

**Appendix D: SMMPO 21-day Public Comment Period Comments**

## Route 6 report

Edward Hoffer <ehoffer@gmail.com>

Fri 2/21/2020 4:40 PM

To: Jed Cornock <jcornock@srpedd.org>

Hi, Jed. I enjoyed the draft report.

Re the "items that should be done regardless," such as protected left turns, I would urge that consideration be given to on-demand traffic lights at the exit from Littleneck Village and the Marion Senior Center/Community Center. Both of these are "low traffic need," but both require elderly drivers to move across Route 6 with limited visibility of oncoming traffic. For LNV it is west-bound traffic cresting a hill, and for the senior center it is traffic coming east-bound around a curve,

Without a light triggered by a car at the entrance to the highway, I can almost guarantee an accident with injury.

Thanks.

Ed

Edward P Hoffer MD

## Regarding route 6

Lori Peltola <csyl55@icloud.com>

Mon 2/24/2020 6:40 AM

**To:** Jed Cornock <jcornock@srpedd.org>

I have not seen mention of speed limits in any discussion. Speed limits are too high on Route 6. Regardless of what the actual limit is, if it is not in forced, it's irrelevant. It is the biggest factor in any design. I live on a side road to Route 6 and when turning or entering my car shakes from the speed of passing drivers. L. Peltola, Wareham resident

Sent from my iPad

## Changes to Route 6 for safety

Eileen Marum <u\_emarum@umassd.edu>

Mon 2/24/2020 8:41 AM

To: Jed Cornock <jcornock@srpedd.org>

Cc: Gil Hilario <ghilario@marionma.gov>; Eileen Marum <u\_emarum@umassd.edu>; Terri Santos <tsantos@marionma.gov>

Hi Jed,

In the interests of safety, the following are suggestions for the Route 6 corridor from Route 240 in Fairhaven to Wareham:

1. More visible signage,
2. LED streetlights to brighten the roadway,

**3. CONTINENTAL CROSSWALK MARKINGS** Crosswalk markings provide guidance for pedestrians crossing roadways and should be more visible to drivers. Studies show that continental crosswalk markings are detected at about twice the distance upstream as the transverse marking during daytime conditions. This increase in distance reflects increased driver awareness and opportunity for a driver to react when pedestrian(s) cross the roadway. Install LED lighting at all crosswalks.

<https://www.fhwa.dot.gov/publications/research/safety/pedbike/10067/10067.pdf>

4. Reconstruct drainage to avoid standing water,
5. Remove telephone poles, mailboxes and trash receptacles from sidewalks to make them handicap and pedestrian accessible, and
6. Add bicycle signage and separate bicycles from motor vehicle traffic.

Thanks for all you do,

Eileen J. Marum

Marion, Planning Board



## Route 6 corridor study

Nadia Melim <nmelim@jonespayne.com>

Tue 2/25/2020 4:36 PM

To: Jed Cornock <jcornock@srpedd.org>

 1 attachments (5 MB)

Route-6-Corridor-Study-Report-DRAFT-Feb-2020\_NMcomment.pdf;

Hi,

I was not able to make any of the open meetings for the Rt 6 study, but I was able to flip through the draft and had a few comments to share. They are on the attached PDF. My area of concern is Wareham & Marion, and the alternative I prefer is #4, with revisions as noted in the PDF.

I'm not sure if any of this stuff will ever become reality, but it would be nice to see a change from the huge swath of pavement into something more appropriate for what the road has become since 195 went in! I've seen enough accidents to know changes are definitely needed...

Thanks!

Nadia

**Nadia Melim AIA**

Project Architect

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# DRAFT

## Route 6 Corridor Study

February 2020

Hi, my comments are in pink on the following pages of the PDF:

7

8

9

19

20

24

26

I appreciate the effort that has gone into this study. I hope it leads to some much needed changes before the bridges.

Thank You  
Nadia Melim, AIA  
Wareham Resident



**SRPEDD**  
Southeastern Regional Planning  
& Economic Development District

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## Executive Summary

Prior to the extension of Interstate 195 to Route 25 in the 1970s, Route 6 was the primary highway used to access Cape Cod. Therefore, at that time, the roadway was designed to accommodate a higher number of vehicles traveling at higher speeds in order to get “from point A to point B.” Although it still allows for that use, it also serves other purposes – providing access to residential properties, local businesses, recreational areas, and municipal facilities. Those land uses, the trips they create, and the associated users all need a roadway that is safe, reliable, and accessible. Currently, Route 6 is auto-centric, 4-lane highway, that prioritizes vehicle uses and discourages walking or biking. As such, the Route 6 Corridor Study was initiated to analyze current and future traffic conditions and to develop improvements aimed at making the roadway safer for all road users.

## The Process

The study included these main sequential steps:

### Step #1: Develop Study Goal

*To improve conditions of Route 6 for all road users employing a context sensitive approach.*



### Step #2: Identify Core Issues

- High vehicle speeds
- Narrow travel lanes with little to no shoulder
- Sidewalk network is not consistent, close to road, and in need of repairs to be ADA compliant
- No bicycle accommodations
- Some drainage structures are sinking, creating depressions along curb
- Some unsignalized intersections have geometric challenges leading to sight distance issues
- Signalized intersections lack protected left turn lanes blocking visibility for oncoming traffic



### Step #3: Create Guiding Principles

- Enhance or implement pedestrian and bicycle accommodations
- Revise signal timing and phasing at signalized intersections to improve operations and safety
- Modify selected intersection geometries to improve sight distances
- Improve pavement markings, lighting, signage, and drainage to increase safety
- Provide more public transportation to reduce traffic volumes
- Investigate reducing the number of travel lanes (road diet) to help lower travel speeds

## Improvements

During the study, it became clear that improving the corridor needed to include answers to two basic questions – First: “what improvements can be made with the existing layout?” and, Second, “is it possible to reduce the number of travel lanes?” Similar to typical transportation studies, SRPEDD first developed several improvements that answered the first question and then developed four (4) conceptual layout alternatives to build consensus around the second question, otherwise known as the “number of travel lanes” conversation.

Importantly, both the future improvements and the conceptual layout alternatives (page 30) were crafted considering: (1) the overall goal of the study, (2) the core issues, (3) the guiding principles, and (4) current federal and state design guidance.

In the end, SRPEDD recommends that the communities work with MassDOT to implement the following future improvements:

1. Signalize New Boston Road (Fairhaven)
2. Signalize Spring Street (Marion)
3. Signalize Swifts Beach Road (Wareham)
4. Modify North Street traffic signal to include protected/permissive left turns (Mattapoisett)
5. Modify Front Street traffic signal to include protected/permissive left turns (Marion)
6. Change physical geometries to create 90-degree intersections at six (6) locations
  - a. Brandt Island Road (Mattapoisett)
  - b. Church Street Extension (Mattapoisett)
  - c. Marion Road (Mattapoisett)
  - d. Converse Road (Marion)
  - e. Creek Road (Marion)
  - f. Hathaway Street (Wareham)

Most LED lights make it harder to see, I don't understand why everyone is so fast to replace the sodiums. The LED need to be very warm toned otherwise the drastic difference between lit and not lit momentarily blinds drivers. The NTSB is addressing this in car headlights, how come it's being ignored for streetlights?

Furthermore, if the sodiums aren't broken why are we unnecessarily adding to the waste stream? If it isn't broken, don't fix it.

Additionally, the following general improvements should be made to improve safety:

1. Replace all existing signage and pavement markings with high-visibility retroreflective materials to improve visibility
2. Replace all existing High-Pressure Sodium (HPS) streetlights with high-efficiency LED lights to improve visibility
3. Replace all existing “standard” style crosswalks with “continental” or “ladder” style to improve visibility
4. Reconstruct existing drainage structures that are in disrepair and bring flush to pavement surface to avoid depressions and standing water
5. Remove telephone poles from existing sidewalks clearance widths and add ADA compliant curb ramps to improve pedestrian mobility
6. Add bicycle signage along the corridor to improve awareness of bicycle activity

Does any of this report deal with flood zones? I'm not sure anything could be helped anyways, but it would be something to consider.

It should be noted that these improvements are intended to be implemented regardless of the future layout of Route 6.



## Conceptual Layout Alternatives

The conceptual layout alternatives highlight potential strategies to address the lack of multi-modal accommodations on Route 6. The basic goals for the conceptual designs were to attempt to use only the existing land owned by MassDOT (Right-of-Way or “ROW”) and to accommodate all road users. Each alternative generally achieved the basic goals but come with a set of “pros” and “cons”. It should be noted that they are not meant to be a “one size fits all” approach. Rather, the intent is to answer the question – “is it possible to reduce the number of travel lanes?” and if so, “where?”

## Alternatives #1 & #2

Alternatives #1 and #2 have some notable similarities and distinct differences. While both focus on improving conditions for pedestrians, they do not include the same type of improvements for bicyclists. Alternative #1 simply includes providing a consistent 6-foot sidewalk on both sides of the road for the entire corridor while continuing bicycle travel in the roadway. Meanwhile, Alternative #2, includes a 10-foot, separated “sidepath” on both sides of the road to accommodate both pedestrian and bicycle travel. In this alternative, bicyclists would be physically separated from motorists, no longer needing to “share the road”. Both alternatives make no physical changes to the roadway or utilities (drainage system, utility pole locations); however, Alternative #2 would require additional land acquisition to accommodate the sidepath, therefore, resulting in a higher cost.

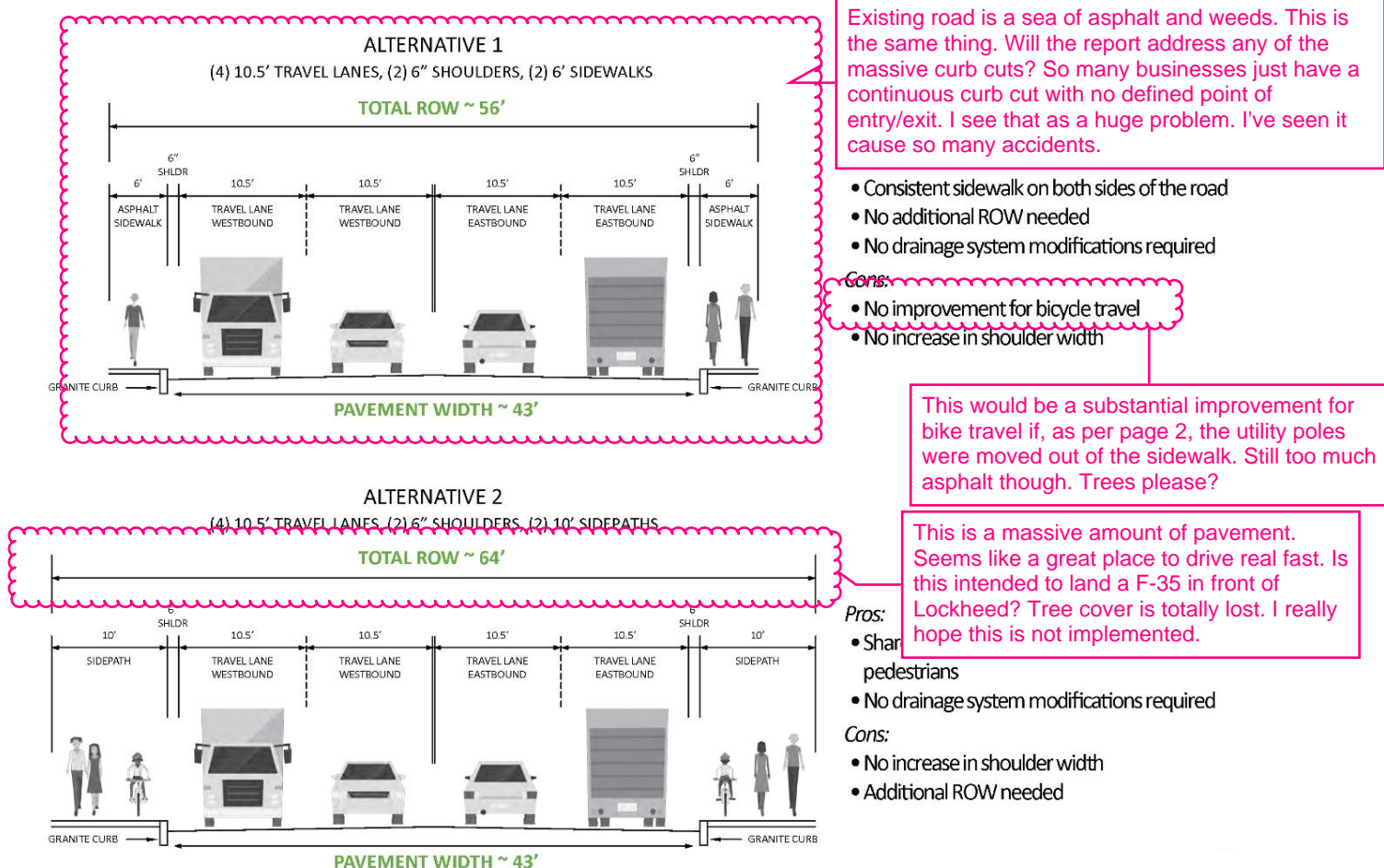


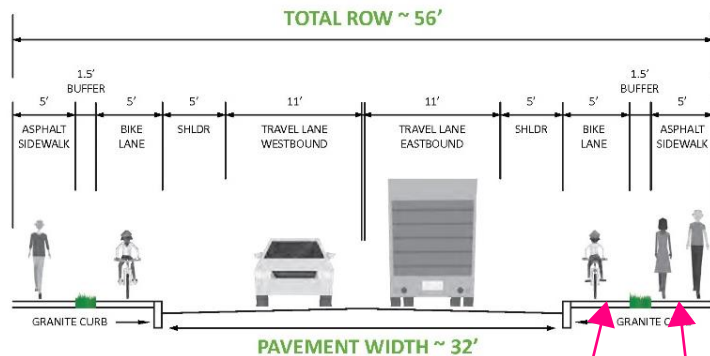
Figure 1: Conceptual Layout Alternatives #1 and #2

### Alternatives #3 & #4

Alternatives #3 and #4 are very similar. Both focus on improving conditions for all road users – providing separation between the bicyclists and pedestrians from the travel way, reducing the number of travel lanes to reduce vehicle speeds, and enlarging the current shoulder area to accommodate first responders. These options would include improvements to the drainage system and potential utility pole relocations. The main difference between the two options is the design of the separated bicycle and pedestrian environment. In Alternative #3, bicyclists and pedestrians would have their own space while in Alternative #4, bicyclists and pedestrians would share the 10-foot, separated “sidepath”. These options would not include land acquisition; however, it would involve upgrades to the drainage system, curb relocations, and restriping of the travel way.

#### ALTERNATIVE 3

(2) 11' TRAVEL LANES, (2) 5' SHOULDERS, (2) 5' BIKE LANES, (2) 1.5' GRASS BUFFERS, (2) 5' SIDEWALKS



#### Pros:

- Separated off-road facilities for bicycles and pedestrians
- Larger shoulder to separate vehicle traffic from bicycles and pedestrians
- No additional ROW needed

#### Cons:

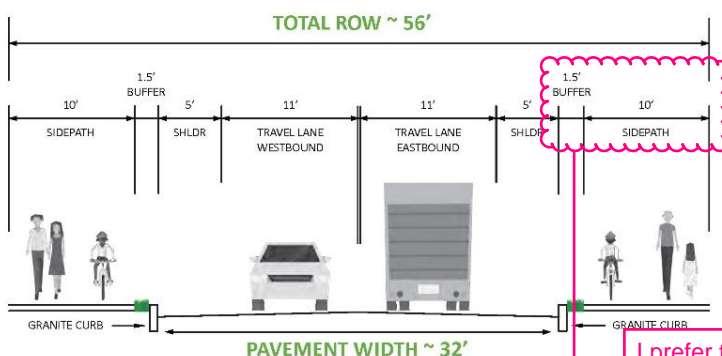
- Vehicle passing opportunities reduced
- Utility pole relocation likely needed
- Drainage system modifications likely needed

who is going to use this sidewalk if the one further away from traffic exists?

If I'm on a bike I'm probably mostly on this one, but jumping between this one and the other one depending on where the most trash is. I suppose it also depends on how high the snow or weeds are. Extra maintenance for extra sidewalk seems unnecessary to me.

#### ALTERNATIVE 4

(2) 11' TRAVEL LANES, (2) 5' SHOULDERS, (2) 1.5' GRASS BUFFERS, (2) 10' SIDEPATHS



#### Pros:

- Shared off-road facility for bicycles and pedestrians
- Larger shoulder to separate vehicle traffic from bicycles and pedestrians
- No additional ROW needed

#### Cons:

- Vehicle passing opportunities reduced
- Utility pole relocation likely needed
- Drainage system modifications likely needed

Figure 2: Conceptual Layout Alternatives #3 and #4

I prefer this one for most parts of Rt 6 in Marion & Wareham, but make the buffer something big enough to actually plant things in, say 12', with a 5' sidewalk. Plant hardy street trees in the buffer with native drought tolerant plants. No grass! Why is landscaping being ignored everywhere? I don't see the landscape architects name on any of the report documents, so maybe there isn't one? There needs to be one. It can't be an afterthought.

During both of the Phase 2 public meetings and for a public was encouraged to fill out a preference survey for the future of Route 6 (see page 33 for more detail). Importantly, the survey was flexible – the participants could select multiple alternatives if that suited them or even design their own alternative. SRPEDD simply asked that they indicate any “modifications” on the survey to ensure accurate review and cataloging. In the end, Alternative #2 was the most popular choice followed by Alternative #1.

## Introduction

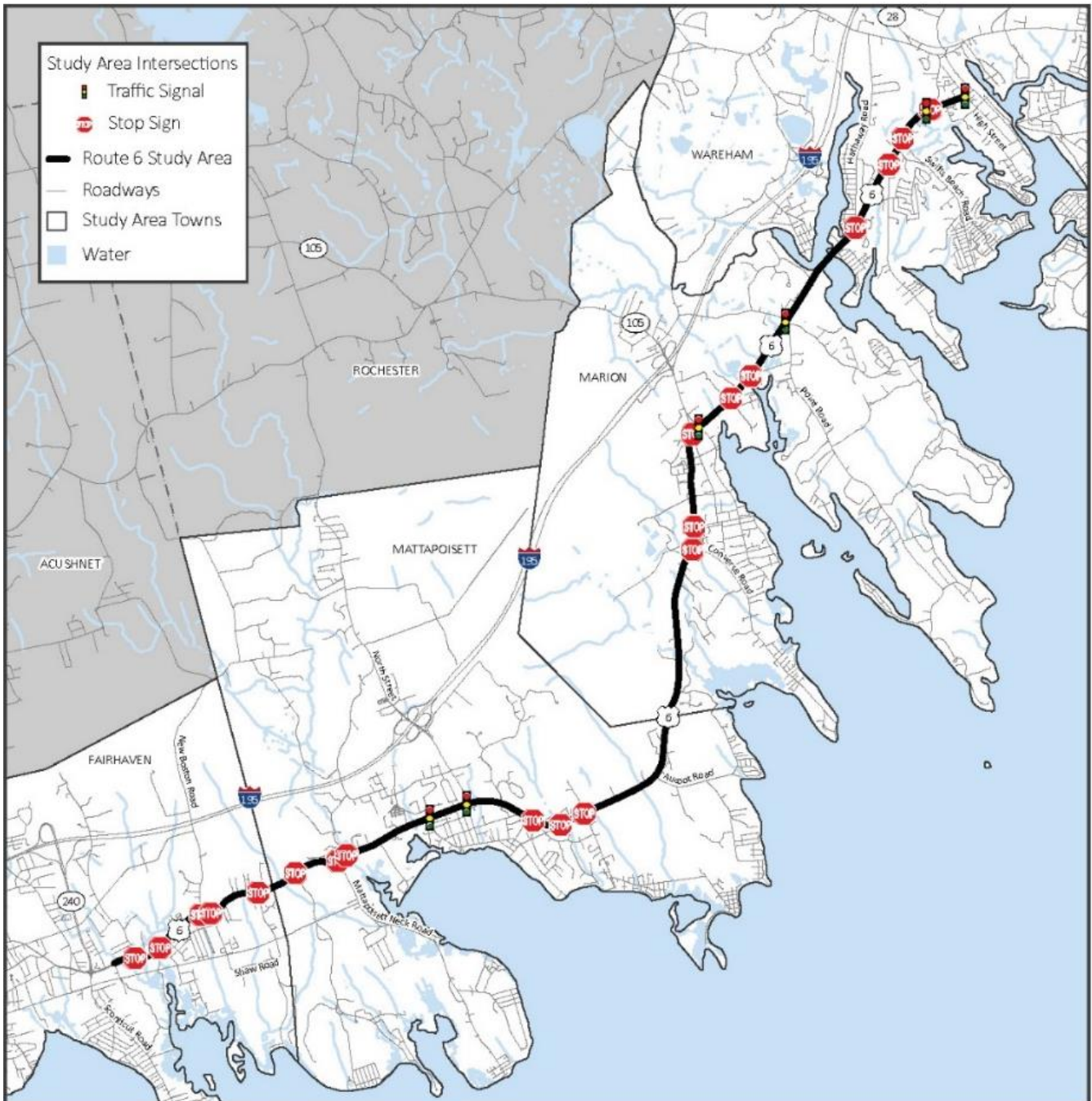
Prior to the extension of Interstate 195 to Route 25 in the 1970s, Route 6 was the primary highway used to access Cape Cod. At that time, the 4-lane highway provided more “mobility” than “access”. In other words, the roadway was designed to accommodate a high volume of vehicles traveling at higher speeds in order to “get from point A to point B.” Although it still allows for that use, it now serves other purposes – providing access to residential properties, local businesses, and municipal facilities. Those land uses, the trips they create, and the associated users all need a roadway that is safe, reliable, and accessible.

The Route 6 Corridor Study was the result of initiatives from two separate entities: the Town of Marion and the Massachusetts Department of Transportation (MassDOT) District 5 office. The Town of Marion initiated the request as a result of several goals found in their new Master Plan (completed by SRPEDD in 2017). Meanwhile, MassDOT District 5 was expressing interest in examining the corridor for potential improvements. Shortly after Marion’s request, the town of Mattapoisett approached SRPEDD and MassDOT District 5 with interest in improving the corridor and within a few months, Fairhaven and Wareham were also on board. To support the study, each community submitted separate letters expressing concerns about safety at various intersections, vehicle speeds, and the lack of multi-modal accommodations along the corridor.

The goal of this study was to build consensus around the concept of improving conditions for all road users employing a context sensitive approach.

## Route 6 Corridor Study

In the end, the Route 6 Corridor Study included a thirteen (13) mile stretch of roadway, from approximately Route 240 in Fairhaven, east to High Street in Wareham (see Figure 3).



*Figure 3: Study Area*



### Goals & Timeline

During Marion's Master Plan process, SRPEDD continually heard that Route 6 was not accommodating to bicyclists and pedestrians, the intersections were difficult to navigate, traffic speeds were high, and it was difficult to cross – essentially, dividing the community. However, at the time, there wasn't a clear direction toward improving these conditions. In other words, there wasn't consensus about the corridor's future. Therefore, the goal of the study was to build that consensus – improve conditions along Route 6 for all road users employing a context sensitive approach.

### Study Phases

The study was divided into two phases, generally covering a two-year period (2018 and 2019). Phase 1 focused on existing conditions – a comprehensive analysis of transportation and land use data such as traffic volumes, intersection operations, roadway and intersection safety, bicycle, pedestrian, and transit facilities, recent and anticipated developments, and existing zoning. Phase 2 focused on future conditions – an in-depth analysis of future traffic projections, roadway and intersection operations, and potential improvements.

### Public Outreach

Public engagement was a core component of the study. With four communities, several stakeholders, and one roadway owner, it was imperative that the study provide ample opportunity for input, comment, and review. As such, SRPEDD developed and implemented a comprehensive public outreach program that included: (1) creating multiple outlets for information distribution (project webpage, Facebook page, project brochure, informational posters, etc.), (2) generating a public survey and comment card, (3) meeting individually with key stakeholders, and (4) facilitating four

public meetings (2 meetings for each study phase). Utilizing those methods, SRPEDD gathered a great deal of input from a variety of stakeholders – each providing their own perspective of the current and future Route 6 corridor.

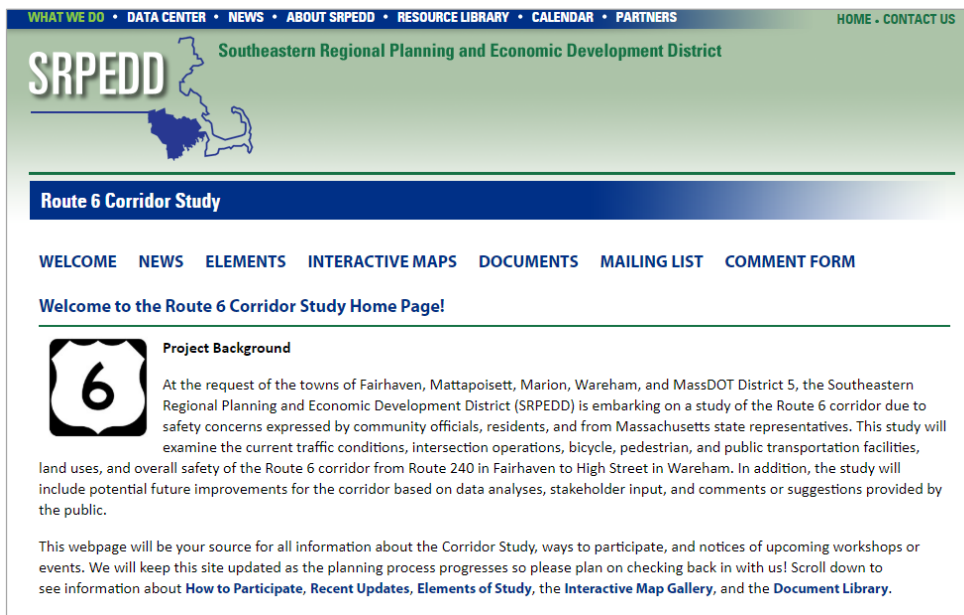


Figure 4: Project webpage

### Stakeholder Meetings

At the outset of the study, stakeholder meetings were held with each community and MassDOT District 5 to introduce the study and to gather feedback about community specific issues, ongoing initiatives, and future goals for the corridor. This process was incredibly valuable as it provided direct insight about the roadway and its intersections from local experts and added locations for further study that had not been previously included.

Phase 1 stakeholder meetings:

- June 28, 2018 – Marion Transportation & Circulation Task Force
- July 1, 2018 – MassDOT District 5
- August 8, 2018 – Town of Marion
- August 9, 2018 – Town of Fairhaven
- August 28, 2018 – Town of Mattapoisett & Town of Wareham (separate meetings)
- October 17, 2018 – Town of Mattapoisett Bicycle & Pedestrian Committee

As a result of these stakeholder meetings, the following six (6) intersections were added to the study:

1. Fairhaven – New Boston Road & Weeden Road (*two intersections*)
2. Mattapoisett – River Road & Prospect Road (*two intersections*)
3. Marion – Hermitage Road & Creek Road (*two intersections*)

### Public Survey

A 17-question public survey was developed that asked a variety of questions related to the public's experience with Route 6. The survey was translated into three languages (Spanish, Portuguese, and Haitian-Creole) and distributed to each study area town hall. Additionally, the survey link was provided on the project webpage, sent out in several Facebook posts and in study specific direct email blasts. Lastly, paper copies were available at all four public meetings. As of February 1, 2020, the survey gathered over 800 responses.

### Project Webpage, Social Media, Printed Materials

SRPEDD created a project webpage that contained relevant project information, existing conditions mapping, links to the public survey and comment card, and ways for the public to engage with the project team. Additionally, SRPEDD distributed the printed materials (see Figure 5 below) to public buildings (town halls, libraries, councils of aging) in the study area to increase awareness of the study.

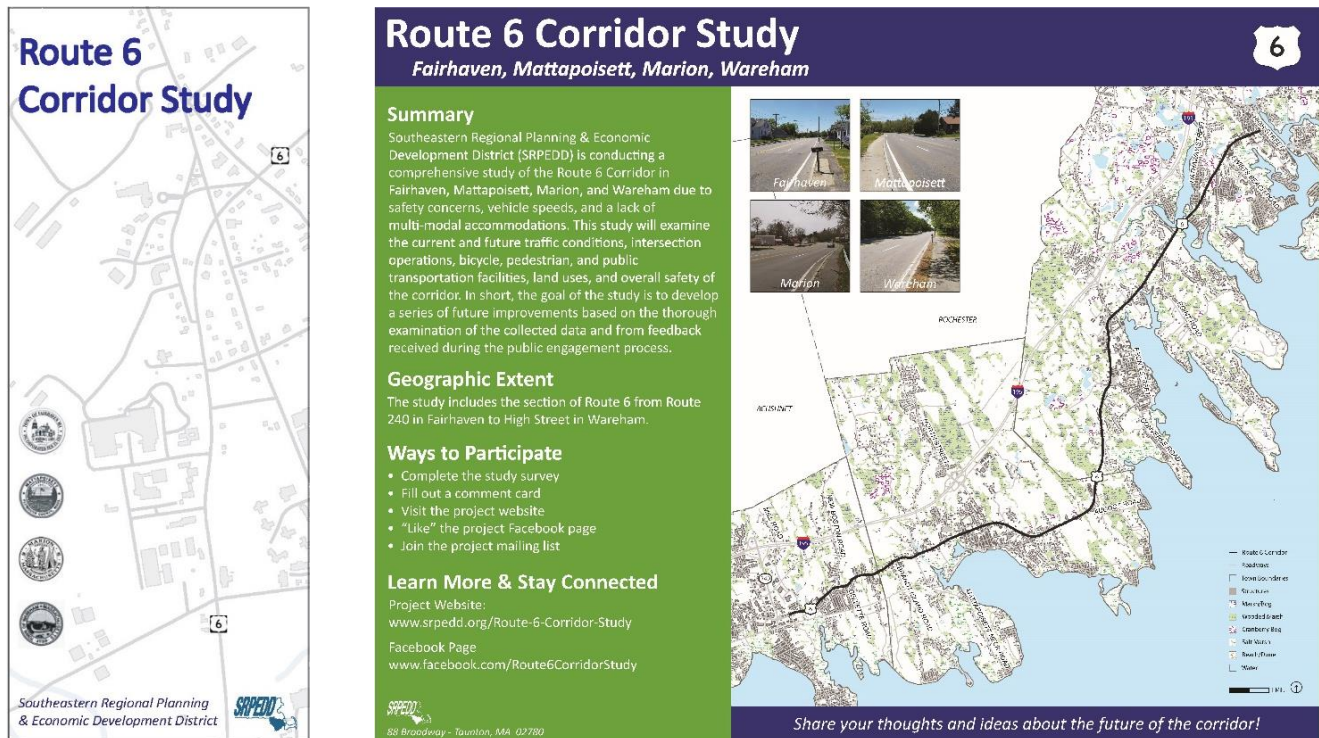


Figure 5: Study brochure (left) and informational poster (right)

### Public Meetings

SRPEDD held a total of four public meetings for the study – two meetings for each study phase. More information about the purpose of the meetings and feedback received is included in the following sections of this report.

#### Phase 1: Existing Conditions

- November 8, 2018 – Wareham Town Hall, Wareham (31 attendees)
- November 14, 2018 – Old Rochester Regional High School, Mattapoisett (34 attendees)

#### Phase 2: Future Conditions

- December 12, 2019 – Center Elementary School, Mattapoisett (40 attendees)
- January 6, 2020 – Sippican Elementary School, Marion (145 attendees)

## Phase 1: Existing Conditions

The first phase of the study focused on all existing aspects of the corridor – including, but not limited to the physical layout and condition of the roadway; bicycle, pedestrian and transit facilities; location and severity of crashes along the corridor; intersection operations; and, the current land uses and zoning regulations.

Over the spring and summer of 2018, SRPEDD staff completed an extensive Data Collection and Analysis Program. This work included a thorough inventory of pavement and sidewalk conditions (noting gaps in the network and issues with Americans with Disabilities Act [ADA] compliance), roadway cross-section and intersection dimensions (lane, shoulder, sidewalk, and crosswalk widths) and physical infrastructure locations (utility pole locations, catch basins, signage, lighting, etc.). This inventory is explained in more detail in the following sections.

### *Physical Layout*

Route 6 is as an Urban Minor Arterial, that runs parallel to Interstate I-195, connecting the Providence area to Cape Cod. In general, the 13-mile study area (Arsene Street in Fairhaven to High Street in Wareham) is a 4-lane, auto-oriented streetscape with, little to no shoulder, and, in most cases, five-foot sidewalks located close to the road.

General observations:

- Travel lanes are narrow (generally 10.5 feet)
- Very small painted shoulder (8 to 10 inches)
- Roadway curves (horizontal & vertical) create safety issues
- Several angled “T-style” intersections that have difficult sight distances
- Drainage system issues (standing water in outside lane)
- Turning movements at some signalized intersections create visibility issues



*Figure 6: Route 6 in Marion at Wareham Town Line, looking westbound*



*Figure 7: Route 6 in Mattapoisett between Main Street and North Street, looking eastbound*



### Cross Sections

For the most part, Route 6 includes four (4) 10.5-foot travel lanes with 8 to 10-inch shoulders. There are two sections in the study area where this condition is different (displayed below): (1) Mattapoisett – Main Street to North Street (3 lanes) and (2) Wareham – Gibbs Avenue to High Street (2 lanes).

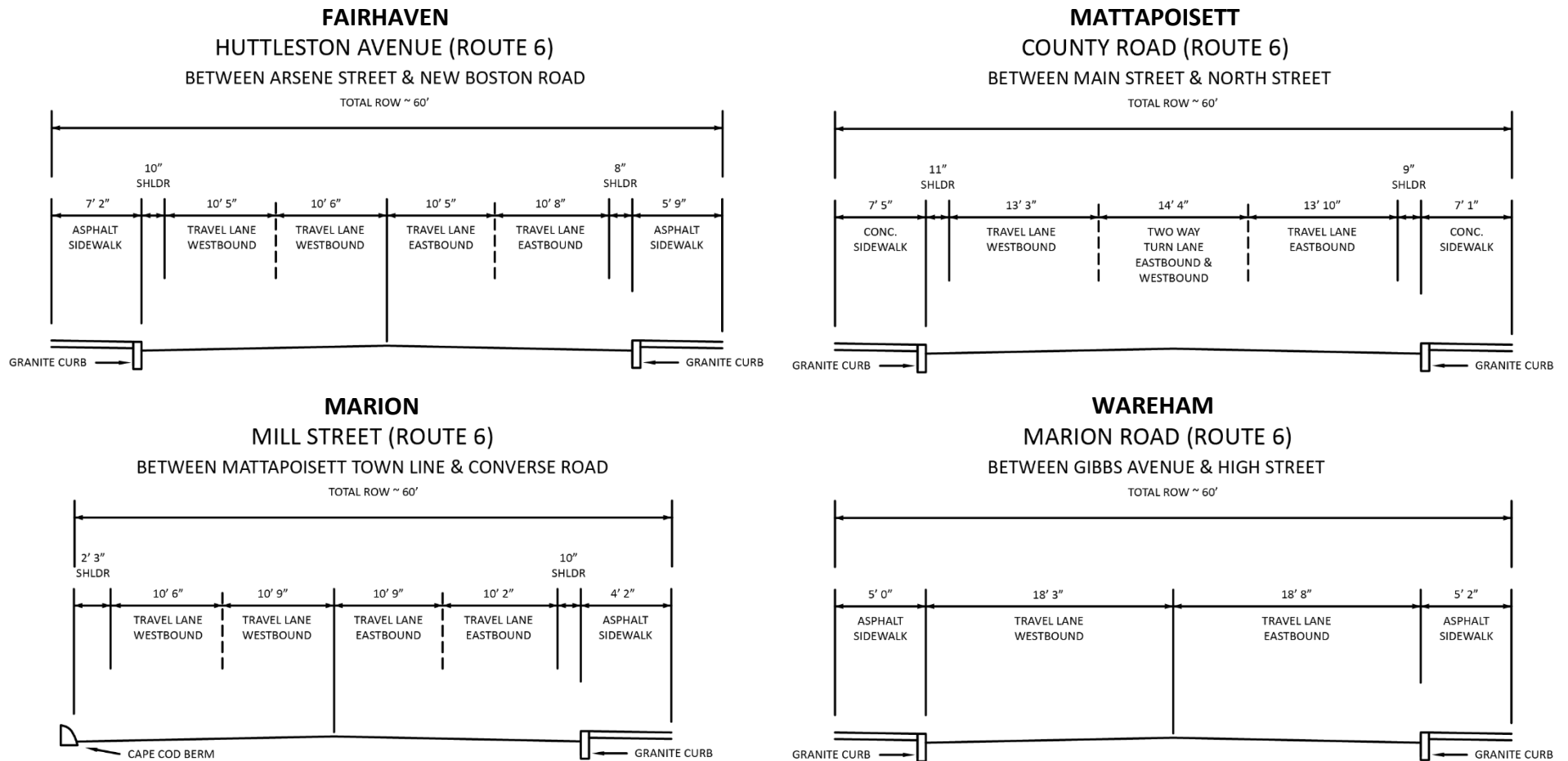


Figure 8: Typical Route 6 cross-sections

### Posted Speed Limits

Overall, posted speed limits along the corridor range from 35 MPH to 50 MPH. The 35 MPH zones are located at three points along the corridor; at the two ends of the corridor (in Fairhaven from Arsene Street to Shaw Road and in Wareham from Gibbs Avenue to High Street) and along a small section in Marion in the area of the “S curve” – just south of Converse Road. The area between Main Street and North Street in Mattapoisett is speed zoned at 40 MPH, which many residents are seeking to lower because of the dense commercial activity found in that area (more details are provided later in the report). Lastly, the remainder of the corridor is posted at either 45 MPH or 50 MPH (see the Crashes & Posted Speed Limits map on page 15 for more detail).

### Pavement Conditions, Utilities, Signage

According to surveys completed in 2018, pavement along Route 6 in Fairhaven, Mattapoisett, and Wareham, while pavement in Marion is generally in poor condition. Typically, pavement that is considered to be in poor condition has extensive and high severity distresses (cracking, potholes, rutting, etc.). Of particular concern for Route 6, are the drainage structures along the corridor that are sinking and creating depressions in the outer lane (see Figure 9). Vehicles are travelling in the inside lane to avoid these distresses.



Figure 9: Drainage issues and utility pole locations

For the most part, the utility poles and signage along the corridor are located at the curb edge. Their location coupled with the high travel speeds create serious safety hazards for motorists.

### Land Uses

A key component of the study is an examination of land uses and zoning along the corridor. To that end, SRPEDD selected and analyzed parcels that were located within 500 feet of the corridor – known as the “study area parcels”. Land uses are predominantly residential (approximately 65% to 75% of study area parcels); however, there is a steady mix of commercial entities along the corridor and several “nodes” of commercial activity. That said, commercial uses only accounted for approximately 3% to 5% of the total study area parcels while vacant land (12% to 16%) and institutional uses such as municipally owned buildings accounted for more (4% to 11%).

## Traffic Data

Over the spring and summer of 2018, SRPEDD staff collected mainline roadway traffic data using Automatic Traffic Recorders (ATRs) that provided vehicle volumes, speeds, and classifications for a 48-hour period. Additionally, SRPEDD collected peak-hour intersection turning movements at twenty-six (26) major intersections along the corridor to perform existing operational analyses.

## Vehicle Volumes

The highest traffic volumes recorded were in Fairhaven, near Mill Road while the lowest were recorded in Marion, near Spring Street and Front Street. Not surprisingly, the higher volumes were found near roadways that provided access to I-195; Mill Road, North Street, Front Street, and Gibbs Avenue. Figure 8 below shows the average vehicles per day for a 24-hour period.

## Vehicle Speeds

Recorded 85<sup>th</sup> percentile speeds ranged from a low of 36 MPH to a high of 55 MPH. As to be expected, the lower speeds were recorded in higher activity or more densely developed areas (i.e. near High Street in Wareham) while the higher speeds were found in low density residential areas (i.e. Mattapoisett/Marion town line).

## Heavy Vehicle Percentages

Heavy vehicles generally accounted for approximately 5-6% of the total vehicles in the counts. This type of truck traffic activity is expected on roadways like Route 6. Once again, higher percentages were found near roadways that provided access to I-195.

### Fairhaven & Mattapoisett



### Marion & Wareham

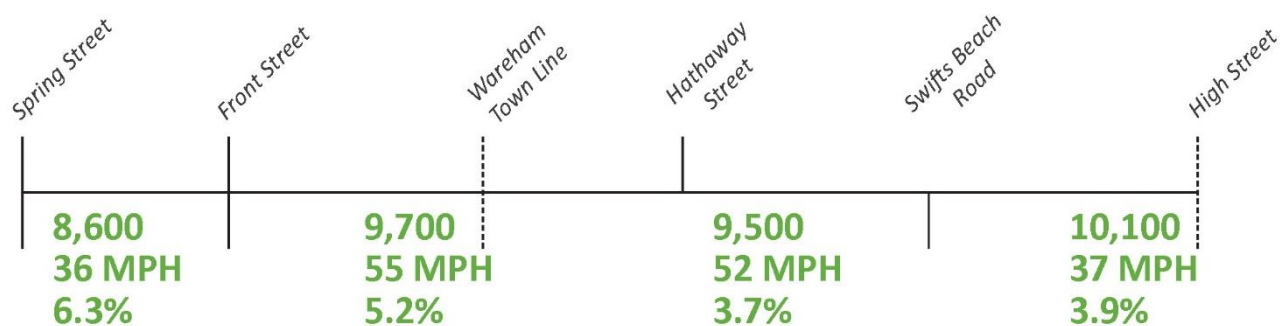


Figure 10: Average Daily Traffic, 85<sup>th</sup> Percentile Speeds, and Heavy Vehicle Percentages

## Crash Analysis

The most recent three-year period of crash reports (2015 through 2017) were obtained from all four municipal police departments and analyzed for the study area intersections. Most of the study area intersections had crash rates below both the most recently available Statewide and District 5 average crash rates for signalized and unsignalized intersections and only a handful of locations had concerning numbers of injury crashes. That said, improvements can be made to enhance safety at a number of locations. Table 1 provides a summary of the crash data for the study area intersections.

**Table 1: Study Area Intersection Crash Summary (2015-2017)**

Route 6 Intersection	Community	Total Crashes	Property Damage Only	Injury Crashes	Crash Rate ACC/MEV	Crash Rate EPDO
Mill Road	Fairhaven	3	3	0	0.14	1.00
Weeden Road	Fairhaven	12	8	4	0.91	9.33
New Boston Road	Fairhaven	7	7	0	0.46	2.33
Gellette Road	Fairhaven	4	2	2	0.29	4.00
Shaw Road	Fairhaven	2	0	2	0.17	0.66
Brandt Island Road	Mattapoisett	6	1	5	0.55	8.66
Mattapoisett Neck Road	Mattapoisett	3	3	0	0.28	1.00
River Road	Mattapoisett	5	4	1	0.46	3.00
Main Street	Mattapoisett	6	5	1	0.48	3.33
North Street	Mattapoisett	24	17	6	1.32	15.66
Church Street Ext.	Mattapoisett	2	2	0	0.21	0.66
Marion Road	Mattapoisett	2	1	1	0.25	2.00
Prospect Road	Mattapoisett	3	2	1	0.31	2.33
Converse Road	Marion	1	1	0	0.10	0.33
Main Street	Marion	1	1	0	0.10	0.33
Spring Street	Marion	7	4	2	0.48	4.66
Front Street	Marion	6	3	3	0.94	6.00
Hermitage Road	Marion	1	1	0	0.11	0.33
Creek Road	Marion	2	1	1	0.42	2.00
Point Road	Marion	4	2	2	0.45	4.00
Hathaway Street	Wareham	4	1	3	0.35	5.33
Cromesett Road	Wareham	10	5	5	0.71	10.00
Swifts Beach Road	Wareham	10	8	2	0.56	6.00
Shaw's Plaza	Wareham	15	10	5	0.91	11.66
Gibbs Avenue	Wareham	4	4	0	0.28	1.33
High Street	Wareham	6	2	4	0.44	7.33

At the time of the study, the statewide & District 5 region crash rate (ACC/MEV) thresholds were 0.78 and 0.57 for signalized intersections and 0.57 for unsignalized intersections.

Locations with averages above statewide or regional thresholds are indicated in red – identifying a safety issue.

This chart seems to be missing the significant amount of accidents that occur outside Top of The Hill Liquors due to the massive curb cut. Traffic on 6 doesn't know where to expect people going in and out because the parking lot there is simply rolls into Rt.6.

So many places have never-ending curb cuts that could be made smaller or more distinct so drivers know where to expect oncoming/outgoing traffic; heading south from Wareham: 167 Marion Road, Wareham service station, cranberry cottage, ying dynasty, sam's gas (sort of), marion auto sales, Kool Kone, Gateway Tavern, Top of the Hill liquors/Rose and vickys, 401 wareham road, the old cumby's, wells service station, santoro's, etc.



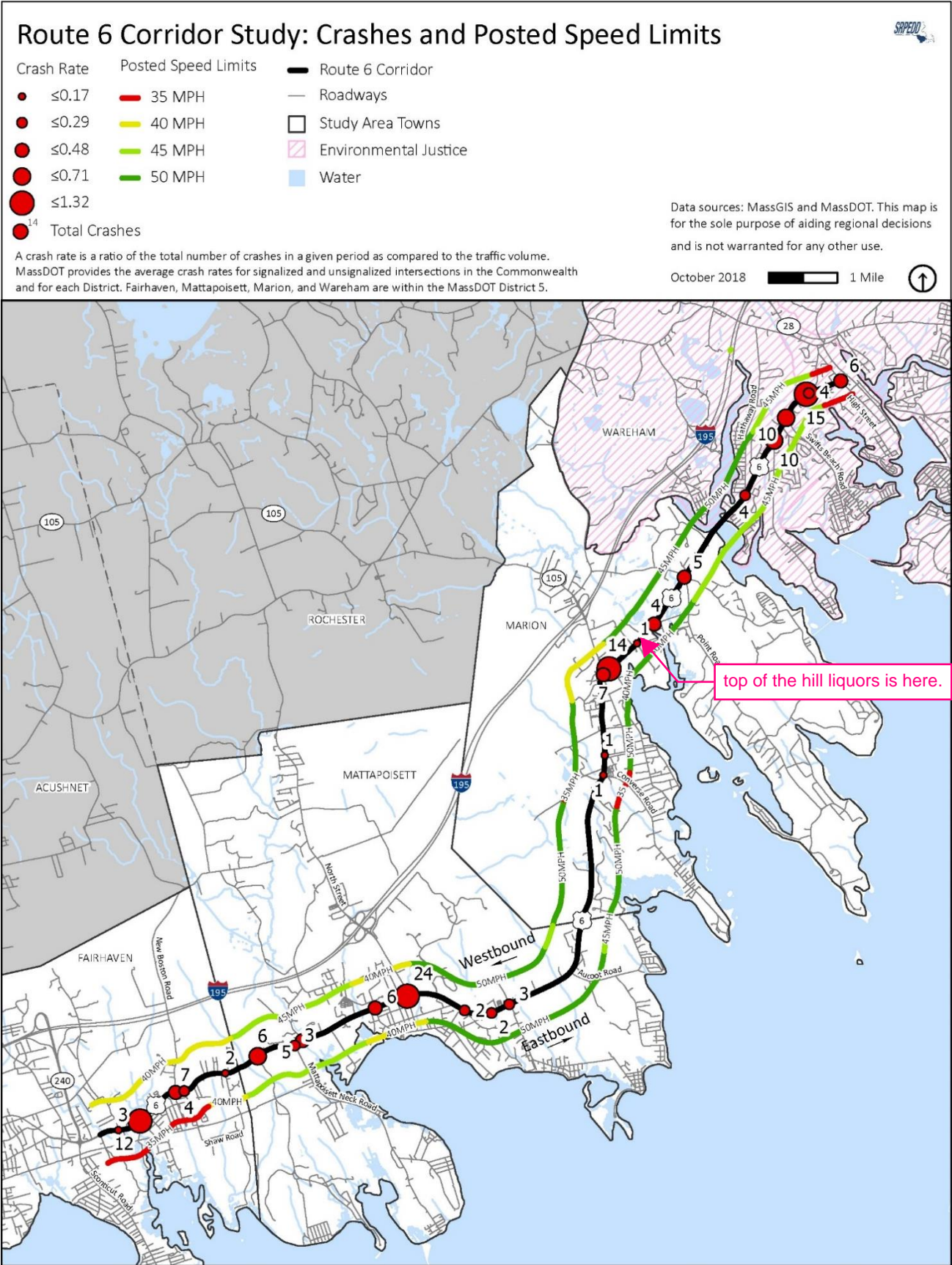


Figure 11: Study area crashes and posted speed limits

## Bicycle, Pedestrian & Transit Network

### Bicycle Facilities

There are no dedicated bicycle facilities along Route 6. In other words, there are no bike lanes or off-road facilities. Additionally, there are no shared-use pavement markings such as “sharrows” or signage alerting motorists to the presence of bicyclists. Therefore, bicyclists must share the road with motor vehicles – this is especially challenging due to the narrow travel lanes, lack of shoulders and the elevated travel speeds. During site visits, some bicyclists were observed riding on the sidewalk, which creates the potential for conflicts with pedestrians.

### Pedestrian Facilities

Route 6 lacks consistent sidewalks. Although the western portion of the study area (Arsene Street in Fairhaven to North Street in Mattapoisett) generally has 5 to 6-foot asphalt sidewalks with granite curbing on both sides of the road, there are significant gaps in the network in Marion and Wareham. The sidewalks in Fairhaven and Mattapoisett (up to North Street) are in good condition – having minimal surface cracking, proper clearance widths and ADA compliant curb ramps. However, east of North Street, the sidewalk conditions begin to deteriorate, and, in some areas, the sidewalk simply ends. Figure 12 below shows the location and condition of the sidewalks in the study area.

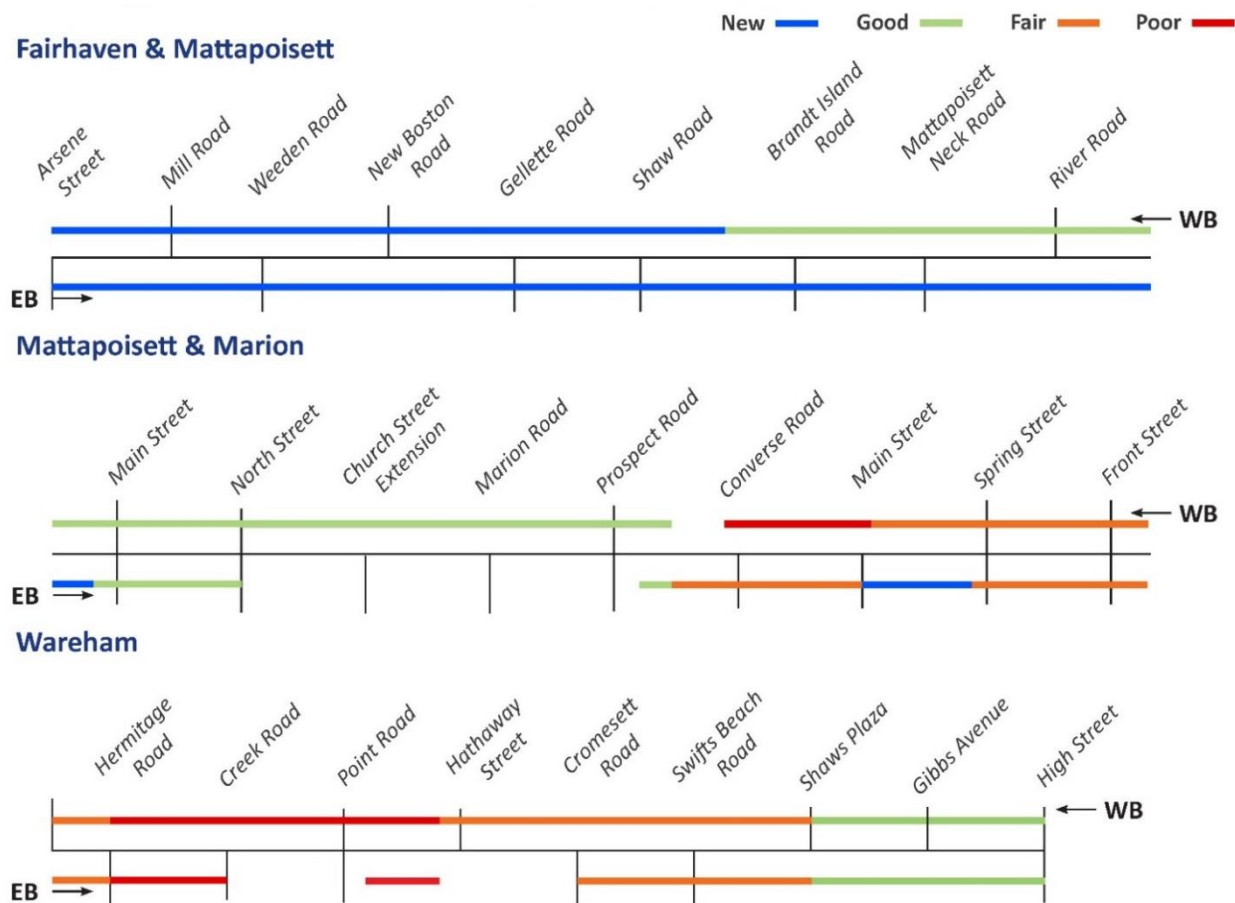


Figure 12: Sidewalk locations and condition



Figure 13 below illustrates the mix of conditions of pedestrian facilities along the Route 6 corridor.



Figure 13: Pedestrian facility examples on Route 6

The image in Mattapoisett (top right) clearly shows pedestrian foot traffic indicating that a sidewalk is needed while the image in Marion (bottom left) shows a sidewalk in disrepair with inadequate clearance widths. Meanwhile, the images in Wareham (top left) and Fairhaven (bottom right) show sidewalks that are in very good condition and free of obstructions.

### Public Transportation

The only public transportation in the study area is provided by the Greater Attleboro Taunton Regional Transit Authority (GATRA) – the “Wareham-New Bedford Connection.” This service primarily provides medical trips along Route 6 between the New Bedford Terminal and Cranberry Plaza in Wareham; however, GATRA service is a flag stop system, meaning that a patron can wave the bus down anywhere along the route and the bus will stop as long as it is safe to do so.

Although recent data sampled by SRPEDD indicates lower ridership, the service provides lifeline connections for low income individuals in Wareham needing to access services in New Bedford. As such, GATRA just recently secured state grant funding to continue this service for another year.

Figure 14 (next page) shows the study area bicycle, pedestrian, and transit network.



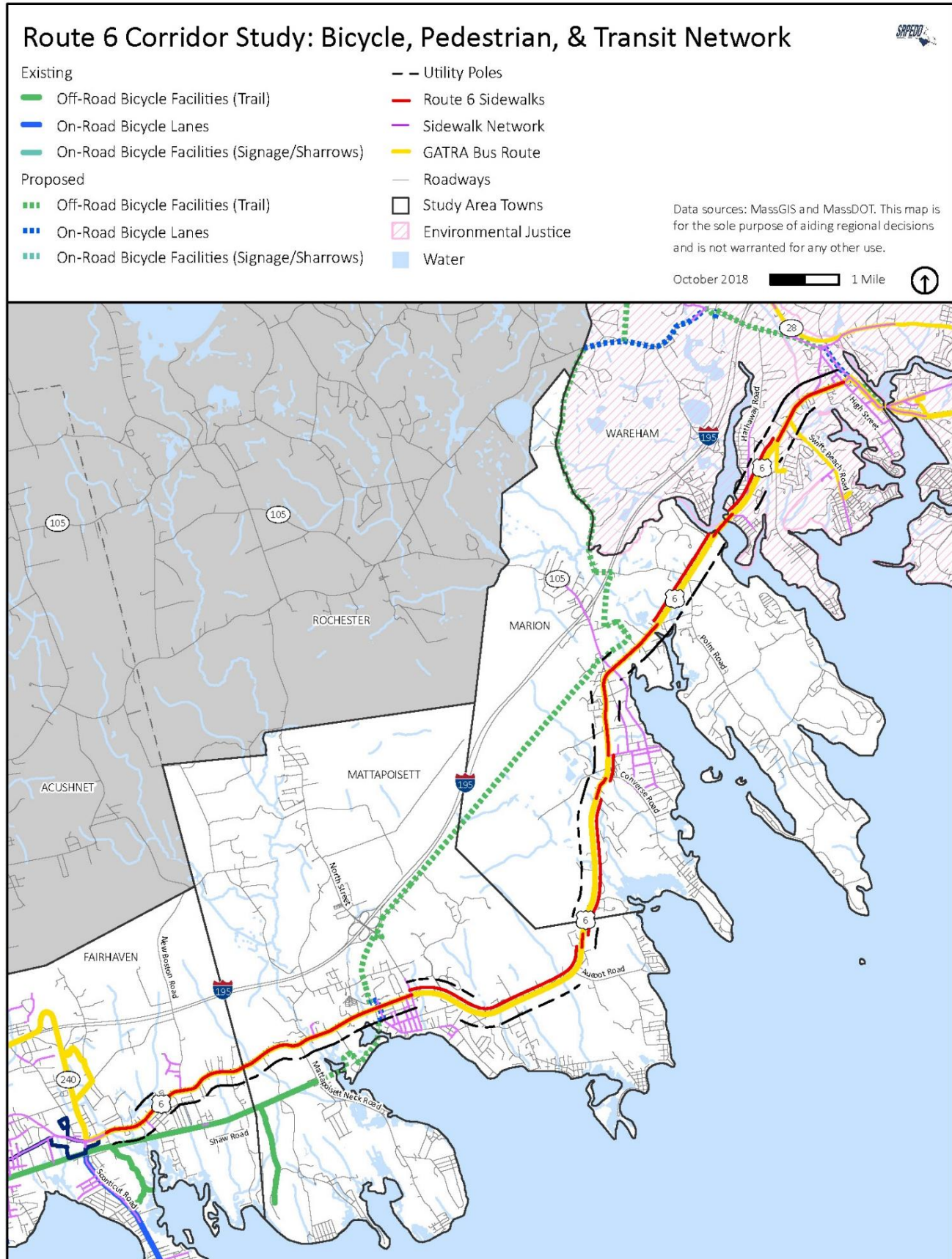


Figure 14: Study area bicycle, pedestrian, and transit network



## Traffic Operations

Level-of-service analysis is a general measure that summarizes the overall operation of an intersection or transportation facility. The analysis includes inputs such as lane uses and widths, traffic control, traffic volumes and operating speeds to calculate a range of operating conditions. It is summarized with letter grades from “A” to “F”, with “A” being the most desirable and “F” representing the maximum flow rate or the worst possible traffic congestion. Table 2 summarizes the existing levels-of-service for the study area intersections during the afternoon peak period.

**Table 2: Study Area Intersections PM Peak Hour Level-of-Service (LOS)**

Route 6 Intersection	Community	Traffic Control	LOS
Mill Road	Fairhaven	Stop Sign	E
Weeden Road	Fairhaven	Stop Sign	C
New Boston Road	Fairhaven	Stop Sign	C
Gellette Road	Fairhaven	Stop Sign	C
Shaw Road	Fairhaven	Stop Sign	C
Brandt Island Road	Mattapoisett	Stop Sign	B
Mattapoisett Neck Road	Mattapoisett	Stop Sign	B
River Road	Mattapoisett	Stop Sign	B
Main Street	Mattapoisett	Traffic Signal	B
North Street	Mattapoisett	Traffic Signal	B
Church Street Ext.	Mattapoisett	Stop Sign	B
Marion Road	Mattapoisett	Stop Sign	B
Prospect Road	Mattapoisett	Stop Sign	C
Converse Road	Marion	Stop Sign	C
Main Street	Marion	Stop Sign	B
Spring Street	Marion	Stop Sign	D
Front Street	Marion	Traffic Signal	B
Hermitage Road	Marion	Stop Sign	B
Creek Road	Marion	Stop Sign	B
Point Road	Marion	Traffic Signal	B
Hathaway Street	Wareham	Stop Sign	B
Cromesett Road	Wareham	Stop Sign	C
Swifts Beach Road	Wareham	Stop Sign	F
Shaw’s Plaza	Wareham	Traffic Signal	C
Gibbs Avenue	Wareham	Stop Sign	C
High Street	Wareham	Traffic Signal	B

Table 2 shows that most study area intersections operate with acceptable delay (LOS D or better). That said, Mill Road and Swifts Beach Road operate at failing LOS (E and F respectively). Based on satisfaction of a Traffic Signal Warrants Analysis (TSWA) completed for Swifts Beach Road, MassDOT District 5, in conjunction with the town of Wareham, is currently exploring signalization, which will improve delay and improve safety at that intersection.

Part of the issue at Swift's Beach Road is the angle the road hits Rt. 6 at. It seems to surprise people who are turning into it, leading to a last moment jamming on of the brakes. People who are northbound turning right also slow down very early, which seems to be an issue for cars trying to turn onto Rt.6.

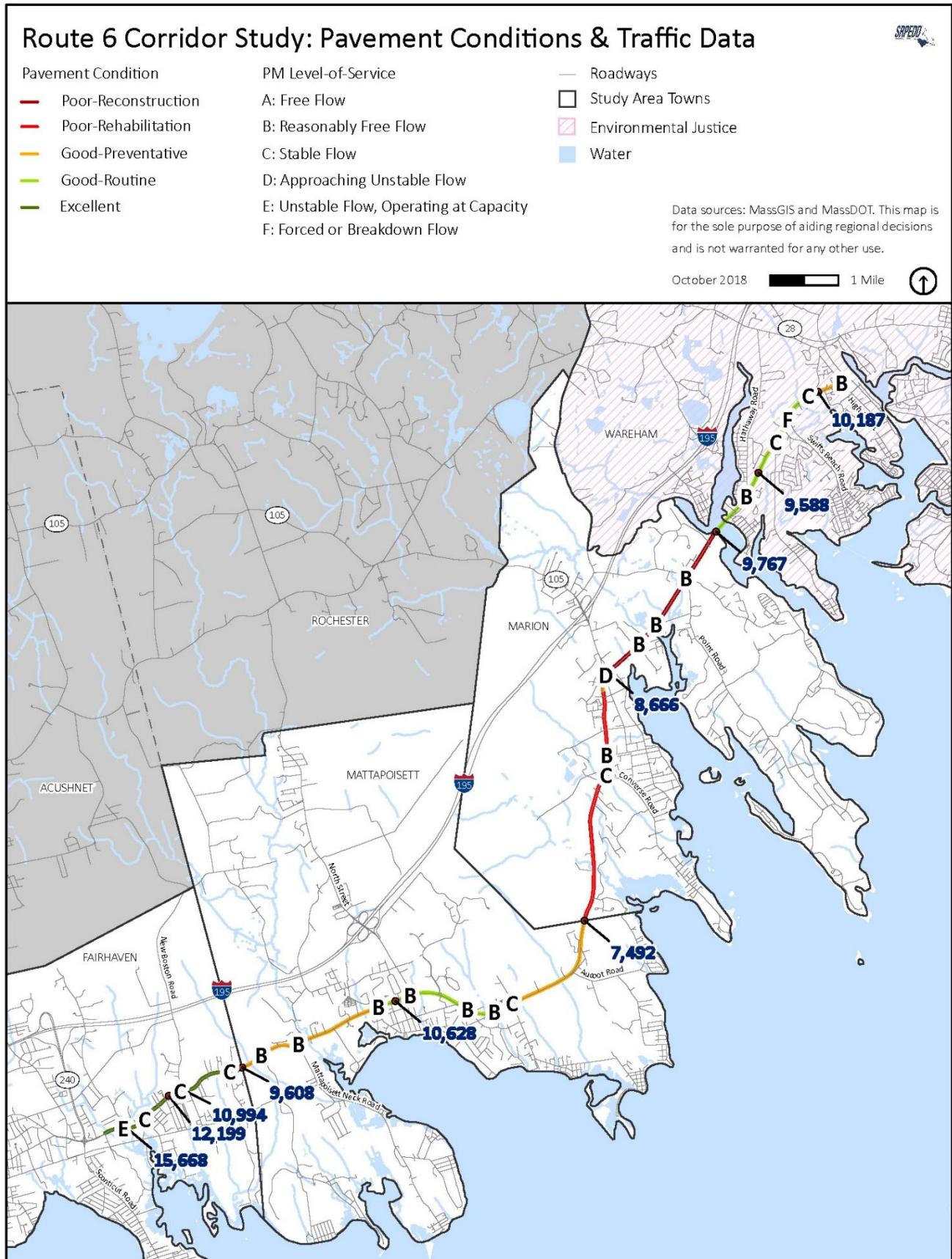


Figure 15: Study area pavement conditions and traffic data

### Public Meetings

The goal of the public process was to identify issues, collect additional information to substantiate these issues, consider measures to address them, and seek support for recommendations leading to implementation.

Phase 1 concluded in November 2018, as SRPEDD facilitated public workshops at the Wareham Town Hall and the Old Rochester Regional High School. The purpose of this meeting was to: (1) present the results of SRPEDD's existing conditions data collection and analyses; (2) gather the public's concerns about the corridor; and, (3) create "future vision" diagrams of Route 6 using a table-top, icon based layout exercise.

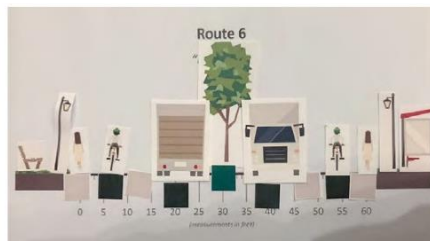
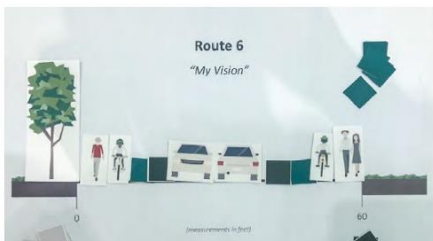
All together, thirty-two (32) diagrams were completed, cataloged, and analyzed following the meeting. Although there was a variety of options recorded, a total of three (3) layouts (shown below) had the most consensus, therefore, they were advanced to Phase 2 of the study and ultimately helped create the future improvement alternatives (discussed in more detail later in this report).



Figure 16: Public Meeting at Wareham Town Hall

Hey that's more people than normally show up for these kinds of things! Good job :-)

### Two Lane Road with Bike/Ped Lane (14 participant suggestions)



### Center Turn Lane/Three Lane Road with Bike/Ped Lane (8 participant suggestions)



So many wonderful trees! Can we please have trees.

### Transit-Oriented Design (3 participant suggestions)



Figure 17: Top three "Future Visions" from Phase 1 Public Meetings



## Phase 2: Future Conditions

The second phase of the study focused on an analysis of future development potential along the corridor and the associated traffic volume increases, the effect on the roadway and intersection operations and potential improvements that would mitigate those volume increases as well as address the concerns raised during Phase 1. In other words, future traffic increases affect the way the corridor operates – this phase is intended to mitigate those impacts and use those future traffic figures to test different long-term improvements.

Based on the feedback recorded from the public survey, from the stakeholder meetings, and from the participants at the public meetings, SRPEDD focused on the following principles during the development of future improvements:

- Enhance or implement pedestrian and bicycle accommodations
- Revise signal timing and phasing at signalized intersections to improve operations and safety
- Modify selected intersection geometries to improve sight distances
- Improve pavement markings, lighting, signage, and drainage to increase safety
- Provide more public transportation to reduce traffic volumes
- Investigate reducing the number of travel lanes (road diet) to help lower travel speeds

### *Future Traffic Volumes*

Future traffic volumes were generated using SRPEDD's Regional Travel Demand Model coupled with future development activity information from each community. The model analyzes existing traffic operations for the entire SRPEDD region and forecasts future traffic patterns based on projected growth in the region that considers population, households, employment and development. Consistent with MassDOT's Traffic Impact Assessment (TIA) guidelines and SRPEDD's Regional Transportation Plan (RTP) process, the future traffic conditions analysis included both short term (7-year) and long-term (20+ year) time horizons. That said, the three analysis periods used in this study included: (1) 2018 or "Existing"; (2) 2025 or "Short-Term"; and, (3) 2040 or "Long-Term".

### *Future Scenarios*

Using the principles from Phase 1 (identified above), in conjunction with federal and state design guidance documents, SRPEDD staff developed the following future scenarios:

- 2025 & 2040 No Improvements
- 2025 & 2040 With Improvements (4 Lanes)
- 2025 & 2040 With Improvements (2 Lanes)

The first scenarios (noted above as "No Improvements") simply add future traffic volumes to the "Existing" scenario (2018) and do not include improvements – the intent is to show what operations would look like in the future (short-term and long-term) if no changes were made. In contrast, the four (4) remaining scenarios (noted above as "With Improvements") included enhancements to the bicycle and pedestrian environment, improvements to the traffic signal timings and phasing, and modifications to several intersections with difficult geometry – the only difference is the number of travel lanes (4 versus 2).

## Two Lane Capacity

Based on the recorded traffic volumes, especially during the peak period (highest was approximately 850 to 900 vehicles), and analysis performed using the Highway Capacity Manual (HCM), Route 6 is projected to operate at LOS C when reduced to a 2-lane configuration. The analysis shows that Route 6 is currently operating under capacity and investigating a potential road diet is feasible.

## Three Lane (Two-Way Left Turn Lane) Scenario

Although the public indicated preference for a three-lane configuration at the Phase 1 public meetings, SRPEDD did not include it based on design guidance in the MassDOT Project Development and Design Guide (“Design Guide”) and due to safety concerns.

The MassDOT Design Guide specifically states that “The two-way left-turn lane is a special application of flush medians which allows turning movements along its entire length. TWLTs may be appropriate in areas with frequent driveway spacing in highly developed, or commercialized areas. Two-way left-turn lanes are appropriate on roadways with no more than two through lanes in each direction and where operating speeds are in the range of 30 miles per hour.”

It goes on to say “TWLT lanes may be used where daily traffic through volumes are between 10,000 and 20,000 vehicles per day for 4-lane roadways and between 5,000 and 12,000 vehicles per day for 2-lane roadways. Left-turn movements should consist of at least 70 turns per ¼ mile during the peak hours and/or 20 percent of the total volume. Careful evaluation of individual site is required for implementation of TWLT lanes.”

The main concern with this treatment is the operating speeds along the corridor. As summarized on page 13, recorded 85<sup>th</sup> percentile speeds ranged from a low of 36 MPH to a high of 55 MPH – all above the 30 MPH range guidance found in the Design Guide. Additionally, other than the section of Route 6 between North Street and Main Street in Mattapoisett (already has this treatment), there were no other areas that appeared to have the development density and the left turns that would warrant this type of treatment. Rather, SRPEDD felt that other options such as “pocket” style left turn lanes would be a better and safer approach by (1) providing a “safe-haven” for turning movements, (2) allowing uninterrupted flow for thru vehicles, and (3) reducing the chances of head-on collisions.

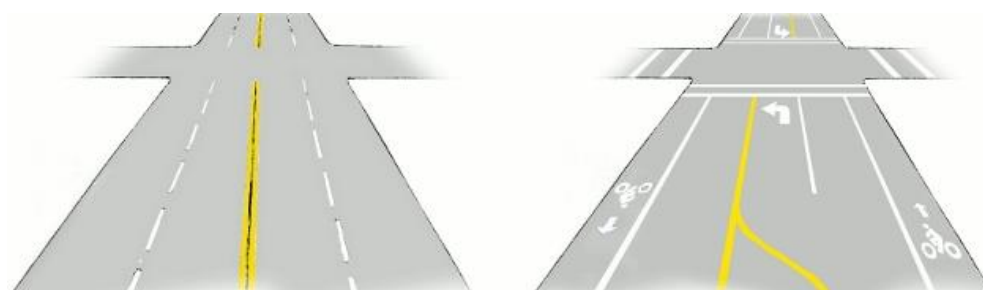


Figure 18: Example of “Pocket” style left turn improvement (City of Davis, CA)

That said, the public made it clear that this option should be fully explored when improvements are initiated on Route 6. Therefore, at that time, MassDOT should work closely with the communities to determine if a solution to this issue is possible and can be engineered.

## Operations Analysis Results

Figure 19 below illustrates the PM peak hour future conditions operations analysis results for the Town of Fairhaven.



Figure 19: PM peak hour future conditions LOS in Fairhaven

As expected, intersection operations at the major intersections in Fairhaven (Mill Road and New Boston Road) will get worse in the future if improvements are not implemented. The analysis shows that the Mill Road intersection is projected to worsen over time to LOS F from LOS E. Additionally, New Boston Road will downgrade from LOS C to LOS E in 2040.

Currently, Mill Road is used as a cut-through street to avoid the very busy Route 6 & Route 240 intersection. Signalizing this intersection will serve to encourage this behavior, therefore, it was not considered for improvements. However, installing a traffic signal at New Boston Road (town request), improves safety and LOS both in the 4-lane and 2-lane configurations.

Except for Gellette Road in 2040 with a 2-lane configuration, the remainder of Fairhaven's intersections are projected to operate at acceptable LOS ("A" to "D").

Figure 20 below illustrates the PM peak hour future conditions operations analysis results for the Town of Mattapoisett.

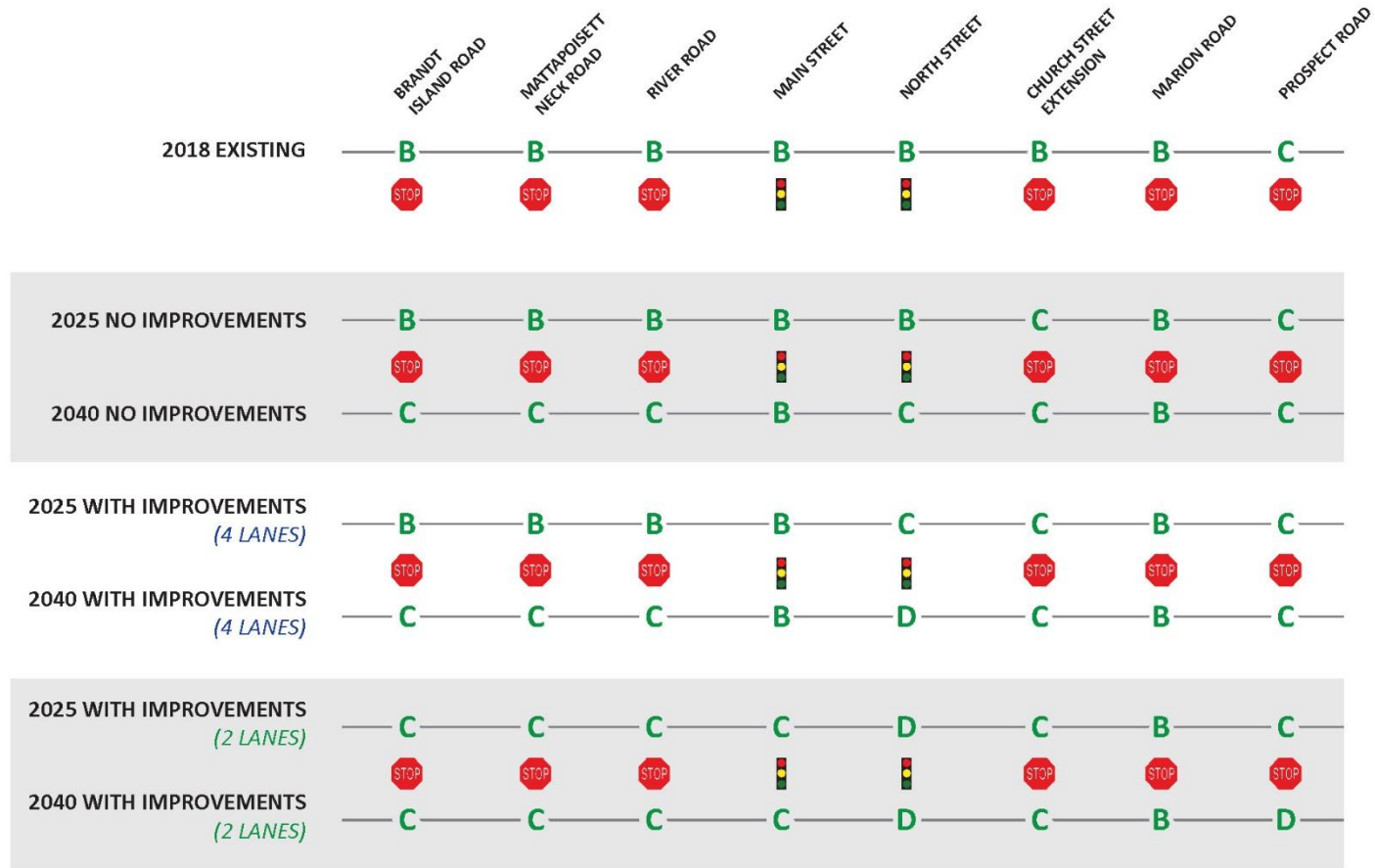


Figure 20: PM peak hour future conditions LOS in Mattapoisett

All of the intersections in Mattapoisett have acceptable LOS (“A” to “D”) in all scenarios. As previously mentioned, signal phasing improvements (dedicated left turns) at the North Street intersection would improve safety while geometric improvements at Brandt Island Road, Church Street Extension, and Marion Road would improve sight lines. Additional intersection ahead warning signage on Route 6 would improve conditions at the Prospect Street intersection.

Figure 21 below illustrates the PM peak hour future conditions operations analysis results for the Town of Marion.

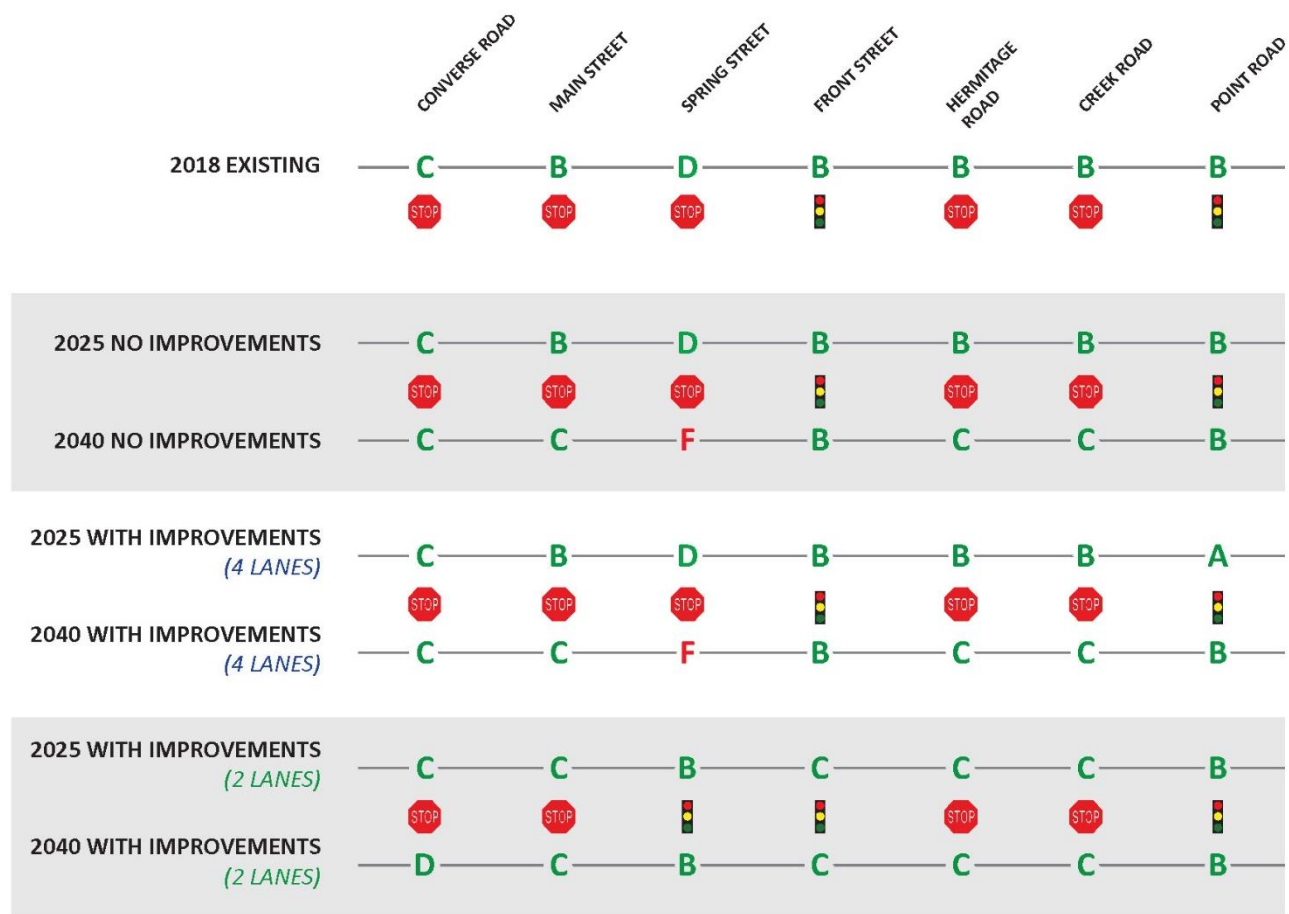


Figure 21: PM peak hour future conditions LOS in Marion

In Marion, the only intersection that operates at failing LOS (“E” and “F”) in the future is Spring Street. Conditions are expected to worsen from LOS D to LOS F in 2040 without improvements. Unfortunately, traffic volumes did not warrant the installation of a traffic signal until Route 6 is reduced to 2 travel lanes in that area. That said, once a traffic signal is in place, LOS is expected to operate at LOS B. However, the town has options – consideration of a roundabout at this location also provides dramatic improvement to the LOS and safety. This type of improvement would need to be thoroughly designed and vetted with the town to ensure it’s the right fit for Marion.



Figure 22 below illustrates the PM peak hour future conditions operations analysis results for the Town of Wareham.



Figure 22: PM peak hour future conditions LOS in Wareham

The Cromesett Road, Swifts Beach Road, and Gibbs Avenue intersections are expected to have failing LOS ("E" and "F") in 2040 if improvements are not implemented. That said, MassDOT and the town are pursuing signalization of the Swifts Beach Road intersection – expecting to improve conditions from LOS F to LOS B in the 4-lane configuration and from LOS F to LOS C in the 2-lane layout. No improvements are expected or planned for Cromesett Road; however, as conditions worsen, the Town will need to explore options similar to the Swifts Beach Road project.

### *Improvements*

During the study, it became clear that improving the corridor needed to include answers to two basic questions – First: “what improvements can be made with the existing layout?” and, Second, “is it possible to reduce the number of travel lanes?” Similar to typical transportation studies, SRPEDD first developed several improvements that answered the first question and then developed four (4) conceptual layout alternatives to build consensus around the second question, otherwise known as the “number of travel lanes” conversation.

Importantly, both the future improvements and the conceptual layout alternatives (page 30) were crafted considering: (1) the overall goal of the study, (2) the core issues, (3) the guiding principles, and (4) current federal and state design guidance.

### Overall Goal

- To improve conditions of Route 6 for all road users employing a context sensitive approach.

### Guiding Principles

- Enhance or implement pedestrian and bicycle accommodations
- Revise signal timing and phasing at signalized intersections to improve operations and safety
- Modify selected intersection geometries to improve sight distances
- Improve pavement markings, lighting, signage, and drainage to increase safety
- Provide more public transportation to reduce traffic volumes
- Investigate reducing the number of travel lanes (road diet) to help lower travel speeds

### Core Issues

- High vehicle speeds
- Narrow travel lanes with little to no shoulder
- Sidewalk network is not consistent, close to road, and in need of repairs to be ADA compliant
- No bicycle accommodations
- Some drainage structures are sinking, creating depressions along curb
- Some unsignalized intersections have geometric challenges leading to sight distance issues
- Signalized intersections lack protected left turn lanes blocking visibility for oncoming traffic







### Design Guidance

- MassDOT Project Development and Design Guide
- FHWA Manual on Uniform Traffic Control Devices (MUTCD)
- AASHTO: A Policy on the Geometric Design of Highways and Streets
- AASHTO: Guide for the Development of Bicycle Facilities
- United States Access Board Streets and Sidewalks Guidelines
- Massachusetts Architectural Access Board (AAB 521 CMR: 21.2.1)
- MassDOT Separated Bike Lane Planning & Design Guide
- National Association of City Transportation Officials Design Guides

In the end, SRPEDD recommends that the communities work with MassDOT to implement the following future improvements:

1. Signalize New Boston Road (Fairhaven)
2. Signalize Spring Street (Marion)
3. Signalize Swifts Beach Road (Wareham)
4. Modify North Street traffic signal to include protected/permissive left turns (Mattapoisett)
5. Modify Front Street traffic signal to include protected/permissive left turns (Marion)
6. Change physical geometries to create 90-degree intersections at six (6) locations
  - a. Brandt Island Road (Mattapoisett)
  - b. Church Street Extension (Mattapoisett)
  - c. Marion Road (Mattapoisett)
  - d. Converse Road (Marion)
  - e. Creek Road (Marion)
  - f. Hathaway Street (Wareham)

## Traffic Control Type

<u>Intersection</u>	<u>Existing</u>	<u>Future</u>	
New Boston Road			
Spring Street*			*Only in 2 lane configuration
Swifts Beach Road			

## Traffic Signal Movements


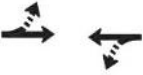

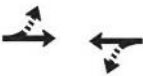
<u>Intersection</u>	<u>Existing</u>	<u>Future</u>	
North Street			Protected/ Permissive Left Turns
Front Street			

Figure 23: Traffic Control Changes

## Conceptual Layout Alternatives

The conceptual layout alternatives (next page) highlight potential strategies to address the lack of multi-modal accommodations on Route 6. The basic goals for the conceptual designs were to attempt to use only the existing land owned by MassDOT (Right-of-Way or “ROW”) and to accommodate all road users. Each alternative generally achieved the basic goals but come with a set of “pros” and “cons”. It should be noted that they are not meant to be a “one size fits all” approach. Rather, the intent is to answer the question – “is it possible to reduce the number of travel lanes?” and if so, “where?”

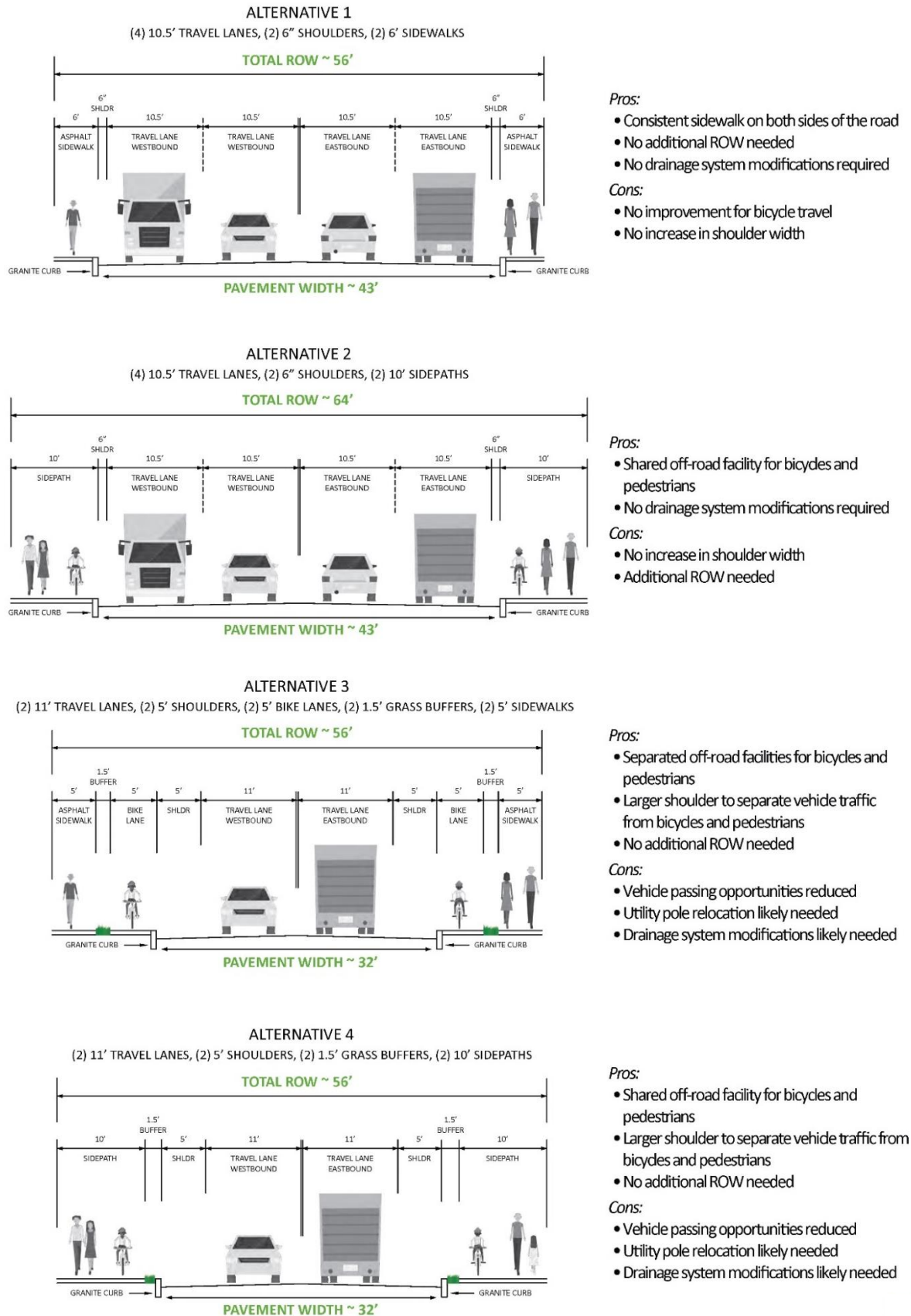


Figure 24: Conceptual Layout Alternatives

## Alternative #1

Alternative #1 focuses on improving conditions for pedestrians. It includes no physical changes to the roadway or utilities (drainage system, utility pole locations). It does, however, include installing 6-foot sidewalks where gaps exist and upgrading the existing sidewalks to meet ADA guidelines (replacing the walk surface, removing obstructions, providing adequate clearance widths, etc.). Bicyclists would still need to “share the road” with motorists in this alternative. This option presents the lowest cost improvement.

## Alternative #2

Alternative #2 focuses on improving conditions for bicyclists and pedestrians. It includes no physical changes to the roadway or utilities (drainage system, utility pole locations). It does, however, include providing a 10-foot, separated “sidepath” on both sides of the road to accommodate pedestrian and bicycle travel. Sidepaths are shared-use paths that are located immediately adjacent or parallel to the side of the road. Bicyclists would be physically separated from motorists, no longer needing to “share the road”. This option presents a higher cost mainly due to land acquisition.

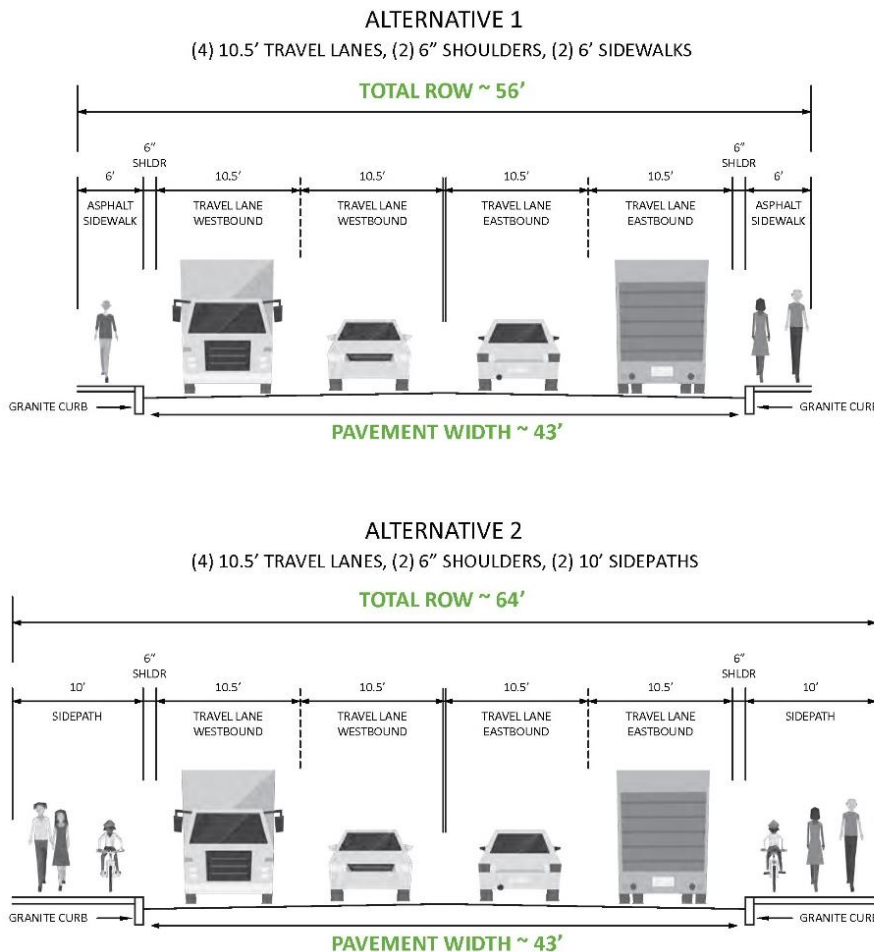


Figure 25: Conceptual Layout Alternatives #1 & #2

## Alternatives #3 & #4

Alternatives #3 and #4 are very similar. Both focus on improving conditions for all road users – providing separation between the bicyclists and pedestrians from the travel way, reducing the number of travel lanes to reduce vehicle speeds, and enlarging the current shoulder area to accommodate first responders. This option would include improvements to the drainage system and potential utility pole relocations. The main difference between the two options is the design of the separated bicycle and pedestrian environment. In Alternative #3, bicyclists and pedestrians would have their own space while in Alternative #4, bicyclists and pedestrians would share the 10-foot, separated “sidepath”. These options would not include land acquisition; however, it would involve upgrades to the drainage system, curb relocations, and restriping the travel way.

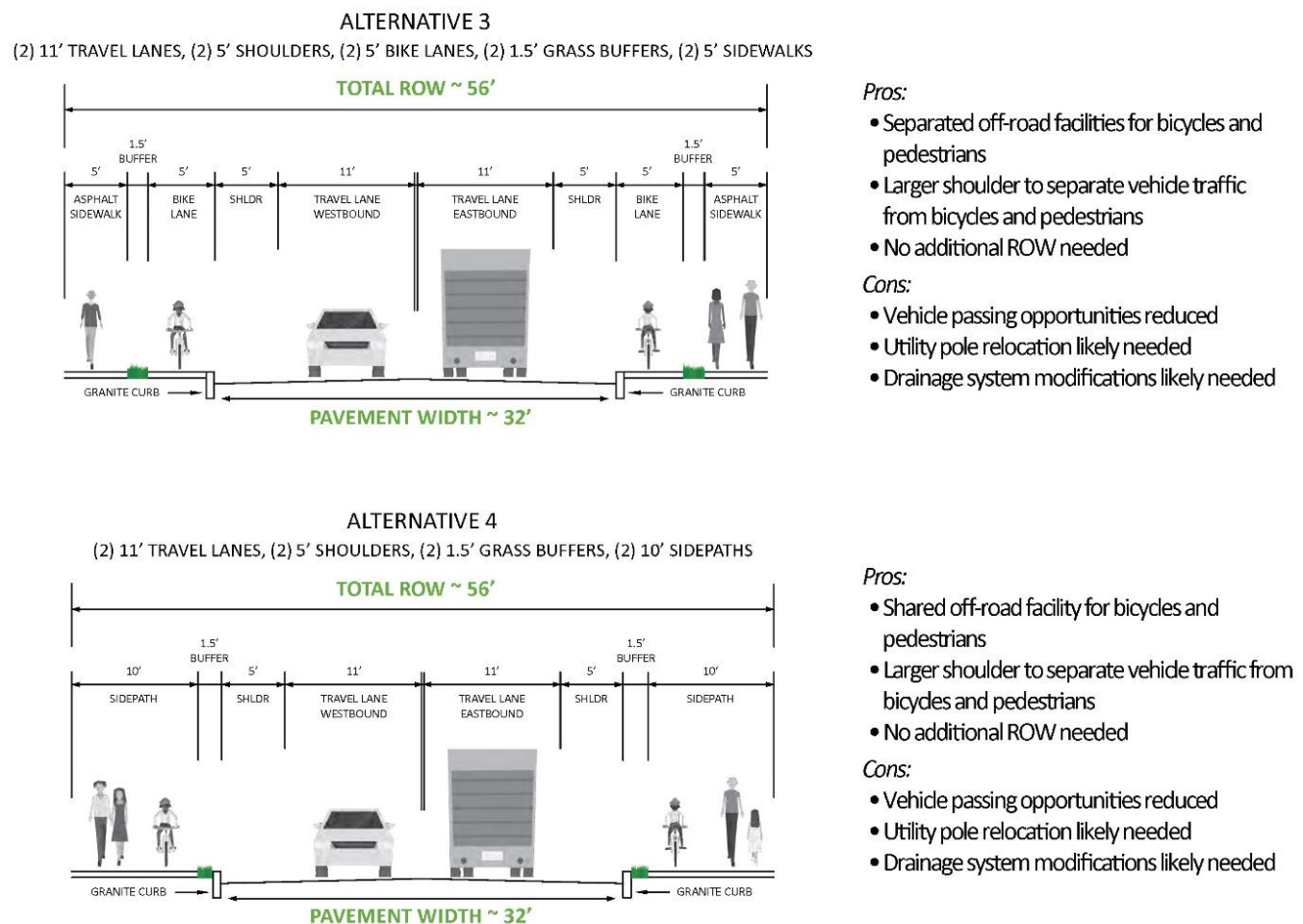


Figure 26: Conceptual Layout Alternatives #3 & #4



## *Public Meetings*

The goal of Phase 2 was to build consensus about the future of Route 6 – balancing efforts to improve bicycle and pedestrian facilities while maintaining acceptable traffic flow and to identify where specific improvements would be most appropriate.

Phase 2 concluded in January 2020, as SRPEDD facilitated the second of two public meetings. The first meeting was held at the Center Elementary School (December 2019) and second meeting was held at the Sippican Elementary School (January 2020). The purpose of these meetings was to: (1) present the results of SRPEDD’s future conditions analyses; (2) present and gather the public’s feedback on the set of draft improvement alternatives; and, (3) to build consensus about the type and locations of future layouts using a preference survey (see Figure 28 on the following page).



*Figure 27: Public Meeting at Sippican Elementary School*

Similar to Phase 1, SRPEDD asked for the public to consider which presented alternative reflected their preference for the future of Route 6 and to indicated that choice on the survey. Importantly, the survey was flexible – the participants could select multiple alternatives if that suited them or even design their own alternative. SRPEDD simply asked that they indicate any “modifications” on the survey to ensure accurate cataloging following the meetings.

The survey was posted on the project webpage and paper copies were made available at the town halls. Following a 2-week comment period, SRPEDD cataloged and analyzed one hundred thirteen completed surveys. Importantly, this exercise allowed residents, town officials, business owners, commuters and others to express their opinions about the corridor and brought the communities closer to consensus.

As shown in Table 3 (page 37), the majority of respondents preferred Alternative #2 – keeping the 4-lane configuration while expanding the existing sidewalks to provide a 10-foot sidepath on both sides of the road for the entire corridor. While this conceptual alternative addresses two of the core issues (lack of sidewalk consistency and bicycle accommodations) by providing the separated space for bicycles and pedestrians, it does not address the high vehicle speeds and narrow travel lanes and shoulders. Additionally, it requires land acquisition in order to provide the sidepath on both sides of road. That said, if and when this alternative moves forward as a project, the final design could be modified in a way that reduces this impact and associated costs.

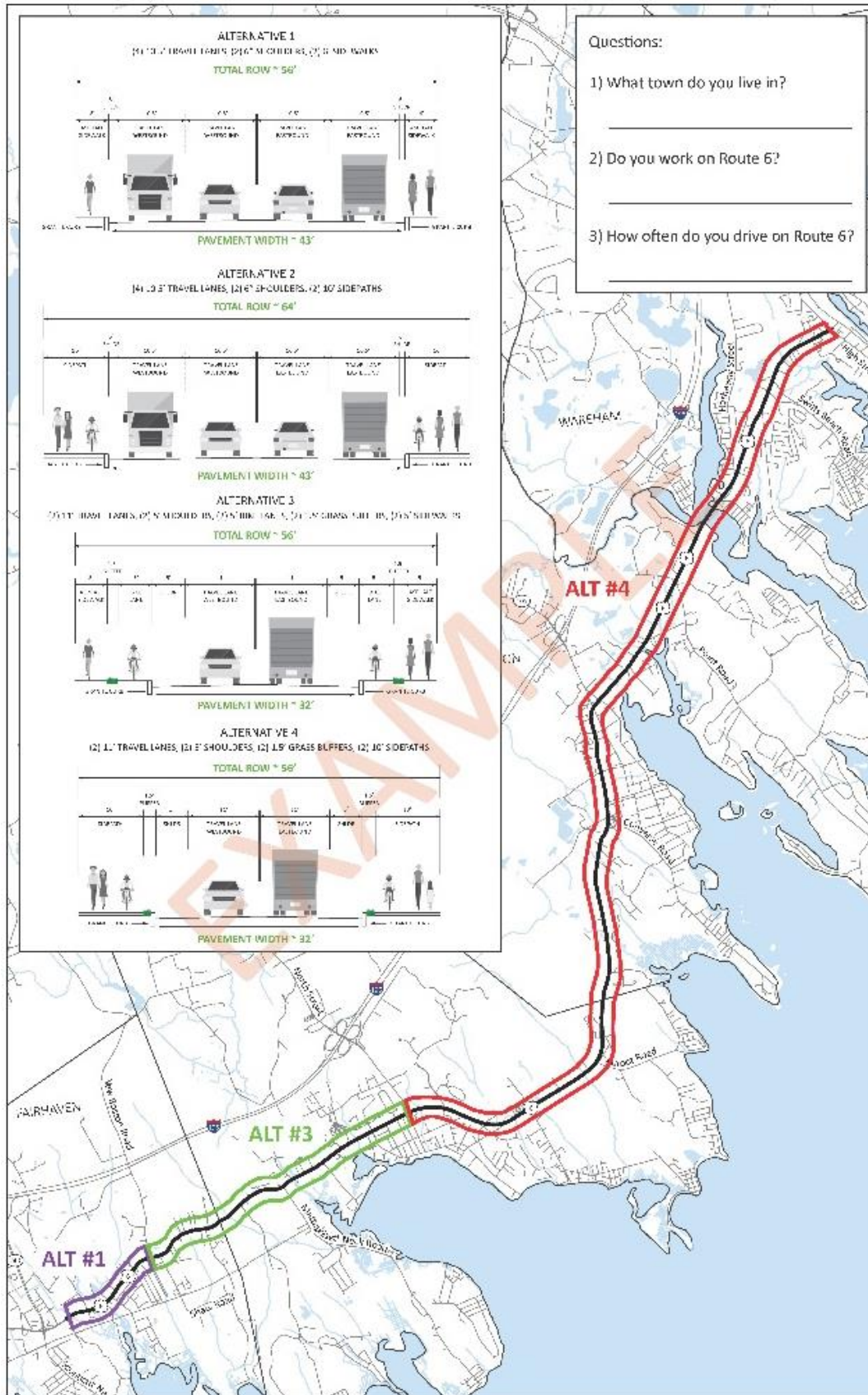


Figure 28: Preference Survey Example presented at the public meetings



## Conclusions & Recommendations

### *Conclusions*

Prior to the extension of Interstate 195 to Route 25 in the 1970s, Route 6 was the primary highway used to access Cape Cod. Therefore, at that time, the roadway was designed to accommodate a higher number of vehicles traveling at higher speeds in order to get “from point A to point B.” Although it still allows for that use, it also serves other purposes – providing access to residential properties, local businesses, recreational areas, and municipal facilities. Those land uses, the trips they create, and the associated users all need a roadway that is safe, reliable, and accessible. Currently, Route 6 is auto-centric, 4-lane highway, that prioritizes vehicle uses and discourages walking or biking. The goal of this study was to build consensus around the concept of improving conditions along Route 6 for all road users employing a context sensitive approach. Ultimately, significant changes cannot be accomplished overnight; however, with continual dialogue and engineering expertise, Route 6 can be improved.

### Core Issues

Throughout the study, SRPEDD identified the following core issues:

- High vehicle speeds
- Narrow travel lanes with little to no shoulder
- Sidewalk network is not consistent, close to road, and in need of repairs to be ADA compliant
- No bicycle accommodations
- Outside lane drainage structures are sinking, creating depressions along curb
- Some unsignalized intersections have geometric challenges leading to sight distance issues
- Signalized intersections lack protected left turn lanes blocking visibility for oncoming traffic

### Guiding Principles

Based on an understanding of the core issues coupled with the feedback recorded from the public survey, from the stakeholder meetings, and from the participants at the public meetings, SRPEDD focused on the following principles during the development of future improvements:

- Enhance or implement pedestrian and bicycle accommodations
- Revise signal timing and phasing at signalized intersections to improve operations and safety
- Modify selected intersection geometries to improve sight distances
- Improve pavement markings, lighting, signage, and drainage to increase safety
- Provide more public transportation to reduce traffic volumes
- Investigate reducing the number of travel lanes (road diet) to help lower travel speeds

## *Recommendations*

### Improvements

Considering the core issues and the guiding principles, SRPEDD recommends that the communities work with MassDOT to implement the following improvements:

1. Signalize New Boston Road (Fairhaven)
2. Signalize Spring Street (Marion)
3. Signalize Swifts Beach Road (Wareham)
4. Modify North Street traffic signal to include protected/permissive left turns (Mattapoisett)
5. Modify Front Street traffic signal to include protected/permissive left turns (Marion)
6. Change physical geometries to create 90-degree intersections at six (6) locations
  - a. Brandt Island Road (Mattapoisett)
  - b. Church Street Extension (Mattapoisett)
  - c. Marion Road (Mattapoisett)
  - d. Converse Road (Marion)
  - e. Creek Road (Marion)
  - f. Hathaway Street (Wareham)

Additionally, the following general improvements should be made to improve safety:

1. Replace all existing signage and pavement markings with high-visibility retroreflective materials to improve visibility
2. Replace all existing High-Pressure Sodium (HPS) streetlights with high-efficiency LED lights to improve visibility
3. Replace all existing “standard” style crosswalks with “continental” or “ladder” style to improve visibility
4. Reconstruct existing drainage structures that are in disrepair and bring flush to pavement surface to avoid depressions and standing water
5. Remove telephone poles from existing sidewalks or include a path that provides adequate clearance widths and add ADA compliant curb ramps to improve pedestrian mobility
6. Add bicycle signage along the corridor to improve awareness of bicycle activity

It should be noted that these improvements are intended to be implemented regardless of the future layout of Route 6.

## Future Route 6 Layout

In total, SRPEDD received 113 preference surveys with a range of opinions. The vast majority of the completed surveys included the selection of a provided alternative for the entire corridor. However, there were some that (1) chose a combination of the provided alternatives (classified as “Combination”), (2) modified a provided alternative or created a new one (classified as “Other”), and (3) neglected to select a specific alternative (classified as “Blank”). The results of the comprehensive review, cataloging effort, and final tally are shown below, ranked by total number of selections:

**Table 3: Preference Survey Exercise Results**

Rank	Alternative	Total Tally	Percent of Total
1	Alternative #2	35	31%
2	Alternative #1	21	19%
3	“Combination”	15	13%
4	Alternative #3	14	12%
5	Alternative #4	13	12%
6	“Other”	9	8%
7	“Blank”	6	5%
<b>Total</b>		<b>113</b>	<b>100%</b>

As shown in Table 3, the majority of respondents preferred Alternative #2 – keeping the 4-lane configuration while expanding the existing sidewalks to provide a 10-foot sidepath on both sides of the road for the entire corridor. While this conceptual alternative addresses two of the core issues (lack of sidewalk consistency and bicycle accommodations) by providing the separated space for bicycles and pedestrians, it does not address the high vehicle speeds and narrow travel lanes and shoulders. Additionally, it requires land acquisition in order to provide the sidepath on both sides of road. That said, if and when this alternative moves forward as a project, the final design could be modified in a way that reduces this impact and associated costs.

Although this exercise provided valuable insights about the public’s preference, it is important to note that this is not considered to be a final “vote” or “decision” about the future layout of Route 6. Rather, it should be used as a foundation on which to build continued support for future layout changes, should specific communities wish to move forward. As previously noted, there are several improvements in this report that provide increased intersection efficiencies and safety, Americans with Disabilities Act (ADA) compliance, enhanced visibility, and infrastructure upgrades that should be pursued regardless of the roadway layout.

Lastly, the preference for a 3-lane configuration (2 travel lanes with a two-way left-turn lane) was expressed and supported during the public meetings and preference survey comment period. Although the MassDOT Project Development & Design Guide indicated that this treatment may not be preferable for Route 6 (mainly due to operating speeds), SRPEDD recommends that, at a minimum, it be considered during the design stage of any future project to ensure all possibilities are evaluated.

## Rt 6 upgrades

Gayle Santello <gbsant@verizon.net>

Wed 2/26/2020 9:32 AM

To: Jed Cornock <jcornock@srpedd.org>

Hopefully it's been agreed that reduction to 2 lanes would be an incredible disastrous downgrade! Drainage, some better signage might be helpful, but most of the sidewalks are in good shape & many of us see no need change that up! We live on Converse Rd off rt 6 & have had a business here for 30 yrs! We find most of the ideas unnecessary & a huge waste of \$. Thank you!

Gayle Boston Santello  
185 Converse Rd.  
Marion, MA 02738

## Route 6 Study Comments

Daniel Eling <deling@gmail.com>

Thu 2/27/2020 9:48 AM

To: Jed Cornock <jcornock@srpedd.org>

Mr. Cornock,

Having reviewed the Route 6 Draft Corridor Study, I have only one comment. Given the proximity of I-195 parallel to the entire study area of Route 6, I think the "get from A to B" metropolitan connector design of the road is no longer appropriate. I believe the communities would be better served if Route 6 were put on a road diet, especially in the denser areas of Mattapoisett and Marion. This would be accompanied by the addition of improved, separated pedestrian and bicycle facilities. Basically, these communities should work to push the A-to-B and through-traffic to I-195 and reorient Route 6 to alternative transportation, denser walkable development, and more attractive village centers. Thank you.

v/r,

Dan Eling

Marion



## Church Street Extension Mattapoisett Proposed Rt. 6 Road Changes

Patrick Dawson <patrick.dawson@dawsonre.com>

Thu 2/27/2020 11:43 PM

To: Jed Cornock <jcornock@srpedd.org>

Cc: Sandra Dawson <sandra.dawson@dawsonre.com>

My name is Patrick Dawson, the principle resident who lives directly across the street from the proposed 90 degree change at the intersection of Rt. 6 & Church Street Extension Mattapoisett. I recently saw this story in the local newspaper (The Sippican Week) & had some serious concerns about these planned changes to the current layout of Rt. 6 in my immediate neighborhood.

Currently, there are two main entranceways off of Rt. 6 when it intersects with my street. The first is at Church Street Extension itself, where the cars come flying down the road just like they are continuing on Rt. 6. The second entranceway is directly across the street from my house, in front of my driveway. The cars approaching from either direction on Rt. 6 have to slow down on Rt. 6 itself in order to turn onto Church Street Extension.

In my view, both access areas are extremely dangerous and it's just a matter of time before somebody gets seriously injured. I have spoken to the local police safety officer about my concerns. This past Fall the Town of Mattapoisett installed a new sign at the top of Church Street Extension warning drivers to slow down when exiting off of Rt. 6. In my view, this sign has not been very effective in getting drivers to slow down. How can I be safe when I exit my driveway or go to pick up the mail? I feel like I'm taking my life into my hands every time either I or my family leaves the yard!

If the State of Massachusetts is seriously considering changing this local intersection into a ninety degree angle in front of my home is there some way that I can get a copy of this proposed map changes so that I can better understand and be able to visualize what exactly they are proposing? This proposed change directly impacts both myself and my family and nobody on the state level (MA Dept of Transportation) has ever even spoken to either myself or my neighbors about what kind of impact this change will have on our quality of life.

Patrick Dawson

### **Patrick Dawson, Realtor, GRI, CBR**

*Co-Owner, Marketing Manager*

#### **Dawson Real Estate**

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## Route 6 improvements

Lynne Moody <lmoody333@gmail.com>

Fri 2/28/2020 8:10 AM

To: Jed Cornock <jcornock@srpedd.org>

Hello,

I am writing to just express my support of making Route 6 a more bicycle and pedestrian friendly space. I bike, run and walk along Route 6 quite often and find the high speeds of cars scary and dangerous. I would love to see it cut down to just two lanes with a protected bike/pedestrian lane on either or both sides. I think this would slow traffic down but unfortunately may increase road rage! Cars are more than able to pass me when I am biking in the right hand lane, but so many harass me verbally or with their car horns. When I asked a Marion police officer about it, he asked, " why are you riding on that road? I wouldn't" and basically was not going to help the situation. Short of decreasing the lane, maybe there should be a concerted effort to educate the public about bicycle rights and laws!

Thank you for the work you are doing!

Lynne Moody

## Route 6 comments

Tim Francis <timothyjfrancis@gmail.com>

Fri 2/28/2020 8:17 AM

To: Jed Cornock <jcornock@srpedd.org>

Thank you for all the work that has been done on the Route 6 corridor improvements. I attended one of the meetings in Marion and appreciate all the work, chance for comments and suggestions. I realize you get a lot of different viewpoints!

My primary hope is making it more bicycle, pedestrian/runner friendly. So an alternative including the bike lanes is necessary. Even if it was a nice bike path on just one side of the road. I think it could drop to 2 lanes for most of it, as I just don't see the traffic that would drive it being 4 lanes most of the time. This would likely kick a few more over to I-195 as well which is its purpose. I know there is more opposition to that and keeping 4 is ok but gives you less room to work with for shoulders and bike lane.

Probably not "the" perfect solution and maybe some variances within each town ends up working. Its a huge, but needed project so again thanks!

Tim Francis

## Route 6

Daniel Creavin <dancreavin43@gmail.com>

Fri 2/28/2020 10:22 AM

To: Jed Cornock <jcornock@srpedd.org>

We do not see any bike lanes or addition of turn lanes in the survey. That would add to safety.

Resident

Sent from my iPad

## Route 6 in Marion

lswarner00@gmail.com <lswarner00@gmail.com>

Fri 2/28/2020 2:38 PM

To: Jed Cornock <jcornock@srpedd.org>

An not totally up on the whole length but inexpensive and simple ideas for Marion.

1. Make rte. 6 from Dunkin donuts to the Front St/105 lights 3 lanes. Also from Burr Bros to the same lights.
2. Make the lights have a left turn arrow for the middle la. The lights already have pedestrian buttons.
3. Make Spring street 1 way from the Brew fish to rte. 6.
4. Cost would be modification of the lights and perhaps as many as 10 signs.

I am sure that some would be upset that we aren't spent pots of money but it would curb accidents and help with the flow of traffic now.



## Rt. 6 Draft Report

tnolte@rcn.com <tnolte@rcn.com>

Sun 3/1/2020 12:13 PM

To: Jed Cornock <jcornock@srpedd.org>

Cc: bdesousa43@comcast.net <bdesousa43@comcast.net>; Michael Gagne <mgagne@mattapoisett.net>

Jeff,

Suggest adding a 'green' streets attitude to the Guiding Principles. As you know, this provides for environmental sustainability through surface drainage in addition to an element of beautification. Also, there should be a consideration of street furniture, signage (not just traffic signs), bike racks, etc. With that in mind, recommend Alt. 3 with a slight adjustment to reduce the shoulder to increase the buffer (tree lawn). This would allow the various towns to landscape with trees/bushes should they choose to and/or for placement of the street furniture.

In areas of greater residential or commercial traffic (such as Main Street to North Street in Mattapoisett), recommend the street section in the lower left portion of Page 21 (these sections should be labeled for reference purposes and were not available at the meetings). This would add a more effective element of traffic calming. Turns to the left would still be 'pocket style' (as they are now) by reducing the width of the median.

The idea of land acquisition in any scheme would seem to be impossible due to timing, lawsuits, and costs as we in Mattapoisett have difficulty even re-claiming town land for sidewalks.

Sincerely,  
Ted Nolte  
Nolte Associates  
Architects/Planners

## Route 6 Corridor Study comments

David Bramley <dlbramley2@gmail.com>

Sun 3/1/2020 3:15 PM

To: Jed Cornock <jcornock@srpedd.org>

The following are my comments regarding the Draft Route 6 Corridor Study. Please do not hesitate to contact me if I can be of assistance.

Alternative No. 2 is the best option. Maintaining two lanes of traffic in each direction is necessary. The two-lane stretch of Route 6 east of Yarmouth is a headache and nightmare. However, maintaining the clearance along the sidewalks also is critical. Currently, much of the vegetation adjacent to the existing sidewalks encroaches on the sidewalk significantly in many locations.

There should not be a signal at Spring Street and Route 6. Reconfiguring the intersection will alleviate the difficulty in using this intersection. There also are insufficient traffic movements to justify a light. Having two traffic lights in such close proximity will be very user unfriendly.

The Creek Road/Route 6 intersection is fine as it is. There is little difficulty using the intersection. The money can be spent better elsewhere.

The pavement at nearly every catch basin along Route 6 is in desperate need of attention. Travelling in the right-hand lane requires the ability of a slalom racer to avoid the pot holes and broken pavement.

33 Joanne Drive, Marion

David Bramley, PE, LSP, LEP  
860-966-2911

## Route 6 Proposal - thoughts

Pardo, Noel <Noeljonpardo@taboracademy.org>

Tue 3/3/2020 9:27 AM

To: Jed Cornock <jcornock@srpedd.org>

Thank you for all the work on the initial draft. After reviewing the proposals, I would like to support further study on the pocket left turn improvement and a reduction to two lanes of traffic to allow for a bike path, pedestrian path, and wider shoulders (alternative 3). The only other major issue is when a breakdown occurs in a two-lane system. Do we have statistics on this? Maybe contact towing companies or AAA for data?

Thank you again,

Noel Pardo

--

NOEL PARDO P'18, P'20

Director of Auxiliary Programs | Boys Varsity Crew Coach

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**RE: Rt. 6 Draft Report**

Bonne DeSousa <bdesousa43@comcast.net>

Tue 3/3/2020 12:34 PM

To: tnlte@rcn.com <tnlte@rcn.com>; Jed Cornock <jcornock@srpedd.org>

Cc: 'Michael Gagne' <mgagne@mattapoissett.net>

Jeff,

I agree with Ted and I thank him for nudging me to finalize my thoughts on the draft.

I think that the emergence of popular destinations in the future is something that cannot be accurately assessed in the scope of the traffic study and perhaps there can be a mention of the need to provide safe crossings to popular destinations.

I am thinking specifically of a completed bike path that will roughly parallel Route 6 and be 15 miles long. The longer it becomes the more popular it will be, increasing the numbers of people seeking direct routes to it from every neighborhood along Route 6. Alta Planning did a study for Mattapoissett and they pointed out that the longer bike paths like Cape Cod Canal and Shining Tides get many more visitors per day than the shorter ones.

Excerpt from Alta Planning email (Kyle James clarification) Feb. 1, 2011

*"When reviewing surveys of trail users across the country, 70%-90% of inter-municipal trail users tend to live within 0.5 miles of the trail. Large, connected regional trails tend to attract a higher total number of users, of which a greater percentage tend to be non-local users. With the gap still present between the Phoenix Rail-Trail and North Street (and through Wareham), demand for the study segments is likely to be more reflective of inter-municipal trail trip patterns, like those observed on the Phoenix Rail-Trail. Thus, the demand estimates in the draft memo are an adjustment of the counts observed on the Phoenix Rail-Trail to account for differences in the surrounding populations within a short walking and bicycling distance. **As the remaining gaps in the regional network are closed and Mattapoissett becomes more connected to the Cape Cod rail-trail system/ Southcoast Bikeway, it is reasonable to expect that usage of the segments through Mattapoissett would start to reflect the higher number of users observed at the Shining Sea Path and Cape Cod Canal Path North/South noted on Page 23** (and, conversely, that demand for trail segments in the region would benefit from connectivity with Mattapoissett). "*

Thus I think a regular safe pedestrian and bicycle crossings should be provided along its entire length. There should be a specific mention of this.

## Comparison to Other Multi-use Paths

To ground-truth the demand estimates, the extrapolated values were compared to counts collected at existing multi-use pathways in the northeast.

- Walloomsac River Multi-use Path (Bennington, VT)<sup>11</sup>
  - at School Street: 28 bicyclists and pedestrians during the peak-hour
  - at Depot Street: 18 bicyclists and pedestrians during the peak-hour
- Prospect Street Multi-Use Path (North Bennington, VT)<sup>11</sup>
  - at College Road: 16 bicyclists and pedestrians during the peak-hour
- Toonerville Trail(Springfield, VT)<sup>11</sup>
  - Charlestown Road east of I-191: 300 bicyclists and pedestrians during the peak-hour
  - Charlestown Road west of I-191: 19 bicyclists and pedestrians during the peak-hour
  - near Seavers Brook Road: 56 bicyclists and pedestrians during the peak-hour
- Rutland Rail-Trail (Rutland, VT)<sup>11</sup>
  - near Franklin Street: 39 bicyclists and pedestrians during the peak-hour
  - near Union Street: 60 bicyclists and pedestrians during the peak-hour
  - near West Street: 170 bicyclists and pedestrians during the peak-hour
- Barre Bike Path (Barre, VT)<sup>11</sup>
  - near Bridge Street: 116 bicyclists and pedestrians during the peak-hour
  - near Parkside Terrace: 196 bicyclists and pedestrians during the peak-hour
  - north of Parkside Terrace: 322 bicyclists and pedestrian during the peak-hour
- Cape Code Canal Path North<sup>12</sup>
  - west of Herring Run Recreation: 1,064 bicyclists and pedestrians per day
- Cape Code Canal Path South<sup>12</sup>
  - at West End: 854 bicyclists and pedestrians per day
  - at East End: 626 bicyclists and pedestrians per day
- Shining Sea Path<sup>12</sup>
  - south of County Road: 923 bicyclists and pedestrians per day
  - south of Locust Street: 1,948 bicyclists and pedestrians per day

Among the selected comparable multi-use paths, the demand estimates for the proposed Mattapoisett Rail-Trail fell within the low-middle range.

<sup>11</sup> Vermont bike and Pedestrian Count Data, VTrans, 2016.

<<http://www.uvm.edu/~transctr/research/VTransBPPortal/index.html>>

<sup>12</sup> Cape Cod Commission Traffic Counting Report 2018, Appendix E: Bicycle/Pedestrian Counts, Cape Code Commission.

<[http://www.capecodcommission.org/resources/transportation/counts/pdf\\_count/BikePed.pdf](http://www.capecodcommission.org/resources/transportation/counts/pdf_count/BikePed.pdf)>



## Route 6 comments

Dave Bramley <dlbramley2@gmail.com>

Tue 3/3/2020 5:10 PM

**To:** Jed Cornock <jcornock@srpedd.org>

In addition to my previous comments, I suggest that the speed indicator west of Little Neck Village (Marion) be moved easterly to the intersection with Parkway Lane. The current location is too far from the entry to Little Neck Village and the traffic either ignores the indicator or speeds back up after passing the indicator and the effectiveness of the warning is lost.

David Bramley  
33 Joanne Drive, Marion  
860-966-2911

Sent from [Mail](#) for Windows 10

## Corridor study

Jennifer Francis <jafmocha@gmail.com>

Sun 3/8/2020 11:51 AM

To: Jed Cornock <jcornock@srpedd.org>

📎 1 attachments (5 MB)

Route-6-Corridor-Study-Report-DRAFT-Feb-2020\_jaf.pdf;

Hi Jed --

Great job pulling together the Corridor Study! I've added a few thoughts using comment bubbles -- you'll have to open it in Acrobat to read them.

It seems our SelectBoard is hot to trot on Rte 6, so we'll be working on an RFQ to get some preliminary designs worked up. I've asked to use some of our SRPEDD "free" time to get your help as we move forward -- hope that's okay with you!

Thanks for attending our TCTF meeting the other night and for presenting the results to the BoS.

Cheers,  
Jennifer



**Jennifer Francis, PhD** | [jenniferafrancis.com](http://jenniferafrancis.com)

Senior Scientist

Woods Hole Research Center | <http://whrc.org>

Falmouth, Massachusetts USA

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DRAFT

# Route 6 Corridor Study

February 2020



**SRPEDD**  
Southeastern Regional Planning  
& Economic Development District

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& Economic Development District

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Massachusetts Commission Against Discrimination (MCAD)  
One Ashburton Place, 6th Floor Boston, MA 02109  
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Portuguese: Caso esta informação seja necessária em outra idioma, favor contar o coordenador em Título VI do SRPEDD pelo telephone (508) 824-1367.

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## Executive Summary

Prior to the extension of Interstate 195 to Route 25 in the 1970s, Route 6 was the primary highway used to access Cape Cod. Therefore, at that time, the roadway was designed to accommodate a higher number of vehicles traveling at higher speeds in order to get “from point A to point B.” Although it still allows for that use, it also serves other purposes – providing access to residential properties, local businesses, recreational areas, and municipal facilities. Those land uses, the trips they create, and the associated users all need a roadway that is safe, reliable, and accessible. 

Currently, Route 6 is auto-centric, 4-lane highway, that prioritizes vehicle uses and discourages walking or biking. As such, the Route 6 Corridor Study was initiated to analyze current and future traffic conditions and to develop improvements aimed at making the roadway safer for all road users.

## The Process

The study included these main sequential steps:

### Step #1: Develop Study Goal

*To improve conditions of Route 6 for all road users employing a context sensitive approach.*




### Step #2: Identify Core Issues

- High vehicle speeds
- Narrow travel lanes with little to no shoulder
- Sidewalk network is not consistent, close to road, and in need of repairs to be ADA compliant
- No bicycle accommodations
- Some drainage structures are sinking, creating depressions along curb
- Some unsignalized intersections have geometric challenges leading to sight distance issues
- Signalized intersections lack protected left turn lanes blocking visibility for oncoming traffic




### Step #3: Create Guiding Principles


- Enhance or implement pedestrian and bicycle accommodations
- Revise signal timing and phasing at signalized intersections to improve operations and safety
- Modify selected intersection geometries to improve sight distances
- Improve pavement markings, lighting, signage, and drainage to increase safety
- Provide more public transportation to reduce traffic volumes
- Investigate reducing the number of travel lanes (road diet) to help lower travel speeds 

## Improvements


During the study, it became clear that improving the corridor needed to include answers to two basic questions – First: “what improvements can be made with the existing layout?” and, Second, “is it possible to reduce the number of travel lanes?” Similar to typical transportation studies, SRPEDD first developed several improvements that answered the first question and then developed four (4) conceptual layout alternatives to build consensus around the second question, otherwise known as the “number of travel lanes” conversation.

Importantly, both the future improvements and the conceptual layout alternatives (page 30) were crafted considering: (1) the overall goal of the study, (2) the core issues, (3) the guiding principles, and (4) current federal and state design guidance.

In the end, SRPEDD recommends that the communities work with MassDOT to implement the following future improvement 

1. Signalize New Boston Road (Fairhaven)
2. Signalize Spring Street (Marion )
3. Signalize Swifts Beach Road (Wareham)
4. Modify North Street traffic signal to include protected/permissive left turns (Mattapoisett)
5. Modify Front Street traffic signal to include protected/permissive left turns (Marion)
6. Change physical geometries to create 90-degree intersections at six (6) locations
  - a. Brandt Island Road (Mattapoisett)
  - b. Church Street Extension (Mattapoisett)
  - c. Marion Road (Mattapoisett)
  - d. Converse Road (Marion)
  - e. Creek Road (Marion)
  - f. Hathaway Street (Wareham)

Additionally, the following general improvements should be made to improve safety:

1. Replace all existing signage and pavement markings with high-visibility retroreflective materials to improve visibility
2. Replace all existing High-Pressure Sodium (HPS) streetlights with high-efficiency LED s to improve visibility
3. Replace all existing “standard” style crosswalks with “continental” or “ladder” style to improve visibility
4. Reconstruct existing drainage structures that are in disrepair and bring flush to pavement surface to avoid depressions and standing water
5. Remove telephone poles from existing sidewalks or include a path that provides adequate clearance widths and add ADA compliant curb ramps to improve pedestrian mobility
6. Add bicycle signage along the corridor to improve awareness of bicycle activity

It should be noted that these improvements are intended to be implemented regardless of the future layout of Route 6.

## Conceptual Layout Alternatives

The conceptual layout alternatives highlight potential strategies to address the lack of multi-modal accommodations on Route 6. The basic goals for the conceptual designs were to attempt to use only the existing land owned by MassDOT (Right-of-Way or “ROW”) and to accommodate all road users. Each alternative generally achieved the basic goals but come with a set of “pros” and “cons”. It should be noted that they are not meant to be a “one size fits all” approach. Rather, the intent is to answer the question – “is it possible to reduce the number of travel lanes?” and if so, “where?”

## Alternatives #1 & #2

Alternatives #1 and #2 have some notable similarities and distinct differences. While both focus on improving conditions for pedestrians, they do not include the same type of improvements for bicyclists. Alternative #1 simply includes providing a consistent 6-foot sidewalk on both sides of the road for the entire corridor while continuing bicycle travel in the roadway. Meanwhile, Alternative #2, includes a 10-foot, separated “sidepath” on both sides of the road to accommodate both pedestrian and bicycle travel. In this alternative, bicyclists would be physically separated from motorists, no longer needing to “share the road”. Both alternatives make no physical changes to the roadway or utilities (drainage system, utility pole locations); however, Alternative #2 would require additional land acquisition to accommodate the sidepath, therefore, resulting in a higher cost.

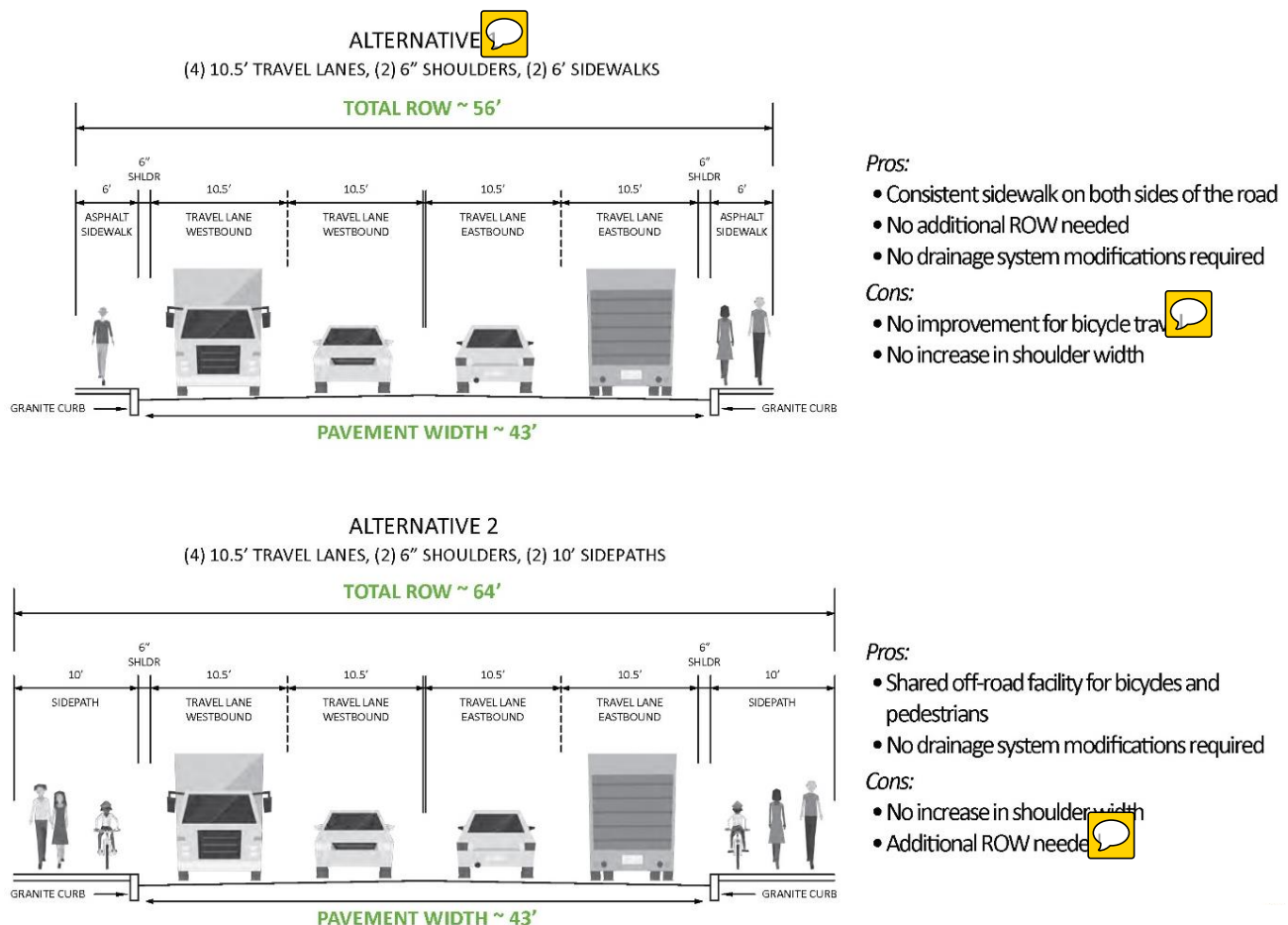


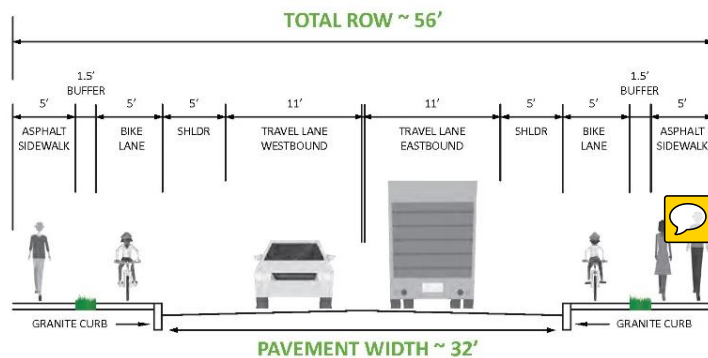
Figure 1: Conceptual Layout Alternatives #1 and #2

## Alternatives #3 & #4

Alternatives #3 and #4 are very similar. Both focus on improving conditions for all road users – providing separation between the bicyclists and pedestrians from the travel way, reducing the number of travel lanes to reduce vehicle speeds, and enlarging the current shoulder area to accommodate first responders. These options would include improvements to the drainage system and potential utility pole relocations. The main difference between the two options is the design of the separated bicycle and pedestrian environment. In Alternative #3, bicyclists and pedestrians would have their own space while in Alternative #4, bicyclists and pedestrians would share the 10-foot, separated “sidepath”. These options would not include land acquisition; however, it would involve upgrades to the drainage system, curb relocations, and restriping of the travel way.

### ALTERNATIVE 3

(2) 11' TRAVEL LANES, (2) 5' SHOULDERS, (2) 5' BIKE LANES, (2) 1.5' GRASS BUFFERS, (2) 5' SIDEWALKS



#### Pros:

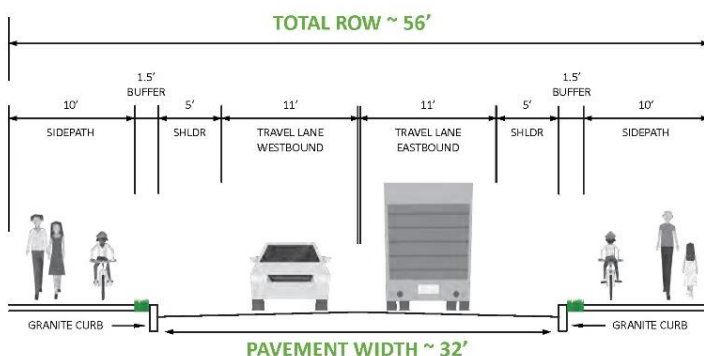
- Separated off-road facilities for bicycles and pedestrians
- Larger shoulder to separate vehicle traffic from bicycles and pedestrians
- No additional ROW needed

#### Cons:

- Vehicle passing opportunities reduced
- Utility pole relocation likely needed
- Drainage system modifications likely needed

### ALTERNATIVE 4

(2) 11' TRAVEL LANES, (2) 5' SHOULDERS, (2) 1.5' GRASS BUFFERS, (2) 10' SIDEPATHS




#### Pros:

- Shared off-road facility for bicycles and pedestrians
- Larger shoulder to separate vehicle traffic from bicycles and pedestrians
- No additional ROW needed

#### Cons:

- Vehicle passing opportunities reduced
- Utility pole relocation likely needed
- Drainage system modifications likely needed

Figure 2: Conceptual Layout Alternatives #3 and #4

During both of the Phase 2 public meetings and for a two-week period following those events, the public was encouraged to fill out a preference survey which asked them to provide input about the future of Route 6 (see page 33 for more detail). Importantly, the survey was flexible – the participants could select multiple alternatives if that suited them or even design their own alternative. SRPEDD simply asked that they indicate any “modifications” on the survey to ensure accurate review and cataloging. In the end, Alternative #2 was the most popular choice followed by Alternative #1 

## Introduction

Prior to the extension of Interstate 195 to Route 25 in the 1970s, Route 6 was the primary highway used to access Cape Cod. At that time, the 4-lane highway provided more “mobility” than “access”. In other words, the roadway was designed to accommodate a high volume of vehicles traveling at higher speeds in order to “get from point A to point B.” Although it still allows for that use, it now serves other purposes – providing access to residential properties, local businesses, and municipal facilities. Those land uses, the trips they create, and the associated users all need a roadway that is safe, reliable, and accessible.

The Route 6 Corridor Study was the result of initiatives from two separate entities: the Town of Marion and the Massachusetts Department of Transportation (MassDOT) District 5 office. The Town of Marion initiated the request as a result of several goals found in their new Master Plan (completed by SRPEDD in 2017). Meanwhile, MassDOT District 5 was expressing interest in examining the corridor for potential improvements. Shortly after Marion’s request, the town of Mattapoisett approached SRPEDD and MassDOT District 5 with interest in improving the corridor and within a few months, Fairhaven and Wareham were also on board. To support the study, each community submitted separate letters expressing concerns about safety at various intersections, vehicle speeds, and the lack of multi-modal accommodations along the corridor.

The goal of this study was to build consensus around the concept of improving conditions for all road users employing a context sensitive approach.



In the end, the Route 6 Corridor Study included a thirteen (13) mile stretch of roadway, from approximately Route 240 in Fairhaven, east to High Street in Wareham (see Figure 3).

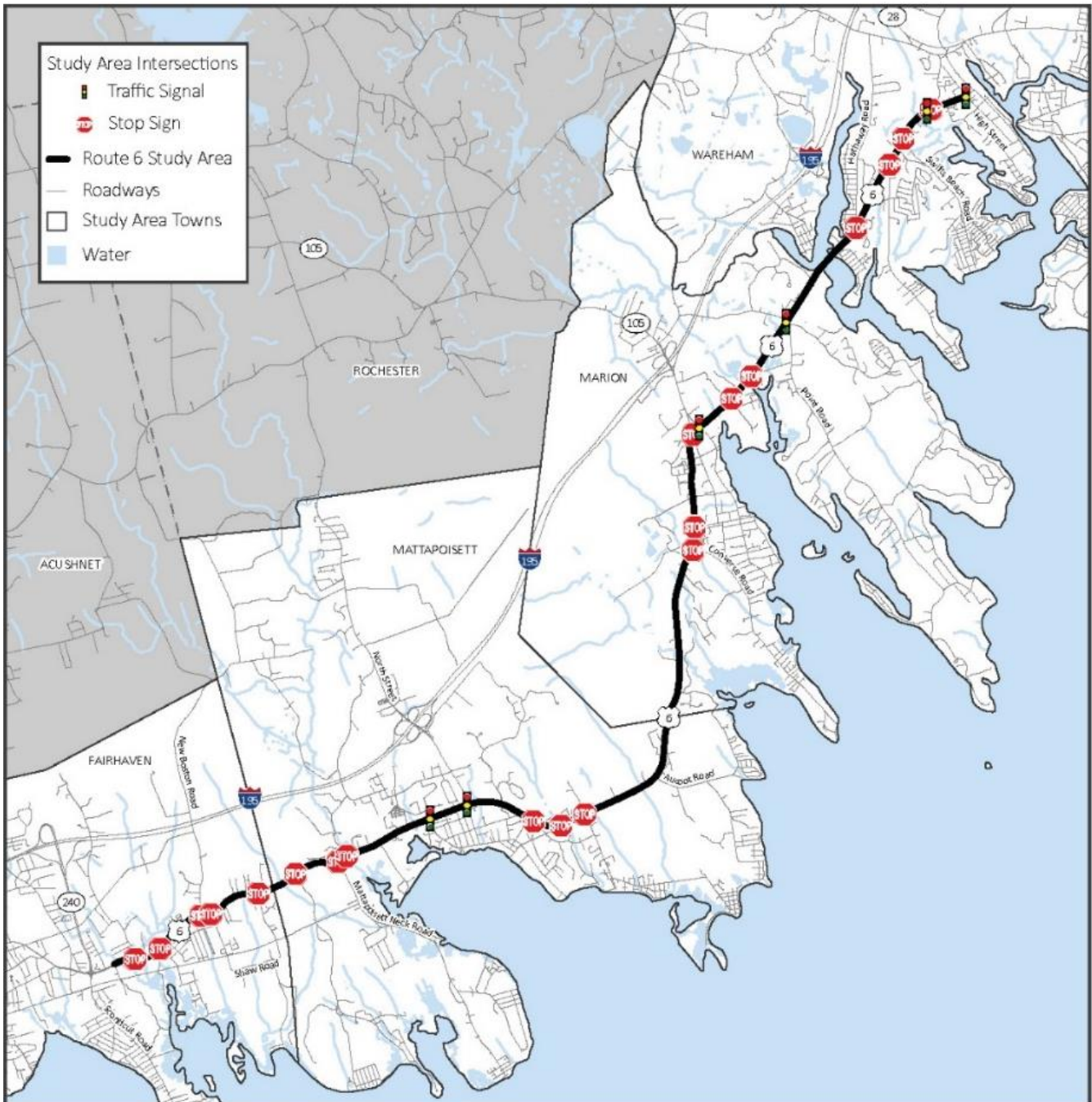


Figure 3: Study Area

### Goals & Timeline

During Marion's Master Plan process, SRPEDD continually heard that Route 6 was not accommodating to bicyclists and pedestrians, the intersections were difficult to navigate, traffic speeds were high, and it was difficult to cross – essentially, dividing the community. However, at the time, there wasn't a clear direction toward improving these conditions. In other words, there wasn't consensus about the corridor's future. Therefore, the goal of the study was to build that consensus – improve conditions along Route 6 for all road users employing a context sensitive approach.

### Study Phases

The study was divided into two phases, generally covering a two-year period (2018 and 2019). Phase 1 focused on existing conditions – a comprehensive analysis of transportation and land use data such as traffic volumes, intersection operations, roadway and intersection safety, bicycle, pedestrian, and transit facilities, recent and anticipated developments, and existing zoning. Phase 2 focused on future conditions – an in-depth analysis of future traffic projections, roadway and intersection operations, and potential improvements.

### Public Outreach

Public engagement was a core component of the study. With four communities, several stakeholders, and one roadway owner, it was imperative that the study provide ample opportunity for input, comment, and review. As such, SRPEDD developed and implemented a comprehensive public outreach program that included: (1) creating multiple outlets for information distribution (project webpage, Facebook page, project brochure, informational posters, etc.), (2) generating a public survey and comment card, (3) meeting individually with key stakeholders, and (4) facilitating four

public meetings (2 meetings for each study phase). Utilizing those methods, SRPEDD gathered a great deal of input from a variety of stakeholders – each providing their own perspective of the current and future Route 6 corridor.



Figure 4: Project webpage

### Stakeholder Meetings

At the outset of the study, stakeholder meetings were held with each community and MassDOT District 5 to introduce the study and to gather feedback about community specific issues, ongoing initiatives, and future goals for the corridor. This process was incredibly valuable as it provided direct insight about the roadway and its intersections from local experts and added locations for further study that had not been previously included.

Phase 1 stakeholder meetings:

- June 28, 2018 – Marion Transportation & Circulation Task Force
- July 1, 2018 – MassDOT District 5
- August 8, 2018 – Town of Marion
- August 9, 2018 – Town of Fairhaven
- August 28, 2018 – Town of Mattapoisett & Town of Wareham (separate meetings)
- October 17, 2018 – Town of Mattapoisett Bicycle & Pedestrian Committee

As a result of these stakeholder meetings, the following six (6) intersections were added to the study:

1. Fairhaven – New Boston Road & Weeden Road (*two intersections*)
2. Mattapoisett – River Road & Prospect Road (*two intersections*)
3. Marion – Hermitage Road & Creek Road (*two intersections*)

### Public Survey

A 17-question public survey was developed that asked a variety of questions related to the public's experience with Route 6. The survey was translated into three languages (Spanish, Portuguese, and Haitian-Creole) and distributed to each study area town hall. Additionally, the survey link was provided on the project webpage, sent out in several Facebook posts and in study specific direct email blasts. Lastly, paper copies were available at all four public meetings. As of February 1, 2020, the survey gathered over 800 responses.

### Project Webpage, Social Media, Printed Materials

SRPEDD created a project webpage that contained relevant project information, existing conditions mapping, links to the public survey and comment card, and ways for the public to engage with the project team. Additionally, SRPEDD distributed the printed materials (see Figure 5 below) to public buildings (town halls, libraries, councils of aging) in the study area to increase awareness of the study.

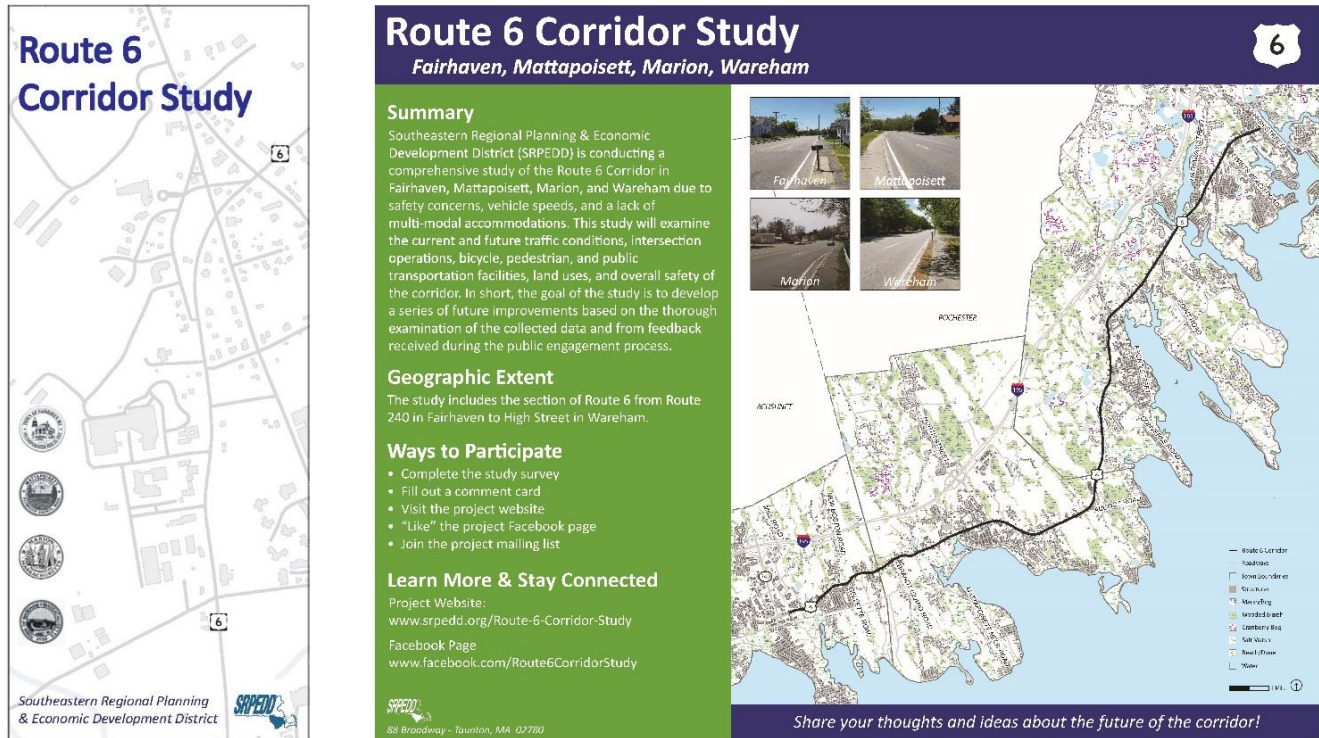


Figure 5: Study brochure (left) and informational poster (right)

### Public Meetings

SRPEDD held a total of four public meetings for the study – two meetings for each study phase. More information about the purpose of the meetings and feedback received is included in the following sections of this report.

#### Phase 1: Existing Conditions

- November 8, 2018 – Wareham Town Hall, Wareham (31 attendees)
- November 14, 2018 – Old Rochester Regional High School, Mattapoisett (34 attendees)

#### Phase 2: Future Conditions

- December 12, 2019 – Center Elementary School, Mattapoisett (40 attendees)
- January 6, 2020 – Sippican Elementary School, Marion (145 attendees)



## Phase 1: Existing Conditions

The first phase of the study focused on all existing aspects of the corridor – including, but not limited to the physical layout and condition of the roadway; bicycle, pedestrian and transit facilities; location and severity of crashes along the corridor; intersection operations; and, the current land uses and zoning regulations.

Over the spring and summer of 2018, SRPEDD staff completed an extensive Data Collection and Analysis Program. This work included a thorough inventory of pavement and sidewalk conditions (noting gaps in the network and issues with Americans with Disabilities Act [ADA] compliance), roadway cross-section and intersection dimensions (lane, shoulder, sidewalk, and crosswalk widths) and physical infrastructure locations (utility pole locations, catch basins, signage, lighting, etc.). This inventory is explained in more detail in the following sections.

### Physical Layout

Route 6 is as an Urban Minor Arterial, that runs parallel to Interstate I-195, connecting the Providence area to Cape Cod. In general, the 13-mile study area (Arsene Street in Fairhaven to High Street in Wareham) is a 4-lane, auto-oriented streetscape with, little to no shoulder, and, in most cases, five-foot sidewalks located close to the road.

General observations:


- Travel lanes are narrow (generally 11 feet) 
- Very small painted shoulder (8 to 10 inches)
- Roadway curves (horizontal & vertical) create safety issues
- Several angled “T-style” intersections that have difficult sight distances
- Drainage system issues (standing water in outside lane)
- Turning movements at some signalized intersections create visibility issues



Figure 6: Route 6 in Marion at Wareham Town Line, looking westbound



Figure 7: Route 6 in Mattapoisett between Main Street and North Street, looking eastbound

### Cross Sections

For the most part, Route 6 includes four (4) 10.5-foot travel lanes with 8 to 10-inch shoulders. There are two sections in the study area where this condition is different (displayed below): (1) Mattapoisett – Main Street to North Street (3 lanes) and (2) Wareham – Gibbs Avenue to High Street (2 lanes).

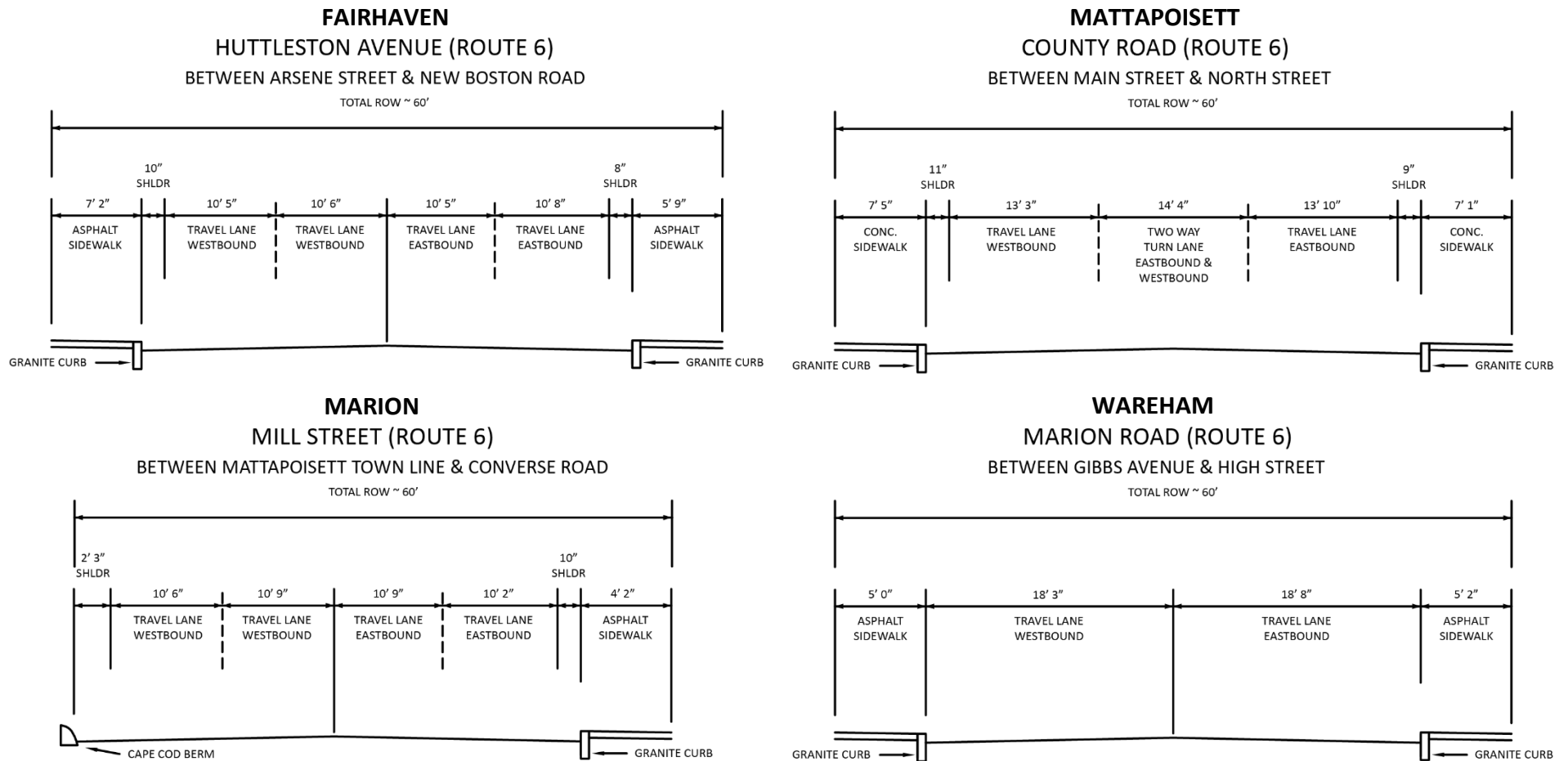


Figure 8: Typical Route 6 cross-sections



### Posted Speed Limits

Overall, posted speed limits along the corridor range from 35 MPH to 50 MPH. The 35 MPH zones are located at three points along the corridor; at the two ends of the corridor (in Fairhaven from Arsene Street to Shaw Road and in Wareham from Gibbs Avenue to High Street) and along a small section in Marion in the area of the “S curve” – just south of Converse Road. The area between Main Street and North Street in Mattapoisett is speed zoned at 40 MPH, which many residents are seeking to lower because of the dense commercial activity found in that area (more details are provided later in the report). Lastly, the remainder of the corridor is posted at either 45 MPH or 50 MPH (see the Crashes & Posted Speed Limits map on page 15 for more detail).

### Pavement Conditions, Utilities, Signage

According to surveys completed in 2018, pavement along Route 6 in Fairhaven, Mattapoisett, and Wareham, while pavement in Marion is generally in poor condition. Typically, pavement that is considered to be in poor condition has extensive and high severity distresses (cracking, potholes, rutting, etc.). Of particular concern for Route 6, are the drainage structures along the corridor that are sinking and creating depressions in the outer lane (see Figure 9). Vehicles are travelling in the inside lane to avoid these distresses.



Figure 9: Drainage issues and utility pole locations

For the most part, the utility poles and signage along the corridor are located at the curb edge. Their location coupled with the high travel speeds create serious safety hazards for motorists.

### Land Uses

A key component of the study is an examination of land uses and zoning along the corridor. To that end, SRPEDD selected and analyzed parcels that were located within 500 feet of the corridor – known as the “study area parcels”. Land uses are predominantly residential (approximately 65% to 75% of study area parcels); however, there is a steady mix of commercial entities along the corridor and several “nodes” of commercial activity. That said, commercial uses only accounted for approximately 3% to 5% of the total study area parcels while vacant land (12% to 16%) and institutional uses such as municipally owned buildings accounted for more (4% to 11%).

## Traffic Data

Over the spring and summer of 2018, SRPEDD staff collected mainline roadway traffic data using Automatic Traffic Recorders (ATRs) that provided vehicle volumes, speeds, and classifications for a 48-hour period. Additionally, SRPEDD collected peak-hour intersection turning movements at twenty-six (26) major intersections along the corridor to perform existing operational analyses.

## Vehicle Volumes

The highest traffic volumes recorded were in Fairhaven, near Mill Road while the lowest were recorded in Marion, near Spring Street and Front Street. Not surprisingly, the higher volumes were found near roadways that provided access to I-195; Mill Road, North Street, Front Street, and Gibbs Avenue. Figure 8 below shows the average vehicles per day for a 24-hour period.

## Vehicle Speeds

Recorded 85<sup>th</sup> percentile speeds ranged from a low of 36 MPH to a high of 55 MPH. As to be expected, the lower speeds were recorded in higher activity or more densely developed areas (i.e. near High Street in Wareham) while the higher speeds were found in low density residential areas (i.e. Mattapoisett/Marion town line).

## Heavy Vehicle Percentages

Heavy vehicles generally accounted for approximately 5-6% of the total vehicles in the counts. This type of truck traffic activity is expected on roadways like Route 6. Once again, higher percentages were found near roadways that provided access to I-195.

### Fairhaven & Mattapoisett



### Marion & Wareham

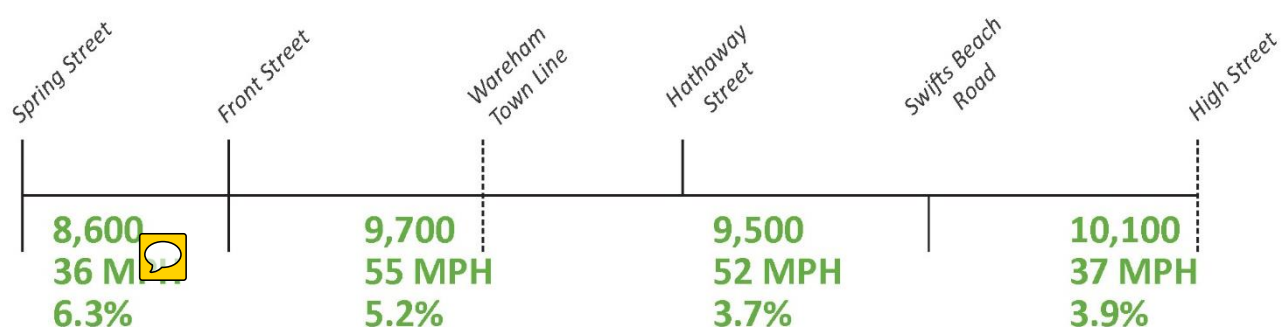


Figure 10: Average Daily Traffic, 85<sup>th</sup> Percentile Speeds, and Heavy Vehicle Percentages

## Crash Analysis

The most recent three-year period of crash reports (2015 through 2017) were obtained from all four municipal police departments and analyzed for the study area intersections. Most of the study area intersections had crash rates below both the most recently available Statewide and District 5 average crash rates for signalized and unsignalized intersections and only a handful of locations had concerning numbers of injury crashes. That said, improvements can be made to enhance safety at a number of locations. Table 1 provides a summary of the crash data for the study area intersections.

**Table 1: Study Area Intersection Crash Summary (2015-2017)**

Route 6 Intersection	Community	Total Crashes	Property Damage Only	Injury Crashes	Crash Rate ACC/MEV	Crash Rate EPDO
Mill Road	Fairhaven	3	3	0	0.14	1.00
Weeden Road	Fairhaven	12	8	4	0.91	9.33
New Boston Road	Fairhaven	7	7	0	0.46	2.33
Gellette Road	Fairhaven	4	2	2	0.29	4.00
Shaw Road	Fairhaven	2	0	2	0.17	0.66
Brandt Island Road	Mattapoisett	6	1	5	0.55	8.66
Mattapoisett Neck Road	Mattapoisett	3	3	0	0.28	1.00
River Road	Mattapoisett	5	4	1	0.46	3.00
Main Street	Mattapoisett	6	5	1	0.48	3.33
North Street	Mattapoisett	24	17	6	1.32	15.66
Church Street Ext.	Mattapoisett	2	2	0	0.21	0.66
Marion Road	Mattapoisett	2	1	1	0.25	2.00
Prospect Road	Mattapoisett	3	2	1	0.31	2.33
Converse Road	Marion	1	1	0	0.10	0.33
Main Street	Marion	1	1	0	0.10	0.33
Spring Street	Marion	7	4	2	0.48	4.66
Front Street	Marion	6	3	3	0.94	6.00
Hermitage Road	Marion	1	1	0	0.11	0.33
Creek Road	Marion	2	1	1	0.42	2.00
Point Road	Marion	4	2	2	0.45	4.00
Hathaway Street	Wareham	4	1	3	0.35	5.33
Cromesett Road	Wareham	10	5	5	0.71	10.00
Swifts Beach Road	Wareham	10	8	2	0.56	6.00
Shaw's Plaza	Wareham	15	10	5	0.91	11.66
Gibbs Avenue	Wareham	4	4	0	0.28	1.33
High Street	Wareham	6	2	4	0.44	7.33

At the time of the analysis, the Statewide & District 5 region crash rate (ACC/MEV) thresholds were 0.78 and 0.75 respectively for signalized intersections and 0.57 for unsignalized intersections. Locations with averages above statewide or regional thresholds are indicated in red – identifying a safety issue.



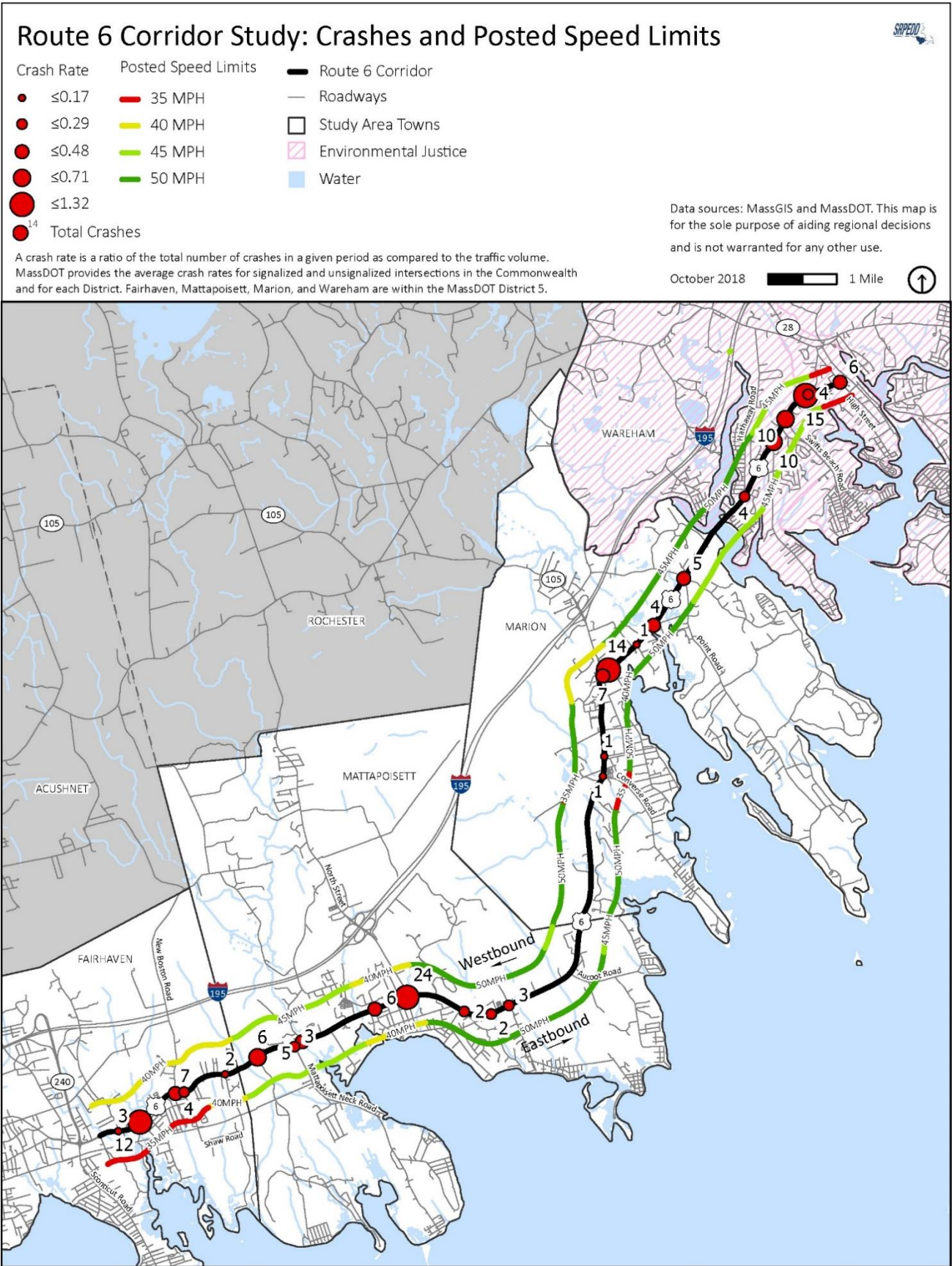


Figure 11: Study area crashes and posted speed limits

## Bicycle, Pedestrian & Transit Network

### Bicycle Facilities

There are no dedicated bicycle facilities along Route 6. In other words, there are no bike lanes or off-road facilities. Additionally, there are no shared-use pavement markings such as “sharrows” or signage alerting motorists to the presence of bicyclists. Therefore, bicyclists must share the road with motor vehicles – this is especially challenging due to the narrow travel lanes, lack of shoulders and the elevated travel speeds. During site visits, some bicyclists were observed riding on the sidewalk, which creates the potential for conflicts with pedestrians.

### Pedestrian Facilities

Route 6 lacks consistent sidewalks. Although the western portion of the study area (Arsene Street in Fairhaven to North Street in Mattapoisett) generally has 5 to 6-foot asphalt sidewalks with granite curbing on both sides of the road, there are significant gaps in the network in Marion and Wareham. The sidewalks in Fairhaven and Mattapoisett (up to North Street) are in good condition – having minimal surface cracking, proper clearance widths and ADA compliant curb ramps. However, east of North Street, the sidewalk conditions begin to deteriorate, and, in some areas, the sidewalk simply ends. Figure 12 below shows the location and condition of the sidewalks in the study area.

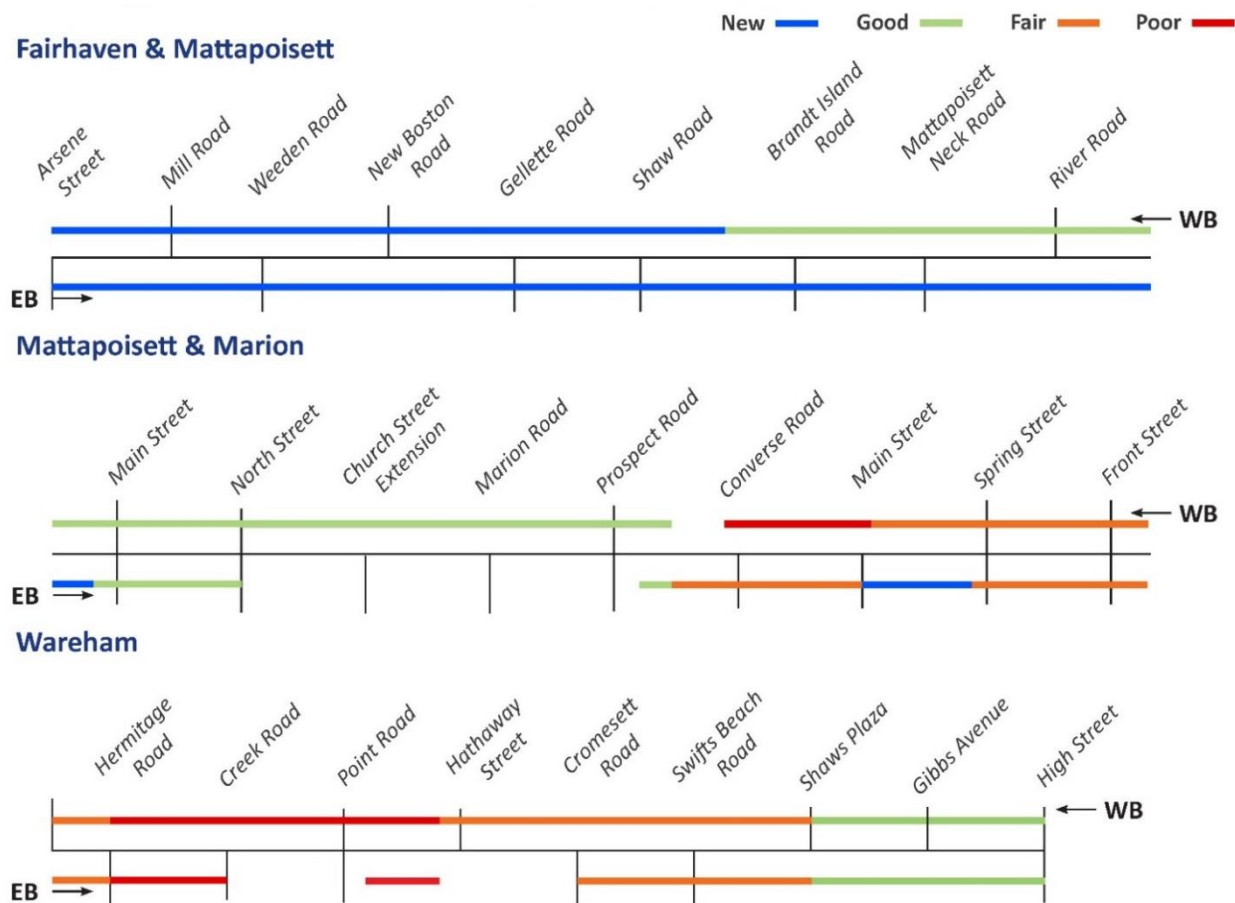


Figure 12: Sidewalk locations and condition



Figure 13 below illustrates the mix of conditions of pedestrian facilities along the Route 6 corridor.



Figure 13: Pedestrian facility examples on Route 6

The image in Mattapoisett (top right) clearly shows pedestrian foot traffic indicating that a sidewalk is needed while the image in Marion (bottom left) shows a sidewalk in disrepair with inadequate clearance widths. Meanwhile, the images in Wareham (top left) and Fairhaven (bottom right) show sidewalks that are in very good condition and free of obstructions.

### Public Transportation

The only public transportation in the study area is provided by the Greater Attleboro Taunton Regional Transit Authority (GATRA) – the “Wareham-New Bedford Connection.” This service primarily provides medical trips along Route 6 between the New Bedford Terminal and Cranberry Plaza in Wareham; however, GATRA service is a flag stop system, meaning that a patron can wave the bus down anywhere along the route and the bus will stop as long as it is safe to do so.

Although recent data sampled by SRPEDD indicates lower ridership, the service provides lifeline connections for low income individuals in Wareham needing to access services in New Bedford. As such, GATRA just recently secured state grant funding to continue this service for another year.

Figure 14 (next page) shows the study area bicycle, pedestrian, and transit network.



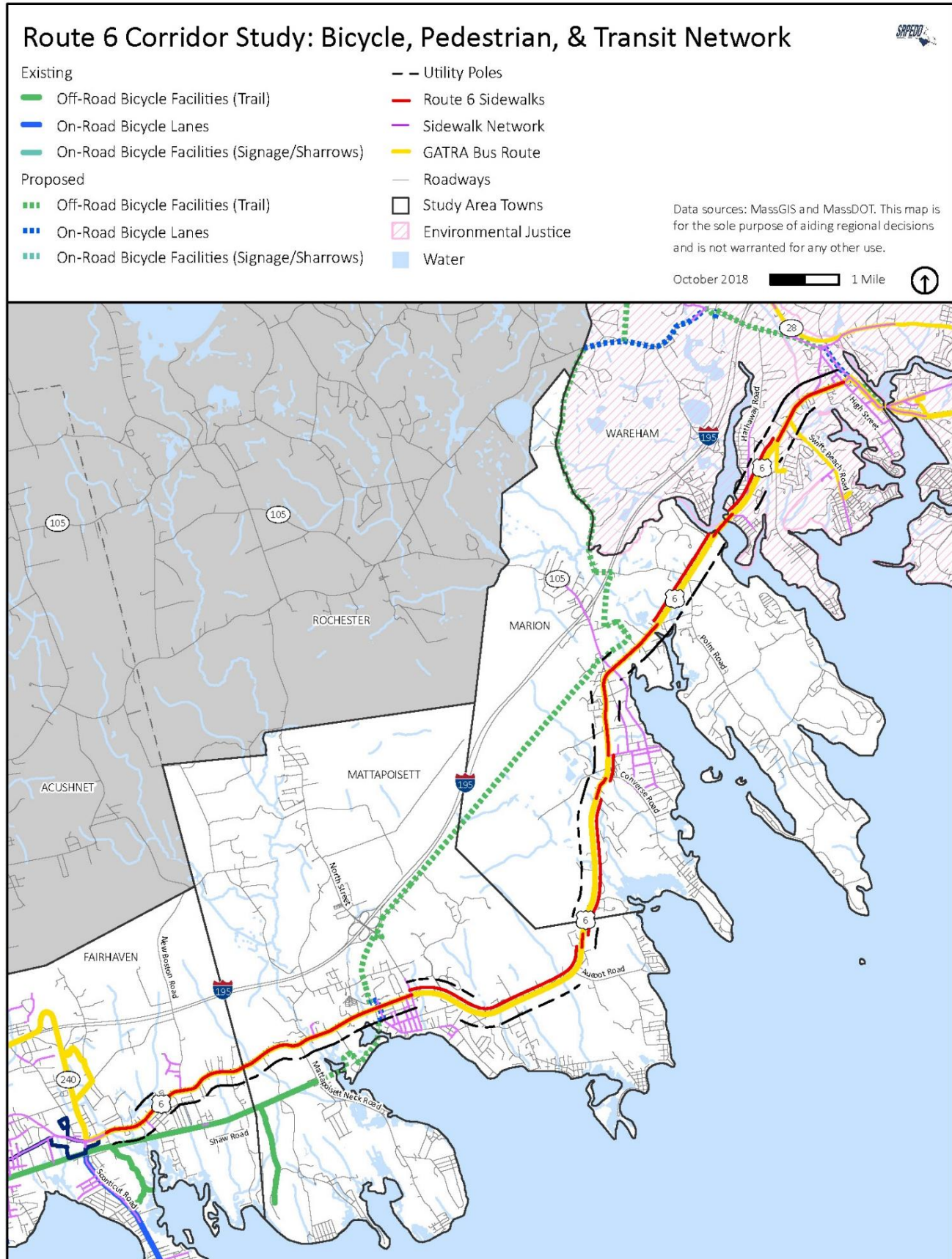


Figure 14: Study area bicycle, pedestrian, and transit network

## Traffic Operations

Level-of-service analysis is a general measure that summarizes the overall operation of an intersection or transportation facility. The analysis includes inputs such as lane uses and widths, traffic control, traffic volumes and operating speeds to calculate a range of operating conditions. It is summarized with letter grades from “A” to “F”, with “A” being the most desirable and “F” representing the maximum flow rate or the worst possible traffic congestion. Table 2 summarizes the existing levels-of-service for the study area intersections during the afternoon peak period.

**Table 2: Study Area Intersections PM Peak Hour Level-of-Service (LOS)**

Route 6 Intersection	Community	Traffic Control	LOS
Mill Road	Fairhaven	Stop Sign	E
Weeden Road	Fairhaven	Stop Sign	C
New Boston Road	Fairhaven	Stop Sign	C
Gellette Road	Fairhaven	Stop Sign	C
Shaw Road	Fairhaven	Stop Sign	C
Brandt Island Road	Mattapoisett	Stop Sign	B
Mattapoisett Neck Road	Mattapoisett	Stop Sign	B
River Road	Mattapoisett	Stop Sign	B
Main Street	Mattapoisett	Traffic Signal	B
North Street	Mattapoisett	Traffic Signal	B
Church Street Ext.	Mattapoisett	Stop Sign	B
Marion Road	Mattapoisett	Stop Sign	B
Prospect Road	Mattapoisett	Stop Sign	C
Converse Road	Marion	Stop Sign	C
Main Street	Marion	Stop Sign	B
Spring Street	Marion	Stop Sign	D
Front Street	Marion	Traffic Signal	B
Hermitage Road	Marion	Stop Sign	B
Creek Road	Marion	Stop Sign	B
Point Road	Marion	Traffic Signal	B
Hathaway Street	Wareham	Stop Sign	B
Cromesett Road	Wareham	Stop Sign	C
Swifts Beach Road	Wareham	Stop Sign	F
Shaw’s Plaza	Wareham	Traffic Signal	C
Gibbs Avenue	Wareham	Stop Sign	C
High Street	Wareham	Traffic Signal	B

Table 2 shows that most study area intersections operate with acceptable delay (LOS D or better). That said, Mill Road and Swifts Beach Road operate at failing LOS (E and F respectively). Based on satisfaction of a Traffic Signal Warrants Analysis (TSWA) completed for Swifts Beach Road, MassDOT District 5, in conjunction with the town of Wareham, is currently exploring signalization, which will improve delay and improve safety at that intersection.



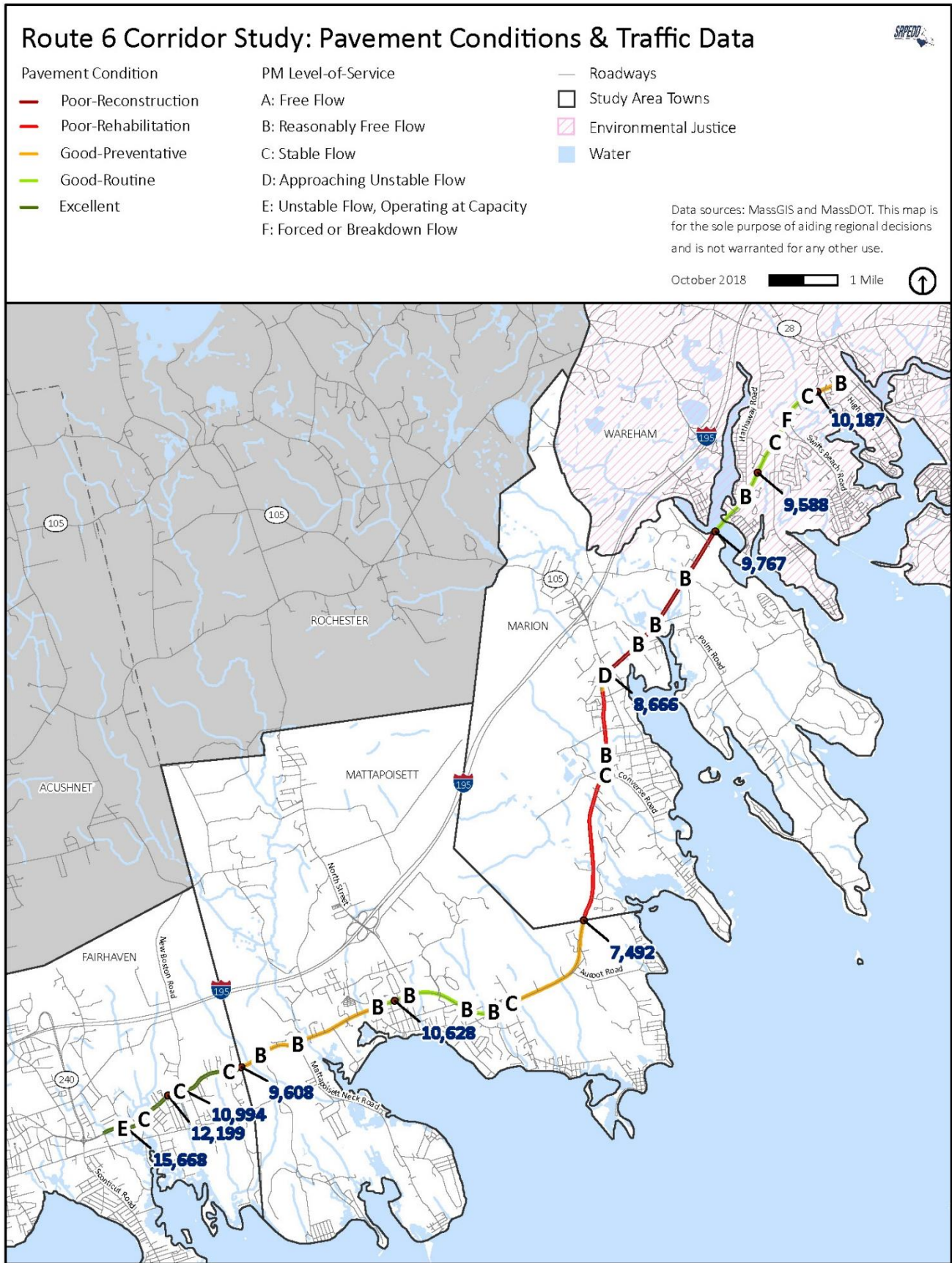


Figure 15: Study area pavement conditions and traffic data

### Public Meetings

The goal of the public process was to identify issues, collect additional information to substantiate these issues, consider measures to address them, and seek support for recommendations leading to implementation.

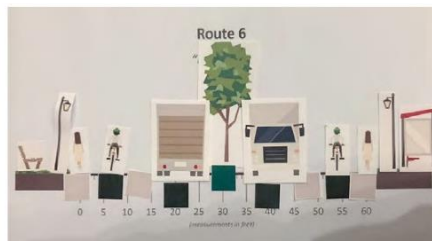
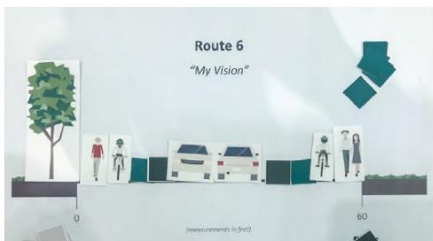
Phase 1 concluded in November 2018, as SRPEDD facilitated public workshops at the Wareham Town Hall and the Old Rochester Regional High School. The purpose of this meeting was to: (1) present the results of SRPEDD's existing conditions data collection and analyses; (2) gather the public's concerns about the corridor; and, (3) create "future vision" diagrams of Route 6 using a table-top, icon based layout exercise.



Figure 16: Public Meeting at Wareham Town Hall

All together, thirty-two (32) diagrams were completed, cataloged, and analyzed following the meeting. Although there was a variety of options recorded, a total of three (3) layouts (shown below) had the most consensus, therefore, they were advanced to Phase 2 of the study and ultimately helped create the future improvement alternatives (discussed in more detail later in this report).

### Two Lane Road with Bike/Ped Lane (14 participant suggestions)



### Center Turn Lane/Three Lane Road with Bike/Ped Lane (8 participant suggestions)



### Transit-Oriented Design (3 participant suggestions)

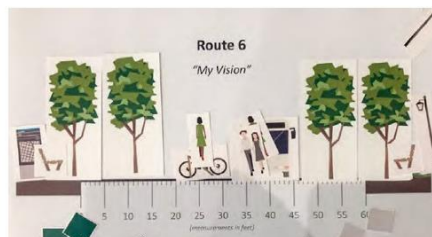
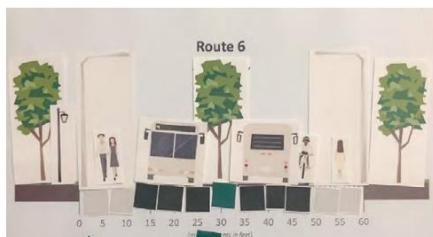


Figure 17: Top three "Future Visions" from Phase 1 Public Meetings

## Phase 2: Future Conditions

The second phase of the study focused on an analysis of future development potential along the corridor and the associated traffic volume increases, the effect on the roadway and intersection operations and potential improvements that would mitigate those volume increases as well as address the concerns raised during Phase 1. In other words, future traffic increases affect the way the corridor operates – this phase is intended to mitigate those impacts and use those future traffic figures to test different long-term improvements.

Based on the feedback recorded from the public survey, from the stakeholder meetings, and from the participants at the public meetings, SRPEDD focused on the following principles during the development of future improvements:

- Enhance or implement pedestrian and bicycle accommodations
- Revise signal timing and phasing at signalized intersections to improve operations and safety
- Modify selected intersection geometries to improve sight distances
- Improve pavement markings, lighting, signage, and drainage to increase safety
- Provide more public transportation to reduce traffic volumes
- Investigate reducing the number of travel lanes (road diet) to help lower travel speeds

### *Future Traffic Volumes*

Future traffic volumes were generated using SRPEDD's Regional Travel Demand Model coupled with future development activity information from each community. The model analyzes existing traffic operations for the entire SRPEDD region and forecasts future traffic patterns based on projected growth in the region that considers population, households, employment and development. Consistent with MassDOT's Traffic Impact Assessment (TIA) guidelines and SRPEDD's Regional Transportation Plan (RTP) process, the future traffic conditions analysis included both short term (7-year) and long-term (20+ year) time horizons. That said, the three analysis periods used in this study included: (1) 2018 or "Existing"; (2) 2025 or "Short-Term"; and, (3) 2040 or "Long-Term".

### *Future Scenarios*

Using the principles from Phase 1 (identified above), in conjunction with federal and state design guidance documents, SRPEDD staff developed the following future scenarios:

- 2025 & 2040 No Improvements
- 2025 & 2040 With Improvements (4 Lanes)
- 2025 & 2040 With Improvements (2 Lanes)

The first scenarios (noted above as "No Improvements") simply add future traffic volumes to the "Existing" scenario (2018) and do not include improvements – the intent is to show what operations would look like in the future (short-term and long-term) if no changes were made. In contrast, the four (4) remaining scenarios (noted above as "With Improvements") included enhancements to the bicycle and pedestrian environment, improvements to the traffic signal timings and phasing, and modifications to several intersections with difficult geometry – the only difference is the number of travel lanes (4 versus 2).



## Two Lane Capacity

Based on the recorded traffic volumes, especially during the peak period (highest was approximately 850 to 900 vehicles), and analysis performed using the Highway Capacity Manual (HCM), Route 6 is projected to operate at LOS C when reduced to a 2-lane configuration. **The analysis shows that Route 6 is currently operating under capacity and investigating a potential road diet is feasible.**

## Three Lane (Two-Way Left Turn Lane) Scenario

Although the public indicated preference for a three-lane configuration at the Phase 1 public meetings, SRPEDD did not include it based on design guidance in the MassDOT Project Development and Design Guide (“Design Guide”) and due to safety concerns.

The MassDOT Design Guide specifically states that “The two-way left-turn lane is a special application of flush medians which allows turning movements along its entire length. TWLTs may be appropriate in areas with frequent driveway spacing in highly developed, or commercialized areas. Two-way left-turn lanes are appropriate on roadways with no more than two through lanes in each direction and where operating speeds are in the range of 30 miles per hour.”

It goes on to say “TWLT lanes may be used where daily traffic through volumes are between 10,000 and 20,000 vehicles per day for 4-lane roadways and between 5,000 and 12,000 vehicles per day for 2-lane roadways. Left-turn movements should consist of at least 70 turns per ¼ mile during the peak hours and/or 20 percent of the total volume. Careful evaluation of individual site is required for implementation of TWLT lanes.”

The main concern with this treatment is the operating speeds along the corridor. As summarized on page 13, recorded 85<sup>th</sup> percentile speeds ranged from a low of 36 MPH to a high of 55 MPH – all above the 30 MPH range guidance found in the Design Guide. Additionally, other than the section of Route 6 between North Street and Main Street in Mattapoisett (already has this treatment), there were no other areas that appeared to have the development density and the left turns that would warrant this type of treatment. Rather, **SRPEDD felt that other options such as “pocket” style left turn lanes would be a better and safer approach by (1) providing a “safe-haven” for turning movements, (2) allowing uninterrupted flow for thru vehicles, and (3) reducing the chances of head-on collisions.**

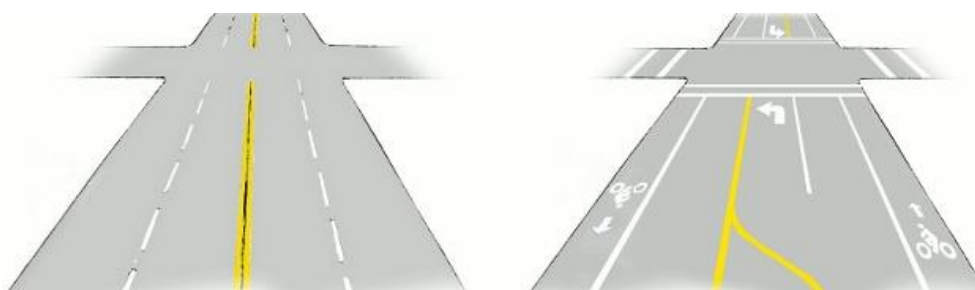


Figure 18: Example of “Pocket” style left turn improvement (City of Davis, CA)

That said, the public made it clear that this option should be fully explored when improvements are initiated on Route 6. Therefore, at that time, MassDOT should work closely with the communities to determine if a solution to this issue is possible and can be engineered.



## Operations Analysis Results

Figure 19 below illustrates the PM peak hour future conditions operations analysis results for the Town of Fairhaven.



Figure 19: PM peak hour future conditions LOS in Fairhaven

As expected, intersection operations at the major intersections in Fairhaven (Mill Road and New Boston Road) will get worse in the future if improvements are not implemented. The analysis shows that the Mill Road intersection is projected to worsen over time to LOS F from LOS E. Additionally, New Boston Road will downgrade from LOS C to LOS E in 2040.

Currently, Mill Road is used as a cut-through street to avoid the very busy Route 6 & Route 240 intersection. Signalizing this intersection will serve to encourage this behavior, therefore, it was not considered for improvements. However, installing a traffic signal at New Boston Road (town request), improves safety and LOS both in the 4-lane and 2-lane configurations.

Except for Gellette Road in 2040 with a 2-lane configuration, the remainder of Fairhaven's intersections are projected to operate at acceptable LOS ("A" to "D").

Figure 20 below illustrates the PM peak hour future conditions operations analysis results for the Town of Mattapoisett.

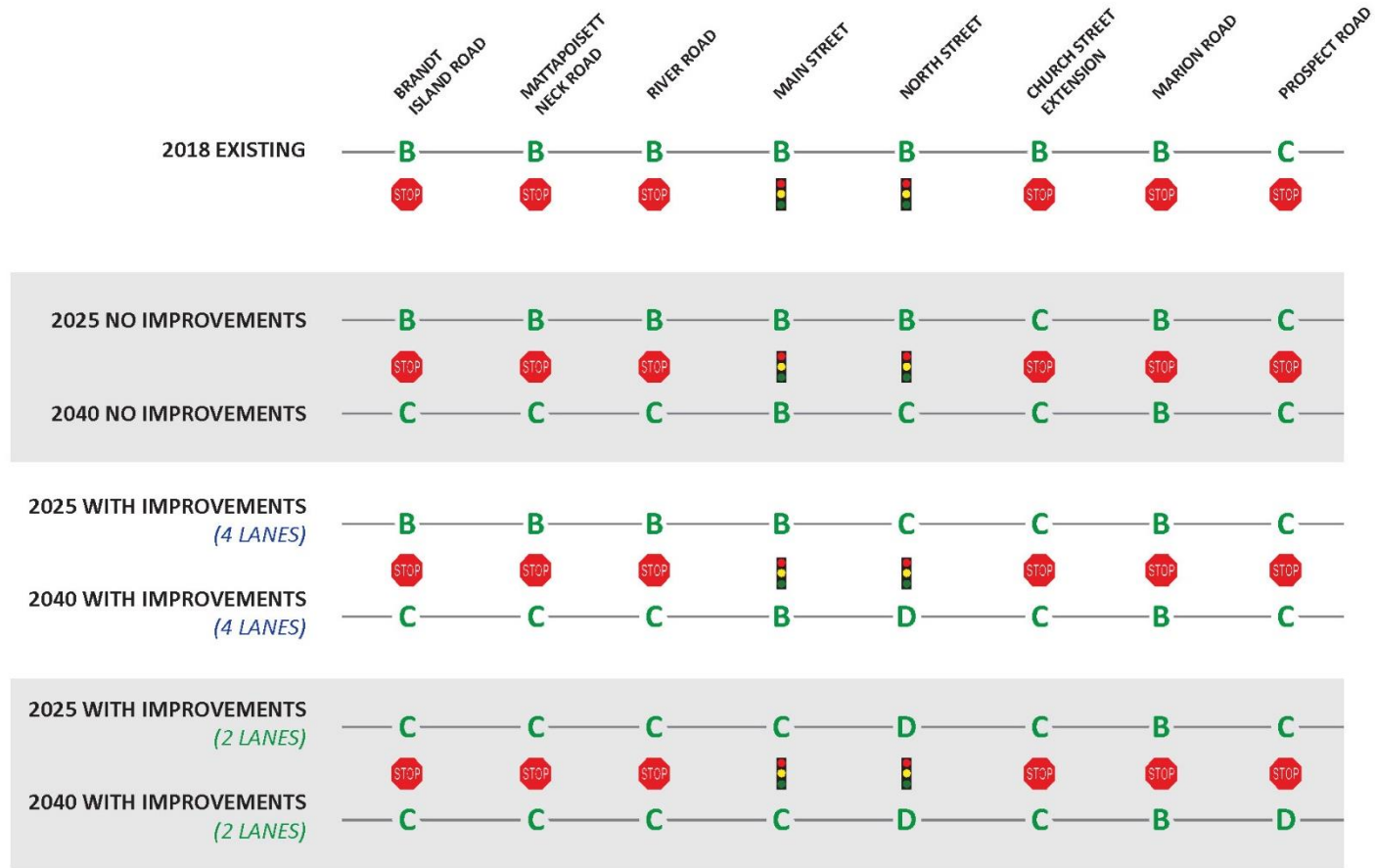


Figure 20: PM peak hour future conditions LOS in Mattapoisett

All of the intersections in Mattapoisett have acceptable LOS (“A” to “D”) in all scenarios. As previously mentioned, signal phasing improvements (dedicated left turns) at the North Street intersection would improve safety while geometric improvements at Brandt Island Road, Church Street Extension, and Marion Road would improve sight lines. Additional intersection ahead warning signage on Route 6 would improve conditions at the Prospect Street intersection.

Figure 21 below illustrates the PM peak hour future conditions operations analysis results for the Town of Marion.



Figure 21: PM peak hour future conditions LOS in Marion

In Marion, the only intersection that operates at failing LOS ("E" and "F") in the future is Spring Street.

Conditions are expected to worsen from LOS D to LOS F in 2040 without improvements.

Unfortunately, traffic volumes did not warrant the installation of a traffic signal until Route 6 is reduced to 2 travel lanes in that area. That said, once a traffic signal is in place, LOS is expected to operate at LOS B. However, the town has options –

consideration of a roundabout at this location

also provides dramatic improvement to the LOS and safety. This type of improvement would need to be thoroughly designed and vetted with the town to ensure it's the right fit for Marion.

Figure 22 below illustrates the PM peak hour future conditions operations analysis results for the Town of Wareham.

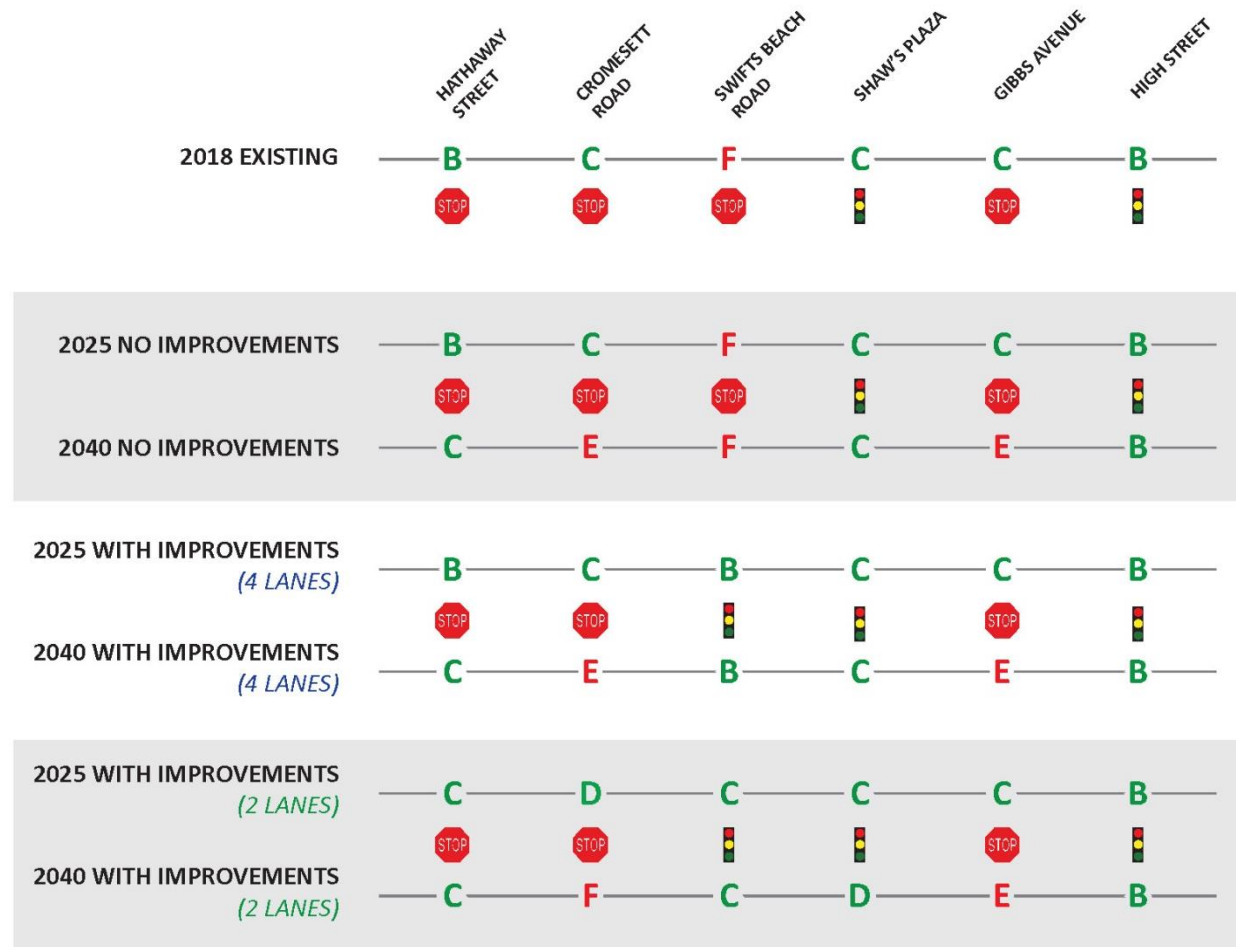


Figure 22: PM peak hour future conditions LOS in Wareham

The Cromesett Road, Swifts Beach Road, and Gibbs Avenue intersections are expected to have failing LOS (“E” and “F”) in 2040 if improvements are not implemented. That said, MassDOT and the town are pursuing signalization of the Swifts Beach Road intersection – expecting to improve conditions from LOS F to LOS B in the 4-lane configuration and from LOS F to LOS C in the 2-lane layout. No improvements are expected or planned for Cromesett Road; however, as conditions worsen, the Town will need to explore options similar to the Swifts Beach Road project.



## *Improvements*

During the study, it became clear that improving the corridor needed to include answers to two basic questions – First: “what improvements can be made with the existing layout?” and, Second, “is it possible to reduce the number of travel lanes?” Similar to typical transportation studies, SRPEDD first developed several improvements that answered the first question and then developed four (4) conceptual layout alternatives to build consensus around the second question, otherwise known as the “number of travel lanes” conversation.

Importantly, both the future improvements and the conceptual layout alternatives (page 30) were crafted considering: (1) the overall goal of the study, (2) the core issues, (3) the guiding principles, and (4) current federal and state design guidance.

## Overall Goal

- To improve conditions of Route 6 for all road users employing a context sensitive approach.

## Guiding Principles

- Enhance or implement pedestrian and bicycle accommodations
- Revise signal timing and phasing at signalized intersections to improve operations and safety
- Modify selected intersection geometries to improve sight distances
- Improve pavement markings, lighting, signage, and drainage to increase safety
- Provide more public transportation to reduce traffic volumes
- Investigate reducing the number of travel lanes (road diet) to help lower travel speeds

## Core Issues

- High vehicle speeds
- Narrow travel lanes with little to no shoulder
- Sidewalk network is not consistent, close to road, and in need of repairs to be ADA compliant
- No bicycle accommodations
- Some drainage structures are sinking, creating depressions along curb
- Some unsignalized intersections have geometric challenges leading to sight distance issues
- Signalized intersections lack protected left turn lanes blocking visibility for oncoming traffic







## Design Guidance

- MassDOT Project Development and Design Guide
- FHWA Manual on Uniform Traffic Control Devices (MUTCD)
- AASHTO: A Policy on the Geometric Design of Highways and Streets
- AASHTO: Guide for the Development of Bicycle Facilities
- United States Access Board Streets and Sidewalks Guidelines
- Massachusetts Architectural Access Board (AAB 521 CMR: 21.2.1)
- MassDOT Separated Bike Lane Planning & Design Guide
- National Association of City Transportation Officials Design Guides

In the end, SRPEDD recommends that the communities work with MassDOT to implement the following future improvements:




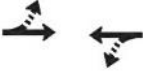
1. Signalize New Boston Road (Fairhaven)
2. Signalize Spring Street (Marion)
3. Signalize Swifts Beach Road (Wareham)
4. Modify North Street traffic signal to include protected/permissive left turns (Mattapoisett)
5. Modify Front Street traffic signal to include protected/permissive left turns (Marion)
6. Change physical geometries to create 90-degree intersections at six (6) locations
  - a. Brandt Island Road (Mattapoisett)
  - b. Church Street Extension (Mattapoisett)
  - c. Marion Road (Mattapoisett)
  - d. Converse Road (Marion)
  - e. Creek Road (Marion)
  - f. Hathaway Street (Wareham)

## Traffic Control Type

<u>Intersection</u>	<u>Existing</u>	<u>Future</u>
New Boston Road		
Spring Street*		
Swifts Beach Road		

\*Only in 2 lane configuration

## Traffic Signal Movements

<u>Intersection</u>	<u>Existing</u>	<u>Future</u>
North Street		
Front Street		

Protected/  
permissive  
Left Turns

Figure 23: Traffic Control Changes

## Conceptual Layout Alternatives

The conceptual layout alternatives (next page) highlight potential strategies to address the lack of multi-modal accommodations on Route 6. The basic goals for the conceptual designs were to attempt to use only the existing land owned by MassDOT (Right-of-Way or “ROW”) and to accommodate all road users. Each alternative generally achieved the basic goals but come with a set of “pros” and “cons”. It should be noted that they are not meant to be a “one size fits all” approach. Rather, the intent is to answer the question – “is it possible to reduce the number of travel lanes?” and if so, “where?”



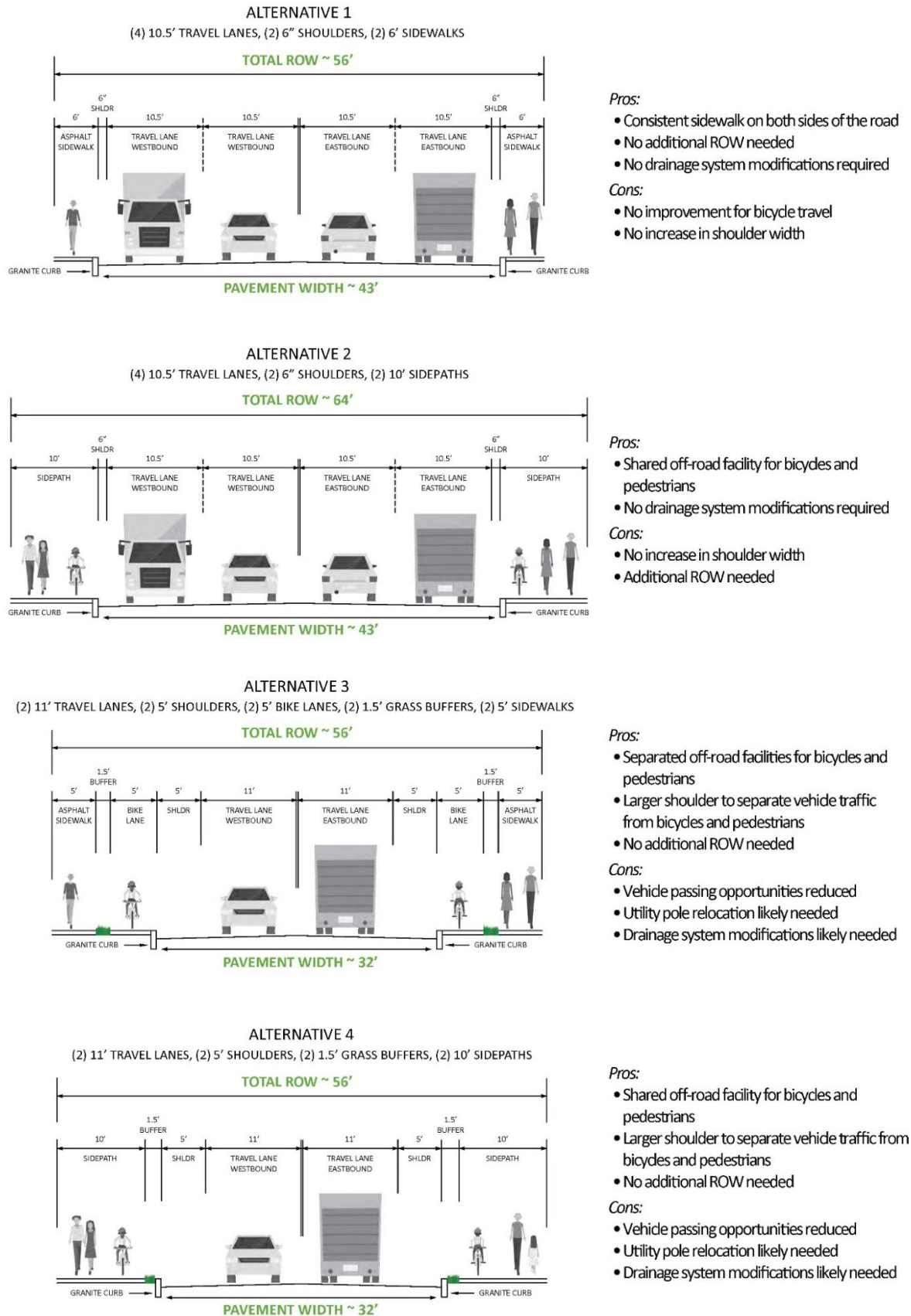


Figure 24: Conceptual Layout Alternatives

## Alternative #1

Alternative #1 focuses on improving conditions for pedestrians. It includes no physical changes to the roadway or utilities (drainage system, utility pole locations). It does, however, include installing 6-foot sidewalks where gaps exist and upgrading the existing sidewalks to meet ADA guidelines (replacing the walk surface, removing obstructions, providing adequate clearance widths, etc.). Bicyclists would still need to “share the road” with motorists in this alternative. This option presents the lowest cost improvement.

## Alternative #2

Alternative #2 focuses on improving conditions for bicyclists and pedestrians. It includes no physical changes to the roadway or utilities (drainage system, utility pole locations). It does, however, include providing a 10-foot, separated “sidepath” on both sides of the road to accommodate pedestrian and bicycle travel. Sidepaths are shared-use paths that are located immediately adjacent or parallel to the side of the road. Bicyclists would be physically separated from motorists, no longer needing to “share the road”. This option presents a higher cost mainly due to land acquisition.

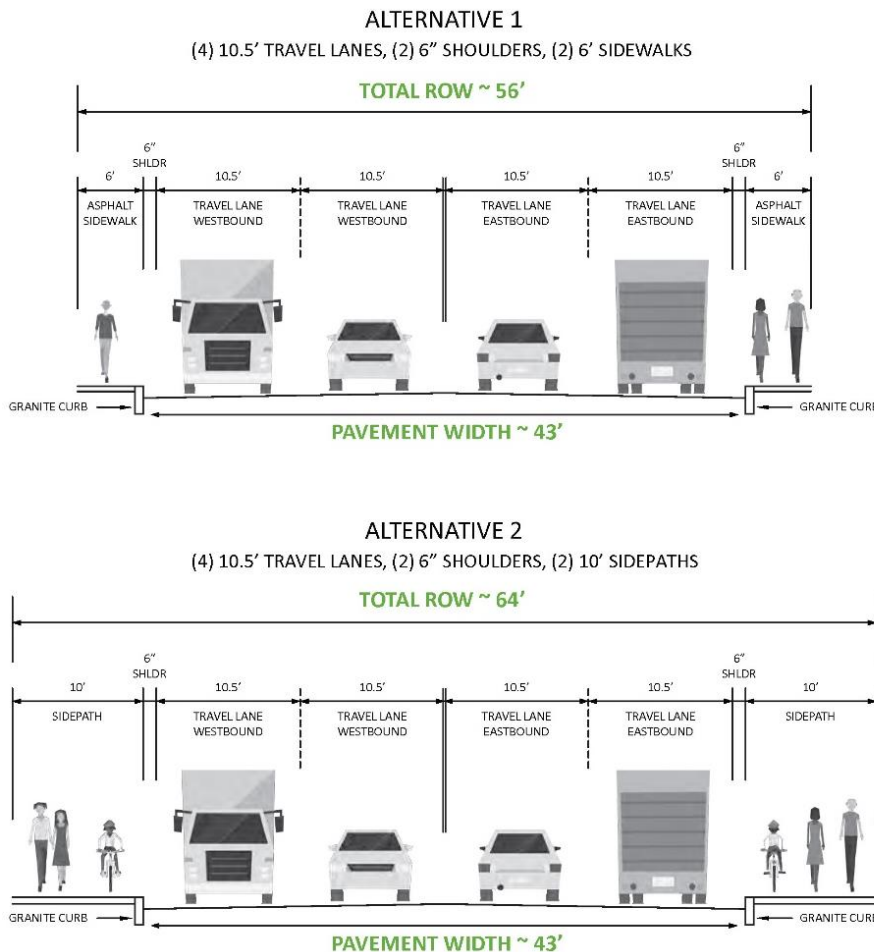


Figure 25: Conceptual Layout Alternatives #1 & #2

## Alternatives #3 & #4

Alternatives #3 and #4 are very similar. Both focus on improving conditions for all road users – providing separation between the bicyclists and pedestrians from the travel way, reducing the number of travel lanes to reduce vehicle speeds, and enlarging the current shoulder area to accommodate first responders. This option would include improvements to the drainage system and potential utility pole relocations. The main difference between the two options is the design of the separated bicycle and pedestrian environment. In Alternative #3, bicyclists and pedestrians would have their own space while in Alternative #4, bicyclists and pedestrians would share the 10-foot, separated “sidepath”. These options would not include land acquisition; however, it would involve upgrades to the drainage system, curb relocations, and restriping the travel way.

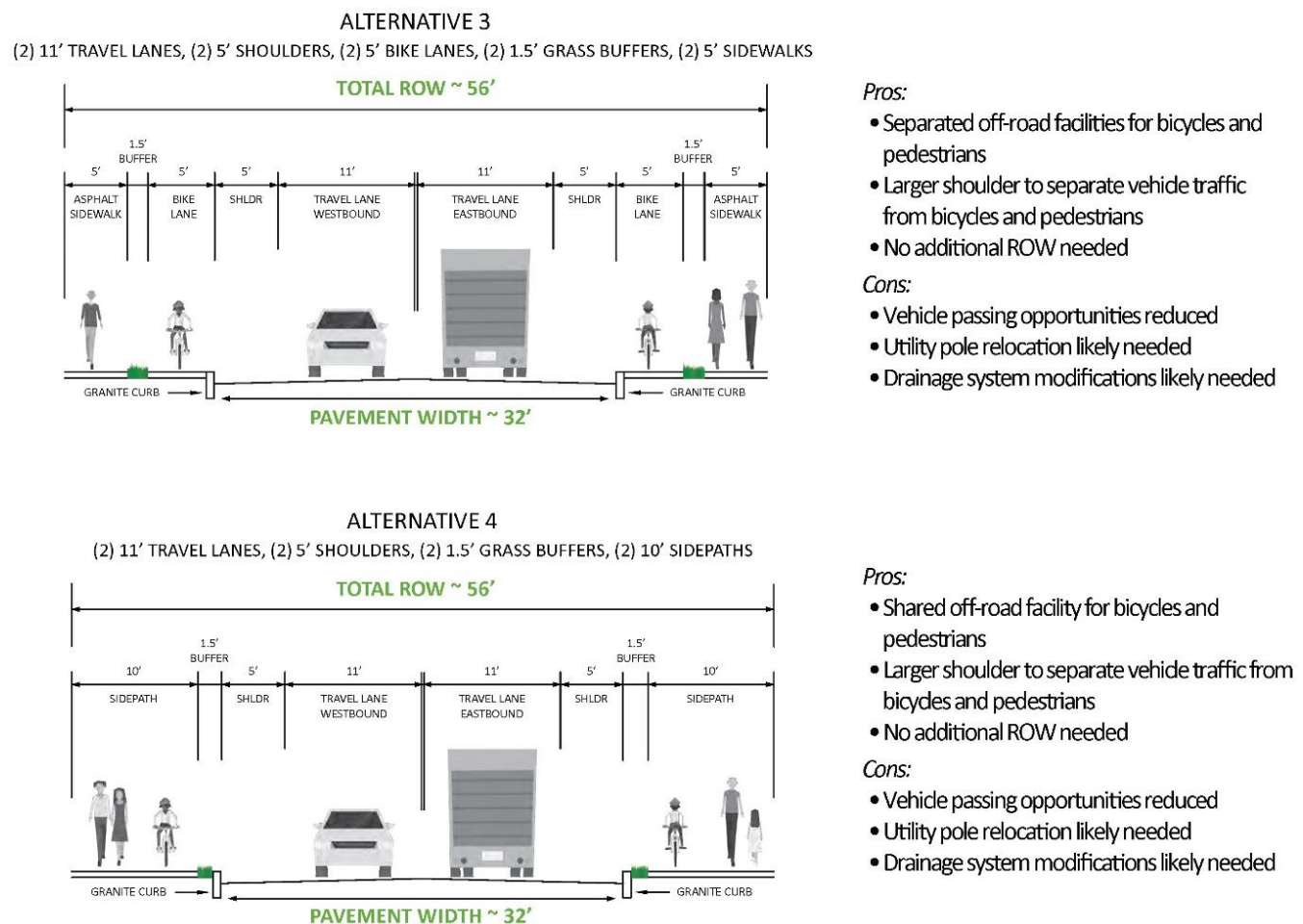


Figure 26: Conceptual Layout Alternatives #3 & #4

## *Public Meetings*

The goal of Phase 2 was to build consensus about the future of Route 6 – balancing efforts to improve bicycle and pedestrian facilities while maintaining acceptable traffic flow and to identify where specific improvements would be most appropriate.

Phase 2 concluded in January 2020, as SRPEDD facilitated the second of two public meetings. The first meeting was held at the Center Elementary School (December 2019) and second meeting was held at the Sippican Elementary School (January 2020). The purpose of these meetings was to: (1) present the results of SRPEDD’s future conditions analyses; (2) present and gather the public’s feedback on the set of draft improvement alternatives; and, (3) to build consensus about the type and locations of future layouts using a preference survey (see Figure 28 on the following page).



*Figure 27: Public Meeting at Sippican Elementary School*

Similar to Phase 1, SRPEDD asked for the public to consider which presented alternative reflected their preference for the future of Route 6 and to indicated that choice on the survey. Importantly, the survey was flexible – the participants could select multiple alternatives if that suited them or even design their own alternative. SRPEDD simply asked that they indicate any “modifications” on the survey to ensure accurate cataloging following the meetings.

The survey was posted on the project webpage and paper copies were made available at the town halls. Following a 2-week comment period, SRPEDD cataloged and analyzed one hundred thirteen completed surveys. Importantly, this exercise allowed residents, town officials, business owners, commuters and others to express their opinions about the corridor and brought the communities closer to consensus.

As shown in Table 3 (page 37), the majority of respondents preferred Alternative #2 – keeping the 4-lane configuration while expanding the existing sidewalks to provide a 10-foot sidepath on both sides of the road for the entire corridor. While this conceptual alternative addresses two of the core issues (lack of sidewalk consistency and bicycle accommodations) by providing the separated space for bicycles and pedestrians, it does not address the high vehicle speeds and narrow travel lanes and shoulders. Additionally, it requires land acquisition in order to provide the sidepath on both sides of road. That said, if and when this alternative moves forward as a project, the final design could be modified in a way that reduces this impact and associated costs.



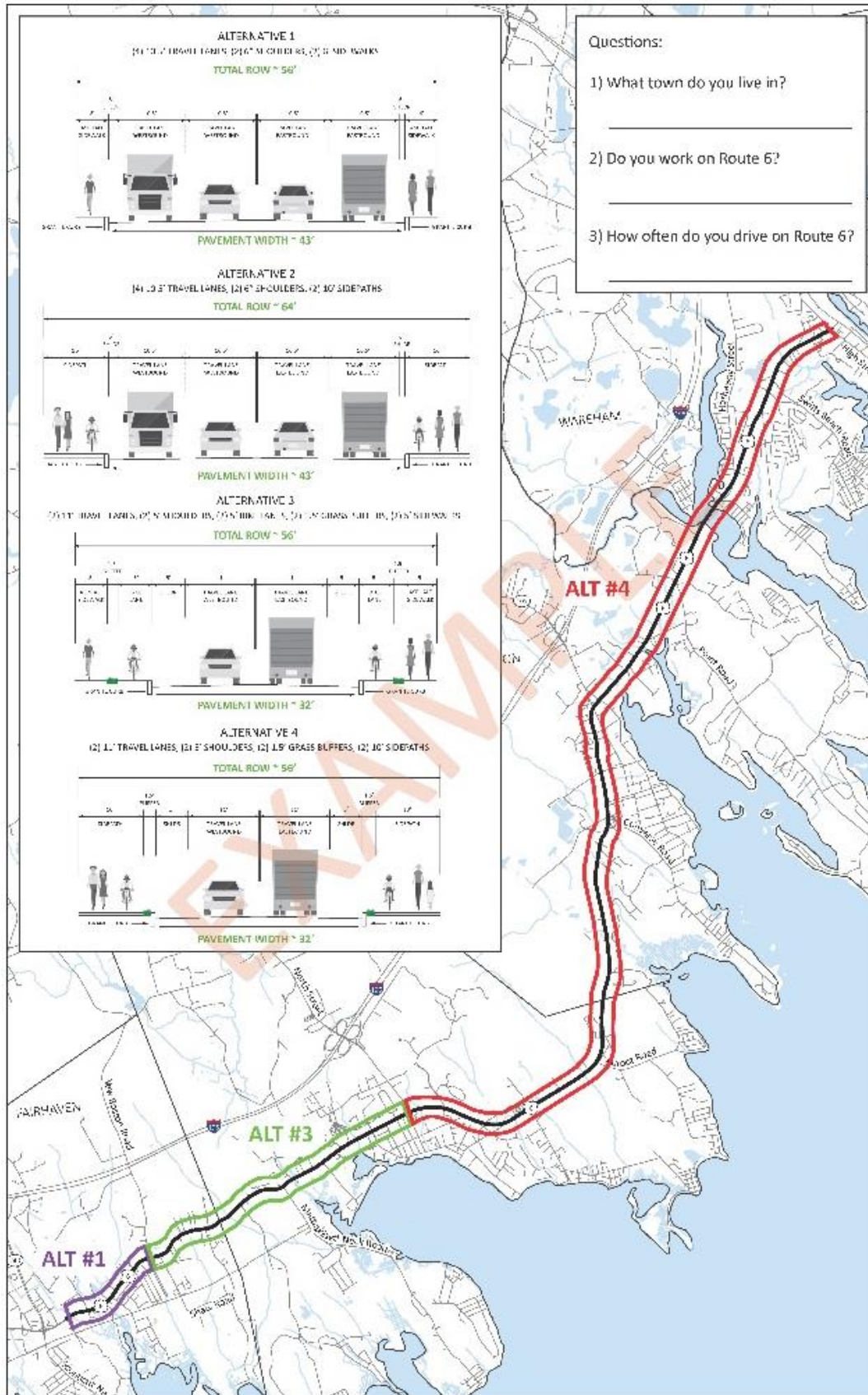


Figure 28: Preference Survey Example presented at the public meetings

## Conclusions & Recommendations

### *Conclusions*

Prior to the extension of Interstate 195 to Route 25 in the 1970s, Route 6 was the primary highway used to access Cape Cod. Therefore, at that time, the roadway was designed to accommodate a higher number of vehicles traveling at higher speeds in order to get “from point A to point B.” Although it still allows for that use, it also serves other purposes – providing access to residential properties, local businesses, recreational areas, and municipal facilities. Those land uses, the trips they create, and the associated users all need a roadway that is safe, reliable, and accessible. Currently, Route 6 is auto-centric, 4-lane highway, that prioritizes vehicle uses and discourages walking or biking. The goal of this study was to build consensus around the concept of improving conditions along Route 6 for all road users employing a context sensitive approach. Ultimately, significant changes cannot be accomplished overnight; however, with continual dialogue and engineering expertise, Route 6 can be improved.

### Core Issues

Throughout the study, SRPEDD identified the following core issues:

- High vehicle speeds
- Narrow travel lanes with little to no shoulder
- Sidewalk network is not consistent, close to road, and in need of repairs to be ADA compliant
- No bicycle accommodations
- Outside lane drainage structures are sinking, creating depressions along curb
- Some unsignalized intersections have geometric challenges leading to sight distance issues
- Signalized intersections lack protected left turn lanes blocking visibility for oncoming traffic

### Guiding Principles

Based on an understanding of the core issues coupled with the feedback recorded from the public survey, from the stakeholder meetings, and from the participants at the public meetings, SRPEDD focused on the following principles during the development of future improvements:

- Enhance or implement pedestrian and bicycle accommodations
- Revise signal timing and phasing at signalized intersections to improve operations and safety
- Modify selected intersection geometries to improve sight distances
- Improve pavement markings, lighting, signage, and drainage to increase safety
- Provide more public transportation to reduce traffic volumes
- Investigate reducing the number of travel lanes (road diet) to help lower travel speeds





## *Recommendations*

### Improvements

Considering the core issues and the guiding principles, SRPEDD recommends that the communities work with MassDOT to implement the following improvements:

1. Signalize New Boston Road (Fairhaven)
2. Signalize Spring Street (Marion)
3. Signalize Swifts Beach Road (Wareham)
4. Modify North Street traffic signal to include protected/permissive left turns (Mattapoisett)
5. Modify Front Street traffic signal to include protected/permissive left turns (Marion)
6. Change physical geometries to create 90-degree intersections at six (6) locations
  - a. Brandt Island Road (Mattapoisett)
  - b. Church Street Extension (Mattapoisett)
  - c. Marion Road (Mattapoisett)
  - d. Converse Road (Marion)
  - e. Creek Road (Marion)
  - f. Hathaway Street (Wareham)

Additionally, the following general improvements should be made to improve safety:

1. Replace all existing signage and pavement markings with high-visibility retroreflective materials to improve visibility
2. Replace all existing High-Pressure Sodium (HPS) streetlights with high-efficiency LED lights to improve visibility
3. Replace all existing “standard” style crosswalks with “continental” or “ladder” style to improve visibility
4. Reconstruct existing drainage structures that are in disrepair and bring flush to pavement surface to avoid depressions and standing water
5. Remove telephone poles from existing sidewalks or include a path that provides adequate clearance widths and add ADA compliant curb ramps to improve pedestrian mobility
6. Add bicycle signage along the corridor to improve awareness of bicycle activity

It should be noted that these improvements are intended to be implemented regardless of the future layout of Route 6.

Future Route 6 Layout

In total, SRPEDD received 113 preference surveys with a range of opinions. The vast majority of the completed surveys included the selection of a provided alternative for the entire corridor. However, there were some that (1) chose a combination of the provided alternatives (classified as “Combination”), (2) modified a provided alternative or created a new one (classified as “Other”), and (3) neglected to select a specific alternative (classified as “Blank”). The results of the comprehensive review, cataloging effort, and final tally are shown below, ranked by total number of selections:

**Table 3: Preference Survey Exercise Results**

Rank	Alternative	Total Tally	Percent of Total
1	Alternative #2	35	31%
2	Alternative #1	21	19%
3	“Combination”	15	13%
4	Alternative #3	14	12%
5	Alternative #4	13	12%
6	“Other”	9	8%
7	“Blank”	6	5%
<b>Total</b>		<b>113</b>	<b>100%</b>

As shown in Table 3, the majority of respondents preferred Alternative #2 – keeping the 4-lane configuration while expanding the existing sidewalks to provide a 10-foot sidepath on both sides of the road for the entire corridor. While this conceptual alternative addresses two of the core issues (lack of sidewalk consistency and bicycle accommodations) by providing the separated space for bicycles and pedestrians, it does not address the high vehicle speeds and narrow travel lanes and shoulders. Additionally, it requires land acquisition in order to provide the sidepath on both sides of road. That said, if and when this alternative moves forward as a project, the final design could be modified in a way that reduces this impact and associated costs.

Although this exercise provided valuable insights about the public’s preference, it is important to note that this is not considered to be a final “vote” or “decision” about the future layout of Route 6. Rather, it should be used as a foundation on which to build continued support for future layout changes, should specific communities wish to move forward. As previously noted, there are several improvements in this report that provide increased intersection efficiencies and safety, Americans with Disabilities Act (ADA) compliance, enhanced visibility, and infrastructure upgrades that should be pursued regardless of the roadway layout.

Lastly, the preference for a 3-lane configuration (2 travel lanes with a two-way left-turn lane) was expressed and supported during the public meetings and preference survey comment period. Although the MassDOT Project Development & Design Guide indicated that this treatment may not be preferable for Route 6 (mainly due to operating speeds), SRPEDD recommends that, at a minimum, it be considered during the design stage of any future project to ensure all possibilities are evaluated.

## Route 6 Study - Fairhaven/Wareham

lenfowler40@verizon.net <lenfowler40@verizon.net>

Sun 3/8/2020 2:55 PM

**To:** Jed Cornock <jcornock@srpedd.org>

If the ultimate study was to include any two lane auto designs, I suggest the following:  
For any road intersections include provisions for turnoff lanes for either left or right turns for both directions.

Sent from Len's iPhone

## Route 6 study comments

lynnerich@att.net <lynnerich@att.net>

Sun 3/8/2020 6:51 PM

To: Jed Cornock <jcornock@srpedd.org>

As a resident who has to use route 6 when leaving my driveway, I ask everyone to remember what a highway is for. A highway is to efficiently and quickly move motorists driving cars and trucks. If the roadway's primary function is diminished to accommodate other uses, that is a failure. What was done to downtown Wareham is absolutely terrible for drivers.

Leave route 6 the way it is.

Richard Bumpus, Marion, MA

Sent from Windows Mail

## Route 6

Camille Hyde <camillehyde96@gmail.com>

Wed 3/11/2020 12:09 PM

**To:** Jed Cornock <jcornock@srpedd.org>

**Cc:** Camille Hyde <camillehyde96@gmail.com>

Hello. Just a couple of concerns regarding Route 6 in Marion. I have lived on River Road in Marion for 23 years. Since Wareham Crossing has been built, there has been a considerable increase in traffic along route 6. Especially concerning is the speed at which cars travel going over the bridge between Wareham and Marion. My street being the first Street in Marion after the bridge, a little over a year ago, I witnessed a fatal car accident on Route 6 at the end of my street. The driver had just passed me "speeding", he lost control and crashed into a tree! The other concern is regarding the traffic light at the Cumberland Farms in Marion. It is extremely difficult to take a left hand turn when traveling west bound on route 6, because visibility is blocked. Thank you for taking these concerns into consideration! Sincerely, Camille Hyde



## Comment

Home <daniel-rogers@comcast.net>

Wed 3/18/2020 8:43 AM

To: Jed Cornock <jcornock@srpedd.org>

Mr. Cornock,

Sorry for the late comment but I do have one observation I would like to express.

I noticed that the current preliminary report does not acknowledge the business after creek road and I believe the same road configuration with the turning lane should extend to the bridge in wareham I and the light at the intersection of rt.6 and point road should have a turn arrow to maximize the safety of that intersection as well as the others in town.

Thank you for your consideration of this comment.

Daniel P. Rogers  
10 Autumn Lane  
Marion, MA