


TRAFFIC OPERATIONS POLICY DIRECTIVE

TR-001 (REV 10/2020)

TRAFFIC OPERATIONS POLICY DIRECTIVE	NUMBER: 20 - 03	PAGE: 1 of 5
JASVINDERJIT S. BHULLAR, DIVISION CHIEF (Signature) 	DATE ISSUED: November 13, 2020	EFFECTIVE DATE: November 16, 2020
SUBJECT: Portable Changeable Message Signs (PCMS) Anti-Hacking Protection	DISTRIBUTION <input checked="" type="checkbox"/> All District Directors <input checked="" type="checkbox"/> All Deputy District Directors - Traffic Operations <input checked="" type="checkbox"/> All Deputy District Directors - Maintenance <input checked="" type="checkbox"/> All Deputy District Directors - Construction <input type="checkbox"/> All Deputy District Directors - Design <input type="checkbox"/> All Deputy District Directors - Planning <input type="checkbox"/> Chief Counsel, Legal Division <input checked="" type="checkbox"/> Headquarters Division Chiefs for: <u>Design</u>	
DOES THIS DIRECTIVE AFFECT OR SUPERSEDE ANOTHER DOCUMENT? <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO	IF YES, DESCRIBE Revised Standard Special Provision 12-3.32 "PORTABLE CHANGEABLE MESSAGE SIGNS"	
WILL THIS DIRECTIVE BE INCORPORATED IN A DEPARTMENT MANUAL, GUIDELINE OR STANDARD PLAN? <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO	IF YES, DESCRIBE CALTRANS STANDARD SPECIFICATIONS	

DIRECTIVE

The keyboard security lockout feature shall be active at all times for all portable changeable message signs (PCMS) in use on the State Highway System (SHS).

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IMPLEMENTATION

All PCMS in use on the SHS shall be placed and maintained with the keyboard lockout feature activated. Passwords used to restrict access to the controller/control program shall be unique for each installation and shall comply with industry standards. Caltrans staff will periodically inspect the equipment to ensure that it remains activated.

If the PCMS is placed as part of a construction contract, the contractor shall be directed to activate the keyboard lockout feature on each installation. The attached Revised Standard Special Provision 12-3.32 "PORTABLE CHANGEABLE MESSAGE" has been updated under 12-3.32C Construction as follows:

~~Operate the PCMS under the manufacturer's instructions.~~

Operate the PCMS under the manufacturer's instructions. Activate the keyboard security lockout feature at all times.

DELEGATION

No new delegations of authority are created under this policy.

BACKGROUND

In response to an increase in the number of incidents involving the hacking of PCMS, Caltrans needs to take additional steps to prevent the malicious use of this equipment and the potential misdirection or endangerment of the traveling public. **The attached Revised Standard Special Provision 12-3.32 "PORTABLE CHANGEABLE MESSAGE" shall be incorporated in the next update of the Caltrans Standard Specifications.**

TRAFFIC OPERATIONS POLICY DIRECTIVE**DEFINITIONS**

When used in this Traffic Operations Policy Directive, the text shall be defined as follows:

- 1) **Standard** – a statement of required, mandatory or specifically prohibited practice. All standards text appears in **bold** type. The verb **shall** is typically used. Standards are sometimes modified by Options.
- 2) Guidance – a statement of recommended, but not mandatory, practice in typical situations, with deviations allowed if engineering judgment or engineering study indicates the deviation to be appropriate. All Guidance statements text appears in underline type. The verb should is typically used. Guidance statements are sometimes modified by Options.
- 3) Option – a statement of practice that is a permissive condition and carries no requirement or recommendation. Options may contain allowable modifications to a Standard or Guidance. All Option statements text appears in normal type. The verb may is typically used.
- 4) Support – an informational statement that does not convey any degree of mandate, recommendation, authorization, prohibition, or enforceable condition. Support statements text appears in normal type. The verbs shall, should and may are not used in Support statements.

ATTACHMENT

1. Revised Standard Special Provision 12-3.32 "PORTABLE CHANGEABLE MESSAGE"
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12-3.32 PORTABLE CHANGEABLE MESSAGE SIGNS

12-3.32A General

12-3.32A(1) Summary

Section 12-3.32A includes specifications for placing, maintaining, and removing portable changeable message signs.

12-3.32A(2) Definitions

Reserved

12-3.32A(3) Submittals

If requested, submit a certificate of compliance for each PCMS.

Submit your cell phone number before starting the first activity that requires a PCMS.

12-3.32A(4) Quality Assurance

Reserved

12-3.32B Materials

Each PCMS consists of a sign panel, a controller unit, a power supply, and a structural support system.

The PCMS must:

1. Be assembled to form a complete self-contained unit that can be delivered to the job site and placed into immediate operation.
2. Operate at an ambient air temperature from -4 to 158 degrees F.
3. Not be affected by mobile radio transmissions other than those required to control the PCMS.
4. Be capable of displaying a 3-line message with at least 7 characters per line.
5. Provide a complete alphanumeric selection.
6. Be internally or externally illuminated during the hours of darkness, when non-illuminated pixels are used.
7. Have a dimming control that automatically adjusts the character light intensity to provide optimum character visibility and legibility under all ambient lighting conditions. The dimming control must have a minimum 3 manual dimming modes of different intensities.

A message with 18-inch high characters or 15-inch high characters must be visible from a distance of 1,500 feet and legible from a distance of at least 750 feet at noon on a cloudless day and during the night by persons with 20/20 vision or vision corrected to 20/20.

A message with 10-inch high characters must be legible from a distance of at least 650 feet at noon on a cloudless day and during the night by persons with 20/20 vision or vision corrected to 20/20.

The controller must:

1. Be an all solid-state unit.
2. Include at least 5 preprogrammed messages.
3. Have a user adjustable display rate.
4. Have a user adjustable flashing-off time.
5. Include a screen to review the messages before being displayed on the sign.
6. Include a keyboard message entry system. The keyboard must be equipped with a security lockout feature.
7. Have nonvolatile memory to store an infinite number of user created messages.
8. Be installed at a location that allows the user to perform all the functions from a single position.

12-3.32C Construction

Use a PCMS with characters:

1. At least 18 inches in height where the useable shoulder area is 15 feet wide or more
2. At least 12 inches in height where the useable shoulder area is less than 15 feet wide
3. At least 10 inches in height if the PCMS is:
 - 3.1. Mounted on a service patrol truck or incident response vehicle

3.2. Used for traffic control where the posted speed limit is less than 40 mph

Place a PCMS as far from the traveled way as practicable where it is legible to approaching traffic without encroaching on the traveled way. Where the vertical roadway curvature restricts the sight distance of approaching traffic, place the sign on or before the crest of the curvature where it is most visible to the approaching traffic. Where the horizontal roadway curvature restricts the sight distance of approaching traffic, place the sign at or before the curve where it is most visible to approaching traffic. Where practicable, place the sign behind guardrail or Type K temporary railing.

If multiple signs are needed, place each sign on the same side of the road at least 1,000 feet apart on freeways and expressways and at least 500 feet apart on other types of highways.

Replace paragraph 4 in section 12-3.2C of the RSS for section 12 with:

~~Operate the PCMS under the manufacturer's instructions.~~

Operate the PCMS under the manufacturer's instructions. Activate the keyboard security lockout feature at all times.

When in operation, place the bottom of a PCMS at least 7 feet above the roadway in areas where pedestrians are anticipated and 5 feet above the roadway elsewhere. Place the top of the PCMS no more than 14.5 feet above the roadway.

If more than one PCMS is simultaneously visible to traffic, only one sign may display a sequential message at any time. Do not use dynamic message displays, such as animation, rapid flashing, dissolving, exploding, scrolling, horizontal movement, or vertical movement of messages. The message must be centered within each line of the display.

You may use an additional PCMS if more than 2 phases are needed to display a message.

Display only messages shown or ordered.

Repeat the entire message continuously in not more than 2 phases of at least 3 seconds per phase. The sum of the display times for both of the phases must be a maximum of 8 seconds. If more than 2 phases are needed to display a message, use an additional PCMS.

You must be available by cell phone during activities that require a sign. Be prepared to immediately change the displayed message if ordered. You may operate the sign with a 24-hour timer control or remote control if authorized.

Keep the PCMS clean to provide maximum visibility.

After the initial placement, move a sign from location to location as ordered.

12-3.32D Payment

Not Used