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WISCONSIN TRANSPORTATION INFORMATION CENTER – LTAP at the University of Wisconsin–Madison

“The goal was to make sure there was good research and informed judgment behind every decision to change or add.”

Revised MUTCD sets new safety standards

RECENT RELEASE of the 2009 Manual on Uniform Traffic Control Devices (MUTCD) introduces a range of updates and additions local road officials will need to apply in their jurisdictions.

The first comprehensive revision of the national standard in six years features changes from expanded use of symbol signs to new guidance on establishing right-of-way control at intersections. It also incorporates minimum sign retro-reflectivity standards adopted in January 2008.

Crossroads highlights here a selection of the updated provisions that will influence transportation infrastructure for state and local governments. The Wisconsin Department of Transportation hopes to publish its supplement officially adopting 2009 MUTCD by the end of 2010.

Safety data provides framework

Tom Heydel, Traffic Engineer for WisDOT Southeast Region—who served on a review committee for the 2009 edition—says the basis for many key changes came from data from traffic safety and operational studies and observed trends.

“More than previous editions, this manual reflects the results of individual FHWA initiatives focused on improving safety,” he observes. “The goal was to make sure there was good research and informed judgment behind every decision to change or add.”

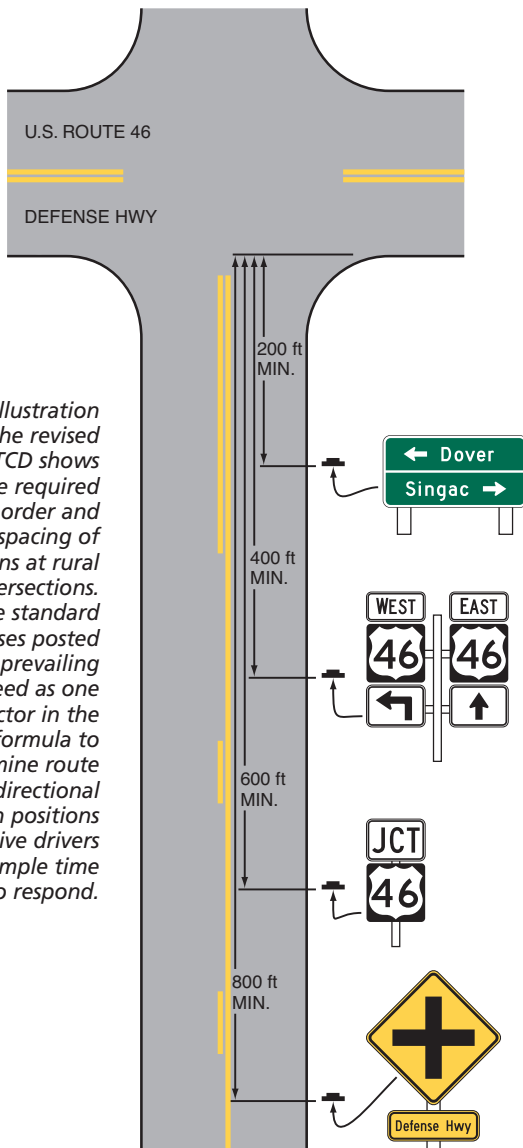
John Berg, Division Design and Operations Engineer for the Federal Highway Administration (FHWA), based in Madison, says the updated MUTCD also furthers the “complete streets” concept by requiring better pavement markings and longer walk times at crosswalks

to increase safety for bicyclists and pedestrians.

Berg and Heydel identified the various provisions they know, from experience and feedback, will have an impact on keeping local roads safe and in compliance.

More sign visibility

The MUTCD update adds methods for enhancing the conspicuity, or visibility of regulatory, warning or guide signs with flags, plaques, reflective stripes and beacons.



An illustration from the revised MUTCD shows the required order and spacing of signs at rural intersections. The standard uses posted or prevailing speed as one factor in the formula to determine route and directional sign positions that give drivers ample time to respond.



Plaque in black on yellow background alerts drivers to a new turn restriction.



Red/orange flags call attention to a change in the posted speed limit.

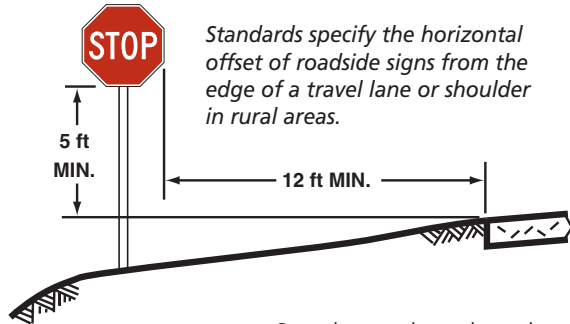
It also specifies the order and spacing of directional and route signs at rural intersections, and the minimum horizontal offset from the edge of the travel lane and/or shoulder. Here as elsewhere in the new edition, Heydel says detailed figures illustrating the standards make them easier to understand.

Changes in the 2009 edition strengthen requirements for sign-

Revised MUTCD sets safety standards

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ing horizontal curves to reduce crashes. A new table defines various approaches based on the difference between the posted or prevailing speed and advisory speed. Heydel suggests the information makes it easier to establish safe speeds under every condition and install signs that match.



Using studies that show growing public recognition of traffic control symbols, the 2009 MUTCD specifies them in many cases to replace language signs.



New "school bus stop ahead" symbol sign has a black legend on green fluorescent background with red to show flashing lights and stop sign on a standing bus.

One change that takes a broad stroke is the standards now apply to private roads open to public travel. The MUTCD covers roads within shopping centers, airports, arenas and other privately owned facilities. Berg notes some rules do not translate easily to conditions in parking lots and facilities so these are exempt.

Roundabouts and setting speeds

In response to the growing use of roundabouts in the United States, the new MUTCD expands its section on signing and pavement markings for this new style of intersection. The manual introduces new directional arrow signs and circulation signs specific to roundabouts.

Speed studies get a strong endorsement in the 2009 MUTCD. According to Heydel, it emphasizes development and use of these engineering studies for setting speed zones. Current Wisconsin policy mirrors this provision. The TIC fact sheet *Setting Speed Limits on Local Roads* covers all the latest changes and is available free from the Transportation Information Center.

There is new guidance in the manual for establishing right-of-way control at intersections. Traffic volume on all legs of the

intersection, approach speeds and approach angle, sight distances and crash data are among factors to consider.

Signs and signals

Using studies that show growing public recognition of traffic control symbols, the 2009 MUTCD specifies them in many cases to replace language signs. Examples include "School bus stop ahead" and "Turning traffic must yield to pedestrians." It also retires word signs like "HILL" or "DIVIDED HIGHWAY" in favor of universal symbols.

Extensive research prompted FHWA to take a new look at determining signal warrants related to pedestrian volume. The provision requires road officials to examine a combination of vehicle and pedestrian volumes over a four-hour period or during a single peak hour. Berg says this makes it easier to meet Warrant 4 requirements with lower pedestrian volumes on streets with a high volume of vehicle traffic but harder to meet it on streets with low volume.

A new section on countdown pedestrian signals addresses application of hybrid beacons as an option at unsignalized crosswalks or where emergency vehicles cross traffic. Known as the HAWK, the device combines features of a traffic control signal with a warning beacon and goes dark between activations. Judged effective in studies around the country, Heydel says WisDOT is evaluating its response to this device and its usage.

Legible street name signs

The anticipated update of requirements for street name signs is part of the 2009 edition. Sign legends must be a mix of uppercase and lowercase letters, see *below*. Traffic speed dictates letter size: signs along a 45 mph or faster multi-lane roadway require 8-inch uppercase and 6-inch lowercase lettering



versus 6-inch uppercase and 4 1/2-inch lowercase for lower posted speeds. For local roads posted at 25 mph or less, the 4-inch/3-inch standard still applies.

The new provisions allow the use of blue, brown or white as an alternative to green for the background color of street name signs. The new standard for legend colors is white lettering on green, blue and brown signs, black letters on white signs.

With changes in sign sizes related to road speeds and other regulatory factors, the MUTCD also features a new Sign Size table to give street and road officials an easy reference for updating their signs.

Attention to work zones

Provisions that update measures to keep temporary traffic control zones safe for workers and road users reinforce the MUTCD focus on reducing crashes and fatalities in every roadwork scenario.

Among a series of revisions in this section, an important change for local governments is the rule requiring high-visibility safety apparel for all workers in the public right-of-way on all roads, not only federal aid highways.

Flaggers in a work zone must use a visible paddle or a flag to signal approaching drivers. The standard no longer permits hand signals alone.



The 2009 MUTCD details proper flagging protocols that require visible apparel and paddles or flags motorists can see clearly.

The 2009 edition also expands on a recommendation to develop complete traffic control plans for special events that, like road construction projects, effect normal traffic movement.

Time to review

The 2009 MUTCD is available for review online at the FHWA website or purchase in printed form. The site includes resources that go with the revisions in this edition, including a series of slideshow presentations that highlight key changes throughout the MUTCD.

Crossroads plans to revisit the topic in future issues and explore individual revisions in more depth. ■

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Resources

<http://mutcd.fhwa.dot.gov/>
Link to the Manual on Uniform Traffic Control Devices information and resources on the FHWA site.

Setting Speed Limits on Local Roads, TIC Bulletin #21, updated in 2009, publication outlines the process of studying and setting safe speeds on Wisconsin roads.

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RESOURCES

Print copies of listed publications available free from TIC. Download or request items at **Publications** on TIC website. Video, CDs, and DVDs loaned free at county UW-Extension offices. Also see **Video Catalog** on TIC website.

TIC website
<http://tic.engr.wisc.edu/>

Publications

Setting Speed Limits on Local Roads, TIC Bulletin #21, 6 pp., updated 2009. Available from TIC. Reviews the role of local governments in setting limits. Update includes information from new **Statewide Speed Management Guidelines**.

Flagger's Handbook, 28 pp., 2007. Pocket-sized handbook on flagger safety includes important changes in the MUTCD.

Work Zone Safety: Guidelines for Construction, Maintenance & Utility Operations, 55 pp., 2006. Illustrated handbook reviews temporary traffic control applications that promote safety for vehicles, pedestrians, workers and equipment.

Web Sources

Page on FHWA site with link to 2009 Manual on Uniform Traffic Control Devices (MUTCD) and information discussing changes.
<http://mutcd.fhwa.dot.gov>

DVD/VHS/Multimedia

Timely resources new to TIC collection or related to current newsletter topics.

Flagging Operations and Procedures, North Carolina State Institute for Transportation Research and Education, 2002, 24 minutes, #18610 VHS (also DVD). Demonstrates proper equipment and procedures in the Wisconsin **Flagger's Handbook** for single flagger, two flaggers, pilot car, night flagging, one-direction flagging and emergency flagging operations. Recommended for flaggers and their supervisors.



CALENDAR

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Other Events

April 14 . . . Pewaukee
2010 Traffic Engineering Workshop and Transportation Planning Forum

Sponsored by the Institute of Transportation Engineers (ITE) at the Country Springs Hotel in Pewaukee. Fee: \$65. Contact John Cambell at jcambell@traffic-ad.com for more information.

May 19 Madison
Maintenance Decision Support System Showcase

Free FHWA-sponsored training session discusses the experience of state DOTs and large cities in implementing Maintenance Decision Support Systems (MDSS) for winter maintenance operations. MDSS is a computer-based, customizable tool that provides route-specific weather forecast information and treatment recommendations. It helps support efficient use of salt and other deicing materials, effective use of operators and equipment, reduced environmental impact from deicing chemicals, and improved road condition monitoring and reporting. Register online at <http://www.utahltap.org>

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