Traffic Control for Work Zones

An Online Continuing Education Course for Engineers

Course Number: T-3021

Credit: 3 Hours / 3 PDH / 3 CPD

Traffic Control for Work Zones

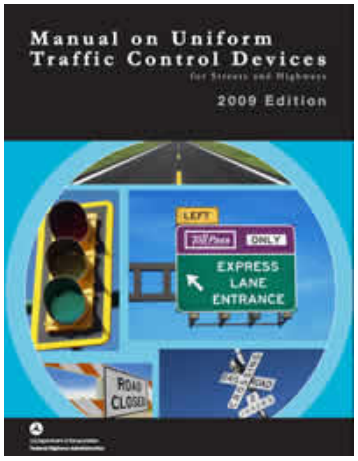
Gregory J. Taylor, P.E.

INTRODUCTION

This course shows how to effectively plan and design temporary traffic controls for work zone locations. The contents of this course are intended to serve as guidance and not as an absolute standard or rule. Its purpose is to help you to use the **Manual on Uniform Traffic Control Devices (MUTCD) Part 6 – Temporary Traffic Control** more effectively and not replace it. Should there be any discrepancies between the contents of this course and the MUTCD - always follow the MUTCD.

Upon course completion, you should be familiar with the general design guidelines for work zone traffic control. The course objective is to give engineers and designers an in-depth look at the principles to be considered when selecting and designing temporary traffic control for work zones.

For this course, the *Manual on Uniform Traffic Control Devices for Streets and Highways (MUTCD) 2009 Edition* will serve as a reference for fundamental design principles. The MUTCD is recognized as the **national standard** for all traffic control devices installed on any street, highway, bikeway, or private road open to public travel. Any traffic control device design or application contained within it is considered to be in the public domain and available for use.



http://mutcd.fhwa.dot.gov/pdfs/2009/mutcd2009edition.pdf
MUTCD 2009

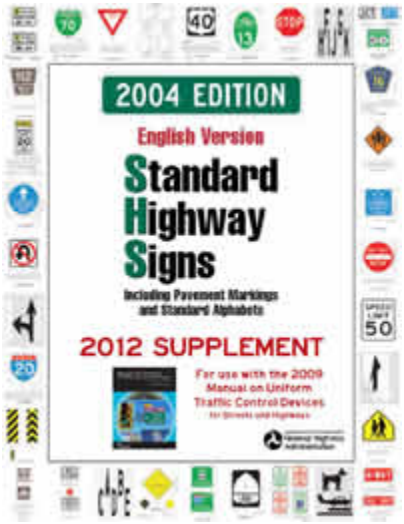
http://mutcd.fhwa.dot.gov/pdfs/2009/part6.pdf
Part 6

Traffic signs and pavement markings are typically used for conveying laws and regulations, traffic and roadway conditions, and guidance and other information. These critical tools provide important information for safe travel on any U.S. roadway system.

Road users process different types of visual and non-visual information differently: speed, roadway conditions, traffic, legal enforcement, noise levels, etc. Signs and markings serve as reminders of important information, so road users do not have to memorize everything.

The goal is to provide drivers with relevant information when they need it - resulting in safer, more efficient roadways with reduced liability risks. However, poor sign management can greatly reduce safety, contribute to roadway incidents, and increase liability exposure.

The *Standard Highway Signs and Markings* book contains detailed specifications for all adopted standard signs and pavement markings. All traffic control devices have to be similar to or mirror images of those this manual. Any symbols or colors cannot be modified unless otherwise stated.



http://mutcd.fhwa.dot.gov/SHSe/shs_2004_2012_sup.pdf

MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (MUTCD)

By law (23 CFR 655, Subpart F), the *Manual on Uniform Traffic Control Devices* (MUTCD) is recognized as "the national standard for all traffic control devices installed on any street, highway, bikeway, or private road open to public travel". It is the definitive authority for traffic signs and pavement markings.

Nationwide consistency is the goal of the MUTCD by requiring uniform, understandable, and effective traffic control devices on all facilities open to public travel. It defines the nationwide standards for the installation and maintenance of the devices on all streets and highways. The MUTCD allows us to drive anywhere in the U.S. using the same basic signs with the same meanings. Drivers who see a particular sign should expect it to mean the same thing regardless of location.

The MUTCD has nine chapters ("Parts"):

- General
- Signs
- Marking
- Highway Traffic Signals
- Low-Volume Roads
- Temporary Traffic Control
- School Areas
- Highway-Rail Grade Crossings
- Bicycle Facilities

Since this course concentrates primarily on the subject of temporary traffic control, we will focus mainly on Part 6 - Temporary Traffic Control.

SHALL, SHOULD, and MAY
The terms "shall," "should," and "may" have specific meanings when used in the MUTCD.

> SHALL – Required, mandatory or specifically prohibitive practice.
> Any statements with "shall" conditions are typically used as a STANDARD in the MUTCD. These items cannot be modified or compromised. There is no allowance for discretion and they must be followed.
>
> SHOULD – Advisory or recommended practice in typical situations.
> Deviation is appropriate if justified by engineering judgment or study. Statements marked as "should" are used for GUIDANCE in the MUTCD.

MAY – Permissive or optional practice without requirement or recommendation. Items marked as "may" are typically used in OPTION statements in the MUTCD and can contain allowable modifications.

SUPPORT statements do not contain the verbs "shall", "should", or "may". These statements are for informational purposes only (without any mandate, recommendation, or enforcement).

Road User

The MUTCD defines a road user as *"a vehicle operator, bicyclist, or pedestrian, including persons with disabilities, within the highway or on a private road open to public travel"*. This group includes users of various skill levels and ages, pedestrians, wheelchairs, runners, rollerbladers, bicyclists, truck drivers, and motorcyclists. By meeting user needs, engineers can minimize any problems that the average road user may encounter.

Temporary Traffic Control

A temporary traffic control (TTC) zone is a roadway location with changing user conditions due to road work, incidents, or special events. The main function of temporary traffic control is *"to provide for the reasonably safe and effective movement of road users through or around TTC zones while reasonably protecting road users, workers, responders to traffic incidents, and equipment".* Any TTC plan should include all phases of project development – planning, design, construction, and restoration.

FUNDAMENTAL PRINCIPLES OF TEMPORARY TRAFFIC CONTROL

- General plans/guidelines should be developed to provide safety for all users' equipment.
- Road user movement should be obstructed as little as possible.
- Motorists, bicyclists, and pedestrians should be guided in a clear and positive fashion through TTC zones and incident sites.
- Routine day/night inspections should be performed to provide acceptable levels of operations.
- Attention should be given to roadside safety maintenance during the life of the TTC zone.
- Each person (from upper-level management to field workers) whose actions affect TTC zone safety, should receive appropriate training for job decisions each individual is required to make.
- Good public relations should be maintained.

DEFINITIONS

The following terms may help determine the appropriate traffic control for existing street or highway conditions.

Low Speed – roadways with posted speed limits of 40 mile per hour (mph) or less.

High Speed – locations with posted speed limits of 45 mph or greater

Low Volume – sites with the average daily traffic volumes (ADT) less than 400 vehicles per day.

Special attention should be paid to nearby facilities (schools, manufacturing plants, etc.) that impact special traffic generation, and work zone locations subject to peak-hour traffic increases (typically 7-9 a.m. and 4-6 p.m).

Urban Street Conditions – routes with relatively low speeds, pedestrian activity, intersections, business entrances, and/or residential driveways. Work zones do not have to be within a municipality's corporate limits to qualify as an urban condition.

PARTS OF A TRAFFIC CONTROL ZONE

A traffic control zone is located between the first warning device and the where traffic resumes normal operations. Typical types of traffic control devices used in work zone traffic control include:

- Signs
- Channelizing Devices
- Lighting Devices
- Pavement Markings

Most temporary traffic control (TTC) zones are divided into the following four areas:

Advance warning area
Informs road users about an upcoming work zone or incident area and may vary from a single device to a series of advance signs.

Transition area
Redirects vehicles away from their normal path and through the work area.

This route sh[illegible]her. These areas usually involve the

Activity ar[illegible]
Where work[illegible]
This site is c[illegible]nt, and construction materials. Ac[illegible]as:

[illegible] storage
[illegible]y area

Termination a[illegible]
Contains adequ[illegible]rn to their normal driving route. T[illegible]e work area to the last traffic control d[illegible]