

# Car Park Barriers

*Do yours comply?*

**Child dies of injuries in car park accident**

**Toddler killed in carpark accident**

An elderly man and woman have been taken to hospital after driving their car off a car park at a Brisbane shopping

WorkSafe Western Australia is waiting to speak to the people who witnessed the death of a 25 year-old man in a Joondalup shopping centre carpark



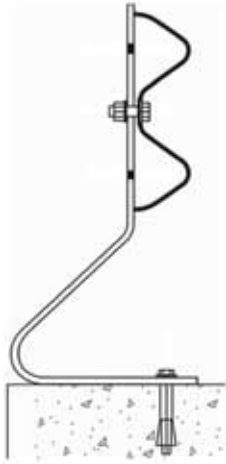


Figure 1: Ingal Classic Spring Steel Post



### When do I need a crash barrier?

Barriers shall be constructed to prevent vehicles from running over the edge of a raised platform or deck of a multi-storey car park including the perimeter of all decks above ground level. They are required wherever the edge from the deck to a lower level exceeds 600mm.

*Reference: AS 2890.1 – 2004*

### When do I need a handrail and mesh Infill?

A continuous balustrade must be provided along any walkway if its level above the surface beneath is more than 1m. The height of the balustrade must not be less than 1m above the floor of any walkway.

Openings in the balustrade must be constructed so that any opening does not permit a 125mm sphere to pass through it.

*Reference: Building Code of Australia*

### What are the anti-climb requirements?

For floors 4m above the surface beneath, any horizontal elements within the barrier between 150mm and 760mm above floor level must not facilitate climbing.

*Reference: Building Code of Australia*

### When do I need wheel stops?

At drops between 150mm and 600mm wheel stops shall be provided.

Wheel stops should not be relied upon to stop a vehicle.

*Reference: AS 2890.1 – 2004*

### What are the loading requirements for a crash barrier?

The horizontal imposed action on barriers required to withstand the accidental impact from vehicles during parking shall be 30kN for barriers installed in light traffic areas. This load is based upon a 1500kg vehicle travelling at 2m/s and 0.1m crumple zone.

Light traffic areas are defined as parking areas, garages, driveways and ramps restricted to cars, light vans, etc not exceeding 2500kg gross mass.

The impact force shall be distributed over a 1.5m length of the barrier at any position along the barrier and shall be assumed to act at 0.5m above floor level.

*Reference: AS 1170.1 – 2002*



Figure 2: Ingal Standard Spring Steel Post

### What is an Ingal Spring Steel Buffer?

An Ingal Spring Steel Buffer is the next generation of barriers specifically designed for low-speed perpendicular impacts.

An Ingal Spring Steel Buffer is manufactured from high-grade spring steel and is heat-treated for strength and flexibility. An Ingal Spring Steel Buffer deflects upon impact reducing the forces transferred to the anchor bolts by up to 75%. This absorption of energy allows the post to be installed with only one anchor bolt resulting in an easier to install system.

Since an Ingal Spring Steel Buffer System is capable of absorbing impact energy, damage to the barrier and impacting vehicle is minimal.

The post and rail design is compatible with mesh infill panels and handrails. The width of an Ingal Spring Steel Buffer System can be as little as 100mm, meaning valuable floor space is conserved. The open design allows light infiltration and cross flow ventilation.

### What crash testing has been undertaken?

Rigorous crash testing of Ingal Spring Steel Buffers was performed to validate compliance in light traffic areas.

Each test configuration comprised of a 4m length of Ingal guardrail supported by three posts at 2m centres. Each post was anchored with just one M20 anchor bolt. The 1500kg test vehicle impacted the barrier over a 1.5m section at the edge of the system to ensure maximum loading was applied to the support post at the end of the barrier.

A series of tests, each at different impact speeds, were carried out on each of the two barrier posts to determine the effects of different impact forces and subsequent barrier deflections.

### What were the test results?

The Ingal Spring Steel Buffers performed outstandingly and well-exceeded the minimum requirements stipulated in AS1170.1.

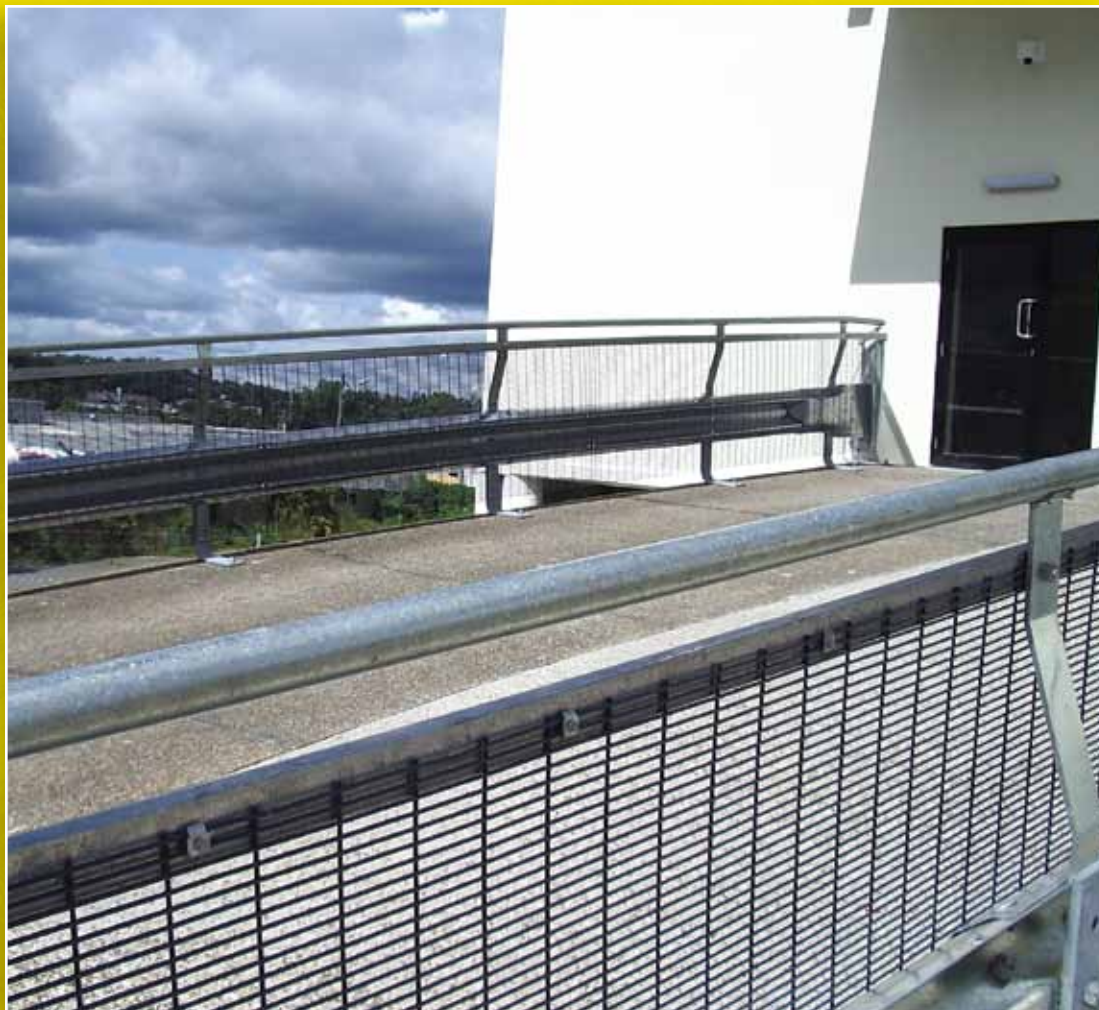
The Standard Post was subjected to impact speeds of up to 6.4m/s. The Classic Post was subjected to impact speeds of up to 7.0m/s

### Conclusion

The flexible nature of an Ingal Spring Steel Buffer allows it to absorb a higher level of impact force than is required by the standard while still satisfying the requirements to halt and contain the vehicle.

A Spring Steel Buffer is exclusive to Ingal Civil Products. Components are held in stock at Ingal distribution facilities located throughout Australia. To find out more about Ingal Spring Steel Buffers, visit [www.ingalcivil.com.au](http://www.ingalcivil.com.au) or freecall on 1800 803 795

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## Ingal Civil Products

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