California Traffic Control Devices Committee
Agenda Item Report

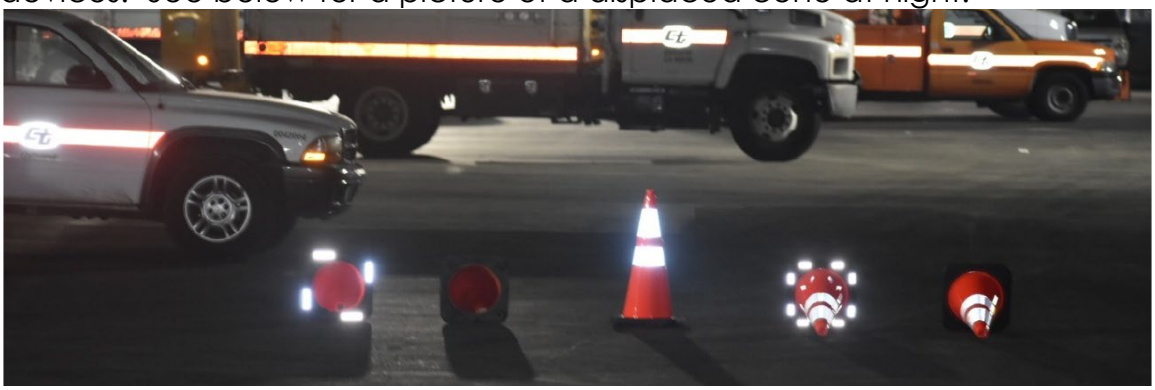
Meeting Date: November 04, 2021 **Item Number:** 21-19	**From:** Gurinderpal (Johnny) Bhullar, PE, TE, Secretary to CTCDC
Sponsored By: Lee Haber, PE, Caltrans	**Presented By:** Russ Wenham, PE, TE, PTOE, Caltrans
Description: Proposed Changes to Add Options to Cones and Portable Delineators Allowing Retroreflectorization to Bases.	

Recommendation:
Motion by committee to recommend inclusion of the proposed changes to the CA MUTCD – Section 6F.64 "Cones" and Section 6F.65 "Tubular Markers".

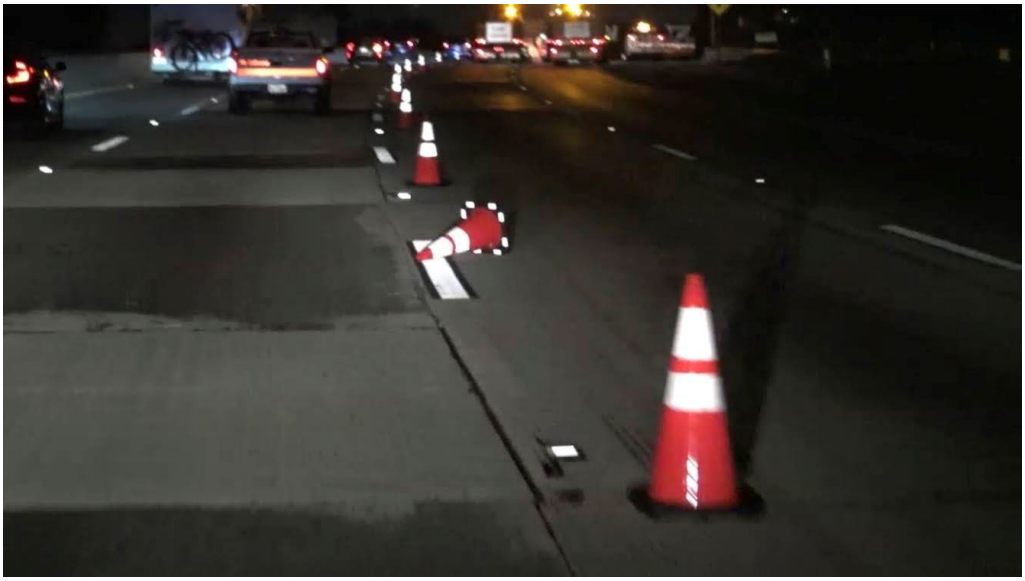
Agency Making Request/Sponsor:
Caltrans.

Background:
Traffic cones and portable delineators are among the most commonly used temporary traffic control devices in California. Cones are required to have retroreflective bands when used during the hours of darkness, and portable delineators are always required to have retroreflective bands. It has been demonstrated to Caltrans that when retroreflectorization is added to the top and bottom of cone and portable delineator bases that visibility is improved at night. Additionally, the option of placing retroreflective sleeves over cones at night is no longer needed.

Retroreflectorization on Bases:
Cones and Portable Delineators can fall over in a temporary traffic control (TTC) work zones after being hit or blown over by passing traffic. When laying on their sides both devices can be hard to see by drivers traversing the TTC zone. This condition is worsened at night because most portable delineators and some cones have black colored bases which may block the view of the retroreflective bands on those devices. See below for a picture of a displaced cone at night:



The proposed changes to Sections 6F.64 "Cones" and 6F.65 "Tubular Markers" will provide an option to install retroreflective materials on the top and bottom of the bases of the devices so they are more visible at night to drivers when they fall over and are laying on their sides. See below for a picture of a displaced cone at night with retroreflectorization on the base:



Elimination of Retroreflective Sleeve Option:

Paragraph 9 of Section 6F.64 "Cones" provides the option to use a single "retroreflective sleeve" in lieu of two retroreflective bands – first required by the Federal MUTCD 2009 edition. This option was provided in the CA MUTCD because prior to adoption of the Federal MUTCD and its California Supplement, the Caltrans Traffic Manual and Standard Specifications allowed use of a retroreflective sleeve over the upper part of an orange colored cone that had no retroreflective bands for use at night.

Retroreflective sleeves have not been the mainstream practice for many years and visual consistency will be improved with the elimination of the option to use sleeves. The option was removed from Caltrans Standard Specifications in 2008 resulting in the discontinuation of the use of sleeves on Caltrans projects. Caltrans recommends that it is time to remove the option from the CA MUTCD.

Attachments:

Attachment A – Proposed Change to Section 6F.64
Attachment B – Proposed Change to Section 6F.65

ATTACHMENT A

Attachment A – Proposed Change to Section 6F.64

Proposal:

Note:

Black text is consistent with the Federal MUTCD.
Blue text is current text as amended for use in California.
~~Struck-out red~~ text is to be deleted from the CA MUTCD.
Red text is newly proposed text.

Modify Section 6F.64 as shown:

Section 6F.64 Cones

Standard:

01 **Cones (see Figure 6F-7) shall be predominantly orange and shall be made of a material that can be struck without causing damage to the impacting vehicle. For daytime and low-speed roadways, cones shall be not less than 18 inches in height. When cones are used on freeways and other high-speed highways or at night on all highways, or when more conspicuous guidance is needed, cones shall be a minimum of 28 inches in height.**

02 **For nighttime use, cones shall be retroreflectorized or equipped with lighting devices for maximum visibility. Retroreflectorization of cones that are 28 to 36 inches in height shall be provided by a 6-inch wide white band located 3 to 4 inches from the top of the cone and an additional 4-inch wide white band located approximately 2 inches below the 6-inch band.**

03 **Retroreflectorization of cones that are more than 36 inches in height shall be provided by horizontal, circumferential, alternating orange and white retroreflective stripes that are 4 to 6 inches wide. Each cone shall have a minimum of two orange and two white stripes with the top stripe being orange. Any nonretroreflective spaces between the orange and white stripes shall not exceed 3 inches in width.**

Option:

Additional white colored retroreflectorization may be added to the top and / or bottom sides of the base of cones (not part of the conical shape) to enhance visibility.

Support:

03a The 36 inch and 42 inch high cones provide additional conspicuity in visually complex environments and for older road users.

Option:

04 Traffic cones may be used to channelize road users, divide opposing vehicular traffic lanes, divide lanes when two or more lanes are kept open in the same direction, and delineate short duration maintenance and utility work.

Guidance:

05 *Steps should be taken to minimize the possibility of cones being blown over or displaced by wind or moving vehicular traffic.*

Option:

06 Cones may be doubled up to increase their weight.

Support:

07 Some cones are constructed with bases that can be filled with ballast. Others have specially weighted bases, or weight such as sandbag rings that can be dropped over the cones and onto the base to provide added stability.

Guidance:

08 *Ballast should be kept to the minimum amount needed.*

~~Option:~~

09 ~~Retroreflectorization of 28 inch in height or higher cones may be provided by a 13 inch band sleeve).~~

Standard:

10 **On State highways, the retroreflectorized bands shall be visible at 1000 feet at night under illumination of legal high beam headlights, by persons with vision of or corrected to 20/20.**

ATTACHMENT B

Attachment B – Proposed Change to Section 6F.65

Proposal:

Note:

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Red text is newly proposed text.

Modify Section 6F.65 as shown:

Section 6F.65 Tubular Markers

Portable Delineator

Standard:

08 **The design of a portable delineator shall be as shown in Figure 6F-102(CA).**

09 **Portable delineators shall be a minimum of 36 inches in height. The vertical portion of portable delineators shall be fluorescent orange or predominantly orange. The posts shall be not less than 3 inches in width or diameter. Retroreflectorization of portable delineators that have a height of less than 42 inches shall be provided by two 3-inch wide white bands placed a maximum of 2 inches from the top with a maximum of 6 inches between the bands. Retroreflectorization of portable delineators that have a height of 42 inches or more shall be provided by four 4-inch to 6-inch wide alternating orange and white stripes with the top stripe being orange.**

Option:

Additional white colored retroreflectorization may be added to the top and / or bottom sides of the portable delineator base to enhance visibility.

Support:

10 The 42 inch or higher portable delineators provide additional conspicuity in visually complex environments and for older road users.

Guidance:

11 Portable delineators have less visible area than other devices and should be used only where space restrictions do not allow for the use of other more visible devices.

12 Portable delineators should be stabilized by using weighted bases, or weights such as sandbag rings that can be dropped over the portable delineators and onto the base to provide added stability. Ballast should be kept to the minimum amount needed.

Option:

13 Portable delineators may be used effectively to divide opposing lanes of road users, divide vehicular traffic lanes when two or more lanes of moving vehicular traffic are kept open in the same direction, and to delineate the edge of a pavement drop off where space limitations do not allow the use of larger devices.