



Changeable Message Signs (CMS)

Policy, Procedures, and Guidelines

March 2012

Table of Contents

Section	Title	Page
	Index	2
1.0	Description	3
2.0	Purpose	3
3.0	Management	4
3.1	Assigned Duties	4
4.0	Appropriate Use	5
5.0	Inappropriate Use	6
6.0	Message Priority	7
7.0	Blank Out	7
8.0	Pre-approved Messages	7
9.0	Special Messages	8
10.0	Operations	8
	Appendix A	10

Section 1.0 - Description

In 2005, the City of Roseville City Council adopted an Intelligent Transportation System (ITS) Master Plan. This plan outlines the equipment, infrastructure, and funding necessary for the City to implement a citywide ITS system. The goal of the ITS system is to leverage technology to optimize the capacity of the City's roadway network. This is accomplished through the use of real-time data collection, traffic surveillance cameras, intelligent signal equipment, improved signal synchronization, high speed data communications lines, and public dissemination of current or upcoming traffic conditions. The latter item is accomplished through the use of the City's Traveler Information web page and use of changeable message signs (CMS's).

CMS's in Roseville are permanently mounted, electrical message boards which allow City staff to display various full color words, numbers, symbols, or graphics remotely from the City's Traffic Operations Center (TOC) which is located at the Civic Center. These messages may contain up to three lines of text with a maximum of 16 characters across and have the ability to show three distinct pages. Other names for changeable message signs are "variable message signs" (VMS) or "dynamic message signs" (DMS).

Section 2.0 - Purpose

The purpose of the City's CMS's is to communicate real-time and near future roadway or traffic conditions and/or guidance to the motoring public, as conditions warrant, so that they may react to those conditions in a safe and timely manner and choose alternative transportation routes if necessary. CMS applications include:

- A. Emergency response and incident management
- B. Road maintenance and construction activities
- C. Traveler information
- D. Special events affecting traffic conditions or driver route choices
- E. Traffic related public service announcements

CMS effectiveness is dependent upon providing information that is timely, accurate, and reliable. Appropriate use of CMS's will help promote road user confidence. They are high profile devices specifically designed to attract road users' attention. Using a CMS for extraneous messages can dilute their effectiveness when they are really needed. When CMS's only display appropriate messages, road users will be more likely to pay attention to the information.

Below are some operator actions that lead to low sign credibility:

A. Information inaccurate— road user observing differing conditions than those displayed on the CMS.

- B. Information not current road user observing out-of-date information displayed on the CMS.
- C. Information irrelevant road user does not need to know what is being displayed.
- D. Information obvious road user can readily observe (without a CMS) what message is being communicated.
- E. Information is repetitive road user sees the same message every day.
- F. Information is trivial the message has no direct impact on road user's trip.
- G. Information is erroneous road user can easily verify message and disprove if false.
- H. Messages are poorly designed road user has difficulty reading and/or comprehending intended message.

Section 3.0 - Management

The City's CMS's are managed and operated by the Public Works/Engineering Division. The signs can be activated Monday through Friday during normal business hours for new messages and 24 hours a day, seven days a week for emergency messages. Pre-approved messages can be scheduled to begin anytime as long as the request was made to staff during normal business hours. Appropriateness, priority, scheduling, and content of all messages are reviewed and approved by the Engineering Division.

Hours of Operation	Who to Contact	Contact Number
Normal Business Hours	Tony Philipp	776-1300
Monday – Friday	Jason Shykowski	
7 am – 5 pm	Engineering	
After Hours	Signal Tech	774-5117
Monday – Friday		Or e-mail:
5 pm to 7 am		pagesignaltechnicians@roseville.ca.us
Weekends/Holidays		

3.1 Assigned Duties

Engineering:

- A. New messages
- B. Scheduled messages
- C. Emergency messages
- D. Remove/Change messages

Technician:

- A. Emergency Traffic Messages at the request of the Police Department
- B. Removal of outdated or incorrect messages
- C. Sign maintenance and troubleshooting

Section 4.0 - Appropriate Use

The CMS's will only be activated to provide roadway users with accurate and real time traffic related information such as:

- A. <u>Emergency response and incident management</u> These include crashes, debris on road, hazardous material spills, downed electrical lines, fires, etc. These are incidents caused by random, unpredictable occurrences. These messages should be activated as soon as an event is verified, and deactivated as soon as an event is concluded. The goal of this type of message is to enhance traffic control near an incident scene, to inform motorists about traffic impacting circumstances, and to advise motorists regarding actions to take. This type of message will likely require modification throughout the life of the event. In order to maintain credibility, the information must be accurate and timely.
- B. Road maintenance and construction activities These are planned events and their requests should generally be included and approved as a part of a larger traffic control plan. The goal of this type of message is to enhance traffic control around a work zone in order to provide a safer work environment, to inform roadway users about traffic impacting circumstances, and to advise or direct motorists on actions to take. When possible, these types of messages should be limited to a continuous duration of no more than seven days. This type of message will likely require modification throughout the life of the project.
- C. <u>Traveler information</u> The goal of this type of message is to inform roadway users regarding non-recurring congestion and to advise them of slow traffic that may create unexpected conditions or increased travel time. These types of messages should be activated as soon as the congestion event is verified, and be removed as soon as it has ended.
- D. Special events affecting traffic conditions or driver route choices The goal of this type of message is to inform roadway users of special events and to advise them of anticipated slow traffic, lane closures, or detours that may create unexpected conditions or increased travel time. These types of messages should be activated at least 24 hours and up to 5 days in advance of the event and be removed as soon as the event has ended. An example of this type of message is Downtown Tuesday Nights.
- E. <u>Traffic related public service announcements (PSA'S)</u> The goal of this type of message is to provide a brief transportation related notification that does not require an immediate response but encourages the driver to change future driver behavior. PSA's should be activated in conjunction with a larger State or National campaign or event. PSA's should only be used randomly and sparingly so as to not degrade the warning nature of the sign, otherwise motorists may disregard the CMS thinking there is just another non-emergency message displayed. Examples of this type of message include Click it or Ticket, Report Drunk Drivers, etc.

The Engineering Division will determine which CMS's will be activated to inform the motoring public of pertinent and relevant roadway conditions or events.

Messages shall be brief but convey the maximum amount of information possible concerning roadway conditions or events. Signs shall display information that is timely, accurate, and reliable. Signs shall be monitored and updated as needed.

Emergency response and incident management events should be verified prior to posting an appropriate message. Verification can occur through visual sightings by Engineering or Police Department staff or traffic cameras. When verifying information, the CMS operator should ascertain:

- A. Type of emergency
- B. Location
- C. Projected duration of incident and requested message
- D. Impact of the incident
- E. Action to be taken by the roadway user if any
- F. Contact information to verify message content and duration

Messages that expire after midnight can be left operational until 7am the next morning unless otherwise requested by the Police Department.

Section 5.0 - Inappropriate Use

The following messages are not permitted on CMS's:

- A. Personal messages
- B. Public service messages (not traffic related) Flex Your Power, Recycle, etc.
- C. Regulatory messages such CMS messages do not have any legal status
- D. Replacement of static signs (such as road work ahead), pavement markings, or standard traffic control devices
- E. Advertising except as required to clarify a traffic related message
- F. Generic messages such as "Have a nice day" or "Welcome to Roseville".
- G. Time and temperature
- H. Capital Improvement Project advertising and announcements unless directly related to pending adverse traffic conditions.
- I. Repetitive Messages CMS's should not be used to display the same message day after day. If this becomes the case, use of a static sign should be considered.

Section 6.0 - Message Priority

CMS messages have the following priorities with 1 being the highest:

- 1. <u>Emergency response and incident management</u> The first priority is safety. This priority means that any messages that are directly related to safety are given first priority for display. Examples of this are accidents blocking lanes/roadway, power lines down across the road, terrorist threats, etc.
- 2. <u>Road maintenance and construction activities</u> These types of events have an immediate impact on the roadway user and are the intended primary use of the City's CMS's.
- 3. <u>Traveler Information</u> These types of events have an immediate impact on the roadway user and their route decisions.
- 4. <u>Special Events</u> These types of events have an immediate impact on the roadway user and their route decisions. However, certain time sensitive and urgent messages such as Amber Alerts may override a special event message.
- 5. <u>Public Service Announcements</u> These types of events are beneficial to the road user but generally do not have an immediate impact on their route choices. These types of messages should not continuously be active for more than two weeks. The individual public service announcement priorities are as follows:
 - A. Amber Alerts
 - B. Click it or Ticket
 - C. Report Drunk Drivers
 - D. Air Quality announcements
 - E. Transportation related National or State events

When two messages of the same priority are requested for the same time period, the message with the earlier end date shall be displayed. The other message may be activated upon completion of the first message. Two messages shall not be displayed during the same time period.

Section 7.0 - Blank Out

The normal state of all CMS's shall be blank. This will be the lowest priority message and shall be the default for all signs. Blank messages are an important part of the CMS programming. Overuse of the CMS's invite drivers to ignore their content, while careful, well spaced use increases the perceived importance of any messages displayed.

Section 8.0 - Pre-approved Messages

Engineering shall maintain a list of pre-approved messages. These messages shall include a predefined priority, layout, graphics, and text when possible. The current list of pre-approved messages is included in Appendix A of this document.

Section 9.0 - Special Messages

Special messages can be displayed upon request to and at the discretion and schedule of the Engineering Division. To ensure the special message is displayed when needed, please provide a written request at least two weeks prior to the event. The request should include:

- A. Event name
- B. Date of event
- C. Location of event
- D. Suggestion of information to display
- E. 80 pixels wide by 30 pixels high color graphic to use with message (optional).

Section 10.0 - Operations

One of the goals of CMS operations is the use of consistent messages in response to similar situations.

The following factors shall be considered:

- A. The message should consist of:
 - a. Problem statement (What)
 - b. Location/Date statement (Where/When)
 - c. Action statement (What is required of the driver)
- B. Unnecessary words (an, and, the, etc.) should be eliminated and common abbreviations should be used without punctuation unless necessary to make the message clear.
- C. Messages should be displayed in compatible chunks of information as outlined above. Each chunk should be contained on a line or page of text. The chunks should not be mixed together.
- D. Single panel messages should be continuously displayed.
- E. The message length should be limited to 9 seconds for all lines and all pages combined
- F. The minimum exposure time should normally be 1 second per line of text.
- G. Messages should not be longer than three displayed panels of information.
- H. Time shall be displayed in the 12 hour format with an "AM" or "PM" suffix.
- I. Messages should be visible for at least 1000 feet and legible at 600 feet.
- J. Do not display two unrelated messages on a sign.
- K. Messages should not scroll horizontally or vertically.
- L. Messages should not flash except to highlight a critically urgent situation.
- M. Messages should not contain both the words "left" and "right".
- N. Messages should use standard abbreviations from FHWA's Changeable Message Sign Operation and Messaging Handbook table 6.1 through 6.5.

- O. Messages should be accurate and timely.
- P. Two panel messages should typically use the following format: panel 1 problem/distance or date and panel 2 action.
- Q. Three panel messages should typically use the following format: panel 1 problem, panel 2 distance or date, and panel 2 action.

Prior to the display of new messages, spelling, layout, and intent should be verified by a second Engineering staff person.

All messages shall be verified by direct observation, field personnel, the use of CCTV cameras, or through direct LED monitoring.

Appendix A – Pre-approved Messages

Name: Amber Alert	Type: PSA	Priority: 4	Duration : 4 hours	
Request : Mon – Fri 7 am to 5 pm		Schedule: Anytime		
Description : Used to notify the public of child abduction.				
Description : Used to notify the public of child abduction.				

Notes:

- Must be verified by the Police Department
- May be removed at the request of the Police Department
- Must be credible, real-time information
- Should list license plate number along with vehicle description when possible
- Overrides other PSA's and Special Events
- Shall terminate at midnight
- May extend duration upon request by Police Department

Name: Spare the Air Type: PSA	Priority : 5 Duration : 24 hrs max			
Request : Mon – Fri 7 am to 5 pm	Schedule: Start prior to 4 pm			
Description : Used to notify the public of pendin				
associated transportation information.				
Notes:				
 Initiated at the request of the Alternative Transportation Division 				
 Displayed on day prior to event 				
Terminates at midnight				

Name: Report Drunk	Type: PSA	Priority: 5	Duration : 4 hours	
Drivers				
Request : Mon – Fri 7 am to 5 pm Schedule: Thu – Sat 10 pm			nu – Sat 10 pm to 2 am	
Special Occasions				
Description : Used to notify the public of their ability to report suspected drunk drivers.				
Notes:				
 At the request of the Police Department 				
 May be removed at the request of the Police Department 				

Name: Click it or	Type: PSA	Priority: 5	Duration : 24 hrs to	
Ticket			2 week	
Request : Mon – Fri 7 am to 5 pm Schedule: Special Occasions				
Description : Used to notify the public of the requirement to wear a seatbelt.				
Notes:				
 At the request of the Police Department 				
 May be removed at the request of the Police Department 				

Name: Blank	Type: Default	Priority : 6	Duration : Anytime	
Request : Mon – Fri 7 am to 5 pm Schedule: Anytime			nytime	
Description : Used when another message is not being displayed.				
Notes:				
• Useful in maintaining the credibility and urgency of the CMS.				

Name: Downtown	Type: Special Event	Priority: 4	Duration : 24 hours	
Tuesday Nights				
Request : Mon – Fri 7 a	am to 5 pm	Schedule: Mon 4 pm thru Tue 12 am		
		May, June, July		
Description : Used to notify the public of road closures for the event.				
Notes:				
• May be terminated after the event manually at 10 pm or automatically at				
midnight.				

Name: 4 th of July	Type: Special Event	Priority: 4	Duration : 5 days		
Parade					
Request : Mon – Fri 7 am to 5 pm Schedule: Week prior to July 4th					
Description : Used to notify the public of road closures for the event.					
Notes:					
 Should be terminated after the event – usually mid-afternoon. 					

Name: Placer County	Type: Special Event	Priority: 4	Duration : 5 days	
Fair				
Request : Mon – Fri 7 am to 5 pm		Schedule: Week prior to and during		
		e	vent	
Description : Used to notify the public of congestion in conjunction with the event.				
Notes:				

Name: Capitals	Type: Special Event	Priority: 4	Duration : 5 days	
Tennis				
Request: Mon – Fri 7 am to 5 pm		Schedule: Week prior to and during		
		event		
Description : Used to notify the public of congestion and parking in conjunction with the				
event.				
Notes:				