

ROAD SAFETY AUDIT

Massachusetts Avenue at
Melnea Cass Boulevard

City of Boston

July 19, 2016

Prepared for:
Massachusetts Department of Transportation



Prepared by:
Howard Stein Hudson
11 Beacon Street, Suite 1010
Boston, MA 02108



HOWARD STEIN HUDSON

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Background

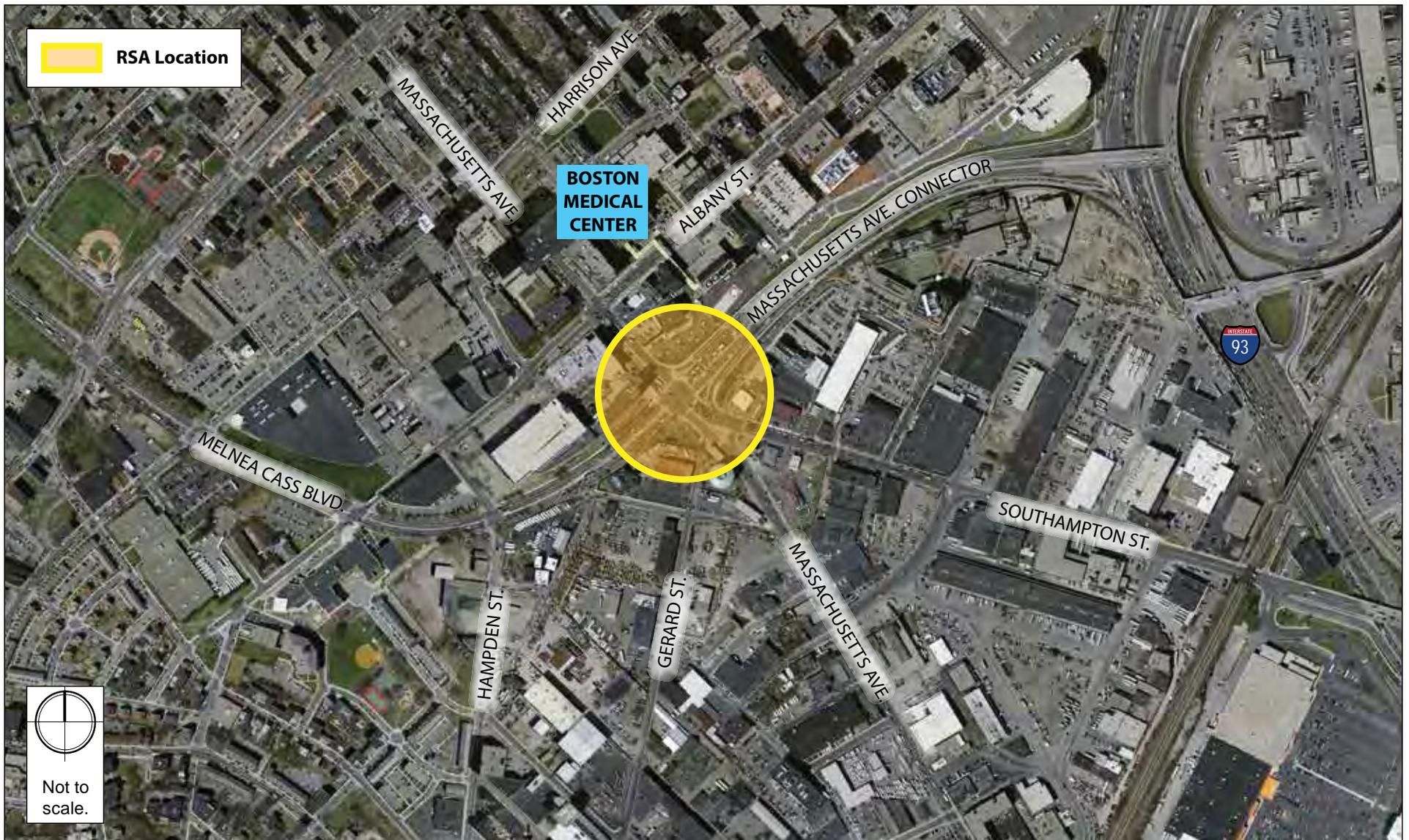
The Road Safety Audit (RSA) focused on the intersection of Massachusetts Avenue and Melnea Cass Boulevard. From 2012 to 2014, 112 crashes were reported at the intersection. The intersection was identified by the Massachusetts Department of Transportation (MassDOT) as a Highway Safety Improvement Program (HSIP) High Crash Cluster from 2011-2013, indicating that the location falls within the top 5% of High Crash Locations within the Metropolitan Area Planning Council. The intersection was also ranked #117 in the Top 200 Intersection Crash Report for 2010 to 2012 by MassDOT.

The City of Boston has identified Massachusetts Avenue as a priority corridor for 2016. In 2016, Vision Zero will focus on making short-term improvements to Massachusetts Ave through rapid implementation projects, including the study area intersection of Massachusetts Avenue at Melnea Cass Boulevard.

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

Figure 1. Locus Map



Project Data

The audit team conducted the RSA for the intersection of Massachusetts Avenue at Melnea Cass Boulevard on Thursday, June 2, 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
Charlotte Fleetwood	Boston Transportation Department
Angela Wilhelm	Boston Transportation Department
Zach Wassmouth	Boston Public Works Department
Alyssa Cabrera	Boston Public Health Commission
Shalaya West	Boston Public Health Commission
Selam Engida	Boston Public Health Commission
Patricia Mendez	Boston Disability Commission
Laura Segal	Boston EMS
James Salvia	Boston EMS
Brendan Kearney	WalkBoston
Dorothea Hass	WalkBoston
Becca Wolfson	Boston Cyclists Union
Lisa Schletzbaum	MassDOT Traffic Safety
Tom Leiper	MassDOT
Zach Veaner	MassDOT District 6
Amitai Lipton	MassDOT District 6
Hameed Pervez	MassDOT District 6
Dan Dumais	MDM Transportation Consultants
Nick Jackson	Toole Design Group
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 Boston Police Department. From January 2012 – December 2014, 112 crashes were reported at the intersection with 41 (or 37%) resulting in personal injury and one collision resulted in a pedestrian fatality. Of the 112 crashes reported, 95 (or 85%) of the crashes were vehicular crashes, 13 (or 12%) of the crashes involved pedestrians, and 4 (or 3%) of the crashes involved cyclists. Of the 41 injuries reported, 28 (or 68%) of the injuries reported were vehicle drivers, 12 (or 29%) of the injuries reported were pedestrians, and one (or 3%) of the injuries was a cyclist.

Of these crashes, 36 (or 32%) were rear-end crashes, 32 (or 29%) angle crashes, 13 (or 12%) involved a pedestrian, 12 (or 11%) were sideswipe crashes, 10 (or 9%) were unknown/other crashes, 4 (or 4%) involved a cyclist, 4 (or 4%) were single vehicle crashes, and one crash was head-on. Of the 112 crashes, 51 (46%) occurred during daylight hours and 29 (26%) occurred during dark-lighted conditions. Of the 112 crashes, 49 (44%) occurred during clear weather. **Appendix C** provides the detailed crash data for the study area.

Project Location and Description

The RSA focused on the intersection of Melnea Cass Boulevard at Massachusetts Avenue in Boston, as shown in the aerial image in **Figure 2**.

Massachusetts Avenue at Melnea Cass Boulevard is a signalized intersection with four approaches. The Melnea Cass Boulevard eastbound approach consists of two through lanes and an exclusive right-turn lane with three receiving lanes provided along the Massachusetts Avenue Connector eastbound. Signage on the eastbound approach restricts vehicles from turning left onto Massachusetts Avenue. The Massachusetts Avenue Connector westbound approach consists of two exclusive left-turn only lanes, two through lanes, and a signal controlled channelized right-turn lane. It was observed that vehicles often use the Massachusetts Avenue Connector westbound channelized right-turn lane as two lanes. A raised median that varies from 5 to 8 feet wide separated the directions of travel along the Melnea Cass Boulevard and the Massachusetts Avenue Connector approaches. The Massachusetts Avenue Connector westbound through lanes are provided two receiving lanes along Melnea Cass Boulevard westbound. The Southampton Street northbound approach consists of two exclusive left-turn only lanes, two through lanes, and a channelized right-turn lane with two receiving lanes provided northbound along Massachusetts Avenue. The Massachusetts Avenue southbound approach consists of two exclusive left-turn only lanes, a through lane, and a shared through/right-turn lane. The two through lanes are provided with three receiving lanes along Massachusetts Avenue south of the intersection. A 6-foot raised median separates the north-south directions of travel along the northbound and southbound intersection approaches.

Parking is prohibited along all approaches of the intersection. Crosswalks and wheelchair ramps are maintained on all legs of the intersection, as are countdown pedestrian signal indications. Wheelchair ramps at the intersection were not equipped with tactile warning strips. The pavement and pavement markings are in poor condition.

The intersection operates with four phases. The first phase provides a lead phase for the protected left-turns at the Southampton Street northbound and Massachusetts Avenue southbound approach and right-turn overlap phases for the Melnea Cass Boulevard eastbound and Massachusetts Avenue Connector westbound right-turn lanes. The second phase allows the Southampton Street northbound and Massachusetts Avenue southbound through and right-turn movements to run with concurrent pedestrian crossings. Left-turns are prohibited during this phase. The third phase provides a protected phase for the Massachusetts Avenue Connector westbound approach and the concurrent pedestrian crossing across Massachusetts Avenue. The final phase allows the Melnea Cass Boulevard eastbound and Massachusetts Avenue Connector westbound through and right-turn movements to proceed with concurrent pedestrian crossings provided across Massachusetts Avenue and Southampton Street. The pedestrian crossing across Southampton Street was found to be malfunctioning.

A traffic signal is located just south of the intersection of Massachusetts Avenue/Melnea Cass Boulevard on Southampton Street. The two intersections appear to run on separate controllers but are assumed to be coordinated.

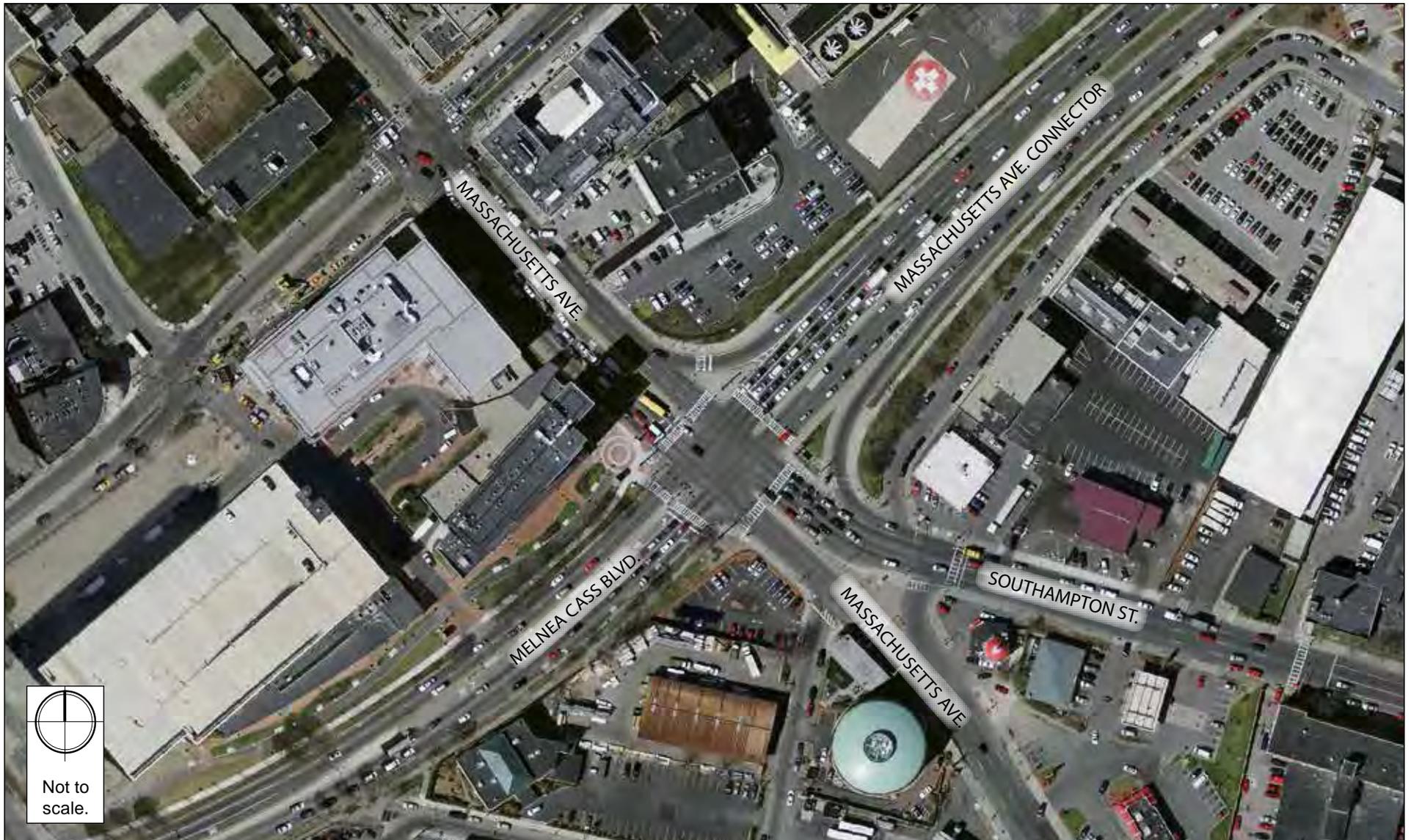
This intersection is the junction of the following roadways, which are categorized according to MassDOT Office of Transportation Planning functional classifications:

Massachusetts Avenue, an urban principal arterial under City of Boston jurisdiction, runs north to south from Cambridge and the northwestern part of the Boston metropolitan area to Columbia road to the southeast. Within the study area, Massachusetts Avenue provides two travel lanes in each direction with additional turn lanes at intersections. Massachusetts Avenue is separated by a raised median southeast of St. Botolph Street, except on signalized intersection approaches. On-street parking is provided on both sides of the roadway, north of Harrison Avenue. Within the study area, sidewalks are provided along both sides of the roadway. Within the area, land-use along Massachusetts Avenue consists of retail/commercial properties, the Woods-Mullen Shelter, the Boston Health Care for the Homeless Program (BHCHP) building, and the Boston University Medical Center. Located just south of the intersection with Melnea Cass Boulevard and the Massachusetts Avenue Connector is the Southampton Shelter. Near the study area, a bicycle lane is provided traveling northbound departing the intersection with Melnea Cass Boulevard and sharrows are provided on Massachusetts Avenue when approaching the intersection with Melnea Cass Boulevard. No bike accommodations are provided on Massachusetts Avenue south of the Massachusetts Avenue Connector. There are no posted speed limits on Massachusetts Avenue. The speed limit is assumed to be 30 mph based on roadway characteristics. Massachusetts Bay Transportation Authority (MBTA) Buses 1, 8, 9, 10, 171, CT3 run along Massachusetts Avenue within the vicinity of the study area intersection.

Massachusetts Avenue Connector is an urban principal arterial under MassDOT jurisdiction that provides access to the I-93 ramps. Massachusetts Avenue Connector runs east to west from Melnea Cass Boulevard to I-93. Three travel lanes are provided in each direction with additional turning lanes as it approaches Massachusetts Avenue. The roadway is separated by a center median that varies between 5 and 15 feet wide. Minimal shoulders are provided along both sides of the roadway. On-street parking is prohibited along the Massachusetts Avenue Connector. Sidewalks are provided along both sides of the roadway which lead to I-93 Frontage Road. There are no posted speed limits or speed regulations on the Massachusetts Avenue Connector.

Melnea Cass Boulevard is approximately 0.9 miles long and extends from Massachusetts Avenue to Columbus Avenue in the South End of Boston. Across Massachusetts Avenue, Melnea Cass Boulevard connects to the “Massachusetts Avenue Connector,” which provides access to I-93 northbound and southbound and I-90 eastbound and westbound. Melnea Cass Boulevard is classified as an urban principal arterial under control of the City of Boston. Melnea Cass Boulevard provides two lanes in each direction with additional turn lanes at intersections. Sidewalks are provided along both sides of the roadway. On-street parking is prohibited along the entire roadway. MBTA Buses 1, 8, 19, 47, and CT3 run along Melnea Cass Boulevard. On the north side of the street, a 40-foot wide easement has been provided to accommodate Urban Ring public transportation. Today this easement is planted with a pedestrian/bicycle path, the South Bay Harbor Trail (SBHT), running through it. Bicycle riding on the sidewalk is prohibited east of Massachusetts Avenue but permitted west of the Massachusetts Avenue. Land uses along Melnea Cass Boulevard consist of residential, school, office, and commercial. There are no posted speed limits on Melnea Cass Boulevard. The speed limit is assumed to be 30 mph based on roadway characteristics.

Figure 2. Massachusetts Avenue at Melnea Cass Boulevard



Audit Observations and Potential Safety Enhancements

Based on field observations on Thursday, June 2, 2016, the RSA team determined that the study area intersection has the following issues that affect safety:

- Pedestrian accommodations;
- Bicycle accommodations;
- Emergency vehicle access;
- Wayfinding and guidance;
- Pavement and pavement markings;
- Intersection geometry;
- Signal visibility; and
- Traffic signal timing and phasing.

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. Pedestrian Accommodations

Observations:

13 of the 112 reported crashes involved pedestrians. Many of these collisions are the result of pedestrians walking outside of the crosswalks along the intersection approaches. Sidewalks are provided along both sides of all intersection approaches. Crosswalks with pedestrian signals and pushbuttons are also provided across all intersection approaches. Wheelchair ramps are provided at all the crosswalks but lack detectable warning panels and may not have compliant slopes or level landings. The proximity of local shelters and the Boston Medical Center reinforces the strong need for adequate and accessible sidewalks, wheelchair ramps, and pushbuttons.



Person in wheelchair crossing the Massachusetts Avenue Connector in the crosswalk.

Audit team members noted that pedestrians frequently cross against the walk signal. During the audit, it was observed that the pedestrians are not able to cross the entire length of the Massachusetts Avenue Connector during the provided Walk and Flashing Don't Walk times. Pedestrians are forced to cross one direction of traffic then wait in the median pedestrian refuge for the next cycle. This increases the likelihood that pedestrians will cross against the walk signal into oncoming traffic. Insufficient pedestrian clearance intervals could be a reason for the pedestrian pushbuttons that are located on the medians of each crossing except for the crosswalk across Melnea Cass Boulevard.

On the southeast corner of the intersection, there is a noticeably worn path on the grass area of the traffic island for the Southampton Street channelized right turn, indicating a clear desire line to the north of the existing sidewalk. During the audit, it was noted that additional desire lines between medical facilities may not be addressed by the existing pedestrian accommodations and that pedestrians frequently create their own paths through the study area which could lead to potential conflicts with vehicles or create non-ADA compliant routes.

An audit member noticed that people are frequently observed crossing one direction of travel along Massachusetts Avenue, between Albany Street and Melnea Cass Boulevard, then walking along the center median until a gap in traffic allows them to cross the other direction.

Two pedestrian crashes were reported along the Massachusetts Avenue Connector east of the intersection. Vehicles traveling from I-93 and approaching the intersection along the Massachusetts Avenue Connector may not be aware that they are transitioning into a heavy pedestrian area and may still be traveling at high speeds. This could be an attributing factor to the pedestrian crashes along the Connector.

During the audit, vehicles turning right from Melnea Cass Boulevard were observed to be aggressive and did not yield to pedestrians in the crosswalk. During the peak hours, over 250 vehicles turn right from Melnea Cass Boulevard to Massachusetts Avenue. While there were no reported collisions that involved

eastbound right-turning vehicles striking pedestrians in the southern crosswalk, permitting vehicles to turn right while the concurrent pedestrian crossing across the southern leg of Massachusetts Avenue and Southampton Street is provided a Walk signal creates the opportunity for conflict.

Vehicles are also permitted to turn right on red but do not have adequate visibility around the corner to see crossing pedestrians. A tree, light post, sign posts, and span pole are located on the southwest corner of the intersection which further limits vehicle drivers' sight line of crossing pedestrians and pedestrian's view of turning vehicles and increases the likelihood for vehicles to turn into a crossing pedestrian.

During the audit, a team member noted that the Crash Data Summary Charts show that approximately 42 crashes (or 38% of total crashes) at the intersection occurred during nighttime or early morning. This trend could be an indication that there is not adequate lighting at the intersection, especially along pedestrian accommodations and crossings.

Potential Enhancements:

1. Upgrade all pushbuttons to be APS push buttons.
2. Upgrade all wheelchair ramps at the intersection to be ADA compliant.
3. Evaluate pedestrian timings and consider extending the pedestrian clearance times to allow pedestrians to cross the roadways within in a single phase instead of having to cross one direction of travel at a time. This would decrease pedestrian delay, increase pedestrian comfort and safety, and also allow the pedestrian pushbuttons to be removed from the center medians.
4. Confirm that there is a minimum width of 6 feet at all pedestrian refuge islands to provide adequate protection for waiting pedestrians and cyclists.
5. Consider evaluating the overall pedestrian network to identify ways to better address key pedestrian desire lines. Consider installing fencing/landscaping along areas of the traffic islands and medians to channel and guide pedestrians along intended paths or providing striped and controlled crossings where there are heavy pedestrian desire lines.
6. Consider providing enhanced pedestrian crosswalks or “gateway” treatments at the intersection to increase drivers’ visibility of pedestrians and alert them that they are entering an area with heavy pedestrian traffic, especially when approaching from the Massachusetts Avenue Connector.
7. Consider restricting right turns on red at the Melnea Cass Boulevard westbound approach to increase safety and avoid potential conflicts for the pedestrians crossing the southern leg of Massachusetts Avenue and Southampton Street.
8. Due to the heavy volume of vehicles turning eastbound right from Melnea Cass Boulevard, evaluate if it is feasible to provide a leading pedestrian interval for pedestrians crossing the southern leg of the intersection across Massachusetts Avenue and Southampton Street to enhance pedestrian safety and visibility. The Massachusetts Avenue Connector westbound phase would be changed to a lagging left-turn.
9. Evaluate the intersection lighting and provide lighting improvements if necessary.

Safety Issue #2. Bicycle Accommodations

Observations:



Cyclist crossing Melnea Cass Boulevard in the crosswalk.

Four of the 112 reported crashes involved a cyclist. Bicycle accommodations at the intersection of Massachusetts Avenue/Melnea Cass Boulevard are limited and most approaches do not have any bicycle accommodations. The South Bay Harbor Trail runs along Melnea Cass Boulevard to the intersection with Massachusetts Avenue and there are plans to expand the trail further east in the future. In addition a northbound bike lane is located on Massachusetts Avenue north of the intersection. Cyclists are only provided sharrows when approaching the intersection on Massachusetts Avenue southbound. Despite the lack of formal accommodations, bicycle volumes within the intersection are relatively heavy. The lack of formal separation from vehicles along the northbound and southbound approaches at

a complex and high volume intersection creates an uncomfortable situation for cyclists. During the audit, multiple cyclists were observed to cross the intersection using the crosswalks and pedestrian signals in order to safely navigate the intersection.

Audit members also noted that it is typical to see cyclists riding against traffic on Massachusetts Avenue south of the intersection with Melnea Cass Boulevard. It was stated that the south side of the intersection is more desirable in order to avoid the right-turning conflict on Southampton Street. In addition to the conflicts with pedestrians and southbound cyclists, this northbound cyclist movement may also be unexpected for vehicles.

Potential Enhancements:

1. Consider adding bicycle wayfinding signage for the South Bay Harbor Trail to help guide cyclists along the safest route through the area.
2. Consider adding green paint in the bicycle lanes where there are conflict zones with vehicular traffic.
3. Consider consolidating the number of southbound lanes on Massachusetts Avenue to provide bicycle accommodations and help reduce the amount number of potential conflicts between vehicles and cyclists.
4. Consider installing a contra-flow bike lane on Massachusetts Avenue, south of Southampton Street to provide formal accommodations for the cyclists that currently use this route. The existing u-turn area between Massachusetts Avenue and Southampton Street could be used by cyclists to cross-over from Massachusetts Avenue to the east side of Southampton Street.

Safety Issue #3. Emergency Vehicle Access

Observations:

Just to the north of the intersection is Boston Medical Center which generates a significant amount of emergency vehicles, many of which pass through the intersection of Massachusetts Avenue/Melnea Cass Boulevard. 7 of the 112 crashes were crashes that involved emergency vehicles traveling through the intersection with lights and sirens activated. No pre-emption is provided at the intersection and team members observed during the audit that the size and complexity of the intersection makes it difficult for vehicles to know where the emergency vehicles are coming from or going to.

Potential Enhancements

1. Evaluate the feasibility of providing a queue jump for emergency vehicles on the Massachusetts Avenue southbound approach. The lane-use at the Massachusetts Avenue approach could be changed so that there is one left-turn lane, one left-turn/through lane, a through/right-turn lane. This would allow the outermost lane to be dedicated for emergency vehicles and bicycles. The shared left-turn/through lane would require changing the signal to operate with split phasing for the northbound and southbound approaches which could increase the southbound vehicle queuing but would provide emergency vehicles with a more efficient path through the intersection and bicycles with separation from most vehicular traffic. The traffic signal timing along Massachusetts Avenue southbound would need to be optimized to try to prevent queue spillback due to the split phasing.
2. Consider providing a queue jump lane along the east side of the Southampton Street northbound approach for ambulances heading toward the hospital. The lane could also be shared with bicycles and vehicles turning right towards I-93 as well.
3. Consider exploring the effectiveness and feasibility of installing emergency vehicle preemption or consider utilizing the GPS technology within the emergency vehicles to connect with the central control system to provide preemption similar to that used with bus priority at all approaches to the intersection.

Safety Issue #4. Wayfinding and Guidance

Observations:

The Melnea Cass Boulevard eastbound approach consists of two through lanes and a right-turn only lane. Left-turns are prohibited at this approach by three diagrammatic no left-turn signs (R3-2 Movement Prohibition signs) located along the approach on the center median. Three of the 112 crashes reported involved vehicles taking an illegal left-turn from Melnea Cass Boulevard and hitting a vehicle traveling westbound from the Massachusetts Avenue Connector. It was noted by an audit member that this turn restriction was implemented within the last 5 years and that while some vehicles still execute the left-turn, vehicle compliance overall has been increasing. An audit team member noted that GPS technologies may not be up to date with the most recent turning restrictions at the intersection and could potentially be directing vehicles to take the left-turn from Melnea Cass Boulevard.



Lane use guidance along the Melnea Cass Boulevard approach.

10 of the 112 crashes were sideswipe crashes that occurred along the intersection approaches. Audit members noted that vehicles often end up in the turning lanes inadvertently when approaching the intersection causing drivers to make last minute lane changes. Along the Melnea Cass Boulevard eastbound approach, two “Right Lane Must Turn Right (R3-7) signs, are provided and a diagrammatic right-turn only (R3-5R) sign which shows a right-turn arrow above the word “ONLY” is provided on the span wire across the intersection; however, these signs are not clearly visible until you are already in the right-turn lane. Two of the sideswipe collisions along this approach involved vehicles moving from the right-turn lane to the adjacent through lane which could indicate that drivers are not provided warning far in enough in advance of the turn lane.

Along the Massachusetts Avenue Connector, overhead guide signs are provided directing vehicles left, straight, or right depending on their destination. The Massachusetts Avenue Connector westbound approach consists of two left-turn lanes, two through lanes, and a channelized right-turn lane. However, there are no diagrammatic lane use signs to provide vehicles guidance for which lane to choose. Left-turn only pavement markings are provided along the two left-turn lanes but due to consistent congestion on the approach drivers may not see the markings. The only regulatory sign provided that guides drivers is a “Right Lane Must Turn Right” (R3-7) sign, located at the entrance to the right-turn lane. As a result, audit members observed that vehicles often end up in the wrong lane based on their desired destination and may try to change lanes among the queuing traffic or even within the intersection.

During the audit it was observed that vehicles will frequently turn right from the outside through lane located to the south of the splitter island. This move creates the potential for conflict with concurrent pedestrians crossing Massachusetts Avenue that the right-turn slip lane does not have. While this lane is

not designated for right-turns there are no movement prohibition signs to prevent vehicles from executing turns and no pavement markings are provided along these two through lanes to show that they are through only lanes.

The Massachusetts Avenue southbound approach consists of two left-turn only lanes, a through lane, and a shared through/right-turn lane. While traveling southbound on Massachusetts Avenue one of the through lanes becomes a left-turn only lane when approaching the intersection with Melnea Cass Boulevard and the Massachusetts Avenue Connector. An overhead guide sign directs vehicles to turn left for I-90 and I-93 and two signs are provided on the center median which show that the two left lanes are left-turn only lanes. However, no pavement markings or guidance is provided for the remaining two lanes. Two sideswipe crashes were reported along this approach which involved vehicles changing lanes through traffic.



Lack of lane use and guide signs on the Massachusetts Avenue southbound through lanes.

Audit members who routinely drive the area also noted that this approach is confusing for drivers and vehicles have a difficult time deciding which lane to be in and often require attempting last-minute lane changes. During the audit, a vehicle was observed to be in the inside left-lane trying to signal to other vehicles that it actually needed to turn right. An audit member noted that it is typical to see drivers intentionally choose the outside left-turn lane because it had a shorter queue than the through lanes causing them to get stuck in a turn-only lane. The heavy congestion along the intersection approach also makes it more difficult for drivers to change lanes.



Lane use signs along the Southamptton Street approach.

Two rear-end crashes were reported along the Southamptton Street approach. There is a diagrammatic left-turn only (R3-5) sign with a single left-turn arrow on the center median of the approach; however, there are two dedicated left-turn lanes for this approach. In addition, there is another diagrammatic left-turn only (R3-5) sign mounted overhead on the span wire for the inside left-turn lane only. There is no sign adjacent to the signal head for the middle left-turn lane. Lane assignment confusion could lead to drivers to queue in the incorrect lane or execute late lane changes which could contribute to the number of rear-end crashes at this approach.

Potential Enhancements:

1. Consider providing diagrammatic lane use signs (R3-8 series) along every approach in place of the “Right Lane Must Turn Right” (R3-7) signs, overhead diagrammatic mandatory and optional lane control (R3-5 and R3-6) signs, and combination lane use/destination guide (D15-1) signs.
2. Consider providing lane drop markings in advance of the right-turn lane on Melnea Cass Boulevard to alert drivers of the transition to a turning only lane. The proposed pavement markings would transition from the broken white lane lines to wide dotted white lane lines and then a wide solid white lane line.
3. Consider changing the green ball vehicle indications to through arrows for the Melnea Cass Boulevard and Massachusetts Avenue Connector through lanes to discourage improper lane use.
4. Consider installing through only pavement marking legends along the Massachusetts Avenue Connector through lanes.
5. Consider installing diagrammatic no right-turn movement prohibition (R3-1) signs on the splitter island at the Massachusetts Avenue Connector westbound approach to prevent drivers from turning right from the through lane.
6. Consider changing the overhead guide sign along the Massachusetts Avenue southbound approach for I-90 and I-93 from a left-facing arrow to two downward arrows indicating to drivers to be in either of the left-lanes. Also consider changing the single left-facing arrow to two ‘advance left’ arrows or two diagrammatic left-turn arrow only (R3-5L) signs.
7. Consider adding wayfinding or guide signs along the Massachusetts Avenue southbound approach to continue straight for Massachusetts Avenue Southbound or New Market Square and to turn right for Melnea Cass Boulevard and Roxbury.
8. Consider changing the single diagrammatic left-turn only (R3-5) sign mounted on the Southampton Street median to be two diagrammatic left-turn only arrows (R3-8) and adding a second diagrammatic left-turn only (R3-5) sign overhead for the outside northbound left-turn lane.
9. Coordinate with Google and Waze to ensure that the most recent turn restrictions have been updated in their systems to prevent vehicles from being directed to execute illegal maneuvers.

Safety Issue 5. Pavement and Pavement Markings

Observations:

During the audit, team members observed that pavement markings were worn and in poor condition. The pavement within the intersection was observed to be in poor condition with potholes and cracking experienced. An audit team member also observed that there was rutting likely due to heavy truck traffic along the Massachusetts Avenue Connector westbound approach.



Worn pavement and pavement markings within the intersection.

Six of the 112 crashes were sideswipe crashes between left-turn vehicles. The white dotted lane line extensions for the double left-turn lanes were observed to be worn and barely visible in the field and therefore do not provide proper turning guidance for vehicles. Audit members also observed that the path of opposing left-turning vehicles seem to overlap causing difficulty for northbound and southbound left-turning vehicles to turn simultaneously. The white dotted lane line extensions for the dual left-turn lanes are 22 feet apart in the center of the intersection which does not leave opposing left-turning vehicles with adequate shy distance from one another. This could cause them to alter their paths which could be contributing factor to the number of sideswipes. The poor condition of the pavement markings along the Melnea Cass Boulevard receiving lanes could also be contributing to the confusion of northbound left-turning vehicles from Southampton Street.

Potential Enhancements:

1. Refresh all pavement markings at the intersection and along the intersection approaches.
2. Consider utilizing recessed or slotted pavement markings within the intersection to increase visibility.
3. Consider using 8" lane lines on all intersection approaches when separating through lanes with turning lanes.
4. Consider providing lane assignment pavement marking arrows at the beginning of all turn lanes to increase drivers' awareness of the lane assignments and help reduce weaving along intersection approaches.
5. Consider resurfacing the intersection to improve pavement condition. The potential for structural issues should also be explored as they could be contributing to the poor pavement condition.
6. Evaluate the turning radius provided for the left-turns and ensure that the white dotted lane line extensions for the double left-turn lanes do not have overlapping paths. The radius provided for the simultaneous left-turns should have at a minimum separation between the swept paths of design vehicle turns.

Safety Issue #6. Intersection Geometry

Observations:

The study area intersection carries heavy percentages of truck traffic due to the proximity to the highway to the east of the intersection and nearby layover and industrial sites to the south of the intersection. During the audit, turning trucks were observed to make wide turns which require tracking into multiple lanes when executing right-turns. In addition, multiple trucks were observed to drive over the corner curb when turning right from Melnea Cass Boulevard onto Massachusetts Avenue and when using the channelized right-turn from Southampton Street to the Massachusetts Avenue Connector. Heavy vehicle encroachment into adjacent lanes or heavy vehicles mounting the curb during a turn could lead to potential conflicts with adjacent vehicles or pedestrians waiting on the sidewalk.



Tractor trailer in right-turn lane on Melnea Cass Boulevard encroaching on through lane.

Two angle collisions were reported at the Massachusetts Avenue Connector channelized right-turn lane. The Massachusetts Avenue Connector channelized right-turn lane provides one wide single lane. During the audit, vehicles were observed to stack in two lanes along the single lane which increases the likelihood of sideswipe or angle collisions along this movement.

An audit member noted that there are lane imbalances along the Massachusetts Avenue Connector and Southampton Street. The departures for both of these roadways consist of three receiving travel lanes, while there are only two through lanes that feed into these sections. Since there are two through or turning lanes entering into three receiving lanes, it is unclear which receiving lane vehicles are supposed to travel in. This could potentially lead to sideswipe crashes or weaving conflicts through the intersection.

Six of the 112 crashes involved sideswipes of left-turning vehicles. During the audit, team members observed that drivers tend to shy away from the center medians along Melnea Cass Boulevard and the Massachusetts Avenue Connector when turning which forces them to encroach on the path of the adjacent turning lane.

Potential Enhancements:

1. Evaluate intersection corner radii for turning trucks and explore the potential for flush medians or other corner treatments to improve truck turning while maintaining smaller radii for passenger vehicles to reduce turning speeds, increase visibility of pedestrians, and potentially shorten pedestrian crossings.
2. Evaluate the size and location of the concrete center medians located along Melnea Cass Boulevard and the Massachusetts Avenue Connector to ensure that vehicles have adequate distance to make turning movements.
3. Consider providing white dotted lane line extension pavement markings for the Melnea Cass Boulevard and Massachusetts Avenue through lanes to guide vehicles to their correct receiving lanes or consider reducing the number of receiving lanes to match the number of lanes on the approaches.
4. Consider reconstructing the two existing channelized right-turns and widening the channelized right-turn from the Massachusetts Avenue Connector to be two lanes since vehicles already stack in two lanes under existing conditions.
5. Consider installing a signalized channelized right-turn from Melnea Cass Boulevard to Massachusetts Avenue to allow for better turning for heavy vehicles while providing protection for crossing pedestrians.

Safety Issue #7. Signal Visibility

Observations:

36 of the 112 reported crashes were rear-end collisions located along all intersection approaches. An audit team member noted that signal visibility along the intersection approaches is limited when a vehicle is not in the front of the queue or is waiting behind a large truck. All of the traffic signals are mounted on the overhead span wire with no supplemental or near side signals provided. The heavy traffic and queuing experienced at this intersection create a large distance between the vehicle and the signal indications making them harder for drivers to see. Vehicles may also stack close to the vehicle in front of them out of frustration which can further limit signal visibility. The lack of signal visibility could be a contributing factor toward the rear-end crashes. An audit member noted that vehicles will rely on following the vehicle in front of them if they are not able to see the indications. This could lead to red-light running.

It was observed during the audit, that no traffic signal indications are provided for vehicles at the Southampton Street northbound channelized right-turn lane, despite the presence of pedestrian signals. A traffic signal is provided further south of the intersection that appears to be coordinated with the study area intersection. The crash data does not show any reported crashes at the channelized right-turn; however, there is the potential for northbound vehicles that have passed through the upstream signal to turn right onto the Massachusetts Avenue Connector when there is a Walk signal across the channelized right-turn. A team member also noted that the lack of vehicular signals is inconsistent with westbound channelized right-turn from the Massachusetts Avenue Connector which provides vehicular traffic signals and pedestrian signals.

Potential Enhancements

1. Consider evaluating the signal height to determine if it is sufficient and provides proper visibility for approaching vehicles.
2. Consider installing near-side or far-side supplemental signal heads for additional signal visibility.
3. Consider installing back plates with reflective borders where traffic signal heads are currently without and adding reflective borders to the existing traffic signal back plates to increase signal indication visibility.
4. Consider installing vehicular traffic signals for the Southampton Street northbound channelized right-turn lane to prevent vehicles from being able to drive through the crosswalk during a pedestrian Walk signal.
5. Consider tree removal or trimming at the southwest corner of the intersection on Melnea Cass Boulevard to improve vehicle drivers' visibility of traffic signals and pedestrians around the corner.

Safety Issue #8. Traffic Signal Timing and Phasing

Observations:

Due to heavy traffic volumes traveling through the study area intersection and along Massachusetts Avenue, the section of Massachusetts Avenue between Albany Street and Melnea Cass Boulevard tends to be consistently blocked by traffic. Five of the reported crashes involved crashes with southbound vehicles from Massachusetts Avenue that entered the intersection during the red light. The traffic experienced along Massachusetts Avenue leads to driver frustration which may increase the likelihood of vehicles disobeying the traffic signals. The high volume of vehicles and traffic movements at the intersections lead to a long cycle length and increase queuing and delay. An audit member noted that due to congestion and driver frustration, vehicles traveling in the southbound through lanes could get distracted and proceed through the intersection when vehicles in the adjacent left-turn lanes have a leading left-turn phase. This could cause conflicts between the through movement and the opposing left turns.

During the audit, left-turning vehicles from the Massachusetts Avenue Connector were observed to continue through the intersection after the signal had turned red for several second. The vehicles that would begin to execute the left-turn during the all-red clearance interval would proceed to continue through the southern crosswalk without yielding and dominate a majority of the pedestrian Walk interval. This could also attribute to some of the rear-end collisions reported along the Melnea Cass Boulevard eastbound approach. If vehicles turning left from the Massachusetts Avenue Connector continue to proceed through the red light, Melnea Cass Boulevard through traffic will be provided a green light and may need to stop short to avoid colliding with the left-turning vehicles.



Right-turning vehicles spilling back onto the Massachusetts Avenue Connector.

Two rear-end crashes were reported along the Massachusetts Avenue Connector channelized right-turn lane. It was observed that the right turning movement from the Massachusetts Avenue Connector to Massachusetts Avenue toward Albany Street is a very heavy movement. During the audit, vehicles making this movement were observed to have a green light for the right turn and then a red light when approaching Albany Street. Due to the heavy volume, vehicles were queued in the middle through lane spilling back onto the Massachusetts Avenue Connector. The heavy congestion and queuing experienced along the right-turn lane helps contribute to the amount of rear-end crashes when vehicles do not see the traffic slowing in front of them.

Potential Enhancements:

1. Evaluate traffic operations to determine if it is feasible to provide lead/lag left-turn phasing for the Southampton Street northbound and Massachusetts Avenue southbound phases so that all southbound lanes proceed at the same time. This would also allow the opposing left-turns to occur at different times to potentially reduce the likelihood of left-turn sideswipe crashes.
2. Evaluate traffic operations to determine if it's feasible to switch the Massachusetts Avenue Connector phase to have a lagging left-turn phase to provide a leading pedestrian interval across Massachusetts Avenue. This would help prevent westbound left-turning vehicles from continuing through the red left-turn arrow and interfering with following concurrent pedestrian Walk phase.
3. Evaluate the signal timings and progression along Massachusetts Avenue between Melnea Cass Boulevard and Albany Street to reduce congestion and queuing.
4. Assess and update all clearance intervals, including the pedestrian clearance interval, to be compliant with current standards.
5. Consider doing a study to determine the feasibility of constructing a crossover or displaced left-turn (XDL) for left-turns from the Massachusetts Avenue Connector to Massachusetts Avenue southbound to improve signal operations by reducing the number of signal phases required at the intersection.
6. Enforcement at the intersection should be considered to prevent illegal maneuvers such as red light running, illegal left-turns, vehicles turning right on red, and vehicles not yielding to pedestrians.

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 Massachusetts Avenue/Melnea Cass Boulevard.

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

- Upgrade all pushbuttons to be APS push buttons.
- Upgrade all wheelchair ramps at the intersection to be ADA compliant.
- Consider restricting right turns on red at the Melnea Cass Boulevard westbound approach.
- Evaluate the feasibility of providing a leading pedestrian interval for pedestrians crossing the southern leg of the intersection across Massachusetts Avenue and Southampton Street and changing the Massachusetts Avenue Connector westbound phase to have a lagging left-turn phase.
- Evaluate pedestrian timings and consider extending the pedestrian clearance time to allow pedestrians to cross the roadways within in one stage.
- Consider evaluating the overall pedestrian network to identify ways to better address key pedestrian desire lines. Consider installing fencing/landscaping along areas of the traffic islands and medians to channel and guide pedestrians along intended paths or providing striped and controlled crossings where there are heavy pedestrian desire lines.
- Confirm that there is a minimum width of 6 feet at all pedestrian refuge islands.
- Consider providing enhanced pedestrian crosswalks or “gateway” treatments at the intersection.
- Evaluate the intersection lighting and provide lighting improvements if necessary.
- Consider adding bicycle wayfinding signage for the South Bay Harbor Trail.
- Consider adding green paint in the bicycle lanes where there are conflict zones with vehicular traffic.
- Consider consolidating the number of southbound lanes on Massachusetts Avenue to provide bicycle accommodations.
- Consider installing a contra-flow bike lane on Massachusetts Avenue, south of Southampton Street.

- Evaluate the feasibility of providing a queue jump for emergency vehicles on the Massachusetts Avenue southbound approach. The lane-use at the Massachusetts Avenue approach could be changed so that there is one left-turn lane, one left-turn/through lane, a through/right-turn lane.
- Consider providing a queue jump lane along the east side of the Southampton Street northbound approach for ambulances heading toward the hospital. The lane could also be shared with bicycles and vehicles turning right towards I-93 as well.
- Consider exploring the effectiveness and feasibility of installing emergency vehicle preemption or consider utilizing the GPS technology.
- Consider providing diagrammatic lane use signs (R3-8 series) along every approach in place of the “Right Lane Must Turn Right” (R3-7) signs, overhead diagrammatic mandatory and optional lane control (R3-5 and R3-6) signs, and combination lane use/destination guide (D15-1) signs.
- Consider providing lane drop markings in advance of the right-turn lane on Melnea Cass Boulevard.
- Consider changing the green ball vehicle indications to through arrows for the Melnea Cass Boulevard and Massachusetts Avenue Connector through lanes.
- Consider installing through only pavement marking legends along the Massachusetts Avenue Connector through lanes.
- Consider installing diagrammatic no right-turn movement prohibition (R3-1) signs on the splitter island at the Massachusetts Avenue Connector westbound approach.
- Consider changing the overhead guide sign along the Massachusetts Avenue southbound approach for I-90 and I-93 from a left-facing arrow to two downward arrows. Also consider changing the single left-facing arrow to two ‘advance left’ arrows or two diagrammatic left-turn arrow only (R3-5L) signs.
- Consider adding wayfinding or guide signs along the Massachusetts Avenue southbound approach.
- Consider changing the single diagrammatic left-turn only (R3-5) sign mounted on the Southampton Street median to be two diagrammatic left-turn only arrows (R3-8) and adding a second diagrammatic left-turn only (R3-5) sign overhead for the outside northbound left-turn lane.
- Coordinate with Google and Waze to ensure that the most recent turn restrictions have been updated in their systems.
- Refresh all pavement markings at the intersection and along the intersection approaches.

- Consider utilizing recessed or slotted pavement markings within the intersection.
- Consider using 8” lane lines on all intersection approaches when separating through lanes with turning lanes.
- Consider providing lane assignment pavement marking arrows at the beginning of all turn lanes.
- Evaluate the turning radius provided for the left-turns and ensure that the white dotted lane line extensions for the double left-turn lanes do not have overlapping paths.
- Consider providing white dotted lane line extension pavement markings for the Melnea Cass Boulevard and Massachusetts Avenue through lanes or consider reducing the number of receiving lanes to match the number of lanes on the approaches.
- Consider evaluating the signal height.
- Consider installing near-side or far-side supplemental signal heads.
- Consider installing back plates with yellow reflective borders where traffic signal heads are currently without and adding reflective borders to the existing traffic signal back plates.
- Consider installing vehicular traffic signals for the Southampton Street northbound channelized right-turn lane.
- Consider tree removal or trimming at the southwest corner of intersection on the Melnea Cass Boulevard approach.
- Evaluate traffic operations to determine if it is feasible to provide lead/lag left-turn phasing for the Southampton Street northbound and Massachusetts Avenue southbound phases so that all southbound lanes proceed at the same time.
- Evaluate the signal timings and progression along Massachusetts Avenue between Melnea Cass Boulevard and Albany Street.
- Assess and update all clearance intervals, including the pedestrian clearance interval, to be compliant with current standards.
- Enforcement at the intersection should be considered to prevent illegal maneuvers.

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

- Consider constructing a crossover or displaced left-turn (XDL) for left turns from the Massachusetts Avenue Connector to Massachusetts Avenue southbound to improve signal operations by reducing the phases from four signal phases to three.

- Consider reconstructing the two existing channelized right-turns and widening the channelized right-turn from the Massachusetts Avenue Connector to be two lanes.
- Consider installing a signalized channelized right-turn from Melnea Cass Boulevard to Massachusetts Avenue.
- Evaluate intersection corner radii for turning trucks and explore the potential for flush medians or other corner treatments.
- Evaluate the size and location of the concrete center medians located along Melnea Cass Boulevard and the Massachusetts Avenue Connector.
- Consider resurfacing the intersection to improve pavement condition. The potential for structural issues should also be explored as they could be contributing to the poor pavement condition.

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
Pedestrian Accommodations	Upgrade all pushbuttons to be APS push buttons.	High	Short-Term	Medium	City of Boston
	Upgrade all wheelchair ramps at the intersection to be ADA compliant.	High	Mid-Term	Medium	City of Boston/ MassDOT
	Consider provided a leading pedestrian interval across Massachusetts Avenue/Southampton Street.	High	Short-Term	Low	City of Boston
	Evaluate pedestrian timings and consider extending the pedestrian clearance times.	High	Short-Term	Low	City of Boston
	Consider restricting right turns on red at the Melnea Cass Boulevard westbound approach.	Medium	Short-Term	Low	City of Boston
	Consider providing enhanced pedestrian crosswalks or “gateway” treatments at the intersection.	Medium	Mid-Term	Medium	City of Boston/ MassDOT
	Consider evaluating the overall pedestrian network. Consider installing fencing/landscaping along areas of the traffic islands and medians to channel and guide pedestrians or providing striped and controlled crossings where there are heavy pedestrian desire lines.	Low	Short-Term /Long-Term	Low	City of Boston
	Confirm that a minimum width of 6 feet is provided at pedestrian refuges.	Low	Short-Term	Low	City of Boston
	Evaluate the intersection lighting and provide lighting improvements if necessary.	Low	Short-Term	Low	City of Boston/ MassDOT
Bicycle Accommodations	Consider installing a contra-flow bike lane on Massachusetts Avenue, south of Southampton Street.	High	Short-Term	Low	City of Boston
	Consider consolidating the number of southbound lanes on Massachusetts Avenue to provide bicycle accommodations.	High	Short-Term	Low	City of Boston
	Consider adding bicycle wayfinding signage for the South Bay Harbor Trail.	Low	Short-Term	Low	City of Boston
	Consider adding green paint in the bicycle lanes where there are conflict zones with vehicular traffic.	Low	Short-Term	Low	City of Boston
Emergency Vehicle Access	Consider providing a queue jump for emergency vehicles on the Massachusetts Avenue southbound approach and the Southampton Street northbound approach.	Medium	Long-Term	Low	City of Boston
	Consider exploring the effectiveness and feasibility of installing emergency vehicle preemption or consider utilizing the GPS technology.	Medium	Mid-Term	Low	City of Boston

Table 3. Summary of Potential Safety Enhancements (continued)

Safety Issue	Safety Enhancement	Safety Payoff	Time Frame	Cost	Responsible Party
Wayfinding and Guidance	Consider changing the lane use signage, providing additional overhead lane use signs, and overhead combination lane use/destination guide signs.	Low	Short-Term	Low	City of Boston/ MassDOT
	Consider providing lane drop markings in advance of the right-turn lane on Melnea Cass Boulevard.	Low	Short-Term	Low	City of Boston
	Consider changing the green ball vehicle indications to through arrows for the Melnea Cass Boulevard and Massachusetts Avenue Connector through lanes.	Low	Short-Term	Low	City of Boston
	Consider installing through only pavement marking legends along the Massachusetts Avenue Connector through lanes.	Low	Short-Term	Low	City of Boston/ MassDOT
	Consider installing diagrammatic no right-turn (R3-1) signs on the splitter island at the Massachusetts Avenue Connector westbound approach.	Low	Short-Term	Low	City of Boston/ MassDOT
	Consider revising the overhead guide sign along the Massachusetts Avenue southbound approach or adding additional wayfinding and guide signs along the approach.	Low	Short-Term	Low	MassDOT
	Coordinate with Google and Waze to ensure that the most recent turn restrictions have been updated in their systems.	Low	Short-Term	Low	City of Boston
Pavement and Pavement Markings	Evaluate the turning radius provided for the left-turns.	Medium	Short-Term	Low	City of Boston
	Refresh all pavement markings at the intersection and along the intersection approaches.	Low	Short-Term	Low	City of Boston/ MassDOT
	Consider utilizing recessed or slotted pavement markings within the intersection.	Low	Short-Term	Low	City of Boston/ MassDOT
	Consider using 8" lane lines on all intersection approaches when separating through lanes with turning lanes.	Low	Short-Term	Low	City of Boston/ MassDOT
	Consider providing lane assignment pavement marking arrows at the beginning of all turn lanes.	Low	Short-Term	Low	City of Boston/ MassDOT
	Consider resurfacing the intersection to improve pavement condition. The potential for structural issues should also be explored.	Low	Long-Term	Medium/ High	City of Boston/ MassDOT

Table 4. Summary of Potential Safety Enhancements (continued)

Safety Issue	Safety Enhancement	Safety Payoff	Time Frame	Cost	Responsible Party
Intersection Geometry	Evaluate intersection corner radii for turning trucks and explore the potential for flush medians or other corner treatments.	Medium	Mid-Term	High	City of Boston/ MassDOT
	Evaluate the size and location of the concrete center medians located along Melnea Cass Boulevard and the Massachusetts Avenue Connector.	Low	Mid-Term	Medium	City of Boston/ MassDOT
	Consider reconstructing the two existing channelized right-turns and widening the channelized right-turn from the Massachusetts Avenue Connector to be two lanes.	Low	Long-Term	High	City of Boston/ MassDOT
	Consider installing a signalized channelized right-turn from Melnea Cass Boulevard to Massachusetts Avenue.	Low	Mid-Term	High	City of Boston/ MassDOT
	Consider providing white dotted lane line extension markings for the Melnea Cass Boulevard and Massachusetts Avenue through lanes or reduce the number of receiving lanes to match the number of lanes on the approaches.	Low	Short-Term	Low	City of Boston
Signal Visibility	Consider installing vehicular traffic signals for the Southampton Street northbound channelized right-turn lane.	High	Short-Term	Medium	City of Boston
	Consider installing near-side or far-side supplemental signal heads.	Medium	Short-Term	Medium	City of Boston
	Consider evaluating the signal height.	Low	Short-Term	Low	City of Boston
	Consider adding back plates with reflective borders to the traffic signals.	Low	Short-Term	Low	City of Boston
	Consider tree removal or trimming at the southwest corner of intersection on the Melnea Cass Boulevard approach.	Low	Short-Term	Low	City of Boston
Traffic Signal Timing and Phasing	Evaluate traffic operations to determine if it is feasible to provide lead/lag left-turn phasing for the Southampton Street northbound and Massachusetts Avenue southbound phases.	Medium	Short-Term	Low	City of Boston
	Evaluate the signal timings and progression along Massachusetts Avenue between Melnea Cass Boulevard and Albany Street.	Medium	Short-Term	Low	City of Boston
	Assess and update all clearance intervals, including the pedestrian clearance interval, to be compliant with current standards.	Medium	Short-Term	Low	City of Boston
	Consider constructing a crossover or displaced left-turn (XDL) for left-turns from the Massachusetts Avenue Connector.	Medium	Long-Term	High	City of Boston/ MassDOT
	Enforcement at the intersection should be considered to prevent illegal maneuvers. ³	Medium	Short-Term	Low	City of Boston

Appendix A. RSA Meeting Agenda

Agenda

Road Safety Audit

Boston, MA

Massachusetts Ave. at Melnea Cass Blvd.

Meeting Location: Boston EMS Headquarters, Room 411
785 Albany Street, Boston, MA

June 2, 2016

10:00 AM – 12:30 PM

Type of meeting: High Crash Location – Road Safety Audit
Attendees: Invited Participants to Comprise a Multidisciplinary Team
Please bring: Thoughts and Enthusiasm!!

10:00 AM Welcome and Introductions

10:15 AM Discussion of Safety Issues

- Crash history, Speed Regulations
- Existing Geometries and Conditions

11:00 AM Site Visit

- Walk to the intersections of Massachusetts Avenue/Melnea Cass Boulevard
- As a group, identify areas for improvement

11:45 AM Discussion of Potential Improvements

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

12:30 PM Adjourn for the Day – but the RSA has not ended

Instructions for Participants:

- Before attending the RSA on June 2nd, 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: Thursday, June 7, 2016

Location: Boston EMS Headquarters, Room 411 (785 Albany Street, Boston, MA)

Audit Team Members	Agency/Affiliation	E-mail Address	Phone Number
Charlotte Fleetwood	Boston Transportation Department	charlotte.fleetwood@boston.gov	617-635-2662
Angela Wilhelm	Boston Transportation Department	Angela.wilhelm@boston.gov	617-635-2966
Zach Wassmouth	Boston Public Works Department	Zachary.wassmouth@boston.gov	617-635-4953
Alyssa Cabrera	Boston Public Health Commission	acabrera@bphc.org	617-534-2635
Shalaya West	Boston Public Health Commission	swest@bphc.org	617-534-2632
Selam Engida	Boston Public Health Commission	sengida@bphc.org	
Patricia Mendez	Boston Disability Commission	Patricia.mendez@boston.gov	617-635-2529
Laura Segal	Boston EMS	Segal@bostonems.org	617-343-1143
James Salvia	Boston EMS	salvia@bostonems.org	
Brendan Kearney	WalkBoston	bkearney@walkboston.org	617-367-9255
Dorothea Hass	WalkBoston	dhass@walkboston.org	671-367-9255
Becca Wolfson	Boston Cyclists Union	bwolfson@bostoncyclistsunion.org	315-345-6532
Lisa Schletzbaum	MassDOT Traffic Safety	Lisa.schletzbaum@state.ma.us	857-368-9634
Tom Leiper	MassDOT	Thomas.leiper@dot.state.ma.us	857-260-6321
Zach Veaner	MassDOT District 6	Zachary.veaner@state.ma.us	857-368-6163
Amitai Lipton	MassDOT District 6	Amitai.lipton@state.ma.us	857-368-6313
Hameed Pervez	MassDOT District 6	Hameed.pervez@state.ma.us	857-368-6307
Dan Dumais	MDM Transportation Consultants	ddumais@mdmtrans.com	508-303-0370
Nick Jackson	Toole Design Group	njackson@tooledesign.com	647-619-9910
Alex Siu	Howard Stein Hudson	asiu@hshassoc.com	617-348-3346
Jessica Lizza	Howard Stein Hudson	jlizza@hshassoc.com	617-348-3330

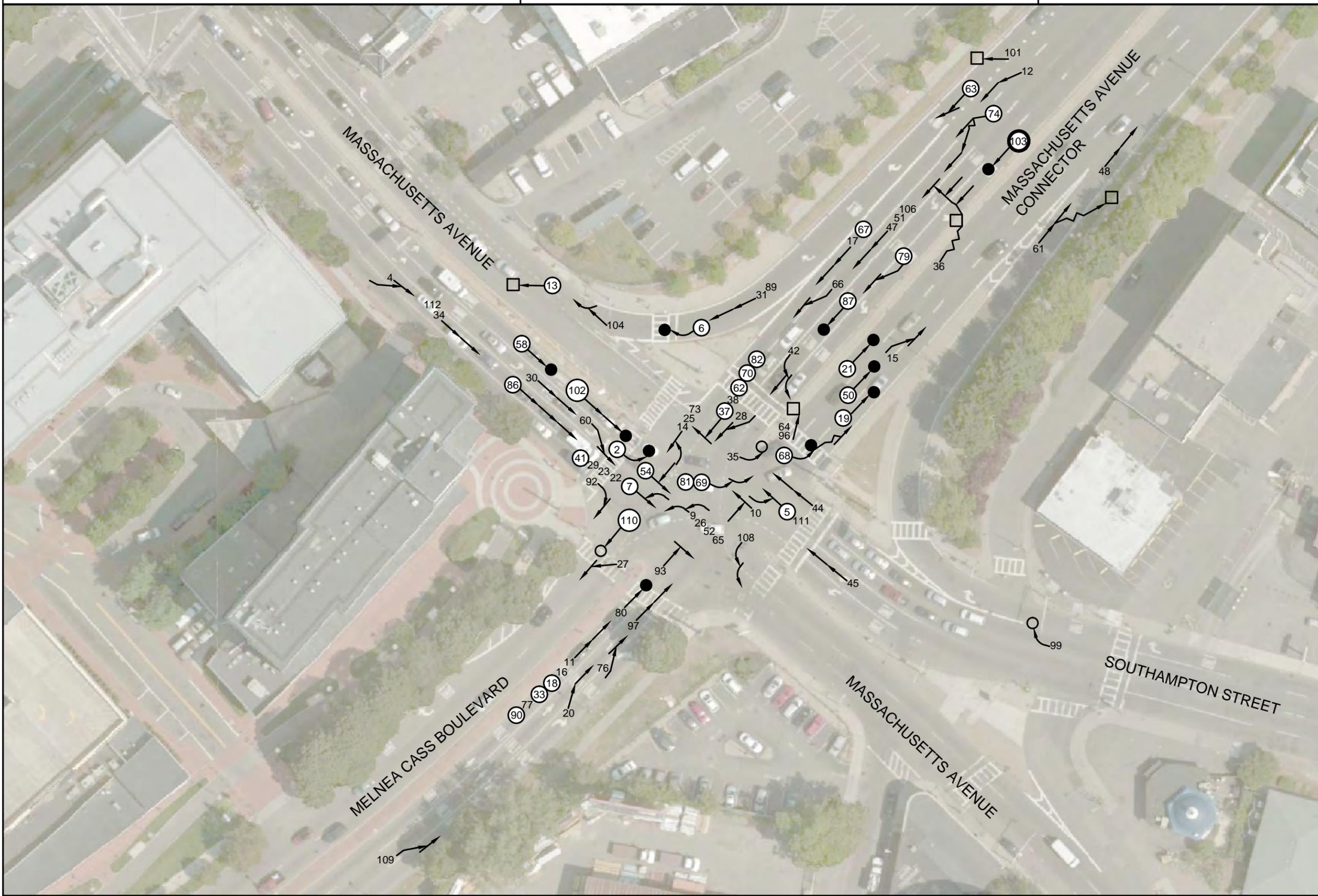
Appendix C. Detailed Crash Data



HOWARD STEIN HUDSON

BOSTON, MA
MASSACHUSETTS AVE AT MELNEA CASS BLVD
REGION: BOSTON MPO
COLLISION DIAGRAM

TIME PERIOD ANALYZED: JAN 2012 - DEC 2014
SOURCE OF CRASH DATA: STATE AND BOSTON POLICE
DATE PREPARED: APRIL 18, 2016
PREPARED BY: D. CARRON



Key

- Rear-End
- Head-on
- Sideswipe
- Overturned
- Fixed-Object
- Angle
- Turning Movement
- Parked Vehicle
- Out of Control
- Bicyclist
- Pedestrian
- I.D. Number
- Injury Accident
- Fatal Accident



* NOT TO SCALE

Crash Data Summary Table
 Massachusetts Avenue/Melnea Cass Boulevard, Boston, MA
 January 2012 - December 2014

ID	Date	Time	Day	Crash Type	Severity	Weather	Lighting	Description
1*	1/8/2012	11:45 PM	Sunday	Vehicle Other	Property Damage	Clear -Night	Outside-Night-Street Lights	Vehicle was driving on Melnea Cass and a tire came off and hit another vehicle.
2	1/12/2012	7:50 AM	Thursday	Pedestrian Dart Out	Injury	Rain	Outside-Day	Motorist was turning left from Mass Ave onto Melnea Cass outbound when a pedestrian walked out into the middle of traffic in front of the motorist's vehicle, leaving no time for the motorist to stop.
3*	1/24/2012	9:39 AM	Tuesday	Side Impact	Injury	Not Reported	Not Reported	Motorist was traveling inbound on Mass Ave and was struck at the intersection, causing them to run into a pedestrian signal.
4	1/26/2012	8:07 PM	Thursday	Side Impact	Property Damage	Rain	Outside-Night-Street Lights	Motorist was traveling outbound on Mass Ave when an EMS truck started moving forward, striking the motorist's vehicle on the front passenger side door.
5	1/26/2012	11:11 PM	Thursday	Left Turn Side Impact to Passing Vehicle	Injury	Rain	Outside-Night-Street Lights	Vehicle taking southbound left-turn from Mass Ave struck vehicle traveling straight northbound.
6	2/10/2012	6:54 PM	Friday	Pedestrian hit by turning vehicle	Injury	Clear-Night	Outside-Night-Street Lights	Driver came to a complete stop at a red light on Melnea Cass before attempting to turn right on red into a pedestrian.
7	2/17/2012	9:20 AM	Friday	Left Turn Side Impact to Passing Vehicle	Injury	Cloudy	Outside-Day	Vehicle took a northbound left-turn in front of oncoming southbound vehicle and struck front side.
8*	3/3/2012	12:11 PM	Saturday	Pedestrian Other	Injury	Rain	Outside-Day	Pedestrian was selling flowers on the median at the intersection and the motorist drove over the pedestrian's foot when they stepped closer to retrieve something from the vehicle.
9	3/5/2012	2:18 AM	Monday	Side Impact	Property Damage	Clear-Night	Outside-Night-Street Lights	Vehicle taking northbound left-turn onto Melnea Cass Blvd from outside left-turn lane took turn too sharply and hit left-turning vehicle in inside lane on passenger side.
10	3/21/2012	6:14 PM	Wednesday	Side Impact	Property Damage	Sunny-Day	Outside-Day	Vehicle traveling northbound got stuck in intersection due to traffic and was struck from eastbound vehicle traveling through from Melnea Cass Blvd.
11	3/23/2012	2:44 PM	Friday	Rear End	Property Damage	Sunny-Day	Outside-Day	Vehicle was stopped at red light on Melnea Cass Blvd and second vehicle traveling on Melnea Cass wasn't paying attention and rear ended stopped vehicle.
12	4/5/2012	12:50 PM	Thursday	Rear End	Property Damage	Clear	Daylight	Both vehicles were traveling west on the Mass Ave Connector Ramp toward the intersection. Vehicle 1 failed to notice that Vehicle 2 had stopped in traffic and hit them from behind.
13	4/14/2012	2:16 AM	Saturday	Single Vehicle Crash	Injury	Clear-Night	Outside-Night-Limited/No Street Light	Driver fell asleep and hit sidewalk and center median on Mass Ave when coming from Expressway.
14	4/30/2012	9:24 PM	Monday	Left Turn Side Impact to Passing Vehicle	Property Damage	Not Reported	Not Reported	Vehicle attempted to turn eastbound left from Melnea Cass onto Mass Ave and struck a vehicle traveling westbound through.
15	5/3/2012	10:31 AM	Thursday	Sideswipe 2 Moving Car	Property Damage	Rain	Outside-Day	Vehicle traveling east on Mass Ave Connector sideswipe vehicle it was trying to pass.
16	5/22/2012	10:40 PM	Tuesday	Rear End	Property Damage	Not Reported	Outside-Night-Street Lights	Vehicle was waiting at red light on Melnea Cass Blvd and was rear ended.
17	6/10/2012	11:55 PM	Sunday	Rear End	Property Damage	Clear-Night	Outside-Night-Street Lights	Vehicle waiting at red light on Mass Ave Connector was hit from behind.
18	6/22/2012	9:15 AM	Friday	Rear End	Injury	Not Reported	Not Reported	Vehicle was waiting at red light on Melnea Cass Blvd eastbound approach and was hit from behind.
19	6/25/2012	3:34 PM	Monday	Pedestrian hit by turning vehicle	Injury	Clear	Daylight	Driver was traveling southbound on Mass Ave turning left onto Mass Ave Connector Ramp when they struck a pedestrian crossing approx. 20 feet east of the crosswalk on the Mass Ave Connector Ramp.
20	8/2/2012	11:13 PM	Thursday	Rear-end	Property Damage	Clear	Dark-Lighted Roadway	Driver was slowing for a red light and attempting to change lanes at the same time, striking the other vehicle in the rear.
21	8/6/2012	8:38 PM	Monday	Pedestrian Hit By Straight On Vehicle	Injury	Clear	Dark-Lighted Roadway	Driver was traveling eastbound on Mass Ave Connector after having taken a left-turn from Mass Ave southbound. Approx. 100 feet east of the intersection, a pedestrian stepped off the median into the path of the driver and was hit.
22	8/8/2012	8:20 PM	Wednesday	Left Turn Side Impact to Passing Vehicle	Property Damage	Clear-Night	Outside-Night-Street Lights	Southbound vehicle on Mass Ave ran red light and was struck by northbound left-turning vehicle with a green arrow.
23	9/2/2012	11:51 AM	Sunday	Left Turn Side Impact to Turning Vehicle	Property Damage	Sunny-Day	Outside-Day	Vehicle taking a northbound left-turn onto Melnea Cass was hit by a southbound vehicle that had run a red light.
24*	9/15/2012	4:20 PM	Saturday	Sideswipe 2 Moving Car	Property Damage	Not Reported	Not Reported	No direction information but vehicle was sideswiped by trailer that was passing the vehicle.
25	9/21/2012	11:00 PM	Friday	Left Turn Side Impact to Turning Vehicle	Property Damage	Clear-Night	Outside-Night-Street Lights	Vehicle was taking a prohibited eastbound left-turn from Melnea Cass Blvd onto Mass Ave and was struck by a vehicle traveling westbound from the Mass Ave Connector.

Crash Data Summary Table
 Massachusetts Avenue/Melnea Cass Boulevard, Boston, MA
 January 2012 - December 2014

ID	Date	Time	Day	Crash Type	Severity	Weather	Lighting	Description
26	9/22/2012	10:16 AM	Saturday	Sideswipe 2 Moving Car	Property Damage	Cloudy	Outside-Day	Vehicle in inner northbound left-turn lane was turning and side was struck by rear wheel of trailer from truck.
27	9/29/2012	5:00 PM	Saturday	Side Impact	Property Damage	Cloudy	Outside-Day	Vehicle traveling westbound had just passed intersection and was struck on passenger side rear by vehicle to the left.
28	10/17/2012	12:01 PM	Wednesday	Angle	Property Damage	Cloudy	Daylight	Driver was in the right left-turn lane in the westbound direction on the Mass Ave Connector Ramp. When the light turned green, the driver traveled straight through the intersection rather than turning left, and struck the vehicle to the right that was traveling through the intersection from the correct thru lane.
29	12/6/2012	8:07 AM	Thursday	Left Turn Side Impact to Turning Vehicle	Property Damage	Sunny-Day	Outside-Day	Vehicle taking a northbound left-turn onto Melnea Cass Blvd with a green left arrow and was struck on passenger side by southbound vehicle.
30	12/15/2012	10:00 PM	Saturday	Vehicle Other	Property Damage	Clear-Night	Outside-Night-Street Lights	Vehicle stopped at red light on Mass Ave southbound approach backed into vehicle behind it.
31	12/27/2012	5:00 PM	Thursday	Right Turn Rear End	Property Damage	Not Reported	Not Reported	Vehicle traveling on Mass Ave Connector taking right onto Mass Ave was struck in the rear.
32*	12/28/2012	7:45 AM	Friday	Sideswipe 2 Moving Car	Property Damage	Sunny-Day	Outside-Day	Vehicle was on Mass Ave and was sideswiped by a tractor trailer turning left onto Melnea Cass Boulevard from Mass Ave.
33	1/4/2013	3:00 PM	Friday	Rear End	Injury	Cloudy	Outside-Day	Vehicle was waiting at red light on Melnea Cass Blvd eastbound approach and was hit from behind.
34	1/19/2013	3:58 AM	Saturday	Rear End	Property Damage	Not Reported	Not Reported	Vehicle was on Mass Ave near Melnea Cass and was struck from behind.
35	1/20/2013	1:27 PM	Sunday	Bicycle Hit by Turning Vehicle	Not Reported	Sunny-Day	Outside-Day	Cyclist was waiting on median island on Melnea Cass when they were hit by a vehicle turning left from Mass Ave to Melnea Cass outbound toward I-93.
36	1/30/2013	7:07 PM	Wednesday	Vehicle Other	Property Damage	Cloudy	Outside-Night-Street Lights	Vehicle traveling eastbound on Mass Ave Connector veered into light pole then continued over the median and hit three vehicles traveling westbound.
37	2/3/2013	2:22 AM	Sunday	Side Impact	Injury	Not Reported	Not Reported	Ambulance with sirens on was proceeding through intersection to Mass Ave and was hit on right side by vehicle coming from I-93.
38	2/13/2013	12:00 AM	Wednesday	Side Impact	Property Damage	Not Reported	Not Reported	MV NB on Mass Ave attempted to move out of way of ambulance and collided with vehicle travelling on Melnea Cass coming from I-93
39*	2/20/2013	5:58 PM	Wednesday	Rear End	Injury	Clear-Night	Outside-Night-Street Lights	Motorist glanced down at their phone and ran into the vehicle they were following.
40*	2/22/2013	6:25 PM	Friday	Side Impact	Property Damage	Dusk	Outside-Night-Street Lights	Hit and Run. Motorist was stopped at red light when their vehicle was hit in the right front fender area causing visible damage.
41	3/6/2013	5:15 PM	Wednesday	Left Turn Side Impact to Turning Vehicle	Injury	Cloudy	Outside-Night-Street Lights	Vehicle traveling southbound on Mass Ave went straight in a left-turn only lane during protected left phase and collided with northbound left-turning vehicle.
42	3/7/2013	3:45 PM	Thursday	Vehicle Other	Property Damage	Not Reported	Not Reported	Motorist was sitting in the left-turn lane on the Mass Ave Connector WB when a TT unit struck the left side of their vehicle, dragging it into another vehicle.
43*	3/8/2013	8:12 AM	Friday	Rear End	Injury	Snow	Outside-Day	Motorist lost control of vehicle in the snow and struck the vehicle they were following.
44	3/12/2013	9:50 PM	Tuesday	Rear-end	Property Damage	Rain	Dark-Lighted Roadway	Driver entered the intersection traveling northbound on Mass Ave with a green indication when an ambulance with emergency lights approached traveling westbound. The driver stopped to allow the ambulance to enter the intersection, and their vehicle was hit by the vehicle behind them.
45	3/27/2013	6:30 PM	Wednesday	Rear End	Property Damage	Not Reported	Not Reported	Vehicle was waiting northbound on Mass Ave for red light and was rear ended.
46*	5/1/2013	9:00 AM	Wednesday	Not reported	Property Damage	Not Reported	Outside-Day	Motorist leaving parking space backed into parked vehicle.
47	5/12/2013	9:48 AM	Sunday	Rear End	Property Damage	Rain	Outside-Day	Vehicle was traveling westbound on Mass Ave Connector and was hit from behind.
48	5/21/2013	3:29 PM	Tuesday	Rear End	Property Damage	Clear	Daylight	Driver was turning right onto the Mass Ave Connector eastbound when they struck the rear of a fire truck that was parked to the side of the Mass Ave Connector with lights flashing.
49*	6/25/2013	12:31 PM	Tuesday	Pedestrian Other	Injury	Sunny-Day	Outside-Day	Pedestrian claimed to have had their foot run over by a vehicle and was found laying in the median of Melnea Cass Blvd.
50	7/12/2013	10:12 PM	Friday	Pedestrian Hit By Straight On Vehicle	Injury	Clear	Dark-Lighted Roadway	Driver had turned left onto the Mass Ave Connector eastbound when a pedestrian stepped in front of the vehicle.
51	7/15/2013	10:50 AM	Monday	Rear End	Property Damage	Cloudy	Outside-Day	Vehicle was traveling inbound on Mass Ave Connector and was hit from behind.
52	7/15/2013	2:30 PM	Monday	Sideswipe 2 Moving Car	Property Damage	Not Reported	Not Reported	Vehicle traveling on the inside northbound left-turn lane from Mass Ave onto Melnea Cass Blvd sideswiped the front bumper of a vehicle in the outside left-turn lane.
53*	7/18/2013	1:00 PM	Thursday	Vehicle Other	Property Damage	Sunny-Day	Outside-Day	Vehicle was waiting at red light and vehicle in front backed into the vehicle.

Crash Data Summary Table
 Massachusetts Avenue/Melnea Cass Boulevard, Boston, MA
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ID	Date	Time	Day	Crash Type	Severity	Weather	Lighting	Description
54	7/23/2013	5:12 PM	Tuesday	Side Impact	Injury	Rain	Outside-Day	Vehicle ran red light from Mass Ave Connector and struck southbound vehicle traveling along Mass Ave.
55*	8/28/2013	8:47 PM	Wednesday	Sideswipe 2 Moving Car	Property Damage	Clear-Night	Outside-Night-Street Lights	Motorist was operating in the right left-turn only lane when the vehicle in the left lane entered the right lane
56*	9/9/2013	10:22 AM	Monday	Side Impact	Property Damage	Sunny-Day	Outside-Day	Motorist was turning left from Mass Ave onto Melnea Cass Blvd from the right left-turn lane when the vehicle in the left lane collided with them.
57*	9/30/2013	3:00 PM	Monday	Rear End	Property Damage	Warm and Clear	Outside-Day	Hit and Run. Motorist was rear-ended at the intersection.
58	10/11/2013	9:28 PM	Friday	Pedestrian Dart Out	Injury	Not Reported	Not Reported	Motorist was traveling SB on Mass Ave in the left lane when a pedestrian ran out in front of their vehicle and was hit.
59*	10/12/2013	8:18 AM	Saturday	Rear End	Injury	Sunny-Day	Outside-Day	Motorist was stopped at a red light when they were hit from behind.
60	10/22/2013	7:30 PM	Tuesday	Sideswipe	Property Damage	Sunny-Day	Outside-Day	Vehicle waiting at red light on Mass Ave southbound approach and was sideswiped by a vehicle turning left onto Mass Ave Connector.
61	10/26/2013	3:43 PM	Saturday	Rear-end	Property Damage	Clear	Daylight	Driver slowed to merge onto the Mass Ave Connector eastbound and the vehicle behind them struck the rear of their car and was then pushed over the curb into a sign.
62	10/30/2013	3:25 PM	Wednesday	Side Impact	Injury	Sunny-Day	Outside-Day	Vehicle was waiting northbound on Southampton St and entered the intersection to let an ambulance pass then hit a westbound vehicle traveling straight through the intersection.
63	11/5/2013	9:19 AM	Tuesday	Angle	Injury	Clear	Daylight	Driver was traveling westbound on Mass Ave Connector and attempted to change lanes in front of an MBTA bus without allowing enough space to do so. The rear of the vehicle struck the front end of the MBTA bus.
64	11/6/2013	5:00 PM	Wednesday	Single Vehicle Crash	Property Damage	Clear	Dark-Lighted Roadway	Motorist drove over the median on Mass Ave Connector East in the westbound direction.
65	11/15/2013	9:50 AM	Friday	Sideswipe	Property Damage	Not Reported	Outside-Day	Vehicle was taking a northbound left-turn in the outer left turn lane from Mass Ave onto Melnea Cass Blvd when a vehicle's trailer in the right passing lane collided with the first vehicle.
66	11/17/2013	7:41 PM	Sunday	Rear-end	Property Damage	Not Reported	Dark-Lighted Roadway	Both vehicles were traveling west on the Mass Ave Connector Ramp toward the intersection. One vehicle traveling in the thru lane was hit from behind by another vehicle that was changing lanes from the left-turn lane into the thru lane.
67	12/3/2013	5:46 PM	Tuesday	Rear-end	Injury	Clear/Cloudy	Dark-Unknown Roadway Lighting	Driver stopped for a red light traveling westbound on Mass Ave Connector and was hit from behind.
68	12/5/2013	12:50 PM	Thursday	Pedestrian Other	Injury	Cloudy	Outside-Day	Southbound left-turn vehicle swerved to avoid hitting pedestrian and ran over pedestrians foot and hit vehicle in lane next to it.
69	12/11/2013	5:05 PM	Wednesday	Rear-end	Injury	Clear	Dark-Lighted Roadway	Driver was traveling southbound on Mass Ave within the intersection and moved to the left to avoid a vehicle that had come to a stop, and hit the rear of another vehicle that was turning left onto the Mass Ave Connector.
70	12/23/2013	1:00 PM	Monday	Side Impact	Injury	Rain	Outside-Day	Ambulance was traveling northbound on Mass Ave with sirens activated and was struck by vehicle traveling westbound from the Mass Ave Connector.
71*	12/28/2013	2:09 PM	Saturday	Pedestrian Other	Injury	Sunny-Day	Outside-Day	Person was knocked to the ground by a vehicle, but both parties left the scene by the time police arrived.
72*	2/19/2014	7:45 AM	Wednesday	Rear End	Injury	Sunny-Day	Inside-Well Lit	Motorist was stopped at a red light when they were hit from behind.
73	2/19/2014	2:20 PM	Wednesday	Left Turn Side Impact to Passing Vehicle	Property Damage	Not Reported	Not Reported	Vehicle traveling eastbound on Melnea Cass Blvd took an illegal left-turn and hit a vehicle traveling westbound.
74	3/6/2014	12:14 PM	Thursday	Angle	Injury	Clear	Daylight	Driver was attempting to change lanes to the right, struck the vehicle that was to the right of them, and then was pushed into a third vehicle in the lane to the left.
75*	3/11/2014	7:30 PM	Tuesday	Rear End	Property Damage	Not Reported	Not Reported	Hit and Run. Motorist was on Melnea Cass Blvd and was struck in the left rear bumper by another vehicle.
76	3/17/2014	9:10 AM	Monday	Sideswipe 2 Moving Car	Property Damage	Sunny-Day	Outside-Day	Vehicle was on Melnea Cass Boulevard in right-turn only lane and tried to get over into thru lane and sideswiped vehicle in thru lane.
77	3/17/2014	9:30 AM	Monday	Rear End	Property Damage	Not Reported	Not Reported	Vehicle traveling east on Melnea Cass Boulevard was rear-ended.
78*	4/28/2014	4:16 PM	Monday	Rear End	Property Damage	Clear-Day	Outside-Day	Vehicle was stopped at a red light and when it turned green was slow to move and was rear ended by vehicle behind.
79	5/15/2014	7:26 PM	Thursday	Sideswipe, Same Direction	Injury	Cloudy	Dusk	Driver was traveling westbound on Mass Ave Connector and attempted to pass a vehicle that was stopped in front of them at the light on the left side, striking the vehicle in the rear.

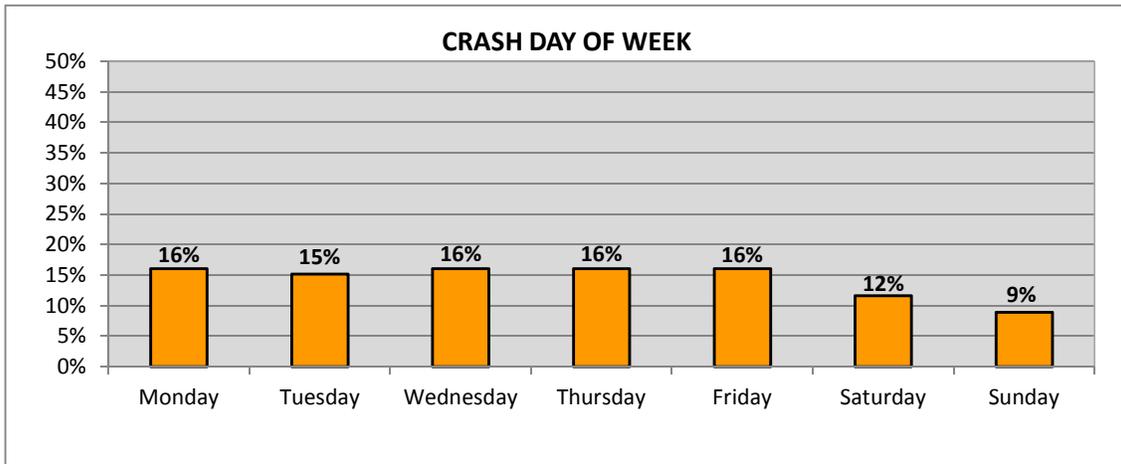
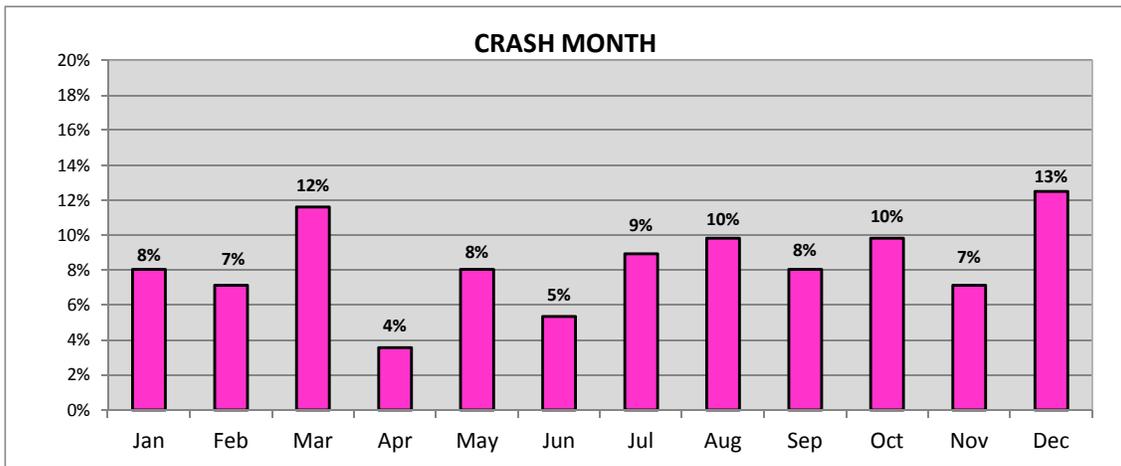
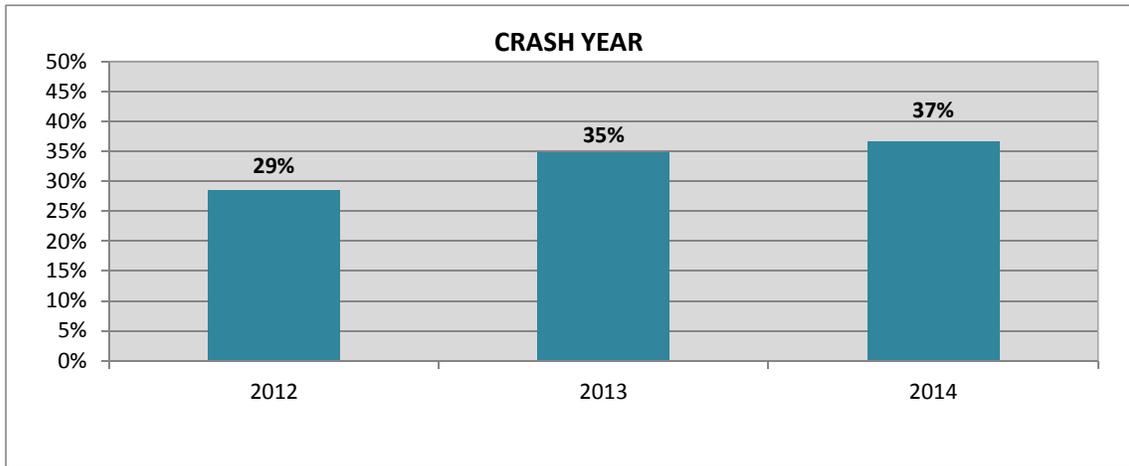
Crash Data Summary Table
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ID	Date	Time	Day	Crash Type	Severity	Weather	Lighting	Description
80	5/16/2014	12:11 AM	Friday	Pedestrian Hit By Straight On Vehicle	Property Damage	Not Reported	Not Reported	Pedestrian stepped off island on Melnea Cass Boulevard and was hit by eastbound vehicle.
81	5/21/2014	9:16 AM	Wednesday	Vehicle Other	Injury	Clear	Outside-Day	Southbound truck turning left from Mass Ave onto Mass Ave Connector encroached into inner left turn lane and struck a school bus.
82	5/24/2014	2:00 AM	Saturday	Side Impact	Injury	Clear-Night	Outside-Night-Street Lights	Vehicle traveling westbound from Mass Ave Connector to Melnea Cass Blvd was struck by northbound vehicle from Southampton Street that ran a red light.
83*	6/16/2014	3:18 PM	Monday	Side Impact	Injury	Sunny-Day	Outside-Day	Police with siren and lights on traveling through intersection was hit by a vehicle with a green light that didn't yield. Not enough information to place.
84*	6/26/2014	11:28 AM	Thursday	Rear End - 4 car	Injury	Cloudy	Outside-Day	4 car rear end.
85*	7/15/2014	1:25 PM	Tuesday	Side Impact	Injury	Cloudy	Outside-Day	Vehicle cut off the other vehicle causing a 3 car collision (1 angle collision resulting in a rear end collision)
86	7/15/2014	9:20 PM	Tuesday	Rear End - 3 Car	Injury	Not Reported	Not Reported	Driver was stopped at a red light on Mass Ave outbound at Melnea Cass Blvd when they were struck from behind and pushed into a third vehicle.
87	7/20/2014	9:40 PM	Sunday	Pedestrian Hit By Straight On Vehicle	Injury	Not Reported	Not Reported	Pedestrian stepped off island on Melnea Cass Boulevard and was hit by westbound vehicle.
88*	7/22/2014	3:01 PM	Tuesday	Sideswipe	Property Damage	Not Reported	Not Reported	Vehicle hit rear bumper of car in front while trying to change lanes. No location information.
89	7/26/2014	5:35 PM	Saturday	Rear End	Property Damage	Clear	Daylight	Vehicles were traveling westbound on Mass Ave Connector to turn right onto Mass Ave. Traffic slowed, and second vehicle crashed into the rear of the first.
90	8/4/2014	4:55 PM	Monday	Rear End	Injury	Sunny-Day	Outside-Day	Eastbound vehicle traveling on Melnea Cass Blvd was hit from behind near intersection with Mass Ave.
91*	8/14/2014	2:00 PM	Thursday	Vehicle Other	Property Damage	Not Reported	Not Reported	Hit and Run. Motorist was hit near the intersection and sustained damage to the front bumper, driver's side fender, hood, and tire rim.
92	8/15/2014	12:40 AM	Friday	Side Impact	Property Damage	Clear-Night	Outside-Night-Street Lights	Vehicle traveling westbound from Mass Ave Connector to Melnea Cass Blvd was struck by southbound vehicle turning right onto Melnea Cass Blvd.
93	8/17/2014	4:16 AM	Sunday	Side Impact	Property Damage	Rain	Outside-Night-Street Lights	Police cruiser was proceeding southbound through intersection with lights and siren from Mass Ave and was struck by eastbound vehicle from Melnea Cass Blvd who didn't see cruiser.
94*	8/25/2014	11:30 AM	Monday	Rear End	Property Damage	Sunny-Day	Outside-Day	Motorist was stopped in traffic and was rear-ended by another vehicle.
95*	8/27/2014	3:00 PM	Wednesday	Vehicle Other	Not Reported	Not Reported	Outside-Day	Traffic was stopped for a red light, and the motorist was attempting to change lanes. They beeped to alert the driver in front of them, and that driver exited their car and insisted the first motorist had hit their car.
96	8/27/2014	4:08 PM	Wednesday	Single Vehicle Crash	Property Damage	Clear	Daylight	Driver was traveling eastbound on Mass Ave Connector when they fell asleep and struck a light pole on the raised median.
97	9/7/2014	3:45 PM	Sunday	Rear End	Property Damage	Day	Outside-Day	Vehicle traveling eastbound on Melnea Cass Blvd looking to turn right onto Mass Ave stopped for a pedestrian and was hit from behind.
98*	9/12/2014	8:30 AM	Friday	Bicycle Other	Property Damage	Not Reported	Not Reported	Driver was traveling in the area of Melnea Cass Blvd and Mass Ave when they were hit in the side by a cyclist who then fell onto the hood.
99	10/7/2014	9:45 AM	Tuesday	Bicycle hit by turning vehicle	Not Reported	Not Reported	Not Reported	Motorist was driving erratically and struck a cyclist while changing lanes to travel toward I-93 from Mass Ave NB.
100*	10/9/2014	2:54 PM	Thursday	Rear End	Not Reported	Not Reported	Not Reported	Motorist was rear-ended at the intersection.
101	10/10/2014	2:38 AM	Friday	Single Vehicle Crash	Property Damage	Not Reported	Outside-Night-Street Lights	Motorist was exiting the interstate onto Melnea Cass Blvd when they were cut off and swerved onto the sidewalk, striking an electric box.
102	10/17/2014	10:48 PM	Friday	Pedestrian Other	Injury	Not Reported	Not Reported	Vehicle stopped at red light on Mass Ave southbound was rear ended which caused the vehicle to hit pedestrian in crosswalk.
103	10/23/2014	8:07 PM	Thursday	Head-on	Fatality	Rain	Dark-Lighted Roadway	Driver of large truck was traveling westbound on Mass Ave Connector in the left travel lane and struck a pedestrian in the roadway that they could not see.
104	11/6/2014	12:45 PM	Thursday	Sideswipe 2 Moving Car	Property Damage	Not Reported	Not Reported	Vehicle was taking westbound right from Mass Ave Connector onto Mass Ave and was sideswiped.
105*	11/17/2014	2:38 AM	Monday	Vehicle Other	Property Damage	Rain/Sleet	Outside-Night-Street Lights	As the motorist was exiting the interstate onto Melnea Cass Blvd, when they were struck by another motorist who fled down Mass Ave northbound.
106	11/17/2014	6:00 PM	Monday	Rear End	Property Damage	Not Reported	Not Reported	Vehicle was waiting at red light on Mass Ave Connector to continue onto Melnea Cass and was hit from behind.
107*	11/24/2014	1:10 PM	Monday	Rear End	Injury	Rain	Outside-Day	Motorist was rear-ended at the intersection.
108	12/2/2014	7:11 AM	Tuesday	Side Impact	Property Damage	Sunny-Day	Outside-Day	Vehicle taking left from Mass Ave connector in outside left-turn lane was struck by vehicle in inside left-turn lane.
109	12/12/2014	8:17 PM	Friday	Side Impact	Property Damage	Not Reported	Not Reported	Vehicle was traveling eastbound on Melnea Cass Blvd and went to turn into right lane and was struck by vehicle traveling in right lane.
110	12/13/2014	11:59 PM	Saturday	Bicycle Other	Injury	Not Reported	Outside-Night-Street Lights	Driver was traveling inbound from I-93 through the intersection when they struck a cyclist (presumably riding against traffic with a red light) on the far side of the intersection.

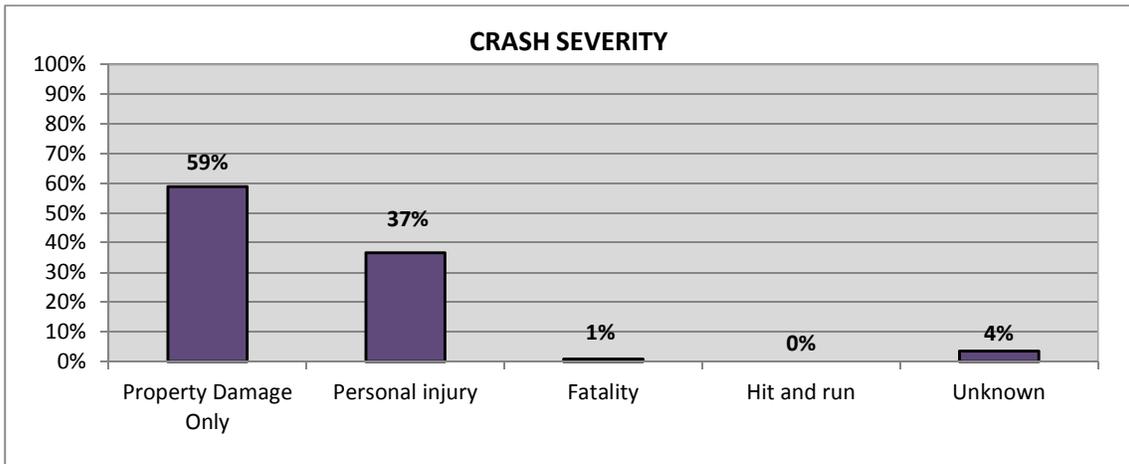
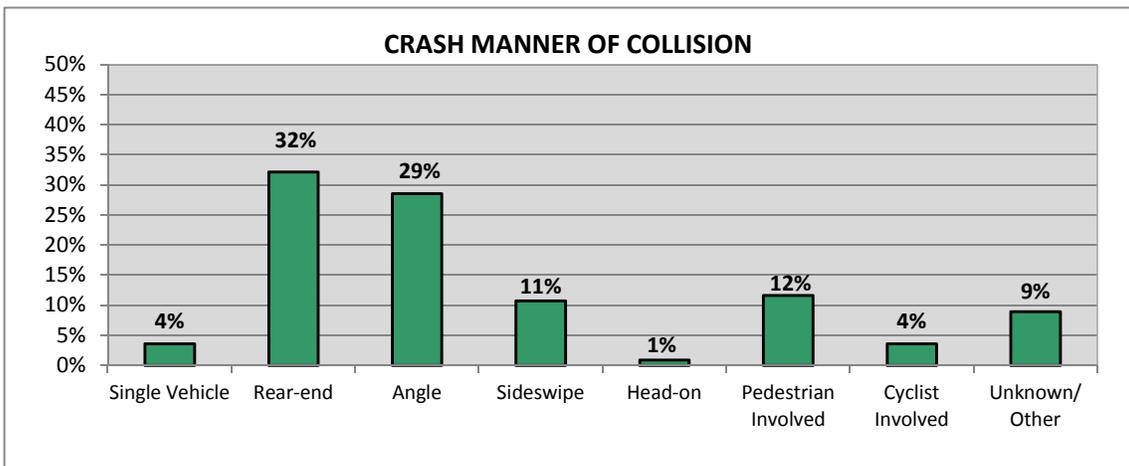
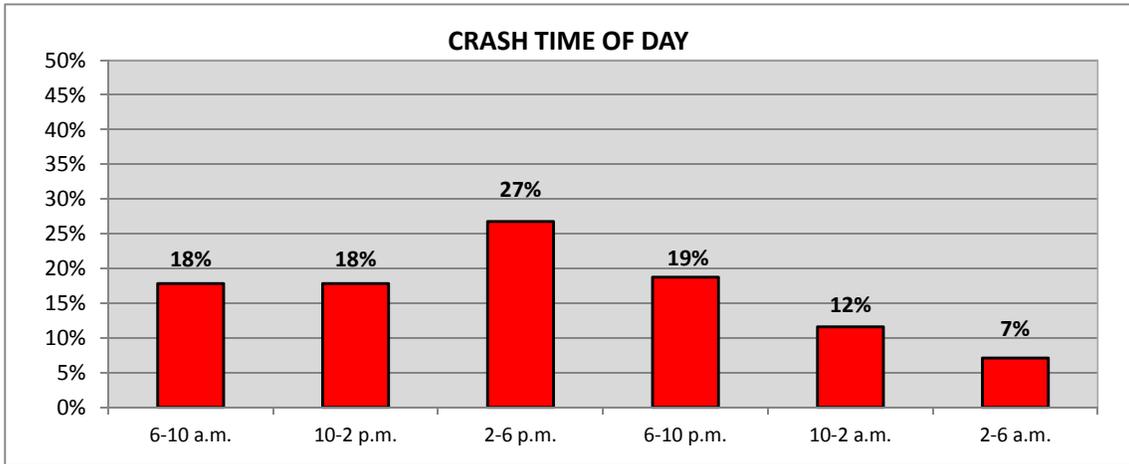
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 Massachusetts Avenue/Melnea Cass Boulevard, Boston, MA
 January 2012 - December 2014

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111	12/23/2014	8:40 AM	Tuesday	Side Impact to Turning Vehicle	Property Damage	Not Reported	Not Reported	Vehicle was taking a left-turn from Mass Ave southbound and was hit by a northbound thru vehicle going through a red light.
112	12/23/2014	1:52 PM	Tuesday	Rear End	Property Damage	Rain	Outside-Day	Vehicle waiting at red light on Mass Ave southbound was rear-ended.
***An additional 14 crashes were supplied by EMS that were not able to be supplemented with police crash records.								

Crash Data Summary Charts
Massachusetts Avenue/Melnea Cass Boulevard, Boston, MA



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