

PROTECTION BOLLARDS- 02 Impact Recovery

02

Photo Dept Transport Safety Yellow Advanced
Polymer XHD Impact Recovery Bollards

BOLLARDS RECOVER FROM IMPACT

When secured on Impact Recovery System bollards absorb vehicle impact and slowly, safely self-recover from low-speed impact



BOLLARDS REUSABLE

Bollards are removable and reusable following even severe impact



FOOTINGS REUSABLE

The Impact Recovery System protects the surrounding pavements and footings protected from damage when bollards are impacted or need replacing.



IMPACT TESTED

ZERO WASTE Foundations are independently tested. Impact Recovery Bollards impact tested and supported by more than two decades of field performance. Visit website to view videos and client testimonials



INDUSTRY SUPPORT

Multi award winning, chosen by leading WA transport, road, utility and local government authorities — including Department of Transport, Main Roads WA, Western Power, City of Perth, City of Fremantle and City of Wanneroo



SAVE THOUSANDS

By making bollards and surrounding foundations reusable and greatly improving the efficiency of bollard maintenance, you save thousands over the life of a development



Department of
Transport



mainroads
WESTERN AUSTRALIA



WESTERN AUSTRALIA
Innovator
of the Year



WorkSafe
Western Australia

Impact Recovery **Bollards**

To overcome the problem of repeated repairs to bollards and the surrounding foundations, we developed the Impact Recovery System

BOLLARDS RECOVER FROM IMPACT

When secured on Impact Recovery System bollards absorb vehicle impact and slowly, safely self-recover from low-speed impact

BOLLARDS ARE REUSABLE FOLLOWING SEVERE IMPACT

Bollards are easily removable and are reusable following even severe impact

FOOTINGS ARE REUSABLE

Surrounding pavements and footings remain protected from damage when bollards are impacted or need replacing.

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[VIEW VIDEO](#)



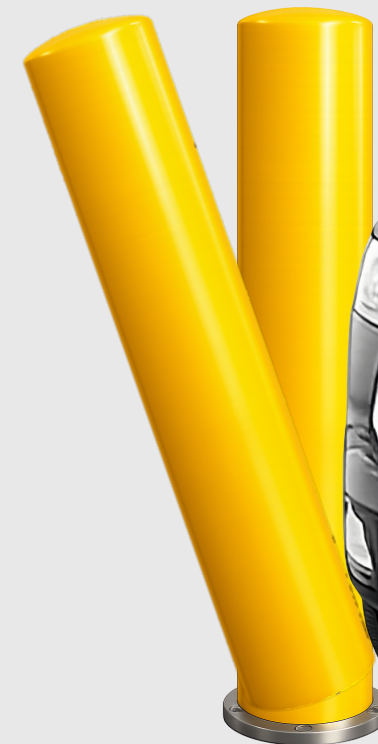
[VIEW SPECS](#)



02

OUR SECOND INNOVATION

20°





“When impacted
something’s got to give!”



It doesn't matter how big the bollard or footing-
Unless you incorporate some form of shock absorbing
mechanism the bollard and footing will need
replacing every time a bollard is badly impacted

The reason is that the impact force seeks out the
weakest component- and when a bollard is rigid it is
the footing that takes the brunt of the force and no
standard inground bollard will stop a truck.

Outcome of **impact**

Bollard Type	Speed	What happens upon impact
Surface Mount - Standard 140 Steel	≈ 4 km/h	Bolts bend or pull out, and slab damage is likely. These bollards are not protective they are regarded as aesthetic only.
Surface Mount - Standard 165 Steel	≈ 4 km/h	Bolts bend or pull out, and slab damage is likely. These bollards are not protective they are regarded as aesthetic only.
In-ground - Standard 140 Steel	≈ 7 km/h	Survives a very slow nudge. A light car hit can crack the footing. These bollards are not protective they are regarded as aesthetic only.
In-ground - Standard 140 Steel Concrete Filled	≈ 8 km/h	Stiffer but more brittle. Energy drives into the footing and moisture can be trapped causing rust. These bollards are not protective they are regarded as aesthetic only .
In-ground - Standard 165 Steel	≈ 7 km/h	Very limited improvement over 140 mm. As there is nowhere for the impact force to go, a car hit (especially with so many SUVs and 4WD on the road) still tends to damage the footing and can cause cars to become projectiles .
In-ground - Standard 165 Steel - Concrete Filled	≈ 8 km/h	Stiffer but with little real-world gain. Loads transfer into the footing and footing is dislodged with added risk of bollard rusting out at base and simply folding upon impact.
Impact Recovery - Surface Mount with Steel, Stainless steel or Advanced Polymer Bollard casing	≈ 13 km/h	Bollard deflects and self-recovers under low-speed impact and side glances. Upon higher-speed impact, the resistance core can bend and require replacement. Surrounding footing is not damaged.
Impact Recovery - In-ground 350 with Steel, Stainless steel or Advanced Polymer Bollard casing	≈ 16 km/h	Improved stability over surface mount. Bollard deflects and self-recovers under low-speed impact and side glances. Upon higher-speed impact, the resistance core can bend and require replacement. Surrounding footing is not damaged.
Impact Recovery - In-ground 650 with Steel, Stainless steel or Advanced Polymer Bollard casing	≈ 19 km/h	Greater embedment improves resistance to more serious low-speed impacts. Bollard deflects and self-recovers under low-speed impact and side glances. Upon higher-speed impact, the resistance core can bend and require replacement. Surrounding footing is not damaged.
Impact Recovery - In-ground 650 (Extra Heavy Duty) with Steel, Stainless steel or Advanced Polymer Bollard casing	≈ 21 km/h	Highest-duty option for severe low-speed impacts/ impacts from utility vehicles or trucks. Bollard deflects and self-recovers under low-speed impact and side glances. Upon higher-speed impact, the resistance core can bend and require replacement. Surrounding footing is not damaged.

It's time to move from
repetition **to resilience**



4 levels of protection

4 levels of protection to protect people and assets,
protect bollards and surrounding foundations

1. Strong **resistance core**

Unlike spring-loaded bollards that can over-flex, the heavy-duty resistance core restricts bollard deflection to approximately 20 degrees under low-speed passenger vehicle impact. For higher-risk zones and areas subject to utility vehicle impact, the 650 mm depth IRS can be upgraded to an Extra Heavy Duty resistance core to further reduce the risk of bending

2. Impact **recovery rings**

Unlike springs that quickly wear out, creating dangerous litigation risks, our re-usable energy absorbing Impact Recovery Rings create a permanent shock absorbing cushion that absorb the impact force and self-recover, with no reduction in capacity following multiple impacts, greatly improving energy absorption, safety and resilience



3. Durable **Bollard casing**

A Heavy-duty impact resistant stainless-steel pipe bollard casing provides an impact resistant surface, designed to last and continue looking good. Under mild inland conditions, stainless bollards may last for decades. In coastal or high-salt environments, **316 stainless steel** is generally recommended for improved corrosion resistance and longer aesthetic life.



4. Zero Waste **foundations:**

ZERO WASTE Inground Foundations are made from Advanced Polymers that protect the surrounding foundations when a bollard is impacted and continue working following multiple low and high speed impacts. Surface Mount are made from heavy duty base plate that is highly resilient to impact and with the sacrificial resistance core taking the brunt of the impact- the base plate becomes reusable following even severe impact.



Bollard

safely recovers

Under low-speed or glancing impacts, the Impact Recovery Rings absorb the initial force, allowing controlled bollard deflection of up to 20° before the internal Resistance Core limits further movement.

The bollard then slowly self-recovers without dangerous spring-back.

Designed for repeated impacts, the ring system maintains its recovery performance over time while helping protect the footing from damage.

[VIEW VIDEO](#)



Fast efficient replacement

Bollards are removable and ground socket can be capped (or another item such as a table or signpost installed)

If the bollard is pushed beyond 20 degrees, the Resistance core will bend and need replacing. The bollard remains safely secured in the footing and footings remain undisturbed.

- 1.** The Bollard is slipped off the resistance core.
- 2.** The Resistance core replaced
- 3.** The bollard slipped back on



Inground **Impact Recovery System**

In-Ground Impact Recovery Bollards are suitable for almost any installation environment, including concrete, asphalt, and paved areas. Recommended foundation options

- **350 mm depth** — recommended for most applications
- **650 mm depth** — recommended where bollards may be impacted by utility vehicles or in areas subject to heavier contact
- **Extra Heavy-Duty Core** — recommended in higher-impact environments where reduced maintenance is a priority

The bollard remains rigid. (and cannot be deflected by hand) When struck by a vehicle, the Impact Recovery Rings absorb the impact force, allowing the bollard to deflect by up to **20°** before slowly self-recovering.

In more severe impacts, the internal Resistance Core may bend and require replacement.



Ground socket protects
surrounding foundations from
damage impact after impact

Cap included



Impact Recovery Rings are made
from advanced urethane and
rubber compound, withstanding
hundreds of impacts



Surface mount **Impact Recovery System**

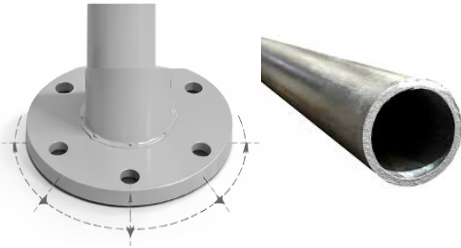
Surface Mount Impact Recovery Bollards are installed into solid concrete surfaces such as pavements, driveways, and slabs.

They remain rigid in normal use, but under vehicle impact the ring system absorbs the initial force, allowing the bollard to deflect up to **20°** and then slowly self-recover.

Following severe impacts, the internal Resistance Core may require replacement.



Heavy duty base plate with solid upright spigot resists bending and 5 evenly spaced anchors distribute impact force.



Heavy Duty Resistance core resistant forward movement of vehicles beyond 20 degrees.



Impact Recovery Rings are made from advanced urethane and rubber compound, repeated recovering following impact



20 °



Choose your impact recovery bollard

Use chart opposite to help choose the correct
Bollard and footings for your purpose.

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1. Choose your Bollard casing

You can secure steel, stainless or Advanced Polymer Bollards on the Impact Recovery System.

Galvanised and powder coated Steel

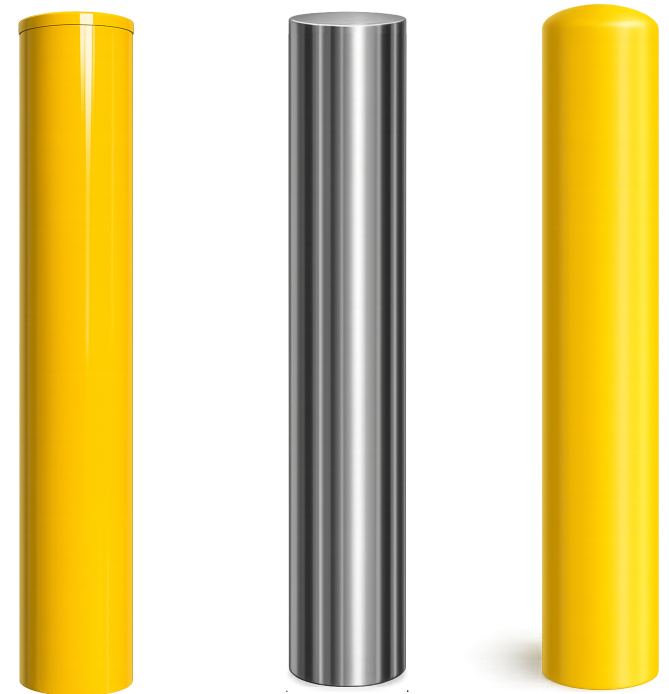
Suitable for industrial locations, but can chip and show scratches

Stainless steel

Stainless for aesthetically pleasing bollards – highly durable

Advanced Polymer

Advanced Polymer impact resistant bollards are suitable for most locations greatly reducing maintenance. Excellent for car parks.



2. Choose your installation method

Footing Options

- 350 Inground Heavy Duty
- 650 In-ground Heavy Duty
- 650 In-ground Extra Heavy Duty
- Surface Mount Heavy Duty

VISIT WEBSITE FOR SPECS & VIDEOS

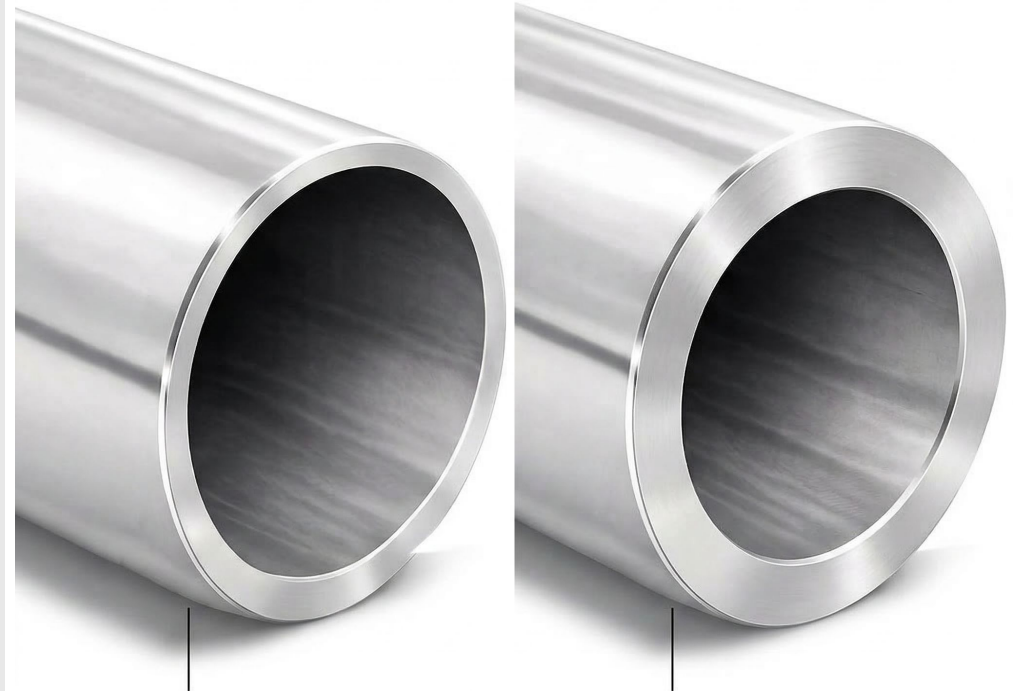


3. Choose your resistance core

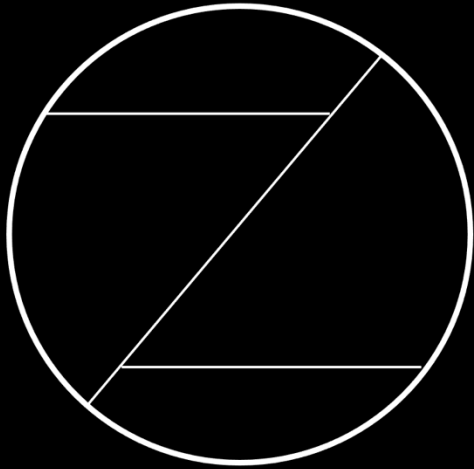
For 650 mm deep foundations, an Extra Heavy-Duty Resistance Core is available, increasing bending resistance by up to 150%.

This can help reduce maintenance in areas exposed to impacts from utility vehicles, service vehicles, and trucks.

Note: Higher resistance may also increase the severity of vehicle damage on impact, so the maintenance benefits should be considered alongside the potential consequences of a harder collision.



Heavy Duty Resistance Core Extra Heavy-duty Resistance Core



ZERO CIVIL

ADVANCED ZERO WASTE TECHNOLOGIES

19 GIBBERD RD BALCATT
hello@zerocivil.com
0414 628 511

zerocivil.com