

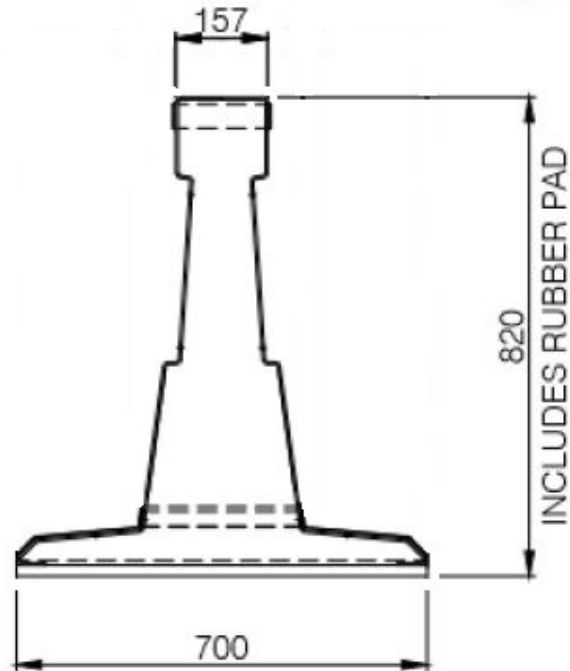
ZONEGUARD

REVISION REGISTER

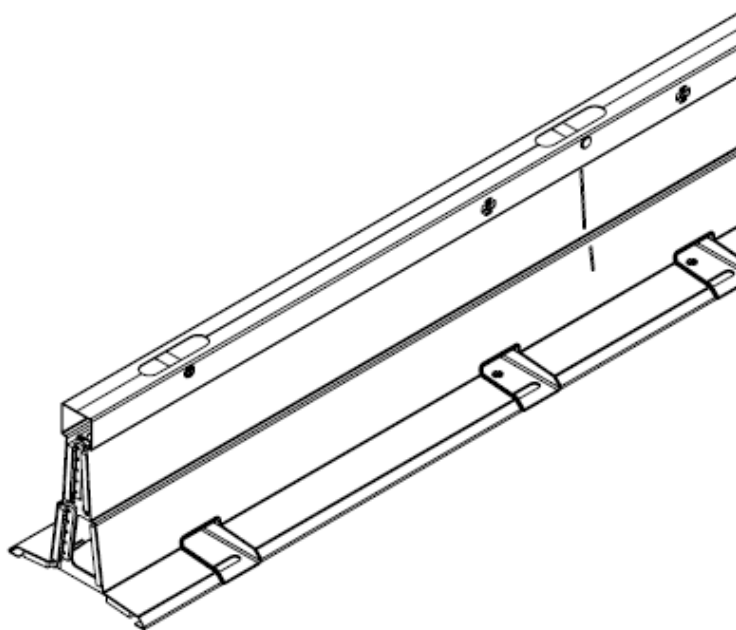
Revision	Description	Date
1	Issued for use.	28/08/2014.

Zoneguard 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.

Images:

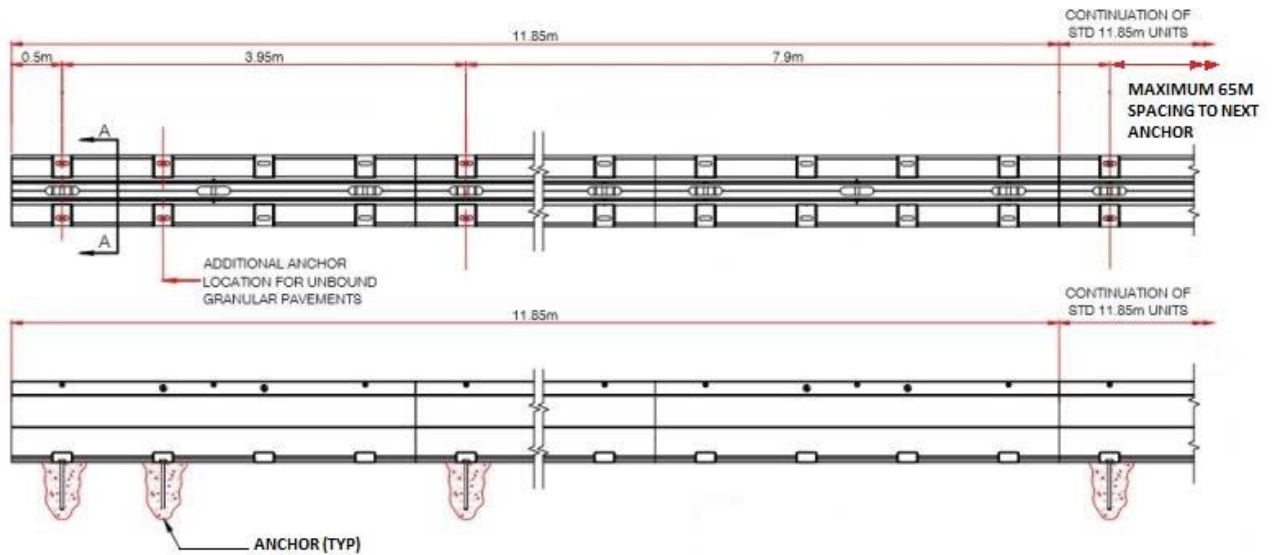


Typical cross section of Zoneguard



Oblique view of Zoneguard

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Plan and Elevation of Anchored Zoneguard End Unit



Photograph of Zoneguard installation

Ownership: Hill & Smith UK

Supplier: Hill and Smith Pty Ltd
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Phone: (07) 3807 8050

Website - <http://hillandsmith.com.au/>

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Test Level: Approved to MASH TL3 and to NCHRP TL 4.

Test Level	Test Description	Deflection (measured at base of units)
NCHRP350 - TL3	2000kg vehicle at 100km/h, 25° impact angle	1.65m
MASH - TL3	2270kg vehicle at 100km/h, 25° impact angle	1.88m
NCHRP350 - TL4	8000kg vehicle at 80km/h, 15° impact angle	1.27m

Configuration:

- Standard 11.85m long units are to be used.
- As the barrier is designed to resist loadings by deflecting the units should be free to move but the system **must** be anchored with each end unit anchored and, if required, at intermediate locations.
- Intermediate units should also be anchored, with a maximum spacing of 65m between intermediate anchors.
- Suitable for unbound granular pavements with a minimum thickness of 350 mm (i.e. 150 mm basecourse on 200 mm subbase), where anchoring shall consist of 8 x 500 mm long by 30 mm dia pins.
- For other pavement types, refer to Supplier for anchoring details.
- Custom fabricated radii units in 2.5°, 5.0° and 7.5° angles may be used.

Design:

- Design to be in accordance with the ZoneGuard Specification Manual Metric Australian Version May 2014, Rev 7, by Hill & Smith.
- 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.
- The ends of the barrier must be protected with a suitable end treatment.
- Minimum offset between the edge of barrier and the edge of an excavation is 1.9 m.

Minimum Length:

75m (including anchored end units).

Terminals permitted:

- Tau-II crash cushion
- Absorb 350 (suitable for TL 2 conditions only – i.e. maximum design speed = 70 km/h, maximum posted speed = 60 km/h)

Length of Need:

The beginning of the length of need shall be at the leading end of the crash cushion (for TL3 and TL4 conditions). If an Absorb 350 terminal is used (for TL2 conditions) the beginning of the length of need shall be at the leading end of the Zoneguard anchored unit.

Limitations:

- The cross slope shall be not greater than 7% 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.

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- 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 greater than 8%.
- Standard 11.85m long units cannot be used on radii less than 200 m.
- Custom fabricated radii units in 2.5°, 5.0° and 7.5° angles may be used on radii between 200 m and 14 m.
- Cannot be used on radii less than 14 m.
- A Minimum Deflection System, with continuous anchoring requirements is currently not approved for use by Main Roads WA.
- Objects should not be placed on top of the barrier as they are designed to move under impact. "Anti-Gawk" screens are not to be attached.

Installation and Maintenance Requirements:

In accordance with the ZoneGuard Specification 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

Code	Description
B176	TL 3 and TL 4 approval.