WATER ON ROAD
5 MILES
SLOW DOWN

Source: FHWA.

# Efficient Messaging for Changeable-Message Signs During Nonrecurring Events

## Changeable-Message Signs

Changeable-message signs (CMSs), also referred to as variable- or dynamic-message signs, are programmable signs used on roadways throughout the United States. Because they provide relevant, current information safely, CMSs are among the most popular methods of disseminating information about nonrecurring events to travelers.

## Units of Information: One Answer to a Single Question

CMSs convey information in units. Each unit of information should provide a brief answer to one question. Only one unit of information should appear on each line of the CMS:

What is the problem?
Where is it?
How should I react?

ROAD WORK
AT I-40
USE OTHER ROUTES

Source: FHWA.

The following are potential units of information:
- Problem/nonrecurring event.
- Location of event.
- Suggested action.
- Effect of event.
- Intended audience.
- Good reason to comply.

## Limitations on Message Length

The *Manual on Uniform Traffic Control Devices for Streets and Highways* suggests that the amount of information displayed be limited to no more than the following:

5 Units of information per message
4 Words per unit of information
3 Units of information per phase
2 Phases per message
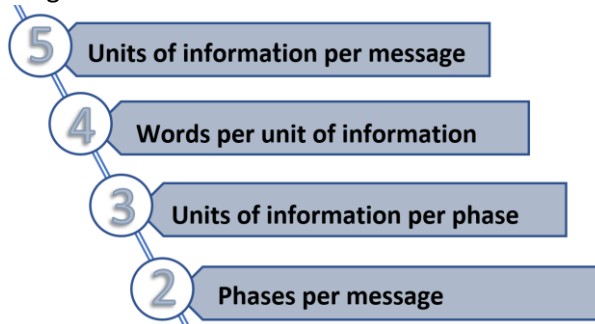
Source: FHWA.

Providing fewer units of information is recommended when visibility is low. Potential causes of low visibility are as follows:
- Fog or precipitation.
- Horizontal or vertical curves.
- High volume of large trucks.

### Value of Brevity

Drivers have a short time to read and comprehend CMSs. The more succinct the message, the more effective it is likely to be.

### Consistency

Messages are easier to read if word choice is consistent and the order of units of information is predictable.

Uncommon or unexpected phrases are difficult to read quickly and may result in drivers reducing their speeds as they drive by the CMS.

### Two-Phase Signs

When a message has two phases, some drivers may only see one phase of the message. As such, each phase of the message should be understandable on its own.

When a CMS changes phase, all units of information should change. If the first line of a message does not change, the entire message takes longer to read, and there is a risk that drivers will miss information because they do not realize the message has changed.

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# Eliminate Redundancy

CMSs that include vague or overly simplistic information can adversely affect drivers' attitudes about the message. Do not include information that drivers can easily observe.

| Redundant Messages | Informative Messages |
|---|---|
| WARNING<br>FALLING SNOW | BLACK ICE<br>ON BRIDGE<br>SLOW DOWN |
| Drivers can see when snow is falling on a roadway. The message does not provide any new information. | This message informs drivers about an unseen weather hazard and suggests an appropriate action. |
| MAJOR CONGESTION<br>SLOW TRAFFIC AHEAD | STADIUM TRAFFIC<br>20 MIN DELAY |
| Drivers can see the volume of traffic on a roadway and are aware of their speed. | This message informs drivers of the source of congestion and the extent of the estimated delay. |

Image sources: FHWA.

# Phrases to Avoid

Message length can be reduced by eliminating information that is not useful to drivers. The following information can be excluded without reducing the effectiveness of the message:

- **"Ahead"**
  - Drivers expect events described on CMSs to be on the road in front of them. Reduce reading time by eliminating "ahead."
- **"Name of Current Road"**
  - Drivers expect road names displayed on CMSs to correspond to names of cross streets or highways that intersect the current roadway. Reduce confusion by removing the name of the current road.
- **"Warning" or "Caution"**
  - Adding the words "warning" or "caution" to the beginning of a CMS does not influence how drivers respond to that message. Exclude these words to make room for information that is more likely to influence drivers' behaviors.

# Most Effective Messaging

Another way to reduce message length is by prioritizing the information that is most likely to be effective in leading to desired changes in traveler behavior:

- **"Road Closed"**
  - The phrase "road closed" is sufficient to encourage drivers to seek an alternate route. Describing the event that caused the road closure does not provide any additional benefit. Instead, focus on the information a driver needs such as where to exit or what route to take.
- **Specific Action Requests**
  - The more specific an action request, the more likely drivers will be to comply with that request:

ACCIDENT AT EXIT 35 EXPECT DELAY          ACCIDENT AT EXIT 35 USE OTHER ROUTES          ACCIDENT AT EXIT 35 USE I-245

Lower Diversion Rates --------------------------------------------------------------------------------------Higher Diversion Rates

Source: FHWA.

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