removable traffic bollards

Advanced engineering delivers efficiency and long-term sustainability

"Our selection is not based on price alone; we also took into consideration the safety & saving aspects.

ZERO WASTE Foundations allow quick replacement of items with no further effort required to the base, (providing a significant cost benefit in replacing the damaged item by re-using the existing footing) and reduces risk of injury to employees by reducing time spent on traffic islands exposed to traffic." MRWA SPEC 601

mainroads WESTERN AUSTRALIA

Department for Transport

unit includes

- 60 OD CHS Steel Bollard
- Powder coated to MRWA Standards
- MRWA Striping

Secured using ZERO WASTE Foundations

- 350 mm Ground Socket
- Self-locking Taper attached
- Cap (for ground socket)

Installation & Removal Tools Required
(MRWA has removal tools)

MRWA SPECS: “Removable bollards (as per standard drawing 200831-0014) are to be used in high speed locations, such as at heavy vehicle bypass lanes in freeways to prevent access from general traffic.

These bollards are typically adjacent to high speed roads and therefore must be frangible.” MRWA

“It’s time to move from repetition **to resilience**”

Flush finish
Installed flush with ground level with no trip hazards.

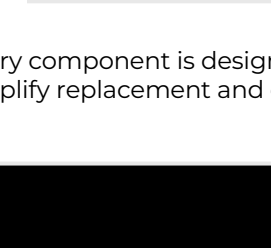
Impact-absorbing polymer socket
Advanced polymer construction helps absorb impact energy and protect surrounding foundations.

Reinforced body
Vertical and horizontal ribs provide added strength and stability.

Flexible depth options
Standard 350 mm depth, with shorter or deeper options available to suit site conditions.

Drainage-ready base
Weak spot provided to allow drainage.

Reusable self-locking taper
Taper attaches to item using screws provided and finishes flush when installed.



Reusable cap included
For use during installation and when items are removed.

Every component is designed to reduce damage, simplify replacement and extend service life.

advanced engineering

ZERO damage to locking device

Pins, padlocks and metal locking components can be damaged on impact, reducing locking capacity and creating unstable items, unauthorised removal risks and potential liability. Our friction-based locking system uses no breakable components, helping maintain secure holding capacity even in high wind conditions and severe impacts.

Keeping items well aligned, stable and secure

ZERO damage to footings

Concrete and metal footings are rigid and unforgiving, so impact forces are often transferred into surrounding paving, concrete and asphalt. Our impact-absorbing foundation helps protect surrounding surfaces from damage during both low- and high-speed impacts.

Protecting safety, aesthetics and service life of pavements

ZERO damage from corrosion and wear

Traditional concrete and metal fixing methods are prone to rust, corrosion and ongoing deterioration providing a limited lifespan. Our advanced polymer socket was developed to absorb impact energy and continue working even after severe impact, reducing maintenance and extending asset life.

This ensures bollards are easily removable using tools provided, no matter how long between removals.

Quality Australian 60 OD CHS Galvanised steel Pipe 2.9 mm wall thickness

Primed and powder-coated to last.

MRWA Striping available 100W/300R/100W

Taper is removable and reusable

Re-usable ground socket protects surrounding foundations from damage impact after impact

Cap included

Bollards are removable (using removal tool from a standing position) to allow access, for wide loads, maintenance or upgrades.

Socket can be capped when bollard is removed.

survive impact
up to 110 kmph

Independent impact tests performed by Authorised Authorities demonstrated no diminished holding capacity, following multiple impacts.

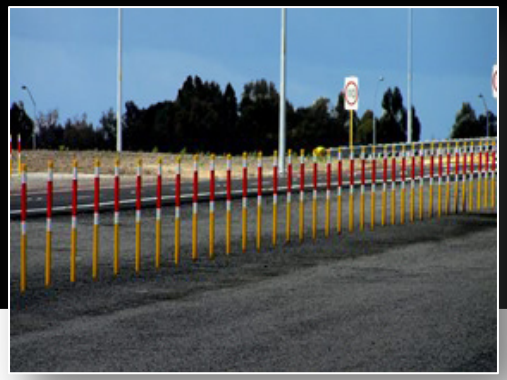
Refer to Specifications and Impact Testing & Approvals (including In-service documentation) for more details

When impacted at high speed the bollard folds more easily- reducing the risk of damage to surrounding footings.

With thousands of units installed over more than twenty years, in-service performance shows no damage from 5-110 kmph (see below)

When impacted bollards bend at ground level demonstrating no damage to surrounding foundations following multiple impacts.

Bollards remain safely seated in the socket, only removable using tools provided.



from repetition to resilience

Moving operations from repetition to resilience - from repeatedly rebuilding pavements to building long term success

Traditional approach

- Repeated excavation and reinstatement
- Damage to paving, asphalt and foundations
- Unstable bollards and damaged footings increasing safety and liability risks
- Higher labour and traffic management costs
- On-going carbon waste and landfill
- On-going concrete and paving supplies
- On-going disruption to road users and pedestrians
- Gradual visual decline of streetscapes
- Risk of damage to dangerous and costly underground services
- High cost , high risk replacements
- Costs and risks continue to climb

ZERO WASTE Approach

- Reusable socket and locking device remains in good working condition
- Surrounding foundations and paving remain protected
- Damaged items are removed and replaced quickly
- Zero waste, disturbance or heavy labour
- Faster, more efficient replacements
- No on-going disturbance to underground services
- No repeated concrete break out (removing the risk of silicosis)
- Cleaner, longer-lasting streetscapes
- Very low cost, low risk replacements
- Maintenance operations quickly reduce both costs and risks, becoming more financially sustainable
- Time and money saved can be used for further improvements further increasing financial and environmental sustainability

1. Carbon waste

Current methods are consuming vast quantities of carbon intensive concrete. We are already borrowing resources from future generations and with rapid urbanisation the damage, carbon waste and consumption of finite resources is growing – providing no future benefit.

2. Growing disturbance

In our cities the growing number of roadworks are resulting in a major increase in the disturbance to traffic flow and has become a major problem increasing traffic management requirements, costs, risks and disturbance to public. The bad news is that with rapid urbanisation the disturbance is set to increase dramatically

3. Growing difficulty

Building and maintaining roads is hard work, dealing with traffic, angry drivers and a growing number of dangerous and poorly mapped underground services, road workers are risking their lives on daily basis. and with fast growing urbanization this job is becoming increasingly dangerous.

4. Growing Costs

Using these costly and time-consuming methods is no longer tenable. With ever increasing safety and environmental pressures, global unrest and depleting resources, the cost of materials is rapidly increasing as the gap between the growing demand and the finite budgets continues to grow

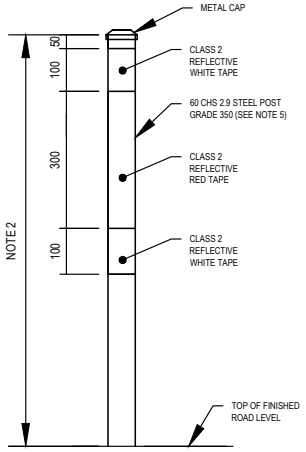
5. Risk of cost overruns

It's hard enough to budget with the rapidly increasing cost of carbon intensive supplies, but it's the unknown variables, such as delays caused by heavy traffic or rain; injury caused by working in traffic; back injuries from digging and heavy labour; or costly damage to the growing number of (often poorly mapped) underground services, that cause havoc with budgets and the risk of cost overruns is growing.

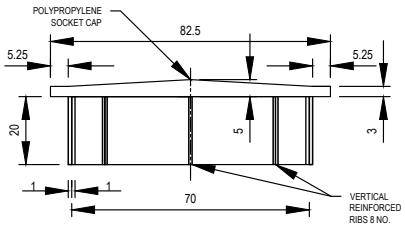
DOH&S WorkSafe Award

Awarded for substantially reducing risk of workplace injury. Removing the need for digging and heavy labour (No.1 Workplace injury). Substantially reducing time in dangerous traffic (No.1 Serious workplace injury)

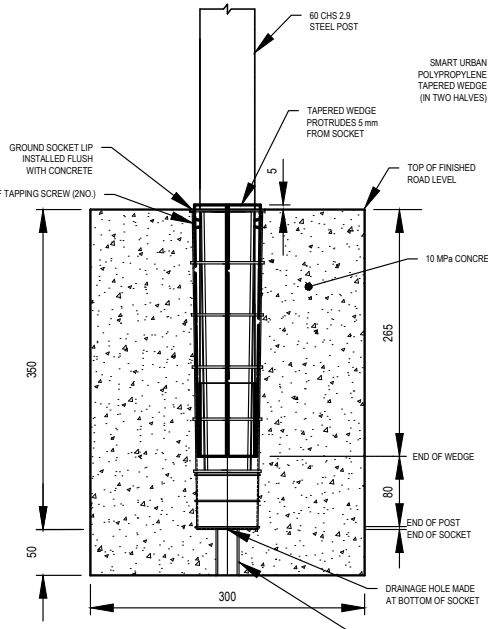
WorkSafe
Western Australia



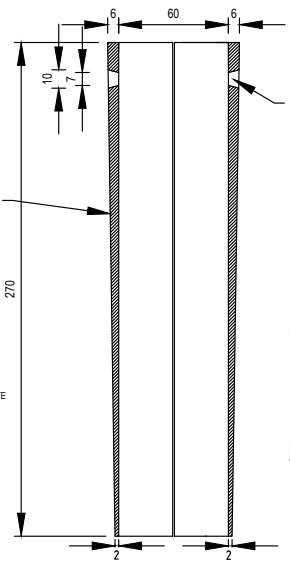
BOLLARD



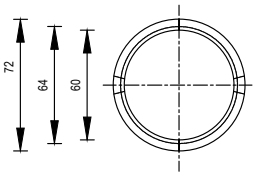
ELEVATION
SOCKET CAP



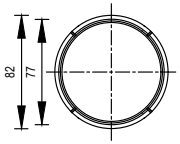
SECTIONAL ELEVATION
FOOTING



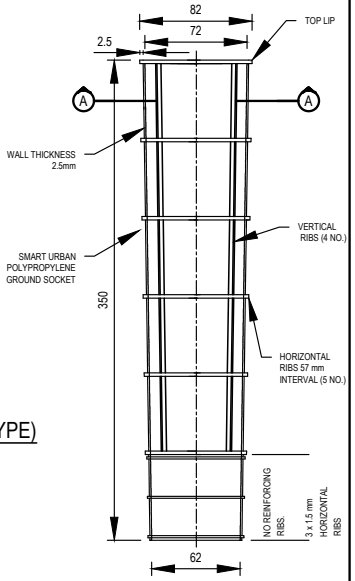
SECTIONAL ELEVATION
WEDGE (SMART URBAN TYPE)



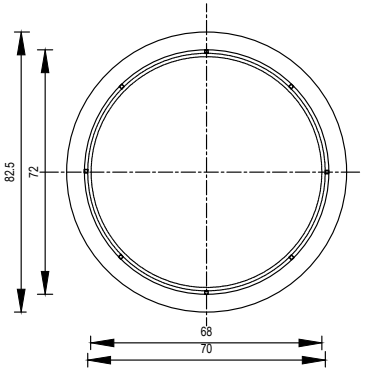
PLAN



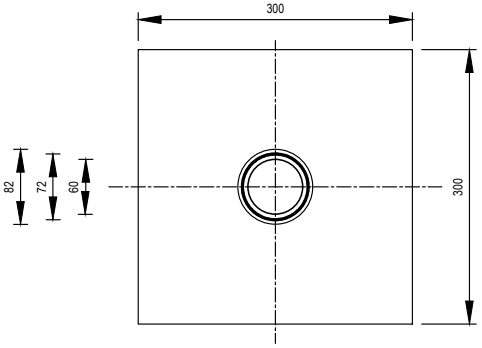
SECTION A-A



ELEVATION
SOCKET (SMART URBAN TYPE)



PLAN



PLAN
(SEE NOTE 8)

AMENDMENTS

No.	DESCRIPTION	APPROVED & DATE
2.	20mm DIA DRAINAGE HOLE ADDED. CHANGE AUSPOSTS TO SMART URBAN AMENDED.	T. FREEMAN 06/05/14
3.	TITLE BLOCK AND FONT UPDATED. MOVED NOTES TO TITLEBLOCK.	C. Mariano 9/11/23

NOTES

1. SMART URBAN REMOVABLE BOLLARDS TO BE INSTALLED TO MANUFACTURER'S SPECIFICATIONS AND THIS DRAWING.
2. HEIGHT OF BOLLARD TO BE 900 mm ABOVE FINISHED ROAD LEVEL UNLESS OTHERWISE SPECIFIED IN THE DESIGN DRAWINGS.
3. THE SPACING OF BOLLARDS SHOULD BE IN ACCORDANCE WITH THE DESIGN DRAWINGS
4. THE SOCKETS SHOULD BE CAPPED WHEN NOT USED.
5. BOLLARDS AND METAL CAPS SHALL BE COVERED WITH EXTERIOR GRADE LEAD FREE POLYESTER POWDER COAT.
6. THE FINISHED COLOUR AND SPECULAR GLOSS VALUE SHALL BE EQUIVALENT TO GOLDEN YELLOW Y14 AS SPECIFIED IN AS2700.
7. ALL DIMENSIONS IN MILLIMETERS.
8. AS AN ALTERNATIVE TO THE 300X300X400 mm DEEP CONCRETE FOOTING, THE FOOTING MAY BE BORED USING A 350 mm DIA. AUGER TO GIVE CYLINDRICAL 400 mm DEEP FOOTING

△3

△3

mainroads
PLANNING AND TECHNICAL SERVICES DIRECTORATE
ROAD AND TRAFFIC ENGINEERING BRANCH
Waterloo Crescent EAST PERTH 6004
Telephone 138 138

DRAWN	SOORI K. KASIRI	29/04/14
DESIGNED	SOORI K. KASIRI	29/04/14
VERIFIED	D. LANDMARK	26/06/08
APPROVED	R. GROVE	26/06/08
FILE NO.	13/4330	

SCALES N.T.S

A3

STANDARD DRAWING
REMOVABLE BOLLARDS
FOR USE ON ROADS UP TO 110 km/h

MRWA DRAWING NUMBER AMENDMENT

200831-0014-3

VIEW WEBSITE

INSTALLATION

TESTING & APPROVALS

PRICING

ORDERING

19 GIBBERD RD BALCATTTA
PHONE: 0414 628 511

hello@zerocivil.com