



Fundamentals of Roadway Signage

An Online Continuing Education Course for Engineers

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Fundamentals of Roadway Signage

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IV. Summary

I. Roadway Signage

A. Introduction

The *U.S. Department of Transportation Federal Highway Administration* publishes the Manual on Uniform Traffic Control Devices (MUTCD), which provides guidance to all 50 states related to roadway signage. This guidance ensures that all areas of the country are uniformly signed, so there is no confusion for drivers that drive in different states.

The Manual on Uniform Traffic Control Devices (MUTCD) is known as “the national standard for all traffic control devices installed on any street, highway, bikeway, or private road open to public travel” by law (23 CFR 655, Subpart F).

Please note that this course only provides a sampling of the signs identified in the MUTCD for educational purposes. The most commonly used signs are detailed in this course. A full accounting of signs can be found in the MUTCD.

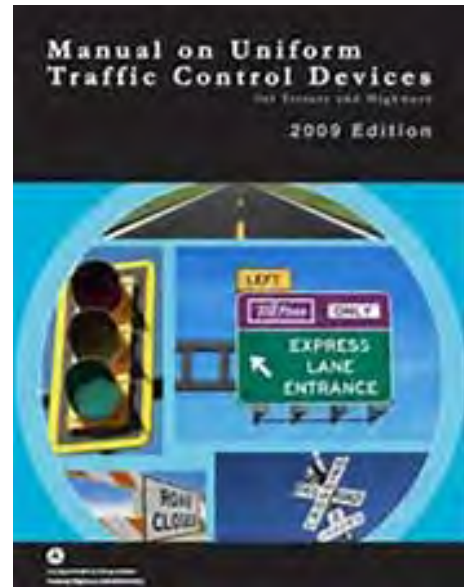
B. Sign Purpose

The purpose of signs is to promote safety and efficiency by providing for the orderly movement of all road users on all types of roadways.

C. Principles of Signs

In order to be effective signs should meet five requirements:

1. Fulfill a need
2. Command attention
3. Convey a clear, simple meaning
4. Command respect from the road users
5. Give adequate time for proper response



II. Design and Installation of Signs

A. Retroreflection of Sign Elements

Reflective “buttons” can be used to identify symbols, word messages, or borders. A material that has a smooth, sealed outer surface over a microstructure that reflects light can be used to identify symbols, word messages, borders, or backgrounds.

B. Color of Signs

The color code establishes general meanings for the colors that have been identified as being appropriate for use in conveying traffic control information.

The standard colors are as follow:

Color	Standard Usage
Black	Regulation
Blue	Tourist information and evacuation route
Brown	Recreational and cultural interest
Fluorescent Yellow-Green	Pedestrian, bicycle and school warning
Green	Direction guidance
Orange	Temporary traffic control
Purple	Toll signs
Red	Stop or prohibition
White	Regulation
Yellow	Warning

C. Ground Mount Sign Installation

1. Sign Panel Sizes

Sign panel sizes vary per the roadway designation: conventional road (single lane or multi-lane), expressway, or freeway. Generally, the sign panel size is smallest on the single lane conventional roadway and largest on the freeway. However, roadway speed also plays a factor in sign size. As the speed limit increases, the sign panel size also increases so that it is visible at a farther distance. The MUTCD also provides the minimum and oversized sign panel sizes, so that roadway signing is uniform.

2. Mounting Height

The minimum height measured vertically from the bottom of the sign to the elevation of the near edge of the pavement, of signs installed at the side of the road in rural areas shall be 5 feet.

The minimum height measured vertically from the bottom of the sign to the top of the curb, of signs installed at the side of the road in business and commercial areas shall be 7 feet. This is because parking and/or pedestrian movements are likely to occur, which may obstruct the view of the sign.

The minimum height measured vertically from the bottom of the sign to the sidewalk shall be 7 feet. If a secondary sign is mounted below the primary sign, it shall not project more than 4 inches into the sidewalk.

Directional, route, regulatory and warning signs on freeways shall be installed with a minimum height of 7 feet measured vertically from the bottom of the sign to the elevation of the near edge of the pavement. If a secondary sign is mounted below another sign on the freeway, the major signs shall be installed with a minimum height of 8 feet, and the secondary sign shall be installed with a minimum height of 5 feet.

Where large signs, exceeding 50 square feet, are installed on multiple breakaway posts, the clearance from the ground to the bottom of the sign shall be at least 7 feet.

3. Lateral Offset

For post mounted installations, the minimum lateral offset should be 12 feet from the edge of the traveled way. If a shoulder wider than 6 feet exists, the minimum lateral offset should be 6 feet from the edge of the shoulder.

Lesser lateral offsets may be used on ramps or interchanges, but not less than 6 feet from the edge of the traveled way. On roadways where it is impractical to locate signs within the desired offset, a lateral offset of at least 2 feet may be used. A lateral offset of at least 1 foot from the face of the curb may be used in business and commercial areas.

Post mounted signs shall be breakaway or yielding if within the clear zone.

For overhead sign supports, the minimum lateral offset from the edge of the shoulder to the near-edge of the sign support shall be 6 feet. Overhead signs shall have a barrier or crash cushion if they are within the clear zone.

Signs on any supports should not intrude into the usable width of a sidewalk.

4. Orientation

Signs should be placed vertically mounted at right angles to the traffic they are intended to serve. Signs that are placed 30 feet or more from the pavement edge should be turned toward the road.

5. Posts and Mountings

Signposts, foundations, and mountings shall be constructed as to hold signs in a proper and permanent position and to resist swaying in the wind.

During nighttime conditions, war. This strip shall be at least 2 inches in width, be placed for the full length of the support, and its color shall match the background color of the sign.

6. Maintenance

Maintenance activities should include:

- Proper position
- Cleanliness
- Legibility
- Daytime and nighttime visibility

Damaged or deteriorated signs should be replaced. A schedule for inspecting (both day and night), cleaning, and replacing signs should be established to assure adequate maintenance.

Steps should be taken to see that weeds, trees, shrubbery do not obscure the face of any sign. In addition, special attention should be paid to ensure that construction, maintenance, and utility materials and equipment do not block sign visibility.

D. Overhead Sign Installations

Overhead signs should be used for:

- Freeways and expressways
- Locations where there is a need for lane use control
- Locations where there is insufficient roadside space

An engineering study may be necessary to determine if overhead signs should be considered for the following conditions:

- Complex interchange/intersection design
- Traffic volume at or near capacity
- Multi-lane exits
- High-speed traffic
- Insufficient space for ground-mounted signs
- Junction of two freeways
- Left exit ramps

1. Mounting of Overhead Signs

There are a variety of methods for mounting overhead signs, including the following:

- Overhead truss structure
- Overhead monotube structure
- Overhead roadway/pedestrian bridge structure
- Span wire
- Intersection signal wire

III. Types of Signs

The functions of signs are to provide regulations, warnings, and guidance information for road users. Signs can be defined by their function:

- A. Regulatory – traffic laws
- B. Warning – information of a situation that may not be apparent
- C. Object Markers – mark obstructions in or adjacent to the roadway
- D. Guide Signs
 - 1. Conventional Roads
 - 2. Preferential/Managed Lane Signs
 - 3. Advanced Information Signs
- E. Toll Road Signs
- F. General Information Signs
 - 1. General Service
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- G. Recreational Signs
- H. Changeable and
- I. Emergency Management

A. Regulatory Signs

Regulatory signs give notice of a requirement imposed by traffic laws, ordinances, or regulations. They must be clearly visible and legible in all weather conditions.

Regulatory signs shall be rectangular. The size of regulatory signs shall vary according to the type of roadway. For example, a multi-lane freeway will require larger signs than a collector road. In addition, if a roadway facility has two lanes in each direction, two regulatory signs are required: one for each side of the roadway.

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clearly indicate the purpose of the sign. Signs must be supported by

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