



Memorandum

Subject: **INFORMATION:** MUTCD – Official
Ruling No. 2(09)-174 (I) – Uses of and
Nonstandard Syntax on Changeable
Message Signs

Date: **January 4, 2021**

From: Mark R. Kehrli
Director, Office of Transportation
Operations

In Reply Refer To:
HOTO-1

To: Federal Lands Highway Division Directors
Division Administrators

Purpose: The purpose of this memorandum is to provide an official interpretation of the provisions of the 2009 edition of the *Manual on Uniform Traffic Control Devices for Streets and Highways* (MUTCD) related to changeable message sign messaging. Specifically, we have been asked whether the MUTCD provides for displays on changeable message signs (CMS) that use unconventional wording typically not found on standard signing and how public input into the development of CMS messages may be used. This information will clarify the provisions of the MUTCD and will assist States and local agencies in ensuring that their traffic control devices will promote the safe and efficient utilization of the highways.

Background: A CMS can be an effective tool to provide real-time traffic regulatory, warning, or guidance information to the traveling public. In most cases, the messages displayed on CMS are related to traffic delays, travel times, lane closures, rerouting due to traffic incidents, and similar strategies to manage traffic actively on the highway system. With few exceptions, the MUTCD limits the use of CMS to the display of traffic operational, regulatory, warning, and guidance information.¹ Chapter 2L of the MUTCD contains information on all the general types of messages allowed on CMS.

A determination of whether a specific CMS message is suitable begins with consideration of the fundamental principles common to all official traffic control devices:

Traffic control devices or their supports shall not bear any advertising message or any other message that is not related to traffic control.²

In addition, for a traffic control device to be effective, it should meet the following characteristics:³

- A. *Fulfill a need;*
- B. *Command attention;*
- C. *Convey a clear, simple meaning;*
- D. *Command respect from road users; and*
- E. *Give adequate time for proper response.*

¹ *Manual on Uniform Traffic Control Devices for Streets and Highways* (MUTCD) 2009 Ed. § 2L.01 ¶ 3

² *Id.*; § 1A.01.

³ *Id.*; § 1A.02.

It is when these five traffic control device principles are engineered into the design, placement, and use of a CMS that it is most effective. When one or more of these principles is compromised, so, too, is the effectiveness of the CMS.

Similarly, it has been shown that inappropriate or excessive use of a traffic control device can diminish its effectiveness:

A standard device used where it is not appropriate is as objectionable as a non-standard device; in fact, this might be worse, because such misuse might result in disrespect at those locations where the device is needed and appropriate.⁴

The application of this principle to CMS becomes even more complex as it can refer to the location of the CMS itself, the frequency of display of messages on the CMS, the content of the message displayed, or combinations thereof.

The following illustrates the application of the five principles of an effective traffic control device as they apply to CMS:

1. *Fulfill a need.* Signs fulfill a need by providing regulatory, warning, or guidance information to the road user at the point that information is needed to ensure safe and efficient operation. The primary purpose of CMS is to provide relevant information on changing highway traffic conditions. To meet this need, these signs are most often located in advance of major junctions, before areas prone to incidents or adverse road-weather conditions, and in areas of recurring congestion on facilities with higher volumes and speeds where driver workload demands are high. Thus, the need to display a message is determined in response to nonpermanent or temporal factors.
2. *Command attention.* By their nature of displaying an illuminated message and, often, by their placement to take advantage of long viewing distances and in an overhead position, electronic CMS tend to capture the attention of the road user.
3. *Convey a clear, simple meaning.* Clear and simple messages are easy to read and comprehend with only short glances away from the roadway, resulting in minimal visual and cognitive distraction from the driving task. The use of witticisms, colloquialisms, and popular culture references that target or are comprehended only by a limited segment of the population is not consistent with a clear, simple meaning for all. Instead, these messages rely on hidden meanings or targeted cultural knowledge to understand the message. Similarly, the use of newly coined terms (neologisms), words combining the meanings of two words or blending of sounds (portmanteaus), metadata tags (“hashtags”), electronic shorthand (“Internet slang”), and other forms that do not use conventional syntax do not convey a clear, simple meaning to many road users.
4. *Command respect from road users.* Respect for CMS is gained through the posting of information that is relevant to all road users at the location and time it is displayed. Just as important, CMS messages also command respect through the consistent use of simple, official language and design. The use of colloquialisms, popular culture references, and other types of indirect or potentially esoteric messaging tends to diminish respect of a CMS as a traffic control device because of its unauthoritative tone and its similarity to promotional advertising that employs a similar approach.
5. *Give adequate time for proper response.* The use of nonstandard or unconventional syntax in a message often results in significantly longer times for the observer to recognize and

⁴ *Id.*; § 1A.06.

process. Further, if comprehension of such a message is poor, then a significant portion of drivers will not respond accordingly or might respond unpredictably, negating any potential benefit that might be gained.

It is important to recognize that the non-static nature and advanced technological capabilities of CMS still require adherence to the principles that govern other types of official traffic signs whose messages do not change. While many of the criteria specific to CMS are stated in Chapter 2L of the MUTCD, it is not an independent or comprehensive Chapter unto itself. Other criteria, such as background and legend color, for example, are stated in Chapter 2A and apply to CMS.

Similarly, the format, content, and amount of legend displayed on CMS should be based on scientific principles that account for the human factors that include the information processing capabilities of the road user, habituation, and credulity. These principles should not be relegated to lesser importance simply because of the procedures by which the CMS are operated or because of the attractiveness and versatility of their capabilities. For those cases in which a new technology exists, but appears not to be addressed in the MUTCD, the official interpretation and official experimentation provisions⁵ of the MUTCD apply.

Effective and Safe Uses of CMS

The primary purpose of CMS is for the display of traffic operational, regulatory, warning, and guidance information. Other messages allowed by the MUTCD include traffic safety campaigns (by contrast with active warning messages of downstream conditions) and non-commercial messages related to improving traffic conditions such as those providing information on alternative means of transportation, electronic toll collection, or carpooling. In addition, the display of emergency and homeland security messages, and America's Missing: Broadcast Emergency Response (AMBER) alerts, is also allowed in the relatively rare instances when specific conditions are met. Primarily displaying relevant traffic-related messages of changing conditions due to congestion, incidents, weather, etc., will help to condition the motoring public to expect a message pertinent to them during those times. In contrast, excessive display of messages not relevant to traffic operational, regulatory, warning, and guidance information, regardless of the travel or traffic conditions, might adversely impact driver attention to the display of information that is critical to the driving task. Therefore, the selective and judicious use of CMS for these other purposes will promote the effectiveness of the sign for its primary purpose, which is to display real-time traffic information. Lastly, adherence to a policy establishing suitable controls that limit the number and duration of non-traffic related messages should make the signs less prone to requests to use them for inappropriate purposes.

The use of CMS to help promote traffic safety is becoming increasingly popular among States and transportation agencies. It is recognized that CMS can be an effective means of further propagating traffic safety campaign messages directly to the motoring public in a cost-effective manner. However, to ensure safety and effectiveness as a traffic control device, it is expected that CMS will be used judiciously for the display of safety messages, and that those messages will be derived from larger safety campaigns that rely on other media as their principal means of communicating the campaign message. These other media generally include, but might not be limited to, such outlets as television, radio, and Internet advertisements; 511 travel information system and Highway Advisory Radio messages; displays in rest areas; and mailings with motor vehicle registrations. The CMS display, if used as part of a traffic safety campaign, should be a supplement to the broader national or State-level campaign. In addition, a safety campaign, such as seat-belt use or prevention of impaired driving, should include active enforcement as a primary element of the campaign.

⁵ *Id.*; § 1A.10.

Design of Sign Messages

- Basic Message Development

Many of the current generation of electronic-display CMS have significant technological advancements when compared with their predecessors. Their high-resolution, full-color display capabilities have improved representation of sign lettering and allow the accurate depiction of route shields, symbols, and other features commonly used on static signs. While these capabilities are quite enabling, their overuse can result in overly complex or superfluous messages. Accordingly, it is essential that detailed messages developed for CMS adhere to the same principles used for static, non-changeable sign legends to the extent practicable. For example, displaying an image of a Speed Limit sign with a redundant word legend placed next to it within the CMS display confronts the observer with what appears to be multiple messages when, in fact, they convey the same message. Similarly, displaying the Slippery When Wet symbol sign adjacent to a word message that advises motorists of slippery roadway conditions also imposes an unnecessary informational load on observers. This effect of a duplicative sign and message within the same sign display is merely a product of the advanced capabilities of the CMS rather than actual need or improved effectiveness. The advanced functionality of newer CMS should be used only to improve legibility and comprehension of the sign message to convey a clear, simple meaning.

- Engaging the Public

Public input on official matters can be helpful in informing agency decisions on transportation issues. However, the messages that are displayed on signs including CMS are expected to adhere to the basic principles of traffic control devices and the provisions of the MUTCD. To this end, if public input is solicited on traffic control devices, it should only serve to inform whatever message is developed and displayed by the agency technical representatives, in accordance with conventional sign legend syntax.

- Unconventional Message Syntax

There is no objective evidence that colloquial, popular culture, or other unconventional messages on CMS have any greater effect on driver behavior than conventional sign messages. Further, the use of nonstandard language, neologisms, portmanteaus, and witticisms has the potential to result in additional time and attention on the message when compared with a standard or conventional message. Similarly, most references to popular culture simply will not be understood by certain segments of the population, again resulting in more attention directed toward viewing and attempting to decipher the message and away from the road. The result is that the intended message is not received by some if not many observers due to the use of nonstandard or unconventional diction and an increased safety risk.

Principal Uses of CMS

The MUTCD lists several uses of CMS. These uses are consistent with the uses of traffic control devices in general throughout the rest of the MUTCD and, with two special exceptions, are related to traffic control. The public has now developed a confidence in the operational capabilities of CMS and has come to primarily expect that information relevant to travel conditions will be displayed on them in the event of unexpected conditions.

- Real-Time Traffic Control Messages

The original intent of CMS was to provide information about traffic and travel conditions in real time. Whether for non-recurring congestion, incidents, work zones, or similar conditions, CMS are mainly used for the purpose of informing the traveling public of

unexpected or atypical travel conditions. Accordingly, uses other than relevant real-time traffic control messages should be selective and confined to periods during which traffic exposed to those messages will not be likely to habituate to seeing non-relevant messages on the signs.

- Travel Time Messages

Travel time messages are a valuable resource to travelers during periods of congestion when travel time might vary considerably. To be effective, the travel time should have some point of reference, most often a distance, over which that time applies so that the traveler can gauge the level of congestion and extent of any delay. Either a distance or a reference-location-based exit number⁶ appropriately provides this context. Ideally, comparative travel times for alternative routes to a common destination will provide the most direct message and help to balance traffic volumes among the two routes.

These two uses remain the principal function of CMS. Any other uses, to the extent that they are allowed, are considered secondary.

Acceptable Secondary Uses of CMS

- Traffic Safety Campaign Messages

It is important that any safety campaign related messages be limited in duration. Displaying safety campaign messages on a near-continuous basis can be counterproductive to the intended purpose, as motorists might habituate to and ignore messages that are displayed for long periods of time or with such frequency or predictability that motorists perceive them as being displayed continually.

Frequencies as often as weekly (e.g., “Safety Sundays,” “Message Mondays,” “Haiku Holidays”) typically do not tie into an active safety campaign whose primary components include outreach and enforcement concurrent with the display of the messages as only a supporting element. Instead, a more effective and strategic approach to traffic safety campaigns and accompanying messages is for them to coincide with those on the National Highway Traffic Safety Administration’s annual communications calendar.⁷ Alignment with national campaigns helps ensure consistency for long-distance travel from one State to the next and may avoid the need for States to establish individual policies that might vary widely. It also helps to stem overuse of the CMS for such messages making the messages more impactful.

In addition, it is important that any safety campaign message be in response to a specific traffic safety concern relevant to the roadway type on which it is displayed. For example, a safety campaign message reminding drivers to watch for school children at the beginning of the school year would be inappropriate for a freeway application where school children and other school activity are not present.

In summary, whether part of a broader national or State-level traffic safety campaign, the display of the associated safety message on CMS should be limited to provide optimum impact and must be relevant to the roadway type on which it is displayed.

- Emergency and Homeland Security Messages

In times of a declared state of emergency, it might be appropriate to display messages related to evacuation or homeland security information, pre-empting other messages that are not related to the emergency. Traffic patterns likely will be atypical due to the

⁶ See MUTCD § 2E.31.

⁷ <https://www.trafficsafetymarketing.gov/calendars>

emergency, necessitating unique messaging that might not be specifically related to traffic conditions.

Homeland security messages are displayed only in emergency situations when there is an imminent security threat to the general population. These messages are not "promotional" or "advisory" in nature and should undergo significant levels of scrutiny prior to being approved for broadcast. Conversely, generic security or personal safety messages do not promote safe and effective highway use when there is no context of a declared state of emergency or known imminent national security threat.

- America's Missing: Broadcast Emergency Response (AMBER) Alerts

The posting of AMBER alerts on CMS is the result of a statutory requirement.⁸ The AMBER alert is a nationally coordinated program under the U. S. Department of Justice. Its stated purpose is to recover an abducted child where an intent to harm has been determined. A case goes through multiple levels of law enforcement review before an AMBER alert is ever issued. The information also must have been entered into the National Crime Information Center system. Accordingly, AMBER alerts on CMS are relatively rare, making them a true exception. These messages are not "promotional" or "advisory" in nature.

No other types of alerts have been authorized for display on CMS. Other "alert" concepts have been extrapolated inappropriately from the AMBER alert concept and are inconsistent with the safe and effective use of a traffic control device, which is not intended or the purpose of displaying public notices.

- Transportation-Related Messages

Transportation agencies sometimes desire to display messages for the purpose of improving traffic conditions such as those providing information on alternative means of transportation, electronic toll collection, or carpooling as a means of reminding drivers of relevant options or opportunities for transportation. The provision in the MUTCD allowing for transportation-related messaging is intended only for messages narrowly focused toward these types of purposes. Messages regarding broader transportation items not related to improving traffic conditions, such as reminders of driver's license or vehicle registration renewal, vehicle recall information, and vehicle maintenance, are outside the intent of this provision.

Consistent with the principles articulated in the MUTCD, CMS are not intended for promotional purposes or messages that are unrelated to traffic control. Limiting the uses of CMS to messages primarily related to traffic control is expected to help transportation agencies preserve the effectiveness of the sign and its primary function as traffic control devices whose messages adhere to established criteria. Among the uses that are inappropriate for CMS are the following:

- Date and time (except as related to expected roadway or traffic conditions, such as planned closures or other events affecting traffic)
- Display of Web site or e-mail addresses, uniform resource locators (URL), domain names, metadata tags ("hashtags"), electronic device applications ("apps"), or similar forms
- Display of telephone numbers (except as specifically allowed)⁹

⁸ Pub. L. 108-21 (April 30, 2003).

⁹ See MUTCD § 2A.06.

- Display of statistics, such as highway fatalities or summonses issued
- Personal safety messages (e.g., WEAR SUN SCREEN)
- Promotional advertising (commercial or non-commercial)
- Public awareness campaigns unrelated to traffic operation or safety
- Public safety alerts (except homeland security and AMBER alerts as described herein)
- Public service announcements
- Sponsor acknowledgment
- Weather conditions or advisories (except as related to expected adverse road-weather conditions)
- Any use of video, motion, flashing, or other graphic features not specifically provided for in the MUTCD

Conclusion: Electronic-display CMS, when used judiciously, provide important, real-time information to travelers for improving the safe and effective utilization of the highways. Their messages help road users navigate congestion and prepare for other unexpected roadway conditions. As official traffic control devices, it is important that all the allowable types of messages displayed on these signs adhere to the most fundamental principles of effective traffic control devices, among which are relevance and timeliness, simplicity and familiarity of message, minimization of legend elements and complexity, and consistency with other types of signs. To maintain the integrity and effectiveness of CMS, prudent judgment should be employed in the determination of the use of CMS as well as the content and syntax of messages displayed thereupon. The adoption by agencies of sound policies governing the judicious use of these official traffic signs is expected to benefit the motorist by preserving their primary use of relevant and timely messages that help the motorist navigate unexpected or unusual traffic and travel conditions.

For recordkeeping purposes, this interpretation has been assigned the following Official Ruling number and title: “2(09)-174 (I) – Uses of and Nonstandard Syntax on Changeable Message Signs.” Please direct any inquiries regarding appropriate CMS use or message design to Mr. Marty Calawa, Martin.Calawa@dot.gov, of the Office of Transportation Operations MUTCD Team.

Copy:
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