BG 800 Steel Gate (Ingal)

**Product summary**

<table>
<thead>
<tr>
<th>Status</th>
<th>Accepted</th>
</tr>
</thead>
<tbody>
<tr>
<td>Category</td>
<td>Permanent Steel Gate</td>
</tr>
<tr>
<td>Test Level</td>
<td>NCHRP350 TL3: 100km/h</td>
</tr>
<tr>
<td>Supplier</td>
<td>Ingal Civil Products</td>
</tr>
<tr>
<td>Description</td>
<td>BG 800 Steel Gate can be used with permanent longitudinal barrier installation.</td>
</tr>
</tbody>
</table>

**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**

- **Accepted configuration**: BG 800 Steel Gate (6 and 12 metre) with an attached T-Top structure, hinge assembly and hinge pins, terminal section with anchor assembly and wheel sets.
- **Variants**: Nil
- **Deflection**: 1.16 metre
- **Product manual reviewed**: Highway Care International Barrier Guard 800 Gate Product Manual, Version 1b
- **ASBAP issue**: 6 March 2018
- **End Treatments**: Refer to approved terminal & connections

Refer VicRoads conditions & notes for use (below).
BG 800 Steel Safety Barrier (Ingals)

VicRoads Conditions for Use

Tested design requirements

<table>
<thead>
<tr>
<th>Containment level</th>
<th>Speed (km/h)</th>
<th>Vehicle mass (kg)</th>
<th>Point of Redirection (m)</th>
<th>Minimum length of barrier (m)</th>
<th>Anchor/Pin Spacing (m)</th>
<th>Dynamic deflection (m)</th>
<th>Working width (m)</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>NCHRP350 TL-3</td>
<td>100</td>
<td>2000</td>
<td>N/A</td>
<td>N/A</td>
<td>Refer to product manual</td>
<td>1.16</td>
<td>1.70</td>
<td>N/A</td>
</tr>
</tbody>
</table>

Approved Terminals and Connections

Crash Cushions or Terminals must be fitted to both ends of a barrier

Public Domain Products

- W-Beam Guardrail: Not Permitted
- Thrie-Beam Guardrail: Not Permitted
- Type F Concrete Safety Barrier: Permitted – BG 800 to Concrete Safety Barrier. The transition includes the Full Height Terminal End. No temporary concrete barriers accepted in Victoria

Proprietary Products

- Barrier Guard 800 Steel Safety Barrier – Temporary and Permanent: Refer to BG 800 Steel Safety Barrier – Temporary and Permanent (Highway Care International) Detail Sheet conditions of approved use

Design Guidance

- System width (m): 0.54 for Standard
- 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: N/A.
- Slope limit: 1. Side slope limit: 40 Horizontal to 1 Vertical (2.5%)
- Systems conditions:
  1. Maximum gate opening is 30 metres.
  2. Installation on top of a kerb is not permitted.
  3. Only to be installed on straight horizontal alignments.
  4. May be used in 110 km/h speed zone (permanent installations only).
- Minimum installation distance from batter hinge point of the slope (m): N/A.
- Gore area use: N/A.
- Pedestrian area use: N/A.
- Cycleway use: N/A.
- Frequent impact likely: Not Permitted
- Remote location use: Permitted
- Median use: Permitted
Foundation pavement conditions

<table>
<thead>
<tr>
<th>Pavement</th>
<th>Use</th>
<th>Accepted Speed (max)</th>
<th>Post/Pin spacing (m)</th>
<th>Pavement Construction</th>
<th>Post/pin type</th>
</tr>
</thead>
<tbody>
<tr>
<td>Concrete</td>
<td>Permitted</td>
<td>100 km/h</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Deep lift asphaltic concrete</td>
<td>Permitted when installed on a concrete slab, including the hinge section.</td>
<td>100 km/h</td>
<td></td>
<td>Foundation pavement conditions must be smooth and free of snag points, kerbs or obstructions that may interfere with the operation of the product</td>
<td>Refer to product manual</td>
</tr>
<tr>
<td>Asphaltic concrete over granular pavement</td>
<td>Permitted when installed on a concrete slab, including the hinge section.</td>
<td>100 km/h</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Flush seal over granular pavement</td>
<td>Permitted when installed on a concrete slab, including the hinge section.</td>
<td>100 km/h</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Unsealed compacted formation</td>
<td>Not Permitted</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>Natural surface</td>
<td>Not Permitted</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
</tr>
</tbody>
</table>

Other considerations and comments

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

Procurement
Connecting this product barriers that are sourced from different distributors is 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.

References
- VicRoads Road Design Note 06-04 Accepted Safety Barrier Products.

Example of Permanently Marking on BG 800 Unit

Detail Sheet – Update Summary

<table>
<thead>
<tr>
<th>Issue</th>
<th>Approved</th>
<th>Amendment</th>
</tr>
</thead>
<tbody>
<tr>
<td>May 2016</td>
<td>NDS-SSD</td>
<td>First edition</td>
</tr>
<tr>
<td>August 2018</td>
<td>M-SSD</td>
<td>Supplier traceability update</td>
</tr>
</tbody>
</table>
Design Terminology

- **Direction of travel (1)**
- **Direction of travel (2)**
- **Trailing Terminal**
- **Offset to travel lane**
- **Safety Barrier**
- **Leading Terminal**
- **Trailing point of need**
- **Length of need**
- **Hazard**
- **First possible point of contact with hazard from direction 1**
- **First possible point of contact with hazard from direction 2**

Deflection Terminology

- **Hazard**
- **Hazard free area**
- **Dynamic deflection**
- **Permanent deformation**
- **Working width (vehicle roll allowance)**
- **Containment = Tested vehicle weight**
- **System width**
- **Dynamic deflection**
- **Working width**

Terminal Terminology

- **Point of need**
- **Transition**
- **Development length**
- **Minimum length of barrier**
- **Point of exit**

Flare Terminology

- **Flare**
- **Flare length**
- **Flare width**
- **Point of need with flare**
- **Flare rate = d:1**
- **Safety Barrier**
- **Direction of travel**
- **Edge line**