

# ROADSIDE

SERVICES AND SOLUTIONS



## ENERGY ABSORBING BOLLARD 20

PRODUCT MANUAL

“Creating a **safer environment**™”

### Our shared vision

Wherever possible, Roadside Services and Solutions chooses suppliers who share our vision and embrace sustainability. This is why Roadside is proud to partner with global companies like 3M which is renowned for its commitment to the environment and is the sole supplier to Roadside of sign sheeting and pavement marking solutions.

# Energy Absorbing Bollard 20 - EAB20 product manual

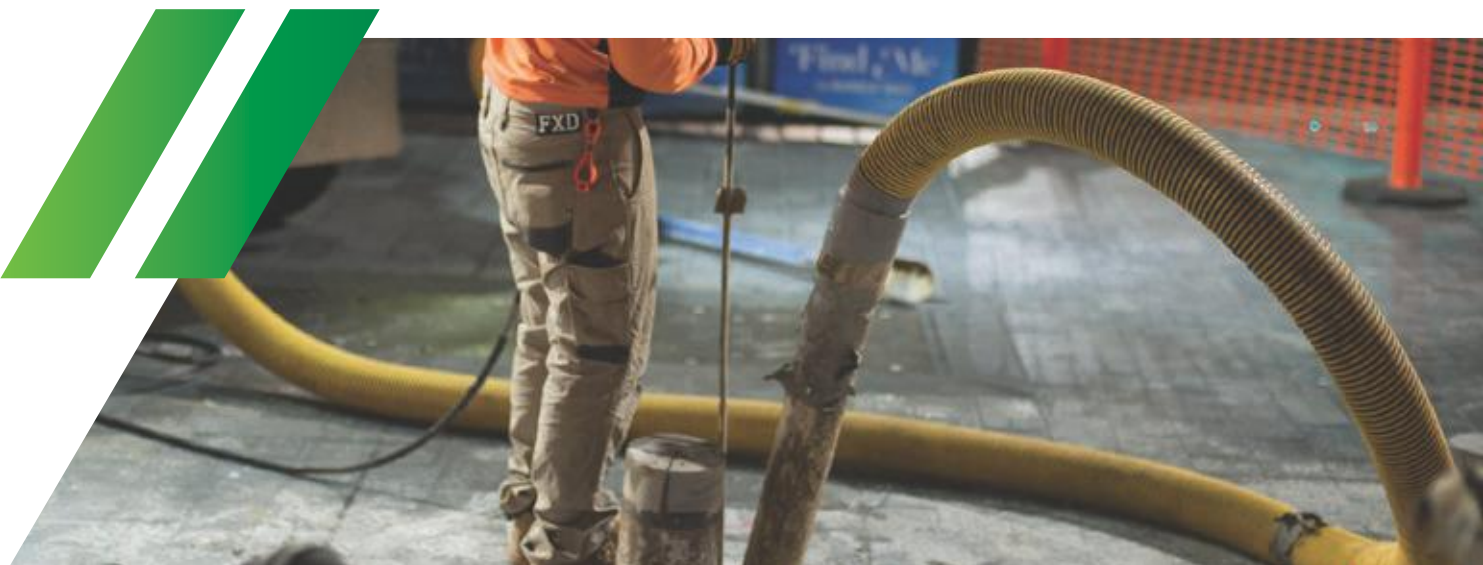
Roadside Services and Solutions is a proud producer and distributor of traffic control products, including Energy Absorbing Bollards designed to protect pedestrians, buildings, infrastructure and other facilities from errant vehicles or keep vehicles out of unauthorised areas. A number of these products are also designed to minimise damage to vehicles and injury to occupants.

The range of bollards available suits various situations and a range of speed impacts expected in these situations. They can be used in individual circumstances or in combination with other bollards such as in pedestrian malls. In a worst case scenario the bollards can help protect areas where there are high numbers of pedestrians from deliberate acts intended to injure as many people as possible.

The EAB20 bollards are specially designed for use in car parking facilities and other public places where vehicles are travelling slowly and are tested to effectively withstand impacts up to 20km/h. They are specially designed to prevent vehicle access to public places. The EAB20 has been successfully tested to an impact speed of 20km/h and fully complies with AS 2890 for parking facilities. It is the only crash-tested car park Energy Absorbing Bollard on the Australian market. Typical other decorative bollards are surface-mounted or buried 200-300 millimetres below the ground and frequently with no concrete or steel reinforcement. This makes them incapable of stopping vehicles even at a speed of 5-10km/h.

These other bollards can also be dangerous when hit by an out-of-control vehicle, as they can become flying projectiles with the potential to injure pedestrians. The EAB20 bollards are designed to protect infrastructure and pedestrians from errant vehicles in these situations by absorbing the impact of slow-moving vehicles while staying in place created by the solid installation methods. At Roadside Services and Solutions we continue to innovate our product and service delivery to ensure our bollards meet the highest protection and safety requirements for each site.

While most people take these products for granted, there are specific requirements relating to manufacture, installation and placement of these items, all aimed at keeping users safe from hazards.



For further information please contact

T 1300 022 222 F 1300 131 111

E [roadside@rss.net.au](mailto:roadside@rss.net.au) W [roadsideservices.com.au](http://roadsideservices.com.au)

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# 1. Introductory notes

The Energy Absorbing Bollard 20 (EAB20) has been designed and tested for installation in places to protect pedestrians from errant vehicles and from damaging buildings and infrastructure.

The EAB20's performance is critically dependant on correct installation. This manual is designed to assist with ensuring the correct installation of the EAB20.

Over time, EABs may require maintenance. This will depend on the location they are fitted and if they have been damaged by an out-of-control vehicle.

It is imperative installation crews are fully familiar with the installation instructions. This manual must be reviewed carefully before any work begins and if necessary additional information and assistance can be obtained from Roadside Services and Solutions engineering staff.

# 2. System overview

The EAB20 is classified as a non re-directive crash attenuator tested under vehicle impacts at 20kph.

# 3. Function

The EAB20 has been designed to safely decelerate and stop an out-of-control vehicle travelling at speeds 20km/h and under.

The EAB20 cartridge progressively deforms on impact and absorbs the kinetic energy of the out-of-control vehicle.



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## 4. Preparation

Before any attempt is made to begin the installation of an EAB20, it is important to read and fully understand the installation instructions. This will ensure correct installation and minimise possible errors which can compromise the performance of the EAB20. Before soil excavation begins, it is critical to locate all underground services.

A plan / plans of the underground services can be obtained from Dial Before You Dig. Using the plans and an experienced locator, all underground services (gas pipes, phone cables and water pipes) must be clearly marked on the surface of the road / footpath where the work will be undertaken. Water jets and vacuum trucks are the preferred method for excavation. An auger could cause extensive damage to the underground services if not detected before works start.



While underground infrastructure plans supplied from Dial Before you Dig provide the best available public information, the risk of unidentified services not marked on the plans is a reality.

Therefore, extra care must be taken when excavating for the installation of EAB20s.







## 5. Tools required and mandatory PPE

The following tools are typically required, although in some locations this may change, depending on the circumstances.





- High water pressure jet / vacuum truck
- Auger or digging tools
- Spirit level
- String line
- Road marking paint
- 1/2 Besser block or high density foam block
- 32MPa concrete
- Crowbar
- Shovel
- Broom



## 6. Installation instructions

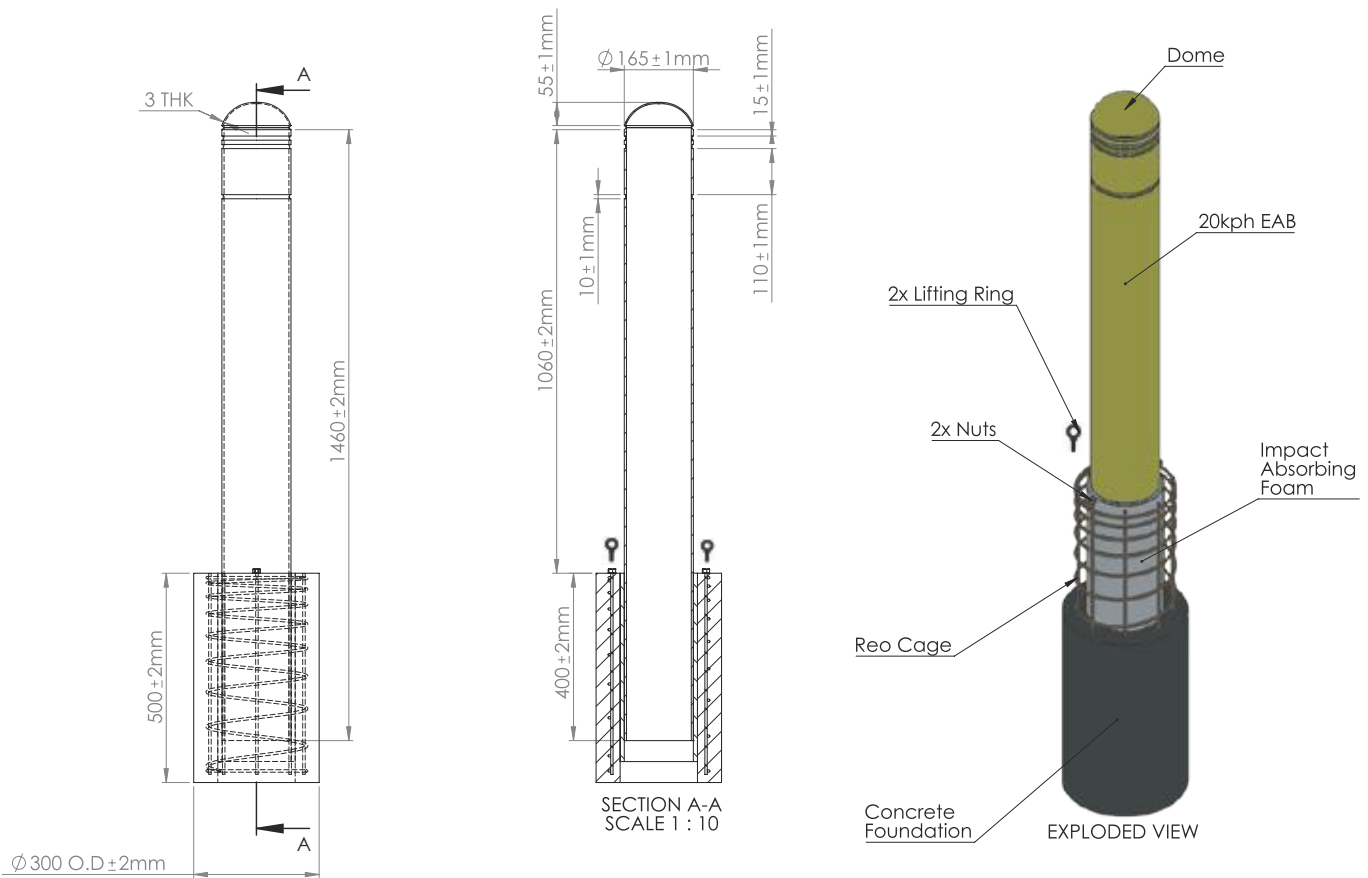
ITEM	ACTIVITY	ACCEPTANCE CRITERIA	PICTURE
1	Preparation	Before soil excavation begins, locate all underground services. The underground services plans can be obtained from Dial Before You Dig. An experienced locator will identify all underground services (gas pipes, phone cables, water pipes, etc ) from the plan and clearly mark these on the surface of the road or footpath. Water jets and vacuum trucks are preferred for excavation, rather than an auger which could cause extensive damage to obscured underground services. Correct PPE must be worn at all times during the installation. Refer to SWMS.	
2	Site preparation	Mark out where the hole centres are to be dug or excavated. Follow the site design.  NOTE: It is recommended spacing be 600mm from the curbing, this may vary slightly depending on the job requirements.	
3	Site preparation	If installing a line of bollards, use a string line to check the bollards are in a straight line.  NOTE: Ensure the ITP has been checked for the correct locator to avoid hitting any services.	
4	Dig holes  Use water jet vacuum truck or auger	Excavate a 600mm deep x 450mm diameter wide hole.  NOTE: If using machinery refer to the SWMS for the safe operating procedure.  NOTE: Water jet and vacuum truck are the preferred method for excavation, rather than an auger which could cause extensive damage to the obscured underground services.	
5	Position reo cage	Insert the reo cage into ground. Place the EAB20 bollard in to the centre of the cage. Use a spirit level to ensure the bollard is level. Pour concrete into the space surrounding the reo and bollard.  NOTE: Concrete should be 32Mpa strength concrete at a 70mm slump mix.	
6	Position bollard	Use a spirit level to ensure the bollard is correctly positioned.	

## 6. Installation instructions

ITEM	ACTIVITY	ACCEPTANCE CRITERIA	PICTURE
7	Pour concrete	Fill the remainder of the hole with a minimum 32MPa strength concrete.  NOTE: If the cartridge is to be covered with concrete or asphalt, the covering depth must not exceed a depth of 30mm. The cartridge may be covered with non bonded pavers to a depth of 50mm.	
8	Replace pavement	Finish by screeding the concrete surface and if applicable replace pavers around the installed bollard.	
9	Finish	Clean and sweep up any excess dirt or debris from the site.	
10	Ensure	Installers complete the Roadside EAB Registration Form and email it to: roadside@rss.net.au	



## 7. Main components and dimensions



### EAB20 weights and dimensions

	Bollard, cartridge, reo cage	Bollard only	Reo cage only	
Diameter	270mm	165mm	270mm	
Length	1560mm	1460mm	500mm	
Weight	42.0kg	29.0kg	10kg	

# 8. Notes



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