

# QUADGUARD M10 CRASH CUSHION

## REVISION REGISTER

Issue & Revision	Description	Date
1	Issued for use.	17/04/2020
1 A	Reverse impact conditions amended.	22/07/2022

The Quadguard M10 system is a fully re-directive and non-gating crash attenuator that incorporates energy absorbing cartridges contained within steel frames, and is suitable for hazards up to 0.61 m wide. The Quadguard M10 system includes a Monorail that is anchored to the foundation.

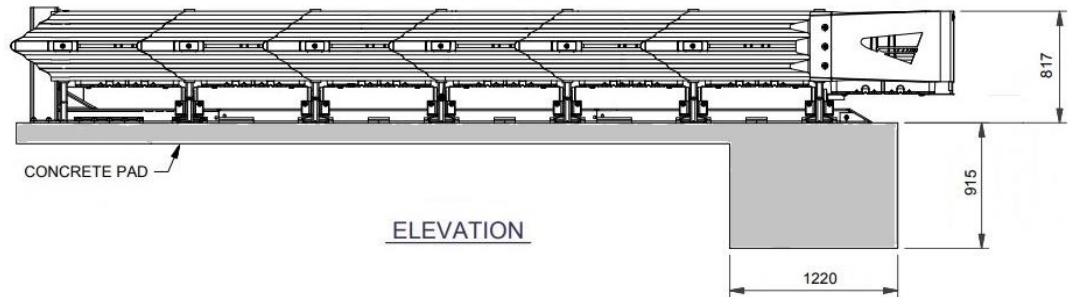
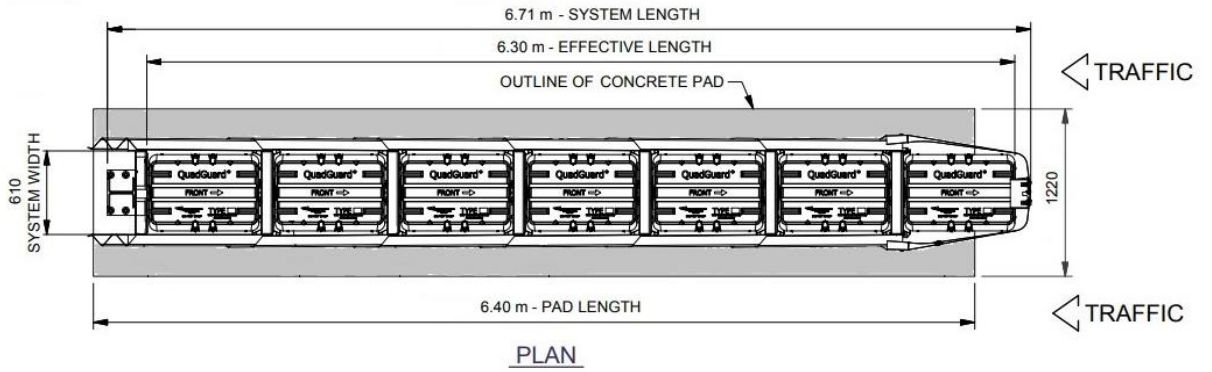
Note that the Quadguard crash cushion was previously accepted by Main Roads, but will no longer be accepted for new installations after a “phase out” period of six months from the above issue date (i.e. phase out period ends on 17/10/2020)

### Images:

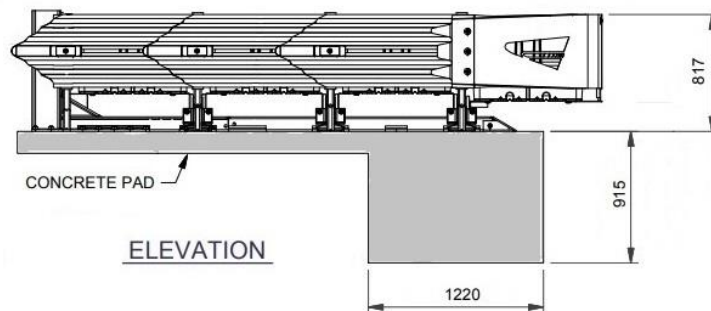
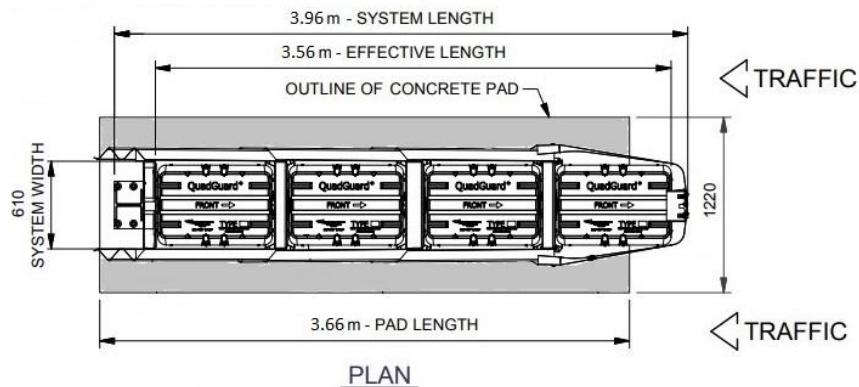


Photographs of Quadguard M10 Crash Cushion (MASH TL 3 – 6 bays)

# QUADGUARD M10 CRASH CUSHION



Quadguard M10 Crash Cushion Configuration (MASH TL 3 – 6 bays)



Quadguard M10 Crash Cushion Configuration (MASH TL 2 – 3 bays)

**Ownership:** Trinity Industries Inc. USA  
[www.highwayguardrail.com](http://www.highwayguardrail.com)

## QUADGUARD M10 CRASH CUSHION

**Supplier:** Ingal Civil Products  
3 Temperley Close, Welshpool WA 6106  
Ph: (08) 08 9358 9139  
Website - <http://www.ingalcivil.com.au/>

**Test Level:** Tested in accordance with MASH TL 2 and TL 3

Test Level	Design Speed (km/h)	Number of bays	System length (m)	System width (mm)
MASH TL 2	70	3	3.96	610
MASH TL 3	100	6	6.71	610

### Configuration:

- Quadguard M10 crash cushions may be transitioned to Constant Slope or Type F permanent concrete barriers.
- Quadguard M10 crash cushions may be transitioned to thrie beam or w-beam barriers, but only where reverse direction impacts are highly improbable and a risk assessment has been completed and steps undertaken to mitigate any risks identified.
- Quadguard M10 CZ crash cushions are accepted for use in temporary applications – refer to separate design sheet.
- All supplied units to have the yellow nose assembly.

### Design:

- Design to be undertaken in accordance with the *Quadguard M10 (24" Wide) TL-2 & TL-3 Product Description Assembly Manual (PN 625887 Rev D, Nov 2019)*.
- No item that can affect the height at which a vehicle could impact the unit at shall be placed 15 m prior to the unit or along the length of the unit to the rear of the backstop. For kerbing in this area, it is Main Roads preference is to use Mountable Type M kerbing (i.e. flush), however Mountable Type A kerbing is permitted if required for drainage purposes.
- As the panels slide rearward during an impact, the hazard width must not prevent the panels from this movement.
- The foundation acceptable to Main Roads for permanent Quadguard M10 crash cushions is a reinforced 28 MPa concrete pad (150 mm thick with anchor block or 200 mm thick without anchor block), with M20 x 180mm Gr8.8 chemical anchors. Refer *Quadguard M10 (24" Wide) TL-2 & TL-3 Product Description Assembly Manual (PN 625887 Rev D, Nov 2019)*.

### Limitations:

- Not to be used on crossfalls steeper than 8%.
- A hazard free area should be provided as shown in Figure 1.

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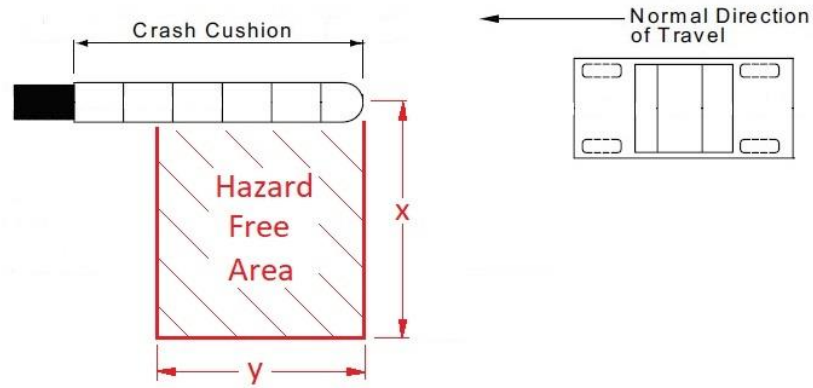


Figure 1: Hazard free area for crash cushion

Test Level	x (m)	y (m)
MASH TL 2	9.7	2.9
MASH TL 3	11.0	7.2

## Installation:

Installation to be in accordance with *Quadguard M10 (24" Wide) TL-2 & TL-3 Product Description Assembly Manual (PN 625887 Rev D, Nov 2019)*.

## Parts to be Replaced After impact:

Damaged cartridges and sliding panels.

## Parts Typically Re-useable After Impact:

Undamaged cartridges and sliding panels.

## References:

Relevant FHWA Approval Letters:

[https://safety.fhwa.dot.gov/roadway\\_dept/countermeasures/reduce\\_crash\\_severity/barriers/pdf/cc112.pdf](https://safety.fhwa.dot.gov/roadway_dept/countermeasures/reduce_crash_severity/barriers/pdf/cc112.pdf)

[https://safety.fhwa.dot.gov/roadway\\_dept/countermeasures/reduce\\_crash\\_severity/barriers/pdf/cc112c.pdf](https://safety.fhwa.dot.gov/roadway_dept/countermeasures/reduce_crash_severity/barriers/pdf/cc112c.pdf)

Code	Description
CC-112	MASH TL 3 approval - 6 bays
CC-112C	MASH TL 3 approval – bolt size modification.