Clarifications on Implementing the AASHTO Manual for Assessing Safety Hardware, 2016
May 2019

This Q&A document has been developed for the purpose of further clarifying and implementing the Manual for Assessing Safety Hardware (MASH), which is published by the American Association of State Highway and Transportation Officials (AASHTO). This Q&A document has been approved by AASHTO and FHWA for dissemination to the roadside safety hardware community, and supplements previous Q&A documents developed in the same manner. The responses below were developed by a joint AASHTO/FHWA technical working group of representatives from state transportation departments, the Federal Highway Administration, and accredited crash testing laboratories.

For answers to specific questions about the federal-aid eligibility process, please see FHWA’s Roadside Hardware Policy Memoranda and Guidance.

1. Is it acceptable to use metric components (such as bolts) in lieu of imperial components?
   Use of any alternate component must demonstrate equivalent capacity, physical properties, and mechanical properties.

2. Can surrogate testing be used for low-speed performance evaluation for small sign supports in lieu of full-scale testing under MASH?
   As outlined in MASH Section 4.2.2, surrogate bogie testing vehicles are not allowed for these devices.

3. Tests 3-40, -41, -42, -43, and -44 are run on a non-redirective crash cushion sand barrel array, and the back row of barrels was not engaged in tests 40 through 43. The array failed test 3-44 however. If the back row is modified, do tests 40 through 43 need to be run again?
   If the rear barrels were not engaged during tests 40 through 43, those tests do not need to be performed again. A basic inertial analysis on the modified array should be documented to show that the performance of the array in those tests would not change.

4. If a MASH test resulted in a failure, and the same exact test was re-conducted and it passed, how would this be viewed? Would the failed test need to become part of the submission for eligibility?
   A failing test is not acceptable. If a test fails, the issue should be identified and the device should be redesigned and retested.

5. If a MASH test conducted using an 1100C vehicle was a failure, can another 1100C test vehicle make/model be used to conduct the same test?
   No. Since the cause of all failures should be fully analyzed by the laboratory, barring any testing procedure violations, the device should be fully reviewed for modifications before any ensuing testing is conducted.

6. Where should splices and tensioners be located during testing?
   For a given crash test, cable splices and tensioners should be positioned within each cable element downstream from the critical impact point of the test article but upstream from the location of the expected maximum dynamic barrier deflection.
7. If w-beam ruptures during a test and the vehicle is redirected, does the test fail?
   Yes, w-beam rail rupture on length-of-need testing would be a failed test regardless of test results.

8. Can a live driver be used for a temporary work zone device test, without measuring occupant
   riderdown acceleration or occupant impact velocity?
   No. Sensor data is needed to obtain objective measurements during the test.