Middleborough

Complete Streets Program

Complete Streets

Needs Assessment & Prioritization Plan

June 2020

Middleborough is committed to improving conditions for all roadway users, regardless of age, ability, income level or mode of transportation.

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Introduction

This Complete Streets Needs Assessment for the town of Middleborough was completed using a technical assistance grant from the MassDOT Complete Streets Funding Program. It provided the town with the opportunity to have SRPEDD assess their bicycle, pedestrian, and transit facilities and to ultimately help them put together a list of projects that will improve those networks.

What are "Complete Streets"

Complete Streets are roadways or streets that safely and comfortably accommodate all users, regardless of age and ability or mode of transportation (see Figure 1). Users include, but are not limited to: motorists, bicyclists, pedestrians, public transportation riders and providers, emergency response vehicles, freight operators, and school buses. The needs of each of these users are unique and the way they use the transportation network is different; therefore, a number of design features need to be considered to accommodate all users.

Complete Streets components can include roadway design features such as ADA compliant sidewalks and crossings, curb extensions, bicycle lanes, shared use pavement markings, bus shelters and pull-outs, wayfinding signage, landscaping, street lighting, and many other items. Not all streets need to include every Complete Streets element, rather, each street should contain the appropriate level of "completeness" depending on its context and function.

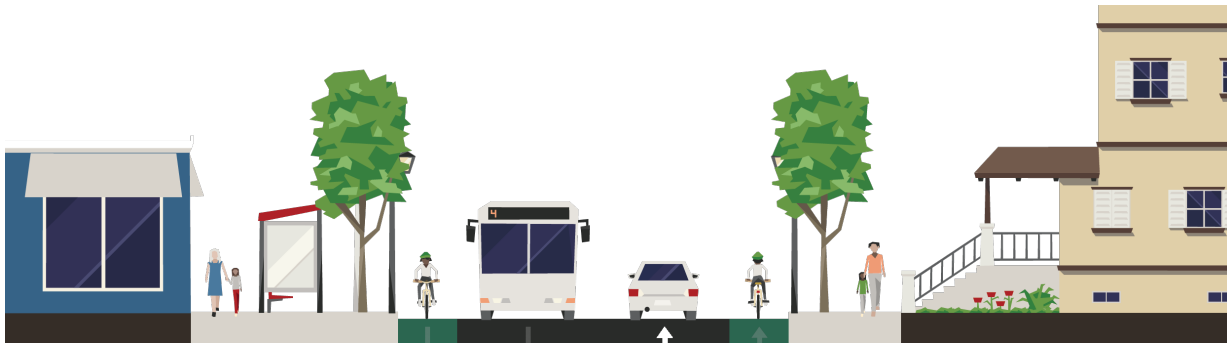


Figure 1: Example of "Complete Streets" elements (Streetmix.net)

MassDOT Complete Streets Funding Program

The MassDOT Complete Streets Funding Program was launched in February 2016 to provide technical assistance and construction funding to communities that demonstrate a commitment to include Complete Streets in policy and in practice. In short, a community may be eligible for up to $400,000 in construction funding to implement Complete Streets elements in municipal projects. The optional technical assistance funding component allowed SRPEDD to assist Middleborough in evaluating the conditions of their bicycle, pedestrian, public transportation network; to identify problem areas; and, to develop a comprehensive improvement plan (a.k.a. "Prioritization Plan"). The MassDOT approved Prioritization Plan allows Middleborough to then apply for the $400,000 in construction funding.

Middleborough's Complete Streets Policy

Middleborough adopted its Complete Streets Policy in April 2019 and the MassDOT Complete Streets Funding Program approved the Policy in May 2019. The following statements in the policy underscore the town's commitment and approach to implementing Complete Streets going forward.

Purpose and Intent

"The purpose of the Town of Middleborough's Complete Streets Policy is to accommodate all road users by creating a roadway network that meets the needs of individuals utilizing a variety of transportation modes, to continue to develop the town's off-road trail network, and to create connections between both facilities. It is the intent of the Town of Middleborough to formalize the planning, design, operation and maintenance of streets so that they are safe for users of all ages, all abilities and all income levels as a matter of routine." - Middleborough Complete Streets Policy (April 2019)

Network and Context Sensitivity

"The Town of Middleborough recognizes that "complete streets" may be achieved through single elements incorporated into a particular project or incrementally through a series of smaller improvements or maintenance activities over time. As such, the town will focus on incorporating Complete Streets elements that are appropriate to the specific area, that complement the physical conditions of the given roadway or trail and that respond to the need of the existing and potential future users of the facility.

"Middleborough recognizes that as a rural community, some roads may offer greater or lesser degrees of accommodation for each type of user due to a variety of factors and that each potential project must be evaluated in the context of the town's community and neighborhood character." - Middleborough Complete Streets Policy (April 2019)

The entire Middleborough Complete Streets Policy can be found in the Appendix of this report.

Summary of Middleborough

The town of Middleborough, located in Plymouth County, is the second largest town (land area) in the Commonwealth. It contains a combination of rural and suburban type residential properties, varying sized commercial and industrial entities generally located along the town's major routes and a charming, typical New England style downtown. It is located approximately 40 miles south of Boston and nearly 30 miles east of Providence, RI. Neighboring towns include Bridgewater to the north, Halifax, Plympton and Carver to the east, Wareham and Rochester to the south, and Lakeville and Raynham to the west. One-third of the town contains wetlands, streams or rivers, and bogs - covering approximately 25 square miles. Major roadways in Middleborough include Interstate 495, Route 28, Route 44, and Route 105 and the town has two highway interchanges where clusters of commercial activity can be found. The town's formal bicycle network is very limited while the sidewalk network (generally located in the Downtown area) is larger than most communities in the region. Middleborough is currently served by Commuter Rail (current station is on town line with Lakeville) and has regular fixed-route bus service from the Greater Attleboro Taunton Regional Transit Authority (GATRA).

Population

Middleborough is a rural-suburban community with a population of 24,505 (American Community Survey 5-Year Estimates [2013-2018]). Between 2013 and 2018, the U. S. Census indicates that Middleborough's total population increased by 6%, with the largest population growth occurring in the 65 to 74-year-old age group (49.8%). Like many other SRPEDD region communities, Middleborough's population is growing older, which demonstrates the importance of Complete Streets treatments in encouraging healthy and active lifestyles.

Land Use

The majority of the town's residential development is low density single family homes; however, the downtown area has a large supply of two-family and apartment units on smaller lots. The downtown provides a mix of service based commercial entities and institutional uses - all accessible by the extensive sidewalk network. Generally speaking, the larger commercial and industrial land uses are found along the major roadway corridors (Route 28 and Route 105) and near the I-495 interchanges. Middleborough has an extensive amount of wetland and agricultural areas, resulting in a large amount of undeveloped land. The majority of Middleborough's municipal uses, such as the Town Hall, Fire Department, Post Office, and Schools are located in the downtown area.

Areas of Activity

Middleborough's size makes it challenging to have sidewalks, bike lanes, and transit service on every street. Therefore, this needs assessment focused on the following three areas.

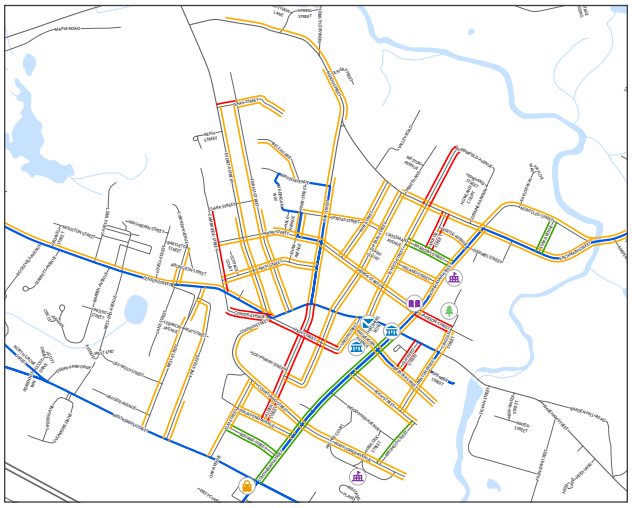


Figure 2: "Downtown Area"

"Downtown Area"

This area generally includes roadways within a 1/2 mile from the Town Hall. As previously mentioned, this area includes the majority of the town's institutional uses and a number of commercial entities. Trip generators in this area include the Town Hall, Post Office, Library, Churches, Schools, Playgrounds, and the many small service based shops in the downtown (barber shop, tailor, coffee shop, gas station, restaurant, etc.).

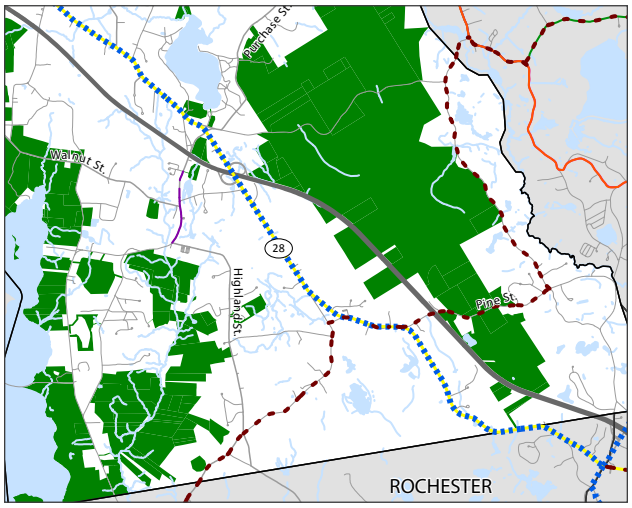


Figure 3: "South Middleborough"

"South Middleborough"

This area generally includes the I-495 Rock Village exit south to the Rochester town line, east to the Carver town line, and west to the Lakeville town line. It is a quiet, rural area with a large amount of protected open space. This area is home to the Rocky Gutter Wildlife Management Area, the Stuart F. Morgan Conservation Area, the Weston Forest, and Rock Village. Due to its relative seclusion and lower density development, many of the roadways in this area are popular with bicyclists.

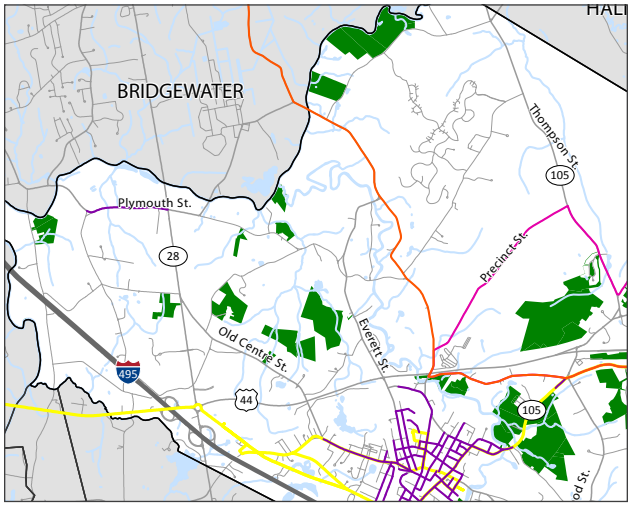


Figure 4: "North Middleborough"

"North Middleborough"

This area generally includes the section of town from Route 44 north to the Bridgewater town line and east to the Carver town line. Similar to the "South Middleborough" area, it has a rural, small town feel with the main exception being near the Middleborough Rotary, where large industrial uses exist. The Titicut Green has many of the typical New England characteristics that Complete Streets investments compliment.

Goals & Objectives

The goals and objectives of this Complete Streets Needs Assessment directly supported the commitments in the town's Complete Streets Policy.

Overall Goal

The overall goal was to accommodate all road users regardless of age, ability, income level and mode of transportation. To that end, this Need Assessment focused on identifying areas in town that were in need of improvements, determining the type of improvement(s), and to providing a strategy for implementation.

Key Objectives

The key objectives of this Complete Streets Needs Assessment included the following:

1) Improve Safety

Users of the roadway want to feel safe and comfortable when using that facility. That feeling of safety is essential for walkers and bicyclists because of the risk associated with their exposure to traffic. Additionally, riders of public transportation need safe and accessible ways to access the service and secure places to wait for the bus. Therefore, improving safety is a primary objective when developing Complete Streets investments.

Figure 5: Example of Connectivity Issue

2) Provide/Enhance Connectivity

Proper connectivity is essential for a network to operate effectively and efficiently. New England roadways don't always allow for all modes of travel to connect in a safe and comfortable way and therefore create barriers for use. Moreover, these uses/users may change along the network (transition from a bicyclist to a transit rider or from a transit rider to a walker) due to a variety of factors and mitigating these physical or operational challenges is critical for that connectivity.

3) Increase Mobility

Increasing mobility of users, especially those with disabilities or the aging population is a primary objective of Complete Streets. A pedestrian network that doesn't have properly designed curb ramps or a public bus route shelter that doesn't have the proper sized landing area and connection to a nearby sidewalk, limits mobility for many users and therefore limits use. Complete Streets is focused on identifying and solving these issues.

4) Enhance Livability & Sustainability

Many federal, state, and private agencies and organizations define Livability a bit differently but all have the same principle in mind. Livability is a comprehensive evaluation of a community's characteristics that describes the values of living in a certain place. In other words, it is a way to describe components such as the variety in housing types, the type and quantity of nearby services, amount and character of recreational opportunities and social interactions, and, transportation options. Communities that have better "Livability" tend to be more "Sustainable", allowing them to adjust to economic fluctuations, housing market declines, etc. Complete Streets plays a major role in this because it allows for multi-modal use - variety is the key ingredient.

Figure 6: Livable Environment

5) Employ Context Sensitivity

Context sensitivity is another important component for Complete Streets practitioners in New England. Many of the roadways in this region were built for the automobile and roadside elements such as stone walls, large shade trees, embankments, wetlands, etc. limit future expansion. Additionally, there are many areas in communities that do not warrant full Complete Streets designs that include elements such as sidewalks on both sides of the road with two bike lanes. They simply may not have the demand found in other areas in a community. Therefore, rather than creating a project that clear cuts a large amount of trees or negatively impacts adjacent wetlands, installs infrastructure that doesn't fit the demand, a designer must focus those Complete Streets elements that fit the context of that particular area.

6) Focus of Cost Effectiveness

One of the more important factors in Complete Streets is cost effectiveness. Similar to context sensitivity, a designer must focus on factors such as the physical barriers to adding non-motorized accommodations to the roadway, land ownership issues, and the impact to existing public utilities (electric lines, water and wastewater lines, gas lines, etc.). These items can exponentially increase project costs and reduce the chances that funding would be able to cover the implementation costs.

These objectives helped shape the Complete Streets Evaluation criteria which was used to score each project.

Methodology and Results

Project Process & Phases

SRPEDD completed this Complete Streets Needs Assessment in the following four steps:

1 *Review of Town Plans/Documents*

The first step included a thorough review of the town's municipal documents (e.g. Master Plan Findings and Alternatives Report, Open Space & Recreation Plan, Community Development Strategy) to identify areas of focus, to reveal town priorities, and to highlight common goals.

***** Stakeholder Meeting: Project Summary & Needs Discussion *****

2 *Existing Conditions Evaluation*

The second step included an extensive existing conditions evaluation of the pedestrian, bicycle, and transit networks throughout the summer months of 2019. SRPEDD staff collected data about the roadway networks in Middleborough that helped identify gaps and needs as well as future project locations and their required components. More information regarding the elements of this survey are provided in the following sections.

***** Public Meeting #1: Existing Conditions *****

3 *Project Development/Cost Estimation*

The third step included a summary of the Existing Conditions Evaluation and the public input, some initial findings, and a draft list of projects (provided in a Story Map). The town reviewed the draft list of projects before they were released for public comment.

***** Public Meeting #1: Draft Prioritization Plan *****

4 *Project Evaluation & Prioritization*

The third step included scoring the draft projects using the evaluation criterion (scoring system based on value of improvement), developing cost estimates, ranking the projects in the town's final Prioritization Plan, and finally, producing this Complete Streets Needs Assessment report.

1 Review of Town Plans/Documents

This assessment included the review of several of Middleborough's relevant planning documents. Those included the town's Master Plan Findings and Alternatives Report (2002), the South Coast Rail Corridor Plan Five-Year Update of Community Priority Areas Report (2013), the Open Space & Recreation Plan (2008), and the Community Development Strategy (2008).

Master Plan Findings and Alternatives Report (2002)

Middleborough's Master Plan was developed as a 20-year policy document that would help the town manage growth, preserve its natural resources, maintain the public facilities and services, and connect the town in a meaningful way. Although dated, goals of the Transportation & Circulation section such as (1) Ensure adequate and convenient access to major commercial and industrial areas, and (2) Support alternative modes of transportation such as bikeways and pedestrian paths that connect the Town together, provide justification for Complete Streets investments.

South Coast Rail Corridor Plan Five-Year Update of Community Priority Areas Report (2013)

This report presented the result of a community-driven land use planning exercise that updated the 2008 Priority Development Areas (PDAs) and Priority Protection Areas (PPAs) in the town of Middleborough. The town identified seven (7) Priority Development Areas, four (4) Priority Protection Areas and seven (7) Combined Priority Development & Protection Areas. Complete Streets investments are focused on these areas as a way to bolster economic development and to encourage active and passive recreation.

Open Space & Recreation Plan (2008)

Middleborough's Open Space & Recreation Plan focused on preserving the traditional, rural, small-town feel, protecting surface water, open space, and animal habitats, connecting the residents to the town's natural resources, and protecting the cultural and historical assets. The plan noted that multi-use trails are needed to access public open space and woodlands and indicated that future initiatives should focus on promoting non-motorized modes of transportation that could eventually link to adjoining towns.

Community Development Strategy (2008)

Middleborough's Community Development Strategy focused on maintaining a sustainable, livable, and safe community for all town residents. Key goals/objectives from that report include: (1) Improve handicapped accessibility throughout Middleborough public ways and public facilities, (2) Work with the Housing Authority and DPW to make street and sidewalk improvements on Benton Avenue, and (3) Complete water main, drainage, parking lot, street and sidewalk infrastructure improvements in the Town Center.

Stakeholder Meeting: Project Summary & Needs Discussion

On May 8, 2019, SRPEDD met with the Middlborough Complete Streets Working Group to summarize the project process, note key milestones, solicit input from town officials, and to highlight specific problem areas in town.

The Complete Streets Working Group included:

- Robert Nunes, Town Manager
- Andrew Sukeforth, Assistant to the Town Manager
- Chris Peck, Director, Department of Public Works
- Leeann Bradley, Town Planner
- Janis Akerstrom, Director, Economic & Community Development
- Patricia Cassidy, Conservation Agent
- Robert Buker, Health Officer
- Jackie Crowley, Middleborough Gas & Electric

Following a brief presentation about the process, the Working Group marked up maps that showed items such as, areas with safety concerns, popular bike routes, sidewalks that need improvements, etc. Figure 7 show the results of that exercise.

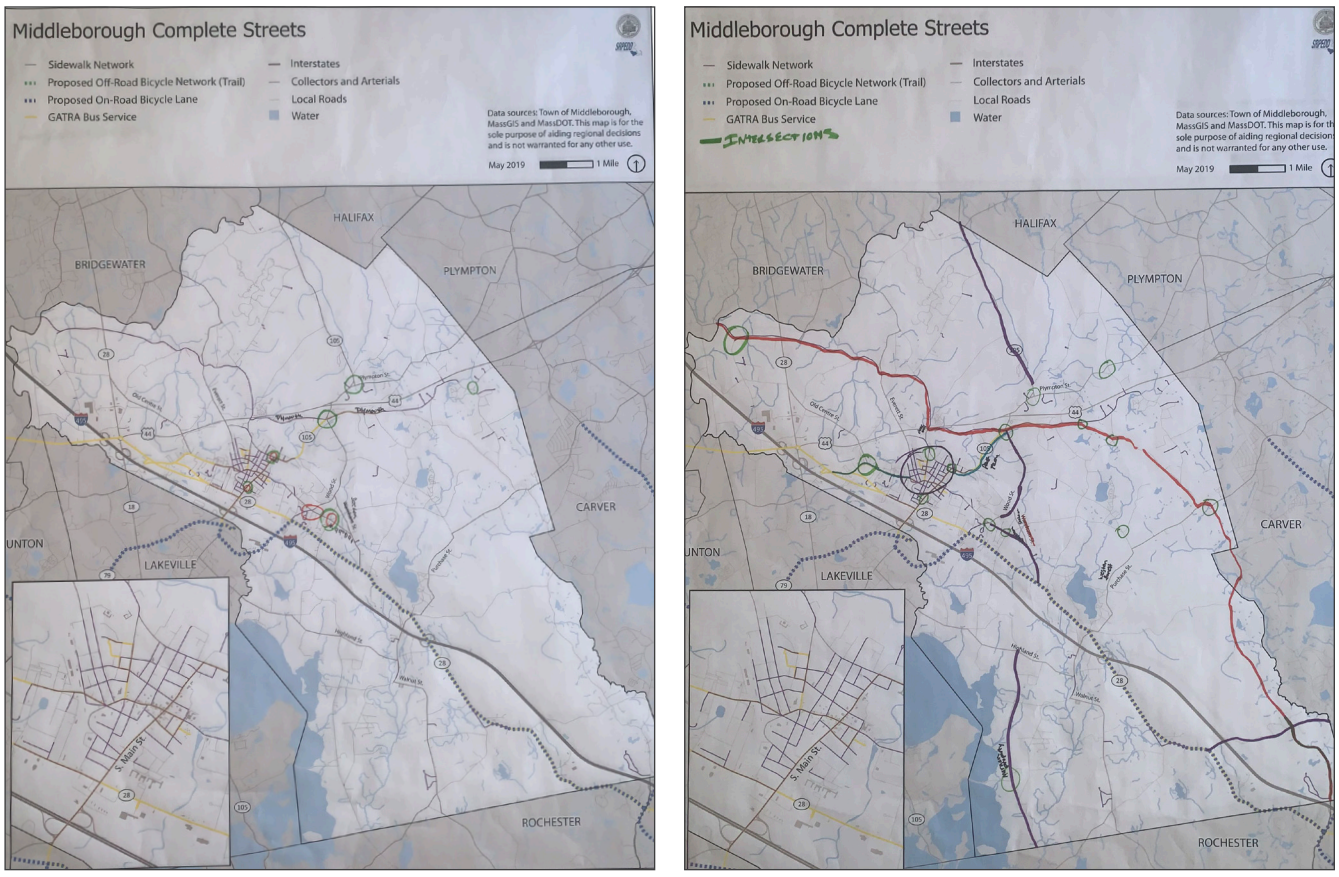


Figure 7: Maps from the Complete Streets Working Group Meeting (May, 2019)

2 Existing Conditions Evaluation

A thorough survey of the town's pedestrian, bicycle, and transit network was conducted in the Summer of 2019. It began with a simple "verification" of the existing network presented in the MassDOT Road Inventory File confirming features such as sidewalk widths, material, and conditions; shoulder widths, material and conditions; the presence of street trees and roadside lighting; and crosswalk presence and conditions. The following sections briefly describe the analysis completed as part of the evaluation and following sections highlight the results.

Network Gap Analysis

SRPEDD analyzed the most recent and available bicycle, pedestrian, and transit facilities GIS data from the town and other relevant State entities to identify and verify existing gaps in those networks. Once the GIS network was established, staff then performed field surveys to verify the information and edited the file where needed. Lastly, staff documented the gap characteristics (length, general pavement conditions, adjacent land characteristics, and land use) and documented the feasibility of fixing the network issue.

American with Disabilities Act (ADA) Survey

SRPEDD performed field surveys of ADA accommodations that included, but were not limited to: measuring existing sidewalk widths, identifying the number of sidewalk obstructions, surveying sidewalk surface conditions, and quantifying and surveying curb ramps (location, size, and physical components).

Bicycle, Pedestrian, and Transit Infrastructure Evaluation

SRPEDD performed a Bicycle, Pedestrian and Transit Infrastructure Evaluation in order to document the conditions of those facilities. Specifically, that evaluation included, but was not limited to: documenting the condition and measuring the widths of roadway shoulders, identifying the presence and type of street lighting, identifying and evaluating the locations and conditions of transit facilities, and documenting signage.

Roadway & Intersection Crash Analysis

SRPEDD utilized MassDOT GIS crash data (2017-2019) to identify safety issues along all roadway corridors and at all unsignalized and signalized intersections in Middleborough. This information was used to conduct a thorough three-year crash analysis that included a review of any reported bicycle and pedestrian crashes.

Roadway Network

In general, Middleborough's roadway network is typical of the rural/suburban communities in the SRPEDD region. It includes a pavement surface that has either a double or single yellow centerline with no painted edgeline (formal shoulder demarcation) that either meets a asphalt berm or a grassy or vegetated shoulder and does not include a formal drainage system or a sidewalk. Lane widths are generally 10-12 feet wide and the immediate land adjacent to the pavement surface can include large shade trees, dense vegetation, step drop-offs, stone walls, and utility poles.

Figure 8: Everett Street (looking northbound)

That said, Middleborough has number of roadways within a 1/2 mile of the "Downtown Area" that have sidewalks (sometimes on both sides of the road) with grass buffers, asphalt or granite curbing, and formalized drainage. As described on page 4, this area includes many of the town's institutional uses (town hall, fire department, post office, elementary schools, recreation areas, etc.) and a number of commercial entities along Center Street and Wareham Street. This area serves as a good "starting point" for Complete Streets investments focused on improving aging infrastructure and expanding the existing sidewalk network and create a future formal bicycle network.

Figure 9: Anderson Avenue (looking westbound)

Jurisdiction

According to the 2018 MassDOT Road Inventory File, Middleborough has a total 207.99 centerline miles of roadway. Approximately 155.59 centerline miles (75%) of the total are roadways under town jurisdiction (making them eligible for the Complete Streets program) while 39.04 miles are under MassDOT jurisdiction (Route 18, Route 28, Route 44) and 13.36 miles are unaccepted roadways (see Figure 11 on page 13). Due to the Complete Streets Funding Program eligibility criteria, SRPEDD only performed the existing conditions evaluation on roadways under town jurisdiction.

Chapter 90 Funding

Middleborough receives approximately $873,000 per year in state aid (also known as Chapter 90 funds) to help maintain the locally owned roadways in town. The amount of funding that is received through the program combined with the increasing costs of projects generally provides for a limited number of projects each year. Simply said, there are more needs than there are funds to address them. Figure 10 shows Middleborough's allotment of Chapter 90 funds from the past 5 years (FY15 to FY19). It should be noted, that FY15 was higher because the statewide Chapter 90 funding was $100,000 more than the other fiscal years.

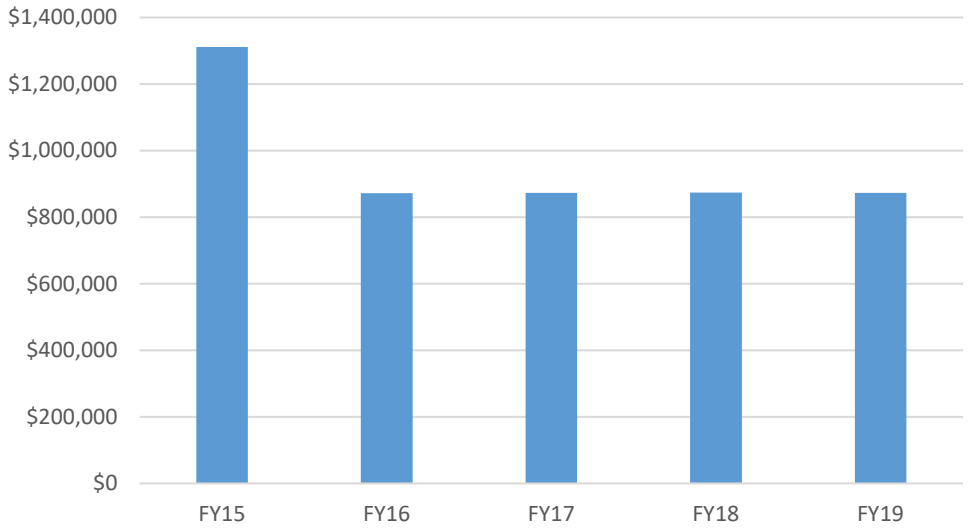


Figure 10: Town of Middleborough's Chapter 90 apportionments over the last five fiscal years.

Considering the limited amount of Chapter 90 funds received each year, Middleborough is fortunate to be participating in the Complete Streets Funding Program in order to address much needed multi-modal improvement projects.

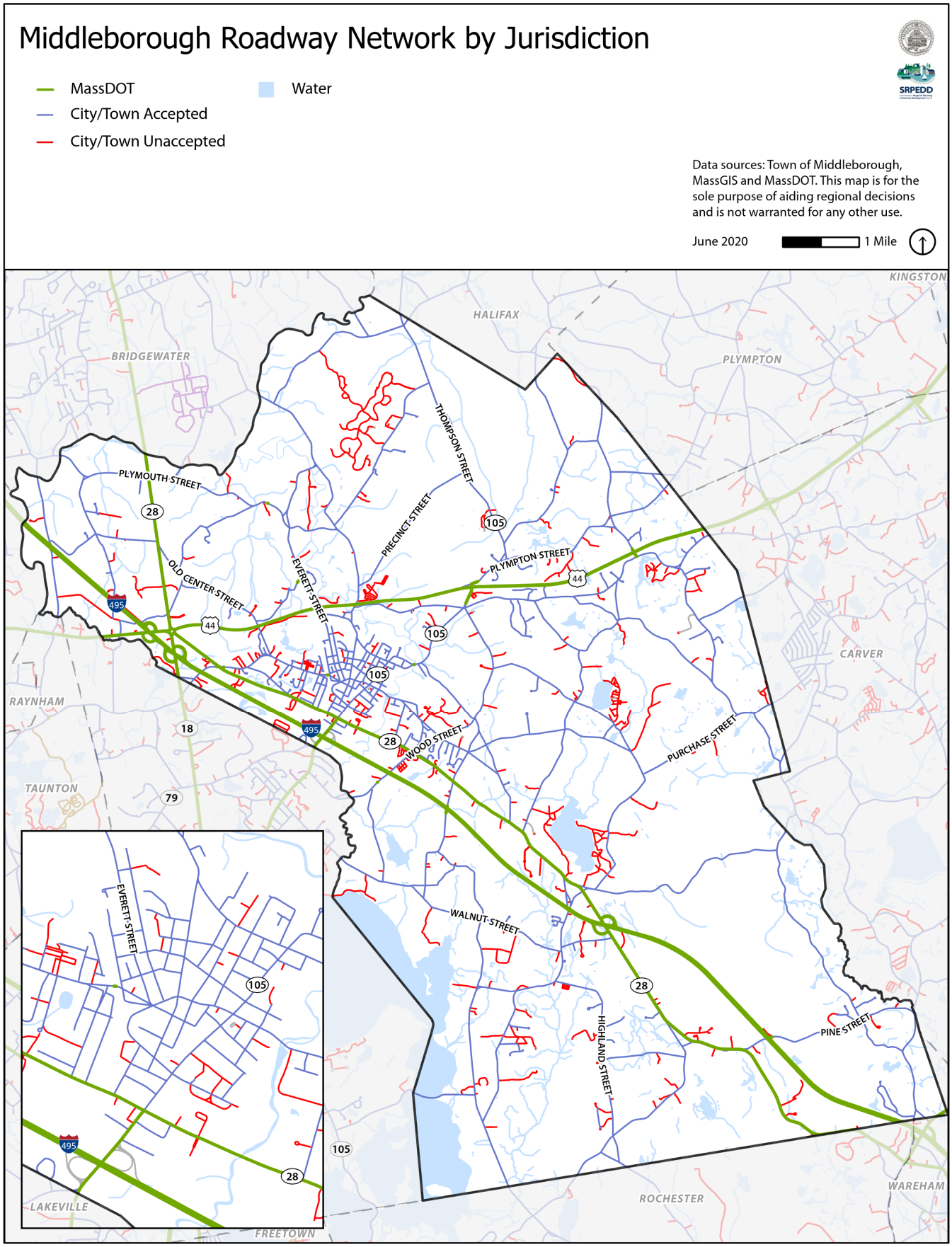


Figure 11: Town of Middleborough Roadway Network by Jurisdiction

Posted Speed Limits

In general, recorded speed zones on the surveyed roadways were either 30mph (many of the side roads like Benton Street, School Street, and Street) or 35mph (main roads like East Main Street, Everett Street and Wood Street). The Manual on Uniform Traffic Control Devices (MUTCD) states that shared lane markings or "sharrows" should not be applied to roadways with posted speed limits over 35mph. This is important in Middleborough because the many of the town owned roadways that cannot physically accommodate bicycle lanes (due to roadside constraints) are candidates for these shared-use markings. This type of improvement is a helpful way to indicate to motorists to expect bicyclists to be sharing the road and to take care when passing is needed.

Roadway & Intersection Safety

Middleborough had two town-owned intersections or areas that appeared on MassDOT's Highway Safety Improvement Program (HSIP) Vehicle Crash Clusters 2015-2017 map. Those intersections were South Main Street & Courtland Street/Mayflower Avenue and Thomas Street & Sachem Street. In recent years, the town has made improvements at both of those locations in order to improve safety. Specifically, the South Main Street & Courtland Street/Mayflower Avenue intersection received new signage, high-visibility crosswalks and a reduction of on-street parking to improve sight distances. Meanwhile, the Thomas Street & Sachem Street intersection was converted to a 4-way stop control from the previous 2-way stop configuration - reducing the high speed conflicts of the past. Middleborough did not have any town-owned locations on the Bicycle or Pedestrian Crash Cluster 2008-2017 map or on MassDOT's 2016 Top 200 Crash Locations Report.

That said, the crash analysis performed by SRPEDD as part of this assessment, using the last three years of available crash data (2017-2019) did highlight a few intersections that experienced elevated numbers of crashes (see below); however, the majority of the crashes resulted in property damage only. In the three year period, there were a total of two crashes that involved a pedestrian at town owned intersections (both at the North Main Street & Center Street intersection) and none that involved a bicyclist.

SRPEDD Crash Analysis - Elevated Crash Locations (2017-2019):

1.) North Main Street & Center Street/Wareham Street (24 crashes)
2.) South Main Street & Courtland Street/Mayflower Avenue (21 crashes)
3.) Center Street & Oak Street (14 crashes)
4.) North Main Street/East Main Street & North Street (12 crashes)
5.) East Main Street & Wood Street/Plymouth Street (11 crashes)

All crashes that occurred between 2017 and 2019 in Middleborough are shown on Figure 12: Roadway & Intersection Map on Page 15.

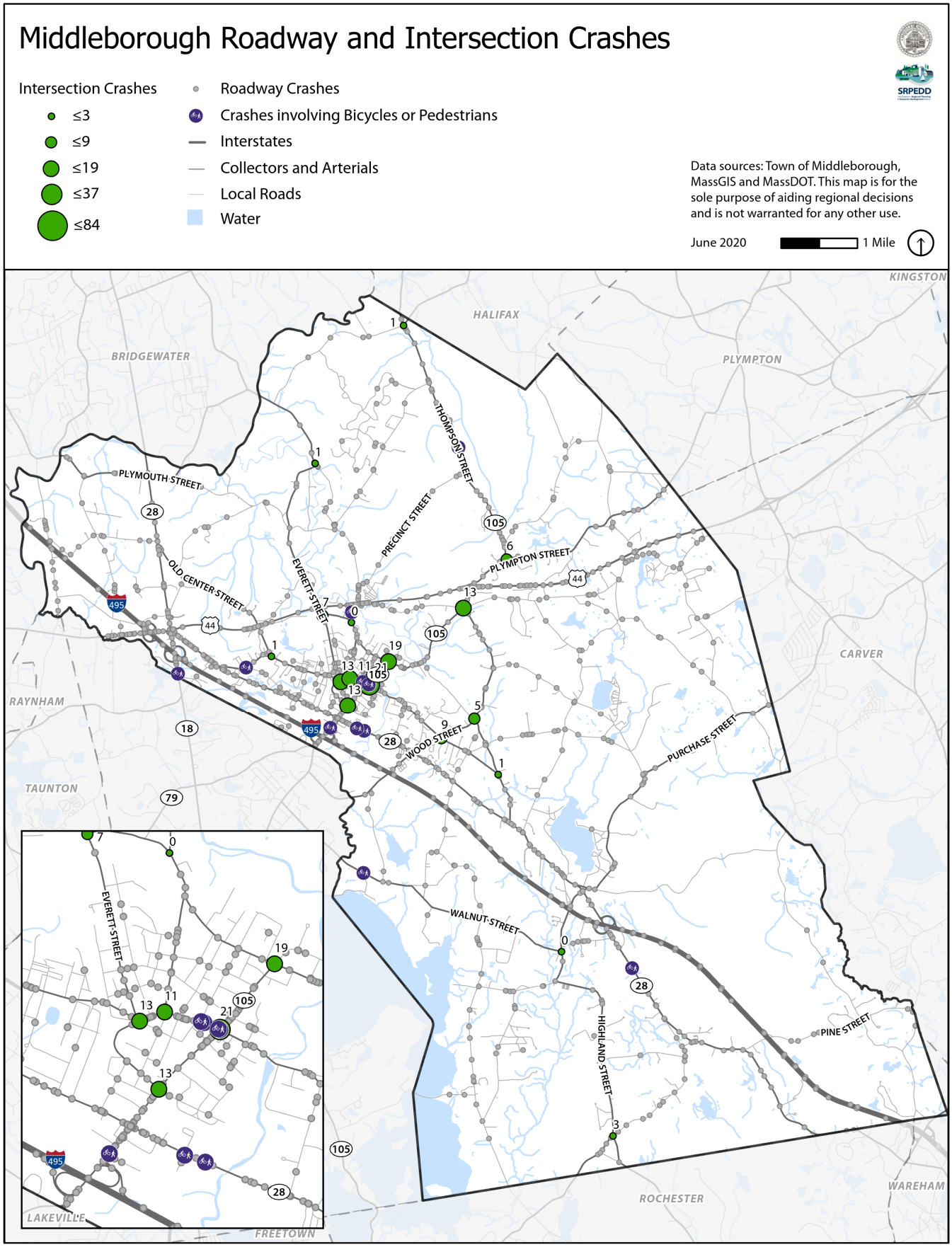


Figure 12: Town of Middleborough Roadway & Intersection Crashes (2017-2019)

Pedestrian Network

The pedestrian network analysis consisted of verifying the existence of sidewalks, confirming their locations and extents, and analyzing their condition and compliance with the Americans with Disabilities Act (ADA) of 1990 and the Massachusetts Architectural Access Board (MAAB) regulations. The following sections highlight the results of SRPEDD's pedestrian network analysis.

Sidewalks

Middleborough's current sidewalk network is generally concentrated in the "Downtown Area" (1/2 mile area around the Town Hall). The majority of those sidewalks generally have hot mix asphalt walk surfaces with either asphalt or granite curbing or have a grass buffer with no vertical curbing. That said, there are some sidewalks (School Street, Pierce Street) that have concrete walk surfaces with granite curbing. There are only a few sidewalks in town that are located outside of the "Downtown Area"; (1) a nearly one-mile section in "North Middleborough" at the Titicut Green, (2) a 600 foot section on East Main Street near the Wood Street/Plymouth Street intersection, (3) a 2,800 foot section on Carmel Street and Plymouth Street in East Middleborough, (4) a 3,500 foot section on Wood Street from Route 28 to Tiger Drive, and, (5) a 2,400 foot section on Miller Street from approximately Smith Street to Highland Street. Meanwhile, there are only a handful of gaps in the existing "Downtown Area" sidewalk network - those areas include small sections of Frank Street, North Street, Cambridge Street, and Everett Street.

Figure 13: School Street sidewalk

Figure 14: Benton Street sidewalk

Overall, the condition of the existing sidewalks in Middleborough vary (see Figure 15 on Page 17). Some are newer and in good condition with proper ADA accessibility (Pierce Street - from North Main Street to Oak Street, School Street - from Center Street to Pierce Street, and Center Street - from Oak Street to Everett Street), whereas others (Benton Street - from Rock Street to Wareham Street, Everett Street - from Center Street to Isaac Street, and Mayflower Avenue - from South Main Street to Mitchell Street) are older and in fair to poor condition and do not provide proper ADA accessibility (inadequate clearance width, lack of proper curb ramps, trip hazards, and excessive slopes).

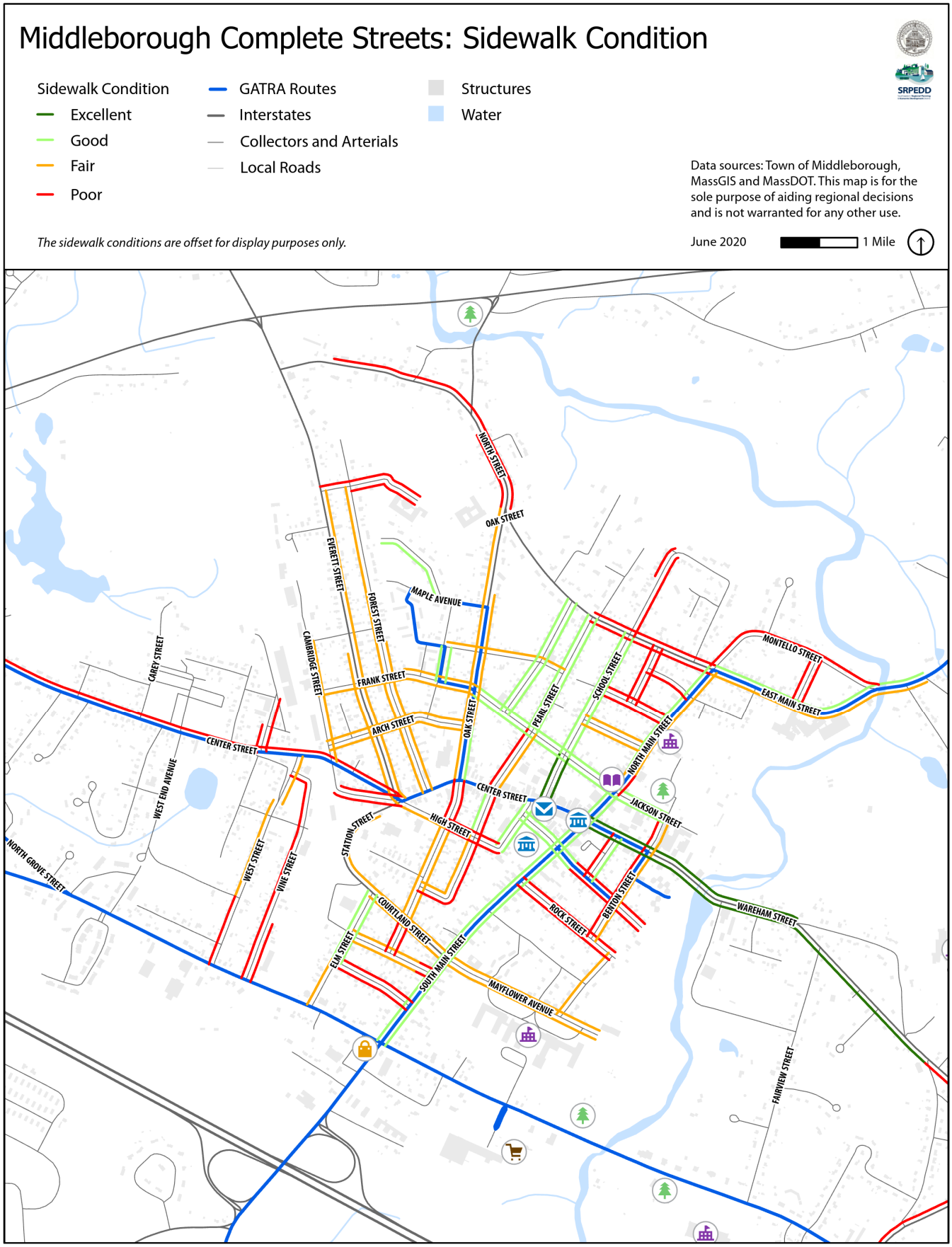


Figure 15: Town of Middleborough Sidewalk Conditions

Crossings

During the existing conditions evaluation, SRPEDD noted that the town uses the "standard" type crosswalk. The majority of the existing crossing pavement markings were in good to fair condition. Although the "standard" style is an accepted, safe, and widely used style for crosswalks, the high visibility "continental", "zebra" or "ladder" type (as shown in Figure 17) have been shown to be more effective.

Figure 16: "Standard" style crosswalks on South Main Street

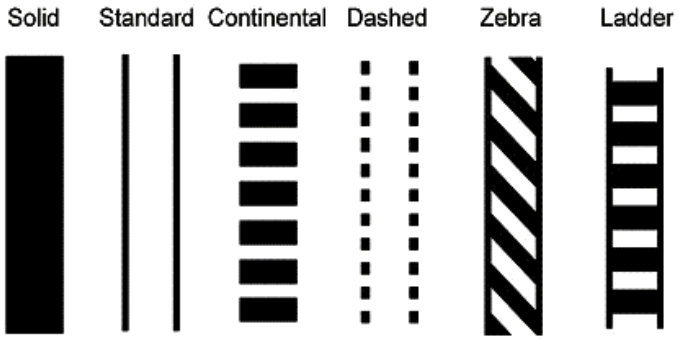


Figure 17: Sidewalk Types

Numerous studies been conducted to determine the best type of crossing treatment; however, at this point, the Manual on Uniform Traffic Control Devices (MUTCD) has yet to determine the preferred treatment. Nevertheless, those studies have shown that drivers were more likely to see the "continental", "zebra", and "ladder"; therefore, employing one of them for the entire town is highly recommended.

Curb Ramps

As described in the Americans with Disabilities Act (ADA) of 1990 and the Massachusetts Architectural Access Board (MAAB) Regulations (521 CMR 21), curb ramps are required when a pedestrian walkway or route crosses a street. There are many design requirements for curb ramps but most notable are the: (1) location, (2) slope, (3) transitions (level landing, flared sides), and (4) accessible features (tactile warning panel). Many of Middleborough's curb ramps comply with the ADA and MAAB requirements (Pierce Street, School Street); however, there are many that need to be upgraded. Each project included in the Prioritization Plan includes either installing or upgrading all necessary curb ramps. Figure 18 shows an example of missing curb ramps along the sidewalk on North Main Street.

Figure 18: Curb ramps are needed

Bicycle Network

A bicycle network is an assemblage of facilities that enhance the safety and comfort of bicyclists. Facilities can generally be separated into three groups: (1) Separate use paths and separated bicycle lanes (off-road facilities), (2) On-road bicycle lanes, (3) Designated/signed routes and shared-use pavement markings or "sharrows" (see Figure 19). For this assessment SRPEDD identified and analyzed Middleborough's bicycle network and summarized them into either the "on-road" or "off-road" type facilities.

Figure 19: Shared-use marking or "Sharrow"

On-Road Bicycle Conditions

Middleborough does not have a formal "on-road" bicycle network. In other words, there are no marked bike lanes or shared use pavement markings ("sharrows") in town. Currently, bicyclists must use either the formal painted shoulder (if present) or the edge of the travel lane and "share the road" with motorized vehicles; however, there currently isn't signage that indicates this situation. For example, Route 28 in Middeborough generally has a 3 to 5 foot shoulder where bicyclists can ride; however, there is not signage indicating their presence. As Middleborough begins to create this formal bicycle network (see on Figure 22 on Page 21), Route 28 will serve as one of the primary north-south routing options; therefore, a partnership with MassDOT will be necessary as they own and maintain that facility.

Figure 20: Bicycle Lane Example

Off-Road Bicycle Conditions

Although Middleborough has a number of open spaces with walking trails, there are currently no dedicated off-road bicycle paths or trails in town. In other words, there aren't trails in town that were specifically made just for bicyclists. For example, one of the more popular locations in town for walking and biking is the Pratt Farm, located on East Main Street just outside of the "Downtown Area". This location has an extensive trail network that allows for both pedestrians and bicyclists; however, there are locations that make sharing the network challenging.

Transit Network

Fixed-Route Bus Service

Middleborough has a moderate, yet important transit network via service provided by the Greater Attleboro/ Taunton Regional Transit Authority (GATRA). Specifically, the town is serviced by three routes: (1) the Middleborough/Taunton Connection, (2) the Downtown Middleborough Shuttle, and (3) the Wareham/Lakeville Train Connector. The Middleborough/Taunton connection provides service along Routes 28, 44, and 105 between the Middleborough Council on Aging on Plymouth Street to the GATRA Terminal in Taunton. Meanwhile, the Downtown Middleborough Shuttle provides service with in the "Downtown Area" (described in this report), connecting the Middlebury Arms residential development on Wood Street to the Southeast Health Center on Route 28. Scheduled stops on that route include the Hannaford's supermarket, Town Hall, the Riverview apartments (Middleborough Housing Authority), the Nemasket Street apartments, the Acorn Hill apartments, and Trucchi's supermarket. Lastly, the Wareham/Lakeville Train Connector provides service along Route 28 between Cranberry Plaza in Wareham and the Middleborough/Lakeville MBTA Commuter Rail station on Route 105. GATRA primarily operates on a "flag stop" system, where riders simply "flag down" the bus to board (where it is safe). This type of system makes it challenging to improve connections to transit; however, those areas adjacent to the existing network are included in the project list to ensure that folks utilizing the transit service can access it as it passes by. The entire Bicycle, Pedestrian, and Transit Network in Middleborough is shown on Figure 22 on Page 21.

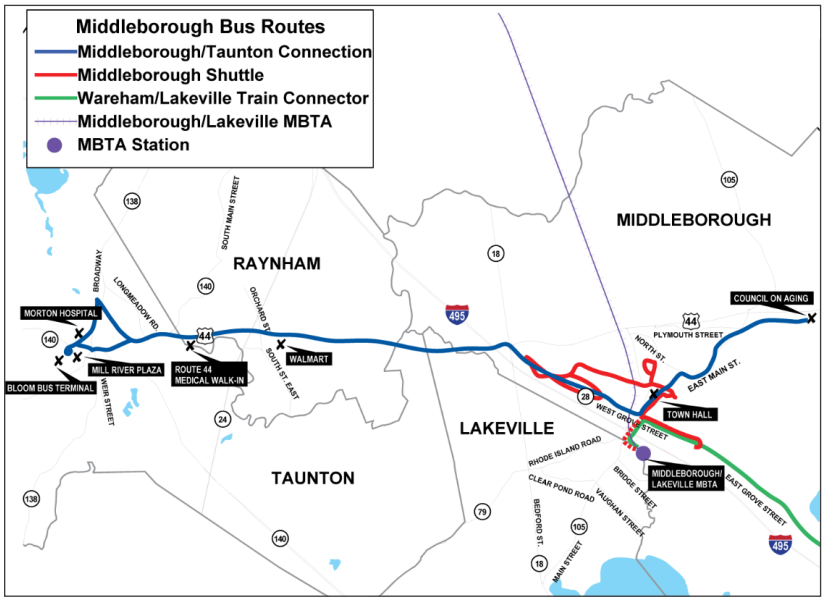


Figure 21: GATRA service in Middleborough (Source: GATRA.org)

MBTA Commuter Rail

Since 1997, following the opening of the Old Colony Commuter Rail Line, Middleborough has benefited from having regular commuter train service to Boston. The existing station is currently located just over the town line in Lakeville; however, with the introduction of South Coast Rail (service to Fall River and New Bedford), Middleborough will now have a brand new station located in town, at the former Chase Chevrolet dealership site. This new station location allows for better connections to existing neighborhoods in the "Downtown Area".

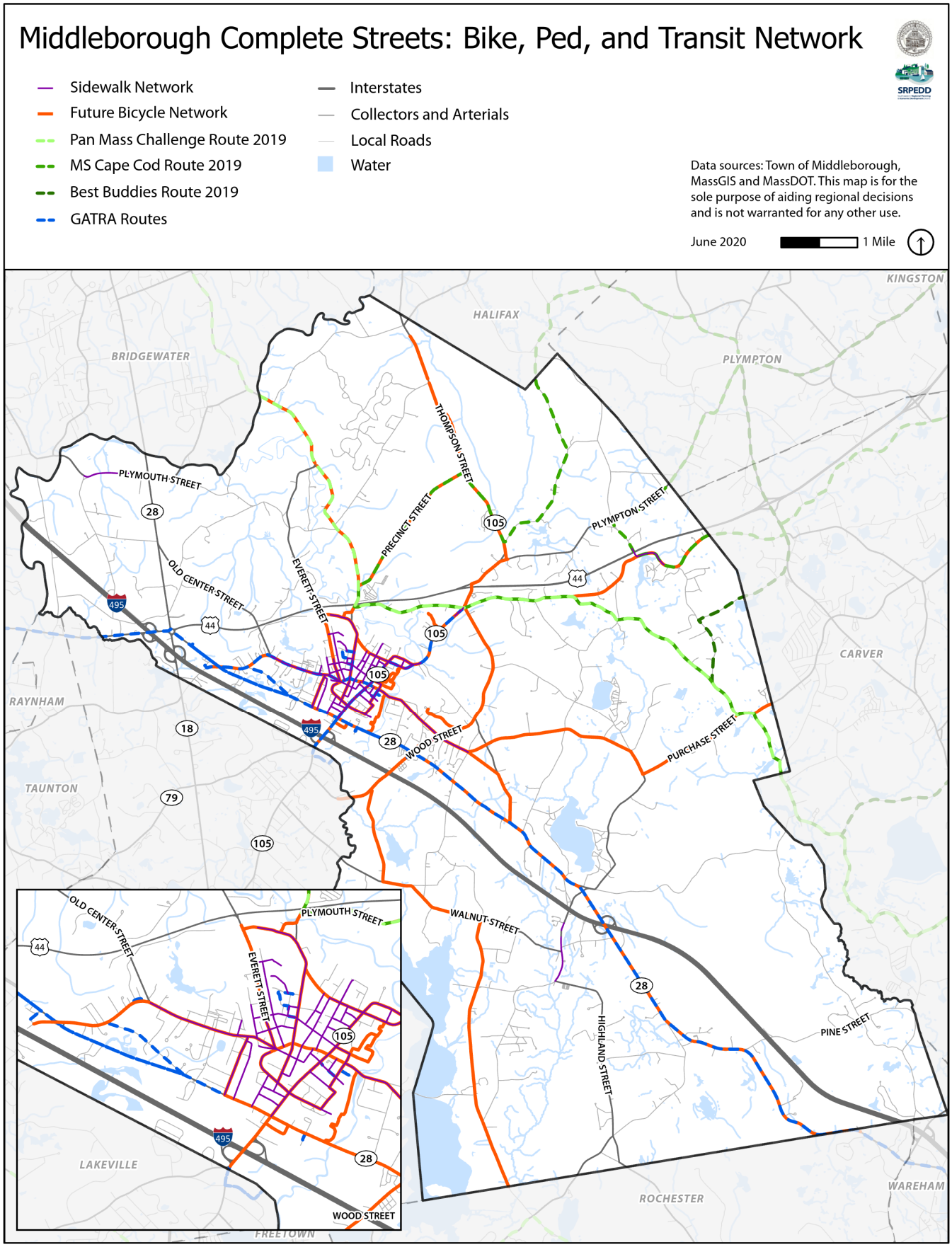


Figure 22: Town of Middleborough Bike, Ped, and Transit Network

Public Input: Interactive Input Map

The project team used an interactive input map (WikiMap) embedded on the project webpage as an alternative for residents who couldn't attend an in-person event or who prefer to submit comments electronically. Over the course of 12 months, a total of 108 comments were provided (see Figure 23), including items such as intersection safety concerns, bicycling opportunities, to curb ramp issues.

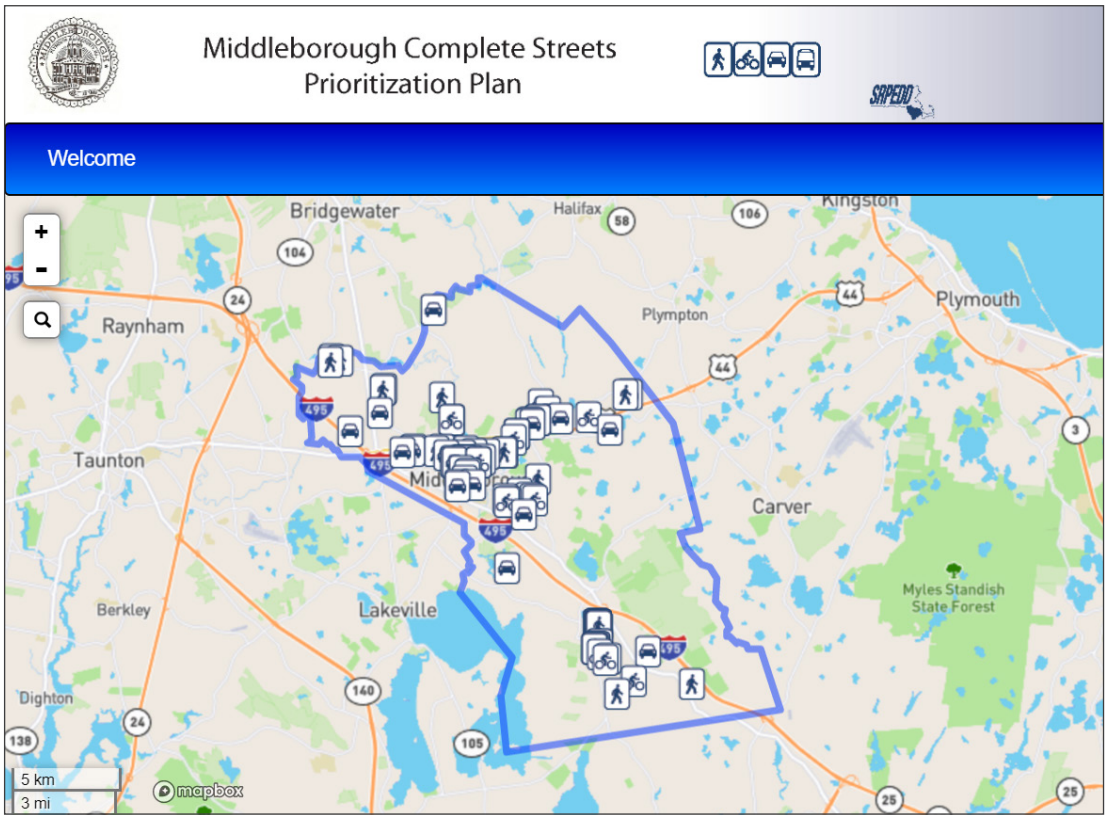
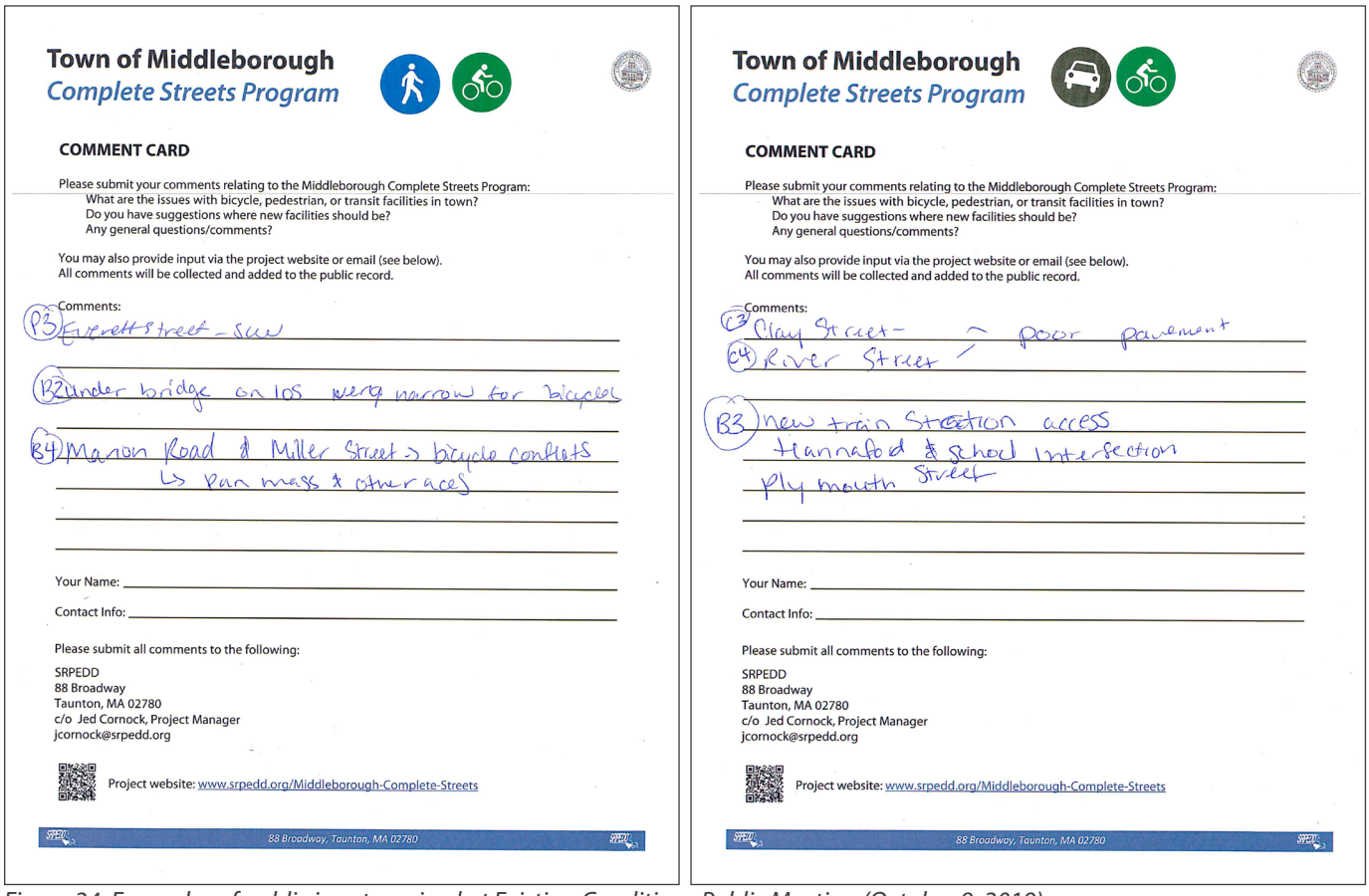


Figure 23: Interactive Input Map (Source: WikiMap)

It should be noted that the majority of the comments submitted were located within the "Downtown Area" described earlier in this report. Additional areas of focus east of the "Downtown Area", in "North Middleborough" - near the Titicut Green, and in "South Middleborough" - near Highland Street. Many of the comments described safety concerns for bicyclists and pedestrians - most indicating issues related to the lack of infrastructure.

Public Meeting #1: Existing Conditions

The first public meeting was held on October 8, 2019 at the Town Hall. At the meeting, following a summary of existing findings, participants placed stickers on large paper maps to indicate the type of issue (safety, accessibility, network gap, poor infrastructure, etc.), its location, and details about a possible improvement. Additionally, attendees were asked to participate in a preference survey on different types of multi-modal accommodations (e.g. each user has their own space, bicyclists share the off-road facility with pedestrians, all users share the same space). Examples of public input is shown on Figure 24 (below) and all public comments (in-person and online) are shown on Figure 25 on Page 24.



Town of Middleborough
Complete Streets Program

COMMENT CARD

Please submit your comments relating to the Middleborough Complete Streets Program:
What are the issues with bicycle, pedestrian, or transit facilities in town?
Do you have suggestions where new facilities should be?
Any general questions/comments?

You may also provide input via the project website or email (see below).
All comments will be collected and added to the public record.

Comments:

P3 Everett Street - sucks

P2 Under bridge on 105 very narrow for bicycles

P4 Marion Road & Miller Street -> bicycle conflicts b/c Pan mass & other races

Your Name: _____

Contact Info: _____

Please submit all comments to the following:

SRPEDD
88 Broadway
Taunton, MA 02780
c/o Jed Cornock, Project Manager
jcornock@srpedd.org

Project website: www.srpedd.org/Middleborough-Complete-Streets

88 Broadway, Taunton, MA 02780

Town of Middleborough
Complete Streets Program

COMMENT CARD

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What are the issues with bicycle, pedestrian, or transit facilities in town?
Do you have suggestions where new facilities should be?
Any general questions/comments?

You may also provide input via the project website or email (see below).
All comments will be collected and added to the public record.

Comments:

C3 Clay Street - ~ poor pavement

C4 River Street /

B3 new train station access
Plymouth & school intersection
Plymouth Street

Your Name: _____

Contact Info: _____

Please submit all comments to the following:

SRPEDD
88 Broadway
Taunton, MA 02780
c/o Jed Cornock, Project Manager
jcornock@srpedd.org

Project website: www.srpedd.org/Middleborough-Complete-Streets

88 Broadway, Taunton, MA 02780

Figure 24: Examples of public input received at Existing Conditions Public Meeting (October 8, 2019)

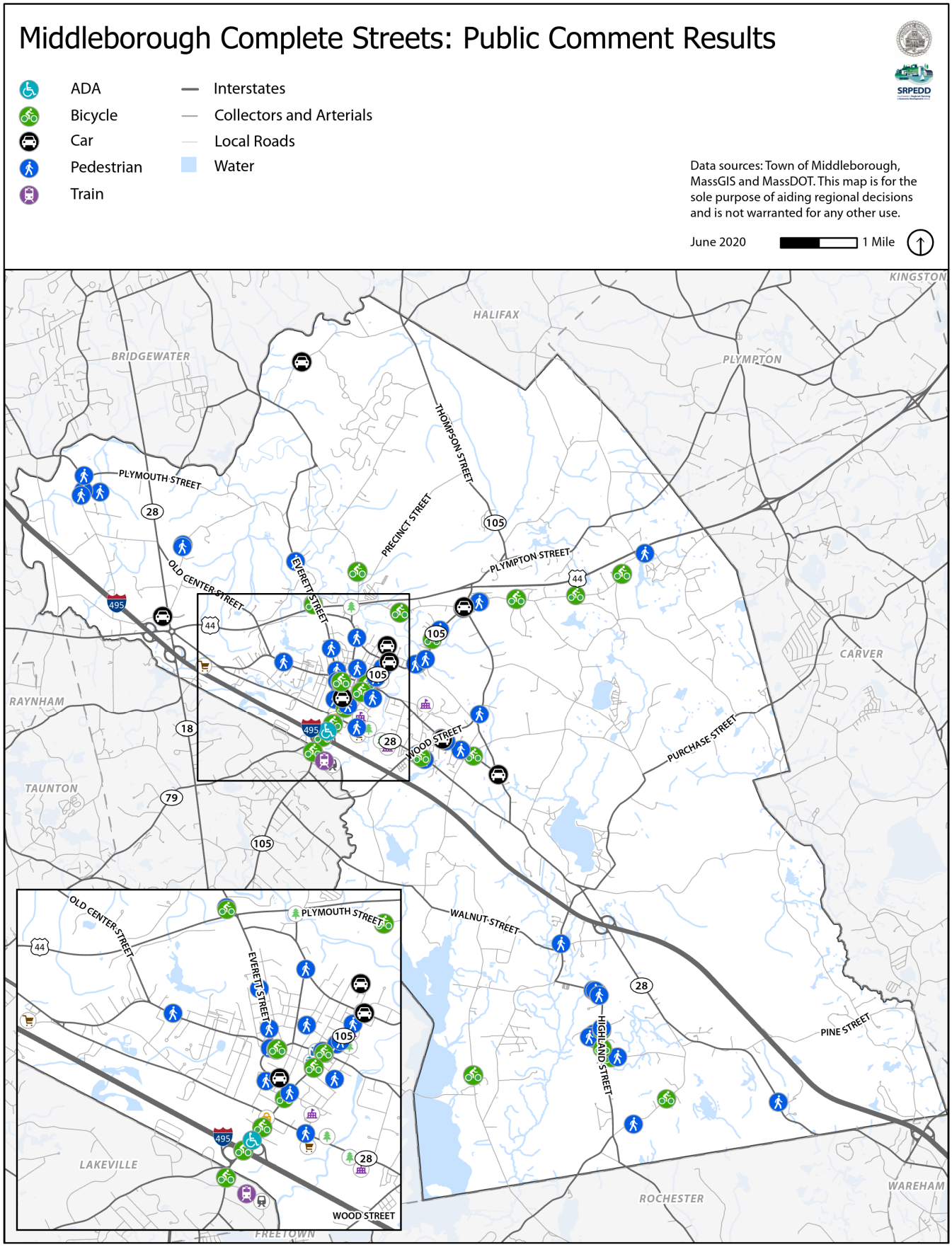


Figure 25: Town of Middleborough Complete Streets Public Comments

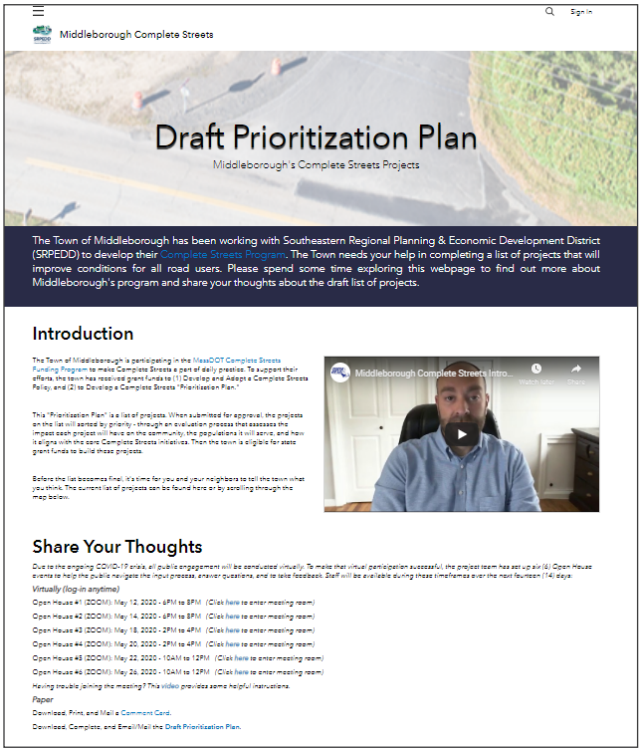
3 Project Development & Draft Prioritization Plan

Based on the results of the town plans and document review and the existing conditions evaluation, SRPEDD developed a draft list of projects that: (1) filled the gaps in the network, (2) improved ADA compliance, (3) addressed aging and/or deteriorated infrastructure, and (4) improved safety.

The original plan was to hold another in-person public meeting to review the Draft Prioritization Plan; however, due to the COVID-19 pandemic, facilitating that type of an event was not feasible. Therefore, over a virtual meeting, SRPEDD presented the results of the Existing Conditions Evaluation and the Draft Prioritization Plan to the Working Group in early May 2020 and provided time for feedback before launching the virtual public workshop webpage and asking for public input.

Public Meeting #2: Draft Prioritization Plan

On May 12th, SRPEDD launched the Virtual Public Workshop webpage. It included a brief written summary and supplementary video (see the figure to the left) explaining Middleborough's Complete Streets Program and importantly, a "where we are now" explanation. Residents, business owners, and town officials were asked to indicate their approval/disapproval for each project by scrolling through the ESRI Story Map and clicking "thumbs up" or typing comments. Additionally, the entire list of projects was available to download for those who didn't want to use the interactive system. Over the 14 day comment period, a total of 15 comments were submitted. Figure 26 shows elements from the Virtual Public Workshop.



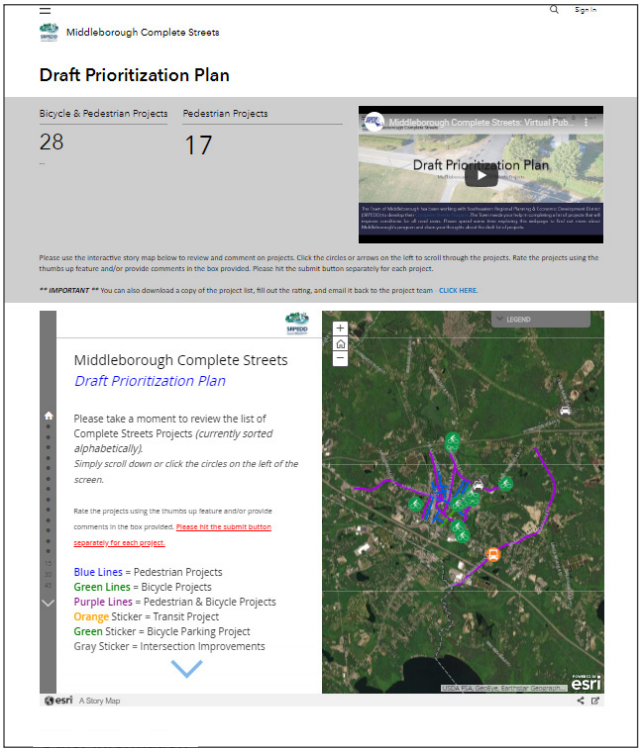


Figure 26: Virtual Public Workshop Webpage Elements

4 Project Evaluation & Final Prioritization Plan

Project Evaluation

Following the Draft Prioritization Plan Virtual Public Workshop, SRPEDD refined the project list (combining projects that had multiple phases, removing projects that could be completed with other funding, etc.) and scored each project using an evaluation criteria. The basic themes included: (1) Livability/Sustainability, (2) Connectivity, (3) Safety, (4) Trip Generators, (5) Traffic Volume, (6) Project Readiness, and (7) Aligning with Town Plans. Each project received a numeric value (0-3) for each theme representing how the improvement addressed each issue. Final project scores and the Evaluation Criteria table are located in the Appendix of this report.

Final Prioritization Plan

Following the project evaluation process, SRPEDD finalized the project cost estimates using the weighted bid prices found in MassDOT's Construction Project Estimator. Additionally, starting dates and an estimated construction schedule was provided for each project. Ultimately, the Final Prioritization Plan was developed considering the results of the evaluation criteria, the objectives of the needs assessment, and recorded public and town support. All project cost estimation worksheets are included in the Appendix of this report.

Recommendations

The following are other recommendations to provide more complete streets elements in the town of Middleborough. These are meant to be completed over time and are separate from the MassDOT Complete Streets Funding Program.

Town Projects

The town is currently pursuing Transportation Improvement Program (TIP) funding for Wareham Street, from North Main Street to Wood Street (Project #608530). That project will include full-depth reconstruction of the roadway with upgraded drainage, new sidewalks, bicycle lanes, and new pavement markings and signage. This project will provide substantial improvements to a critical corridor that links to the "Downtown Area". As part of this assessment, the project team evaluated the remainder of Wareham Street, from Wood Street south to Route 28 for Complete Streets investments; however, due to the amount of work needed, the complexity of some features, and the overall cost, it was recommended that the town pursue TIP funding for that portion.

State Jurisdiction Roadways

The 13 mile section of Route 28 and the 5 mile section of Route 44 that run through town are under MassDOT jurisdiction and, therefore, outside the control of the town. Nevertheless, the town has a vested interest in these roadways and how they contribute to the connectivity of their network. For example, Route 44 essentially divides the areas to the south from areas to the north due to the type of roadway and the lack of multi-modal facilities. Additionally, Route 28 runs the entire length of the town but has very limited bicycle and pedestrian facilities. Therefore, it is recommended that Middleborough continue to advocate for the multi-modal improvements along both of these roadways and their intersections to ensure safety for all users.

Bicycle Facilities

Middleborough should explore every opportunity to install bicycle lanes or wider shoulders where high levels of bicyclists are present. The term "bicycle lane" refers to a portion of a roadway that has been designated for the preferential or exclusive use of bicyclists by striping, signing, and pavement markings. Bike lanes typically range from four feet to six feet in width. In the absence of a formal bike lane, Middleborough should make every effort to use shared-use pavement markings or "sharrows" with appropriate signage and to widen shoulders whenever possible. In 2016, SRPEDD completed a Regional Bicycle Plan that identified the existing bicycle infrastructure for its 27-member communities that make up Southeastern Massachusetts, and included a proposed plan for improving and expanding that infrastructure to create a safe, efficient, and connected bicycle network.

Additionally, Figure 22 on Page 21 shows a potential future bicycle network for the town that provides in-town circulation and connections to neighboring communities. Middleborough should continue to work closely with SRPEDD to identify future opportunities to develop this network and to link in-town routes to the larger regional bicycle network where possible.

Sidewalks

Sidewalk availability, condition, and surface width are important factors of the transportation network in every municipality. Increased opportunities to choose a more active lifestyle have shown to result in improved health, economic viability, neighborhood sustainability, and air quality. Middleborough has an extensive sidewalk network in the "Downtown Area" but very limited coverage outside of that area. Town officials should systematically work to build upon that "Downtown Area" by expanding outward down roadways such as Wareham Street, East Main Street, and Sachem Street.

Sidewalks should be vertically and horizontally separated from the roadway and should be a minimum of five feet in width. lt is preferable to have a minimum two-foot vegetated buffer strip between the curb and the sidewalk to increase distance between vehicles and pedestrians; however, including these elements is a challenge when the municipality does not own the right-of-way. When possible, Middleborough should work on creating that added separation in all future construction projects. Lastly, once constructed or replaced, it is very important that sidewalks are regularly inspected, kept clear of debris and vegetation, and maintained to ensure ADA compliance. Middleborough is encouraged to the maximum extent feasible under current funding constraints to regularly maintain the existing network to ensure its longevity.

Prioritization Plan & Implementation

The following are the ***top 15 projects*** listed in the Prioritization Plan (the entire Prioritization Plan can be found in Appendix A):

Project List

1. North & South Main Street Bicycle and Pedestrian Improvements

Resurface the existing sidewalk on both sides of the road from Reland Street to North Street to provide a 6 foot wide walk surface on the north side of the road and an 8 foot sidewalk on the south side. Add ADA/AAB compliant curb ramps with tactile warning panels and high visibility crosswalks at all pedestrian crossing locations (where necessary). Install Rectangular Rapid Flashing Beacons at the Memorial Early Education Center school crosswalk near Barrows Street on North Main Street and the mid-block crosswalk near Rock Street on South Main Street. Resurface and restripe roadway from Reland Street to North Street to provide 5 foot wide bicycle lanes with MUTCD approved bicycle lane pavement markings and bicycle lane signage (R3-17). Add sharrows and bicycle signage (R4-11) on North Main Street from Center Street to Reland Street. Add sharrows and bicycle signage (R4-11) on South Main Street from Center Street to Route 28.

2. Wood Street Transit Improvements

Installation of a bus turnout with ADA compliant landing pad, transit shelter and bicycle parking at the Wood Street and Route 28 intersection, start/end point for the GATRA Middleborough Shuttle

3. Center Street Bicycle and Pedestrian Improvements (Phase 1)

Resurface the road, narrow the travel lanes to 11 feet and replace/widen the existing sidewalk on the right (north) side of the road with an 8 foot sidepath with a 1 foot grass buffer. Add ADA/AAB compliant curb ramps with tactile warning panels and high visibility crosswalks at all pedestrian crossing locations (where necessary).

4. Center Street Bicycle and Pedestrian Improvements (Phase 2)

Resurface the existing sidewalk on both sides of the road to provide a 5 foot wide walk surface. Add ADA/AAB compliant curb ramps with tactile warning panels and high visibility crosswalks at all pedestrian crossing locations (where necessary). Reuse existing granite curbing when feasible. Restripe roadway to provide 5 foot wide bicycle lanes with MUTCD approved bicycle lane pavement markings and bicycle lane signage (R3-17).

5. East Main Street Bicycle and Pedestrian Improvements (Phase 1)

Resurface the existing sidewalk on both sides of the road to provide a 5 foot wide walk surface. Add ADA/AAB compliant curb ramps with tactile warning panels and high visibility crosswalks at all pedestrian crossing locations (where necessary). Reuse existing curbing. Restripe roadway to provide 5 foot wide bicycle lanes with MUTCD approved bicycle lane pavement markings and bicycle lane signage (R3-17).

6. Oak Street Bicycle and Pedestrian Improvements (Phase 1)

Resurface the existing sidewalk on the right (north) side of the road from North Street to Maple Avenue to provide a 5 foot wide walk surface. Resurface the existing sidewalk on both sides of the road from Maple Avenue to High Street to provide a 5 foot wide walk surface. Maintain grass buffer whenever feasible. Add ADA/AAB compliant curb ramps with tactile warning panels and high visibility crosswalks at all pedestrian crossing locations (where necessary). Add sharrows and bicycle signage (R4-11).

7. Oak Street Bicycle and Pedestrian Improvements (Phase 2)

Resurface the existing sidewalk on both sides of the road to provide a 5 foot wide walk surface. Retain grass buffer and street trees. Add ADA/AAB compliant curb ramps with tactile warning panels and high visibility crosswalks at all pedestrian crossing locations (where necessary). Resurface and restripe roadway to provide 5 foot wide bicycle lanes with MUTCD approved bicycle lane pavement markings and bicycle lane signage (R3-17).

8. East Main Street Bicycle and Pedestrian Improvements (Phase 2)

Install a new 5 foot wide asphalt sidewalk with granite curbing on the right side of the road (Sachem Street to Pratt Farm). Add ADA/AAB compliant curb ramps with tactile warning panels and high visibility crosswalks at all intersecting streets. Add sharrows and bicycle signage (R4-11).

9. Elm Street Bicycle and Pedestrian Improvements

Resurface the existing sidewalk on both sides of the road to provide a 5 foot wide walk surface. Add section of sidewalk to provide a 5 foot wide walk surface with granite curbing from Bourne Street to Route 28 to close the sidewalk gap on the east side of the road. Maintain grass buffer. Add ADA/AAB compliant curb ramps with tactile warning panels and high visibility crosswalks at all pedestrian crossing locations (where necessary). Restripe roadway to provide 5 foot wide bicycle lanes with MUTCD approved bicycle lane pavement markings and bicycle lane signage (R3-17).

10. Everett Street Bicycle and Pedestrian Improvements (Phase 1)

Resurface the existing sidewalk on both sides of the road to provide a 5 foot wide walk surface. Add ADA/AAB compliant curb ramps with tactile warning panels and high visibility crosswalks at all pedestrian crossing locations (where necessary). Resurface and restripe roadway to provide 5 foot wide bicycle lanes with MUTCD approved bicycle lane pavement markings and bicycle lane signage (R3-17).

11. Everett Street Bicycle and Pedestrian Improvements (Phase 2)

Resurface the existing sidewalk on the right (east) side of the road to provide a 5 foot wide walk surface. Maintain grass buffer whenever feasible. Add ADA/AAB compliant curb ramps with tactile warning panels and high visibility crosswalks at all pedestrian crossing locations (where necessary). Resurface and restripe roadway to provide 5 foot wide bicycle lanes with MUTCD approved bicycle lane pavement markings and bicycle lane signage (R3-17).

12. Jackson and Lincoln Street Bicycle and Pedestrian Improvements

Resurface the existing sidewalks on both sides of Lincoln Street from Wareham Street to Jackson Street to provide a 5 foot wide walk surface. Add ADA/AAB compliant curb ramps with tactile warning panels and high visibility crosswalks at all pedestrian crossing locations (where necessary). Resurface and restripe Lincoln Street to provide 5 foot wide bicycle lanes with MUTCD approved bicycle lane pavement markings and bicycle lane signage (R3-17). Add sharrows and bicycle signage (R4-11) on Jackson Street from North Main Street to Lincoln Street.

13. Mayflower Avenue Bicycle and Pedestrian Improvements

Resurface the existing sidewalk on both sides of the road to provide a 5.5 foot wide walk surface. Maintain grass buffer Add ADA/AAB compliant curb ramps with tactile warning panels and high visibility crosswalks at all pedestrian crossing locations (where necessary). Resurface and restripe roadway to provide 5 foot wide bicycle lanes with MUTCD approved bicycle lane pavement markings and bicycle lane signage (R3-17).

14. North Street Bicycle Pedestrian Improvements (Phase 2)

Resurface the existing sidewalk on the left (north) side of the road to provide a 5 foot wide walk surface. Add ADA/AAB compliant curb ramps with tactile warning panels and high visibility crosswalks at all intersecting streets. Restripe roadway to provide 5 foot wide bicycle lanes with MUTCD approved bicycle lane pavement markings and bicycle lane signage (R3-17).

15. Station Street Bicycle and Pedestrian Improvements

Resurface the existing sidewalk on the south (right) side of the road to provide a 5 foot wide walk surface and maintain grass buffer. Install a sidewalk on the north side of the road to provide a 5 foot walk surface and a 2 foot grass buffer. Add ADA/AAB compliant curb ramps with tactile warning panels and high visibility crosswalks at all pedestrian crossing locations (where necessary). Resurface and restripe roadway to provide 5 foot wide bicycle lanes with MUTCD approved bicycle lane pavement markings and bicycle lane signage (R3-17). Install radar speed feedback signs.

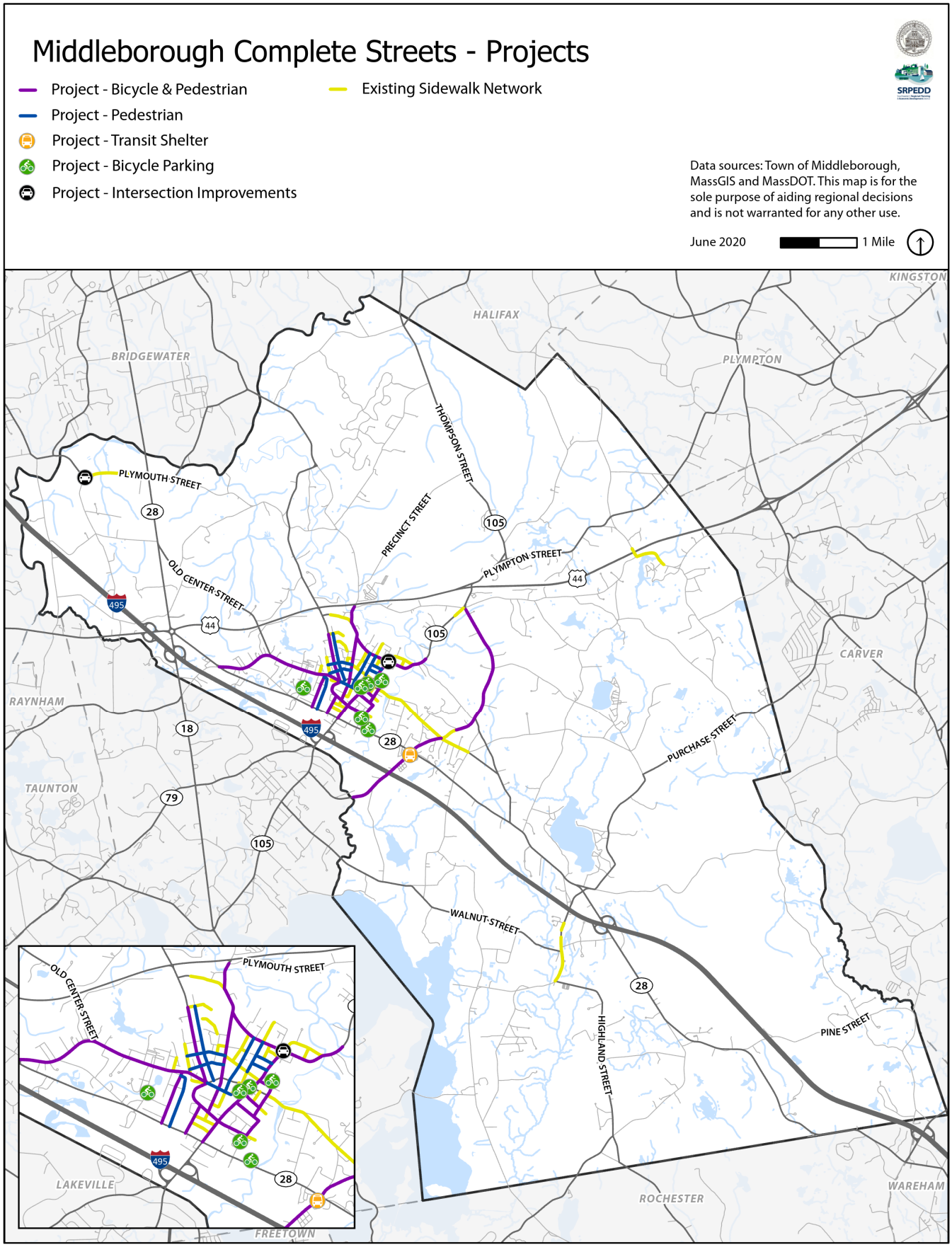


Figure 27: Town of Middleborough Complete Streets Projects

Appendix A

Middleborough Complete Streets Prioritization Plan

Appendix B

Middleborough Complete Streets Evaluation Criteria

Appendix C

Middleborough Complete Streets Project Scoring Results

Appendix D

Middleborough Complete Streets Cost Estimates

Appendix E

Middleborough Crash Summary Table (2017-2019)

Appendix F

Middleborough Complete Streets Policy