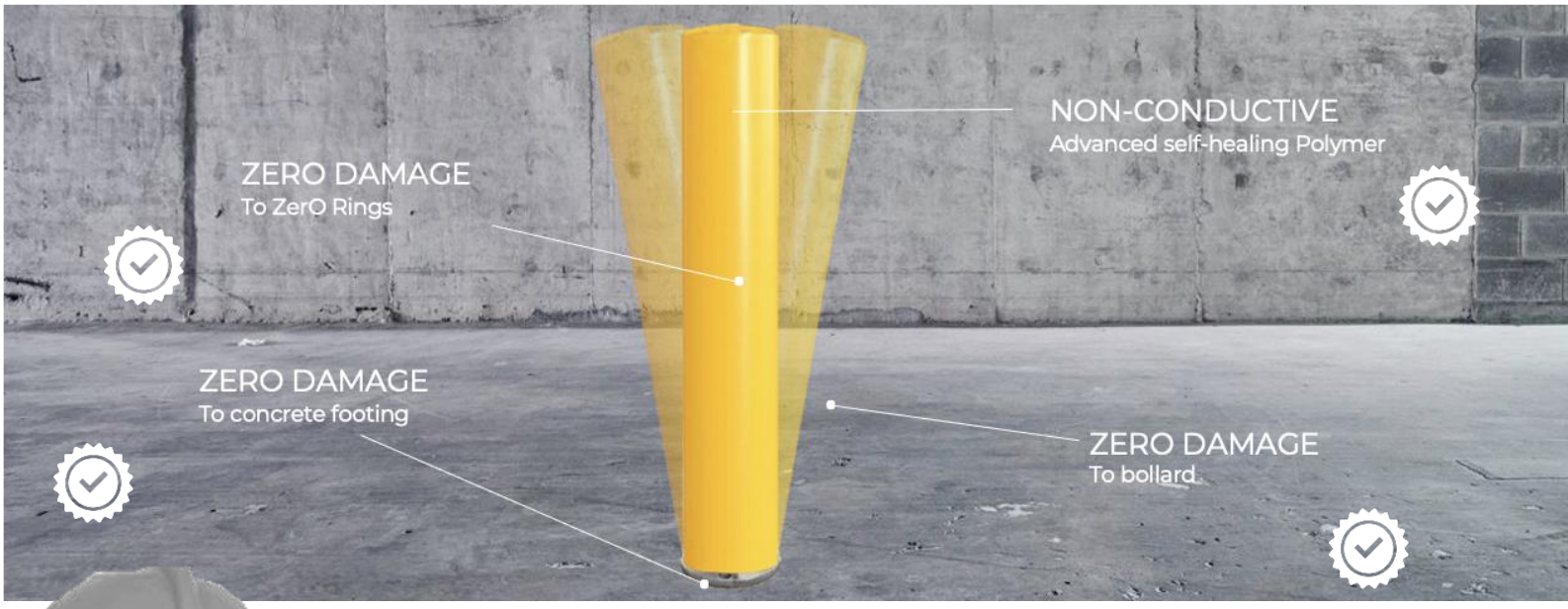
The ultimate disabled bay bollard

Protect vehicles from damage, Bollards and the surrounding concrete and paving from damage for the entire lifespan of a development, greatly improving safety and efficiency



100 YEARS

The ultimate disabled bay bollard

Disabled bay Bollards are highly vulnerable to impact from doors and vehicles, resulting in very costly maintenance

Spring loaded bollards over-deflect causing further litigation risks and wear out over time (especially near the coast)

We have developed an Impact Recovery Bollard that overcomes all of these problems

- **Zero damage**
- **ZERO Disturbance**
- **ZERO Waste**
- **ZERO expensive maintenance**
- **ZERO damage to vehicles**

What makes us unique

- There is no other bollard that provides protection and is flexible.
- There is no other “flexible” bollard that continues working effectively after thousands of impacts
- There is no other bollard re-usable following severe impact
- There is no other bollard that protects surrounding foundations from damage for the life of a development.

When impacted something's got to give!

Unless you incorporate some form of shock absorbing mechanism the bollard and footing will need replacing every time

Surface Mount Bollards

When a surface mount bollard is impacted, if the bollard itself is strong enough- the impact force is directed to the base plate, which bends or is ripped from the concrete.

Inground Bollards

When a bollard installed directly in concrete is impacted, if the bollard itself is strong enough to withstand the impact force, it is then directed to the footing, which is dislodged

Chipping scratching denting

Another growing problem is caused by cheap imported bollards that chip, scratch and dent in no time creating on going maintenance that these bollards overcome.

It's time to put an end to this madness!

There is never a good outcome, as both the bollard and the footings need replacing every time!

Some companies sell flexible bollards that are spring loaded (over-flexing causing dangerous litigation risks as they can be deflected by hand, offering very little, if any protection) and over time springs become weak, causing "floppy" bollards. All this work is creating tonnes of unnecessary concrete waste and lining the pockets of the suppliers at your expense.

City of Perth came to us to develop a solution that would provide protection, reduce damage to vehicles and reduce the cost of maintenace- We developed the Impact Recovery System that provides a low cost and sustainable solution to all of these problems

Advanced engineering overcomes these problems

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Bollards self-recover

Upon low-speed impact bollards absorb the impact force and slowly self -recover and are removable and reusable following severe impact

No damage to footings

ZERO WASTE Foundations remain pristine condition for the entire lifespan of a development and base plates are reusable following severe impact

Bollards Impact Resistant

ZERO WASTE Bollards are made from Australian heavy-duty materials designed to withstand impact without damage, remaining in good condition

Bollard re-usable

Both surface mount and Inground bollards are removable and reusable following severe impact, saving thousands over the life of a development

Footings reusable

ZERO WASTE foundations remain in pristine condition and surface mount base plates are reusable following severe impact, saving thousands

Simple replacements

Bollards are low cost to maintain. If damaged, they are removed and replaced in less than 5 minutes without the need for digging or heavy labour.

Impact resistant base plate

With square base plates the impact force is concentrated on one anchor- with heavy duty round base plates the impact force is evenly distributed, reducing the risk of damage

Superior protection

Unlike spring loaded bollards that can over-flex, the strong resistance core provides superior protection against errant vehicles, greatly improving safety

Advanced Polymer Bollard

Advanced polymer bollards (and bollards covers) provide excellent resistance against denting, chipping and fading- extending the potential lifespan

Impact Tested

From 0-10kmph

Bollards remain rigid and appear to be solid bollards (cannot be deflected by hand) but when a bollard is impacted by a vehicle, the bollard deflects up to twenty degrees and stops.

BOLLARD REUSBALE

When a bollard is impacted, it deflects up to 20 degrees and slowly, safely self recovers. Bollards are reusable even following severe impact.

FOOTINGS REUSABLE

ZERO WASTE foundations absorb the impact energy protecting surrounding footings from damage for the entire lifespan of a development

ONLY REPLACEABLE COMPONENT

The Inner Resistance Core is sacrificial. When a bollard is badly impacted the inner resistance core can bend and need replacing.

Rings are re-usable. Taper is reusable and clamps are reusable.
The only replacement part is the resistance Core (can be supplied with Taper attached to save time with replacements).

Replacement Part

The ONLY component is the Internal Resistance Core.

When a bollard is badly impacted the inner resistance core can bend and need replacing. Rings are removed and reattached to the replacement core (supplied with Taper attached)

AUSTRALIAN MADE

Galvanised steel pipe 3.6 mm or 5.5 mm wall thickness with Self-locking Taper attached (or stud for the surface mount units). Rings are secured to the resistance core using stainless steel clamps provided which are also reusable.

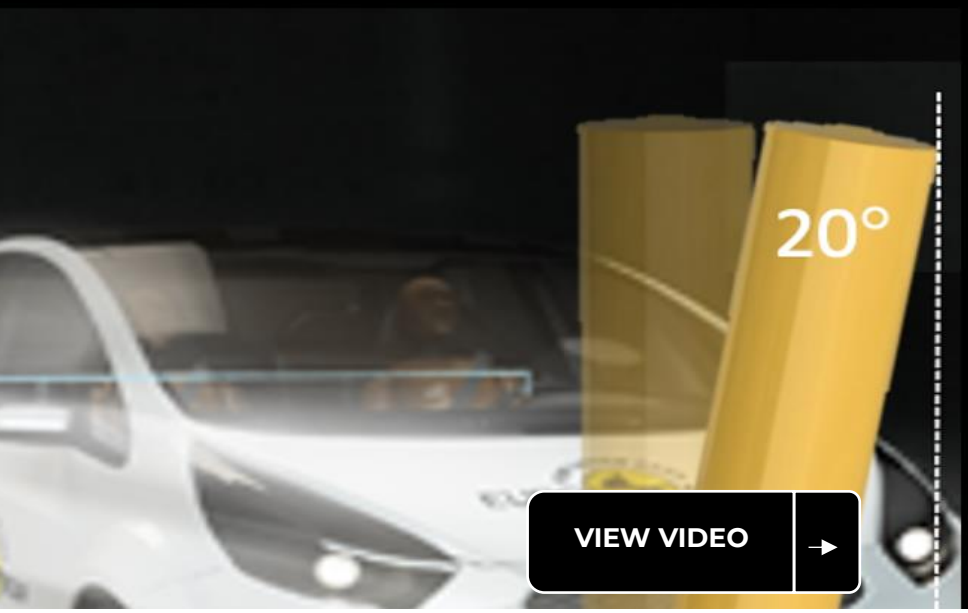
If you wish to save more money

- The Taper can be removed from the damaged core using screwdriver and re-used
- If you choose to make your own Resistance Core because 3.6 mm Pipe is so strong it is easier to pre-drill the post before securing the Taper. We do not recommend making your own Heavy Duty Core
- You must weigh up the cost of labour vs the cost of materials and take into consideration the generation of waste

LICENSING RIGHTS: If you choose to make your own Resistance Core a licence is required to ensure quality. We do not recommend this if using the Heavy Duty Resistance Core unless highly experienced. Please apply to ZERO CIVIL for manufacturing license to avoid legal action.

Protection Bollards

Impact Recovery Bollards are classified as Protection Bollards crash tested using AS/NZS 3845.2:2017



Impact Tested
Vehicle Mass 1860 kg
Speed 10 km/hr
Installed 350 mm Depth in asphalt.

SPECS	Bollard	Socket	Reo Cage
DIAMETER	150 mm	60 mm	550 mm
LENGTH	1560 mm	650 mm	800 mm
WEIGHT	6 kg		34 kg

Result of multiple impacts: Bollard did not penetrate or show potential to penetrate the occupant compartment or present an undue hazard to other traffic, pedestrians or personnel in a work zone (e.g. Zero disturbance to footing resulting in zero debris)

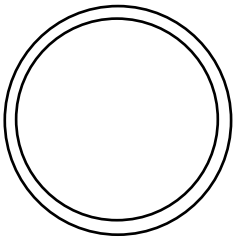
Maximum containment level, being passenger vehicles travelling between 0-10 km/hr the Bollard self -recovered following multiple impacts from 0-10 km/hr without damage or signs of fatigue, resulting in Zero debris or damage to surrounding foundations.

At low speed the bollard deflects up to 20 degrees at which time the driver was aware of hitting the bollard and reversed off- allowing the bollard to self-correct. At high speed the internal resistance core bent at ground level and needed replacing.

The resistance core can be altered at any time to 5.5 mm wall thickness to provide greater resistance against bending. (Keeping in mind it will also provide a rigid object that will increase impact force acting upon a vehicle and therefore increase the risk of injury to vehicle occupants.

Increasing resistance

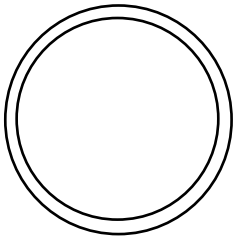
The resistance core is what prevents any further forward movement of a vehicle beyond the bollard. You can increase the strength of the resistance core up to 5.5 mm wall thickness – which provides 150% greater resistance against bending.



STANDARD 300 MM

Standard Resistance Core is strong enough to stop a passenger vehicle and can be used with Surface Mount footing.

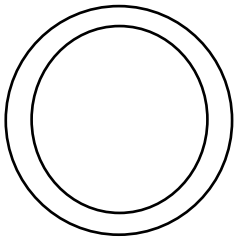
$50.00



STANDARD 650/950 MM

Standard Resistance Core can be used with 350 mm and 650 mm depth In-ground footings.

$60.00 / $70.00



HEAVY DUTY 950 MM

Substantially stronger Heavy Duty Resistance Core can only be used with 650 mm Depth Concrete footings

$100.00

XTRA HEAVY DUTY RESISTANCE CORE

60.3 OD X 5.5MM (CHS) CIRCULAR STEEL HOLLOW SECTION (7.30 KG/M)

If you find the resistance core is bending too frequently (often due to trucks of utility vehicles impacting them) you can increase the inner core to 5.5 mm wall thickness. This will increase the resistance by 150% and reduce the incidence of having to replace the inner core. **Please Note**: **This strength internal resistance Core can only be used with 650 mm depth solid 30MPa concrete footings.**

Replacement Parts

The footings are permanent and should never need replacing.
All other components are re-usable, although they can be easily replaced, if required.

	Internal Resistance Core is re-usable but can bend upon high impact from utility vehicle or truck and can need replacing. Supplied in packs of 12 with Taper attached - ready to install.	
	Bollards are reusable impact after impact. Over time they may get dirty and can be wiped clean – refer to maintenance instructions provided Can be easily replaced	
	If Taper is not installed correctly (flush with ground level- not protruding from socket) it can be damaged and need replacing. Available in packs of 50 complete Tapers (100 half tapers) including screws.	
	Impact Recovery Rings will withstand thousands of impacts and continue to recover. We now incorporate 50% recycled materials, and so rings may need replacing if they show any signs of cracking or deteriorating after 10 + years.	

HD Resistance Core

The only replacement part is the internal Steel Resistance Core.
The Standard Resistance Core is sufficient to stop a passenger vehicle and reduce the risk of injury to drivers and vehicles. With 650 mm footings the resistance core can be increased to 5.5 mm wall thickness to provide greater resistance against bending. Provided with Taper attached

STANDARD 300 MM

Standard Resistance Core is strong enough to stop a passenger vehicle and can be used with Surface Mount footing.

STANDARD 650/950 MM

Standard Resistance Core can be used with 350 mm and 650 mm depth In-ground footings.

HEAVY DUTY 950 MM

Substantially stronger Heavy Duty Resistance Core can only be used with 650 mm Depth Concrete