



Work Zone Traffic Safety

Summary

The Hazard: death or serious injury from being struck by vehicles or equipment in work zones.

Who is at risk: streets/highways, utilities and other public works department workers who maintain roadways, bridges, sewers, catch basins, etc.

Prevention: reducing the speed of vehicles, traffic control plans warning motorists of work zones, guiding traffic safely through the work zone, and returning passing vehicles to normal traffic flow.

Laws: The U.S. Department of Transportation, Federal Highway Administration's (FHWA) Manual on Uniform [Traffic Control Devices](#) (MUTCD). The Occupational Safety and Health Administration (OSHA) enforced the MUTCD (29 CFR 1926.200-203).

The hazard and who is at risk:

Each year AFSCME members die or are seriously injured when vehicles crash through traffic control devices and enter a work zone. Workers are also struck by equipment operating within the work area. Repairing streets and bridges, cleaning catch basins, and rebuilding manholes are examples of tasks that require workers to share the road with other vehicles.

PREVENTION: A *traffic control plan (TCP)* must be developed **BEFORE** the work begins to guide drivers through and around work zones.

A traffic control plan should include:

- Advance warning to drivers of road work ahead,
- Traffic control devices to clearly mark the work zone and channel traffic through it, and

- Returning traffic to normal traffic patterns as quickly, safely and efficiently as possible.

A traffic control plan needs to address these factors:

- Type of roadway (number of lanes, divided or undivided highway, etc.),
- Volume and speed of traffic (the number and speed of cars, trucks, etc.),
- Type of job and how long it will last, and
- Type and number of [traffic control signs](#) and devices.

Detours: Closing roads and re-routing traffic away from the maintenance activities puts a safe distance between workers and traffic.

Barriers: [Concrete barriers](#), also called Jersey barriers or K-rails, separate workers from traffic. They are used long-term projects such as during road construction and bridge deck replacement. Concrete barriers are commonly used to temporarily change stretches of 4-lane divided highways into two-lane roads.

Reducing the Speed Of Traffic In Work Zones: Methods to slow traffic in work zones include:

- Driving pilot cars at reduced speeds to slow traffic,
- Portable rumble strips on roadways,
- Portable radar units mounted on construction vehicles,
- Aggressively enforcing speed limits in work zones,
- Doubling the fines and/or points charged against a driver's record for speeding.

Advance Warning Signs: Signs should be located far enough in advance of the work area to allow vehicles to move smoothly and efficiently around work areas. They must clearly inform motorists of approaching activity and guide drivers around or through the activity.

All advance warning signs **must** be:

- orange background with black lettering or symbols,
- retro-reflective or illuminated if used when it is dark,
- 4 feet by 4 feet if traffic moves at 45 miles per hour (mph) or faster,
- 3 feet by 3 feet if speeds are 40 mph or lower,
- 7 feet above the road surface (measured to the bottom of the sign),
- at least 1 foot above the road surface if the sign is portable,
- less than 50 per cent of the top two rails or not more than 33 per cent of all rails if mounted on a barricade.

Advance warning signs should be placed so as to give motorists enough time to react to the conditions they will find ahead of them. In general, the distance between the first warning sign and the work area should be increased the faster that traffic is moving. The following table includes the recommendations for sign placement found in the **Manual on Uniform Traffic Control Devices (MUTCD)**, which has been issued by the United States Department of Transportation, Federal Highway Administration (FHWA).

MUTCD Recommendations on Sign Spacing for Advance Warning Signs

Type of Roadway	Speed	Sign A*	Sign B**	Sign C***
Urban, Low Speed	40 mph or less	100 ft.	100 ft.	100 ft.
Urban, High Speed	45 mph or more	350 ft.	350 ft.	350 ft.
Rural (Secondary)	45 mph or more	500 ft.	500 ft.	500 ft.
Expressway	45 mph or more	Expressway 45 mph or more 1,000 ft. 1,600 ft. 2,600 ft.	Expressway 45 mph or more 1,000 ft. 1,600 ft. 2,600 ft.	Expressway 45 mph or more 1,000 ft. 1,600 ft. 2,600 ft.

(*) Sign A is the warning sign nearest to where traffic lanes narrow or shift.

(**) Sign B is the next sign upstream from where traffic lanes narrow or shift.

(***) Sign C is the first sign (in a three-sign series) that the driver sees in a temporary traffic control zone.

Traffic Control Devices

Cones, drums and barricades, vertical panels, tubular markers and pavement markings are commonly used to alter, or channel the normal traffic flow. They alert drivers of work activities ahead and provide smooth and gradual traffic movement from one lane to another. Cones, drums and other devices must be made of lightweight materials and give way when struck by a vehicle. They must not break apart or be capable of penetrating the passenger compartment of a vehicle. The material used to weigh down devices to prevent them from being easily blown over (ballast) must also be made of materials that will cause only minimal damage to vehicles.

The proper use of cones, drums or other devices requires that:

- The number of feet between traffic control devices in the area where traffic is shifted from one lane to another (**transition area**) cannot be greater than the miles per hour that traffic is moving. For example, if the speed limit is 45 miles per hour, the devices cannot be more than 45 feet apart.
- The number of feet between devices where the traffic is moving through the work

area(**activity area**) cannot be more than twice the number of miles per hour. For example, if traffic is moving at 45 miles per hour, the devices cannot be more than 90 feet apart.

- Cones left up overnight must be equipped with retro-reflective striping.
- All drums must have retro-reflective striping (day or night). All devices must be properly installed and be inspected regularly to ensure their effectiveness.
- Damaged or very dirty devices must be removed from service.

Traffic cones and tubular markers **must**:

- Be at least 18 inches in height (tubular markers must also be at least 2 inches wide).
- Be at least 28 inches in height on roads with speeds of 45mph or greater.
- Be orange in color.
- Have two 3-inch wide, white, retro-reflective bands at the top of the cone and a maximum of 6 inches between the bands.

Vertical panels **must**:

- Be 8 to 12 inches wide and at least 24 inches in height.
- Have alternating orange and white, retro-reflective stripes at least 4 inches in width. If the panel height is 36 inches or more, the stripes must be at least 6 inches wide.
- Stripes must slope downward at a 45 degree angle in the direction that traffic is moving. Have a minimum of 270 square inches of retro-reflective area facing traffic when used on freeways and expressways.

Drums **must**:

- Be orange in color.
- Be at least 3 feet high and 18 inches wide.
- Have at least 2 orange and 2 white alternating, retro-reflective stripes. Stripes must be at between 4 inches and 6 inches wide.
- Have closed tops to prevent accumulation of roadwork or other debris.
- **Steel drums are prohibited!**

Barricades are of three types and they can be portable or fixed:

- *Type I*: **must** be at least 3 feet high with **one** rail 2 feet in length.
- *Type II*: **must** be at least 3 feet high with **two** rails 2 feet in length.
- *Type III*: **must** be at least 5 feet high and have **three** rails that are at least 4 feet long.

The rails on all three types of barricades must be between 8 and 12 inches wide. They may be equipped with warning lights under certain circumstances. Warning lights must be of a steady burn type when used to channel traffic.

The stripes on the rails of a barricade **must**:

- Have alternating orange and white retro-reflective striping.
- Slope downward at a 45-degree angle in the direction traffic is moving.
- Be a minimum of 4 inches wide. If the rail lengths are 36 inches or greater, the stripes must be a minimum of 6 inches wide.
- Have a minimum of 270 square inches of retro-reflective area facing oncoming traffic when used on freeways.

Pavement Markings

Pavement **must** be marked in all temporary traffic control zones. Pavement markings include paint, plastics, and temporary raised pavement markers. Markings between opposing lanes of traffic **must** be yellow and the edges must be white.

Laws to protect workers

The United States Department of Transportation, Federal Highway Administration (FHWA) has issued the Manual on Uniform Traffic Control Devices. The Occupational Safety and Health Administration (OSHA) enforces the MUTCD and is part of OSHA's standards for the Construction Industry ([29 CFR 1926.200 - 29 CFR 1926.203](#)). For state and local government workers not covered by OSHA, the state Department of Transportation requires that the standard be followed on all public roadways.

This material was produced under Grant Number 46C8-HT32 from the Occupational Safety and Health Administration, U.S. Department of Labor. It does not necessarily reflect the view or policies of the U.S. Department of Labor, nor does mention of trade names, commercial products or organizations imply endorsement by the United States Government.

April 2010

For more information about protecting workers from workplace hazards, contact the AFSCME Health and Safety Program at (202) 429-1228, or 1625 L Street, N.W., Washington, DC 20036.