



CAPE COD
COMMISSION

Route 6 Safety Analysis

**CRASH HISTORY, PREVIOUS STUDIES & PAST AND
FUTURE INVESTMENTS**

OCTOBER 2022

Prepared by Cape Cod Commission Staff on behalf of the Cape Cod Metropolitan Planning Organization and the Cape Cod Joint Transportation Committee. Funded by the Massachusetts Department of Transportation and Federal Highway Administration

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The information depicted on the maps and figures in this report are for planning purposes only. They are not adequate for legal boundary definition, regulatory interpretation, or parcel level analysis. They should not substitute for actual on-site survey or supersede deed research. Unless otherwise noted, the source for road data and information for maps and figures in this report is the Massachusetts Department of Transportation (MassDOT) (2015) and Cape Cod Commission planimetric data (2014). Unless otherwise noted, parcel data is from a Cape Cod Commission regional parcel data set (2018).

PROJECT TEAM

Steven Tupper, Deputy Director

Colleen Medeiros, Transportation Program Manager

David Nolan, Senior Transportation Planner (Project Manager)

Evan Costa, Transportation Planner/Engineer

CAPE COD COMMISSION

3225 Main Street • P.O. Box 226 • Barnstable, MA 02630

508-362-3828 • Fax: 508-362-3136 • Email: frontdesk@capecodcommission.org

www.capecodcommission.org

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Executive Summary

The goal of this analysis is to examine the recently completed planning studies and their recommended improvements for Route 6 on Cape Cod, review of the recent crashes reported on Route 6, and to identify the recent and future construction investments for Route 6. The compilation of these materials will help the Massachusetts Department of Transportation (MassDOT) and others prioritize potential improvement projects for Route 6 in the near and further future.

A review of the crash history on Route 6 (2010-2021) is documented as well. The purpose of the crash analysis is to validate that overall crashes are trending downward while focusing on the severity of crashes and better understanding the conditions of fatal and injury crashes. From 2010-2021 there were 23 fatal crashes on Route 6, 1,214 injury crashes and 2,936 property damage only crashes (115 crashes were unreported – it is safe to assume no one was injured in those crashes). The goal, known as 'Vision Zero', meaning no fatal crashes on our road network, is what the Cape is striving for, and Commission staff will work to achieve this goal. The Cape has a significant population increase during the summer months creating unique challenges for Route 6 with increased volumes during these times. Vehicle speeds throughout Route 6 continue to be a challenge for safety as well.

Highlighted are the ten recently completed planning projects and eight Roadway Safety Audits (RSA) that focused on the Route 6 corridor. The recommendations from these reports are documented throughout. There are also ten currently funded or under design construction projects across the region along Route 6. It is important to note that there are projects that are yet to be planned that are vital to safety on Route 6, such as the section through Eastham. The Town of Eastham has not had a Transportation Improvement Program (TIP) project in many years. While funding is limited each year, getting a project for Route 6 in Eastham is a priority for the region.

Cape Cod Commission staff will continue to advocate and work with MassDOT and all Route 6 communities to improve safety for the region. Staff will further identify issues or locations that need a more detailed study as part of future Unified Planning Work Program (UPWP) studies.

Introduction

Route 6 in Barnstable County is a roughly 70-mile corridor, varying from a village center to a limited access highway, to a 4-lane undivided highway. Route 6 is mainly owned and maintained by the Massachusetts Department of Transportation (MassDOT), however, a segment in Bourne and Provincetown are owned by the municipalities. Route 6 crosses the Cape Cod Canal via the Sagamore Bridge, which is owned and maintained by the United States Army Corp of Engineers. From the Sagamore Bridge to Exit 78 (Old Exit 9), Route 6 is a 4-lane, median divided limited access highway with a speed limit of 55 miles per hour (MPH). There are eight interchanges throughout this section providing direct access to the towns of Sandwich, Barnstable, Yarmouth, and Dennis. After Exit 78 in Dennis, Route 6 becomes a two-lane, median divided, limited access highway through the Eastham-Orleans Rotary with a speed limit of 50-MPH. There are three interchanges along this section providing direct access to Harwich, Brewster, and Orleans. From the Eastham-Orleans Rotary, Route 6 becomes a 4-lane undivided highway through Eastham, where the lanes drop to one lane per direction. The speed limit through Eastham is 40-MPH. The two lane, undivided section of Route 6 remains through North Truro where it becomes a 4-lane median divided highway until the routes end at Province Lands Road in Provincetown (45-50 MPH).

The goal of the study is to analyze the recent crash history of the roadway, examine the recently completed planning studies and their recommended improvements for Route 6, and to identify the recent and future construction investments for Route 6. The compilation of these materials will help MassDOT and others prioritize potential improvement projects for Route 6 in the near and further future.

Crash Analysis

Based on data available from the MassDOT Crash [IMPACT Tool](#), staff conducted an analysis of crashes that occurred on Route 6 from 2010-2021. According to the available data, it is important to note, that, at the time of this report, 2020 and 2021 crash data is considered “Open”, meaning that the data is not finalized, and minor changes to the data could occur.

Figure 1 below summarizes the crash data by total crashes, the crash severity [fatal, serious injury, property damage only (PDO), or not reported], and the percentage of serious injury/fatal crashes.

	Total crashes	Fatal Crashes	Non-Fatal Injury Crashes	PDO Crashes	Not Reported Crashes	Percent Injury or Fatal
2010	404	0	130	251	23	32%
2011	413	5	116	280	12	29%
2012	415	5	104	271	35	26%
2013	384	3	117	256	8	31%
2014	385	4	121	257	3	32%
2015	466	2	132	323	9	29%
2016	445	0	133	306	6	30%
2017	401	2	113	281	5	29%
2018	270	0	71	193	6	26%
2019	263	0	63	196	4	24%
2020	239	1	61	176	1	26%
2021	203	1	53	146	3	27%
Total	4288	23	1214	2936	115	29%

Table 1: Crash Info by Year

FATAL CRASHES

From 2010-2021 there were 23 fatal crashes on Route 6 in Barnstable County, fortunately yearly totals have been trending downwards since 2014. Overall, that downward trend is being felt in total crashes, not just on Route 6, but across Cape Cod. Safer roadways, advanced vehicle technology, and enhanced enforcement have all played a role in the reduction of crashes in the region.

A deeper dive into the fatal crashes on Route 6 are detailed below. The Town of Eastham has experienced the highest total of fatal crashes (on Route 6) within its boundaries since 2010, with a total five (5). Sandwich follows Eastham with four (4) fatal crashes. Of the 23 fatal crashes that occurred on Route 6, five of them involved a non-motorist (3 pedestrian, 1 bicyclist, 1 unknown), and were in the towns of Eastham (two), Provincetown and Yarmouth (two).

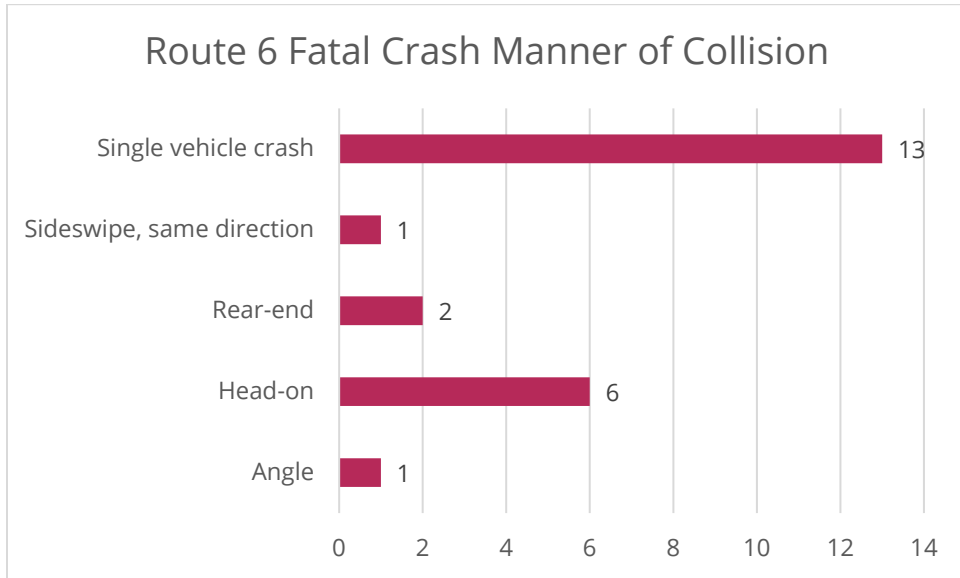


Figure 1: Fatal Crashes by Manner of Collision

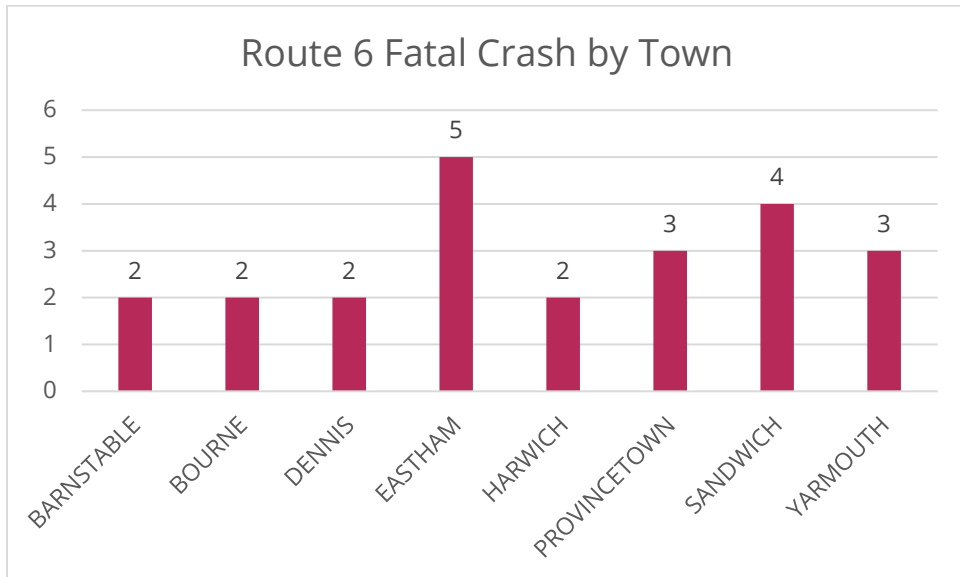


Figure 2: Fatal Crashes by Town

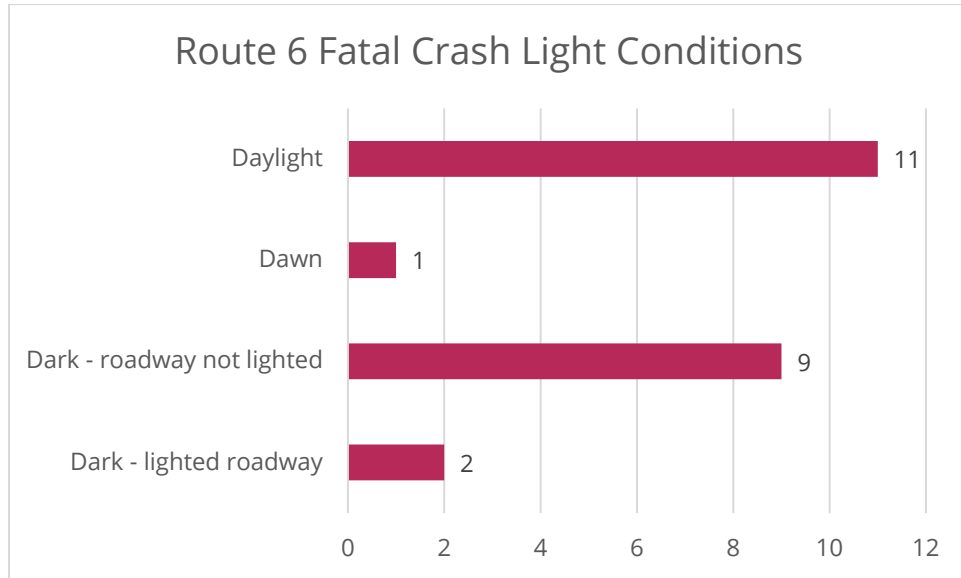


Figure 3: Fatal Crashes by Light Conditions

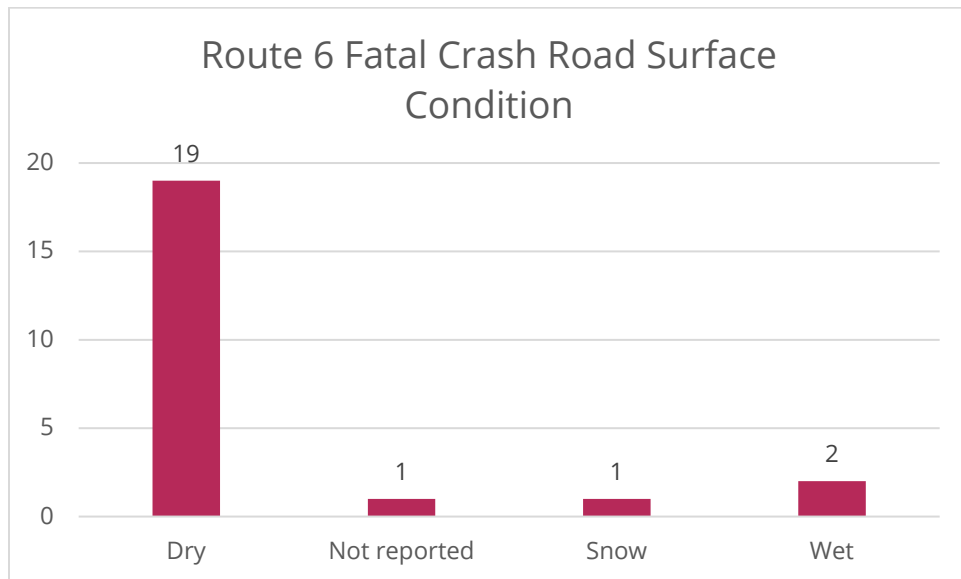


Figure 4: Fatal Crashes by Road Conditions

NON-FATAL INJURY CRASHES

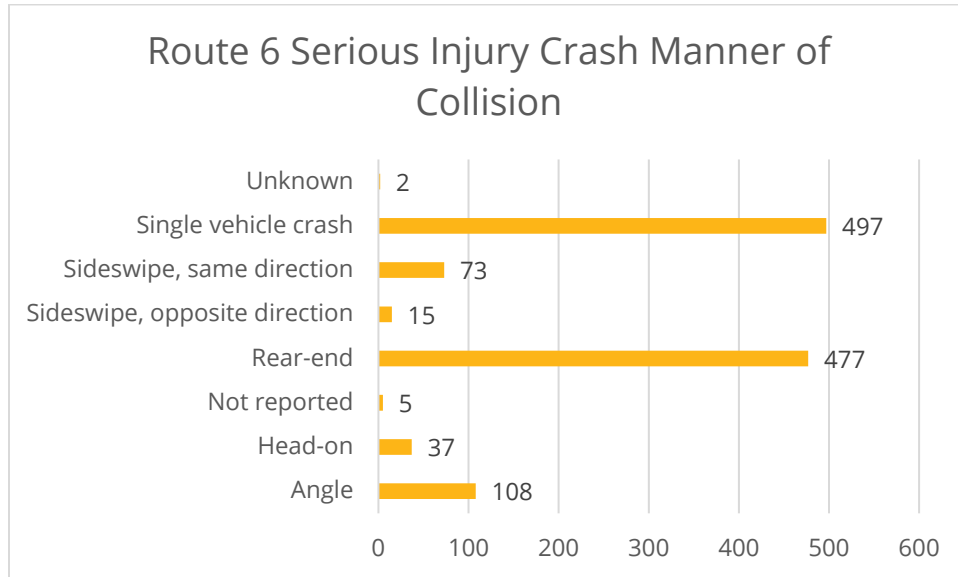


Figure 5: Injury Crashes by Manner of Collision

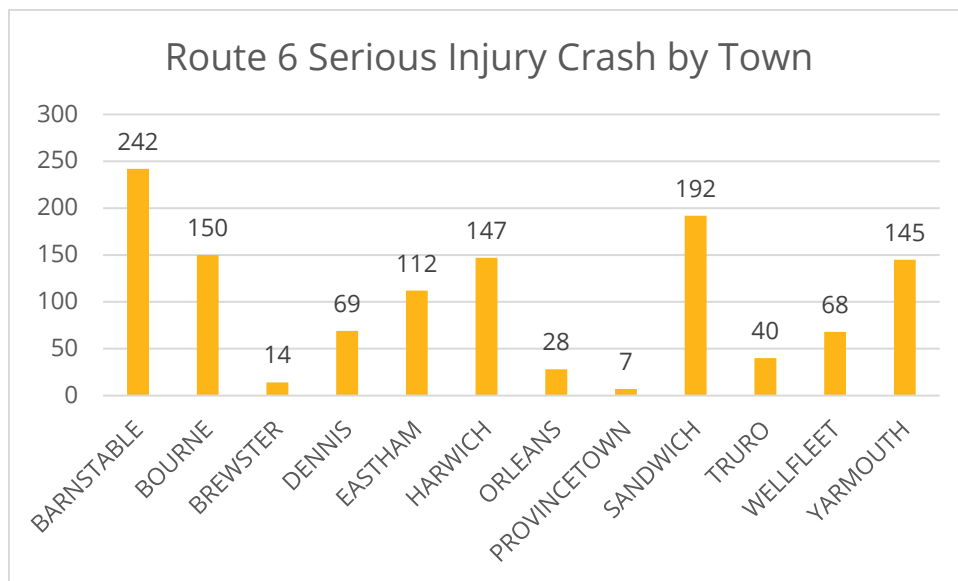


Figure 6: Injury Crashes by Town

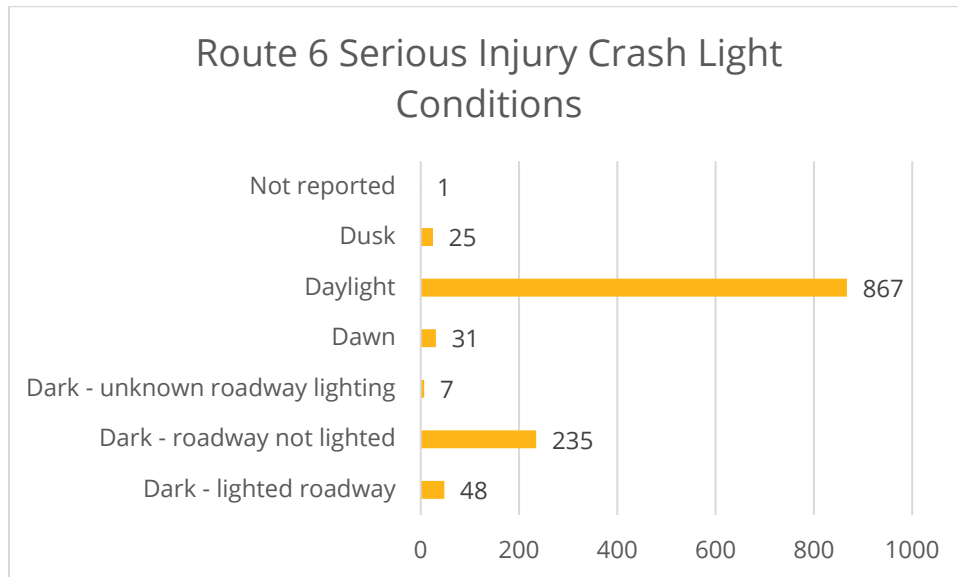


Figure 7: Injury Crashes by Light Conditions

PROPERTY DAMAGE ONLY (PDO) CRASHES

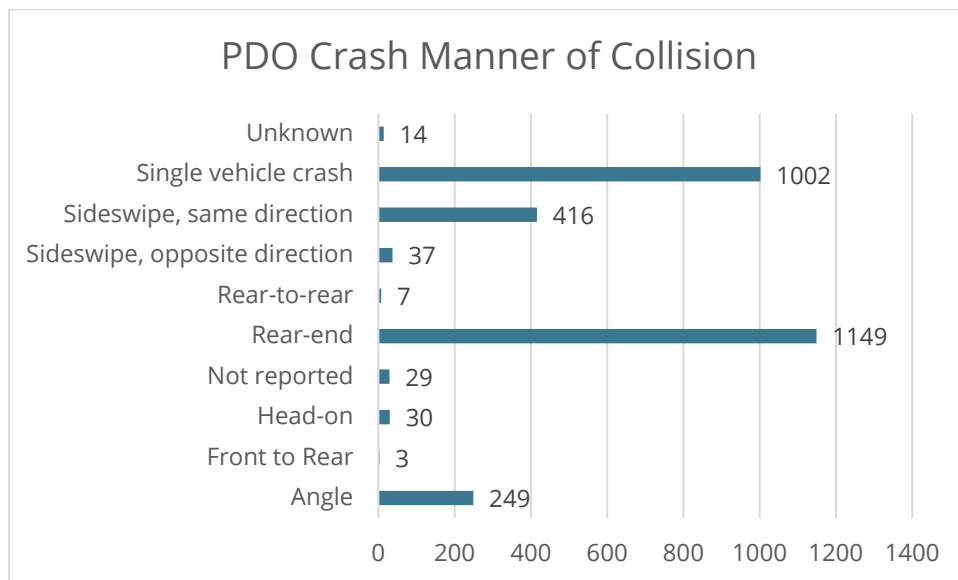


Figure 8: PDO Crashes by Manner of Collision

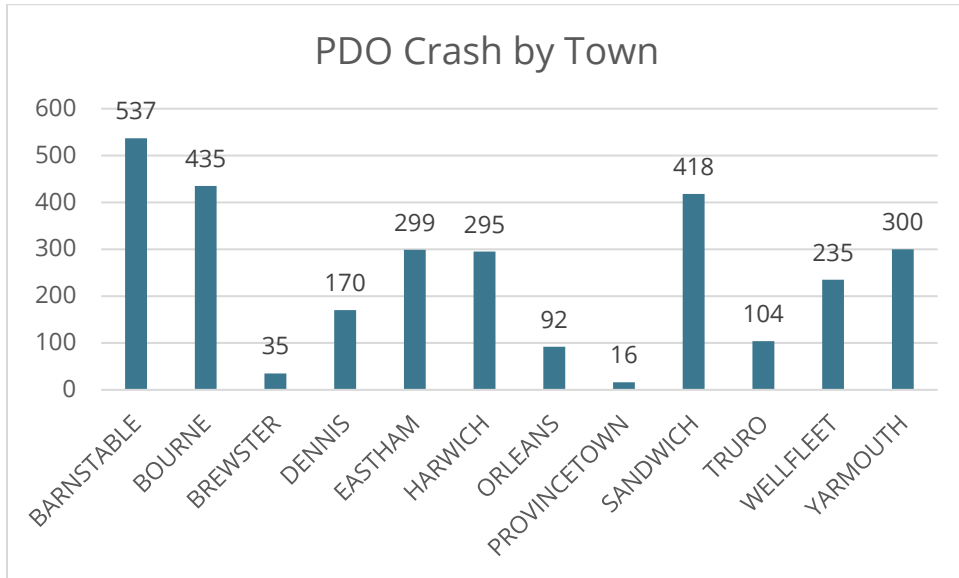


Figure 9: PDO Crashes by Town

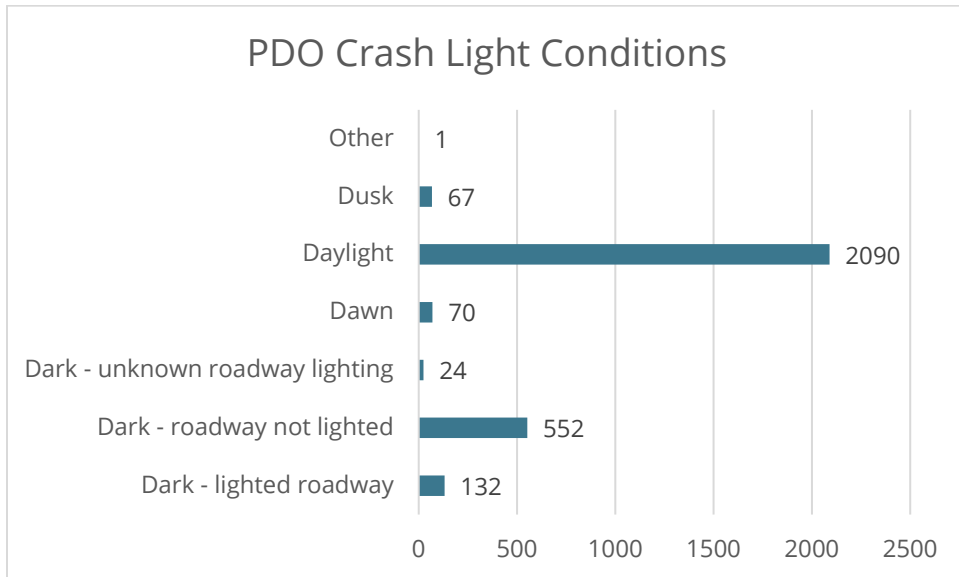


Figure 10: PDO Crashes by Light Conditions

Previous Studies

Commission staff and other organizations have invested resources in previous years to take a more detailed look at Route 6 and some of its unique safety challenges. Some projects (Route 6 Safety: Shoulder and Ramp Design) encompass several Cape subregions in the study while others (Route 6 Truro-Provincetown Bike Lane Extension Study) only include one subregion, while others (Town of Wellfleet Road Safety Audit Route 6 at Main Street) only highlight a singular location in an individual town. Each study is briefly described and with its recommendations.

ROUTE 6 SAFETY: SHOULDER AND RAMP DESIGN

Completed in 2019 by the Cape Cod Commission, the scope of this project was to examine the length of the interchange acceleration and deceleration lanes and width of shoulders on Route 6 (specifically between the Sagamore Bridge and the Orleans Rotary). The study looked at federal standards for the appropriate length of acceleration and deceleration lanes and compared that to the existing lengths of Route 6 ramps. Analysis indicated that the majority of Route 6 acceleration and deceleration lanes are far below the federal standards. Staff also identified areas of Route 6 where paved shoulders exist. The purpose was to then analyze how many crashes and the severity of crashes at each interchange and crashes that occurred where the highway lacked shoulders. The project was presented at two public meetings to solicit feedback on potential recommendations to be included in the report. The recommendations from the final report are as follows:

- Conduct additional outreach if any potential projects are to move forward
- Extend acceleration and deceleration lane lengths where feasible as part of any planned repaving projects
- Consider targeted safety project(s) to extend acceleration and deceleration lane lengths at high priority locations: Exit 59 (Old Exit 2), Exit 61 (Old Exit 3), Exit 63 (Old Exit 4), Exit 65 (Old Exit 5) on ramps, Exit 82 (Old Exit 10), and Exit 85 (Old Exit 11).
- With additional public outreach, consider adding paved shoulders as part of any planned repaving projects (High Priority locations include: Sagamore Bridge-Exit 68 (Old Exit 6) eastbound, Sagamore Bridge-Exit 68 westbound, and Exit 68 to Exit 78 (Old Exit 9) westbound.

A link to the full report can be found [here](#).¹

¹ www.capecodcommission.org/Route6RampAndShoulderStudy

ROUTE 6 HYDROPLANING CRASH ANALYSIS AND ALTERNATIVES DEVELOPMENT

Completed in 2013 by the Cape Cod Commission, this project sought to identify wet-weather related crashes on Route 6 (limited access portion – Sagamore Bridge to Eastham-Orleans Rotary). The report highlights crash data, existing drainage problems, and best practices for stormwater management on highways. Highlighted in the report were 147 crashes from 2006-2010 that were considered wet-weather related, with 99 of those crashes occurring near the on- and off-ramps. The most frequent crash type was a single vehicle run-off-the road crash.

Several alternatives were identified in conclusion to the existing conditions review; they are listed below:

- Expanded shoulder
- Remove curbing and berms
- Substitute water quality swales for curb and berm approach
- Minimize drainage path lengths
- Consider using greater design flood frequency
- Proper maintenance of roadway and stormwater controls
- Provide adequate pavement cross slope
- Utilize alternate pavement surface textures
- Stormwater controls addressing nutrient reduction

A link to the full report can be found [here](#).²

BARNSTABLE COUNTY HIGH CRASH LOCATIONS (2022)

This study featured a county-wide look at high crash locations throughout the region. While no recommendations were offered as a result of this report, it did provide insight to which intersections on Cape Cod pose the greatest safety challenges.

A unique component to the report included looking at Route 6 interchanges separately from the rest of Cape Cod intersections and only ranking them amongst themselves. The below chart shows the Route 6 interchanges ranked by number of crashes from 2018-2020.

² www.capecodcommission.org/Route6Hydroplaining

Rank Crashes	Town	Old Exit Number	New Exit Number	Crash Count
1	Dennis	Exit 9A/9B	Exit 78 - Route 6 at Route 134	86
2	Barnstable	Exit 6	Exit 68 - Route 6 at Route 132	80
3	Yarmouth	Exit 7	Exit 72 - Route 6 at Willow Street	77
4	Harwich	Exit 10	Exit 82 - Route 6 at Route 124	67
5	Yarmouth	Exit 8	Exit 75 - Route 6 at Station Ave/Union Street	64
6	Bourne	Exit 1A	Exit 1A - Route 6 at Scenic Highway	53
7	Barnstable	Exit 5	Exit 65 - Route 6 at Route 149	50
8	Orleans	Exit 12	Exit 89 - Route 6 at Route 6A	40
9	Falmouth		Route 28 at Nathan Ellis Highway	38
10	Sandwich	Exit 3	Exit 61 - Route 6 at Quaker Meeting House Road	34
11	Harwich	Exit 11	Exit 85 - Route 6 at Route 137	33
12	Bourne	Exit 1C	Exit 55 - Route 6 at Mid-Cape Connector	28
13	Sandwich	Exit 4	Exit 63 - Route 6 at Chase Road	24
14	Sandwich	Exit 2	Exit 59 - Route 6 at Route 130	23
15	Falmouth		Route 28 at Thomas B Landers Road	8
16	Falmouth		Route 28 at Brick Kiln Road	3
17	Truro		Route 6 at Highland Road	2

Table 11: Interchange Crash Totals (2018-2020)

It is important to note that crashes at these interchanges included crashes on Route 6 as well as the intersecting street at the on- and off-ramps.

A link to the full report and interactive map of high crash locations on the Cape Cod Crash Dashboard can be found at www.capecodcommission.org/safety.

MASSDOT CAPE COD CANAL TRANSPORTATION STUDY

The purpose of the Cape Cod Canal Transportation Study, completed by MassDOT, was to identify existing and future multimodal transportation deficiencies and needs around the Cape Cod Canal area.

According to the project website, the study strived to develop and analyze a range of transportation alternatives in Bourne and Sandwich. These include highway, interchange, and non-highway improvements, as well as options and design elements that improve access and safety for all modes. Additionally, this study includes significant coordination with the US Army Corps of Engineers (USACE) on its study of the Bourne and Sagamore Bridges, which are under its stewardship and jurisdiction.

The assumption was made during this study that the USACE would recommend replacing both the Bourne and Sagamore Bridges, which has since been confirmed. Many of the recommendations from this report encompass Route 6 on both sides of the Cape Cod Canal. Those recommendations are included below:

- New Scenic Highway (Route 6) to Route 25 westbound ramp
- Route 6 Exit 55 (Old Exit 1C) Relocation
- Belmont Circle (3-Leg Roundabout plus Signalized Intersection)
- Belmont Circle with Route 25 Eastbound Fly-over
- Replacement of the Bourne and Sagamore Bridge (Sagamore Bridge is a key connection for Route 6)
- Additional Route 6 Eastbound Travel Lane from Exit 1A to Exit 59 (Old Exit 2)
- Intersection Improvements at Route 6 and Cranberry Highway
- Park and Ride Lot construction with multimodal transportation center at Route 6 Exit 59 (Route 130 – Sandwich)
- Reconstruction of Sagamore Bridge approaches
- Signal timing improvements at Scenic Highway/Nightingale Road
- Improve bicycle/pedestrian connections to/from local roadways over the Canal as Sagamore and Bourne Bridges

A link to the final report website is [here](#)³.

ROUTE 6 OUTER CAPE COMPLETE STREETS STUDY

Completed by Michael Baker International, on behalf of MassDOT, the Route 6 Outer Cape Complete Streets Study is a comprehensive study to provide recommendations which will improve bicycling and walking conditions along Route 6 through Eastham, Wellfleet, and Truro. Completed in 2019, the project broke Route 6 up into four segments: Eastham (4-lane undivided highway), Wellfleet (2-lane undivided highway), Truro South (2-lane undivided highway), and Truro North (4-lane undivided highway). The recommendations were broken out by segment and are listed below:

Eastham

- Construct sidewalks on both sides of Route 6
- Implement safety improvements in the corridor

³ <https://www.mass.gov/lists/cape-cod-canal-study-documents#cape-cod-canal-transportation-study:-final-report>

- Add bicycle accommodations
- Creation of bus turnouts, installation of crosswalks including ADA accommodations, and additional improvements at:
 - Eastham Town Hall
 - Four Points Sheraton
 - Village Green General Store
- Convert Orleans/Eastham Rotary to a roundabout
- Intersection improvements:
 - Governor Prence/Route 6
 - Brackett Road/Route 6
 - Other intersections would benefit from crosswalk and ADA compliant ramps
 - Road diet – Reduce Route 6 to 3-lane (northbound, southbound, two-way left turn lane) with bicycle lanes on both sides and sidewalks on both sides.

Wellfleet

- Address congestion at merge area near Wellfleet/Eastham Town Line (pavement markings, signage)
- Correct signage indicating "disappearing lane" at Marconi Beach Road/Route 6 intersection
- Reconstruct intersections to consolidate Cemetery & Old Wharf Rd at Route 6 in Wellfleet
- Pedestrian accommodation at Route 6/Lawrence Road intersection
- Cape Cod Rail Trail (CCRT) Connectors:
 - Wellfleet Bay Wildlife Sanctuary
 - Springbrook Road
- Route 6 Bike/Ped Safety and Crossing Improvements
 - LeCount Hollow Rd (splitter island modifications, signalize/roundabout)
 - W Road
 - Main Street
 - Cove Road
- Cove Road access managements improvements
- From Eastham Town Line to south of Main Street, alter cross section to 5-foot-wide bike lanes on both sides with 3-foot buffers, and 11-foot travel lanes in each direction with a sidewalk along the west side of Route 6

- From Main Street to Truro Town Line the same cross section is proposed, with the addition of the Cape Cod Rail Trail extension buffered from Route 6 on the east side of the corridor.
- Creation of bus turnouts, installation of crosswalks including ADA accommodations, and additional improvements at:
 - Maurice's Market
 - Marconi Beach/South Wellfleet Cape Cod National Seashore Marconi Site
 - Blackfish Variety (Main Street)
 - Wellfleet Dunkin' Donuts

Truro South

- Cross section to mirror Wellfleet with 5-foot-wide bike lanes on both sides with 3-foot buffers, and 11-foot travel lanes in each direction with a sidewalk along the west side of Route 6 and the Cape Cod Rail Trail extension buffered on the east side of the corridor.
- Pedestrian accommodations at all intersections along the corridor
- Tighten curb radii at several intersections along the corridor
- Improved geometry at the Route 6/Whitmanville Road intersection and bike/pedestrian and transit stop upgrades
- Crosswalk improvements at Truro Central School
- Improve bike safety, create pedestrian enhancements, and reduce vehicle speeds at Route 6/Shore Road

Truro North

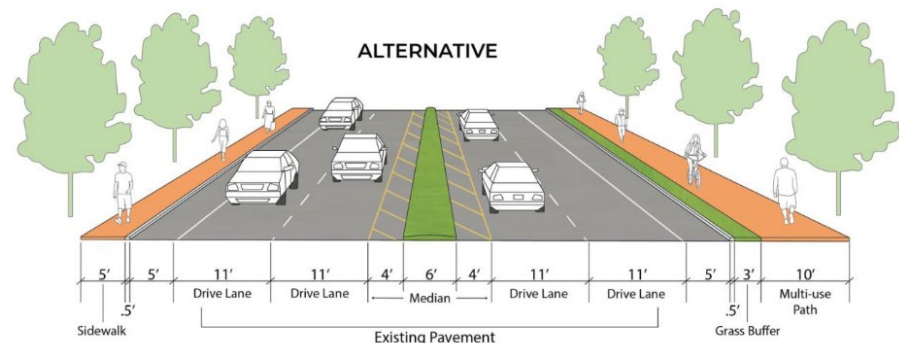
- Cross section to mirror Truro South with 5-foot-wide bike lanes on both sides with 3-foot buffers, and 11-foot travel lanes in each direction with a sidewalk along the west side of Route 6 and the Cape Cod Rail Trail extension buffered on the east side of the corridor. There would be an additional 14-feet of unused, existing, pavement.
- Tighten curb radii at Pilgrim Heights Road and South Hollow Road
- Improve Stott's Crossing/High Head Road intersection
- Improve Head of the Meadow/Standish Way intersection

ROUTE 6 EASTHAM CORRIDOR STUDY

Completed by the Cape Cod Commission, the Route 6 Eastham Corridor Study was a focused planning level, preferred concept development plan, for the 4-lane undivided section of Route 6 in North Eastham. The study focused on the section of roadway from Old Orchard Road to the Wellfleet Town Line. The study examined existing conditions and was guided by recommendations heard at a public meeting in 2019 hosted by the Commission and Town of Eastham staff.

The study ended with a conceptual level plan for a preferred cross section for this portion of roadway through North Eastham. The recommendations for this study are outlined below:

- Raised median on Route 6 between Massasoit Road to T-Time Property
- Shared use path on the east side of Route 6 from Massasoit Road to T-Time Property
- Two-lane roundabout at the intersection of Route 6 and Massasoit Road
- Two-lane roundabout at the intersection of Route 6 and T-Time Driveway
- Signalized pedestrian crossing at MainStreet Mercantile/Hole In One Driveways (with turn pockets to allow for vehicles to turn into businesses)
- Bus pull-offs at existing bus stops north and south of Brackett Road intersection



A link to the full report can be found [here](#).⁴

LIVING STREETS – ROUTE 6 EASTHAM-SOUTH WELLFLEET

Cape Cod Commission staff worked on the Living Streets study with the objective of improving safety, reducing congestion and accommodating pedestrians, bicyclists, and motorists in Eastham and South Wellfleet. The study area included Route 6 from Brackett Road in Eastham to Village Lane in Wellfleet. Commission staff presented at a public workshop to solicit feedback during the study. After an existing condition review of the cross section, land use and zoning, traffic volumes, crash history, intersection geometry and traffic operations, and transit infrastructure and route, staff

⁴ www.capecodcommission.org/EasthamRoute6CorridorStudy

prepared potential alternatives for the corridor. The alternative evaluation table is provided from the report below:

Potential Enhancement	Time Frame	Cost	Expected Benefit		
			Safety	Congestion	Bike/Ped
1. Brackett Road at Route 6					
A. Retiming	Short	Low	Medium	Medium	Low
B. Left Turn Lanes	Medium	Medium	High	Medium	Low
C. Realignment	Long	High	Medium	Low	Low
2. Oak Road at Route 6					
A. Restrict left turns with signage and enforcement	Short	Low	High	Medium	Low
B. Median to prohibit left turns	Long	High	High	High	Medium
3. Curb Cuts					
A. Restrict turns	Short	Low	Medium	Low	Low
4. Nauset Road					
A. Pedestrian Phase Signal	Medium	Medium	Medium	Low	High
5. Aspinet Road					
A. Repeater light	Medium	Medium	Low	Medium	Low
B. Realignment with Nauset Road	Long	High	Medium	Low	Low
6. Wellfleet Drive-in					
A. Left Turn Lane and move merge back	Long	Medium	Medium	High	Low
7. CCRTA Bus Stops					
A. Move Bus Stop	Short	Low	Low	Low	Medium
B. Bus Pull Out	Medium	Medium	Medium	Medium	Low
8. Entire Corridor					
A. Sidewalk on East Side	Medium	Medium	High	Medium	High

A link to the report is included [here](#)⁵.

WELLFLEET: ROUTE 6 SAFETY STUDY

The focus for Cape Cod Commission staff for this study was to examine the Route 6 corridor in Wellfleet, with a goal to improve safety and traffic flow for all users. The study included identification of safety issues, existing traffic flow challenges, an alternatives evaluation, and to build consensus on a preferred alternative for each location examined. The intersections of Route 6 at Main Street, LeCount Hollow Road, Cove Road, and the lane drop at the Eastham/Wellfleet Town Line were the primary focus of the study.

After a review of existing conditions staff created a list of potential improvements to improve these locations. The summary of recommendations is included in the following chart.

⁵ www.capecodcommission.org/Route6EasthamLivingStreets

LeCount Hollow Road	Cove Road
<ul style="list-style-type: none"> • Discuss removal of the utility poles on the splitter island with the utility company. • Consider a breakaway Stop Sign on the splitter island to increase visibility to motorists. • Evaluate alternative parking and delivery options for the PB Bistro. • Consider the installation of a traffic signal or roundabout understanding that the signal warrants are met based on the June 21, 2012 traffic volumes, but such a treatment is not necessitated in the offseason. • Consider possible realignment of the old Route 6 layout to add separation from the main intersection. • Evaluate bicycle and pedestrian accommodations relative to such demands 	<ul style="list-style-type: none"> • Review School Bus stopping location and procedure and consider a "Bus Stop Ahead" sign or other treatments to alert they may need to stop. • Provide Access Management to reduce the number of conflict points and avoid driver confusion: <ul style="list-style-type: none"> • Install a new stop sign at the end of Cove Road • Close northern Cove's Corner / Rt. 6 driveway • Mark turn pocket for Cove Road left turns instead of long turn lane • Restrict left turns from southern Cove's Corner / Rt. 6 driveway • Align Cove's Corner / Cove Road driveway with the parking lot flow lines • Mark turn pocket for Cove's Corner left turns instead of long turn lane (optional) • If issues persist, consider closing both Cove's Corner driveways onto Rt. 6 and installing a signal or roundabout at the Cove Road and Rt. 6 intersection • Evaluate bicycle and pedestrian accommodations relative to such demands
Main Street	Merge Area Near Eastham Town Line
<ul style="list-style-type: none"> • Apply vegetative management and access management practices. Reduce visual clutter approaching the intersection. Complete signal head LED retrofit of the intersection. • Consider moving Rt. 6 NB left turn lane stop bar back to improve sightlines for Rt. 6 SB left turning vehicles • Consider Rt. 6 SB left turn restrictions or a left turn arrow • Evaluate bicycle and pedestrian accommodations relative to such demands • Consider complete reconstruction of intersection to accommodate safe turning movements and bicycle and pedestrian needs 	<ul style="list-style-type: none"> • Add/ update signage indicating lane drop • Add pavement markings to indicate lane drop • Consider moving Route 6 northbound merge back into Eastham and dedicating the left lane to vehicles turning left in Wellfleet Drive-In Theatre with additional signage

A link to the final report can be found [here](#)⁶.

OUTER CAPE BICYCLE AND PEDESTRIAN MASTER PLAN

The purpose of the Outer Cape Bicycle and Pedestrian Master Plan (OCBPMP) was to create a framework for an interconnected bicycle and pedestrian network linking the towns of Wellfleet, Truro, and Provincetown with the Cape Cod Rail Trail (CCRT), the Cape Cod National Seashore (CCNS), and other destinations within the three communities. The plan provides a recommended primary route for extending the CCRT from its terminus in South Wellfleet to Truro and Provincetown, as well as a list of secondary routes within each community that connect to popular destinations.

⁶ www.capecodcommission.org/Route6SafetyWellfleet

The recommended “Primary Route” takes the form of a separated multi-use path within the Route 6 right-of-way for much of its length in an effort to accommodate the greatest variety of users and to provide a direct route through the region with minimal impact to natural and cultural resources. It also provides a multi-use path along segments of currently unpaved railroad bed in South Wellfleet, owned by the Massachusetts Department of Conservation and Recreation (DCR), and in Provincetown, owned by the Town of Provincetown. The Primary Route includes both interim and long-term segments in South Truro, North Truro, and Provincetown, acknowledging the complexity and cost of implementing a multi-use path along Route 6 and the existence of other viable alternatives on local roads and paths. In these areas, where interim Primary Route segments are proposed along local roads with limited traffic, the route takes the form of paved shoulders and, in some cases, uses existing road space with “share-the-road” pavement markings and signage. The report discusses design features along the Primary Route, including safety improvements at Route 6 crossings, and cross sections to illustrate how the multi-use path can be accommodated within the Route 6 right-of-way.

The final report provides a narrative on the various segments of the Primary Route along Route 6 in the Recommendations section. A link to the final report can be found [here](#)⁷.

ROUTE 6 TRURO AND PROVINCETOWN BICYCLE LANE EXTENSION STUDY

At the time of this report, MassDOT had recently installed bike lane symbols, new striping, and associated bicycle signage on Route 6 from Lawrenceville Road in Wellfleet to South Highland Road in North Truro. The studies goal was to examine options for extending bicycle accommodations into the 4-lane section of Route 6 in North Truro and Provincetown. The goal is to have a separated multi-use path in the Outer Cape, but on-road accommodations are needed until an alternate route is a reality.

Using public feedback from outreach meetings, Commission staff worked to recommend three alternatives for varying portions of the Route 6 corridor addressed in this study and concluded that more public outreach would be needed to decide on a preferred alternative. Recommendations are included below:

- Alternative 1: includes 6 feet of widening on each side of Route 6 to create 1-way bike lanes in each direction. The bicycle lanes would be located adjacent to the 2-foot shoulder in order to allow for a small amount of buffer space away from motor vehicles as well as to avoid the need for relocation of existing roadway storm drains.

⁷ www.capecodcommission.org/OCBPMP_Final

- Alternative 2: includes the creation of a 10-foot two-way separated bike lane along the westbound side of Route 6. The bicycle lanes would be located adjacent to a 4-foot buffer area that would include flexible posts to help guide motorists to stay in their lane. To avoid the need for new pavement construction, the space for creation of the separated bike lane would necessitate the removal of the westbound travel lane.
- Alternative 3: includes the creation of 1-way separated bike lanes along each side of Route 6. The bicycle lanes would be located adjacent to a 6-foot buffer area that could include flexible posts that would help guide motorists to stay in their lane. To avoid the need for new pavement construction, the space for creation of the separated bike lane would necessitate the removal of a travel lane in each direction
- Continue to support the long-range vision of the Outer Cape Bicycle and Pedestrian Master Plan to provide a separated multi-use path on Route 6.
- Conduct more investigation on road diet pilot projects across the Commonwealth. This information would be useful to help communities understand how lane removal projects have worked elsewhere.
- Town bicycle committees should use this study to seek input from community members on their preferences for bike lane extension.
- Obtain more traffic data, particularly at peak season times. While the project team believes a road diet is technically feasible, more summer traffic counts are needed to determine how the road would function operationally at the busiest traffic times.
- Consider a pilot project to implement Alternative 2 or 3 (as these alternatives do not require new pavement construction). The duration of the pilot project could be limited to when the Outer Cape Bicycle and Pedestrian Master Plan preferred alternative (Route 6 multi use path) is constructed.

A link to the final report can be found [here](#)⁸.

ROADWAY SAFETY AUDITS

The Federal Highway Administration (FHWA) defines a Road Safety Audit (RSA) as the formal safety examination of an existing or future road or intersection by an independent, multidisciplinary team. The purpose of an RSA is to identify potential safety issues and possible opportunities for safety improvements considering all roadway users. Over recent years, there have been several RSAs that have taken place along Route 6 or at intersections along the roadway. Route 6 locations are located below with links to the final reports.

⁸ www.capecodcommission.org/Route6TruroProvincetownBikeLaneExtensionStudy

- Bourne - [Route 6 \(Scenic Highway\)](#) - 2014
- Sandwich - [Major Highway Median Cross-Over Crashes \(Route 6 Sandwich\)](#) - 2008
- Barnstable - [Meetinghouse Way \(Route 149\)/Route 6 Ramps](#) - 2010
- Yarmouth - [Union Street – Station Avenue at U.S. Route 6 Ramps](#) - 2011
- [Orleans/Eastham Rotary & Route 6/Van Dale Avenue Intersection](#) - 2019
- Eastham - [Route 6 and Governor Prence Road Intersection](#) - 2012
- Eastham - [Route 6 at Nauset Road/Wampum Lane](#) - 2017
- Wellfleet - [Route 6 at Main Street \(Wellfleet\)](#) - 2016

While conducting these RSAs, the team identifies issues including speed, road alignment/cross section, intersections, auxiliary lanes, clear zones and crash barriers, bridges and culverts, pavement, lighting, signage, traffic signals, pavement marking and delineation, and weather/animal impacts. A list of potential safety enhancements are outlines based on cost ad time frame in each report, as well as the ownership for each potential project.

Route 6 Investments

Every year the region sees numerous construction projects along our transportation network with the intention of improving our current system for all roadway users. Route 6 has been a key focus for a lot of these construction projects. There are numerous projects that have been completed in recent years, with more projects on the horizon. Some of these construction projects are prioritized and funded by MassDOT. Other construction projects have been and prioritized by the Cape Cod Metropolitan Planning Organization (CCMPO), and many of these projects are advanced by the municipalities. Outlined in this section are the recently completed and future roadway investments on Route 6.

BOURNE

Belmont Circle Improvements (Under Construction)

At the time of this report, the Belmont Circle traffic and multi-modal project is underway. This project is intended as an interim improvement to address safety and congestion issues at Belmont Circle ahead of a long-term reconstruction project anticipated with the Canal Bridges replacement. Proposed improvements include upgraded pavement markings and signs, as well as improved pedestrian and bicycle accommodations through the installation of sidewalks, pedestrian hybrid beacons and shared use paths.

Scenic Highway Median Installation (Under Design)

Funded for 2024, the median installation on Route 6 (Scenic Highway) is a regionally prioritized project that has been placed on the State Transportation Improvement Program (STIP). This project consists of installing a median and wider shoulders to the existing four travel lane cross section providing separation between the eastbound and westbound opposing directions. The project is also slated to include the construction of a shared use path.

Canal Area Transportation Improvements (Future)

While no funding is yet associated with the recommended replacement of the Bourne and Sagamore (Route 6) Bridges, it is worth noting that this project is critical to the region and to the transportation system for Cape Cod. Elements of this project are outline in the “Previous Studies” section.

Route 6 Resurfacing and Related Work (Completed)

Work on this project included roadway resurfacing (mill and overlay) of the existing roadway. Drainage improvements, bridge work, safety improvements and associated work were also included. The project extended along Route 6 from the South side of the Sagamore Bridge Easterly to the Sandwich/Barnstable town line, a total length of approximately 8.5 miles. This project was completed in 2013.

Route 6 & 28 Bypass Road Repaving and Related Work (Completed)

The purpose of this project was to resurface the Route 6 & 28 Bypass Road, from Memorial Circle near the Wareham Town Line to Belmont Circle. Other work included minor drainage improvements and new pavement markings. This project was completed in 2018.

Cohasset Narrows Bridge Replacement (Completed)

This project has been completed and included the demolition and replacement of the William H. Dalton Memorial Bridge carrying Route 6/Route 28 (the Cranberry Highway) over Cohasset Narrows at the Bourne-Wareham Town Line. The project replaced the existing structure with a new 350 foot long 3-span bridge and a new bridge deck that is 70-feet 9-inches wide accommodating the 56-foot roadway and two 6-foot-wide sidewalks protected with bridge railing. The construction for this project was completed in 2015.

Bridge Camera & Equipment Installation (Completed)

Completed in 2011, the project includes the installation of cameras and associated equipment to provide real time data at the Sagamore and Bourne Bridges. Traffic counting equipment is installed on the bridges as well and has been tracked annually by MassDOT and Cape Cod Commission staff.

SANDWICH

Route 6 Resurfacing and Related Work (Completed)

Work on this project included roadway resurfacing (mill and overlay) of the existing roadway. Drainage improvements, bridge work, safety improvements and associated work were also included. The project extended along Route 6 from the south side of the Sagamore Bridge easterly to the Sandwich/Barnstable town line, a total length of approximately 8.5 miles. This project was completed in 2013.

Cable Barrier Installation (Completed)

Following a number of head on crashes, MassDOT made statewide systematic improvements to reduce the number of head on crashes including on Route 6. This project included the installation of a cable barrier in the median of Route 6 in Sandwich. The total distance of the project was 1.4 miles of cable barrier and was installed at four distinct areas of the roadway. The project was completed in 2012.

Route 6 Ramps/Route 130 Intersection Improvements (Completed)

This project included the installation of new traffic signals at the end of the two ramps for the Route 6/Route 130 interchange in the Town of Sandwich. The work also included roadway resurfacing and box widening to provide for exclusive left turn lanes for vehicles entering Route 6 from Route 130. This project was completed in 2014.

Park and Ride Facility on Route 130 at Route 6 (Under Consideration)

This project is currently in the preliminary design phase and does not have funding yet associated for construction. This project is outlined at a conceptual level in the Cape Cod Canal Transportation Study by MassDOT, and it summarizes that the park and ride could have 100 parking spaces and connect to the future Service Road shared use path that is slated for construction in 2023.

BARNSTABLE

Roundabout Installation Route 6 Ramp at Route 149 (Completed)

Work on this project consisted of installing a roundabout at the intersection of the eastbound exit ramp of Route 6 and Route 149. The work included installing sidewalks, guard rail, bike paths and crosswalks at the intersection. The work also included increasing the length of the deceleration lanes on Route 6 eastbound and westbound. This project was completed in 2012.

Lighting and Landscaping at Route 6 Ramp at Route 149 (Completed)

Work on this project included the installation of landscaping and lighting in and around the roundabout on Route 149 at the Route 6 eastbound ramp. This project was completed in 2017.

Route 6 Bridge Preservation (Under Construction)

This project involved minor rehabilitation to the bridge carrying Route 6 westbound and eastbound over Route 132. The work included removing the bituminous wearing surface on the bridge deck and overlaying with an 1½" latex modified concrete; replacement of the expansion joints at the abutments; replacement of the joint over the pier with a link slab; adding three beam guardrail to the bridge parapet; cleaning (full removal) and painting of the entire existing structural steel as indicated in these contract documents; remove debris off the abutment bridge seats and coat the concrete surfaces, including abutment front face with an epoxy coating; repair concrete deteriorations at the abutments, wingwalls and piers.

There is also an ongoing construction project for the Route 149 bridge over Route 6. Construction began in 2021 and include many elements that bridge preservation project over Route 132 detailed.

Route 6 Resurfacing and Related Work (Under Design)

This project is scheduled for construction in 2025 and includes repaving and other related work on the Barnstable sections of Route 6. The addition of a 10-foot-wide shoulder for the length of the project is being evaluated. The project length is 8.5 miles long. This project is funded through the 2025 Transportation Improvement Program.

Park and Ride Expansion and Improvements at Route 132 (Under Design)

This project is in the preliminary design phase and includes the expansion of parking capacity at the existing Park and Ride facility on Route 132. The project may also include electric vehicle parking spaces and upgrades to bus shelters. The project is funded through the 2024 Transportation Improvement Program.

YARMOUTH

Route 6 Resurfacing and Related Work (Completed)

In 2018 a repaving and related work project was completed. This project repaved Route 6 from a mile east of the Station Avenue interchange through the Route 134 interchange in Dennis.

Completed in 2022 was another Route 6 resurfacing and related work project that consisted of resurfacing (mill/overlay) on Route 6 in Yarmouth from the Barnstable Town Line to the Dennis Town Line. Also included in this project were minor safety and drainage improvements.

Route 6 at Station Ave Intersection Improvements (Under Consideration)

This project is currently unprogrammed for funding but seeks to address the safety challenges at the intersection of the Route 6 ramps at Station Avenue in Yarmouth. A preferred alternative is not yet known, and Commission staff plan to address this project in an upcoming Station Avenue Corridor Planning Study through the 2023 Unified Planning Work Program.

DENNIS

Route 6 Resurfacing and Related Work (Completed)

In 2018 a repaving and related work project was completed. This project repaved Route 6 from a mile east of the Station Avenue interchange through the Route 134 interchange in Dennis.

Completed in 2017 was another Route 6 resurfacing and related work project that consisted of resurfacing (mill/overlay) on Route 6 in Dennis from the Yarmouth Town Line to the Route 124 interchange in Harwich.

HARWICH

Route 6 Resurfacing and Related Work (Completed)

In 2017 a repaving and related work project was completed. This project repaved Route 6 from the Yarmouth/Dennis Town Line to the Route 124 interchange in Harwich.

Completed in 2019 was another Route 6 resurfacing and related work project that consisted of resurfacing (mill/overlay) on Route 6 from Route 124 to west of the Orleans/Eastham Rotary.

BREWSTER

Route 6 Resurfacing and Related Work (Completed)

In 2019 a repaving and related work project was completed. This project repaved Route 6 from the Route 124 interchange in Harwich to west of the Orleans/Eastham Rotary.

Route 6 Bridge Preservation (Under Construction)

Construction began in spring of 2022 for a series of bridge preservation projects on Route 6 in both Brewster and Orleans. The project includes general bridge repairs and painting of these bridges.

ORLEANS

Route 6 Resurfacing and Related Work (Completed)

In 2019 a repaving and related work project was completed. This project repaved Route 6 from the Route 124 interchange in Harwich to west of the Orleans/Eastham Rotary.

Route 6 Bridge Preservation (Under Construction)

Construction began in spring of 2022 for a series of bridge preservation projects in both Brewster and Orleans. The project includes general bridge repairs and painting of these bridges.

Orleans/Eastham Rotary Improvements (Under Design)

This project was recently initiated by MassDOT in 2022 and is in the preliminary design phase. The goal of this project would be to improve safety through a rotary retrofit project, which would include new lines and signs giving motorists a better sense of direction leading into and through the rotary. This project does not yet have any programmed funding associated with it.

EASTHAM

Orleans/Eastham Rotary Improvements (Under Design)

This project was recently initiated by MassDOT in 2022 and is in the preliminary design phase. The goal of this project would be to improve safety through a rotary retrofit project, which would include new lines and signs giving motorists a better sense of direction leading into and through the rotary. This project does not yet have any programmed funding associated with it.

Route 6 Pedestrian Hybrid Beacon (PHB) (Completed)

In 2020, the regions first Pedestrian Hybrid Beacon (PHB) signal was installed on Route 6 in Eastham near the intersection of Governor Prence Road. The PHB signal provides a safe place for bicycles and pedestrians to cross the four-lane section of Route 6 while traffic is temporarily stopped with a red signal indication.

Pedestrian Improvements on Route 6 at Nauset Road (North End) (Completed)

In 2019, pedestrian improvements were installed at the signalized intersection of Route 6 at Nauset Road/Wampum Lane to include a new pedestrian signal phase with pedestrian push buttons and countdown timers. This intersection is close to the Cape Cod Rail Trail and provides an important connection for users trying to access Route 6.

It is worth noting, that, the Town of Eastham has not had a Transportation Improvement Program (TIP) project in many years. Given the numerous fatalities and the challenging landscape of Route 6 through Eastham, there is a desire to move a safety project forward to improve the Route 6 corridor in town.

WELLFLEET

Route 6 Bicycle Accommodation Improvements (Completed)

Work on this project consisted of installing pavement markings and signs for bicycle lanes along Route 6 in the Towns of Truro and Wellfleet. This was the first phase of improvements on Route 6. The project began on Route 6 at the Route 6/Lawrence Road/School Street intersection in Wellfleet and extended to the Route 6/South Highland Road in Truro. In addition, sharrows and signs were installed on South Highland Road in Truro, providing an alternate route for less experienced riders

until a future phase of bicycle lanes are installed on Route 6 to Shore Road. The project also included material to repair eroded shoulders as needed.

Cape Cod Rail Trail Extension (Completed to Wellfleet Hollow Campground)

This project is nearing completion at the time of this report. The project extends the Cape Cod Rail Trail from its previous terminus at Lecount Hollow Road in Wellfleet to Wellfleet Hollows Campground.

Route 6 Pavement Preservation and Related Work (Under Design)

This project is currently programmed through the 2023 STIP and will improve pavement conditions along Route 6 through the Town of Wellfleet. Other features of the project include five-foot bicycle lanes, sidewalk installation, new bus pull-offs and PHB signals at three new mid-block crosswalks.

Route 6 Intersection Improvements at Main Street (Under Design)

This project is currently programmed through the 2023 TIP and intends to provide safety upgrades and improved accommodations for all modes at the intersection of Route 6 at Main Street in Wellfleet. Work on this project includes intersection improvements and the installation of bike lanes and sidewalks. A shared use path is also proposed to be constructed on the eastern side of Route 6 from Lawrence Road to a possible future connection to the Cape Cod Rail Trail. Also included is pavement milling and overlay, drainage upgrades and the installation of new pavement markings and signs.

Shared Use Path Along Route 6 (Under Consideration)

This proposed project is currently under preliminary design by MassDOT this project and does not yet have funding programmed for construction. The basis of this project is to construct a shared use path along the Route 6 in Truro to match the limits of installation of the shared use path to be built as part of the Route 6 and Main Street project Wellfleet in 2023.

TRURO

Bicycle Accommodation Improvements (Completed)

Work on this project consisted of installing pavement markings and signs for bicycle lanes along Route 6 in the Towns of Truro and Wellfleet. This was the first phase of improvements on Route 6. The project began on Route 6 at the Route 6/Lawrence Road/School Street intersection in Wellfleet and extended to the Route 6/South Highland Road in Truro. In addition, sharrows and signs were installed on South Highland Road in Truro, providing an alternate route for less experienced riders until a future phase of bicycle lanes are installed on Route 6 to Shore Road. The project also included material to repair eroded shoulders as needed.

Shared Use Path Along Route 6 (Under Consideration)

This proposed project is currently under preliminary design by MassDOT this project and does not yet have funding programmed for construction. The basis of this project is to construct a shared use path along the Route 6 in Truro to match the limits of installation of the shared use path to be built as part of the Route 6 and Main Street project Wellfleet in 2023.

Bicycle Accommodation Improvements (Completed)

Work on this project consisted of milling and overlay of the roadway, installing pavement markings for bicycle lanes and signage along Route 6 in the Town of Truro from South Highland Road to Shore Road. In addition, improvements were made at the Route 6/Shore Road intersection including modification of the crossing. Also, the Route 6 pavement markings were reconfigured between Shore Road and South Hollow Road, moving lane drop closer to South Hollow Road located to the north.

Route 6 Resurfacing and Related Work (Under Design)

This project is currently programmed through the 2026 TIP and is still currently under design. The project will contain the basic elements of a repaving project from Truro through Provincetown. The project will also include the construction of a sidewalk on the west side of the roadway from the public safety facility to Shore Road. Further bicycle and pedestrian accommodations will be considered as the design progresses.

PROVINCETOWN

Route 6 Resurfacing and Related Work (Under Design)

This project is currently programmed through the 2026 TIP and is still currently under design. The project will contain the basic elements of a repaving project from Truro through Provincetown. The project will also include the construction of a sidewalk on the west side of the roadway from the public safety facility to Shore Road. Further bicycle and pedestrian accommodations will be considered as the design progresses.

Route 6 at Shank Painter Road Improvements (Under Design)

Work on this project consists of complete streets upgrades to Shank Painter Road. Geometric improvements are proposed at the Route 6/Shank Painter Road intersection to convert the intersection into a modern roundabout. Also included in the project is a road diet on Route 6 from Shank Painter Road to the National Seashore at Province Lands Road to convert the Route 6 westbound travel lanes into a shared use path, which will allow for improved bicycle and pedestrian accommodation. The two Route 6 eastbound travel lanes will be converted to provide two-way traffic. This project is funded through the 2024-2025 TIP.



MULTI-TOWN

Route 6 Ramp – Wrong Way Prevention Signage (Completed)

MassDOT made a statewide improvement to increase the signage indicating “Wrong Way” on state interchange ramps. In 2015, “Wrong Way” signs were constructed on all the Route interchanges, more clearly indicating to drivers that they are travelling the wrong way while entering Route 6.

Conclusion

Route 6 on Cape Cod is a major, regional roadway, varying from a village center to a limited access highway, to a 4-lane undivided highway. The ten previous reports and eight RSAs offer key recommendations that fit into the regional goals of Cape Cod, with a primary focus on improving safety for all roadway users. Commission staff will continue to study and provide recommendations along Route 6 at problematic intersections and corridors to ensure safety goals are being met.

The goal of 'Vision Zero' is beginning to take shape as crashes have been trending downward; Commission staff will work with local and state partners to continue that downward trend until there are no fatal crashes on our roadways. Reducing the risk for the most vulnerable roadway users (bicyclists, pedestrians, transit riders, etc.) by creating roadways that accommodate these users while reducing vehicle speeds is key task in this effort.

State and local committees have shown willingness to invest in Route 6 with federal funding through a variety of construction projects that maintain and improve the safety of the roadway. There is still a way to go to improve Route 6 fully; investments along the section through Eastham and Canal area improvements in Bourne and Sandwich are a priority for the region moving forward. There are currently 10 projects that are either under construction or in design with construction funding allocated to the project, but several projects still in need of funding.

Cape Cod Commission staff will continue to advocate and work with MassDOT and the local municipalities to improve safety on Route 6. Staff will further identify issues or locations that need a more detailed study as part of future Unified Planning Work Program (UPWP) studies.