (BAT) Stops
Brockton Area Transit (BAT) Route 14
MBTA Commuter Rail Stations
MBTA Commuter Rail Lines
Canton
Randolph
MAZZEO DRIVE
LINDELOF AVENUE
TURNPIKE STREET
TRACY WOOD ROAD
PAGE STREET
139
YORK STREET
PINE STREET
24
AMVETS MEMORIAL HIGHWAY
BODWELL STREET
138
WASHINGTON STREET
PLEASANT STREET
CENTRAL STREET
Avon
LINCOLN STREET
PEARL STREET
PROSPECT STREET
PARK STREET
0
0.5
1 Miles
OLD COLONY PLANNING COUNCIL
Old Colony Planning Council
70 School Street
Brockton, MA 02301
August 2024
oldcolonyplanning.org
Data Sources: MassDOT, OCPC, Office of Geographic Information (MassGIS)

Project Development and Funding

Funding is essential in ensuring the implementation of improvements recommended in this study. Although the recommendations in this planning level study are conceptual, the implementation stage takes transportation improvement projects from the concept stage through design and construction. The *MassDOT Project Development and Design Guide* explains the project development process in Massachusetts and includes the design standards for transportation projects. The MassDOT project development process, which can include Transportation Improvement Program (TIP) funding (for federal aid eligible roads) consists of the following:

- Problem/Need/Opportunity Identification (A Project Need form is submitted to MassDOT utilizing MassDOT Project online Intake Tool, MaPIT)
- Planning (A project planning report is completed)
- Project Initiation (A Project Initiation Form is submitted to MassDOT)
  - Identification of Appropriate Funding
  - Definition of Appropriate Next Steps
  - Project Review Committee Action
- Environmental Design and ROW Process (Includes Plans, Specifications, and Estimates, P, S, & E)
  - Environmental Studies and Permits
  - Right-of-Way Plans
  - Permits
- Programming (Old Colony TIP and State Transportation Improvement Program, STIP)
  - Programming of Funds
- Procurement (Construction bids and contractor selection)
- Construction
- Project Assessment

On sections of federal aid eligible roadway owned and maintained by the municipality, the municipality typically initiates a project by completing and submitting the Project Need Form (available in the Appendix), as well as providing for project planning and design. Similarly, for state owned facilities, MassDOT initiates projects and provides planning and design on their section of roads.

The process outlined above is typical for funding roads that are federal aid eligible. These federal eligible roads are of higher classification (usually arterial or urban collector) and can be owned and maintained by a municipality or the Commonwealth of Massachusetts. Federal aid eligible regional transportation needs have outpaced available funding in the Transportation Improvement Program (TIP) for the past several years. All projects on the TIP go through a comprehensive evaluation process to determine priority for funding; therefore, the programming of the TIP is a competitive process.
A municipality can apply for funding utilizing The MassDOT Project Intake Tool (MaPIT). MaPIT is a Geographic Information System (GIS) and project development tool for online project planning, automated analysis, reporting, and collaboration. The system is intended to provide a user friendly, web-based environment for populating Project Need and Project Scope Forms, and for completing local aid applications for the Chapter 90, Small Bridge, Safe Routes to School and Bottleneck Funding Programs. Municipalities can open a MaPIT account and apply directly seeking funding through the Old Colony Transportation Improvement Program (TIP). For TIP projects, the town would have to have an engineer design the project to MassDOT specifications. The town would be responsible for design costs and any right of way takings.

In general, the process to fund a project through the TIP may take up to five years. Other alternative funding options are available for project construction for roads that are either not federal aid eligible or are eligible but might be chosen for other reasons, such as avoiding the TIP process.
Additional funding alternatives are outlined as follows:

• **Bipartisan Infrastructure Law** – The Bipartisan Infrastructure Law makes historic investments in the transportation sector: improving public safety and climate resilience. It provides funding for major projects including roads, bridges, airports (FAA Administration), public transit, passenger and freight rail, and ports and waterways.

• **Capital Improvement Program (CIP) - Local Funding** has historically been utilized to help provide the design and engineering of highway projects.

• **Exactions (Developer Mitigation Agreements)** Communities have increasingly turned to exactions as a means to meet new infrastructure and public service needs. Cities and towns use developer exactions as a strategy to offset the burdens of new development on the community. Exactions contribute to regional equity by ensuring that a new development pays a fair share of the public costs that they generate. Exactions consist of a developer's payment of funds to offset the cost of necessary construction, design, or maintenance of public infrastructure directly connected to the new development. Developers commit to an agreement for funding or constructing off-site improvements in exchange for the approvals to proceed with a development project.

• **Bridge Replacement and Rehabilitation Program** provides funds for rehabilitation and replacement of any bridge on a public road. Bridges on the federal aid system or off the federal aid system are eligible for these funds.

• **Chapter 90** provides funding for highway construction, preservation, and improvement projects that create or extend the life of capital facilities. The level of funding is determined by a formula that is based upon public way mileage, population, and level of employment in each community. The Chapter 90 Program is a reimbursement program, as the community must initially pay the cost of a particular project.

• **Community Development Block Grant (CDBG) Program** provides for the development or expansion of economic opportunities and the provision of decent housing and public facilities. Eligible use of funds includes community development (construction or reconstruction of streets, water and sewer facilities, neighborhood centers, recreation facilities, and other public works).

• **Massachusetts Complete Streets Funding Program** - The MassDOT Complete Streets Funding Program addresses critical gaps in transportation networks by giving Massachusetts municipalities tools and funding to advance Complete Streets in their community. All municipally owned roadways are eligible for projects through the Complete Streets Funding Program. These roadway projects provide an opportunity to incorporate Complete Street principles into the design. Completes Streets link: https://gis.massdot.state.ma.us/completestreets

• **Shared Streets and Spaces (applications opened September 5 also through October)** The Shared Streets and Spaces Grant Program is administered by the Massachusetts Department of Transportation (MassDOT). The program provides funding to municipalities and public transit authorities to quickly implement improvements to plazas, sidewalks, curbs, streets, bus stops, parking areas, and other public spaces in support of public health, safe mobility, and strengthened commerce. Online link: https://www.mass.gov/shared-streets-and-spaces-grant-program

The Link to the **MassDOT grants page** in the GeoDOT local site: **https://geodot-local-massdot.hub.arcgis.com/pages/grants**.
This website includes:

• Chapter 90
• Local Bottlenecks

- Municipal Small Bridge Program
- Safe Routes to School (SRTS)
- Community Transit Grant Program
- Complete Streets Funding Program
- Industrial Rail Access Program (IRAP)
- MassTrails
- Municipal Pavement Program
- Shared Streets and Spaces Grant Program
- Workforce Transportation Program

APPENDICES

Route 139 Corridor Study And General Survey Results

Automatic Traffic Counts

Intersection Turning Movement Counts

Intersection Levels of Service

Intersection Crash Rates

Map of Watershed, Vernal pool, Core Habitat

Water Supplies Map