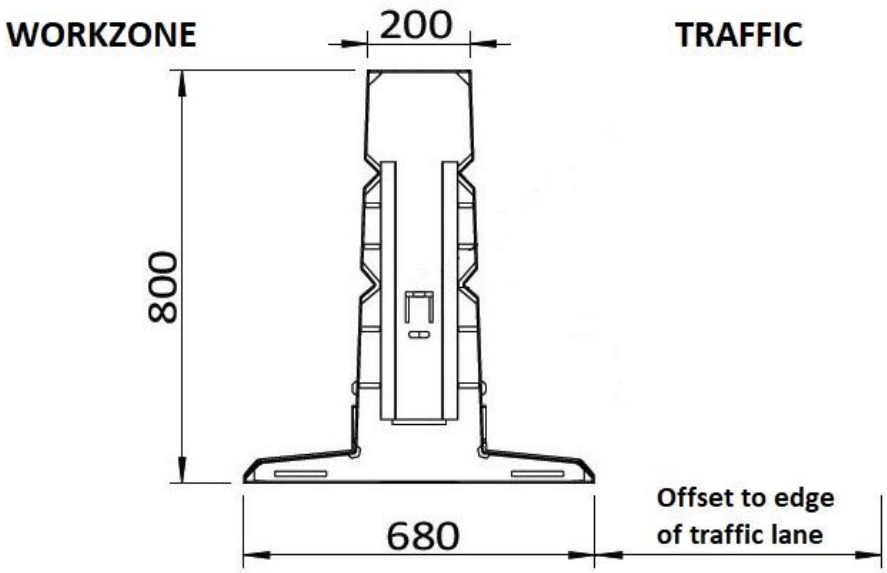
DEFENDER 100LDS

REVISION REGISTER

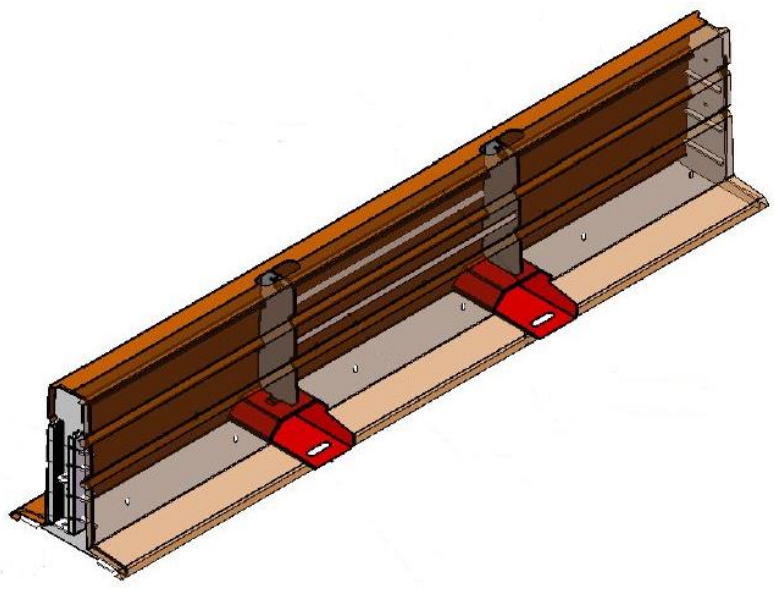
Revision	Description	Date
1	Issued for use.	08/01/2020.
1A	Terminals permitted updated. Manual updated.	9/08/2021
1B	Manual reference updated. Supplier details updated.	12/10/2022

Defender 100LDS is a portable pinned steel barrier that is to be used for temporary applications only. Each Defender 100LDS barrier unit is effectively 3.9 m long with a unit mass of 303 kg. The Defender 100LDS **does not** include concrete filled ballast boxes.

Images:



Typical cross section of Defender 100LDS



Oblique view of Defender 100LDS unit

DEFENDER 100LDS

Photograph of Defender 100LDS unit

Ownership: Safe Barriers Pte Ltd

Supplier: Safe Barriers Pty Ltd
Suite 54, 29 Smith Street
Parramatta, NSW 2150
Phone: 1800 169 799
Website - www.safebarriers.com

Test Level: Approved to MASH TL3

Test Level	Test Description	Deflection	Working Width (measured at base of units)
MASH – TL3	2,270 kg vehicle @ 100 km/h, 25º impact angle	0.88 m	1.56 m

Configuration:

- Standard 3.9 m long units excluding ballast are to be used.
- As the barrier is designed to resist loadings by deflecting the units should be free to move, other than where pinned.
- The system was crash tested on a flat asphalt surface.

Design:

- Design to be in accordance with the Defender 100LDS® Product Design and Installation Manual Version 2.0, dated 12 April 2022.
- The system is anchored every 9.15 m (maximum) using two symmetrically installed anchor pins placed in the pre-cut slot in the barrier drain at the base of the Defender 100LDS barrier.

DEFENDER 100LDS

- Anchoring details consist of
  - 30 mm diameter x 500 mm long Q235B grade steel ground where minimum pavement construction is 150 mm asphalt with 150 mm compacted sub-base, or
  - 25 mm diameter x 440 mm long threaded rod with epoxy where minimum pavement construction is 250 mm asphalt.
- It is recommended that the barrier (680 mm width) should be offset from the edge of traffic lane by:
  - traffic speed 40 km/h or less - 0.2 m;
  - traffic speed 41 to 60 km/h - 0.3 m;
  - traffic speed 61 to 80 km/h - 0.5m;
  - traffic speed greater than 80 km/h - 1.0 m
- Barrier length must be sufficient to adequately protect the hazard.
- The ends of the barrier must be protected with a suitable end treatment.

Minimum Length:
78 m (not including terminals).

Terminals permitted:

- Absorb-M (suitable for maximum design speed = 80 km/h, maximum posted speed = 70 km/h)

- Hercules Crash Cushion, pinned (anchored), suitable for TL3 conditions.
  Not permitted as a departure terminal. At the connection to the crash cushion, the end unit is required to be transitioned to the Crash Cushion (incorporating 8# ground anchor pins) as detailed in the Defender 100LDS® Product Design and Installation Manual Version 2.0, dated 12 April 2022.

- Quadguard M10 CZ Crash Cushion, pinned (anchored), suitable for TL3 conditions.
  At the connection to the crash cushion, the end unit is required to be transitioned to the Crash Cushion (incorporating 8# ground anchor pins) as detailed in the Defender 100LDS® Product Design and Installation Manual Version 2.0, dated 12 April 2022.

Crash cushions may only be installed where reverse impacts are highly improbable and a risk assessment has been completed and steps undertaken to mitigate any risks identified.

The following terminal will not be accepted for temporary installations on Main Roads WA contracts awarded after 1 January 2022.

- TAU-II Crash Cushion, pinned (anchored), suitable for TL3 conditions.
- At the connection to the crash cushion, the Defender 100LDS end unit is required to be transitioned to the TAU-II Crash Cushion (incorporating 8# ground anchor pins) as detailed in the Defender 100LDS® Product Design and Installation Manual Version 2.0, dated 12 April 2022.
  May only be installed where reverse impacts are highly improbable and a risk assessment has been completed and steps undertaken to mitigate any risks identified.

DEFENDER 100LDS

Point of Redirection:
The points of redirection shall be at the interface between the barrier and the end treatment.

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.
- Standard 3.9 m long units cannot be used on radii less than 230 m.
- 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 Defender 100LDS® Product Design and Installation Manual Version 2.0, dated 12 April 2022.

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:

Item	Description
1	System tested on 28 February, 19 July and 14 September 2017 by Holmes Solution to MASH TL3. A copy of this testing can be found on Main Roads file 17/9005.

Relevant FHWA Approval Letters:
Refer to website:
https://safety.fhwa.dot.gov/roadway_dept/countermeasures/reduce_crash_severity/barriers/pdf/b298.pdf

Code	Description
B-298	Defender Barrier 100 LDS - MASH TL 3.