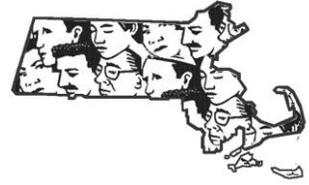


MA FACE

Occupational Fatality Report



Municipal Crossing Guard Fatally Injured When Struck by a Motor Vehicle – Massachusetts

Release Date: May 9, 2016
Investigation: # 14-MA-036-01

Massachusetts Department of Public Health
Occupational Health Surveillance Program

SUMMARY

On December 15, 2014 a 76-year-old female municipal crossing guard (victim) was fatally injured when she was struck by a motor vehicle while working at unsignalized pedestrian crosswalks within a T-shaped intersection. The victim had just finished crossing a student and stepped into the roadway to get across the street when she was struck by a sport utility vehicle (SUV). The SUV immediately stopped after striking the victim and stayed at the scene. A call was placed for emergency medical services (EMS). EMS and local police arrived within minutes and transported the victim to a local hospital where she died later that same day.

Contributing factors identified in this investigation were outdated traffic control signage to warn motorists of crosswalk location, crosswalk markings were starting to fade, and parking was permitted within 20 feet of crosswalks.

The Massachusetts FACE Program concluded that to prevent similar occurrences in the future, municipalities should:

- **Ensure that, at a minimum, crosswalk traffic control signage meets the standards set forth in the *Manual on Uniform Traffic Control Devices* (MUTCD);**
- **Provide crossing guards with American National Standards Institute compliant high-visibility safety apparel and MUTCD compliant STOP paddles to help ensure they're visible to motorists while working along roadways;**
- **Consider additional measures to ensure crosswalks at unsignalized intersections and mid-block locations are clearly visible to motorists;**
- **Ensure that crossing guards are provided with initial training and annual refresher training; and**
- **Provide work environments for employees that, at a minimum, meet all relevant Occupational Safety and Health Administration (OSHA) regulations and industry accepted standards of practice per the Department of Labor Standards policy.**



INTRODUCTION

On December 18, 2014, the Massachusetts FACE Program was alerted by the local media that three days earlier a female municipal crossing guard had died from injuries sustained when she was struck by a motor vehicle. An investigation was initiated. On December 22, 2014, representatives from the Massachusetts FACE Program and the Massachusetts Department of Labor Standards (DLS) traveled to the incident location and met with the municipal police and school department representatives to discuss the incident. The police report and death certificate were reviewed during the course of the investigation. Photographs were taken of the incident location.

EMPLOYER

The employer is a municipal school department for a Massachusetts city with more than 28,000 residents. The department employs 18 crossing guards that are assigned throughout the city to help students cross roadways on their way to and from the city's nine public schools. The city's crossing guards work two relatively short shifts, Monday through Friday, one in the morning when student are commuting to school and one in the afternoon when school is dismissed for the day. The city's crossing guards did not have union representation.

WRITTEN SAFETY PROGRAMS AND TRAINING

At the time of the incident, the department did not have a written safety and health program. It was reported that the department did have some basic procedures for crossing guards and that the department would provide the crossing guards with a review of these procedures. New hires were also provided with a review of these same basic procedures and a brief review of the assigned location at time of hire. New hires were also checked on during their shifts for the first few days on the job. The department provided crossing guards with high-visibility vests and gloves, but STOP paddles were not provided. The high-visibility vests provided to crossing guards were American National Standards Institute (ANSI) Class 2 compliant.

VICTIM

The victim was a 76-year-old female municipal worker and had been employed as a crossing guard by the school department for about 10 years. She had become a crossing guard after retiring from her lifetime occupation. The location where the victim was assigned to cross on the day of the incident was her regularly assigned location.

INCIDENT LOCATION

The school closest to the crosswalks that the victim was assigned was an elementary school for students in kindergarten through fifth grade. This school was located in a suburban setting and was primarily surrounded by single family houses. The school was one block away from a busier downtown setting. The roadway in front of the school was a side street that ran primarily east and west and had two travel lanes, one lane for each direction of travel. The travel lanes were divided by painted solid double yellow line and there were no other roadway markings. This roadway ran perpendicular to a main roadway.

The victim's assigned location was within the busy downtown area on the main roadway, which ran north and south. This area consisted of a four lane median divided asphalt roadway that was straight and flat in this area. The median was a wide grassy area with some trees. Both the northbound and southbound travel lanes had the same design: two same direction travel lanes divided by painted dashed white lines. Along both the outer right and left-hand sides of the roadway was parallel parking with white roadway marking designating each parking space. On the outer edge of each parking lane there was granite curbing and then sidewalks (Figure 1).

One of the two crosswalks to which the victim was assigned traversed the two northbound travel lanes and the two parking lanes making up the main roadway. These parallel parking spaces on the main roadway abutted the crosswalk (Figure 2). The second crosswalk the victim was responsible for traversed a side street that perpendicularly intersected the main roadway (Figure 3). This side street was parallel to and one block north of the side street on which the school was located.

This intersection with the two crosswalks was unsignalized and the crosswalks formed an L-shaped area that the victim was responsible for (Figure 1). Each crosswalk was made up of two white painted parallel lines with white diagonal center lines. These painted crosswalk markings were fading and in the need of being repainted. The speed limit for the main roadway was an unmarked 30 miles per hour (MPH), which is in accordance with Massachusetts General Laws, Chapter 90, Section 17, Speed Limits for a thickly settled business district.

The crosswalk that traversed the northbound lanes of the main roadway contained the following signage on both sides of the roadway: a non-fluorescent yellow diagonal pedestrian crossing sign with a yellow downward pointing arrow, and a florescent yellow-green state law yield to pedestrian within crosswalk sign. In addition, the right-hand side of the roadway also contained a non-fluorescent yellow school zone sign behind the other sign assembly (Figure 2). There was no signage to warn of the crosswalk that traversed the side street at this intersection.

A convenience store was located at the intersection, next to both the crosswalk on the northbound travel lanes of the main roadway and the crosswalk for the side street. During the site visit, multiple vehicles stopped and parked to patronize this location (Figure 4).

INVESTIGATION

The incident occurred around 7:50 a.m. on a Monday. At the time of the incident it was 29 degrees Fahrenheit, overcast and there was no wind. The victim arrived at her assigned location and parked her car on the main roadway, within the parallel parking on the left-hand side of the northbound travel lane. The victim was wearing a yellow-green ANSI Class 2 high-visibility vest and was also wearing yellow-green high-visibility mittens while performing her job (Figure 5).

Immediately before the incident, the victim was standing on the north side of the side street when a student walked up to her to cross the side street. The victim stepped into the side street and an approaching car that was traveling west on the side street stopped as she crossed the student within the crosswalk (Figure 3). Once the student was across the side street and on the side walk,

it was reported that the victim then turned and started to walk across the main roadway to the location of her parked car potentially without looking for additional moving vehicles.

As the victim was crossing the street outside of the crosswalk there was an SUV that was traveling in the left-hand northbound travel lane. The driver of the SUV hit the vehicle's brakes and tried to avoid the victim, but the left front side of the SUV struck the victim. The victim was thrown multiple feet and landed on the roadway. The driver of the SUV immediately stopped. A passenger of the car that was stopped on the side street placed a call for emergency medical services (EMS). EMS and local police arrived within minutes and transported the victim to a local hospital where she was pronounced dead.

Since the investigation, the municipality has implemented multiple changes. The crosswalks have been repainted and parking has been eliminated with 20 feet of the crosswalk. In addition, the crossing guards have been provided training and STOP paddles.

CONTRIBUTING FACTORS

Occupational injuries and fatalities are often the result of one or more contributing factors or key events in a larger sequence of events that ultimately result in the injury or fatality. The Massachusetts FACE team identified the following contributing factors in this incident.

- Outdated traffic control devices at the crosswalk location to warn motorists of the crosswalk location.
- Crosswalk markings were starting to fade.
- Parking was allowed within 20 feet of the crosswalks.

CAUSE OF DEATH

The medical examiner listed the cause of death as multiple blunt force injuries.

RECOMMENDATIONS/DISCUSSION

Recommendation #1: Municipalities should ensure that, at a minimum, crosswalk traffic control signage meets the standards set forth in the *Manual on Uniform Traffic Control Devices (MUTCD)*.

Discussion: The U.S. Department of Transportation's (DOT) *Manual on Uniform Traffic Control Devices (MUTCD)* sets forth the basic principles that govern the design and usage of traffic control signs and devices.¹ Part 7 of the MUTCD is specifically about traffic control devices within school areas and includes a section on crosswalk marking. Municipalities should follow the MUTCD minimum standards and guidelines to help ensure pedestrian safety as related to crosswalks, proper usage of crosswalk roadway markings, and signage. These standards and guidelines will help determine the appropriate number and location of roadway markings and traffic control devices, including signs.

In this case, prior to the incident, traffic control signage was present at the crosswalk location, although not all of the signage was in compliance with the MUTCD. Some of the signage was in compliance and had the fluorescent yellow-green background and some of the signage was not in compliance and had a non-fluorescent yellow background (Figure 3). The crosswalk roadway markings were fading. On-street parallel parking was allowed within 20 feet of the crosswalk and on both sides of the roadway (Figure 3), which is prohibited by the MUTCD. These conditions would possibly contribute to a motorists' decreased visibility of the crosswalks.

The following should be addressed in order to make the crosswalk, and therefore crossing guards, students, and other pedestrians using the crosswalk, more visible to motorists:

- Install permanent MUTCD compliant fluorescent yellow-green signage at all crosswalk locations. Routinely review crosswalk signage for compliance with the MUTCD and any damage; replace signage as needed.
- Ensure painted crosswalks are highly visible and in good condition. The crosswalk where the victim was struck consisted of two white parallel lines with center diagonal lines. Although this style of crosswalk roadway marking is a good option for motorist visibility, the crosswalk markings were starting to fade. Crosswalks and other roadway marking should be routinely evaluated to ensure they are not faded and are in good condition.
- Prohibit parking and standing of any motor vehicles within 20 feet of both sides of crosswalks. No parking and no stopping signs and roadway markings should be used. As in this case, when vehicles are allowed to park or stop on both sides of the street and on both sides of the crosswalk, these vehicles can block both the pedestrian's view of oncoming traffic and the motorist's view of pedestrians trying to enter the crosswalk. In addition, vehicles parked immediately after a crosswalk might distract the motorists as they drive through the area.
- Provide portable in-street pedestrian crossing signs to crossing guards. The use of portable in-street pedestrian crossing signs during the crossing guards' shifts would give an added warning to motorists of crosswalk locations where students will be crossing the roadway. The crossing guards could put the in-street signs in the center of the roadway at the beginning of their shift and remove them at the end of their shift. This would help keep the signs conspicuous for motorists.

Recommendation #2: Municipalities should provide crossing guards with American National Standards Institute compliant high-visibility safety apparel and MUTCD compliant STOP paddles to help ensure they're visible to motorists while working along roadways.

Discussion: One of the hazards crossing guards face while working is being struck by a moving vehicle. Their work positions them in and around roadways, bringing them in close proximity to motor vehicle traffic usually with no barriers between them and the moving vehicles. Crossing guards should be provided with the appropriate personal protective equipment (PPE), such as the vests that were provided to the victim and other crossing guards in this municipality. The ANSI Class 2 high-visibility garments are intended for use where greater visibility is necessary during inclement weather conditions and when activities occur near roadways where traffic speeds

exceed 25 miles per hour.² The *Manual on Uniform Traffic Control Devices* (MUTCD) states that all workers exposed to the risks of moving roadway traffic or construction equipment should wear high-visibility safety apparel.¹ The MUTCD refers to the latest ANSI standards for High-Visibility Safety Apparel (ANSI/ISEA 107-2015).²

The MUTCD also recommends STOP paddles as the primary hand signaling device for crossing guards.¹ In this case, crossing guards were not supplied with STOP paddles. The STOP paddles should be provided and should be lightweight and portable. According to the MUTCD, STOP paddles should be a red octagon that is at least 18 inches in size with a white border. The word STOP should be on both sides of the paddle and spelled out in at least 6-inch upper case white letters. The paddles should be retroreflectorized or illuminated when used during hours of darkness. Light-emitting diode (LED) illuminated flashing STOP paddles are available and can increase the range the paddle can be visible, day or night, which should result in drivers noticing them further in advance than conventional STOP paddles.³

Municipalities should have crossing guards participate in the selection of PPE and equipment to ensure that the PPE and equipment will meet their needs as the users. After the PPE and equipment has been in service, an evaluation should be performed to ensure that the PPE and equipment is best suited for the worker using the equipment to complete their task.

Recommendation #3: Municipalities should consider additional measures to ensure crosswalks at unsignalized intersections and mid-block locations are clearly visible to motorists.

Discussion: Crosswalks located at unsignalized intersections and mid-block locations (locations between intersections) present some additional design challenges when compared to crosswalk locations at signalized intersections. This is in part due to motorists often not expecting pedestrians to be crossing at these unsignalized intersections and mid-block locations. Therefore, it is important to give motorists as much advanced notice as possible of crosswalks. Implementing additional traffic control devices at these locations will help keep crossing guards and pedestrians safe.

The following are some additional options to help increase the visibility of crosswalks to motorists and to alert motorists that they are approaching a crosswalk (not all apply to this incident):

- In-pavement roadway warning light systems. The lights for these systems are embedded in the roadway pavement along each side of the crosswalk.³
- Raised crosswalks. These bring the crosswalk within the roadway up to the level of the sidewalk. Raised crosswalks improve the visibility of the crosswalk and pedestrian, and act as a speed hump, resulting in reduced vehicle speeds.⁴
- Rectangular Rapid Flash Beacons (RRFB).⁴ These permanent crosswalk signs have flashing lights that are pedestrian-activated and should be used at unsignalized intersections and mid-block pedestrian crosswalks.

- Pedestrian Hybrid Beacons, also known as the High intensity Activated crossWalk (or HAWK). This pedestrian-activated light system should only be used at mid-block pedestrian crossings. The system consists of two red lights above a single yellow light, for motorists and a walk and don't walk symbol for pedestrians.⁵
- Trim vegetation in the area to ensure that it is not blocking motorists' views of the crosswalk.
- In winter months, ensure that crosswalks are free of snow and ice.

The municipality had installed a RRFB a couple of blocks up from where the incident occurred. The installation location of the RRFB was at an unsignalized crosswalk in front of a post office. Consideration should be giving to installing additional RRFBs at other unsignalized intersection and mid-block crosswalk locations within the downtown and other areas with heavy pedestrian and vehicle traffic.

Recommendation #4: Municipalities should ensure that crossing guards are provided with initial training and annual refresher training.

Discussion: Reportedly there were basic procedures for crossing guards and the department provided crossing guards and newly hired crossing guards with a review of these procedures. Municipalities should develop a formal classroom training for crossing guards that includes verbal instruction, written materials and videos, and pre- and post-tests. The classroom training should be followed by on-the-job training where crossing guards will demonstrate their ability to perform the job. Then crossing guards should be provided with annual refresher trainings.

Trainings should include, but not be limited to, these following safe work practices. Crossing guards should: make eye contact with motorist; wait for traffic gaps before entering crosswalks; and confirm all vehicles have stopped before entering the crosswalk. These steps should be adhered to at all times when crossing a roadway. In addition, it should be made clear that crossing guards should not: talk and text on cell phones, direct traffic, cross students when a traffic light is green (when assigned to a signalized intersection), stand in the roadway while traffic is moving past, or park personal vehicles in a location that obstructs motorists' view.⁶

Training materials should be routinely reviewed and updated. This will ensure that all trainings are updated to include newly recognized hazards and newly implemented equipment. Crossing guards should be included in the process of reviewing and updating the training materials. In addition, a review of the materials and training should be performed after an incident or near-miss incident. Mandatory trainings, held during normal working hours or not, should be paid time for attendees.

Recommendation #5: Municipalities should provide work environments for employees that, at a minimum, meet all relevant Occupational Safety and Health Administration (OSHA) regulations and industry accepted standards of practice per the Department of Labor Standards policy.

Discussion: The federal Occupational Safety and Health Act require private sector employers to provide workplaces that are free from recognized hazards likely to cause death or serious

physical harm to employees. While public sector employees in Massachusetts are not covered by federal OSHA, in most cases OSHA regulations still apply. Massachusetts executive branch state agencies must comply with OSHA regulations to protect state workers as required by Massachusetts General Law Chapter 149 Section 6½. This law that extends OSHA protection to these state workers is enforced by the Massachusetts Department of Labor Standards.

In this case, the incident involved a municipal public sector workplace. The Massachusetts Department of Labor Standards (DLS), in accordance with Chapter 149 Section 6, is charged with inspecting municipal workplaces and determining what procedures and practices are required to protect municipal workers.⁷ As a matter of policy, DLS utilizes OSHA regulations, standards set forth in the MUTCD, as well as other consensus standards such as those developed by the American National Standards Institute (ANSI), as a basis for its inspections and in determining whether proper procedures are being followed to protect municipal workers.

Municipalities should work together to help ensure that crossing guards are being provided workplaces that are free from recognized hazards likely to cause death or serious physical harm. In this case, the school department, as the employer, has the greatest responsibility to ensure the safety of crossing guards, but individual schools and police departments also have important responsibilities to ensure the safety of the crossing guards, which in turn will help ensure the safety of the students while getting to and from their schools.

ADDITIONAL RESOURCES

MA FACE Safety Alert: Protect the Crossing Guards that Protect Our Children. August 2015.
www.mass.gov/eohhs/docs/dph/occupational-health/face-facts/crossing-guards-legal.pdf

MA DLS. Recommendations for Crossing Guard Safety. January 2013.
www.mass.gov/lwd/docs/dos/occupational-safety/crossing-guard-safety-bulletin.pdf

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<http://mutcd.fhwa.dot.gov/pdfs/2009/part7.pdf>. Date accessed: 8/27/2015.
2. ANSI/ISEA 2015. American National Standards Institute for high-visibility safety apparel. New York, NY: American National Standards Institute, ANSI/ISEA 107 -2015.
3. ATSSA 2006. Putting Safety in the Safe Routes to School Program. A School Administrator's Guide. American Traffic Safety Services Association. www.atssa.com/galleries/default-file/SRTSAdminGuide.pdf. Date accessed: 8/27/2015.
4. US DOT 2009. Rectangular Rapid Flash Beacons (RRFB).
http://safety.fhwa.dot.gov/intersection/conventional/unsignalized/tech_sum/fhwasa09009/. Date accessed: 8/27/2015.

5. US DOT 2012. Pedestrian Hybrid Beacon.

http://safety.fhwa.dot.gov/provencountermeasures/fhwa_sa_12_012.cfm. Date accessed: 8/27/2015.

6. MA DLS 2013. Crossing Guard Safety Tips for Supervisors.

www.mass.gov/lwd/docs/dol/crossingguard1-nov-2013.ppt

7. Massachusetts General Laws, Chapter 149: Section 6. Safety devices and means to prevent accidents and diseases generally.

Figure 1 – Aerial view of the incident location and surrounding area



Figure 2 – Street view of crosswalks within the intersection where the victim was struck



Figure 3 – Street view of side street crosswalk that the victim crossed with the student before the incident



Figure 4 – Street view of intersection where victim was struck with vehicles parked on both sides of the street



Figure 5 – Example of an ANSI Class 2 high-visibility vest

