

ROAD SAFETY AUDIT

Falmouth Rd (Rte 28) at Iyannough Rd (Rte 132)

Barnstable Airport Rotary

Town of Barnstable

May 2019

Prepared For:
MassDOT



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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 opportunities for safety improvements considering all roadway users. This RSA evaluates the rotary intersection of Falmouth Road (Route 28) at Iyannough Road (Route 132) – more commonly known as the Barnstable Airport Rotary in Barnstable, MA. Additional approaches to and from the rotary are also included in the audit safety area, as shown in Figure 1.

The rotary intersection of Falmouth Road (Route 28) at Iyannough Road (Route 132) – more commonly known as the Barnstable Airport Rotary in Barnstable, MA – is considered a HSIP crash cluster for 2011-2013, 2012-2014, and 2013-2015. A key objective of the RSA is to identify short-term, mid-term, and long-term safety improvements that can be implemented at the subject intersections and incorporated in potential improvements of these intersections.

Project Data

A Road Safety Audit was completed for the study area intersection on Monday, April 1, 2019. The RSA meeting was held at the Barnstable Municipal Airport located at 480 Barnstable Road in Hyannis, MA. As shown below in Table 1, the audit team consisted of a multidisciplinary team with representatives from state, regional and local agencies and organizations providing expertise in the engineering, planning, maintenance and emergency response fields. Contact information for the RSA attendees is provided in Appendix B of this report.

Within the email invitation sent on Friday, March 22, 2019 to each participant in the RSA, background material was provided. This information included collision diagrams and crash data summaries for the rotary. During the RSA meeting, these materials were reviewed as a group prior to the field visit to the intersection. During the RSA field visit, various safety issues were observed and identified. Following the RSA field visit, the team returned to discuss additional concerns and potential solutions for the existing safety issues.

Table 1: Participating Audit Team Members

Audit Team Member	Agency/Affiliation
Michelle Deng	MassDOT Traffic Safety
Ana Fill	MassDOT Traffic Safety
Bianca Marshall	MassDOT D5 Traffic
Jason Walters	MassDOT D5 Projects
Matt Lounsbury	Barnstable Police Department
Dean Melanson	Hyannis Fire Department
Amanda Ruggiero	Barnstable Department of Public Works (DPW)
Mona Solmonte	Town of Barnstable Transportation Coordinator
Colleen Medeiros	Cape Cod Commission
Jeff Craddock	Sea Sports Cyclery
Radu Nan	Kittelson & Associates Inc.
Lauren Hunt	Kittelson & Associates Inc.
Phil Viveiros	McMahon Associates Inc.
Alex Bulhoes	McMahon Associates Inc.

Project Location and Description

Study Area Roadways

There are several roadways that service the Airport Rotary that are described below and shown in Figure 1:

Falmouth Road (Route 28)

Falmouth Road (Route 28) is classified as an urban principal arterial under MassDOT jurisdiction; while Route 28 is designated as a north/south route, Falmouth Road generally travels in an east/west direction to the west of the Barnstable Airport Rotary. At the rotary, Route 28 continues to the east on Iyannough Road (Route 28). Falmouth Road (Route 28) provides one lane of travel in each direction with shoulder markings. The roadway varies in width, and within the study area Falmouth Road (Route 28) has a single wide travel lane that can accommodate two vehicles entering the rotary at once. Adjacent to the Barnstable Airport Rotary, Falmouth Road (Route 28) is abutted by retail land uses. There are currently no sidewalks provided on either side of the roadway, with the exception of the segment of sidewalk on the Citizen’s Bank property, and there are no marked crossings within the study area on Falmouth Road (Route 28). The speed limit on Falmouth Road (Route 28) is 35 mph, except at the approach to the rotary where the speed limit decreases to 25 miles per hour. No posted speed limit signs are present.

Iyannough Road (Route 132)

Iyannough Road (Route 132) is classified as an urban principal arterial under Town of Barnstable jurisdiction that travels in a north/south direction from the Barnstable Airport Rotary to the north. Iyannough Road (Route 132) provides two lanes of travel in each direction with a sloped curb median and shoulder markings. At its intersection with the Barnstable Airport Rotary, Iyannough Road (Route 132)

operates as two lanes in either direction, although it is not striped as such in the immediate vicinity of the approach. On the western side of Iyannough Road (Route 132) entering the rotary, there are diagonal pavement markings within the right shoulder and the shoulder narrows down to a pinch point at the approach. There are no sidewalks or crosswalks present; however, there appears to be a pedestrian desire line worn in the grass at the northwestern corner of this approach. Adjacent to the Barnstable Airport Rotary intersection, Iyannough Road (Route 132) is abutted by retail land uses. No posted speed limit is present on Iyannough Road (Route 132); however, a warning sign for 30 miles per hour (mph) in the Business District is present in the northbound direction.

Iyannough Road (Route 28)

Iyannough Road (Route 28) is classified as an urban principal arterial under MassDOT jurisdiction that travels in an east/west direction from the Barnstable Airport Rotary to the east. Iyannough Road (Route 28) provides one lane of travel in each direction with wide shoulder markings. The roadway varies in width, and within the study area, Iyannough Road (Route 28) has wide travel lanes. Adjacent to the Barnstable Airport Rotary, Iyannough Road (Route 28) is abutted by the Barnstable Municipal Airport and retail land uses. There is an entrance for the Barnstable Municipal Airport located approximately 400 feet east of the rotary on Iyannough Road (Route 28). There are no sidewalks provided on either side of the roadway and there are no marked crossings within the study area on Iyannough Road (Route 28). The speed limit on Iyannough Road (Route 28) is 35 miles per hour (mph), except when approaching the rotary where it is 25 miles per hour (mph). There are posted speed limit signs of 25 mph westbound and 35 mph eastbound in the vicinity of the rotary.

Barnstable Road

Barnstable Road is comprised of two segments within the study area, as follows:

- The northern segment begins at the intersection with Airport Road to the north, generally running south along the Barnstable Municipal Airport before connecting to the Barnstable Airport Rotary.
- The southern segment begins at the Barnstable Airport Rotary, generally running south towards the intersection with Main Street in the village of Hyannis.

The northern segment of Barnstable Road is classified as a local roadway under Town of Barnstable jurisdiction. Within the study area, Barnstable Road is a one-way roadway in the southbound direction, providing one lane of travel with narrow shoulders on both sides of the roadway. Barnstable Road diverges approximately 150 feet prior to the Barnstable Airport Rotary, allowing traffic to either remain on airport property (via a one-way counter-clockwise circulator roadway) or exit the airport via the rotary. There is no access provided from the Barnstable Airport Rotary to Barnstable Road northbound. Approximately 350 feet north of the Airport Rotary, an unnamed connector roadway intersects Barnstable Road and provides a connection to Iyannough Road (Route 132); north of this intersection, Barnstable Road provides one lane of travel in each direction with shoulder markings. Sidewalks are provided on the western side of the roadway terminating before the rotary. Barnstable Road is primarily abutted by retail land uses to the west, the Barnstable Municipal Airport to the east, and does not appear to have a posted speed limit.

The southern segment of Barnstable Road is classified as an urban principal arterial under Town of

Barnstable jurisdiction. Barnstable Road provides one lane of travel in each direction with a sloped curb median and shoulder markings. Barnstable Road transitions from one to two lanes approaching the rotary. Sidewalks are provided on both sides; however, there are no crosswalks provided in the vicinity of the rotary. The roadway is primarily abutted by retail land uses. There are no posted speed limit signs on Barnstable Road.

Study Area Intersection

Barnstable Airport Rotary

As shown in Figure 1, the Barnstable Airport Rotary is a large rotary, which serves as an intersection of the following roadways:

- Falmouth Road (Route 28)
- Iyannough Road (Route 132)
- Iyannough Road (Route 28)
- Barnstable Road

In general, there is one wide lane that serves as a circulator around the rotary. The rotary is absent of pavement markings with the exception of the marked edge lines. There are no sidewalks or crosswalks provided around the rotary.

Falmouth Road (Route 28) connects to the Barnstable Airport Rotary from the west and provides a single channelized lane that is under yield control. Iyannough Road (Route 132) connects to the Barnstable Airport Rotary from the northwest and provides one wide channelized lane without lane markings at the entrance, which effectively functions as a two-lane approach under yield control. Iyannough Road (Route 28) connects to the Barnstable Airport Rotary from the southeast and provides a single channelized lane that is under yield control. The northern segment of Barnstable Road connects to the Barnstable Airport Rotary from the north and provides a single channelized lane that is under yield control. There are no departure lanes provided at the approach for the northern segment of Barnstable Road. The southern segment of Barnstable Road connects to the Barnstable Airport Rotary from the south and provides two channelized lanes that are under yield control.

Crash Data

Crash data from the Barnstable Police Department were provided for the study area by MassDOT for this RSA. Crashes for each location were summarized for a three-year period from 2014-2016. A total of 78 crashes occurred within the study area during the three-year period reviewed. Of the reported crashes that occurred, 11 crashes (14%) were angle collisions, 38 crashes (49%) were rear-end crashes, 25 crashes (32%) were sideswipe collisions, and 4 crashes (5%) were single vehicle collisions. Of the crashes that occurred, approximately 82% resulted in property damage only and there were no fatal crashes within the three-year period.

Based on the reported data, there is a decrease in crashes during the winter and spring months of December through April and then an increase from 6% to 14% in May when there is likely an increase in tourism-related traffic. The highest time period for crash activity is during the midday period between 10:00 AM and 12:00 PM when traffic volumes are heavier in the nearby retail areas and potentially due to traffic generated by Cape Cod Hospital and the Steamship Authority ferries. Based on the crash data, the 20-29 driver age group had the highest involvement in crashes (24%).

A detailed crash diagram of the study area intersection is provided in Appendix C.



FIGURE 1
FALMOUTH RD (RTE 28) AT IYANNOUGH RD (RTE 132)
ROAD SAFETY AUDIT - AIRPORT ROTARY
BARNSTABLE, MASSACHUSETTS

Audit Observations and Potential Safety Enhancements

During the RSA meeting prior to the field visit, a brief introduction of the RSA process and a summary of crash information was presented to the audit participants. Following this brief presentation, the members of the audit team were asked to discuss the existing issues that may affect safety within the study area. The audit team then visited the study area as a group, at which time observations of various safety concerns and deficiencies were identified and documented. Provided below is a list of the safety concerns and the potential enhancements identified during the RSA.

Safety Issue #1: Traffic Operations

Observations:

During the audit meeting, the group discussed the lack of clear lane designation and/or markings both approaching and within the rotary. In particular, Iyannough Road (Route 132) is striped as two lanes to approximately 50 feet before the rotary; at the rotary, a wide lane with no striping is provided, creating confusion on whether the lane should operate as one or two lanes. Within the rotary, there is also a lack of clear lane designation, which may contribute to vehicles exiting from the inner lane creating confusion for vehicles entering the rotary. Based on the crash data, 27% of the crashes were sideswipe in nature, which may be attributed to the lack of clear lane designation and/or markings.



Image 1: Lack of Lane Definition within Barnstable Airport Rotary

The group also observed a lack of clear signage in advance of the rotary to provide wayfinding guidance to drivers. In some instances, there is existing signage within the study area that may need to be re-evaluated to determine if the signage is necessary. In addition, the location of the existing signage may need to be re-evaluated to determine if it is adequate. For example, there are wayfinding signs for the Airport throughout the rotary that do not appear to meet the current retroreflective requirements and the visibility may be hindered by other nearby signage (i.e. Iyannough Road (Route 28) approach). In addition, the area experiences a high volume of tourists and drivers who are unfamiliar with the area, which exacerbates the situation.

It was also noted that there is typically traffic congestion in both directions along Iyannough Road (Route 28) from the rotary to the intersection with Yarmouth Road approximately 0.5 mile south. Audit participants noted that southbound queues from the signalized Yarmouth Road intersection often extend into the Airport Rotary, which creates congestion within the rotary and at approach roadways, particularly the Barnstable Road northbound approach. The group mentioned that there are instances when the traffic queue on the northern segment of Barnstable Road extends north past the Wendy's driveway, which restricts access to the Barnstable Municipal Airport driveway. Rear-end crashes at the rotary entrances may have occurred because drivers tend to drive more aggressively in periods of traffic congestion and attempt to accept shorter

gaps when entering the rotary; as a result, entering vehicles may need to suddenly stop if gaps in traffic are too short, resulting in a rear-end crash involving the vehicle behind them.

The group observed vehicles travelling at high speeds approaching and navigating around the rotary during off-peak times. Speeding was specifically noticed on the northeastern quadrant of the rotary between Iyannough Road (Route 28) and the northern segment of Barnstable Road, where drivers have an opportunity to gain speed. The high speeds present a safety concern, especially within the rotary where there are numerous decision points for drivers. High speeds within the rotary also make it more difficult for incoming drivers to accurately judge gaps within the rotary. The inability to judge gaps appropriately due to speeds may also cause drivers to stop abruptly, and may be another contributing factor to the rear-end crashes that occurred at the rotary entrances.

The audit team also observed that GPS systems often direct drivers to follow unconventional routes to the Barnstable Municipal Airport.

Enhancements:

- Evaluate existing signage within the study area and consider removing unnecessary signage.
- Evaluate the existing lane and arrow pavement markings in the study area and consider alternative markings within the rotary and at approach roadways to provide clear lane designation.
- Evaluate the number of lanes needed within the rotary and provide modern roundabout markings to clarify operations and reduce the likelihood of unexpected maneuvers.
- Consider installing diagrammatic wayfinding signage in advance of the rotary to provide information to drivers and reduce the likelihood of unexpected maneuvers.
- Consider installing diagonal pavement markings in shoulders for improved lane definition.
- Evaluate the signal timings and queue detection at the intersection of Iyannough Road (Route 28) and Yarmouth Road on an interim basis to reduce queuing extending into the rotary. Longer-term improvements are being implemented at this intersection.
- Consider installing advisory speed signage at all approaches entering the rotary to encourage slower speeds.
- Evaluate speed limits on approach roadways and consider installing speed limit signage to encourage appropriate speeds.
- Consider installing transitional materials and/or a “raised rotary” concept to improve awareness of the rotary and encourage slower speeds.
- Consider improving wayfinding signage to the Barnstable Municipal Airport to provide an alternative route to the Airport other than the rotary.
- Coordinate with GPS providers to provide better guidance to the Barnstable Municipal Airport.
- Review origin and destination data to/from the Barnstable Municipal Airport to identify alternative routes.

Safety Issue #2: Roadway Geometry

Observations:

The group made a general observation that the majority of the delta islands at the approaches to the rotary do not appear to provide adequate deflection. Proper deflection is necessary to better orient the drivers while entering the rotary. In addition, proper deflection can act as a speed calming measure for vehicles entering the rotary. Audit participants also observed a number of instances where vehicles entered the rotary via a “straight-on” maneuver toward the inner portion of the circle, cutting across the outer vehicle path and, on a few occasions, cutting off approaching vehicles within the rotary. Based on the crash data, there were 9 angle crashes (12%) that occurred at the approach entrances, which may be attributed to the lack of deflection of the delta islands.

Due to the skew and/or asymmetric layout of the rotary, there are short segments where vehicles are maneuvering between entrances and exits, specifically the segment between Iyannough Road (Route 132) and Falmouth Road (Route 28) and the segment between Barnstable Road and Falmouth Road (Route 28). The high crossover volume presents a safety concern at these locations. Based on the crash data, there were 20 crashes (26%) at this crossover area between the Iyannough Road (Route 132) entrance and Falmouth Road (Route 28) exit. The majority of these crashes were angle and sideswipe in manner, and there were also several rear-end crashes as well, which may be attributable to the inter-circle vehicular crossover. There were also 4 crashes (crash numbers 5, 50, 60, 61) in the inter-circle segments between Barnstable Road and Iyannough Road (Route 28), which may be attributable to the inter-circle crossover as well.



Image 2: Inter-circle Crossover between Falmouth Road and Barnstable Road

Based on observations from the group, the Iyannough Road (Route 132) approach appears to be too narrow to properly function as two lanes although it appears to operate as such. In addition, the group mentioned that the sight distance at the approaches may be hindered, which could impact proper gap judgement. Based on the crash data, 5 rear-end crashes (6%) and 7 angle crashes (9%) occurred at the Iyannough Road (Route 132) approach, some of which may be attributable to the narrow cross section. Based on the crash data, 24 rear-end crashes (31%) and 9 angle crashes (12%) occurred at the approach entrances, some of which may be attributable to potential sight distance obstructions.

Enhancements:

- Evaluate the lane capacity demands at all approaches to accommodate merge areas.
- Evaluate the existing delta islands at all approaches and consider re-designing the entrances to improve deflection.
- Evaluate whether there is adequate sight distance at all approaches to improve gap acceptance for entering vehicles.

- Consider adding right turn bypass lanes where appropriate to divert vehicles that do not need to access the rotary.
- Consider relocating the approach from the northern segment of Barnstable Road to increase separation between the Barnstable Road approach and the Iyannough Road (Route 132) approach.
- Evaluate the need for two lanes at the Barnstable Road northbound approach and the Iyannough Road (Route 132) approach; if two lanes are required, ensure that adequate width is provided.
- Consider installing flexible delineator posts along the shoulder from Iyannough Road (Route 132) to Falmouth Road (Route 28), as a short-term trial, to provide better lane definition and eliminate vehicles exiting the rotary from the inner lane.
- Evaluate airport access along the northern segment of Barnstable Road and consider geometric improvements to facilitate access for instances when there is traffic congestion on Barnstable Road.
- Evaluate a double roundabout concept to increase separation between approaches and encourage slower speeds within the roundabout.
- Evaluate the feasibility of converting the rotary into a signalized intersection.
- Evaluate the feasibility of realigning the approach roadways to eliminate the short rotary segments between approaches.
- Evaluate providing grade separation to reduce the number of roadways intersecting the rotary as recommended in the Hyannis Access Study Implementation report.

Safety Issue #3: Emergency Vehicle Operations

Observations:

During the audit meeting, the attending emergency response personnel explained that the available width on the southern segment of Barnstable Road is restrictive and does not provide adequate space for vehicles to pull over when emergency vehicles are responding. There is a concrete median with sloped curbing in the center of the roadway and vertical curbing on the side of the roadway. The physical obstructions in conjunction with the narrow single lane width restrict access for emergency vehicles in either direction. This condition is exacerbated when queueing within the rotary is present, as noted earlier. The group identified the Airport Rotary as a major intersection connecting to Cape Cod Hospital and is frequented by emergency personnel.



Image 3: Barnstable Road Median

Enhancements:

- Consider coordination with emergency response personnel on any potential geometric improvements to ensure that accommodations are made to facilitate emergency vehicle operations.
- Evaluate the pull-off areas along all approach roadways to ensure that there is adequate clearance for emergency vehicles to pass.

- Consider installing diagonal pavement markings within the right shoulder of the rotary, similar to the treatment on Iyannough Road (Route 132), to provide pull-off areas.
- Consider re-designing the median on the southern segment of Barnstable Road to make it traversable for emergency vehicles.
- Consider the feasibility of emergency pre-emption strategies and/or signals that could help facilitate emergency vehicle operations through the rotary.

Safety Issue #4: Heavy Vehicle Operations

Observations:

During the audit field visit, it was observed that heavy vehicles tended to encroach on the adjacent lanes while entering the rotary in order to navigate the turn. Audit participants noted that heavy vehicles tend to utilize the full width of the circulator road to navigate within the rotary. The crash data supports these tendencies as the majority of the crashes where a tractor trailer was identified (crash numbers 26, 36, 64, & 77) were sideswipe in manner, indicating that lane encroachment may be a contributing factor. The group identified that the nearby Steamship Authority Hyannis Terminal generates heavy vehicle traffic that exacerbates these issues. During the audit, tire tracks were observed in the grass area behind the curb on the corner of Iyannough Road (Route 132) at the rotary entrance, which indicates that truck encroachment is present.



Image 4: Heavy Vehicle Encroachment

Enhancements:

- Evaluate potential alternative truck routes to divert heavy vehicles away from the rotary.
- Consider installing truck aprons or shoulders to accommodate heavy vehicle turning movements.
- Consider truck lane use guidance signage and/or pavement markings (i.e. “Trucks Use Inner Lane”) to provide clear guidance for heavy vehicles.
- Evaluate turning paths at all approaches to determine if geometry is adequate.

Safety Issue #5: Pedestrian and Bicycle Accommodations

Observations:

During the audit field visit, it was observed that there are no pedestrian or bicycle accommodations around the rotary, with the exception of a walkway on the Citizens Bank site between the southern segment of Barnstable Road and Iyannough Road (Route 28) approaches. There are some worn paths in grassy areas, specifically between the Iyannough Road (Route 132) and Falmouth Road (Route 28) approaches, which may indicate a pedestrian desire line. The group mentioned that there are seasonal workers in the area that walk and/or bike to work, as well as some anecdotal observations of people parking off-site and walking to the Airport. Additionally, there was a mention that bicyclists currently avoid the rotary and seek alternative routes because of uncertainty as to whether bicyclists can safely navigate the rotary. Although there were no crashes within the study area involving a pedestrian or bicycle, the desire lines should be evaluated to determine whether adequate amenities are in place.



Image 5: Lack of Pedestrian Amenities

Enhancements:

- Evaluate the pedestrian and bicycle desire lines and consider appropriate amenities, such as sidewalks, crosswalks, rectangular rapid flashing beacons (RRFB), etc. to improve bicycle and pedestrian facilities around the rotary.
- Consider the needs of seasonal cyclists while evaluating guidance and wayfinding signage within and adjacent to the rotary to provide clear guidance.
- Consider organizing an educational campaign with handouts and suggested routes for cyclists, which would involve coordination with employers, retail shops, etc.

Safety Issue #6: Driver's Education

Observations:

Based on the crash data, the 20-29 driver age group had the highest involvement in crashes (24%). In discussion, audit participants mentioned that the age group corresponds to the most prevalent age range of the seasonal workers in the area. In addition, audit members mentioned that there may be unfamiliarity with driving in rotaries amongst drivers of all age groups.

Enhancements:

- Consider development of an educational campaign (potentially targeted to seasonal visitors) that reinforces how roadway users should navigate within the Airport Rotary.

Recommendations

After the site visit, audit participants returned to discuss the safety issues and consider various improvements. The audit participants were encouraged to consider both short 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.

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

Summary of Road Safety Audit

A summary of the potential recommendations discussed by the RSA audit team are summarized in Table 3. The recommendations are summarized based on the potential safety payoff, time frame, approximate cost and potential responsible agency. The safety payoff is a subjective judgment of the potential effectiveness of the safety recommendations listed below.

Table 3: Potential Safety Enhancement Summary

Safety Issue	Potential Safety Enhancement	Safety Payoff	Time Frame	Cost	Jurisdiction
Traffic Operations	Evaluate existing signage within the study area and consider removing unnecessary signage.	High	Short-Term	Low	Town of Barnstable/ MassDOT
Traffic Operations	Evaluate the existing lane and arrow pavement markings in the study area and consider alternative markings within the rotary and at approach roadways to provide clear lane designation.	High	Mid-Term	Medium	Town of Barnstable/ MassDOT
Traffic Operations	Evaluate the number of lanes needed within the rotary and provide modern roundabout markings to clarify operations and reduce the likelihood of unexpected maneuvers.	High	Mid-Term	Medium	Town of Barnstable/ MassDOT
Traffic Operations	Consider installing diagrammatic wayfinding signage in advance of the rotary to provide information to drivers and reduce the likelihood of unexpected maneuvers.	High	Mid-Term	Medium	Town of Barnstable/ MassDOT
Traffic Operations	Consider installing diagonal pavement markings in shoulders for improved lane definition.	Medium	Mid-Term	Low	Town of Barnstable/ MassDOT
Traffic Operations	Evaluate the signal timings and queue detection at the intersection of Iyannough Road (Route 28) and Yarmouth Road on an interim basis to reduce queuing extending into the rotary. Longer-term improvements are being implemented at this intersection.	Low	Short-Term	Low	Town of Barnstable/ MassDOT
Traffic Operations	Consider installing advisory speed signage at all approaches entering the rotary to encourage slower speeds.	Medium	Short-Term	Low	Town of Barnstable/ MassDOT
Traffic Operations	Evaluate speed limits on approach roadways and consider installing speed limit signage to encourage appropriate speeds.	Medium	Short-Term	Low	Town of Barnstable/ MassDOT
Traffic Operations	Consider installing transitional materials and/or a “raised rotary” concept to improve awareness of the rotary and encourage slower speeds.	Low	Long-Term	High	Town of Barnstable/ MassDOT

Safety Issue	Potential Safety Enhancement	Safety Payoff	Time Frame	Cost	Jurisdiction
Traffic Operations	Consider improving wayfinding signage to the Barnstable Municipal Airport to provide an alternative route to the Airport other than the rotary.	High	Mid-Term	Low	Town of Barnstable/ MassDOT
Traffic Operations	Coordinate with GPS providers to provide better guidance to the Barnstable Municipal Airport.	Medium	Short-Term	Low	N/A
Traffic Operations	Review origin and destination data to/from the Barnstable Municipal Airport to identify alternative routes.	Low	Short-Term	Low	N/A
Roadway Geometry	Evaluate the lane capacity demands at all approaches to accommodate merge areas.	High	Mid-Term	Medium	Town of Barnstable/ MassDOT
Roadway Geometry	Evaluate the existing delta islands at all approaches and consider re-designing the entrances to improve deflection.	High	Mid-Term	High	Town of Barnstable/ MassDOT
Roadway Geometry	Evaluate whether there is adequate sight distance at all approaches to improve gap acceptance for entering vehicles.	High	Short-Term	Low	Town of Barnstable/ MassDOT
Roadway Geometry	Consider adding right turn bypass lanes where appropriate to divert vehicles that do not need to access the rotary.	Medium	Long-Term	High	Town of Barnstable/ MassDOT
Roadway Geometry	Consider relocating the approach from the northern segment of Barnstable Road to increase separation between the Barnstable Road approach and the Iyannough Road (Route 132) approach.	Medium	Long-Term	High	Town of Barnstable/ MassDOT
Roadway Geometry	Evaluate the need for two lanes at the Barnstable Road northbound approach and the Iyannough Road (Route 132) approach; if two lanes are required, ensure that adequate width is provided.	Medium	Mid-Term	Medium	Town of Barnstable/ MassDOT
Roadway Geometry	Consider installing flexible delineator posts along the shoulder from Iyannough Road (Route 132) to Falmouth Road (Route 28), as a short-term trial, to provide better lane definition and eliminate vehicles exiting the rotary from the inner lane.	Low	Short-Term	Low	Town of Barnstable/ MassDOT

Safety Issue	Potential Safety Enhancement	Safety Payoff	Time Frame	Cost	Jurisdiction
Roadway Geometry	Evaluate airport access along the northern segment of Barnstable Road and consider geometric improvements to facilitate access for instances when there is traffic congestion on Barnstable Road.	Low	Mid-Term	Medium	Town of Barnstable
Roadway Geometry	Evaluate a double roundabout concept to increase separation between approaches and encourage slower speeds within the roundabout.	Medium	Long-Term	High	Town of Barnstable/ MassDOT
Roadway Geometry	Evaluate the feasibility of converting the rotary into a signalized intersection.	High	Long-Term	High	Town of Barnstable/ MassDOT
Roadway Geometry	Evaluate the feasibility of realigning the approach roadways to eliminate the short rotary segments between approaches.	High	Long-Term	High	Town of Barnstable/ MassDOT
Roadway Geometry	Evaluate providing grade separation to reduce the number of roadways intersecting the rotary as recommended in the Hyannis Access Study Implementation report.	High	Long-Term	High	Town of Barnstable/ MassDOT
Emergency Vehicle Operations	Consider coordination with emergency response personnel on any potential geometric improvements to ensure that accommodations are made to facilitate emergency vehicle operations.	High	Short-Term	Low	Town of Barnstable/ MassDOT
Emergency Vehicle Operations	Evaluate the pull-off areas along all approach roadways to ensure that there is adequate clearance for emergency vehicles to pass.	High	Short-Term	Low	Town of Barnstable/ MassDOT
Emergency Vehicle Operations	Consider installing diagonal pavement markings within the right shoulder of the rotary, similar to the treatment on Iyannough Road (Route 132), to provide pull-off areas.	High	Short-Term	Low	Town of Barnstable/ MassDOT
Emergency Vehicle Operations	Consider re-designing the median on the southern segment of Barnstable Road to make it traversable for emergency vehicles.	High	Mid-Term	High	Town of Barnstable

Safety Issue	Potential Safety Enhancement	Safety Payoff	Time Frame	Cost	Jurisdiction
Emergency Vehicle Operations	Consider the feasibility of emergency pre-emption strategies and/or signals that could help facilitate emergency vehicle operations through the rotary.	Medium	Long-Term	Medium	Town of Barnstable/ MassDOT
Heavy Vehicle Operations	Evaluate potential alternative truck routes to divert heavy vehicles away from the rotary.	Low	Short-Term	Low	Town of Barnstable/ MassDOT
Heavy Vehicle Operations	Consider installing truck aprons or shoulders to accommodate heavy vehicle turning movements.	Low	Mid-Term	Medium	Town of Barnstable/ MassDOT
Heavy Vehicle Operations	Consider truck lane use guidance signage and/or pavement markings (i.e. "Trucks Use Inner Lane") to provide clear guidance for heavy vehicles.	Low	Mid-Term	Medium	Town of Barnstable/ MassDOT
Heavy Vehicle Operations	Evaluate turning paths at all approaches to determine if geometry is adequate.	Medium	Short-Term	Low	Town of Barnstable/ MassDOT
Pedestrian and Bicycle Accommodations	Evaluate the pedestrian and bicycle desire lines and consider appropriate amenities, such as sidewalks, crosswalks, rectangular rapid flashing beacons (RRFB), etc. to improve bicycle and pedestrian facilities around the rotary.	Medium	Mid-Term	High	Town of Barnstable/ MassDOT
Pedestrian and Bicycle Accommodations	Consider the needs of seasonal cyclists while evaluating guidance and wayfinding signage within and adjacent to the rotary to provide clear guidance.	Medium	Mid-Term	Low	Town of Barnstable/ MassDOT
Pedestrian and Bicycle Accommodations	Consider organizing an educational campaign with handouts and suggested routes for cyclists, which would involve coordination with employers, retail shops, etc.	Low	Short-Term	Low	Town of Barnstable/ MassDOT
Driver's Education	Consider development of an educational campaign (potentially targeted to seasonal visitors) that reinforces how roadway users should navigate within the Airport Rotary	Low	Short-Term	Low	N/A

Appendix A. RSA Meeting Agenda

Agenda

Road Safety Audit Barnstable, MA

Airport Rotary
(Route 28 at Iyannough Road & Barnstable Road)

Meeting Location: Barnstable Municipal Airport
1st floor conference room
480 Barnstable Road, Hyannis, MA 02601
April 1st, 2019
9:00 AM– 12:00 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, speed regulations, recent and existing projects – all provided in advance
- Existing geometries and conditions

10:00 AM Site Visit

- Walk to the Airport Rotary (Route 28 at Iyannough Road and Barnstable Road)
- As a group, identify areas for improvement

11:00 AM Discussion of Potential Improvements

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

12:00 PM Adjourn for the Day – but the RSA has not ended

Instructions for Participants:

- Before attending the RSA on April 1st, participants are encouraged to drive/walk through the intersection 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

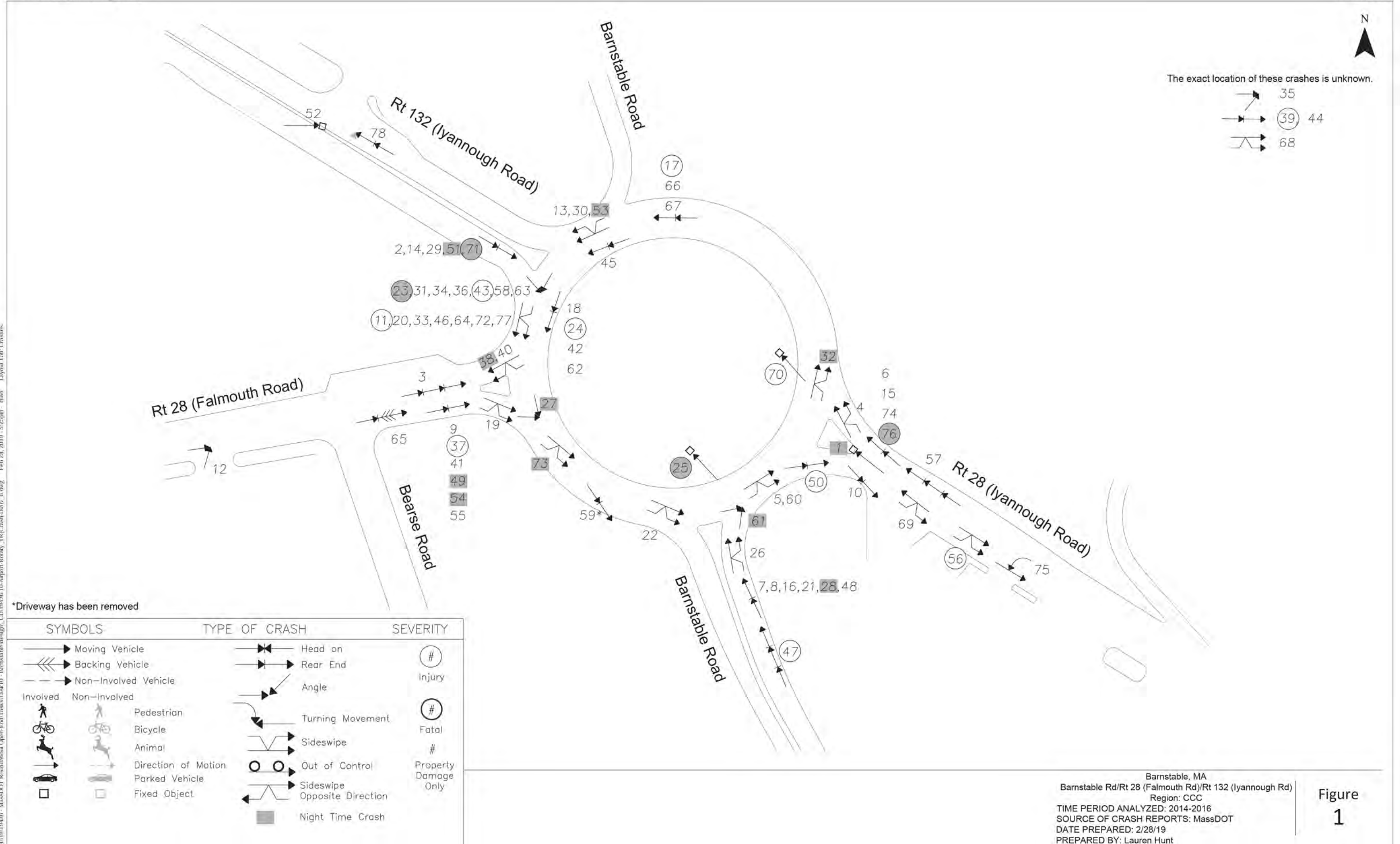
Participating Audit Team Members

Date: April 1, 2019

Location: Barnstable Municipal Airport
480 Barnstable Road, Hyannis, MA

Audit Team Members	Agency/Affiliation	Email Address	Phone Number
Michelle Deng	MassDOT Traffic Safety	michelle.deng@state.ma.us	857-368-9637
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Jason Walters	MassDOT D5 Projects	Jason.walters@dot.state.ma.us	508-884-4370
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Dean Melanson	Hyannis Fire Department	dmelanson@hyannisfire.org	508-648-5802
Amanda Ruggiero	Barnstable Department of Public Works (DPW)	Amanda.ruggiero@town.barnstable.ma.us	
Mona Solmonte	Town of Barnstable Transportation Coordinator	mona.solmonte@town.barnstable.ma.us	508-862-4613
Colleen Medeiros	Cape Cod Commission	Colleen.medeiros@capecodcommission.org	508-362-3828
Jeff Craddock	Sea Sports Cyclery	jeffreyscraddock@gmail.com	508-292-4761
Radu Nan	Kittelson & Associates Inc.	rnan@kittelson.com	617-377-4004
Lauren Hunt	Kittelson & Associates Inc.	lhunt@kittelson.com	703-885-8970
Phil Viveiros	McMahon Associates Inc.	pviveiros@mcmahonassociates.com	508-823-2245
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Appendix C. Detailed Crash Data



Barnstable, MA
 Barnstable Rd/Rt 28 (Falmouth Rd)/Rt 132 (Iyannough Rd)
 Region: CCC
 TIME PERIOD ANALYZED: 2014-2016
 SOURCE OF CRASH REPORTS: MassDOT
 DATE PREPARED: 2/28/19
 PREPARED BY: Lauren Hunt

Figure 1

Crash Data Summary Table
 Airport Rotary (Rt 28/Rt 132/Barnstable Rd) , Barnstable, MA
 2014 - 2015

Crash Diagram Ref #	Crash Date mo/dd/yy	Crash Day	Time of Day hh:mm	Manner of Collision Type	Light Condition Type	Weather Condition Type	Road Surface Type	Driver Contributing Code Type	Driver Ages			Comments
									D1	D2	D3	
1	1/4/14	Saturday	6:13 PM	Single vehicle crash	Dark - lighted roadway	Cloudy	Wet	Distracted	42			MV1 NB on Rte 28 (Iyannough Rd) hit sign on median island then continued forward stopping at the rotary
2	1/8/14	Wednesday	2:48 PM	Rear-end	Daylight	Clear	Dry	Inattention	70	54		MV2 EB on Rte 132 (Iyannough Rd) was rear ended by MV1. MV1 thought MV2 had entered the rotary
3	1/20/14	Monday	11:41 AM	Rear-end	Daylight	Clear	Dry	Followed too closely	58	54	44	MV1 EB on Rte28 (Falmouth Rd) was following too closely and rear ended MV2, pushing MV2 into MV3
4	1/31/14	Friday	1:50 PM	Sideswipe, same direction	Daylight	Clear	Dry	No improper driving	22	17		MV1 (Tractor Trailer) WB on Rte 28 (Iyannough Rd) sideswiped MV2 also on WB on Rte 28 (Iyannough Rd) as it passed MV2 to enter the rotary. MV2 was stopped at the time
5	2/3/14	Monday	11:40 AM	Sideswipe, same direction	Daylight	Snow	Snow	Failed to yield right of way	64	41		MV2 was traveling in the rotary when MV1 NB on Barnstable Rd entered the rotary and sideswiped MV2
6	3/7/14	Friday	10:53 AM	Rear-end	Daylight	Clear	Dry	Followed too closely	45	28		MV2 WB on Rte 28 (Iyannough Rd) rear-ended MV1
7	3/22/14	Saturday	1:49 PM	Rear-end	Daylight	Clear	Dry	Followed too closely	45	29		MV2 NB on Barnstable Rd was rear ended by MV1
8	3/27/14	Thursday	1:05 PM	Rear-end	Daylight	Clear	Dry	Followed too closely	59			MV2 NB on Barnstable Rd rear ended MV1
9	4/1/14	Tuesday	12:20 PM	Rear-end	Daylight	Clear	Dry	Followed too closely	25	73		MV2 EB on Rte 28 (Falmouth Rd) rear ended MV1 due to brake failure
10	4/9/14	Wednesday	2:53 PM	Rear-end	Daylight	Clear	Dry	Inattention	80	65		MV2 EB on Rte 28 (Iyannough Rd) rear ended MV 1. MV2 distracted for a moment
11	4/16/14	Wednesday	1:18 PM	Sideswipe, same direction	Daylight	Clear	Dry	Failed to yield right of way	68	32		MV1 entering rotary from Rte 132 (Iyannough Rd) sideswiped MV2 exiting the rotary onto Rte 28 (Falmouth Rd)
12	5/3/14	Thursday	1:25 PM	Angle	Daylight	Rain	Wet	Failure to keep in proper lane or running off road	47	27		MV2 exiting BMW dealership hit MV1 EB on Rte 28 (Falmouth Rd)
13	5/2/14	Friday	12:52 PM	Sideswipe, same direction	Daylight	Other	Dry	Other improper action	31	61		MV2 while in the rotary was struck by MV1 entering rotary from Barnstable Rd SB
14	5/9/14	Friday	11:35 AM	Rear-end	Daylight	Cloudy	Dry	Followed too closely	36	18		Hit & run, MV1 SB on Rte 132 (Iyannough Rd) was rear ended by MV2 who fled the scene after stating that no damage occurred
15	5/31/14	Saturday	3:43 PM	Rear-end	Daylight	Clear	Dry	Failed to yield right of way	56	48		MV1 WB on Rte 28 (Iyannough Rd) rear ended MV2, thinking MV2 had entered the rotary
16	6/2/14	Monday	4:59 PM	Rear-end	Daylight	Clear	Dry	Unknown	34	36		MV1 NB on Barnstable Rd rear ended MV2, thinking MV2 had entered the rotary
17	6/2/14	Monday	2:32 PM	Rear-end	Daylight	Clear	Dry	Followed too closely	52	49		MV2 in the rotary Car was slowing/stopping to prepare to exit rotary and MV1 (Tractor Trailer) behind failed to stop in time
18	6/20/14	Friday	6:06 PM	Rear-end	Daylight	Clear	Dry	Followed too closely	18	49		MV2 rear ended MV1 in the rotary when MV1 stopped quickly for traffic
19	6/26/18	Tuesday	4:13 PM	Sideswipe, same direction	Daylight	Clear	Dry	Unknown	59	59		MV1 exiting rotary from left lane to Rte 28 EB tried to overtake MV2 exiting from right lane, and sideswiped MV2
20	7/3/14	Thursday	7:16 PM	Sideswipe, same direction	Daylight	Cloudy	Dry		53			Hit and run. MV1 entered rotary from Rte 132 (Iyannough Rd) without yielding and hit rear of MV2 traveling in rotary
21	7/11/14	Friday	4:21 PM	Rear-end	Daylight	Cloudy	Dry	Inattention	21	43		MV2 rear ended MV1, thinking MV1 had entered the rotary
22	7/12/14	Saturday	4:35 PM	Sideswipe, same direction	Daylight	Clear	Dry	Unknown	26	17		MV1 entering rotary from Rte 28 (Falmouth Rd) and MV2 exiting rotary to Barnstable Rd when vehicles collided
23	8/3/14	Sunday	1:38 AM	Angle	Dark - lighted roadway	Rain	Wet	Failed to yield right of way	22	31		OUI Crash. MV1 entered rotary from Rte 132 (Iyannough Rd) at high speeds, and struck MV2 traveling in rotary
24	8/23/14	Saturday	1:03 PM	Rear-end	Daylight	Clear	Dry	No improper driving	20	53		MV1 entering rotary from Rte 132 (Iyannough Rd) rear ended MV2 traveling in rotary
25	9/5/14	Friday	11:30 PM	Single vehicle crash	Dark - lighted roadway	Cloudy	Dry	Illness	24			Medical Emergency. MV1 NB on Barnstable Rd drove straight through the rotary and into a tree
26	9/19/14	Friday	11:38 AM	Sideswipe, same direction	Daylight	Clear	Dry	Inattention	44	35		MV1 (Tractor Trailer) entering rotary from Barnstable Rd NB made wide turn from left lane and sideswiped MV2
27	10/30/14	Thursday	7:39 PM	Angle	Dark - lighted roadway	Clear	Dry	Failed to yield right of way	22	33		MV2 entering rotary from Rte 28 (Falmouth Rd) struck MV1 traveling in the rotary
28	11/26/14	Wednesday	5:29 PM	Rear-end	Dark - lighted roadway	Rain	Wet	Inattention	47	29		MV1 NB on Barnstable Rd rear ended MV2. MV1 was distracted
29	3/10/15	Tuesday	4:12 PM	Rear-end	Daylight	Clear	Sand, mud, dirt, oil, gravel	Inattention	41	42		MV2 EB on Rte 132 (Iyannough Rd) was rear ended by MV1. MV1 thought MV2 had entered the rotary
30	4/24/15	Friday	12:45 PM	Sideswipe, same direction	Daylight	Clear	Dry	Failed to yield right of way	27	20		MV2 in the rotary's left lane sideswiped MV1 while attempting to change lanes
31	4/25/15	Saturday	1:06 PM	Angle	Daylight	Clear	Dry	Unknown	45	18		MV1 entering the rotary from Rte 132 (Iyannough Rd) struck MV2 traveling in the rotary
32	5/4/15	Monday	10:32 PM	Sideswipe, same direction	Dark -roadway not lighted	Clear	Dry	Failed to yield right of way	55	53		MV2 entering the rotary from Rte 28 (Iyannough Rd) into path of MV1 traveling in the rotary
33	5/19/15	Tuesday	5:34 PM	Sideswipe, same direction	Daylight	Cloudy	Wet	Inattention	20	30		MV1 entering the rotary from Rte 132 (Iyannough Rd) struck MV2 traveling in the rotary

Crash Data Summary Table
 Airport Rotary (Rt 28/Rt 132/Barnstable Rd) , Barnstable, MA
 2014 -2016

Crash Diagram Ref #	Crash Date mm/dd/yy	Crash Day	Time of Day h:mm	Manner of Collision Type	Light Condition Type	Weather Condition Type	Road Surface Type	Driver Contributing Code Type	Driver Ages			Comments
									D1	D2	D3	
34	5/22/15	Friday	2:20 PM	Sideswipe, same direction	Daylight	Cloudy	Dry	Inattention	52	19		MV1 entering the rotary from Rte 132 (Iyannough Rd) struck MV2 traveling in the rotary
35	6/23/15	Tuesday	10:40 AM	Angle	Daylight	Clear	Dry	Unknown	82	86		Hit and Run. MV1 was struck by MV2 while both were traveling in the rotary.
36	7/8/15	Wednesday	2:48 PM	Angle	Daylight	Cloudy	Dry	No improper driving	23			MV2 entered rotary from Rte 132 (Iyannough Rd) and was clipped on the side by MV1 (Tractor Trailer) exiting the rotary onto Rte 28 (Falmouth Rd)
37	7/10/15	Friday	5:19 PM	Rear-end	Daylight	Clear	Dry	Failed to yield right of way	20	59		EB MV1 on Rte 28 (Falmouth Rd) failed to stop in time and rear ended MV2
38	8/1/15	Saturday	8:15 PM	Sideswipe, same direction	Dark - lighted roadway	Clear	Dry	No improper driving	74	19		MV1 exiting rotary onto Rte 28 (Falmouth Rd) and MV2 traveling in the rotary collided
39	8/3/15	Monday	10:17 AM	Rear-end	Daylight	Clear	Dry	No improper driving	18			Hit & run. MV1 rear ended while traveling in rotary
40	8/4/15	Tuesday	11:26 AM	Sideswipe, same direction	Daylight	Clear	Dry	Followed too closely	24	55		MV1 and MV2 were exiting the rotary onto Rte 28 (Falmouth Rd), and MV1 struck MV2
41	8/5/15	Wednesday	11:50 AM	Rear-end	Daylight	Clear	Dry	Followed too closely	52	18		MV2 EB on Rte 28 (Falmouth Rd) rear ended MV1. MV 2 distracted by vehicle exiting Bearse Rd
42	9/1/15	Tuesday	5:55 PM	Rear-end	Daylight	Cloudy	Dry	Glare	40	73		MV1 and MV2 traveling in the rotary when UNK vehicle cut in front of MV2. MV2 was rear ended by MV1
43	9/1/15	Tuesday	4:29 PM	Angle	Daylight	Clear	Dry	Unknown	25	72		MV1 exiting the roundabout to Rte 28 (Falmouth Rd) was struck by MV2 entering the roundabout from Rte 132 (Iyannough Rd. MV2 creeping forward to see around a truck
44	9/21/15	Monday	8:53 AM	Rear-end	Daylight	Clear	Dry	Followed too closely	38	67		MV1 and MV2 traveling in the rotary when UNK vehicle cut in front of MV2. MV2 was rear ended by MV1
45	9/25/15	Friday	9:09 PM	Rear-end	Dark - lighted roadway	Clear	Dry	Failed to yield right of way	28	46		MV2 failed to yield to MV1 when entering the rotary from Barnstable Rd SB. MV2 rear ended MV1
46	10/11/15	Sunday	3:04 PM	Sideswipe, same direction	Daylight	Clear	Dry	No improper driving	48	67		MV 1 and MV2 exiting the rotary to Rte 28 (Falmouth Rd) when MV2 sideswiped MV1
47	10/19/15	Monday	5:33 PM	Rear-end	Daylight	Clear	Dry	No improper driving	66	37		MV1 entering the rotary from Barnstable Rd SB rear ended MV2 who then rear ended MV3
48	10/21/15	Wednesday	3:16 PM	Rear-end	Daylight	Clear	Dry	Unknown	28	62		MV2 entering the rotary from Barnstable Rd SB rear ended MV1
49	11/3/15	Tuesday	5:33 AM	Rear-end	Dark - lighted roadway	Clear	Dry	Inattention	43	24		MV2 EB on Rte 28 (Falmouth Rd) rear ended MV1. MV 2 was distracted
50	11/11/15	Wednesday	11:40 AM	Rear-end	Daylight	Clear	Dry	Exceeded authorized speed limit	51	19		MV1 and MV2 traveling in the rotary when traffic slowed. MV1 rear ended MV2
51	11/22/15	Sunday	6:16 PM	Rear-end	Dark - lighted roadway	Rain	Wet	Followed too closely	64	27		MV2 EB on Rte 132 (Iyannough Rd) was rear ended by MV1
52	11/27/15	Friday	7:08 AM	Single vehicle crash	Daylight	Cloudy	Wet	Glare	28			MV1 EB on Rte 132 (Iyannough Rd) lost control due to solar glare and hit the center median
53	12/11/15	Friday	6:51 PM	Sideswipe, same direction	Dark - lighted roadway	Cloudy	Wet	Inattention	31	31		MV1 and MV2 were traveling in the rotary when the two vehicles collided
54	12/15/15	Tuesday	3:54 PM	Rear-end	Dusk	Clear	Dry	No improper driving	59			Hit and Run. MV2 EB on Rte 28 (Falmouth Rd) was rear ended by MV1. MV 2 left the scene
55	1/9/16	Saturday	3:23 PM	Rear-end	Daylight	Clear	Wet	Inattention	61	23		MV2 EB on Rte 28 (Falmouth Rd) rear ended MV1
56	1/28/16	Thursday	10:48 AM	Sideswipe, opposite direction	Daylight	Clear	Dry	Failed to yield right of way	47	70		EB MV1 SB on Rte 28 (Iyannough Rd) was struck by MV2 making an illegal left turn out of private property crossing over the double yellow line
57	2/1/16	Monday	11:27 AM	Rear-end	Daylight	Clear	Dry	Operating defective equipment	64	68	64	MV3 NB on Rte 28 (Iyannough Rd) rear ended MV2 who then rear ended MV1
58	3/3/16	Thursday	7:58 AM	Angle	Daylight	Clear	Dry	Glare	37	31		MV2 entered rotary from Rte 132 (Iyannough Rd) and struck MV1 exiting the rotary onto Rte 28 (Falmouth Rd)
59	5/4/16	Wednesday	12:11 PM	Rear-end	Daylight	Cloudy	Wet	Followed too closely	61	21		MV1 exiting rotary into bank parking lot (driveway no longer opened). MV2 rear ended MV1 thinking it was exiting at Barnstable Rd
60	5/7/16	Saturday	11:33 AM	Sideswipe, same direction	Daylight	Clear	Dry	No improper driving	40	55		MV2 exiting rotary to Rte 28 (Iyannough Rd) was sideswiped by MV1 who was unsure of how many lanes are in the rotary
61	5/13/16	Friday	10:10 PM	Angle	Dark - lighted roadway	Rain	Wet	Failed to yield right of way	52	46		MV1 NB on Barnstable Rd struck MV2 traveling in the rotary
62	5/27/18	Sunday	7:31 AM	Rear-end	Daylight	Cloudy	Dry	No improper driving	23	26		MV1 and MV2 traveling in the rotary when UNK vehicle cut in front of MV2. MV2 was rear ended by MV1
63	6/1/16	Wednesday	1:33 PM	Angle	Daylight	Clear	Dry	Unknown	84			Hit & run. MV2 entered rotary from Rte 132 (Iyannough Rd) and struck MV1 exiting the rotary onto Rte 28 (Falmouth Rd). MV2 fled the scene
64	6/7/16	Tuesday	2:28 PM	Sideswipe, same direction	Daylight	Clear	Dry	No improper driving	46	57		MV1 (Tractor Trailer) entering rotary from Rte 132 (Iyannough Rd) sideswiped MV2
65	6/22/16	Wednesday	2:26 PM	Angle	Unknown	Unknown	Unknown	No improper driving	29			MV1 and MV2 EB on Rte 28 (Falmouth Rd) were stopped in traffic when MV2 backed into MV1. MV2 then gave false information before leaving
66	6/29/16	Wednesday	12:35 PM	Rear-end	Daylight	Cloudy	Dry	Inattention	65	20		MV1 and MV2 were in the rotary. MV2 slowed for traffic and was rear ended by MV1

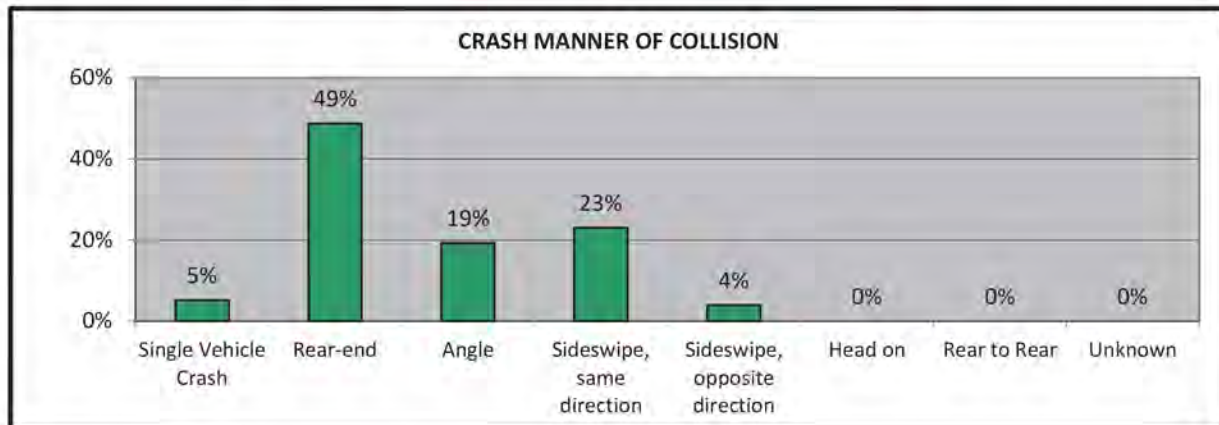
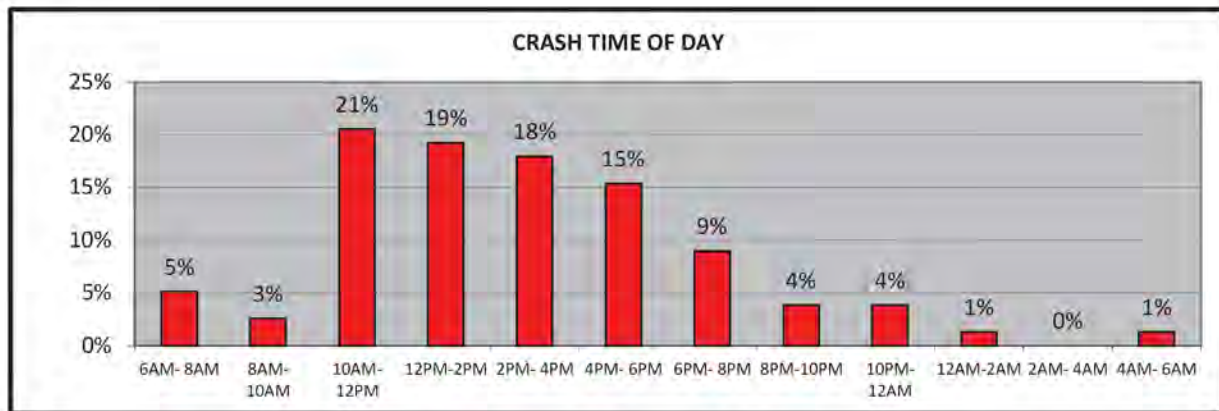
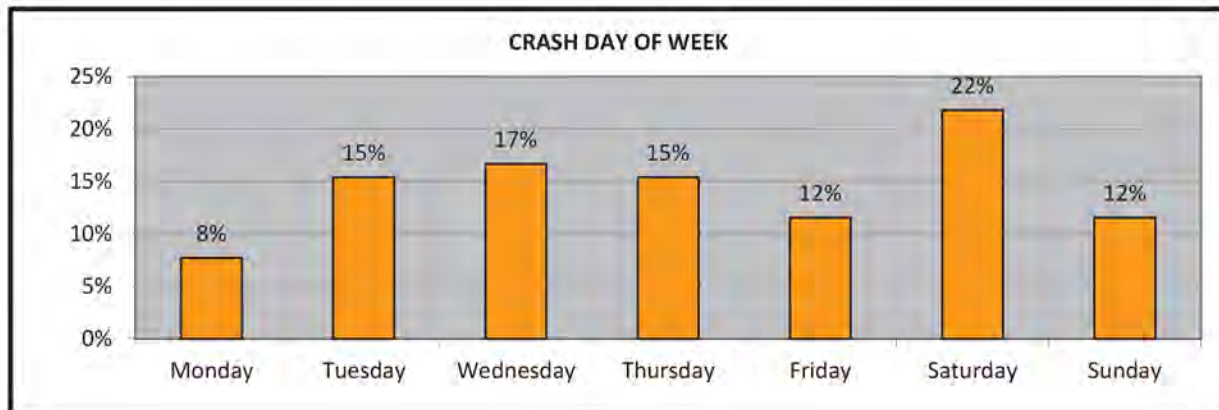
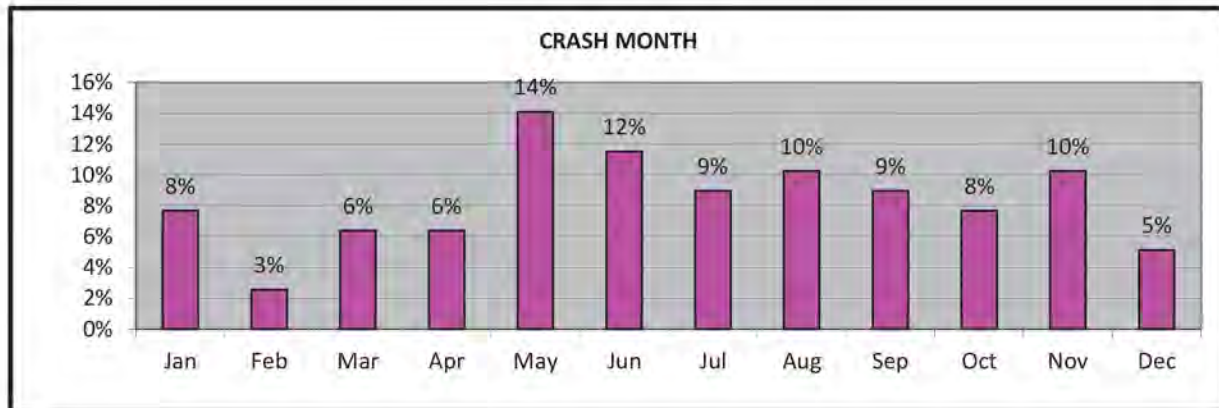
Crash Data Summary Table
 Airport Rotary (Rt 28/Rt 132/Barnstable Rd) , Barnstable, MA
 2014 - 2016

Crash Diagram Ref #	Crash Date mm/dd/yy	Crash Day	Time of Day hh:mm	Manner of Collision Type	Light Condition Type	Weather Condition Type	Road Surface Type	Driver Contributing Code Type	Driver Ages			Comments
									D1	D2	D3	
67	7/17/16	Sunday	12:47 PM	Rear-end	Daylight	Cloudy	Dry	Inattention	32	24		MV1 and MV2 were in the rotary. MV2 was rear ended by MV1
68	7/29/16	Friday	12:35 PM	Sideswipe, same direction	Daylight	Rain	Wet	Unknown	63	55		MV1 and MV2 were traveling in the rotary when the two vehicles collided
69	8/15/16	Monday	6:54 AM	Sideswipe, opposite direction	Daylight	Clear	Dry	Inattention	23	75		MV1 NB on Rte 28 (Iyannough Rd) and MV2 exiting the rotary. MV2 took the turn to exit the rotary too wide and MV1
70	8/25/16	Thursday	3:10 PM	Single vehicle crash	Daylight	Clear	Dry	Illness	58			Medical emergency. MV1 was stuck on rock over the inside curb of the rotary
71	9/26/16	Monday	9:11 PM	Rear-end	Dark - lighted roadway	Clear	Dry	Other improper action	35	26		MV2 EB on Rte 132 (Iyannough Rd) rear ended by MV1. MV2 mentioned brake malfunction
72	10/16/16	Sunday	11:14 AM	Sideswipe, same direction	Daylight	Clear	Dry	Unknown	27	43		MV1 and MV2 entering rotary from Rte 132 (Iyannough Rd) simultaneously and they collided
73	10/20/16	Thursday	6:31 PM	Sideswipe, same direction	Dark - lighted roadway	Clear	Dry	Unknown	50	42		MV1 and MV2 traveling in the rotary when MV2's trailer sideswiped MV1
74	11/8/16	Tuesday	10:59 AM	Rear-end	Daylight	Clear	Dry	Distracted	23	60		MV1 EB on Rte 28 (Falmouth Rd) rear ended MV2
75	11/10/16	Thursday	10:06 AM	Sideswipe, opposite direction	Daylight	Cloudy	Dry	Inattention	34	49		MV 1 NB on Rte 28 (Iyannough Rd) turning left into parking lot stuck MV2 SB on Rte 28 (Falmouth Rd)
76	11/28/16	Monday	4:24 PM	Rear-end	Dusk	Clear	Dry	Other improper action	45	37		MV1 NB on Rte 28 (Falmouth Rd) rear ended by MV2
77	12/13/16	Tuesday	9:49 AM	Sideswipe, same direction	Daylight	Clear	Dry	Failed to yield right of way	71	55		MV1 travelling in rotary and MV2 (Tractor Trailer) exiting the rotary onto Rte 28 (Falmouth Rd) was sideswiped by MV2 who was making a wide turn
78	12/23/16	Friday	2:16 PM	Rear-end	Daylight	Clear	Dry	No improper driving	33	22		MV 1 NB on Rte 132 (Iyannough Rd) stopped suddenly for UNK vehicle exiting Wendy's parking lot. MV 2 rear ended MV1

*Courtesy Crash - A term used to describe a crash that occurs subsequent to a non-involved mainline driver who gives the right of way, contrary to the rules of the road, to another driver.

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

Crash Data Summary Tables and Charts



Crash Data Summary Tables and Charts

