

Australian/New Zealand Standard™

**Road safety barrier systems and
devices**

Part 2: Road safety devices



AS/NZS 3845.2:2017

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Australian Industry Group
Australian Motorcycle Council
Australian Steel Institute
Austroads
Concrete Institute of Australia
Department for Transport, Energy and Infrastructure, SA
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Originally as part of AS/NZS 3845:1999.
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PREFACE

This Standard was prepared by the Joint Standards Australia/Standards New Zealand Committee CE-033, Road Safety Barriers, to supersede, in part, AS/NZS 3845:1999, *Road safety barrier systems*.

This Standard is Part 2 of a series of two Standards on road safety barrier systems and devices. This Part 2 sets out the requirements for both permanent and temporary safety devices that include bollards, longitudinal channelizing devices, truck or trailer mounted attenuators, rear underrun protection devices and sign support structures and poles. Part 1 sets out the requirements for permanent and temporary safety barrier systems that include longitudinal road safety barriers, terminals, crash cushions, interfaces including transitions, and longitudinal barrier gate systems.

Notes to the text contain information and guidance. They are not an integral part of the Standard.

Statements expressed in mandatory terms in Notes to Tables are deemed to be requirements of this Standard.

The term 'informative' has been used in this Standard to define the application of the appendices to which it applies. An 'informative' appendix is only for information and guidance.

FOREWORD

In 2006, the National Highway Cooperative Research Program of the US Transportation Research Board was revising the testing conditions documented in NCHRP Report 350. At this time, Standards Australia and Standards New Zealand decided to revise AS/NZS 3845:1999 in line with the American Association of State Highway and Transportation Officials (AASHTO) Manual for Assessing Safety Hardware (MASH).

At about the same time, the Safe System approach has become the underlying philosophy for road safety. It is recognized that road crashes are the major cause of societal suffering, preventable death and injury and a major cost burden of the order of tens of billions of dollars on health systems and society in general. Some governments have recognized this societal burden and, as a result, have adopted a safe system approach in their action plans to reduce deaths and injuries on roads. The Safe System approach is based on human injury tolerance to impact forces. The Safe System approach acknowledges that humans make errors, but that the road traffic system should be designed to increase the chances of road users surviving any accidents which do occur. Refer to OECD, [2008], *Towards Zero: Ambitious road safety targets and the safe system approach*, International Transport Forum, ISBN 978-92-821-0195-7.

In a Safe System, if a road user travels in accordance with all traffic laws and on a safe road in a safe vehicle, but finds through no fault of their own they become involved in a crash, the crash should not result in death or serious injury. Similarly, if a driver does make an error then a Safe System should react to minimize the consequences of the error. In a Safe System, the regulatory system should strongly discourage socially unacceptable road use behaviour. Thus all road user training and behaviour management, vehicle development and regulation, and road design and traffic management systems should be considered as a holistic inter-related system and governed according to this paradigm. The Safe System comprises four major interconnected elements: safe use, safe roads and roadsides, safe vehicles and safe speeds.

Road safety devices contributing to safer roads

Road safety devices are integral components of the safer roads element of the Safe System approach. However, there are a limited number of ways in which road safety devices can operate. Some devices attempt to dissipate the kinetic energy of a vehicle crash by one or more of the following mechanisms:

- (a) Heat through friction.
- (b) Elastic movement of the device or components of the vehicle, or both.
- (c) Plastic deformation of portions of the device or the vehicle, or both.
- (d) Fracture of elements of the device or the vehicle, or both.
- (e) Physical displacement of the device or the vehicle, or both, such as lifting the vehicle.

Energy should not be dissipated in unexpected or uncontrolled ways. For instance, unintended snagging of a vehicle on an element of the device can cause violent rolling and yawing, which may result in fatal or serious injuries to vehicle occupants. The unintended snagging of a rider on an element of the device can cause fatal or serious injuries.

The majority of passenger vehicles have been designed to meet New Car Assessment Programmes (NCAP) and, in Australia, the Australian Design Rules (ADRs) with a reasonable crash survivability outcome for the occupants. This means that road environments can be designed by taking into consideration safer vehicle technology.

It should not be expected that a road safety device will provide complete protection for vehicle occupants over the wide range of variables that could apply in a crash, such as vehicle mass, dimensions, speed and orientation of the vehicle on impact. It should be recognized that the effect on vehicle occupants of impacting a road safety device should be more forgiving than the effect on vehicle occupants of impacting the hazard that it is shielding/supporting.

The AS/NZS 3845 series of Standards, the Austroads guides to road design and the operation of the Austroads safety barrier assessment process support each other. Austroads guides describe the road and roadside configurations that identify where road safety barriers may need to be installed and the appropriate longitudinal and transverse location of these barriers. This series of Standards sets out the requirements of road safety barrier systems and devices. Road Authorities may review the information specified by the Standards and consider the usefulness of road safety barrier systems and devices for use on their road network.

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SECTION 1 SCOPE AND GENERAL

1.1 SCOPE

This Part of the Standard sets out the requirements for both permanent and temporary road safety devices including—

- (a) bollards;
- (b) longitudinal channelizing devices;
- (c) truck or trailer mounted attenuators;
- (d) rear underrun protection devices; and
- (e) sign support structures and poles.

NOTE: Longitudinal road safety barriers, terminals, crash cushions, interfaces (including transitions) and longitudinal barrier gate systems are specified in AS/NZS 3845.1.

The intention of this Standard is to ensure that road safety devices are crashworthy when impacted by a vehicle under specified conditions.

This Standard includes the following:

- (i) Testing methods and data.
- (ii) Considerations in the evaluation process.
- (iii) Manufacturing requirements.
- (iv) Issues to be addressed in specifying road safety devices including documentation required.
- (v) Erection and maintenance practices necessary to achieve expected performance.
- (vi) Minimum site conditions (cross slope, placement of kerbs or similar) that enable the device to have acceptable performance when impacted.
- (vii) Steps to evaluate the nature of repairs necessary following a crash.

This Standard makes significant reference to MASH and NCHRP 350. It also references some relevant European CEN Standards.

1.2 EXCLUSIONS

Longitudinal barriers, terminals, transitions, crash cushions, and longitudinal barrier gates are covered in AS/NZS 3845.1.

This Standard does not apply to the following:

- (a) Road safety devices erected for special purposes, such as motor sport events that include vehicle, motorcycle or kart racing, concessional go-kart facilities or special permit vehicles.