

ROAD SAFETY AUDIT

Cape Road/S Main Street (Route 140) at
Hartford Avenue East

Town of Mendon

March 16, 2016

Prepared for:
Massachusetts Department of Transportation



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Background

The Road Safety Audit (RSA) focused on the intersection of Hartford Avenue East at Cape Road (Route 140) and Main Street (Route 140). From 2011 to 2014, 47 crashes were reported at the intersection. The intersection was identified by the Massachusetts Department of Transportation (MassDOT) as a Highway Safety Improvement Program (HSIP) High Crash Cluster from 2011-2013, indicating that the location falls within the top 5% of High Crash Locations within the Central Massachusetts Regional Planning Commission (CMRPC) area. The intersection is also being evaluated by MassDOT District 3 for any low cost and signal improvements that can be implemented.

In general, the RSA is intended to identify potential safety improvements that can be evaluated and included as part of future design efforts for reconstruction. The short-term, low-cost potential improvements could be considered by the responsible agency for implementation prior to reconstruction, as appropriate.

The study area is shown in **Figure 1**.



Figure 1. *Locus Map*



Project Data

The audit team conducted the RSA for the intersection of Cape Road/S Main Street (Route 140) at Hartford Avenue East on Tuesday, February 23, 2016. The RSA agenda can be found in **Appendix A**. **Table 1** lists the audit team members and their affiliations. **Appendix B** provides contact information for all team members.

Table 1. Participating Audit Team Members

Audit Team Member	Agency/Affiliation
Alan Tetreault	Mendon Highway Department
Kim Newman	Mendon Town Administrator
David Kurczy	Mendon Police Department
Dan Daniska	Central Massachusetts Regional Planning Commission
John Mastera	MassDOT Highway Safety
Lori Shattuck	MassDOT D3 Traffic
Lola Campbell	MassDOT D3 Traffic
Siahr Siddiaqi	MassDOT D3 Traffic
Alex Siu	Howard Stein Hudson
Jessica Lizza	Howard Stein Hudson

Prior to the RSA, in order to begin assessing possible safety issues, the team reviewed collision diagrams and crash detail summaries based on crash records supplied by the state and the Town Police Department. From 2011-2014, 47 crashes were reported at the intersection with 12 (or 26%) resulting in personal injury. Of these crashes, 15 (or 32%) were angle crashes, 15 (32%) rear-end crashes, 8 (17%) were head-on crashes, 6 (12%) were sideswipe crashes, and 2 (4%) were single vehicle crashes. Of the 47 crashes, 36 (77%) occurred during daylight hours, 8 (17%) occurred during dark-lighted conditions, and 3 (6%) occurred during other/unknown conditions. Of the 47 crashes, 35 (74%) occurred during clear weather and 38 (81%) occurred on dry pavement.

Appendix C provides the detailed crash data for the study area.

Project Location Description

The RSA focused on the intersection of Cape Road/S Main Street (Route 140) at Hartford Avenue East in Mendon, as shown in the aerial image in **Figure 2**.

Hartford Avenue East at Cape Road/South Main Street (Route 140) is a signalized intersection with four approaches and is owned and maintained by MassDOT. The Hartford Avenue East eastbound approach has one shared left-turn/through lane and one shared through/right-turn lane. The Hartford Avenue East westbound approach consists of one shared left-turn/through lane and one exclusive right-turn lane with approximately 300 feet (or 12-15 vehicles) of storage. A gas station driveway is located along the Hartford Avenue East westbound approach. Approximately 175 feet east of the intersection, the two eastbound receiving lanes merge to one lane. The Cape Road (Route 140) northbound approach consists of one exclusive left-turn lane with 100 feet (or 4-5 vehicles) of storage and one shared through/right-turn lane. The South Main Street (Route 140) southbound approach consists of exclusive left-turn lane with 250 feet (or 10-12 vehicles) of storage and one shared through/right-turn lane. Crosswalks with wheelchair ramps with detectable warning panels are provided across all of the intersection legs. Video detection, including bike detection, is provided along all approach lanes. Emergency pre-emption is not provided at the intersection. Dunkin' Donuts provides a driveway along the north side of Hartford Avenue East approximately 200 feet east of the intersection and along Route 140 approximately 100 feet north of the intersection.

The intersection operates with four phases. The first phase provides a protected lead for the Route 140 southbound approach and an overlap phase for the Hartford Avenue East westbound right-turn lane. The second phase allows the Route 140 northbound and southbound phases to run with permissive left turns. The third phase is a push-button actuated exclusive pedestrian phase. The final phase allows the Hartford Avenue East eastbound and westbound approaches to run with permissive left turns.

This intersection is the junction of the following roadways, which are categorized according to MassDOT Office of Transportation Planning functional classifications:

Cape Road/South Main Street (Route 140) is an urban principal arterial under the jurisdiction of the MassDOT. Route 140 runs north-south from Grafton to New Bedford. Within the vicinity of the study area, Route 140 generally consists of one lane in each direction. Additional turning lanes are provided at the intersection with Hartford Avenue East. Within the study area, shoulders are provided along both sides of the roadway. South of the intersection, 4-foot shoulders are provided along both sides of Route 140. North of the intersection, the northbound shoulder is 4 feet wide and the southbound shoulder is 2 feet wide. Sidewalks are not provided along the roadway except for at the intersection with Hartford Avenue East along both sides of the roadway and along the east side of the roadway for approximately 175 feet north and south of the intersection with Hartford Avenue East. Within the study area, the speed limit along Route 140 is posted at 40 miles per hour (mph) and is consistent with speed regulations for the area.

Hartford Avenue East is classified as an urban minor arterial and falls under city/town jurisdiction. Hartford Avenue runs east-west through Mendon from Providence Street to the Town of Bellingham and

generally consists of one lane in each direction within the vicinity of the study area but widens to provide additional turning lanes at the intersection with Route 140. Shoulders are provided along both sides of the roadway within the vicinity of the intersection with Route 140. The Hartford Avenue eastbound shoulder is 4 feet wide west of the intersection and 2 feet wide east of the intersection. The Hartford Avenue westbound shoulder is 4 feet wide. Sidewalks are provided along the north side of the roadway from Charlesview Road east of the intersection with Route 140 to 300 feet west of the intersection. Sidewalks are provided along the south side at the corners of the intersection with Route 140. The speed limit within the vicinity of the intersection is posted at 30 mph and is consistent with the speed regulations.



Figure 2. *Cape Road/S Main Street (Route 140) at Hartford Avenue East*



Road Safety Audit Observations

Based on field observations on Tuesday, February 23, 2016, the RSA team determined that the study area intersection has the following issues that affect safety:

- Traffic signal phasing and timing;
- Intersection geometry;
- Access management; and
- Signage and pavement markings.

The following sections describe in more detail the safety issues and potential enhancements determined during the RSA. Several of these issues require further study and engineering judgment to determine the feasibility of implementing the improvements to address them.

Safety Issue #1. Traffic Signal Phasing and Timing

Observations:

Six of the 47 crashes, involved the collision of southbound left-turning vehicles with northbound vehicles traveling through the intersection. The existing traffic signal phasing provides a protected southbound lead phase then provides permissive phasing for the northbound and southbound approaches. An audit team member noted that it is common for vehicles taking a southbound left-turn from Route 140 to miss the protected movement and get trapped within the intersection, unable to find gaps in the northbound traffic. Further contributing to this issue is that when the Route 140 northbound left-turn lane queues, it obstructs the southbound left-turn lane's sight lines of vehicles traveling northbound through the intersection. One of the crashes involved a northbound left-turning vehicle that collided with a southbound vehicle traveling through the intersection. This crash is also most likely the result of the permissive left-turns.



Protected permissive green arrow signal indication for the Route 140 southbound left-turn lane.



Visibility of westbound vehicles traveling on Hartford Avenue with the steep grade change.

One of the reported crashes involved a left-turning eastbound vehicle that collided with vehicle traveling westbound through the intersection. The Hartford Avenue East approaches have permissive left-turns which increase the potential for conflicts with turning vehicles. In addition, the downward grade along the westbound approach makes it difficult for eastbound vehicles at the intersection to see westbound vehicles approaching the intersection until they have reached the crest of the hill.

Fifteen of the 47 crashes were rear-end crashes which could indicate insufficient clearance intervals. In addition, two crashes involved vehicles traveling westbound that entered the intersection during a red light. This could indicate that the red time is insufficient for the Hartford Avenue East westbound approach. An audit team member also noted that during peak hours, vehicles experience lengthy delays and become frustrated and attempt to clear the signal during the all-red interval. Another contributing factor for the rear-end crashes could be the lack of visibility of the traffic signal indications.

Potential Enhancements:

1. Consider changing the Route 140 southbound traffic signal indications to flashing yellow arrow and providing a supplemental “left-turn yield on flashing yellow arrow” sign.
2. Evaluate traffic operations to determine if it is feasible to change the signal phasing to provide a protected-only movement for the southbound left-turn lane.
3. Consider providing protected left-turns along the Hartford Avenue East approaches.
4. Evaluate the signal timings to reduce congestion and driver frustration during the peak hours.
5. Assess and update all clearance intervals to be compliant with current standards.
6. Consider adding reflective borders to the traffic signal back plates to increase signal indication visibility.

Safety Issue #2. Intersection Geometry

Observations:

The Hartford Avenue East eastbound approach consists of a shared left-turn/through lane and a shared through/right-turn lane. Two receiving lanes are provided but merge approximately 175 feet east of the intersection. Two sideswipe crashes were reported at the receiving lanes and are most likely the result of vehicles merging at relatively high speeds. It was noted by an audit team member that vehicles traveling eastbound tend to accelerate east of the intersection in order to jockey for position in the merge area.



Merge for Hartford Avenue East eastbound receiving lanes.

An audit team member noted that there is significant congestion during the peak hours and long queues tend to form, especially during the p.m. peak hour along the Hartford Avenue East westbound approach. As a result of the long queues, it was mentioned that it is common for vehicles to travel through the intersection in the right-turn lane in order to bypass the vehicles waiting to turn left. A member also mentioned that the Hartford Avenue East westbound lane configuration is not consistent with the standard configuration of a left-turn lane and a shared through/right-turn lane that is provided at the signalized intersection further to the east. One sideswipe crash that involved a vehicle trying to change lanes at the intersection could be a result of a vehicle trying to maneuver around a waiting vehicle or confusion over the lane configuration.

No bicycle accommodations are provided at or near the intersection, with the exception of bicycle detection. While none of the reported crashes involved a cyclist, the lack of bicycle accommodations combined with the high travel speeds along Hartford Avenue East and Route 140 puts cyclists at greater risk. Cyclists travelling through the intersection are forced to mix with vehicles in the travel lanes due to inadequate shoulder width along the roadways.

Potential Enhancements:

1. Consider changing the Hartford Avenue East eastbound lane-use to be an exclusive left-turn lane and a shared through/right-turn lane to eliminate the merge condition along the receiving lanes and provide space for a storage left-turn lane, through lane, and right-turn lane along the westbound approach to reduce congestion and queuing.
2. Evaluate the feasibility of using the additional space created by reducing the number of eastbound lanes to widen the roadway shoulders to accommodate bicycles.

Safety Issue #3. Access Management

Observations:

Dunkin' Donuts is located at 144 Hartford Avenue, approximately 200 feet east of the intersection with Route 140. Driveways with access to Dunkin' Donuts are provided on Hartford Avenue and Route 140. Left-turns are prohibited into the driveway on Hartford Avenue by two no left-turn (R3-2) signs. However, an audit member noted that because there are no physical barriers preventing left-turns into the driveway, many people execute the move despite the signs. Turning left from the eastbound travel lane on Hartford Avenue requires vehicles to judge gaps in the two lanes of on-coming traffic. In addition, some of crashes that occurred when turning into the Dunkin' Donuts driveway could be "courtesy" crashes, where one vehicle stops to allow a left turn into the driveway and a second vehicle traveling in the outside travel lane is blocked from view and does not stop.



Dunkin' Donuts driveway on Hartford Avenue

Seven of the 47 crashes involved vehicles turning left into the Dunkin' Donuts driveway and getting hit by vehicles traveling westbound along Hartford Avenue. In addition to the lack of physical prohibition, the Hartford Avenue address of the Dunkin' Donuts may mislead people to believe that the only entrance is along Hartford Avenue. The storefront is visible along Hartford Avenue but not along Route 140 and no signage is provided to guide people to the second driveway on Route 140.

Potential Enhancements:

1. Consider providing guide signs to direct people to the driveway on Route 140.
2. Consider making the Dunkin' Donuts driveway on Hartford Avenue an exit only.
3. If providing left-turns into the driveway is desirable, consider providing a left-turn lane for vehicles to turn left into the driveway to get vehicles out of the eastbound through lanes.
4. If the left-turn prohibition is to remain, consider changing the geometry of the channelized island at the driveway or making geometric changes along Hartford Avenue to provide room for a short median to physically prevent people from turning left into the driveway on Hartford Avenue and only allow right-turns in and out of the driveway.

Safety Issue #4. Signage and Pavement Markings

Observations:

Two of the 47 crashes were sideswipes that occurred along the westbound approach from vehicles trying to switch lanes. Intersection lane control (R3-7) signs are provided along the intersection approaches. However, along the Hartford Avenue East westbound approach the R3-7 sign is not provided until you are nearing the intersection and the pavement markings at the intersection are worn.

In addition, the dotted white lane lines that start at the taper for the Hartford Avenue westbound right-turn lane lead to broke white lane lines instead of a solid white lane line for the right-turn lane and the “ONLY” pavement markings do not begin until partially into the lane. This could confuse drivers as the broken white would generally indicate that both lanes would continue as through lanes.

Potential Enhancements

1. Consider installing advanced diagrammatic lane control (R3-8) signs along the intersection approaches to supplement the regulatory lane-use (R3-7) signs to provide drivers with more advanced and clearer lane-use warning.
2. Consider refreshing pavement markings along the Hartford Avenue approaches and within the intersection of Hartford Avenue/Route 140.
3. Consider replacing the broken white lane lines with an extension of the solid white lane line or the dotted white lane lines for the Hartford Avenue East westbound right-turn lane so that the dotted white lane lines turn into the solid white lane line instead of a broken white lane lines.

Potential Safety Enhancements

Based on its observations and discussions, the RSA team identified the issues and possible enhancements that could improve safety at the intersection of West Central Street (Route 140)/Franklin Village Drive.

Short-term enhancements include, but are not limited to:

- Consider changing the Route 140 southbound traffic signal indications to flashing yellow arrow and providing a supplemental “left-turn yield on flashing yellow arrow” sign.
- Evaluate traffic operations to determine if it is feasible to change the signal phasing to provide a protected-only movement for the southbound left-turn lane.
- Consider providing protected left-turns along the Hartford Avenue East approaches.
- Evaluate the signal during the peak hours.
- Assess and update all clearance intervals to be compliant with current standards.
- Consider adding reflective borders to the traffic signal back plates.
- Consider changing the Hartford Avenue East eastbound lane-use to be an exclusive left-turn lane and a shared through/right-turn lane to eliminate the merge condition along the receiving lanes and provide space for a storage left-turn lane, through lane, and right-turn lane along the westbound approach.
- Evaluate the feasibility of using the additional space created by reducing the number of eastbound lanes to widen the roadway shoulders to accommodate bicycles.
- Consider providing guide signs to direct people to the driveway on Route 140.
- Consider making the Dunkin’ Donuts driveway on Hartford Avenue an exit only.
- If providing left-turns into the driveway is desirable, consider providing a left-turn lane for vehicles to turn left into the driveway to get vehicles out of the eastbound through lanes.
- Consider installing advanced diagrammatic lane control (R3-8) signs along the intersection approaches to supplement the regulatory lane-use (R3-7) signs.
- Consider refreshing pavement markings along the Hartford Avenue approaches and within the intersection of Hartford Avenue/Route 140.
- Consider replacing the broken white lane lines with an extension of the solid white lane line or the dotted white lane lines for the Hartford Avenue East westbound right-turn lane.

To enhance the safety of the corridor, the *long-term enhancements* are to:

- If the left-turn prohibition is to remain, consider changing the geometry of the channelized island at the driveway or consider making geometric changes along Hartford Avenue to provide room for a short median to physically prevent people from turning left into the driveway on Hartford Avenue and only allow right-turns in and out of the driveway.
- **Table 2** summarizes these safety issues, possible enhancements, estimated safety payoff, time frame, cost, and responsibility. Safety payoff estimates are based on engineering judgment and are categorized as low, medium, and high. The time frame is categorized as short-term (<1 year), mid-term (1 to 3 years), or long-term (typically >3 years). Long-term improvements are typically considered to be substantial improvements with an expected time frame for implementation of greater than 3 years. The costs are categorized as low (<\$10,000), medium (\$10,000 to \$50,000), or high (>\$50,000).

The RSA is intended to identify potential safety improvements that can be evaluated and included as part of the design process for the future reconstruction efforts. The short-term low-cost improvements should be considered by the responsible agency for immediate implementation, as appropriate.

Table 2. Summary of Potential Safety Enhancements

Safety Issue	Safety Enhancement	Safety Payoff	Time Frame	Cost	Responsible Party
Traffic Signal Phasing and Timings	Consider changing the Route 140 southbound traffic signal indications to flashing yellow arrow and providing a supplemental “left-turn yield on flashing yellow arrow” sign.	Low	Short-Term	Low	MassDOT
	Evaluate traffic operations to determine if it is feasible to change the signal phasing to provide a protected-only movement for the southbound left-turn lane.	High	Short-Term	Low	MassDOT
	Consider providing protected left-turns along the Hartford Avenue East approaches.	High	Mid-Term	Medium	MassDOT
	Evaluate the traffic signal timings during the peak hours.	Medium	Short-Term	Low	MassDOT
	Assess and updated all clearance intervals to be compliant with current standards.	High	Short-Term	Low	MassDOT
	Consider adding reflective borders to the traffic signal indication back plates.	Low	Short-Term	Low	MassDOT
Intersection Geometry	Consider changing the Hartford Avenue East eastbound lane-use to be an exclusive left-turn lane and shared through/right-turn lane and the westbound approach to a storage left-turn lane, a through lane, and a right-turn lane.	High	Mid-Term	Low	MassDOT
	Evaluate the feasibility of using the additional space created by reducing the number of eastbound receiving lanes to widen the roadway shoulders to accommodate bicycles.	Low	Long-Term	Medium	MassDOT
Access Management	Consider making the Dunkin’ Donuts driveway on Hartford Avenue and exit only.	Low	Mid-Term	Medium	MassDOT/ Dunkin’ Donuts/Town of Mendon and Hopedale
	Consider providing guide signs to direct people to the driveway on Route 140.	Low	Short-Term	Low	MassDOT/ Dunkin’ Donuts/ Town of Hopedale and Mendon
	If providing left-turns into the driveway is desirable, consider providing a left-turn lane for vehicles to turn left into the driveway.	Low	Short-Term	Low	MassDOT

Table 3. Summary of Potential Safety Enhancements (continued)

Safety Issue	Safety Enhancement	Safety Payoff	Time Frame	Cost	Responsible Party
Access Management	If the left-turn prohibition is to remain, consider changing the geometry of the channelized island at the driveway or consider making geometric changes along Hartford Avenue to provide room for a short median.	Medium	Mid-Term	Medium	MassDOT/ Dunkin' Donuts/Town of Hopedale and Mendon
Traffic Sign and Pavement Markings	Consider installing advanced diagrammatic lane control (R3-8) signs along the intersection approaches to supplement the regulatory lane-use (R3-7) signs.	Low	Short-Term	Low	MassDOT
	Consider refreshing pavement markings along the Hartford Avenue approaches and within the intersection of Hartford Avenue/Route 140.	Low	Short-Term	Low	MassDOT/ Town of Mendon
	Consider replacing the broken white lane lines with an extension of the solid white lane line or the dotted white lane lines for the Hartford Avenue East westbound right-turn lane.	Low	Short-Term	Low	MassDOT

Appendix A. RSA Meeting Agenda

Agenda

Road Safety Audit

Mendon, MA

Cape Rd./Main St. (Route 140) at Hartford Ave. East

Meeting Location:
Mendon Town Hall
20 Main Street, Mendon, MA

Tuesday, February 23, 2016
1:00 PM – 4:00 PM

Type of meeting:

High Crash Location – Road Safety Audit

Attendees:

Invited Participants to Comprise a Multidisciplinary Team

Please bring:

Thoughts and Enthusiasm!!

1:00 PM

Welcome and Introductions

1:15 PM

Discussion of Safety Issues

- Crash history, Speed Regulations – provided in advance
- Existing Geometries and Conditions

2:00 PM

Site Visit

- Drive to the intersection of Cape Road/Main Street (Route 140) at Hartford Avenue East
- As a group, identify areas for improvement

3:00 PM

Discussion of Potential Improvements

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

4:00 PM

Adjourn for the Day – but the RSA has not ended

Instructions for Participants:

- Before attending the RSA on February 23, 2016, 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: Tuesday, February 23, 2016

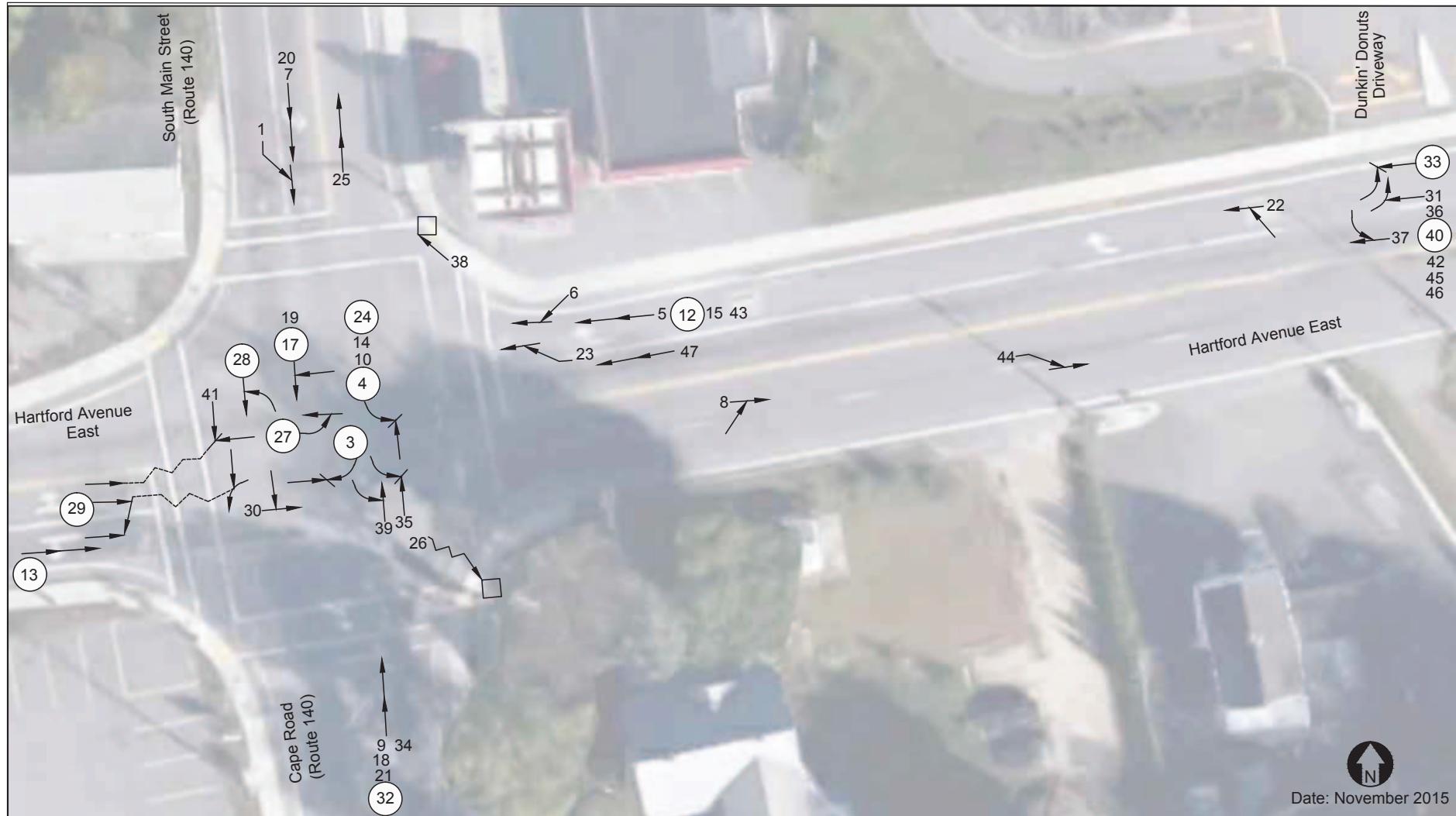
Location: Mendon Town Hall (20 Main Street, Mendon, MA)

Audit Team Members	Agency/Affiliation	E-mail Address	Phone Number
Alan Tetreault	Mendon Highway Department	highwaydpt@mendonma.gov	508-473-0737
Kim Newman	Mendon Town Administrator	knewman@mendonma.gov	508-468-8863
David Kurczy	Mendon Police Department	jkurczy@mendonpublicsafety.com	508-478-2797
Dan Daniska	Central Massachusetts Regional Planning Commission	ddaniska@cmrpc.org	508-459-3531
John Mastera	MassDOT Highway Safety	john.mastera@state.ma.us	857-368-9648
Lori Shattuck	MassDOT D3 Traffic	lori.shattuck@dot.state.ma.us	508-929-3945
Lola Campbell	MassDOT D3 Traffic	alolade.campbell@dot.state.ma.us	508-929-3887
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Alex Siu	Howard Stein Hudson	asiu@hshassoc.com	617-348-3346
Jessica Lizza	Howard Stein Hudson	jlizza@hshassoc.com	617-348-3330

Appendix C. Detailed Crash Data



Collision Diagram - Cape Road/Main Street (Route 140) at Hartford Avenue East, Mendon, MA



Key

Rear-End	→→→	Sideswipe	↗↘	Fixed-Object	→□	Turning Movement	↘	Pedestrian/Bicyclist	○	I.D. Number	##
Head-on	←+→	Overturned	↗↘	Angle	→↘	Parked Vehicle	→☒	Out of Control	↗↘	Injury Accident	##
										Fatal Accident	###

Crash Data Summary Table
Hartford Avenue East/Route 140, Mendon/Hopedale, MA
January 2011-December 2014

ID	Date	Day	Time	Manner	Weather	Lighting	Road Surface	Driver Contributing Code	Ages			Description
1	1/27/2011	Thursday	11:18 PM	Sideswipe same direction	Clear	Dark - lighted roadway	Dry	Failure to keep in proper lane or running off road	28	57		Vehicle 1 was in the exclusive left-turn lane waiting to take a SB left. A tractor trailer unit was in the through/right-turn lane when it began to turn left failing to see Vehicle 1 and sideswiping Vehicle 1 in the process.
2*	1/29/2011	Saturday	9:14 PM	Angle	Clear	Dark - lighted	Wet	N/A				
3	2/4/2011	Friday	8:24 AM	Head-on	Clear	Daylight	Dry	Inattention	65	37		Vehicle 1 entered the intersection in the eastbound direction when Vehicle 2 exited from the gas station and crossed two traffic lanes. Vehicle 2 failed to yield the right of way to Vehicle 1 and struck Vehicle 1.
4	2/22/2011	Tuesday	10:24 AM	Head-on	Clear	Daylight	Dry	Failed to yield right of way	64	31		Vehicle 1 entered the intersection in the eastbound direction when Vehicle 2 exited from the gas station and crossed two traffic lanes. Vehicle 2 failed to yield the right of way to Vehicle 1 and struck Vehicle 1.
5	3/2/2011	Wednesday	6:08 AM	Rear-end	Clear	Dawn	Dry	No improper driving	83			Vehicle 1 was stopped at red light when Vehicle 2 struck Vehicle 1 from behind.
6	3/19/2011	Saturday	12:31 PM	Angle	Clear	Daylight	Dry	Inattention	67	58		Vehicle 1 pulled out from the gas station driveway, attempting to cross over 2 lanes of traffic. Vehicle 2 could not stop in time and collided with Vehicle 1.
7	5/20/2011	Friday	3:16 PM	Rear-end	Clear	Daylight	Dry	Followed too closely				Vehicle 2 stopped at a stop light. Vehicle 1 failed to stop in time and struck Vehicle 2 from behind.
8	8/1/2011	Monday	12:51 PM	Angle	Clear	Daylight	Dry	Inattention	18	63		Vehicle 2 was traveling eastbound on Hartford Ave when Vehicle 1 made an abrupt left-turn into the lane Vehicle 2 was in, striking Vehicle 2.
9	9/21/2011	Wednesday	5:49 PM	Rear-end	Clear	Daylight	Dry	Inattention	28	24		Vehicle 1 was stopped at red light when Vehicle 2 struck Vehicle 1 from behind.
10	12/8/2011	Thursday	9:09 PM	Head-on	Clear	Dark - lighted roadway	Dry	Disregarded traffic signs, signals, road markings	60	25		Vehicle 1 was traveling northbound on Cape Road. Vehicle 2 was traveling southbound and turning left from the exclusive left-turn lane with a green indication. Vehicle 1 struck Vehicle 2 within the intersection.
11*	12/30/2011	Friday	8:11 PM	Rear-end	Clear	Dark - roadway not lighted	Dry					
12	2/1/2012	Wednesday	5:50 PM	Rear-end	Cloudy	Dawn	Dry	Inattention	55	39		Vehicle 1 was stopped at red light when Vehicle 2 struck Vehicle 1 from behind.
13	2/20/2012	Monday	8:08 AM	Rear-end	Clear	Daylight	Dry	Inattention	20	27		Vehicle 2 stopped in traffic for a red light. Vehicle 1 struck Vehicle 2 from behind.
14	3/29/2012	Thursday	11:27 AM	Head-on	Cloudy	Daylight	Dry	Failed to yield right of way	43	55		Vehicle 1 was cut off by Vehicle 2 while traveling through on Cape Road northbound. Vehicle 2 was traveling southbound turning left.
15	4/14/2012	Saturday	1:10 PM	Rear-end	Clear	Daylight	Dry	Inattention	19	51		Vehicle 2 was stopped in traffic for a red light. Vehicle 1 struck Vehicle 2 from behind.
16*	5/1/2012	Tuesday	7:18 AM	Unknown	Cloudy	Daylight	Dry					

Crash Data Summary Table
Hartford Avenue East/Route 140, Mendon/Hopedale, MA
January 2011-December 2014

ID	Date	Day	Time	Manner	Weather	Lighting	Road Surface	Driver Contributing Code	Ages			Description
17	5/31/2012	Thursday	5:07 PM	Angle	Clear	Daylight	Dry	Disregarded traffic signs, signals, road markings	23	27		Vehicle 1 was traveling westbound on Hartford Ave. Vehicle 2 was traveling southbound on Cape Rd. Vehicle 1 entered the intersection after the signal had turned red. Vehicle 2 started moving south when the signal turned green, and Vehicle 1 struck the front end of Vehicle 2.
18	8/23/2012	Thursday	7:32 PM	Rear-end	Clear	Daylight	Dry	Unknown	51	56		Vehicles were stopped at a red light in the northbound direction. Vehicle 1 rolled into Vehicle 2 from behind.
19	10/11/2012	Thursday	8:28 AM	Angle	Clear	Daylight	Dry	Unknown	26	35		Vehicle 2 traveling westbound stopped in the intersection to yield to a police cruiser responding to a call. After the cruiser cleared the intersection, Vehicle 2 began to continue through the intersection. The signal had switched while Vehicle 2 was in the intersection, and a tractor trailer unit was blocking the sight line between Vehicle 1 and Vehicle 2. Vehicle 1 pulled into the intersection striking Vehicle 2.
20	10/11/2012	Thursday	8:35 AM	Rear-end	Clear	Daylight	Dry	Inattention				Vehicle 2 was traveling southbound and stopped at a red light. Vehicle 1 did not stop in time and struck Vehicle 2 from the rear.
21	11/14/2012	Wednesday	8:56 AM	Rear-end	Clear	Daylight	Dry	Followed too closely	58	60		Vehicles 1 and 2 stopped in traffic. Vehicle 1 moved forward then braked. Vehicle 2 failed to brake before running into Vehicle 1.
22	12/26/2012	Wednesday	9:51 PM	Angle	Snow	Dark - lighted roadway	Snow	Unknown	30	25		The vehicles were traveling eastbound in adjacent travel lanes. Vehicle 1 was in the left lane and attempted to enter the right lane to turn right at the intersection, when it was struck by Vehicle 1.
23	2/21/2013	Thursday	5:19 PM	Angle	Clear	Daylight	Dry	Swerving or avoiding due to wind, slippery surface, vehicle, object, non-motorist in roadway, etc.	18	30		Vehicle 1 was traveling westbound in the rightmost lane attempting to turn right. Vehicle 2 was also traveling west and swerved into the rightmost lane to go around a vehicle turning left in front of it. Vehicle 2 entered the right lane and struck Vehicle 1.
24	7/3/2013	Wednesday	10:21 AM	Head-on	Cloudy	Daylight	Dry	Failed to yield right of way	29	33		Vehicle 1 was traveling straight on Rt 140 northbound. Vehicle 2 was traveling southbound on Route 140 attempting to turn left onto Hartford Ave. Vehicle 2 attempted to clear the intersection to make way for an approaching ambulance, colliding with Vehicle 1.
25	7/24/2013	Wednesday	9:46 AM	Rear-end	Clear	Daylight	Dry	Followed too closely				Vehicle 1 was traveling northbound on Cape Road. Vehicle 2 was also traveling northbound. Vehicle 1 collided with Vehicle 2 from behind.

Crash Data Summary Table
Hartford Avenue East/Route 140, Mendon/Hopedale, MA
January 2011-December 2014

ID	Date	Day	Time	Manner	Weather	Lighting	Road Surface	Driver Contributing Code	Ages				Description
26	9/12/2013	Thursday	11:57 PM	Single vehicle crash	Rain	Dark - lighted roadway	Wet	Operating vehicle in erratic, reckless, careless, negligent or aggressive manner	25				Vehicle was traveling southbound on Route 140 when attempting to turn left onto Hartford Ave. The vehicle left the right lane, striking a mailbox then telephone pole on Hartford Avenue before leaving the area and parking down the street. Driver was arrested for OUI Liquor.
27	9/14/2013	Saturday	12:46 PM	Sideswipe opposite direction	Clear	Daylight	Dry	No improper driving	67	27			Vehicle 1 was traveling westbound turning left with green light, cutting in front of Vehicle 2 traveling eastbound and striking Vehicle 2.
28	10/20/2013	Sunday	11:20 AM	Angle	Clear	Daylight	Dry	Failed to yield right of way	26	28			Vehicle 1 was traveling straight through the intersection and was cut off by Vehicle 2 turning left from the opposite direction.
29	10/28/2013	Monday	8:02 AM	Angle	Clear	Daylight	Dry	Failed to yield right of way	37	50	50	31	The traffic signal equipment failed during rush hour and switched to flashing operation. Vehicles 2 and 3 were stopped at the signal in the eastbound direction. Vehicle 4 had stopped for the flashing red indication, then attempted to take a westbound left turn. Vehicle 1 then entered the intersection from north, failing to yield for the yellow indication, striking Vehicle 4, then Vehicles 2 and 3, which were still stopped on the approach.
30	10/28/2013	Monday	8:12 AM	Angle	Clear	Daylight	Dry	Unknown	30	25			The traffic signal equipment failed during rush hour and switched to flashing operation. Vehicle 1 entered the intersection from the north with a flashing yellow light. Vehicle 2 entered the traffic lane from the west after stopping at a flashing red light and was struck by Vehicle 1.
31	11/22/2013	Friday	4:02 PM	Angle	Clear	Daylight	Wet	Made an improper turn/ Failed to yield right of way	56	55			Vehicle 1 was traveling west on Hartford Ave, Vehicle 2 was traveling east on Hartford Ave. Vehicle 2 attempted to turn left into Dunkin Donuts driveway despite "No Left Turn" signs, crossing in front of and striking Vehicle 1.
32	2/20/2014	Thursday	1:53 PM	Rear-end	Clear	Daylight	Dry	Inattention	19	52			Vehicles 1 and 2 stopped for a red light on Cape Rd northbound. Vehicle 1 rolled into Vehicle 2.
33	4/9/2014	Wednesday	5:36 PM	Head-on	Clear	Daylight	Dry	Failed to yield right of way/ Disregarded traffic signs, signals, road markings	33	59			Vehicle 1 turned left across 2 travel lanes to enter Dunkin Donuts driveway despite two "No Left Turn" signs at the location and struck Vehicle 2 in the right-most eastbound lane.
34	4/10/2014	Thursday	10:44 AM	Rear-end	clear	Daylight	Dry	Inattention	60	29			Vehicle 2 stopped on NB approach for an unmarked police vehicle displaying blue flashing lights and sounding a siren. Vehicle 1 attempted to stop but struck Vehicle 2 from behind.
35	4/26/2014	Saturday	11:09 PM	Head-on	Rain	Dark - lighted roadway	Wet	No improper driving	45				Vehicle 1 was traveling north with solid green indication. Vehicle 2, traveling south, attempted to turn left across the northbound lane, striking the front of Vehicle 1. Vehicle 2 did not stop and continued southbound along Cape Road.

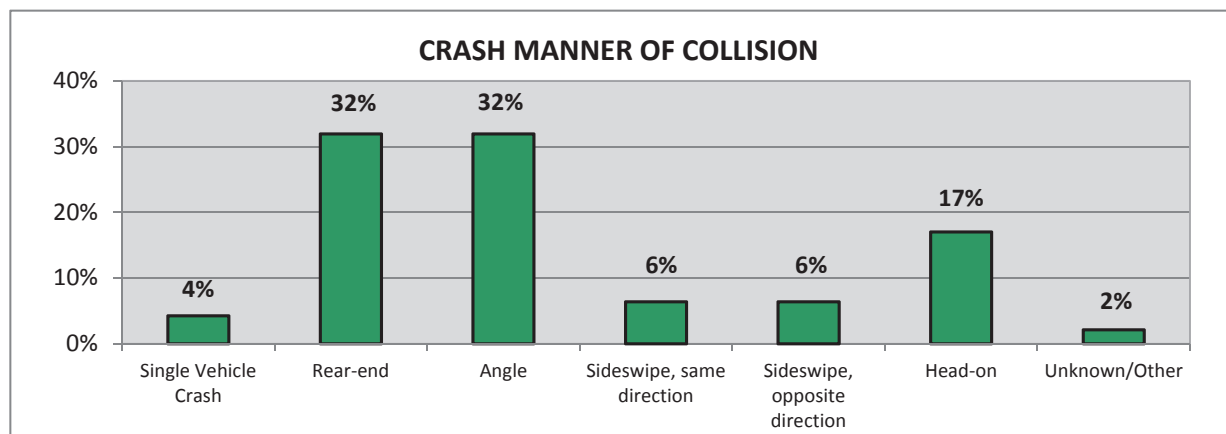
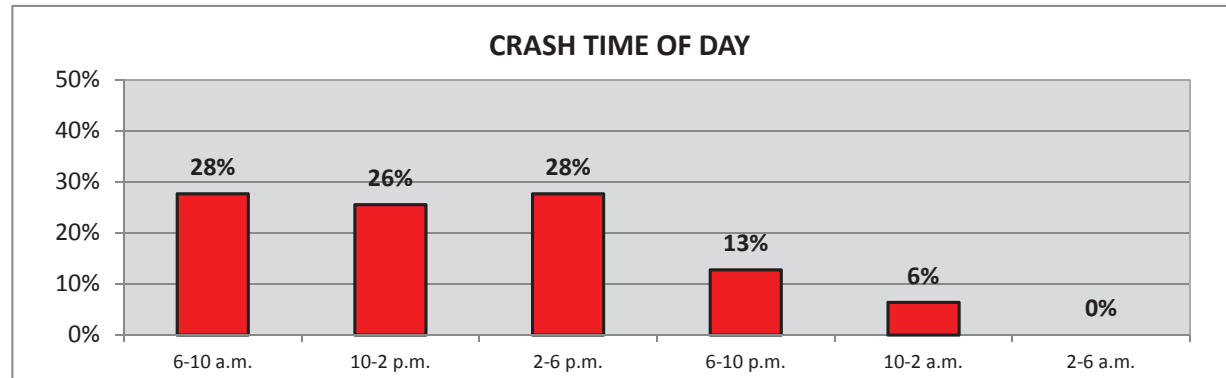
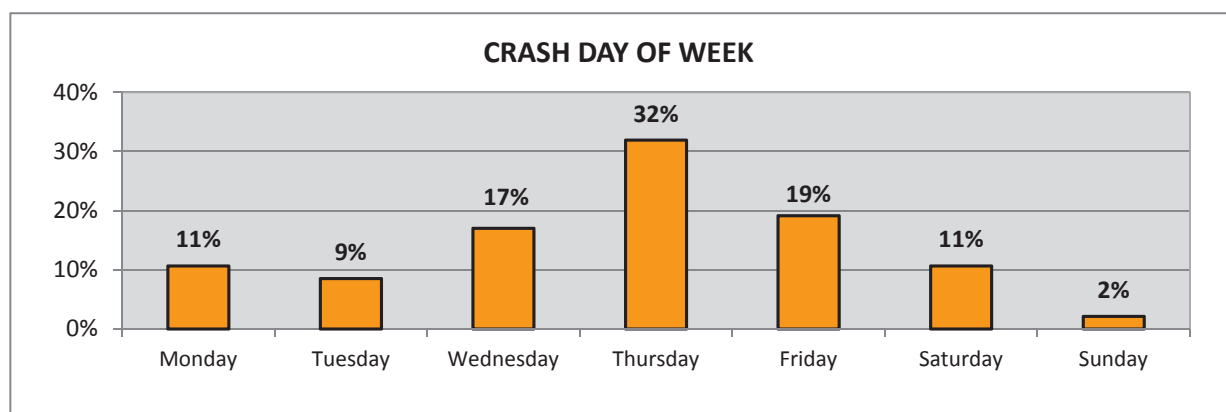
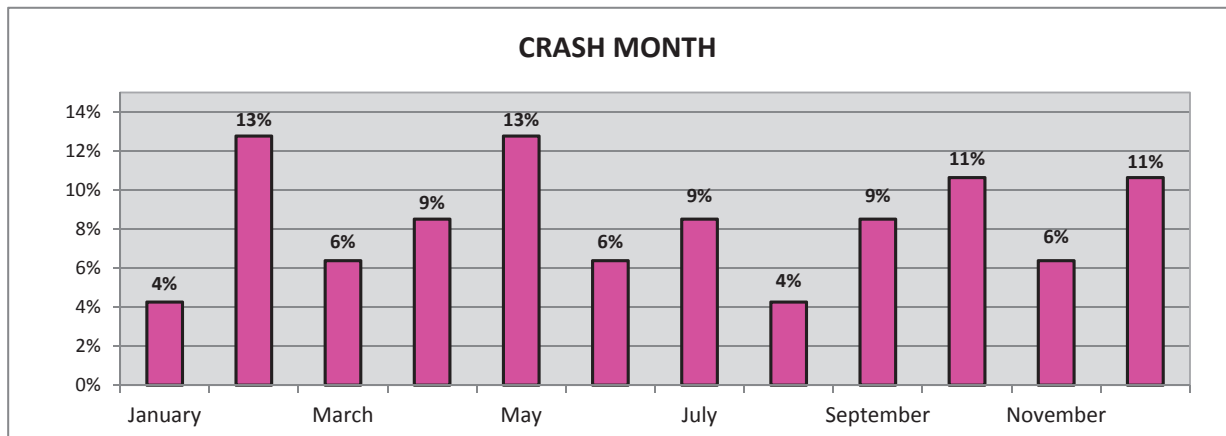
Crash Data Summary Table
Hartford Avenue East/Route 140, Mendon/Hopedale, MA
January 2011-December 2014

ID	Date	Day	Time	Manner	Weather	Lighting	Road Surface	Driver Contributing Code	Ages				Description
36	5/1/2014	Thursday	1:31 PM	Angle	Cloudy	Daylight	Dry	Failed to yield right of way	49	24			Vehicle 2 turned left into Dunkin Donuts parking lot, failing to see Vehicle 1 approaching. Vehicle 1 struck Vehicle 2.
37	5/6/2014	Tuesday	6:06 PM	Sideswipe, opposite direction	Clear	Daylight	Dry	Failed to yield right of way	20	82			Vehicle 1 was pulling out from the Dunkin Donuts driveway and did not see Vehicle 2 approaching in the center westbound lane, and struck Vehicle 2.
38	5/23/2014	Friday	8:03 AM	Single vehicle crash	Cloudy	Daylight	Dry	Operating defective equipment					A tractor trailer unit traveling westbound on Hartford Ave struck a traffic signal post while turning right onto Cape Rd.
39	6/13/2014	Friday	9:20 AM	Sideswipe opposite direction	Rain	Daylight	Wet	Driving too fast for conditions	66	51			Vehicle 1 and Vehicle 2 entered the intersection. Vehicle 1 attempted a SB left turn and struck vehicle 2 traveling NB. Weather and visibility were very poor at the time.
40	6/13/2014	Friday	5:58 PM	Angle	Rain	Daylight	Wet	Disregarded traffic signs, signals, road markings/ Made an improper turn	32	32			Vehicle 1 was traveling west on Hartford Ave, Vehicle 2 was traveling east on Hartford Ave. Vehicle 2 attempted to turn left into Dunkin Donuts driveway despite "No Left Turn" signs, crossing in front of and striking Vehicle 1.
41	6/24/2014	Tuesday	5:13 PM	Head-on	Clear	Daylight	Dry	Inattention	35	52			Vehicle 1 was traveling westbound on Hartford Ave through a red traffic light. Vehicle 2 was traveling southbound on Cape Rd and was struck by Vehicle 1 and hit into Vehicle 3 waiting at the light.
42	7/17/2014	Thursday	4:26 PM	Angle	Clear	Daylight	Dry	Visibility obstructed/ Other improper action	21	50			Vehicle 1 was traveling west on Hartford Ave, Vehicle 2 was traveling east on Hartford Ave. Vehicle 2 attempted to turn left into Dunkin Donuts driveway despite "No Left Turn" signs, crossing in front of and striking Vehicle 1.
43	7/25/2014	Friday	12:18 PM	Rear-end	Clear	Daylight	Dry	Inattention	39	40			Vehicle 1 was slowing or stopping in traffic and was struck from behind by Vehicle 2.
44	9/4/2014	Thursday	7:25 AM	Sideswipe same direction	Clear	Daylight	Dry	Operating vehicle in erratic, reckless, careless, negligent or aggressive manner	44	22			Vehicle 1 and 2 were both merging into one lane and Vehicle 1 sideswiped Vehicle 2.
45	11/6/2014	Thursday	5:35 PM	Angle	Rain	Dark - lighted roadway	Wet	Unknown	45	49			Vehicle 1 was traveling west on Hartford Ave, Vehicle 2 was traveling east on Hartford Ave. Vehicle 2 attempted to turn left into Dunkin Donuts driveway despite "No Left Turn" signs, crossing in front of and striking Vehicle 1.
46	12/8/2014	Monday	4:57 PM	Angle	Clear	Dark - lighted roadway	Wet	Made an improper turn/ Failed to yield right of way	38	35			Vehicle 1 was traveling west on Hartford Ave, Vehicle 2 was traveling east on Hartford Ave. Vehicle 2 attempted to turn left into Dunkin Donuts driveway despite "No Left Turn" signs, crossing in front of and striking Vehicle 1.
47	12/19/2014	Friday	3:20 PM	Rear-end	Clear	Daylight	Dry	Inattention	68	30			Vehicle 2 changed lanes in front of Vehicle 1. Vehicle 1 accelerated in their lane traveling westbound and rear-ended Vehicle 2.

*Not Enough Information

Data Summary based on reports received from Mendon and Hopedale police departments

Crash Data Summary Tables and Charts



Crash Data Summary Tables and Charts

