

ROAD SAFETY AUDIT

Route 132 - East of Bearse's Way to West of Airport
Rotary

Town of Barnstable

February 2023

Prepared For:
MassDOT



Town of Barnstable



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Background

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 countermeasures to improve safety considering all roadway users. As part of the Massachusetts Department of Transportation’s (MassDOT) guidelines, RSAs are required for Highway Safety Improvement Program (HSIP) eligible locations and should be conducted prior to the development of the 25 percent design submission or prior to the submission of a Draft Environmental Impact Report (DEIR) for a project of regional impact. This RSA was conducted as part of the Route 132 Improvement project on behalf of the Town of Barnstable, Massachusetts.

The RSA evaluates an approximately 1.2-mile segment of Massachusetts Route 132 (also known as Iyannough Road) in Barnstable, Massachusetts from east of Bearse’s Way to west of Airport Rotary, as shown in Figure 1. This study area approximately corresponds to the segment of Route 132 that is under the jurisdiction of the Town of Barnstable. Most of the roadway segments within the study area are top five percent crash locations for fatal and injury crashes within the Cape Cod Commission (CCC) region, according to the MassDOT Network Screening Crash Based Tool, based on historical data from 2013-2017. In addition, the location along Route 132 between the Courtyard by Marriott hotel (707 Iyannough Road) and Nightingale Lane has been identified by MassDOT as a 2010-2019 top five percent pedestrian crash cluster. Looking at historical data, this same segment was also identified by MassDOT as a 2009-2018 and a 2008-2017 top five percent pedestrian crash cluster. The intersection of Route 132 at Independence Drive/ Enterprise Road was also previously identified as a 2015-2017 top five percent intersection crash cluster.

The RSA evaluates all crash data along Route 132 from east of Bearse’s Way to west of Airport Rotary for the years 2017-2019. In addition, the RSA also evaluates Route 132 at the high crash pedestrian cluster (between the Courtyard by Marriott hotel and Nightingale Lane) for crashes involving a pedestrian or bicyclist and a motor vehicle for the years 2010-2019.

Project Data

A Road Safety Audit was conducted for Route 132 from east of Bearse’s Way to west of Airport Rotary on February 22, 2023. The RSA was held at the Cape Cod Gateway Airport in the Airport Conference Room. A copy of the agenda for the meeting is provided in Appendix A.

The road safety audit team, as shown in Table 1, was comprised of representatives from state, regional, and local agencies, and included a cross-section of the engineering, planning, advocacy groups, emergency responders, and law enforcement fields. A complete list of the contact information of all attendees is included in Appendix B.

Figure 1: Locus Map

Route 132 Road Safety Audit | Barnstable, Massachusetts



Signalized Intersections

- 1 Route 132 at Festival Plaza Driveway
- 2 Route 132 at Independence Drive/Enterprise Road
- 3 Route 132 at Cape Cod Mall/Capetown Plaza

Unsignalized Intersections

- 4 Route 132 at Airport Road
- 5 Route 132 at Nightingale Lane

Table 1: Participating Audit Team Members

Audit Team Member	Agency/Affiliation
Douglas Palmer	Barnstable Police
Troy Perry	Barnstable Police
David Nolan	Cape Cod Commission
Evan Costa	Cape Cod Commission
Fred Valdivia	Cape Cod Regional Transit Authority
Frank Nogueira	Cape Cod Regional Transit Authority
David Webb	Hyannis Fire
Jason Walters	MassDOT District 5 Projects
Samuel Hawkins	MassDOT District 5 Traffic
Kevin Pierre-Noel	MassDOT District 5 Traffic
Michelle Deng	MassDOT Traffic and Safety
Dakota DelSignore	MassDOT Traffic and Safety
Griffin Beaudoin	Town of Barnstable Department of Public Works
Paul Graves	Town of Barnstable Department of Public Works
Matt Duranleau	VHB, Inc.
Abigail Sheusi	VHB, Inc.
Joelle Nutter	VHB, Inc.

Prior to the meeting, VHB distributed a copy of the agenda, safety prompt list, crash diagrams, and crash summary tables of the RSA location to all RSA attendees. Crash diagrams and summary tables for 2017-2019 crash data for the full study area were compiled from state and local police crash reports obtained from MassDOT and the Barnstable Police Department. Crash diagrams and summary tables were also provided for pedestrian and bicycle crashes that occurred on Route 132 at the high crash pedestrian cluster (between the Courtyard by Marriott hotel and Nightingale Lane) from 2010-2019. All attendees were encouraged to visit the study area prior to the meeting.

The meeting began with a brief description of the agenda of the RSA meeting, followed by introductions and a description of the RSA process. During the pre-audit meeting, using the crash materials provided in advance, VHB facilitated the discussion of existing safety issues with all RSA attendees. RSA attendees were encouraged to bring their local knowledge and expertise to the discussion on existing safety and operational issues for the study area. Following the pre-audit meeting, the audit team walked the 1.2-mile corridor of Route 132 from east of Bearse’s Way to west of Airport Rotary and identified additional safety concerns. The team then returned to the conference room and discussed potential solutions, ranging from short-term to long-term, and low cost to high-cost countermeasures for each identified safety concern.

Project Location and Description

The RSA study area includes the 1.2-mile segment of Route 132 from east of Bearse’s Way to west of Airport Rotary. In addition to numerous unsignalized driveways along Route 132, the corridor includes three signalized intersections and two unsignalized intersections:

- Route 132 at Festival Plaza Driveway (signalized)
- Route 132 at Independence Drive/ Enterprise Road (signalized)
- Route 132 at Airport Road (unsignalized)
- Route 132 at Cape Cod Mall Driveway/ Capetown Plaza Driveway (signalized)
- Route 132 at Nightingale Lane (unsignalized)

Route 132

Route 132, also known as Iyannough Road, is a principal arterial that roughly travels in a northwest-southeast orientation (referred to as east-west in this report for simplicity). Route 132 connects Route 6 in the west with Hyannis village and Route 28 in the east and along the corridor provides access to one of the largest shopping regions on Cape Cod. Within the study area between east of Bearse’s Way and west of Airport Rotary, the roadway is under the jurisdiction of the Town of Barnstable. East and west of the study area, the roadway is under the jurisdiction of MassDOT. Within the study area, two lanes of travel are provided in each direction with additional turn lanes provided for turning movements at the intersections with Independence Drive/ Enterprise Road and Cape Cod Mall Driveway/ Capetown Plaza Driveway. Approximate lane width along Route 132 is between 10-11 feet wide and approximate shoulder width along Route 132 is two feet or less.

A median is present along approximately half of the corridor. A scored concrete median is present in the center of the roadway from approximately 350 feet west of Independence Drive to the intersection with Independence Drive/ Enterprise Road. A raised center median is present in the center of the roadway from Independence Drive/ Enterprise Road to the Cape Cod Mall east driveway (a distance of approximately 2,000 feet) and from Nightingale Lane to the Airport Rotary (a distance of approximately 600 feet). No median is present along the other segments of the corridor.

Within the study area, a sidewalk is provided along the south side of the roadway from Bearse’s Way to the Cape Cod Mall east driveway and on the north side of the roadway for short segments in front of individual parcels. Between the Cape Cod Mall east driveway and the Airport Rotary, no sidewalks are provided on either side of the road. Crosswalks are provided across Route 132 at the three signalized intersections. No dedicated bicycle facilities are provided along the corridor and on-street parking is not allowed on either side of Route 132. Land use along the roadway is mainly commercial and there are numerous unsignalized driveways serving the different businesses along the corridor. A statutory speed limit of 30 miles per hour (mph) is posted along the corridor per Massachusetts General Law (MGL) Chapter 90 Section 17 for business districts. Pavement markings along Route 132 in the study area were in good condition as they were restriped in fall 2022 a few months prior to the date the RSA was conducted.

The Cape Cod Regional Transit Authority (CCRTA) operates several bus lines in the study area, including the Barnstable Villager, the Hyannis Crosstown, and the Sealine. The Barnstable Villager line provides stops at several locations along the corridor, including the Cape Cod Gateway Airport, the Cape Cod Mall, the Capetown Plaza, the Festival Plaza, and Stop and Shop. The Hyannis Crosstown line provides stops at the Cape Cod Mall and the Southwind Plaza, and the Sealine provides a stop at the Cape Cod Mall. It should be noted that all the bus stops in the study area are located within individual parcels and no bus stops are located on Route 132 itself.

Route 132 at Festival Plaza Driveway

Route 132 is bisected by the Festival Plaza Driveway from the north to form a three-legged signalized intersection. The Route 132 eastbound leg consists of one through lane and one shared through and left-turn lane and the Route 132 westbound leg consists of one through lane and one shared through and right-turn lane. The southbound leg consists of one exclusive right-turn lane and one exclusive left-turn lane. Pedestrian accommodations at the intersection include a crosswalk along the east leg of the intersection and sidewalks along the south side of Route 132 and the east side of the Festival Plaza Driveway. No dedicated bicycle accommodations are provided at this intersection.

Route 132 at Independence Drive/ Enterprise Road

Route 132 is bisected by Independence Drive from the north and Enterprise Road from the south to form a four-legged signalized intersection. The eastbound and westbound legs of the intersection both provide one left-turn only lane, one through lane, and one shared through and right-turn lane. The northbound leg of the intersection provides one exclusive left-turn lane, one shared through and left-turn lane, and one shared through and right-turn lane. The southbound leg of the intersection provides one exclusive left-turn lane, one shared through and left-turn lane, and one exclusive right-turn lane. Pedestrian accommodations at the intersection include crosswalks across the west and south legs of the intersection and sidewalks along the south side of Route 132 and the west side of Independence Drive and Enterprise Road. No dedicated bicycle accommodations are provided at this intersection.

Route 132 at Airport Road

Route 132 is bisected by Airport Road from the north to form a three-legged unsignalized intersection. A center median divides the eastbound and westbound lanes of travel on Route 132 at the intersection and Airport Road operates as right-in/right-out only. The eastbound leg of the intersection provides two through lanes and the westbound leg of the intersection provides one through lane and one shared through and right-turn lane. The southbound leg of the intersection provides one right-turn only lane. The Airport Road approach is under STOP-control. A sidewalk is provided along the south side of Route 132 and no crosswalks are provided at this intersection. No dedicated bicycle accommodations are provided at this intersection.

Route 132 at Cape Cod Mall Driveway/ Capetown Plaza Driveway

Route 132 is bisected by the Cape Cod Mall Driveway from the south and the Capetown Plaza Driveway from the north to form a four-legged signalized intersection. The eastbound and westbound legs of the intersection both provide one exclusive left-turn lane, one through lane, and one shared through and right-turn lane. The northbound leg of the intersection provides one exclusive left-turn lane, one through

lane, and one exclusive right-turn lane. The southbound leg of the intersection provides one exclusive right-turn lane and one shared through and left-turn lane. Pedestrian accommodations include crosswalks across the west, south, and north legs of the intersection and sidewalks along the south side of Route 132 and both sides of the Cape Cod Mall Driveway at the south leg of the intersection. No dedicated bicycle accommodations are provided at this intersection.

Route 132 at Nightingale Lane

Route 132 is bisected by Nightingale Lane from the south to form an unsignalized “T”-intersection. The eastbound leg of the intersection provides one through lane and one shared through and right-turn lane and the westbound leg of the intersection provides one shared through and left-turn lane and one through lane. The northbound leg of the intersection provides one shared right/left-turn lane. The Nightingale Lane approach is under STOP-control. There are no dedicated sidewalks or crosswalks provided on the approaches to this intersection and no dedicated bicycle accommodations are provided at this intersection.

Crash Data

2017-2019 Crash Data Study Area-Wide

Crash data provided by the Barnstable Police Department and MassDOT show that a total of 111 crashes were reported along the study area corridor in the three-year period between 2017 and 2019. Of these crashes, eight involved a non-motorist (pedestrian or bicycle) and a vehicle. Of the reported crashes, 78 percent occurred in daylight while 20 percent occurred in dark or twilight conditions on a lighted roadway. Analysis of road surface conditions found that 80 percent of crashes occurred when the road surface was dry. June was the month with the highest percentage of crashes (11 percent), while January, July, and December, each made up 10 percent of the total crashes. The most common day of the week for the reported crashes was Friday (26 percent) while Saturday and Sunday were the least common days for crashes (five percent and six percent respectively). Of the 111 crashes, the most common crash time was between 12pm and 2pm (25 percent) and the second most common crash time was between 2pm and 4pm (19 percent). Most of the crashes reported throughout the study area did not result in any injury (69 percent), while 31 percent of the crashes resulted in a possible injury, non-incapacitating injury, or incapacitating injury. None of the reported crashes between 2017-2019 involved fatal injury. Angle crashes were the most common crash type (49 percent), while rear-end (23 percent) and same direction sideswipe (18 percent) crashes were the second and third most common. Single vehicle crashes made up nine percent of the total crashes and opposite direction sideswipe crashes were the least common making up one percent of the total crashes. Full crash data summaries and collision diagrams are provided in Appendix C.

In total, 47 of the 111 total reported crashes (42 percent) that occurred along the corridor from 2017-2019 occurred at the three signalized intersections. Of the 47 crashes at signalized intersections, 40 percent involved turning movements, 32 percent were rear-end crashes, and 28 percent were angle crashes. Of the signalized intersection crashes, 17 percent involved a possible injury, non-incapacitating injury, or incapacitating injury, and one the 47 crashes involved a vehicle striking a bicyclist.

2010-2019 Crash Data Involving Pedestrians and Bicyclists at the High Crash Pedestrian Cluster

Crash data provided by the Barnstable Police Department and MassDOT shows that a total of nine crashes involving a pedestrian or bicyclist and a motor vehicle were reported at the high crash pedestrian cluster (between the Courtyard by Marriott hotel and Nightingale Lane) between 2010 and 2019. Of the nine reported crashes, three occurred in daylight and six occurred in dark conditions. Analysis of road surface conditions showed that seven crashes occurred on dry roadways and two crashes occurred on wet roadways. Three of the reported crashes occurred in January while two crashes occurred in November and one crash each occurred in February, June, July, and December. The most common crash periods with three crashes each were between 4pm and 6pm and 6pm and 8pm, while two crashes occurred between 12pm and 2pm and one crash occurred between 8pm and 10pm. Eight of the crashes resulted in possible injury, non-incapacitating injury, or incapacitating injury, and one of the crashes resulted in a fatal injury.

Audit Observations and Potential Safety Enhancements

During the RSA meeting, a brief introduction of the RSA process was presented to the audit team members. Following this brief presentation, the members of the audit team were asked to discuss the existing issues that may affect safety at each intersection and along the corridor as a whole using the provided crash data and local knowledge. The audit team then walked the length of the corridor, at which time observations of various safety concerns and deficiencies were identified and documented.

Provided below is a list of the safety concerns that were identified during the RSA for the corridor along with potential enhancements identified during the RSA. Several of these concerns and their associated improvements will require further coordination and engineering to determine the feasibility of implementing appropriate safety enhancements.

Study Area-Wide

Safety Issue #1: Poor Access Management Along Corridor

One of the key issues that audit participants noted along the corridor as a whole were unsafe and illegal left-turns into and out of driveways and unsignalized intersections. Along the corridor, at least 43 of the 111 crashes (39 percent) were a result of vehicles turning left or a result of a vehicle being rear-ended while waiting to turn left. Of the 43 crashes caused by an unsafe or illegal left-turn, one involved a vehicle striking a bicyclist.

It was noted that there are many different access points along the corridor serving different businesses, with several businesses having multiple access points. For example, the Holiday Inn and Toyota of Hyannis auto dealership each have three driveways. Many of these access points and driveways have a right-in/right-out designation but may not have sufficient geometry or signage to discourage left-turns. During the site walk, audit participants noticed areas where left-turn only signage was either missing or faded,

and one location where a sign had fallen and not been replaced. Signage deficiencies are discussed in detail later in this section under Safety Issue #3.

Audit participants also noted that there are different types of access points throughout the corridor. Most of the driveways in the study area are intended to be right-in/right-out only, but there are also a few driveways that are full-access or hybrid. This mix of access point types may confuse drivers as to which movements are permitted at each driveway. Local audit participants also noted that this corridor experiences a lot of drivers who are not local and may be unfamiliar with the roadway, which could contribute to some of the improper turning movements observed along the corridor.

Audit team members noted that at locations throughout the corridor where a median is not present, drivers make left-turns into and out of right-turn only driveways. Of the 111 crashes reported in the study area between 2017-2019, at least 26 crashes (23 percent) involved vehicles making left-turns in areas along the corridor where a median is not present and left-turns are not permitted.

Another issue that the audit participants noted while reviewing the crash data was that courtesy crashes were prevalent along the corridor. Courtesy crashes generally occur along roadways with more than one lane per direction (such as Route 132) when a driver in one lane stops to let a vehicle enter the roadway contrary to the right-of-way or to let a pedestrian or bicyclist cross the roadway and a vehicle in another lane does not stop to allow the turning driver, pedestrian, or bicyclist to enter the roadway, causing a crash. Participants also noted that at least one crash and several near misses occurred when a driver was waiting for a gap in traffic to make a turn and another driver attempted to swerve around the driver waiting to turn. This was especially prevalent near intersections with no dedicated turn lanes, such as the intersection of Route 132 at Festival Plaza Driveway. At least six of crashes reported in the study area between 2017 and 2019 were considered courtesy crashes and at least three of the reported crashes involved a vehicle being rear-ended while waiting to turn left.

Proposed Enhancements:

- Consider making the center median consistent throughout the corridor to prevent left turns. Evaluate the effectiveness of different kinds of medians such as raised medians or vegetative medians.
- Evaluate the possibility of an entire corridor road diet by reducing the number of travel lanes to one lane per direction and adding in a two-way shared left-turn lane to reduce the number of courtesy crashes and to provide space for vehicles waiting to make a left turn.



Image 1: A vehicle making an illegal left-turn from Route 132 westbound into the Cumberland Farms driveway.

- Consider the possibility of reducing the number of existing access points and driveways along the corridor to limit the number of conflict points. Work with businesses to try and consolidate driveway and/or share driveways.
- Consider restricting the number of future access points serving new developments along the corridor to limit the number of future conflict points.
- Consider converting existing full access driveways along the corridor to right-in/right-out driveways with proper geometry and signage to discourage left turns.



Image 2: A business along the corridor with multiple access points.

Safety Issue #2: Vehicle Speeds Along the Corridor

Audit participants noted that speeding was an issue along the corridor, especially at night when there is a lack of congestion on the roadway. The roadway is mostly straight, provides two lanes per direction, and features businesses that are set back from the roadway creating an environment that does not discourage speeding. Audit participants also noted that driver frustration from long queues and cycle lengths at the signalized intersections may also contribute to the speeding issues observed along the corridor.

During the site walk, audit participants noticed several business district speed limit signs (30 mph) along the study area corridor that do not meet MassDOT signage standards. It was noted that the Town of Barnstable is currently in the process of updating these signs to be consistent with MassDOT standards. The corridor does not currently have any speed regulations at the time of the RSA.

Proposed Enhancements:

- Consider replacing existing signage and installing additional speed limit signs along the corridor to inform drivers of the speed limit and meet local and state standards,
- Consider conducting a speed study for the corridor to identify areas of speeding concern and where countermeasures should be focused.
- Consider adding speed feedback signs with radar along the corridor to inform drivers of their current speed and consider collecting speed data to assess the effects of these speed feedback signs.
- Consider implementing speed management countermeasures where appropriate within the study area to slow vehicle speeds.
- Consider adding tree coverage to the median as well as roadside vegetation along the corridor to improve the characteristics of the roadway and create a calmer roadway environment that encourages lower travel speeds.
- Evaluate the possibility of reducing lane width along the corridor to encourage lower travel speeds.

Safety Issue #3: Signage

During the site walk, audit participants noted that many signs along the corridor were faded, blocked by foliage, or missing. Audit participants also noted that signage was lacking or inconsistent at many of the corridor right-in/right-out driveways. Participants noticed one sign, at the Cumberland Farms driveway, that was faded and had fallen without being replaced or repaired. A “Do Not Enter” sign with a short height was also observed along the corridor at the Olive Garden driveway. Participants also noted that at several signalized intersection approaches along the corridor, lane use and advanced warning signage was not present or was non-compliant with standards. It was noted that the Town of Barnstable is currently in the process of replacing missing, damaged, faded, and outdated signs.



Image 3: Right-turn only sign that has fallen and faded at the Cumberland Farms Driveway.

Proposed Enhancement:

- Conduct an inventory of all existing signage and replace signs that are in poor condition or missing.
- Consider relocating signs that are obstructed and adding in new signs where necessary and appropriate to improve sign visibility and increase the effectiveness of signage along the corridor, including signage enforcing no-left turns out of driveways
- Consider adding lane use signs at all signals to reduce driver confusion approaching signalized intersections.

Safety Issue #4: Pedestrian and Bicycle Accommodations

The RSA participants noted a general lack of pedestrian and bicycle accommodations along the corridor and noticed many crashes involving a vehicle striking pedestrians or bicyclists in the crash data. Along the corridor, eight reported crashes involved a motor vehicle striking a pedestrian or bicyclist between 2017 and 2019 and five additional reported crashes involved a motor vehicle striking a pedestrian or bicyclist between 2010 and 2019 in the high crash pedestrian cluster. One fatal crash was reported in 2013 involving a vehicle striking a pedestrian who was crossing Route 132 near Trader Joes (where no sidewalks or crosswalks are provided). In total, nine pedestrian and bicycle crashes occurred in the high crash pedestrian cluster (between the Courtyard by Marriott hotel and Nightingale Lane) between 2010 and 2019.

Sidewalks are inconsistent along the corridor; many locations do not have sidewalks and many of the sidewalks along the corridor are in poor condition and narrow. During the site walk, audit participants noted that the comfort level of pedestrians along the



Image 4: A dirt path worn down on the south side of Route 132 near Christmas Tree Shop Plaza where no sidewalk is present.

corridor is low due to the close proximity of vehicle traffic in the Route 132 travel lane and the lack of a buffer area between the sidewalk and vehicle travel lane. Audit participants noticed pedestrians traveling along the corridor even in locations with no sidewalks. Paths could be seen worn down in the grass and dirt in locations without sidewalks (such as on the south side of the roadway between the Cape Cod Mall east driveway and Nightingale Lane), indicating heavy foot travel is present along Route 132 despite the lack of sidewalks. Audit participants also noted many locations where the sidewalk was in poor condition and observed several pinch points along the sidewalk that are inaccessible for wheelchair users. It was also noted during the site walk that there are many obstructions in the path of pedestrians along existing sidewalks, including utility poles, hydrants, and ponding in some areas.

While on the site walk, audit participants noticed that no bicycle accommodations are present along the corridor and bicyclists were observed biking both on the sidewalk and on the roadway. The shoulder along the corridor is very narrow (two feet or less), so it does not provide adequate room for bicyclists to utilize.

Crosswalks are only present along the corridor at signalized intersections and are not provided across all legs of signalized intersections. Many of the existing crosswalks are not ADA compliant and several of the signalized intersections do not include pedestrian countdown displays. Most of the driveways and unsignalized intersections along the corridor do not provide crosswalks. During the site walk audit participants noticed that some signalized pedestrian crossing intervals may not provide enough time to fully cross Route 132, and that some pedestrian countdown timers were not functioning properly. There is also a lack of crossing opportunities along the corridor as only four crosswalks across Route 132 are present in the 1.2 miles corridor. There is a long distance between crossings along the corridor with no crossings provided in the half-mile segment between the Cape Cod Mall Driveway/ Capetown Driveway and the Airport Rotary which is part of the high crash pedestrian cluster.

Audit participants noticed that all seven pedestrian crashes reported involved pedestrians jaywalking to cross the roadway. One participant noted that during the day, many parts of Route 132 in this area are gridlocked, making it safer for pedestrians to jaywalk and cross the roadway. During the RSA, audit participants observed multiple pedestrians crossing Route 132 at unprotected locations in the area near McDonald’s. Participants also noted that in the summer there is an increase in pedestrians and bicyclists on the roadway and crossing the roadway most likely due to an increase in tourists and seasonal workers. Audit team members also noted that additional pedestrian and bicycle traffic may be generated along Route 132 once the Cape Cod Rail Trail future extension is completed north of the corridor, as well as once additional proposed development along the corridor is constructed, such as the planned redevelopment of the Capetown Plaza.



Image 5: Narrow pinch point along the sidewalk west of Enterprise Road.

Proposed Enhancements:

- Consider extending the sidewalk on the south side of Route 132 from the Cape Cod Mall east driveway to the Airport Rotary to provide a continuous pedestrian accommodation along the corridor.
- Consider adding a continuous sidewalk or shared used path to the north side of Route 132 to provide dedicated pedestrian and bicycle accommodations.
- Evaluate pedestrian desire lines and origin-destination data to determine where dedicated/additional pedestrian crossings are most desired.
- Consider constructing a buffer area between the sidewalk and the Route 132 travel lanes to provide separation between pedestrians and vehicular traffic.
- Consider the possibility of a pilot program with temporary bicycle lanes in the summer to provide short-term bicycle accommodations along the corridor and provide the opportunity to evaluate the impact on vehicle operations before fully reconstructing the corridor.
- Evaluate the possibility of constructing mid-block pedestrian crossings that would include other enhancements such as HAWK signals, a full traffic signal, or crossing islands, especially in the segment between the Courtyard by Marriott hotel and Nightingale Lane to provide safe crossing opportunities for pedestrians.
- Consider installing crosswalks across all legs of signalized intersections. If crosswalks are added, use the town standard of ladder style crosswalks for safety and consistency.
- Consider improving existing crosswalks by installing ramps and detectable warning pads where missing to meet ADA standards. Ensure that existing crosswalks are clear of drains and other obstructions.
- Evaluate signalized crossing pedestrian clearance intervals and ensure that all pedestrian countdown timers are operational and updated to provide adequate crossing accommodations at signalized intersections.
- Evaluate existing sidewalks for ADA compliance, especially regarding slope and width, and upgrade existing sidewalks in poor condition.
- Consider installing adequate crossing treatments at all unsignalized intersections and driveways, including crosswalk ramps and ladder style crosswalks.
- Consider the possibility of adding in temporary pedestrian crossing signals, where indicated by desire lines, to provide safe pedestrian crossings prior to the full reconstruction of the corridor.



Image 6: A bicyclist traveling westbound on Route 132 near BJ's Gas using a pool noodle to create space between himself and passing vehicles.

- Evaluate the possibility of an entire corridor road diet and utilizing the additional roadway width for recommendations to improve vulnerable road user safety, such as sidewalks and bicycle facilities.

Safety Issue #5: Lighting

Audit participants noted that the corridor is lacking lighting for vehicles as well as pedestrian level lighting. Light poles are only located along one side of Route 132, providing inadequate lighting for the entire cross section of the corridor. Of all the reported motor vehicle crashes, 22 percent occurred in dark or dusk roadway conditions. Of the eight pedestrian and bicycle crashes reported along the corridor from 2017-2019, five occurred in dark roadway conditions (62 percent) and of the nine pedestrian and bicycle crashes reported in the high crash pedestrian cluster from 2010-2019, six occurred in dark roadway conditions (67 percent). Several audit participants shared that while driving the corridor at night they are unable to see pedestrians and bicyclists crossing the roadway. Participants mentioned that this is particularly an issue at the eastern end of the corridor near Wendy’s. Audit participants noticed an increase in pedestrian crashes in January and noted that it might be caused by the fact that there are more hours of darkness in January where the lack of adequate lighting is more impactful than in the summer months when more hours of daylight are provided.

Proposed Enhancement:

- Consider adding more lighting along the corridor to improve driver visibility at night.
- Consider adding pedestrian level lighting to provide better illumination for pedestrians and bicyclists.

Safety Issue #6: Emergency Access

The audit personal representing the local police and fire departments noted that Route 132 is an emergency access route to the hospital for Hyannis, as well as for towns throughout Cape Cod. The audit participants noted that sometimes the median on Route 132 slows down emergency vehicles because drivers are unable to mount the median and make room for emergency vehicles to pass through when traffic is heavy. One participant noted that sometimes emergency vehicles need to mount the median or drive in the lane of opposing traffic to pass through the traffic on the roadway. It was also noted that while the traffic signals along the corridor and Barnstable and Hyannis emergency vehicles are equipped with Opticom signal priority technology, some emergency vehicles from surrounding towns that travel on Route 132 are not equipped with Opticom signal priority technology.

Proposed Enhancements:

- Evaluate the possibility of a road diet along the entire corridor by removing one lane of travel per direction and adding in a two-way center left-turn lane along the length of the corridor that could be used by emergency vehicles.
- Evaluate emergency pre-emption at signalized intersections along the corridor and consider updating/installing at signalized locations where emergency pre-emption is broken or missing.

- Consider opportunities to equip emergency vehicles from other municipalities in the region that travel on Route 132 to access the Cape Cod Hospital with emergency pre-emption transponders that are compatible with the Opticom signal priority technology installed at the traffic signals along the corridor.

Safety Issue #7: Traffic Signal Equipment and Operations

During the site walk participants noted that not all signals throughout the corridor featured reflective backplates, making visibility of the signal light itself difficult. This can be an issue for drivers traveling eastbound along Route 132 in the morning and westbound along Route 132 in the evening, as audit participants noted that sun glare can be an issue that effects drivers’ visibility. Participants noted that the exclusive left-turn phases at signals throughout the corridor may not provide enough time for all the vehicles making left-turns to turn. Audit participants noted that some of the signals along the corridor are old, and do not have the most up to date equipment or technology, such as adaptive signal control or transit signal priority. While reviewing crash data, audit participants noted 11 rear end crashes at signals (10 percent of the total reported crashes) that may indicate signal timing issues.



Image 7: Route 132 at Cape Cod Mall/ Capetown Plaza intersection with outdated signal equipment and no retroreflective back plates on the signals.

Proposed Enhancements:

- Consider adding retroreflective back plates to all signals to increase signal head visibility.
- Evaluate existing signal equipment and update where necessary to meet current standards.
- Evaluate existing signal timing and phasing operations including yellow/all red clearance intervals and left turn phase lengths to reduce possibility of crashes caused by insufficient signal timings.
- Evaluate all signals along the corridor for the possibility of coordination to improve vehicle operations and reduce vehicle speeds.
- Consider adding bicycle detection at all signals to improve bicycle accommodations.
- Consider incorporating adaptive signal technology at all signals along the corridor to control traffic flow.
- Consider incorporating transit signal priority at all signals along the corridor to improve transit operations.

Route 132 at Festival Plaza Driveway

Safety Issue #1: Intersection Operations

One audit participant noticed that there is a driveway for the Cape Crossroads Apartment building less than 50 feet from the intersection of Route 132 with the Festival Plaza Driveway. The participant noted that this driveway causes issues with queuing at the intersection. During the site walk, audit participants noted that there are no dedicated left-turn lanes at this intersection. This can cause the left lane to become a de facto left-turn lane and cause vehicles in the left lane attempting to travel through the intersection to swerve around vehicles waiting to turn left into the right lane. One of the reported crashes at this intersection was due to a vehicle changing lanes at the intersection. In addition, westbound left turns are permitted when eastbound vehicles are traveling through, creating a potential conflict point. Two crashes reported at this intersection involved left turns from Route 132 eastbound.

Proposed Enhancements:

- Consider the possibility of closing the Cape Crossroads driveway closest to the intersection and redirecting this traffic to the additional Cape Crossroads driveway further east of the signalized intersection to reduce the number of conflict points near the signalized intersection.
- Consider the possibility of adding a left-turn lane with a protected left-turn phase on the eastbound approach to the intersection to provide a dedicated storage lane for vehicles waiting to turn left.
- Consider installing a flashing yellow arrow for eastbound left-turn movements to provide additional clarity that left turns are permitted at the same time as westbound through movements.

Route 132 at Independence Drive/ Enterprise Road

Safety Issue #1: Traffic Signal Timings

Audit participants mentioned that drivers running red lights is a problem throughout the entire corridor, but especially at the intersection of Route 132 at Independence Drive/ Enterprise Road. Participants noted that this may be due to a signal timing issue with not enough green time provided. They noted that this problem increases in the summer when traffic on the roadway is heavier. One participant also noted that in personal experience the amount of time provided for the dedicated left-turn movements from Route 132 onto Independence Drive and Enterprise Road is not adequate to accommodate all the vehicles attempting to turn left off of Route 132 in one phase. While reviewing the crash data, audit participants noticed six rear-end crashes at the Independence Drive/ Enterprise Road intersection and suggested that they may be due to insufficient green time provided and/or clearance interval lengths. Audit participants observed and noted a long cycle length at this intersection as well.

Proposed Enhancements:

- Evaluate existing signal timing and phasing operations including yellow/all red clearance intervals and left turn phase lengths to reduce possibility of crashes caused by insufficient signal timings.

Safety Issue #2: Turning Movements

While reviewing crash data, audit participants noted that there were five sideswipe crashes on Route 132 approaching the intersection while drivers were changing lanes. Participants noted that this high number of sideswipe crashes could be due to the left-turn lanes not being an adequate length as the turn lanes can be blocked by the queue for the through movements on Route 132. One audit participant noted that due to recent new developments, the northbound left-turn lane from Enterprise Road onto Route 132 is no longer long enough to accommodate all the traffic. In addition, during the site walk audit team members noted that the “No Turn on Red” sign for the Route 132 eastbound approach is smaller than standard MassDOT sign standards and is located prior to the intersection, so it is not visible for the first vehicle in the queue. While reviewing the crash data, audit participants also noted that there were three sideswipe crashes reported involving two vehicles making left-turns from Independence Drive to Route 132 eastbound at the same time. Some audit participants noted that westbound drivers on Route 132 attempt to make U-turns around the median at this intersection. Sometimes drivers are unable to complete the U-turn in one movement and need to make a three-point turn at the intersection.



Image 8: Short left-turn lane on the Route 132 westbound approach to the Independence Drive/ Enterprise Road intersection.

Proposed Enhancements:

- Consider adding a designated right-turn lane from Route 132 onto Independence Drive.
- Consider added a right-turn slip lane from Enterprise Road onto Route 132.
- Consider increasing the length of the eastbound and westbound left-turn lanes on Route 132 to extend past the length of the queues in the through lanes to ensure that access to the turn lanes is not blocked.
- Consider increasing the length of the northbound left-turn lane to accommodate recent growth in traffic volumes.
- Consider replacing the existing “No Turn on Red” sign on the Route 132 eastbound approach to the far side of the intersection to meet MassDOT standards and increase driver visibility.
- Consider prohibiting westbound U-turns at this intersection to prevent some vehicles from making three-point turns within the intersection.
- Evaluate intersection control strategies, such as a modern roundabout, to facilitate safer turning movements and reduce the number of conflict points.

Route 132 at Airport Road

Safety Issue #1: Signage

While reviewing crash data, audit participants noted that one crash occurred at the intersection of Route 132 and Airport Road where a vehicle attempted to take a left from Airport Road onto Route 132 and was struck by a westbound vehicle on Route 132. A median is present preventing vehicles from making a left onto Route 132 from Airport Road, however, during the site walk audit participants noted that this intersection was lacking signage alerting drivers of this median and the right-turn only onto Route 132.

Proposed Enhancements:

- Install a “One-Way” or “No Left Turn” sign informing southbound drivers on Airport Road that they are restricted from turning left onto Route 132 eastbound.

Route 132 at Cape Cod Mall Driveway/ Capetown Plaza Driveway

Safety Issue #1: Pedestrian Accommodations

During the site walk, audit team members noticed that the pedestrian signal at the Route 132 at Cape Cod Mall Driveway/ Capetown Plaza Driveway was not working properly and was not displaying a “Walk” sign when called. Participants also noted that crosswalk pushbuttons are not located in intuitive or convenient locations for pedestrians. In addition, an audit team member noted that the crosswalk across the west leg of the intersection is obstructed by a drain and a median, and there is no crosswalk provided across the east leg of the intersection. Part of the crosswalk across the north leg of the intersection is also obstructed by a median and detectable warning panels are not provided at the medians obstructing the crosswalks.



Image 9: Crosswalk obstructed by a drain and a median at the west leg of the Cape Cod Mall Driveway/ Capetown Plaza intersection.

Proposed Enhancements:

- Repair the pedestrian signal at the intersection to provide adequate pedestrian accommodations.
- Consider providing crosswalks across all four legs of the intersection and updating the existing crosswalks to be ADA compliant.

Route 132 at Nightingale Lane

Safety Issue #1: Left-Turns onto Route 132 Westbound

While reviewing crash data, audit participants noted seven angle crashes, including four courtesy crashes, involving vehicles taking a left-turn from Nightingale Lane onto Route 132 and being struck by an eastbound vehicle on Route 132. Audit team members noted that Nightingale Lane is sometimes used as a cut-through route for drivers traveling northbound from Route 28 to access Route 132 and avoid the Airport Rotary. During the site walk audit participants also stated that the sight distance at this intersection may be inadequate, especially when turning left from Nightingale Lane onto Route 132 due to the location of utility poles and other roadside obstacles.

Proposed Enhancements:

- Consider adding signage and an island to convert Nightingale Lane to be a right-in/right-out roadway and ensure driver compliance.
- Consider designating Nightingale Lane as one-way southbound to eliminate cut-through traffic turning left onto Route 132 westbound.
- Consider extending the median on Route 132 west through the intersection to prevent drivers from turning left onto Route 132 westbound. The median currently ends approximately 100 feet east of the intersection.
- Evaluate sight distance for drivers turning left from Nightingale Lane onto Route 132 and, where feasible, remove obstacles such as vegetation and sign clutter that restricts sight distance.



Image 10: Intersection of Route 132 at Nightingale Lane with two lanes in each direction on Route 132 and a lack of pedestrian accommodations.

Safety Issue #2: Pedestrian and Bicycle Accommodations

A review of the crash data indicates that this intersection is included within the high crash pedestrian cluster. Of the nine pedestrian/bicycle crashes between 2010 and 2019, three occurred at the intersection of Route 132 and Nightingale Lane. Audit team members noted that there are no pedestrian or bicycle accommodations in this area, and that pedestrians and bicyclists have been observed to cross in this area, including workers without a vehicle accessing the businesses on the north side of Route 132.

Proposed Enhancements:

- Evaluate the possibility of adding a pedestrian and bicycle crossing of Route 132 near Nightingale Lane that would include safe crossing enhancements such as HAWK signals, a full traffic signal, or crossing islands.

Summary of Road Safety Audit

Following the site visit and discussion of existing safety issues, audit team members were asked to consider various safety related improvements. The audit team members were encouraged to consider both short-term and long-term improvements for each of the existing safety issues. Each improvement considered has been categorized as short-term, mid-term, or long-term based on the definitions shown in Table 2. Additionally, a cost category has been assigned to each improvement based on the parameters set forth in Table 2. The safety payoff is based on engineering judgement of the potential effectiveness of the safety recommendations listed below.

Table 2: Estimated Time Frame and Costs Breakdown

Time Frame		Costs	
Short-Term	<1 Year	Low	≤\$10,000
Mid-Term	1-3 Years	Medium	\$10,001-\$50,000
Long-Term	>3 Years	High	>\$50,000

A list of each potential safety enhancement for the study area are provided below in Table 3.

Table 3: Potential Safety Enhancement Summary

Safety Issue	Potential Safety Enhancement	Safety Payoff	Time Frame	Cost	Jurisdiction
Study Area-Wide					
Poor Access Management Along Corridor	Consider making the center median consistent throughout the corridor to prevent left turns. Evaluate the effectiveness of different kinds of medians such as raised medians or vegetative medians.	High	Long-Term	High	Town of Barnstable
	Evaluate the possibility of an entire corridor road diet by reducing the number of travel lanes to one lane per direction and adding in a two-way shared left-turn lane to reduce the number of courtesy crashes and to provide space for vehicles waiting to make a left turn.	High	Long-Term	High	Town of Barnstable
	Consider the possibility of reducing the number of existing access points and driveways along the corridor to limit the number of conflict points. Work with businesses to try and consolidate driveway and/or share driveways.	High	Long-Term	High	Town of Barnstable/Property Owners
	Consider restricting the number of future access points serving new developments along the corridor to limit the number of future conflict points.	Medium	Long-Term	Low	Town of Barnstable/Property Owners
	Consider converting existing full access driveways along the corridor to right-in/right-out driveways with proper geometry and signage to discourage left turns.	High	Long-Term	High	Town of Barnstable/Property Owners

Table 3: Potential Safety Enhancement Summary (cont.)

Safety Issue	Potential Safety Enhancement	Safety Payoff	Time Frame	Cost	Jurisdiction
Study Area-Wide (cont.)					
Vehicle Speeds Along the Corridor	Consider replacing existing signage and installing additional speed limit signs along the corridor to inform drivers of the speed limit and meet local and state standards,	Low	Short-Term	Low	Town of Barnstable
	Consider conducting a speed study for the corridor to identify areas of speeding concern and where countermeasures should be focused.	Low	Short-Term	Low	Town of Barnstable
	Consider adding speed feedback signs with radar along the corridor to inform drivers of their current speed and consider collecting speed data to assess the effects of these speed feedback signs.	Medium	Mid-Term	Medium	Town of Barnstable
	Consider implementing speed management countermeasures where appropriate within the study area to slow vehicle speeds.	Low	Short-Term	Low	Town of Barnstable
	Consider adding tree coverage to the median as well as roadside vegetation along the corridor to improve the characteristics of the roadway and create a calmer roadway environment that encourages lower travel speeds.	Medium	Long-Term	Medium	Town of Barnstable
	Evaluate the possibility of reducing lane width along the corridor to encourage lower travel speeds.	Low	Mid-Term	Medium	Town of Barnstable

Table 3: Potential Safety Enhancement Summary (cont.)

Safety Issue	Potential Safety Enhancement	Safety Payoff	Time Frame	Cost	Jurisdiction
Study Area-Wide (cont.)					
Signage	Conduct an inventory of all existing signage and replace signs that are in poor condition or missing.	Low	Short-Term	Low	Town of Barnstable
	Consider relocating signs that are obstructed and adding in new signs where necessary and appropriate to improve sign visibility and increase the effectiveness of signage along the corridor, including signage enforcing no-left turns out of driveways.	Low	Short-Term	Low	Town of Barnstable
	Consider adding lane use signs at all signals to reduce driver confusion approaching signalized intersections.	Low	Short-Term	Low	Town of Barnstable
Pedestrian and Bicycle Accommodations	Consider extending the sidewalk on the south side of Route 132 from the Cape Cod Mall east driveway to the Airport Rotary to provide a continuous pedestrian accommodation along the corridor.	High	Long-Term	High	Town of Barnstable
	Consider adding a continuous sidewalk or shared used path to the north side of Route 132 to provide dedicated pedestrian and bicycle accommodations.	High	Long-Term	High	Town of Barnstable
	Evaluate pedestrian desire lines and origin-destination data to determine where dedicated/additional pedestrian crossings are most desired.	Low	Short-Term	Low	Town of Barnstable

Table 3: Potential Safety Enhancement Summary (cont.)

Safety Issue	Potential Safety Enhancement	Safety Payoff	Time Frame	Cost	Jurisdiction
Study Area-Wide (cont.)					
Pedestrian and Bicycle Accommodations (cont.)	Consider constructing a buffer area between the sidewalk and the Route 132 travel lanes to provide separation between pedestrians and vehicular traffic.	Medium	Long-Term	High	Town of Barnstable
	Consider the possibility of a pilot program with temporary bicycle lanes in the summer to provide short-term bicycle accommodations along the corridor and provide the opportunity to evaluate the impact on vehicle operations before fully reconstructing the corridor.	High	Short-Term	Medium	Town of Barnstable
	Evaluate the possibility of constructing mid-block pedestrian crossings that would include other enhancements such as HAWK signals, a full traffic signal, or crossing islands, especially in the segment between the Courtyard by Marriott hotel and Nightingale Lane to provide safe crossing opportunities for pedestrians.	High	Long-Term	High	Town of Barnstable
	Consider installing crosswalks across all legs of signalized intersections. If crosswalks are added, use the town standard of ladder style crosswalks for safety and consistency.	Medium	Mid-Term	Medium	Town of Barnstable

Table 3: Potential Safety Enhancement Summary (cont.)

Safety Issue	Potential Safety Enhancement	Safety Payoff	Time Frame	Cost	Jurisdiction
Study Area-Wide (cont.)					
Pedestrian and Bicycle Accommodations (cont.)	Consider improving existing crosswalks by installing ramps and detectable warning pads where missing to meet ADA standards. Ensure that existing crosswalks are clear of drains and other obstructions.	Medium	Short-term	Low	Town of Barnstable
	Evaluate signalized crossing pedestrian clearance intervals and ensure that all pedestrian countdown timers are operational and updated to provide adequate crossing accommodations at signalized intersections.	Low	Short-Term	Low	Town of Barnstable
	Evaluate existing sidewalks for ADA compliance, especially regarding slope and width, and upgrade existing sidewalks in poor condition.	Medium	Mid-Term	High	Town of Barnstable
	Consider installing adequate crossing treatments at all unsignalized intersections and driveways, including crosswalk ramps and ladder style crosswalks.	Medium	Long-Term	Medium	Town of Barnstable
	Consider the possibility of adding in temporary pedestrian crossing signals, where indicated by desire lines, to provide safe pedestrian crossings prior to the full reconstruction of the corridor.	High	Short-Term	Medium	Town of Barnstable
	Evaluate the possibility of an entire corridor road diet and utilizing the additional roadway width for recommendations to improve vulnerable road user safety, such as sidewalks and bicycle facilities.	High	Long-Term	High	Town of Barnstable

Table 3: Potential Safety Enhancement Summary (cont.)

Safety Issue	Potential Safety Enhancement	Safety Payoff	Time Frame	Cost	Jurisdiction
Study Area-Wide (cont.)					
Lighting	Consider adding more lighting along the corridor to improve driver visibility at night.	High	Long-term	High	Town of Barnstable
	Consider adding pedestrian level lighting to provide better illumination for pedestrians and bicyclists.	High	Long-term	High	Town of Barnstable
Emergency Access	Evaluate the possibility of a road diet along the entire corridor by removing one lane of travel per direction and adding in a two-way center left-turn lane along the length of the corridor that could be used by emergency vehicles.	High	Long-Term	High	Town of Barnstable
	Evaluate emergency pre-emption at signalized intersections along the corridor and consider updating/installing at signalized locations where emergency pre-emption is broken or missing.	Low	Medium-Term	Medium	Town of Barnstable
	Consider opportunities to equip emergency vehicles from other municipalities in the region that travel on Route 132 to access the Cape Cod Hospital with emergency pre-emption transponders that are compatible with the Opticom signal priority technology installed at the traffic signals along the corridor.	Low	Short-Term	Low	Local Municipalities

Table 3: Potential Safety Enhancement Summary (cont.)

Safety Issue	Potential Safety Enhancement	Safety Payoff	Time Frame	Cost	Jurisdiction
Study Area-Wide (cont.)					
Traffic Signal Equipment and Operations	Consider adding retroreflective back plates to all signals to increase signal head visibility.	Low	Short-Term	Low	Town of Barnstable
	Evaluate existing signal equipment and update where necessary to meet current standards.	Medium	Mid-Term	High	Town of Barnstable
	Evaluate existing signal timing and phasing operations including yellow/all red clearance intervals and left turn phase lengths to reduce possibility of crashes caused by insufficient signal timings.	Medium	Short-Term	Low	Town of Barnstable
	Evaluate all signals along the corridor for the possibility of coordination to improve vehicle operations and reduce vehicle speeds.	High	Mid-Term	Medium	Town of Barnstable
	Consider adding bicycle detection at all signals to improve bicycle accommodations.	Medium	Mid-Term	Medium	Town of Barnstable
	Consider incorporating adaptive signal technology at all signals along the corridor to control traffic flow.	Low	Long-Term	High	Town of Barnstable
	Consider incorporating transit signal priority at al signals along the corridor to improve transit operations.	Low	Long-Term	High	Town of Barnstable

Table 3: Potential Safety Enhancement Summary (cont.)

Safety Issue	Potential Safety Enhancement	Safety Payoff	Time Frame	Cost	Jurisdiction
Route 132 at Festival Plaza Driveway					
Intersection Operations	Consider the possibility of closing the Cape Crossroads driveway closest to the intersection and redirecting this traffic to the additional Cape Crossroads driveway further east of the signalized intersection to reduce the number of conflict points near the signalized intersection.	Low	Short-Term	Low	Town of Barnstable
	Consider the possibility of adding a left-turn lane with a protected left-turn phase on the eastbound approach to the intersection to provide a dedicated storage lane for vehicles waiting to turn left.	Medium	Mid-Term	Medium	Town of Barnstable
	Consider installing a flashing yellow arrow for eastbound left-turn movements to provide additional clarity that left turns are permitted at the same time as westbound through movements.	Low	Mid-Term	Medium	Town of Barnstable
Route 132 at Independence Drive/ Enterprise Road					
Traffic Signal Timings	Evaluate existing signal timing and phasing operations including yellow/all red clearance intervals and left turn phase lengths to reduce possibility of crashes caused by insufficient signal timings.	Medium	Short-Term	Low	Town of Barnstable
Turning Movements	Consider adding a designated right-turn lane from Route 132 onto Independence Drive.	Medium	Long-Term	High	Town of Barnstable
	Consider added a right-turn slip lane from Enterprise Road onto Route 132.	Low	Long-Term	High	Town of Barnstable

Table 3: Potential Safety Enhancement Summary (cont.)

Safety Issue	Potential Safety Enhancement	Safety Payoff	Time Frame	Cost	Jurisdiction
Route 132 at Independence Drive/ Enterprise Road (cont.)					
Turning Movements (cont.)	Consider increasing the length of the eastbound and westbound left-turn lanes on Route 132 to extend past the length of the queues in the through lanes to ensure that access to the turn lanes is not blocked.	Medium	Long-Term	High	Town of Barnstable
	Consider increasing the length of the northbound left-turn lane to accommodate recent growth in traffic volumes.	Low	Mid-Term	Medium	Town of Barnstable
	Consider replacing the existing “No Turn on Red” sign on the Route 132 eastbound approach to the far side of the intersection to meet MassDOT standards and increase driver visibility.	Low	Short-Term	Low	Town of Barnstable
	Consider prohibiting westbound U-turns at this intersection to prevent some vehicles from making three-point turns within the intersection.	Medium	Short-Term	Low	Town of Barnstable
	Evaluate intersection control strategies, such as a modern roundabout, to facilitate safer turning movements and reduce the number of conflict points	High	Long-Term	High	Town of Barnstable
Route 132 at Airport Road					
Signage	Install a “One-Way” or “No Left Turn” sign informing southbound drivers on Airport Road that they are restricted from turning left onto Route 132 eastbound.	Low	Short-Term	Low	Town of Barnstable

Table 3: Potential Safety Enhancement Summary (cont.)

Safety Issue	Potential Safety Enhancement	Safety Payoff	Time Frame	Cost	Jurisdiction
Route 132 at Cape Cod Mall Driveway/ Capetown Plaza Driveway					
Pedestrian Accommodations	Repair the pedestrian signal to provide adequate pedestrian accommodations.	Medium	Short-Term	Low	Town of Barnstable
	Consider providing crosswalks across all four legs of the intersection and updating the existing crosswalks to be ADA compliant.	Medium	Mid-Term	Medium	Town of Barnstable
Route 132 at Nightingale Lane					
Left-Turns onto Route 132 Westbound	Consider adding signage and an island to convert Nightingale Lane to be a right-in/right-out roadway and ensure driver compliance.	High	Mid-Term	High	Town of Barnstable
	Consider designating Nightingale Lane as one-way southbound to eliminate cut-through traffic turning left onto Route 132 westbound.	Medium	Mid-Term	High	Town of Barnstable
	Consider extending the median on Route 132 west through the intersection to prevent drivers from turning left onto Route 132 westbound.	High	Long-Term	High	Town of Barnstable
	Evaluate sight distance for drivers turning left from Nightingale Lane onto Route 132 and, where feasible, remove obstacles such as vegetation and sign clutter that restricts sight distance.	Low	Short-Term	Low	Town of Barnstable
Pedestrian and Bicycle Accommodations	Evaluate the possibility of adding a pedestrian and bicycle crossing that would include safe crossing enhancements such as HAWK signals, a full traffic signal, or crossing islands.	High	Long-Term	High	Town of Barnstable

Appendix A. RSA Meeting Agenda

Agenda

Road Safety Audit

Hyannis, MA

Route 132 – east of Bearses Way to west of Airport Rotary

Meeting Location: Cape Cod Gateway Airport – 400 Barnstable Road,
Hyannis, MA (Airport Conference Room – First Floor)

February 22, 2023

9:00 AM – 1:00 PM

Type of meeting:	High crash location – Road Safety Audit
Attendees:	Invited participants to comprise a multidisciplinary team
Please bring:	Thoughts and enthusiasm!!

9:00 AM Welcome and Introductions

9:15 AM Discussion of Safety Issues

- Crash history – provided in advance
- Existing geometries and conditions

10:00 AM Site Visit

- Travel to the Route 132 corridor
- Walk certain segments of the corridor as a group and identify areas for improvement
- Focus on signalized intersections and unsignalized locations with a high number of existing crashes

12:00 PM Discussion of Potential Improvements

- Discuss observations and finalize safety issue areas
- Discuss potential improvements and finalize recommendations

1:00 PM Adjourn for the Day – but the RSA has not ended

Instructions for Participants:

- Before attending the RSA on February 22, 2023, participants are encouraged to travel through the corridor and complete/consider elements on the RSA Prompt List with a focus on safety.
- All participants will be actively involved in the process throughout. Participants are encouraged to come with thoughts and ideas, but are reminded that the synergy that develops and respect for others' opinions are key elements to the success of the overall RSA process.
- After the RSA meeting, participants will be asked to comment and respond to the document materials to assure it is reflective of the RSA completed by the multidisciplinary team.

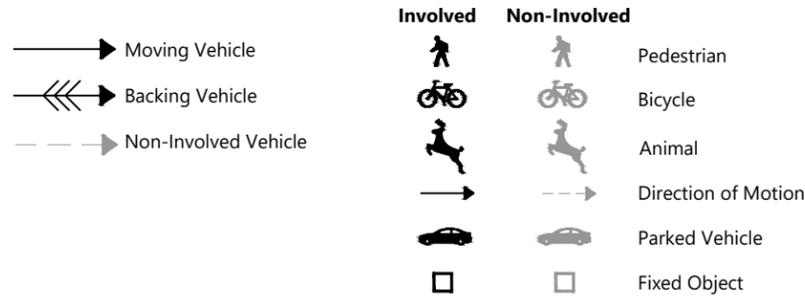
Appendix B. RSA Audit Team Contact List

Participating Audit Team Members

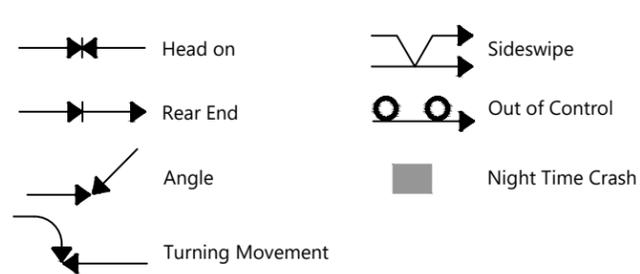
Audit Team Member	Agency/Affiliation	E-mail
Douglas Palmer	Barnstable Police	palmerd@barnstablepolice.com
Troy Perry	Barnstable Police	perryt@barnstablepolice.com
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Frank Nogueira	Cape Cod Regional Transit Authority	fnogueira@capecodrta.org
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Abigail Sheusi	VHB, Inc.	asheusi@vhb.com
Joelle Nutter	VHB, Inc.	jnutter@vhb.com

Appendix C. Detailed Crash Data

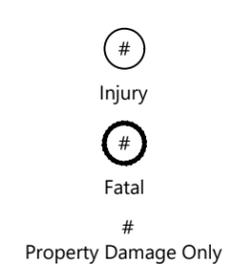
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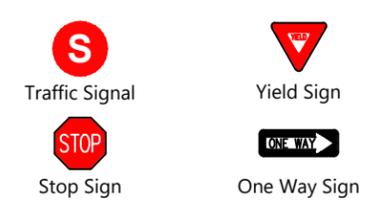
TYPES OF CRASH



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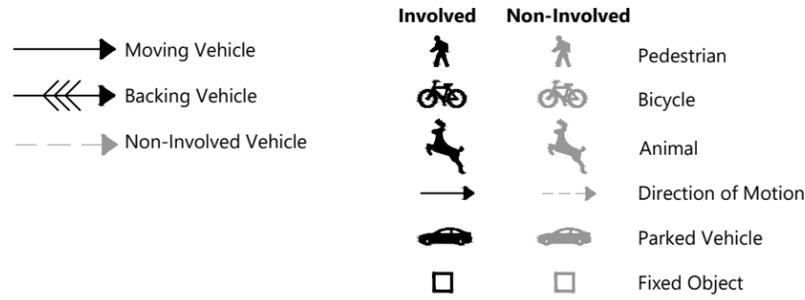
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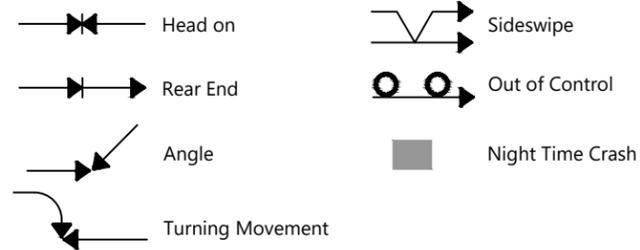
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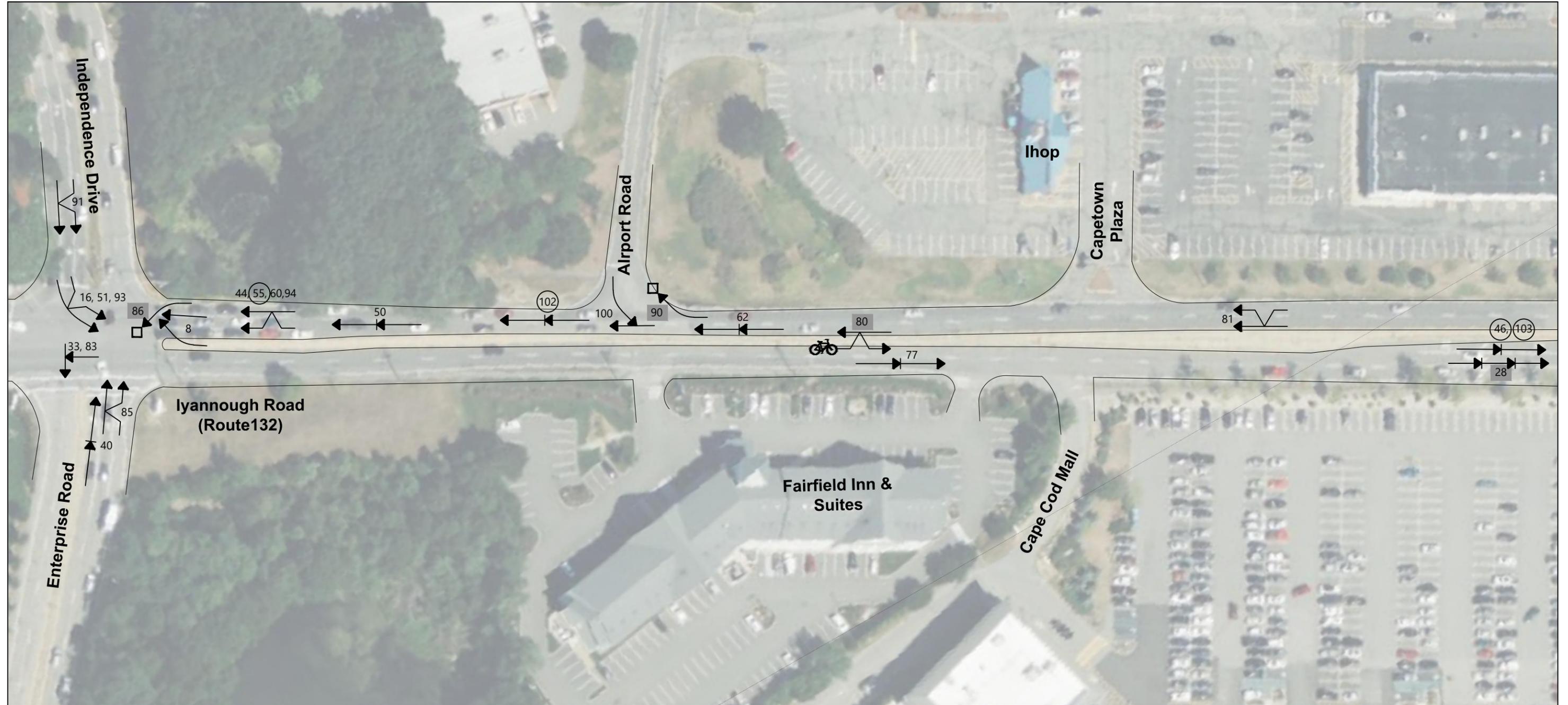
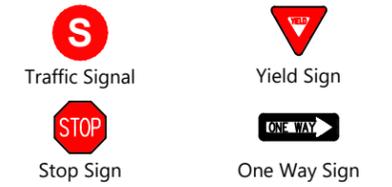
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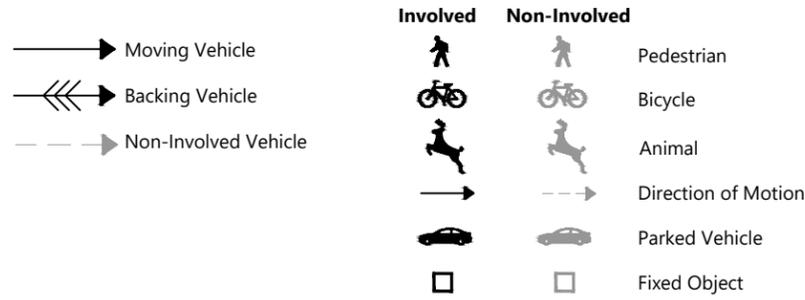
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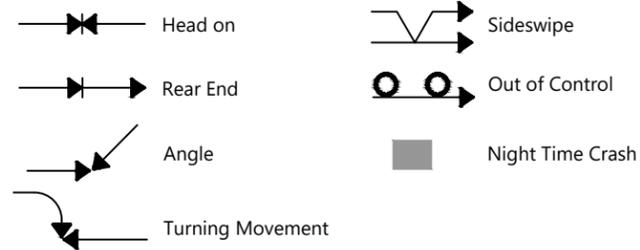
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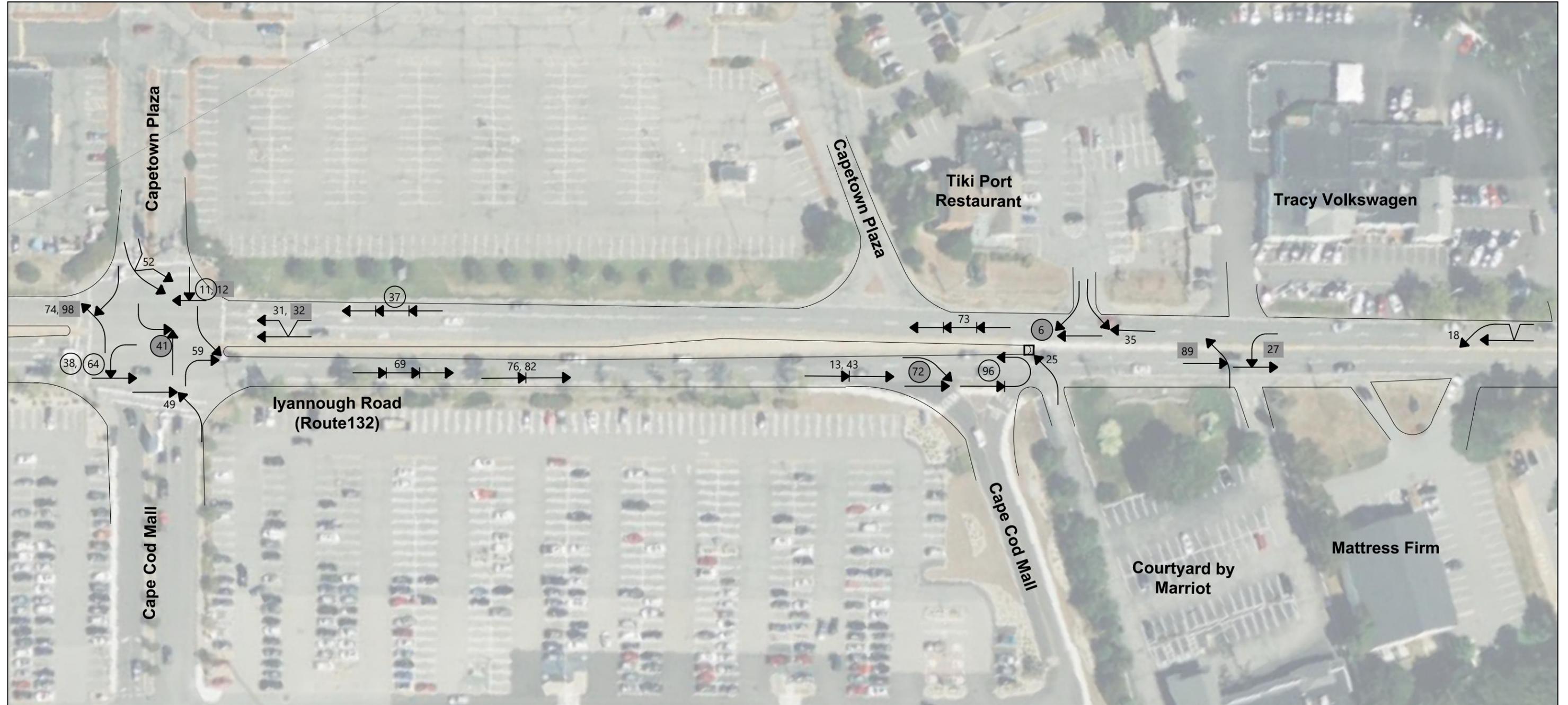
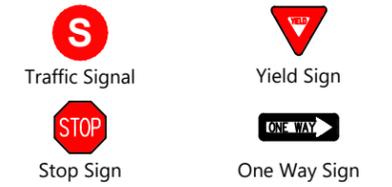
TYPES OF CRASH



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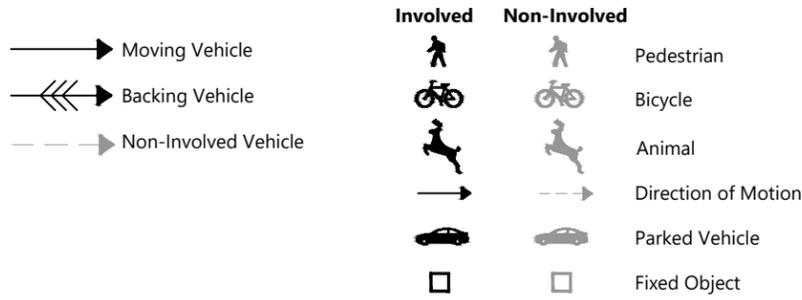
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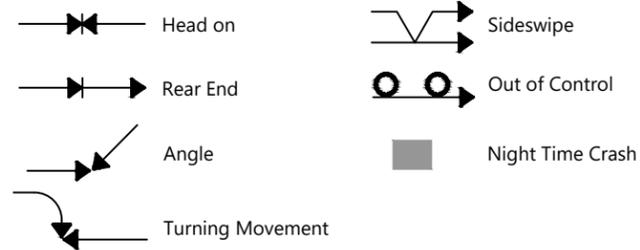
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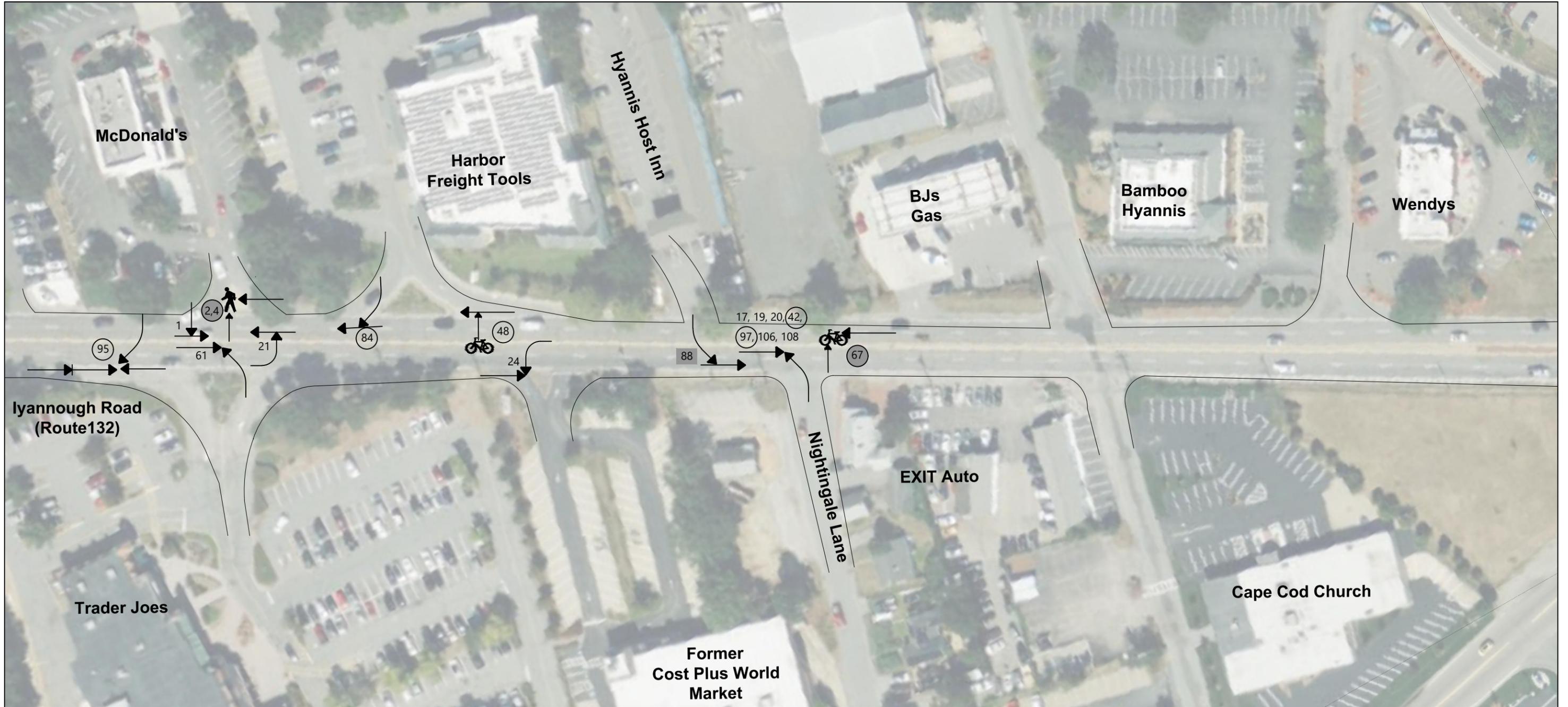
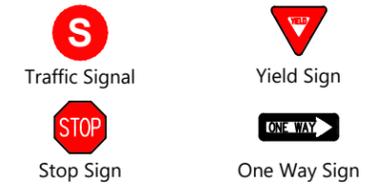
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Source of Crash Reports: Barnstable PD



Crash Data Summary Table

Rt 132 (between east of Bears Way and Nightingale Lane), Barnstable, MA
2017 - 2019

Crash Diagram Ref #	Crash Date	Crash Day	Time of Day	Manner of Collision	Light Condition	Weather Condition	Road Surface	Driver Contributing Code	Injury Status	D1 Age	D2 Age	D3 Age	Comments	Sheet #
#	mm/dd/yy	Day	hh:mm	Type	Type	Type	Type	Type	Type	#	#	#		#
1	01/03/17	Tuesday	2:10 PM	Angle	Daylight	Rain	Wet	Failed to yield right of way	No injury	34	75		EB MV1 on Rt 132 struck SB MV2 travelling illegally across Rt 132 from McDonalds to the Christmas Tree Shop plaza	5
2	01/13/17	Friday	5:52 PM	Single vehicle crash	Dark - lighted roadway	Clear	Dry	No improper driving	Possible	35			EB MV1 on Rt 132 in right lane struck pedestrian travelling NB across roadway near McDonald's	5
3	01/27/17	Friday	3:08 PM	Rear-end	Daylight	Clear	Dry	Followed too closely	No injury	39	69		EB MV2 on Rt 132 stopped for a NB fire truck at the intersection with Independence Drive/ Enterprise Road and EB MV2 rear-ended MV1	2
4	01/29/17	Sunday	6:00 PM	Single vehicle crash	Dark - lighted roadway	Clear	Dry	No improper driving	Incapacitating	23			EB MV1 on Rt 132 in left lane struck pedestrian travelling NB across roadway near McDonald's	5
5	02/06/17	Monday	1:02 PM	Rear-end	Daylight	Clear	Dry	Inattention	No injury	50	28		EB MV2 on Rt 132 was stopped at a red light at the intersection of Independence Drive/ Enterprise Road and was rear ended by EB MV1	2
6	02/10/17	Friday	6:22 PM	Angle	Dark - lighted roadway	Snow	Wet	Inattention	Non-incapacitating	17	77		WB MV1 on Rt 132 was struck by SB MV2 who turning out of the Tiki Port parking Lot	4
7	04/03/17	Monday	5:33 PM	Angle	Daylight	Clear	Dry	Failed to yield right of way	No injury	65	81		WB MV1 on Rt 132 struck by EB MV1 attempting to turn left into Friendly's parking Lot	1
8	04/06/17	Thursday	11:12 AM	Angle	Daylight	Cloudy	Dry	Made an improper turn	No injury	32	81		WB MV1 on Rt 132 in the right lane struck by WB MV2 attempting to take a right turn onto Independence Drive from the center lane of Rt 132	3
9	04/24/17	Monday	1:50 PM	Angle	Daylight	Clear	Dry	Failed to yield right of way	No injury	74	33		WB MV 2 on Rt 132 struck by SB MV1 attempting to turn right from Whole Foods parking lot onto Rt 132	2
10	05/21/17	Sunday	12:05 PM	Rear-end	Daylight	Clear	Dry	No improper driving	No injury	29			WB MV1 on Rt 132 rear-ended WB MV2 (a motorcycle) waiting to turn left into the condo driveway just east of the intersection of Rt 132 and the Festival Plaza Driveway	1
11	05/22/17	Monday	7:59 PM	Angle	Daylight	Cloudy	Dry	Disregarded traffic signs, signals, road markings	Possible	21	49		WB MV2 on Rt 132 was struck by SB MV1 running a red light while departing the Capetown Plaza driveway	4
12	05/22/17	Monday	6:48 AM	Sideswipe, same direction	Dark - lighted roadway	Rain	Wet	Inattention	No injury	68	50		WB MV 1 on Rt 132 in the left lane was struck by SB MV2 who was making a wide right-turn from the Capetown Plaza driveway onto Rt 132 WB	4
13	05/31/17	Wednesday	11:08 AM	Rear-end	Daylight	Clear	Dry	Inattention	No injury	46	68		EB MV1 on Rt 132 rear ended EB MV2 near the Cape Cod Mall	4
14	05/31/17	Wednesday	1:42 PM	Angle	Daylight	Rain	Wet	Made an improper turn	Unknown	56	74	33	EB MV2 on Rt 132 swerved into the WB lane striking WB MV1 on Rt 132 to attempt to avoid striking NB MV3 who cut in front of MV2 to turn left out of the Cape Crossroads driveway	2
15	06/01/17	Thursday	5:37 PM	Angle	Daylight	Clear	Dry	Made an improper turn	No injury	31	29		EB MV2 on Rt 132 struck NB MV1 making an illegal left-turn onto Rt 132 WB from Cape Crossroads driveway	2
16	06/05/17	Monday	9:00 AM	Sideswipe, same direction	Daylight	Cloudy	Wet	Other improper action	No injury	39	64		SB MV1 and SB MV2 were turning left from Independence Drive onto Rt 132 and MV1 crossed into MV2's lane and struck MV2	3
17	06/09/17	Friday	2:48 PM	Angle	Daylight	Clear	Dry	Failed to yield right of way	No injury	32	30		EB MV1 on Rt 132 collided with MV2 turning left to go WB on Rt 132 from Nightingale Lane	5

Crash Data Summary Table

Rt 132 (between east of Bears Way and Nightingale Lane), Barnstable, MA
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Crash Diagram Ref #	Crash Date	Crash Day	Time of Day	Manner of Collision	Light Condition	Weather Condition	Road Surface	Driver Contributing Code	Injury Status	D1 Age	D2 Age	D3 Age	Comments	Sheet #
#	mm/dd/yy	Day	hh:mm	Type	Type	Type	Type	Type	Type	#	#	#		#
18	07/03/17	Monday	6:24 PM	Sideswipe, same direction	Daylight	Clear	Dry	Made an improper turn	No injury	74	49		WB MV1 on Rt 132 tried to turn left from the right lane into the Mattress Firm parking lot and struck WB MV2 in the left lane	4
19	07/25/17	Tuesday	3:52 PM	Angle	Daylight	Clear	Dry	Inattention	No injury	43	37		Vehicle in right lane of Rt 132 EB stopped to let NB MV1 turn left onto Rt 132 from Nightingale Lane. EB MV2 in left lane of Rt 132 didn't stop and collided with MV1	5
20	07/28/17	Friday	7:56 AM	Angle	Daylight	Clear	Dry	Made an improper turn	No injury	58	48		Vehicle in right lane of Rt 132 EB stopped to let NB MV1 turn left onto Rt 132 from Nightingale Lane. EB MV2 in left lane of Rt 132 didn't stop and collided with MV1	5
21	08/15/17	Tuesday	6:10 PM	Angle	Daylight	Rain	Wet	Made an improper turn	No injury	56			WB MV1 in right lane of Rt 132 struck rear left side of MV2 making illegal left turn from EB Rt 132 into McDonald's parking lot	5
22	08/15/17	Tuesday	6:43 PM	Sideswipe, same direction	Daylight	Cloudy	Wet	Inattention	No injury	36	56		NB MV1 was turning left onto Rt 132 WB from the Cape Crossroads driveway and struck SB MV2 turning right onto Rt 132 WB from the Toyota of Hyannis driveway	2
23	08/17/17	Thursday	10:03 PM	Angle	Dark - lighted roadway	Clear	Dry	No improper driving	Possible	24			EB MV2 on Rt 132 was struck by NB MV1 attempting to turn left onto Rt 132 WB from the Cape Crossroads driveway	2
24	08/29/17	Tuesday	1:42 PM	Angle	Daylight	Clear	Dry	Made an improper turn	No injury	Unkn own			EB MV2 on Rt 132 struck MV1 making left turn from Rt 132 WB into the Cost Plus World Market parking lot	5
25	10/25/17	Wednesday	1:21 PM	Single vehicle crash	Daylight	Rain	Wet	Visibility obstructed	No injury	64			WB MV1 turning left out of Courtyard by Marriott Hotel parking lot to enter Rt 132 WB lost bearing due to rain and went over the edge of median and struck a sign	4
26	11/07/17	Tuesday	8:21 PM	Angle	Dark - lighted roadway	Clear	Dry	Inattention	No injury	48	43		WB MV1 on Rt 132 was struck by SB MV2 (vehicle with trailer) backing out of Toyota of Hyannis driveway onto Rt 132	2
27	11/08/17	Wednesday	5:30 PM	Angle	Dusk	Cloudy	Dry	Made an improper turn	No injury	26	27		EB MV2 on Rt 132 struck rear right side of MV1 making illegal left turn from WB Rt 132 into Courtyard by Marriott parking lot	4
28	11/17/17	Friday	4:53 PM	Rear-end	Dusk	Clear	Dry	No improper driving	No injury	49	21		EB MV1 and EB MV2 on Rt 132 were stopped at a red light at the Cape Cod Mall driveway intersection. EB MV3 did not stop and rear-ended MV2 causing MV2 to rear end MV1	3
29	12/05/17	Tuesday	4:56 PM	Rear-end	Dark - lighted roadway	Cloudy	Wet	Inattention	Possible	68	24		EB MV 1 on Rt 132 was rear ended by EB MV2 at the intersection with Independence Drive / Enterprise Road	2
30	12/08/17	Friday	10:15 AM	Angle	Daylight	Clear	Dry	Failure to keep in proper lane or running off road	No injury	31	49		EB MV1 on Rt 132 in the left lane was struck by EB MV2 who mounted the center median while attempting to get around MV1 approaching the intersection with Independence Drive / Enterprise Road	2
31	12/27/17	Wednesday	9:05 AM	Sideswipe, same direction	Daylight	Clear	Dry	Unknown	No injury	59	64		WB MV1 on Rt 132 in the right lane was stopping for a light turning red at the intersection with the Cape Cod Mall driveway and was sideswiped by WB MV2 on Rt 132 in the left lane who was attempting to travel through the intersection before the light turned red	4
32	12/29/17	Friday	5:19 PM	Sideswipe, same direction	Dark - lighted roadway	Clear	Dry	Unknown	No injury	29	20		WB MV2 on Rt 132 was changing lanes from the right lane to the left lane and struck WB MV 1 travelling in the left lane near the Capetown Plaza	4

Crash Data Summary Table

Rt 132 (between east of Bears Way and Nightingale Lane), Barnstable, MA
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#	mm/dd/yy	Day	hh:mm	Type	Type	Type	Type	Type	Type	#	#	#		#
33	01/03/18	Wednesday	2:52 PM	Angle	Daylight	Clear	Dry	Disregarded traffic signs, signals, road markings	No injury	81	73		SB MV1 on Independence Drive entered intersection with Rt 132 and struck WB MV2 on Rt 132 who ran a red light	3
34	01/07/18	Sunday	1:17 PM	Angle	Daylight	Clear	Ice	Unknown	No injury	49	66		WB MV1 on Rt 132 attempted to stop but skidded on ice and struck EB MV2 who was turning left into Festival Plaza	1
35	01/30/18	Tuesday	1:34 PM	Angle	Daylight	Snow	Snow	No improper driving	No injury	53	29		WB MV2 on Rt 132 in the left lane was struck by SB MV1 turning left from the Tiki Port driveway onto Rt 132 EB	4
36	02/06/18	Tuesday	7:18 PM	Angle	Dark - lighted roadway	Clear	Dry	Failed to yield right of way	Possible	38	52		WB MV1 on Rt 132 struck SB MV2 making a left-turn exiting the Festival Plaza Driveway onto Rt 132 EB	1
37	02/09/18	Friday	2:11 PM	Rear-end	Daylight	Clear	Dry	Followed too closely	Possible	39	59	34	WB MV2 and WB MV3 on Rt 132 were stopped at a red light at the Cape Cod Mall driveway intersection. WB MV1 did not stop and rear-ended MV2 causing MV2 to rear end MV3	4
38	03/15/18	Thursday	11:32 AM	Angle	Daylight	Clear	Dry	Unknown	Possible	41	28		EB MV1 on Rt 132 struck WB MV2 attempting to turn left from Rt 132 WB into the Cape Cod Mall at the signalized driveway	4
39	03/23/18	Friday	9:01 PM	Angle	Dark - lighted roadway	Clear	Dry	Inattention	No injury	41	30		WB MV1 on Rt 132 struck SB MV2 exiting Toyota of Hyannis driveway	2
40	04/12/18	Thursday	2:18 PM	Rear-end	Daylight	Clear	Dry	Inattention	No injury	40	18		NB MV2 on Enterprise Drive stopped as the traffic light at the intersection with Rt 132 was turning yellow and was rear-ended by NB MV1	3
41	04/13/18	Friday	9:23 PM	Sideswipe, opposite direction	Dark - lighted roadway	Clear	Dry	Failed to yield right of way	Possible	60	19		SB MV1 exiting the Capetown Plaza and turning left onto Rt 132 struck NB MV2 going straight from the Cape Cod Mall driveway to the Capetown Plaza driveway	4
42	04/19/18	Thursday	2:29 PM	Angle	Daylight	Clear	Dry	Inattention	Possible	80	20		NB MV1 attempting to turn left onto Rt 132 WB from Nightingale Lane pulled in front of EB MV2 travelling on Rt 132 and EB MV2 struck left side of MV1	5
43	05/24/18	Thursday	3:18 PM	Rear-end	Daylight	Clear	Dry	Inattention	No injury	17	22		EB MV1 on Rt 132 rear ended EB MB2 on Rt 132 near Capetown Plaza	4
44	05/25/18	Friday	5:59 PM	Sideswipe, same direction	Daylight	Clear	Dry	Other improper action	No injury	20	74		WB MV1 on Rt 132 was stopped at the intersection with Independence Drive/ Enterprise Road in the left through-lane and was struck by WB MV2 attempting to access the left-turn lane	3
45	06/07/18	Thursday	8:31 AM	Rear-end	Daylight	Clear	Dry	Followed too closely	No injury	19	23		WB MV2 on Rt 132 slowed to let a vehicle exit the Toyota of Hyannis driveway and was rear-ended by WB MV1	2
46	06/11/18	Monday	9:12 AM	Rear-end	Daylight	Cloudy	Dry	Unknown	Possible	35	51		EB MV2 on Rt 132 at the signalized intersection with Cape Cod Mall was rear ended by EB MV1	3
47	06/25/18	Monday	3:22 PM	Angle	Daylight	Clear	Dry	Failed to yield right of way	Possible	37	44		WB MV1 on Rt 132 in right lane was struck by EB MV2 making a left-turn from Rt 132 into Friendly's parking lot	1
48	06/27/18	Wednesday	1:41 PM	Single vehicle crash	Daylight	Clear	Dry	Failed to yield right of way	Possible	28	62		WB MV1 on Rt 132 in right lane struck cyclist crossing roadway near Harbor Fright Tools	5
49	06/27/18	Wednesday	1:00 PM	Angle	Daylight	Clear	Dry	Unknown	No injury	45			EB MV2 on Rt 132 at the intersection with Cape Cod Mall was struck by NB MV1 on the Cape Cod Mall driveway who was making a U-Turn on a red light	4

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#	mm/dd/yy	Day	hh:mm	Type	Type	Type	Type	Type	Type	#	#	#		#
50	07/28/18	Saturday	12:20 PM	Rear-end	Daylight	Clear	Dry	Other improper action	No injury	84	34		WB MV2 on Rt 132 was rear-ended by WB MV1 at the intersection with Independence Drive/ Enterprise Road	3
51	08/17/18	Friday	10:52 AM	Sideswipe, same direction	Daylight	Cloudy	Dry	Unknown	No injury	80	28		SB MV1 and SB MV2 were making dual left turns from Independence Drive onto Rt 132 EB and struck each other	3
52	08/28/18	Tuesday	11:55 AM	Sideswipe, same direction	Daylight	Clear	Dry	Failed to yield right of way	No injury	67	78		SB MV2 at the Capetown Plaza driveway was travelling straight through the intersection with Rt 132 from the left lane and was struck by SB MV1 turning left onto Rt 132 from the right lane	4
53	09/01/18	Saturday	12:22 PM	Angle	Daylight	Clear	Dry	Made an improper turn	No injury	23	24		WB MV2 on Rt 132 in the left lane was struck by WB MV1 attempting to turn left from the right lane into the 973 Lyannough Road driveway	2
54	09/03/18	Monday	9:48 AM	Rear-end	Daylight	Clear	Dry	Followed too closely	No injury	34	25		SB MV1 on the Whole Foods Driveway approaching Rt 132 was rear-ended by SB MV2	2
55	09/22/18	Saturday	5:23 PM	Sideswipe, same direction	Daylight	Clear	Dry	Failed to yield right of way	Possible	35	65		WB MV1 on Rt 132 was transitioning into the left-turn lane approaching Independence Drive/ Enterprise Road and struck WB MV2 already in the left-turn lane	3
56	10/01/18	Monday	3:04 PM	Rear-end	Daylight	Cloudy	Dry	Distracted	Possible	22	51		EB MV1 on Rt 132 rear-ended EB MV2 stopped to turn left into the driveway for Luke's Liquors	1
57	10/19/18	Friday	12:09 PM	Angle	Daylight	Clear	Dry	Inattention	Possible	52	55		EB MV2 on Rt 132 was struck by WB MV1 taking a left-turn in front of MV2 into Dowling and O'Neil Insurance complex	2
58	10/19/18	Friday	1:12 PM	Angle	Daylight	Clear	Dry	Disregarded traffic signs, signals, road markings	Non-incapacitating	25	52		WB MV2 on Rt 132 in the right lane struck EB MV1 on Rt 132 attempting to take a left-turn into the Cumberland Farms parking lot	1
59	11/20/18	Tuesday	3:19 PM	Angle	Daylight	Rain	Wet	Unknown	No injury	70	46		NB MV2 taking a right-turn from the Cape Cod Mall driveway onto Rt 132 EB struck SB MV1 taking a left-turn from the Capetown Plaza driveway onto Rt 132 EB	4
60	11/23/18	Friday	1:02 PM	Sideswipe, same direction	Daylight	Clear	Dry	Followed too closely	No injury	20			WB MV2 on Rt 132 in the left lane approaching the intersection with Independence Drive/ Enterprise Road struck WB MV1 on Rt 132 in the left lane while attempting to maneuver into the right lane	3
61	12/06/18	Thursday	7:39 AM	Angle	Daylight	Clear	Dry	Made an improper turn	No injury	24	29		NB MV1 made illegal left onto Rt 132 WB from Christmas Tree Plaza parking lot, WB MV2 on Rt 132 struck the front right side of MV1	5
62	12/20/18	Thursday	10:34 AM	Rear-end	Daylight	Clear	Dry	Inattention	No injury	29	20		WB MV1 on Rt 132 was rear ended by WB MV2 near the intersection with Airport Road. Both vehicles were stopped in traffic prior to impact.	3
63	12/24/18	Monday	1:09 PM	Rear-end	Daylight	Cloudy	Dry	No improper driving	No injury	63	39	71	EB MV2, EB MV3, and EB MV4 on Rt 132 were approaching the Festival Plaza driveway intersection. EB MV1 did not stop and rear-ended MV2 causing MV2 to rear end MV3 and MV3 to rear end MV4	1
64	01/07/19	Monday	9:04 AM	Angle	Daylight	Clear	Dry	Failed to yield right of way	Possible	43	84		EB MV1 on Rt 132 was struck by WB MV2 attempting to make a left-turn into the Cape Cod Mall driveway	4
65	01/11/19	Friday	1:58 PM	Angle	Daylight	Clear	Dry	Inattention	No injury	20	62		EB MV2 on Rt 132 was struck by NB MB1 exiting Wells Fargo Plaza and making a left-turn	2

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66	02/12/19	Tuesday	7:24 AM	Angle	Daylight	Clear	Dry	Made an improper turn	No injury	26	64		EB MV1 on Rt 132 in the left-lane was struck by NB MV2 attempting to make a left-turn out of the 955 Iyannough Road parking lot	2
67	02/13/19	Wednesday	6:32 PM	Single vehicle crash	Dusk	Cloudy	Dry	No improper driving	Incapacitating	50			WB MV1 on Rt 132 in right lane struck cyclist crossing roadway from Nightingale Lane	5
68	02/23/19	Saturday	1:26 PM	Sideswipe, same direction	Daylight	Cloudy	Dry	Inattention	No injury	24	27		EB MV1 on Rt 132 in the right lane attempted to change to the left lane and struck EB MV2 near Independence Drive	2
69	03/09/19	Saturday	2:14 PM	Rear-end	Daylight	Clear	Dry	Operating vehicle in erratic, reckless, careless, negligent, or aggressive manner	No injury	18			EB MV1 on Rt 132 near the Cape Cod Mall hit the gas instead of the break and struck EB MV2 who struck EB MV3	4
70	03/14/19	Thursday	11:23 AM	Rear-end	Daylight	Clear	Dry	Inattention	No injury	47	24	45	WB MV2 and WB MV3 on Rt 132 were stopped in traffic by Luke's Liquors. WB MV1 did not stop and rear-ended MV2 causing MV2 to rear end MV3	1
71	03/28/19	Thursday	8:48 AM	Sideswipe, same direction	Daylight	Clear	Dry	Glare	No injury	29	41		EB MV2 on Rt 132 in the righth lane attempted to change into the left lane and sideswiped EB MV1 near the Toyota of Hyannis dealership	2
72	04/05/19	Friday	11:24 PM	Angle	Dark - lighted roadway	Rain	Wet	Made an improper turn	Possible	23	63		EB MV2 on Rt 132 in the right lane was struck by EB MV1 attempting to turn right from the left lane into the one-way exit-only driveway for the Cape Cod Mall	4
73	04/22/19	Monday	11:54 AM	Rear-end	Daylight	Rain	Wet	No improper driving	No injury	45	68	36	WB MV1 on Rt 132 slowed down to turn into the Tiki Port and was struck by WB MV2 who was struck by WB MV1	4
74	04/29/19	Monday	4:50 PM	Angle	Daylight	Clear	Dry	No improper driving	No injury	62	22		NB MV2 taking a left-turn from the Cape Cod Mall driveway onto Rt 132 WB and was struck by SB MV1 taking a right-turn from the Capetown Plaza driveway onto Rt 132 WB	4
75	05/31/19	Friday	3:58 PM	Sideswipe, same direction	Daylight	Clear	Dry	Unknown	No injury	40	87		EB MV1 on Rt 132 in the left lane and EB MV2 in the righth lane sideswiped each other near the Holiday Inn	1
76	06/13/19	Thursday	7:42 PM	Rear-end	Daylight	Rain	Wet	No improper driving	No injury	30	63		EB MV2 on Rt 132 was stopped at the red light at the intersection with the Cape Cod Mall driveway and was rear-ended by EB MV1	4
77	06/20/19	Thursday	3:32 PM	Rear-end	Daylight	Clear	Dry	Unknown	No injury	35	59		EB MV1 on Rt 132 rear-ended EB MV2 while attempting to change lanes near the Fairfield Inn & Suites	3
78	06/21/19	Friday	11:41 AM	Rear-end	Daylight	Clear	Dry	Unknown	No injury	18	37		EB MV2 on Rt 132 was stopped at the red light at the intersection with Independence Drive/ Enterprise Road and was rear-ended by EB MV1	2
79	06/21/19	Friday	11:53 AM	Angle	Daylight	Clear	Dry	Unknown	No injury	21	80		WB MV1 on Rt 132 was taking a right-turn into the Festival Plaza driveway and struck EB MV2 on Rt 132 who was taking a left-turn into the Festival Plaza driveway	1
80	07/03/19	Wednesday	9:45 PM	Single vehicle crash	Dark - roadway not lighted	Clear	Dry	No improper driving	No injury	81			MV1 traveling WB on Rt 132 struck cyclist who was traveling EB on Rt 132 in the opposing lane of travel near Capetown Plaza	3

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81	07/07/19	Sunday	10:20 AM	Sideswipe, same direction	Unknown	Unknown	Unknown	Unknown	No injury	83			WB MV2 on Rt 132 sideswiped WB MV1 near the Cape Cod Mall	3
82	07/12/19	Friday	12:19 PM	Rear-end	Daylight	Clear	Dry	Distracted	No injury	21	69		EB MV1 on Rt 132 rear-ended EB MV2 at the intersection with the Cape Cod Mall driveway	4
83	07/17/19	Wednesday	3:49 PM	Angle	Daylight	Clear	Dry	Disregarded traffic signs, signals, road markings	No injury	27	72		WB MV1 on Rt 132 ran the red light at the intersection with Independence Drive/ Enterprise Road and struck SB MV2 on Enterprise Road	3
84	07/26/19	Friday	5:13 PM	Angle	Daylight	Clear	Dry	Failed to yield right of way	Possible	35	43		WB MV2 on Rt 132 was struck by SB MV1 pulling out of Harbor Freight Tools parking lot	5
85	08/09/19	Friday	1:02 PM	Sideswipe, same direction	Daylight	Clear	Dry	Other improper action	No injury	62	61		NB MV2 on Enterprise Road was stopped at the red light at the intersection with Rt 132 and was sideswiped by NB MV1	3
86	08/25/19	Sunday	2:16 AM	Single vehicle crash	Dark - lighted roadway	Clear	Dry	Inattention	No injury	37			WB MV1 on Rt 132 was making a U-Turn at intersection with Enterprise Road and struck divider sign	3
87	09/20/19	Friday	5:57 AM	Angle	Dusk	Clear	Dry	Distracted	Possible	28	26		WB MV1 on Rt 132 was struck by EV MV2 attempting to turn left into Whole Foods Parking Lot	2
88	09/22/19	Sunday	8:55 AM	Angle	Daylight	Clear	Dry	No improper driving	No injury	68	69		SB MV1 (a CCRTA bus) turned left out of Hyannis Host Inn parking lot and struck the rear left of EB MV2 travelling in the right lane of Rt 132	5
89	10/02/19	Wednesday	6:46 PM	Angle	Dark - lighted roadway	Rain	Wet	Failed to yield right of way	No injury	17	28		WB MV1 on Rt 132 struck NB MV2 who was turning left out of the Courtyard by Marriot Parking Lot onto Rt 132 WB	4
90	10/20/19	Sunday	3:45 AM	Single vehicle crash	Dark - lighted roadway	Clear	Dry	Unknown	Unknown	Unkn own			WB MV1 crashed onto the guard rail near the intersection of Rt 132 and Airport Road	3
91	10/24/19	Thursday	1:15 PM	Sideswipe, same direction	Daylight	Clear	Dry	Inattention	No injury	81	53		SB MV1 on Independence Drive approaching Rt 132 was in the middle lane and sideswiped MV2 in the left lane when attempting to change lanes	3
92	11/08/19	Friday	2:02 PM	Sideswipe, same direction	Daylight	Clear	Dry	Failure to keep in proper lane or running off road	No injury	85	30		WB MV1 on Rt 132 was sideswiped by WB MV2 while changing lanes west of Enterprise Road	2
93	11/15/19	Friday	2:37 PM	Sideswipe, same direction	Daylight	Cloudy	Dry	Failure to keep in proper lane or running off road	No injury	93	65		SB MV1 and SB MV2 were making dual left turns from Independence Drive onto Rt 132 EB and struck each other	3
94	11/18/19	Monday	11:47 AM	Sideswipe, same direction	Daylight	Rain	Wet	Failure to keep in proper lane or running off road	No injury	16	33		WB MV2 on Rt 132 was stopped at the intersection with Independence Drive/ Enterprise Road in the left through-lane and was struck by WB MV1 attempting to access the left-turn lane	3
95	12/05/19	Thursday	12:48 PM	Angle	Daylight	Clear	Dry	Failed to yield right of way	Non-incapacitating	42	64	33	SB MV 4 exiting McDonalds parking lot to turn left onto Rt 132 EB was struck by WB MV1 on Rt 132 in the left lane. MV1 swerved into EB traffic and hit EB MV3, MV4 continues WB from impact and struck MV3, MV1 clipped MV2	5
96	12/09/19	Monday	1:01 PM	Angle	Daylight	Rain	Wet	Failed to yield right of way	Possible	54	18		EB MV1 on Rt 132 struck NB MV2 exiting Target parking lot and attempting to make a u-turn	4
97	12/17/19	Tuesday	11:42 AM	Angle	Daylight	Rain	Wet	Visibility obstructed	Possible	70	39		Vehicle in right lane of Rt 132 EB stopped to let NB MV1 turn left onto Rt 132 from Nightingale Lane. EB MV2 in left lane of Rt 132 didn't stop and collided with MV1	5

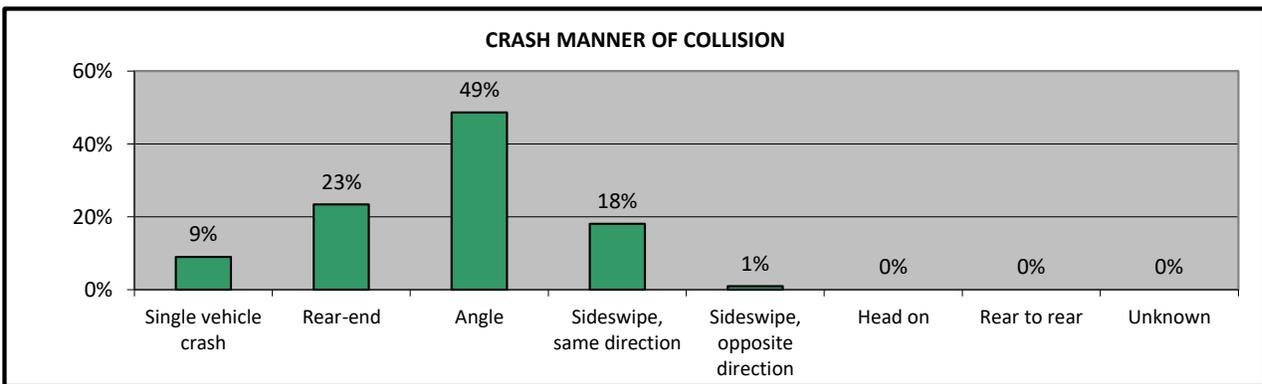
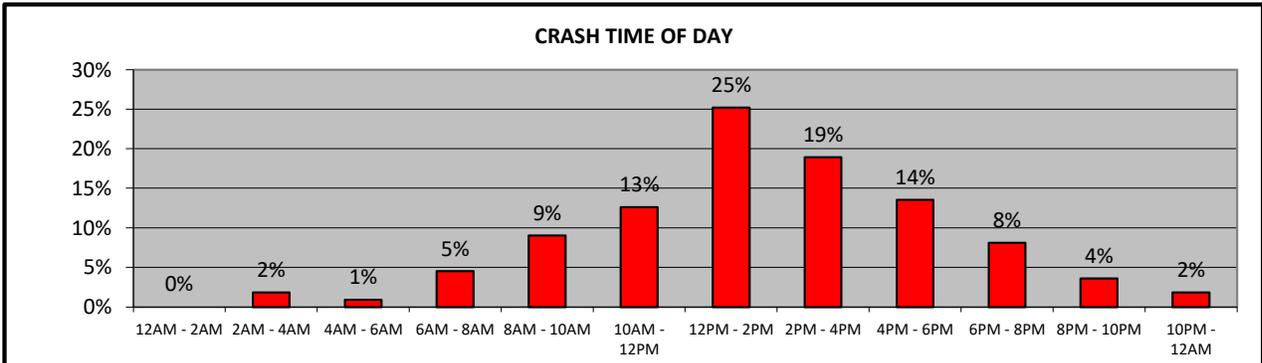
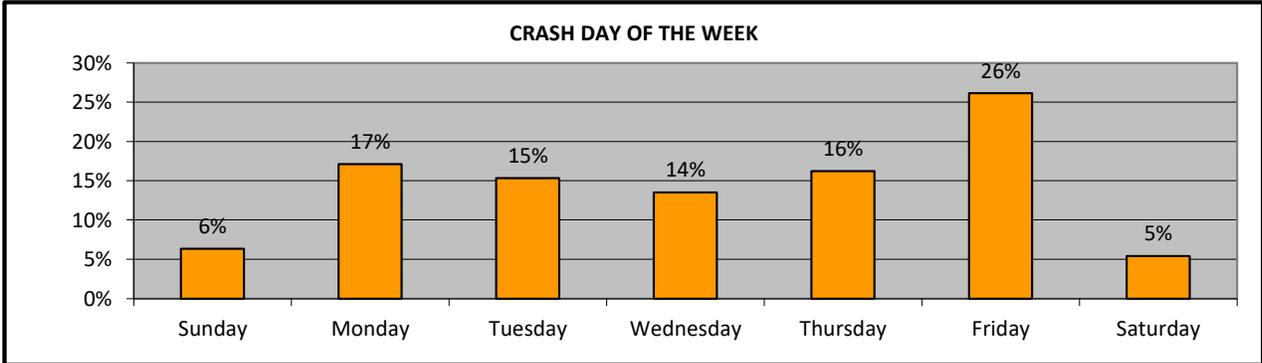
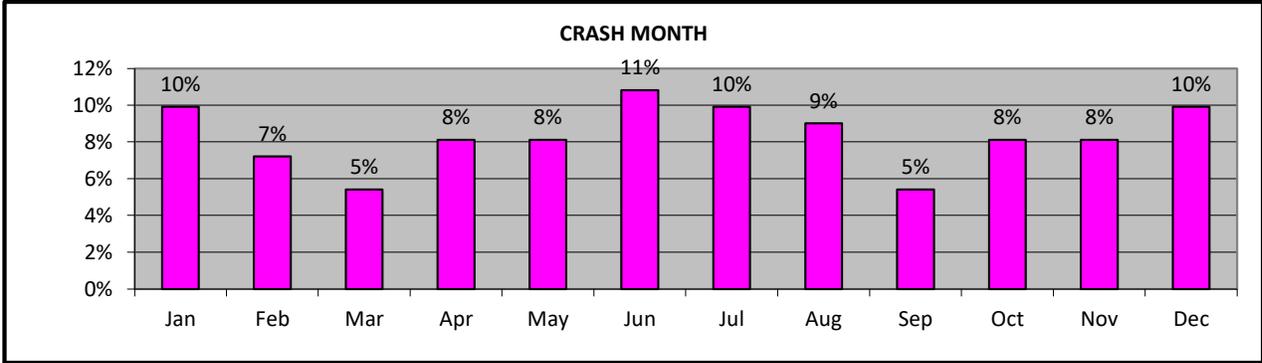
Crash Data Summary Table

Rt 132 (between east of Bears Way and Nightingale Lane), Barnstable, MA
2017 - 2019

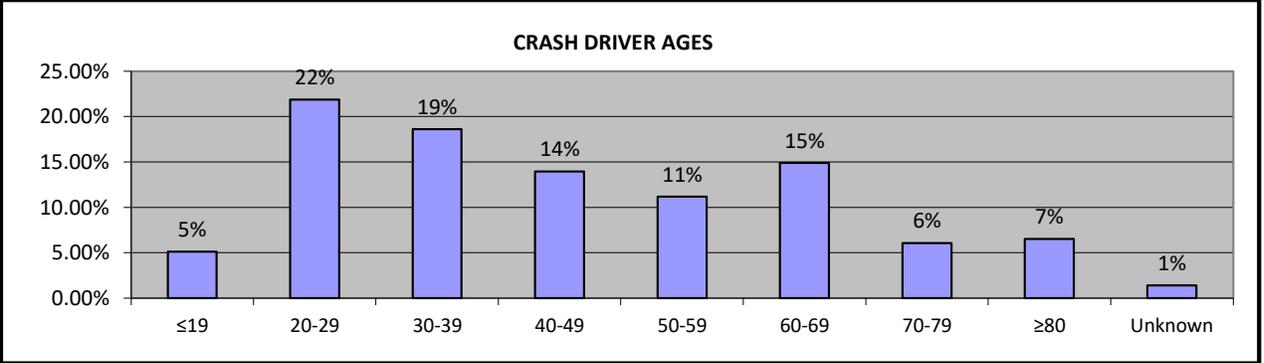
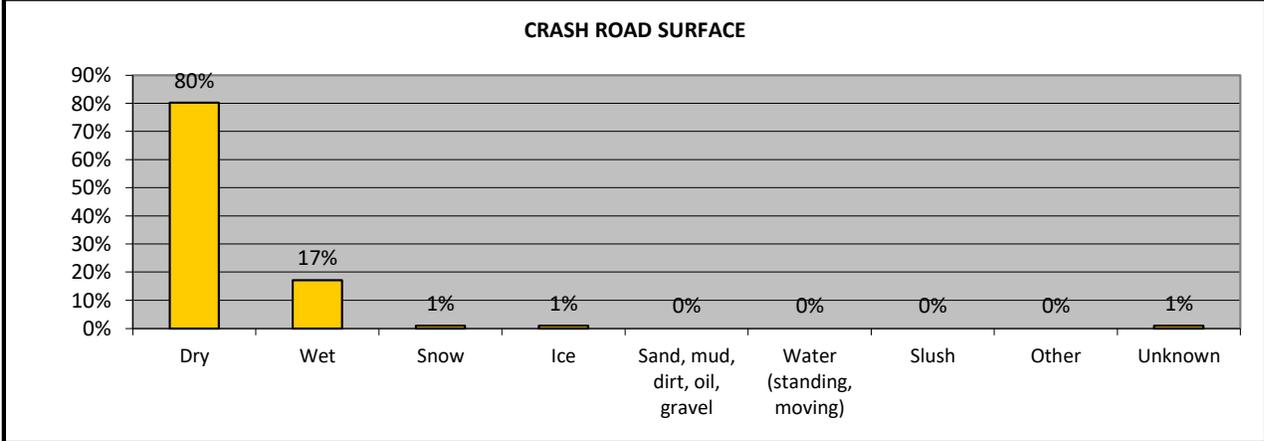
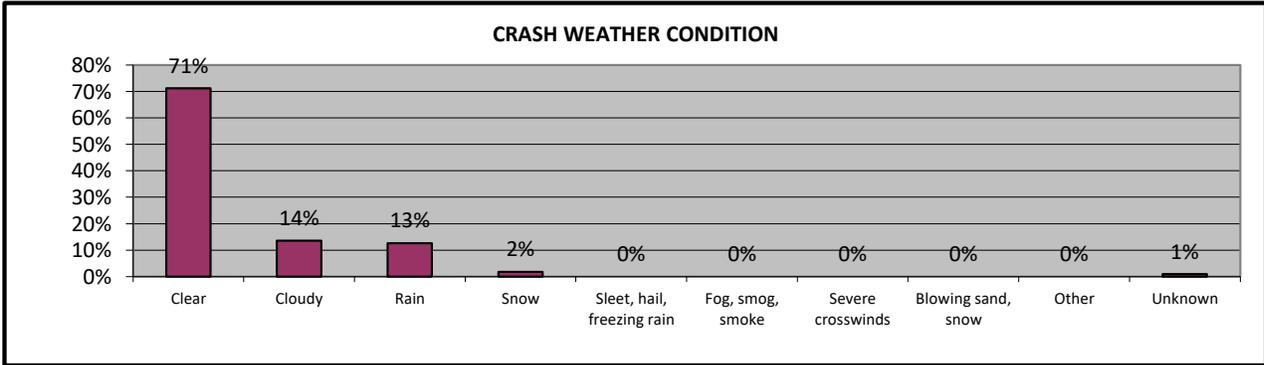
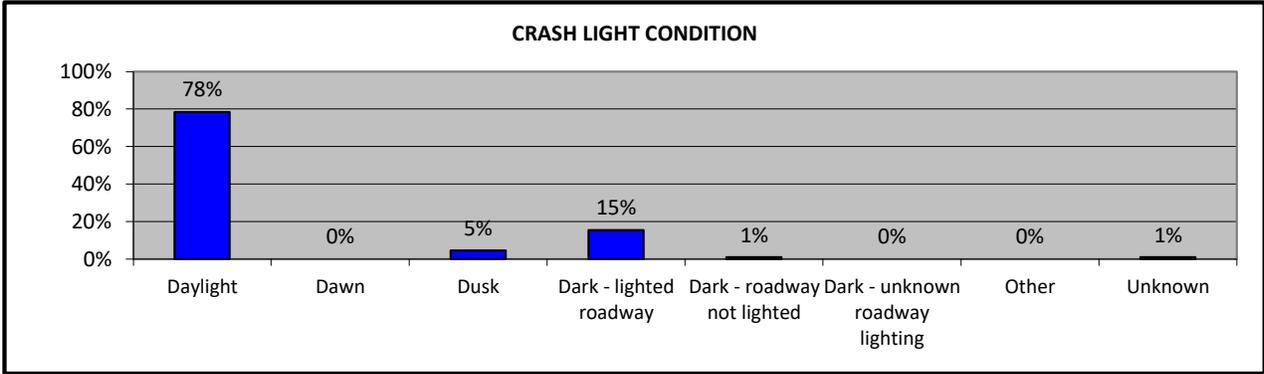
Crash Diagram Ref #	Crash Date	Crash Day	Time of Day	Manner of Collision	Light Condition	Weather Condition	Road Surface	Driver Contributing Code	Injury Status	D1 Age	D2 Age	D3 Age	Comments	Sheet #
#	mm/dd/yy	Day	hh:mm	Type	Type	Type	Type	Type	Type	#	#	#		#
98	01/28/17	Saturday	5:46 PM	Angle	Dark - lighted roadway	Clear	Dry	Inattention	No injury	72	23		SB MV1 was making a right-turn from the Capetown Plaza onto Rte 132 WB and collided with NB MV2 making a left-turn from Cape Cod Mall onto Rte 132 WB	4
99	02/07/17	Tuesday	5:26 PM	Single vehicle crash	Dark - lighted roadway	Rain	Wet	No improper driving	Non-incapacitating	58			EB MV1 on Route 132 near Cumberland Farms struck a pedestrian trying to cross Rte 132	1
100	07/26/17	Wednesday	1:15 PM	Angle	Daylight	Clear	Dry	Inattention	No injury	53	62		WB MV1 on Route 132 was struck by SB MV2 attempting to turn left from Airport Road onto Rte 132 EB	3
101	07/27/17	Thursday	9:48 AM	Angle	Daylight	Clear	Dry	Failure to keep in proper lane or running off road	No injury	30	42	32	MV1, MV2, and MV3 were traveling EB on Rte 132. MV2 in the left lane slowed to turn left into Festival Plaza driveway. MV1 also in the left lane struck the back of MV2 causing MV2 to collide with MV3 in the right lane.	1
102	10/20/17	Friday	3:37 PM	Rear-end	Daylight	Clear	Dry	No improper driving	Possible	16			WB MV2 was stopped in traffic on Rt 132 near Airport Road and was struck in the rear by WB MV1	3
103	12/19/17	Tuesday	8:49 AM	Rear-end	Daylight	Cloudy	Wet	Distracted	Possible	52	61		EB MV1 was stopped at the traffic light of Rt 132 at the Cape Cod Mall and was struck in the rear by EB M2	3
104	01/02/18	Tuesday	7:37 AM	Rear-end	Daylight	Clear	Dry	Visibility obstructed	Non-incapacitating	31	25	47	WB MV1 was stopped waiting to turn left into the Holiday Inn and WB MV2 was stopped behind MV1. WB MV3 did not stop and rear-ended MV2, who rear-ended MV1.	1
105	03/19/18	Monday	12:38 PM	Single vehicle crash	Daylight	Clear	Dry	Inattention	Non-incapacitating	32			Vehicle in right lane of Rt 132 WB stopped to let a pedestrian cross Rt 132 from the north near Luke's Liquors. WB MV2 in left lane of Rt 132 didn't stop and struck the pedestrian	1
106	08/17/18	Friday	12:34 PM	Angle	Daylight	Clear	Dry	Visibility obstructed	No injury	26	36		Vehicle in right lane of Rt 132 EB stopped to let NB MV1 turn left onto Rt 132 from Nightingale Lane. EB MV2 in left lane of Rt 132 didn't stop and collided with MV1	5
107	09/13/18	Thursday	3:57 PM	Angle	Daylight	Clear	Dry	Failed to yield right of way	Non-incapacitating	39	65		Vehicle in left lane of Rt 132 EB stopped to let WB MV1 turn left from Rt 132 into Cumberland Farms. EB MV2 in right lane of Rt 132 didn't stop and collided with MV1	1
108	10/16/18	Tuesday	1:17 PM	Angle	Daylight	Clear	Dry	Inattention	No injury	48	63		Vehicle in right lane of Rt 132 EB stopped to let NB MV1 turn left onto Rt 132 from Nightingale Lane. EB MV2 in left lane of Rt 132 didn't stop and collided with MV1	5
109	11/26/18	Monday	4:14 PM	Angle	Dusk	Clear	Dry	Inattention	No injury	51	53		SB MV1 going straight from Luke Liquor's into Cumberland Farms was struck by EB MV2 on Rte 132	1
110	05/29/19	Wednesday	1:55 PM	Angle	Daylight	Cloudy	Dry	Visibility obstructed	No injury	69	27		SB MV1 attempted to take a left-turn onto Rte 132 EB from the Cape Cod Barber Shop and struck WB MV2 on Rte 132 who had just entered the roadway from Town Fair Tire	1
111	08/28/19	Wednesday	2:59 PM	Angle	Daylight	Clear	Dry	Inattention	No injury	60	44	49	Vehicle in left lane of Rt 132 EB stopped to let WB MV1 turn left into Cumberland Farms from Rt 132. EB MV1 changed from the left lane to the right lane of Route 132 and collided with MV2 who then struck NB MV3 who was waiting to turn right out of Cumberland Farms.	1

Summaries based on crash reports obtained from the Barnstable, Massachusetts Police Department.

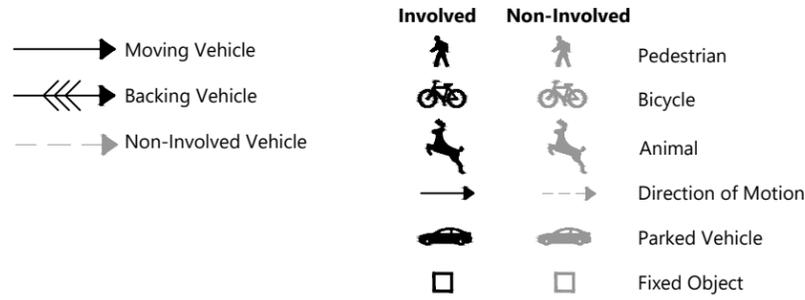
Crash Data Summary Charts
Rt 132 (between east of Bearses Way and Nightingale Lane), Barnstable, MA



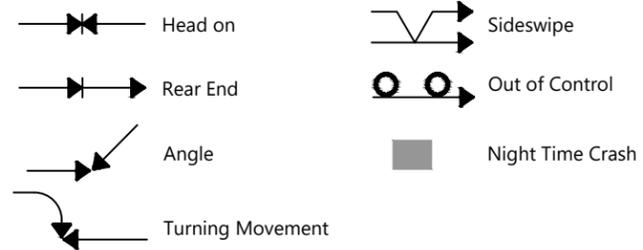
Crash Data Summary Charts
Rt 132 (between east of Bearses Way and Nightingale Lane), Barnstable, MA



SYMBOLS



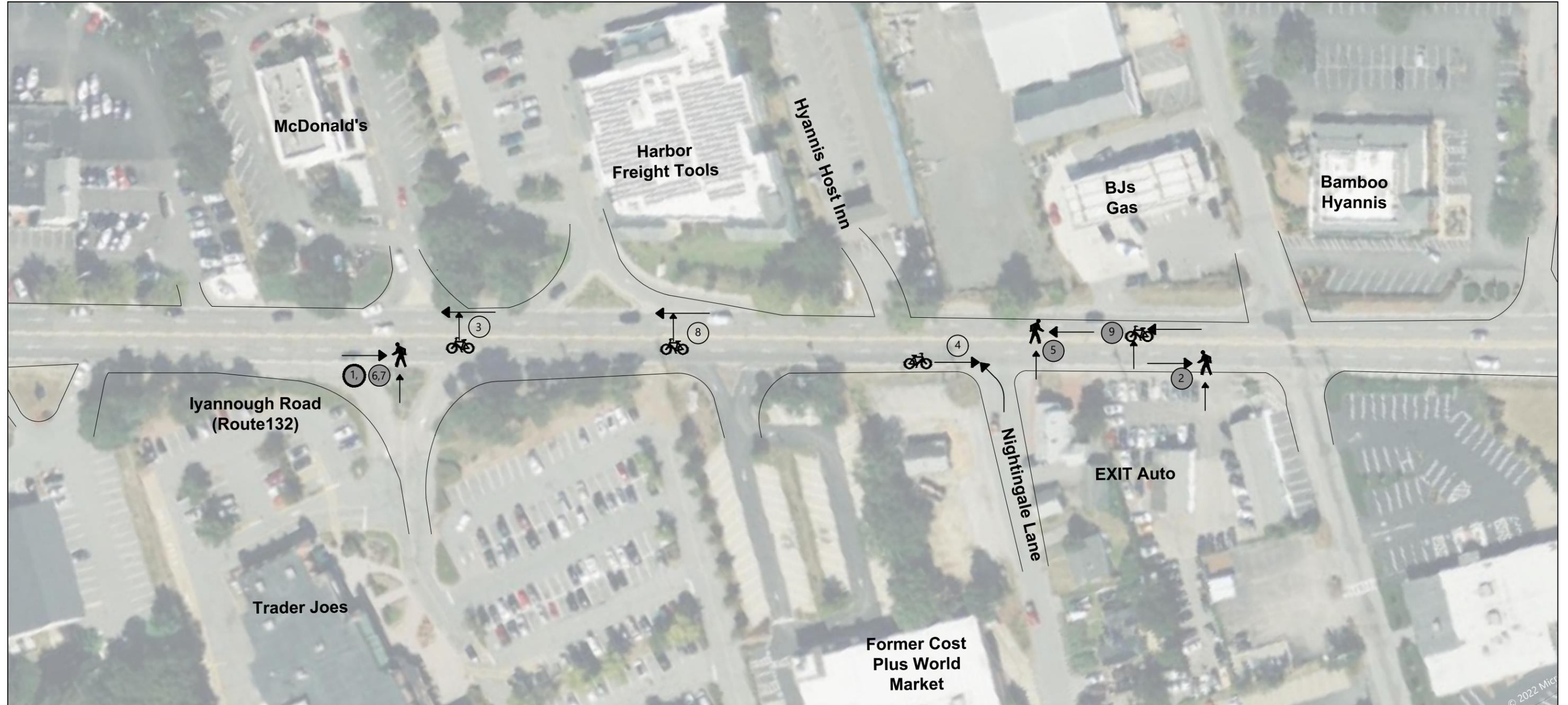
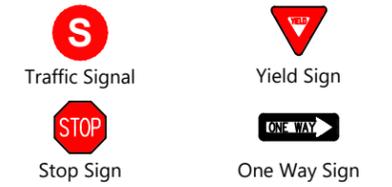
TYPES OF CRASH



SEVERITY



TRAFFIC CONTROL



Source of Crash Reports: Barnstable PD



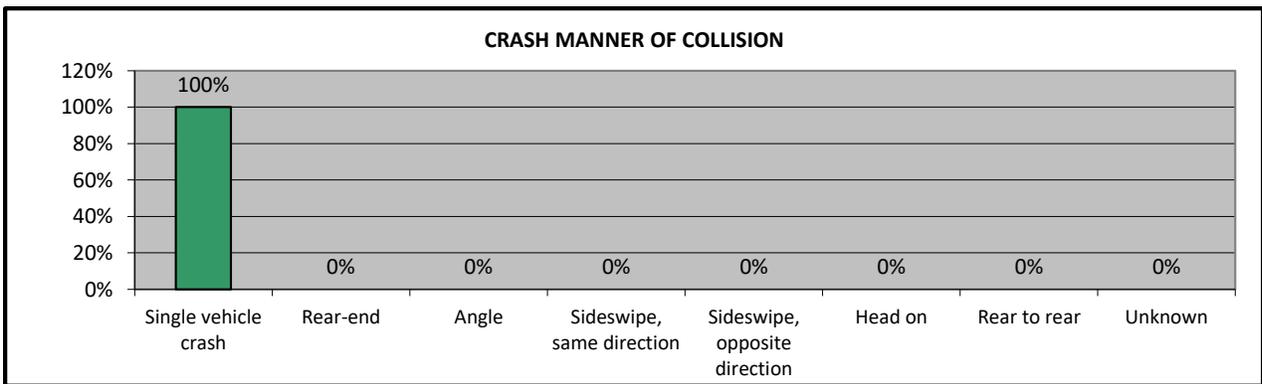
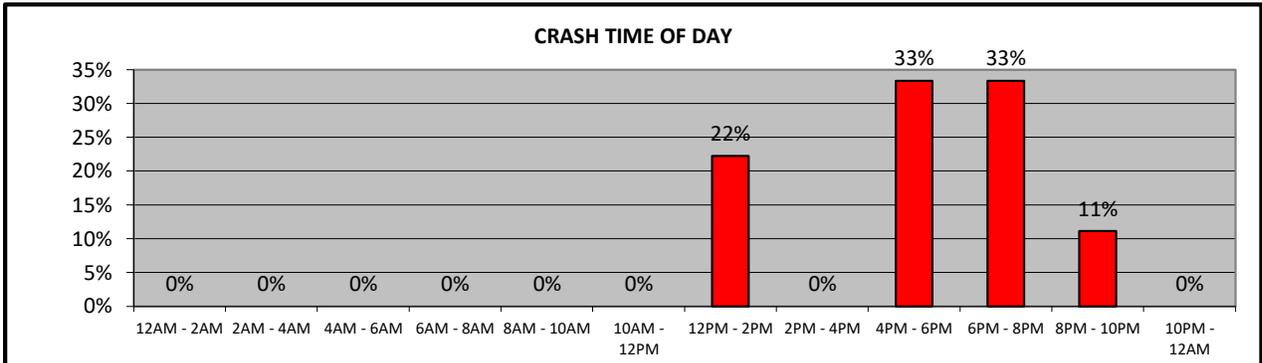
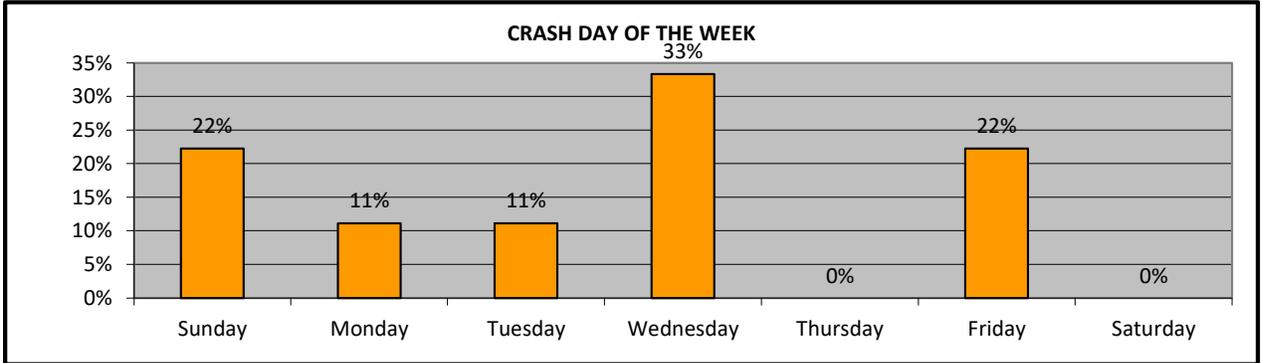
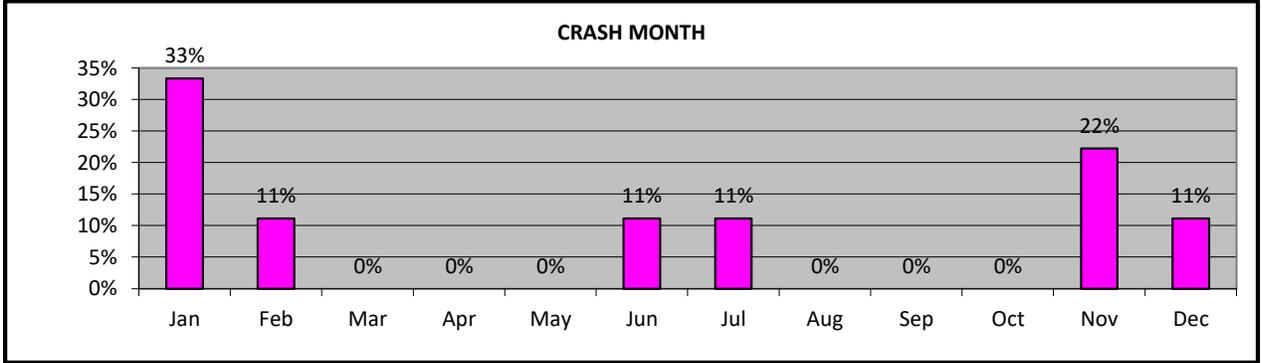
Crash Data Summary Table - Pedestrians and Bicyclists

Route 132 (between Cape Cod Mall East Driveway and Nightingale Lane), Barnstable, MA
2010 - 2019

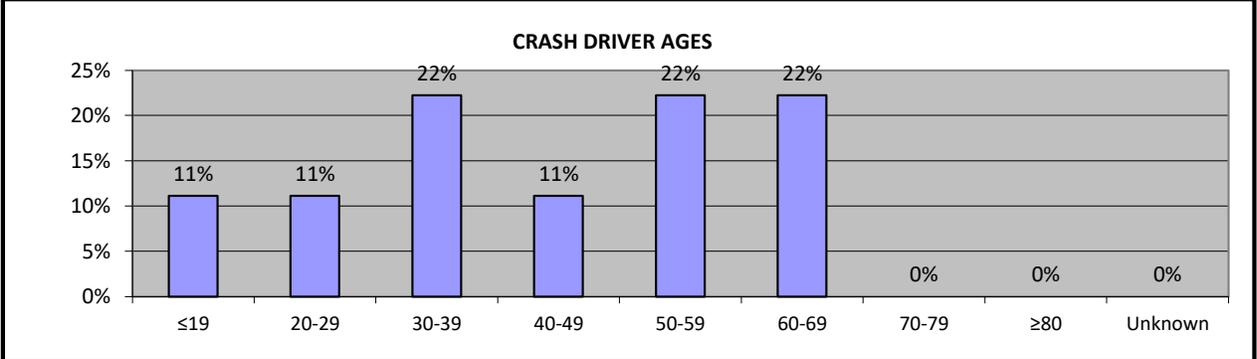
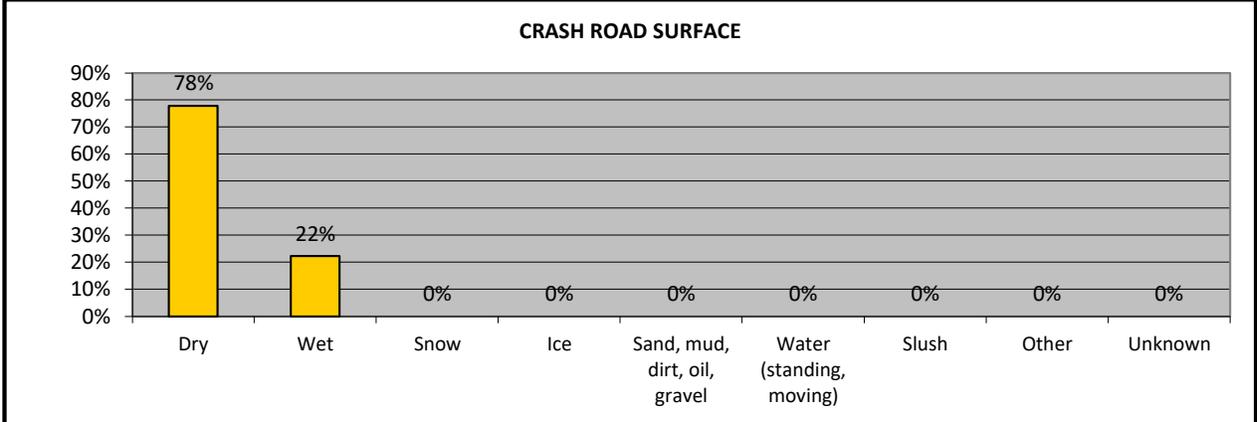
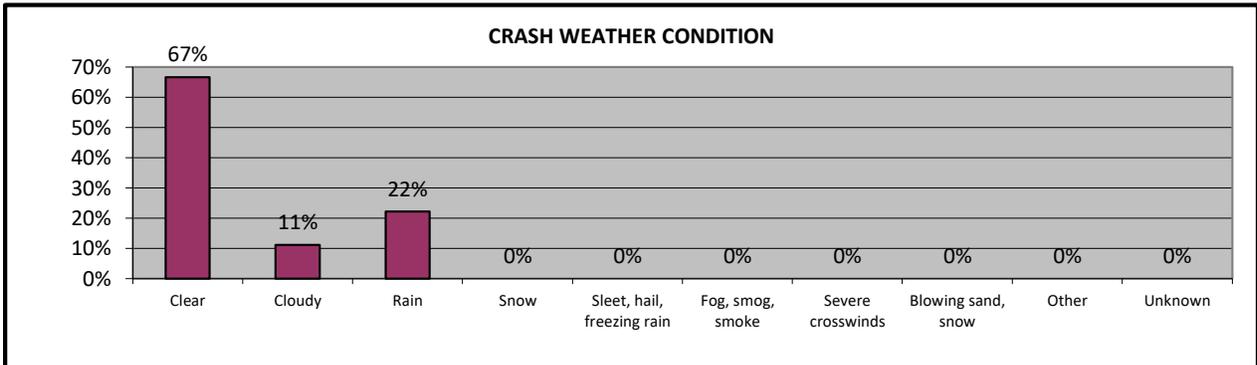
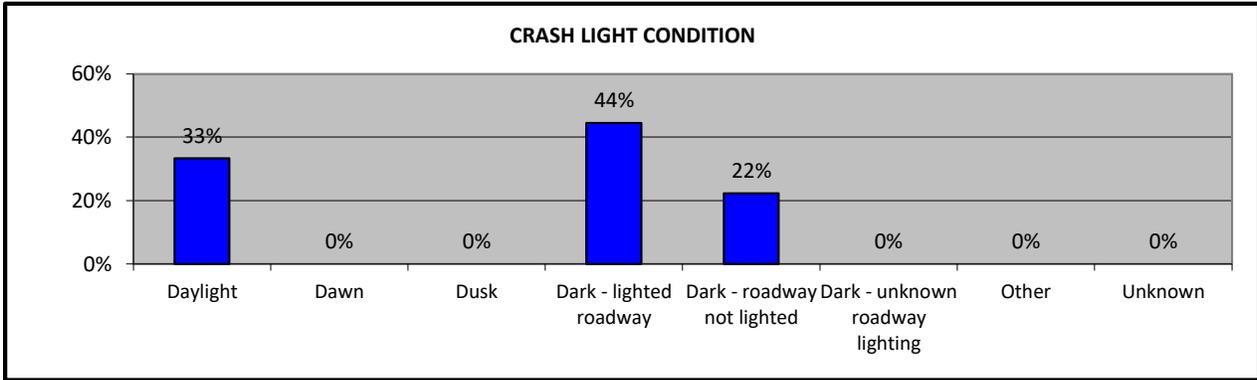
Crash Diagram Ref #	Crash Date	Crash Day	Time of Day	D1 Age	Manner of Collision	Light Condition	Weather Condition	Road Surface	Driver Contributing Code	Injury Status	Comments
#	mm/dd/yy	Day	hh:mm	#	Type	Type	Type	Type	Type	Type	
1	12/23/13	Monday	8:50 PM	18	Single vehicle crash	Dark - lighted roadway	Rain	Wet	No improper driving	Fatal	EB MV1 on Rt 132 struck pedestrian in roadway near McDonald's
2	01/19/14	Sunday	5:10 PM	68	Single vehicle crash	Dark - roadway not lighted	Clear	Dry	No improper driving	Possible	EB MV1 on Rt 132 in right lane struck pedestrian crossing roadway near BJs Gas
3	07/11/14	Friday	1:48 PM	51	Single vehicle crash	Daylight	Clear	Dry	Other improper action	Non-incapacitating	WB MV1 on Rt 132 in right lane struck cyclist who was traveling NB across the roadway heading towards the McDonald's
4	11/11/14	Tuesday	4:15 PM	32	Single vehicle crash	Daylight	Clear	Dry	Inattention	Possible	NB MV1 on Nightingale Lane taking a left-turn onto Rt 132 and was struck by EB cyclist on Route 132
5	11/26/14	Wednesday	6:34 PM	61	Single vehicle crash	Dark - lighted roadway	Rain	Wet	No improper driving	Incapacitating	WB MV1 on Rt 132 struck pedestrian crossing roadway near Nightingale Lane
6	01/13/17	Friday	5:52 PM	35	Single vehicle crash	Dark - lighted roadway	Clear	Dry	No improper driving	Possible	EB MV1 on Rt 132 in right lane struck pedestrian travelling NB across roadway near McDonald's
7	01/29/17	Sunday	6:00 PM	23	Single vehicle crash	Dark - lighted roadway	Clear	Dry	No improper driving	Incapacitating	EB MV1 on Rt 132 in left lane struck pedestrian travelling NB across roadway near McDonald's
8	06/27/18	Wednesday	1:00 PM	45	Single vehicle crash	Daylight	Clear	Dry	No improper driving	Possible	WB MV1 on Rt 132 in right lane struck cyclist crossing roadway near Harbor Fright Tools
9	02/13/19	Wednesday	6:32 PM	50	Single vehicle crash	Dark - roadway not lighted	Cloudy	Dry	No improper driving	Incapacitating	WB MV1 on Rt 132 in right lane struck cyclist crossing roadway from Nightingale Lane

Summaries based on crash reports obtained from the Barnstable, Massachusetts Police Department.

Crash Data Summary Charts - Pedestrians and Bicyclists (2010-2019)
 Route 132 (between Cape Cod Mall East Driveway and Nightingale Lane), Barnstable, MA



Crash Data Summary Charts - Pedestrians and Bicyclists (2010-2019)
 Route 132 (between Cape Cod Mall East Driveway and Nightingale Lane), Barnstable, MA



Appendix D. Road Safety Audit References

Road Safety Audit References

FHWA Office of Safety - Proven Safety Countermeasures, U.S. Department of Transportation, Federal Highway Administration <https://safety.fhwa.dot.gov/provencountermeasures/>.

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