

Australian Bollards Roadside Services & Saferoads Division



EAB 65 **IMPACT TEST** to AS/NZS 3845:1999 & NCHRP R 350

AUS MADE EAB 65 Installation Guide

IMPACT TEST to AS/NZS 3845:1999 & NCHRP R 350

MANDATORY PPE REQUIRED



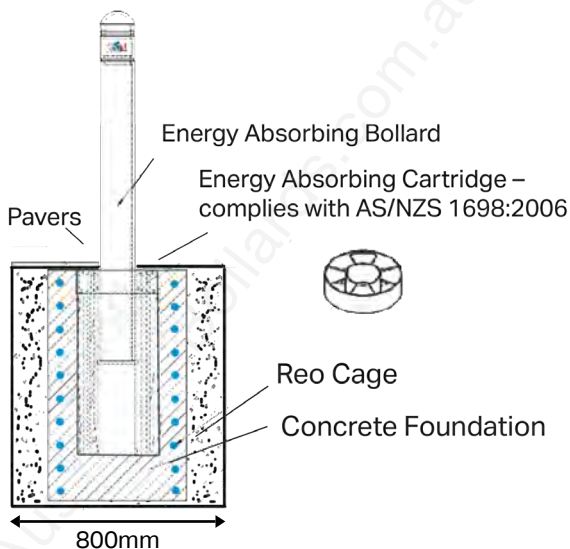
NOTE: HEAVY LIFTING WILL BE REQUIRED IN THIS SOP

TOOLS REQUIRED:

32MPA Concrete, String Line, Spirit Level & Auger/Digging Tools

PENDING LOCATION TRAFFIC MANAGEMENT MAY ALSO BE REQUIRED TO ENSURE THE SAFETY OF OTHERS

Certification will be provided for each bollard



AB-EAB - Installation Weights and Dimension

	Bollard, Cartridge & Reo Cage	Bollard Only	Cartridge Only	Reo Cage Only
Diameter	460mm	153.5mm <small>(16mm wall thickness)</small>	355.6mm	460mm
Length	1870mm	1470mm	800mm	800mm
Weight	122.5kg	69.5kg	28.5kg	24.5kg







EAB Impact Tested to 65kph



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ITEM	ACTIVITY	ACCEPTANCE CRITERIA	H/R/W/M/V	INITIALS	PICTURE
1	Preperation	<p>Before starting, ensure that you have called "Dial Before you Dig" or have located the services located in the area the bollard/s are to be installed.</p> <p>Ensure you have the Inspection & Test Plan document as this needs to be completed and returned to AB Roadside Services Division</p>			
2	Site Preperation	<p>Mark out where the hole centres are to be dug or augered, as per site design</p> <p>Note: It is recommended that the spacing to be 600mm from the curbing, this may vary slightly depending on the job requirements. Refer to the AB EAB manual for recommendations on spacing</p>			
3	Site Preperation	<p>If installing multiple bollards, use a string line to check the bollards are in a straight line.</p> <p>Note: Ensure ITP has been checked for correct locator. This is to avoid hitting any services</p>			
4	Dig / Auger Holes	<p>Auger or manually dig a 1000mm deep x 800mm diameter wide hole.</p> <p>Note: If using machinery refer to the SWMS for the safe operating procedure.</p>			
5	Concrete Holes	<p>Place the HD foam block or 1/2 a Besser brick in the centre of the hole and place the Roadside Energy Absorbing cartridge on top of the foam or brick.</p> <p>Note: The smaller end of the cartridge must be at the bottom of the hole to ensure correct bollard performance.</p>			
6	Position Cartridge	<p>Fill the remainder of the hole with minimum 32MPa strength concrete.</p> <p>Note: If the cartridge is to be covered with concrete or asphalt, the covering depth must not exceed a depth of 25mm.</p> <p>The cartridge may be covered with non-binded pavers to a depth of 50mm</p>			



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ITEM	ACTIVITY	ACCEPTANCE CRITERIA	H/R/W/M/V	INITIALS	PICTURE
7	Position Cartridge	Use a spirit level to ensure the cartridge is correctly positioned. Note: Using a 150mm x 1450mm light-weight galvanised pipe placed into the cartridge to check that the bollards will be vertical may assist.			
8	Pour Concrete	Fill the remainder of the hole with 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 25mm. The cartridge may be covered with non-binded pavers to a depth of 50mm			
9	Place Bollard	Install the bollard once the concrete is dried by placing the AB - EAB in the centre of the cartridge and lowering approximately 400mm on to the cross-bar.			
10	Replace Pavement	Finish off by screeding the concrete surface and if applicable replace pavers around the installed bollard.			
11	Finish	Clean, sweep up any excess dirt or debris from the site.			

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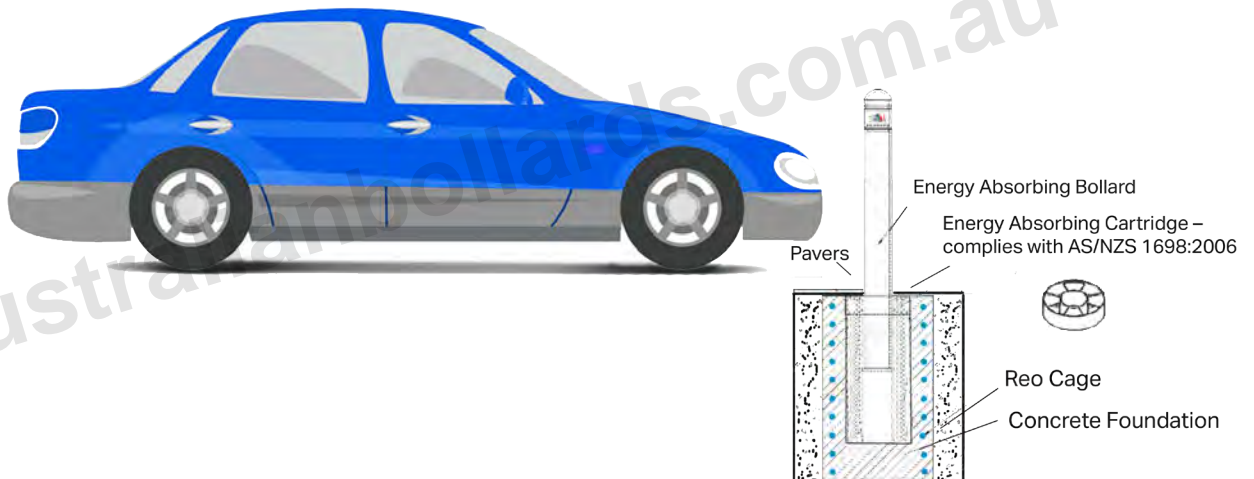
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Australian Made Energy Absorbing Bollards

Australian Bollards Roadside Service Division supplies and manages the latest pedestrian and safety road safety solution. Known as the Energy Absorbing Bollard (EAB), this product is capable of halting vehicles weighing 1700kg while travelling speeds of up to 65 kilometres an hour across work zones and low speed roads, as this product is designed to a TL-0 containment level.



EAB Product Manual

The EAB is manufactured and designed to protect pedestrians, buildings, infrastructure and other facilities from errant vehicles or keep vehicles out of unauthorised areas. A number of these products have also been designed to minimise damage to vehicles and injury to occupants.

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



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Introduction

Australian Bollards EAB has been designed, manufactured and tested for installation in places that protect pedestrians from errant vehicles, damaging buildings and infrastructure.

The EAB's performance is critically dependant on correct installation. Before any work begins and if necessary, additional information and assistance can be obtained from Australian Bollards Roadside Services Division.

It is crucial installation crews are fully familiar with the installation instructions of this product. This manual must be reviewed carefully before any work begins and if necessary, additional information and assistance can be obtained by the staff at Australian Bollards.

System overview:

Australian Bollards EAB is classified as a non-re-directive crash attenuator tested under AS/NZS:3845:1999, Table 5.3.3(3) for a 1700kg vehicle impact at 65km/h. This product conforms to AS/NZS:3845:1999.

Function:

As the EAB has been designed to safely decelerate and stop an out-of-control vehicle, its cartridge progressively deforms on impact, absorbing the kinetic energy of the out-of-control vehicle.

Preparation:

It is extremely important to read, be aware and fully understand the installation instructions. This process will ensure correct installation occurs and minimises possible errors which compromise the performance of the EAB. Before soil excavation begins, it is critical to locate all underground services.

Plans of the underground services can be obtained from Dial Before You Dig. When using these 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. The preferred method for the excavation is water jets and vacuum trucks. Extensive damage could be caused to the underground services by an auger if not detected before work begins.

Extra care when excavating for the installation of EABS is advised.



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Identification:

A compliance permanent sticker is featured prominently to identify the manufacturer and standard to which the EAB complies as this product is classified as a discrete crash cushion, tested to AS/NZS 3845:1999 Table 5.3.3 (3).

Require tools and mandatory PPE (Personal Protective Equipment):

The following tools are required for the installation process. These include a highwater pressure jet / vacuum truck, auger or digging tools, spirit level, string line, road marking paint, ½ Besser block or high-density foam block, 32MPa concrete, crowbar, shovel and broom.



Australian Bollards Recommendations:

Furthermore, it should be noted that consideration should be given for the ability of an out-of-control vehicle to enter the protected area when installing a line of EABS for a temporary work zone. A high-risk assessment should be conducted as this will determine the appropriate distance required in a line of EABS.

Kit Content:

Positioned to provide the maximum protection for pedestrians, the EAB can also be used for other purposes. A single EAB can be used to protect an area and should be positioned at least 500mm away from the area boundary, and a line of EABS can be arranged to provide the safest arrangement for a risk area. A risk assessment must be conducted to ensure the optimum outcome.

The EAB can be fitted with a lifting ring and if removed, a cover plate must be placed over the hole in the cartridge as protection for the public and the cartridge.

Australian Bollards highly recommends when shielding a concrete road barrier, steel road barriers or a rigid object, ensure the EAB is placed no further than 500mm from the object. This will significantly increase the probability the out-of-control vehicle will hit an EAB and not the hazardous object.

Performance:

Providing the correct installation procedure is followed, Australian Bollards EAB will perform equally in soil, concrete, asphalt or paved surfaces. The material used for the top surface of the energy absorbing cartridge must be comparable strength or softer than the 25mm thick non-bonded pavers. However, much stronger and thicker materials (like 32MPa concrete more than 25mm thick) might affect the crash characteristics of the EAB performance in the impact conditions.



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Installation instructions table:

- 4. Dig holes / auger hole:

Excavate a 1000mm deep x 800mm diameter wide hole.

- 9. Place bollard:

The material used for the top surface of the energy absorbing cartridge must be comparable strength or softer than the 25mm thick non-bonded pavers. However, much stronger and thicker materials (like 32MPa concrete more than 25mm thick) might affect the crash characteristics of the EAB performance in the impact conditions.

EAB spacing and clear zone:

Consideration must be given to the location and a clear zone prepared around the site when EABs are installed in a row. Before a commendation is confirmed for the installation spacing, Australian Bollards advises a site safety and risk assessment should be conducted to identify all possible impact directions. (A general guide on different scenarios are provided below).

EAB repair and maintenance:

In case of an event where an out-of-control vehicle impacting the EAB occurs, it is important to visually examine the damage as early as possible.

A sign of an EAB being impact may result in damaged paintwork.

It is vital to examine damage to the foundation below the surface cartridge. Any significant damage to the cartridge will result in the above-ground bollard not being straight.

The bollard must then be removed from the cartridge and the concrete footing needs to be broken by using a jack hammer and crowbar.

Once the damaged footing is removed, a new cartridge and rep cage must be installed. To repair the damaged footing, fill with 32MPa concrete.

Australian Bollards notes that if a steel bollard is involved in an accident and does not have visible deformation (not bent) despite paint damage, the bollard can be used again after it is cleaned and repainted. If any visible deformation of the steel bollard is detected, then a new steel bollard must be installed.

