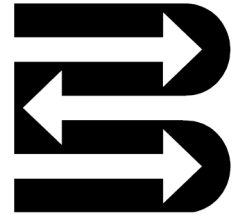


Baystate Roads Program Local Technical Assistance Program (LTAP)

Tech Notes



MassDOT TOOLBOX: WORK ZONE SAFETY

Tech Note #59

The National Work Zone Memorial honors roadway workers, police, and fire/rescue personnel who have lost their lives in work zones.



BACKGROUND

Construction and maintenance are ongoing activities aimed at keeping our roadways safe and efficient for roadway users; however, the very work zones that contain these construction and maintenance activities can create an unexpected condition along the roadway for motorists. Both the FHWA and the Commonwealth of Massachusetts have established formal policies to help keep work zones safe for both drivers and workers, alike.

A work zone should be established at any location where construction or maintenance work is ongoing, which may include long-term or temporary work zones as well as moving work zones. The work zone should be set up such that traffic is separated from potential hazards, whether they be on the shoulder or in the center of the traffic lane. Work zones should last the duration of time work is being performed. If necessary, a work zone should remain in place even when the workers are not present to separate traffic from roadway hazards.

WORK ZONE SAFETY

A fundamental safety element in a work zone is managing vehicle speeds. Some measures that help manage speeds are posting signs for a speed reduction prior to the work zone or providing advance signage alerting motorists of the potentially unexpected conditions ahead. Yet another method is to reduce lane width, using appropriate guidelines and standards, within the

work zone itself. Although this may already occur as a result of construction, it may encourage drivers to find a safer, slower speed.

Construction of an adequate transition and termination zone before and after the designated work zone is another important consideration. This will smoothly move traffic into a path away from workers and equipment and safely back into the lane following the work zone, which can typically be done using signage. Dimensions for these geometric transitions can be found in the *Manual of Uniform Traffic Control Devices - Part 6*. This signage should inform the driver of the geometry of any potential lane changes as well.



Knowing the Stats:

In the United States, 1,010 people were killed in 2006 in motor vehicle crashes that occurred in work zones. In Massachusetts, there were 11 fatalities in 2006 that occurred in work zones. It is the responsibility of a transportation agency to see that work zones are as safe as possible.

SAFETY TIPS

EDUCATION

Informing the public about upcoming or ongoing construction or maintenance can provide enhanced safety and operational benefits. Specifically, informing the public regarding a work zone, increases awareness and may allow drivers to seek alternate routes.

SIGNAGE

Erecting temporary signs declaring the presence of a work zone ahead allows drivers added time to slow down or stop when the work zone is reached. Signs should be placed with adequate sight distance for drivers to react appropriately. Signs should follow *MUTCD* standards (see *Chapter 6F*). Any temporary signs should not impact existing signage. Another consideration is the physical condition and retroreflectivity of the sign.

BARRIERS

Limit access to the work zone. Allow vehicular traffic to pass through it, but delineate the zone with barriers to provide safety for the workers. This doesn't necessarily require the use of "Jersey Barriers"; something as simple as traffic cones, reflectorized plastic drum barrels, or Type III barricades will suffice.

POLICE PRESENCE

Massachusetts requires a police presence, when deemed appropriate by the Awarding Authority, on roadways with a legal speed limit equal to or greater than 45 mph, except when that roadway has an ADT of 4,000 vehicles or less. See *Regulation 701 C.M.R. § 7.00* for the different tiers of public works projects requiring road flaggers and police details and Volume 23, No. 1 of *Mass Interchange*.

PEDESTRIAN, BIKE, AND, TRANSIT ACCOMMODATIONS

Pedestrian and bicyclist safety is as important as motor vehicle safety. Make accommodations for any work zone that shifts pedestrians or bicyclists out of their normal path. A temporary sidewalk or temporary bike lane is one possible solution. If the zone obstructs a bus stop or roadside pull out, create temporary ones to accommodate users (see *MUTCD Chapter 6D*)

LIGHTING

Provide additional lighting to the project site, which may allow drivers to better see obstructions and possible



SIGNAGE CHOICES

Although the signs listed below do not necessarily represent the actual sequence of signage within a work zone, they do provide information about various signs that may prove useful regardless of the work zone location.

Example Sign: W21-1a
Gives ample time and sign distance for drivers to realize that they are approaching a work zone.

Example Sign: W20-5R
If the roadway path has changed, gives ample time and distance to drivers so they know what the roadway geometry will be in the upcoming work zone.

Example Sign: W1-4R
If the roadway changes path, shows the change in geometry of the roadway so that the driver can prepare for any required maneuvers.

Example Sign: W8-11
If work zones create potential roadway hazards, alerts drivers of those hazards. This includes pavement changes, roadway dips, or bumps.

Example Sign: G20-2
Just as at the end of a detour route, tells drivers where the work zone has ended and where they may proceed with their normal traffic flow.

Example Sign: M4-9R
In some instances it becomes necessary to set up a detour route to divert traffic from the zone. Detours should be clearly marked with signage that conveys the new travel path to drivers. This includes signs warning of a detour, signs that direct the path of travel, a sign that ends the detour, and one that leads traffic back to its original path.

RESOURCES

The Manual on Uniform Traffic Control Devices (MUTCD)

Published by the FHWA, it defines the standards used by transportation professionals nationwide to install and maintain traffic control devices on all streets and highways. The most recent version (2009) can be found at:

<http://mutcd.fhwa.dot.gov/>

The National Work Zone Safety Information Clearinghouse

This web site is dedicated to providing comprehensive information to improve motorist, worker and pedestrian safety in roadway work zones. Available at:

www.workzonesafety.org

Standard Details and Drawings for the Development of Traffic Management Plans

Details and drawings developed by MassDOT for the purpose of standardizing the temporary Traffic Management Plans used to control traffic during road and bridge construction projects. These drawings should meet the majority of typical work zone setups, but shall also be used as examples for more customized applications. Available through MassDOT at:

www.mass.gov



WORK ZONE SAFETY QUIZ

Q1. What are the 4 types of roadway activities that commonly impact traffic flow?

A1. Construction, maintenance, utility, and incident.

Q2. What is “TTC”?

A2. Temporary Traffic Control’s primary purpose is to provide for reasonably safe and efficient movement of road users through or around TTC zones while reasonably protecting workers, responders and equipment.

Q3. Where are examples of typical work zone setups found?

A3. Chapter 6 of the *MUTCD* provides applications for TTC zones although not every possible situation is illustrated. Many variables affect the needs of each work zone, including roadway characteristics and the volume, speed and mix of traffic (cars, trucks and buses). Four factors used to describe typical applications are work duration, work location, work type, and highway type.

Q4. What are 5 categories of “work duration”?

A4. *Long-term stationary* is work that occupies a location more than 3 days.

Intermediate-term stationary is work that occupies a location more than 1 day-light period up to 3 days, or night-time work lasting more than one hour.

Short-term stationary is daytime work that occupies a location for more than 1 hour within a single daylight period.

Short duration is work that occupies a location up to 1 hour.

Mobile is work that moves intermittently or continuously.

Q5. What are 4 components of a typical work zone?

A5. *Advance Warning Area* -- tells traffic what to expect ahead.

Transition Area -- moves traffic out of its normal path.

Activity Area -- where work takes place.

Termination Area -- lets traffic resume normal operations.



Q6. What are 5 categories that describe “location of work”?

A6. The choice of TTC needed for a zone depends upon the location as described in the *MUTCD*:

Outside the shoulder

On the shoulder with no encroachment

On the shoulder with minor encroachment

Within the median

Within the traveled way.

As a general rule, the closer the work is to road users, the greater the number of TTC devices that are needed.

Q7. Where can information be found about making TTC zones safer for workers?

A7. Refer to the *MUTCD Section 6D.03*, Worker Safety Considerations, which addresses safety, management, employee training, use of high-visibility safety apparel, and the role of a competent person in worker safety planning and assessment.

