
American Council of Engineering Companies of Massachusetts:

Vulnerable User Legislation

MassDOT Chief Safety Officer, Pat Lavin – February 1, 2024

What is a Vulnerable User?

Acts (2022) Chapter 358 - An Act to Reduce Traffic Fatalities

Massachusetts law defines a “vulnerable user” as:

A pedestrian, including a person engaged in work upon a way or upon utility facilities along a way or engaged in the provision of emergency services within the way; (ii) a person operating a bicycle, handcycle, tricycle, skateboard, roller skates, in-line skates, non-motorized scooter, wheelchair, electric personal assistive mobility device, horse, horse-drawn carriage, motorized bicycle, motorized scooter, or other micro-mobility device, or a farm tractor or similar vehicle designed primarily for farm use; or (iii) other such categories that the register may designate by regulation.

Why this matters – two residents, ten years apart



Christopher Weigl

- Christopher, 23 was a photography graduate student at BU
- Riding in bike lane with the green light, truck turned right across the bike lane and slid under the truck
- This death launched City of Boston's side guard program



- Sidney was 5-years old
- With family crossing street in the crosswalk when truck driver over-ran her
- Driver was following signals, unaware of child crossing in-front of truck



Girl, 5, dies after being hit by tractor-trailer in Andover

By Teddy Tauscher | ttauscher@eagletribune.com May 10, 2023



“Simple safety features, like cross-view mirrors that are now required on state-owned trucks in Massachusetts...could have saved Sidney’s life,” the family said. “The solutions to these problems exist. We just need to implement them.”

Overview of Legislative Requirements

Overview of Truck Safety Device requirements in Chapter 358 of the Acts of 2022

- A motor vehicle, trailer, semi-trailer or semi-trailer unit classified as a **class 3 or above by the Federal Highway Administration, with a gross vehicle weight rating of 10,001 pounds or more**, that is leased or purchased by the commonwealth on or after January 1, 2023, shall be equipped with a lateral protective device, convex mirrors, cross-over mirrors and backup cameras.
- A motor vehicle, trailer, semi-trailer or semi-trailer unit classified as a class 3 or above by the Federal Highway Administration, with a gross vehicle weight rating of 10,001 pounds or more, that is leased or purchased by the commonwealth on or after January 1, 2025, or **operated under a contract with the commonwealth on or after January 1, 2025**, shall be equipped with a lateral protective device, convex mirrors, crossover mirrors and backup cameras.
- The registrar shall adopt regulations establishing standards, consistent with the United States Department of Transportation John A. Volpe National Transportation Systems Center's side guard standard DOT-VNTSC-OSTR-16-05, and specifications for the size, design and mounting of lateral protective devices, convex mirrors and cross-over mirrors. The registrar may provide alternative means of compliance with the convex mirror, cross-over mirror and lateral protective device requirements.... A contractor's failure to comply with this paragraph may be grounds for termination of the contract and may be punishable by a fine of not more than \$500 for the first offense and not more than \$1,000 for a second or subsequent offense

IMPACT - Crash Portal Data

- Transparent & Public Facing Data
- Has 60,00 users
- Changes to the crash form will allow for better analysis of Vulnerable Road User (VRU) Crashes

Reported Crashes YTD
80,563
As of: Tue Sep 12 2023

Reported Fatalities YTD (FARS)
233
As of: Tue Sep 12 2023

Reported Pedestrian Crashes YTD
1,078
As of: Tue Sep 12 2023

Reported Bicyclist Crashes YTD
799
As of: Tue Sep 12 2023

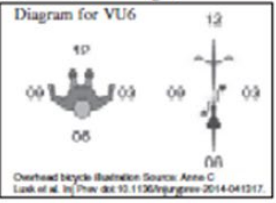
Reported Crash Severity By Year (CDS)
As of: Tue Sep 12 2023

Reported Ages of Drivers in Crashes YTD
18,651 drivers with ages unknown
As of: Tue Sep 12 2023

IMPACT - Crash Portal Data

Adding new fields to the crash form and IMPACT (crash data portal)

Please complete a section for each vulnerable user involved in the crash.

Vulnerable User		Type	VU1	Action	VU2	Location	VU3	
VU: _____ <small>Last First Middle</small> Address _____ City _____ State _____ Zip _____ License # _____ St _____ DOB/Age _____		Primary Injury Area: <input type="text" value="VU7"/>		Event Sequence <input type="text" value="VU8"/> <input type="text" value="VU8"/> <input type="text" value="VU8"/> <input type="text" value="VU8"/>		Test Status: <input type="text" value="VU11"/> Type of Test: <input type="text" value="VU12"/> BAC Test Result: <input type="text" value="VU13"/> Susp. Alcohol: <input type="text" value="VU14"/> Susp. Drug: <input type="text" value="VU15"/>		
Traffic Control Device: <input type="text" value="VU4"/> Origin/Destination: <input type="text" value="VU5"/> Contact Point: <input type="text" value="VU6"/>				Contributing Code: <input type="text" value="VU9"/> <input type="text" value="VU9"/> Distracted by: <input type="text" value="VU10"/> <input type="text" value="VU10"/>				
	Sex	VU16 Seat Pos.	VU17 Safety Equipment	VU18 Eject Code	VU19 Trap Code	VU20 Injury Status	VU21 Transp. Code	Medical Facility
Vulnerable User								

The Four Safety Elements

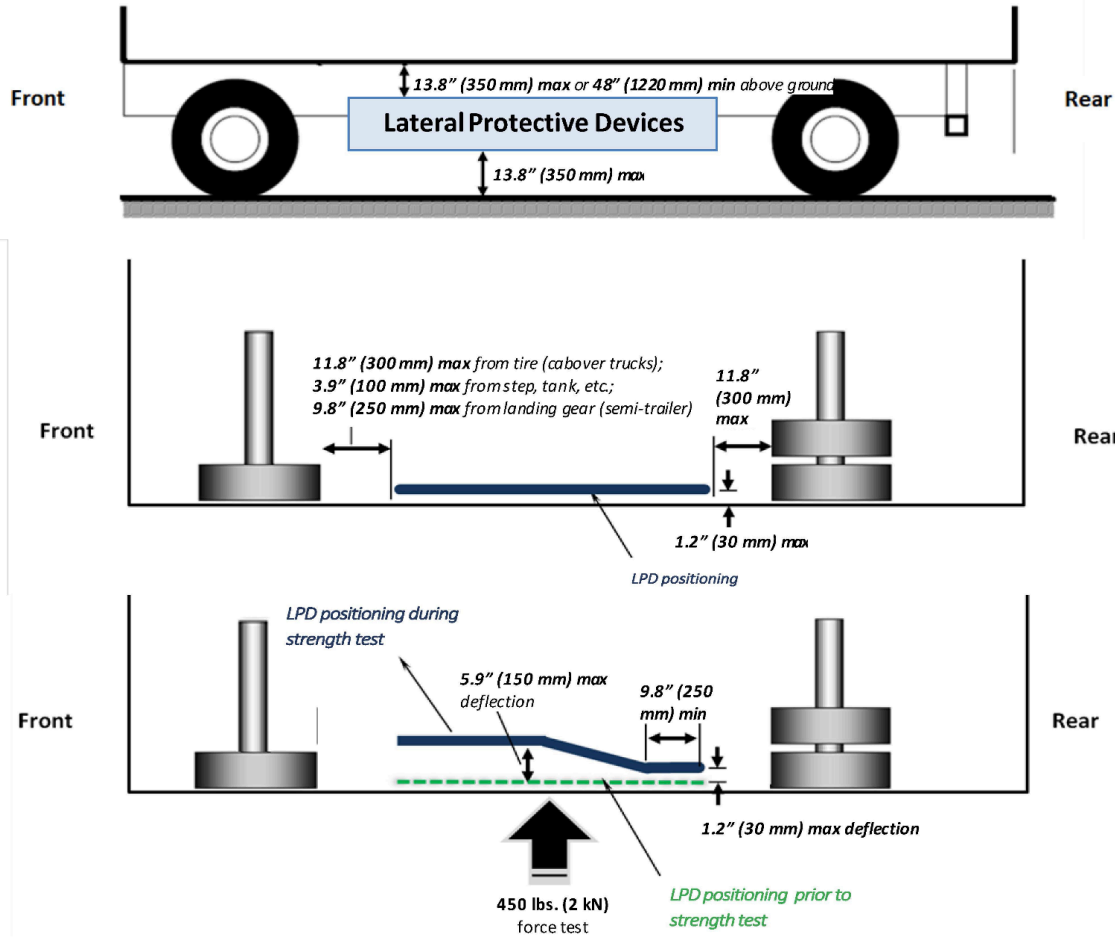
1. Side Guards (Lateral Protective Devices)

2. Cross Over Mirrors [*for front blind zones*]

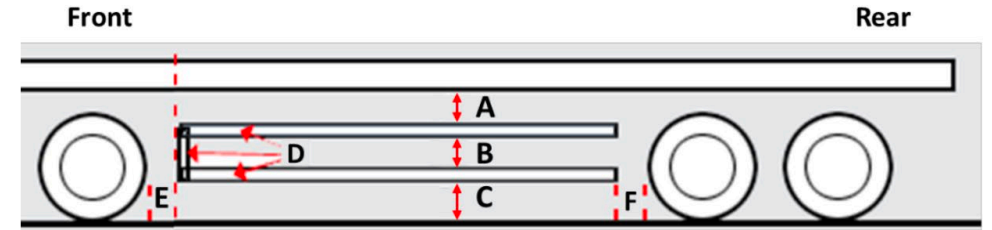
3. Convex Mirrors [*for side blind zones*]

4. Back-up Cameras

USDOT Best Practice Standard for Lateral Protective Devices (LPDs or Side Guards)



Additional dimensional criteria for rail-style LPDs



A	13.8 inches (350 mm) max
B	11.8 inches (300 mm) max
C	13.8 inches (350 mm) max
D	3.9 inches (100 mm) min
E	11.8/3.9 inches (300/100 mm) max*
F	11.8 inches (300 mm) max

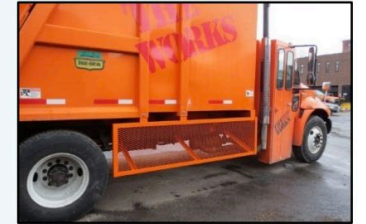
TRUCK SIDE GUARD MODELS



Airflow Deflector Side Guard



Steel or Aluminum Rail Side Guard



Steel Mesh Side Guard

Cross-Over & Convex Mirrors

Currently has no standard for which vehicles need cross over mirrors at the federal level, but New York State has had a law since 2013 on large trucks. The standard set in New York City is for a 3ft person to be visible.



Cross Over Mirrors enable the driver to see:

- Anything at least 3 feet tall.
- Anything passing one foot in front of the vehicle
- The entire width of the front of the truck.

Convex mirrors are used for side blind spots.

Back-up Cameras

Federal Motor Vehicle Safety Standards (FMVSS) No. 111 - as a blueprint

- Applies to all new vehicles **under** 10,000lbs as of May 1, 2018
- Requires a rearview camera system
- Must have a field of view that includes 10-foot by 20-foot zone directly behind the vehicle
- There are specified minimum dimensions for the in-cabin screen
- Must activate when the vehicle is put in reverse

There is no current federal regulation requiring back-up cameras for Class 3+ vehicles

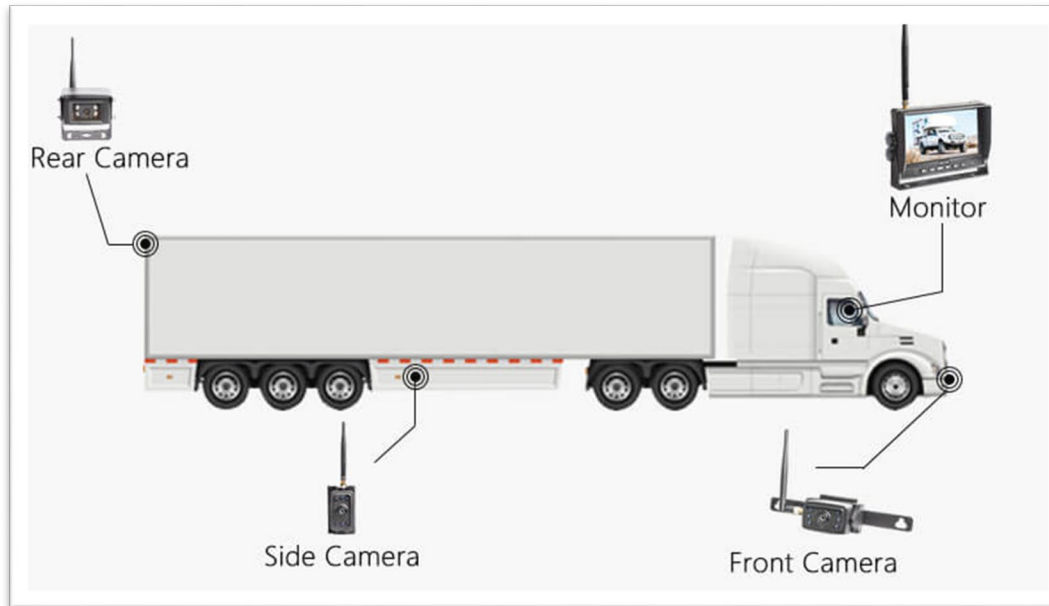


Image Source: Haloview, an aftermarket camera

MassDOT Objectives

1

Minimize our risk of harming people in this way. We want to minimize the potential for any of our vehicles, or those we are contracting with, to cause serious injury or death to anyone on our roadways. Given the evidence base and the availability of safety countermeasures for vehicles, it is imperative that we act.

2

Achieve compliance with a legislative requirement. We want to ensure that we are responsive in delivering to a high standard the requirements as outlined in Sections 9 and 10 of Chapter 358 of the Acts of 2022, sometimes referred to as the Act to Reduce Traffic Fatalities or the Vulnerable Road User law.

3

Show national leadership. We know Massachusetts has a long and proud history of setting “firsts”. Through this work, we want to set an example for other state DOTs, as well as encourage industry players (like large fleet managers and original equipment manufacturers) to critically consider their roles in safer roads via safer vehicles.

4

Demonstrate high capacity for cross-Secretariat, complicated implementation of a safety initiative. With MassDOT in the Project Management lead, we will show competence in setting sound implementation standards that are replicable across state agencies. We will demonstrate an ability to be collaborative, creative, proactive, and forward-thinking.

Questions