

02 Impact Recovery Bollards

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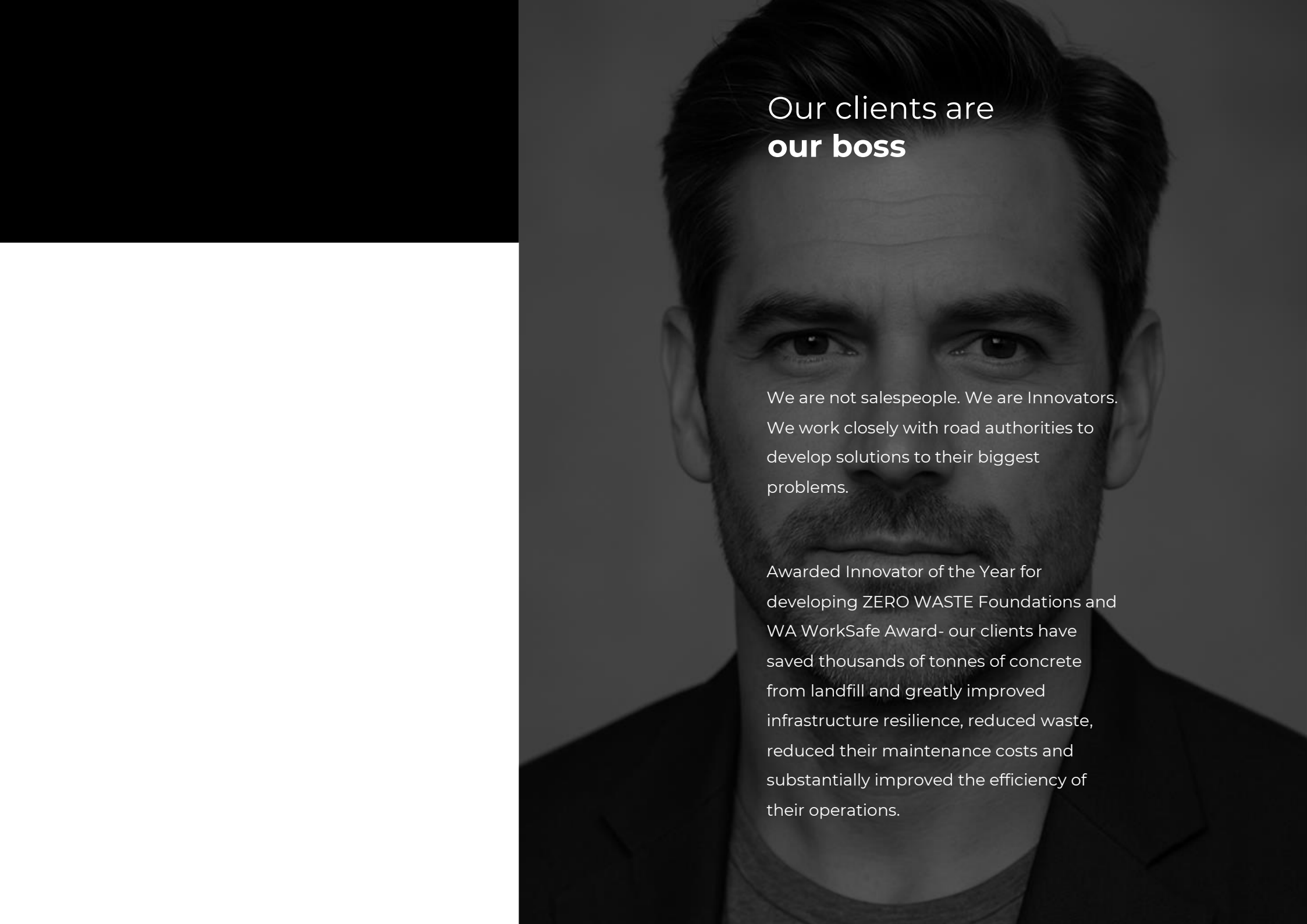
INNOVATION NUMBER TWO OF FIVE

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

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BUY LESS, CHOOSE WELL, MAKE IT LAST!



Our clients are **our boss**

We are not salespeople. We are Innovators.
We work closely with road authorities to
develop solutions to their biggest
problems.

Awarded Innovator of the Year for
developing ZERO WASTE Foundations and
WA WorkSafe Award- our clients have
saved thousands of tonnes of concrete
from landfill and greatly improved
infrastructure resilience, reduced waste,
reduced their maintenance costs and
substantially improved the efficiency of
their operations.

When impacted **something's got to give!**

A bigger bollard or footing does not guarantee protection from damage.

A rigid in-ground bollard acts as a lever, transferring impact loads into its footing and surrounding ground. When those loads exceed the installation's capacity, concrete can crack, the footing can be dislodged, and paving can break apart.

The repair bill can extend well beyond the bollard—to damaged vehicles, concrete footings and surrounding paving. These repeated repairs become very costly over the life of a development.



City of Perth had a **problem!**

Repeated repairs to bollards in the city centre were costing the city more every year and they needed a solution that was more resilient and low cost to replace.

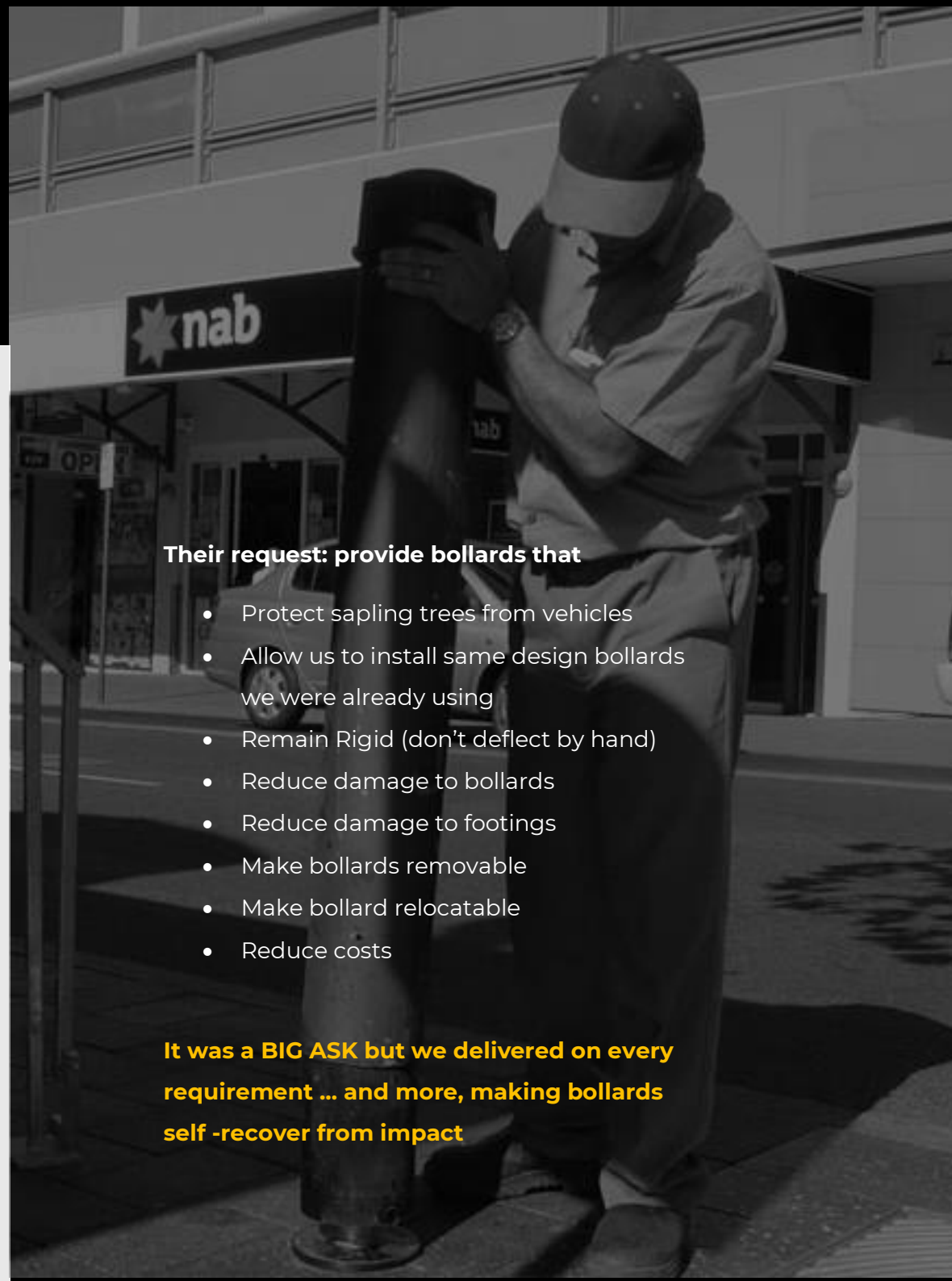
They told us they had tried “everything” including “flexible” bollards, but they offered no resistance (and were dangerous outside pubs when drunk people tried leaning on them) The image in my head always makes me laugh!

But, for the city it was a serious problem causing litigation risks, delays and on-going disturbance

Their request: provide bollards that

- Protect sapling trees from vehicles
- Allow us to install same design bollards we were already using
- Remain Rigid (don't deflect by hand)
- Reduce damage to bollards
- Reduce damage to footings
- Make bollards removable
- Make bollard relocatable
- Reduce costs

It was a BIG ASK but we delivered on every requirement ... and more, making bollards self-recover from impact



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 remains firm but when impacted by a vehicle the bollard deflects up to 20 degrees and 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**

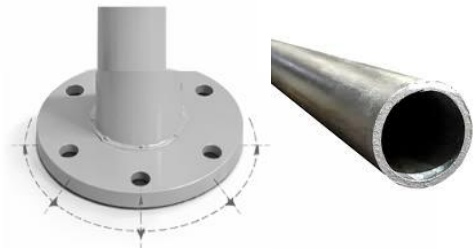
Surface Mount Impact Recovery Bollards are installed into solid concrete surfaces such as pavements, driveways, and slabs.

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 °



Design your impact
recovery bollard

1. Choose your Bollard casing

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

Galvanised and powder coated Steel

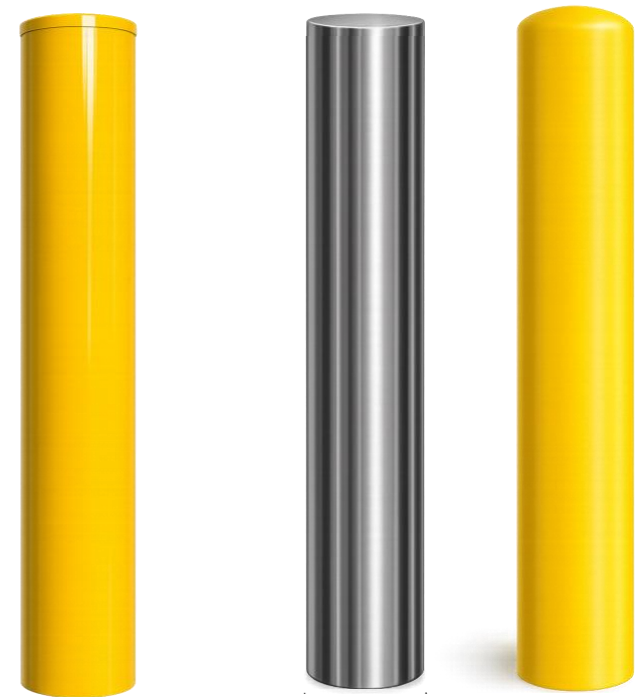
Suitable for industrial locations, but can chip and show scratches

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 carparks.



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

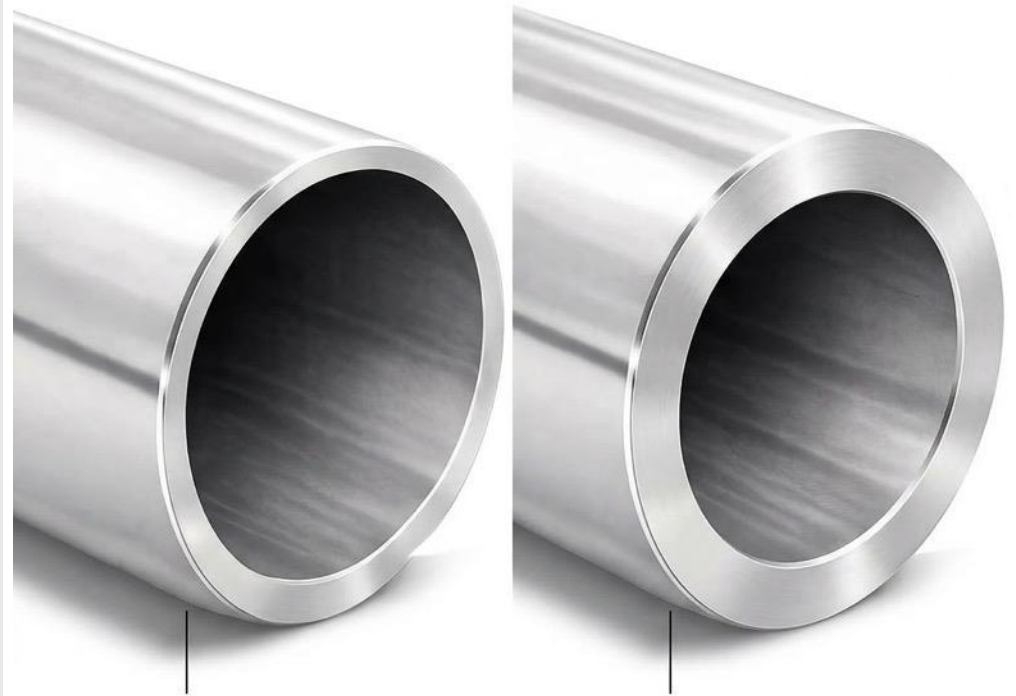


3. Choose your resistance core

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

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