

Memorandum

*Making Conservation
a California Way of Life*

To: CHIEF DEPUTY DIRECTOR
DEPUTY DIRECTORS
DISTRICT DIRECTORS
DIVISION CHIEFS

Date: December 30, 2020

From: CORY BINNS *Cory Binns*
Deputy Director
Maintenance and Operations

MICHAEL KEEVER *Michael D. Keever*
Deputy Director
Project Delivery

Subject: **IMPLEMENTATION OF MANUAL FOR ASSESSING SAFETY HARDWARE (MASH) FOR
TEMPORARY TRAFFIC CONTROL DEVICES**

This memo establishes a sunset date for the *National Cooperative Highway Research Program (NCHRP) Report 350* guidelines for temporary traffic control devices manufactured before December 31, 2019, and amends the guidance regarding the allowable use of temporary work zone roadside safety hardware from the "Implementation of The Manual for Assessing Safety Hardware memo" (MASH 2016), dated December 23, 2016, attached. The Temporary Traffic Control Device Categories 1, 2, and 3 are defined by Traffic Operations Policy Directive 05-09, issued on September 9, 2005, and re-iterated below.

All Category 2 and 3 temporary traffic control devices deployed on the State Highway System after December 31, 2026, must meet "MASH 2016" standards. This seven-year phaseout time limit after December 31, 2019, is consistent with the policies of other states and provides a reasonable transition period for contractors to acquire inventories of MASH compliant Category 2 and 3 devices. California Department of Transportation (Caltrans) will continue to allow the use of temporary traffic control devices that are manufactured before December 31, 2019, and compliant with *NCHRP Report 350* guidelines until the December 31, 2026, sunset date.

For Category 3 temporary traffic control devices, contractors may use the portable concrete barriers (PCBs) contained in Caltrans Standard Plans for projects between December 31, 2019, and December 31, 2026. The standards may include both *NCHRP Report 350* and MASH compliant PCBs during this seven-year period. Contractors may use both PCBs during this transitional time

and should plan to have only an inventory of *MASH* approved PCBs for Caltrans projects by December 31, 2026.

NCHRP Report 350 compliant temporary traffic control devices will not be permitted on the State Highway System after December 31, 2026.

Definition of Temporary Traffic Control Devices' Categories:

- Category 1 Temporary traffic control devices are small devices weighing less than 100 pounds, certified as crashworthy by crash testing or crash testing similar devices. Category 1 temporary traffic control devices include traffic cones, plastic traffic drums, portable delineators, and channelizers.
- Category 2 temporary traffic control devices are small devices weighing less than 100 pounds that are not expected to produce significant changes in vehicular velocity but could cause harm to impacting vehicles. Category 2 temporary traffic control devices include barricades and portable sign supports.
- Category 3 temporary traffic control devices are devices weighing 100 pounds or more that are expected to produce significant changes in the vehicular velocity of impacting vehicles. Category 3 temporary traffic control devices include crash cushions, impact attenuator vehicles, temporary barrier, and end treatments.
- Category 4 temporary traffic control devices consist of trailer mounted devices such as portable changeable message signs, arrow boards, automated flagging assistance devices, and portable signals. The Federal Highway Administration (FHWA) previously exempted these devices from crash-testing as the benefit of the use of these devices outweighs the risk exposure.

Comprehensive *MASH* information for Caltrans can be found at the Website <<https://dot.ca.gov/programs/safety-programs/mash>>.

For questions regarding this process, please contact Monica Kress-Wooster, deputy division chief of Traffic Safety, Division of Safety Programs, at (916) 653-2124 or by e-mail at <monica.wooster@dot.ca.gov>.

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Attachment

Steve Takigawa and Karla Sutliff, "Implementation of the Manual for Assessing Safety Hardware", California Department of Transportation memo, December 23, 2016

Memorandum

*Serious drought.
Help save water!*

To: CHIEF DEPUTY DIRECTOR
DEPUTY DIRECTORS
DISTRICT DIRECTORS
DIVISION CHIEFS

Date: December 23, 2016

From: *LH Orcutt*
STEVE TAKIGAWA
for Deputy Director
Maintenance and Operations
Karla Sutliff
for KARLA SUTLIFF
Chief Engineer
Project Delivery

Subject: **IMPLEMENTATION OF THE MANUAL FOR ASSESSING SAFETY HARDWARE**

This memorandum establishes California Department of Transportation's (Caltrans) timeline for implementation of roadside safety hardware and evaluation of new products under the Manual for Assessing Safety Hardware (MASH), consistent with the Association of State Highway and Transportation Officials (AASHTO) and Federal Highway Administration (FHWA) Joint Implementation Agreement for MASH.

As a matter of practice, FHWA performs a crash worthiness review of roadside safety hardware and when found crash worthy issues a federal aid eligibility letter. Caltrans uses this letter as part of its internal product review process. After December 31, 2016, the FHWA will no longer issue eligibility letters for highway safety hardware not successfully crash tested to MASH. Modifications of eligible highway safety hardware must utilize criteria in the MASH for re-evaluation and/or retesting. Manufacturers must submit new products complying with MASH to Caltrans for review and approval. Caltrans has previously adopted MASH for crash testing internal designs of safety hardware and through this implementation will use only those guidelines to evaluate new products.

Caltrans is adopting the AASHTO/FHWA recommendation to implement MASH for evaluating all new permanent installations and full replacements of roadside safety hardware. Below is the Caltrans implementation schedule of MASH for projects that will be advertised on or after the following dates:

- June 30, 2017: inline w-beam terminals (earlier than AASHTO/FHWA letting date)
- October 31, 2017: w-beam barriers and cast-in-place concrete barriers
 - The Midwest Guardrail System, approved on July 9, 2013, is the Caltrans standard for w-beam barriers and is MASH approved.
- April 30, 2018: Flared w-beam terminals
- October 31, 2018: cable barriers, cable barrier terminals, and crash cushions

- October 31, 2019: bridge rails, transitions, all other longitudinal barriers (including portable barriers installed permanently), all other terminals, sign supports, and all other breakaway hardware.

For temporary work zone roadside safety hardware, including portable barriers, devices manufactured after December 31, 2019, must have been successfully tested to MASH. Such devices manufactured by this date, and successfully tested to NCHRP Report 350, may continue to be used throughout their normal service lives.

After December 31, 2016, Caltrans will no longer evaluate highway safety hardware that has not been successfully crash tested to MASH. Modifications of federal aid eligible highway safety hardware must utilize criteria in MASH for re-evaluating and/or retesting.

Implementation will include these actions:

- Projects on the State highway system with an advertising date on or after the above implementation schedule must use safety hardware that complies with the MASH criteria for all new permanent installations and full replacements.
- New products compliant with MASH must be submitted to the Caltrans New Products Coordinator. Then the Caltrans' Highway Safety Features New Products Committee will evaluate and make recommendations for approval of the new products.

The MASH approved safety hardware devices for Caltrans can be found at:
<http://traffic.onramp.dot.ca.gov/safety-devices-approved-products>

For questions regarding this process for highway safety features, please contact Duper Tong, Chief, Office of Traffic Engineering at (916) 654-5176 or by email at duper.tong@dot.ca.gov; or for bridge rails, transitions, sign supports and other breakaway hardware, Shannon Post, Chief, Office of Design and Technical Services at (916) 227-8070 or by email at shannon.post@dot.ca.gov.

- c: Thomas P. Hallenbeck, Chief, Division of Traffic Operations
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