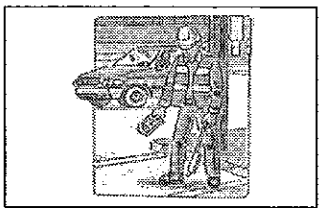

Work Zone Safety—Personal Protective Equipment

Overview Of Topic

Some disturbing statistics on work zones:

- Over the last five years the number of persons killed in motor vehicle crashes in work zones has gone from 717 in 1996 to a high of 1,093 in 2000 (for an average of 829 fatalities per year).
- In 2000, 1,093 fatalities resulted from motor vehicle crashes in work zones of which 264 resulted from large truck crashes.
- On average from 1996 to 2000, 16% of the fatalities resulting from crashes in work zones were non-motorists (pedestrians and bicyclists).

As you can see, work zones are a dangerous place to work. To afford your employees as much protection as possible, you must provide them with certain types of personal protective equipment (PPE).

Types of PPE

PPE comes in many different forms and sizes. Safety glasses, hard hats, steel-toed shoes or boots, gloves, respirators, and hearing protection are all types of PPE that you may need to use to protect yourself when working in a work zone.

However, there is one other important type of PPE that we haven't mentioned: the high-visibility vest, shirt, or jacket. For these garments, OSHA requires compliance with either the 1993 or Millennium Edition version of Part VI of the Federal Highway Administration's Manual on Uniform Traffic Control Devices (MUTCD).

According to the MUTCD

Here are the specifications for high-visibility garments:

- **For daytime work**, the flagger's vest, shirt, or jacket shall be either orange, yellow, yellow-green, or a fluorescent version of these colors.
- **For nighttime work**, similar outside garments shall be retroreflective. The retroreflective material shall be either orange, yellow, white, silver, yellow-green, or a fluorescent

version of these colors, and shall be visible at a minimum distance of 300 m (1,000 ft). The retroreflective clothing shall be designed to clearly identify the wearer as a person.

One other issue is the newest ANSI standard, ANSI/ISEA 107-1999 American National Standard for High-Visibility Safety Apparel. This standard describes high visibility clothing as Class I, II, and III. Class III garments will meet OSHA/DOT requirements above that requires clearly identifying the wearer as a person.

Although an excellent standard for meeting the requirements of OSHA and DOT, it is a voluntary industry consensus standard and is not a requirement. However, some state DOT's are requiring adherence to the ANSI/ISEA standard.

Employee Training

You must instruct each employee in the recognition and avoidance of unsafe conditions and the regulations applicable to his work environment to control or eliminate any hazards or other exposure to illness or injury.

OSHA state-plan-states: Remember that certain states have more stringent regulations that go above and beyond the OSHA standards.

Training Tips

Bring in some typical high-visibility garments that your employees will use when working in work zones. Cover how, when, and where these garments should be worn. Discuss any specific company-related requirements for this subject. **See the Toolbox Talk PPE-High-Visibility Clothing** for more information.

Where To Go For More Information

The 1993 or the Millennium Edition version of Part VI of the Federal Highway Administration's Manual on Uniform Traffic Control Devices (MUTCD).

KELLER'S CONSTRUCTION TOOLBOX TALKS

Work Zone Safety—Personal Protective Equipment

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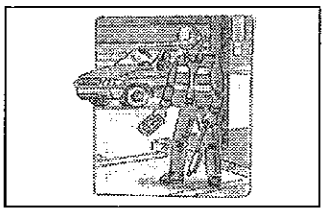
Talk to your supervisor if you have questions on whether your high-visibility garments meet these requirements.



Work Zone Safety—Personal Protective Equipment—Sign-Off Sheet

This sign-off sheet documents the employees at this company, _____, who have taken part in a training session on Work Zone Safety—Work Zone Personal Protective Equipment. The session covered:

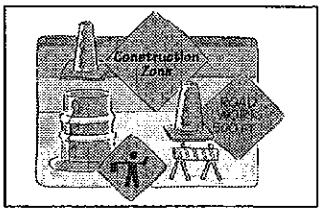
- Work zone statistics.
- Types of work zone personal protective equipment.
- Specifications for high-visibility garments.

The space below is for employees to "sign-off" that they were in attendance.

Date of Training: _____ **Job Location:** _____

Employee Signature	Print Name Here

_____
Supervisor's Signature



Work Zone Safety—Traffic Control Devices

Overview Of Topic

Employers are required to create and maintain a traffic control plan. The first step in designing a safe and efficient traffic control plan is informing the public. This education process begins with notices in media and extends to the worksite with plenty of strategically placed warning and informational signs.

Work zone alerts

Informing motorists about a work zone they will encounter is essential. Two general kinds of alerts are used:

- Initially, motorists are warned that there is construction ahead; and
- Second, motorists are instructed on what actions to take, due to the work zone. For example: reduce speed, be prepared to stop, etc.

Typically the first warning sign is placed 1,500 feet before a work zone; the second, 1,000 feet from construction; and the third, 500 feet from the worksite.

Traffic control devices

Some common traffic control devices include, but are not limited to:

Signs

Classified as regulatory, guide, or warning signs. Regulatory signs set restrictions and you must get permission from the agency that has jurisdiction over that road. Guide signs are used to give directions or indicate distance to a specific location. Warning signs indicate roadway conditions.

There are even message signs that display "real-time" information, i.e., changing weather conditions, detours, etc.

Warning lights

Warning lights are often used in areas prone to fog or severe weather. They usually are used to supplement standard signs or warning and channelizing devices.

Flashing Arrow Panels

Flashing arrow panels are an effective way to warn drivers of the need to change lanes or directions.

Channelizing devices

Channelizing devices, such as traffic cones, are often used to prohibit motorists from entering a traffic lane or area where work is underway. At night these devices can be enhanced by lights or reflectors.

Portable concrete barriers

In some situations, portable concrete traffic barriers may be needed. If a driver strikes one, the barrier is designed to deflect the vehicle back into the roadway where it is less likely to collide head-on with structures or other vehicles.

Temporary pavement markings

Used to supplement the other types of traffic control devices. If existing pavement markings conflict with the interim path of travel, then additional signs and traffic devices are needed.

Employee Training

All personnel, regardless of occupation, must be oriented to each work zone's hazards and how to avoid them. OSHA regulations require equipment operators to be fully trained on the machines they will operate. OSHA and the *Manual On Uniform Traffic Control Devices* have specific regulations for flaggers.

Training Tips

Discuss your company's work zone traffic control plan.

Where To Go For More Information

29 CFR 1926.20—General safety and health provisions.

29 CFR 1926 Subpart G—Signs, Signals, and Barricades.

Part VI of either the 1988 Edition of the Federal Highway Administration (FHWA) Manual on Uniform Traffic Control Devices (MUTCD), with 1993 revisions (Revision 3) or the Millennium Edition of the FHWA MUTCD (Millennium Edition).

KELLER'S CONSTRUCTION TOOLBOX TALKS

Work Zone Safety—Traffic Control Devices

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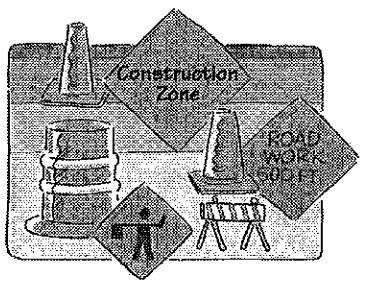

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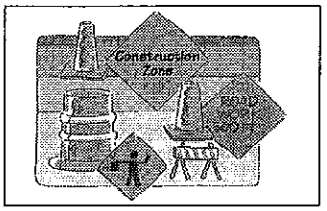


Work Zone Safety—Traffic Control Devices Sign-Off Sheet

This sign-off sheet documents the employees at this company, _____, who have taken part in a training session on Work Zone Safety—Traffic Control Devices. The session covered:

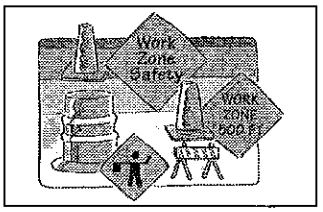
- Two kinds of work zone alerts.
- Types of traffic control devices.
- How the traffic control devices are used.

The space below is for employees to "sign-off" that they were in attendance.

Date of Training: _____ **Job Location:** _____

Employee Signature	**Print Name Here**

_____
Supervisor's Signature



Work Zone Safety—An Overview

Overview Of Topic

Each year, more than 100 workers are killed and over 20,000 are injured in the highway and street construction industry. Most of these injuries and fatalities occur in what is known as the "work zone."

The work zone is an area where highway construction, maintenance, or utility work activities are taking place. What makes this work area dangerous is that passing motorists, construction vehicles, and equipment are moving through the same space that the construction employees are working in.

Accidents that occur in work zones are usually caused by:

- Poor traffic control procedures,
- Unsatisfactory construction vehicle and equipment maintenance (such as malfunctioning warning devices),
- Poorly designed work zones, and
- Failure to establish and follow policies and procedures for ensuring safety on the job.

Vehicles and equipment operating in and around the work zone are involved in over half of the worker fatalities in the heavy and highway construction industry.

Sometimes passing motorists are at fault for the injuries and fatalities that occur in the work zone. Workers are often injured or killed by moving vehicles entering their work zones. Other times, it is the construction vehicles and equipment operating within the work zone that causes the accidents and injuries.

Work zone hazards

There are two basic types of work zone hazards:

- Internal hazards are activities within the workspace such as moving vehicles.
- External hazards are ones presented by passing cars and trucks and the debris they kick up.

Potential hazards associated with work zones include:

- Traffic and construction equipment accidents,
- Working above level,
- Slippery conditions,
- Machinery pinch points,
- Crush zones,
- Drop-offs,
- Trenches,
- Airborne lead and silica particles,
- Truck tip-overs, and
- Energized electrical lines and conductors.

There are many internal and external work zone hazards, but your employees can avoid them if you train them to think safety first, use procedures required or recommended by regulatory agencies and industry experts, and be alert to situations that might result in accidents.

Employee Training

All personnel, regardless of occupation, must be oriented to each work zone's hazards and how to avoid them. OSHA regulations require equipment operators to be fully trained on the machines they will operate. OSHA and the Manual On Uniform Traffic Control Devices (published by the Federal Highway Administration) have specific regulations for flaggers.

Training Tips

Discuss various work zones that employees have driven through.

Where To Go For More Information

29 CFR 1926.20—General safety and health provisions.

29 CFR 1926 Subpart G—Signs, Signals, and Barricades.

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KELLER'S CONSTRUCTION TOOLBOX TALKS

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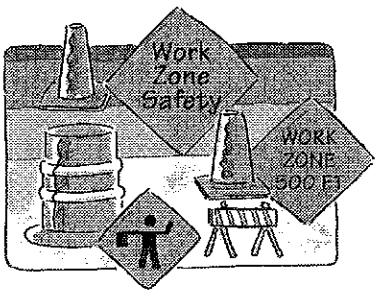

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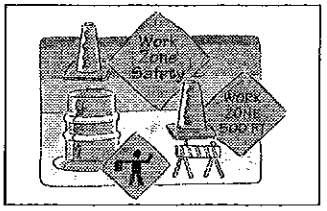


Work Zone Safety—An Overview Sign-Off Sheet

This sign-off sheet documents the employees at this company, _____, who have taken part in a training session on Work Zone Safety—Overview. The session covered:

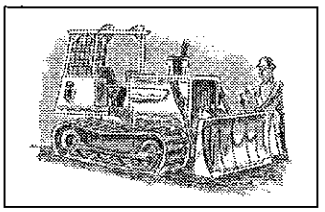
- What a work zone is.
- Why accidents occur is work zones.
- The different types of work zone hazards.

The space below is for employees to "sign-off" that they were in attendance.

Date of Training: _____ **Job Location:** _____

Employee Signature	Print Name Here

_____
Supervisor's Signature



Work Zone Safety—Training Personnel

Overview Of Topic

Poor worker knowledge, due to lack of training or ineffective training, is a major cause of work zone accidents. For this reason, OSHA requires personnel to be trained before they can work in the work zone.

If the operation of equipment is involved, ANSI recommends that this training be based on the manufacturer's manuals and that it includes hands-on instruction.

Work zone orientation

All personnel, regardless of occupation, must be oriented to each work zone's hazards and how to avoid them. This includes personnel visiting the worksite.

For construction workers, NOISH suggests more in-depth training on topics such as:

- Recognizing, eliminating, or avoiding hazards involving equipment;
- Knowing the locations and sizes of blind spots around equipment;
- Knowing the hazards and protective measures associated with working at night; and
- Understanding communication methods and alarms.

Redundancy in communications is best. For example, in addition to motion alarms, use a spotter.

Equipment operator training

OSHA regulations require equipment operators to be fully trained on the machines they will operate. Training should include instruction on:

- How to avoid rollovers;
- Information on the clearances that must be maintained between vehicles, and hazards such as unstable surfaces, trenches, excavations, and overhead utility lines; and

- Instruction on the location, size, and configurations of blind spots and what can be done to minimize their potential for contributing to accidents.

Flagger training

Flaggers are sometimes deployed to safely move traffic through work zones.

Flagger orientation

See the Flagging Safety Toolbox Talk in the Heavy Construction tab.

Employee Training

All personnel, regardless of occupation, must be oriented to each work zone's hazards and how to avoid them. OSHA regulations require equipment operators to be fully trained on the machines they will operate. OSHA and the *Manual On Uniform Traffic Control Devices* have specific regulations for flaggers.

Training Tips

Discuss your company's specific work zone training requirements.

Where To Go For More Information

29 CFR 1926.20—General safety and health provisions.

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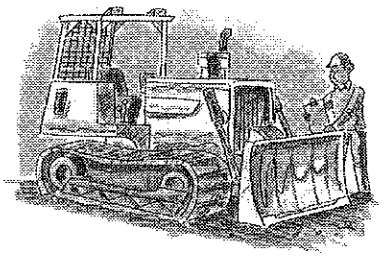

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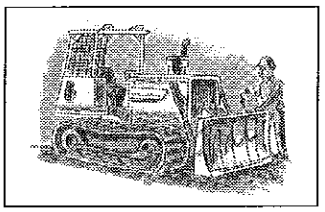

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- Equipment operator training.

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Employee Signature	Print Name Here

_____
Supervisor's Signature