




November 30, 2016

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SUBJECT: Project Delivery Memo #16-03 - MASH Implementation

## PURPOSE AND DIRECTION

### Purpose

To establish a strategy and begin phasing in *Manual for Assessing Safety Hardware* (MASH) compliant hardware, and to inform WSDOT staff and stakeholders involved in specifying, supplying, installing, and maintaining roadside hardware affected by the strategy.

As part of this strategy, Project Delivery Memo #14-01 – ET 31 and ET Plus Guardrail Terminal Moratorium will be rescinded effective December 1, 2016.

### Background

The AASHTO *Manual for Assessment of Safety Hardware* (MASH) is a testing criteria for roadside hardware that updates the previous standard called NCHRP 350. Introduced in 2009, the voluntary approach to testing and installing hardware using MASH criteria was largely unsuccessful. FHWA and the AASHTO Subcommittee on Highways recently adopted an implementation schedule mandating the use of MASH compliant devices. According to this schedule, for contracts with advertisement dates after the dates shown,

only safety hardware successfully tested to meet MASH criteria will be allowed for new permanent installations and full replacements. The schedule is based on categories of safety hardware, and is shown in Table 1.

<u>Date</u>	<u>Category</u>
December 31, 2017	w-beam barriers and cast-in-place concrete barriers
June 30, 2018	w-beam terminals
December 31, 2018	cable barriers, cable barrier terminals, and crash cushions
December 31, 2019	bridge rails, transitions, all other longitudinal barriers (including portable barriers installed permanently), all other terminals, sign supports, and all other breakaway hardware

**Table 1: MASH Compliance Categories and Dates**

Note that these dates should be considered “no-later than” dates, and it is WSDOT’s intent to aggressively pursue implementation of MASH on a category-by-category basis. Some categories will be transitioned to MASH compliance well in advance of the dates shown in the table.

MASH implementation does not currently require the replacement of existing NCHRP 350 devices, only the elimination of their use for new permanent installations and full replacements. NCHRP 350 devices remain functional and can be left in place through their service lives. Temporary/WZTC devices will be converted to MASH compliance as their service lives expire.

MASH implementation will result in substantial changes for supply chain, contractors, and WSDOT Maintenance. These changes warrant outreach to the affected parties.

Although MASH implementation may take a few years, starting now will minimize the need for specialized maintenance, repair, and supply requirements on products that may be destined for only a short period of use.

### **Direction**

For all new permanent installations and full replacements, the schedule approved by FHWA/AASHTO for implementing MASH is hereby adopted by WSDOT, and the dates listed are to be considered the “no-later than” dates that a hardware category will switch over to MASH compliance.

The primary method of implementation shall be modification of the corresponding standard specification to exclude non-MASH compliant products.

For new permanent installations and full replacements, when at least one MASH compliant product within a hardware category becomes available (for instance, accepted onto the Qualified Products List (QPL)), the category may be considered for conversion to a MASH compliance only standard specification.

When a hardware category is converted to require MASH-compliance, existing NCHRP 350 hardware may remain and be repaired. However, if a full replacement is required during the course of a repair, the replacement shall be with a MASH compliant device if a MASH compliant device is available.

Communication about MASH policy shall include ongoing outreach to the Association of General Contractors (AGC) and the American Council of Engineering Companies (ACEC).

A goal of this policy is to minimize the need for specialized maintenance, repair, and supply requirements on products that are destined for "sunsetting." Therefore, for the categories of products shown in Table 1, applications for approval to the QPL will no longer be approved for products that are not MASH compliant.

## **ACTIONS REQUIRED**

### **Development Division – Roadside Safety Unit**

Lead the implementation of MASH for the following categories:

- W-beam barriers
- Cast-in-place concrete barriers (work with Bridge & Structures Office)
- W-beam terminals
- Cable barriers and cable barrier terminals
- Crash cushions (aka attenuators)
- Transitions
- All other longitudinal barriers (including portable barriers installed permanently)
- All other terminals
- Other misc. items associated with the above

Coordinate with Maintenance to make them aware when a specification change is implemented converting a hardware category to MASH.

When a specification is revised to require MASH-compliance, notify Headquarters Materials Laboratory of the products that will meet the new specification for the purpose of updating the QPL.

Based on information currently available to WSDOT, the Development Division has determined that Non-flared guardrail terminals for Type 31 guardrail will be the first hardware category that will meet MASH, and will work with HQ Construction Office to issue a specification that stipulates that change as soon as practicable.

#### **Development Division – Bridge & Structures Office**

Lead the implementation of MASH for the following categories:

- Bridge rails
- Cast-in-place concrete barriers (work with Roadside Safety unit)
- Geosynthetic wall traffic barrier
- Hardware poles (work with Traffic Office)

#### **Traffic Operations**

Lead the implementation of MASH for the following categories:

- Work Zone Traffic Control devices (other than listed under Roadside Safety unit, above)
- Sign supports
- Hardware poles (work with Bridge & Structures Office)

#### **Maintenance Operations**

Coordinate with the Development Division – Roadside Safety unit to understand when a specification has been revised for a hardware category to require MASH-compliance.

When a hardware category is converted to require MASH-compliance, existing NCHRP 350 hardware may remain in place and be repaired. However, if a full replacement is required the replacement shall be with a MASH compliant device.

## **Construction**

Only approve applications to the QPL for products for permanent installation that are MASH compliant for the categories of products shown in Table 1.

Support the specification changes to transition to MASH, including the change to Non-flared guardrail terminals for Type 31 guardrail stipulated in this memorandum.

Update the Design Build template when a category listed in the template is affected.

Support the process for updating the QPL such that products on the QPL are in alignment with the updated specifications.

Participate in outreach to industry partners through the AGC/ACEC.

Update the Construction Manual as needed to reflect changes required by MASH implementation.

## **Regions**

Policy documents such as the Design Manual and contract documents such as the Standard Plans are updated once a year. Specifications are updated three times a year. Therefore, specifications may change faster than the Standard Plans or the Design Manual. This may result – for limited durations - in the Standard Plans or the Design Manual showing systems that no longer meet specifications. Check the WSDOT QPL for the most current list of hardware that meets specifications.

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