

# Type-B Guard Fence - Permanent

## Product summary

<b>Status</b>	Accepted – with commentary
<b>Category</b>	Permanent – Semi Rigid Longitudinal Barriers
<b>Test Level</b>	MASH TL2: <b>70km/h</b> (refer to design requirements)
<b>Supplier</b>	Public Domain
<b>Description</b>	Type-B is strong post w-beam longitudinal barrier.

## Introduction and purpose

This detail sheet is intended to supplement *VicRoads Road Design Note 06-04 - Accepted Safety Barrier Products*. Please refer to RDN 06-04 for the current VicRoads acceptance status, information on the product assessment process and general acceptance conditions.

The technical details within this document have been extracted from various sources of information including a technical assessment undertaken by VicRoads.

***VicRoads requirements take precedence over any manufacturer details.*** Where a departure from these requirements is required, users should understand the risks and document their engineering decisions.

For more detailed product information, refer to relevant VicRoads publications or contact [VicRoads](http://VicRoads).

## Technical information

The Type-B guard fence should be designed, installed and maintained in accordance with the following VicRoads conditions for use.

These conditions for use have been based on a VicRoads assessment of technical performance against AS/NZS 3845.



## Summary Conditions for Use

<b>Accepted configuration</b>	Type-B Guard Fence – 2.5m post spacing Refer VicRoads SD 3661.
<b>Variants</b>	N/A
<b>Deflection</b>	1.82m metres
<b>Product manual reviewed</b>	RDN 06-08 – The use of flexible and semi-rigid and guard fence (December 2017)
<b>ASBAP issue</b>	N/A
<b>Commentary</b>	Type-B does not provide the same level of performance as readily available MASH TL-3 products. As such, designers <b>MUST</b> consider the use of a MASH TL-3 product (or higher) before selecting Type-B guard fence.  Transitions to concrete in accordance with SD 4081 are accepted at 100km/h pending results of the Austroads transitions project. This should be the only new installation of Type-B in locations above 70km/h.  Refer to additional considerations and comments below.

Refer VicRoads conditions for use (below).

## VicRoads Conditions for Use

### Design requirements

Containment level	Speed (km/h)	Vehicle mass (kg)	Point of Redirection (m)*		Minimum length of barrier (m)	Post/Pin Spacing (m)	Dynamic deflection (m)	Working width (m)	Notes
			Leading	Trailing					
MASH TL-2	70	2270	Refer to appropriate approved terminal conditions		82	2.5	1.82	1.82	Deflection based on MASH TL-3 modified crash testing. Minimum length based on tested article length

### Approved Terminals and Connections

<i>Crash Cushions or Terminals must be fitted to both ends of a barrier</i>	
<b>Public Domain Products</b>	
Short Radius Curve Terminal	Limited Use – may be used in constrained locations in accordance with RDN 06-08 and all requirements of VicRoads Standard Drawings 4091-4094.
Thrie-Beam Guardrail	Not permitted
F-Shape Concrete Barrier	Permitted – VicRoads Standard Drawing 4081 can be used at 100km/h until a suitable alternative is available.
<b>Proprietary Products</b>	
Proprietary Terminals	Refer to approved Guard Fence Terminal Detail Sheet conditions of approved use.
Proprietary Barrier	Refer to Barrier Detail Sheet conditions of approved use; <ul style="list-style-type: none"> <li>EzyGuard SMART &amp; 4 barrier</li> <li>Ramshield barrier</li> <li>Safety Roller barrier</li> <li>Sentry Barrier</li> </ul> Transitions between Type-B and proprietary products should be limited unless being used to transition into F-Shape concrete barrier in accordance with SD 4081.

### Design Guidance

System width (m)	0.442
Installation	This product must be installed in accordance with <a href="#">VicRoads Standard Drawing 3661</a> and <a href="#">VicRoads Standard Section 708 – Steel Beam Guard Fence</a>
Minimum distance to excavation	1.82 metres minimum distance between the edge of the barrier and the edge of an excavation.
Slope limit	Side slope limit: 6 Horizontal to 1 Vertical (16.7%).
Systems conditions	<ol style="list-style-type: none"> <li>Flaring across the clear zone without a terminal listed below is not permitted.</li> <li>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.</li> <li>To be installed in soil that meets or exceeds AASHTO Grade B standard.</li> </ol>
Minimum installation distance from batter hinge point of the slope (m)	0.5
Gore area use	Permitted – Terminal location to avoid frequent impacts
Pedestrian area use	Permitted – Posts present considerable snagging risk. Backing plate may separate during impact.
Cycleway use	Permitted – Posts present considerable snagging risk. Backing plate may separate during impact.
Frequent impact likely	Permitted

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Remote location	Permitted
Median use	Permitted

### Foundation pavement conditions

Submitted Foundation Pavement Conditions					
Pavement	Use	Accepted Speed (max)	Post/Pin spacing (m)	Pavement construction	Post/pin type
Concrete	Not Permitted				
Deep lift asphaltic concrete	Not Permitted				
Asphaltic concrete over granular pavement	Permitted	70 km/h	2.5m	Foundation pavement conditions must be smooth and free of snag points, kerbs or obstructions that may interfere with the operation of the product	Driven Post Refer SD 3661
Flush seal over granular pavement	Permitted	70 km/h			
Unsealed compacted formation	Permitted	70 km/h			
Natural surface	Permitted	70 km/h			

### Other considerations and comments

#### Type-B commentary

Type-B guard fence does not provide the same level of performance as readily available MASH TL-3 products. As such, VicRoads recommends that designers always consider the use of a MASH TL-3 product (or higher).

In general, Type-B guard fence should be limited to low speed environments with strong maintenance justification, such as the ability to store or obtain certain components.

The VicRoads Safe System Engineering team recognises the extent of current Type-B installations in Victoria and is actively seeking solutions to improve network safety and ongoing maintenance- to improve safety for the community.

Type-B guard fence has received a MASH TL-2 rating, based on values from a MASH 3-10, MASH 3-11 & Modified MASH 3-11 crash test.

#### Type-B transition to concrete barriers (SD 4081)

VicRoads acknowledges the Austroads project aimed at designing a MASH transition between steel beam guard fence and rigid concrete barrier.

Until then, VicRoads continues to adopt the transition detailed in Standard Drawing 4081. This transition is deemed to comply to NCHRP 350 and can be used up to 100km/h. This should be the only new installation of Type-B in locations above 70km/h.

#### Existing Type-B installations

Type-B guard fence has an intended service life of ~20 years. Existing Type-B installations may remain in service until they require replacement, or the barrier design requires a higher containment level.

Existing Type-B installations may be evaluated based on the conditions for use in this detail sheet. Projects may also undertake a benefit-cost assessment to determine the potential value of replacing with a MASH TL-3 product.

### References

#### Design

- VicRoads Road Design Note 06-08 The Use of Guard Fence.

#### Installation

- VicRoads Standard Drawing 3661 – Type-B Guard Fence
- VicRoads Standard Section 708 – Steel Beam Guard Fence

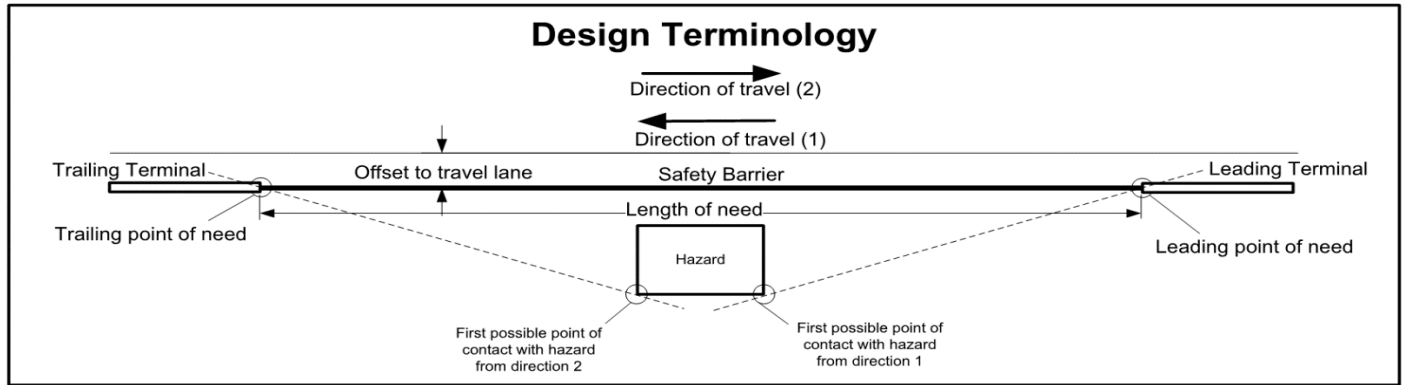
#### Other:

- Road Austroads Guide to Road Design – Part 6.
- VicRoads Road Design Note 06-04 Accepted Safety Barrier Products.
- VicRoads Supplement to Austroads Guide to Road Design – Part 6.

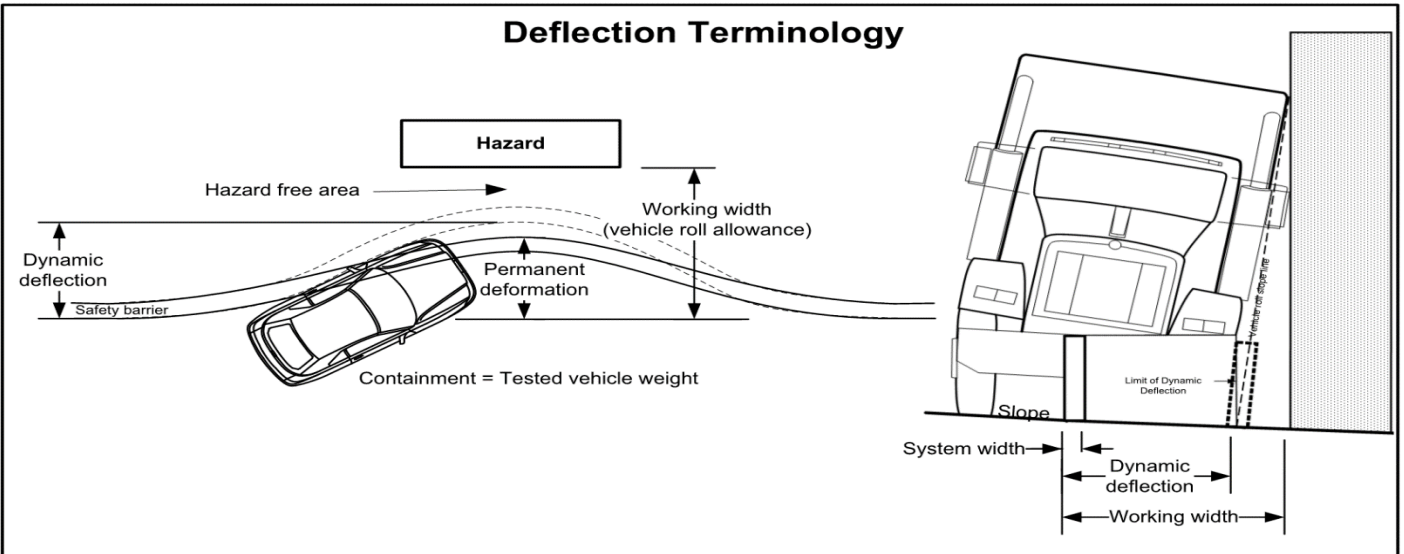
#### Detail Sheet – Update Summary

Issue	Approved	Amendment
April 2019	M-SSE	1 <sup>st</sup> Edition

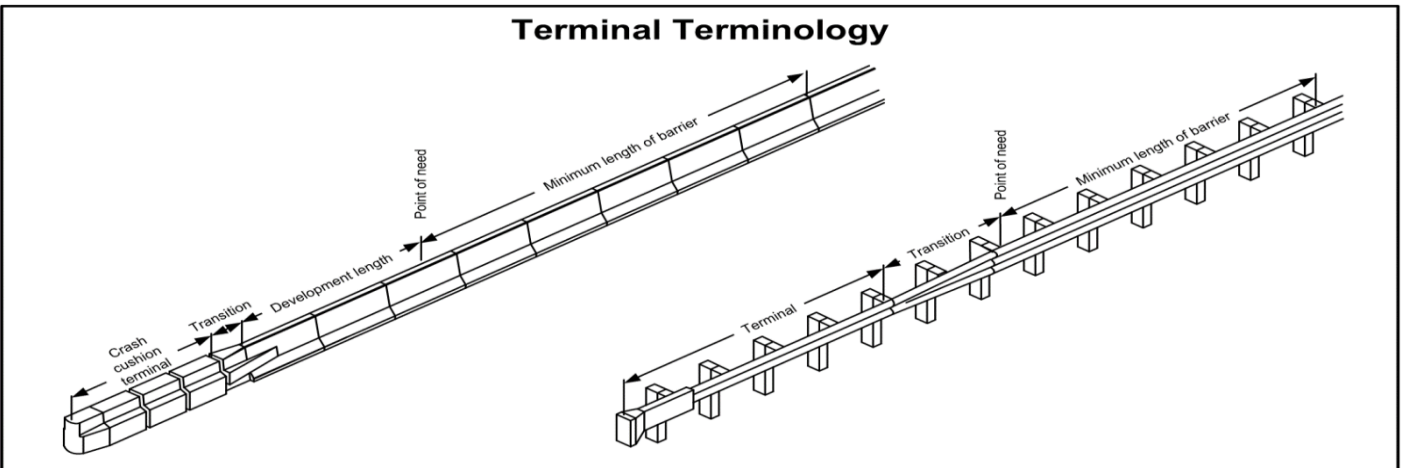
### Design Terminology



### Deflection Terminology



### Terminal Terminology



### Flare Terminology

