

# BARRIERGUARD MDS (MINIMUM DEFLECTION SYSTEM)

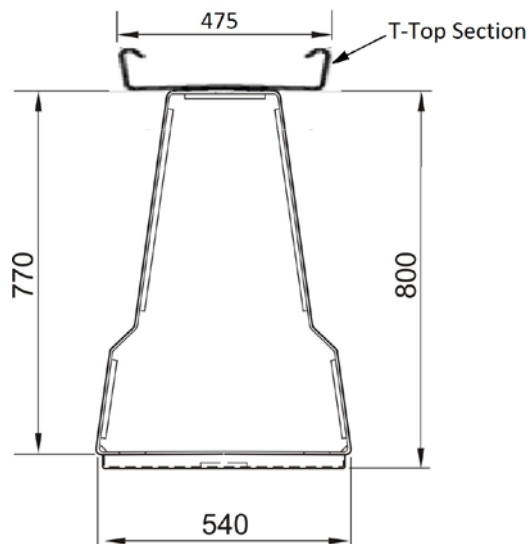
## REVISION REGISTER

Revision	Description	Date
1	Issued for use.	13/05/2016.

BarrierGuard 800 is a portable steel barrier, which is anchored to the pavement at the ends (and at intermediate anchors if required) and is considered a semi rigid system that is to be used for temporary applications only. It is approved for use by Main Roads WA, with conditions under a separate design sheet.

BarrierGuard MDS (Minimum Deflection System) is a variant of BarrierGuard 800, with anchors at 6m spacing, an additional steel section (referred to as the "T-Top") fitted to the top of the barriers and reduced deflections. At the beginning and end of a length of BarrierGuard MDS a ramped transition piece is installed to shield the exposed ends of the T-Top. The BarrierGuard MDS is also considered a semi rigid system that is to be used for temporary applications only. It is approved for use by Main Roads WA, under the following conditions.

### Images:



Typical Cross Section of BarrierGuard MDS



Photograph from BarrierGuard MDS installed (showing T-Top section)

## **BARRIERGUARD MDS (MINIMUM DEFLECTION SYSTEM)**

**Owner and Supplier:** Highway Care Ltd  
GPO Box 4533, Sydney, NSW 2001  
Email: [info@highwaycareint.com](mailto:info@highwaycareint.com)  
<http://www.highwaycareint.com>

**Test Level:** NCHRP 350 TL 3.

### **Design Considerations:**

#### **Test Deflection:**

Under TL 3 conditions (i.e. 2000kg vehicle, 100km/h speed and 25° impact angle), the dynamic test deflection was measured as 305mm at the top and 76mm at the base.

Note that this deflection was measured in a crash test performed under controlled conditions. The dynamic deflection measured is the maximum horizontal offset of the barrier during impact. Designers should be aware that the deflection figure published as a test result may not be the deflection value achieved in the field for all impacts by errant vehicles.

#### **Configuration:**

As the barrier is designed to resist loadings by deflecting, the units should be free to move but the system must be anchored at the each end with 8 x 500 mm long by 32 mm Dia pins and at intermediate locations.

The location of pinned intermediate anchors shall be at intervals not greater than 6m.

#### **Design:**

- Design to be in accordance with the relevant sections of the BarrierGuard 800 Australia & New Zealand Product Manual (Rev 2b, dated April 2016) published by Highway Care International.
- Barrier should be placed a minimum of 250 mm from the edge of travelled way to avoid nuisance impacts.
- Barrier length must be sufficient to adequately protect the hazard.
- Where the ends of the barrier may be impacted, they should be protected with a terminal that is permitted (refer below).

#### **Minimum Length:**

48m (including anchor points) for a TL 3 impact.

Note that BarrierGuard MDS may be used within a longer length of BarrierGuard 800, with the transition pieces for the T-Top sections. In this situation a minimum length of 48m of BarrierGuard MDS must be installed.

A minimum length of 48m must be installed when BarrierGuard MDS only is used.

#### **Length of Need:**

The point of need is at the nose of the crash cushion.

## **BARRIERGUARD MDS (MINIMUM DEFLECTION SYSTEM)**

### **Terminals Permitted:**

- TAU-II crash cushion
- Quadguard crash cushion (including CZ version)
- Full Height Terminal (not crashworthy – only permitted where the end of the barrier cannot be impacted)

Note that at the beginning and end of a length of BarrierGuard MDS a Full Height Terminal is required. Where a crashworthy terminal is required, a crash cushion is attached to the Full Height Terminal.

### **Connections Permitted:**

BarrierGuard 800 MDS may be used within a longer length of BarrierGuard 800, with transition pieces for the T-Top sections.

BarrierGuard 800 MDS may be connected to permanent concrete barrier, with transition pieces for the T-Top sections and a nested three beam connection as detailed by the Supplier (refer Supplier's drawing no. BG-90-29).

### **Limitations:**

- The cross slope shall be not greater than 10% for the area between the edge of travelled way and the barrier, and the area immediately behind the barrier for the width of the deflection.
- Cannot be placed adjacent to kerbs or other objects within the deflection limits of the barrier, which may prevent lateral displacement.
- Not to be used on longitudinal slopes or crossfalls greater than 8%.
- To be used where pavement thickness is at least 350 mm and with an asphalt surfacing of 30 mm. For pavements not meeting these requirements design advice shall be sought from the Supplier.
- Cannot be used on radii less than 20 m and these smaller radii require 600 mm long special units.

### **Installation and Maintenance Requirements:**

In accordance with the Product Manual. The holes for the anchors made to accommodate the anchor pins must be repaired.

### **Parts to be Replaced after Impact:**

Units may need to be repaired after impact or replaced depending on the extent of damage.

### **Parts Typically Re-Useable after Impact:**

Undamaged units.

### **References:**

Relevant FHWA Approval Letters, refer to website

[http://safety.fhwa.dot.gov/roadway\\_dept/policy\\_guide/road\\_hardware/listing.cfm](http://safety.fhwa.dot.gov/roadway_dept/policy_guide/road_hardware/listing.cfm)

## BARRIERGUARD MDS (MINIMUM DEFLECTION SYSTEM)

Code	Description
B158	BarrierGuard Minimum Deflection System TL 3 approval.
B131	BarrierGuard 800 TL 4 approval