



SWAT Bulletin

Safety for Workers and Traffic

Number 4, March 2006

Temporary Safety Barriers

Work on roads, or road reserves, involve many different activities, such as plumbing connections, tree planting and pruning, unloading vehicles and repairing roads.

What is a safety barrier?

The Worksite Safety – Traffic Management Code of Practice defines safety barriers as barriers which:

- physically separate the work area and the travelled way,
- are designed to resist penetration of an out-of-control vehicle, and
- have properties which redirect an out-of-control vehicle back on to the road away from the work area.

What is required?

The Occupational Health and Safety Act 2004 requires employers to provide the safest practicable workplace.

The Worksite Safety – Traffic Management Code of Practice and Australian Standard AS 1742.3 provide information about different control measures which can be used to provide safer roadside worksites. Safety barriers are one such control.

Where a safety barrier is used, it should meet or exceed the specifications contained in the Worksite Safety – Traffic Management Code of Practice, and Australian Standards AS 1742.3¹ and AS 3845², which include details about the design and appropriate use of safety barriers.

When should I use a safety barrier?

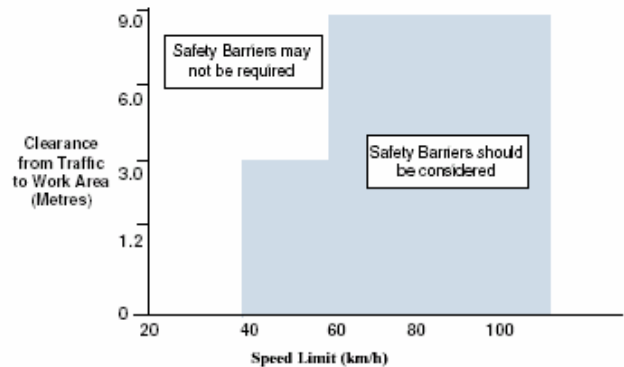
Safety barriers should be used when –

- there is potential for traffic conflicts (eg head on collision), or
- there are hazardous objects or deep excavations near traffic, or
- workers or roadworks plant and equipment need protection, or
- footpaths or bicycle paths need to be separated from traffic.

Barriers may be particularly useful in situations where:

- long term works are being undertaken and sufficient clearance is not able to be provided between the worker and the traffic,
- it is desirable to keep the speed limit of passing vehicles higher to allow greater traffic volumes to pass the worksite, or
- it is not possible to close a lane to provide increased clearance between workers and traffic.

The figure below compares the speed of vehicles passing the site with the clearance of workers from traffic to determine where safety barriers should be considered as a control measure.



Extract from Worksite Safety – Traffic Management Code of Practice, Figure 12 – Guidelines for use of Safety Barriers.

The Code also provides guidance for clearance between traffic and workers, road type, and speed limit both with and without a safety barrier installed.

Clearance to Traffic (metres)	Road Type	Safety Barrier in place	Worksite Speed Limit (km/h)
Within 1.2 m	All	No	40
1.2 m to 3.0 m	Local traffic road	No	60
	Collector Road or Rural Arterial 'C' Road	Yes	Speed limit
	Secondary Road or Rural Arterial 'A' and	No	40
		Yes	80

Extract from Worksite Safety – Traffic Management Code of Practice, Table 6 – Guide to the Selection of Worksite Traffic Management Speed Zones Long Term Works.

¹ Australian Standard 1742.3 Manual of Uniform Traffic Control Devices, Part 3: Traffic Control Devices for Works on Roads.

² Australian Standard 3845 Road Safety Barrier Systems.

What do safety barriers look like?

Safety barriers may be temporary or permanent, and may be made of various materials including concrete, steel, and plastic.

VicRoads has produced a list of barrier designs which it has accepted for use on Victorian roads. This list may be accessed at www.vicroads.vic.gov.au (search for 'road design note' then select 912A Accepted Safety Barrier Products).



Examples of safety barriers (from VicRoads' Road Design Note 912A), above (Current at October 2005 version of Road Design Note.)



Do different barriers provide different levels of protection?

Yes. There are several different levels to which manufacturers may test their product. Essentially, the speed and size of passing vehicles are considered when choosing a test level.

The most common barriers in use in Victoria (summarising from AS 3845 – and AS 1742.3) are:



Test level	Crash speed used for test purposes	Recommended maximum traffic speed past worksite ³
TL-1	50 km/h	40km/h
TL-2	70 km/h	60 km/h
TL-3	100 km/h	80 km/h

AS 3845 actually includes test levels from TL-0 through to TL-6. As the test level number increases, so does the requirement for the barrier to resist penetration of larger vehicles at higher speeds.

When selecting a safety barrier for use on a road, the worksite conditions and layout need to be matched to the barrier design.



³ From Worksite Safety – Traffic Management Code of Practice section 57(5) and AS 1742.3

What is the difference between a 'containment fence' and a safety barrier?

A containment fence is simply a barrier that provides physical and visible separation of the work area and the travelled way.

Containment fences do not provide the same level of protection from an out-of-control vehicle as a safety barrier and are not able to redirect such a vehicle away from the work area.

A containment fence, however, may be an appropriate control measure in a situation where the separation between workers and traffic is large enough and the vehicle speed is low enough to provide a safe worksite without the need for a safety barrier. The Worksite Safety – Traffic Management Code of Practice provides guidance on separation distances and vehicle speeds where this control measure may be appropriate.

Containment fences are sometimes a useful means of providing delineation for pedestrians, or providing a visual reminder to workers that they are getting too close to traffic.

Examples of containment fences include orange mesh fencing, safety tape or water filled plastic barriers which do not meet the test levels in AS 3845.



In the picture above, the barriers in the foreground do not meet the criteria for a safety barrier, but could be used as a containment fence.

Who should install a safety barrier?

Before commencing any works on a road, the appropriate consents need to be obtained. The traffic management controls installed at a worksite may need to be agreed by negotiation with the coordinating road authority⁴.

The barrier layout needs to be included in the traffic management plan. The layout needs to be designed by a competent person, particularly in situations where the barrier is not installed exactly in accordance with the manufacturers' instructions, or additional attachments (such as screens) are to be installed.

The barrier needs to be installed by personnel with suitable expertise.

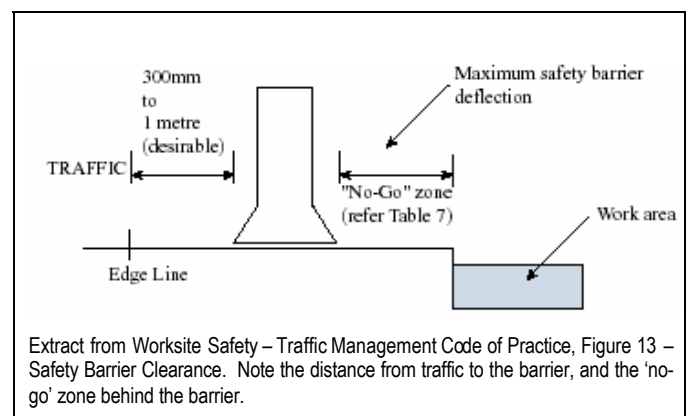
How do I know if the safety barrier is set up correctly?

The barrier should be set up in accordance with the manufacturers' and/or engineers' directions so that the safest practicable worksite is set up, and the installation is safe for motorists to pass.

Ensure that detailed installation instructions are obtained from the supplier when a barrier is purchased or hired.

The barrier should:

- be in good condition, and
- be certified as meeting the test level (TL) needed for the installation (either noted on the barrier or documentation on site confirming compliance), and
- have the required clearance behind it (so that if an out-of-control vehicle did strike the barrier at the design speed and cause it to move the site personnel would not be struck). This distance can vary from approximately one metre to six metres depending upon the barrier design, and



Extract from Worksite Safety – Traffic Management Code of Practice, Figure 13 – Safety Barrier Clearance. Note the distance from traffic to the barrier, and the 'no-go' zone behind the barrier.

- be interconnected as per manufacturer's instructions (this can include the use of vertical pins and/or wire ropes), and
- contain or exceed the minimum number of interconnected barrier units needed in order to form a safety barrier, and

⁴ SWAT Bulletin 3 – Work on Roads may be of assistance to clarify the consent and coordinating road authority process.

- be water filled, if required as part of its design, and
- be sited on an appropriate base material (level, compacted, correct surface type, etc, as per manufacturers requirements). Some barrier designs also require the barrier to be connected to the pavement. And,
- be properly positioned relative to other obstacles (such as kerb and channel which may make a vehicle launch over a barrier), or excavations, and
- be properly positioned relative to passing traffic. Traffic should not be closer than 300 mm from the barrier (this is extended to one metre in an ideal layout), and
- have appropriate end treatments installed (so that if a vehicle had a 'head on' collision with the end of a barrier there is a crumple zone, or flaring in accordance with AS, provided).

What if my barriers don't interconnect?

In the event of a collision, all of the individual safety barrier units need to be correctly connected so that their combined mass is able to assist with deflecting an out-of-control vehicle.

Previously, there were some safety barriers in use in Victoria which were not able to be connected adequately to meet the test level (TL) requirements.

If the barrier units are not interconnected to form a safety barrier which meets AS 3845, then it is considered to be a containment fence only.

VicRoads has produced a Bridge Technical Note which details a connection retrofit for a specific style of 'VicRoads' concrete barrier.

To access the technical note go to www.vicroads.vic.gov.au (search for 'bridge technical note' then select '2005/008 – Temporary Precast Concrete Barriers for TL-3 Loading'.)

What about barriers for pedestrians?

It is expected that the level of protection provided to members of the general public not be less than that provided for workers at a roadside worksite.

What is WorkSafe looking for?

During the SWAT campaign, inspectors are conducting inspections of roadside worksites. Whilst on site, inspectors are checking on traffic management controls including advance warning for motorists, signage, delineation of the worksite and work zone separation.

If the safety barriers in place do not comply with the Worksite Safety – Traffic Management Code of Practice or AS 3845, WorkSafe inspectors will require them to be replaced with compliant safety barriers as soon as feasible.

WorkSafe inspectors may use the Safety Barrier Checklist to assist with their site inspection.

Where can I obtain further information?

Guidance material with references to safety barriers include:

- The Worksite Safety – Traffic Management Code of Practice. A link may be found to this document on the traffic management page of www.worksafe.vic.gov.au (Choose 'safety basics' from the yellow box; then choose 'traffic management / roadside worksite safety').
- Australian Standard AS 1742.3 Manual of Uniform Traffic Control Devices, Part 3: Traffic Control Devices for Works on Roads may be purchased from Standards Australia. More details from www.standards.com.au
- Australian Standard AS 3845 Road Safety Barrier Systems may be purchased from Standards Australia. More details from www.standards.com.au
- VicRoads Bridge Technical Note 2005/008 – Temporary Precast Concrete Barriers for TL-3 Loading, December 2005, available at www.vicroads.vic.gov.au
- VicRoads Road Design Note 9-12A Accepted Safety Barrier Products, October 2005, available at www.vicroads.vic.gov.au
- WorkSafe SWAT newsletters and bulletins, including SWAT bulletin 3 'Work on Roads' and the Temporary Safety Barrier Checklist is available from the WorkSafe roadside worksite safety & traffic management page. (From www.worksafe.vic.gov.au choose 'safety basics' from the yellow box; then choose 'traffic management / roadside worksite safety').
- WorkSafe's Advisory Service can be contacted on 1800 136 089. This Advisory Service acts as a central contact point for WorkSafe Victoria services, including assistance with general OHS enquiries, and receipt of reports about unsafe worksites.

Thanks to VicRoads for their assistance with this bulletin.