

# BG 800 Steel Safety Barrier (Ingal)

## Product summary

<b>Status</b>	Accepted
<b>Category</b>	Permanent & Temporary Longitudinal Barrier
<b>Test Level</b>	MASH TL-3: <b>100km/h</b> (refer design requirements)
<b>Supplier</b>	Ingal
<b>Description</b>	BG 800 is a steel permanent & temporary longitudinal barrier.



BG800 Standard & Low Deflection System (LDS)



BG800 Minimum Deflection System (MDS)

## 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 information submitted to VicRoads by the Supplier and the recommended 'Conditions for Use' from the Austroads Safety Barrier Assessment Panel (ASBAP).

***VicRoads requirements take precedence over the product manual and Austroads conditions.*** 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 the individual product manual or contact the System Supplier.

## Technical information

The BG 800 steel safety barrier should be designed, installed and maintained in accordance with the following VicRoads conditions for use.

These conditions for use have been based on an Austroads assessment of technical performance against AS/NZS 3845 and contain VicRoads specific requirements when necessary.

## Summary Conditions for Use

<b>Accepted configuration</b>	BG 800 Steel Safety Barrier – Permanent & Temporary
<b>Variants</b>	BG 800 LDS pinned at 12m spacing BG 800 MDS pinned at 6m spacing 6 metre BG 800 Steel Safety Barrier – Section 12 metre BG 800 Steel Safety Barrier – Section BG 800 Full Height Terminal End (6 and 12 metre) 0.61 metre BG 800 5° Radius Section 0.61 metre BG 800 10° Radius Section
<b>Deflection</b>	1.66 metre
<b>Product manual reviewed</b>	Highway Care International Revision 2c – July 2016 for Temporary Highway Care International Revision 5c – July 2016 for Permanent
<b>ASBAP issue</b>	1 January 2019

Refer VicRoads conditions & notes for use (below).

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## VicRoads Conditions for Use

### Tested design requirements

System Type	Containment level	Speed (km/h)	Vehicle mass (kg)	Point of Redirection (m)		Minimum length of barrier (m)	Anchor/Pin Spacing (m)	Dynamic deflection (m)	Working width (m)	Notes
				Leading	Trailing					
Standard	NCHRP350 TL-4	80	8000	2.0	2.0	60.0	60.0 (Max)	1.74	2.28 <sup>2</sup>	Refer Below
	MASH TL-3	100	2270					1.66	2.24 <sup>2</sup>	
LDS <sup>1</sup>	NCHRP350 TL-3	100	2000	2.0	2.0	60	12.0 (Max)	0.89	1.43 <sup>2</sup>	
MDS	NCHRP350 TL-3	100	2000	2.0	2.0	42.0	6.0 (Max)	0.1	0.64 <sup>2</sup>	

Note 1 LDS (Lower Deflection System) is permitted only for temporary applications.

Note 2 Calculated working width is dynamic deflection plus system width, refer to deflection terminology diagram (below) for further guidance.

### Approved Terminals and Connections

<b>Crash Cushions or Terminals must be fitted to both ends of a barrier</b>	
<b>Public Domain Products</b>	
W-Beam Guardrail	Not Permitted
Thrie-Beam Guardrail	Not permitted
Type F Concrete Safety Barrier	Permitted – BG 800 to Thrie Beam to Permanent Type F Concrete Safety Barrier for all system types. The transition includes the Full Height Terminal End (except for MDS system type, which is not required) No temporary concrete barriers accepted in Victoria
<b>Proprietary Products</b>	
TAU-II Steel Rail Crash Cushion	Refer to Universal TAU-II Steel Rail Crash Cushion Detail Sheet conditions of approved use
QuadGuard	Refer to QuadGuard Detail Sheet conditions of approved use
SMART Steel Crash Cushion	Refer to SMART Steel Crash Cushion Detail Sheet conditions of approved use
Absorb 350 Plastic Terminal	Refer to Absorb 350 Plastic Terminal Detail Sheet conditions of approved use (Temporary Systems Only)

### Design Guidance

System width (m)	0.54
Installation	This product must be installed and maintained in accordance with the Product Manual and Road Agency specifications. Road Agency specifications and standards shall have precedence.
Minimum distance to excavation	Minimum distance between the edge of the barrier and the edge of an excavation: <ul style="list-style-type: none"> <li>1.70 metre for standard system types</li> <li>0.30 metre for non-standard system types, when anchored on concrete pavement</li> <li>0.70 metre for non-standard system types, when anchored on flexible pavement</li> </ul>
Slope limit	1. Side slope limit: 12.5 Horizontal to 1 Vertical (8%)
Systems conditions	<ol style="list-style-type: none"> <li>Flaring across the clear zone without a terminal listed above 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>Cannot be used on radii less than 20m</li> <li>Cannot be placed adjacent to kerbs or other objects within the deflection limits of the barrier, which may prevent lateral displacement</li> <li>May be used in 110 km/h speed zone (permanent installations only).</li> </ol>
Minimum installation distance from batter hinge point of the slope (m)	N/A.

### Design Guidance (Cont.)

Gore area use	Permitted – consider speed and deflection limitations.
Pedestrian area use	Permitted – consider potential for snagging and deflection.
Cycleway use	Permitted – consider potential for snagging and deflection.
Frequent impact likely	Permitted
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	Permitted	100 km/h	Refer to tested design requirement anchoring/pin spacing	Foundation pavement conditions must be smooth and free of snag points, kerbs or obstructions that may interfere with the operation of the product	Refer VicRoads requirements.  Refer to Product Manual.
Deep lift asphalt	Permitted	100 km/h			
Asphalt over granular pavement	Permitted	100 km/h			
Flush seal over granular pavement	Permitted with driven ground anchor	100 km/h			
Unsealed compacted formation	Permitted with driven ground anchor	100 km/h			
Natural surface	Not Permitted	N/A	N/A	N/A	N/A

### Other considerations and comments

#### Post/pin types

Removable anchors, such as the KelKen anchor, must be used on bridges and other structures. Kelken anchor suitable for asphalt and concrete applications.

Hilti wedge bolt anchors to be used for MDS on concrete base. Embedment depth to be 200mm in concrete base, plus full depth asphalt if required.

#### Attachment and Screens

VicRoads does not maintain a list of accepted worksite safety barrier screens. Screens should only be adopted after due consideration of [Road Design Note 06-12](#).

#### Damaged Components

Damaged components must be replaced. Repaired components must not be used.

#### Procurement

Connecting this product barriers that are sourced from different distributors are not permitted, and is a procurement & warranty risk that VicRoads will not be responsible for and therefore must be managed by the proponent for the service life of the product.

The units shall be traceable in accordance with marking/s prescribed by the current Australian/New Zealand Standard “AS/NZS 3845 Road Safety Barrier Systems” and Road

Agency specification. Example of Highway Care BG800 unit permanently marked.



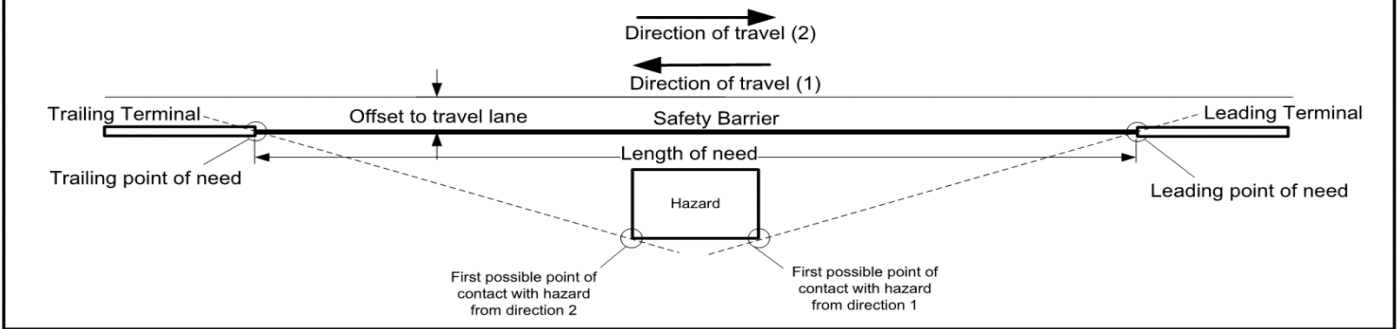
### References

- Austroads Guide to Road Design – Part 6.
- Product Installation Manual and Product Operational Manual refer licensed product supplier website.
- VicRoads Road Design Note 06-04 Accepted Safety Barrier Products.
- VicRoads Supplement to Austroads Guide to Road Design – Part 6.

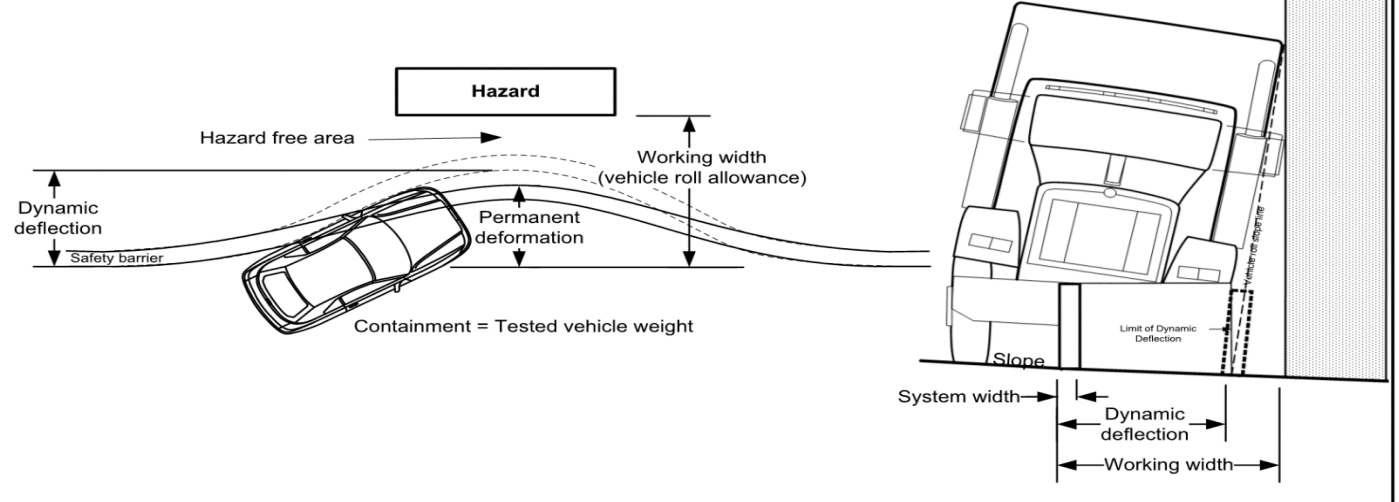
### Detail Sheet – Update Summary

Issue	Approved	Amendment
May 2016	NDS-SSD	First edition
Aug 2018	M-SSD	Supplier tractability update
Jan 2019	M-SSE	Deflection value. Anchor requirement on bridge decks.
Jan 2019	M-SSE	ASBAP Date & Product Manual

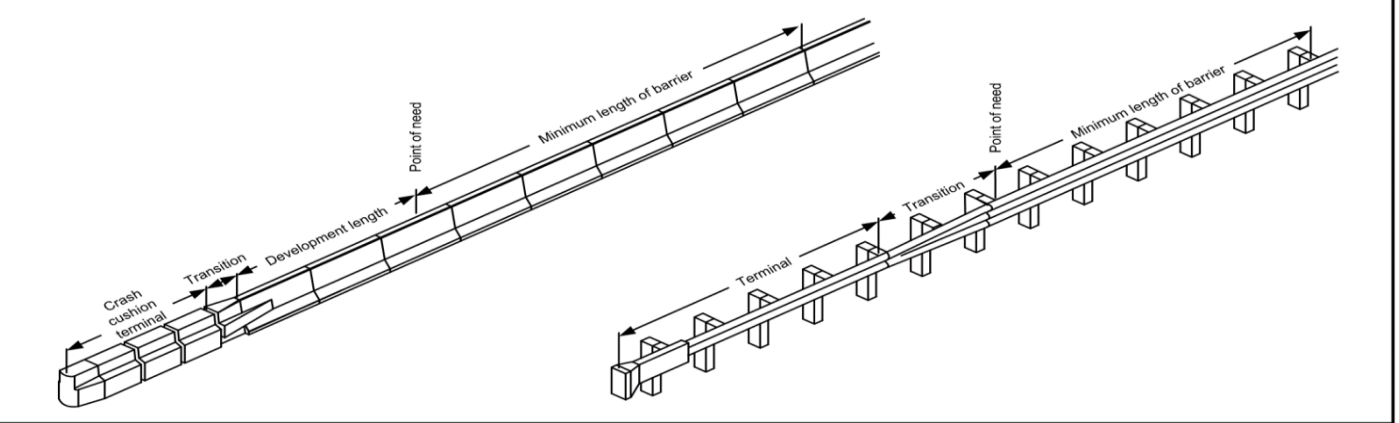
### Design Terminology



### Deflection Terminology



### Terminal Terminology



### Flare Terminology

