OSHA

Department of Labor Standards

OSHA Region I - Cooperative and State Programs
Preventing Backover Injury Training/Inspection
"Mirror Check"

Braintree Area Office	
Date:	*Tuesday, March 19, 2013*
Time:	*Start anytime between 7:00 a.m. and 10:30 a.m.*
Duration:	*Expected between 30 minutes and one hour depending on location size*
Location:	*Buildings, facilities and construction sites throughout New England*
Sponsor:	*OSHA Region I - Cooperative and State Programs*
Contact:	*Timothy S. Irving, Compliance Assistance Specialist, at 617-565-6924 ext. 631*

OSHA Region I Cooperative and State Programs and the Area Offices are working with our State Partners, Alliances, Partnerships, Voluntary Protection Programs and SHARP companies have scheduled a Preventing Backover Injury Training/Inspection "Mirror Check" Day on Tuesday, March 19, 2013, starting anytime between the hours of 7:00 a.m. and 10:30 a.m.

Mission Description: *During the allotted time frame of the "Mirror Check," each participating company will designate an individual to provide a group safety training component involving employees on their project/location. In addition, the company will conduct an inspection of its facility/location or site and track how many pieces of equipment or vehicles were inspected. Participating organizations will be asked to document training and inspection via their own internal attendance sheets and complete a course evaluation to assist in determining of the effectiveness of this event. Please coordinate the totals for your facility/location or site and have one course evaluation completed per facility/location or site:*
http://www.surveymonkey.com/s/GN7YMCD

General Information: *Cars, pickups, dump trucks, delivery vehicles, 18-wheelers as wells as fork trucks and heavy construction equipment all have something in common. OSHA investigated eight worker deaths in New England in 2012 due to backovers and three more involved working on or near vehicles. The count does not include several public sector workers not investigated by OSHA, scores more severely injured in this type of accident or at home injuries. All industries and facilities are exposed to backover hazards, such as construction, manufacturing, retail, healthcare, and education and all employees must be trained in recognizing the hazards associated with motor vehicles and other equipment.*

Information Provided: *Standard training PowerPoint, Fact Sheets, Checklist and Quick Cards will be provided electronically and posted on the www.csr-em.org homepage and on the Facebook page two weeks prior to training date. The material provided is recommended but are not required to be used. In addition, links to other educational and training sites will be attached along with inspection tips.*

Like us on Facebook *Safety Training and Inspection Days-New England*

Mirror Check Day
AT HOME SAFETY

Problem:

- Many children are killed or seriously injured in backover incidents. A backover incident typically occurs when a vehicle coming out of a driveway or parking space backs over an unattended child because the driver did not see him or her.

Mirror Check Day
AT HOME SAFETY

Prevention Tips

- Teach children not to play in or around cars.
- Supervise children carefully when in and around vehicles.
- Always walk around your vehicle and check the area around it before backing up.
- Be aware of small children–the smaller a child, the more likely it is you will not see them.
- Teach children to move away from a vehicle when a driver gets in it or if the car is started.
- Have children in the area stand to the side of the driveway or sidewalk so you can see them as you are backing out of a driveway or parking space.

Mirror Check Day
AT HOME SAFETY

Prevention Tips

- Make sure to look behind you while backing up slowly in case a child dashes behind your vehicle unexpectedly.
- Take extra care if you drive a large vehicle because they are likely to have bigger blind zones. Roll down your windows while backing out of your driveway or parking space so that you'll be able to hear what is happening outside of your vehicle.
- Teach your children to keep their toys and bikes out of the driveway.

Mirror Check Day
AT HOME SAFETY

Prevention Tips

- Because kids can move unpredictably, you should actively check your mirrors while backing up.
- Many cars are equipped with detection devices like backup cameras or warning sounds, but they cannot take the place of you actively walking around your car to make sure your children are safely out of the way. Do not rely solely on these devices to detect what's behind your vehicle.

Mirror Check Day AT WORK

- Motor vehicle-related incidents are consistently the leading cause of work-related fatalities in the United States. Thirty-five percent of occupational fatalities reported by the Bureau of Labor Statistics are associated with motor vehicles. Between 2003-2009, on average:
- 347 pedestrian workers died each year as a result of being struck by a motor vehicle.
  - Source: U.S. Department of Labor, Bureau of Labor Statistics

Mirror Check Day AT WORK

- Between 2005 and 2010, more than 350 workers were killed as a result of vehicles or equipment backing up.
- This data has prompted OSHA to examine whether a rule is needed to regulate backing procedures on worksites.

Mirror Check Day
AT WORK

- **Can We Be Safe Near Vehicles/Equipment/Traffic?** Being struck is the biggest danger in/around road work.

Workers on foot must

- Remain alert at all times
- Check surroundings often, listen for warnings and backup alarms
- Keep a safe distance from traffic and moving vehicles
- Stay behind protective barriers where possible
- Look out for each other, warn coworkers

Mirror Check Day
AT WORK

- **What Other Precautions Do We Need?** Employers must provide and ensure the use of proper Personal Protective Equipment (PPE).

  Workers must wear personal protective equipment: Proper class of safety vest at all times in the work zone
- High-visibility clothing
- Bright-colored hard hats are more visible

Mirror Check Day
AT WORK

What About Construction Equipment?
Treat equipment and vehicles with caution.

Around equipment, vehicles Stay out of "blind spots"

- Communicate with operators by radio signals and/or eye contact
- Don't approach until you communicate with operator and he/she acknowledges you
- Stay outside a "safety circle" around equipment
- Stay clear of vehicles, know traffic control plan
- Use spotters when you must work with your back to equipment or traffic

TURN OUT YOUR SIDE MIRRORS TO REDUCE BLIND ZONES

AVOID:

LANE CHANGE
MERGE CRASHES
BACKOVER INJURIES

Good visibility is no accident

Mirror Check Day – March 19, 2013

THERE ARE AN AVERAGE OF 55 OCCUPATIONAL BACKOVER FATAL ACCIDENTS IN THE UNITED STATES EACH YEAR.

Vehicles Causing the Most Backover Fatalities 2005-2010*

Dump Truck	67
Semi/Tractor Trailer	40
Truck	30
Forklift	21
Garbage Truck	20
Pick-up Truck	16

*OSHA Intergrated Management Information System data

THERE ARE MORE THAN 600,000 LANE CHANGE/ MERGE COLLISIONS IN THE UNITED STATES EACH YEAR.

More than 200 people die each year in these crashes.

60% of drivers causing the crash say they didn't see the other vehicle.

my Life, your HANDS

Mirror adjustment*

GOOD VISUAL SEARCH HABITS REQUIRE PROPER POSITIONING AND USE OF MIRRORS LOCATED INSIDE AND OUTSIDE A VEHICLE. USING THE DESCRIBED SETTINGS, YOU CAN SEE WHAT IS DIRECTLY BEHIND YOUR VEHICLE WITH THE INSIDE MIRROR, AND YOU CAN SEE DIRECTLY INTO SPACES ADJACENT TO EACH OF THE VEHICLE'S REAR CORNERS BY USING THE SIDE MIRRORS.

MIRRORS ARE INTENDED FOR DETECTION AND NOT FOR GATHERING DETAILED INFORMATION.

Inside Mirror Adjustment*

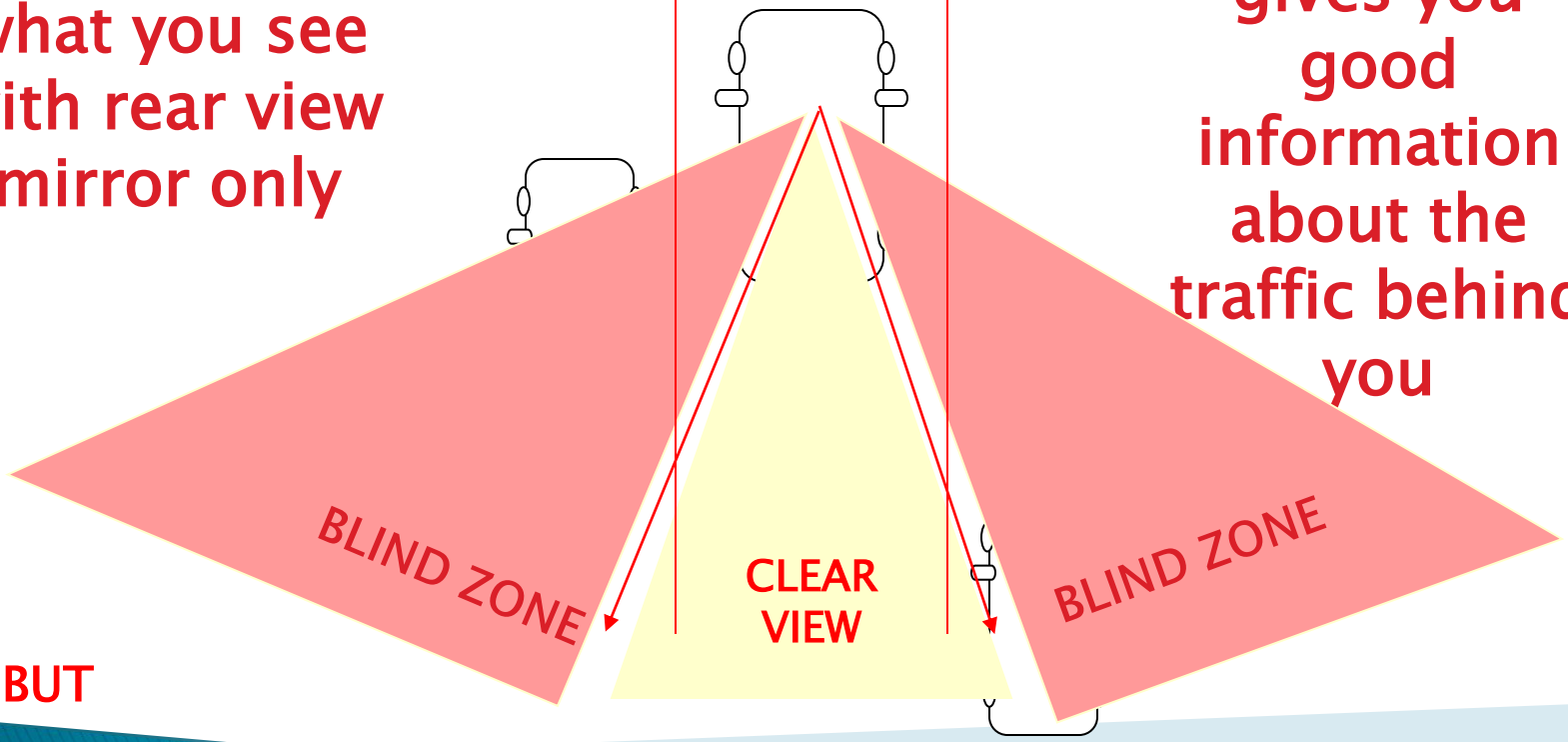
- **ADJUST THE INSIDE MIRROR SO YOU CAN SEE THE ENTIRE REAR WINDOW FROM THE DRIVER'S SEAT. YOU SHOULD HAVE TO MOVE ONLY YOUR EYES, NOT YOUR HEAD, WHEN USING THIS MIRROR.**

- **DRIVERS 6 FEET TALL OR TALLER MAY FIND IT HELPFUL TO TURN THE MIRROR UPSIDE DOWN, IF POSSIBLE. THIS USUALLY RAISES THE BOTTOM EDGE OF THE MIRROR ABOUT 1 TO 2 INCHES AND CAN SUBSTANTIALLY RESCUE A MAJOR BLIND AREA TO THE FRONT FOR TALL DRIVERS.**

YOUR INSIDE REAR VIEW MIRROR IS NOT ENOUGH

what you see with rear view mirror only

gives you good information about the traffic behind you



BUT

you cannot see traffic on your left and right until it gets very close

my Life, your HANDS

Side View Mirror Adjustment*

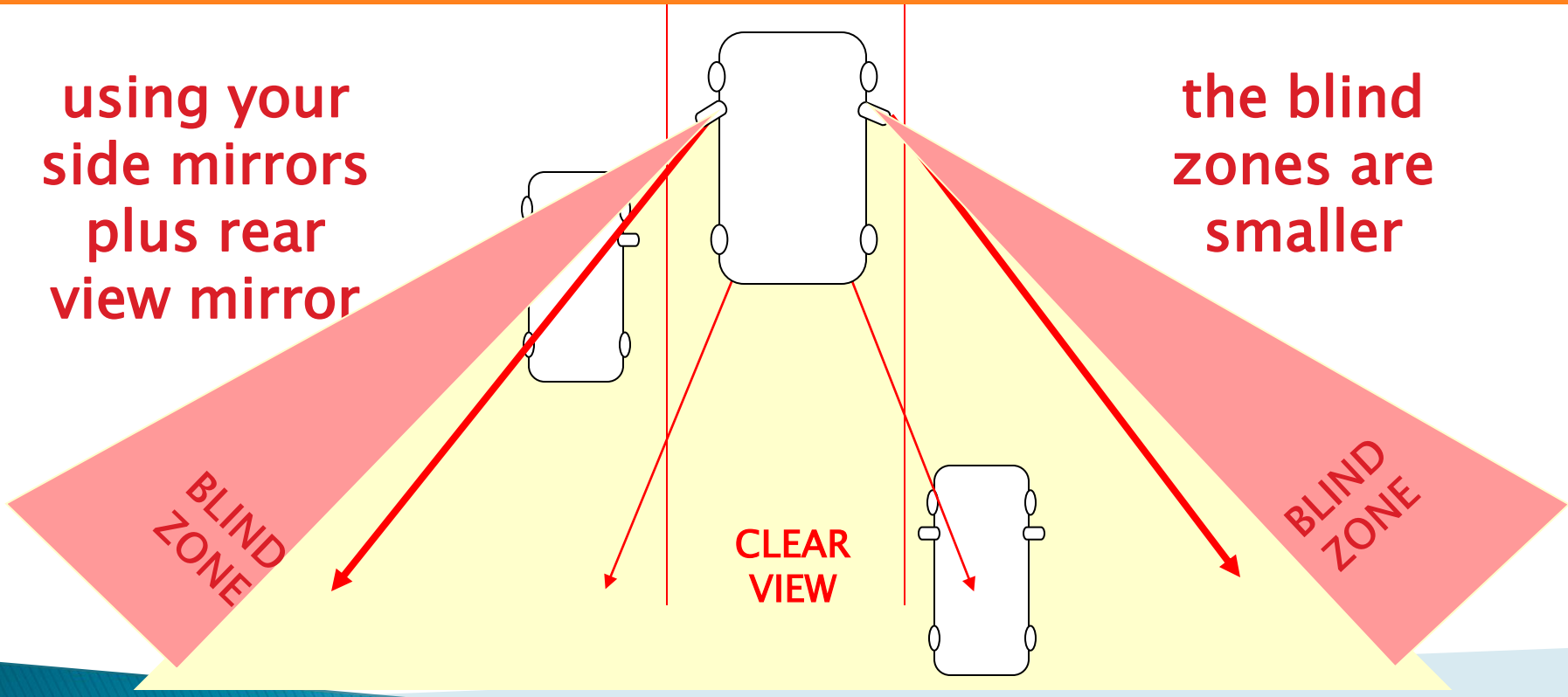
- **TO ADJUST THE DRIVER'S SIDE-VIEW MIRROR, PLACE YOUR HEAD AGAINST THE LEFT SIDE WINDOW AND SET THE MIRROR SO YOU CAN JUST BARELY SEE THE SIDE OF THE CAR IN THE MIRRORS RIGHT SIDE.**

- **TO ADJUST THE PASSENGER'S SIDE-VIEW MIRROR, POSITION YOUR HEAD SO THAT IT IS JUST ABOVE THE CENTER CONSOLE. SET THE MIRROR SO YOU CAN JUST BARELY SEE THE SIDE OF THE CAR IN THE LEFT SIDE OF THE MIRROR. IF THE VEHICLE IS NOT EQUIPPED WITH REMOVE MIRROR-ADJUSTMENT CONTROLS, YOU MAY NEED ASSISTANCE WHEN ADJUSTING THIS MIRROR.**

NORMAL SIDE MIRROR POSITION – (YOU CAN SEE THE SIDE OF YOUR CAR)

using your side mirrors plus rear view mirror

the blind zones are smaller



AND

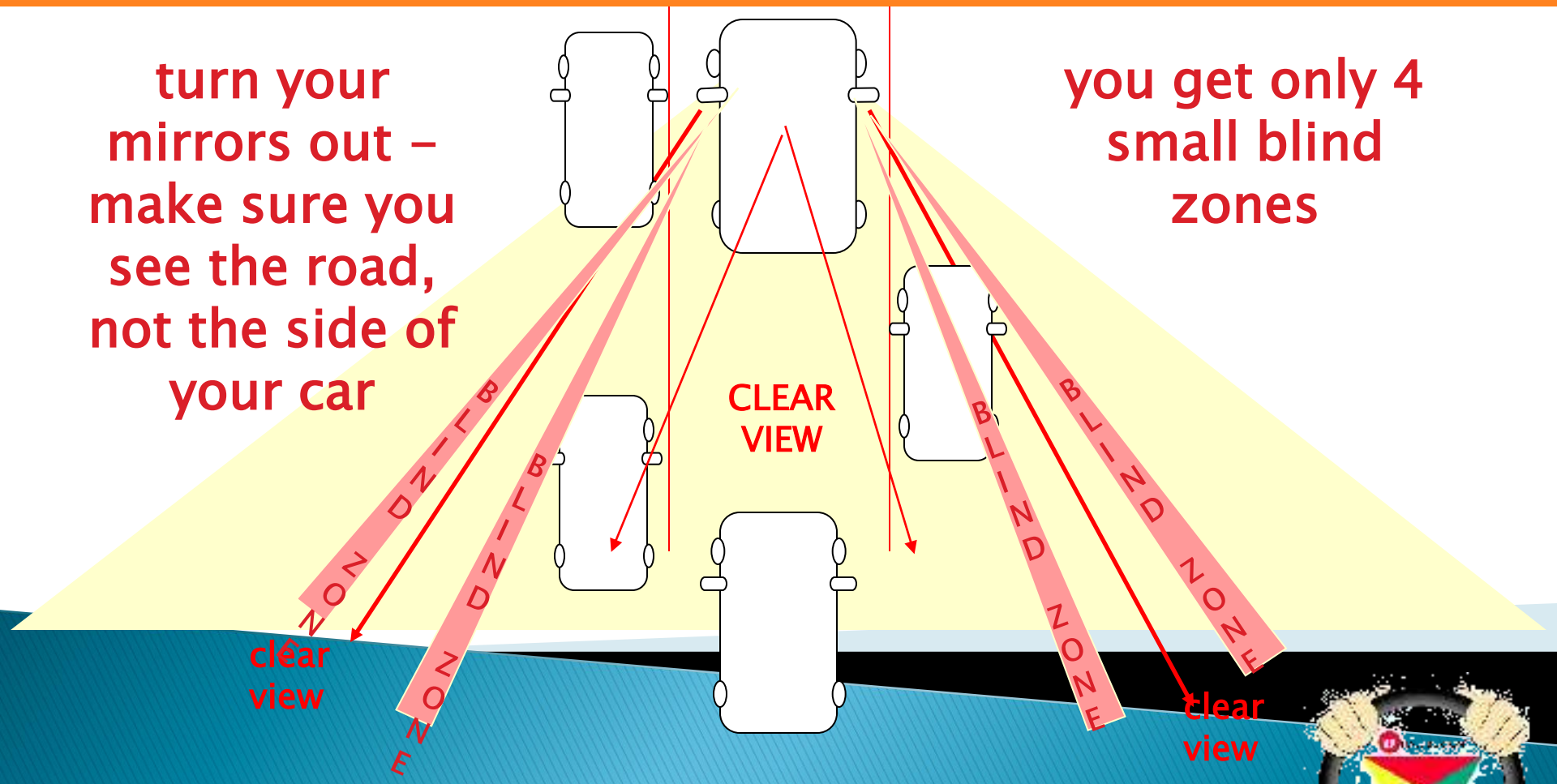
other traffic stays in your view for longer

my Life, your HANDS

NEW SIDE MIRROR POSITION –
(YOU LOOK ALONG THE ROAD, NOT THE SIDE OF YOUR CAR)

turn your mirrors out – make sure you see the road, not the side of your car

you get only 4 small blind zones



you can see other traffic sooner and for longer

my Life, your HANDS

New adjustments*

WITH THESE SETTINGS, YOU WILL HAVE ALMOST SEAMLESS VISUAL CONTACT AROUND YOUR VEHICLE, WHICH CAN HELP YOU DETECT THE PRESENCE OF NEARBY ROADWAY USERS. FOR EXAMPLE, WHEN BEING PASSED BY A VEHICLE IN THE LANE TO YOUR LEFT, YOU WILL SEE IT PROGRESS FROM THE REARVIEW MIRROR, TO THE LEFT SIDE MIRROR AND THEN TO YOUR SIDE VISION.

BEFORE DRIVING WITH THESE UPDATED MIRROR SETTINGS, SEE HOW THEY WORK WHILE YOUR VEHICLE IS PARKED. FOR EXAMPLE, YOU CAN PARALLEL PARK ALONG A STREET, THEN SEE HOW PASSING VEHICLES MOVE THROUGH YOUR MIRRORS AND PERIPHERAL VISION. THIS CAN HELP YOU BECOME ORIENTED TO THE NEW SETTINGS BEFORE HEADING OUT INTO TRAFFIC.

New adjustments*

REMEMBER, EVEN PROPERLY ADJUSTED MIRRORS CANNOT ELIMINATE ALL BLIND SPOTS. TO REDUCE RISK, MAKE A FINAL CHECK TO THE SIDES BEFORE ATTEMPTING ANY LATERAL MOVES.

PLEASE SEE VIDEO FOR DEMONSTRATION

- AAA YouTube Video on Mirror adjustment – http://youtu.be/6DXAA8z8we8

* * AAA.com information

FIVE GOOD REASONS TO TURN OUT YOUR MIRRORS

- you don't need to look over your shoulder so often (but it's not a bad idea to do so)
- you need only a brief glance at the mirror to view the blind zone – at highway speeds, turning your head means 30m travelled
- glancing at the mirror leaves the forward scene in your view

FIVE GOOD REASONS TO TURN OUT YOUR MIRRORS

- blind zones can be included in your visual scanning (which we're all doing, of course)

- at night, no more glare from headlights into your mirrors

GOOD VISIBILITY IS NO ACCIDENT

It will take time to change your habits and to get used to the new mirror position.

But stick with it and you will be rewarded with a new view in driving that will improve your safety and comfort.

TRY THE NEW POSITION TODAY

my Life, your HANDS

OSHA – Backing Safety Solutions

- Spotter
- Spotters are a proven method of protecting employees on foot behind vehicles with an obstructed view, but spotters themselves can be at risk for injury or even death. Employers can implement the following actions to help keep spotters safe:
- Ensure that spotters and drivers agree on hand signals before backing up.
- Instruct spotters to always maintain visual contact with the driver while the vehicle is backing.

OSHA – Backing Safety Solutions

- Instruct drivers to stop backing immediately if they lose sight of the spotter.
- Not give spotters additional duties while they are acting as spotters.
- Instruct spotters not to use personal mobile phones, personal headphones, or other items which could pose a distraction during spotting activities.
- Provide spotters with high-visibility clothing, especially during night operations.

Suggested Spotting Signals

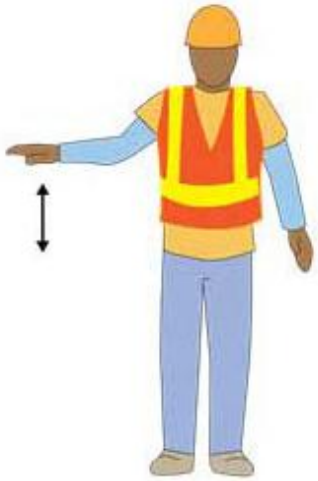
Back up

Back, turn left

Back, turn right

Move forward

Distance left to back



Slow down

Stop

Note: The following list of solutions is not required by any OSHA standard. It is provided for informational purposes only.

Cameras

- Most vehicles (and some types of mobile equipment) can accommodate a camera that provides operators with a view to the rear. Some vehicles come equipped with cameras or may be offered with them as optional equipment. Camera systems can also be purchased as after-market equipment for vehicles. Viewing screens may be dash-mounted but must not block the driver's view out the windshield. Harsh environments, such as some construction sites or mines, may require more rugged cameras. Determining where to mount a camera for maximum effectiveness may be difficult, especially on large vehicles. For example, dump trucks may require two or three cameras to monitor the blind spots on the front, rear, and side of the vehicle.

Proximity Detection Systems

- Radar and ultrasonic technology both are used in backing safety systems. A radar system transmits a signal, which is bounced off an object. The signal is then received by a receiver. These systems alert the driver with a visual and/or audio warning. These systems must be positioned so that they won't detect harmless objects, such as the concrete slab of a driveway, which can interfere with the detection of an object or person behind the vehicle or mobile equipment. Also, the composition of an object can affect detection, with some materials being virtually invisible to radar. Like cameras, this equipment can be mounted on most vehicles and may be an option from some manufacturers.

Proximity Detection Systems

- Ultrasonic systems, such as sonar, emit bursts of ultrasonic waves in a frequency above the hearing threshold of humans. When the waves strike an object, they generate echoes used to determine the distance to the object. These systems alert the driver with a visual and/or audio warning.

Tag-based Systems

- Electromagnetic field-based proximity detection system, which is a type of tag-based system. This system consists of electromagnetic field generators and field detecting devices. One electromagnetic field-based system uses electromagnetic field generators installed on a vehicle and electronic sensing devices (a tag) worn by persons working near the vehicle. Another electromagnetic field-based system uses field generators worn by persons working near the vehicle, with the sensing devices installed on the vehicle. These electromagnetic field-based systems can be programmed to warn affected workers, stop the vehicle, or both, when workers get within the predefined danger zone of the vehicle.

Internal Traffic Control Plans

- An internal traffic control plan (ITCP) is another method used to address backover hazards. These are plans that can use to coordinate the flow of moving equipment, workers, and vehicles at a worksite/facility to minimize or eliminate vehicles and employees from crossing paths. These plans can significantly reduce, or possibly eliminate, the need for vehicles to back up on a site.

OSHA Letter of interpretation

• **Standard Number:** 1926.602(a)(9)(ii)

January 21, 1987

MEMORANDUM FOR: ROGER CLARK
Regional Administrator

FROM: JOHN B. MILES, JR., Director
Directorate of Field Operations

SUBJECT: Interpretation of 29 CFR 1926.602(a)(9)(ii)

This is in reply to your memorandum (ARA/TS STD 3-13) requesting a written interpretation of the term "obstructed view to the rear" relative to use of back-up alarms of earthmoving and compacting equipment.

A simple interpretation would be "anything" that would "blockout" (interfere) with the overall view of the operator of the vehicle to the rear of the vehicle, at ground level.

"Obstructed view to the rear" could include such obstacles as any part of the vehicle such as structural members, its load (gravel, dirt, rip-rap), its height relative to ground level viewing, damage to windows or side mirrors, etc. used for rearview movement of the vehicle; in addition, it could include restricted visibility due to weather conditions such as heavy fog; or work being done after dark, without proper lighting.

Question #1: Does 29 CFR 1926 Subpart O permit an employer to use a rear-mount day/night camera system with in-cab monitoring of the truck's rear instead of a back-up alarm?

OSHA Letter of interpretation

- **Answer #1**: Two requirements in 29 CFR 1926 Subpart O, 1926.601(b)(4) and 1926.602(a)(9), relate to back-up alarms, or trucks in construction, both of which are triggered when the operator's view is obstructed.[1]

  Section 1926.601(b)(4) states: No employer shall use any motor vehicle equipment *having an obstructed view to the rear* unless:
  (i) The vehicle has a reverse signal alarm audible above the surrounding noise level or:
  (ii) The vehicle is backed up only when an observer signals that it is safe to do so.
  (Emphasis added). Section 1926.602(a)(9)(ii)[2] states:

- §1926.602 Material handling equipment
  (a) Earthmoving equipment; General (9) Audible alarms

(ii) No employer shall permit earthmoving or compacting equipment which *has an obstructed view to the rear* to be used in reverse gear unless the equipment has in operation a reverse signal alarm distinguishable from the surrounding noise level or an employee signals that it is safe to do so.

(Emphasis added). Where the back-up camera provides an "unobstructed view to the rear," that is, a clear view of the path the vehicle is to take, such that the driver can see if anyone is in that path or about to enter the danger area of that path, the requirement for an audible alarm or observer is not applicable. Here, the camera system provides the operator with a clear view to the rear and, thus, this back-up alarm requirement is not triggered.

Question #2: When operating a truck in reverse, is an employer that uses a radar/Doppler or such motion sensing system in the rear of a truck – which warns both the driver and employees working within the vicinity of the vehicle whenever the truck is in reverse – in compliance with 29 CFR 1926 Subpart O?

OSHA Letter of interpretation

Answer: #2: Both §1926.601(b)(4) and §1926.602(a)(9)(ii) require employers operating trucks in reverse, with an obstructed view, to use a reverse signal alarm. As prior OSHA letters have explained, these standards provide employers with flexibility to use technology to meet this requirement. So long as the radar/Doppler that you use provides adequate warning to workers in the path of the truck and to workers walking towards the path of the truck in time to avoid contact, you will be in compliance with this particular OSHA requirement.

Question: Does the use of a "discriminating alarm" meet the requirements set forth in 29 CFR 1926.602(a)(9)(ii)? In this case, "discriminating alarm" refers to a system that uses infrared light, ultrasonic waves, radar, or similar means to detect objects or persons at the rear of the equipment, and sounds an audible alarm when a person or object is detected.

OSHA Letter of interpretation

- A discriminating alarm as described above would fulfill the requirements of 1926.602(a)(9)(ii) as long as the alarm was consistently effective in detecting any employee who is in the path of the equipment and alerting the employee of the backing-up of the equipment. As noted in our letter entitled "Alternatives to common back-up alarms on combustion motor vehicles; use of other effective technology or observers/signal persons," dated September 27, 2004, alternatives to conventional back-up alarms may be used so long as they "provide adequate warning to workers in the path of the vehicle, and to workers walking towards the path of the vehicle in time to avoid contact." A discriminating alarm that detected such employees and gave warning to them in time to avoid contact with the vehicle would therefore meet the requirements of the standard.

Classes of Safety Garments ANSI/ISEA 107-2010*

Class 1 Garment

Class 2 Garment

Class 3 Garment

* See 3M ANSI/ISEA 107-2010 description

Knowledge Check – Questions

1) Who is responsible for providing reflective vest at work?
2) Who is responsible for ensuring employees are using their PPE?
3) What action will help you hear better before backing up?
4) The type of plan which coordinates traffic flow at your facility?
5) Class 1 reflective vest can be worn at night?

Knowledge Check – Answers

1) Who is responsible for providing reflective vest at work? **Employer**
2) Who is responsible for ensuring employees are using their PPE? **Employer**
3) What action will help you hear better before backing up? **Rolling down your window**
4) The type of plan which coordinates traffic flow at your facility? **Internal traffic control**
5) Class 1 reflective vest can be worn at night? **NO – Must be Class 3**

Course Evaluation

- "Mirror Check Day" participating organizations are asked to document training and inspections via their own internal attendance sheets and complete the online course evaluation to assist in determining of the effectiveness of this event.

- Please coordinate the totals for your facility/location or site and have one course evaluation completed per facility/location or site: http://www.surveymonkey.com/s/GN7YMCD

Thank you for participating!!