

Wisconsin Construction Safety Newsletter

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Work Zone Traffic Safety

Transportation incidents and workers struck by vehicles or mobile equipment account for the highest number of fatal work injuries, according to the Bureau of Labor Statistics. Workers such as emergency responders, clean-up, utility, demolition, construction, and others in areas where there are moving vehicles and traffic are exposed to being struck by moving vehicles. Work zones are used to move traffic in an approved direction and are typically identified by signs, cones, barrels, and barriers.

Construction workers in general have one of the highest fatality rates of any industry. Highway construction workers are at even greater risk because they not only are exposed to the same hazards that are typically found in commercial or residential construction, but also because they may become the victim of a car or a truck crash. A NIOSH study found that 1 of 3 workers killed in construction work zones were struck by motorists.

OSHA data shows there have been numerous fatalities in Region V involving employees working on road construction sites. The majority of these fatalities were the result of employees being struck by highway and construction vehicles.

General

Work zones need traffic controls identified by signs, cones, barrels, and barriers. Drivers, employees on foot, and pedestrians must be able to see and understand the proper routes. Construction project managers determine traffic control plans within construction/demolition worksites. When there are

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No fall protection
being used.



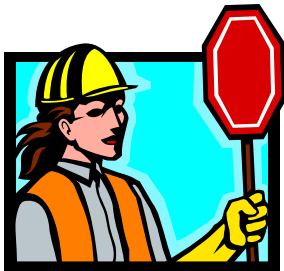
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several projects, coordinated vehicle routes and communication between contractors will reduce vehicular struck-by incidents.

Signs

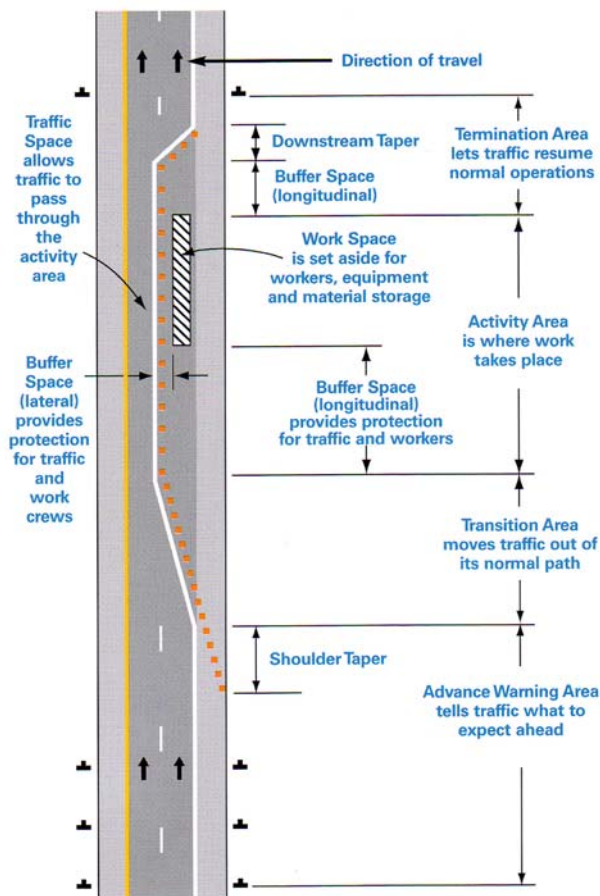
Standard highway signs for information, speed limits, and work zones will assist drivers in identifying, in the designated traffic paths, such directives as:

- Evacuation Routes.
- Do Not Enter.
- Reduced Speed Ahead.
- Road Closed.
- No Outlet.



Component Parts of a Temporary Traffic Control Zone

MUTCD, Figure 6C-1



All illustrations from the *Manual on Uniform Traffic Control Devices (MUTCD)*, 2003 Edition with Revision No.1 Incorporated, dated November 2004, U.S. Department of Transportation, Federal Highway Administration. For more information visit www.mutcd.fhwa.dot.gov.

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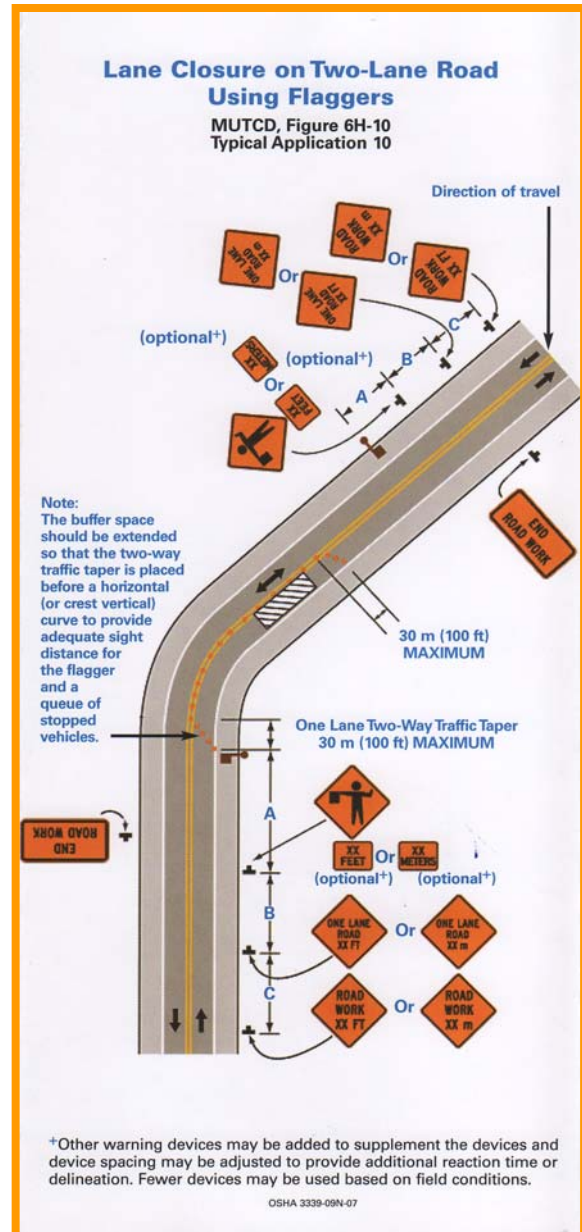
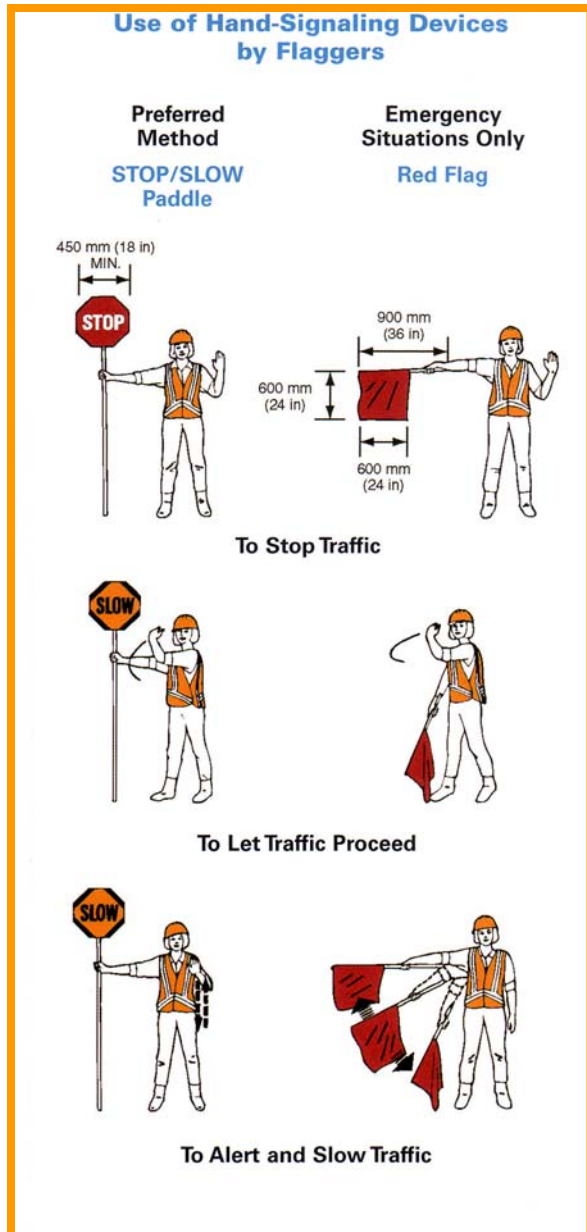
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Using standard highway signs for internal construction worksite traffic control will assist workers in recognizing the route they are to use at the construction site.

Traffic Control Devices

Standard traffic control devices, signals, and message boards will instruct drivers to follow a path away from where work is being done. The authority in charge will determine the approved traffic control devices such as cones, barrels, barricades, and delineator posts that will be used as part of the traffic control plan. These standard devices should also be used inside the work zone.

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Lighting

Flagger stations should be illuminated. Lighting for workers on foot and equipment operators is to be at least 5 foot-candles or greater. Where available lighting is not sufficient, flares or chemical lighting should be used. Glare affecting workers and motorists should be controlled or eliminated.

Training

Flaggers must be trained/certified and use the signaling methods required by the authority in charge. Workers on foot, equipment operators, and drivers in internal work zones need to know the routes the construction vehicles will use. Equipment operators and signal persons need to know the hand signals used on the worksite. Operators and workers on foot need to know the visibility limits and the “blind spots” for each vehicle on site. Workers on foot should wear high visibility safety garments designated as Class 1, 2 or 3. Workers should be made aware of the ways in which shift work and night work may affect their performance.

Driving

Seat belts and roll over protection should be used on equipment and vehicles as the manufacturer recommends.

Let's keep those work zones safe for the workers. If you have questions contact the local OSHA office.



***Safe-in-Sound*TM Award for Excellence and Innovation in Hearing Loss Prevention**

Hearing loss is a major problem in the US. One way to address this issue is to reward companies that have excellent programs for preventing hearing loss and learn from their experiences. The National Institute for Occupational Safety and Health (NIOSH), in partnership with the National Hearing Conservation Association (NHCA), has created an award to be given each year to organizations and businesses with the best hearing loss prevention program. This award is called *Safe-in-Sound*TM and will be presented at the 35th NHCA Conference in February 2010 in Orlando, FL. One award will be given in the manufacturing sector, one in the service sector and one in construction. An additional award will be given for an innovation in hearing loss prevention, which could be anything from a new product, training program, software program or other new and effective idea. For more information on the award and how to submit nominations please see the *Safe-in-Sound*TM website at www.safeinsound.us If you know of any companies with great hearing loss prevention programs, encourage them to apply. The deadline for nominations for the 2010 awards is July 31, 2009. We look forward to hearing from you!



Lead in Construction

Lead is a common hazardous element found at many construction sites. Lead exposure comes from inhaling fumes and dust, and lead can be ingested when hands are contaminated by lead dust. Lead can be taken home on workers' clothes, skin, hair, tools and in vehicles.

Repair, removal, renovation and demolition operations often generate dangerous airborne concentrations of lead, a metal that can cause damage to the nervous system, kidneys, cardiovascular system, blood forming organs, and reproductive system if inhaled or ingested in dangerous quantities. The Occupational Safety and Health Administration (OSHA) has developed regulations designed to protect workers involved in construction activities from the hazards of lead exposure.

Health Hazards

- Loss of Appetite
- Constipation
- Nausea
- Excessive Tiredness
- Headache
- Fine Tremors
- Colic with Severe Abdominal Pain
- Metallic Taste in the Mouth
- Weakness
- Nervous Irritability
- Hyperactivity
- Muscle and Joint Pain or Soreness
- Anxiety
- Pallor
- Insomnia
- Numbness
- Dizziness



Reproductive Risks

Lead is toxic to both male and female reproductive systems. Lead can alter the structure of sperm cells and there is evidence of miscarriage and stillbirth in women exposed to lead or whose partners have been exposed. Children born to parents who were exposed to excess lead levels are more likely to have birth defects, mental retardation, or behavioral disorders or to die during the first year of childhood. In addition, workers' lead exposure can harm their children's development.

Short-term (acute) overexposure-as short as days-can cause acute encephalopathy, a condition affecting the brain that develops quickly into seizures, coma, and death from cardio-respiratory arrest. Short-term occupational exposures of this type are highly unusual but not impossible.

Extended, long-term (chronic) overexposure can result in severe damage to the central nervous system, particularly

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Proper setup of rescue equipment according to 1926.21(b)(6)(i)

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the brain. It can also damage the blood-forming, urinary, and reproductive systems. There is no sharp dividing line between rapidly developing acute effects of lead and chronic effects that take longer to develop.

Worker Exposure

Lead is most commonly absorbed into the body by inhalation. When workers breathe in lead as a dust, fume, or mist, their lungs and upper respiratory tract absorb it into the body. They can also absorb lead through the digestive system if it enters the mouth and is ingested.

A significant portion of the lead inhaled or ingested gets into the bloodstream. Once in the bloodstream, lead circulates through the body and is stored in various organs and body tissues. Some of this lead is filtered out of the body quickly and excreted, but some remains in the blood and tissues. As exposure continues, the amount stored will increase if the body absorbs more lead than it excreted. The lead stored in the tissue can slowly cause irreversible damage, first to individual cells, then to organs and whole body systems.

Applicability to Construction

OSHA's lead in construction standard applies to all construction work where an employee may be exposed to lead. All work related to construction, alteration, or repair, including painting and decorating, is included. Under this standard, construction includes, but is not limited to:

- Demolition or salvage of structures where lead or materials containing lead are present.
- Removal or encapsulation of materials containing lead.
- New construction, alteration, repair, or renovation of structures, substrates, or portions or materials containing lead.
- Installation of products containing lead.
- Lead contamination from emergency cleanup.
- Transportation, disposal, storage, or containment of lead or materials containing lead where construction activities are performed.
- Maintenance operations associated with these construction activities.

How Lead is Used

In construction, lead is used frequently for roofs, cornices, tank linings, and electrical conduits. In plumbing, soft solder, used chiefly for soldering tinplate and copper pipe joints, is an alloy of lead and tin. Soft solder has been banned for many uses in the United States. Because lead-based paint inhibits the rusting and corrosion of iron and steel, lead is used on bridges, railways, ships, lighthouses, and other steel structures, although substitute coatings are available.

Construction projects vary in their scope and potential for exposing workers to lead and other hazards. Projects such as removing paint from a few interior residential doors may involve limited exposure. Others projects, however, may involve removing or stripping substantial quantities of lead-based paints on large bridges and other structures.

Most Vulnerable Workers

Workers potentially at risk for lead exposure include those involved in iron work, demolition work, painting, lead based paint abatement, plumbing, heating and air conditioning maintenance and repair, electrical work, and carpentry, renovation, and remodeling work. Plumbers, welders, and painters are among those workers most exposed to lead. Significant lead exposures also can arise from removing paint from surfaces previously coated with lead-based paint such as bridges, residences being renovated, and structures being demolished or salvaged. With the increase in highway work, bridge repair, residential lead abatement, and residential remodeling, the potential for exposure to lead-based paint has become more common.

Workers at the highest risk of lead exposure are those involved in:

- Abrasive blasting.
- Welding, cutting, and burning on steel structures.

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No fall protection being used. Missing guardrails, bracing and planks.

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- Lead Burning
- Using Lead-Containing Mortar
- Power Tool Cleaning without Dust Collection Systems
- Rivet Busting
- Cleanup Activities Where Dry Expendable Abrasives are Used
- Movement and Removal of Abrasive Blasting Enclosures
- Manual Dry Scraping and Sanding
- Manual Demolition of Structures
- Heat-gun Applications
- Power Tool Cleaning with Dust Collection Systems
- Spray Painting with Lead-Based Paint
- Cutting Drywall or Other Material Containing a Lead Backing

Employer Responsibilities / Worker Protection

Employers of construction workers are responsible for developing and implementing a worker protection program. At a minimum, the employer's worker protection program for employees exposed to lead above the PEL include:

- Hazard Determination, Including Exposure Assessment.
- Medical Surveillance and Provisions for Medical Removal
- Job-Specific Compliance Programs
- Engineering and Work Practice Controls
- Respiratory Protection
- Protective Clothing and Equipment
- Housekeeping
- Hygiene Facilities and Practices
- Signs
- Employee Information and Training
- Record Keeping

Additional Information

For more information on this, and other health-related issues impacting workers, visit OSHA's Web site at www.osha.gov.

OSHA's Lead in Construction Advisor is interactive expert software that is also found on OSHA's website. It is intended to help users, especially small business, to understand OSHA's Lead in Construction standard. It is NOT a substitute for the standard. This Advisor provides an introduction to the scope and logic of the regulation, and summary guidance to facilitate compliance.



A typical vibrating roller machine similar to the machine described in the fatalities below.

Region 5 Construction Fatalities for May 2009 to July 2009

SIC code and accident description

1741—Masonry, Stone Setting, and Other Stone Work

On a construction site involving a new multi-family project, an employee, operating a mortar mixer, was found crushed between the overturned mortar mixer and an adjacent rough terrain fork lift. The mortar mixer had the tires and axle removed.

1731—Electrical Work

An employee was changing wiring and a plug from 220 volt single phase to 240 volt three phase as part of the preparation for a new soldering machine. The employee removed the circuit panel cover and shut off the three breakers that fed power to the room where the work was to be done. The employee was on a ladder and was disconnecting wires inside of a junction box when he contacted an energized wire. A co-worker holding the ladder was not injured.

1611—Highway and Street Construction, Except Elevated Highways

An employee was part of an asphalt road crew. He was operating a vibrating roller machine on newly laid asphalt. The machine overturned onto the employee.

1771—Concrete Work

An employee of an excavating and landscaping company was loading a Case D450 loader/dozer onto a trailer at a job site when the D450 went off the side of the ramp and tipped over onto the employee.



Silica Dust Hazards

The saw on the left, a Soff-Cut saw, has an enclosure around the blade and is designed to be run dry (and comes with an optional vacuum dust collection system), is being used with water and no vacuum.

The saw on the right, a Stihl, has a fitting for the attachment of a water line, but the employee is instead holding the hose to the ground with his left foot.

Top Ten Violations

Listed below are the “top ten” cited violations found during Federal OSHA construction inspections from October 2007 through September 2008.

| <u>Rank</u> | <u>Standard</u> | <u>Hazard</u> |
|-------------|------------------|--|
| 1. | 29 CFR 1926.451 | General Requirements of all Types of Scaffolds |
| 2. | 29 CFR 1926.501 | Duty to Have Fall Protection |
| 3. | 29 CFR 1926.1053 | Ladders |
| 4. | 29 CFR 1926.503 | Fall Protection Training |
| 5. | 29 CFR 1910.1200 | Chemical Hazard Communication |
| 6. | 29 CFR 1910.453 | Aerial Lifts |
| 7. | 29 CFR 1926.20 | General Safety and Health Provisions |
| 8. | 29 CFR 1926.651 | Specific Excavation Requirements |
| 9. | 29 CFR 1926.100 | Head Protection |
| 10. | 29 CFR 1926.454 | Scaffold Training Requirements |

This newsletter provides an overview of OSHA standards and does not alter or determine compliance responsibilities, which are described in the OSHA standards and the *Occupational Safety and Health Act*. Because interpretations and enforcement policy may change over time, the best sources for additional guidance on OSHA compliance requirements are current administrative interpretations and decisions by the Occupational Safety and Health Review Commission and the courts.



No fall
protection being
used.

Wisconsin Contact Information

Wisconsin OSHA Consultation Offices:

- Wisconsin State Laboratory of Hygiene, University of Wisconsin
2601 Agriculture Drive, Madison, WI 53718-6780
(608) 226-5240 (Health)
- Wisconsin Department of Commerce, 141 NW Barstow Street, Fourth Floor
Waukesha, Wisconsin 53188-3789
800-947-0553 (Safety)

Wisconsin OSHA Enforcement Offices:

- Appleton Area Office, 1648 Tri Park Way, Appleton, Wisconsin 54914,
(920) 734-4521, (920) 734-2661 FAX
- Eau Claire Area Office, 1310 W. Clairemont Avenue, Eau Claire, Wisconsin 54701
(715) 832-9019, (715) 832-1147 FAX
- Madison Area Office, 4802 E. Broadway, Madison, Wisconsin 53716
(608) 441-5388, (608) 441-5400 FAX
- Milwaukee Area Office, 310 Building, Suite 1180, 310 West Wisconsin Avenue
Milwaukee, Wisconsin 53203
(414) 297-3315, (414) 297-4299 FAX

Do you have comments or ideas for articles?

E-mail them to the Wisconsin Construction Safety Newsletter at Zortman.Chris@dol.gov

Ideas for Articles for Upcoming Issues

Do you have any ideas for articles that you want to see or topics that you think are important?
Please let us know at the email address listed just above.