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CAPE COD  
COMMISSION

# Eliminating Transit Barriers

A review of bus stops and access to them on Cape Cod

October 2016







## Executive Summary

Pedestrian access to bus stops was identified as a key impediment for transit users on Cape Cod and the Islands by the Regional Coordinating Council (RCC). The RCC was established by Executive Order for the purpose of improved coordination of transportation services for the elderly and disabled. The group surveyed its membership and determined that accessing bus services was an issue at some locations. CCRTA requested that the Cape Cod Commission (CCC) conduct an assessment of CCRTA-designated stops including an inventory of amenities and potential access improvements so that local communities could be made aware of potential improvements in future public works planning. This report identifies projects that could enhance pedestrian accommodations and bus stop facilities.

The study was conducted by inspecting each bus stop and identifying existing accommodations and facilities. The assessment included reviewing a statewide sidewalk inventory, Environmental Justice populations and ridership at each stop. The roadways that were identified for pedestrian improvements are on major roads with transit stops. The stops that showed need for facility improvements were stops that had had minimal facilities or accommodations and high ridership. Funding methods including town-controlled funds, Federal Transit Authority Section 5339 Funds, Transportation Improvement Program (TIP) Highway Funds, and Development Regulation are discussed.

The recommendations in this report include implementing a signage program to add low cost amenities such as CCRTA logo signs, schedules and systems maps at bus stops. Several bus stop were identified to not have these types of amenities.

The list of roadways where transit stops would benefit from sidewalk improvements includes:

- County Road in Bourne
- Route 28A in Bourne
- Route 28 in Dennis (intermittent)
- Route 28 in Yarmouth (intermittent)
- Route 28 in Barnstable (intermittent)
- Route 28 in Harwich (intermittent)
- Route 28 in Chatham (intermittent)
- Route 28 in Falmouth (intermittent)
- Route 132 in Barnstable (intermittent)
- Shank Painter Road in Provincetown
- Cotuit Road in Sandwich
- Route 130 in Sandwich
- Route 6 in Eastham (east side)
- Route 6 in Truro
- Route 6 in Wellfleet
- Route 151 in Falmouth and Mashpee

The bus stops that were identified to have pedestrian and facility needs base on existing conditions and ridership include:



- Stop and Shop, Orleans – H2O and Flex
  - Patriot Square - H2O
  - Stop and Shop, South Yarmouth – H2O
  - Shaw’s, South Yarmouth – H2O
  - Highland Road – Flex and Provincetown/North Truro Shuttle  
(List of recommended bus stop improvement locations continued)
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- Stop and Shop at Quaker Meeting House Road – Sandwich Line
  - Anchorage at Crowell Road – H2O
  - Seacoast Shores Boulevard – Sealine
  - Chatham Rotary – H2O
  - Woods Hole Steamship – Sealine and WHOOSH Trolley
  - Cape Cod Mall Route 28 – Hyannis Villager and Barnstable Villager
  - Higgins Crowell Road – H2O
  - North Truro Camping Area- Provincetown/North Truro Shuttle
  - Catamount Hotel- Bourne Run



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## Introduction

### Study Objectives

The focus of this report is to develop a plan for increasing pedestrian access to transit and improving facilities at bus stops. The project goals are to identify where to invest in transit stops and to prioritize the investments by ridership, equity and cost. This report is meant as a tool for local communities to identify potential gaps in their pedestrian network.

### Project Goals Include:



Identify where to invest in transit stops



Prioritize by ridership, equity and cost

### Study Area

All Cape Cod Regional Transit Authority (CCRTA) bus stops in Barnstable County for CCRTA routes and some intercity bus stops were evaluated. Sidewalks throughout Cape Cod were identified near bus stops. Figure 1 shows the Cape Cod region, including CCRTA bus stops and bus routes.

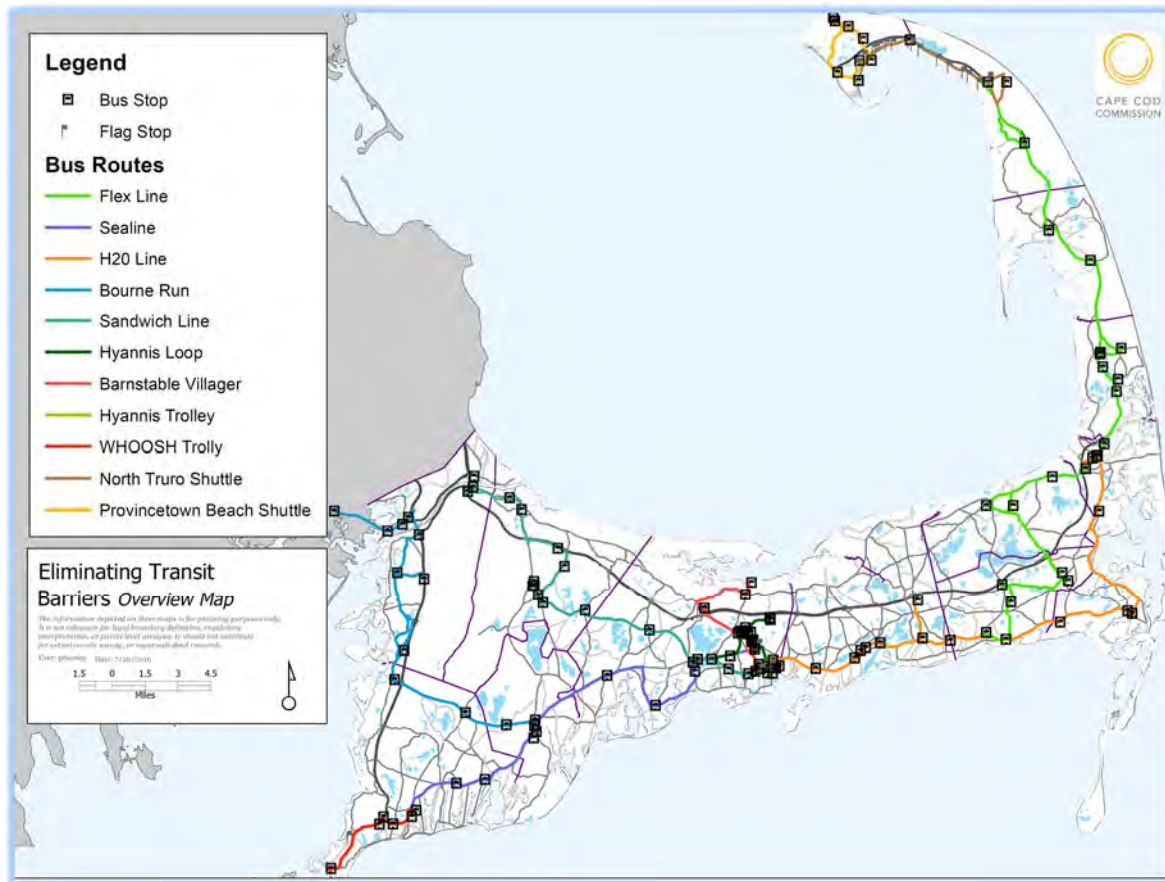


Figure 1: Study Area

## Project Team

The project team consisted of staff at the Cape Cod Commission and Cape Cod Regional Transit Authority as listed below;

- Cathy Lynds, CCRTA
- John Fuller, CCRTA
- Lynn Ahlgren, CCRTA
- Paula George, CCRTA
- Kristen Boyd, CCRTA
- Glenn Cannon, P.E. CCC
- Patrick Tierney, CCC
- Lev Malakhoff, CCC
- Martha Hevenor, CCC
- Anne Reynolds, CCC
- Gary Prahm, CCC
- Traffic Technician (Interns), CCC





For feedback, *Eliminating Transit Barriers* was presented to the Regional Coordinating Committee and the Cape Cod Regional Transit Authority Advisory Board.

## Data Collection

Cape Cod Commission staff collected data at CCRTA bus stops to evaluate the stops for pedestrian accommodations and transit stop facilities. An ESRI Geographic Information System (GIS) application was used gather site attributes of bus stops and sidewalks, and streamline the data collection process. The types of attributes are discussed further in the existing conditions section of the report. In addition to bus stop data, a Massachusetts state sidewalk GIS layer was reviewed to identify locations with limited pedestrian accommodations.



## Previous Studies

This initiative was prompted by the findings of previous studies including the Regional Coordinating Committee survey and the Cape Cod Commission’s *Closing the Gaps* study.

### Regional Coordinating Committee Survey

In September 2012, the Regional Coordinating Committee conducted a survey on transit consumers and providers. The top response for barriers that impedes the ability to access public transportation, identified by sixty percent of consumer respondents, was lack of sidewalks. The results of the survey question are presented in Figure 2.

#### Q9 Check off any of the following barriers that impede your ability to access public transportation.

Answered: 161 Skipped: 191

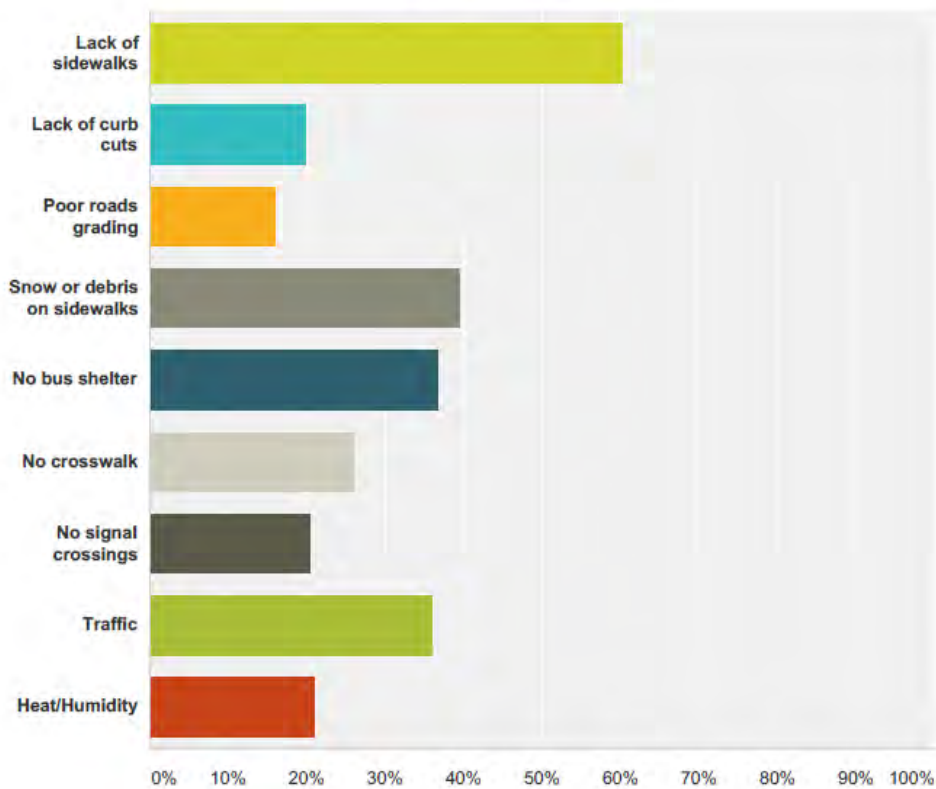


Figure 2: Regional Coordinating Committee Survey Questionnaire Results



## ***Closing the Gaps***

Cape Cod Commission conducted a study in 2013 titled *Closing the Gap* that reviewed the connectivity of existing public transit (bus) routes with existing bicycle and pedestrian paths, and local bicycle and pedestrian planning documents. The conclusion of the report recommends improvements to eliminate gaps in connectivity.

The list below summarizes the sidewalks projects that were identified to be within a mile of a bus stop;

- County Road sidewalk in Bourne
- Route 28A sidewalk in Bourne
- Route 28 sidewalk in Dennis
- Route 6 sidewalk in Eastham
- Route 28 sidewalk in Harwich
- Shank Painter Road sidewalk in Provincetown
- Cotuit Road sidewalk in Sandwich
- Route 130 sidewalk in Sandwich
- Route 6 sidewalk in Truro
- Route 6 sidewalk in Wellfleet

*Eliminating Transit Barriers* is a follow up study to *Closing the Gaps*. The information in this report includes more detailed inspection of the stops.



## Bus Stop Design

The ideal bus stop would have complete pedestrian accommodation and facilities, and have sidewalks that connect directly to the passenger's origin or destination.

Some bus stops are located along the street. These types of bus stops require the bus to stop in the road and passengers must walk to their destination. Some bus stops are curb side or off-street at a developments including shopping centers or grocery stores.

### Bus Facilities

The current design of bus stops to be installed by the CCRTA is represented in Figure 3. Modifications to this design include brown metal trim. CCRTA previously built wood bus shelters, however due to the high costs of materials, construction, and maintenance, the CCRTA has discontinued this design.

The bus stops also may include facilities such as benches, lighting and system maps. Bus stop facilities enhance the transit experience and provide indication of where the bus stops.

A feature that is included in many of the stops now is *NextBus* signage that tells the time of the next bus arrival. The CCRTA will be discontinuing the usage of this product. As a replacement, a cellphone application will be advertised that alerts passengers of bus arrivals.



Figure 3: Bus Shelter Design

### Pedestrian Accommodations

Sidewalks, crosswalks and curb ramps are some of the major pedestrian accommodations for accessibility to transit stops. On-street bus stops have a higher need for these accommodations because they support the safe travel for each passenger to and from the bus stop towards their destination.

Existing sidewalks are typically four feet wide or more. The Massachusetts Department of Transportation (MassDOT) design guidelines require sidewalks that are at least five feet wide. It is beneficial to have sidewalks on both sides of the road so that a passenger can walk to the bus that travels from both directions. Many CCRTA stops are off-street or curbside at grocery stores and shopping centers. At these locations it is important for the sidewalk network on the streets to connect to those at the commercial development.

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Crosswalks are utilized by pedestrians to cross the street. If a passenger is taking transit to and from their destination, at an off-street stop the pedestrian will be required to cross the street. Crosswalks are important for pedestrians to safely access the stop from either side of the road. Crosswalks are typically five feet wide and there are several designs, most typically used is the piano key or continental, as shown in Figure 4.



Figure 4: Continental or Piano Key Crosswalk

Curb ramps are essential for handicap and stroller access. Modern design of all pedestrian facilities is guided by Americans with Disabilities Act (ADA) regulations. The design of curb ramps includes a four-foot-wide ramp, five-foot-wide turning areas, and textured pads at transitions from the ramp to a road crossing. Figure 5 shows drawings of typical curb ramps.

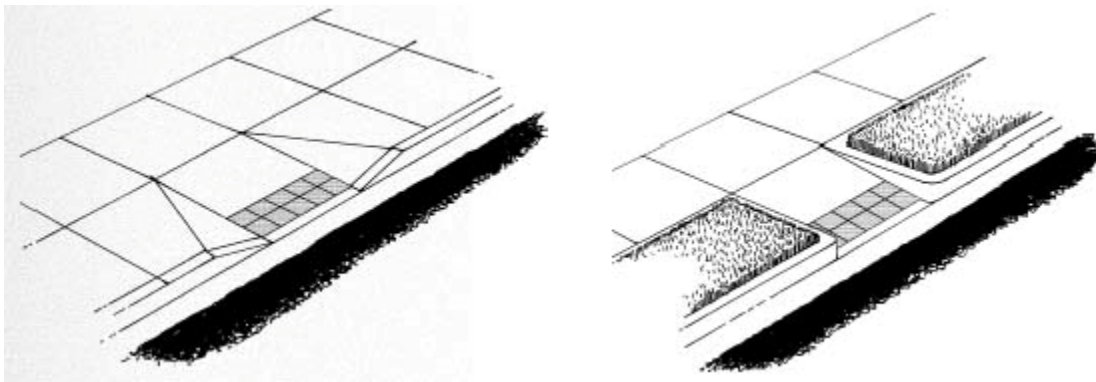


Figure 5: Curb Ramp Examples



## Example Bus Stops

Several bus stops were identified to have excellent pedestrian accommodations and transit facilities when compared to other bus stops. High Ridership stops are recommended to reflect attributes shown in the examples below.



### **Dennis Crossing – H2O**

Ridership: 12,685 passengers per year

Pedestrian Accommodation: crosswalk, curb ramps, sidewalks on both sides

Transit Facilities: Bus Shelter, Lighting, CCRTA sign, Benches, Bike Racks

Proposed Improvements: System Map, Schedules

### **East Falmouth Dunkin Donuts - Sealine**

Ridership: 13,608 passengers per year

Pedestrian Accommodation: crosswalk, curb ramps, sidewalks on both sides

Transit Facilities: Bus Shelter, Lighting, CCRTA sign, Benches, Schedule, System Map, Bike Racks

Notes: Ongoing construction project at the Route 28 and Davisville Road intersection

Proposed Improvements: None





### **Harwich Community Center - Flex**

Ridership: 1,524 passengers per year

Pedestrian Accommodation: crosswalk, curb ramps, sidewalks on both sides

Transit Facilities: Bus Shelter, Lighting, CCRTA sign, Benches, Schedule, System Map, Bike Racks

Proposed Improvements: Curb ramps and crosswalk upgrades

### **Mashpee Commons Stop and Shop- Sealine and Bourne Run**

Ridership: 21,746 passengers per year

Pedestrian Accommodation: Curb ramps, Sidewalks, Crosswalk. Development sidewalks connect to on street sidewalks.

Transit Facilities: CCRTA Logo sign, Stop and Shop bus shelter, benches, bike racks, and lighting are from development

Notes: Stop is curb side at grocery store

Proposed Improvements: Add system map and schedule. Extend sidewalks along Route 151 and Route 28, including the Mashpee Rotary. Consider adding a second stop at in other parts of Mashpee Commons.





## Existing Conditions

Ridership data for each stop was provided by the CCRTA. The facilities at each bus stop were evaluated by Cape Cod Commission. Sidewalks were first evaluated using the MassDOT roadway inventory file. A review of all stops shows that each location could benefit from some improvement.

### Ridership

CCRTA provided ridership data at each stop for fiscal year 2015. The data identifies the origin of the passenger trip. Stops with transfer opportunities include the ridership on multiple transit routes. Ridership does not include intercity bus or rail passengers. Because the Hyannis Loop started operation in September 2015, annual ridership was estimated based on the available 2016 data. It should be noted that CCRTA operates a flag service – meaning that passengers can signal a CCRTA bus anywhere along the route and if safe, the driver will pick them up. This service is provided as a convenience for passengers who wish to board at areas between designated stops.

Ridership is dependent on many factors such as the frequency of buses (number of buses per hour) and surrounding land use and demographics. There are several metrics used to measure the success of transit routes, such as ridership per revenue hour, or cost per passenger. This information is available from the CCRTA’s *Comprehensive Service Assessment*. For simplicity, only ridership is discussed in this report.

Ridership was organized into three ranges as shown in the Table 1:

- 4,000 passengers or more
- Between 500 to 4,000 passengers
- Less than 500 passengers

**Table 1: Annual CCRTA Ridership Distribution by Stop**

<i>Fixed Bus Route</i>	<b>Number of stops with 4,000 passengers or more</b>	<b>Number of stops with 500 – 4,000 passengers</b>	<b>Number of stops with less than 500 passengers</b>
<i>Villager</i>	2	6	8
<i>Sealine</i>	10	7	17
<i>Sandwich</i>	2	9	11
<i>Hyannis Loop</i>	1	4	5
<i>H2O</i>	13	6	19
<i>Flex</i>	5	17	22
<i>Bourne</i>	0	7	7
<b>Total</b>	<b>33</b>	<b>56</b>	<b>89</b>



Figure 6 shows the geographic distribution of the ridership data. Route 28, which has the Sealine and H2O routes shows high ridership. There are also high ridership stops in Hyannis, Sandwich along Route 130, Truro, Orleans and Provincetown.

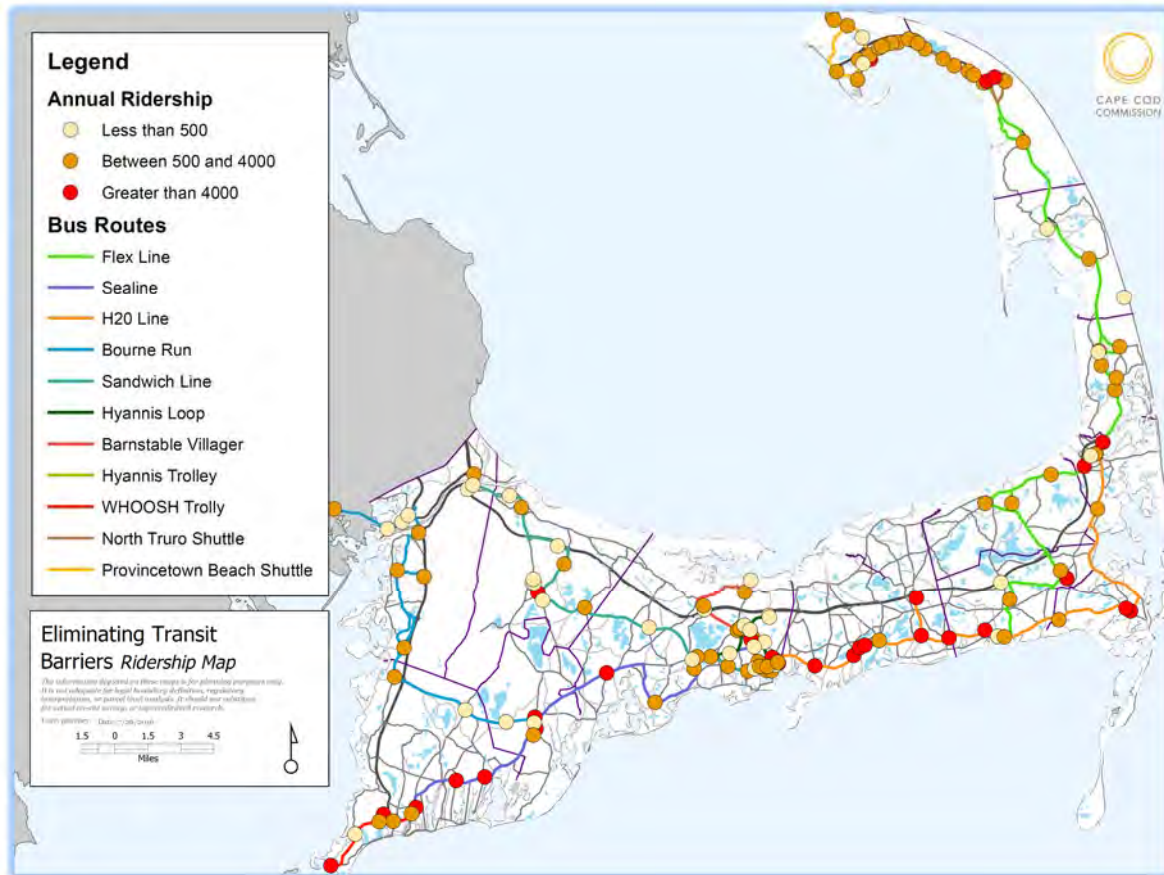


Figure 6: Ridership Map



## Sidewalks

The MassDOT roadway inventory features a sidewalk attribute that shows right and left side sidewalks. Cape Cod Commission reviewed this data to identify the existing sidewalk network. The roadway inventory file is only occasionally updated, therefore some sidewalks that currently exist may not be reflected in the data because they have may been constructed before its last update.

The following figures show the sidewalk network in the Upper Cape, Mid Cape, Lower Cape and Outer Cape. The green line shows where there is a sidewalk presence and does not reflect sidewalk condition or which side of the road has sidewalks. Some of the areas with transit stops in the Upper Cape that do not include sidewalks are Route 151 in Falmouth and Mashpee, Route 28A in Bourne, Farmerville Road in Sandwich, Route 28 in Mashpee and Barnstable, and Cotuit Road in Sandwich. Since the last update of this map, sidewalks have been constructed on parts of Cotuit Road in Sandwich.

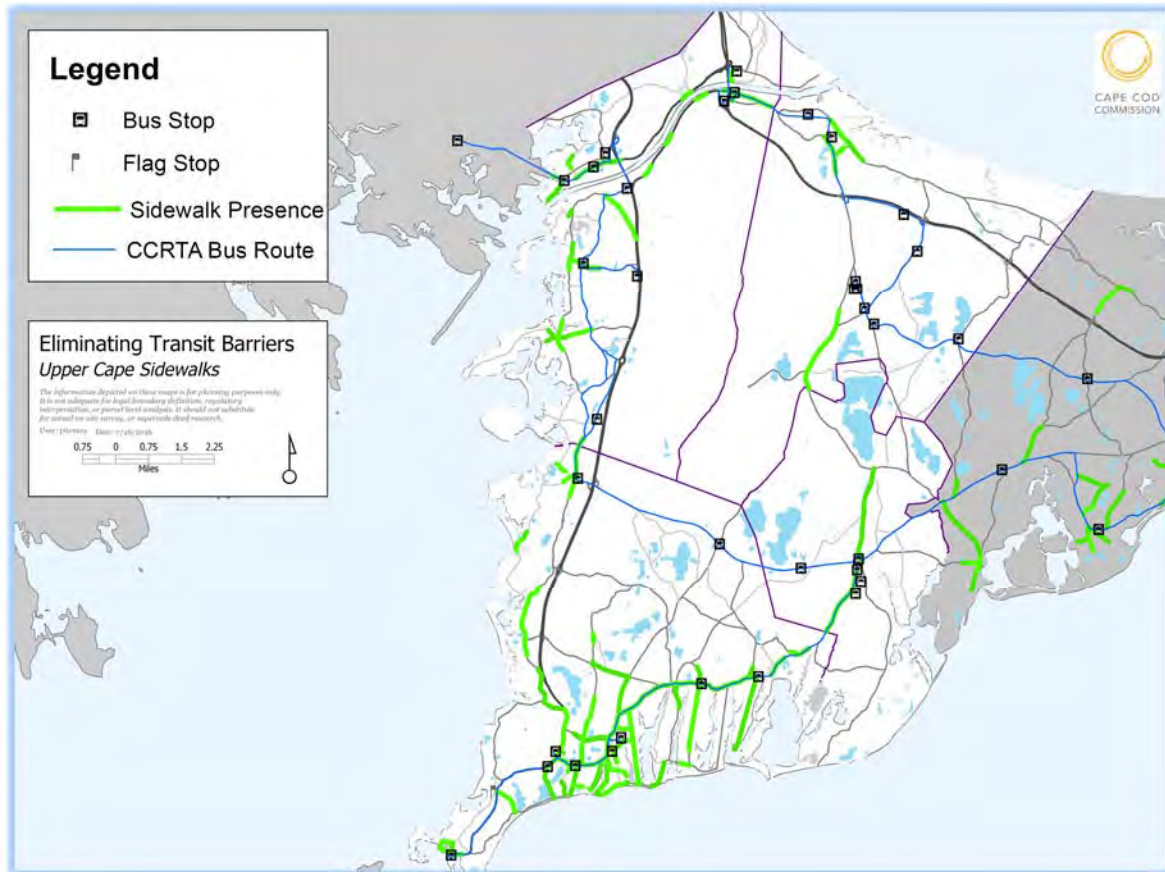


Figure 7: Upper Cape Sidewalks



In the Mid Cape there are a few notable areas that do not have sidewalks. These include portions of Race Lane in Barnstable, Route 132 in Hyannis, Route 28 in West Barnstable Independence Park Drive in Barnstable and Route 134 in Dennis. Since the last update of this map sidewalks have been constructed along the southern portion of Route 134.

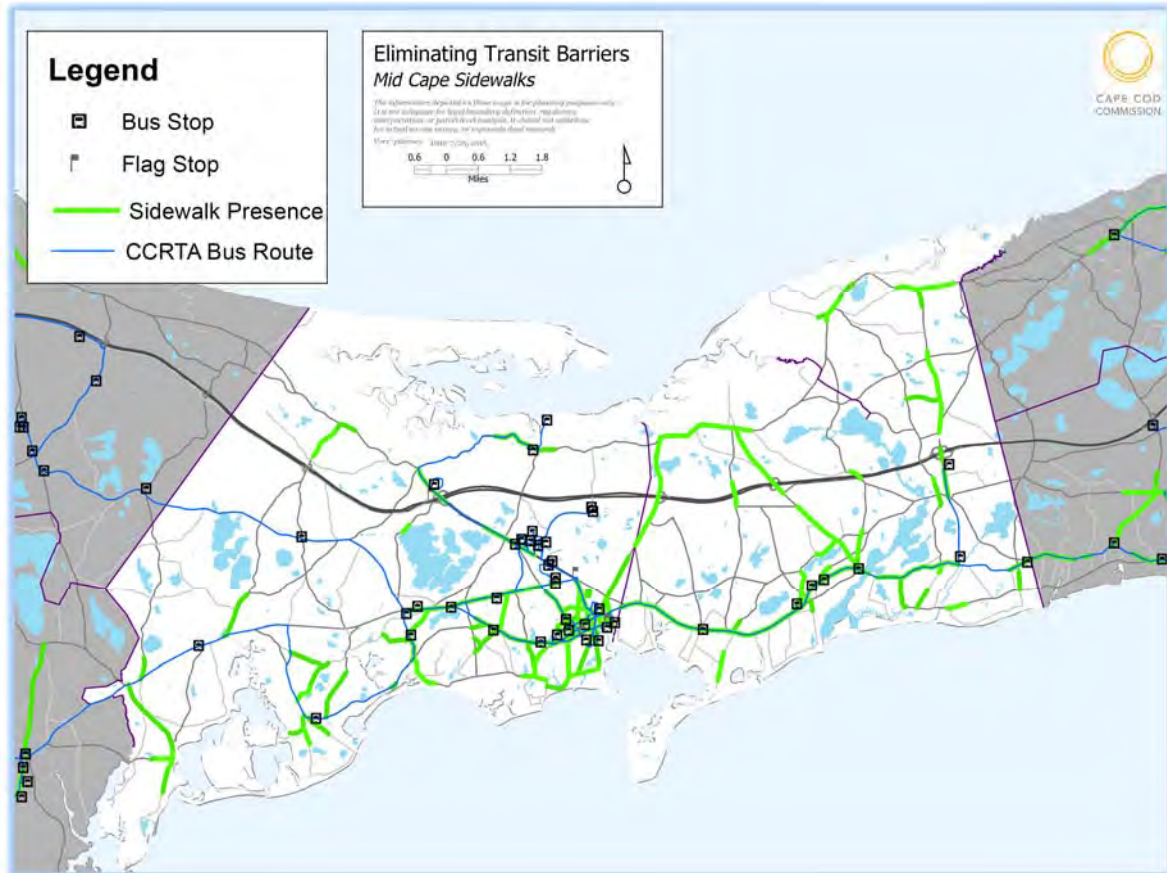


Figure 8: Mid Cape Sidewalks



The areas that do not have sidewalks in the Lower Cape include portions of Route 28 in East Harwich, Queen Anne Road in Harwich, Route 137 in Harwich and Brewster, Route 6A in Brewster, and Route 28 in Chatham, Harwich and Orleans. Since the last update of the sidewalk data sidewalks have been constructed along Route 6A and Overpass Road in Brewster.

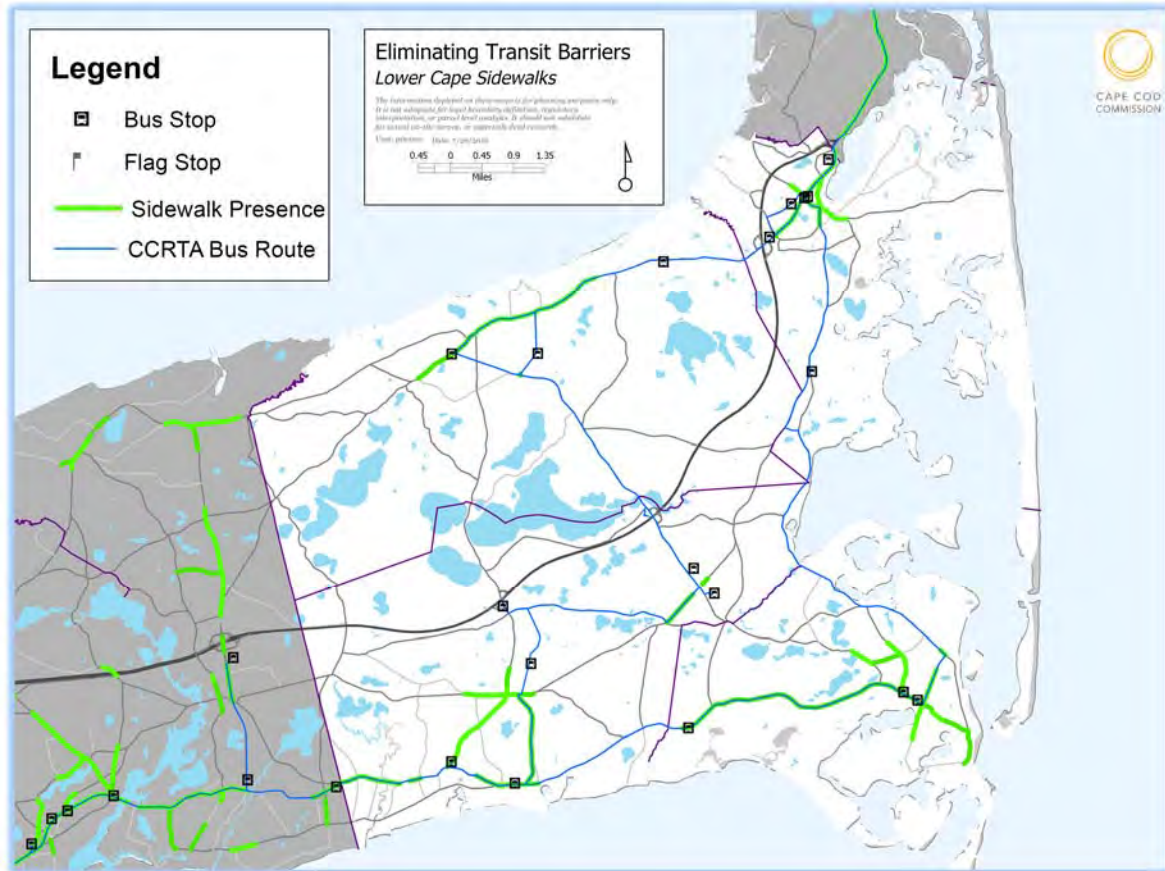


Figure 9: Lower Cape Sidewalks

In the Outer Cape, sidewalks are more limited. The roadways that do not have sidewalks include the majority of Route 6 in Wellfleet and Truro, Highland Road in Truro, Bradford Street in Provincetown, Province Lands Road in Provincetown, and Shank Painter Road in Provincetown.

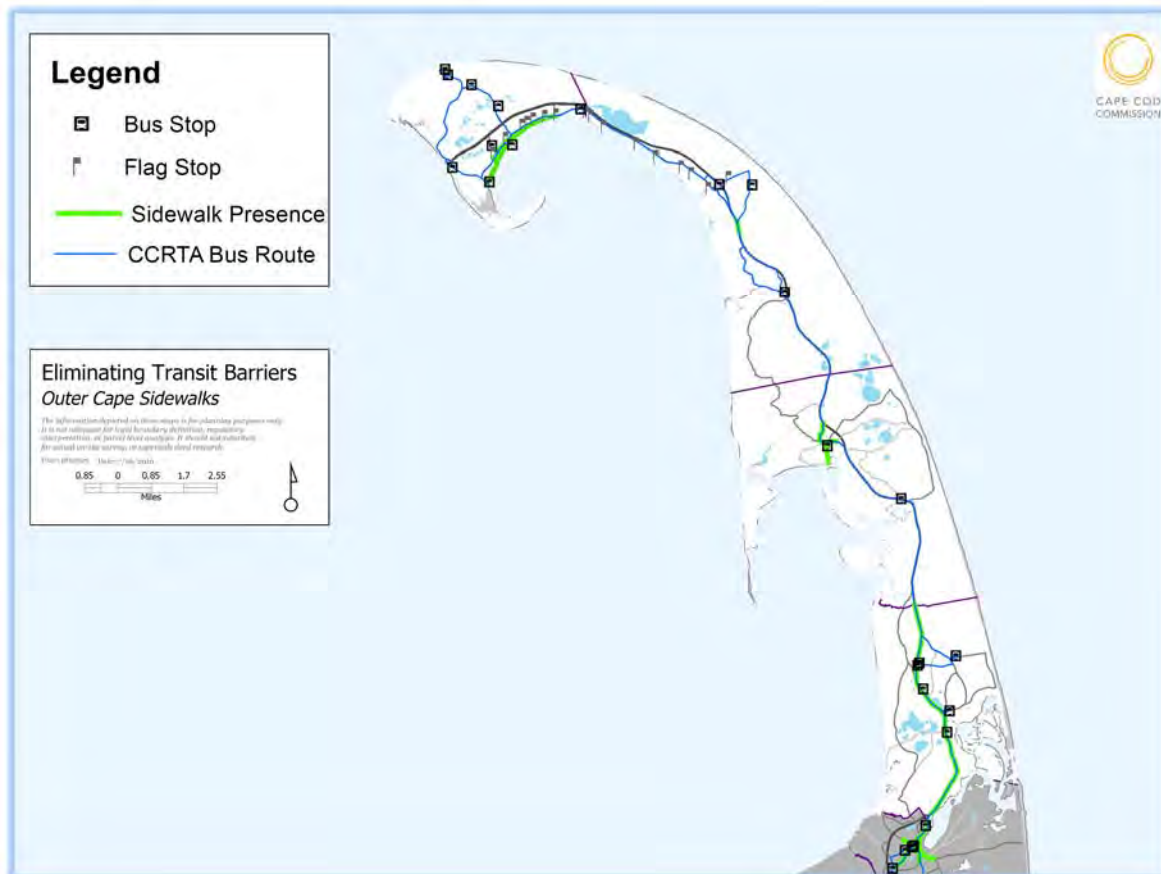


Figure 10: Outer Cape Sidewalks

## Pedestrian Accommodations

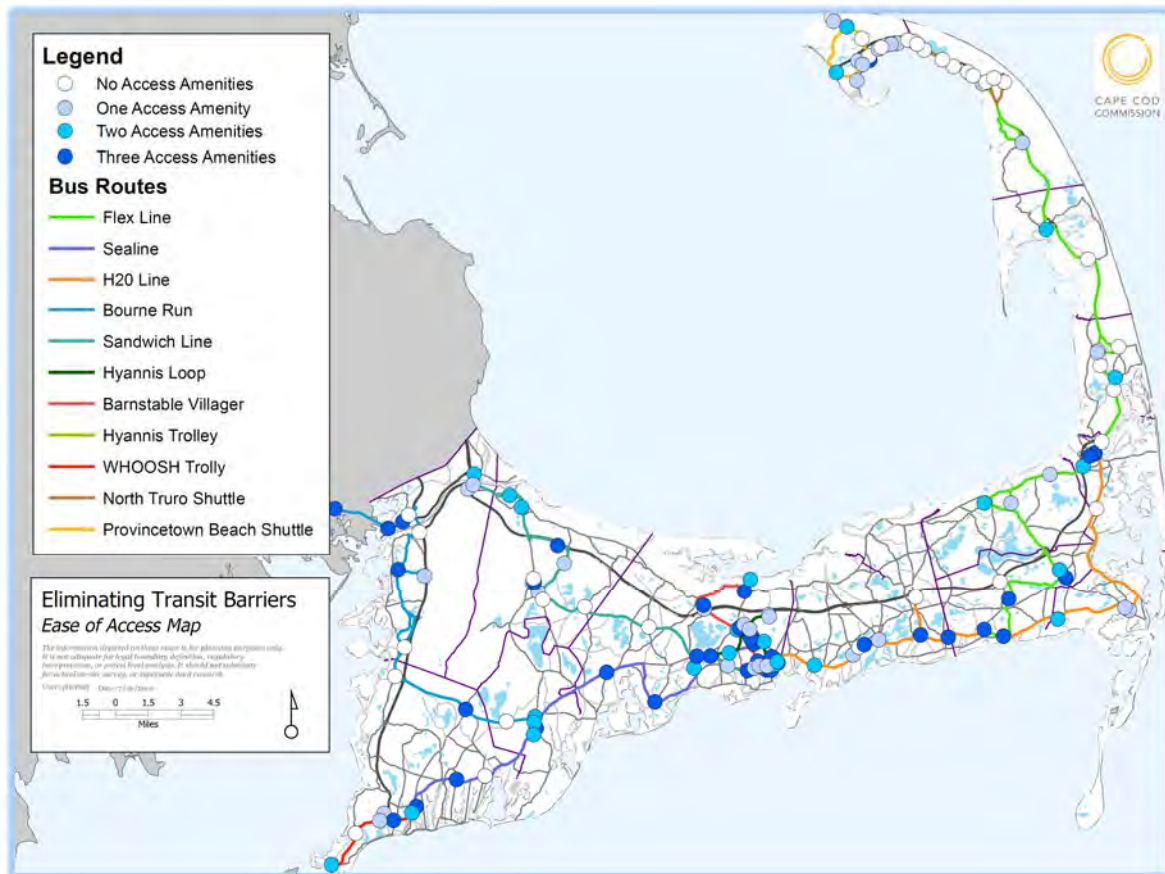
Cape Cod Commission staff inspected transit stops for curb ramp access, sidewalks along the street, and crosswalk availability at the stop. The intention of collecting this data is to identify which stops have issues with access. When technicians inspected each bus stop they were prompted with the following questions for each category and answered “Yes” or “No.” Answers reflect the general state of the area and do not reflect the exact conditions;

- Crosswalk – “Does the Stop have a crosswalk near the bus stop location? Across the nearby street? Does the nearby traffic signal have pedestrian phasing?”
- Sidewalk – “Does the street and nearby streets have a sidewalk accessing the area of the bus stop? Does the commercial lot have sidewalks that connect to the street sidewalk network?”



- **Curb Ramp** – “Could a wheelchair get to where passengers wait for the bus? Is there a curb ramp at least 4 feet wide?” (4-foot width was chosen based on ADA standards)

Figure 11 below shows which stops received one, two or three “Yes” answers for the crosswalk, sidewalk and curb ramp layers. The map shows that the Mid-Cape area and Route 28 generally has more crosswalks, sidewalks or curb ramps than other sections of Cape Cod. This trend is also reflected in the sidewalks map. The entire list of data can be found in the Appendix.



**Figure 11: Cape Wide Count of Pedestrian Accommodations at Bus Stops**



## Transit Stop Facilities

At each bus stop technicians also identified facilities including:

- Bus shelters
- Lighting
- *NextBus* signs (to be replaced with QR codes)
- CCRTA signage
- Benches
- Schedules
- System maps
- Bike racks

The entire list of data can be found attached as Appendix. Figure 12 shows which transit stops include the select facilities. The intention of this map is to identify which transit stops have facilities.

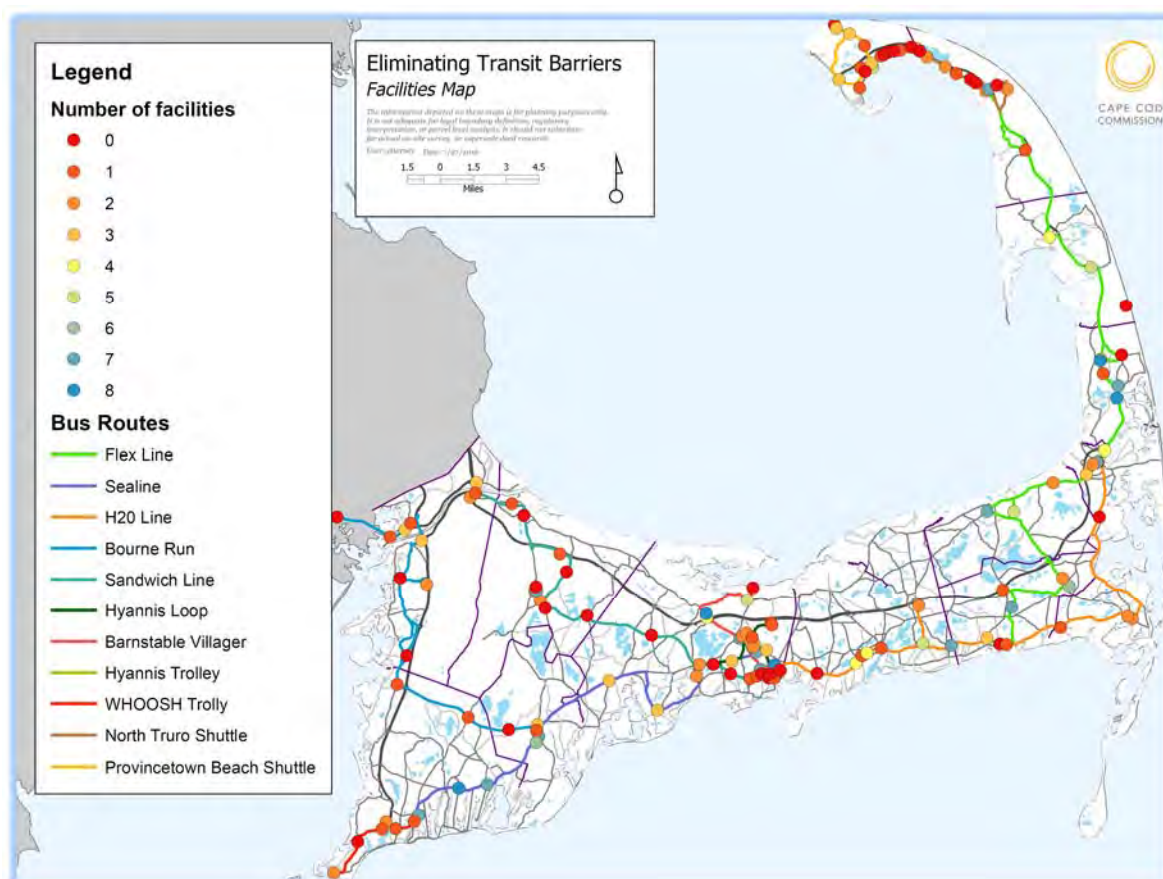


Figure 12: Number of Facilities



## Environmental Justice

The Environmental Justice areas in proximity to bus stops were identified and are shown in Figure 13. Environmental Justice regions are determined by the 2010 census and include areas of minority population and low-income. The minority areas on Cape Cod are along parts of Route 28 in Falmouth, Route 130 and Route 28 in Mashpee, Hyannis, and Route 28 in Yarmouth. The low-income areas include parts of Route 28 in Falmouth, Hyannis, Yarmouth, Dennis, Harwich and parts of Route 6A in Orleans. It is important to identify the bus stops in these regions because Environmental Justice populations can be transit dependent, increasing the need for safe pedestrian routes to bus stops and ensuring equity in the placement of resources.

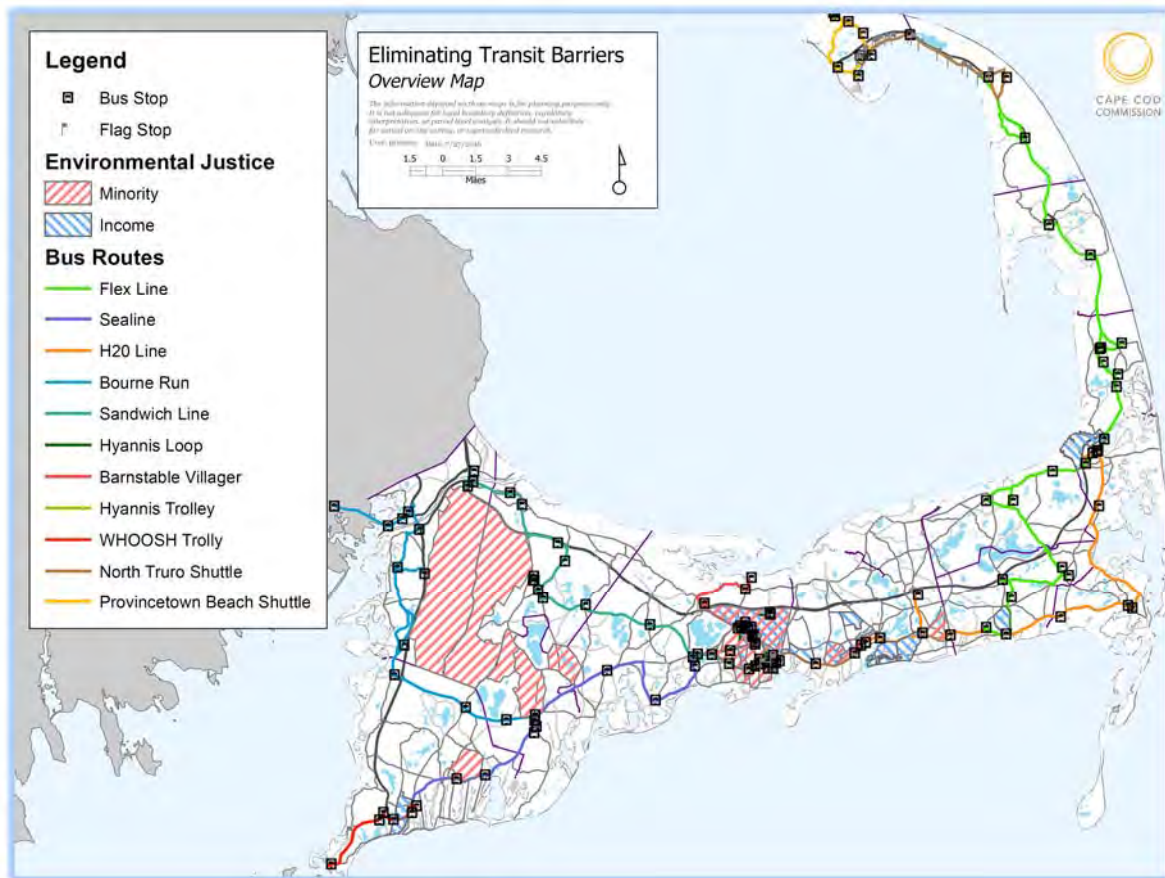


Figure 13: Environmental Justice





## Improvement Considerations

The reviewing of the existing conditions identified several sidewalk projects and recommendations. The stops that showed high ridership and a need for improved pedestrian access are detailed below.



### **Stop and Shop Orleans – H2O and Flex**

Ridership: 21,094 passengers per year

Pedestrian Accommodation: On street sidewalks are not connected to bus stop

Transit Facilities: Bus Shelter, benches, schedule

Notes: Bus stop is on the side of Stop and Shop. Visible to foot traffic only. In proximity to low-income EJ populations.

Proposed Improvements: Move the bus stop to be more visible or closer to the street and provide a sidewalk connection to the on street sidewalk. Include lighting, system maps, bike racks, and CCRTA signage in a redesign.

### **Patriot Square – H2O**

Ridership: 15,713 passengers per year

Pedestrian Accommodation: Curb side stop with no connection to on street sidewalks.

Transit Facilities: None

Notes: Curb side stop

Proposed Improvements: Add signage and schedule to current bus stop location. Consider location for a bus shelter with all transit facilities. Connect location of bus stop to sidewalks with pedestrian connection. Extend sidewalks the entire length of Route 134 (connection through exit 9 ramps).





**Stop and Shop South Yarmouth - H2O**

Ridership: 14,926 passengers per year

Pedestrian Accommodation: Curb side stop with no connection to on street sidewalks.

Transit Facilities: Benches, lighting, sheltered area provided by development. CCRTA signage is at the stop.

Notes: Stop is curb side at grocery store and in proximity to low-income and minority EJ populations.

Proposed Improvements: Connect stop with on street sidewalk network. Consider location for bus shelter with all facilities.

**Shaw's South Yarmouth – H2O**

Ridership: 7,467 passengers per year

Pedestrian Accommodation: None

Transit Facilities: CCRTA Signage

Notes: Stop is behind Shaw's near residential area and in proximity to low-income and minority EJ populations.

Proposed Improvements: Move stop to make it more visible from the roadway. Consider the location for a bus shelter with all facilities. Construct a sidewalk at the location of the stop that connects to on-street sidewalks.





**Highland Road – Flex and Provincetown/ North Truro Shuttle**

Ridership: 6,250 passengers per year

Pedestrian Accommodation: None. Roadway is low volume.

Transit Facilities: Bus shelter, benches, lighting, CCRTA signage, schedule, system map, bike racks

Notes: Seasonal bus stop and bus pullout

Proposed Improvements: Consider sidewalks along the length of Highland Road

**Stop and Shop at Quaker Meeting House Road – Sandwich Line**

Ridership: 5,349 passengers per year

Pedestrian Accommodation: Development sidewalks do not connect to on street sidewalks

Transit Facilities: Lighting provided and benches provided by development.

Notes: Stop is curb side at grocery store and in proximity to minority EJ populations.

Proposed Improvements: Add signage, system maps and schedules. Consider moving stop closer to the street or connecting the development sidewalks with the on street sidewalks. Consider location for CCRTA bus shelter with all facilities. Extend sidewalks along Quaker Meeting House Road and Cotuit Road.





### **Anchorage at Crowell Road – H2O**



Ridership: 5,155 passengers per year

Pedestrian Accommodation: Sidewalks on the opposite side of the development

Transit Facilities: Lighting and benches at development

Notes: Stop is curb side at Housing Authority

Proposed Improvements: Add a sidewalk on the other side of the road. Consider moving the bus stop to the street. Provide a cross walk at the bus stop location. Consider the location for a bus shelter with all transit facilities.

### **Seacoast Shores Boulevard - Sealine**

Ridership: 4,830 passengers per year

Pedestrian Accommodation: Sidewalk on one side of the road (opposite of transit stop).

Transit Facilities: Bus Shelter, Lighting, CCRTA signage, Benches, Schedules, System Maps

Notes: Stop is near residential neighborhood and in proximity to minority EJ populations.



Proposed Improvements: Add sidewalk to north side of Route 28. Extend pavement or path from shelter to roadway. Consider location for Bus pullout. Add crosswalk on Route 28. Add bike racks to bus stop location.



**Chatham Rotary – H2O**

Ridership: 4,485 passengers per year

Pedestrian Accommodation:  
Intermittent Sidewalks on one side of the road

Transit Facilities: CCRTA signs, Benches

Notes: Bus pullout is at the transit stop on the south side of Route 28.

Proposed Improvements: Consider adding sidewalks to both sides of Route 28 near the bus stop and upgrade existing sidewalks for accessibility with curb ramps. Consider the location for a bus shelter with all facilities. Add cross walk along Route 28.

**Woods Hole – Sealine and WHOOSH Trolley**

Ridership: 14,927 passengers per year

Pedestrian Accommodation:  
Crosswalks, sidewalks on nearby street

Transit Facilities: Shelter and lighting provided by development

Notes: Stop is curbside stop at Steamship Authority terminal and site has been discussed for improvements.

Proposed Improvements: Add sidewalks to the development site with curb ramps for accessibility. Add CCRTA signage, schedule, system map, and bike racks to site.





**Cape Cod Mall Route 132 – Hyannis Loop and Barnstable Villager**

Ridership: 8,142 passengers per year

Pedestrian Accommodation: Sidewalks on site, Crosswalk

Transit Facilities: Bus Shelter Lighting, CCRTA signage, benches, system map, schedule

Notes: Bus stop is located behind the mall closer to Route 28 and in proximity to low-income and minority EJ populations. Route 28 is scheduled for reconstruction in 2016 at this location.

Proposed Improvements: Add bike racks and curb ramps to increase accessibility. Construct Sidewalks along Route 28 and Route 132 with crosswalks and pedestrian signals at traffic lights. Consider moving stop or adding a stop at an on street location or curb side location.

**Higgins Crowell Road – H2O**

Ridership: 6,693 passengers per year

Pedestrian Accommodation: Sidewalks on Route 28 and pedestrian crossing at traffic signal.

Transit Facilities: None

Notes: Stop is on street at intersection

Proposed Improvements: Consider location for bus shelter that includes all facilities. Upgrade curb ramps to include textured padding at street crossings.





### **North Truro Camping – Provincetown/ North Truro Shuttle**

Ridership: 5,521 passengers per year

Pedestrian Accommodation: None, Low volume road

Transit Facilities: None

Notes: Seasonal stop at campgrounds

Proposed Improvements: Consider sidewalks along Highland Road. Add CCRTA signage. Consider location for bus shelter that includes all facilities.

### **Catamount Motel – Bourne Run**

Ridership: 3,151 passengers per year

Pedestrian Accommodation: None

Transit Facilities: None

Notes: Stop is in proximity to minority EJ populations. Motel name is not clearly marked and does not show up on Google Maps.

Proposed Improvements: Consider sidewalks along Route 28A. Add CCRTA signage and Benches. Consider location for bus shelter that includes all facilities. Consider moving the bus location to on-street or to a new location.





# Recommendations

Cape Cod Commission Staff recommends the following projects and methods to improve access to transit following a review of the data.

## Signage, Map and Schedule Program

Many of the bus stops on the CCRTA system do not have signs indicating that the bus stops at that particular location. Staff recommends placing a CCRTA logo sign, CCRTA system map and CCRTA fixed route schedule at each bus stop. This could help to improve the visibility of the stops and decrease confusion for passengers and bus drivers. The majority of the bus stops on the Sandwich and Bourne Run, and many of the curb side bus stops are do not have signage. Figure 14 shows the bus stops where Cape Cod Commission staff did not see CCRTA signage as well as those locations that are signed.

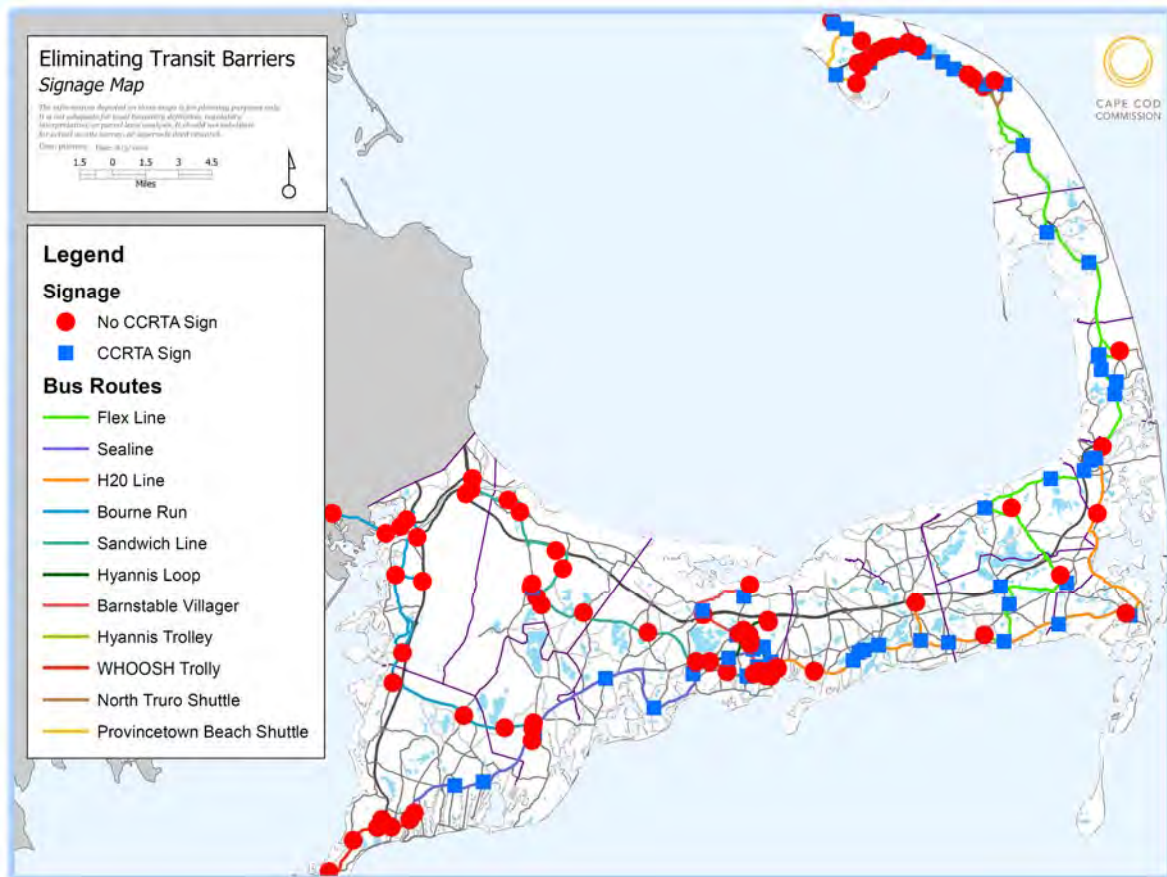


Figure 14: Signage Location Map





## Sidewalks

As identified in both the Closing the Gaps and Eliminating Transit Barriers there are several roadways that do not have consistent sidewalks and have transit stops on them. Sidewalks are typically recommended on most roadways. Exceptions may include low-volume or low-speed roads or limited access highways. Staff recommends sidewalks be constructed to improve walkability to these CCRTA bus stops.

The list of roadways that have transit lines and would benefit from sidewalk improvements includes;

- County Road in Bourne
- Route 28A in Bourne
- Route 28 in Dennis (intermittent)
- Route 28 in Yarmouth (intermittent)
- Route 28 in Barnstable (intermittent)
- Route 28 in Harwich (intermittent)
- Route 28 in Chatham (intermittent)
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- Route 6 in Wellfleet
- Route 151 in Falmouth and Mashpee

## Build-Out of High Ridership Stops

As identified in the Problem identification portion of the report the bus stops that were identified to have pedestrian and facility needs based on existing conditions and ridership include:

- Stop and Shop, Orleans – H2O and Flex
- Patriot Square- H2O
- Stop and Shop, South Yarmouth – H2O
- Shaw's, South Yarmouth – H2O
- Highland Road – Flex and Provincetown/North Truro Shuttle
- Stop and Shop at Quaker Meeting House Road – Sandwich Line
- Anchorage at Crowell Road – H2O
- Seacoast Shores Boulevard – Sealine
- Chatham Rotary – H2O
- Woods Hole Steamship – Sealine and WHOOSH Trolley



- Cape Cod Mall Route 28 – Sealine and Barnstable Villager
- Higgins Crowell Road – H2O
- North Truro Camping Area- Provincetown/North Truro Shuttle
- Catamount Hotel- Bourne Run

## Funding

Funding for the above projects is not identified but could be facilitated through the programs listed below. Funding for each program is based on availability and competing interests will determine the outcomes.

- Town-controlled funds – Cape towns could fund the sidewalk projects using specific funds under their control. This may be easiest if the roadway is owned by the town.
- Federal Transit Authority Section 5339 Funds– CCRTA controls funds allocated by the FTA that are annually categorized for Bus Shelters or Improvements to Bus Stops. These funds could be used to outfit bus stops with facilities or small scale sidewalk projects. In 2017 approximately \$30,000 was allocated to bus stop improvement.
- Transit Enhancement Funds Section 5307 – Annually CCRTA receives 5307 funds for general operating expenses as well as capital improvements. Current Federal law requires that recipients of 5307 funds spend 1% of their funds on “transit enhancements” which are defined in the regulations. Bus shelters and improvements to them and the area around them qualify for this use. In 2017, CCRTA will spend approximately \$80,000 on transit enhancements.
- Transportation Improvement Program (TIP) Highway Funds - The Cape Cod Metropolitan Planning Organization’s (MPO) transportation capital plan, the Transportation Improvement Program (TIP), lists major transportation projects planned in the next five years. The MPO is made up of eleven voting members with representatives of state agencies, regional organizations, and Cape Cod towns. Discussions at MPO meetings help to establish a preference for which projects are funded through the TIP. Members of the public are welcome and encouraged to attend these meetings and voice opinions.

Each year the TIP allocates approximately \$20 million split between highway and transit funds. To request use of highway funds a Project Need Form (PNF) must be submitted for review by MassDOT staff.

In 2017 a project at the Harwich Route 124 Park and Ride, a bus stop location for the Plymouth and Brockton Bus was funded in the TIP. This funding category may be able to both construct sidewalks and bus stop improvement.



- **Development Regulation** - Town planning boards review and approve site plans for developments. In Barnstable County, the Cape Cod Commission reviews development with major impacts to the region or lots with proposed structures larger than 10,000 square feet. A town or county development regulation could request improvements to a bus stop or roadway layout paid for by the developer. Several CCRTA bus stops are located curbside at retail or grocery stores. Some of these developments do not have a pedestrian path that connects to the street or bus stop facilities.

## Conclusion

Pedestrian access to bus stops was identified as an issue by transit users on Cape Cod and bus stops on Cape Cod were identified to have varying levels of facilities. This report identifies projects that could enhance pedestrian accommodations and bus stop facilities.

The study was conducted by inspecting each bus stop and identifying what accommodations and facilities are existing. The assessment included reviewing a statewide sidewalk inventory, Environmental Justice populations and ridership at each stop. The roadways that were identified for pedestrian improvements are on major roads with transit stops. The stops that showed need for facility improvements were stops that had minimal facilities or accommodations and high ridership. Funding methods including town controlled funds, Federal Transit Authority Section 5339 Funds, Section 5307 Funds, Transportation Improvement Program (TIP) Highway Funds, and Development Regulation are discussed.



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