

# ROAD SAFETY AUDIT

Massachusetts Avenue at Maple Street

Town of Lexington

May 17, 2012

Prepared For:  
MassDOT Highway Division



Prepared By:  
BETA Group, Inc.



ENGINEERING SUCCESS **TOGETHER**

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## Project Data

A Road Safety Audit for the intersection of Massachusetts Avenue and Maple Street was held on April 17, 2012 at the Town Hall in Lexington, MA. As indicated in Table 1, the audit team consisted of representatives from State, Regional and Local agencies and included a cross-section of engineering, planning and emergency response expertise.

**Table 1. Participating Audit Team Members**

<b>Audit Team Member</b>	<b>Agency/Affiliation</b>
Lisa Schletzbaum	MassDOT Highway Division – Safety Section
John Livsey	Town of Lexington – Town Engineer
John Fleck	Town of Lexington – Fire
Marc Valenti	Town of Lexington – Highway Superintendent
Bill Hadley	Town of Lexington – Director of Public Works
Aaron Henry	Town of Lexington – Planning
John Mazerall	Town of Lexington – Police
Chen-Yuan Wang	CTPS (Boston Region MPO)
Sara Timoner	MassDOT Highway Division – District 4 Traffic
Constance Raphael	MassDOT Highway Division – District 4
Dominic Caiazzo	MassDOT Highway Division – Safety Section
Douglas Halpert	MassDOT Highway Division – Safety Section
Greg Lucas	BETA Group, Inc.
Jaklyn Centracchio	BETA Group, Inc.

## Background

The Federal Highway Administration defines a Road Safety Audit (RSA) as *the formal safety examination* of an existing or future road or intersection by an *independent, multidisciplinary team*. The purpose of an RSA is to *identify potential safety issues and possible opportunities for safety improvements* considering all roadway users. A Road Safety Audit was scheduled for the intersection of Massachusetts Avenue and Maple Street as required by MassDOT Highway Safety Improvement Program (HSIP) guidelines. A Private design consultant is under contract with the Town of Lexington to design roadway improvements for Massachusetts Avenue from Marrett Road to Pleasant Street. The intersection of Massachusetts Avenue and Maple Street has been identified as a high crash location in the Boston Region MPO and would be eligible for Federal Highway Safety Improvement Program (HSIP) funds for construction, provided that the proposed improvements enhance safety. The RSA is intended to identify both short and long term safety improvements that can be made at the subject intersection prior to the proposed project and/or incorporated into the proposed project.

## Project Description

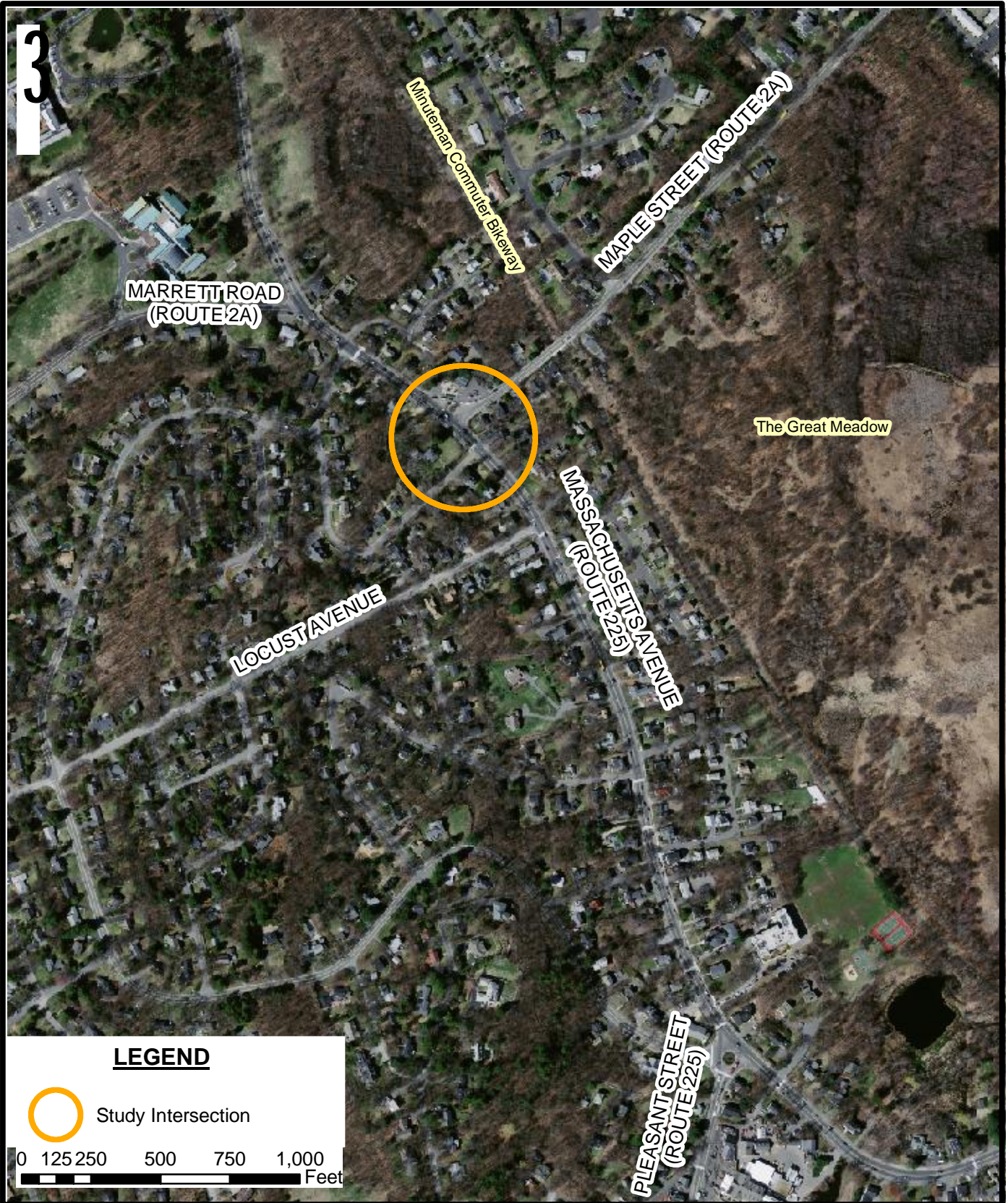
The intersection of Massachusetts Avenue and Maple Street, shown in Figure 1, is located in the eastern part of Lexington. Massachusetts Avenue is functionally classified as an Urban Principal Arterial, while Maple Street is classified as an Urban Minor Arterial. Both roadways are under Town of Lexington jurisdiction in the vicinity of the intersection, although Maple Street is state-owned further north of the intersection. The intersection carries three state-numbered routes: Routes 4



**Massachusetts Avenue at Maple Street**

and 225 follow Massachusetts Avenue through the intersection, while Route 2A joins Massachusetts Avenue from its intersection with Marrett Road approximately 600 feet to the northwest, then departs Massachusetts Avenue via Maple Street northward. The intersection serves several important regional connections; Massachusetts Avenue connects Lexington Center to Arlington, Cambridge and Boston to the southeast; while Maple Street carries traffic from residential areas of Lexington and Winchester to MA Route 2 and I-95/Route 128. Vehicles follow Maple Street to Massachusetts Avenue and then to Pleasant Street approximately ½ mile southeast of Maple Street to access Route 2, while vehicles bound for I-95/Route 128 may follow the same route and follow Route 2 west, or follow Massachusetts Avenue to Marrett Road to its interchange with I-95. The Minuteman Bikeway, an 11-mile bicycle trail through Bedford, Lexington, Arlington and Cambridge, runs essentially parallel to Massachusetts Avenue and has access to Maple Street from an underpass approximately 400 feet north of the study intersection. It was noted that despite the proximity of the Bikeway, there is a significant amount of bicycle traffic in both directions on Massachusetts Avenue through the intersection.





Massachusetts Avenue at Maple Street  
ROAD SAFETY AUDIT  
LEXINGTON, MA

Figure 1  
Location Map

Massachusetts Avenue and Maple Street form a 3-way T-type intersection with a circular island separating the approach and departure lanes of the Maple Street leg. No traffic control devices are provided at the intersection. Massachusetts Avenue runs generally northwest-southeast through the intersection but is generally an east-west route through the region; for clarity purposes, this report will refer to it as an east-west route. Massachusetts Avenue eastbound provides two narrow lanes, a left turn lane and a through lane, while Massachusetts Avenue westbound provides a single general purpose lane. Maple Street has a wide departure lane on the south side of the circular median and separate left and right turn approach lanes on the north side of the median, with the left and right turn lanes separated by a painted gore area. Maple Street widens from a typical width of approximately 28 feet north of the intersection to approximately 200 feet at the gutter line to Massachusetts Avenue; the end result is a wide expanse of pavement that allows turning movements from a wide range of entry points and at great variances in vehicle speed. This wide expanse of pavement also proves challenging for pedestrians and bicyclists attempting to cross Maple Street to continue along Massachusetts Avenue.

Sidewalks are provided along both sides of Massachusetts Avenue and along the east side of Maple Street in the vicinity of the intersection. No crosswalks are provided at the intersection, although crosswalks are provided across Massachusetts Avenue at its intersection with Plainfield Street approximately 80 feet east of Maple Street, and at its intersection with Tower Road approximately 300 feet west of Maple Street. Both crosswalks are at the location of MBTA bus stops for Routes 62 and 76, which follow Massachusetts Avenue through Lexington.

Land use in the area is primarily residential, with the exception of an automotive service center on the northeast corner of the intersection. It was noted that a recent request for a change in zoning for the service center property was denied by the Town.


Crash data were provided by the Lexington Police Department and summarized by MassDOT. There were a total of eighteen reported and police documented crashes at the intersection within the period from January 2008 to December 2011. Crashes documented by operators only were not reviewed. During the three year period from 2007 to 2009, there were 29 police and operator reported crashes located to the study intersection. The crash summary shows that thirteen of the eighteen crashes (72%) were angle crashes. Eight of the thirteen angle crashes involved a vehicle turning left from Maple Street to Massachusetts Avenue eastbound, with five colliding with an eastbound vehicle and three colliding with a westbound vehicle. Two crashes involved a bicycle traveling west on Massachusetts Avenue, one involving a vehicle turning left onto Maple Street and the other involving a vehicle departing Maple Street. The right lane from Maple Street to Massachusetts Avenue westbound experienced four crashes – two angle crashes involving a turning vehicle and a through vehicle, and two rear-end crashes between vehicles waiting to merge onto Massachusetts Avenue. Rear-end crashes with this type of geometry typically occur when two drivers are both looking to the left for an available gap, and the following driver assumes the lead driver will go and accelerates before the lead driver has accelerated. An additional rear-end crash included in the intersection summary occurred at the crosswalk crossing Massachusetts Avenue at Plainfield Street. Crash data summaries and a collision diagram are included in the Appendix.

Speed regulations maintained by MassDOT Highway Division establish a 30 MPH speed limit for Massachusetts Avenue from Maple Street to Marrett Road, and a 35 MPH speed limit for Massachusetts Avenue southeast of Maple Street. Complete speed regulations for Massachusetts Avenue in Lexington are included in the Appendix.



## Audit Observations

Following a brief introduction to the RSA process and a summary of existing geometry, crash and speed regulation information, audit participants were asked to discuss safety issues at the intersection of Massachusetts Avenue and Maple Street. Audit participants then conducted a site visit as a group, at which time they offered observations on safety concerns and deficiencies. A summary of those major safety considerations is as follows:

- Lack of Traffic Control – No traffic control devices are provided at the intersection. The left turn from Maple Street generally operates as a STOP-controlled approach, although neither a STOP sign or a painted STOP bar are provided. The right turn from Maple Street to Massachusetts Avenue westbound generally operates as a yield, but the lack of yield sign or yield markings may give vehicles on Maple Street the false sense that they have the right of way. A number of crashes at the intersection may be attributed to the lack of traffic control, especially the four crashes related to the right turn lane from Maple Street.
- 
- Excessive Delay—Audit participants familiar with the intersection operation stated that traffic congestion is a significant issue during peak periods. It was noted that long queues develop on Maple Street and that driver aggression and frustration may be a contributing factor to the crash history of the intersection. It was noted that the nearby intersection of Massachusetts Avenue and Pleasant Street has similar characteristics and may contribute to the level of driver frustration.
  - Narrow Lane Widths – The two-lane section of Massachusetts Avenue eastbound approaching the intersection provides narrow lanes for turning vehicles and for through vehicles. Although lane widths were not measured on the day of the audit, they appear to be 10-feet or less in width. This may be a factor in the sideswipe crash in this area, which involved vehicles traveling in the opposite direction. It was noted that the left turn lane was added approximately five years ago to increase capacity, but that the modification was completed by restriping the roadway without widening.
  - Pedestrian Accommodations – A number of safety issues related to pedestrian accommodations were discussed during the audit.
    - No crosswalks are provided across Massachusetts Avenue or Maple Street at the intersection. Pedestrians are accommodated at crosswalks adjacent to MBTA bus stops both east and west of the intersection on Massachusetts Avenue, although this does not address pedestrians needing to cross Maple Street in order to follow Massachusetts Avenue on its north side.

- The excessive width of Maple Street provides a challenge for pedestrians and bicyclists, who must cross both a wide departure lane with vehicles turning from a wide range of entry points and at a great variance in speeds, and a wide approach area with two separate turning lanes and a wide, unprotected painted gore area. This may be a factor in the two bicycle crashes that occurred at the intersection.



- Handicap ramps are not provided at the crosswalk at Plainfield Street. It should be noted that handicap ramps are provided at the crosswalk crossing Massachusetts Avenue west of Maple Street at Tower Road.

- Pedestrian warning signs are not provided for the crosswalks crossing Massachusetts Avenue at Plainfield Street and at Tower Road. This may be a factor in the rear-end crash at the Plainfield Street crosswalk.

- Visibility – A number of safety issues related to visibility for turning vehicles were discussed at the audit.

- The marked left turn lane from Massachusetts Avenue eastbound to Maple Street is approximately 150 feet in length, but ends at a point adjacent to the southern edge of the painted gore on the Maple Street approach in order to avoid conflicts between vehicles turning left from Massachusetts Avenue and vehicles turning left from Maple Street. A vehicle turning left from Massachusetts Avenue must travel approximately two to three car lengths beyond the end of the turn lane before making the turn onto Maple Street, and vehicle queues often start at the point where vehicles turn from, not the point where the turn lane ends. As a result, left turn queues from Massachusetts Avenue block left turns from Maple Street. In instances where vehicles in queue leave gaps for vehicles from Maple Street, the cars in queue present visibility constraints for turning vehicles. The blockage of turning movements and constrained visibility are likely a factor in the angle crashes involving left turning vehicles.



- A utility pole and signs located in the circular median constrain visibility of westbound traffic for vehicles turning left from Maple Street.



- A utility pole and hedges on the southeast corner of the intersection restrict potential visibility of pedestrians on the sidewalk for vehicles turning right from Massachusetts Avenue westbound to Maple Street.
- Signage – In addition to the visibility issues noted above related to signage in the median, it should be noted that the object marker sign in the median violates MassDOT guidelines and should be removed.

The Massachusetts amendments to the Manual on Uniform Traffic Control Devices (MUTCD) state that an H1-2 warning cluster panel should be used in place of MUTCD standard object markers, and that H1-2 panels shall be used only where traffic can pass on both sides (immediately to the right or left side) of a gore, island, or other obstruction. The H1-2 object marker on this island is visible to eastbound vehicles on Massachusetts Avenue, who can only pass to the right side of the island when turning to Maple Street.



- Bicycle Accommodation – As previously noted, the excessive width of the Maple Street approach to Massachusetts Avenue presents a challenge to bicycles traveling along the north side of Massachusetts Avenue. It was also noted that while shared lane use is permitted along Massachusetts Avenue, lane and shoulder widths do not meet state guidelines for bicycle accommodation. This may be a contributing factor to the two bicycle crashes at the intersection.
- Speeding – Speed was noted as a concern, both for through traffic along Massachusetts Avenue and for turning traffic. The wide departure lane for Maple Street allows vehicles to navigate both left and right turns from Massachusetts Avenue at a high rate of speed.
- Service station – The automotive service station on the northeast corner of the intersection has three curb cuts along the Maple Street right turn lane. It was noted that vehicles exiting the service station to go east on Massachusetts Avenue cross the painted median separating the left and right turn lanes from Maple Street, which can create conflicts and additional visibility constraints for both left and right turning vehicles. Vehicles leaving the service station to go north on Maple Street must cross the wide approach lane, and may not be able to see cars approaching from the north on Maple Street or turning from Massachusetts Avenue. Finally, it was noted that vehicles parked on the northwest corner of the property are parked such that they must back out into the right turn lane from Maple Street to exit the parking space. Town personnel noted that the vehicle typically parked in this spot, including on the day of the audit, belongs to the owner of the service station.
- Emergency Signal – Although outside the limits of the intersection and beyond the limits of the reconstruction project along Massachusetts Avenue from Marrett Road to Pleasant Street, safety issues related to the existing emergency signal at the East Lexington fire station approximately 2.5 miles to the east were discussed during the audit. It was noted that the existing signals are post-

mounted with 8” heads, which provides reduced visibility when compared to standard 12” heads mounted overhead. It was noted that vehicles frequently run the red signal, especially during times when the signal is active but a fire vehicle is not leaving the station with lights flashing, such as when the vehicle backs in upon its return to the station.

## Potential Safety Enhancements

After the site visit, audit participants returned to the meeting location to discuss the safety issues and consider improvements. Audit participants were encouraged to consider both short and long term improvements for each issue. Each improvement considered has been categorized as short-term, mid-term, or long-term based on the definitions shown in Table 2. Additionally, a cost category has been assigned to each improvement based on the parameters set forth in Table 2.

**Table 2. Estimated Time Frame and Costs Breakdown**

Time Frame		Costs	
Short-term	<1 year	Low	<\$10,000
Mid-term	1–3 years	Medium	\$10,000–\$50,000
Long-term	>3 years	High	>\$50,000

The following improvements were suggested by audit participants to improve safety issues associated with the intersection of Massachusetts Avenue and Maple Street.

- Install STOP and Yield signs for the Maple Street approach. The left turn from Maple Street to Massachusetts Avenue generally operates under STOP control, and should have a STOP sign installed. A Yield sign should be installed for the right turn lane from Maple Street to Massachusetts Avenue westbound. This is a low cost improvement that should be implemented immediately in advance of long-term improvements at the intersection.
- Improve control by considering a traffic signal or roundabout. It was noted that the planned reconstruction project from Maple Street to Pleasant Street is currently at the 25% design stage and is considering concepts for improvements to both the Maple Street and Pleasant Street intersections. The design should consider traffic signal installation along with geometric improvements discussed in detail below. It was noted that the proposed reconstruction project may also consider a roundabout for the intersection of Massachusetts Avenue and Maple Street. A roundabout would address visibility issues at the intersection, but may present challenges to pedestrians when compared to a traffic signal because of the lack of a protected crossing. In some cases, a roundabout design improves safety when compared to a signal. It was noted that construction of a roundabout may require property acquisition on the northeast corner of the intersection. The design should follow established state guidelines for roundabouts by providing proper deflection for the entering roadways. This is a long-term, high cost improvement, regardless of the reconstruction strategy considered. If a traffic signal is constructed, it should include emergency preemption equipment.



- Widen Massachusetts Avenue between Marrett Road and Maple Street. The short segment of Massachusetts Avenue between these two roadways includes the two lane approach section at Maple Street. This segment should be widened to provide lane and shoulder widths meeting state guidelines. This long-term, high cost improvement can be incorporated into traffic signal improvements at the intersection, but may not be required if a roundabout is constructed.
- Reduce width of the Maple Street approach. The excessive width creates a number of potential safety issues documented in this report. A significant reduction in width can be achieved while still maintaining adequate turning radii and lane widths to allow all existing turning movements. A beneficial side effect is the creation of additional green space at the intersection. This is a long-term, high cost improvement that can be incorporated into other improvements proposed at the intersection.
- Provide “Share The Road” signage along Massachusetts Avenue. It was noted that despite the proximity of the Minuteman Bikeway, a significant number of cyclists choose to ride along Massachusetts Avenue through the study intersection. It was suggested that drivers should be alerted to the presence of these cyclists by installation of “Share The Road” signs. This is a short-term, low cost improvement.
- Provide W11-2 pedestrian warning signs for the existing crosswalks at Plainfield Street and Tower Road. It was noted that the Town has installed yellow-green fluorescent pedestrian warning signs with a W16-7p arrow panel at a number of crosswalks town-wide. Similar signs should be installed at these two crosswalks to increase awareness of the potential for pedestrians to be in the roadway. This is a short-term, low cost improvement.
- Install handicap ramps for the crosswalk at Plainfield Street. This is a short-term, medium cost improvement that can be incorporated into proposed improvements along the corridor.
- Determine long-term strategies for pedestrian access. Some audit participants suggested that intersection improvements at the Maple Street intersection should include pedestrian crosswalks across Massachusetts Avenue, while others suggested that pedestrian crossings of Massachusetts Avenue continue to be accommodated via the existing crossings at Plainfield Street and Tower Road. The proposed reconstruction project should consider the location of existing and proposed crosswalks based on pedestrian desire lines and existing pedestrian counts, as well as the location of bus stops. This is a mid-term, potentially high cost improvement.
- Relocate utility pole located within the existing circular island on Maple Street. The utility pole creates visibility constraints for vehicles waiting to turn left onto Massachusetts Avenue. This utility pole should be relocated as part of any improvements considered for the intersection. This is a potentially short-term, low cost improvement that will be incorporated into other long-term improvements.
- Remove H1-2 object marker from the circular island. This sign is not in compliance with the Massachusetts amendments to the MUTCD and should be removed. This is a short-term, low cost improvement.



- Widen Massachusetts Avenue to provide bicycle accommodation. In addition to the specific intersection improvements aimed at improving bicycle access, overall corridor improvements should include lane and shoulder widths meeting state standards for bicycle accommodation. This is a long-term, high cost improvement.
- Enforce speed at and in the vicinity of the intersection. Police enforcement carries no additional cost, but will result in decreased enforcement elsewhere in the Town. It was also noted that installation of a roundabout would likely decrease speeds along Massachusetts Avenue.
- Trim hedges along the southeast corner. Vegetation along the back of sidewalk currently presents a potential sight distance obstruction. Geometric improvements may reduce or eliminate the need to trim these hedges. This is a short term, low cost improvement.
- Consider restricting left turns from the center service station driveway. The service station has three separate curb cuts along Maple Street that directly abut the right turn lane from Maple Street to Massachusetts Avenue. Vehicles exiting the center driveway must turn across the wide Maple Street approach or across the painted gore area separating the left and right turn lanes, presenting additional conflict points with turning vehicles. It was suggested that restricting this center driveway as a right in/right out driveway would eliminate these potential conflicts. This is a short-term, low cost improvement.
- Install overhead signal heads with 12” LED lenses for the East Lexington fire station on Massachusetts Avenue. Although not located within the audit study area, the audit team discussed improvement strategies related to the existing emergency signal at the East Lexington fire station. Mast arms supporting overhead signal heads with 12” LED lenses should be installed at this location to increase visibility of the signal for approaching vehicles. This is a long-term, high cost improvement. Existing ground-mounted heads could be replaced with new heads with 12” LED lenses as an interim short-term measure.



## Summary of Road Safety Audit

Table 3 summarizes potential recommendations discussed by the audit team. The recommendations are categorized based on the potential safety payoff, as well as by time frame and cost. The safety payoff is a qualitative judgment of the effectiveness of the potential safety improvements. Each recommendation has a responsibility assigned to it stating whether MassDOT or the Town of Lexington would be responsible for implementing the recommended improvement. “Project” refers to improvements that are assumed to be included or could reasonably be accommodated as part of proposed improvements at the intersection. Costs provided for “Project” improvements are an order of magnitude estimate which estimates the cost of the improvement if completed independent of the project.

**Table 3. Potential Safety Enhancement Summary**

Safety Issue	Safety Enhancement	Responsibility	Safety Payoff	Time Frame	Cost
Lack of Traffic Control	Install STOP and Yield signs for the Maple Street approach.	Town	High	Short-term	\$1,000
Lack of Traffic Control, Excessive Delay, Pedestrian Accommodations, Visibility, Speeding	Improve control by considering installation of a traffic signal or roundabout. If a traffic signal is installed, it should include emergency preemption.	Project	High	Long-term	TBD
Narrow Lane Widths, Bicycle Accommodation	Widen Massachusetts Avenue between Marrett Road and Maple Street. This improvement is intended to specifically address the narrow lane widths of the existing two lane approach at Maple Street.	Town	Medium	Long-term	\$200,000
Pedestrian Accommodations, Visibility, Speeding	Reduce width of the Maple Street approach.	Project	High	Long-term	TBD
Bicycle Accommodations	Provide “Share The Road” signage along Massachusetts Avenue.	Town	Medium	Short-term	\$2,000
Pedestrian Accommodations	Provide W11-2 pedestrian warning signs with W16-7p arrow panels for the existing crosswalks at Plainfield Street and Tower Road.	Town	Medium	Short-term	\$3,000
Pedestrian Accommodations	Install handicap ramps for the crosswalk at Plainfield Street.	Town	Low	Short-term	\$10,000
Pedestrian Accommodations	Determine long-term strategies for pedestrian access. This improvement includes conducting pedestrian counts and studying pedestrian travel patterns.	Town/Project	Medium	Mid-term	TBD
Visibility	Relocate utility pole located within the existing circular island on Maple Street. (This improvement will be incorporated into other geometric improvements at the intersection.)	Town/Project	Medium	Long-term	*
Signage	Remove H1-2 object marker from the circular island.	Town	Low	Short-term	\$500
Bicycle Accommodation	Widen Massachusetts Avenue to provide bicycle accommodation.	Project	Medium	Long-term	TBD

**Table 3. Potential Safety Enhancement Summary**

Safety Issue	Safety Enhancement	Responsibility	Safety Payoff	Time Frame	Cost
Speeding	Enforce speed at and in the vicinity of the intersection.	Town	Medium	Short-term	\$0 (Reduced enforcement elsewhere)
Visibility	Trim hedges along the southeast corner of the intersection.	Town	Medium	Short-term	\$500
Service Station	Consider restricting left turns from the center service station driveway.	Town	Medium	Short-term	\$1,000
Emergency Signal	Install overhead signal heads with 12" LED lenses for the East Lexington fire station.	Town	High	Long-term	\$50,000 **
Emergency Signal	Replace ground-mounted signal heads with new heads with 12" LED lenses.	Town	Medium	Short-term	\$5,000 **

\* Improvements to be incorporated into the proposed project are assumed to be included as part of the overall project cost.

\*\* These safety issues and improvements were discussed at the audit, but are outside of the limits of the proposed reconstruction project.

## Appendix A. RSA Meeting Agenda

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# Agenda

## Road Safety Audit

Lexington

### Massachusetts Avenue at Maple Street

Meeting Location: Samuel Hadley Public Services Building, 201 Bedford Street, 2<sup>nd</sup> floor conference room, Lexington, MA

Tuesday, April 17, 2012

10:00 AM – 12:00 noon

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 – provided in advance
- Existing Geometries and Conditions

11:00 AM Site Visit

- Drive to the intersection of Mass. Ave at Maple St
- As a group, identify areas for improvement

11:30 AM Discussion of Potential Improvements

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

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

#### Instructions for Participants:

- Before attending the RSA on April 17th, 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

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## Appendix C. Detailed Crash Data

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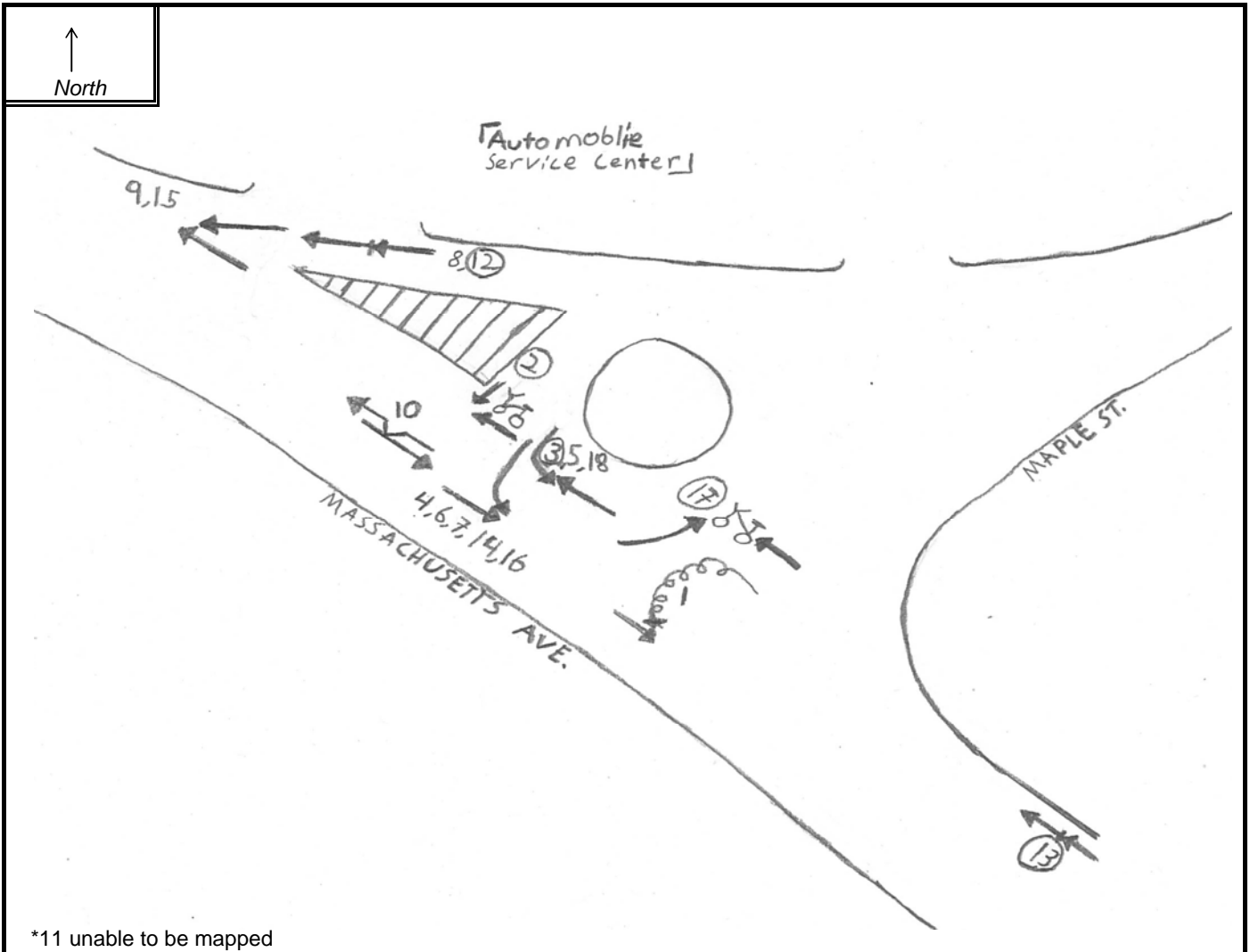
**Crash Count: 27**  
**Fatalities: 0**  
**Injured: 8**  
**Non-injured: 19**  
**EPDO: 59**  
**RPA: METROPOLITAN AREA PLANNING COUNCIL**  
**Municipality: LEXINGTON**  
**MassDOT District: 4**





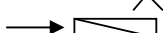

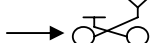
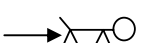



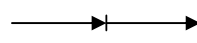

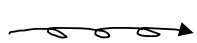
**Equivalent Property Damage Only (EPDO)**  
Less than 50  
50-150  
150-300  
More than 300  
[View on Google Fusion Tables](#)  
[Download the file](#)



## COLLISION DIAGRAM

CITY/TOWN : <u>Lexington</u>	DATE PREPARED: <u>Feb-12</u>	
REGION: <u>MAPC</u>	PREPARED BY: <u>D. Halpert &amp; D. Caiazzo</u>	
ROADWAY NAMES: <u>Maple Street and Massachusetts Avenue</u>		
TIME PERIOD ANALYZED: <u>1/1/09 - Dec. 2011</u>		
SOURCE OF CRASH REPORTS: <u>Lexington Police Department</u>		



SYMBOLS	TYPES OF CRASH	SEVERITY
 Moving Vehicle  Backing Vehicle  Non-Involved Vehicle  Pedestrian  Parked Vehicle  Fixed Object  Bicycle  Animal	 Head On  Angle  Turning Move  Rear End  Sideswipe  Out of Control	<p style="text-align: center;">○ Injury Accident</p> <p style="text-align: center;">● Fatal Accident</p>

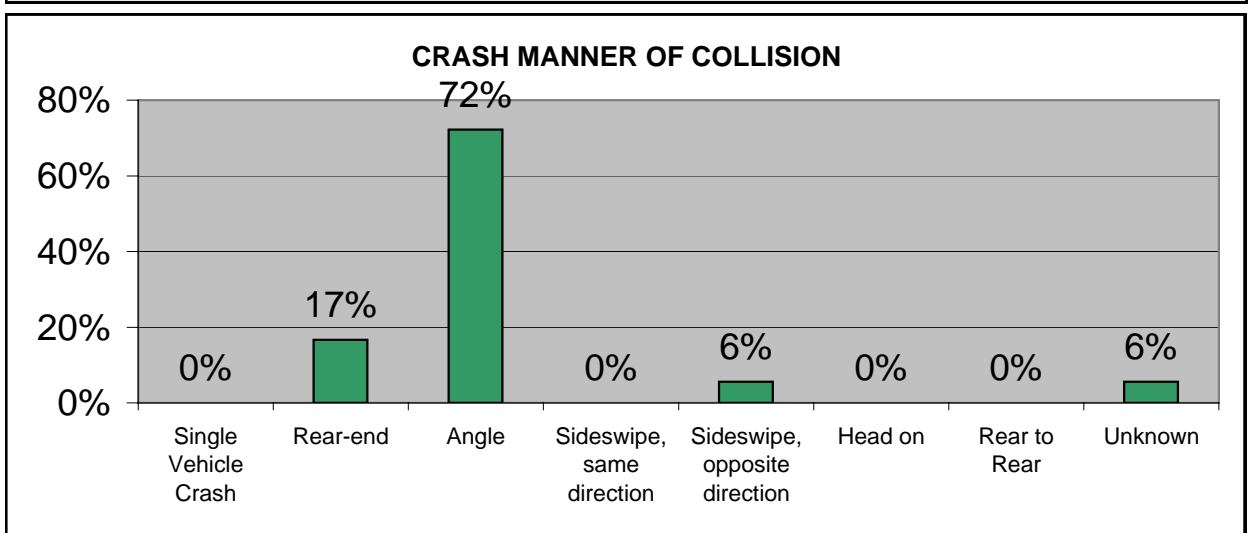
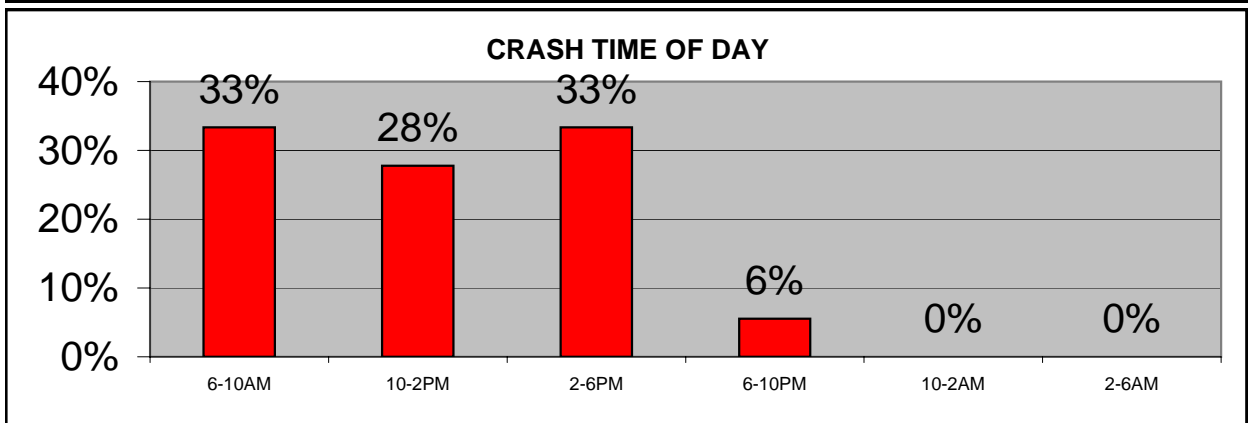
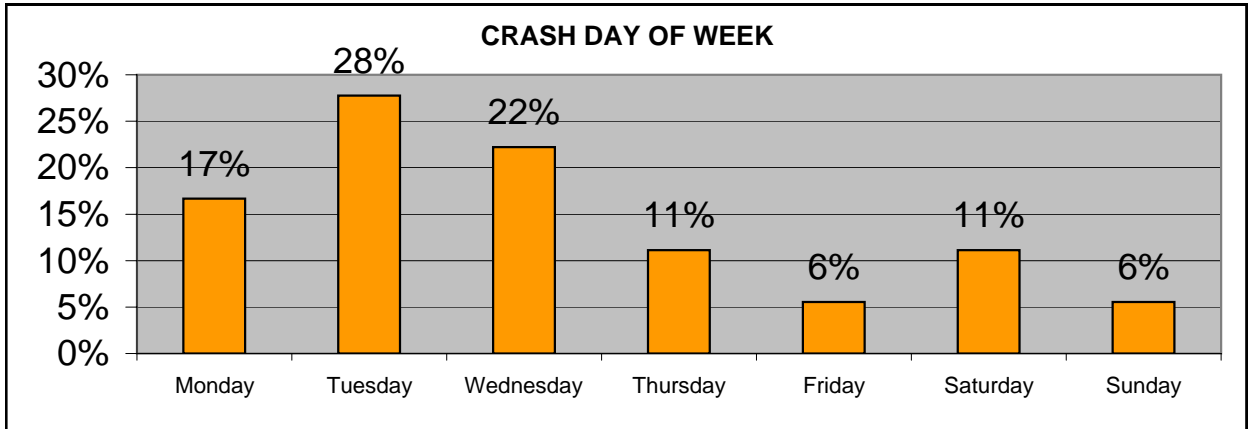
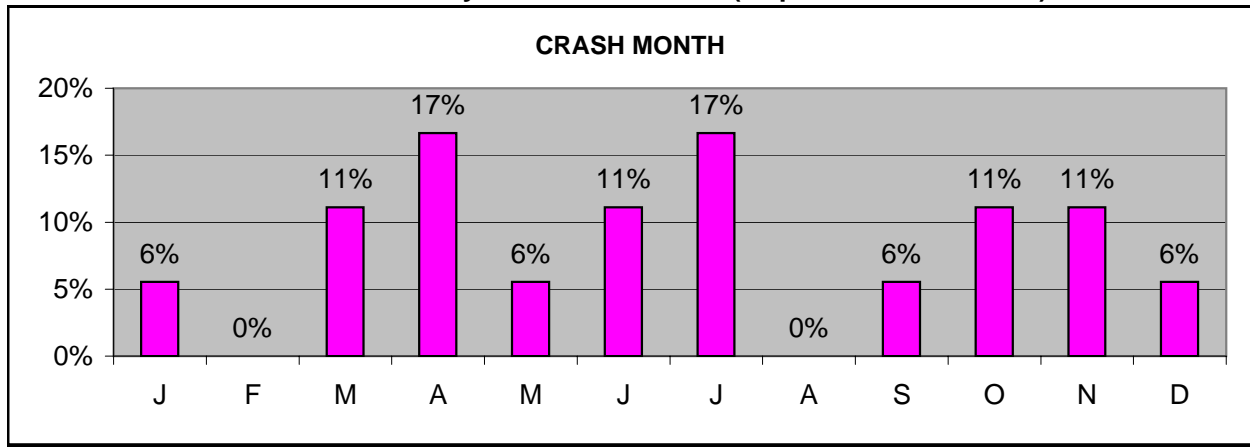
# Crash Data Summary Table

Intersection of Maple Street and Massachusetts Avenue; Lexington, MA  
January 2009 - December 2011

#	Crash Date	Crash Day	Time of Day	Manner of Collision	Light Condition	Weather Condition	Road Surface	Driver Contributing Code	Ages		Comments
1	3/2/09	Monday	3:17 PM	Angle	Daylight	Cloudy	Wet	Wrong side or wrong way	45	53	Out of control possibly due to wet roadway
2	3/15/09	Sunday	3:41 PM	Angle	Daylight	Clear	Dry	Inattention	66	41	
3	4/23/09	Thursday	12:33 PM	Angle	Daylight	Clear	Dry	Failed to yield to right of way	30	19	
4	6/10/09	Wednesday	3:43 PM	Angle	Daylight	Cloudy	Dry	Failed to yield to right of way	83	73	
5	7/1/09	Wednesday	10:24 AM	Angle	Daylight	Cloudy	Dry	Other improper action	16	47	
6	7/7/09	Tuesday	9:12 AM	Angle	Daylight	Rain	Wet	Failed to yield to right of way	45	38	
7	11/17/09	Tuesday	5:23 PM	Angle	Dark - lighted roadway	Clear	Dry	Operating Vehicle in erratic, reckless, careless, negligent, or aggressive manner	40	57	
8	4/19/10	Monday	12:35 PM	Rear-end	Daylight	Clear	Dry	Distracted	48	44	
9	6/14/10	Monday	9:47 AM	Angle	Daylight	Cloudy	Dry	Other improper action	19	48	Limited visibility
10	10/7/10	Thursday	9:13 AM	Sideswipe, opposite direction	Daylight	Cloudy	Dry	Unknown	25	34	
11	10/26/10	Tuesday	10:41 AM	Unknown	Daylight	Clear	Wet	Glare	82		Struck unknown object. Sun glare
12	12/15/10	Wednesday	8:33 AM	Rear-end	Daylight	Clear	Dry	Other improper action	25	50	
13	1/11/11	Tuesday	8:03 AM	Rear-end	Daylight	Clear	Dry	Followed too closely	41	38	Occurred at a crosswalk where pedestrian was crossing
14	4/12/11	Tuesday	5:45 PM	Angle	Daylight	Clear	Dry	Exceeded authorized speed limit	52	22	
15	5/13/11	Friday	8:03 PM	Angle	Dark - lighted roadway	Cloudy	Dry	Failed to yield to right of way	38	27	
16	7/27/11	Wednesday	5:48 PM	Angle	Daylight	Clear	Dry	No Improper Driving	55	27	
17	9/17/11	Saturday	8:36 AM	Angle	Daylight	Clear	Dry	Failed to yield to right of way	32	63	
18	11/19/11	Saturday	12:10 PM	Angle	Daylight	Clear	Dry	Failed to yield to right of way	33	86	

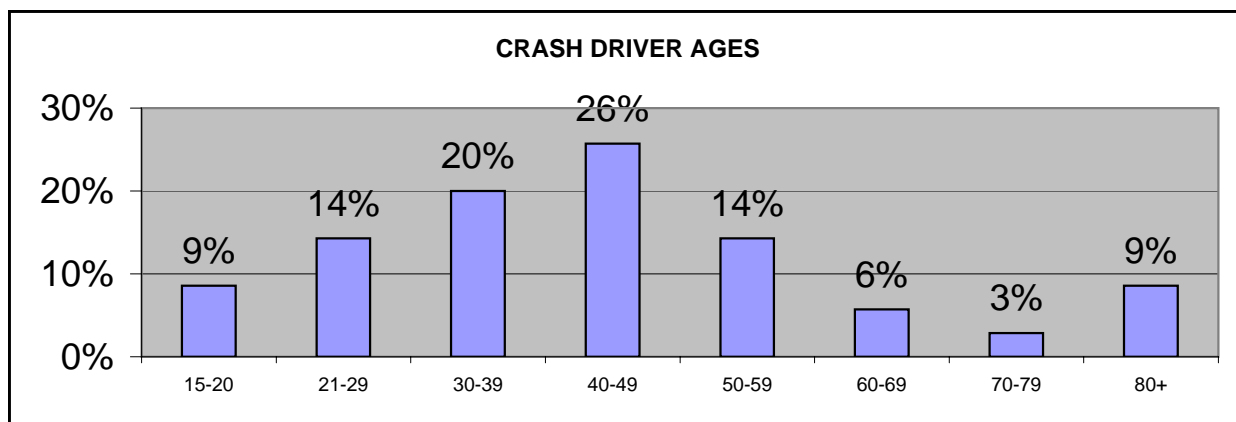
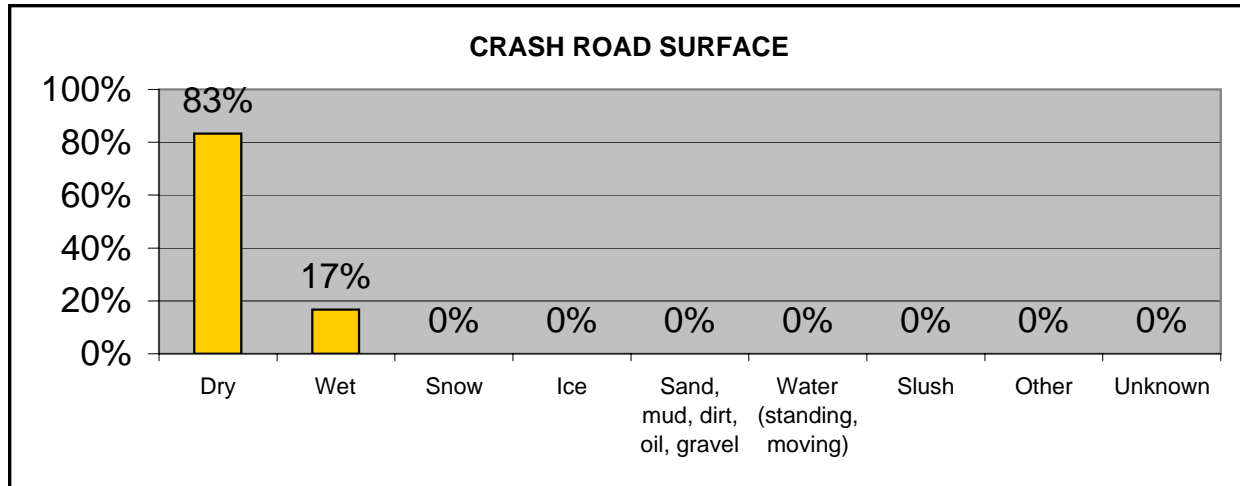
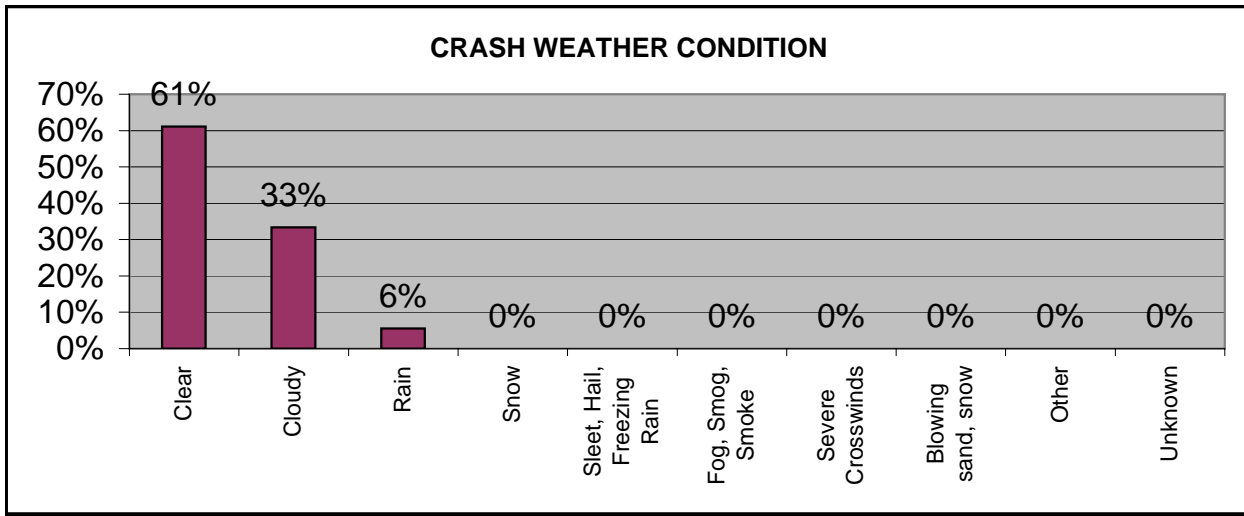
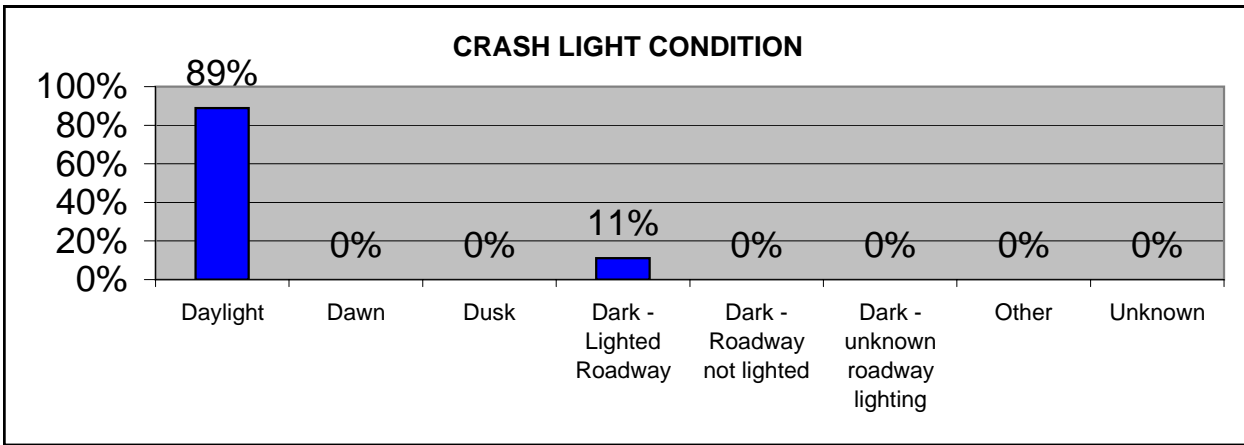
Summary based on Crash Reports obtained from the Lexington Police Department

**Crash Data Summary Tables and Charts (Maple St. & Mass. Ave.)**





**Crash Data Summary Tables and Charts (Maple St. & Mass. Ave.)**



## Appendix D. Speed Regulations

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THE COMMONWEALTH OF MASSACHUSETTS

DEPARTMENT OF PUBLIC WORKS

SPECIAL REGULATION GOVERNING THE SPEED OF MOTOR VEHICLES ON

TOWN WAYS, IN THE TOWN OF LEXINGTON

April 22, 1958

SPECIAL SPEED REGULATION NO. 158

Highway Location: LEXINGTON

Authority in Control: TOWN OF LEXINGTON

Name of Highway: Massachusetts Avenue, Bedford Street, Waltham Street, Woburn Street, Lowell Street, Watertown Street, Pleasant Street, Hancock Street, Adams Street, Lincoln Street, School Street, Spring Street, East Street, Grant Street and Wood Street

In accordance with the provisions of Section 18 of Chapter 90 of the General Laws (Ter. Ed.), as amended by Section 2 of Chapter 564 of the Acts of 1948, the following Special Speed Regulations made by the Board of Selectmen of the Town of Lexington shall be effective immediately upon compliance with the applicable provisions of the above-referenced Section 2.

The following designated speed limits are established at which motor vehicles may be operated in the areas described:

MASSACHUSETTS AVENUE-EASTBOUND

Beginning at Marrett Road (Route 2A),

thence easterly	0.13 miles	at 30 miles per hour			
thence	1.38 "	" " 35 "	" "	" "	" "
"	0.39 "	" " 30 "	" "	" "	" "
"	0.31 "	" " 25 "	" "	" "	" "
"	0.29 "	" " 30 "	" "	" "	" "
"	1.15 "	" " 35 "	" "	" "	" "
"	0.43 "	" " 30 "	" "	" "	" "
"	0.59 "	" " 35 "	" "	" "	" "

total distance being 4.67 miles. to the Arlington line; the

MASSACHUSETTS AVENUE-WESTBOUND

Beginning at the Arlington line,

thence westerly	0.59 miles	at 35 miles per hour			
thence	0.43 "	" " 30 "	" "	" "	" "
"	1.15 "	" " 35 "	" "	" "	" "
"	0.29 "	" " 30 "	" "	" "	" "
"	0.31 "	" " 25 "	" "	" "	" "
"	0.39 "	" " 30 "	" "	" "	" "
"	1.38 "	" " 35 "	" "	" "	" "
"	0.13 "	" " 30 "	" "	" "	" "

the total distance being 4.67 miles. to Marrett Road (Route 2A);

JUL 9 2007

THE COMMONWEALTH OF MASSACHUSETTS  
HIGHWAY DEPARTMENT  
TOWN OF LEXINGTON  
SPECIAL SPEED REGULATION # 158-C

Highway Location: LEXINGTON  
Authority In Control: TOWN OF LEXINGTON  
Name of Highway (s): MASSACHUSETTS AVENUE  
WALTHAM STREET  
BEDFORD STREET

In accordance with the provisions of Chapter 90, Section 18, of the General Laws (Ter. Ed.) as amended, the following Special Speed Regulation is

Hereby Adopted  
by the Board of Selectmen  
of the Town of Lexington

Special Speed Regulation number 158, dated April 22, 1958 is hereby amended on Massachusetts Avenue and Waltham Street as follows, and Special Speed Regulation 158-A, dated October 1, 1973 is hereby amended by striking out the regulation in its entirety and inserting in place thereof the following revisions and addenda:

That the following speed limits are established at which motor vehicles may be operated in the areas described:

**MASSACHUSETTS AVENUE - EASTBOUND**

*By striking out the clauses reading:*  
0.39 miles at 30 miles per hour  
0.31 miles at 25 miles per hour  
0.29 miles at 30 miles per hour

*And inserting in place thereof:*  
0.26 miles at 30 miles per hour  
0.57 miles at 25 miles per hour  
0.16 miles at 30 miles per hour

**MASSACHUSETTS AVENUE - WESTBOUND**

*By striking out the clauses reading:*

- 0.29 miles at 30 miles per hour
- 0.31 miles at 25 miles per hour
- 0.39 miles at 30 miles per hour

*And inserting in place thereof:*

- 0.16 miles at 30 miles per hour
- 0.57 miles at 25 miles per hour
- 0.26 miles at 30 miles per hour

**WALTHAM STREET – NORTHBOUND**

*By striking out the clause reading:*

0.31 miles at 30 miles per hour to Massachusetts Avenue; the total distance being 2.54 miles.

*And inserting in place thereof:*

0.24 miles at 30 miles per hour  
0.07 miles at 25 miles per hour ending at the junction of Massachusetts Avenue;  
the total distance being 2.54 miles.

**WALTHAM STREET – SOUTHBOUND**

*By striking out the clause reading:*

Beginning at Massachusetts Avenue, thence southerly  
0.31 miles at 30 miles per hour

*And inserting in place thereof:*

Beginning at the junction of Massachusetts Avenue, thence southerly on Waltham Street  
0.07 miles at 25 miles per hour  
0.24 miles at 30 miles per hour