Operational Instruction

Temporary Safety Barriers
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Manager, Traffic and Access Standards Section  
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1. Scope

This Operational Instruction outlines the Department for Planning, Transport and Infrastructure’s (DPTI) requirement for temporary safety barriers:

- their condition of use; and
- guidance on the application of temporary safety barriers used in road work situations.

This guideline must be read in conjunction with Australian Standards AS1742.3 ‘Traffic Control Devices for Works on Roads’ and AS/NZS3845 ‘Road Safety Barrier Systems’.

2. Background

Site managers/supervisors have a responsibility for the control of traffic in construction and maintenance roadwork zones and the safety of the public and their workers.

The use of temporary barriers forms part of a traffic guidance scheme and consideration needs to be given to conforming to the requirements of the Australian Standards AS1742.3, and relevant DPTI Guides.

3. General Use

During the initial project and works planning stages, site managers/supervisors should identify potential risks to road users and their workers which may be encountered during the life of the project, as part of temporary traffic management.

Temporary longitudinal barriers can be used to prevent inadvertent vehicular access into construction or maintenance workzones.

Temporary safety barriers are designed to protect or minimise the risk to workers, and to minimise the risk of injury to vehicle occupants in the event of a collision.

The type of temporary barrier used to protect the roadwork zone from errant vehicles, where the consequences of a vehicle encroaching into the workzone is likely to be severe (e.g. where large excavations exist near the travel path), or the risk of encroaching is high.

Where worksites are left overnight or pedestrians may encroach into the work area, high-level delineation devices or separation barriers may be necessary. The site manager should determine whether the barrier system is suitable and approve its use.
Temporary barriers should:

- contain the vehicle with limited penetration and controlled deceleration in a predictable manner, or
- redirect the vehicle in a predictable manner.

4. Definitions

A longitudinal barrier is placed on the roadside, to the left or in the median, to prevent errant vehicles from encroaching a static worksite.

The clear zone (or clear width) is defined as an available area that is clear of the hazard thus providing an area of recovery for errant vehicles.

Length of Need – a temporary barrier should only be as long as necessary to provide protection, and then terminated appropriately.

5. Barrier Performance

5.1 System Details

Temporary barriers specified for use on DPTI roads during roadworks shall meet requirements specified in AS/NZS3845 at:

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<th>Design Speed (v)</th>
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<tr>
<td>0 or 1</td>
<td>( v \leq 50\text{km/h} )</td>
</tr>
<tr>
<td>2</td>
<td>( 50 \leq v \leq 70\text{km/h} )</td>
</tr>
<tr>
<td>3</td>
<td>( 70 \leq v \leq 100\text{km/h} )</td>
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NOTE:
Above Test Level information shall be printed on the surface of the barrier.

Selection and use of suitable temporary barriers must be in accordance with their design speed limits.

5.2 Material

Temporary barriers can be made from concrete, metal or plastic materials. Their main benefit is in their much lower displacement under impact (i.e. intrusion into the protected space or clear zone lengths) from a safety view point.

DPTI has decided to include plastic material barriers (refer to Section 12 for Accepted list) as a protection barrier at roadworks. Plastic barriers not on the acceptance list shall only be used for delineation purposes.
5.3 End Treatment

Temporary barriers must be terminated appropriately i.e. at least flared away from oncoming traffic or fitted with a crashworthy end treatment to at least the same test level as the barrier. Preference should be given to systems that have their own specially designed end treatment.

The hazard associated with the longer length of road safety barrier systems associated with a small flare rate can be effectively balanced against the risk associated with a shorter period of exposure. Under these circumstances, a flare as high as 5 to 1 may be adopted, provided it is for a short-term installation (a few weeks) or where the traffic volumes are very low.

5.4 Colour/Retro-reflective Tape

Plastic barrier units are typically in white or orange colour. All temporary barriers are to be supplemented with yellow or orange retro-reflective tape of Class 1 material (refer to AS1906.1). Concrete barriers are typically off-white. The barrier should be able to accommodate warning lights for use overnight.

5.5 Interlocking Modules

The ends of each unit have connections that interlock with one another. Barrier units must be joined to transfer tension from one unit to another (to provide tensile moment resistance).

5.6 Minimum Length of Need

A minimum length is necessary to achieve crashworthiness depending upon the system being used. This is identified at compliance. The system supplier shall provide this information when requested and at time of supply.

5.7 Maximum Height of Supply

Barriers exceeding 1.05m in height shall not be used where needed visibility will be restricted over the barrier for passenger car drivers.

6. Installation Requirements

AS1742.3 'Traffic Control Devices for Works on Roads' must be referred to, in particular the clause detailing 'Safety Barriers' (clause 3.10.3) and Section 12 of this document.

Positioning of safety barriers must be in accordance with AS3845 'Road Safety Barrier Systems'.
6.1 Orientation to Traffic

Barriers should be placed parallel to the traffic flow or at an angle of less than 15 degrees.

6.2 Offset

The desirable minimum offset from a traffic lane is 500mm, but not less than 250mm. The end of a flared terminal should be at least 3 metres away from traffic.

6.3 Lateral Deflection/Penetration (Clear Zone)

A clear zone must be provided for the dynamic deflection of the barrier. Barriers should not be placed in front of kerbs. Refer to the manufacturers’ guide for the expected maximum deflection of the barrier system.

6.4 Maximum Slope of Roadway

Check the manufacturers’ recommended maximum longitudinal and cross slope values. Excessive slopes or kerbs may create a vaulting effect for the impacting vehicle.

6.5 Sight Distances

Sight lines must be checked where visibility over the barrier is required for road users.

7. Maintenance

Road safety barrier systems shall be inspected on a routine basis (checked daily both at the start and finish of the daily work) to identify, record, and rectify any damage or defects on the barrier systems.

8. Post Crash Assessment and Repair

Before a road safety barrier system is installed, action plans must be prepared for assessing and repairing the road safety barriers in case they are damaged. Assessment of the damage to a road safety barrier system shall be undertaken as soon as is practicable after a crash.

9. Unacceptable Barriers

Steel drums, used with guardrail or as a standalone device, are not considered to be a suitable carrier capable of redirecting an errant vehicle away from a workzone. W-beam guardrail was designed and tested to attach to steel posts and spacers as a complete system, having a specific failure mechanism. Upon failure the posts are
initially restrained by passive pressure in the soil resulting in localised failure of the soil at the ground line and for a short distance below. Steel posts partially rotate but also bend near the ground. The controlled reaction of the posts and spacers minimise the risk of the vehicle vaulting or rolling over.

W-beam attached to steel drums does not provide the appropriate post-stiffness and soil interaction needed for the W-beam to effectively react under substantial impact. Drums may also become projectiles during a collision and injure workers or road users.

It is important that barriers react as designed; otherwise events may become unpredictable and uncontrolled. Injuries are much more likely to occur when an accident happens.

10. Inspection and Serviceability

Site managers/supervisors are responsible for periodically checking their traffic control scheme and devices and to carry out maintenance so that their devices perform adequately in service and attain their maximum service life.

Traffic control devices that are left overnight on a roadwork site should be checked daily both at the start and finish of the workday.

All barriers must be kept serviceable. Their condition should be reviewed periodically and replaced if necessary.

If a barrier system is not meeting the requirements outlined in this Operational Instruction or the manufacturer’s instructions, due to the device reaching the end of its service life or because of its inadequate design or installation, the device shall be withdrawn from use.

11. Sight Distance Considerations

The primary purpose of roadway delineation devices is to provide the visual information needed by motorists to drive through a workzone safely. Sufficient sight distance in accordance with Austroads ‘Guide to Road Design – Part 4A: Unsignalised and Signalised Intersections’ Approach Sight Distance criteria (clause 3.2.1) should be provided on the approaches to the work activity area so that drivers may confirm advance warning and respond appropriately to the traffic control device.

Adequate sight distance is even more important at intersecting roads and where additional conflicting movements are present.

If sight distance is inadequate because of the horizontal or vertical curvature channelization, devices should be extended to a point where they are clearly visible to road users.
12. **Approved and Selection of Safety Barriers**

All safety barrier products are reviewed by an Austroads National Safety Barrier Panel and is based on the NSW’s Road Transport Authority (RTS) assessment procedure.

The following link is to the approved list of safety barrier products (including temporary barriers) for use in SA. DPTI reserves the right to rescind or modify products from this list at any time.

[SA's Selection of Accepted Safety Barrier Products](#)

13. **Reference**

2. AS/NZS3845-1999 Road Safety Barrier Systems