Technical Circular T-02/21
Date: July 2, 2021

To: All HQ Directors: Operations, Planning and Major Projects
All Regional Executive Directors
All Directors, Engineering
All Directors, Rehabilitations, Construction & Maintenance
All Traffic Engineers
All District Managers Transportation
All Project Managers
All Regional Paving Managers

Subject: Acceptance of Crashworthy Roadside Highway Safety Devices

Purpose

The purpose of this Technical Circular is to establish and update the requirements for acceptance of crashworthy roadside highway safety devices on provincial highways.

Background

Highway safety devices acceptable for use on provincial highways are listed on the ministry's Recognized Products List (RPL). Most crashworthy roadside safety devices currently listed are recognized based on successful crash testing meeting the National Cooperative of Highway Research Program (NCHRP) Report 350 testing criteria. These criteria were established in 1993 to provide guidance on testing and evaluating.

Since the publication of NCHRP Report 350, significant changes have occurred in vehicle fleet characteristics, testing technology, and the literature on related research. The American Association of State Highway Transportation Officials (AASHTO) Manual for Assessing Safety Hardware (MASH) is an update to and supersedes NCHRP Report 350. MASH contains revised criteria for impact

performance evaluation of highway safety features, based primarily on changes in the vehicle fleet.

New product listings and applications in the RPL now require MASH 2016 certification or eligibility.

Policy

All new and replacement crashworthy roadside highway safety devices installed on provincial highways shall meet the full-scale testing requirements of MASH 2016 or the most recent version thereof, unless identified as an exemption or exception.

Roadside highway safety devices used on Provincial highways shall be successfully crash tested to MASH Test Level 3 (TL-3) with the following exception: Roadside safety devices tested to MASH TL-2 will be acceptable for installation on low speed roadways with posted speeds of less than 70 km/h. Independent facilities conducting crash testing should meet the accreditation for ISO 17025.

For roadside highway safety devices where there is no commercially available product that has successfully passed MASH crash testing at the appropriate test level, a product successfully tested to a similar test level under NCHRP Report 350 will be acceptable. European Road Restraint Systems (EN 1317) may be acceptable upon meeting the following requirements:

- The crash testing should be conducted at an ISO 17025 independent testing facility and witnessed by an ISO Auditor. A written confirmation is required by the Auditor that the test was performed in accordance with the requirements of ISO 17025.

- The crash test must be witnessed by a licenced Professional Engineer with demonstrable expertise in design and testing of crashworthy roadside

systems. The Engineer shall provide a crash test report certifying the crash test fully complies with the requirements of the AASHTO MASH Test Level and successfully passed.

For existing in-service crashworthy roadside safety devices that do not meet the latest MASH testing requirements, and where complete replacement is not required, devices may be maintained as transitional products.

In-service crashworthy roadside safety devices should be considered for replacement when they are required to be relocated due to major road rehabilitation work (e.g. pavement rehabilitation).

Crashworthy roadside safety devices include, but are not limited to, longitudinal steel barrier, end treatments, crash cushions, and breakaway hardware.

Crashworthy roadside highway safety devices will be assessed through the ministry's Recognized Products evaluation process. Typical documentation required for submission includes, but is not limited to, a Federal Highway Administration (FHWA) eligibility letter, crash test report, crash test videos, and drawings.

Exemptions

The following systems have been identified as exemptions:

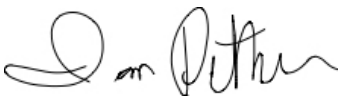
- Roadside concrete barrier products which meet the requirements of the Ministry of Transportation and Infrastructure Standard Specifications for Highway Construction, Section 941 – Precast Reinforced Concrete Barrier, are acceptable. Products are to be procured as per the ministry's RPL requirements.

- Steel traffic barrier products which meet the requirements of the Ministry of Transportation and Infrastructure Standard Specifications for Highway Construction, Section 312 - Steel Traffic Barriers, are acceptable.

- Barriers on bridges are governed by the BC Supplement to CHBDC S6-14 and CSA S6-14 or the most recent version thereof. Currently, the BC Supplement to CHBDC S6-14 (and the related CSA S6-14) uses barrier testing requirements from NCHRP Report 350 and are acceptable.

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