

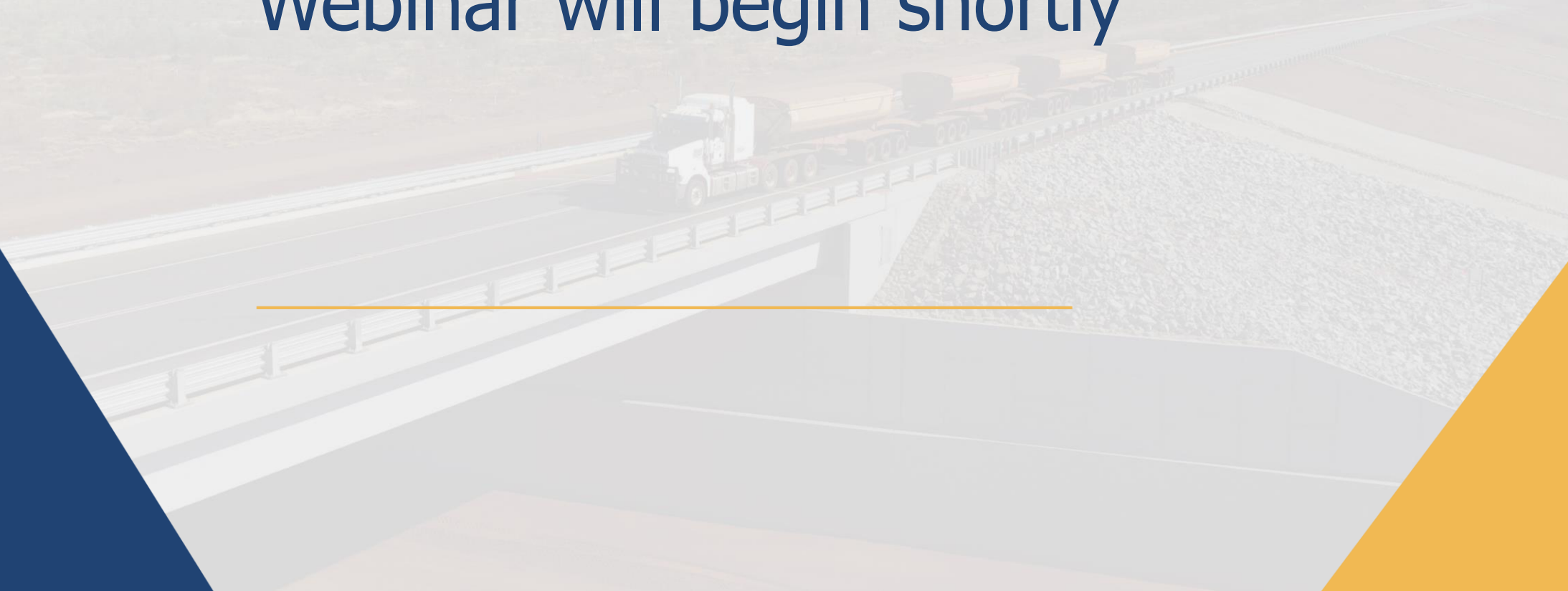
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AUSTRALIAN CONSTRUCTION PRODUCTS

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SMARTER SAFETY SOLUTIONS



Webinar Series

Proprietary Road Safety Barriers - Standard & Variant Applications

February 15, 2023

Presented by
Wesam Refahi

SMARTER SAFETY SOLUTIONS

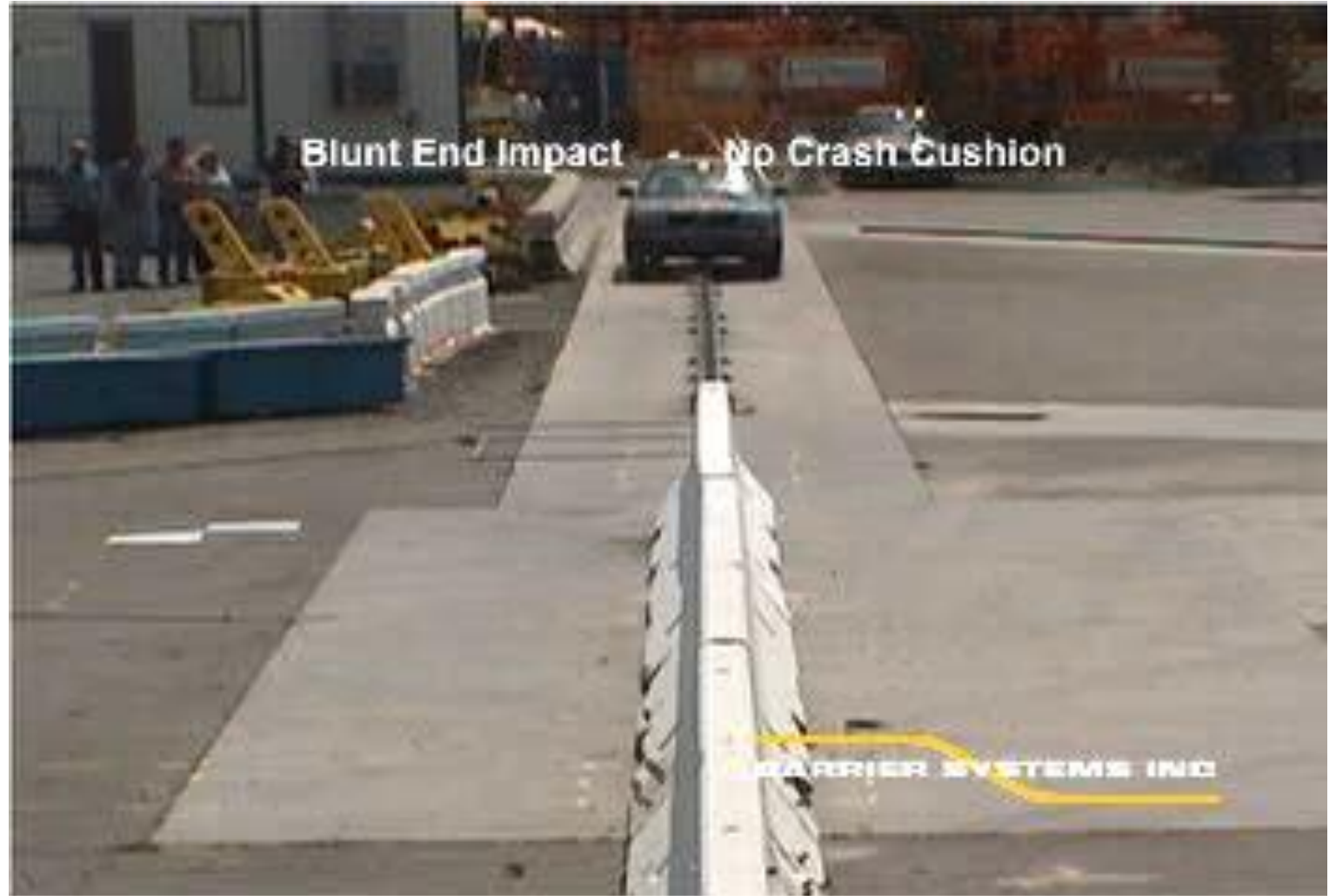


INDUSTRY LEADING PRODUCTS IN ROADSIDE SAFETY BARRIERS AND STEEL ARCHED STRUCTURES.

ACP offers a wide range of market leading roadside safety barrier systems and steel arched structures that meet or exceed industry standards and specifications.

We proudly manufacture a range of products locally at our Sydney based factory using Australian made BlueScope steel. With Sales representatives and distribution Warehouses across the country, ACP provides quality and service to meet the demands of any sized project.

Why we need
road safety
barriers &
devices...



-
- The difference can be life or death.

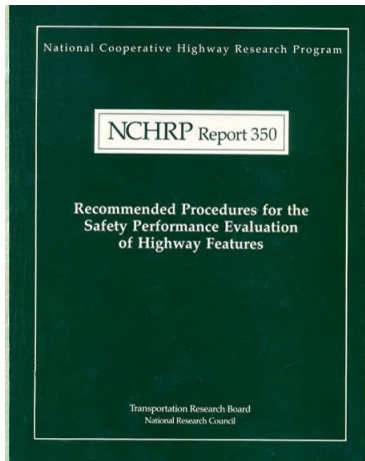
A TAU-M Crash Cushion impacted at 100 km/hr – Pick-Up Truck



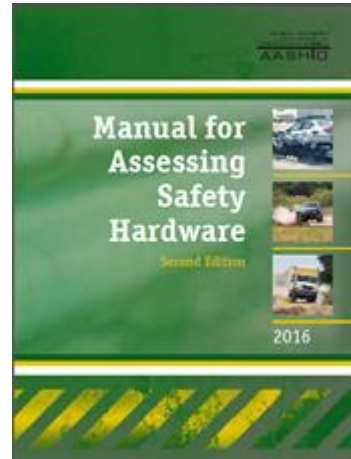
MASH

What is MASH and how is it related to Road Safety Barriers?

AASHTO – NCHRP Report 350



AASHTO - MASH 2016 Manual for Assessing Safety Hardware - Second Edition



'The purpose of this manual is to present uniform guidelines for the crash testing of both permanent and temporary highway safety features and recommended evaluation criteria to assess test results.'

Reference:

<https://store.transportation.org/Common/DownloadContentFiles?id=1539>

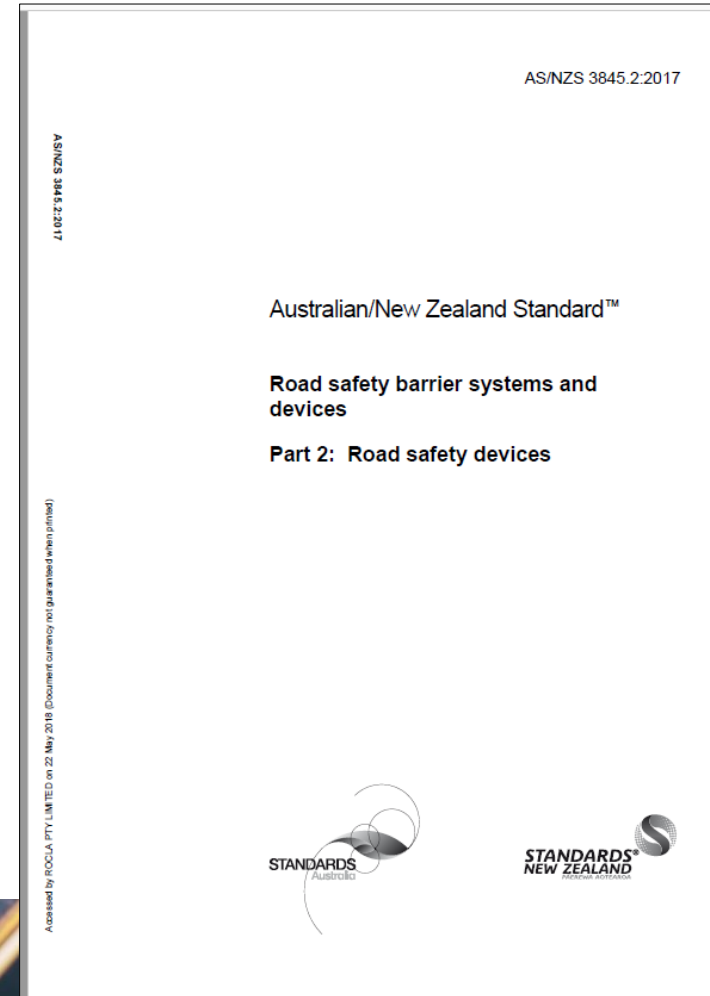
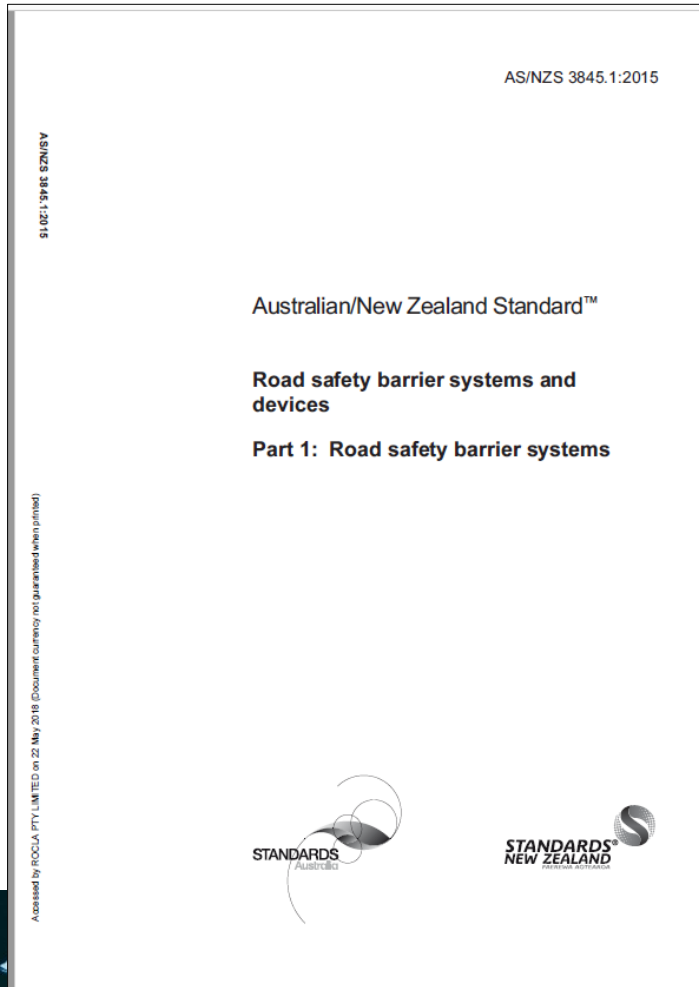
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Ref:
https://safety.fhwa.dot.gov/roadway_dept/countermeasures/reduce_crash_severity/aashto_guidancecfm



Australian Standard for Road Safety Barrier Systems and Devices

What is AS/NZS 3845.1 2015 and 3845.2 2017?



Australian Standard for Road Safety Barrier Systems and Devices

What is AS/NZS 3845.1 2015 and 3845.2 2017?

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 compensate for that error such that the road user will survive the consequences of mistakes made. Refer to OECD, [2008]. *Towards Zero: Ambitious road safety targets and the safe system approach*, International Transport Forum, ISBN 978-92-821-0195-7.

Ref: Page 6 – AS/NZS
3845:2015 Part 1

MASH

Test Vehicles – TL-1 to TL-4 (no change to TL-5/TL-6 Vehicle 36T)

NCHRP 350 Vehicle		MASH Vehicle		Weight Increase NCHRP -> MASH
<p>Small Car</p> 	<p>820C Weight: 1,809 lb (820 kg)</p>		<p>1100C Weight: 2,420 lb (1,100 kg)</p>	+ 280 kg
<p>Pickup Truck</p> 	<p>2000P Weight: 4,409 lb (2,000 kg)</p>		<p>2270P Weight: 5,000 lb (2,270 kg)</p>	+ 270 kg
<p>Single Unit Truck</p> 	<p>8000S Weight: 17,636 lb (8,000 kg)</p>		<p>10000S Weight: 22,000 lb (10,000 kg)</p>	+ 2,000 kg

MASH

Comparison table of NCHRP 350 vs. MASH

Data sourced from AS/NZS 3845:1 (2015) - page 68

NCHRP 350						MASH						Increase in Energy %
Test level	Mass kg	Type	Speed km/h	Angle degrees	IS kJ	Test level	Mass kg	Type	Speed km/h	Angle degrees	IS kJ	
1	820	C	50	20	9.3	1	1100	C	50	25	18.9	+ 103%
	2000	P	50	25	34.5		2270	P	50	25	39.1	+ 13%
2	820	C	70	20	18.1	2	1100	C	70	25	37.1	+ 105%
	2000	P	70	25	67.5		2270	P	70	25	76.6	+ 13%
3	820	C	100	20	37	3	1100	C	100	25	75.8	+ 105%
	2000	P	100	25	137.8		2270	P	100	25	156.4	+ 13%
4	820	C	100	20	37	4	1100	C	100	25	75.8	+ 105%
	8000	SU	80	15	132.3		10000	SU	90	15	209.3	+ 58%
5	820	C	100	20	37	5	1100	C	100	25	75.8	+ 105%
	36000	V	80	15	595.4		36000	V	80	15	595.4	+ 0%
6	820	C	100	20	37	6	1100	C	100	20	49.6	+ 34%
	36000	T	80	15	595.4		36000	T	80	15	595.4	+ 0%

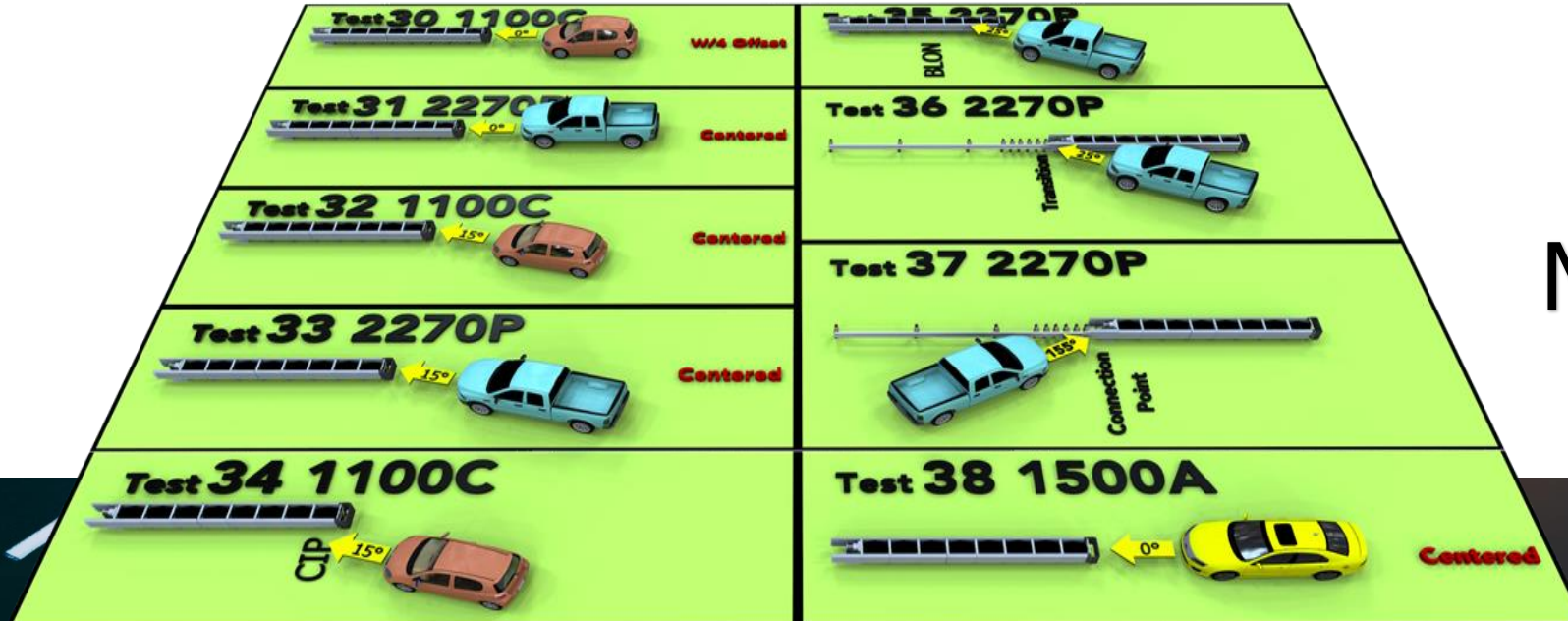
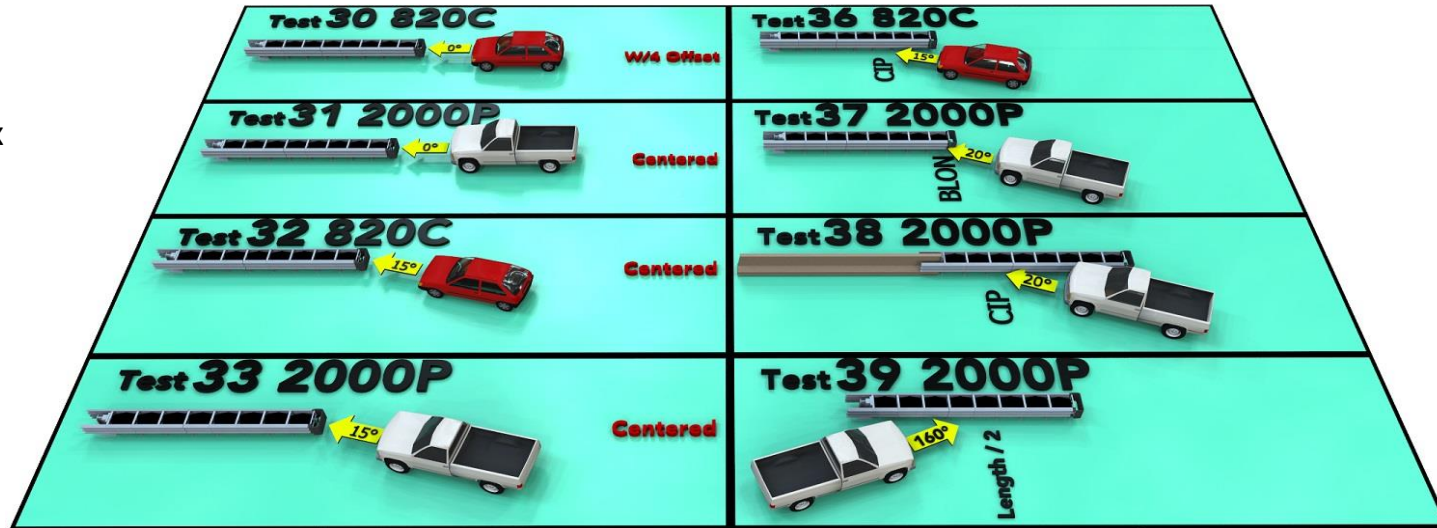
Symbols: C=Car P=Utility Pick-Up SU=Single Unit Truck B=Bus A=Articulated Vehcile (Van) T=Articulated Vehcile (Tanker)

MASH

Comparison Example
- Crash Cushion Matrix

NCHRP 350

Non Gating
Re-Directive



MASH

Non Gating
Re-Directive

Types of Proprietary Road Safety Barriers - Permanent



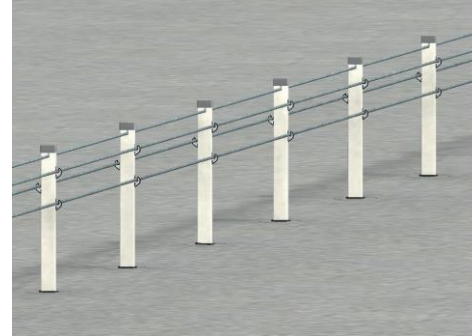
Flexible W-Beam



Flexible Thrie-Beam



Motorcyclist Barrier



Flexible WRSB



Safety Roller Barrier



Transitions



Guardrail End Terminal



Median Guardrail End Terminal



Median Traffic Gate



Crash Cushion



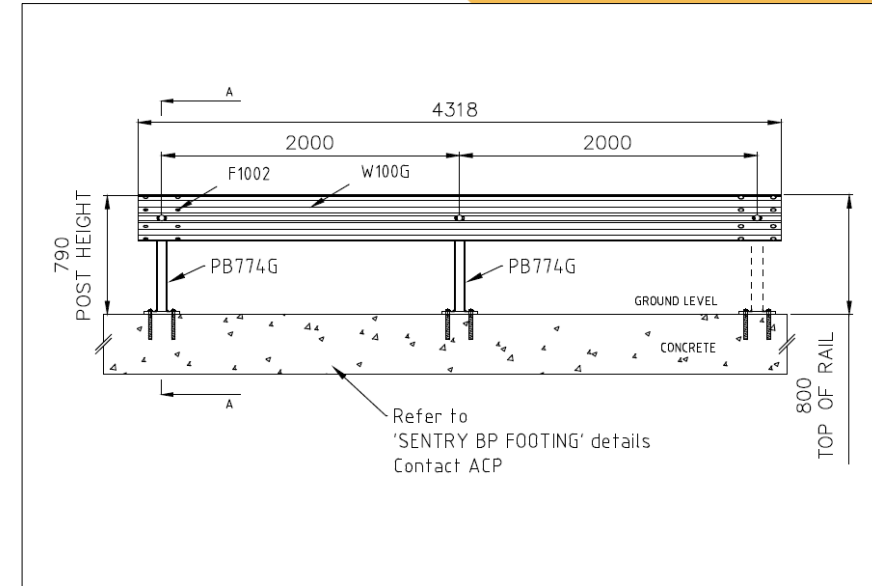
Flexible W-Beam Guardrail – Sentry W-Beam Barrier TL-3



Standard Installation Features:

- Roadways designed to meet max. Test Level 3.
- Driven Posts generally @ 2m Post Spacings.
- Natural Ground to Asphalt pavements.
- Generally accommodating areas with hazard free area behind rail up to approx. 1.7m.

Flexible W-Beam Guardrail – Sentry W-Beam Barrier TL-3 Variants



Variant Installation Options:

- Options to reduce post spacing for lower deflection performance. Useful where hazards are closer to barrier.
- Options to utilise Extended Posts for deeper embedment's around close proximity to slopes and/or weaker soils.
- Utilise Median (back-to-back) option for median barrier applications where design requirements permit.
- Utilise Baseplate option to accommodate locations where underground services may be present such as drains.

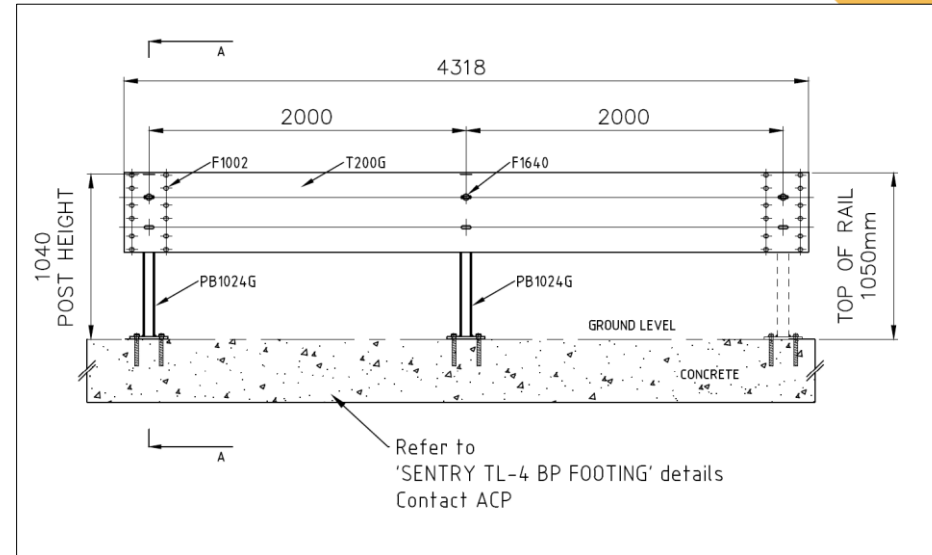
Flexible Thrie-Beam Guardrail – Sentry ThrieBeam Barrier TL-4



Standard Installation Features:

- Roadways designed to meet max. Test Level 4.
- Driven Posts generally @ 2m Post Spacings.
- Natural Ground to Asphalt pavements.
- Generally accommodating areas with hazard free area behind rail up to approx. 2.8m.

Flexible Thrie-Beam Guardrail – Sentry ThrieBeam Barrier TL-4 Variants



Variant Installation Options:

- Options to reduce post spacing for lower deflection performance. Useful where hazards are closer to barrier.
- Options to utilise Extended Posts for deeper embedment's around close proximity to slopes and/or weaker soils. TL-3 design only.
- Utilise Median (back-to-back) option for median barrier applications where design requirements permit. (Currently under R&D)
- Utilise Baseplate option to accommodate locations where underground services may be present such as drains.

Motorcyclist Protection Barrier – HIASA & RiderPro MPS systems



Standard Installation Features:

- Roadways designed to meet max. Test Level 3 & 4.
- Applied to Posts generally @ 2m Post Spacings.
- HIASA MPS compatible with Public Domain G4 retrofit
- RiderPro MPS compatible with Sentry W & ThrieBeam
- RiderPro MP MPS compatible with Sentry W-Beam & Public Domain G4 retrofit

Guardrail End Terminal – MAX-Tension TL-2 & TL-3 End Terminals



Standard Installation Features:

- End Terminals tested to MASH Test Level 2 and Test Level 3.
- Natural Ground to Asphalt pavements.
- Standard with Yellow Nose Cover.
- Flare offset of 0 - 610mm compatible.
- Compatible to transition to various guardrail systems
- Point of Need from Post No. 1 for TL-2 system
- Point of Need from Post No. 3 for TL-3 system

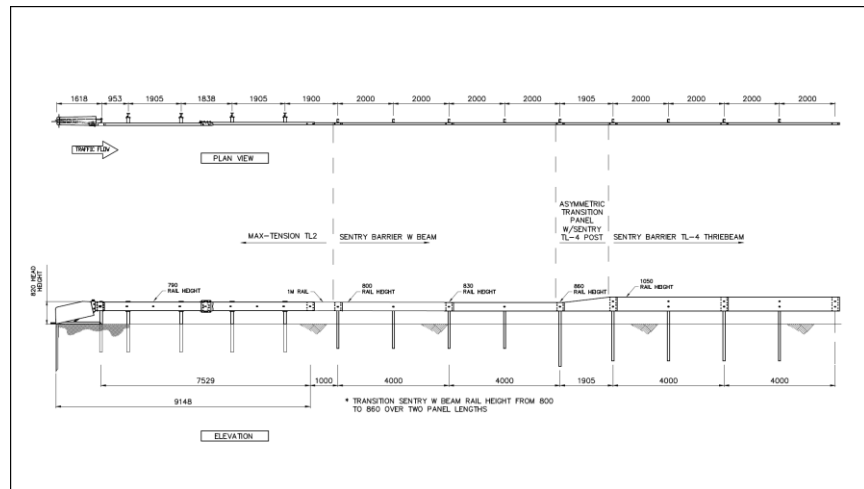
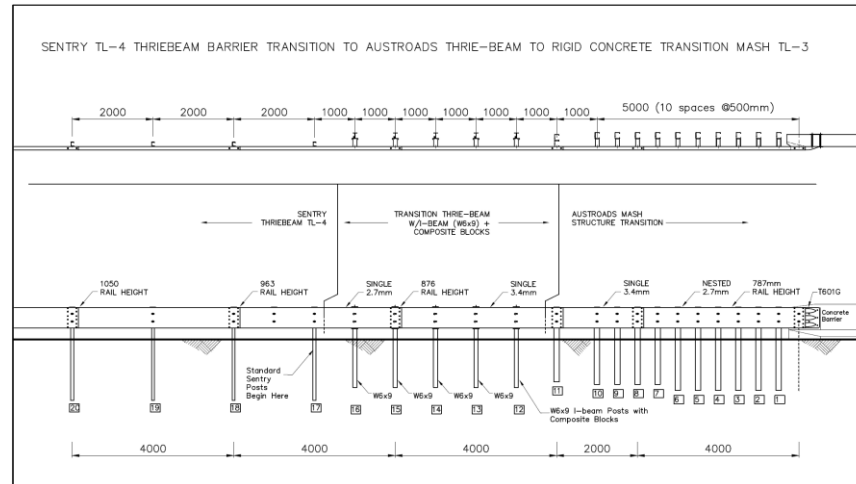
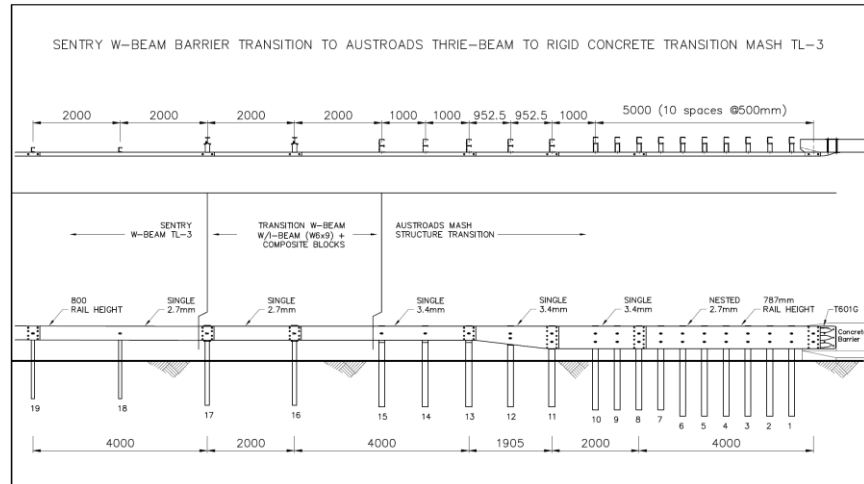
Guardrail End Terminal – X-Tension TL-3 Median End Terminal



Standard Installation Features:

- Conditionally Approved for use in QLD & VIC.
- End Terminal tested to Test Level 3.
- Natural Ground to Asphalt pavements.
- Standard with Median Yellow Nose Cover.
- Flare offset of 0 - 1200mm compatible.
- Versatile option for 2-way roads compared with using a crash cushion for barrier median terminations.

Guardrail Transitions – Proprietary



Standard Installation Features:

- Various designs to adopt depending on barrier types.
- Sentry W & ThrieBeam transition options to various GREAT terminals including Austroads SBTA-21-005 transition.
- Natural Ground to Asphalt pavements.
- Consult with supplier when unsure of transition selection.

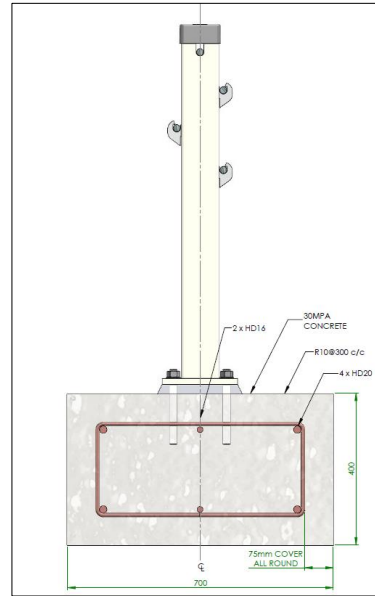
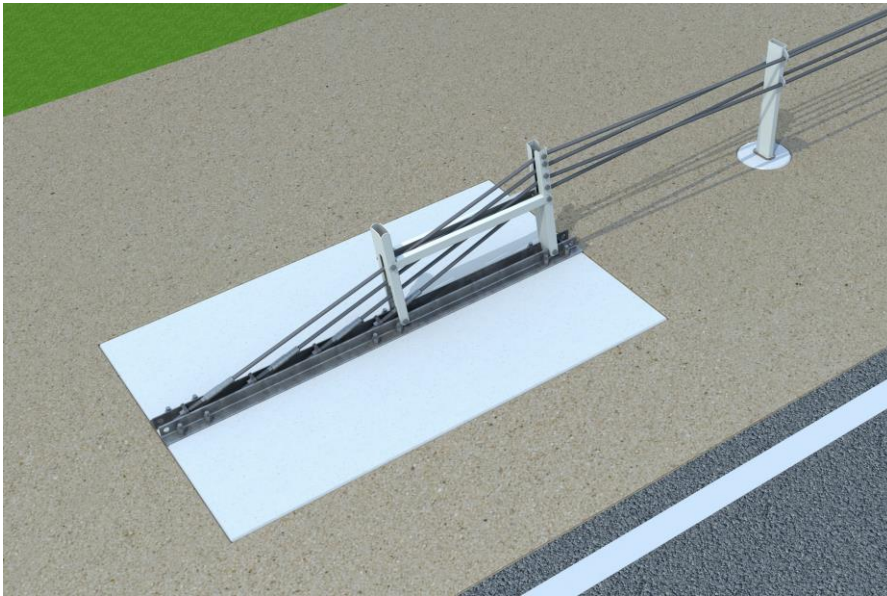
Flexible Wire Rope Barrier – Sentryline M Wire Rope Safety Barrier



Standard Installation Features:

- Roadways designed to meet max. Test Level 3 & 4.
- Posts generally @ 3m Post Spacings. Tested TL-3 & 4.
- Posts @ 2m Post Spacing tested at TL-3.
- Permitted in all ground conditions using concrete post footings.
- Non-release anchor type.
- Point of Need 13.5m from anchor.

Flexible Wire Rope Barrier – Sentryline M Wire Rope Safety Barrier - Variants



Variant Installation Options:

- Baseplate option on 400mm deep strip footing for shallower embedment scenarios.
- Multiple anchor foundation options such as pile option and three different block options.
- Anchor block foundation includes a default size, a narrow option and a shallow option.

Crash Cushion – Universal TAU-M Crash Cushion



Standard Installation Features:

- MASH Test Level 2 & 3 Tested systems.
- Available in concrete and asphalt pavement systems.
- Connection details to various steel and concrete barriers.
- Typically supplied preassembled with minimal work onsite to deploy for live traffic.
- Used in low to high speed areas particularly in locations with more frequent & higher risk of impacts into hazards.

Median Traffic Gate – ArmorGuard Steel Gate System



Standard Installation Features:

- A permanent steel gate system for concrete medians.
- Contraflow traffic during maintenance or emergencies.
- Manually operated for guaranteed opening.
- Low-cost median gate / Fast installation.
- Hinges from either end for one person to open the system when required.
- Can be unpinned for complete opening/removal in less than 5 minutes.

Safety Roller Barrier – KSI Safety Roller Steel Rail Safety Barrier



Standard Installation Features:

- MASH Test Level 3 & 4 Tested.
- Ground-breaking shock energy absorb system.
- Decreases speed impact whilst redirecting vehicles.
- Market leading crash testing performance figures including ride down forces.
- Designed for extreme road hazards and provides high visibility.

Austrroads Guide to Road Design – Part 6

What is the Austrroads Guide to Road Design Part 6: Roadside Design Safety and Barriers?

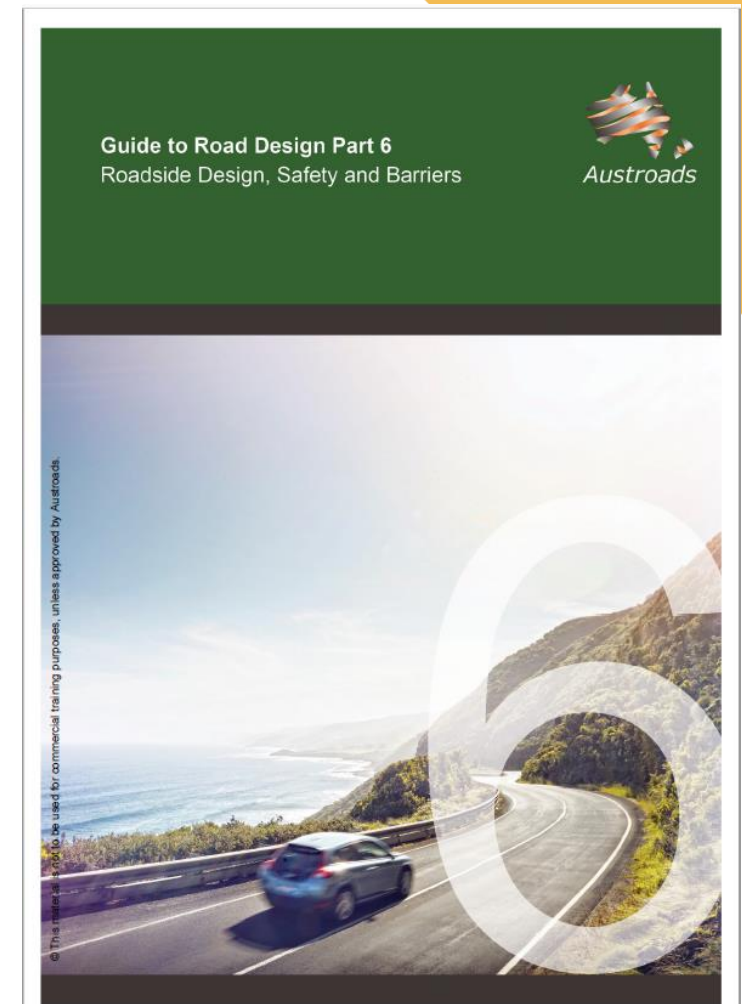
1.4 Scope of this Part

This Part describes the elements of roadside design and the many features and objects that may have to be accommodated and coordinated in the space between the edge of the carriageway and the reservation boundary, and within medians. The major focus of Part 6 is to provide guidelines for hazard identification and risk mitigation processes and to give a clearly defined process for designing roads for safety.

Specifically, this Part provides:

- guidelines on the rationale of errant vehicle management
- guidelines for assessment and treatment of hazards on the roadside
- guidance on the selection and location of road safety barriers
- a road design process that implements errant vehicle management and risk management principles.

While some consideration is given to trucks, motorcyclists, cyclists and pedestrians with respect to road safety barriers, it should be understood that the hazard mitigation processes discussed in this Part largely relate to the occupants of cars.



Austrroads Guide to Road Design – Part 6

What is the Austrroads Guide to Road Design Part 6: Roadside Design Safety and Barriers?

'Abstract

Guide to Road Design Part 6: Roadside Design, Safety and Barriers provides guidance on roadside design and in particular guidance on evaluating the risk of a roadside and the selection and use of road safety barrier systems.

Roadsides have to accommodate many features that support the road and the safe and efficient operation of traffic, and have to be designed with regard to environmental requirements. Part 6 should therefore be read in conjunction with other Parts of the Guide to Road Design.

Part 6 provides information to enable designers to understand the principles that lead to the design of safer roads, identify hazards, undertake a risk assessment process of roadside hazards, establish the need for treatment of hazards and determine the most appropriate treatment. Methods of evaluating the effectiveness of treatment options are summarised. A comprehensive design process, guidance and design considerations are provided for the selection of a suitable barrier and for the lateral and longitudinal placement of barrier systems'. *Reference – page 3, AGRD 06-22.*

Austrroads Guide to Road Design – Part 6

What is the Austrroads Guide to Road Design Part 6: Roadside Design Safety and Barriers?

Main sections of AGRD Part 6

1. Introduction to Roadside Design
2. Network Risk Assessment
3. Program and Project Risk Assessment
4. Treatment Options
5. Fundamentals of Safety Barrier Systems
6. Road Safety Barriers
7. Installation of Other Roadside Safety Devices
8. Roadside Design for Steep Downgrades

State Road Safety Approvals and Specifications

Other supplementary specifications by states and barrier system approval lists

Key State road safety approval documents & related specifications

1. Approved Road Safety Barriers & Devices List/Doc
2. State Supplement to AGRD Part 6
3. Road Safety Barrier Specifications & Requirements
4. Road Design Notes & Sheets if available
5. Road Safety Barrier related standard drawings if available
6. Any other technical specifications or requirements relating to road safety barriers

State Road Safety Approvals and Specifications

Other supplementary specifications by states and barrier system approval lists

Service NSW [↗](#) Live Traffic [↗](#) Transport Info [↗](#) Transport for NSW [↗](#) Service Centres [↗](#)

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- Safety Barrier Products

Draft documents for public review & comment

Aboriginal Participation in Construction

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Safety Barrier Products

Safety barriers are intended to safely redirect the majority of vehicles that have left the roadway.

The [Austroads Safety Barrier Assessment Panel](#) (the Panel) assesses the crashworthiness and suitability of road safety barriers, systems and devices for deployment on roads managed by Australian/New Zealand road agencies in line with AS/NZS 3845. AS/NZS 3845 outlines AASHTO Manual for Assessing Safety Hardware (MASH) as the current basis for crash testing protocol. TfNSW adopts the recommendations of the Panel.

Product selection

Only products that have been assessed and accepted should be installed on the NSW classified road network. This applies to all installations including permanent and workzone (temporary).

All accepted systems have acceptance conditions outlining the parameters under which the product is accepted for use.

Product acceptance conditions should be read in conjunction with [R132-Safety Barrier Systems \(PDF, 274Kb\)](#) and the [Austroads Guide to Road Design Part 6: Roadside Design, Safety and Barriers](#).

Enquiries relating to safety barriers can be sent via email to: TechnologyStandards@transport.nsw.gov.au.

Accepted products


- [Accepted Safety Barrier Systems and Device \(PDF, 664Kb\)](#)

Longitudinal Barrier MASH Test Levels

Test Level	Vehicles	Impact Speed
T1.5	1,100 kg	100 km/h

State Road Safety Approvals and Specifications

Other supplementary specifications by states and barrier system approval lists

 <p data-bbox="1067 325 1200 344">TS 00028:1.0</p> <p data-bbox="1003 391 1200 409">Technical Information</p> <h2 data-bbox="555 529 1085 611">Accepted Road Safety Barrier Systems and Devices</h2> <p data-bbox="555 746 759 765">Issue date: 08 July 2022</p> <p data-bbox="555 783 784 802">Effective date: 07 July 2022</p> <p data-bbox="555 1318 784 1332">© State of NSW through Transport for NSW 2022</p>	<p data-bbox="1753 318 2000 358">TS 00028:1.0 Accepted Road Safety Barrier Systems and Devices Effective date: 07 July 2022</p> <h3 data-bbox="1666 405 1760 424">Disclaimer</h3> <p data-bbox="1429 444 1982 482">This document has been prepared by Transport for NSW (TfNSW) specifically for its own use and is also available for use by NSW public transport agencies for transport assets.</p> <p data-bbox="1429 496 1995 582">Any third parties considering use of this document should obtain their own independent professional advice about the appropriateness of using this document and the accuracy of its contents. TfNSW disclaims all responsibility and liability arising whether directly or indirectly out of or in connection with the contents or use of this document.</p> <p data-bbox="1429 596 1989 635">TfNSW makes no warranty or representation in relation to the accuracy, currency or adequacy of this document or that the document is fit for purpose.</p> <p data-bbox="1429 649 1989 688">The inclusion of any third party material in this document, does not represent an endorsement by TfNSW of any third party product or service.</p> <p data-bbox="1352 1239 1964 1278">For queries regarding this document, please email Transport for NSW Advanced Technical Services at technologystandards@transport.nsw.gov.au</p> <p data-bbox="1352 1318 1582 1332">© State of NSW through Transport for NSW 2022</p>
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State Road Safety Approvals and Specifications

Other supplementary specifications by states and barrier system approval lists

TS 00028:1.0
Accepted Road Safety Barrier Systems and Devices
Effective date: 07 July 2022

10.8 Distance to an excavation

The minimum distance between the back of the system and the edge of an excavation should provide sufficient distance to accommodate the barrier's design deflection and provide adequate lateral support for the system, whichever is the greater.

11 Accepted products

11.1 Accepted permanent products






MASH TL3 and TL4 permanent products are accepted for use in 110 km/h speed zones.

11.1.1 Steel rail safety barriers




Due to the performance of steel rail safety barriers during impact, that is, flattening of the rail, the dynamic deflection and working width values at TL3 are generally the same. At TL4 the working width value includes any heavy vehicle roll observed during testing.

Steel rail safety barriers are listed in Table 1.

Table 1 – Steel rail safety barriers

Product name	Supplier	Austrroads TCU	Test level	Product photo	TNSW conditions & variants
CrocGuard Safety Barrier	Safe Direction	9 Jun 22	MASH TL4 MASH TL3		Nil
EZY-GUARD High Containment Safety Barrier	Ingal Civil Products	14 Mar 22	MASH TL4 MASH TL3		Nil
EZY-GUARD LDS Safety Barrier	Ingal Civil Products	3 Jun 22	MASH TL4 MASH TL3		Nil
RAMSHIELD High Containment Safety Barrier	Safe Direction	9 Jun 22	MASH TL4 MASH TL3		Nil
Sentry Thrie-Beam Safety Barrier	Australian Construction Products	14 Mar 22	MASH TL4 MASH TL3		Nil

TS 00028:1.0
Accepted Road Safety Barrier Systems and Devices
Effective date: 07 July 2022

Product name	Supplier	Austrroads TCU	Test level	Product photo	TNSW conditions & variants
EZY-GUARD 4 Safety Barrier	Ingal Civil Products	14 Mar 22	MASH TL3		Connection to INGAL MPR
EZY-GUARD Smart Safety Barrier	Ingal Civil Products	23 Sep 21	MASH TL3		Nil
RAMSHIELD Safety Barrier	Safe Direction	9 Jun 22	MASH TL3		Connection to Bikershield MPR
SENTRY W BEAM Safety Barrier	Australian Construction Products	3 Jun 22	MASH TL3		Nil
NSW Transition to Rigid Concrete	Public Domain	Not applicable	NCHRP 350		Conditionally accepted 1 Jan 20


11.1.2 Wire rope safety barriers

The following apply to all wire rope safety barriers (WRSB):

- The maximum length of WRSB between anchors is 1000 m where this is in accordance with the system owner's and system supplier's guidance. Longer installations require intermediate anchorage. It is necessary to overlap the intermediate anchors to provide a continuous length of redirective barrier system. A minimum of accepted deflection distance should be provided between the intermediate anchors. This minimises any risk associated with errant vehicles impacting two systems simultaneously which is not well understood at this time.
- WRSB consist of tensioned ropes held between posts and, as such, there is a limit to their use on horizontal and vertical alignments. It is generally accepted that the minimum allowable horizontal curve radius for WRSB installations is 200 m, however if the system supplier specifies a minimum that is different than this, the manufacturer's requirements shall be used. The minimum allowable sag curve K value is 30. The use of intermediate anchors at the base of sag curves may be considered to reduce ropes from rising. There is no K value limit for crest curves.


State Road Safety Approvals and Specifications

Other supplementary specifications by states and barrier system approval lists



Safety Barrier Technical Conditions for Use

SENTRY W BEAM Safety Barrier - Permanent



Issue Date: 3 June 2022 **Proponent:** Australian Construction Products

This document is a summary of the Austroads Safety Barrier Assessment Panel's assessment of the technical performance of the product against AS/NZS 3845 Parts 1 or 2 only. It does not consider procurement practices by individual Road Agencies. The Austroads Safety Barrier Assessment Panel may at any time, withdraw or modify this document without notice.

These Technical Conditions for Use do not imply that this product may be used on roads under the care and control of individual Road Agencies. Users should refer to individual Road Agency websites to determine whether this product is accepted for use within that jurisdiction, and if the Road Agency has adopted any additional or specific requirements.

These conditions do not take precedence over Road Agency specifications and standards.

These conditions do take precedence over instructions in the Product Manual.

Status	Recommended for Acceptance
Product accepted	SENTRY W BEAM Safety Barrier
	<p>Variants Back to back installation Base plate installation – may only be installed on concrete foundation pavements</p> <p>Variants that are NOT listed above are NOT recommended for acceptance.</p>
Accepted impact speed	100 km/h
Product manual reviewed	V1.8 – July 2020 – Sentry W Beam IM 030 Rev 01 – dated 25 July 2019 – RiderPro IM 035 Rev 01 – 31.01.22 – RiderPro MP

Design Requirements

Containment Level	Point of Redirection		Tested Article Length (m)	Anchor/Post Spacing (m)	Dynamic Deflection (m)	Working Width (m)	Notes
	Leading (m)	Trailing (m)					
MASH TL3	Interface between barrier and end treatment		90	2.0	1.59	1.59	

Approved Connections

An accepted end treatment must be provided at both ends of all barrier installations

Public Domain Products	
W-Beam Guardrail	Permitted
Thrie-Beam Guardrail	Not permitted
Concrete	Permitted using SBTA 21-005 Transition from strong post W-Beam to rigid concrete barrier
Proprietary Products	
Max-Tension Guardrail Terminal	<ul style="list-style-type: none"> Refer to Max-Tension Guardrail Terminal Technical Conditions for Use.
RiderPro	<ul style="list-style-type: none"> Motorcyclist Protection Device Tested to EN1317.8 – Class C60 with Severity Level 1. Not permitted on kerbed roads
RiderPro MP	<ul style="list-style-type: none"> Motorcyclist Protection Device Tested to CEN/TS 17342 – Class C60 with Severity Level 1. Not permitted on kerbed roads

Design Guidance

Minimum installation length	78 metres between crash cushions/terminals (tested article)
System width (m)	0.20 (standard) 0.30 (back to back)
Minimum distance to excavation (m)	1.59 measured from the face of the barrier
Side slope limit	17%
System conditions	Installation on top of a kerb is not recommended, however if installed on top of a kerb, all system components must be free to operate.
Gore area use	Permitted
Pedestrian area use	Permitted
Cycleway use	Permitted
Frequent impact likely	Permitted
Remote location	Permitted
Median use	Permitted

Foundation Pavement Conditions

Pavement Type	Use	Max Accepted Impact Speed (km/h)	Post/Pin Spacing (m)	Post/Pin Type	Pavement Construction
Concrete	Permitted	100	2.0	ACP Sentry Barrier base plate post or ACP Sentry Barrier driven post with coring holes	Refer to drawings
Deep lift asphaltic concrete	Permitted	100	2.0	ACP Sentry Barrier Post	Minimum AASHTO standard soil strength
Asphaltic concrete over granular pavement					
Flush seal over granular pavement					
Unsealed compacted formation					

Note: Installation in pavement conditions not permitted above have not been justified to the Panel's satisfaction.

Recommendations about RSB type selection


Recommendations about designing for or specifying RSB type:

- Always follow local state guidelines on RSB's.
- Adhere to the local state 'Supplement to AGRD Part 6' where applicable.
- Adhere to local state guidelines or processes on design exceptions and/or Extended Design Domain (EDD).
- Adhere to any local state specifications and design notes/drawings where applicable. If unsure always ask your local state technical department for advice.

Recommendations about procuring RSB products:

- Adhere to local state current RSB approval lists where applicable.
- RSB approval lists are always being updated so don't assume one you have on file is still valid.
- Do not hesitate to ask RSB suppliers directly about any technical information relating to their products. Suppliers can also provide solutions or advice where possible.

State RSB Approval List Documents



TS 00028:2.0
Technical Information

Accepted Road Safety Barrier Systems and Devices

Issue date: 12 October 2022
Effective date: 12 October 2022

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NSW/ACT

Department of Transport and Main Roads
Department of Transport

TMR Accepted Road Safety Barrier Systems and Devices

November 2022

QLD



Department of Transport

Road Design Note

Accepted Safety Barrier Products **RDN 06-04**
December 2022

Purpose
This document provides a list of road safety devices that DoT, formerly VicRoads, has assessed and considers acceptable for use on the dedicated road network, subject to appropriate design and installation. For roads not on the dedicated road network (e.g. local roads), the responsible road authority (e.g. Councils) should be contacted to determine if this list is applicable.

Key Information
Safety barrier selection and design is an intricate process that requires the application of engineering judgement and risk assessment. Designers should use this list of Accepted Safety Barrier Products in conjunction with:

- the 'Austroads Guide to Road Design (AGRD) - Part 8', 'DoT Supplement to AGRD - Part 8' and Road Design Notes, which describe the steps involved in designing a safety barrier.
- the 'General Conditions of use and Safety Barrier Policies' detailed below.
- the 'Austroads Technical Conditions of Use (TCU)' and DoT specific conditions or variants listed below, which detail any product specific limitations identified through assessment.
- the individual 'Product Installation and Maintenance Manuals', which are provided by the product owner or supplier to help achieve the desirable installation.

Further information on the list, the product assessment process and barrier performance requirements are provided below. Where reference to 'VicRoads' approved products is made for the acceptance of Safety Barrier Products, this document shall be deemed to satisfy that requirement. For further clarification, please contact the Engineering Standards team.

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1. General Conditions of Use
Safety barrier products must be used in accordance with the following conditions of use:
1.1 Acceptance conditions
All products accepted for use by the DoT are listed below and will have a DoT Letter of Acceptance issued to the Proprietor (typically the System Supplier). Using a product that is not accepted for use, or using a product outside the parameters for which it has been accepted by DoT, represents an unacceptable risk to road users.
Where a departure from the 'Austroads TCU' or 'DoT Conditions and Variants' is required, users should understand and document the risks and apply engineering judgement.

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VIC/TAS

OFFICIAL Government of South Australia
Department for Infrastructure and Transport

Accepted Safety Barrier Products - GD 300

Safety Barrier Products
Safety barriers are intended to safely redirect the majority of vehicles that have left the roadway.
The Austroads Safety Barrier Assessment Panel (ASBAP) assesses the crashworthiness and suitability of road safety barriers, systems and devices for deployment on roads managed by Australian/New Zealand road agencies in line with AS/NZS 3845.
Performance
AS/NZS 3845:1-2015 and AS/NZS 3845:2-2017 outlines AASHTO Manual for Assessing Safety Hardware (MASH) as the current basis for crash testing protocol. In line with AS/NZS 3845, ASBAP has updated its product submission criteria and is transitioning the current suite of accepted products.
DIT is adopting MASH as the nominal standard for road safety hardware in line with ASBAP and AS/NZS 3845.
MASH testing results will be used as the primary performance criteria in promoting any road safety hardware. Therefore it is a DIT requirement to select products, if possible, that have undergone the full suite of MASH testing.
National Scheme
A national scheme is being developed to ensure the people who design, install, and maintain road safety barriers on Australia and New Zealand's road network are appropriately trained. Austroads has partnered with Lintec (LIX) to develop a national accreditation scheme that will require the certification of all people engaged in the design, installation, and maintenance of any road safety barrier system used in New Zealand or Australia.
Legacy Products
No new installations are permitted. Existing installations may be maintained until the end of their service. When replacements of existing installations are required, it is recommended that new accepted MASH-tested products are to be installed. MASH tested products provide an increased level of safety to road users.
Accepted Speed Environment
Products accepted in speed environments at 100 km/h may be installed in speed environments of 110 km/h.

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SA

NORTHERN TERRITORY
Department of Infrastructure, Planning and Logistics

Road safety barriers

Road safety barrier systems are intended to safely redirect the majority of vehicles that unintentionally leave the roadway.
The [Austroads Safety Barrier Assessment Panel \(ASBAP\)](#) assesses the crashworthiness and suitability of tested road safety barrier systems and devices for deployment on roads managed by Australian/New Zealand road agencies in line with AS/NZS 3845.
AS/NZS 3845:1-2015 and AS/NZS 3845:2-2017 identify and outline the American Association of State Highway and Transportation Officials (AASHTO) Manual for Assessing Safety Hardware (MASH) for the purpose of evaluating new safety hardware on the US highway network. AASHTO MASH supersedes the AASHTO National Cooperative Highway Research Program Report 350 (NCHRP 350) evaluation.
In line with AS/NZS 3845, ASBAP has updated its product submission criteria and is transitioning the current suite of accepted products.
The Department of Infrastructure, Planning and Logistics (DIPu) is adopting MASH as the nominal standard for road safety barrier systems in line with ASBAP and AS/NZS 3845. Where there are no MASH tested products for a specific application, DIPu will consider NCHRP 350 and European Standard EN1317 tested products.
Going forward, only products that have been Austroads assessed should be installed on the NT Government road network. This applies to all installations including permanent and work zone (temporary).
All accepted systems have "Technical Conditions for Use" outlining the parameters under which the product is accepted for use and should be read in conjunction with the product manual.

Test level (TL) containment comparisons

Test level	MASH Containment	NCHRP 350 Containment
TL1	1,100kg & 2,270kg at 50km/h	820kg at 50km/h & 2,000kg at 50km/h
TL2	1,100kg & 2,270kg at 70km/h	820kg at 70km/h & 2,000kg at 70km/h
TL3	1,100kg & 2,270kg at 100km/h	820kg at 100km/h & 2,000kg at 100km/h
TL4	1,100kg & 2,270kg at 100km/h 30,000kg at 90km/h	820kg at 100km/h & 2,000kg at 100km/h 8,000kg at 80km/h
TL5	1,100kg & 2,270kg at 100km/h 36,000kg at 90km/h	820kg at 100km/h & 2,000kg at 100km/h 36,000kg at 90km/h

NT

mainroads

List of Approved Road Safety Barrier Systems

Technical Library Home

Current version number
AT - 31 January 2023
[See full version details](#)

Category
Technical Information

Guideline Owner
Ezra Storch
Contact: [Matt Briggs](#)

Page Last Reviewed
31 January 2023

Table of Contents

1. Series
2. Terms
3. Terms
4. Data
5. Miscellaneous Products

This list is split into the following components:

- Series
- Terms
- Terms
- Series (only apply to series of barrier and hardware)
- Miscellaneous Products

This listing does not cover traffic barriers or structures. Details on approved traffic barriers on structures and bastions can be found on the Main Roads website under Standard Design under the heading Traffic Barriers and Bastions for Structures.
For each approved component a date of approval is shown. If it is a proprietary product approved since 2021 it is a public domain product that has been included under license 2021 and details about it are available in the component name.
Approved subproducts for use on Work Zone barrier systems can be found in Appendix D of Specification 801 Safety & Traffic Barrier Systems.

WA

SMARTER SAFETY SOLUTIONS



Questions?

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