



Product Guide

Committed to Your Safety

FEATURING
MASH COMPLIANT
PRODUCTS

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Roadside Safety Barriers

EZY-GUARD SMART INGAL CIVIL PRODUCTS



MASH TL3 COMPLIANT

MASH TL3: 2,270kg Utility @ 100km/h

- Can be mounted as post on base plate.
- Consideration for Motorcyclists.

EZY-GUARD 4 INGAL CIVIL PRODUCTS



MASH TL3 COMPLIANT

8,000kg Truck + 2,270kg Utility

- Fewer components for rapid installation.
- Locally designed and manufactured.

EZY-GUARD HC INGAL CIVIL PRODUCTS



MASH TL3 COMPLIANT

MASH TL4 COMPLIANT

- High containment.
- Easy to transport and simple to install.

EZY-GUARD LDS INGAL CIVIL PRODUCTS



MASH TL4 COMPLIANT

MASH TL4: 10,000kg Truck + 2,270kg Utility

- MASH TL4 compliant.
- Ideal for locations where low deflections are a priority.

EZY-GUARD HD INGAL CIVIL PRODUCTS



MASH TL3 COMPLIANT

- MASH TL3 compliant.
- Heavy duty configuration.

EZY-GUARD BRIDGE BARRIER



MASH TL2/TL3 OPTIONS

- Integrated components designed for Bridge Barriers.
- Can be bolted directly to the bridge structure.

Innovative Engineering

Mashflex® TL4 Wire Rope Safety Barrier



MASH TL3 COMPLIANT

MASH TL4 COMPLIANT



MashFlex uses recycled plastics.

- Crash tested to MASH TL3 and TL4.
- Superior 4 rope system.
- Machine swaged, stainless steel fittings for dependable in-service performance.
- Variable post spacing to suit deflection requirements.
- Posts can be powder-coated.
- Point of need for MashFlex system is 11.73m.

The MashFlex Driven Sleeve is an alternative to the typical concrete post footing where a steel sleeve foundation is driven into the ground.

- No post concrete required.
- Rapid installation.
- Minimal spoil removal.
- Hot Dip Galvanised to AS/NZS 4680.



ET-SS Guardrail End Terminal

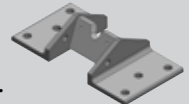


Front Anchored Technology

MASH TL2 COMPLIANT

MASH TL3 COMPLIANT

- Tall narrow extruder head provides less obstruction for ongoing maintenance operations such as mowing and snow removal.
- Vertically compressed rail is flattened and maintains connection to unit for quicker repair and clean up.
- Surface mounted option uses baseplated posts which are chemically anchored to a 250mm thick concrete pad.
- A concrete anchor post option is also available for locations where the 1.8m anchor post cannot be installed.
- 100% galvanised steel head and post design reduces weather or UV related issues.
- Optional protective covers available for fire protection and vulnerable road users.



Ingal MPR Motorcyclist Protection Rail



MASH TL3 COMPLIANT

EN1317-8 COMPLIANT

- Crash tested to MASH TL3.
- Quick installation on new or retrofit projects.
- No modification required to traditional guardrail barriers to accommodate Ingal MPR.
- The mounting bracket also allows the motorcyclist rail to be raised to match alterations in the level of the road surface.
- Narrow footprint of 320mm.
- Field curve down to a 26m radius.
- More space between the system and the ground (60mm), allowing water drainage, snow clearance, cleaning of hard shoulders, etc.
- No drilling of guardrail required, meaning galvanised coating is not compromised.

Committed to Your Safety

QuadGuard® M10 Crash Cushion



MASH TL2 COMPLIANT

MASH TL3 COMPLIANT

- Compliant to MASH TL3 and TL2.
- Self-supporting steel nose.
- Tension strut backup.
- Monorail guide stabilisers.
- Anchorage in concrete or asphalt.
- High strength Quad-Beam™ panels.
- Does not use anchoring chains or tension cables.
- Damaged cartridges are replaceable.
- Potentially reusable after an impact.

QuadGuard® Elite M10 Crash Cushion



MASH TL2 COMPLIANT

MASH TL3 COMPLIANT

- Severe-duty, self-restoring crash cushion.
- Available in TL-2 (70km/h) or TL-3 (100km/h) configurations.
- Consists of a flex-belt nose and High Density Polyethylene (HDPE) cylinders surrounded by a framework of steel Quad-Beam™ panels.
- Cylinders are potentially reusable after an impact within MASH crash test standards.
- Also available in a 1.75m wide configuration.

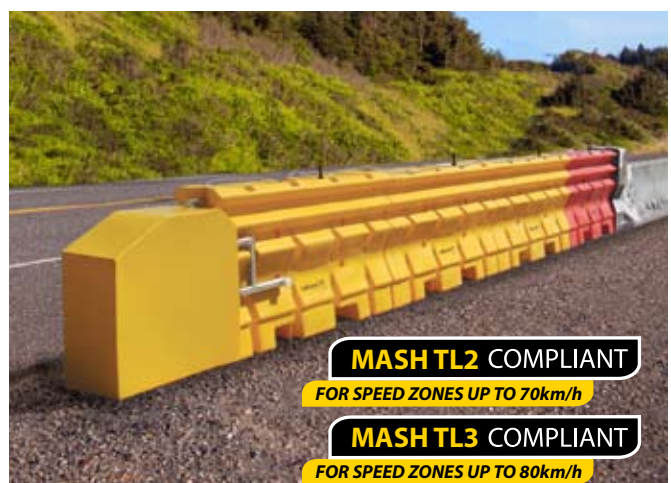
ArmorZone™ Work Zone Temporary Barrier



MASH TL2 COMPLIANT

- Provides work zone protection to temporary construction sites and other roadside activities.
- Economical to transport, fast to install and relocate.
- Water filled barrier rapidly deployed by only 2 personnel.
- Stabilised HDPE modules strong enough to absorb nuisance impact without repair.
- Environmentally friendly – 100% recyclable.

ArmorBuffa™ Temporary End Treatment



MASH TL2 COMPLIANT

FOR SPEED ZONES UP TO 70km/h

MASH TL3 COMPLIANT

FOR SPEED ZONES UP TO 80km/h

- Temporary end treatment for F-Type concrete barriers and HighwayGuard steel barriers.
- Designed to perform on a variety of foundations including concrete, asphalt, and any other surfaces capable of bearing the weight of the system.
- Cross slopes of up to 8% (5° or 1:12 slope) can be accommodated with the standard hardware.

Dependable and Reliable

Raptor® Pole Protection Crash Cushion



MASH TL1 COMPLIANT

- Designed, tested and accepted to MASH TL1 criteria.
- Reduces the impact severity of errant vehicles with a utility pole or tree.
- Usable in places typically impossible to protect.
- Zero maintenance, UV Stabilised PE (UV8), expected lifespan 25 years.
- Installation and repairs can be done under 30 minutes.

BG800® High Performance Portable Steel Safety Barrier



MASH TL3 COMPLIANT

- Unique connector design allows installation of up to 300 metres of barrier per hour (quicker to install than concrete barrier).
- Proven to withstand multiple design impacts without need for major repair or replacement.
- Available in 6 and 12 metre section lengths with special angle sections for tight radii.
- Transport 4 times more barrier per load than concrete.

HighwayGuard® Standard Portable Steel Safety Barrier



MASH TL3 COMPLIANT

MASH TL4 COMPLIANT

- Fully tested and compliant at 58m anchor spacing providing rapid deployment.
- Flexible deployment, reconfiguration and removal made easy using patented T-connector, allowing for simple installation at challenging site conditions.
- Single 6m module can be installed in 6, 12 or 18m lengths.
- Wheelset option - ability to add wheels for easy mobility.

SafeStop SS180M® Truck Mounted Attenuator



MASH COMPLIANT

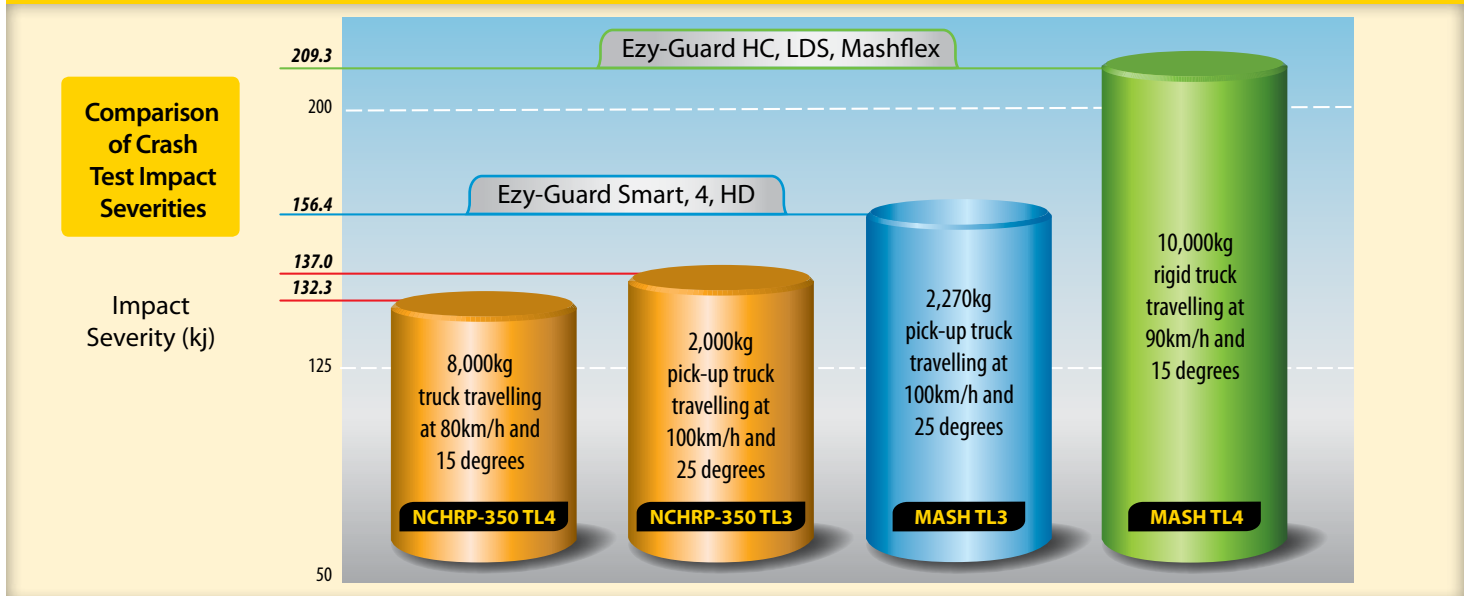
- MASH Test Level 3 (100km/h) safety.
- High visibility with a full 24v Electrics and LED lighting.
- Simplified cable-free design with replaceable, energy absorbing cartridges.
- Short height while in storage mode ideal for garage storage and low overpasses.
- Potentially reusable steel support frame.

Committed to Your Safety

Established in 1933, Ingal Civil Products is Australia's leading manufacturer and distributor of safety barrier systems for roads and carpark applications throughout the Asia-Pacific region. As a division of Industrial Galvanizers Corporation Pty Ltd, we are part of a large network of companies specialising in engineered steel products and galvanizing services whilst employing over 8000 people in more than 20 countries.

At Ingal Civil Products we pride ourselves on having made a significant contribution to the safety of our roads. Our product range includes road safety barriers, carpark & industrial barriers, workzone & traffic control products, delineation and fencing products. We are the market leader for safety barrier systems and continue to service our customers through our ongoing program of research and development.

Roadside Safety Barrier Testing Standards Explained



Since its introduction in 1999, the Australian/New Zealand Standard AS/NZS 3845 has utilised the NCHRP Report 350 guidelines as the basis for testing protocols to assess safety barrier related hardware and devices. In the recent revision of this Standard, Part 1:2015 and Part 2:2017 recognised the introduction of the Manual for Assessing Safety Hardware (MASH) guidelines, and updated to MASH as the basis for crash testing.

In an effort to encourage installation of MASH compliant devices, the Austroads Safety Barrier Assessment Panel (ASBAP) updated its assessment criteria to be in accordance the MASH guidelines as per AS/NZS3845 Parts 1 and 2. The Panel set a staged transition period due to conclude at the end of December 2020, and this was recommended to the various state road authorities.

MASH TL1 COMPLIANT

MASH TL2 COMPLIANT

MASH TL3 COMPLIANT

MASH TL4 COMPLIANT

MASH SUMMARY

Test Level	Maximum Test Vehicle Mass	Impact Speed	Impact Angle	Crash Energy
TL-1	Pickup - 2270kg	50kph	25	39kJ
TL-2	Pickup - 2270kg	70kph	25	77kJ
TL-3	Pickup - 2270kg	100kph	25	156kJ
TL-4	Single Unit Truck - 10000kg	90kph	15	209kJ

Ingal Civil offer the full range of MASH Compliant products for your project

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