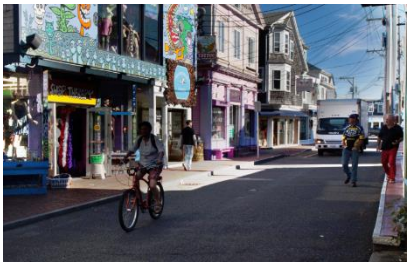
3225 MAIN STREET • P.O. BOX 226
BARNSTABLE, MASSACHUSETTS 02630

(508) 362-3828 • Fax (508) 362-3136 • www.capecodcommission.org

CAPE COD COMMISSION

Provincetown Parking and Circulation Study

February 2016



Executive Summary

The Provincetown Selectmen requested Cape Cod Commission staff to conduct a comprehensive review of parking and traffic circulation issues in Provincetown. During the summer season, parking is at a premium. Specific parking areas are overcapacity almost every day in July and August. The parking supply is oversaturated during multiple special events. Residents are aware that changes to traffic circulation patterns can have a dynamic effect on adjacent roadways or intersections. Instead of addressing individual intersection or roadway segments, the Selectmen requested that Commission staff look at individual improvements and how the proposed changes would impact the entire roadway network.

This report is data driven and includes information received during public and stakeholder meetings. Innovative use of BlueTOAD technology and our standard transportation practices (road tubes, turning movement counts, and observations) were used to establish the existing conditions. BlueTOAD equipment is able to identify travel patterns of Bluetooth devices such as cellphones, and car radios. This tracking allowed CCC staff to determine the distribution of traffic entering and exiting town from different roadways.

The project team, which included Provincetown staff and Cape Cod Commission staff used data and information received during public and stakeholder meetings to identify problem locations and alternatives to examine.

CCC staff decisions are laid out in this report. Based on the data collected, analysis, public outreach, stakeholder interviews and observations, CCC staff recommends the transportation improvement projects identified in the following tables. These recommendations have been weighed based on ability to be implemented and benefit to the town. The tables on the following pages show the issue areas and recommendations organized by timeframe and cost.

A task which has a short term time frame could be implemented or acted on before the summer of 2016. A task with a medium time frame could be acted on within 2 years or before the summer of 2018. A task with a long term time frame would require more than 2 years to implement.

A task with low cost is assumed to have under $100,000 in associated costs. A task with medium cost is assumed to be between $100,000 and $500,000. A task with a high cost is assumed to have over $500,000 in cost.

Table 1: Summary of recommendations

Short Time Frame and Low Cost	
Issue Area	**Recommendation**
Parking	Add parking information into the *iPtown* smart phone application
Parking	Reassess town-wide parking policies
Parking	Produce an Event Parking Management Plan
Valet Parking	Conduct a valet parking feasibility plan
Conwell Street from Cemetery Road to Bradford Street	Conduct a property line survey to determine the amount of Right-of-Way and design the roadway to accommodate all users (motorist, bicyclist and pedestrians)
Shank Painter Road	Install shared lane markings (sharrows) on the right side of the road

Medium Time Frame and Low Cost	
Issue Area	**Recommendation**
Motor vehicle confusion on Ryder Street Extension	Extend the sidewalk and repurpose the existing pavement to provide two travel lanes, as shown in Figure 32
Pedestrians walking from Conwell Street to Dunes Edge Campground	Construct a sidewalk on the north side Route 6 from Conwell Street to Dunes Edge Campground, as shown in Figure 35
Sign Clutter	Conduct a comprehensive review of all existing signs
Directing visitors to parking	Install signage on Route 6 directing motorists to Shank Painter Road, Captain Bertie's Way and ultimately to the Grace Hall Parking Lot
Driver confusion at Lopes Square	Stripe travel lanes at Lopes Square, as shown in Figure 31

Medium Time Frame and Medium Cost	
Issue Area	**Recommendation**
Structured Parking	Conduct a parking structure feasibility study
Conwell Street from Route 6 to Cemetery Road	Construct bike lanes and a sidewalk as recommended by ENV Partners (the town's consultant)
Prince Street and Bradford Street	Construct a new ADA accessible ramp that aligns with the Bradford Street crosswalk, as shown in Figure 30
Standish Street and Bradford Street	Reconstruct the intersection as recommended by ENV Partners (the town's consultant)
Pedestrian access on High Pole Hill Road	Construct a sidewalk on High Pole Hill Road from Bradford Street to the Provincetown Monument parking lot, As shown in Figure 34
Visitor (Pedestrian) access around town	Conduct a pedestrian wayfinding plan

Long Time Frame and Medium Cost	
Issue Area	**Recommendation**
Parking	Purchase and install a digital parking sign, as shown in Figure 37

Long Time Frame and High Cost	
Issue Area	**Recommendation**
Shank Painter Road	Reconstruct Shank Painter Road, as shown in Figure 26

CAPE COD
COMMISSION

Table of Contents

Executive Summary i
Table of Contents v
List of Appendices ix
Introduction 1
Scope of Work 1
Project Team 2
Concurrent and Previous Studies 3
Project Timeline 4
Existing Conditions 5
Travel Patterns 5
Vehicle Volumes and Level of Service 8
Parking Data 10
Bicycle and Pedestrian Accommodations 17
Public Transit 19
Public Outreach 20
Public Kickoff Workshop 20
Stakeholder Meetings 20
Public Discussion and Presentation to Selectmen 20
Alternatives Survey 20
Issue Areas 22
Transportation Design Standards 22
Parking Space Dimensions 22
Shared Lane Markings 23
Parking 25
Event Parking Management 25
Transit to Existing Remote Parking on Rainy Days 27
Parking Management 28
Parking Structures 29
Valet Parking 31
Route 6 Parking 32
Smart Phone Parking Applications "Apps" 34
Major Roadways 35

Shank Painter Road 35
Conwell Street 38
Reverse One Way Direction of High Pole Hill Road 40
Intersections 41
Standish Street at Bradford Street 41
Prince Street at Bradford Street 42
Howland Street at Route 6 43
Alden Street at Route 6 44
Lopes Square 45
Ryder Street Extension 46
Bicycle and Pedestrian Accommodations 47
Commercial Street 47
High Pole Hill Road 48
Bradford Street 49
Route 6 from Dunes Edge Campground to Conwell Street 50
Bike Racks 51
Outer Cape Bike and Pedestrian Master Plan 51
Signage 52
Remove Sign Clutter 52
Digital Parking Sign 53
Town Center Signs – Shank Painter Road 54
Pedestrian Wayfinding to Town Center 57
Transit 58
Increase Transit Services 58
Pilgrim Springs Remote Parking 59
Summary of Recommendations 60
Parking 61
Major Roadways 62
Intersections 63
Bicycle and Pedestrian 64
Signage 65
Transit 66

List of Figures

Figure 1: Project timeline 4
Figure 2: BlueTOAD detector locations 5
Figure 3: Travel patterns from Route 6 into Provincetown 6
Figure 4: Travel patterns from Route 6 to MacMillan Pier 6
Figure 5: Travel patterns from MacMillan Pier 7
Figure 6: Travel patterns from MacMillan Pier to Route 6 7
Figure 7: Estimated summer 2015 4-5pm traffic volumes 8
Figure 8: Parking locations and ownership 11
Figure 9: Average weekday traffic volumes into Grace Hall and MPL 12
Figure 10: Accumulation at Grace Hall Parking Lot 13
Figure 11: Turnover rates at MPL and Grace Hall 14
Figure 12: Utilization by paid customers at meters and kiosks 15
Figure 13: Parking demand per space 16
Figure 14: Bike accommodation map 17
Figure 15: Pedestrian accommodation map 18
Figure 16: Regional and local transit options 19
Figure 17: Public kickoff meeting 20
Figure 18: Typical parallel parking space layout 23
Figure 19: Share the Road signage 23
Figure 20: Share the Road markings 23
Figure 21: Placement of Shared the Road markings 24
Figure 22: Event parking locations 26
Figure 23: Parking demand per space 29
Figure 24: Parking deck locations 30
Figure 25: *MobileNOW!* sign in Provincetown 34
Figure 26: Shank Painter Road concept 36
Figure 27: Proposed improvements on Conwell Street 38
Figure 28: Alden Street/ High Pole Hill Road at Bradford Street 40
Figure 29: Proposed improvements for Standish Street at Bradford Street 41
Figure 30: Pedestrian path from Grace Hall Parking Lot 42
Figure 31: Lopes Square vehicle striping 45
Figure 32: Ryder Street two way striping 46

Figure 33: Shared Space or Woonerf Concept....47
Figure 34: High Pole Road sidewalk to the Provincetown Monument 48
Figure 35: Sidewalk on Route 6 from Dunes Edge Campground to Conwell Street....50
Figure 36: Sign clutter on Route 6 52
Figure 37: Graphic rendering of digital parking sign on Route 6 53
Figure 38: Graphic rendering of Shank Painter Road priority signage....54
Figure 39: Summer 4pm-5pm Traffic volume changes for Shank Painter Road priority 55
Figure 40: Examples of wayfinding elements 57
Figure 41: Passenger boarding the bus on Fourth of July....58

List of Tables

Table 1: Summary of recommendations ii
Table 2: Concurrent and previous studies 3
Table 3: LOS at unsignalized intersections based on 2015 traffic volumes 9
Table 4: List of parking lots including number of spaces, type and price 10
Table 5: Parking permit prices 12
Table 6: MPL occupancy signage 14
Table 7: Alternatives survey results 21
Table 8: Size of parking spaces 22
Table 9: Parking space estimates on CCRTA Provincetown Shuttle 27
Table 10: Parking structure capacity 30
Table 11: Estimated cost of parking structures....31
Table 12: Estimated number of parking spaced for Route 6 parking 32
Table 13: 4pm-5pm Intersection Level of Service for Shank Painter Road priority 56
Table 14: Intersection recommendations summary table....63
Table 15: Bicycle and pedestrian recommendations summary table....64
Table 16: Signage recommendations summary table....65
Table 17: Transit recommendations summary table....66

List of Appendices

Appendix A: Scope of Work

Appendix B: Outreach Appendix

- Kickoff Presentation
- Poster Presentations
- Presentation to Selectmen
- Survey Results

Appendix C: Data

- BlueTOAD movement analysis
- Automatic Traffic Recorder volume counts
- Turning Movement Counts

Appendix D: Data analysis

Appendix E: Shank Painter Road concept

CAPE COD
COMMISSION

Introduction

The Town of Provincetown requested that the Cape Cod Commission (CCC) staff conduct analysis of parking and circulation issues in Provincetown and provide a list of options to improve existing conditions, particularly during peak summer months.

Provincetown's compact development patterns, along with the existing connections to air, ferries, and bus transportation, provide a favorable environment for car-free transportation. Bicycling is a primary mode of transportation in Provincetown, not only for its residents but also for thousands of annual visitors, many of whom choose to spend their time in town without a car. However, automobile travel, including truck deliveries, to and around Provincetown is still critical to the economic vitality of the area. Provincetown's narrow streets and limited parking supply create challenges for motorists, primarily in the peak season, and lead to conflicts with bicyclists who share the road space.

The objectives of the project are to provide:

1. A professional analysis of current parking conditions and overall circulation issues in Provincetown, and
2. A set of recommendations for parking and circulation improvements and policy as well as potential roadway infrastructure improvements to address vehicle circulation and safety for motorists, bicyclists, and pedestrians.

Scope of Work

Prior to beginning work on the project, CCC staff met with town staff and agreed on a scope of work. As work in the field and public meetings got underway, the project team and stakeholders identified additional (related) areas of concern and requested that the CCC incorporate these issues into the study. These include the following:

- Event Parking
- Alden Street/High Pole Hill Road at Bradford Street
- Howland Street at Route 6
- Bradford Street at Standish Street
- Ryder Street Extension and Lopes Square
- Conwell Street bicycle and pedestrian conflicts
- Shank Painter Road bicycle and pedestrian conflicts

Shank Painter Road is a frequently traveled route to the town center and the west end. The roadway connects to residential neighborhoods, local businesses and ponds. Bicycles and pedestrians have limited accommodation, but right of way width presents an opportunity to upgrade amenities.

- Bradford Street at Prince Street bicycle and pedestrian conflicts
- Commercial Street bicycle and pedestrian conflicts

- Bicycle and pedestrian pathways to local attractions

The Provincetown Monument, Cape Cod National Seashore beaches, bike and walking paths, and local camp grounds attract a lot of visitors who bike or walk to other destinations in town. These areas may lack pedestrian and bicycle connectivity to the town center.

- Signage
- Transportation design standards for parking spaces and shared lane markings (sharrows)
- Design alternatives for the following roads: Shank Painter Road, Conwell Street
- Parking Lot Pricing
- Parking Structures
- Route 6 parking

Project Team

The project team consisted of both Provincetown and Cape Cod Commission Staff:

- David B. Panagore, Provincetown, Town Manager
- David Gardner, Provincetown, Assistant Town Manager
- Jim Golden, Provincetown, Police Chief
- Gloria McPherson, Provincetown, Town Planner
- Richard J. Waldo, Provincetown, Department of Public Works Director
- Dan Hoort, Provincetown, Finance Director
- Domenic Rosati, Provincetown, Parking Administrator
- Glenn Cannon P.E., Cape Cod Commission, Director of Technical Services
- Lev Malakhoff, Cape Cod Commission, Senior Transportation Engineer
- Steven Tupper, Cape Cod Commission, Transportation Planner
- Patrick Tierney, Cape Cod Commission, Transportation Planner
- Phil Dascombe, Cape Cod Commission, Community Design Manager
- Martha Hevenor, Cape Cod Commission, Planner II
- Cally Harper, Cape Cod Commission, Planner II
- Leslie Richardson, Cape Cod Commission, Chief Economic Development Officer
- Anne Reynolds, Cape Cod Commission, GIS Director
- Gary Prahm, Cape Cod Commission, GIS Analyst

We would like to thank the Stakeholders, the BlueTOAD team, the Provincetown Parking Department and everyone who attended the public meetings and/or took the survey.

Concurrent and Previous Studies

The project team reviewed the following studies in whole or in part, as summarized in the table below.

Table 2: Concurrent and previous studies

Title	Agency	Date	Summary
Outer Cape Bike and Pedestrian Master Plan	Cape Cod Commission, Cape Cod National Seashore	Fall 2016	Identify a preferred alternative for a "primary" route from terminus of the Cape Cod Rail Trail in South Wellfleet to Truro and Provincetown as well as a list of "secondary" routes in each town that connect to bikeways and destinations.
Design Consulting	Environmental Partners Group	Ongoing	Design of Conwell Street bike/ped accommodation and intersection of Bradford Street at Standish Avenue.
Provincetown Bikeability Assessment	MassBike	2015	Identified ways that the roads could better accommodate bicyclists.
Design and Resiliency Report (DART)	Provincetown 365, American Institute of Architects	2014	Identified options for improvement throughout the town including Shank Painter Road, zoning, parking, and transit and housing opportunities.
Shank Painter Road Study	Cape Cod Commission	2012	Identified ways to improve the road for vehicles, bicyclist, and pedestrians.
Transportation Safety Report	Cape Cod Commission	2009	Recommended a planning study on Shank Painter Road, and did not recommend changing the Shank Painter Road at Route 6 intersection.
MacMillan Pier Transportation Feasibility Study	Parsons Brinkerhoff	2006	Identified options for improving the MacMillan Pier area for public transportation services.
Conwell Street Safety Study	Cape Cod Commission	1999	Discussed and recommended scenarios such as sidewalk and one-way travel on the roadway.
Provincetown Center Parking and Traffic Management Study	Vanasse/Hangen Associates	1986	This study estimated peak parking demands, identified critical traffic flow problems, and established a five-year parking and traffic master plan.

Project Timeline

The study began in June 2015 with a public kickoff meeting. Data collection was conducted in July 2015 and August 2015. Stakeholder meetings, data analysis, and alternative identification task were complete in September and October. CCC staff attended a public meeting in November 2015 to present informational posters, answer questions, and provide a presentation to the Board of Selectmen. Following completion of alternatives analysis, CCC staff issued a draft report in January 2016. The final report will be available in February 2016. The project team designed the timeline so that the report would be available in time for the 2016 spring traffic hearing where the selectmen would have an opportunity to consider and move forward recommendations. The figure below shows the timeline of the project.

Provincetown PCS Timeline	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar
Tasks										
Public Kickoff Meeting	♦									
Data Collection		■	■							
Stakeholder Meetings				■	■					
Analyze Data				■	■					
Identify Alternatives				■	■					
Public Discussion						♦				
Analyze Alternatives						■	■			
Type Draft Report						■	■			
Edit Draft Report								■		
Final Report Release									♦	
Spring Traffic Hearing										♦

Figure 1: Project timeline

Existing Conditions

CCC used three primary methods for collecting data on vehicle numbers and activity. Automatic traffic recorders (also known as "road tubes") were used to count motor vehicle volumes on road segments; manual turning movement counts of motor vehicle, pedestrian, and bicycle activity were conducted at intersections; and "BlueTOAD" detectors, non-intrusive devices that recognize "Bluetooth" signals from cellphones, radios or other devices, were used to sample travel patterns throughout town.

CCC used the data to identify and quantify problem areas, and to analyze the impacts of alternatives.

Travel Patterns

CCC utilized BlueTOAD detectors from TrafficCast International, Inc. to analyze the movements of vehicles entering, exiting, and moving within Provincetown. The figure below shows the locations of BlueTOAD detectors. The detectors were setup between August 11th and August 19th in 2015, and were strategically placed 500 feet between detectors to avoid duplicate detection.

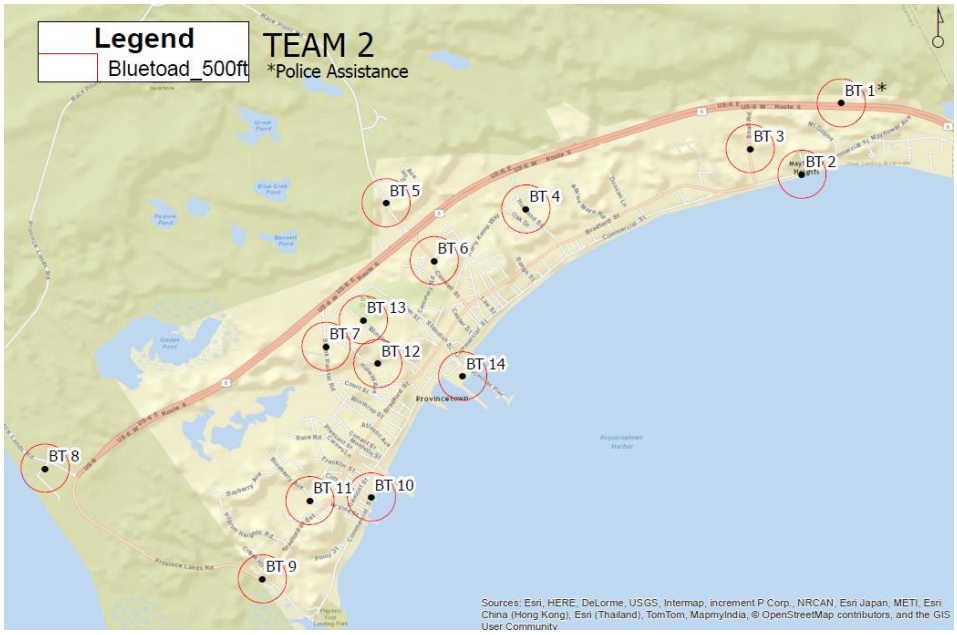


Figure 2: BlueTOAD detector locations

TrafficCast conducted data analysis using its proprietary algorithm and provided data on traffic patterns upon request. The following images show the percentages of travel patterns collected between August 12, 2015 and August 18, 2015. (The list of patterns and associated percentages are identified in the Appendix.)

The detectors were able to determine where vehicles exit Route 6 and head into town. The following figure shows that the highest percentage of entering traffic is on Conwell Street at 41%, followed by Shank Painter Road at 29%. Province Lands Road and Snail Road are shown to capture 16% and 14% of incoming traffic respectively.

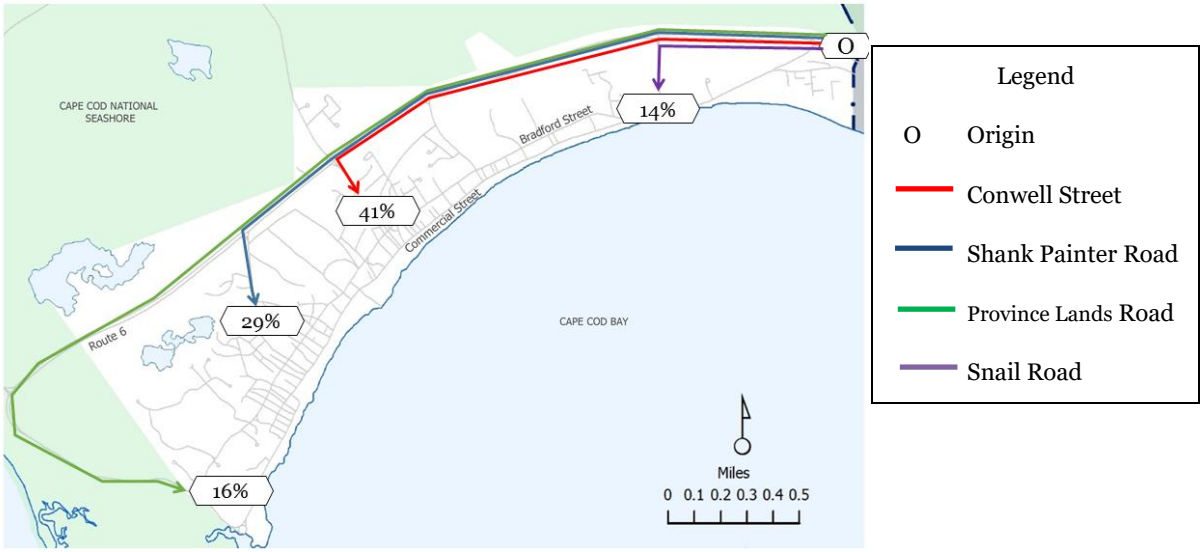


Figure 3: Travel patterns from Route 6 into Provincetown

CCC staff used BlueTOAD data to understand vehicle travel patterns from Route 6 to MacMillan Pier. The following figure shows that the most common route for visitors traveling to MacMillan Pier was through Conwell Street at 61%, followed by Shank Painter Road at 19%. Province Lands Road and Snail Road show 11% and 9% of traffic accessing MacMillan Pier respectively.

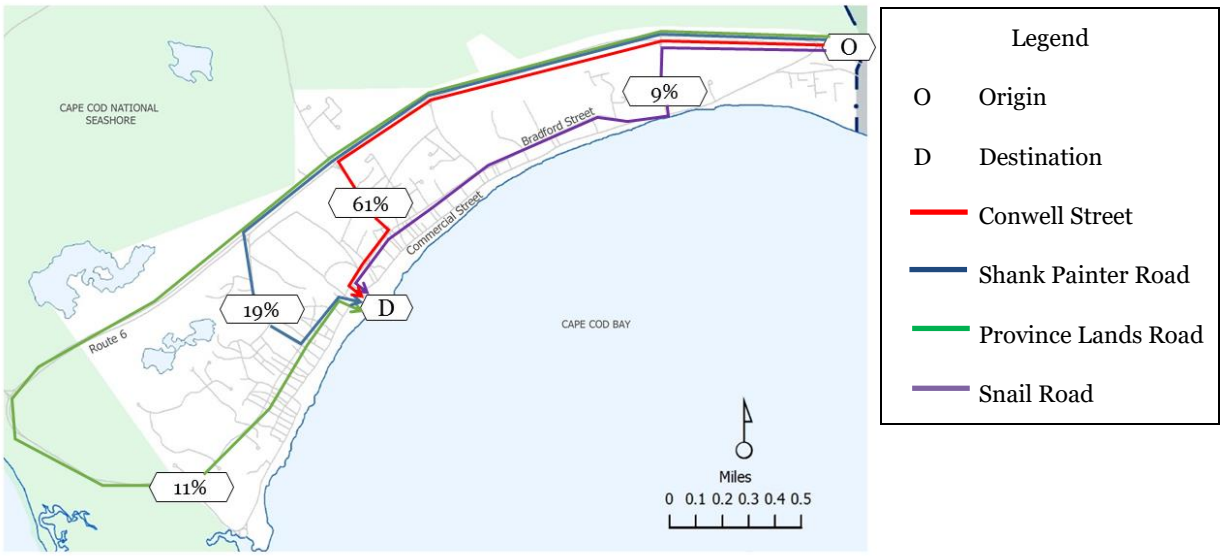


Figure 4: Travel patterns from Route 6 to MacMillan Pier

The following figure shows the travel patterns from MacMillan Pier to different locations (BlueTOAD detector zones) in town. Conwell Street draws the highest percentage at 26%, Shore Road shows the second highest at 23% followed by Province Lands Road at 22%. Less traveled routes include Shank Painter Road at 15%, Snail Road at 9% and Howland Street at 5%.

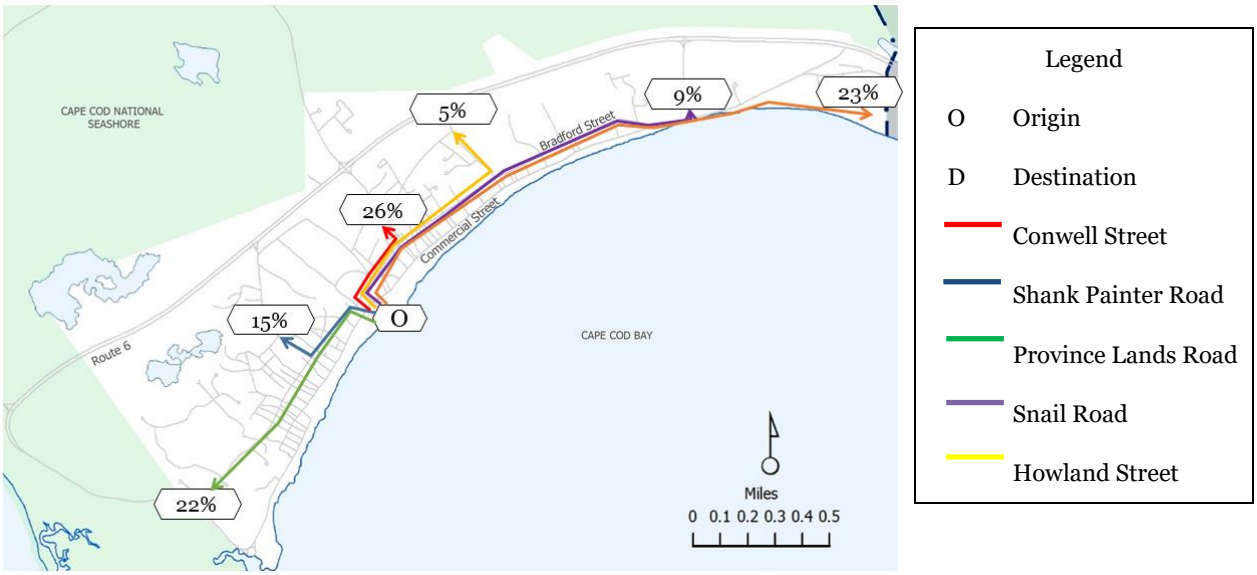


Figure 5: Travel patterns from MacMillan Pier

The following figure shows the travel patterns of cars from MacMillan Pier leaving town via Route 6. The highest percentage is shown on Conwell Street at 42%, followed by Shank Painter Road at 23%. The less traveled paths include Province Lands Road at 14%, Howland Road at 11% and Snail Road at 10%. The BlueTOAD analysis shows consistently that Conwell Street is used as the main access entering and leaving town.

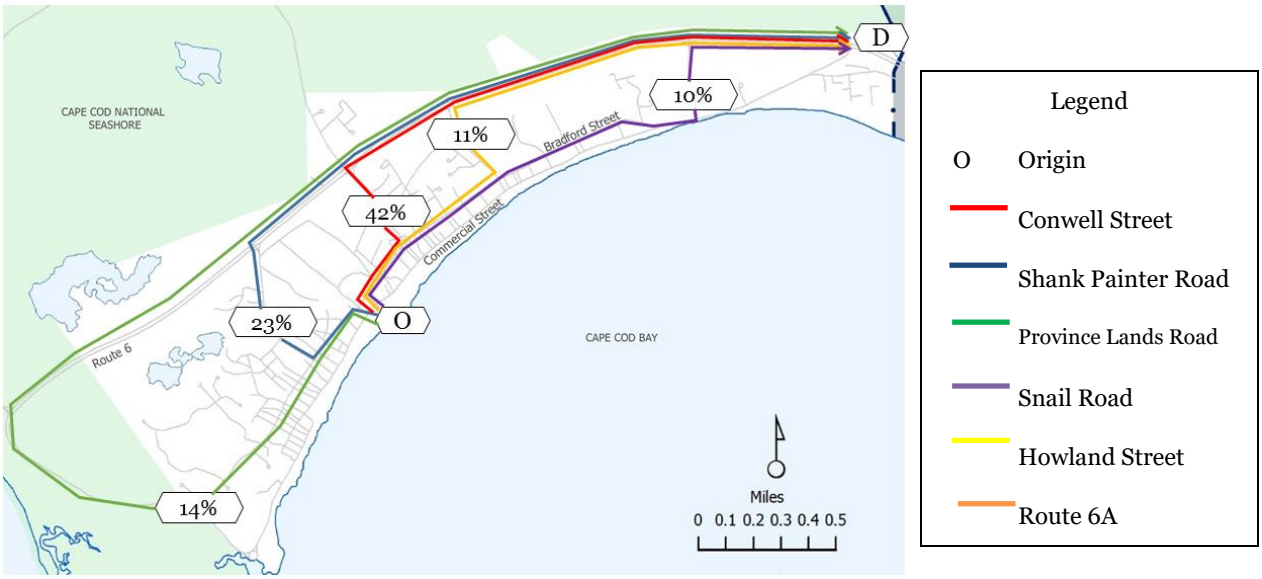


Figure 6: Travel patterns from MacMillan Pier to Route 6

Vehicle Volumes and Level of Service

CCC staff collects traffic data by installing automatic traffic recorders and conducting turning movement counts each summer for the CCC Traffic Counting Program. The program includes a regular schedule of counts, requests from towns, and requests from CCC staff for current projects. CCC staff compiled counts from previous years and adjusted them to 2015 levels using historic traffic volume. Counts at critical locations were re-counted in 2015 for this project. Data is available in more detail, including adjustment factor and year collected in the Appendix. CCC analyzes the data to identify location of congested roadways and difficult turning movements.

Provincetown has two peak count times, 12pm to 1pm and 4pm to 5pm. The highest hour of traffic on Cape Cod is typically 4pm to 5pm. 4pm to 5pm vehicle volumes in August 2015 estimates are identified in the figure below. The highest volume estimated was east bound on Route 6 at 750 vehicles per hour. The lowest volume was estimated on Commercial Street in the west end at 50 vehicles per hour. The following graphic will be referred to in several scenarios to discuss how volumes might change as a result of implementation of different roadway configurations.

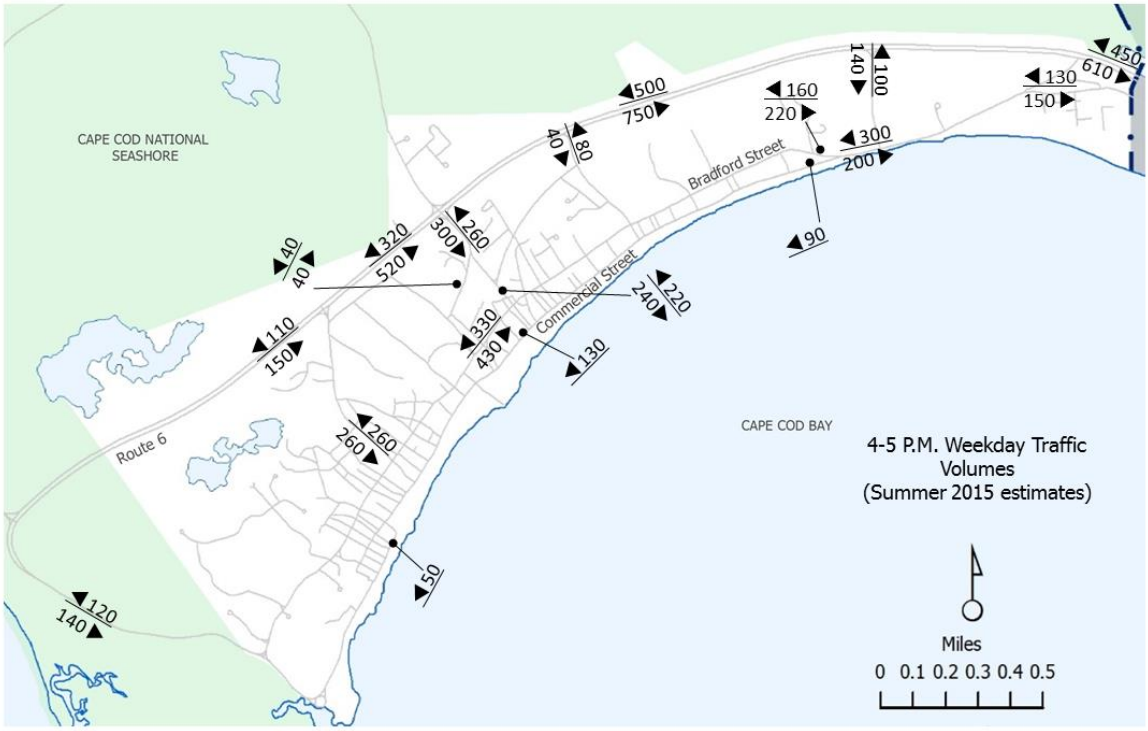


Figure 7: Estimated summer 2015 4-5pm traffic volumes

CCC analyzed unsignalized intersections in town for Level of Service (LOS). The Highway Capacity Manual (HCM), published by the Transportation Research Board (TRB), includes a methodology for calculating the expected vehicular delay based on inputs such as the traffic volumes for the various turning movements, intersection geometric factors such as the availability of turning lanes, and traffic control parameters such as signal timing and phasing. Delay is calculated in terms of seconds per vehicle, with delays over 50 seconds considered to be a failed condition.

The analysis shows that other Bradford Street intersections function at a stable rate of operation, which is inconsistent with public feedback that identified congestion as problematic on Bradford Street. The analysis indicated modest levels of delay at the intersection of Conwell Street and Bradford Street despite observations showing a tendency of backups. This suggests that backups on Conwell Street are not due to the number of vehicles traveling through the intersection, but could be a result of sight distance deficiencies at the intersection.

Table 3: LOS at unsignalized intersections based on 2015 traffic volumes

Intersection	Movement	Delay (s)
Shank Painter Road at Route 6	Northbound Left	38.4
	Northbound Right	15.9
	Total intersection	10.7
Shank Painter Road at Bradford Street	Southbound left	66.1
	Southbound right	14.5
	Total intersection	14.8
Standish Street at Bradford Street	Northbound left/straight	42.7
	Northbound right	12.1
	Total intersection	4.9
Conwell Street at Bradford Street	Southbound left/right	24.0
	Total intersection	7.8
Howland Street at Bradford Street	Eastbound through/left/right	16.6
	Total intersection	13.9
Snail Road at Commercial Street	Southbound left/right	12.9
	Total intersection	5.1
Snail Road at Route 6	Northbound left/right	30.6
	Total intersection	4.2

CAPE COD COMMISSION

Parking Data

Public parking areas in Provincetown range from large parking lots with booth attendants to small kiosk lots and metered street parking spaces. Parking is also available at several private lots, including Riley's Store lot with 368 spaces, the Provincetown Monument with 144 spaces and the Cabral Pier Lot with 200 spaces. The private lots have varied pricing, typically flat rate in the summer. Of the public parking areas, MPL (Municipal Pier Lot) (321 spaces) has the highest hourly charge at $3.50, followed by the Grace Hall lot (354 spaces) at $2.25. The metered space locations range from 10 to 50 spaces and each cost $1.50 per hour to park. The parking areas with kiosks cost $2.00 per hour and range from 26 to 44 spaces. The Jerome Smith lot is also available for camper parking. The baseball fields are used as a designated event parking area. The table below lists parking locations by type, size and pricing.

Table 4: List of parking lots including number of spaces, type and price

Parking Area	Spaces	Type	Cost per hour	Note
Grace Hall	354	Lot	$2.25	$25 Max Daily
MPL	321	Lot	$3.50	$35 Max Daily
Winslow Street	50	Meter	$1.50	
Harry Kemp Lot	35	Meter	$1.50	
Jerome Smith	33	Meter	$1.50	Camper Parking
School Street	29	Meter	$1.50	
Commercial Street Boat slip	19	Meter	$1.50	
Days Lot	16	Meter	$1.50	
Provincetown Inn	10	Meter	$1.50	
Standish Street	9	Meter	$1.50	
West End	44	Kiosk	$2.00	
Johnson Street	33	Kiosk	$2.00	
Alden Street	32	Kiosk	$2.00	
Ryder Street	26	Kiosk	$2.00	
Fire Station	18	Kiosk	$2.00	
Riley's Lot	368	Private	Varies	
Provincetown Monument	144	Private	Varies	
Cabral's Pier Lot	200	Private	Varies	
Total Private Spaces	712			
Total Public Lot Spaces	675			
Total Meter Spaces	201			
Total Kiosk Spaces	153			

The figure below shows the parking lot names and ownership at each lot. The blue lots show the public parking areas including parking meters and kiosks. The Grace Hall parking lot is made up of four sections. The private lots are shown in red.

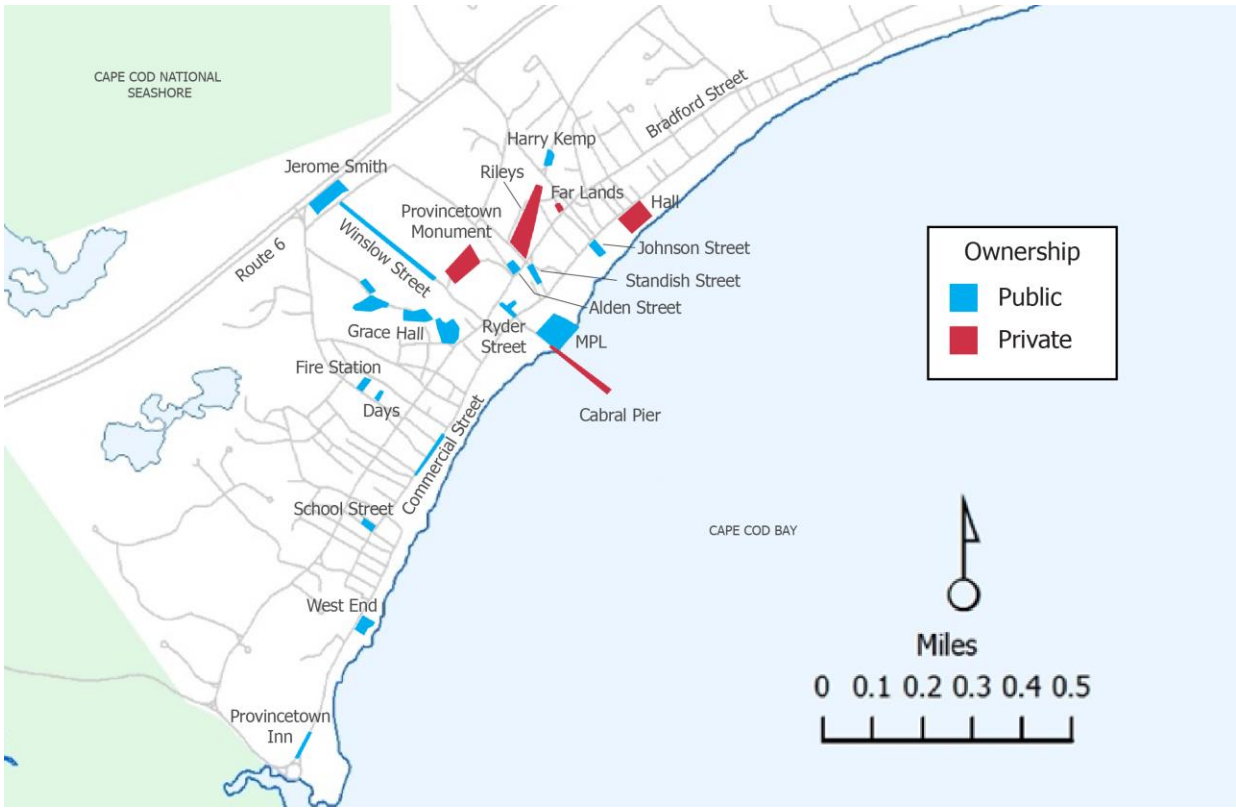


Figure 8: Parking locations and ownership

The town also sells parking permits for use in the public lots. Permits are available for residents and non-residents for use in any lot or for specific locations. Visitors may purchase weekly permits for the Jerome Smith and Grace Hall lots. Permits may also be purchased by residents and non-residents to park campers at the Jerome Smith lot. The following table shows the cost of each type of annual parking permit.

Table 5: Parking permit prices

Annual Parking Permits			
Resident	$55.00	Resident Jerome Smith Camper	$150.00
Senior Resident (61 and over)	Free	Non-Resident Jerome Smith Camper	$425.00
Non-Resident Property Owner	$100.00	Replacement Permits	$10.00
Resident Commercial	$140.00	Jerome Smith Weekly Permits (7 Days)	$50.00
Non Resident	$275.00	Grace Hall Weekly Permits (7 days)	$75.00
Grace Hall Only	$200.00		

CCC staff set automatic traffic recorders at the entrance and exits of MPL and Grace Hall parking lots. The figure below shows a comparison of the average daily incoming cars at MPL and the Grace Hall lot. The analysis shows that the incoming traffic is typically focused on MPL until 10am. Town staff identified town center shopping, town center employment, and Whale Watches as the reason for early arrival.

CCC observations show that despite MPL being "full", incoming vehicles still head there first, and are then redirected to Grace Hall. Traffic continues to access MPL more than Grace Hall except during the 11am and 12pm hours. The data also shows an afternoon demand for parking around 5pm at both lots, but not as the same extreme as the morning.

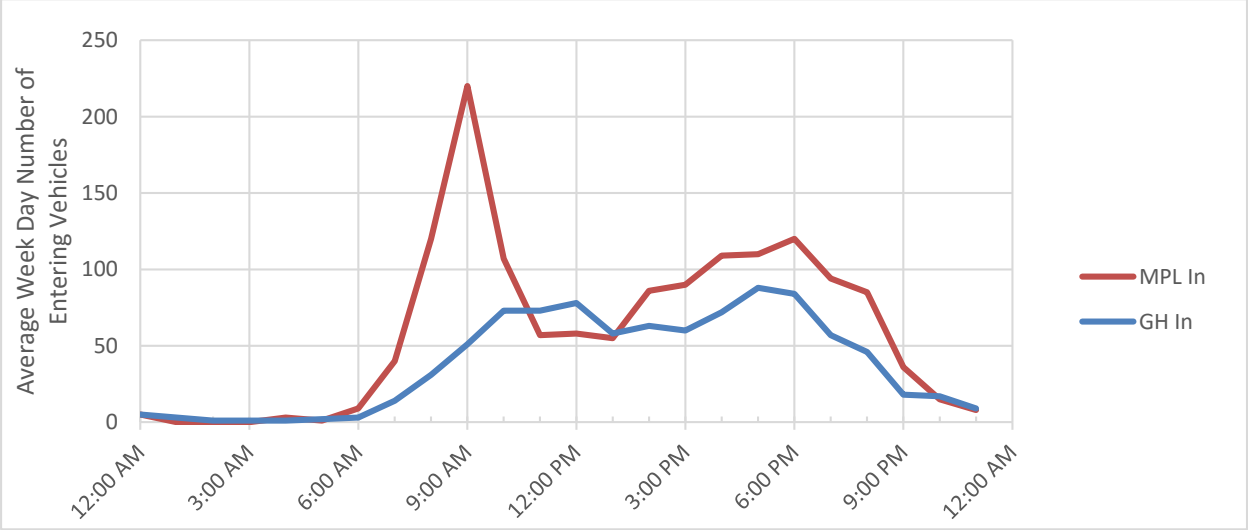


Figure 9: Average weekday traffic volumes into Grace Hall and MPL

The figure below shows the number of estimated cars in the Grace Hall lot for each hour of the day between Friday August 14th and Monday August 17th in 2015. Based on information from Provincetown Parking Department staff, CCC staff assumed that the Grace Hall lot was 85% capacity at the time of setup and retains between 65 and 100 vehicles overnight.

The shaded areas represent evening/night time hours, between 7pm and 7am.

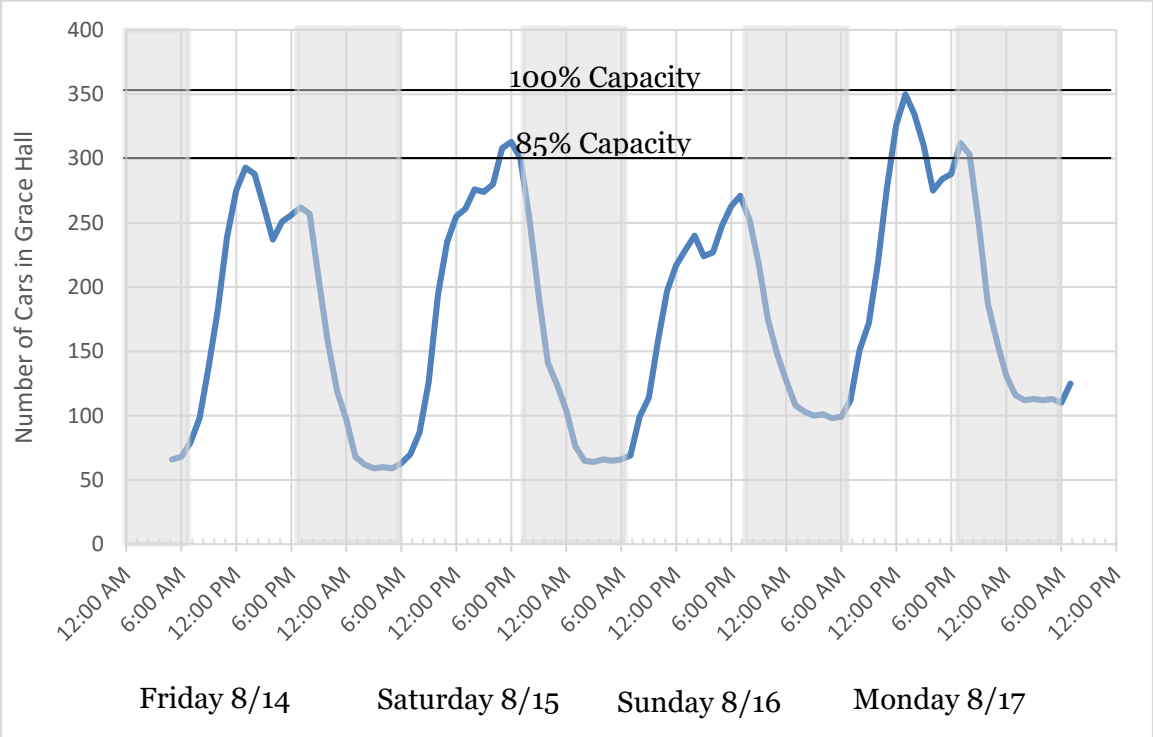


Figure 10: Accumulation at Grace Hall Parking Lot

The data indicate that the Grace Hall parking lot reaches 85% capacity most days in August. Transportation engineers use 85% as a "rule of thumb" to determine capacity of a parking lot. When parking demand reaches 85% of capacity, users may have to search for a parking spot and may become frustrated. The lot experiences two peaks, first in the afternoon between 1pm and 2pm, then in the evening between 7pm and 8pm. Based on this data sample, the Grace Hall lot seldom reaches 100% capacity. MPL reached capacity during this same time period. According to the local parking staff, Grace Hall tends to reach 100% capacity on rainy or cloudy days and for special events.

The data indicate that MPL is full around 10:00 am each morning; this is consistent with the data illustrated in the previous figure. When MPL reaches 100% capacity, an existing sign at the intersection of Bradford Street and Standish Street indicates that the lot is full. The table below shows the times that the parking sign indicated full and an image of the sign.

Table 6: MPL occupancy signage

Times the MPL Sign was Turned to Full during the CCC Study		
13-Aug	10:15	
14-Aug	10:30	
15-Aug	10:30	
16-Aug	10:00	
17-Aug	10:00	
18-Aug	10:30	
19-Aug	10:30	
20-Aug	10:30	
21-Aug	11:00	

The Provincetown Parking Department supplied parking revenue data for the various public paid parking areas within town. The data provided on the two large attendant lots – Grace Hall and MPL – reinforced the data collected by Commission staff. Specifically, the revenue data indicated that the parking lot at the pier has much higher rates of turn-over than the Grace Hall lots. The figure below shows that in August 2014 Grace Hall had a turnover rate of between 1.5 and 2, while MPL had a turnover rate of between 4.1 and 4.6. Based on interviews and data collected, this turnover ratio is consistent throughout the summer.

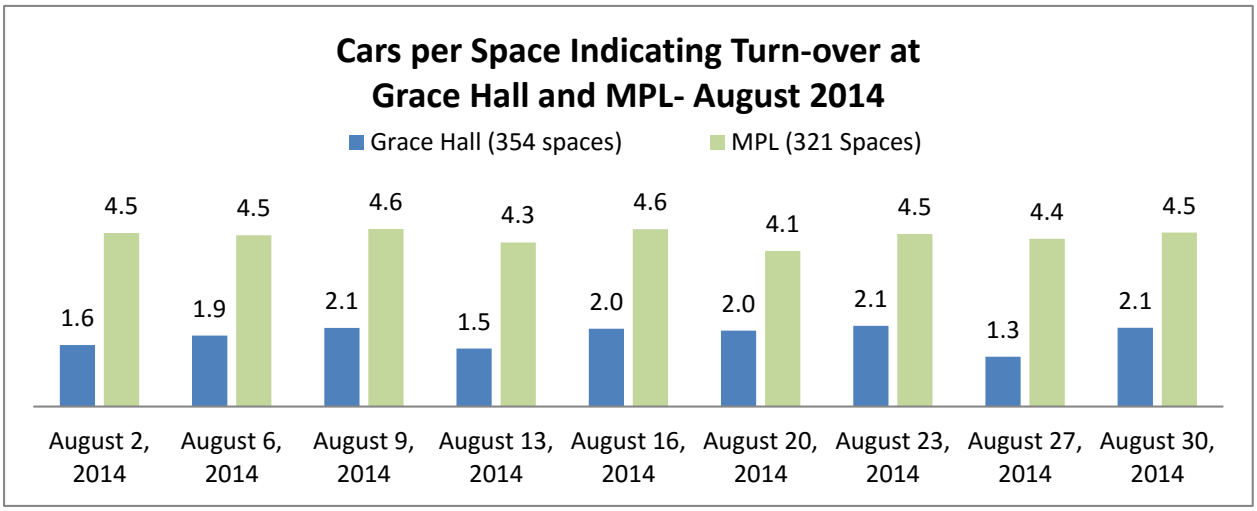


Figure 11: Turnover rates at MPL and Grace Hall

The revenue data on the parking areas served by meters and kiosks spanned the years of 2007-2014 between the months of April and October. Using this data, it is possible to calculate the intensity of use by paid customers at these different locations over this seven year period based on a nine-hour day. Utilization is shown for the meters and kiosks in the figure below. This metric does not account for the permits that use the lots. Town staff identified that the Johnson Street kiosk and School Street meters frequently are utilized by parkers with permits and that Ryder Street turnover is influenced by a three hour limit.

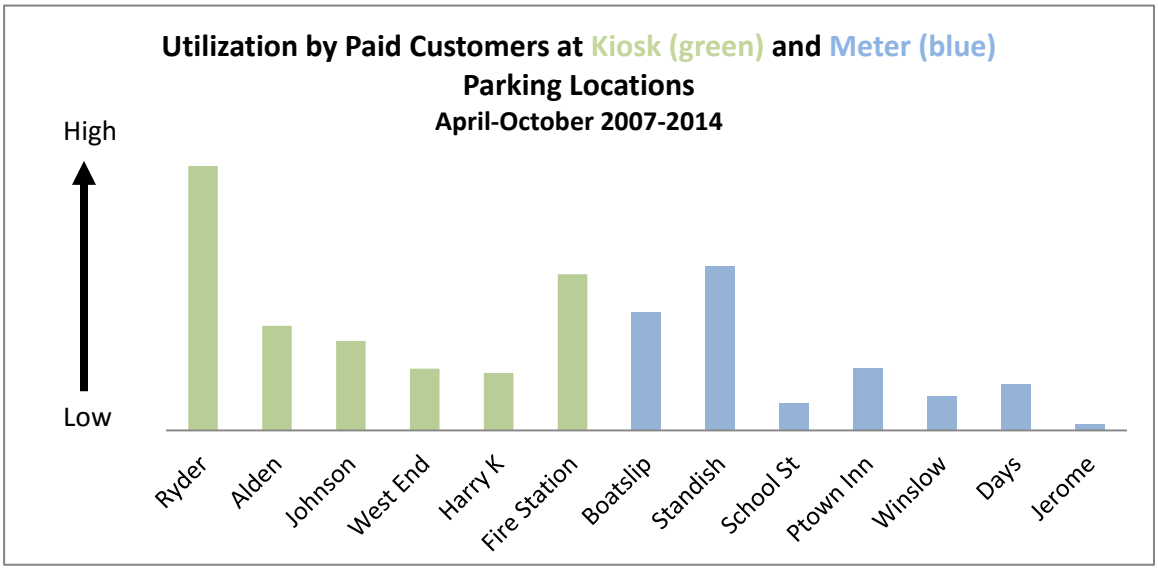


Figure 12: Utilization by paid customers at meters and kiosks

Ryder Street, Standish Street, and the Fire Station show the highest levels of use during this period. The Jerome Smith parking lot appears to be the most under-utilized, followed by the School Street, Winslow, and Days parking areas.

CCC's final step in its analysis of public parking area usage was to estimate relative demand for each of the public parking locations using the revenue data provided by the town from 2014. To quantify the demand, parking areas of similar type were compared. The lot with the largest demand was assigned a demand value of 10, the maximum value. The baseline of zero was defined as no demand. Each parking area was assigned a demand value between 1 (green) and 10 (red) based on the data metric for demand as illustrated in the figure below. The metric for demand was intensity of use for meters and kiosks, and turnover rate for MPL and Grace Hall.

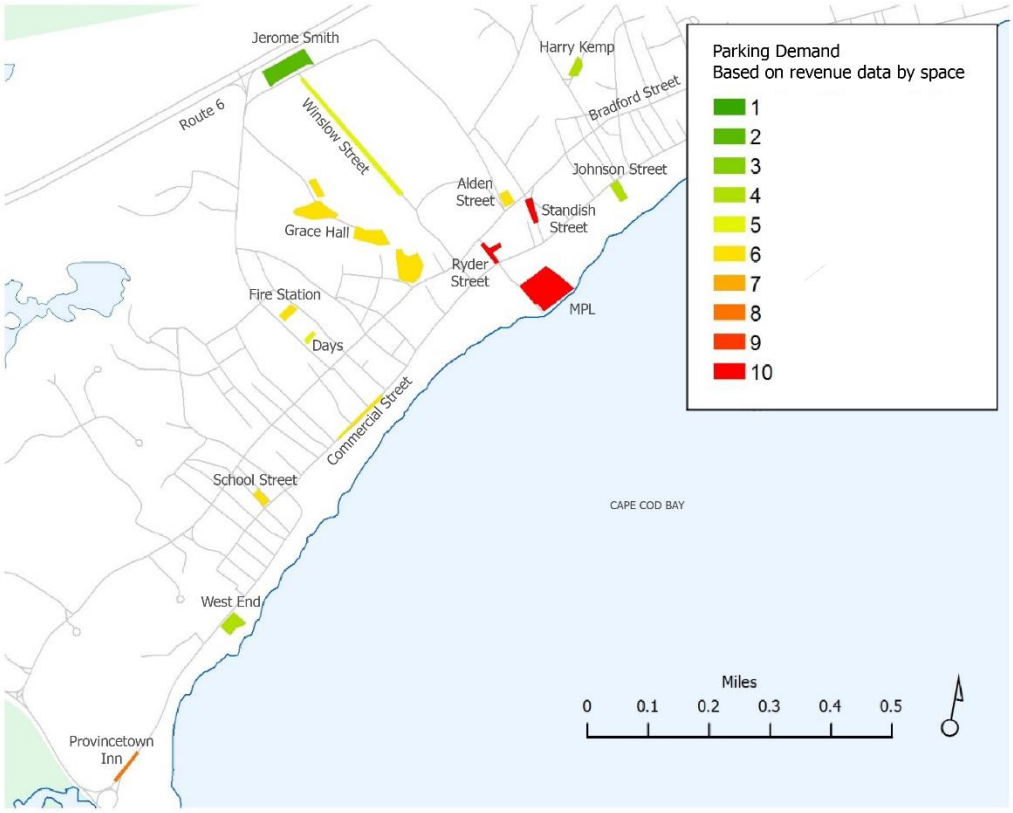


Figure 13: Parking demand per space

Bicycle and Pedestrian Accommodations

The CCC staff collected bicycle and pedestrian accommodation information in the summer of 2014. The following figure shows the bike accommodation provided on major roads in Provincetown. Most roads in Provincetown lack separate bicycle accommodations. Province Lands Road, located within the Cape Cod National Seashore, is the only road in town with a designated bike lane. It is a popular bicycle route to Herring Cove Beach and Cape Cod National Seashore bike paths. Shank Painter Road and the west end of Bradford Street have narrow shoulders that provide partial separation from vehicles.

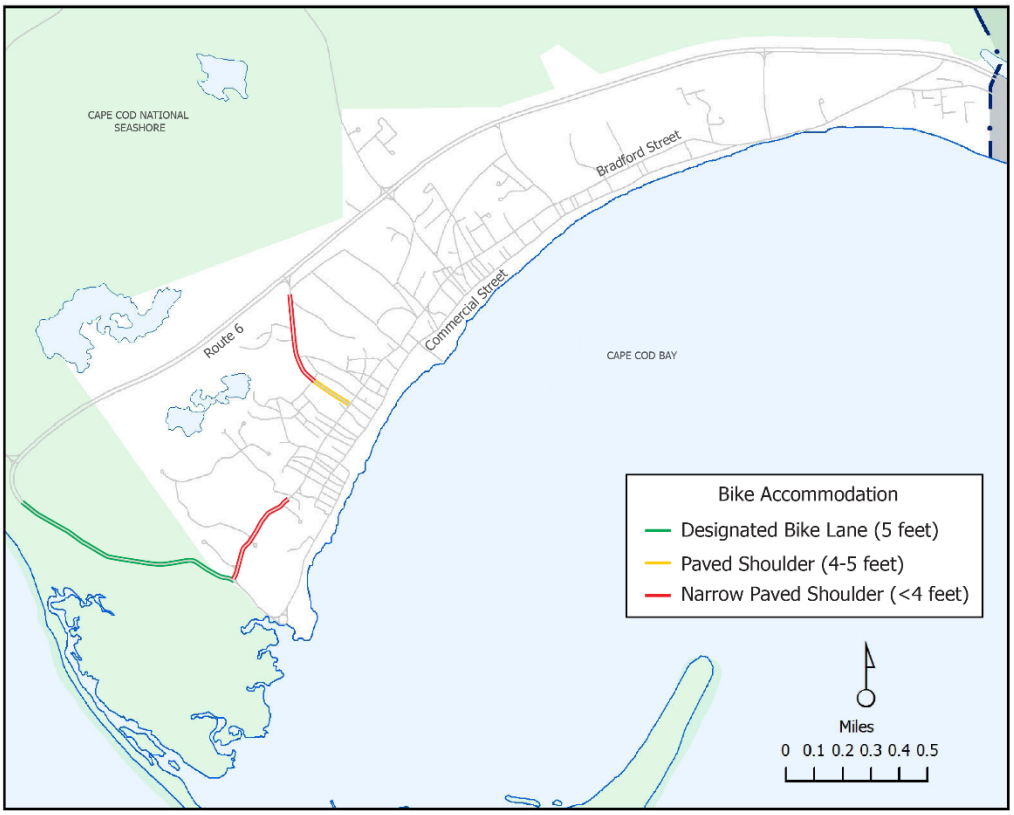


Figure 14: Bike accommodation map

The following figure shows the pedestrian accommodations along major roads in Provincetown. Most of Commercial Street has a sidewalk in good condition on the north side and an intermittent/poor sidewalk on the south side for about a half mile downtown. An intermittent sidewalk in good condition runs along the north and south side of Bradford Street downtown, but the east and west ends have no sidewalk. Shank Painter Road has a sidewalk in poor condition along portions of the west side of the road.

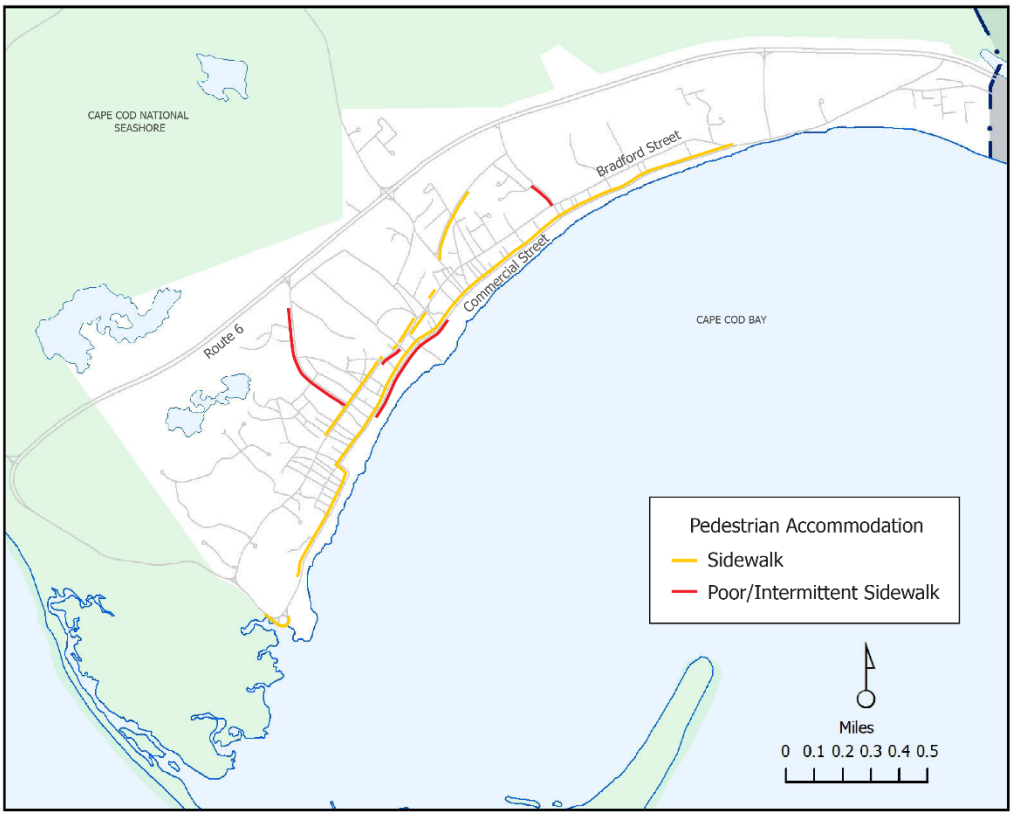


Figure 15: Pedestrian accommodation map

Public Transit

Two year-round bus services are available in Provincetown. The CCRTA operates the FLEX public transit service which provides service between Provincetown and Harwich Monday through Saturday. Its primary route runs along Route 6 and it allows passengers to schedule pickup locations up to ¾ of a mile off the main route. Plymouth and Brockton Bus Company offers service between Hyannis and Provincetown year round, accessing stops twice per day, seven days per week. Both regional buses stop at MacMillan Pier.

The CCRTA also operates a Provincetown Shuttle in the summer months. This route includes two loops, one traveling to the beaches and another traveling to locations in Truro.

Ferry service from MacMillan Pier to Plymouth and Boston is available on a daily basis between May and October.

The following figure shows local and regional public transit (bus) options in Provincetown. (It does not include the other private shuttles options that operate in town.)

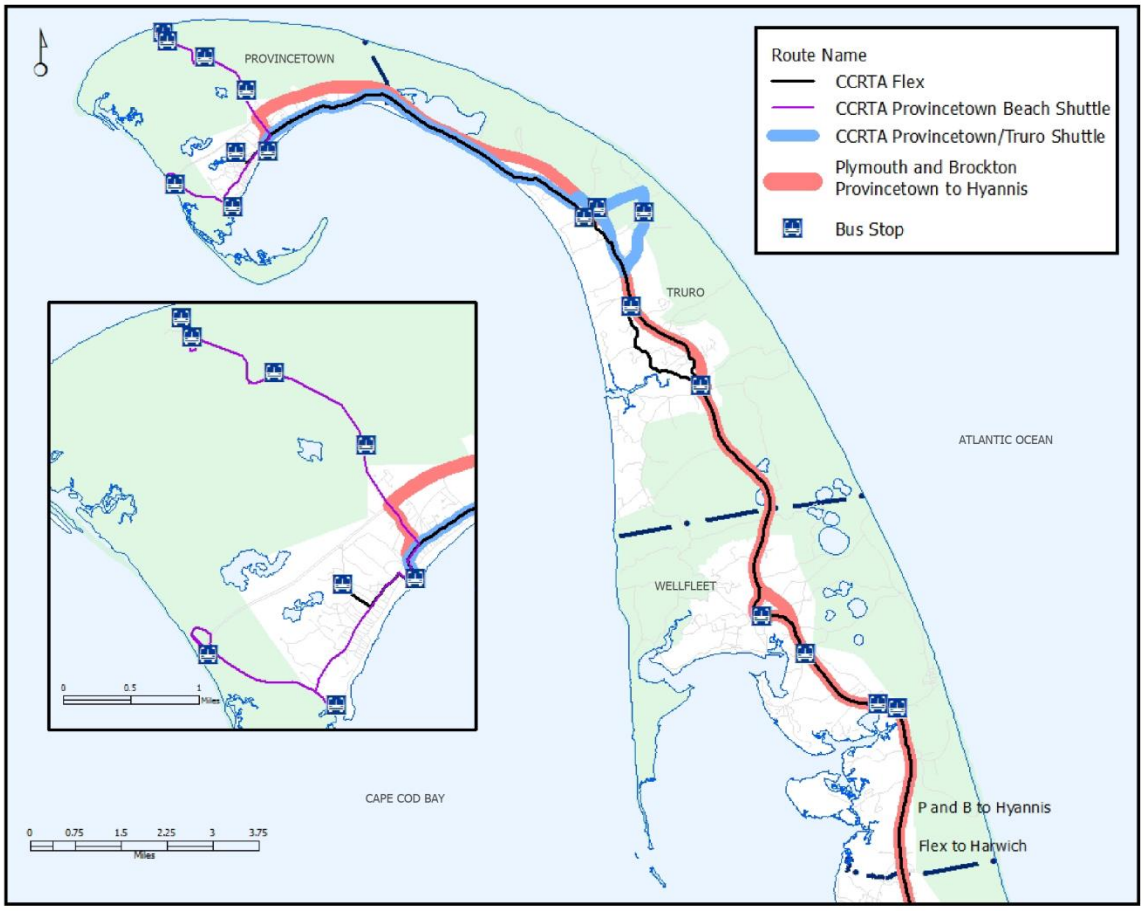


Figure 16: Regional and local transit options

Public Outreach

Outreach was a critical component to this study. The Cape Cod Commission launched and maintained a webpage with project updates and files at the following address: www.capecodcommission.org/provincetownpcs.

Public Kickoff Workshop

A public kickoff meeting was held on June 18, 2015 at Provincetown Town Hall.

CCC staff introduced the project's scope of work and conducted a mapping exercise with the meeting participants to collect their concerns and ideas about parking and circulation.

The photograph to the right shows a mapping exercise from the kickoff meeting.

Meeting participants provided comments to the project team about vehicle, pedestrian and bicycling issues. They identified parking and congestion as a problem and discussed ideas for large-scale projects. The kickoff presentation materials and list of comments is attached in the Appendix.

Figure 17: Public kickoff meeting

Stakeholder Meetings

Workshop attendees also identified project stakeholders. CCC transportation staff met with stakeholders to hear their ideas about parking and circulation issues. The meetings helped the project team understand existing conditions, problem locations, and potential solutions.

Public Discussion and Presentation to Selectmen

CCC staff attended a public meeting and discussion in November 2015 to present informational posters on project focus areas and wayfinding guidance and provided an overview of the project in a presentation to the Board of Selectmen at a televised meeting. The discussion provided another opportunity for the public to express their concerns about parking and circulation issues and for the project team to understand existing conditions.

The full presentation and posters from the public discussion can be found in the Appendix.

Alternatives Survey

Cape Cod Commission staff released an internet-based survey (also available on paper at Town Hall) for public comment on the project between November 10, 2015 and December 20, 2015. The survey listed fifteen alternatives for respondents to indicate their level of support or opposition. Respondents could also identify other concerns. The total number of responses was sixty-seven.

The following table shows each alternative and the number of *strongly support* responses. *Shuttles to/from remote parking areas* and improve *Shank Painter Road for vehicles, bicycles and pedestrians* received the most "*strongly support"* responses. *One-way travel on Conwell Street* received the most "*strongly oppose"* responses and was the only considered alternative that garnered more negative responses than positive. The question received 18 "Other" responses which are listed in the Appendix.

The second question in the survey asked for "general comments." 67 responses were received and are listed the Appendix. The third question asked respondents to identify their type of residency or other affiliation with Provincetown; 70.5% identified as a year round resident, 18% identified as seasonal resident, 3.3% responded that they work in town, 1.6% identified as a visitor, and 6.6% identified as "Other."

Table 7: Alternatives survey results

Answer Options	Strongly Support	Support	Neutral	Oppose	Strongly Oppose
Improve Shank Painter Road for vehicles, bicycles and pedestrians	39	15	6	5	1
Shuttles to/from remote parking areas	38	16	12	2	0
Parking maps and apps	32	28	4	1	0
Real-time reporting of available parking	30	24	12	0	0
Align pricing with demand (e.g., lower price for low-demand lots)	29	26	6	4	1
Additional parking for special events	26	23	15	2	0
Signage on Route 6 to guide visitors to parking	26	25	10	4	0
Improve crosswalks and sidewalks	26	26	11	0	1
New parking areas along Route 6	25	16	14	5	8
Median break at Route 6 to allow left turns at Howland Street	23	21	14	4	4
Bicycle route amenities (e.g., bike lanes, racks, etc.)	23	31	8	3	1
Wayfinding from parking lots to town center	16	20	25	1	2
Commercial Street "woonerf" (i.e., remove curbing, pedestrian-focused streetscape)	15	12	15	10	8
Other	13	1	4	0	0
Identify valet parking opportunities	10	19	22	7	8
One-way travel on Conwell Street	10	11	14	11	19

Issue Areas

Stakeholders and town staff identified several issues related to parking, traffic circulation and road design for the CCC to include in the study. This section of the report provides CCC analysis and recommendations on these topics.

Transportation Design Standards

Provincetown staff requested recommendations on several transportation design standards as listed in the section below.

Parking Space Dimensions

The Provincetown Zoning Bylaw (Section xx) sets forth parking space size standards in its definition of "Parking Space:" *Parking Space shall mean a space adequate to park a standard automobile, plus means of access. Marked spaces shall be not less than 8' x 18'. Where spaces are not marked, each space shall be assumed to require 350 square feet.* The study team suggests that parking spaces in Provincetown should be constructed in a uniform style. Provincetown could adopt a standard parking space size into town regulations according to the dimensions detailed in the table below. The standard should be applied where appropriate. The following figure shows a typical parallel parking configuration with 8-foot wide spaces.

Table 8: Size of parking spaces

Type	Length	Width
Angled or Perpendicular Space (handicap included)	18 feet	9 feet
Parallel Space	20 feet	8 feet
Compact Angled or Perpendicular Space	15 feet	8 feet
Compact Parallel Space	18 feet	7 feet
Handicap Van Space	18 feet	11 feet

Sources: Manual on Uniform Traffic Control Devices (MUTCD)
Danbury Connecticut Zoning restrictions
http://www.danbury-ct.gov/filestorage/21015/21087/21123/23014/Page8-1112.pdf

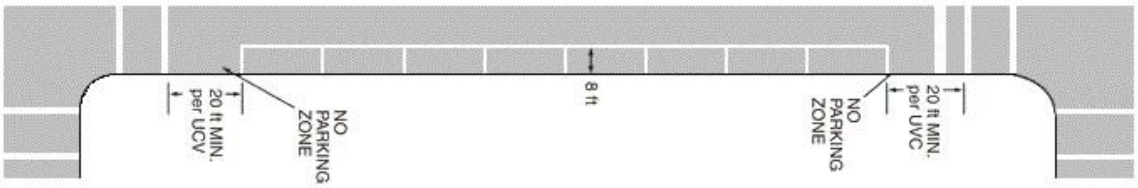


Figure 18: Typical parallel parking space layout

Shared Lane Markings

When designating roads for shared bicycle and vehicle use, shared lane markings and signage are effective in alerting motorists that bicycles may use the road. Shared lane markings are also known as Sharrows, meaning "Shared + Narrow."

The Manual on Uniform Traffic Control Devices (MUTCD) is a national guide, produced by the Federal Highway Administration, to specify the standards by which traffic signs, road surface markings such as Sharrows, and signals are designed, installed, and used. Standards help ensure that road users traveling to different parts of the country are not confused by traffic control devices.

The MUTCD recommends placing the center of the Sharrow at least four feet from the edge of the pavement on roads without street parking. On roads with street parking, the center of the Sharrow should be placed 11 feet from the edge of pavement. The markings should be placed immediately after intersections and spaced no greater than 250 feet apart. According to the MUTCD, this configuration presents effective suggestions to cyclists to ride to the right side of the road while avoiding drainage structures, and signifies to vehicles that bicycles are able to use the entire lane. Shared lane markings cannot be placed in shoulders or bike lanes. The pattern for the Sharrow marking is shown in the figure shown below to the right (Figure 9C-9 in the MUTCD).

Signage could include share the road signs (reference W16-1P or R4-11 in the MUTCD) to signify share the road conditions or that bicycles may use the full lane respectively, as shown in the figure below to the left.

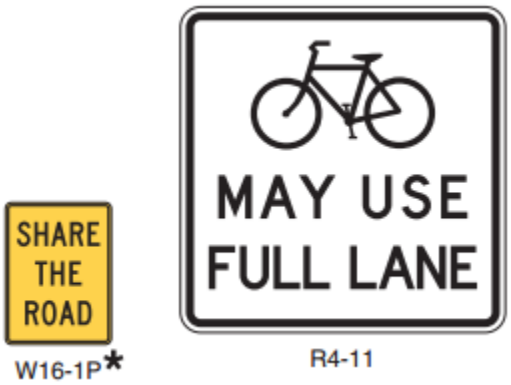


Figure 19: Share the Road signage

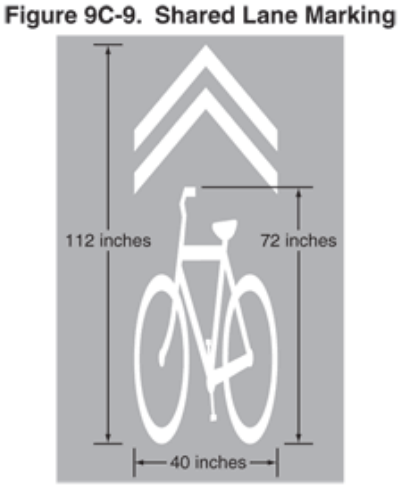


Figure 20: Share the Road markings

MUTCD recommendations are suggested for roads where there is enough pavement width for a vehicle to pass a bicycle. The guidance suggests that shared lane markings are placed in the middle of the lane on low volume, low speed (25 mph) or narrow roads. Shared lane markings are generally not recommended on streets with speed limits above 35 mph. The figure below shows the recommended placement of shared lane markings.

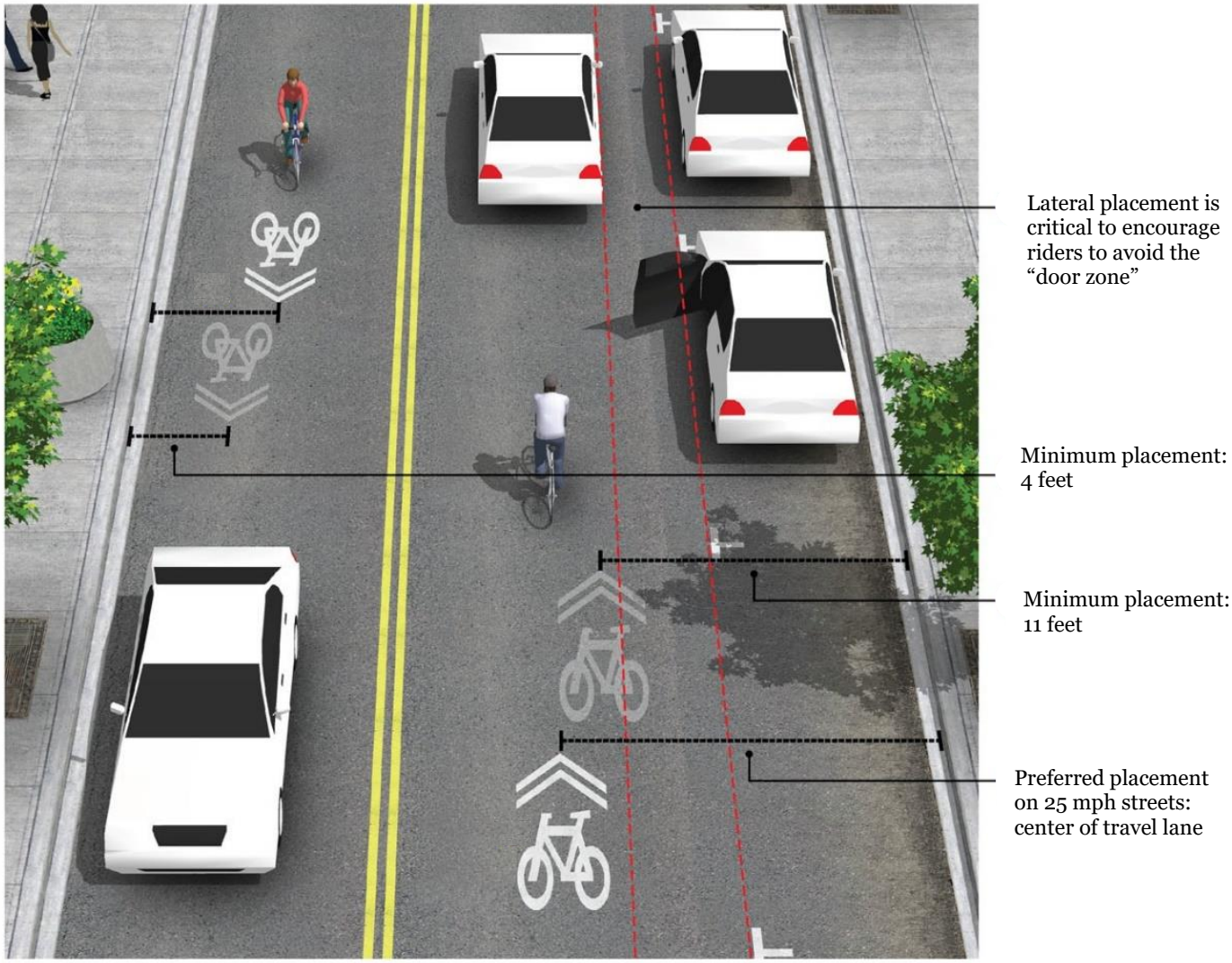


Figure 21: Placement of Shared the Road markings

Source: National Association of City Transportation Officials (NACTO)
http://nacto.org/publication/urban-bikeway-design-guide/bikeway-signing-marking/shared-lane-markings/

Parking

Stakeholders requested CCC staff to provide guidance on strategies to improve parking availability. Provincetown experiences two distinct parking situations; a lack of overall parking for special events and a lack of downtown parking. Through stakeholder interviews and observations, CCC staff determined that parking constraints are tailored to special events (including rainy days) or a lack of convenient downtown parking. CCC Staff has the following recommendation relative to special event parking and specific downtown parking.

Event Parking Management

There are several large events in Provincetown, including July 4th, Bear Week, Pan-Mass Challenge, and Carnival, which oversaturate the parking supply. In addition, parking supply is stressed on cloudy days, when visitors and residents are not attending the beaches. Observations suggest that cars are parked in creative places during events, such as along Route 6 or on residential streets. An event parking management plan would provide a better parking experience during events and other days that parking capacity is stressed.

The event parking plan should identify event parking areas and prioritize a plan to direct visitors to these areas. There are existing areas that are currently being used as temporary parking. These areas include the baseball field off of Winslow Street just to the north of High Pole Hill Road and parking along Route 6.

The event parking plan should identify a communication system between staff and visitors to direct visitors as quickly as possible to available parking. This system may include a combination of the following elements:

- Parking staff positioned at key locations
- Variable message guidance signage
- Internet messaging
- Radio announcements

Event parking could also incorporate aspects of other scenarios presented in this study including, pricing or valet parking.

The soccer fields along Route 6 are a logical location to provide event parking. The land is already cleared and generally the soccer fields are not in use during the time of popular events in Provincetown. These soccer fields were created when the leaching basins were installed. However, based on discussions with the Provincetown DPW Director, the soccer field along Route 6 in the vicinity of Jerome Smith Road/Alden Street is not designed to accommodate vehicle parking.

The event parking management plan should also consider use of the National Seashore Beach or Visitor Center parking lots and use the CCRTA Beach Shuttle to bring visitors to the town center. Provincetown would need to consult with the CCRTA and National Seashore to move this idea forward.

Several locations that town staff identified become parking areas during events or days that parking is stressed. These locations should be included in the formulation of an event management plan.

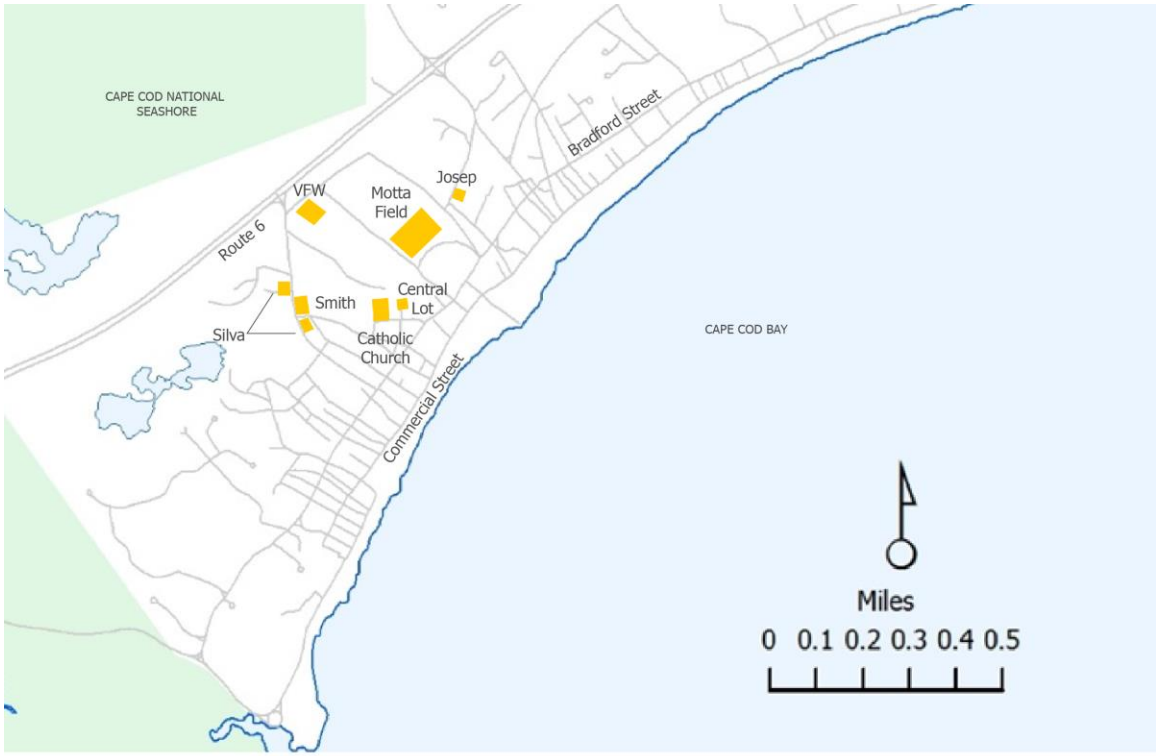


Figure 22: Event parking locations

Actions items for event parking management

- Produce an Event Parking Management Plan that considers events and other unanticipated days that parking supply is stressed

Transit to Existing Remote Parking on Rainy Days

Transit to remote parking was identified as a strongly supported item in the public survey discussed in the public outreach section at the beginning of this report. CCC staff was not able to locate any vacant land available for remote parking. However, it was brought to our attention that on rainy days, the National Seashore beach parking lots are generally empty. These beach parking lots could be advertised during bad weather and utilized for remote parking to encourage visitors to take shuttle buses to and from the downtown area.

There are several existing shuttles that operate locally and regionally detailed in Figure 16. The CCRTA Provincetown Beaches Shuttle stops are detailed in the table below with the estimated number of public parking spots.

Table 9: Parking space estimates on CCRTA Provincetown Shuttle

Provincetown Beaches	
Stop Location	**Estimated Spaces**
Race Point Beach	320
Province Lands Visitor Center	200
Beech Forest Parking Lot	80
Herring Cove Beach	350

The Provincetown Beach Shuttle could be advertised as a parking shuttle at beaches listed in the table above, to provide approximately 950 remote parking spots. Advertisement could include signage along Route 6 or at the parking lots and bus shelters. This alternative would need CCRTA and Cape Cod National Seashore approval.

The stop locations on the CCRTA Flex, CCRTA Provincetown North Truro Shuttle and Plymouth and Brockton route in Provincetown, Truro and Wellfleet were reviewed for number of public parking spots. There were no locations identified on the existing regional bus routes that could be used as remote parking areas.

Actions to increase existing remote parking

- Enter into an agreement with National Seashore to allow for rainy day remote parking at Seashore beach areas

Parking Management

Parking management strategies include the pricing, time restrictions, and permitting. Pricing can be used to alter the behavior of drivers in a way that can benefit residents, businesses, and visitors alike.

Best practices in paid parking management (see sidebar) note that pricing should be considered in a comprehensive way, looking at all the parking available in the area and how it is used, prior to determining specific rates and payment systems.

A well-designed paid parking strategy can benefit businesses by encouraging greater turn-over in the town center while providing longer-term options within walking distance of the town center and reserving spaces for business customers during peak hours.

The first step in developing an effective parking strategy is to do more data collection on the patterns of use in both paid and free parking locations regardless of ownership. The goal in collecting data is to better understand who the dominant users are at the different locations, how long they stay parked at these locations, and when peak demand is experienced. Peak demand should be measured over different time periods including the hour of the day, the day of the week, and the week of the month between April and October.

Best Practices in Parking Management

- Parking pricing should be implemented as part of a comprehensive parking management program that includes improved user information, and improvements to alternative modes.
- Prices should be well publicized and predicable. Use signs, maps, brochures, websites and other resources to provide information to users.
- Payment systems should be convenient. They should accept coins, bills, credit cards, and smartphone technology
- Prices should be structured to maintain 85-90% occupancy rates. At more convenient locations, price higher, make time restrictions smaller, and graduated pricing (e.g., $1 for the first hour, $2 for the second hour and $3 for each subsequent hour) to encourage turnover. Prices should be higher during peak periods and lower during off-peak periods. Less convenient locations can have lower rates and long-term discounts to attract commuters and other longer-term parkers.
- Management programs should anticipate potential spillover problems
- Parking fees should be coordinated for areas throughout the town so that comparable areas have comparable fees.

Adapted from:

TDM Encyclopedia Victoria Transport Policy Institute

The parking strategy should include pricing as discussed in the sidebar, limit long term parking, and address resident and/or commercial employee street parking usage.

Long term parking should be located outside of the town center. Long term parking is encouraged at Jerome Smith and Grace Hall, and discouraged at MPL. This policy should be strictly enforced.

Resident parking takes up some of the parking at MPL and Grace Hall. Creating designated areas for resident only parking such as side streets and new or existing parking lots with free spaces for town center customers at MPL.

Action Items for Parking Management

- Conduct a parking management study to align with best practices
- Graduated pricing at MPL
- Prohibit long-term parking at MPL
- Create resident and/or employee only parking areas at certain locations for specific times of day or year

Parking Structures

Parking lots in the town center, including MPL and private lots, have been identified as consistently full in the summer months (see parking demand shown in Figure 13). Because there is limited space in the downtown to build a new parking lot, a parking structure is an option for increasing convenient parking capacity.

Parking structures can be constructed in a wide variety of styles and sizes according to the character and needs of the community.

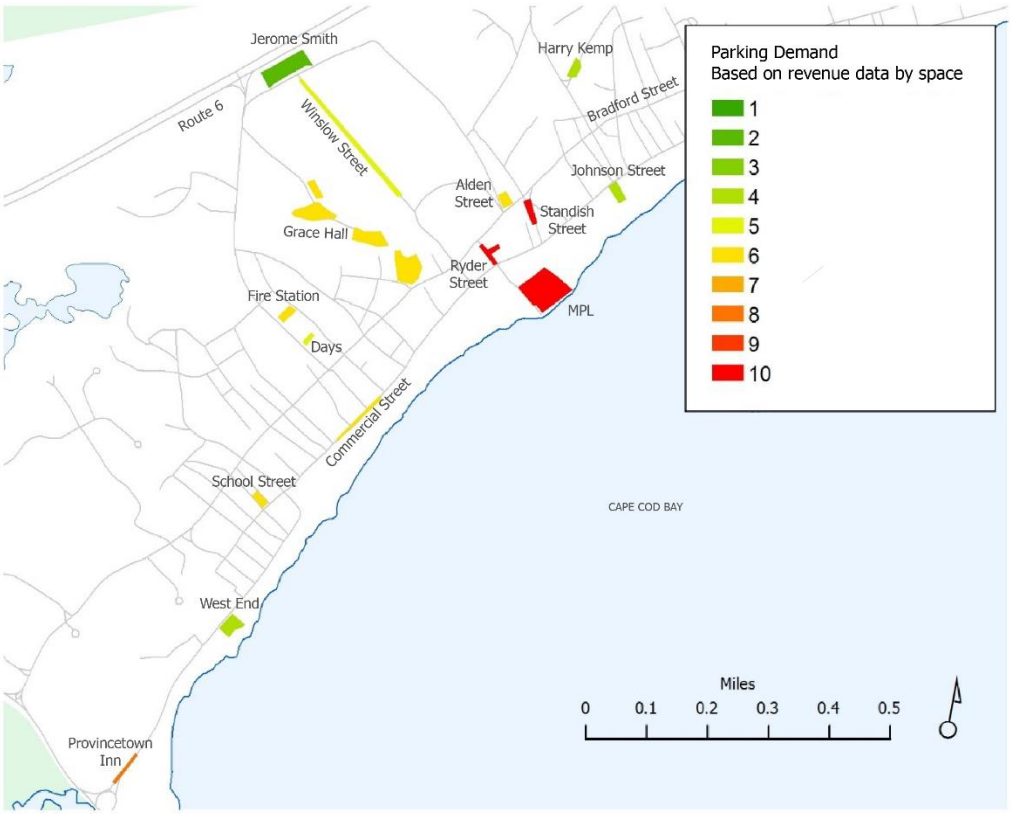


Figure 23: Parking demand per space

Cost

Costs to construct parking structures vary widely depending on materials used and design considerations such as the number of levels and total number of spaces as well as access ramps within the structure and to the local streets.

According to DESMAN Design Management, a parking structure design firm, the cost for each parked vehicle would be approximately $27,000.

Possible Parking Structure Locations

Cape Cod Commission Staff and Provincetown staff identified the locations shown in the figure below. The locations include the Riley's Lot, currently a private parking area, the baseball fields, and the back two lots at Grace Hall.

Figure 24: Parking deck locations

Parking Capacity

The number of parking spaces was estimated assuming that each parking space required 300 square feet of total area. Therefore an acre of parking could accommodate 145 parking spaces. A two-level structure would result in 290 parking spaces per acre of available land.

Land available for a parking structure is outlined in the table below. Assuming that a two level parking structure could be built on an acre of land, the Grace Hall lot has the potential for a parking deck that could accommodate 290 spaces. Riley's Lot would require the town purchase the property from the current owner and could support a parking deck that hosts about 630 spaces. The baseball field, where cars are currently parked during special events, was identified as a potential area that could support 1190 spaces.

Table 10: Parking structure capacity

Parking area	Potential Structured Parking Spaces per level	Number of levels	Total Parking Spaces
Grace Hall (lot 3)	90	3	270
Riley's Lot	315	3	945
Motta Field	300	3	900

Table 11: Estimated cost of parking structures

Parking area	Estimated Parking Spaces (three levels)	Estimated Cost Per Parking Spaces	Estimated Cost
Grace Hall (lot 3)	270	$27,000	$7.3M
Riley's Lot	945	$27,000	$25.5M
Motta Field	900	$27,000	$24.3M

Because a structure is complex, a feasibility study is necessary to determine the preferred location, costs, configuration, and environmental impacts. This study could further investigate the benefit of repurposing other lots.

A parking structure could allow for existing parking areas to be converted for other uses. The Provincetown 365 DART report suggests reducing parking at MPL and repurposing the space. This could be an opportunity for more attractions in the town center or developing new parcels that could generate new tax revenue.

Action Item for parking structures

- Perform a Parking Structure Feasibility Study

Valet Parking

Valet parking could be investigated by the town. Valet parking could allow for vehicles to be stored at higher density in existing parking lots. Valet parking could create a more enjoyable experience for visitors by reducing the stress of searching for available parking.

A feasibility study could identify the cost of operating valet parking, the demand it would generate, and the locations where it could be utilized.

Action Items to introduce valet parking

- Identify existing parking lots that could accommodate valet parking services

Route 6 Parking

Route 6 could be used as parking area if the number of lanes were reduced as discussed in the Provincetown DART report. Route 6 in Provincetown is two lanes in each direction, divided by a planted median. Provincetown has entered into an agreement with MassDOT to furnish maintenance along Route 6 (including future repaving of Route 6) provided that certain Level of Service criteria are maintained on Route 6. Provincetown should consult with MassDOT and fire and police officials to confirm that land reductions are acceptable in regard to the contract.

Volume counts on this roadway show significantly less traffic than required for four lane travel. FHWA states that the upper boundary for lane reduction from two directional lanes to one is 875 vehicles per hour. As shown in the circulation volume graphic, (see Figure 6) Route 6 was measured in the summer of 2015 to have critical directional volumes of 150 vehicles per hour between Province Lands Road and Shank Painter Road, and 520 vehicles between Shank Painter Road and Conwell Street.

The table below shows the estimated number of spaces that could be provided on one side of the median. Parallel parking spaces are assumed to be 22 feet long and angled spaces are assumed to be 12.75 feet wide, placed at a 45 degree angle. Angled parking would require widening the pavement area. Between Conwell Street and Shank Painter Road, Route 6 is approximately 2200 feet. This length could accommodate 170 angled spaces or 110 parallel spaces. Between Shank Painter road and Province Lands, the road is approximately 5000 feet. This length could accommodate 390 angled spaces or 250 parallel spaces. Providing parking on both sides of the median would double the number of spaces. Locations for bus pullouts would reduce the number of parking spaces. A bus pullout takes up approximately 60 feet. This reduced the parallel spaces by 3 spaces and 5 spaces for angled parking. Conwell Street to Shank Painter Road would require 2 bus pullouts and Shank Painter Road to Province Lands Road would require 4.

Table 12: Estimated number of parking spaced for Route 6 parking

Location	Length (feet)	Number of Angled Parking Spaces	Number of Parallel Parking Spaces
Conwell to Shank Painter	2200	160	96
Shank Painter to Province lands	5000	378	205

Source: Cape Cod Commission

Shuttle Cost

A shuttle would be required for connecting people to the town center. The potential shuttle route could travel down Route 6, Shank Painter Road, Bradford Street, and Conwell Street, as discussed in the Provincetown 365 report. The total length of this route is two miles.

The drive time for the route is approximately 20 minutes; factoring in stop time and congestion, this increases to 30 minutes. Therefore, two buses would be required to operate at 15 minute frequencies. According to estimates from the Cape Cod Regional Transit Authority, to operate a shuttle at 15 minute frequencies, the capital cost would be approximately $900,000 for two buses.

The operating cost for each bus is estimated to be $80 per hour. It was assumed that the buses would run for 10 hours per day, seven days per week for the months of July and August, therefore the annual operating cost would be approximately $100,000.

CCC staff also recognizes the need to reconstruct the Route 6/Conwell Street and Route 6/Shank Painter Road intersections. Reconstructing these intersections could add significant costs to the project. In addition, the town would need to provide safety pedestrian access from Route 6 to downtown for visitors.

This alternative is not recommended without further study to identify the cost of intersection and roadway reconstruction, and is dependent on securing a shuttle operator.

Action Items for Route 6 Parking

- Address the MassDOT Route 6 Agreement
- Consult with Provincetown Fire Department and Police Department
- Identify a shuttle bus provider
- Construct safe pedestrian access between the proposed parking areas and downtown

Smart Phone Parking Applications "Apps"

Smartphone applications (referred to as "apps") have changed the way people park their cars. Applications can locate parking spaces in Provincetown, identify occupancy, and streamline payment.

Existing Provincetown Smartphone Application (iPtown)

The Provincetown tourism office manages an application called *iPtown* that details many different Provincetown amenities including but not limited to entertainment, travel and transit, and restaurants. Parking information is not currently included in the app. CCC staff recommends that a static parking map be added to the *iPtown* app.

Private Applications

The town of Provincetown also advertises and incorporates a system called *MobileNOW!* that allows for parking to be paid by phone, website or mobile app. A sign in Provincetown that advertises the *MobileNOW!* system is shown in the figure below. Parts of this system could be integrated into the *iPtown* app. Provincetown could consider several other apps that aid with parking including;

- *Parkmobile* – displays pricing information, processes payment at parking meters and kiosks, and notifies parkers when their time is up.
- *BestParking* –displays pricing at different parking lots.
- *ParkNow*- allows customers to identify parking spaces and book their occupancy prior to traveling to the parking lot.
- *Parkme*- allows customers to identify parking spaces and book their occupancy prior to traveling to the parking lot.
- *Parker*- displays pricing information, processes payment at parking meters and kiosks, and notifies parkers when their time is up.

Action Items for Parking Maps and Applications

- Provide parking information on the iPtown application

Figure 25: *MobileNOW!* sign in Provincetown

Major Roadways

Several alternatives are classified as major roadway projects because of the impact and/or high cost associated with the potential solutions. These alternatives are discussed in the following sections.

Shank Painter Road

Shank Painter Road provides access to the town center and the west end from Route 6. There is a mix of residential and commercial development along the roadway. At the north end of Shank Painter Road, there are two intersections that lead to attractions and parking areas. Jerome Smith Road provides access to Jerome Smith parking lot and the Pilgrim Monument, and Uncle Bertie's Way provides access to Grace Hall parking lot.

The intersections at both ends of Shank Painter Road, Route 6 and Bradford Street, present challenges for vehicles turning out of Shank Painter Road. Bicycles and pedestrians have limited accommodation along the roadway and the right of way width presents an opportunity to upgrade amenities. The intersection of Jerome Smith Road and Shank Painter Road would be reconstructed as part of the roadway project.

The Cape Cod Commission staff conducted a study of Shank Painter Road in 2012. The preferred concept was identified through public outreach and is shown in Figure 25. The concept includes 5 foot bike lanes on both sides of the road, 5 foot sidewalks on one or both sides along the entire corridor, and 11 foot travel lanes. The location of at-grade sidewalks were strategically placed to minimize impacts to parking.

From Route 6 to Stop and Shop, the cross section has five foot sidewalks and bike lanes on both sides. Bike lanes would be separated from the sidewalks with a 2 foot landscaped buffer. A bus pullout is included at the Stop and Shop. Several sections of this segment would have at grade cross walks to allow curb cuts for existing parking areas. From Stop and Shop to the intersection at Brown Street, the sidewalk would be at grade with the bike lane, no landscaping on the west side would exist. This would allow for parking spaces along the roadway. From Brown Street to Bradford Street, the cross section is proposed to have 5 foot bike lanes on both sides and a 5 foot sidewalk on the west side only.

Shank Painter Road preferred concept

As determined in the 2012 study

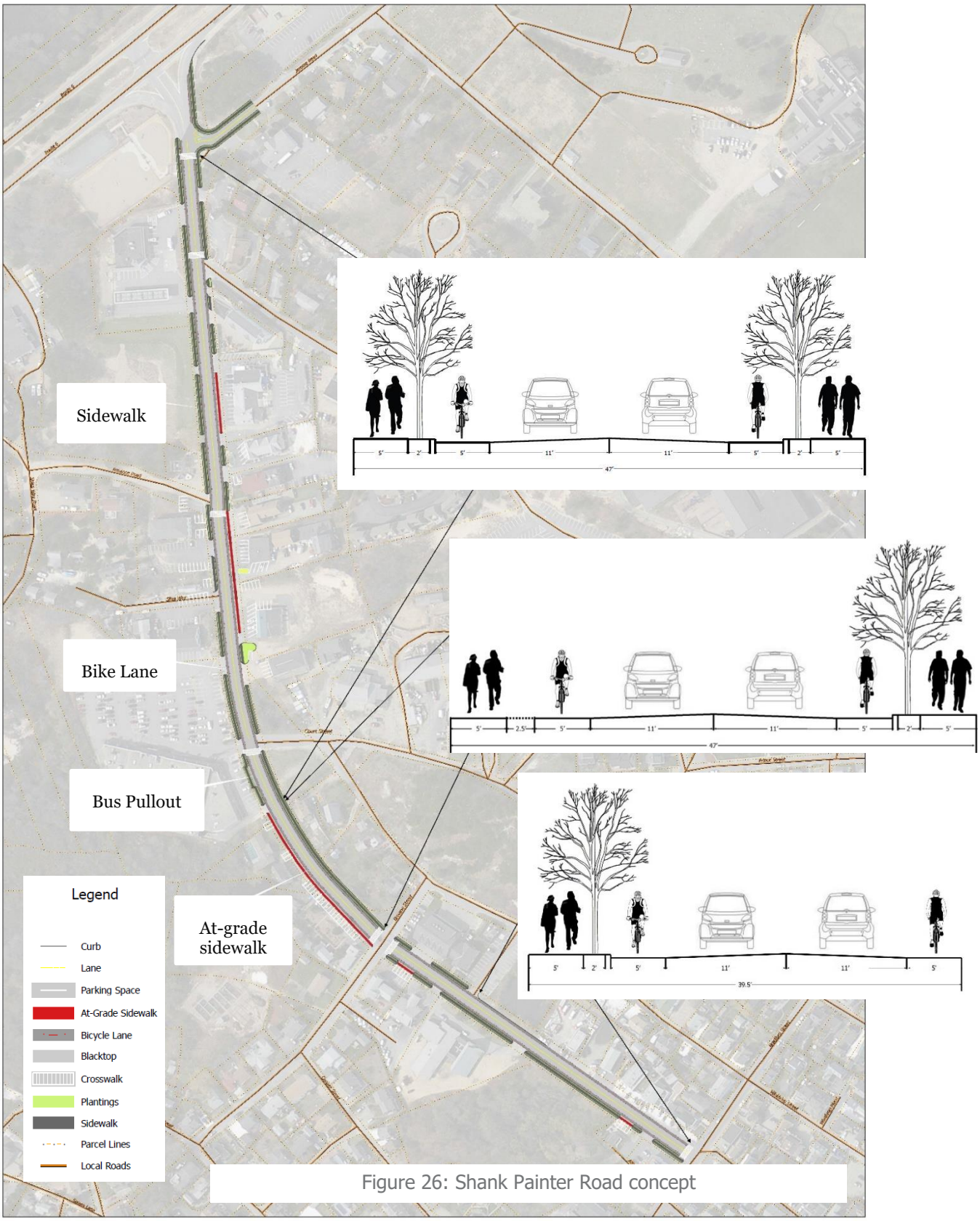


Figure 26: Shank Painter Road concept

Reconstruct Shank Painter Road through the MassDOT Transportation Improvement Program or MassWorks Grant

The town could apply for funding from MassDOT or through a MassWorks grant to reconstruct Shank Painter Road. The MassDOT funding comes though the Transportation Improvement Program (TIP) for Cape Cod. MassWorks grants are administered by the Executive Office of Housing and Development. The TIP is administrated by the Metropolitan Planning Organization (MPO) and lists transportation projects to be funded with federal and state money in the next four years.

Depending on the design of Shank Painter Road, CCC staff estimates the cost between four (4), and eight (8) million dollars for a comprehensive project. The first step in the application process is to complete a Project Need Form (PNF) and a consultation meeting with MassDOT personnel.

Shared Lane Markings

Reconstructing Shank Painter Road could take several years. Presently, Shank Painter Road could be outfitted with shared lane markings to provide short term, low cost bicycle accommodation. On Shank Painter Road, place the Sharrows on the right side of the road because to the width of the roadway, volume of vehicles and speed of vehicles. The posted speed on Shank Painter Road is 25 MPH but Commission staff is concerned about higher motor vehicle speeds and the potential for conflicts with bicycles if the Sharrows were placed in the center of the vehicle lane.

The Sharrows will alert drivers that bicycles use the road and identify the appropriate place for the bicycles to ride. Shared lane markings are detailed in the Transportation Design Standards section of this report.

Action Items for Shank Painter Road

- Place shared lane markings on Shank Painter Road
- Reconstruct Shank Painter Road by one of the following methods:
    - Initiate a Project Notification Form with MassDOT
    - Apply for a MassWorks grant
    - Undertake a municipally financed roadway project

Conwell Street

Conwell Street is congested with motorists, bicyclists, and pedestrians, all utilizing the same width of pavement. CCC Staff was asked to look at possible one-way configurations of Conwell Street from Route 6 to Bradford Street. The main concern expressed by residents along Conwell Street is the lack of pedestrian and bicycle accommodation due to the limited roadway width.

Conwell Street from Route 6 to Cemetery Road

Partially funded by a National Park Service grant, the Environmental Partners Group has performed a survey and design for the bicycle and pedestrian accommodation from Route 6 to Cemetery Road. This concept expands the pavement width to 30 feet, providing 10 foot vehicle lanes and 5 foot bicycle lanes. In addition, on the west side of the road, there is a proposed 6 foot sidewalk. CCC staff recommends that this project move forward to accommodate pedestrian and bicyclist in this section of Conwell Street.

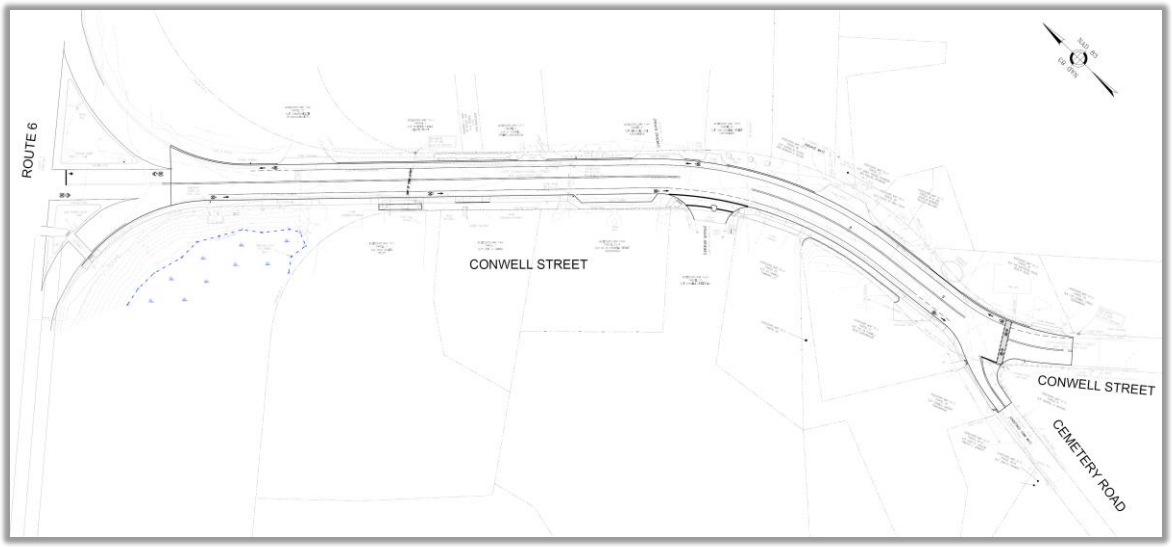


Figure 27: Proposed improvements on Conwell Street

Conwell Street from Cemetery Road to Bradford Street

To accommodate bicyclists and pedestrians along Conwell Street, residents requested CCC staff to look at the potential to turn Conwell Street into a one-way street. With only one travel lane for motorists, the additional pavement on Conwell Street could be repurposed to provide separate bicycle and pedestrian accommodations.

During CCC staff investigation of one-way configurations of Conwell Street, CCC staff determined that any potential one-way configuration of Conwell Street would have significant impacts to residential, business and visitor motor vehicle travel patterns.

CCC staff examined MassDOT record plans for Conwell Street and determined that the roadway may be able to accommodate all users within the existing right-of-way. A professional land survey would determine the actual right-of-way. If all users can be accommodated within the existing right of way, CCC Staff would not recommend any

one-way configuration on Conwell Street due to the disruption this would cause for residents, businesses and visitors.

- *One-way configuration on Conwell Street is not recommended* due to congestion impacts to other intersections and visitor and residential use of the roadway

Bicycle and Pedestrian Accommodation Short-Term Alternative

To provide short-term accommodation with the existing pavement, shared lane markings could be painted on the roadway to notify vehicles that bikes will use the road. Shared lane markings are detailed in the Transportation Design Standards section.

The narrowest part of the road is between Harry Kemp Way and Bradford Street. It was observed that pedestrians frequently cut through the Riley's parking lot to avoid this section. A path through the Riley's lot could be constructed to help pedestrians and cyclists access the downtown area.

Action Items for Conwell Street

- Fund construction of sidewalks and bike lane plans presented by Environmental Partners Group from Route 6 to Cemetery Road
- Survey and design bike and pedestrian accommodation between Cemetery Road and Bradford Street
- Stripe the Road markings on Conwell Street from Cemetery Road to Bradford Street
- Construct a pathway from Conwell Street to Bradford Street through Riley's Parking Lot

Reverse One Way Direction of High Pole Hill Road

High Pole Hill Road and Alden Street are southbound one-way roadways from the Provincetown Monument and Cemetery Road, respectively, to Bradford Street. The northbound counterpart to Alden Street is Standish Street, approximately 150 feet to the east. Vehicle travel to the Provincetown Monument is provided by Winslow Street. An aerial view of this intersection is shown in the following figure. CCC staff was asked to look at reserving the direction of High Pole Road, such that vehicles would access the Provincetown Monument near Alden Street and exit from Winslow Street.

Figure 28: Alden Street/ High Pole Hill Road at Bradford Street

Reversing the direction of High Pole Hill Road is not recommended because of the impacts this action would have on other traffic patterns. Allowing vehicles to enter the Provincetown Monument on High Pole Hill Road from Bradford Street near Alden Street would create an unorthodox intersection configuration. High Pole Hill Road would be a one-way street on the left side of the intersection and Alden Street would be one-way on the right side of the intersection. CCC staff would not recommend this roadway configuration.

Reversing the direction of High Pole Hill Road and Alden Street (creating two one-way streets leading away from Bradford Street) would also have significant impact to motor vehicle travel patterns. Currently, Alden Street and Standard Street act as a one-way coupling; Alden Street provides access to downtown and Standish Street provides access away from downtown. If Alden Street is reversed, Standish Street would also need to be reversed. This would create more traffic at the Standish Street/Bradford Street/Standish Street intersection, an intersection that has already been identified as problematic.

Reversing the direction of High Pole Hill Road would require vehicles leaving the Provincetown Monument or southbound traffic on Winslow Street to exit through the Winslow Street/Bradford Street intersection. CCC staff is concerned with the available sight distance at the Winslow Road/Bradford Street intersection for vehicles trying to exit.

CCC staff does Not Recommended reversing the direction of High Pole Hill Road

Intersections

In this section of the report we discuss problems and potential solutions at several critical intersections. Locations were identified by the project team, stakeholders and during our outreach efforts.

Standish Street at Bradford Street

Standish Street at Bradford Street is near the Riley's parking lot and the Alden Street kiosk. This intersection is heavily utilized by pedestrians, bikes, and motor vehicles to access the town center.

At the request of the town, the Environmental Partners Group (the consultant) has developed concept plans for reconstructing Standish Avenue at Bradford Street. The consultant's concept includes defining the edge of pavement to separate the motorist from the pedestrians. Redesigning the intersection will better protect pedestrians walking on the side of the road. The redesign would also reduce the distance required for pedestrians to cross Bradford Street. The concept does not propose major alterations such as traffic control devices.

Action Item for Standish Street at Bradford Street Intersection

- Reconstruct the Standish Street and Bradford Street intersection according to the consultant's design plans

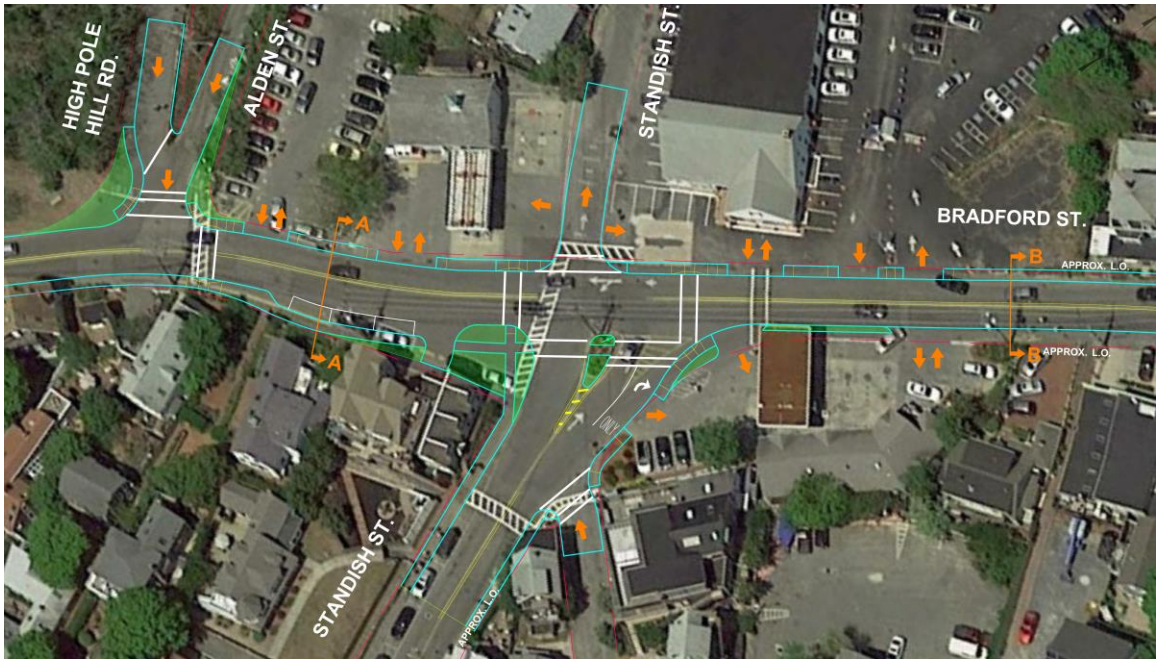


Figure 29: Proposed improvements for Standish Street at Bradford Street

Prince Street at Bradford Street

Pedestrians crossing Bradford Street east of the intersection of Bradford Street and Prince Street was identified as a problem during the 2015 fall traffic hearing. Pedestrians leaving Grace Hall will sometimes walk east on the north side of Bradford Street and cross at the middle or the bottom of the hill where there is not a cross walk and poor sight distance.

The issue could be caused by the location of the stairs from the Grace Hall parking lot. The stairs place pedestrians east of the crosswalk, therefore, they must walk away from their destination to cross at the crosswalk. The location to construct a sidewalk is shown in the figure below.

The issue could be resolved by reconstructing the stairs at a location on Prince Street rather than Bradford Street. Pedestrians could then walk to their destination in a more direct path that includes crossing at the crosswalk at the top of the hill on Bradford Street. The new access point from Grace Hall should be designed as a ramp for handicap accessibility.

CCC staff considers the pedestrian path from Grace Hall to downtown to be the most critical need for wayfinding application. The town should consider pavement treatment, signage or other means to assist visitors trying to locate downtown from Grace Hall.

Action Items for Prince Street at Bradford Street

- Replace the stairs onto Bradford Street from the Grace Hall parking lot with an ADA ramp and sidewalk on Prince Street
- Implement wayfinding concepts for visitors to find Commercial Street from the Grace Hall parking lot

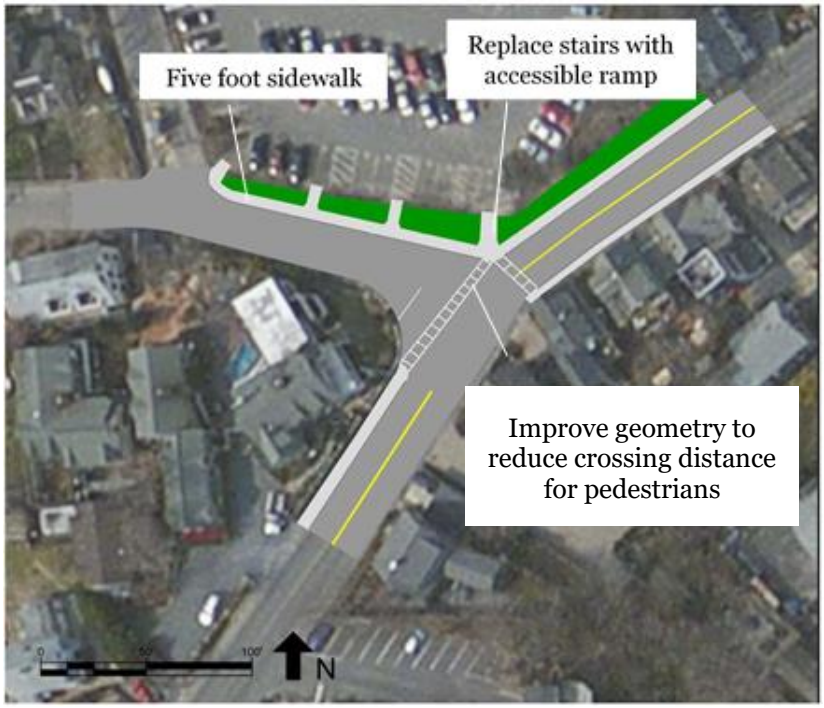


Figure 30: Pedestrian path from Grace Hall Parking Lot

Howland Street at Route 6

Turning movements at Route 6/Howland Street are restricted to right-turn-in/right-turn-out maneuvers. Left turns are prohibited by the median between directional travel lanes on Route 6. Area residents have requested that a break in the median be created to allow full access at the Route 6/Howland Street intersection.

Commission staff examined the concept of providing a break in the Route 6 median to allow for full access at Howland Street. This would provide a new left turn from Route 6 into Howland Street as well as for vehicles exiting Howland Street to turn left onto Route 6. Allowing left turns could change travel patterns for vehicles entering town and vehicles exiting town headed toward the west end on Route 6. This modified intersection would introduce new conflict points with a potential degradation of safety.

Commission staff estimates that southbound traffic on Howland Street would increase by approximately 50 vehicles during the evening peak hour with corresponding decreases in southbound traffic apportioned between Snail Road and Conwell Street. An estimated 20 additional vehicles would be added to northbound Howland Street, primarily consisting of residents destined for Race Point Road or the northern business area on Shank Painter Road.

Public comments state that allowing left turns from Route 6 at Howland Street would provide a new entrance into downtown and alleviate the amount of traffic on Conwell Street. However, vehicles entering downtown from Howland Street would most likely turn onto Harry Kemp Way to access downtown. These vehicles would still need to travel through the Conwell Street/Bradford Street intersection.

The cost to construct an intersection at Howland Street would be significant.

Left turns at Howland Street/Route 6 are not recommended because of the monetary and environmental costs associated with construction and potential safety impacts to achieve minimal circulation benefits.

No Recommended Action for Howland Street/Route 6 Intersection

Alden Street at Route 6

Alden Street traverses Provincetown from Bradford Street on the south to Jerome Smith Road on the north (approximately 300 feet from the southern edge of Route 6). Residents have requested that CCC staff analyze the possibility of extending Alden Street to Route 6 and constructing a three-way intersection. This new intersection would create another entry point to the downtown from Route 6. Constructing a new full-access intersection on Route 6 would introduce multiple conflict points with a potential degradation of safety.

Commission staff estimates that traffic volumes on Alden Street would increase by approximately 20 vehicles in each direction during the evening peak hour. Traffic circulation on Alden Street is constrained by the narrow layout and the one-way restriction along the southern portion of the roadway between Cemetery Road and Bradford Street.

Extending Alden Street to create an intersection with Route 6 is not recommended because of the monetary and environmental cost associated with construction and potential safety impacts in order to achieve minimal circulation benefits.

No Recommended Action for the Alden Street/Route 6 Intersection

Lopes Square

Access to MPL and the fishing dock is through Lopes Square. Lopes Square has several shops and a landscaped median. Cars travel in a one-way, counter clockwise direction around the median where cars are frequently parked along the curb.

At the intersection of Lopes Square and Commercial Street there is clear direction for vehicles to enter and exit the area crossing Commercial Street. Lopes Square presents issues for vehicles and pedestrians because of the numerous entrances and exits and undefined travel lanes. Striping to create an exclusive left turn lane separated from a through lane at the intersection with Commercial Street would properly align turning vehicles. Striping on Lopes Square is shown in the figure below.

Action Items for Lopes Square

- Stripe turning lanes on Lopes Square at the intersection with Commercial Street

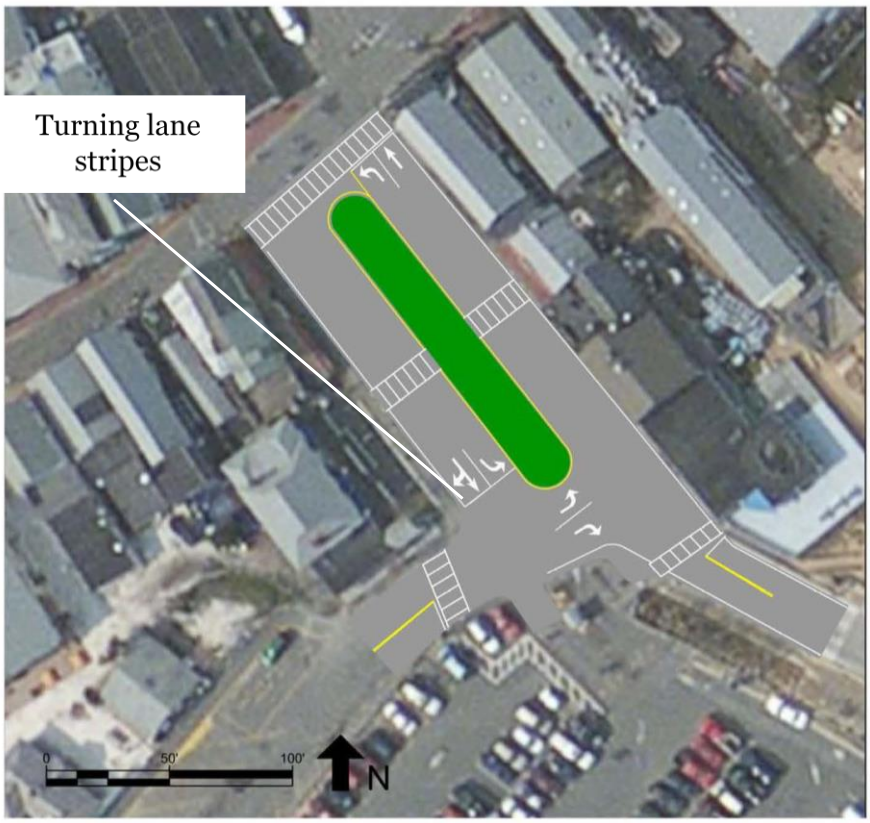


Figure 31: Lopes Square vehicle striping

Ryder Street Extension

Ryder Street Extension forms part of the circulatory road network serving MPL. Beginning at the intersection of Commercial Street and Ryder Street, Ryder Street Extension is a two-way facility traveling about 250 feet southbound toward the pier, then easterly over 300 feet toward Lopes Square.

There are seven angled parking spaces for buses along the north side of the street. There is about 20 feet of pavement between the bus parking area and the fence around MPL, 9 of the 20 feet is hatched as a no parking area except for an electronic vehicle charging station.

A pedestrian crossing at the west end of the street covers over 60 feet of pavement making it difficult for pedestrians to cross. This cross walk provides a valuable connection from the MPL to Commercial Street.

The 20 feet of pavement between the bus parking and fence for MPL could be converted into two 10 foot travel lanes to encourage cars to drive in an appropriate lane rather than over the bus parking spaces or the no parking area. Striping for two way travel and sidewalk extension is shown in the figure below

Action Items for Ryder Street Extension

- Extend curbing at west end to reduce pedestrian crossing distance and provide signage
- Stripe travel lanes at 10 feet each and relocate the electric vehicle parking

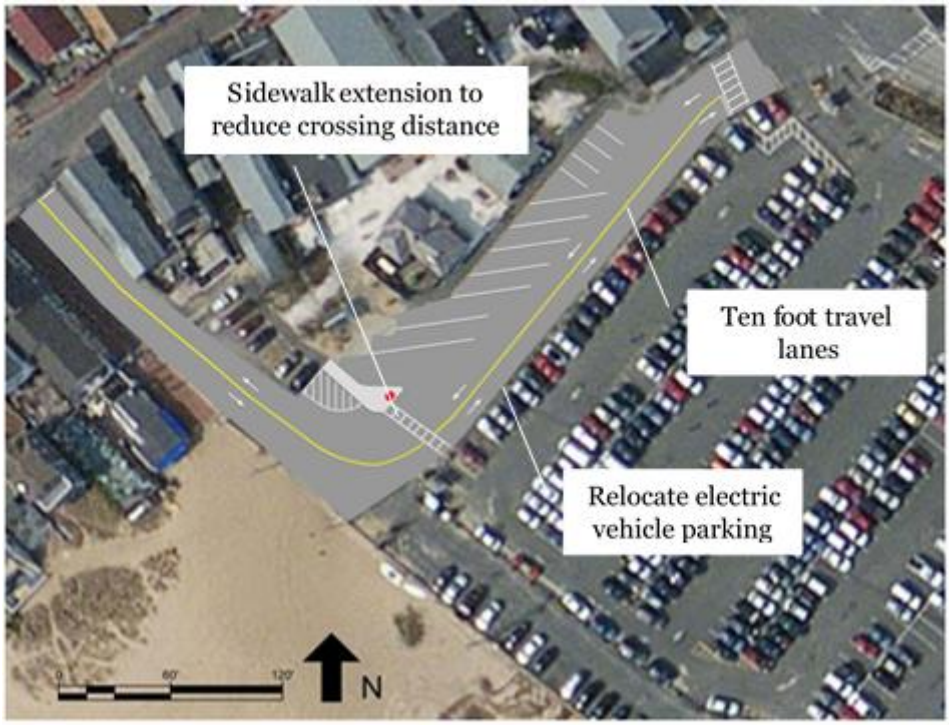


Figure 32: Ryder Street two way striping

Bicycle and Pedestrian Accommodations

Provincetown is fortunate to have many of its attractions in a relatively compact area, well suited for shorter trips that can be accommodated by cycling or walking. Accommodating these modes reduces vehicle congestion and safety problems. Potential options for improving bicyclist comfort and safety follow below.

Commercial Street

Commercial Street is a major attraction in Provincetown and a busy corridor in the summer months with pedestrians and bikes. It serves westbound motor vehicle traffic and two-way bicycle and pedestrian traffic.

Shared Space

As recommended by Provincetown residents, removing vertical curbing along Commercial Street to create a shared space for vehicles, bicyclists and pedestrians was discussed as an alternative. The shared space could be enhanced by other means to separate vehicles from pedestrians such as bollards or different pavement colors. This concept is also known as a woonerf. An example of this concept is found in the figure to the right.

Figure 33: Shared Space or Woonerf Concept

Based on Cape Cod Commission staff observations, the interaction between bicyclists and pedestrians appears to be occasionally hazardous. Staff recommends that sidewalks be provided for pedestrian refuge.

A woonerf is not recommended. Removing curbing would increase pedestrian and bicycle conflicts

Bike Lanes

Also recommended by Provincetown residents were painted bike lanes on Commercial Street to designate where bicyclist should ride. The project team is not confident that lanes would be effective at removing the bikes from the paths of vehicles or pedestrians.

Bike lanes are not recommended.

Sidewalks

Commercial Street has sidewalks along the majority of the corridor, some of which are handicap accessible. The remainder of the sidewalks that are not handicap accessible could be upgraded and new areas for sidewalks could be identified to increase connectivity.

Travel Restrictions

In 2015 Provincetown enforced travel restrictions on Commercial Street during peak hours. This effectively created an area exclusive for pedestrians and bicyclist. Due to the high number of bicycles and pedestrians and the level of protection from vehicles that this effort offers, the enforcement needs to be continued.

Action Items for Commercial Street

- Investigate areas to construct accessible pedestrian sidewalks
- Enforce travel restrictions for vehicles during peak hours of summer months

High Pole Hill Road

High Pole Hill Road provides one-way access from the Provincetown Monument for vehicles. At the intersection of High Pole Hill Road and Bradford Street there is a "do not enter" sign to signify one-way motor vehicle travel. The signage discourages pedestrians from using this route to access the monument. In addition, the road is wide and has a steep grade.

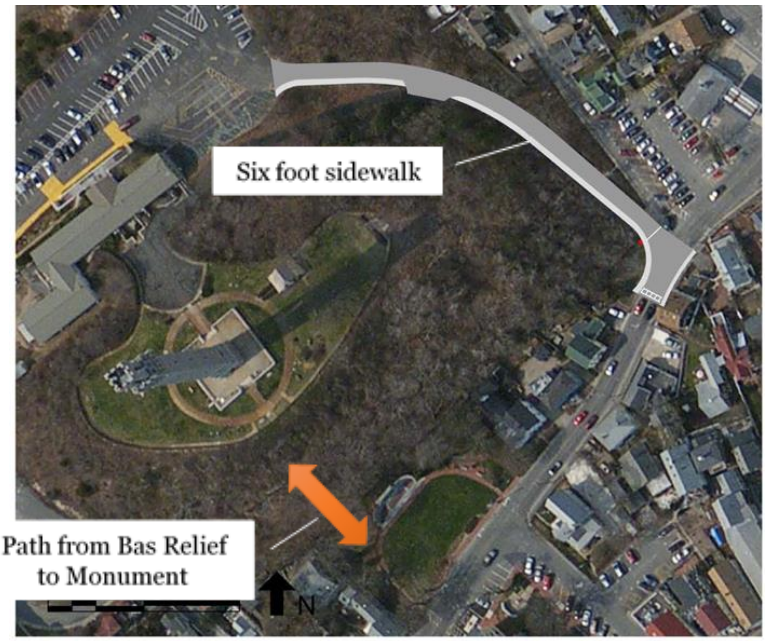


Figure 34: High Pole Road sidewalk to the Provincetown Monument

Sidewalk

A sidewalk along High Pole Hill Road would provide better accommodation and could signal to pedestrians that it is appropriate to walk in the opposite direction of one-way vehicle travel. The figure below shows the sidewalk on High Pole Hill Road and the location of the Provincetown Monument and Bas Relief Park.

Pedestrian Path

While performing outreach in Provincetown, it was identified that visitors often cannot find their way to the Provincetown Monument from Bas Relief Park on Bradford Street across from town hall. The proper way to make the connection is through Winslow Street or High Pole Hill Road. However, pedestrians are often challenged by the one way configuration and the monument is visibly removed from Bradford Street by the steep

grade. A more direct path would benefit pedestrians who would like to walk to the top of the Monument and learn about Provincetown History.

Action Items for High Pole Hill Road

- Construct a sidewalk along High Pole Hill Road
- Identify feasible options for providing direct pedestrian access from Provincetown Town Hall and Bas Relief Park to the Provincetown Monument

Bradford Street

Bradford Street (Route 6A) connects the east end to the west end of Provincetown with two-way travel. Unlike Route 6, the road has commercial and residential development and is populated by bicyclists and pedestrians. The road is often narrow and sidewalks are inconsistent making it difficult for pedestrians and bicyclist to interact with vehicles.

Shared Lane Markings

From Commercial Street to Howland Street the road has less development. This portion of the road has some on-street parking spaces and a consistent pavement width of approximately 24 feet. To provide accommodation on this segment the road could have shared lane markings as defined in the Transportation Design Standards section of this report.

From Howland Street to West Vine Street, the road has more development and vehicles tend to travel at slower speeds. The pavement width is not consistent and this portion occasionally has sidewalks on one or both sides. To provide bicycle accommodation on this portion of the road, place shared lane markings in the center of the travel lane because vehicles do not have room to safely pass the bicycles.

Bike Accommodating Shoulders

From West Vine Street to Province Land Road, the roadway has wide shoulders (approximately 4 feet wide). The shoulders provide accommodation for bicycles and pedestrians. Pedestrians also frequently use this space.

Action Items for Bradford Street

- Stripe Shared lane markings on Bradford Street on the right side of the road from Commercial Street to Howland Street
- Stripe Shared lane markings on Bradford Street in the center of the travel lane from Howland Street to West Vine Street

Route 6 from Dunes Edge Campground to Conwell Street

Dunes Edge Campground is located on the north side of Route 6, east of the Route 6/Conwell Street/Race Point Road intersection. Frequently, visitors will walk or bike from this location to the town center by walking along or crossing Route 6 before the intersection. Crossing Route 6 is not recommended due to the high traffic speeds and number of lanes on Route 6.

To improve safety for the pedestrians, construct a sidewalk on the north side of Route 6 from Dunes Edge to the Route 6/Conwell Street/Race Point Road intersection. Pedestrians could then use the pedestrian signal at the Route 6/Conwell Street/Race Point Road intersection to safely cross and access the town center. A crosswalk on Race Point Road, north of Route 6 would also need to be installed. The figure below shows the sidewalk along Route 6 from Dunes Edge to Conwell Street

Action Items for Route 6 from Dunes Edge Campground

- Construct a sidewalk along the north side of Route 6 from Dunes edge to Conwell Street
- Install a new crosswalk on Race Point Road

Bike Racks

Based on Cape Cod Commission interviews with Provincetown residents, Provincetown has a shortage of bicycle parking. Bicycles are often attached to street signs, light posts or other fixed streetscape objects to prevent theft. This action is illegal in most cases and could result in a fine or confiscation of the bicycle. Bicyclists do this because there is a lack of proper locations to lock their bike.

The Provincetown Bike Committee has created an interactive map that shows desirable locations to build bike racks. Installing bike racks will encourage more bike travel and help prevent bikes from being attached in non-approved locations. Currently there are about 74 bike racks about town. The committee recommends installing, at a minimum, 40 additional bike racks.

Action Items for Bike Racks

- Install bike racks at locations determined by the Provincetown Bike Committee

Outer Cape Bike and Pedestrian Master Plan

The Cape Cod Commission, in conjunction with Cape Cod National Seashore, is working with the towns of Wellfleet, Truro, and Provincetown to develop the Outer Cape Bicycle and Pedestrian Master Plan (OCBPMP). The OCBPMP will outline an interconnected bicycle and pedestrian facility network linking the towns with the Seashore, the Cape Cod Rail Trail, and other destinations within the three communities. The plan will also provide a preferred alternative for a "primary" route from terminus of the Cape Cod Rail Trail in South Wellfleet to Provincetown as well as a list of "secondary" routes in each town that connect to bikeways and destinations.

A steering committee comprised of two representatives (a town staff member and bicycle committee chair) from each of the three communities, as well as Cape Cod Commission and CCNS staff, guides development of the plan. The Steering Committee has held three public workshops, one in each of the communities. The most recent workshop took place in Provincetown on November 12, 2015.

Selection of a preferred primary route between the three towns is currently in progress. The plan contains a list of potential secondary routes in each community based on public input and consultation with each town's bicycle committee. The Steering Committee plans to hold meetings with town officials in early 2016 to determine what each town's priorities are for local/secondary routes. Completion of the master plan is anticipated in the fall of 2016.

Signage

Guiding travelers to available parking via shorter routes and bypassing congested intersections can improve the visitor experience and reduce tourists' unnecessary driving. Improvements to signage are discussed in the following sections of the report.

Remove Sign Clutter

Provincetown has several signs that are poorly placed/designed and are ineffective at relaying information to visitors. These signs create confusion for visitors navigating to destinations and pollute their view shed. Sign clutter on Route 6 is shown in the figure below.

To remove the sign clutter and provide proper direction to destinations and parking areas, conduct a review of all signs with a goal to create a plan that incorporates pedestrian wayfinding. The plan requires a cooperative effort between the Cape Cod National Seashore, Provincetown Monument, Parking Authority, and Provincetown business associations.

Action Items for removing sign clutter

- Conduct a review of current signage throughout town
- Remove ineffective signs

Figure 36: Sign clutter on Route 6

Digital Parking Sign

Public parking for access to the town center is concentrated at MPL and Grace Hall. MPL has been identified as full every day during the summer between 10am and 11am. A sign at the intersection of Standish Street and Bradford Street identifies when the MPL is full. This sign could be supplemented or replaced with an electronic sign that relays more information to visitors such as pricing, number of spaces available, and directions to lots. The sign could include private lots which would require an agreement between the lot owners and town officials.

The figure below shows a rendering of a parking sign that shows the number of available spaces at both parking lots. If placed along Route 6, this sign would help visitors identify which parking lot they would like to access before heading to the town center.

The town would need to invest in technology that would allow for the real-time number of spaces to be counted. The current system should be evaluated for the capability to provide the information. Costs include the sign, infrastructure to provide electric power, software to collect and communicate the information.

Action Items for digital parking signage along Route 6

- Purchase and erect a digital parking sign

Figure 37: Graphic rendering of digital parking sign on Route 6

Town Center Signs – Shank Painter Road

One way to alleviate congestion of downtown Provincetown and make a better experience for visitors is to provide easier parking for visitors. Getting visitors into parking spaces early and removing these cars from the roadway will reduce the amount of congestion in downtown Provincetown.

Current signage directs vehicles to use Conwell Street for Provincetown Center and downtown parking. New signage could be introduced to direct vehicles to Shank Painter Road. An advantage of this concept is that it would improve visitor access to the back entrance of the Grace Hall parking lot. This concept would require replacing the existing Route 6 sign with a new sign.

The figure below shows a mock-up of a sign that could be installed on westbound Route 6 in advance of Conwell Street. The sign's message is intended to encourage motorists to continue west on Route 6, through the Conwell Street intersection to Shank Painter Road where a complimentary sign would guide motorists to turn left.

Figure 38: Graphic rendering of Shank Painter Road priority signage

Cape Cod Commission staff estimates that making Shank Painter Road the main entrance would decrease vehicle traffic using Conwell Street by ten percent. The figure below presents changes in traffic volumes that would result from this shifting priority to Shank Painter Road. Shank Painter Road and the section of Route 6 between Shank Painter Road and Conwell Street would have increased traffic by about 30 vehicles inbound and 26 vehicles outbound during the 4-5 pm peak hour. Traffic volumes on Conwell Street and Cemetery Road would be expected to decrease. It was assumed that half of the vehicles (15) would use the Uncle Bertie's Way entrance to Grace Hall or travel down Jerome Smith Road. The remaining 15 vehicles were assumed to continue to the Shank Painter Road at Bradford Street intersection and take a left turn.

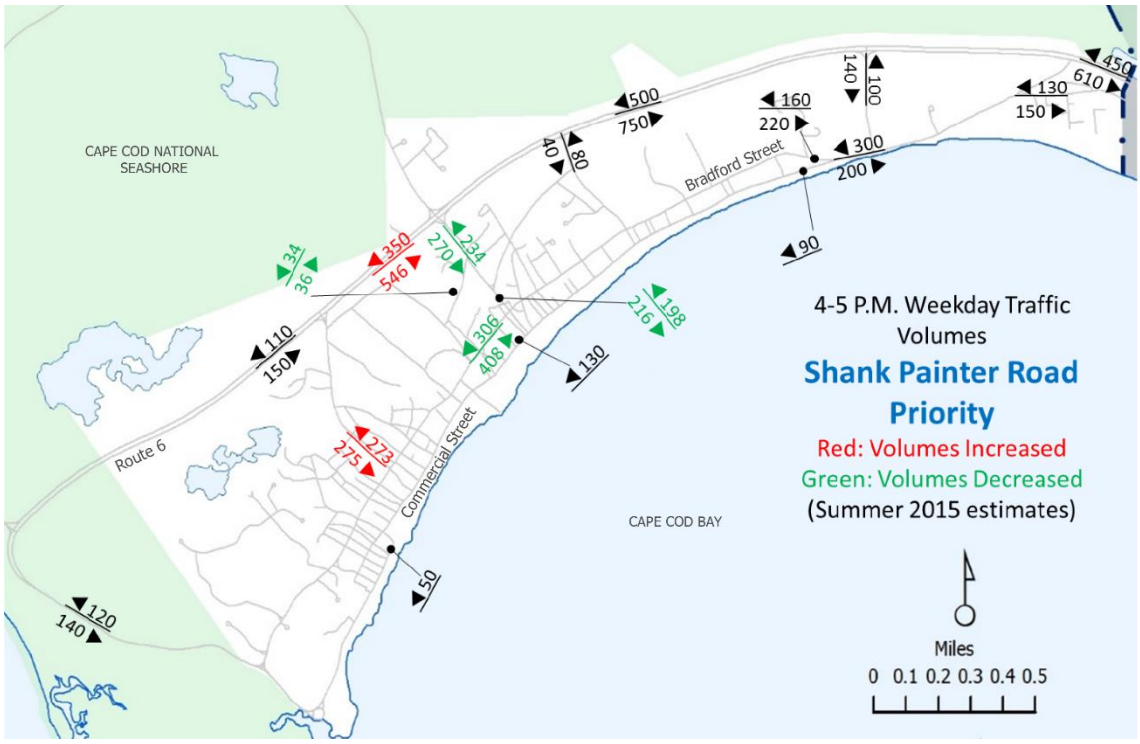


Figure 39: Summer 4pm-5pm Traffic volume changes for Shank Painter Road priority

The adjusted volumes were analyzed and the resulting delay compared to existing volumes is shown in the table below. The analysis shows that impacts to the Route 6 Shank Painter Road intersection would include increased delay for vehicles turning left out of Shank Painter Road. The intersection at Conwell Street and Bradford Street shows modest delay improvements.

Table 13: 4pm-5pm Intersection Level of Service for Shank Painter Road priority

Intersection	Movement	Existing Delay (s/vehicle)	New Delay (s/vehicle)
Shank Painter Road at Route 6	Northbound left	38.4	45.7
	Northbound right	15.9	17.0
	Total intersection	10.7	11.5
Shank Painter Road at Bradford Street	Southbound left	66.1	80.7
	Southbound right	14.5	14.9
	Total intersection	14.8	23.8
Conwell Street at Bradford Street	Southbound left/right	24.0	22.2
	Total intersection	7.8	7.1

Action Items for Shank Painter Road Priority Signage

- Design and install signage plan for Route 6 to direct visitors to use Shank Painter Road

Pedestrian Wayfinding to Town Center

Wayfinding is a term used to describe elements that guide people through the physical environment, orienting them to their surroundings and enhancing their understanding and experience of a place. Wayfinding systems tend to be oriented toward different users with different signage aimed at pedestrians, bicyclists and motorists. Comprehensive wayfinding systems often combine signage, symbols, colors, banners, and maps and can also be integrated into mobile applications, digital displays, or other forms of marketing materials. Examples of wayfinding elements are shown in the figure below.

Signage and trails that are oriented to pedestrians encourage walking and promote a "park once" mentality and direct people to other points of interest in town. Maps should be used for orienting visitors and identifying routes to points of interest in the town. Kiosks or panels should be placed at prominent locations such as near transit hubs, parking lots or attractions. Color can be used to identify destinations such as the town center, monument, and east/west end. Icons and symbols can also be used to brand the destinations. Wayfinding themes and designs can also be incorporated into hard copy maps for visitors. Mobile apps could also be developed using the same unifying themes for location specific directions.

A wayfinding plan will include numerous opportunities for stakeholder and public input. Typically, the planning process will conclude with the preparation of a design palette that incorporates colors, signage types, materials and specifications of all the wayfinding elements. Once approved, pricing and bidding will start before the installation and construction phase begins. Costs for preparing wayfinding plans vary depending on the size of the area, the complexity of the network of pathways, and the amount of design work involved.

Figure 40: Examples of wayfinding elements

Costs for preparing wayfinding plans vary depending on the size of the area, the complexity of the network of pathways, and the amount of design work involved. Initial research indicates that most municipal wayfinding plans cost between $100,000 and $1 million for design and installation depending on the scale. A report prepared for the City of Bar Harbor, Maine (population ~5,200) by Gamble Design, LLC estimates that a Downtown Wayfinding scheme for that city would cost $150,000 - $242,000 with design being $29,000 - $52,000 of that amount.*

*Source: http://www.barharbormaine.gov/ArchiveCenter/ViewFile/Item/96

Signage should clearly guide visitors from major access points toward convenient parking for local attractions. Placement of signs is important to avoid clutter and designs must be easily recognizable from a moving vehicle.

Action Items for pedestrian wayfinding

- Fund a wayfinding plan that helps visitors find the town center, east end and west end from parking areas

Transit

Transit allows people the opportunity to travel without their vehicle to popular destinations. Vehicle congestion and parking demand in the town center area could be relieved if alternative methods of transportation such as transit are encouraged.

Increase Transit Services

The CCRTA Provincetown Shuttle operates from June through September, accessing stops every half hour, seven days per week. The frequency is dependent on congestion and weather. The shuttle operates two loops, one extending to North Truro and another to Provincetown beaches. A passenger boarding the Provincetown North Truro bus is shown in figure 40. There are several private transit options that are not discussed in this report.

Increasing transit service has been discussed with the CCRTA. The best option identified was to provide an additional bus on the North Truro Shuttle to improve frequency from 30 minutes to 20 minutes. Improving the frequency to 20 minutes would increase the convenience and capacity of the shuttle. This effort would require both capital expenses and increased operational expenses.

The Beaches Shuttle was not recommended because this bus was identified as less crowded than the North Truro Shuttle and requires two new buses to improve frequency. In July 2015 the North Truro Route had over 30,000 passengers and the Beaches Route had 6,000 passengers in the same month.

Actions to increase existing public transit service

- For 2017, request the CCRTA improve frequency on the Provincetown North Truro Shuttle from 30 minutes to 20 minutes

Figure 41: Passenger boarding the bus on Fourth of July

Pilgrim Springs Remote Parking

The nearby Pilgrim Heights area is used for walking paths owned by the Cape Cod National Seashore and has approximately 200 parking spaces. The Pilgrim Heights parking lot is generally underutilized and not served by existing transit. With an agreement from the National Seashore, a portion of this parking lot could be reserved for visitors to downtown Provincetown if transit service is provided. This alternative would need CCRTA or Plymouth and Brockton and Cape Cod National Seashore approval.

Actions to provide remote parking at Pilgrim Springs

- Enter into an agreement with the National Seashore to allow remote parking at the Pilgrim Heights parking area and an agreement with the CCRTA and/or the Plymouth and Brockton Bus Company to pick up/drop off visitors at the Pilgrim Heights parking lot

Summary of Recommendations

The tables on the following pages list the recommended options discussed in this report. The timeframe and cost is noted for each recommendation. The cost is assumed to be direct cost to Provincetown.

A task which has a short term time frame could be implemented or acted on before the summer of 2016. A task with a medium time frame could be acted on within 2 years or before the summer of 2018. A task with a long term time frame would require more than 2 years to implement.

A task with low cost is assumed to have under $100,000 in associated costs. A task with medium cost is assumed to have between $100,000 and $500,000. A task with a high cost is assumed to have over $500,000 in cost.

Parking

Parking recommendations are listed in the table below.

Parking Maps and "Apps" (applications) is listed as short time frame and low cost. The town uses apps called *MobileNOW!* and *iPtown*, however, these services could be improved with competition or additional information.

CCC staff recommends reviewing all parking policies to ensure that the public and private parking supply, usage and pricing are successfully managing parking in the downtown area. New policies could be put in place to distribute parkers from the congested downtown parking lots to parking spaces further from downtown. This alternative is listed as short time frame and low cost.

To provide a better parking experience for visitors during events, produce an event parking management plan that identifies protocol and needs. Events were shown to be frequent in the summer months and stress the towns parking supply. The plan is listed as short time frame and low cost.

Provincetown could approach the National Seashore about utilizing existing National Seashore beach parking lots on rainy days. This concept would require approval from the National Seashore and advanced signage directing visitors to remote parking.

Valet parking could be introduced to existing lots to increase convenient parking capacity. Implementation is listed in the table as medium time frame and cost.

A parking structure needs further study to identify the location, cost and impacts. A parking structure would be a way to increase the convenient parking capacity. Construction is listed as long term and high cost.

Table 13: Parking recommendations summary table

Proposal	Time-frame	Cost
Add Parking information to the *iPtown* smartphone application	Short	Low
Reassess Town-wide parking policies	Short	Low
Produce an Event Parking Management Plan	Short	Low
Valet parking feasibility study	Short	Low
Parking Structure Feasibility Study	Medium	Medium

Major Roadways

Recommendations for major roadway projects are listed in the table below.

It appears that Conwell Street has sufficient Right-Of-Way to accommodate motor vehicles, bicyclist and pedestrians within the existing Right-Of-Way. Confirm the existing Right-Of-Way with a professional surveyor.

For short term accommodation, Sharrows can be installed on Shank Painter Road to provide a better bicycling experience and alert motorist of bicyclist in the roadway.

Design plans for bike lanes on Conwell Street from Route 6 to Cemetery Road have been developed. Fund the construction plans.

As a long term improvement, Cape Cod Commission staff recommends reconstructing Shank Painter Road. Shank Painter Road is one of the few roads in town with enough Right-Of-Way to provide separate space for motorists, bicyclists and pedestrians. Reconstructing Shank Painter Road will provide separate space for motorists, bicyclists and pedestrians along this roadway.

Table 14: Major roadways recommendations summary table

Proposal	Time-frame	Cost
Conduct a property line survey along Conwell Street Cemetery Road to Bradford Street	Short	Low
Shank Painter Road bicycle Sharrows	Short	Low
Conwell Street from Route 6 to Cemetery Road – construct bike lanes and a sidewalk	Medium	Medium
Reconstruct Shank Painter Road	Long	High

Intersections

Recommendations for intersection improvements are summarized in the table below.

Lopes Square striping is listed as short time frame and low cost. This alternative proposes painted lines that show the travel and turning lanes on Lopes Square.

Ryder Street Extension curbing and striping is listed as medium time frame and low cost. This alternative provides better definition to where vehicles should drive and reduces crossing distance for pedestrians.

Prince Street at Bradford Street reconstruction is listed as medium time frame and cost. Providing an access ramp from Grace Hall would allow handicap accessibility and would encourage pedestrians to cross at the intersection crosswalk. It would also assist visitors in finding Commercial Street.

Standish Street at Bradford Street reconstruction is listed as medium time frame and cost. This alternative provides better definition for vehicles and pedestrians at this intersection.

Table 14: Intersection recommendations summary table

Location	Time-frame	Cost
Lopes Square striping	Short	Low
Ryder Street Extension side walk extension and striping	Medium	Low
Prince Street at Bradford Street ADA accessible ramp and sidewalk	Medium	Medium
Reconstruct Standish Street at Bradford Street	Medium	Medium

Bicycle and Pedestrian

Cape Cod Commission staff recommends the following Bicycle and Pedestrian action items as listed in table below.

CCC staff recommends that Provincetown continue work on Outer Cape Bike and Pedestrian Master Plan. This effort will establish more comprehensive plans for bicycle and pedestrian access throughout town and the region.

Installing bike racks is identified as a short time frame and low cost alternative. This alternative has been developed by the Provincetown bike committee and would provide benefits to the community.

Sidewalk and Crosswalk from Dunes Edge Camp Ground to Conwell Street is identified as a medium time frame and cost. The sidewalk would help visitors cross Route 6 and access the town.

CCC staff recommends constructing a sidewalk on High Pole Hill Road. This sidewalk would help pedestrians access the Provincetown Monument.

Table 15: Bicycle and pedestrian recommendations summary table

Bike and Pedestrian Proposal	Time-frame	Cost
Install bike racks	Short	Low
Route 6 sidewalk Dunes Edge to Conwell Street	Medium	Low
Sidewalk along High Pole Hill Road	Medium	Medium

Signage

The table below includes a list of signage recommendations.

Removing sign clutter through a comprehensive sign plan could be conducted by staff. This alternative would identify out of date, ineffective or misplaced signs throughout town to remove and/or replace them with more effective signage.

This alternative could remove some vehicles from the congested Conwell Street/Bradford Street intersection and encourage vehicles to use the back entrance of Grace Hall for downtown parking.

Pedestrian wayfinding would assist visitor walking/biking around town using maps, signs, and other wayfinding methods.

A digital parking sign would relay real-time parking information to vehicles on Route 6 so they can make an informed decision on where they would like to park, before accessing the town center.

Table 16: Signage recommendations summary table

Signage	Time-frame	Cost
Produce a Comprehensive Signage Plan	Medium	Low
Shank Painter Road priority signage	Medium	Low
Pedestrian wayfinding to destinations	Medium	Medium
Purchase and install a digital parking sign	Long	Medium

Transit

Transit recommendations are identified in the table below.

Adding another bus to the existing CCRTA North Truro Shuttle service would increase the frequency from 30 minutes to 20 minutes. However, improving frequency on the shuttle is a long-term and high cost item because of state budget concerns. At this time, Provincetown would be required to secure the bus and the increased cost of operating the new bus. CCC staff recommends revisiting this item next year.

Table 17: Transit recommendations summary table

Transit	Time-frame	Cost
Improve frequency on CCRTA Provincetown/North Truro Shuttle	Long	Medium

CAPE COD COMMISSION

3225 MAIN STREET • P.O. BOX 226 • BARNSTABLE, MASSACHUSETTS 02630
(508) 362-3828 • Fax (508) 362-3136 • www.capecodcommission.org