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ROAD MANAGEMENT ACT 2004

CODE OF PRACTICE

WORKSITE SAFETY – TRAFFIC MANAGEMENT

SPECIAL

Road Management Act 2004

NOTICE OF MAKING OF A CODE OF PRACTICE FOR
WORKSITE SAFETY – TRAFFIC MANAGEMENT

I, Tim Pallas, Minister for Roads and Ports, in accordance with section 29 of the **Road Management Act 2004**:

1. publish the Code of Practice for Worksite Safety – Traffic Management, a copy of which is set out below; and
2. give notice that –
 - (a) the date of commencement of the Code of Practice is 1 September 2010; and
 - (b) copies of the Code of Practice may be obtained from VicRoads Head Office, 60 Denmark Street, Kew.

This Code of Practice replaces the Code of Practice for Worksite Safety – Traffic Management as published in the Victoria Government Gazette No. S 276 on Wednesday 22 December 2004.

Dated 26 August 2010

TIM PALLAS
Minister for Roads and Ports

Note: A copy of the Code of Practice may be viewed on the VicRoads website at
www.vicroads.vic.gov.au.

Road Management Act 2004

CODE OF PRACTICE FOR
WORKSITE SAFETY – TRAFFIC MANAGEMENT

I, Tim Pallas, Minister for Roads and Ports, in accordance with section 28 of the **Road Management Act 2004** and section 99A of the **Road Safety Act 1986**, make a Code of Practice for Worksite Safety – Traffic Management.

Dated 26 August 2010

TIM PALLAS
Minister for Roads and Ports

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Road Management Act 2004
CODE OF PRACTICE
WORKSITE SAFETY – TRAFFIC MANAGEMENT

1. Purpose of Code

- (1) The purpose of this Code of Practice is to provide practical guidance to any person conducting, or proposing to conduct, any works on a road in Victoria.
- (2) This Code is intended to –
 - (a) establish and maintain a standardised approach to the conduct of works on roads (whether on the roadway or roadside) that protects the safety of road users and persons engaged in the carrying out of such works;
 - (b) establish a hazard based assessment of worksite conditions to enable the identification and implementation of appropriate control measures to ensure a safe worksite;
 - (c) support the planning for, and management of, traffic to pass safely through, past or around a worksite, including the preparation and implementation of a traffic management plan; and
 - (d) support the engagement of appropriately trained and qualified persons to carry out the works or direct traffic.

2. Authorising provisions

This Code of Practice ('this Code') is made under section 28 of the **Road Management Act 2004** ('the Act') and section 99A of the **Road Safety Act 1986**.

3. Consultation

In accordance with section 28 of the Act, the Minister consulted with the relevant Ministers, relevant utility Ministers, the Infrastructure Reference Panel, the Minister for Public Transport and the Municipal Association of Victoria before this Code was made.

4. Application

- (1) This Code applies to any person conducting, or proposing to conduct any works on a highway (which means any road or road related area) in accordance with section 99A(1) of the **Road Safety Act 1986**, and to the preparation of traffic management plans for the purpose of conducting works.
- (2) This Code commences on the date specified by a notice in the Government Gazette in accordance with section 29 of the Act.
- (3) This Code is approved to operate from 1 September 2010 and replaces the Code of Practice for Worksite Safety – Traffic Management which commenced operation on 1 January 2005 (refer Victoria Government Gazette No. S 276, Wednesday 22 December 2004), which is revoked on the commencement of this Code.

5. Interpretation

- (1) Unless the context otherwise requires, terms used in this Code of Practice that are defined in the Act or the **Road Safety Act 1986** will have the same meaning as in these Acts.
- (2) Additional terms and definitions in this Code –

'freeway' has the same meaning as defined in the **Road Management Act 2004** and includes a tollway.

'high speed road' is a road in which a permanent speed limit of greater than 60 km/h applies.

‘infrastructure manager’ has the same meaning as defined in section 3(1) of the **Road Management Act 2004**, being either ‘in relation to road infrastructure, the responsible road authority’ or ‘in relation to non-road infrastructure, the person or body that is responsible for the provision, installation, maintenance or operation of the non-road infrastructure’ (e.g. a State road authority, a municipal council, utility, provider of public transport).

‘low speed road’ is a road in which a permanent speed limit of 60 km/h or less applies, but not being a speed limit which applies only because of a temporary reason such as roadworks or a street event.

‘mobile works’ has the meaning as generally used in the Australian Standard *AS 1742.3 – 2009: Manual of Uniform Traffic Control Devices, Part 3: Traffic Control for Works on Roads*, being ‘works which entail vehicles moving along the roadway continually at a speed significantly lower than other traffic and obstructing or partially obstructing traffic lanes’.

‘Road Rules’ means the *Road Safety Road Rules 2009*.

‘roadway’ has the same meaning as defined in section 3(1) of the **Road Management Act 2004**, being ‘the area of the public road that is open to or used by members of the public and is developed by road authorities for the driving or riding of motor vehicles.’

‘shoulder’ has the same meaning as defined in section 3(1) of the **Road Management Act 2004**, being ‘the cleared area, whether or not constructed or sealed, next to a roadway that provides clearance between the roadway and roadside’.

‘traffic guidance scheme’ has the meaning as generally used in the Australian Standard *AS 1742.3 – 2009: Manual of Uniform Traffic Control Devices, Part 3: Traffic Control for Works on Roads*, being ‘an arrangement of temporary signs and devices to warn traffic and guide it through or past a work area or temporary hazard’.

‘traffic management plan’ means the details of proposals for the management of traffic, including any relevant traffic guidance scheme and standard operating procedures that relate to the management of traffic during the conduct of works on roads (whether on the roadway, shoulder or roadside). Section 99A(4)(a) of the **Road Safety Act 1986** requires that a traffic management plan ‘comply with the prescribed requirements’ of any relevant Regulations, being the *Road Safety (Traffic Management) Regulations 2009*.

‘works manager’ has the same meaning as defined in section 3(1) of the **Road Management Act 2004**, being ‘any person or body that is responsible for the conduct of works in, on, under or over a road’ (e.g. a road authority, contractor or sub-contractor for a road authority or utility or provider of public transport, a plumber acting alone or as an agent of a utility, or workers operating on the roadside).

‘worksite’ has the meaning as generally used in the Australian Standard *AS 1742.3 – 2009: Manual of Uniform Traffic Control Devices, Part 3: Traffic Control for Works on Roads*, being ‘an area which includes the work area(s) and any additional length of road required for advance signing, tapers, side-tracks, or other areas needed for associated purposes’.

- (3) Where there is an inconsistency between a provision of this Code and the Australian Standard (or any other document) incorporated into this Code, then the provisions of this Code shall prevail.
- (4) References to Australian Standards (or any other documents) that are applied, adopted or incorporated in this Code are references to that Australian Standard (or other document) as amended from time to time.
- (5) This Code is to be interpreted in accordance with the **Interpretation of Legislation Act 1984** as if it were a subordinate instrument within the meaning of that Act.

6. Legal effect of the Code

- (1) The legal effect of a Code of Practice is set out in section 24(4) and section 27 of the Act.
- (2) A Code of Practice is admissible in evidence in any proceeding to which the Act or section 99A of the **Road Safety Act 1986** applies.

PART 1 – WORKSITE SAFETY – TRAFFIC MANAGEMENT**Division 1 – Introduction****7. Preliminary**

- (1) This Code incorporates the Australian Standard *AS 1742.3–2009: Manual of Uniform Traffic Control Devices, Part 3: Traffic Control for Works on Roads* ('AS 1742.3-2009'). The provisions of AS 1742.3-2009 are varied only to accommodate relevant Victorian legislation or to include particular work practices which have been fully investigated and evaluated. This Code also amplifies some provisions of AS 1742.3-2009 to assist in its application.
- (2) It is vital to constantly review the management of traffic (e.g. passenger, commercial and public transport vehicles, motorcycles, cyclists, pedestrians and persons with disabilities) in relation to the general principles of this Code. These principles and guidelines have been established in recognition of driver performance factors, information needs, and the safety of workers, and should be observed in planning, designing, installing, operating and removing any traffic management arrangements for works on roads.
- (3) The requirements of this Code may apply where activities on land abutting a road reserve (e.g. civil or commercial construction works, tradesman activities) result in the use of, or restrict the use of, the roadway or roadside. However, it is not intended that the Code would apply to normal delivery of goods to abutting land, or the conduct of non-road activities (events) on roads.

8. Reference Documents

The documents referenced in this Code are listed in Appendix A.

9. Responsibility for Approval to Conduct Works on Roads

The **Road Management Act 2004** requires any person proposing to conduct works in, on, under or over a road to obtain the written consent of the coordinating road authority, except where an exemption applies. Part 2 of Schedule 7 of the Act sets out the powers and responsibilities of the coordinating road authority in considering any such works proposal.

10. Responsibility for Conducting Works on Roads and Traffic Management

- (1) The responsible road authority, 'infrastructure manager'¹ or 'works manager'¹ is responsible for the conduct of the works, the management of traffic, and the safety of all road users and persons engaged in the carrying out of such works in accordance with the **Road Management Act 2004** and section 99A of the **Road Safety Act 1986**.

Note: 1 – refer to definitions in clause 5 of this Code.

- (2) Responsibility for planning, designing, auditing and implementing traffic management plans and traffic guidance schemes for works on roads, and conducting the works, should be clearly established and documented in an arrangement between the various parties responsible for the subject works.
- (3) The infrastructure manager has the following responsibilities –
 - (a) clearly define the scope of, and any relevant contractual requirements for, the works.
 - (b) carry out audit and surveillance on the works manager.
 - (c) review, as appropriate, what has been provided.
 - (d) specify management system requirements.

- (4) The works manager (being the person or body responsible for the conduct or carrying out of the works) has the following responsibilities –
- (a) ensure that the traffic is managed at the worksite through the preparation and operation of a traffic management plan, including a traffic guidance scheme if required.
 - (b) ensure that risk or hazard assessments are carried out and hazard control measures are identified and implemented for each worksite or each generic worksite.
 - (c) obtain any necessary approvals or authorisations for the works (refer clause 9 of this Code) and/or the use of certain traffic control devices² (e.g. temporary roadworks speed limit signs, portable traffic signals – refer clause 16 of this Code).
 - (d) manage traffic engineers, road safety auditors and sub-contractors.
 - (e) carry out, where appropriate, compliance audits, road safety audits and surveillance on itself or its sub-contractors.
 - (f) ensure traffic control devices are used for their intended purposes.
 - (g) ensure the minimisation of health and safety hazards and risks to others and/or himself/herself arising from the works.
 - (h) comply with any special safety requirements when working in the immediate vicinity of rail infrastructure or rolling stock.
 - (i) comply with any relevant contractual requirements.

Note: 2 – the term ‘traffic control device’ as used in this Code has the same meaning as defined in the *Road Safety (Traffic Management) Regulations 2009*, being a traffic sign, road marking, traffic signals, or other device, to direct or warn traffic on, entering or leaving a road (as defined in the Road Rules), and also includes a road hump.

11. Duty of Care

- (1) Section 99A of the **Road Safety Act 1986** requires that any person conducting, or proposing to conduct works on a road ‘must ensure that the works ... are conducted in a manner that is safe for road users and persons engaged in carrying out the works ...’.
- (2) Further, any person responsible for conducting works on a road that is open to traffic has a duty of care under common law to take all reasonable measures to prevent accident or injury to persons carrying out the works and also to members of the public using the road.
- (3) The **Occupational Health and Safety Act 2004** places a duty of care on employers to provide, and maintain for employees, a workplace that is safe and without risks to health. The **Occupational Health and Safety Act 2004** also places duties on persons in management and control of a workplace to ensure that the workplace is safe and without risks to health.
- (4) Further to clause 11(3) above, the *Occupational Health and Safety Regulations 2007* require that –
 - (a) an employer must eliminate any risk to health or safety associated with construction work³, so far as is reasonably practicable⁴.

Note: 3 – the *Occupational Health and Safety Regulations 2007* define ‘construction work’ as ‘any work performed in connection with the construction, alteration, conversion, fitting out, commissioning, renovation, refurbishment, decommissioning, or demolition of any building or structure, or any similar activity’.

Note: 4 – the test for what is ‘reasonably practicable’ is an objective test i.e. a person is to be judged by the standard of behaviour expected of a reasonable person in the duty-holder’s position who is required to comply with the same duty and is:

- committed to providing the highest level of protection for people against risks to their health and safety.
- proactive in taking measures to protect the health and safety of people.

The WorkSafe Guideline, *How WorkSafe applies the law in relation to Reasonably Practicable*, November 2007 contains more information on determining what is 'reasonably practicable'.

- (b) if it is not reasonably practicable to eliminate a risk to health or safety associated with construction work, the employer must reduce that risk so far as is reasonably practicable by implementing controls in accordance with the hierarchy of safety control principles as described in clause 22 of this Code.
- (5) Division 4A of Part 4 of the Act requires, in summary –
- (a) road authorities, infrastructure managers, works managers and works contractors to ensure safety so far as is reasonably practicable when works are carried out on or in the immediate vicinity of rail infrastructure or rolling stock. These duties are based on duties contained in the **Rail Safety Act 2006**; and
 - (b) owners or occupiers of rail land and infrastructure, and relevant providers of public transport, to be notified in advance of works being carried out that will or are likely to threaten the safety of rail infrastructure or rolling stock.
- Further information on aspects of working in the vicinity of rail infrastructure can be found at clause 79 of this Code.
- (6) The duties of care as referred to in this clause should be exercised in addition to all other duties and responsibilities relevant in conducting the works.
- (7) Road users, in accordance with section 17A of the **Road Safety Act 1986**, have an obligation to drive safely having regard to the physical characteristics of the road, weather and traffic conditions, and to avoid unreasonable risks to other road users.

12. Records Management

- (1) When undertaking works on a road, records of the traffic management plan, and any written authorisation for the erection of certain traffic control devices, should be kept by the person responsible for the works (e.g. the contractor or works manager) (refer clause 16 of this Code). This record should include details of the arrangement and use of all traffic control devices (e.g. when and where temporary roadworks speed limit signs are displayed or changed, what out-of-hours signing arrangements are used) in accordance with the traffic management plan (and any relevant traffic guidance scheme). In addition, the reasons why a higher level of control against risks was not adopted should be recorded and filed for future reference.
- (2) The details of any changes to a traffic management plan (or traffic guidance scheme) made during the conduct of the works should also be recorded and filed. Records should be kept of any traffic related incident or accident that occurred during the works, and of audit and surveillance activities undertaken. *Appendix A: Daily Routine Tasks and Record Keeping* of AS 1742.3-2009 provides guidance on the keeping of such records. These records may be required as evidence in legal proceedings and will greatly assist in establishing pre-existing worksite conditions on which claims for damages are usually based.
- (3) As a general rule, any such records maintained by a road authority, infrastructure manager or works manager conducting works on a road should be kept for the legal period required for particular records concerned, or if a public record, in accordance with the **Public Records Act 1973**.
- (4) The *Road Safety (Traffic Management) Regulations 2009* require that a copy of the traffic management plan (including a traffic guidance scheme if required) must be kept at the worksite at all times when workers are present. Copies of all necessary written authorisations as required for the erection of certain traffic control devices should also be kept at the worksite.

13. Traffic Management Plans

- (1) The management of traffic is an essential requirement of any work undertaken on roads (whether on the roadway, shoulder or roadside). The objectives of traffic management are to –
 - (a) provide a safe environment for all persons working on, and traffic travelling along, roads;
 - (b) minimise the impact of the works on traffic and adjacent landowners/occupiers;
 - (c) minimise delays to train, tram or bus services (and where possible, give priority to public transport), and minimise interference with people’s ability to access a train, tram or bus;
 - (d) cater for the needs of all road users; and
 - (e) communicate the arrangements for, and impacts of, any activities affecting traffic.
- (2) Section 99A(3)(a) of the **Road Safety Act 1986** requires any person conducting works on a road to ‘have in operation a traffic management plan’, while section 99A(4)(a) requires that a traffic management plan ‘comply with the prescribed requirements’ of any relevant Regulations, being the *Road Safety (Traffic Management) Regulations 2009*.
- (3) It should be noted that a traffic management plan provides the details of proposals for the management of traffic during the conduct of works on roads and normally includes a traffic guidance scheme, worksite hazard assessment (such as a Safe Work Method Statement), and details of the location, nature and duration of the works. A traffic guidance scheme shows the arrangement of temporary traffic control devices to warn traffic and guide it through, past or around a work area or temporary hazard.
- (4) A traffic management plan should include details of the requirements to manage traffic through the worksite outside normal working hours or when workers are not present at the site (after-care). This would include the removal or covering of any signs that are not applicable, particularly temporary worksite speed limits.
- (5) Where a standard diagram (e.g. as contained in any relevant Standards Australia documents or this Code) is used as a traffic guidance scheme, or forms part of a traffic management plan, the standard diagram should clearly identify any relevant variations necessary to relate the standard diagram to the specific conditions of the worksite.
- (6) In preparing a traffic management plan, especially for those works having a ‘worksite hazard rating’⁵ of ‘High’ as determined by the worksite hazard management process detailed in Part 2 of this Code, consideration should be given to the following matters where relevant (in addition to any prescribed requirements) –
 - (a) the safety of the workers at the worksite and the public passing through or adjacent to the worksite.
 - (b) overall strategy for the management of traffic, including traffic staging methodology during various stages of the work.
 - (c) arrangement of traffic control devices for each stage of the works.
 - (d) arrangement and number of traffic controllers required for each stage of the works.
 - (e) emergency access – for both workers and any emergency services vehicles travelling through the worksite.
 - (f) any unusual hazards or job specific requirements e.g. nearby school or access to shops.

- (g) use of alternative routes as required.
- (h) provision for over-dimensional vehicles.
- (i) provision of safe passage for pedestrians, cyclists and people with disabilities.
- (j) provision for, and impact on, public transport (e.g. delay to buses/trams, restrictions on passenger access to bus or tram stops, potential for traffic to queue across an adjacent railway crossing), including where possible, priority for public transport.
- (k) provision for access to abutting properties.
- (l) duration and times for conducting the works (e.g. day or night operation).
- (m) traffic management arrangements at the worksite outside normal working hours or when workers are not present at the site (after-care).
- (n) arrangements to address and monitor the risk of end-of-queue collisions due to a build up of traffic at worksites.
- (o) emergency contact details.
- (p) communication arrangements.

Note: 5 – the *Occupational Health and Safety Regulations 2007* classify all construction work on or adjacent to roads used by traffic as ‘high risk construction work’ for which a Safe Work Method Statement (SWMS) is required (refer clause 19(1) of this Code). The ‘worksite hazard rating’ as determined by the worksite hazard management process detailed in Part 2 of this Code, however, provides guidance as to the degree of planning and experience required for the preparation of a traffic management plan (refer clauses 19 and 20 of this Code).

- (7) A traffic management plan should be prepared by a person who is suitably experienced and competent in traffic management (refer clause 15 of this Code), having regard to the nature and complexity of the works, and the type of traffic management plan required. Consultation with workers who have experience in working on trafficked worksites can be beneficial in ensuring that a practicable traffic management plan is prepared.
- (8) Where a traffic management plan proposes the use of certain traffic control devices as part of the subject works that require a written authorisation, a copy of the traffic management plan should be included with the authorisation application for the use of those traffic control devices (refer clause 16 of this Code).

14. Audit and Surveillance

- (1) Audit and surveillance activities undertaken by a responsible road authority or an infrastructure manager (as represented in clauses 9 and 10 of this Code) should focus on the surveillance of works activities performed by the works manager, together with audits of the works manager’s management systems and procedures for the conduct of the works (e.g. worksite safety, OH&S, records management).
- (2) The works manager should ensure that audits of any traffic management plans (and relevant traffic guidance schemes) are undertaken to achieve worksite safety. The audits may include –
 - (a) Compliance Audits – these audits, which are undertaken to verify compliance with a traffic management plan when in operation, should be carried out with a frequency that has regard to the level of safety hazards as identified through the worksite hazard management process as described in Part 2 of this Code. On works that take less than one week, a sample of traffic management plan compliance audits should be undertaken by the works manager to give confidence of satisfactory performance. The number of sample audits to be undertaken should have regard to the likely safety hazards associated with the works.

-
- (i) When to Audit – having regard to the nature and complexity of the works and associated safety hazards, consideration should be given to undertaking compliance audits at the following stages of the works –
- at the start of the works (including the process of erecting traffic control devices).
 - at each major change to the traffic management plan.
 - during both day and night operation for long term works.
 - whenever the operation of a traffic management plan results in unexpected significant disruptions to traffic.
 - at the request of the site safety committee or health and safety representative(s), or affected employees where no health and safety representative(s) exists.
- (ii) Items to Consider – when auditing compliance with a traffic management plan, and having regard to the nature and complexity of the works and associated safety hazards, consideration should be given to the following –
- safety of workers on the worksite, road users and the public.
 - signs, road markings, temporary safety barriers, lighting, and facilities for pedestrians, cyclists and people with disabilities.
 - traffic compliance with the implemented traffic management plan.
 - public transport operation through the worksite.
 - access to abutting properties.
 - effect of the works on surrounding land use (e.g. residential, commercial/industrial, car parking).
 - differences in weather conditions.
 - after-hours conditions.
 - traffic volumes (e.g. peak periods).
- (iii) A Worksite Safety – Traffic Management Checklist is included as Appendix B to this Code as a guide to reviewing the traffic management arrangements at a worksite.
- (b) Road Safety Audits – road safety audits, which are independent audits of the crash potential and safety performance of a traffic management plan during conduct of the works, should be performed on major or larger scale works, and works involving complex traffic arrangements or staging. These audits gauge overall safety performance and identify issues requiring resolution. These audits should be conducted by suitably qualified persons in accordance with the *Austroads Guide to Road Safety – Part 6: Road Safety Audit*.
- (i) When to Audit – consideration should be given to undertaking a road safety audit –
- following preparation of a traffic management plan and prior to the works commencing.
 - at each major change or stage in the traffic management arrangements as depicted in a traffic management plan.

- (ii) Items to Consider – when undertaking a road safety audit, consideration should be given to the following –
 - safety of workers on the worksite and road users.
 - speed of traffic and geometry of the road.
 - crash history of the worksite.
 - traffic volumes and composition (e.g. commercial vehicles).
 - appropriateness of temporary roadworks speed restrictions, signs, road markings, temporary safety barriers, lighting, and facilities for pedestrians and cyclists (during both day and night).
 - aspects of the traffic management arrangements that may confuse road users travelling through the worksite.
 - traffic compliance with the implemented traffic management plan.
 - public transport operation through the worksite.
 - risk of end-of-queue collisions.
- (3) Retrievable records of all audits (both compliance and road safety) should be kept as evidence of compliance with the requirements of this Code. All audits should be undertaken by persons with appropriate experience and competence in traffic management and/or road safety audits.

15. Training of Persons Involved in Traffic Management

- (1) Section 99A(3)(c) of the **Road Safety Act 1986** requires any person conducting works on a road to ‘engage appropriately trained and qualified persons to carry out the works or ... direct traffic’.
- (2) Personnel involved in traffic management and traffic control should, where applicable, possess a certificate, issued by a Registered Training Organisation accredited under the Australian Qualifications Framework to deliver the relevant training courses and competencies, evidencing completion of training in –
 - (a) Traffic Control – as a minimum requirement, only a person who has undertaken a course in traffic control (e.g. VBQU506 – Use Stop/Slow Bat to Control Traffic, or equivalent) or an appropriate refresher course (within the last three (3) years) should act as a traffic controller.
 - (b) Traffic Guidance Schemes – as a minimum requirement, only a person who has undertaken a course in implementing traffic management plans (e.g. VBQU507 – Implement and Monitor Operational Traffic Management Plans, or equivalent) or an appropriate refresher course (within the last three (3) years) should set out, implement, monitor and/or make minor modifications (as a result of any review conducted in accordance with clause 25 of this Code) to a traffic guidance scheme as required by a traffic management plan.
 - (c) Traffic Management Plans – as a minimum requirement, only an experienced Traffic Engineer or works manager who has either undertaken a course in traffic management planning (e.g. RIICC503A – Prepare Work Zone Traffic Management Plans, or equivalent), or has at least two (2) years experience in preparing traffic management plans, should prepare, approve, review and/or make modifications (as a result of any review conducted in accordance with clause 25 of this Code) to traffic management plans (including the worksite hazard assessment).
- (3) It is highly desirable that all personnel involved in traffic management and traffic control attend an appropriate refresher training course every three (3) years following receipt of an initial certificate.

- (4) Personnel involved in traffic management and traffic control should only perform those tasks for which they have the appropriate training.
- (5) It is also desirable that amongst the personnel at any worksite, there is a person(s) with the appropriate levels of first aid and occupational health and safety training.

16. Memorandum of Authorisation

- (1) Various written authorisations are required for the erection of certain traffic control devices at worksites in accordance with Regulations made under the **Road Safety Act 1986**. To ascertain the requirements in relation to the erection of traffic control devices by any person conducting works on a road, reference should be made to the *Road Safety (Traffic Management) Regulations 2009*.

- (2) A written authorisation⁶ as required under the *Road Safety (Traffic Management) Regulations 2009* is provided through the submission of an application to VicRoads or the relevant municipal Council as appropriate. Appendix D of this Code provides an example of a typical application for a written authorisation. An application for a written authorisation should include the traffic management plan (including any relevant traffic guidance scheme) for the subject works, setting out the details for the proposed use of those traffic control devices for which authorisation is sought.

Note: 6 – a written authorisation issued under the *Road Safety (Traffic Management) Regulations 2009* does not constitute consent to conduct any works within the road reserve as required under the **Road Management Act 2004** (refer clause 9 of this Code).

- (3) A works manager for utility⁷ or provider of public transport works is empowered under the *Road Safety (Traffic Management) Regulations 2009* to erect, display, place, remove or alter the following traffic control devices, provided it is for the purposes of ‘authorised works’⁸ –

- (a) works advisory devices – any device that provides warning or advice to drivers or pedestrians in relation to the works, but not regulatory signs. This includes –
 - (i) warning signs with a yellow background;
 - (ii) warning signs with a fluorescent red-orange background;
 - (iii) road humps; and
 - (iv) cones and bollards.
- (b) hand held Stop signs.
- (c) work zone parking signs.
- (d) temporary works speed limit signs (as defined in the *Road Safety (Traffic Management) Regulations 2009*) displaying a speed limit of 40 km/h or more.

All other traffic control devices require authorisation from VicRoads before being used on worksites by utilities or providers of public transport. This includes temporary works speed limit signs for speeds less than 40 km/h and traffic signals.

Note: 7 – ‘Utility’ includes water, electricity, gas and telecommunications.

Note: 8 – ‘Authorised works’ are works that have the consent of the coordinating road authority under clause 16(5) of Schedule 7 to the **Road Management Act 2004**, or are exempt from that consent under section 63(2) of that Act.

- (4) Councils and other entities responsible for roads are empowered under the *Road Safety (Traffic Management) Regulations 2009* to erect, display, place, remove or alter the following traffic control devices, for the purposes of temporary works on the roads or parts of roads for which they are the responsible road authority –
 - (a) minor traffic control devices.
 - (b) temporary works speed limit signs displaying a speed limit of 40 km/h or more.

All other traffic control devices (including all major traffic control devices) require authorisation from VicRoads before being used on worksites. This includes temporary works speed limit signs for speeds less than 40 km/h and traffic signals.

- (5) Authorisation for the use of the traffic control devices as referred to in clauses 16(3) and 16(4) above can be in the form of a Memorandum of Authorisation or by way of an instrument of delegation. An authorisation from VicRoads can be issued with conditions.
- (6) The works manager responsible for the roadworks should keep detailed records of the use of traffic control devices on the worksite (e.g. where and when temporary works speed limit signs or portable traffic signals are in operation).

PART 2 – WORKSITE HAZARD MANAGEMENT PROCESS

Division 1 – Introduction

17. General

- (1) The *Occupational Health and Safety Regulations 2007* require the preparation of a Safe Work Method Statement to identify all hazards and risks to health and safety for high risk construction work (refer clause 19 of this Code). *Section 2.2.3: Risk Management* of AS 1742.3-2009 describes a risk assessment process that should be carried out on each worksite. The risk assessment should include the identification and analysis of all safety hazards likely to arise during the works in the (i) Planning; (ii) Setting Up; (iii) Operating; (iv) Changing; and (v) Dismantling phases of a traffic management plan.
- (2) The general road environment is not free of risks or hazards, even without any works. Accordingly, the level of risk that is considered to be tolerable will depend on the actual conditions at each individual worksite and the surrounding environment.
- (3) For all works within the road reserve, a systematic approach is necessary to identify the hazards and risks to health and safety, to prioritise the critical risks from the lesser risks, identify effective measures to control those risks that may have an undesired or unexpected outcome, and to describe the manner in which the hazard control measures are to be implemented. It is considered important that consultation should form an integral part of this systematic approach to hazard management at a worksite.
- (4) This Part sets out a methodology for the hazard based assessment of worksite conditions. The broad approach is shown in Figure 1.

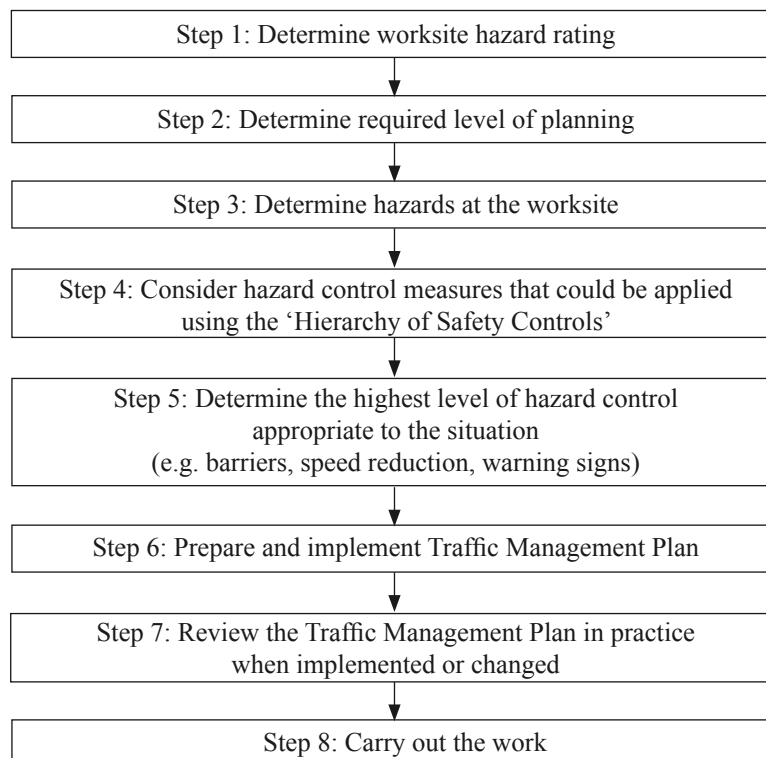


Figure 1: Hazard Assessment Methodology

Division 2 – Process for Determining Worksite Conditions**18. General**

- (1) The normal approach to risk assessment requires consideration of the likelihood of an event occurring and the consequences should the event occur. These two factors, when combined, give an indication of the level of risk.
- (2) For worksite traffic management, the major risks are –
 - (a) speed of traffic adjacent to or through the worksite.
 - (b) clearance between moving traffic, workers and roadworks plant and equipment.
 - (c) traffic volume and vehicle composition.
 - (d) geometry of the worksite, and approaches to the worksite.
 - (e) duration of the works (both short and long term).
- (3) Other factors that should be considered include the type of work being carried out, time of day, sight distance, weather (including the likelihood of fog), presence of pedestrians or cyclists, traffic queues at worksites or major changes in local conditions during the course of the works.
- (4) Clauses 19 to 26 below provide a structured approach to identifying hazards and determining appropriate mitigation measures using a ‘hierarchy of safety controls’.
- (5) For example, a major risk at any worksite (whether located on the roadway or roadside) is where an errant vehicle runs out of control and collides with workers or roadworks plant or equipment at the worksite, or another vehicle or person passing through the worksite. Such an occurrence may cause injuries to workers on the worksite, the vehicle occupants, or pedestrians or cyclists travelling through the worksite. Every effort should be made to eliminate or reduce the likelihood of such an occurrence.
- (6) The Worksite Hazard Assessment Checklist, included as Appendix C in this Code, can be used to document the process followed in undertaking the hazard assessment of a particular worksite.

19. Step 1 – Determine Worksite Hazard Rating

- (1) The *Occupational Health and Safety Regulations 2007* classify all construction work on or adjacent to roads used by traffic as high risk construction work⁹. These Regulations require that a Safe Work Method Statement¹⁰ be prepared for all such works.

Note: 9 – ‘high risk construction work’ includes, amongst other things, construction work:

- where there is a risk of a person falling more than 2 metres.
- on or adjacent to roadways or railways used by road or rail traffic.
- at workplaces where there is any movement of powered mobile plant.
- in, over or adjacent to water or other liquids where there is a risk of drowning.
- involving a trench or shaft if the excavated depth is more than 1.5 metres.

Note: 10 – a ‘Safe Work Method Statement’ is defined as a document that:

- identifies work that is high risk construction work; and
- states the hazards and risks to health or safety of that work; and
- sufficiently describes measures to control those risks; and
- describes the manner in which the risk control measures are to be implemented.

- (2) This Code recommends that every individual worksite be assessed to determine a ‘worksite hazard rating’ based on consideration of the main risk factors present at the worksite. This ‘worksite hazard rating’ is intended to provide an overall assessment of the risk of an event involving road users or workers occurring within the worksite if there were no protective measures in place.
- (3) Determination of the ‘worksite hazard rating’¹¹ will enable a decision to then be made on the extent of planning and detail required for a traffic management plan as set out in Step 2 of this worksite hazard management process.

Note: 11 – the ‘worksite hazard rating’ should, wherever reasonably practicable and having regard to the nature of the works and the road on which they are taking place, result from an actual physical inspection of the proposed worksite.

- (4) The major factors in assessing the hazard rating of a worksite are the road type, speed limit and clearance between the traffic and workers on the worksite. Table 1 provides a guide for assessing the hazard rating of the worksite.

Clearance to Traffic					
	Clearance Between Traffic and Workers				
	<1.2m	1.2m–3.0m	3.0m–6.0m	6.0m–9.0m	> 9.0m
Permanent Speed Limit and Road Type	40km/h				
	Local Traffic Road	L	L	L	L
	Collector Road or Rural Arterial ‘C’ Road	L	L	L	L
	Secondary Road or Rural Arterial ‘A’ and ‘B’ Road	L	L	L	L
	Arterial Road (urban area) and Rural ‘M’ Road	H	L	L	L
	50 km/h				
	Local Traffic Road	L	L	L	L
	Collector Road or Rural Arterial ‘C’ Road	L	L	L	L
	Secondary Road or Rural Arterial ‘A’ and ‘B’ Road	H	L	L	L
	Arterial Road (urban area) and Rural ‘M’ Road	H	L	L	L
	60 km/h or 70 km/h				
	Local Traffic Road	H	L	L	L
	Collector Road or Rural Arterial ‘C’ Road	H	L	L	L
	Secondary Road or Rural Arterial ‘A’ and ‘B’ Road	H	H	L	L
	Arterial Road (urban area) and Rural ‘M’ Road	H	H	H	L
	80 km/h or 90 km/h				
	Local Traffic Road	H	H	H	L
	Collector Road or Rural Arterial ‘C’ Road	H	H	H	L
	Secondary Road or Rural Arterial ‘A’ and ‘B’ Road	H	H	H	L
	Arterial Road (urban area) and Rural ‘M’ Road	H	H	H	H
Freeway (Urban)	H	H	H	H	
100 km/h or 110 km/h					
Local Traffic Road	H	H	H	H	
Collector Road or Rural Arterial ‘C’ Road	H	H	H	H	
Secondary Road or Rural Arterial ‘A’ and ‘B’ Road	H	H	H	H	
Arterial Road (urban area) and Rural ‘M’ Road	H	H	H	H	
Freeway (Urban)	H	H	H	H	

- Local Traffic Road – (e.g. shown brown in Melway or thin black in Country Directory)
- Collector Road – (e.g. shown grey in Melway) or Rural Arterial ‘C’ Road
- Secondary Road – (e.g. shown orange in Melway) or Rural Arterial ‘A’ and ‘B’ Road
- Arterial Road (urban area – e.g. shown black and red in Melway) and Rural ‘M’ Road
- Freeway (urban area – e.g. shown green or blue in Melway)

Note: The rural ‘M’, ‘A’, ‘B’ and ‘C’ road types are as indicated on road signs.

L: Low Worksite Hazard Rating

H: High Worksite Hazard Rating

Table 1: Guide for Assessing Worksite Hazard Rating

20. Step 2 – Determine Required Level of Planning

- (1) The level of planning required in preparing a traffic management plan at a worksite to eliminate or reduce the risk level is dependent on the expected worksite hazard rating and any prescribed requirements as detailed in the relevant Regulations (refer clause 13 of this Code).
- (2) The level of experience and competence required of the person preparing, approving, reviewing or modifying a traffic management plan (refer to clause 15 of this Code) for the worksite is related to the expected worksite hazard rating. As a general guide –
 - (a) Expected worksite hazard rating: High – a site specific traffic management plan (including any relevant traffic guidance scheme) should be prepared by a person suitably experienced and competent in traffic management and discussed with and communicated to those on the worksite. The traffic management plan (to be prepared with due regard to this Code and any occupational health and safety requirements) should also be reviewed by a person appropriately trained and qualified in traffic management, and where necessary, road safety audits.
 - (b) Expected worksite hazard rating: Low – a traffic management plan (including any relevant traffic guidance scheme) should be prepared under the supervision of, and/or reviewed by, a person suitably competent and experienced in traffic management, with due regard to this Code, and any occupational health and safety requirements. This traffic management plan could comprise a standard diagram together with a safe operating procedure or a site plan.
- (3) The traffic management plan (and the associated worksite hazard assessment) for works conducted on roads would normally be included as part of a Safe Work Method Statement (SWMS) where this is required under the *Occupational Health and Safety Regulations 2007* (refer clause 19 of this Code). It is noted, however, that a SWMS should not only deal with safe traffic management practices but comprise a full statement of hazards, control measures and safe work practices to address all health and safety issues at the worksite.
- (4) Notwithstanding the expected worksite hazard rating determined by application of Step 1 (refer clause 19 of this Code), a detailed assessment of the hazards at the worksite and the appropriate measures required to reduce them must be undertaken in accordance with the provisions of this Code. This may result in the worksite having a higher hazard rating than initially expected.

21. Step 3 – Determine Hazards at the Worksite

- (1) Before any detailed evaluation is made of the hazards involved at a worksite, consideration should be given to what situations might cause these hazards to occur. Table 2 (which is not exhaustive) lists some of the possible causes and the resultant hazards, with other issues to be identified on a site specific basis.

CONSEQUENCES	POSSIBLE HAZARDS	POSSIBLE CAUSES
<ul style="list-style-type: none"> ▪ Injury to worker ▪ Injury to vehicle occupants or motorcyclists ▪ Injury to pedestrians or cyclists ▪ Damage to vehicles or equipment ▪ Damage to infrastructure 	<ul style="list-style-type: none"> ▪ Penetration of worksite by a vehicle ▪ Worker straying onto roadway or clear zone ▪ Collision with obstacles on worksite ▪ Failure to navigate through the worksite ▪ End-of queue collision ▪ Works vehicle impacting with motorists or motorcyclists ▪ Obstacles on worksite ▪ Vehicle approach speed too high ▪ Driver loss of control of the vehicle 	<ul style="list-style-type: none"> ▪ Failure to observe work signs ▪ Failure to navigate through the worksite ▪ Inadequate controls ▪ Failure to comply with controls ▪ Inadequate delineation ▪ Inadequate clearance ▪ Inadequate procedures ▪ Untidy worksite ▪ Worksite left unattended ▪ Improper attention given to motorists or motorcyclists ▪ Poor signing ▪ Inappropriate signing ▪ Heavy traffic or lengthy delays ▪ Inadequate sight distance ▪ Long traffic queues ▪ Inadequate signing ▪ Inadequate instructions for workers ▪ Improper attention given to the needs of pedestrians/cyclists ▪ Inappropriate route through or past worksite ▪ Inadequate separation from other traffic ▪ Insufficient number of traffic controllers ▪ Poor visibility.

Table 2: Examples of Worksite Hazards

- (2) A detailed consideration of all relevant hazards should be undertaken to be able to determine the appropriate control measures required to reduce the level of risk. The methodology, as set out in clause 22 of this Code, is based on the standard approach known as the ‘Hierarchy of Safety Controls’.
- (3) In all situations, workers on the worksite should wear personal protective equipment (i.e. as a minimum, a high visibility garment that meets the requirements of *AS/NZS 4602-1999: High Visibility Safety Garments* (‘AS/NZS 4602-1999’), with such equipment appropriate to the viewing conditions (e.g. day or night). In addition, other appropriate personal protective clothing (e.g. safety helmet, safety footwear) (refer also to Part 6, Division 1 of this Code) should be worn.

22. Step 4 – Consider Hazard Control Measures that Could be Used – Hierarchy of Safety Controls

- (1) The *Occupational Health and Safety Regulations 2007* require that if it is not reasonably practicable to eliminate a risk to health or safety associated with construction work, the employer must reduce that risk so far as is reasonably practicable by implementing controls in accordance with a Hierarchy of Safety Controls (refer clause 11(4)(b) of this Code). This Hierarchy of Safety Controls approach considers (in the order listed below) the following –
 - (a) Hazard Elimination/Substitution – Can the hazard be eliminated (e.g. divert the traffic away from the worksite) or can the road be closed for the duration of the works? Can a sidetrack be installed?
 - (b) Isolation/Engineering Controls – Can safety barriers be installed? Can the clearance to the worksite be increased? What engineering measures or protective devices can be implemented to either eliminate or control the hazard (e.g. installation of safety barriers, lane closures, reversible (contra) traffic flow, portable traffic signals, crash attenuators or vehicle crash attenuators, use of escort (pilot) vehicles)?
 - (c) Is there a combination of the above control measures that could be implemented to reduce the level of hazard at the worksite?
 - (d) Administrative/Behavioural Controls – if the Hierarchy of Safety Control measures as identified in subclauses (a), (b) and (c) above have been complied with and a risk to health and safety remains, then administrative/behavioural controls must be used as follows –

What can be done to adjust the behaviour of traffic travelling through the worksite (e.g. speed restrictions, signage, traffic controllers, Variable Message Signs (VMS), delineation of travel path)? Can the work be more safely undertaken at night?
 - (e) Personal Protective Equipment – if the Hierarchy of Safety Control measures as identified in subclauses (a), (b), (c) and (d) above have been complied with and a risk to health and safety remains, then personal protective equipment must be used as follows –


What personal protective equipment can be used to reduce the level of hazard at a worksite? High visibility clothing is considered in more detail in Part 6, Division 1 of this Code.
- (2) When investigating how to manage risks or hazards and keep a safe worksite, so far as is reasonably practicable, consideration should be given to –
 - (a) the severity of the hazard or risk.
 - (b) the state of knowledge about that hazard or risk.
 - (c) the nature of the works (e.g. long term or short term).
 - (d) the availability and practicability of control measures (hierarchy of safety controls).
 - (e) the cost of removing or mitigating that hazard or risk.
- (3) In considering the hazard control measures that could be used at the worksite, it should be recognised that there is often a need to satisfy competing objectives such as –
 - (a) maximising the safety of workers;
 - (b) maximising the safety of all road users;
 - (c) minimising the delay to traffic (including public transport) and the attendant costs incurred; and
 - (d) managing the costs of the hazard control measures so that they relate to the costs of the associated works.

- (4) Table 3 provides guidelines to consider the various hazard/risk factors associated with each worksite and the control measures that may be implemented to eliminate or reduce the hazards using the hierarchy of safety controls. Note that Table 3 provides guidelines only, and does not necessarily list all hazards (e.g. prevailing weather conditions) that may occur at a particular worksite. The guidelines should be used as follows –
- (a) work through each of the hazard/risk factors listed on the left side of Table 3;
 - (b) identify whether that hazard/risk factor is present at the worksite (if the particular hazard is not listed in the table, consider the degree of hazard that it generates relative to those in the table to determine possible control measures that could be used); and
 - (c) consider the hierarchy of safety controls to determine necessary control measures to eliminate or reduce the hazard. Note that –
 - (i) more than one control measure can be used at each worksite.
 - (ii) if it is not reasonably practicable to implement one control measure¹², record the reason and go to the next step in the hierarchy of safety controls.

Note: 12 – in some situations, it may not be physically practicable to implement a particular recognised hazard control measure. This may be due to the short term duration of the works, the road width being insufficient for the location of the control measure, physical limitations due to the presence of frequent residential driveways, lack of available detour routes with sufficient traffic capacity, or the control measure will cause an unacceptable delay to a tram or bus service or prevent people from accessing a tram or bus.

- (5) Whilst it can be beneficial both in improving safety and reducing congestion to use local news media to advise drivers of the presence of the worksite and traffic management arrangements that apply, this cannot be considered as an alternative to implementing hazard control measures.

Table 3: Hazard Control Selection Table

<p>SAFETY HAZARD / RISK FACTORS</p> <p></p>	<p>HIERARCHY OF SAFETY CONTROLS</p> <p>Consider the practicability of control measures, from left to right. Select the most practicable given the circumstances and level of hazard. Record the reason if a higher-level control measure is not considered practicable.</p>		
	<p>ELIMINATION/ SUBSTITUTION</p>	<p>ISOLATION/ ENGINEERING</p>	<p>ADMINISTRATIVE (BEHAVIOURAL)</p>
<p>Clearance to Traffic (Lateral clearance between the nearest edge of a lane carrying traffic and the entire worksite, including all roadworks vehicles or equipment, and pedestrian workers)</p> <p>High Speed Traffic through Worksite</p>	<ul style="list-style-type: none"> Road closure Detour onto other roads Side track past the works 	<ul style="list-style-type: none"> Safety barriers Lane closure adjacent to work area Vehicle-mounted Attenuators 	<ul style="list-style-type: none"> Speed reduction Warning signs / VMS Delineation of travel path
<p>Poor Advance Sight Distance to Worksite (<200 metres)</p>	<ul style="list-style-type: none"> Road closure Traffic diversion past the works 	<ul style="list-style-type: none"> Safety barriers Lane closure adjacent to work area Portable traffic signals Vehicle-mounted Attenuators 	<ul style="list-style-type: none"> Speed reduction Warning signs / VMS Traffic controller Temporary road humps
<p>Poor Observance by Motorists of Directions / Instructions</p>	<ul style="list-style-type: none"> Road closure Traffic diversion past the works 	<ul style="list-style-type: none"> Vehicle-mounted Attenuators Lead and/or Tail vehicle(s) 	<ul style="list-style-type: none"> Extra advance warning signs / VMS Speed reduction Delineation of travel path
<p>Narrow Pavement Width with No Escape Route (< 2.9 metres width)</p>	<ul style="list-style-type: none"> Road closure Traffic diversion past the works 	<ul style="list-style-type: none"> Lane closure adjacent to work area Portable traffic signals 	<ul style="list-style-type: none"> Speed reduction Police presence on site Extra signs / VMS Temporary road humps Re-assessment of information provided
<p>Presence of Workers at the Worksite</p>	<ul style="list-style-type: none"> Road closure Traffic diversion past the works 	<ul style="list-style-type: none"> Safety barriers 	<ul style="list-style-type: none"> Speed reduction Delineation of travel path
<p>Excavation Adjacent to Traffic</p>	<ul style="list-style-type: none"> Road closure Traffic diversion past the works 	<ul style="list-style-type: none"> Safety barriers Increased separation from vehicular traffic Different construction method Safety barriers 	<ul style="list-style-type: none"> Speed reduction Warning signs Delineation of travel path and worksite Speed reduction Delineation of travel path

Presence of Unprotected Hazards within Clear Zone	<ul style="list-style-type: none"> Road closure Traffic diversion past the works 	<ul style="list-style-type: none"> Safety barriers 	<ul style="list-style-type: none"> Speed reduction Delineation of travel path
Rough or Unsealed Road Surface due to Roadworks	<ul style="list-style-type: none"> Road closure Traffic diversion past the works 		<ul style="list-style-type: none"> Speed reduction Warning signs / VMS
High Volume of Traffic through Worksite (> 10,000 vehicles per day)	<ul style="list-style-type: none"> Road closure Detour onto other roads Side track past the works 	<ul style="list-style-type: none"> Safety barriers Lane closure adjacent to work area Portable traffic signals 	<ul style="list-style-type: none"> Speed reduction
High Volume of Heavy Vehicles through Worksite	<ul style="list-style-type: none"> Road closure Detour onto other roads Side track past the works 	<ul style="list-style-type: none"> Safety barriers Lane closure adjacent to work area Portable traffic signals 	<ul style="list-style-type: none"> Speed reduction
Works Vehicles Entering / Leaving Worksite		<ul style="list-style-type: none"> Safety barriers Lane closure adjacent to work area Portable traffic signals 	<ul style="list-style-type: none"> Speed reduction Warning signs / VMS Delineation / control of access points
End-of-queue Build-up of Traffic / Poor Sight Distance to End-of-queue	<ul style="list-style-type: none"> Detour onto other roads Side track past the works 	<ul style="list-style-type: none"> Different construction method 	<ul style="list-style-type: none"> Speed reduction Warning signs / VMS
Cyclists / Pedestrians through Worksite	<ul style="list-style-type: none"> Alternative pathway 	<ul style="list-style-type: none"> Adequate separated or shared road space 	<ul style="list-style-type: none"> Speed reduction Warning signs / VMS Delineation from other traffic
Roadside Fuel Reduction Burning with Smoke over the Road.	<ul style="list-style-type: none"> Road closure Detour onto other roads 	<ul style="list-style-type: none"> Portable traffic signals Lane closure 	<ul style="list-style-type: none"> Smoke Hazard signs Speed reduction Warning signs / VMS

23. Step 5 – Determine the Hazard Control Measures to be Implemented

- (1) Having considered the nature of the works and identified all hazards from Table 3, determine the hazard control measures to be applied, in consultation with those who will be working on the worksite or supervising the works.
- (2) In general, the control measures implemented are likely to be a combination of the following –
 - (a) road closure.
 - (b) lane closures adjacent to the work area or traffic diversions.
 - (c) speed reduction for traffic travelling through the worksite.
 - (d) use of safety barriers.
 - (e) use of vehicle-mounted attenuators.
 - (f) use of warning signs.
 - (g) use of electronic Variable Message Signs (VMS).
 - (h) high visibility clothing for all workers.
 - (i) various other measures.
- (3) Road Closure
 - (a) In situations where traffic volumes are low and an alternative route is available, it may be possible to close the road for all or part of the duration of the works. This would enhance the safety of both workers and the passing traffic. However, the prior approval of the relevant road authority or authorities responsible for both the road to be closed and the alternative route(s) is required.
 - (b) In some circumstances, it may be possible to close the road to general traffic but still permit certain classes of vehicle (eg trams, over-dimensional vehicles or emergency vehicles) to pass through the work area under appropriate controls. In this case, the approval of the authority responsible for the operation of a specific class or classes of vehicle must also be obtained (e.g. tram or bus).
- (4) Lane Closures Adjacent to the Work Area or Traffic Diversions
 - (a) Lane closures adjacent to the work area or traffic diversions can provide effective ways of increasing the separation between workers on or near a road, and the passing traffic. This can allow the works to be undertaken more efficiently and permit traffic to pass through or around the worksite at higher speeds.
 - (b) However, it should be appreciated that if the lane closures result in extensive traffic congestion or unsafe traffic conditions (e.g. potential for end-of-queue collisions or traffic to queue across a rail crossing), or the diversions require large numbers of vehicles to travel over lengthy detours or along unsuitable roads, the community cost of such measures can be quite considerable.
 - (c) *Section 4.8.2: Lane Closures* of AS 1742.3-2009 sets out recommended taper lengths for lane closures on two-lane two-way and multi-lane roads. In addition to lane closures, lane widths to be provided through or past a worksite should generally be a minimum of 3.0 metres for traffic speeds up to 60 km/h and 3.5 metres for higher speeds, unless the exceptions as set out in *Section 4.13.3 Lane Widths* of AS 1742.3-2009 apply.
 - (d) Where a traffic diversion is proposed, pre-planning for the works should give consideration to the suitability of the alternative detour route to accommodate the volume and type of traffic expected to be diverted, and appropriate provision for pedestrians and cyclists.
 - (e) Note that the partial or full closure of a freeway or arterial road needs the written approval of VicRoads.

- (5) Speed Reduction Through Worksite
- (a) Worksite speed limits should conform to the general speed management policies and practices expected by the community. Accordingly, speed limits should reflect the level of works or activity, inactivity, reduced road space and proximity of potential hazards. The speed limits should be consistent with driver expectations and not be unrealistic such that a significant number of road users do not comply. Clauses 68 and 69 provide guidelines on the establishment of speed limits through short term and long term worksites respectively.
 - (b) Where pedestrian workers are on the road within 1.2 metres of traffic and an unusual level of hazard is apparent, consideration could be given to lower than normal worksite speed limits (e.g. 30 km/h). However, such speed limits should only be used when their need is obvious to road users, and normally in conjunction with the use of a traffic controller. Further information on the authorisation requirements for the installation of any temporary roadworks speed limit signs is included in clause 16 of this Code. Further information on the use of speed limit signs is included in Part 5 of this Code.
- (6) Use of Safety Barriers
- Part 4, Division 3 of this Code is to apply where safety barriers are to be used on a worksite for the protection of both road users and workers. For short term – low impact works, the use of safety barriers are unlikely to be practicable, and in such cases other control measures (e.g. vehicle-mounted attenuators, speed reduction, warning signs, traffic cones) should be considered.
- (7) Use of Warning Signs
- (a) Having determined the hazard level, the type of temporary treatment required, and the speed limit through the worksite, the actual signing arrangement can then be determined.
 - (b) Reference should be made to AS 1742.3-2009 and this Code for typical signing arrangements.
 - (c) Warning signs, or other traffic control devices used at a worksite should be regularly inspected (both during the day and night where applicable) to ensure that they are still standing (or operating), are clearly visible to the road user at all times, and the sign faces are clean and legible.
- (8) Use of Electronic Variable Message Signs
- Part 6, Division 4 of this Code is to apply where electronic variable message signs (VMS) can be used at a worksite.
- (9) High Visibility Clothing
- Part 6, Division 1 of this Code is to apply where high visibility clothing is to be worn on a worksite.
- (10) Various Other Measures
- Other measures which could be considered are to be used in accordance with the recommendations of an experienced traffic engineer or an independent road safety auditor as appropriate, and used in a manner consistent with AS 1742.3-2009. Such measures may include –
- (a) lead and/or tail vehicles.
 - (b) pilot vehicles.
 - (c) vehicle mounted signs and devices (e.g. illuminated flashing arrow signs).
 - (d) sign trailers (e.g. speed sign trailers).
 - (e) look out person.

- (f) traffic cones and temporary bollards
- (g) vehicle-mounted attenuators.
- (h) temporary road humps.

24. Step 6 – Prepare and Implement Traffic Management Plan

- (1) Section 99A of the **Road Safety Act 1986** requires any person conducting works on a road to ‘have in operation a traffic management plan’. Clauses 13 and 20 (Step 2) of this Code provide guidance in the preparation of a traffic management plan.
- (2) In accordance with clause 20(3) of this Code, it may be sufficient to prepare a SWMS, including an appropriate traffic guidance scheme or standard diagram (rather than a specific traffic management plan) for some works with a low worksite hazard rating (e.g. short term – low impact or mobile works).
- (3) It is important that workers are made aware of both the existence and contents of the traffic management plan that applies to their worksite.

25. Step 7 – Review the Traffic Management Plan in Practice

- (1) **Implementation Review**
After the traffic management plan has been implemented, a review should be undertaken to ensure that it is operating as expected. This review should take place before work commences on site (refer also clause 14 of this Code).
- (2) **Further Reviews**
As the works progress and the requirements of the traffic management plan change, further reviews should be undertaken to ensure that the plan is operating as expected. These reviews should take place within two days of any change being made.

26. Step 8 – Carry Out the Work

The *Road Safety (Traffic Management) Regulations 2009* require that a copy of the traffic management plan, a hazard assessment and measures to control identified hazards must be kept at the worksite at all times when workers are present. In addition, all necessary written authorisations as required for the erection of certain traffic control devices should also be kept at the worksite when workers are present.

PART 3 – SHORT TERM WORKS**Division 1 – Introduction****27. General**

- (1) The works that are generally included within the meaning of ‘short term’ range from tasks that are undertaken from moving vehicles and works that can be conducted in gaps in traffic to those works that take place in one location for no more than one work shift.
- (2) If a detailed hazard assessment of the proposed short term worksite indicates that the level of risk cannot be tolerated, then the requirements for Long Term Works apply (refer Part 4 of this Code).
- (3) Whilst some of the traffic management measures normally used for fully protected longer term static worksites may not be required (because of possible work inefficiencies due to the short term, low impact or mobile nature of the works), a worksite hazard assessment should be undertaken to ensure that the proposed measures are appropriate for the safety of the particular worksite and workers (refer Part 2 of this Code). This hazard assessment should take into consideration factors such as traffic volume and speed, road geometry and width, and the general behaviour of road users. Table 3 of this Code provides guidance on the possible hazard control measures and traffic management treatments that could be provided for typical short term, low impact or mobile works on either the roadway, shoulder or roadside.
- (4) There are some differences in the traffic management measures that should be used for works in urban (or built-up) areas where traffic generally travels at lower speeds as compared with measures used in non-urban (or open road) areas where roads generally carry higher speed traffic. The definition used for urban area in this Code is the same as in the **Road Management Act 2004** (for example, a speed limit of 60 km/h or less applies).
- (5) In undertaking short term, low impact or mobile works as described in this Part, a works manager should give consideration to the following –
 - (a) the type of work or activity to be performed (refer clause 13 of this Code).
 - (b) the most appropriate traffic management plan required for the works (having regard to the worksite hazard management process as detailed in Part 2 of this Code).
 - (c) the location of all traffic control devices having regard to road geometry, terrain, vegetation, habitation and other conditions that affect visibility and sight distance.
 - (d) the order of erection of all signs and other traffic control devices (e.g. signs should be erected in the following order – (i) advance warning signs; (ii) condition warning signs; (iii) warning of plant/road worker signs; (iv) driving instruction guidance signs).
 - (e) the removal, or cover up, of permanent signs that conflict with temporary signs.
 - (f) the inspection of the worksite and all traffic control devices at the speed limit to apply at the worksite.
 - (g) the recording of the traffic management arrangements for the worksite.
 - (h) the adequacy of access to side roads and abutting property.
 - (i) the safe provision of access for pedestrians, cyclists and people with disabilities.
 - (j) the removal of all signs and other traffic control devices at the completion of the works (i.e. in the reverse order to their erection).

- (6) Subject to a hazard assessment not indicating otherwise, the requirements for short term – low impact works in this Part 3 of the Code can be applied to works on unsealed roads carrying less than 200 vehicles per day (refer *Section 4.5: Works on Unsealed Roads* of AS 1742.3-2009).

28. Typical Works

- (1) Table 4 lists examples of typical works that can be short term, low impact or mobile, and provides references to the sections of this Code where more details of the traffic management measures can be found. Table 4 below should be read in conjunction with Part 5: Speed Zones at Worksites of this Code.

Typical Works	Duration ¹³	Reference (in this Code)
Linemarking or pavement testing	Mobile works	See Part 3, Division 3
Street sweeping and garbage collection	Moving plant – frequently changing work area	See Part 3, Division 2
Mobile inspections (e.g. road, utility)	Continuously moving vehicle	See Part 3, Division 2
Grass cutting	Moving plant – frequently changing work area	See Part 3, Division 2
Litter collection	20 minutes or less	See Part 3, Division 2
Shoulder grading	Moving plant – frequently changing work area	See Part 3, Division 2
Traffic signals and roadside sign maintenance	20 minutes or less	See Part 3, Division 2
	Greater than 20 minutes and less than one working shift	See Part 3, Division 4
Pit cleaning or repair	20 minutes or less	See Part 3, Division 2
	Greater than 20 minutes and less than one working shift	See Part 3, Division 4
Pavement maintenance and repairs, shoulder resheet, sprayed seal works, asphalt works	20 minutes or less	See Part 3, Division 2
	Greater than 20 minutes and less than one working shift	See Part 3, Division 4
Survey works	20 minutes or less	See Part 3, Division 2
	Greater than 20 minutes and less than one working shift	See Part 3, Division 4
Emergency works	Making site safe	See Part 3, Division 7

Note: 13 – for works with a duration greater than that shown in the table, refer to Part 4 of this Code.

Table 4: Typical Works on Roads

(To be read in conjunction with Part 5: Speed Zones at Worksites of this Code.)

- (2) The worksite hazard rating (refer Part 2 of this Code) for short term, low impact and mobile works can be determined from experience with previous similar works, and the worksite hazard rating guide as provided in Table 1 of this Code. The worksite hazard rating determines the level of planning required to produce the traffic management plan (refer Part 2, Division 2 of this Code).

Division 2 – Short Term Low Impact Works**29. General**

- (1) These works generally comprise any of –
 - (a) works that take no longer than 20 minutes to complete and generally involve minimal plant and equipment and few workers (e.g. work between gaps in traffic, work in traffic); or
 - (b) works involving a frequently changing work area (e.g. grass cutting, shoulder grading, minor pavement maintenance, longitudinal survey work); or
 - (c) mobile inspections that generally involve an inspection vehicle travelling at a speed which is less than 20 km/h below the speed limit (e.g. gas leak detection vehicle).
- (2) Note that a worksite hazard assessment should be undertaken to determine whether the procedures as described in clauses 30 and 31 of this Code would adequately protect both road users and the workers (refer clause 17 of this Code). Additional information is provided in AS 1742.3-2009.
- (3) For mobile inspections, the following should apply –
 - (a) where the inspection vehicle travels on the roadway and maintains a speed which is less than 20 km/h below the speed limit, the vehicle should display at least one flashing light. No other protection is required. If the vehicle blocks or partially blocks a traffic lane continuously at speeds which are more than 20 km/h below the speed limit, it should operate within a mobile works convoy (see Part 3, Division 3 of this Code).
 - (b) where the inspection vehicle can operate by travelling along a shoulder or verge clear of traffic, then it may operate as a single vehicle with the display of at least one flashing yellow light.
 - (c) additional information about carrying out mobile inspections is provided in *Section 4.3.6: Mobile Inspections* of AS 1742.3-2009.
- (4) Where the works are wholly confined to the roadside (e.g. grass cutting), a warning device should be provided on the work vehicle and advance warning signs should be placed on the roadside at no more than 2 kilometre intervals. Care should be taken to move the warning signs as the site of the work moves along the road.
- (5) For works such as grass cutting which take place on a narrow median or roadside close to the edge of the roadway, the hazard assessment may indicate that it is necessary, when working close to an adjacent traffic lane, to increase the safety of both the workers and the road users. Although this is a frequently changing work area, the traffic management arrangements should be similar to those used for long term works (refer Part 4 of this Code).
- (6) Consideration should be given to the needs of pedestrians (including people with disabilities) and cyclists if they are expected to pass through the worksite. The path should be smooth and clear of obstructions.

30. Low Speed Roads

- (1) Low speed roads are as defined in clause 5(2) of this Code.
- (2) Works that are of such duration that they could be expected to be carried out reasonably safely during gaps in the traffic do not require the placement of roadside signs or delineation provided that –
 - (a) a suitable warning device is mounted on the work vehicle;
 - (b) a lookout person¹⁴ can see approaching traffic for a distance of at least 150 metres; and

- (c) the work vehicle and equipment, other than hand tools, do not encroach onto the roadway (but excluding where a works vehicle is parked in a lane where parking is permitted at that time of day).

Note: 14 – the only role to be undertaken by the lookout person is to watch for traffic approaching the worksite from any direction and to warn the other workers if there may be a safety risk. The lookout person should be positioned to enable this role to be safely performed and to provide an adequate personal escape path.

- (3) For works with a duration of no longer than five minutes, or which involve a frequently changing work area located on the roadway or shoulder, and the vehicle mounted warning devices are visible for a distance of at least 150 metres, the works can proceed without the use of other signs or warning devices. However, a lookout person should be used to warn the workers of the approach of a vehicle whose size or speed may be a safety risk. In addition, there should be sufficient space for two-way traffic to safely pass the work area without crossing any barrier line (refer Figure 2 of this Code). If there is only width for a single lane past the worksite, then a traffic controller should be used with the associated advance warning signs. The traffic controller may be omitted if the road carries less than 200 vehicles per day.
- (4) On roads with a speed limit of 60 km/h or less, the advance warning signs may be omitted if the work does not encroach onto the roadway or shoulder and no action or extra vigilance is required of the passing road user.
- (5) If the work is being carried out by workers on foot, a shadow vehicle should be located 30 to 40 metres behind the work vehicle. Both the work vehicle, and the shadow vehicle (if used), should be equipped with a vehicle mounted warning device (refer to *Section 4.4: Short-Term Low Impact Works – Built-up Areas* of AS 1742.3-2009).
- (6) For a frequently changing work area not located within a traffic lane, a shadow vehicle equipped with a vehicle mounted warning device should be used subject to the minimum sight distance to oncoming traffic being 50 metres and the maximum work period at any one location being –
 - (a) 20 minutes at any traffic volume; or
 - (b) 40 minutes at traffic volumes of 150 vehicles per day or less; or
 - (c) one (1) hour at traffic volumes of 40 vehicles per day or less.

31. High Speed Roads

- (1) High speed roads are as defined in clause 5(2) of this Code.
- (2) Works that are of such duration that they could be expected to be carried out reasonably safely during gaps in the traffic do not require the placement of roadside signs or delineation provided that –
 - (a) a suitable warning device is mounted on the work vehicle;
 - (b) a lookout person can see approaching traffic for a distance of at least 250 metres; and
 - (c) the work vehicle and equipment, other than hand tools, does not encroach onto the roadway (but excluding where a works vehicle is parked in a lane where parking is permitted at that time of day).
- (3) While tasks such as retrieving debris from the roadway may be undertaken as described above in sub-clause (2), works such as patching small potholes in the roadway which involve a number of separate steps should be carried out as a continuous process, with an appropriate traffic management plan prepared and used.
- (4) If the works would take less than five minutes and the vehicle mounted warning devices are visible for a distance of at least 250 metres, the work may proceed without the use of other signs or warning devices. However, a lookout person should be used to warn the workers of the approach of a vehicle whose size or speed may be a safety risk. In addition, there should be sufficient space for two-way traffic to safely pass the work area without crossing any barrier line (refer Figure 2 of this Code).

- (5) On roads carrying traffic at speeds higher than 60 km/h, the advance warning signs may be omitted if the warning device on the work vehicle can be seen by an approaching motorist for at least 250 metres. In addition, there should be sufficient width for two-way traffic to safely pass the work area. If there is only width for a single lane past the work area, then the speed limit should be reduced to 60 km/h and a traffic controller used, with the associated advance warning signs. The traffic controller may be omitted if the road carries less than 50 vehicles per day.
- (6) If the work involves a frequently changing work area or a series of small works taking place in a number of locations over a 2 kilometre length, warning signs facing approaching traffic should be placed at each end of the worksite. The signs should not be placed more than 2 kilometres apart (refer Figure 3 of this Code). Additional information about works in frequently changing work areas is provided in *Section 4.3.4: Frequently Changing Work Area* and *Section 4.4: Short-Term Low Impact Works – Built-Up Areas* of AS 1742.3-2009.

Division 3 – Mobile Works

32. General

- (1) Mobile works are those which entail vehicles moving along the roadway or shoulder continually at a speed significantly lower than other traffic and obstructing or partially obstructing traffic lanes. The works may involve an occasional stop of very short duration (e.g. less than a minute). These works could include activities such as linemarking, and pavement testing using mobile plant. Additional information is provided in *Section 4.6: Mobile Works* of AS 1742.3-2009.
- (2) Where a worksite hazard assessment indicates a need, mobile works may comprise the following vehicles –
 - (a) a lead vehicle which warns on-coming traffic of the presence of the work vehicle and protects the work vehicle and the workers from approaching traffic.
 - (b) the work vehicle then follows and may have workers on foot immediately behind it.
 - (c) a shadow vehicle provides close-up protection to the rear of workers on foot and is 30 to 40 metres behind the work vehicle. Consideration should be given to using a vehicle equipped with an attenuator (refer clause 35 of this Code) for this purpose, particularly on high speed roads such as freeways.
 - (d) a tail vehicle which provides advance warning to following traffic that works are taking place ahead. The driver of the tail vehicle is also able to alert the workers ahead of a possible hazard. More than one tail vehicle may be required on multi-lane carriageways.
- (3) Information on the positioning of plant and vehicles on various configurations of roads is provided in *Section 4.6.3: Operating Principles* of AS 1742.3-2009.
- (4) Any traffic control devices should be displayed on the vehicles. When required to enhance the safety of workers and the passing traffic, particularly if there are workers or small items of plant on the roadway or shoulder and closer than 1.2 metres to the traffic lane, a mobile temporary speed zone of 40 km/h should be established (using the appropriate roadworks speed limit signs). The speed limit signs are mounted on the tail and lead vehicles (refer to *Section 4.6.5: Mobile Temporary Speed Zones* of AS 1742.3-2009).

33. Low Speed Roads

- (1) On low speed roads, consideration can be given to omitting the lead vehicle unless the work vehicle or following traffic could encroach onto the wrong side of the road. If a lead vehicle is provided, it should be 30 to 100 metres ahead of the work vehicle. If a lead vehicle is not provided, it is important that the work vehicle has warning lights and signs that are clearly visible to on-coming traffic.

- (2) On low speed roads, a tail vehicle is generally not required. However, where the worksite hazard assessment indicates a need, the tail vehicle should be located approximately 200 to 300 metres behind the work vehicle. In an urban area, distances between the lead vehicle, work vehicle and tail vehicle may be reduced having regard to the conditions of the worksite, sight distances to the worksite, and likely safety risks at the worksite.

34. High Speed Roads

- (1) On high speed roads, a lead vehicle should be provided unless the works are being carried out on a divided road. The lead vehicle should operate 200 to 400 metres in advance of the work vehicle to ensure that approaching motorists are given adequate advance warning of the works.
- (2) On freeways or multi-lane roads, two tail vehicles should be used in such a way as to form a mobile taper to guide following traffic past the work vehicle. The tail vehicle(s) should be 300 to 500 metres behind the work vehicle.

35. Vehicle-mounted Attenuators

- (1) Truck or trailer mounted attenuators (TMAs) provide physical protection for worksites where the provision of safety barriers or road closures is not practicable. The TMAs are particularly applicable to short term and mobile worksites where pedestrian workers are on the roadway or shoulder.
- (2) TMAs can also be used to provide temporary protection in emergencies or when erecting or dismantling traffic control devices for long term worksites.
- (3) TMAs should be installed and operated in accordance with the manufacturer's specifications. They should be crash tested to the test level TL3 requirements of *NCHRP Report 350: Recommended Procedures for the Safety Performance Evaluation of Highway Features*¹⁵ ('NCHRP 350') if they are to be deployed on or adjacent to a freeway or an arterial road. TMAs that have been tested and satisfy the NCHRP 350 test level TL2 should only be used in low speed environments.
- (4) The TMA should be located a minimum distance of 30 metres before the workers or equipment that it is shielding, or in accordance with the manufacturer's recommendations. This allows for the TMA to move forward in a clear area should it be struck by another vehicle. Under no circumstances should workers or equipment enter the clear area between the TMA and the worksite.

Note: 15 – at the time of making this Code:

- (i) AS/NZS 3845-1999 was being reviewed by Standards Australia; and
- (ii) **from 1 January 2011**, the *Manual for Assessing Highway Safety Features* ('MASH') is to replace NCHRP 350 in the USA. A deadline of 31 December 2010 is to apply for the submission of device test reports to the FHWA for review and approval as NCHRP 350 compliant devices. References to NCHRP 350 in this Code should, therefore, be read as MASH where applicable. Refer Part 4 of this Code for further details.

Division 4 – Works of Less Than One Shift

36. General

- (1) Unless a detailed worksite hazard assessment indicates that additional measures are required (e.g. a shadow vehicle), works that will take less than one shift and will not be left unattended can normally be protected by the use of warning signs, suitable warning devices mounted on the work vehicle(s) and, in certain circumstances, the imposition of temporary speed limits.
- (2) Unless a worksite hazard assessment indicates otherwise, if the entire work area is located at least 6 metres from the traffic lane, only warning signs should be provided.

- (3) Unless a worksite hazard assessment indicates otherwise, if the works are located between 3 metres and 6 metres from the traffic lane, the required warning signs should be supplemented with vehicle mounted warning devices.
- (4) If the works are located between 1.2 metres and 3 metres from the traffic lane, the edge of the traffic lane should be marked with cones or bollards. A containment fence should also be provided if there is a risk of workers or small items of plant encroaching into the clear zone (also called the 'no-go' zone), in addition to the use of the required warning signs. A temporary speed limit of 60 km/h should be considered for these works unless a worksite hazard assessment indicates otherwise.
- (5) If the works are less than 1.2 metres from the traffic lane, all of the requirements in sub-clause 4 should apply and a temporary speed limit of 40 km/h should be imposed. The containment fence can be omitted if there is insufficient room.

37. Low Speed Roads

On roads with a speed limit of 60 km/h or less, the advance warning signs may be omitted if the work does not encroach onto the roadway. If the work is being carried out by workers on foot, a shadow vehicle should be located 30 to 40 metres behind the work vehicle. Both the work vehicle and the shadow vehicle (if used), should be equipped with a vehicle mounted warning device (refer to *Section 4.4: Short-Term Low Impact Works – Built-up Areas* of AS 1742.3-2009).

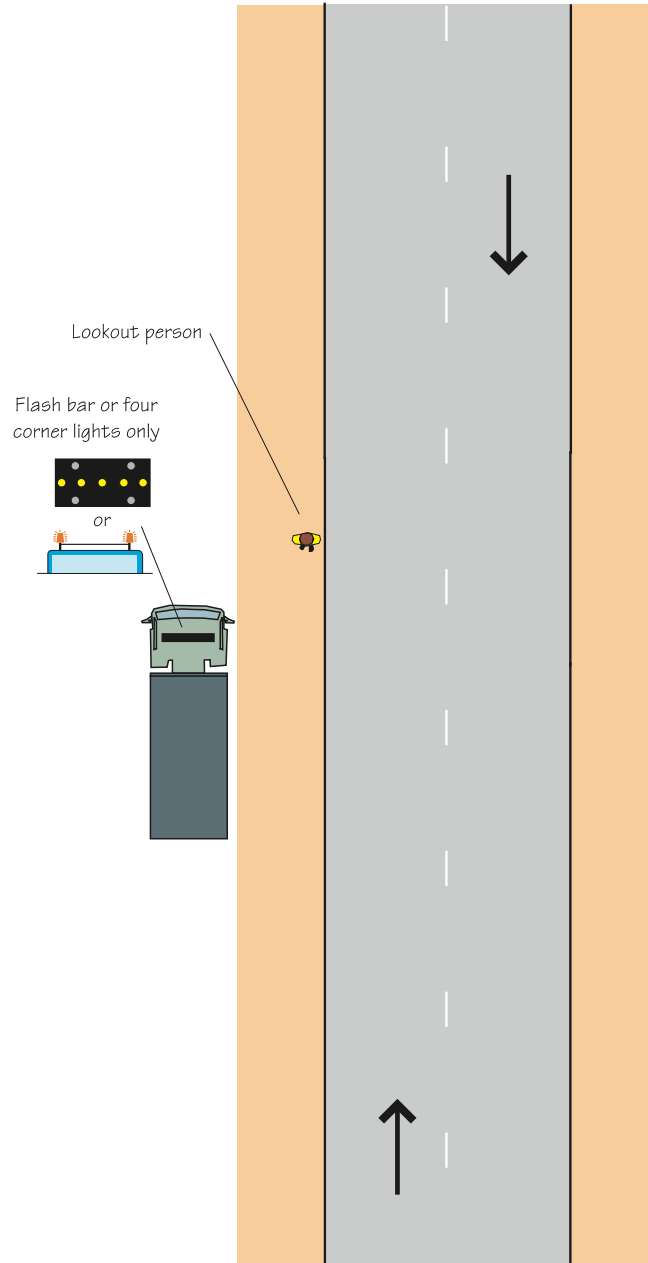
38. High Speed Roads

On roads carrying traffic at speeds higher than 60 km/h, the advance warning signs may be omitted if the warning device on the work vehicle can be seen by an approaching motorist for at least 250 metres. In addition, there should be sufficient width for two-way traffic to safely pass the work area. If there is only width for a single lane past the work area, then the speed limit should be reduced to 60 km/h and a traffic controller used, with the associated advance warning signs. The traffic controller may be omitted if the road carries less than 50 vehicles per day.

Division 5 – Traffic Guidance Schemes for Short Term – Low Impact Works

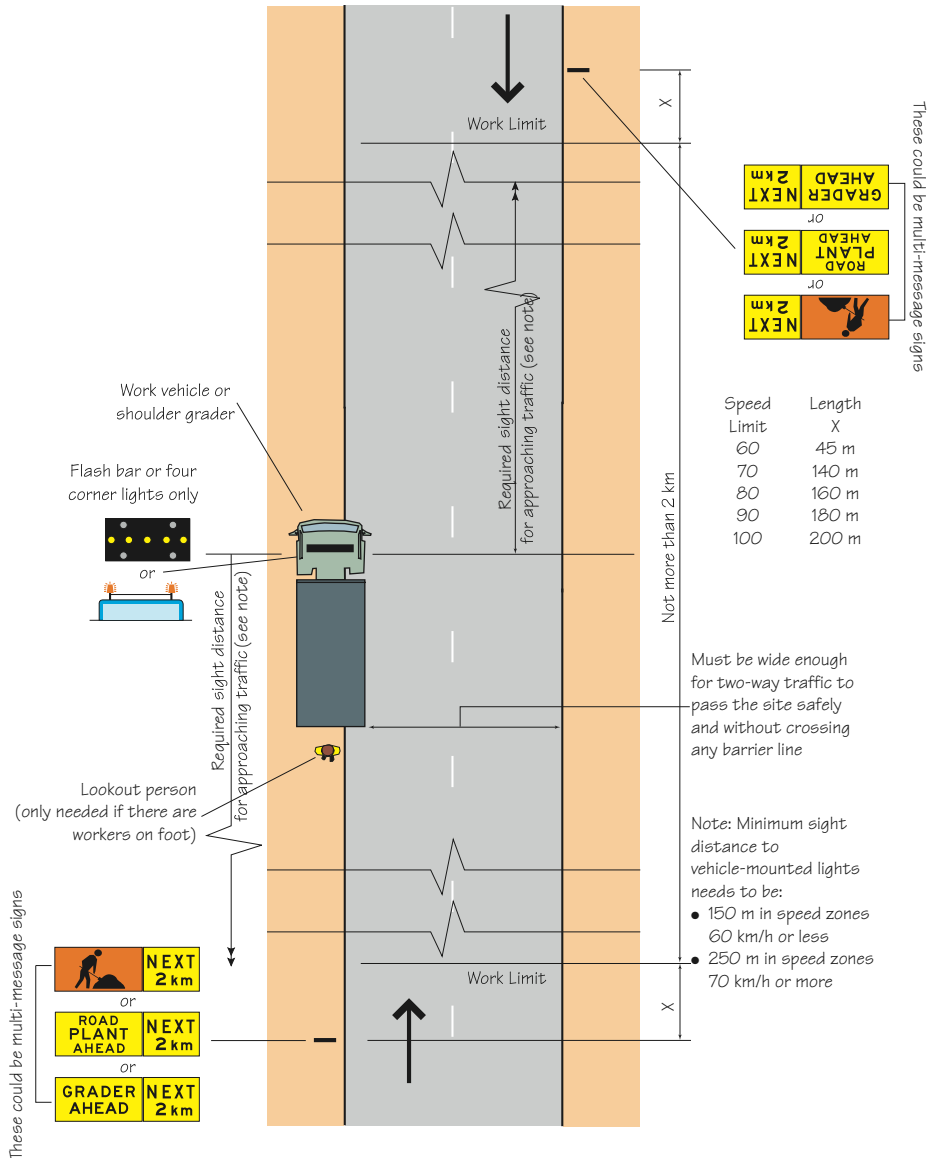
39. General

Examples of traffic guidance schemes for short term – low impact works (which form part of an overall traffic management plan – refer clause 13 of this Code) for a sample of different worksites, which are based on those in AS 1742.3-2009, are shown in Figures 2 and 3 of this Code.

Figure 2: Frequently Changing Work Area – Not in a Traffic Lane

This traffic guidance scheme can be used for works with a vehicle equipped with a vehicle-mounted warning device involving a frequently changing work area not in a traffic lane (for a speed zone of 60 km/h or less) with a minimum sight distance to oncoming traffic of 50 metres. The works (e.g. pit cleaning, litter collection, tree pruning) should be for a maximum period at any one location of 20 minutes, or 40 minutes on roads with 150 vehicles per hour or less, or 1 hour for roads with 40 vehicles per hour or less. For works involving a frequently changing work area in a traffic lane, refer to clause 30(3) of this Code.

Figure 3: Frequently Changing Work Area (and Shoulder Grading)



This traffic guidance scheme can be used when there are a series of short term works involving a frequently changing work area (e.g. shoulder grading, grass mowing, longitudinal surveys) along the road. If there are workers on foot on the roadway or shoulder, they should only work on the same side of the road as the truck and there should be a lookout person ready to warn them of approaching traffic.

40. Removal of Traffic Management Measures

Having regard to the meaning and nature of short term, low impact and mobile works, any traffic management measures provided to protect the worksite should be removed when the workers are no longer present on the worksite (unless some form of residual hazard remains e.g. loose aggregate, an excavation).

Division 6 – Applicability of Preceding Sections**41. General**

If the requirements of Part 3, Divisions 2, 3 and 4, and associated sub-sections, cannot be satisfied, then the task should be considered to be long term (refer Part 4 of this Code) and the traffic management measures applied accordingly.

42. Worksite Hazard Assessment Checklist

The form in Appendix C of this Code can be used to undertake the worksite hazard assessment of the works to be carried out (on either the roadway, shoulder or roadside), and to record the key decisions made when determining the traffic management plan to be used for the works. The completed form should be filed for record purposes.

Division 7 – Emergency and Unplanned Works**43. General**

- (1) In the case of an emergency (e.g. fire, flood, major road or utility incident), or where works cannot be planned, the safety of road users and workers on the worksite is paramount. Therefore, some traffic delays or congestion can be accepted during the works or whilst the traffic management measures are being deployed. However, possible adverse effects on traffic (including public transport) should be assessed in planning any traffic management measures. To assist in managing any traffic delays or congestion associated with an emergency, the VicRoads Traffic Management Centre should be advised on Tel: 13 11 70 as soon as possible.
- (2) A number of road authorities and utility infrastructure managers have prepared incident or emergency response plans for dealing with urgent or unplanned works. Where such plans (which may involve assistance from the Police in the control of traffic) are available, these should be used in preference to the generic traffic management schemes as provided in this Code. Generic traffic management plans should be used, however, where planned works or activities are undertaken by emergency services authorities (e.g. fuel reduction burning, herbicide use or hydrant inspections).
- (3) If the works are expected to take more than two hours and the disruption to traffic is severe, consideration should be given to using the media and/or Variable Message Signs to advise the public of the cause of the delay and its expected duration.
- (4) Once the worksite is protected, other signs and warning devices should be deployed in accordance with the requirements of this Code as determined by the expected duration of the works and a worksite hazard assessment.

44. Low Speed Roads

When traffic speeds are low, whether due to the inherent nature of the road or the effects of the emergency, the initial traffic control may be achieved by the use of a work vehicle on which are mounted suitable warning signs or devices. After the worksite is protected, other signs and warning devices should be deployed in accordance with the requirements of this Code as determined by the expected duration of the works.

45. High Speed Roads

On roads where the approach speeds of traffic are high, the initial traffic control should be achieved by the use of a work vehicle on which are mounted suitable warning signs or devices. As soon as the worksite is secure, action should be taken to provide advance warning to approaching road users. This can be achieved by the use of a second vehicle and appropriate signs. However, it is critical that the safety of the worksite is not prejudiced by removing traffic management measures including the work vehicle, to provide advance warning.

PART 4 – LONG TERM WORKS**Division 1 – Traffic Management****46. General**

Works that are generally included within the meaning of ‘long term’ are those expected to take longer than one shift or are to be left unattended. (Note that *AS 1742.3 – 2009*, refers to these works as ‘static work sites’ i.e. not being short term, low impact or mobile works). Where these works require a traffic management plan to operate for more than one day, it is expected that any traffic management arrangements should also be suitable for traffic operations over night. However, it is most important that all traffic management measures are removed (or covered), when they are no longer applicable or required.

47. Traffic Management Plans

- (1) The major factors in assessing the hazard rating of a worksite are the road type, speed limit and clearance between the traffic and workers on the worksite. Other factors such as the adjacent land use and vehicle access points should also be considered. Table 1 provides a guide when assessing the hazard rating of the worksite, particularly for long term works.
- (2) The level of planning required in preparing a traffic management plan at a worksite to eliminate or reduce the hazard level is dependent on the worksite hazard based assessment (refer clauses 19 and 20 of this Code) and any prescribed requirements as detailed in the relevant Regulations (refer clause 13 of this Code).
- (3) Special consideration should be given to worksites where the expected volumes of traffic would exceed the available capacity, outside normal working hours. The use of alternative routes to supplement the capacity through the worksite should be considered.
- (4) Periodic after-hours inspections should be carried out on long term worksites to ensure that all traffic control devices are operating effectively at night in the low headlight beam of passing vehicles.
- (5) For long term works, the speed limit should be determined from Part 5 of this Code and the requirements of *Section 4.1.2: Maintaining a Safe Workplace* of *AS 1742.3-2009*.

48. Excavation Works

- (1) A detailed hazard assessment should be undertaken for excavation works adjacent to roads carrying traffic. Generally, excavations that are more than 6 metres from the nearest traffic lane require no protection although measures may be required to prevent pedestrians and cyclists entering the work area.
- (2) Safety barriers should be considered in the following circumstances to protect excavations of a depth greater than 250 mm –
 - (a) on low speed roads, safety barriers should be provided as protection for excavations greater than 250 mm deep if they have a clearance of less than or equal to 2.5 metres from a traffic lane.
 - (b) on high speed roads, safety barriers should be considered to protect excavations greater than 250 mm deep if the clearance to a traffic lane is less than or equal to 5 metres for local traffic roads, collector roads or rural arterial ‘C’ roads.
 - (c) on high speed roads, safety barriers should generally be provided to protect excavations greater than 250 mm deep if the clearance to a traffic lane is less than or equal to 6 metres for secondary roads, rural arterial ‘A’ and ‘B’ roads, rural ‘M’ roads and freeways (urban).
- (3) For excavations generally exceeding 250 mm deep, hazard control measures other than safety barriers could be adopted through the application of the hierarchy of controls as described in clauses 22 and 23, and Table 3, of this Code.

- (4) An example of an alternative approach is the provision of a temporary batter with a slope of no steeper than 1 in 3 from the roadway into the excavation in a situation where the excavation will remain unattended outside working hours and safety barriers are not provided. In the case of utility works involving services trenches in or close to the roadway, a hazard assessment may indicate that the imposition of an appropriate temporary works speed limit combined with the closure of an adjacent lane may maximise the safety of workers and road users.
- (5) For more information on the use of safety barriers at worksites, refer to Part 4, Division 3 of this Code.

49. Traffic Management at Night

- (1) The traffic management plans for works at night are generally similar to those used during the day. However, advance warning signs should always be used.
- (2) All workers on the worksite should wear the appropriate high visibility clothing (refer Part 6, Division 1 of this Code).
- (3) Whenever practicable, any restrictions on traffic should be removed if not required to apply over night. Some restrictions on traffic can remain where the worksite is located on a multi-lane road and there is sufficient capacity available to carry the expected overnight traffic volumes. However, unless the hazard assessment of the worksite indicates otherwise, the worksite speed limit outside working hours should be no more than 20 km/h below the permanent speed limit.
- (4) Traffic control signs and certain other traffic control devices are normally manufactured using retroreflective materials. However, the signs and devices can be damaged or become dirty, in use. Therefore, any such signs and devices should be maintained in good condition. In addition, these signs and devices should be checked in place at night to ensure that they are readily visible to road users.
- (5) Single lane operation without any traffic control should not normally operate at night unless the traffic volume is less than 200 vehicles per day and the length of road involved is not greater than 60 metres. In other situations, traffic signals should be used to control traffic on the single lane section. Traffic controllers should only be used at night as a last resort and the worksite should be floodlit to make them more visible to approaching traffic.
- (6) To assist pedestrians and cyclists passing through the worksite, lighting should be provided to at least the same standard as the original footpath or crossing, particularly in urban areas that have existing street lighting.

50. After-Care (Worksite Arrangements Outside Working Hours)

Specific action should be taken to ensure that traffic can pass through a worksite safely at times when workers are not present (after-care). This may include periods outside normal working hours including at night, and at times when there are interruptions to the continuity of the work. The effective management of after-care at worksites should comply with the following –

- (a) the traffic management plan as prepared for the works should include details of the arrangements to manage traffic through the worksite during the after-care periods. This includes the removal or covering of any signs that are not applicable, particularly temporary worksite speed limit signs.
- (b) where a temporary worksite speed limit is necessary outside working hours for the safety of traffic having regard to the worksite conditions (e.g. rough or slippery unsealed road surface, or excavations close to the roadway), the worksite speed limit should be no more than 20 km/h below the permanent speed limit, unless the hazard assessment of the worksite indicates otherwise.

- (c) periodic inspections of the worksite should be undertaken during after-care periods to ensure that:
 - (i) all traffic control devices are operating effectively. It is particularly important that the devices are visible at night in the low headlight beam of passing vehicles; and
 - (ii) adequate provision has been made for pedestrians (including those with disabilities) and cyclists to pass safely through the worksite, especially at times when the temporary worksite speed limits may have been removed and traffic controllers are not present to provide assistance.

Division 2 – Provision for Pedestrians and Cyclists

51. General

- (1) Special provision should be made for pedestrians (including people with disabilities) and cyclists if they are expected to pass through, past or around the worksite. The path to be taken should be located as far as is reasonably practicable from the roadway, be smooth and free from obstructions, be of adequate width (e.g. 1.5 metres for pedestrian paths and 2.0 metres for shared paths), be well delineated and constructed to prevent pedestrians from walking through the work area, and provide clear guidance where the path changes direction.
- (2) Lighting should be provided if this would assist users of the path, particularly in urban areas that have existing street lighting.
- (3) If the works make it necessary for pedestrians or cyclists to cross the road within the worksite, particular attention should be paid to the crossing point to ensure that the pedestrians or cyclists are visible to both the approaching traffic and the operators of roadworks plant and equipment on the worksite.

52. Access to Public Transport

- (1) Where works would adversely affect access to a tram stop, a bus stop or train station, the location and method of providing alternative access for the duration of the works should be investigated in consultation with the relevant tram, bus or train operator.
- (2) In the case of bus stops, for example, temporary stops are required to be installed to enable continued operation of the service. The sites for the temporary stops are to be approved by the Department of Transport, and appropriate signs need to be erected to safely direct passengers to these stops.

Division 3 – Use of Safety Barriers at Worksites

53. General

- (1) This section provides guidance in the use of safety barriers at worksites. According to AS 1742.3-2009, road safety barrier systems are designed to provide a physical barrier between the travelled way and the work area, which will inhibit penetration by an out-of-control vehicle and will have vehicle redirection properties. A safety barrier also provides protection for workers from passing traffic. Safety barriers come in many shapes and are made from a variety of materials including concrete, metal and plastic.
- (2) Figure 4 of this Code provides general guidelines for the use of safety barriers at worksites. The 'hierarchy of safety control' (refer Part 2, Division 2 of this Code) should be applied to determine the appropriate control (as far as is reasonably practicable) to be used.

- (3) Safety barrier protection should be considered where practicable for worksites adjacent to moving traffic. While Figure 4 of this Code indicates that safety barriers may not be required where the clearance from traffic to the work area is greater than 9 metres, consideration may need to be given to increasing this clear zone where there are potential hazards (e.g. steep road embankments) beyond the 9 metre clearance that may present an unacceptable hazard for an errant vehicle. In addition, a safety barrier should be considered for worksites on urban freeways where the clearance is less than 12 metres (refer also to clause 69 and Table 5 of this Code).



Figure 4 – Guide for Use of Safety Barriers

- (4) AS/NZS 3845-1999 and AS 1742.3-2009 require that the selected safety barrier should be appropriate for the location, traffic speed and conditions for which it is to be used.

54. Shape and Strength Requirements

AS 1742.3-2009 provides that all safety barriers 'shall be in accordance with *AS/NZS 3845-1999: Road Safety Barrier Systems*' ('AS/NZS 3845-1999'). AS/NZS 3845-1999 provides that –

- 'all road safety barrier systems and crash attenuators shall be tested in accordance with the procedures specified in this (AS/NZS 3845-1999) Standard'; and
- NCHRP Report 350: Recommended Procedures for the Safety Performance Evaluation of Highway Features* ('NCHRP 350')¹⁶ 'shall be the basis of testing procedures' for safety barriers.

Note: 16 – at the time of making this Code:

- AS/NZS 3845-1999 was being reviewed by Standards Australia; and.
- from 1 January 2011, the *Manual for Assessing Highway Safety Features* ('MASH') is to replace NCHRP 350 in the USA. A deadline of 31 December 2010 is to apply for the submission of device test reports to the FHWA for review and approval as NCHRP 350 devices. References to NCHRP 350 in this Code should, therefore, be read as MASH where applicable.

55. Types of Safety Barriers

- (1) Safety barriers meeting the shape, protection, performance and test requirements of AS/NZS 3845-1999 standards are acceptable for use on worksites. Such safety barriers may be manufactured from concrete, metal or plastic materials.

- (2) The design of a safety barrier system should include an analysis of the appropriate performance test level required for the worksite, and ensure that the selected safety barrier has been crash tested to the required performance level for the worksite. NCHRP 350 provides for safety barriers to be crash tested at a range of test levels, with the most common for temporary safety barriers being –
 - (a) Test Level 1 (TL1) – 50 km/h crash test with a 2,000 kg vehicle (equivalent MASH TL1 – 50 km/h crash test with a 2,270 kg vehicle).
 - (b) Test Level 2 (TL2) – 70 km/h crash test with a 2,000 kg vehicle (equivalent MASH TL2 – 70 km/h crash test with a 2,270 kg vehicle).
 - (c) Test Level 3 (TL3) – 100 km/h crash test with a 2,000 kg vehicle (equivalent MASH TL3 – 100 km/h crash test with a 2,270 kg vehicle).
- (3) Safety barriers tested to TL1 or TL2 should be used for worksites where the speed limit is at least 10 km/h below the crash test speed and where compliance with the speed limit by most vehicles can be reasonably expected. For other worksites (i.e. speed limit of 70 km/h or greater), safety barriers tested to at least TL3 should be used.

56. When Safety Barriers Should be Used

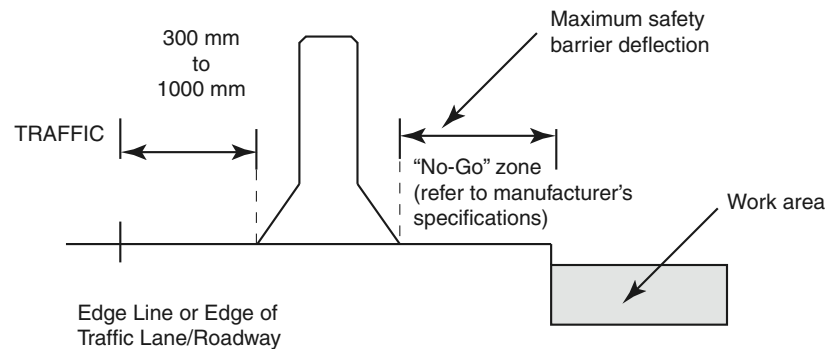
- (1) Safety barriers may be required where any of the following occur –
 - (a) there is inadequate safe clearance between workers or roadworks plant and equipment and moving traffic.
 - (b) there is potential for traffic conflicts (e.g. head-on collision).
 - (c) there are hazardous objects, or excavations (refer to Clause 48 of this Code) near traffic.
 - (d) there is inadequate safe clearance between (temporary) footpaths or bicycle paths and moving traffic.
- (2) Additional information is provided in *Section 3.10.3: Road Safety Barrier Systems* of AS 1742.3-2009.

57. Safe System of Work

- (1) Where, following the completion of the worksite hazard assessment process (refer Part 2 of this Code), safety barriers are to be used at a worksite, a safe system of work should be developed taking into consideration the following –
 - (a) the type, shape, protection, performance and test characteristics of the safety barrier (as stated by the manufacturer).
 - (b) the speed of traffic travelling through the worksite.
 - (c) the clearance between the traffic and work area.
- (2) In particular, attention should be paid to the following characteristics –
 - (a) strength of materials used to manufacture the safety barrier.
 - (b) performance test level of the safety barrier.
 - (c) maximum deflection at test level loading.
 - (d) connection details of individual units to ensure that when joined together they act appropriately.
 - (e) base or footing requirements and whether they need horizontal support or ‘anchoring’ into the existing pavement.
 - (f) anchorage terminal treatments and protection.
 - (g) minimum length of safety barrier.
- (3) All safety barriers should only be used in accordance with the manufacturer’s specifications.

58. Location With Respect to Traffic

- (1) When safety barriers are used parallel to traffic, there should be a horizontal clearance of between 300 mm and 1000 mm (refer Figure 5 of this Code). On high speed roads, particularly where the speed limit is 100 or 110 km/h, the desirable minimum clearance should be at the upper limit of this range. The clearance should be measured from the non-traffic side of the edge line, or in the absence of an edge line, from the edge of the traffic lane, to the base of the safety barrier.
- (2) Where it is not practicable to provide the clearance between the edge line and the safety barrier as specified in sub-clause (1) above, speed limits may need to be reduced. When the work area is below the roadway, consideration should be given to increasing the clearance between the safety barrier and the work area (i.e. the 'no-go' zone). In all cases, the clearance adopted should have regard to the performance characteristics of the safety barrier system being used.
- (3) If the hazard assessment indicates that it is not possible to obtain sufficient clearance behind the safety barrier (i.e. the 'no-go' zone), the speed limit for traffic should be reduced.

**Figure 5: Safety Barrier Clearance**

- (4) It is desirable to not locate safety barriers behind kerb and channel so as to avoid the possibility of the barrier not performing its intended function of safely redirecting an errant vehicle and preventing it from penetrating into the worksite. Where the installation of a safety barrier behind kerb and channel cannot be avoided, then the safety barrier should be located such that its front face is either –
 - (a) less than 0.5 metres behind the face of kerb; or
 - (b) between 3 metres and 4 metres behind the face of kerb.
- (5) Safety barriers placed immediately in front of a kerb may not deflect in accordance with the manufacturer's design assumptions when struck by a vehicle. Where it is necessary to locate a safety barrier in this position, a more detailed assessment of the performance characteristics of the barrier in consultation with the manufacturer should be undertaken.
- (6) The following lengths of safety barrier should generally apply –
 - (a) Minimum – greater of 30 metres or minimum length specified by the safety barrier manufacturer. This minimum length generally does not include the terminal treatment. Note that a vehicle which leaves the road as it approaches the start of a safety barrier could have sufficient momentum to enter the work area by passing behind the barrier. To avoid this possibility, the barrier should be extended beyond the work area. The required safety barrier length (Barrier Length of Need) should be determined as set out in the *Austrroads Guide to Road Design – Part 6: Roadside Design, Safety and Barriers* and any relevant VicRoads guidelines.

- (b) Maximum – there are no restrictions on the maximum length of safety barrier. However, the need to make provision for vehicles that breakdown, worksite access and access for emergency vehicles should be considered.
- (7) In determining the location and length of safety barrier to be used, consideration should be given to the manufacturer's stated performance characteristics of individual safety barrier systems.

59. Protection of Ends of Safety Barriers

- (1) The ends of a safety barrier system represent a safety risk to vehicle occupants. Accordingly, safety barriers should either be terminated with a crashworthy terminal treatment that complies with the appropriate test level requirements of NCHRP 350, or the safety barrier should be extended outside the clear zone at the required flare rate as specified in AS/NZS 3845-1999. A non-rigid retro-reflective hazard marker should be erected on the nose of the terminal to make it more visible to approaching motorists.
- (2) Redirective non-gating terminals should be used at sites where there is a high risk of high-speed, high-angle impacts. Such sites include freeways and multi-lane roads with –
 - (a) more than two lanes of traffic approaching the barrier terminal; and
 - (b) a speed limit of 80 km/h or higher on the approach to the barrier terminal.

60. Working Behind Safety Barriers

- (1) When safety barriers are in place, workers should not be allowed to work behind the safety barriers within the 'no-go' zone as shown in Figure 5 of this Code. Where workers are working in close proximity to the 'no-go' zone, *Section 3.10.3: Road Safety Barrier Systems* of AS 1742.3-2009 requires the use of a safety containment fence or longitudinal barricade to mark the 'no-go' zone.
- (2) The minimum width provided for the 'no-go' zone should be the maximum deflection specified by the manufacturer for the safety barrier, based on the applicable NCHRP 350 test level.
- (3) Where a safety barrier is to be used in a lower speed zone than the NCHRP 350 level at which it has been tested then the width of the 'no-go' zone could be reduced based on calculations of the likely deflection of the safety barrier due to impact of the test vehicle at a speed appropriate to the worksite.
- (4) Where safety barriers are used at a worksite, they should only be removed after consideration of all OH&S issues and consultation with the appropriately trained personnel on the worksite.
- (5) At some worksites, particularly on freeways and other high speed roads, it may be necessary to provide a dedicated lane or area for construction vehicles to access a worksite through a gap in a safety barrier. In such cases, pavement markings and/or devices including audio-tactile markings, frangible delineators and cross hatchings on the roadway could be installed to indicate to motorists that the area is not available to general traffic and to discourage inadvertent use.

61. Debris Protection and Sight Restriction Screens

- (1) Where safety barriers are used on high speed roads, debris protection screens should be considered to protect workers from debris falling from passing vehicles. These screens also have the added advantage of protecting motorists from works activities.
- (2) Where safety barriers are used on heavily trafficked roads (generally volumes higher than 20,000 vehicles per day), consideration should be given to the erection of sight restriction screens. These screens, which are designed to 'hide' activities from road users to avoid creating a distraction, generally comprise flexible mesh fabric or shade cloth placed over a debris protection screen.

- (3) Where it is proposed to erect a screen, consideration should be given to the following –
- (a) the effect of a screen on the stopping sight distance along the road (e.g. roads with small radius curves).
 - (b) the stability of a screen (and safety barrier) under all conditions at the worksite (e.g. wind load, buffeting by passing vehicles).
 - (c) the effect of the height of a screen on the stability of the safety barrier.
 - (d) *Section 2.3.13: Attachments* of AS/NZS 3845-1999, which requires evidence of crash testing, clearly documented historical information, or engineering analysis to show that this is acceptable.
 - (e) the need for emergency access (e.g. a form of access gate or door in the screen).
 - (f) the effect of a screen on the sight distance of drivers of construction vehicles when entering the traffic stream from the worksite.

62. Methods of Moving Safety Barriers

The following general principles should be followed when moving safety barriers around a worksite –

- (a) worksite risk assessment should be completed prior to moving (refer Part 2 of this Code).
- (b) work should be carried out during daylight hours where possible.
- (c) appropriate speed limits should be applied at each worksite.
- (d) consideration should be given to the direction of erection and removal of safety barriers (i.e. generally facing oncoming traffic), with terminal crash attenuators installed first and removed last.
- (e) consideration should be given to using a shadow vehicle with an impact attenuator on roads with high speed and/or high volume traffic.
- (f) compliance with the manufacturer's specifications for moving or lifting safety barriers.

63. Crane Bays

Where safety barriers are used to protect mobile cranes, the general principles as set out below should be followed –

- (a) a traffic management plan should be prepared for each worksite.
- (b) allowance should be made for pedestrians, cyclists and people with disabilities where required.
- (c) a clearance equivalent to the maximum safety barrier deflection for the applicable NCHRP 350 test level should be provided behind the safety barriers to any roadworks plant or equipment (including mobile cranes).

64. Worksite Hazard Assessment Checklist

The form in Appendix C of this Code can be used to undertake the hazard assessment of the worksite (whether on the roadway, shoulder or roadside), and to record the key decisions made when determining the traffic management plan to be used for the works. The completed form should be filed for record purposes.

Division 4 – Traffic Guidance Schemes for Long Term Works

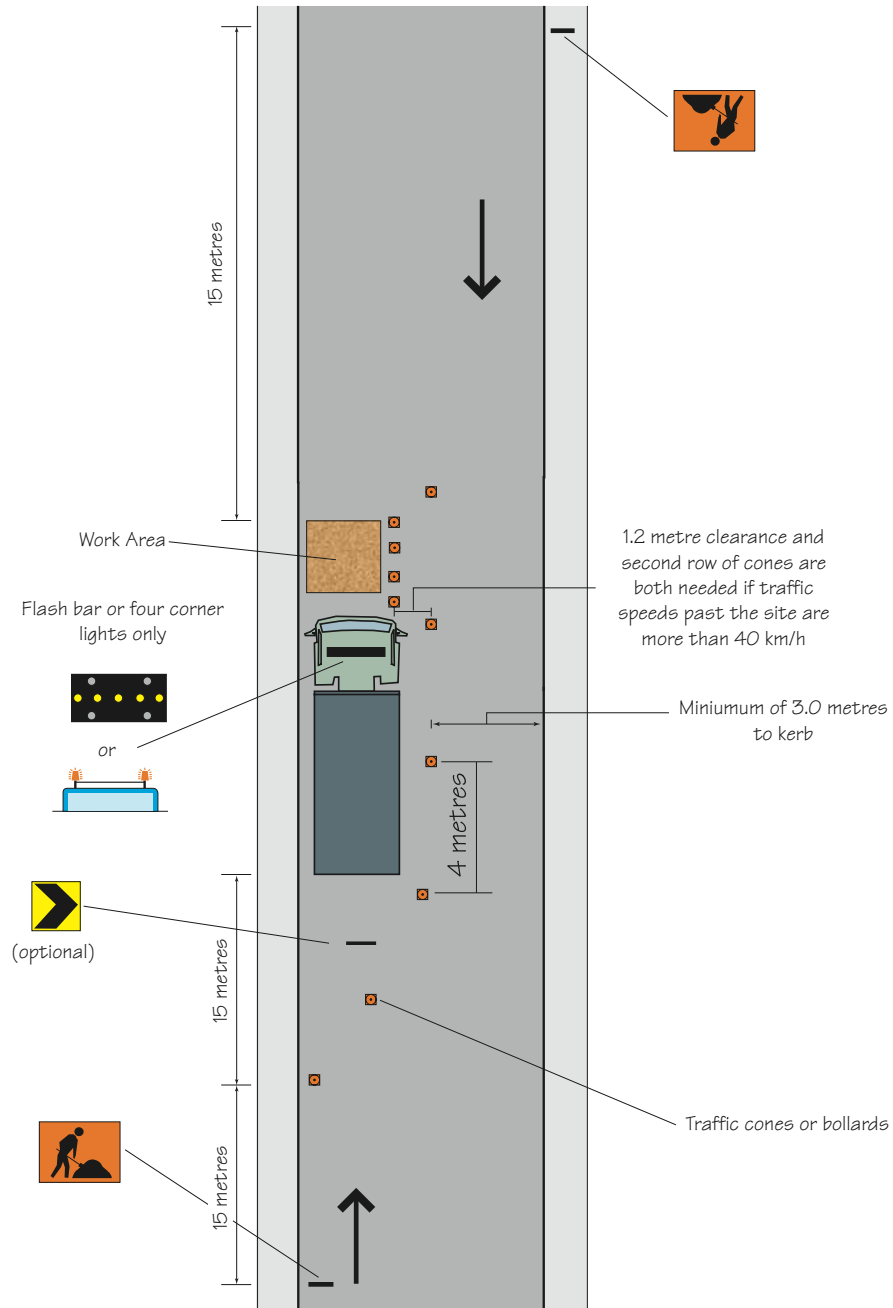
65. General

Examples of traffic guidance schemes (which form part of an overall traffic management plan – refer clause 13 of this Code) for a number of different worksites, which are based on those in AS 1742.3-2009, are shown in Figures 6 to 10 of this Code.

66. Other Traffic Guidance Schemes

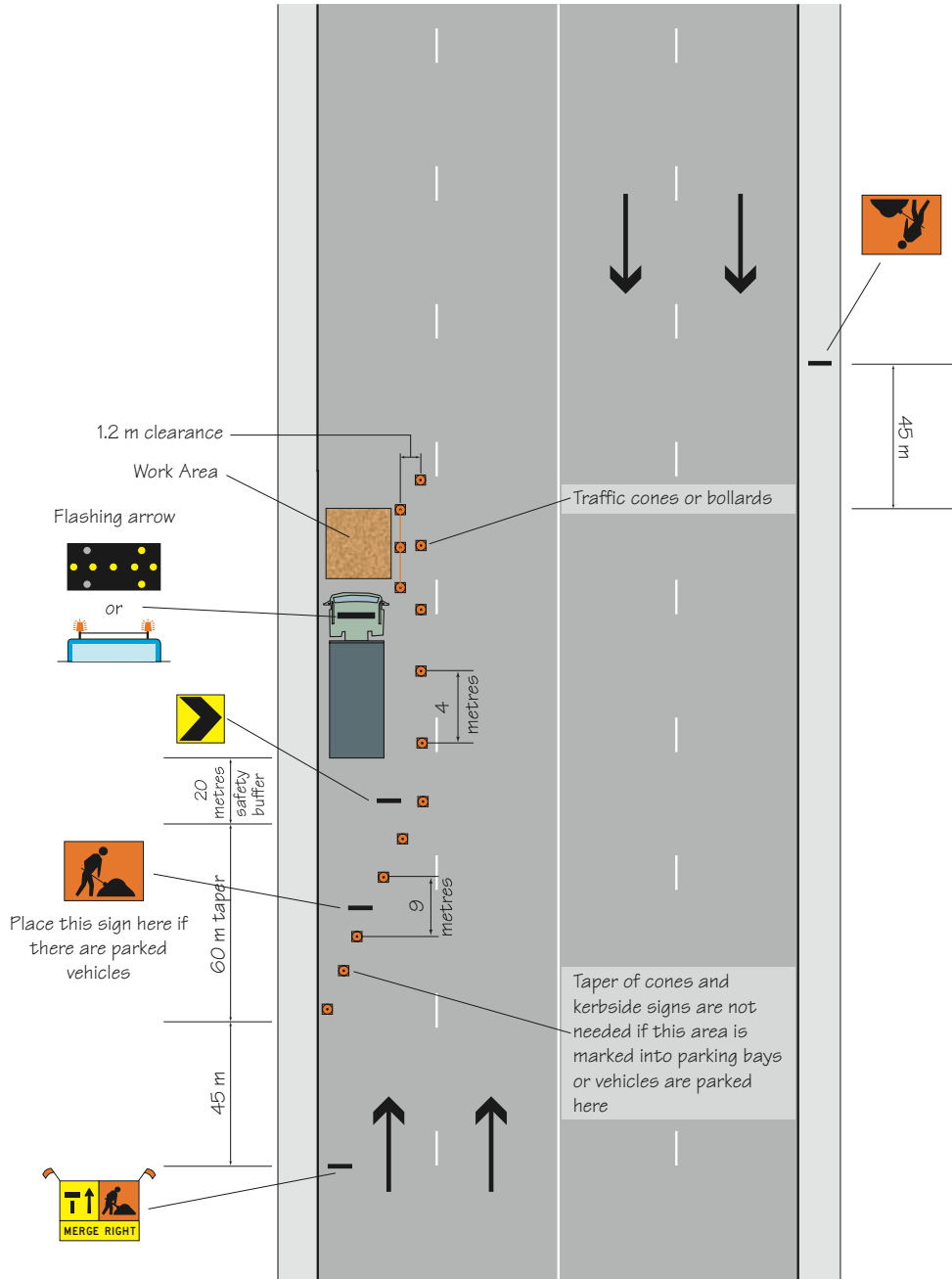
- (1) The traffic guidance schemes shown in this Code (which will form part of an overall traffic management plan – refer clause 13 of this Code) cover a variety of situations and can be modified to accommodate other circumstances. Standard drawings prepared by road authorities or utilities also provide examples of other schemes associated with a range of works on roads. If none of these schemes cover the circumstances of the particular works being contemplated then it may be necessary to have the traffic guidance scheme (and the overall traffic management plan) prepared by a person who is suitably experienced and competent in traffic management (refer clause 15 of this Code).
- (2) Where a standard diagram prepared by a road authority or utility is used as a traffic guidance scheme, or forms part of an overall traffic management plan, the standard diagram should clearly identify any relevant variations necessary to relate the standard diagram to the specific conditions of the worksite.

Figure 6: Partial Closure on a 50 km/h Street



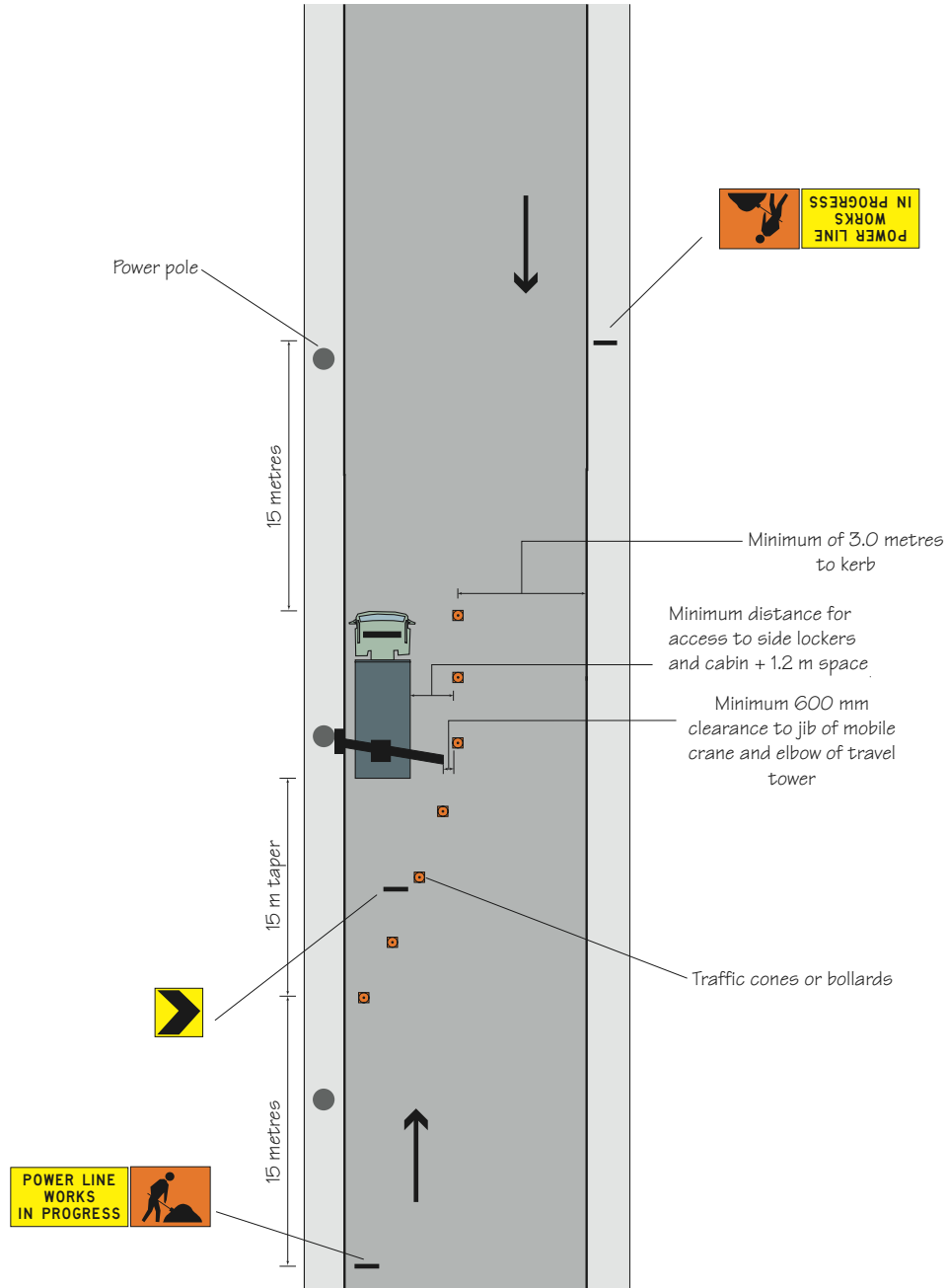
This traffic guidance scheme can be used when traffic volumes are less than 40 vehicles per hour and only an occasional vehicle travels at a speed greater than 50 km/h. This traffic guidance scheme could also be used for works on a nature strip, or off the roadway, where a work vehicle is used as a buffer between the work area and passing traffic.

Figure 7: Lane Closure on a 60 km/h Four Lane Road



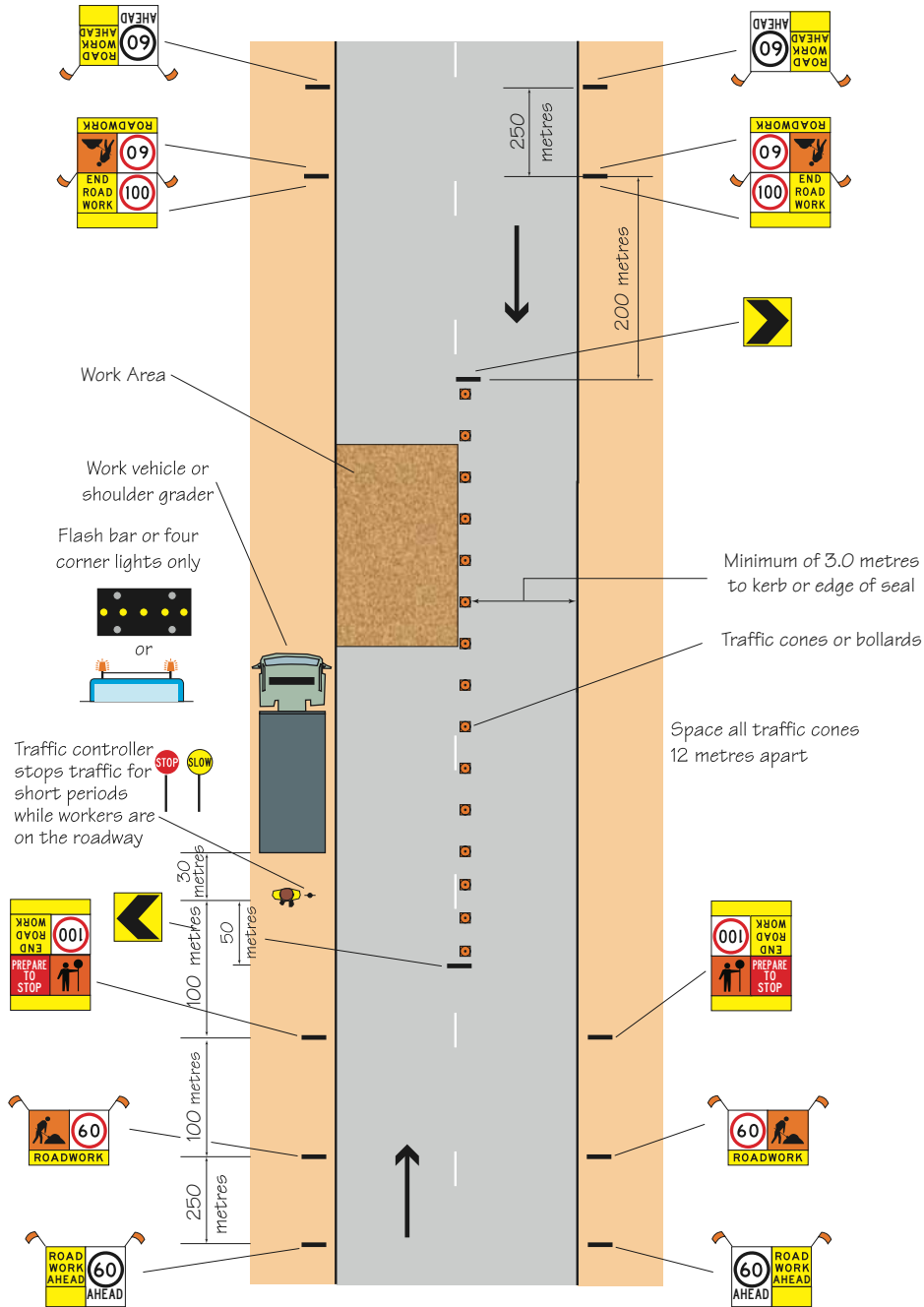
A similar traffic guidance scheme, but with different dimensions, would be applicable for approach speeds lower or higher than 60 km/h.

Figure 8: Powerline or Similar Works on a 50 km/h Street



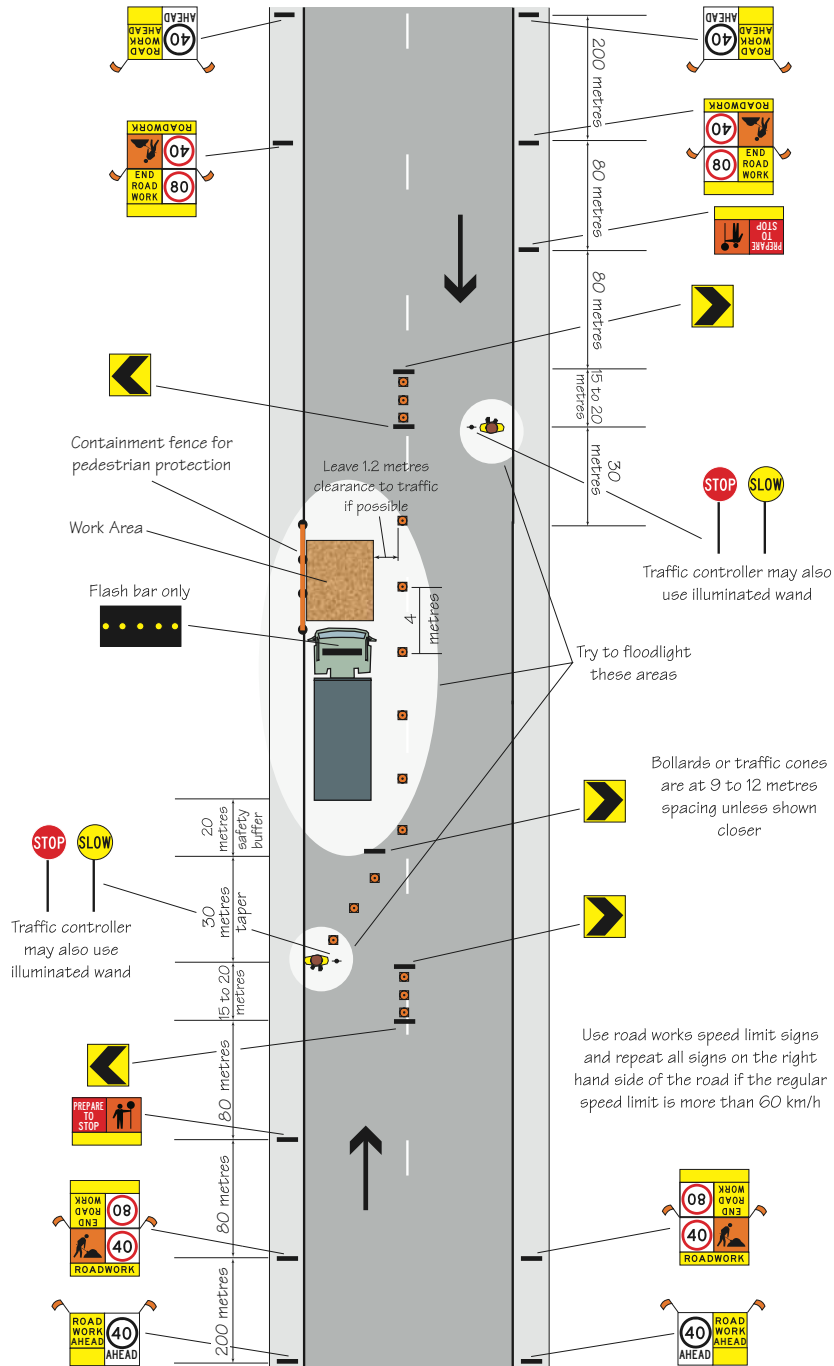
This traffic guidance scheme, which can apply to powerline or similar works on a 50 km/h street, could also apply to overhead sign or vegetation pruning (or similar) works. Where equipment will be working near overhead power lines, works should be undertaken having regard to the WorkSafe Victoria Framework for Undertaking Work Near Overhead and Underground Assets – Guide to the No Go Zones, July 2004, or other relevant Electricity Industry legislation / codes.

Figure 9: Traffic Through the Work Area on a 100 km/h Road



This traffic guidance scheme can be used whenever works need to block the road for only a few minutes at a time, and traffic can move through the worksite at other times. A speed limit of 60km/h or lower should be used. If workers or plant are working within or close to the roadway and there is no containment fence to keep them at least 1.2 metres clear of traffic, then a 40km/h speed limit should be used.

Figure 10: Works at Night of Duration Less Than One Shift on a 80 km/h Road



On a residential street, a traffic controller may not be needed provided that road users can see past the work area.

A similar traffic guidance scheme, but with different dimensions, would be applicable for different approach speeds.

PART 5 – SPEED ZONES AT WORKSITES**Division 1 – Speed Limits Through Worksites****67. Need for Worksite Speed Limits**

- (1) Worksite speed limits should be considered when one or more of the following conditions apply –
 - (a) the safety of workers may be compromised by the proximity of traffic.
 - (b) moving roadworks plant or equipment shares the road through the worksite.
 - (c) loose material or stones are present on the road surface.
 - (d) the standard of vertical or horizontal road geometry (e.g. inadequate sight distance) at the approach to, or within, a worksite is reduced below that of the adjacent sections of the road.
 - (e) the unobstructed clear width of the roadway is significantly reduced.
 - (f) the safety of road users travelling through the worksite at the permanent speed limit is otherwise compromised.
 - (g) the safety of pedestrians, cyclists and people with disabilities may be compromised.
- (2) The potential safety hazards to be considered when determining the speed limit to be adopted through a worksite should include –
 - (a) clearance to the work area.
 - (b) traffic volume and vehicle composition.
 - (c) type of work.
 - (d) duration of work.
 - (e) time of work (e.g. night works).
- (3) Temporary speed limits at a worksite should be removed or the signs covered up, when there is no longer a need for the speed of the traffic to be restricted (refer clause 69(4) of this Code).

68. Speed Limits for Short Term Works

- (1) The existing speed limits generally apply for short term low impact works. However, in urban areas when workers are on the roadway, a speed limit of 60 km/h or less should be implemented.
- (2) If a hazard assessment of the worksite, taking into account such things as the speed and volume of the traffic, indicates that the level of hazard cannot be tolerated, then a long term or mobile worksite should be used and the relevant speed limits implemented.
- (3) When mobile works are being undertaken and it is necessary to enhance the safety of workers and the passing traffic, particularly if there are workers or small items of plant on the roadway or shoulder, a mobile temporary speed zone of 40 km/h should be established. Reference should be made to Part 3, Division 3 of this Code.

69. Speed Limits for Long Term Worksites

- (1) The speed limit to be applied to long term worksites should be determined from Table 5.
- (2) If the works are expected to last no longer than one shift, then generally a safety barrier will not be used and the speed limits determined accordingly. However, on high speed roads consideration should be given to the use of a shadow vehicle, preferably equipped with a vehicle-mounted attenuator (refer clause 35 of this Code), to provide added protection particularly if workers or plant are on or adjacent to the roadway or shoulder.

- (3) Where appropriate on long-term worksites, having regard to the outcome of the worksite hazard assessment process (refer Part 2 of this Code), the physical separation of traffic and the work area is preferred, rather than the introduction of severe speed limits. Physical separation (e.g. moving the traffic further away from the work area, the use of a safety barrier or the use of a vehicle-mounted attenuator – as determined by the application of the hierarchy of safety controls as described in clause 22 of this Code) – is safer, more effective for job productivity, and generally reduces traffic delays.

Clearance to Traffic (metres)	Road Type	Worksite Speed Limit (km/h)*	
		Without Safety Barrier	With Safety Barrier
Within 1.2 m	All	40	80*
1.2 m to 3.0 m	Local Traffic Road	60*	Speed limit
	Collector Road or Rural Arterial 'C' Road	60*	Speed limit
	Secondary Road or Rural Arterial 'A' and 'B' Road	40	80*
	Arterial Road (urban area) or Rural 'M' Road	40	80*
	Freeway (urban)	40	80*
3.0 m to 6.0 m	Local Traffic Road	60*	Speed limit
	Collector Road or Rural Arterial 'C' Road	60*	Speed limit
	Secondary Road or Rural Arterial 'A' and 'B' Road	60	Speed limit
	Arterial Road (urban area) or Rural 'M' Road	60	80*
	Freeway (urban)	60	80*
6.0 m to 9.0 m	Local Traffic Road	80*	Speed limit
	Collector Road or Rural Arterial 'C' Road	80*	Speed limit
	Secondary Road or Rural Arterial 'A' and 'B' Road	80*	Speed limit
	Arterial Road (urban area) or Rural 'M' Road	60	80*
	Freeway (urban)	60	80*
9.0 m to 12.0 m	Local Traffic Road	Speed limit	Speed limit
	Collector Road or Rural Arterial 'C' Road	Speed limit	Speed limit
	Secondary Road or Rural Arterial 'A' and 'B' Road	Speed limit	Speed limit
	Arterial Road (urban area) or Rural 'M' Road	Speed limit	Speed limit
	Freeway (urban)	80	Speed limit
> 12.0 m	All	Speed limit	Speed limit

Note: * Where the worksite speed limit determined from the table is higher than the speed limit on the road where the works are occurring, the speed limit should remain.

**Table 5: Guide to the Selection of Worksite Traffic Management Speed Zones
Long Term Works**

- (4) For long term works, the general principles contained in *Section 4.9: Creating a Temporary Speed Zone at Works on Roads* of AS 1742.3-2009 should be considered. Any temporary speed limits should only apply when workers, roadworks plant and equipment, or traffic controllers are present on the worksite. At other times (e.g. out of hours / night time when workers are not present), any speed restriction signs should be removed or covered up, unless necessary for the safety of traffic having regard to the worksite conditions (e.g. rough or slippery unsealed road surface, excavations close to the roadway).

- (5) Unless the hazard assessment of the worksite indicates otherwise, the worksite speed limit outside working hours should be no more than 20 km/h less than the permanent speed limit.
- (6) Clearance to the worksite is measured to the edge of the nearest running traffic lane.
- (7) In certain situations where pedestrian workers are on the roadway or shoulder and within 1.2 metres of a traffic lane, consideration could be given to lower than normal worksite speed limits (e.g. 30 km/h). However, such speed limits should only be used when their need is obvious to road users, and normally in conjunction with the use of a traffic controller.
- (8) Where manual tasks are being undertaken close to traffic within a 40 km/h speed zone (e.g. string lining, asphalt screeding) workers should, wherever practicable, face the oncoming traffic when performing such tasks.
- (9) The installation of any roadworks speed limit signs (including any proposal to adopt a worksite speed limit of less than 40 km/h) is subject to the authorisation requirements of the *Road Safety (Traffic Management) Regulations 2009* (refer clause 16 of this Code).

Division 2 – Setting Speed Zones

70. General

- (1) In addition to the requirements of *Section 4.9: Creating a Temporary Speed Zone at Works on Roads* of AS 1742.3-2009, the following Victorian practices should be applied in relation to speed zones, repeater signs, end speed restriction signs and speed zoning.
- (2) Worksite speed limits should not be used to mask poor worksite traffic management practices.
- (3) Worksite speed limit signs should not be used alone, but introduced with other traffic control devices required by the worksite conditions. The aim should be to limit vehicle speeds through driver compliance and reduce the need for enforcement.
- (4) Worksite speed limit signs should be placed on both sides of the road, or both sides of each carriageway of the road, on high-speed, high-volume roads, except where permanent overhead electronic signs are installed.
- (5) To ensure the credibility of speed limit signs, the relevant speed limit through the worksite should be changed to suit the conditions. In particular, speed limits should generally be lower when workers are present on the worksite.
- (6) The use of these speed limits should be considered on a case by case basis, with the installation of any roadworks speed limit signs subject to any requirements of the relevant Regulations (including where necessary, the written authorisation of VicRoads) as set out in clause 16 of this Code.

71. Buffer Zones

- (1) *Section 4.9.5: Advance Warning of Temporary Speed Zones (Buffer Zones)* of AS 1742.3-2009 provides that advance warning of a temporary roadworks speed zone is required if the speed of traffic on the approach is more than 30 km/h higher than the roadworks speed limit.
- (2) Speed limit AHEAD signs should be used where the differential between the approach speed limit and the roadworks speed limit is 40 km/h or 50 km/h. The general arrangement and spacing of signs is shown in Figure 11.1 and Table 6.

- (3) An intermediate speed zone (buffer zone) of 80 km/h should be used in combination with 40 km/h AHEAD signs in the transition from an approach speed limit of 100 km/h or 110 km/h to a roadworks speed limit of 40 km/h. The general arrangement and spacing of signs is shown by Figure 11.2 and Table 6. On roads with a traffic volume of 200 vehicles per day or less, the 40 km/h AHEAD sign as shown in Figure 11.2 may be omitted.

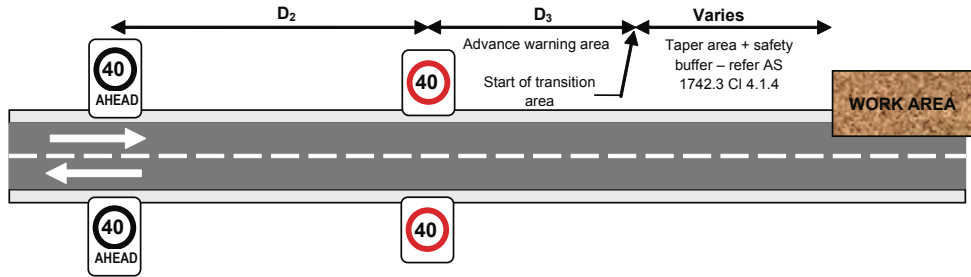


Figure 11.1: Typical Layout of Speed Limit Signs on the Approach to a Work Zone¹⁷

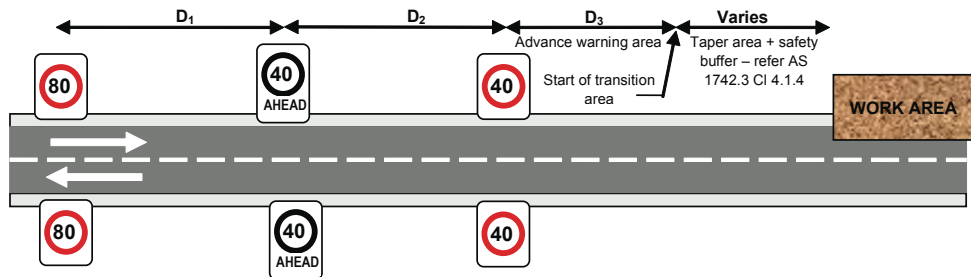


Figure 11.2: Typical Layout of Speed Limit Signs on the Approach to a Work Zone with an Intermediate Speed Zone¹⁷

Note: 17 – refer to clause 83 and Appendix E for information on the use of other traffic control signs in combination with the speed limit signs as shown in Figures 11.1 and 11.2 above.

- (4) Speed limit AHEAD signs should comply with *Section 3.5.5(d): Speed Limit AHEAD (G9-79)* of AS 1742.3-2009.

Approach Speed Limit (km/h)	Roadworks Speed Limit (km/h)	Intermediate Speed Limit (km/h)	Reference	D ₁ (metres)	D ₂ (metres)	D ₃ (metres)
110	60	Not required	Figure 11.1	N/A	300	220
110	40	80	Figure 11.2	200	200	160
100	60	Not required	Figure 11.1	N/A	250	200
100	40	80	Figure 11.2	200	200	160
90	40	Not required	Figure 11.1	N/A	250	180
80	40	Not required	Figure 11.1	N/A	200	160

Table 6: Location of Roadworks Speed Limit Signs

72. Repeater Signs

Section 4.9.8: Repeater Signs of AS1742.3-2009 provides that, where used, repeater speed restriction signs 'shall be placed on the left side of the roadway at a maximum spacing of 500 metres'. Where the roadworks speed limit is 40 km/h, repeater signs should be approximately 200 metres apart. For multi-lane roads or divided roads, repeater signs should be placed on each side of the road or carriageway where practicable.

73. End Speed Restriction

- (1) At the end of the termination area on the departure side of the work area, signs should be erected to return the road to its original, or permanent, speed limit. Signs indicating the end of the roadworks (e.g. an 'End Roadwork' sign), if used, should also be erected at this location. In returning traffic to the permanent speed limit, a buffer zone is not required. Signs terminating the roadworks should be placed facing traffic exiting the work area and should generally be located on the back of the closest multi-message sign frame for traffic heading towards the work area, but never more than 200 metres from the last point on the road affected by the works.
- (2) It is a legal requirement that a roadworks speed zone be terminated by another regulatory speed control sign. The only exception is where the road ends immediately after the work area. An 'END speed limit' (R4-12 – or RM4-V12 as shown in Table E1 of this Code) sign may be used instead of a speed-limit (R4-1 – or RM4-V1 as shown in Table E1 of this Code) sign only in the following limited circumstances –
 - (a) the prevailing speed limit that applies after the work area is the default rural limit of 100 km/h; and
 - (b) it is obvious to drivers that the environment is rural; and
 - (c) it is not desirable to display the actual speed limit because this is incompatible with the road conditions on the departure side of the work area due, for example, to a sharp curve, narrow bridge or unsealed road.
- (3) If a series of speed restrictions is in place on a particular road, and the distance between the ends of the lower speed zones would be less than 1000 metres in non-urban areas, or less than 500 metres in urban areas, then the lower speed limit should be continued between those zones.

74. Speed Zone Signing

Regulatory speed limit signs used at worksites should be consistent with AS 1742.3-2009. Where a regulatory speed limit sign is to be used in a multi-message sign, then it should be used in accordance with *Appendix E: Guidelines for Multi-Message Signs* of this Code.

Division 3 – Speed Control**75. Temporary Road Humps for Worksites**

- (1) In locations where there is a need to improve compliance with an established 40 km/h roadworks speed limit, the use of temporary road humps could be considered. The temporary road humps should comply with the Watts profile as described in the *Austroads Guide to Traffic Management – Part 8: Local Area Traffic Management*, or as approved by VicRoads.
- (2) Prior to the use of temporary road humps, a detailed hazard assessment of the worksite should be carried out. Other measures such as closure of the road and diversion of the traffic should be considered if these would provide a safer worksite. The temporary road humps and their associated signs should be included in the traffic management plan for the worksite.
- (3) Temporary road humps should extend for the full width of the roadway to ensure that vehicles cannot avoid passing over them. It may be necessary to place bollards beside the road in the vicinity of the road humps to prevent vehicles driving around them.

- (4) On two-way roads, a minimum of two temporary road humps should be deployed, with one at each end of the worksite. The use of one temporary road hump may be appropriate if the works are on a one-way roadway or only affect one direction of travel. If the length of the worksite is greater than 200 metres or there is an interrupted line of sight between the ends of the worksite, additional road humps with associated signing should be installed. The spacing between temporary road humps should be no greater than 200 metres.
- (5) Temporary road humps should only be used when workers are on site. The road humps should only be used in daylight unless lighting has been provided at each individual hump. The temporary road humps must be removed when they are no longer required or the speed limit is increased above 40 km/h.
- (6) The installation of any temporary road humps (being major traffic control devices) is subject to the prior receipt of a VicRoads written authorisation (refer clause 16 of this Code).

PART 6 – GENERAL HAZARD CONTROL MEASURES

76. Introduction

This part of the Code provides guidance on measures that can be used to control worksite hazards and is additional to the provisions of AS 1742.3–2009.

Division 1 – High Visibility Clothing

77. General Requirements

- (1) AS 1742.3-2009 provides that ‘High visibility clothing meeting the requirements of *AS/NZS 4602-1999: High Visibility Safety Garments* (‘AS/NZS 4602-1999’) for Types D, N or D/N garments shall be worn by all personnel working in or adjacent to traffic, including traffic at worksites, in quarries and on construction haul roads’.
- (2) Where other Australian Standards apply to the wearing of safety or protective clothing (e.g. emergency services personnel involved in works such as fire fighting or fuel reduction burning; or personnel working in the vicinity of rail tracks), then those standards should apply. However, where personnel are required to work on the road in undertaking non-emergency works (e.g. traffic controllers in conjunction with fuel reduction burns¹⁸), then high visibility clothing meeting the requirements of AS 1742.3-2009 and AS/NZS 4602-1999, or equivalent, should be worn. The wearing of such high visibility clothing for non-emergency works should be supported by other hazard management measures to protect, as far as is reasonably practicable, personnel from the risk of injury from traffic passing through the worksite.

Note: 18 – For roadside fuel reduction burning, a traffic management plan should include controls to address any hazard likely to be caused by smoke over the road (eg refer Table 3 of this Code).

78. Day Use Only at Road Worksites

Wherever personnel are required to work during daylight hours only at a worksite, they should wear a Class (Type) D outer torso garment (e.g. vest, jacket, polo shirt, overalls) with high visibility Class F fluorescent material wherever possible. Material colours for normal use should be either ‘red-orange’ or ‘yellow’ in accordance with AS/NZS 4602-1999. Alternatively, *AS/NZS 1906.4-1997: Retroreflective Materials and Devices for Road Traffic Control Purposes, Part 4: High Visibility Materials for Safety Garments* (‘AS/NZS 1906.4-1997’) provides for the special use colours of ‘red’ or ‘orange’ for particular industries.

79. Day and Night Use Next to Train Tracks

All personnel working on or near train tracks, rail reserves or public transport (rail) infrastructure¹⁹ (e.g. level crossings, boom gates) are required to –

- (a) wear high visibility clothing (e.g. vest, shirt, overalls or rainwear) of the colour ‘special purpose orange’ as defined in AS/NZS 1906.4-1997. Personnel should not wear red or green clothing, including red or green hats or safety hats, or carry red or green objects, as these colours have definite meanings to all operations of the railway system or signalling and safe working, and must be avoided at all times;
- (b) wear ‘special purpose orange’ high visibility clothing incorporating reflective strips as defined in AS/NZS 4602-1999;
- (c) not work within 3 metres (measured horizontally) of the alignment of the nearest train track (the ‘danger zone’) without the necessary safeworking qualifications; and
- (d) wear safety footwear and, if required, eye protection, when working in the ‘danger zone’.

Note: 19 –

- any person (e.g. infrastructure manager, works manager, contractor) proposing to carry out works which require access to any tram tracks, train tracks or other rail infrastructure within a road reserve, should apply to the relevant provider of public transport for any access conditions and approvals that may be necessary in respect of the works. An application should also be made to the relevant provider of public transport if the works may result in increased traffic congestion at a level crossing or reduce a train (or tram) driver’s

view of the level crossing (including the approach roadway on either side of the level crossing). For works that may result in a material change to rail infrastructure or rail land, the approval of VicTrack (as the rail infrastructure and land owner) may also be required.

- for emergency services personnel involved in works such as fire fighting or fuel reduction burning near rail tracks (or on rail reserves), they should consult first with the relevant provider of public transport.

80. Night Use Only

All personnel, including traffic controllers, who are required to work at night only, should wear a Class (Type) N outer torso garment made from a retroreflective material meeting the Class R standard specified in AS/NZS 1906.4-1997. The garment design should generally include retroreflective horizontal hoops on the body, arms and legs in accordance with AS/NZS 4602-1999. Retroreflective material should be capable of reflecting in wet or dry conditions.

81. Combination Day and Night Use

Where personnel carry out work during a combination of day and night time conditions, they should wear a Class (Type) D/N designed outer torso garment made from a solid colour-fluorescent background material as per day use complete with retroreflective strips, preferably horizontal front and back.

82. Wet Weather Clothing

Where personnel are required to work in wet conditions, they should wear clothing made from water proof material matching as near as practicable those properties specified in this Division for colour, and where necessary, retroreflectivity.

Division 2 – Use of Traffic Control Signs

83. Use of Traffic Control Signs

- (1) The use of any traffic control signs on worksites in accordance with a traffic management plan should meet at least the requirements of AS 1742.3-2009.
- (2) Care should be taken to ensure that all traffic control signs, including their supports and fittings, are used and located in a way that does not constitute a hazard to the workers on the worksite or people passing through the worksite, or to a vehicle that might collide with these signs.
- (3) The advance warning distances and intermediate spacing of signs leading up to the work area should comply with the following -
 - (a) where speed limit signs are not used, the advance warning distances and spacing of signs should comply with *Section 4.7.4: Advance Warning Distances* and Figure 4.7 of AS 1742.3-2009.
 - (b) the longitudinal distance between speed limit ahead signs, regulatory speed limit signs and the start of the transition area, traffic diversion or traffic controller position should comply with Table 6 of this Code.
 - (c) intermediate signs (if any) should be placed halfway between the locations mentioned in (b) above.
 - (d) if there are two intermediate signs required, they should be placed at one-third and two-thirds of the distance between the locations mentioned in (b) above.
 - (e) items (b), (c) and (d) above should take precedence over *Section 4.7.4: Advance Warning Distances* and Figure 4.7 of AS 1742.3-2009.
- (4) Worksite speed limit signs should be removed or covered immediately the need no longer exists. This is particularly important when workers and/or roadworks plant and equipment, justifying the speed zone, are not present (e.g. at night or on days when there is no work). Other traffic control signs, such as ROAD PLANT AHEAD and NEW WORK NO LINES MARKED, should also be removed or covered when they are not required.

- (5) Minor variations to a sign or device specified in AS 1742.3-2009 (e.g. a sign reduced in size to enable its use in a standard multi-message sign mounting – refer Appendix E of this Code) can be tolerated provided that such a modified sign or device still represents a reasonable likeness of that sign or device as specified in AS 1742.3-2009.
- (6) Signs and other traffic control devices should be erected and removed in a logical order that gives the greatest protection to workers and road users. Normally, the signs and devices should be erected in the following order – (i) advance warning; (ii) condition warning; (iii) warning of plant/road workers and (iv) driving instruction guidance. The signs and devices would normally be removed in the opposite order.
- (7) AS 1742.3-2009 provides that all roadworks signs should use at least Class 1 retroreflective material as specified in *AS/NZS 1906.1-2007: Retroreflective Materials and Devices for Road Traffic Control Purposes, Part 1: Retroreflective Sheeting* ('AS/NZS 1906.1-2007').

84. Traffic Controllers

- (1) Where traffic controllers are in operation, the approaches should be controlled to a speed limit of 60 km/h or less by means of the most appropriate traffic control measures having regard to the conditions of the worksite and approach road (e.g. sight distance). At night, the speed limit on the approaches to a traffic controller should be 40km/h unless the worksite hazard assessment indicates otherwise.
- (2) If the volume of approaching traffic prevents single lane operation, a traffic controller should be provided for each lane of approaching traffic.
- (3) If there is only width for a single lane past the worksite, then a traffic controller should be used with the associated advanced warning signs. The traffic controller may be omitted if the road carries less than 200 vehicles per day.
- (4) The symbolic Traffic Controller sign should be used to provide advance warning of the presence of a traffic controller. This sign should be used in combination with a PREPARE TO STOP sign to alert drivers that they may be required to stop (refer to *Section 4.10: Traffic Controllers* of AS 1742.3-2009).
- (5) At some locations, limitations on sight distance mean that the traffic controller or the end of the queue of vehicles is not visible to approaching drivers. On roads carrying high speed or high volumes of traffic, consideration should be given to placing an observer at a suitable location so that they can report to the traffic controller on the speed of approaching traffic and the level of congestion present.
- (6) When traffic controllers are working close to traffic signals, care should be taken to ensure that the indication given to the traffic is consistent with the display provided by the traffic signals.
- (7) Further information for traffic controllers is provided in the VicRoads publication *Guidelines for Traffic Controllers*.

Division 3 – Use of Portable Traffic Signals

85. General

- (1) The use of portable traffic signals (refer Figure 12 of this Code) should be in accordance with *Section 4.11: Portable Traffic Signals* of AS1742.3-2009.
- (2) In addition to the requirements of AS 1742.3-2009, the requirements as set out in clauses 86 to 89 of this Code should also apply to the use of portable traffic signals, other than for temporary fixed traffic signals (e.g. fixed temporary signals installed for periods in excess of one to two weeks and connected to mains electricity). The design and installation of temporary fixed traffic signals should comply with the relevant requirements of *AS 1742.14-1996: Manual of Uniform Traffic Control Devices, Part 14 – Traffic Signals*.

- (3) *Section 4.11.2: Operation* of AS 1742.3-2009 provides guidelines for the three modes of operation of portable traffic signals, being (i) vehicle actuated operation; (ii) fixed-time operation; and (iii) manual operation.

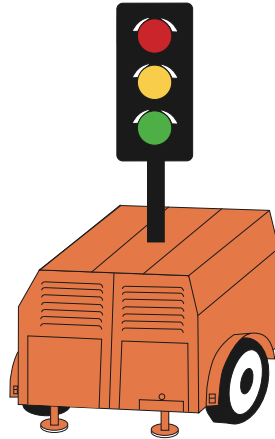


Figure 12: Portable Traffic Signal

86. Authorisation

- (1) Where traffic signals (whether portable or fixed) are proposed to be used at a worksite, their installation and operation is subject to compliance with the requirements of any relevant Regulations (including the written authorisation of VicRoads) as set out in clause 16 of this Code.
- (2) Persons operating portable traffic signals do not have authority to direct vehicles to proceed through red signals.
- (3) Persons operating portable traffic signals should, as a minimum, have been trained as a Traffic Controller (refer clause 15 of this Code).

87. Stop Here On Red Signal Sign

The STOP HERE ON RED SIGNAL (R6-6) sign should be used in conjunction with the portable traffic signals to indicate where traffic must stop, even if a stop line is provided. This sign should be erected 6 metres in advance of the portable traffic signals. Erection of this sign is subject to compliance with the requirements of any relevant Regulations (including the written authorisation of VicRoads) as set out in clause 16 of this Code.



Figure 13: Stop Here On Red Signal Sign

88. Operation

- (1) Shuttle Operation –
- (a) shuttle operation is where a portion of the roadway is closed so that a single lane has to be used alternately by traffic in opposite directions.
 - (b) the length of a single-lane operation under reversible flow should not be greater than the values shown in *Table 4.9: Desirable Maximum Length of Single-Lane Operation under Reversible Flow* of AS 1742.3-2009.
 - (c) if the timing of the signals is pre-set, the red and green times should be realistic, to ensure the safety of road users and workers at the worksite, and to ensure that road users are not kept waiting for an ‘excessive’ period against a red signal.
- (2) Signals for Works Vehicle Crossings –
When signals are used to allow works vehicles to cross a road, manual activation of the signals should be applied, unless VicRoads has approved a detection system to allow the works vehicles to automatically activate the signals.
- (3) Yellow Times –
The yellow time should comply with yellow settings at fixed traffic signals in Victoria, as set out in Table 7 of this Code.

Approach Speed (km/h)	Yellow Time (seconds)
40	3.0
50	3.5
60	4.0
70	4.5
80	4.5

Table 7: Traffic Signal Yellow Times

- (4) Flashing Yellow –
- (a) the equipment should automatically switch to ‘flashing yellow’ when any hazardous or incompatible conditions occur in its operation.
 - (b) under the law in Victoria, flashing yellow signals only have legal effect at an intersection or pedestrian crossing. Flashing yellow should not be used as a regular mode of operating traffic signals, even under light traffic conditions.
- (5) ‘Signal Not In Use’ Signs –
When traffic signals at worksites are not in use, the lamp assembly mast should be lowered or turned and directed away from all traffic flow to avoid distracting road users who may expect the signal to illuminate. If the masts are not lowered, the faces of inoperative lanterns should be covered with an approved metal ‘NOT IN USE’ sign.
- (6) Use of Traffic Signals When No Workers Are Present –
- (a) if portable traffic signals are operated when no works supervisors are present, advice should be provided to the VicRoads Traffic Management Centre (TMC) at 60 Denmark Street, Kew (Telephone 13 11 70). The TMC will contact the operator should they receive advice from the public regarding any problems with the signals.
 - (b) the TMC should also be advised when portable traffic signals are no longer in use.

(7) Approach Speeds –

When portable traffic signals are used for shuttle operation, the 85th percentile speed of approaching traffic should preferably be no more than 60 km/h and certainly no more than 70 km/h. Approach speeds to portable traffic signals used for works vehicle crossings should be no more than 80 km/h, depending on a hazard assessment. Approach speeds may be reduced through speed limit signs. These requirements are in addition to *Section 4.11.3: Approach Conditions and Speed* of AS 1742.3-2009.

89. Site Arrangements

(1) General Layout –

- (a) approaches to portable traffic signals would normally be single lane. On multi-lane roads, reduction to a single lane should be completed a minimum distance of 150 metres in advance of the traffic signals.
- (b) traffic signal units should not be located on the travel path or be used as a barrier to slow traffic. The unit should be between one (1) and two (2) metres from the left edge of the travelled path, with the beam aligned towards approaching vehicles about 200 metres from the signals. The lights should be in the vertical position to ensure maximum beam intensity.
- (c) care should be taken that there is no background interference from other lights of the same colour (e.g. advertising signs). Similarly, lighting in advance of traffic signals may reduce their effectiveness (e.g. the use of an illuminated flashing arrow sign tends to reduce the effectiveness of other devices).

(2) Sight and Stopping Distance –

- (a) it is important to locate signals to give them maximum visibility to approaching traffic and hence provide time for the vehicle to stop on a red signal. The minimum sight distance to the signal lantern required for stopping depends mainly on vehicle type and approach speed. Worksite conditions such as pavement surface also affect the required stopping sight distance.
- (b) *Section 4.11.3: Approach Conditions and Speeds* of AS 1742.3-2009 requires that ‘sight distance on the approach to traffic signals shall be a minimum of 150 metres to the primary signal face’. Where this sight distance is difficult to achieve, consideration should be given to locating additional traffic signals on the right side of the travelled path. Where the view to the traffic signals on the left side of the travelled path may be obscured by traffic ahead, additional signals should be placed on the right side.
- (c) it may be necessary to repeat the symbolic ‘Traffic Signals Ahead’ warning signs where the traffic signals cannot be seen or where traffic queues back beyond the signs and there is a risk of end-of-queue collisions (refer to *Section 4.7.8: Avoiding End-of-queue Collisions* of AS1742.3-2009).

Division 4 – Use of Electronic Variable Message Signs

90. General

- (1) An electronic variable message sign (VMS) is a traffic control device which displays one or more messages providing road users with necessary information about construction operations, maintenance, road incidents, traffic congestion, and roadway conditions.
- (2) When used efficiently, a VMS can convey information that is critical in nature (i.e. that requires road users to alter their driving in some manner and take specific action as a result), or that assists in the protection of workers at worksites or inspection sites.

- (3) An electronic VMS can comprise either of the following –
- (a) Mobile VMS – a mobile VMS may be trailer mounted or vehicle mounted and can be readily moved to a location as required, thus enabling the information to be given at the point of maximum impact (refer to *Section 3.12: Vehicle-Mounted Signs and Devices* of AS1742.3-2009 for information on sign sizes for various vehicle types); or
 - (b) Fixed VMS – a limited number of fixed VMSs have been erected beside or above high speed roads (generally high volume multi-lane roads) for traffic control purposes. These can be used as warning devices for works along the road.

91. Application

- (1) A VMS is used to provide added advance warning to road users on high speed and/or high volume roads where work activities may cause delays, or may require stopping, slowing, merging, or other manoeuvres that need a specific reaction.
- (2) Examples of worksite applications where a VMS can be effective include –
 - (a) construction and maintenance activities to provide advance warning on high speed freeways and arterial roads where workers are exposed to traffic, and to notify of delays and future activities.
 - (b) temporary traffic conditions for all parts of the road reserve including closures, detours and restrictions on vehicle dimensions.
 - (c) traffic conditions including changes in alignment, surface conditions, roadway width, lane drops, traffic delays, congestion and expected decrease of traffic speed.
- (3) Other applications where a VMS can be used are –
 - (a) combined with radar-speed readout, to encourage speed reduction prior to work activities. Due to unit reset/response time, they should only be used on roadways with low to moderate traffic volumes.
 - (b) to provide information on work schedules, alternative routes, anticipated delays, and other time-related information.
 - (c) to advise road users of the reason for the imposition of reduced speed limits.
- (4) Care should be taken to limit VMS use to worksites where there is a significant degree of hazard such as on high speed or multi-lane roads, or where the traffic arrangements are complex. Excessive and inappropriate use of these signs will reduce their effectiveness.

92. Restrictions on VMS Usage

A mobile VMS should NOT be used to –

- (a) replace static signs at a worksite.
- (b) replace flashing light arrow boards.
- (c) advise road users of something they already know.
- (d) provide information that is so specific it gives road users a false sense of security (e.g. Roadwork Ends 1.002 km).
- (e) display unnecessary information such as ‘Please Be Careful’, ‘Drive Safely’.

93. Message Screens

- (1) In order to ensure that the message is readable and understandable, and to maximise road safety, messages should be kept to a maximum of two screens in all speed zones. This enables road users to read and understand the entire message. Messages should not scroll horizontally or vertically.

- (2) If a message is displayed in one screen, the top line should refer to the problem, the centre line should advise of the location, and the bottom line should indicate the road user action required.

ROADWORKS
2 KM
SLOW DOWN

- (3) Single screen messages should be displayed continuously.
- (4) For messages that require two screens the following format should be used –
- (a) Screen 1 – problem/distance
- (b) Screen 2 – action

Example: 1st Screen:

MONASH FWY
NIGHT WORKS
16–17 DEC

2nd Screen:

SEEK ALT
ROUTE

- (5) Message update rates should be set as follows –
- (a) Duration of display of each message screen: 1.2–2 seconds
- (b) Pause between screens of the same message: 0–0.1 seconds
- (c) Pause between the second screen and repeat of the first screen if the message does not flow logically: 0.2–0.5 seconds
- (6) Where the message cannot be condensed to fit on two screens, an additional VMS should be located 300 metres downstream of the first sign. In this situation, only one of the VMSs should display a multiple screen message at any given time.
- (7) Symbols should only be used when the VMS has sufficient clarity for these symbols to be clearly defined by the pixels in the sign.

94. Message Structure

- (1) VMS messages should answer the questions of what, where and when, in a short and concise manner. They should only be displayed when either a response is needed or to inform road users of future events. As a minimum, road users need to know what they should do and a good reason for doing it.

LANE CLOSED
1 KM
MERGE RIGHT

- (2) When used in conjunction with active work operations, the messages should convey the state of the roadway condition and any actions that road users will be required to take (e.g. deviation, closure, lane closure).

95. Message Wording

- (1) When choosing the text for the message, it is important to remember that the message should –
 - (a) be as brief as possible.
 - (b) be easily understood.
 - (c) be unambiguous.
 - (d) be accurate and timely.
 - (e) avoid sensational incident information.
- (2) Messages should be limited in length to eight words in three lines, with each line being centred. This enables road users to quickly read the message without being distracted from the road.
- (3) Where words need to be abbreviated, they should be clear and unambiguous and should be used without a full stop. Unnecessary words and filler words (e.g. ahead, caution, danger, hazardous, a, an, the) should be eliminated.

96. Placement and Operation of VMS Hardware

- (1) Placement of the VMS (refer Figure 14 of this Code) is important to ensure that the sign is visible to the road user and provides ample time to take any necessary action.
- (2) The basic principles of placement for a VMS are –
 - (a) placement should be in accordance with the traffic management plan prepared for the works.
 - (b) where motor driven generators are used, the emitted noise of the equipment should comply with all regulations applicable to the control of environmental noise in the relevant area.
 - (c) pedestrian traffic, other road signing and adjacent properties and businesses should not be adversely affected.
 - (d) if it is practicable, a mobile VMS should be secured to an immovable object to prevent theft, tampering or interference.
- (3) Aiming Distance –
Wherever practicable, a mobile VMS should be aimed to the centre of the nearest lane for approaching traffic, using the desirable aiming distance specified in Table 8 below, and as shown in Figure 14. If the mobile VMS displays two screens, more distance is required for motorists to read and comprehend the sign.

Speed (km/h)	Desirable Aiming Distance (m)	
	One Screen	Two Screens
40–60	65	90
70–80	105	140
90–100	160	200
110	190	235

Table 8: Desirable Aiming Distance

- (4) Longitudinal Placement –
- (a) depending on the application of the VMS, there are a number of positions at which it could be placed. For messages that require an action, the VMS should be placed approximately 12 seconds of travel time upstream from the decision point. For freeways, a VMS should be placed 300 metres in advance of a worksite. For messages advising of forthcoming works, it is important to locate the VMS close to the area that will be affected so that road users can make a judgement as to whether it concerns them.
 - (b) a VMS should generally be positioned well upstream of the advance warning signs for mobile works or frequently changing work areas. Up to two kilometres from the actual work activity is considered appropriate. However, depending on travel speeds and roadway conditions, this distance may vary so road users have sufficient time to make any necessary decisions. A vehicle-mounted VMS may be used for slowly moving and mobile operations if available and if there is adequate shoulder width to permit the vehicle-mounted mobile VMS to be at least one kilometre behind the operation. Caution should be used to ensure that the mobile VMS is not so far from the worksite that the effect is diminished. Alternatively, a distance qualifier should be used to indicate when road users will encounter the works.
- (5) Lateral Placement –
- A VMS should be placed on the side of the roadway closest to the affected travel lane, being normally the left side of the roadway. Lateral positioning of a VMS should have regard to Figure 14 of this Code and the following –
- (a) where there is a kerb, the mobile VMS should be positioned behind it.
 - (b) if there is no kerb, it should be placed on the verge outside of any shoulder or emergency lane.
 - (c) where practicable, the mobile VMS should be positioned behind semi-rigid or rigid protection (e.g. guard fence, wire rope).
 - (d) for urban roads, the mobile VMS should be located to ensure it does not interfere with pedestrians, cyclists and other footpath users.
 - (e) if placing a mobile VMS behind the kerb is not an option, a parking lane can be used although care should be taken in ensuring that it does not encroach into any traffic lanes and the lane is properly closed off to through traffic.
 - (f) where clearance to the travel lane as set out in *Section 2.5.2: Positioning of Devices* of AS 1742.3-2009 cannot be achieved, consideration could be given to the use of a smaller sized VMS having regard to the speed of approaching traffic and the legibility of the message to be displayed.
- (6) Visibility –
- (a) the VMS should be clearly visible and legible from all traffic lanes and remain legible until the vehicle is no more than 30 metres from the sign.
 - (b) elevating the VMS increases the visibility of the sign to oncoming traffic so it can be viewed from behind other vehicles. Where the VMS is located in the vicinity of pedestrians, the bottom of the sign should be a minimum of 2.15 metres above the ground.
 - (c) signs should not be placed in sags or just beyond crests and should not be obstructed from view by vegetation, parked vehicles, or other roadside visual obstructions.

- (d) on curved alignments, in order to meet sight distance requirements, the VMS should be located at the start of the curve, or if not practicable, in such a way as to maximise the sight distance of the sign.
 - (e) also to be taken into consideration is specular reflection, background conditions (including lighting), and oncoming headlights.
- (7) Character Size –

Generally, the size of the characters on a VMS should be equivalent to those on the static signs, as set out in *AS 1742.2 – 2009: Manual of Uniform Traffic Control Devices, Part 2: Traffic Control Devices for General Use*. Table 9 gives a guide to the character dimensions for signs in various speed zones, although the type of road, volume of traffic and position of sign should be taken into consideration when determining whether the sizes would be adequate.

Speed Zone (km/h)	Height (mm)	Size
40–60	180	B
70	240	C
80–90	320	D
100–110	400	E

Table 9: Character Size

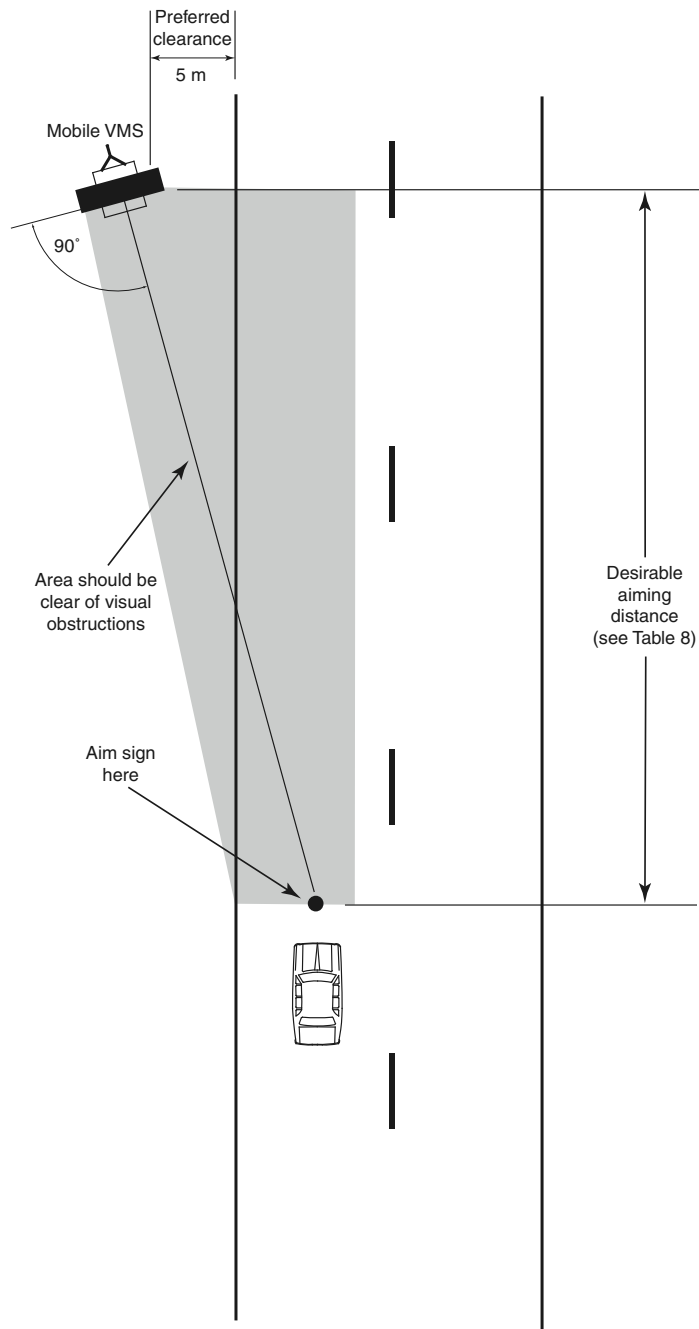


Figure 14: Mobile VMS Placement

Division 5 – Traffic Management with Electronic Signs

97. General

This section covers the use of electronic signs instead of certain static signs at a worksite as part of the overall arrangement of traffic control devices to manage traffic.

98. Electronic Speed Limit Signs

- (1) Where speed limit signs are to be used at a worksite, electronic speed limit signs may be used instead of static signs, provided –
 - (a) the electronic signs conform to the Road Rules, including having a red annulus; and
 - (b) the electronic signs are located longitudinally along the road in accordance with the requirements of AS1742.3-2009; and
 - (c) appropriate buffer zone signs and/or speed limit ahead signs are used in accordance with clause 71 of this Code; and
 - (d) there is no conflict between electronic and static speed limit signs.
- (2) Electronic speed limit signs may be located overhead or at the side of the road. They may be a permanent installation or a portable arrangement. They may have part of the red annulus of the sign flashing when the speed is reduced below the permanent speed limit. These signs may have the capability for the displayed speed limit to be changed remotely.
- (3) The size of an electronic speed limit sign should be of a similar width to that of a static speed limit sign for the same environment. However, the electronic version may be square rather than rectangular.

99. Speed Display Trailers

In situations where there is a need to reinforce roadworks speed limits, trailer-mounted signs displaying the speed of approaching vehicles could be considered for deployment close to workers at the worksite. These signs have been found to be more effective where the workers are visible and hence the reason for the roadworks speed limit is apparent.

100. Electronic Roadwork Warning Signs

A permanently mounted VMS may be used instead of a static sign for temporary roadworks to display messages consisting of words or numbers (e.g. roadwork ahead, end roadwork or advisory speed). Such a VMS may also be used for symbolic advance warning messages, such as the symbolic lane closed messages or the symbolic worker signs, but only if the electronic sign has sufficient clarity for these symbols to be clearly defined by the pixels in the sign. These signs may have an illuminated legend on a black background, instead of the standard colours.

101. Lane Use Signs

- (1) Overhead electronic lane use signs are used to indicate that a traffic lane is closed to traffic by displaying a red diagonal cross over the traffic lane. Where these signs are in place, they may be used at worksites to indicate that a traffic lane is closed. On freeways, these signs, which form part of an overall lane use management system, may also use diagonal arrows to direct drivers to change into a designated lane when roadworks are in progress or an incident occurs.
- (2) If a lane is to be closed for roadworks, any overhead lane use signs should display a red cross to apply over the length of the lane closure.
- (3) Where a traffic lane closure has been implemented using an overhead electronic lane use sign –
 - (a) static lane status signs may be omitted;
 - (b) the maximum spacing between traffic cones or temporary bollards adjacent to a closed traffic lane may be increased to 24 metres, or up to 60 metres if the lane closure is longer than 1 kilometre; and
 - (c) all other traffic control devices used to delineate the traffic lane closure should comply with *Section 3.9: Devices for Delineating and Indicating the Travelled Path* and *Section 4.8: Approach Tapers* of AS1742.3-2009.

APPENDIX A

DOCUMENTS REFERENCED IN THIS CODE

Acts and Regulations:

- Interpretation of Legislation Act 1984
- Occupational Health and Safety Act 2004
- Public Record Act 1973
- Road Management Act 2004
- Road Safety Act 1986
- Occupational Health and Safety Regulations 2007
- Road Safety (Traffic Management) Regulations 2009
- Road Safety Road Rules 2009

Australian Standards:

- AS 1742.2-2009: Manual of Uniform Traffic Control Devices, Part 2: Traffic Control Devices for General Use
- AS 1742.3-2009: Manual of Uniform Traffic Control Devices, Part 3: Traffic Control for Works on Roads
- AS 1742.14-2002: Manual of Uniform Traffic Control Devices, Part 14: Traffic Signals
- AS/NZS 1906.1-2007: Retroreflective Materials and Devices for Road Traffic Control Purposes, Part 1: Retroreflective Sheeting
- AS/NZS 1906.4-1997: Retroreflective Materials and Devices for Road Traffic Control Purposes, Part 4: High Visibility Materials for Safety Garments
- AS/NZS 3845-1999: Road Safety Barrier Systems
- AS/NZS 4360-2004: Risk Management
- AS/NZS 4602-1999: High Visibility Safety Garments

Other:

- Austroads Guide to Road Design – Part 6: Roadside Design, Safety and Barriers 2009
- Austroads Guide to Traffic Management – Part 8: Local Area Traffic Management 2008
- Austroads Guide to Road Safety – Part 6: Road Safety Audit 2009
- MASH: Manual for Assessing Highway Safety Features
- NCHRP Report 350: Recommended Procedures for the Safety Performance Evaluation of Highway Features
- WorkSafe Victoria: Framework for Undertaking Work Near Overhead and Underground Assets – Guide to the No Go Zones, July 2004
- WorkSafe Victoria: How WorkSafe applies the law in relation to Reasonably Practicable, November 2007
- VicRoads: Guidelines for Traffic Controllers 2010

Note: References to Australian Standards, or any other documents, that are applied, adopted or incorporated in this Code are references to that Australian Standard, or other document, as amended from time to time.

APPENDIX B

WORKSITE SAFETY TRAFFIC MANAGEMENT CHECKLIST

WORKSITE SAFETY – TRAFFIC MANAGEMENT CHECKLIST			
Date		Time	
Employer		Works Manager	
Health & Safety Representative			
Location of Worksite			
Activity Being Undertaken			
Estimated daily traffic volume (vehicles per day)	vpd	Clearance between workers and traffic	metres
Permanent traffic speed through area	km/h	Worksite traffic speed	km/h
Risk rating			
	Issue	Yes	No
		N/A	
	PLANNING		
1.	Has a traffic management plan been selected or provided?		
2.	Is the plan available for inspection?		
3.	Is the plan relevant for the work?		
4.	Are written authorisations for temporary roadworks speed limits required / in order?		
5.	Are documented changes (if any) to the traffic management plan available for inspection?		
6.	Have temporary roadworks speed limits been determined correctly? (e.g. Code of Practice for Worksite Safety – Traffic Management)		
	ADVANCE WARNING / SIGNAGE		
7.	Are all roadworks signs and devices installed according to the traffic management plan?		
8.	Have any contradictory, distracting or superfluous signs or markings been covered up or removed?		
9.	Are signs appropriate for current conditions? (e.g. symbolic worker signs not displayed / not visible when no workers on site; road condition signs after worksite vacated)		
10.	Is signage suitably placed, especially for vehicles approaching at high speed? (e.g. check sight distance; advance warning sign distance; height of signs above ground; vehicle queue length not beyond signage; check potential 'end-of-queue' issues)		
11.	Are multi-message signs being used correctly?		
12.	Are the signs free from damage and defect? (e.g. easy to read; check shadow & glare issues)		
13.	Are sign mountings secure, stable and not a hazard to road users if struck?		
14.	Are signs in pairs where needed? (Note: recommended on high speed high volume roads and multi-lane roads)		
15.	Are flashing arrows signs available and in use where required?		
16.	Are sign sizes correct?		
	WORKSITE		
17.	High visibility clothing appropriate for conditions and used and worn correctly? (e.g. day/night; meet AS4602-1999 and AS1906.4-1997; clean; fastened; personnel visible)		
	WORK ZONE SEPARATION		
18.	Are clearances between workers and adjacent traffic being maintained?		
19.	Have safety barriers (where used) been installed correctly? (e.g. units connected; recommended length, proper end treatment installed; water filled where required; correct rating for speed zone; 'no-go' zones observed)		
20.	Has containment fence been installed where required? (e.g. workers/pedestrians/cyclists separation)		
	OTHER ROAD USERS		
21.	Has possible traffic congestion been considered and steps taken to avoid it?		
22.	Have the effects of the works on public transport been considered?		
23.	Have needs of other road users been provided for (e.g. pedestrians, cyclists, wheelchairs)?		
24.	Has proper access to side roads and properties been provided?		
	NOTES		
	REFERENCES		
A.	AS 1742.3 – 2009 Manual of Uniform Traffic Control Devices, Part 3: Traffic Control for Works on Roads.		

APPENDIX C

WORKSITE HAZARD ASSESSMENT CHECKLIST

Work Location:		
Step 1 – Worksite Hazard Rating		
Traffic volume	Traffic speed	
Clearance between workers and traffic	Worksite Hazard Rating: H - High L - Low	
Step 2 – Required Level of Planning		
Plans required.....		
Step 3 – Hazards at Worksite and Step 4 – Hazard Control Measures		
Safety Hazard / Risk Factors	Present at Worksite	Hazard Control Measure(s)
Clearance to traffic		
High speed traffic through worksite		
Poor advance sight distance to worksite (<200 metres)		
Poor observance of directions / instructions by motorists		
Narrow pavement with no escape path (<2.9 metres width)		
Presence of workers at the worksite		
Excavations adjacent to worksite		
Presence of unprotected hazards within the clear zone		
Rough or unsealed road surface		
High volume of traffic through worksite (>10,000 vpd)		
End-of-queue build-up of traffic / Poor sight distance to end-of-queue		
High volume of heavy vehicles		
Works vehicles entering/leaving worksite		
Cyclists/pedestrians through worksite		
Other		
Step 5 – Hazard Control Measures to be Used (include details of the assessment in accordance with the Hierarchy of Safety Controls indicating why higher levels were considered not to be reasonably practicable)		
Step 6 – Traffic Management Plan Prepared and Implemented		
Step 7 – Traffic Management Plan in Practice Reviewed		
Step 8 – Carry out the Work		

For more details of the steps involved in the worksite hazard assessment, refer to Part 2 of this Code.

APPENDIX D

AUTHORISATION FOR CERTAIN TRAFFIC CONTROL DEVICES AT WORKSITES

VICROADS MEMORANDUM OF AUTHORISATION TO ERECT, DISPLAY, PLACE, REMOVE OR ALTER TRAFFIC CONTROL DEVICES			
APPLICATION			
Pursuant to Regulations under Part 2 – Installation of Traffic Control Devices – of the Road Safety (Traffic Management) Regulations 2009, I/we hereby apply for authorisation to erect, display, place, remove or alter (as the case may be) the Traffic Control Device(s) as specified herein.			
I/We also agree and acknowledge that:			
1. The Traffic Control Devices will be removed before the "Expiry (Removal) Date" unless a further authorisation has been granted;			
2. Accurate records of actual usage will be kept in a recoverable document (eg. diary);			
3. The attached plans are a true and accurate reflection of the base information and proposed traffic guidance scheme; and			
4. The traffic guidance scheme as shown on the plan(s) are in accordance with the Worksite Safety Traffic Management - Code of Practice.			
1. APPLICATION DATE:	Fill In This Field	VICROADS / COUNCIL CONTACT DETAILS:	
APPLICANT DETAILS		8. VICROADS / COUNCIL CONTACT:	Fill In This Field
2. NAME:	Fill In This Field	9. VICROADS CONTRACT / PROJECT NO:	Fill In This Field
3. COMPANY:	Fill In This Field	CONTRACTOR DETAILS	
4. PH NUMBER:	Fill In This Field	10. CONTRACTOR:	Fill In This Field
5. FAX NUMBER:	Fill In This Field	11. ON SITE CONTACT:	Fill In This Field
6. EMAIL:	Fill In This Field	12. ON SITE CONTACT MOB:	Fill In This Field
7. SIGNATURE:	Fill In This Field	TRAFFIC MANAGEMENT COMPANY DETAILS	
Please do not alter the format of the MoA Application form.		13. TRAFFIC MANAGEMENT COMPANY:	Fill In This Field
Please note that ALL fields must be completed in order to process your MoA application.		14. ON SITE CONTACT:	Fill In This Field
		15. ON SITE CONTACT MOB:	Fill In This Field
16. Have the following been applied for and approved? (Please tick the appropriate boxes).			
	YES	N/A	EXEMPT
PLANNING PERMIT (Council)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
CONSENT FOR WORKS IN THE ROAD RESERVE (Council)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
CONSENT FOR WORKS IN THE ROAD RESERVE (VicRoads)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
NOTIFICATION OF NON-ROAD INFRASTRUCTURE (VicRoads)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
			Planning Permit Number / Consent Number
DESCRIPTION OF WORK / EVENT			
17. TYPE OF WORK / EVENT:	Drop Down List To Be Used		
18. SCOPE OF WORK / EVENT:	Detailed Description Of The Works To Be Conducted		
18a. LANE CLOSURE DETAILS:	Description Of Lane Closure ie. Left Lane Closed	18c. DIRECTION:	Direction of The Works eg North Bound or Geelong Bound
18b. SPEED REDUCTION:	The Existing Speed Limit to the Reduced Speed Limit	18d. TIME DELAY:	Delay To Traffic From Normal Travel Time
19. IS THIS APPLICATION A REPEAT OF ONE PREVIOUSLY AUTHORISED?:	Yes or No	IF YES, THE VICROADS REF NUMBER IS/WAS:	Type in VicRoads Ref Number
20. MAJOR TRAFFIC CONTROL DEVICE(S):	To Be Filled In With The Major Traffic Control Devices To Be Used		
21. MINOR TRAFFIC CONTROL DEVICE(S):	To Be Filled In With The Minor Traffic Control Devices To Be Used		
22. MAJOR TRAFFIC CONTROL DEVICE(S) FOR AFTER CARE:	To Be Filled in with the Major Traffic Control Devices to be Used for After Care		
23. MINOR TRAFFIC CONTROL DEVICE(S) FOR AFTER CARE:	To Be Filled in with the Minor Traffic Control Devices to be Used for After Care		
LOCATION DETAILS			
24. AREA / TOWN / SUBURB:	Fill In This Field	26. MUNICIPALITY:	Fill In This Field
25. ROAD NAME:	Fill In This Field	27. VCSD REF. Edition:	Fill In This Field
		28. MELWAY Ref. Edition:	Fill In This Field
29. NEAREST INTERSECTING ROAD OR CHAINAGE:	Fill In This Field		
30. OTHER LOCATION DETAILS:	Fill In This Field		
EXPECTED DISPLAY DATES / TIMES			
32. DAYS:	<input type="checkbox"/> Monday <input type="checkbox"/> Tuesday <input type="checkbox"/> Wednesday <input type="checkbox"/> Thursday <input type="checkbox"/> Friday <input type="checkbox"/> Saturday <input type="checkbox"/> Sunday		
33. ERECTION DATE: (format: dd/mm/yyyy)	Fill In This Field		
34. EXPIRY (REMOVAL) DATE: (format: dd/mm/yyyy)	Fill In This Field		
35. DAILY DISPLAY TIMES: (eg. 9:30am to 3:30pm)	Fill In This Field		
36. DISPLAY TIMES (AFTER CARE): (eg. 3:30pm to 9:30am)	Fill In This Field		
37. PERMANENT TRAFFIC CONTROL DEVICES TO BE CHANGED OR COVERED:	Fill In This Field		
AUTHORISATION (VicRoads Internal Use Only)			
As a VicRoads officer with the delegated power, I hereby grant authority to the use of Traffic Control Devices as specified above.		Authorised copies to:	
Signature		1. Contractor / Applicant	
Title		2. Police Traffic Management Unit	
Date:		3. VicRoads file	
		4. Project file	

APPENDIX E

GUIDELINES FOR MULTI-MESSAGE SIGNS

E1. Introduction

- (1) This section describes the permitted uses of multi-message signs at worksites on roads.
- (2) Multi-message signs are an alternative to stand-alone signs. They make the task of signing easier and cheaper due to the lightweight compact sign materials.

E2. Guidelines for Use

The use of multi-message signs should comply with the following requirements –

- (a) As the multi-message sign panels are smaller than the equivalent stand-alone signs, they should not be used on urban freeways, except where the worksite speed limit for traffic approaching the multi-message sign is 60 km/h or less and there are no more than two trafficable lanes for that direction of travel (refer also to sub-clause (c) below). In locations where multi-message signs are not permitted, standard stand-alone signs as per AS 1742.3-2009, or permanent overhead electronic signs (e.g. where used in freeway tunnels), should be used.
- (b) Individual message plates should comply with the requirements for the related stand-alone sign in *Section 3: Description and Use of Signs and Devices* of AS 1742.3-2009.
- (c) When used on high-speed, high-volume roads, sign assemblies should, where practicable, be duplicated on both sides of the roadway to which the signs apply.
- (d) Flags, orange in colour, should be displayed on the first multi-message sign a road user encounters, and any other that has a reduced speed limit within the sign assembly. Flags are not required on a multi-message sign returning traffic to the permanent speed limit at the end of the works. Flags are also not required where these signs are only to be displayed at night.
- (e) When used, regulatory speed limit sign plates should be placed in the top position of the multi-message frame on the side closest to the traffic. Speed Limit AHEAD sign plates should be placed on the side closest to the traffic. If the assembly does not include a speed limit sign plate, the 1200 x 300 mm panel may be placed at either the top or bottom of the assembly, so that the most important message is at the top. Where duplicate signs are used on each side of a roadway, the 1200 x 300 mm panel should be placed in the same position, either top or bottom, for both assemblies.
- (f) All sections of the frame should be filled (a blank yellow plate should be used within any unused sections of the sign assembly) and all sign plates should be placed and mounted in the specified frame at all times.
- (g) Within one sign assembly, no more than two message plates consisting of words only should be used. If the 1200 x 600 mm space is filled with two separate 600 x 600 mm message plates, at least one of the 600 x 600 mm plates should be symbolic or blank.
- (h) Messages should be logically linked and conflicting messages should not be used (e.g. the 1200 x 300 mm AHEAD message plate should not be used in combination with any other regulatory speed limit sign).
- (i) Typical examples of the use of multi-message signs are shown in Figures E1, E2, E3, E4 and E5 of this Appendix.

E3. Frame for Multi-Message Signs

The frame for multi-message signs should be capable of holding the following message plates –

- (a) two 600 x 600 mm and one 1200 x 300 mm²⁰; or
one 1200 x 600 mm and one 1200 x 300²⁰ mm; or
one 600 x 900 mm Speed Limit AHEAD plate and one 600 x 600 mm with the remaining 600 x 300 mm space filled with a blank yellow plate.
- (b) The frame should be capable of holding back-to-back mounting of message plates.
- (c) The frame should have a matt black finish.
- (d) The frame should comply with the requirements of *Section 3.3.1: General of AS 1742.3-2009*.

Note: 20 – the 1200 x 300 mm message plate can be used in either the top or bottom position of the frame (except where a regulatory speed limit sign plate is to be used within the frame – refer clause E2(e) of this Code).

E4. Message Plates

- (1) Approved VicRoads message sign plates are shown in Table E1. No other message plates should be used, unless approved by VicRoads.
- (2) Substrate material for the message plates should comply with the manufacturer's requirements for reflective sheeting. Where plastic flute board is used, the minimum thickness should be 6 mm.
- (3) The sign face should be constructed of retroreflective material meeting or exceeding the performance standard for Class 1 material, as specified in *AS/NZS 1906.1-2007: Retroreflective Materials and Devices for Road Traffic Control Purposes, Part 1: Retroreflective Sheetting*.
- (4) The sizes of symbols and words on message plates should generally accord with 'A' size signs shown in AS 1742.3-2009, however, it is acceptable for the size of the legend to be reduced slightly if it is necessary to fit into the relevant plate size. This takes precedence over the requirements of *Section 3.3.2: Multiple Sign Displays of AS 1742.3-2009*.
- (5) The Speed limit AHEAD sign (G9-79 – or GM9-V79 as shown in Table E1 of this Code) is not suitable to be reduced to a 600 x 600 mm size. It should, therefore, be used as either a standalone sign (1000 x 600 mm size) or as a plate (900 x 600 mm size) in an MMS.

E5. Labelling Ownership of Message Plates








- (1) The rear of message plates may be marked to identify the owner of the sign, subject to the following conditions –
 - (a) the rear marking may consist of a logo and/or lettering indicating the owner.
 - (b) the overall marking should be contained within a rectangle no larger than 200 square centimetres.
 - (c) the marking should be non-reflective.
 - (d) lettering should preferably be orientated at 45 degrees from the horizontal.
- (2) These requirements are to avoid the marking on the rear of the sign being a distraction to road users if the rear of the sign is displayed to traffic.
- (3) The front of message plates may be marked with a 'watermark' to identify the owner of the sign, subject to the following conditions –
 - (a) watermarks may consist of a logo and/or lettering indicating the owner.
 - (b) they should have minimal impact on the retroreflective performance of the sign.









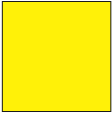




- (c) typically, they should be applied using 1.4% black ink and 98.6% toner.
 - (d) each watermark should not exceed 50 mm square.
 - (e) where used, watermarks should be placed in the corners or along the edge of a sign with a minimum spacing of 320 mm. For example, on a 1200 x 300 mm plate, four watermarks may be placed along the top and bottom edge of the sign; and on a 600 x 600 mm plate, four watermarks may be placed in the four corners.
- (4) Watermarks should only be applied to white, yellow and fluorescent red/orange materials, and not on screen-printed signs with red or blue backgrounds.













TABLE E1











Multi-Message Sign Plates











(Minimum Standard of Class 1 Sheeting Material)










Sign	Size	Colour	Sign Number
Advance Series			
	600 x 600	Black on Yellow	TM1-V1-1
	1200 x 300	Black on Yellow	TM1-V1-2
	1200 x 600	Black on Yellow	TM1-V1-3
	600 x 600	Black on Yellow	TM1-V2-1
	600 x 600	Black on Yellow	TM1-V3
	600 x 600	Black on Yellow	TM1-V4
	600 x 600	Black on Fluorescent Orange	TM1-V5
	1200 x 600	Black on Yellow	TM1-V6
	1200 x 600	Black on Yellow	TM1-V10-1









Sign	Size	Colour	Sign Number
	600 x 600	Black on Yellow	TM1-V10-2
	1200 x 300	Black on Yellow	TM1-V11-1
	1200 x 600	Black on Yellow	TM1-V11-2
	1200 x 300	White on Red	TM1-V18
	1200 x 300	Black on Yellow	TM1-V27
	600 x 600	Black on Yellow	TM1-V30
	1200 x 600	Black on Yellow	TM1-V32
	600 x 600	Black on Fluorescent Orange	TM1-V34
	600 x 600	Yellow	TM1-V100-1
	1200 x 300	Yellow	TM1-V100-2
	1200 x 600	Yellow	TM1-V100-3
	1200 x 300	White on Blue	TM1-V102
	1200 x 300	Black on Yellow	TM1-V103-1











Sign	Size	Colour	Sign Number
	1200 x 600	Black on Yellow	TM1-V103-2
	1200 x 300	Black on Yellow	TM1-V104-1
	1200 x 600	Black on Yellow	TM1-V104-2
	1200 x 300	Black on Yellow	TM1-V105
	600 x 600	Black on Yellow	TM1-V106
	1200 x 300	Black on White	TM1-V108
	1200 x 300	Black on Yellow	TM1-V109
	1200 x 300	Black on Yellow	TM1-V110
	1200 x 600	Black on Yellow	TM1-V111
	600 x 600	Black on Yellow	TM1-V112
Position Series			
	1200 x 300	Black on Yellow	TM2-V4-1
	1200 x 600	Black on Yellow	TM2-V4-2









Sign	Size	Colour	Sign Number
	300 x 600	Black on Yellow	TM2-V6-1(LA)
	300 x 600	Black on Yellow	TM2-V6-1(LC)
	600 x 600	Black on Yellow	TM2-V6-2(L)
	600 x 600	Black on Yellow	TM2-V6-2(R)
	1200 x 600	Black on Yellow	TM2-V6-3(L)
	1200 x 600	Black on Yellow	TM2-V6-3(R)
	600 x 600	Black on Yellow	TM2-V13
	600 x 600	Black on Yellow	TM2-V16
	600 x 600	Black on Yellow	TM2-V17
	1200 x 600	Black on Yellow	TM2-V23









Sign	Size	Colour	Sign Number
	600 x 600	Black on Yellow	TM2-V24
	600 x 600	Black on Yellow	TM2-V25
	600 x 600	Black on Yellow	TM2-V100
	1200 x 300	Black on Yellow	TM2-V101(L)
	1200 x 300	Black on Yellow	TM2-V101(R)
	600 x 600	Black on Yellow	TM2-V102
	600 x 600	Black on Yellow	TM2-V103
	600 x 600	Black on Yellow	TM2-V104
	600 x 600	Black on Yellow	TM2-V105
Road Condition Series			
	600 x 600	Black on Yellow	TM3-V3







Sign	Size	Colour	Sign Number
	600 x 600	Black on Yellow	TM3-V6
	600 x 600	Black on Yellow	TM3-V7
	600 x 600	Black on Yellow	TM3-V9
	600 x 600	Black on Yellow	TM3-V13
	600 x 600	Black on Yellow	TM3-V14
	600 x 600	Black on Yellow	TM3-V16
	600 x 600	Black on Yellow	TM3-V100
	1200 x 300	Black on Yellow	TM3-V101
	1200 x 300	Black on Yellow	TM3-V102-1

Sign	Size	Colour	Sign Number
	1200 x 600	Black on Yellow	TM3-V102-2
Special Hazard Series			
	600 x 600	Black on Yellow	TM4-V6
	1200 x 600	Black on Yellow	TM4-V100-1
	600 x 600	Black on Yellow	TM4-V100-2
	1200 x 600	Black on Yellow	TM4-V101
	1200 x 600	Black on Yellow	TM4-V105
	600 x 600	Black on Yellow	TM4-V106
	600 x 600	Black on Yellow	TM4-V107

Sign	Size	Colour	Sign Number
Traffic Diversion Series			
	1200 x 300	Black on Yellow	TM5-V1(L)
	1200 x 300	Black on Yellow	TM5-V1(R)
	1200 x 300	Black on Yellow	TM5-V1(T)
	600 x 600	Black on Yellow	TM5-V5
	600 x 600	Black on Yellow	TM5-V6
	600 x 600	Black on Yellow	TM5-V100
	600 x 600	Black on Yellow	TM5-V101
Pedestrian Series			
	1200 x 300	Black on Yellow	TM8-V2(L)
	1200 x 300	Black on Yellow	TM8-V2(R)
	600 x 600	Black on Yellow	TM8-V3

Sign	Size	Colour	Sign Number
	1200 x 600	Black on Yellow	TM8-V4
	600 x 600	Black on Yellow	TM8-V100
	600 x 600	Black on Yellow	TM8-V101
	600 x 600	Black on Yellow	TM8-V102
Regulatory Series			
	600 x 600	Red/White	RM2-V4
	600 x 600	Black/Red/White	RM2-V6(L)
	600 x 600	Black/Red/White	RM2-V6(R)
	600 x 600	Black/White	RM2-V14(L)

Sign	Size	Colour	Sign Number
	600 x 600	Black/White	RM2-V14(R)
	600 x 600	Black/Red/White	RM4-V1-40
	600 x 600	Black/Red/White	RM4-V1-50
	600 x 600	Black/Red/White	RM4-V1-60
	600 x 600	Black/Red/White	RM4-V1-70
	600 x 600	Black/Red/White	RM4-V1-80
	600 x 600	Black/Red/White	RM4-V1-90
	600 x 600	Black/Red/White	RM4-V1-100

Sign	Size	Colour	Sign Number
	600 x 600	Black/Red/White	RM4-V1-110
 *	600 x 600	Black on White	RM4-V12-40
 *	600 x 600	Black on White	RM4-V12-60
* To be used only in accordance with clause 73.			
Guide Series			
	600 x 900	Black on White	GM9-V79-40
	600 x 900	Black on White	GM9-V79-50
	600 x 900	Black on White	GM9-V79-60



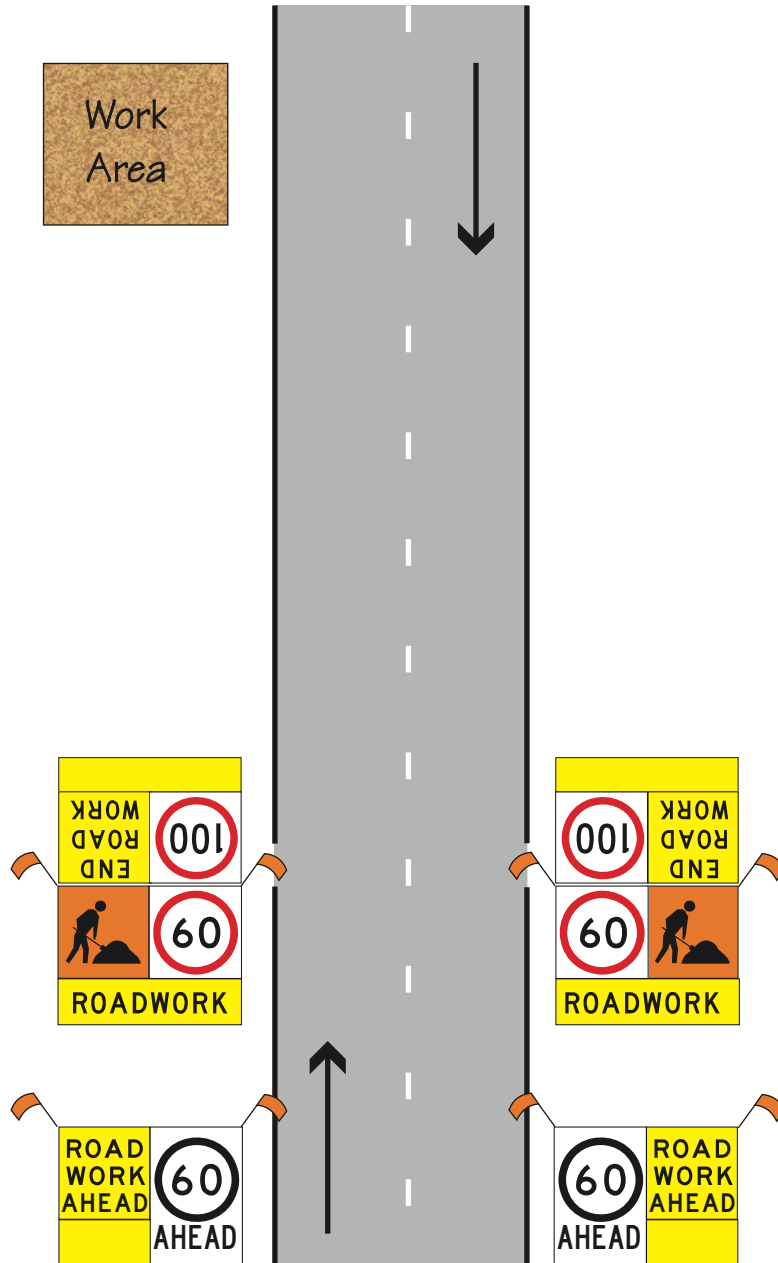
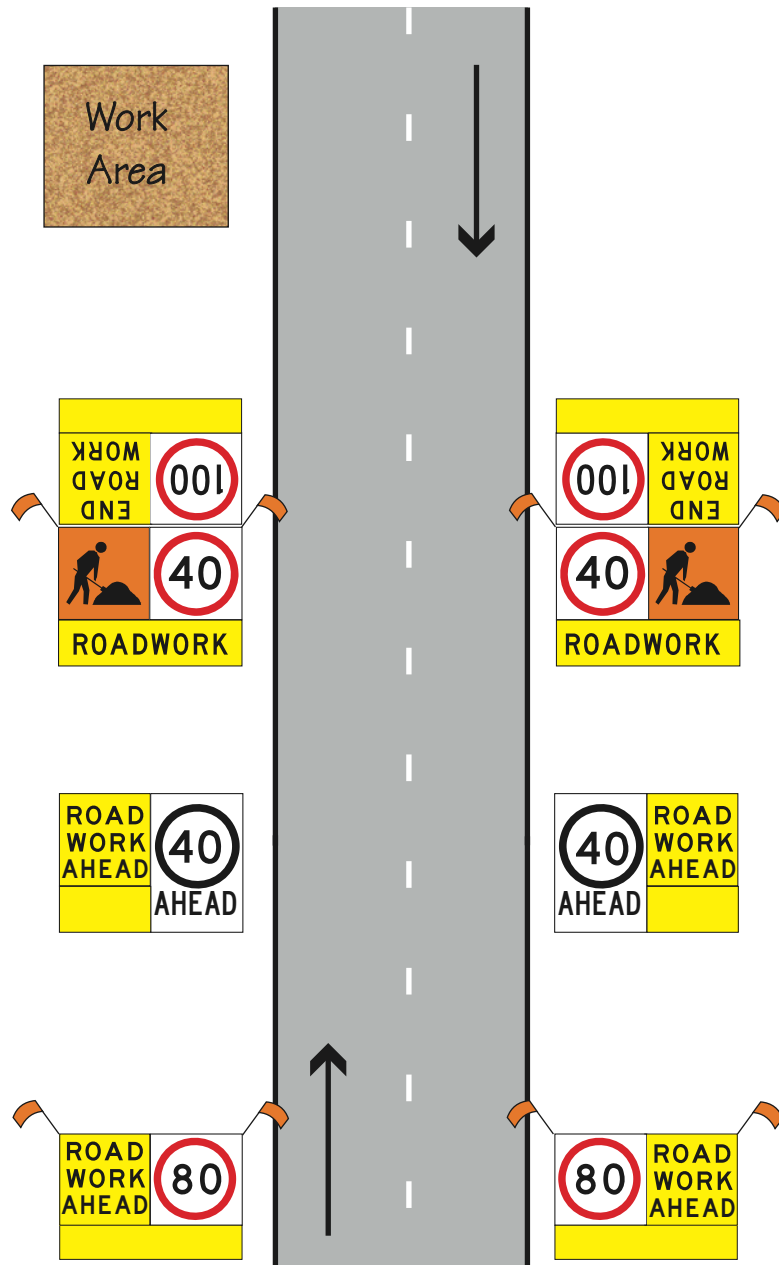
Sign	Size	Colour	Sign Number
 A rectangular sign with a white background. At the top, the number '70' is enclosed in a black circle. Below the circle, the word 'AHEAD' is written in bold, black, uppercase letters.	600 x 900	Black on White	GM9-V79-70
 A rectangular sign with a white background. At the top, the number '80' is enclosed in a black circle. Below the circle, the word 'AHEAD' is written in bold, black, uppercase letters.	600 x 900	Black on White	GM9-V79-80

FIGURE E.1
EXAMPLE OF MULTI-MESSAGE SIGNING FOR BASIC SPEED REDUCTION



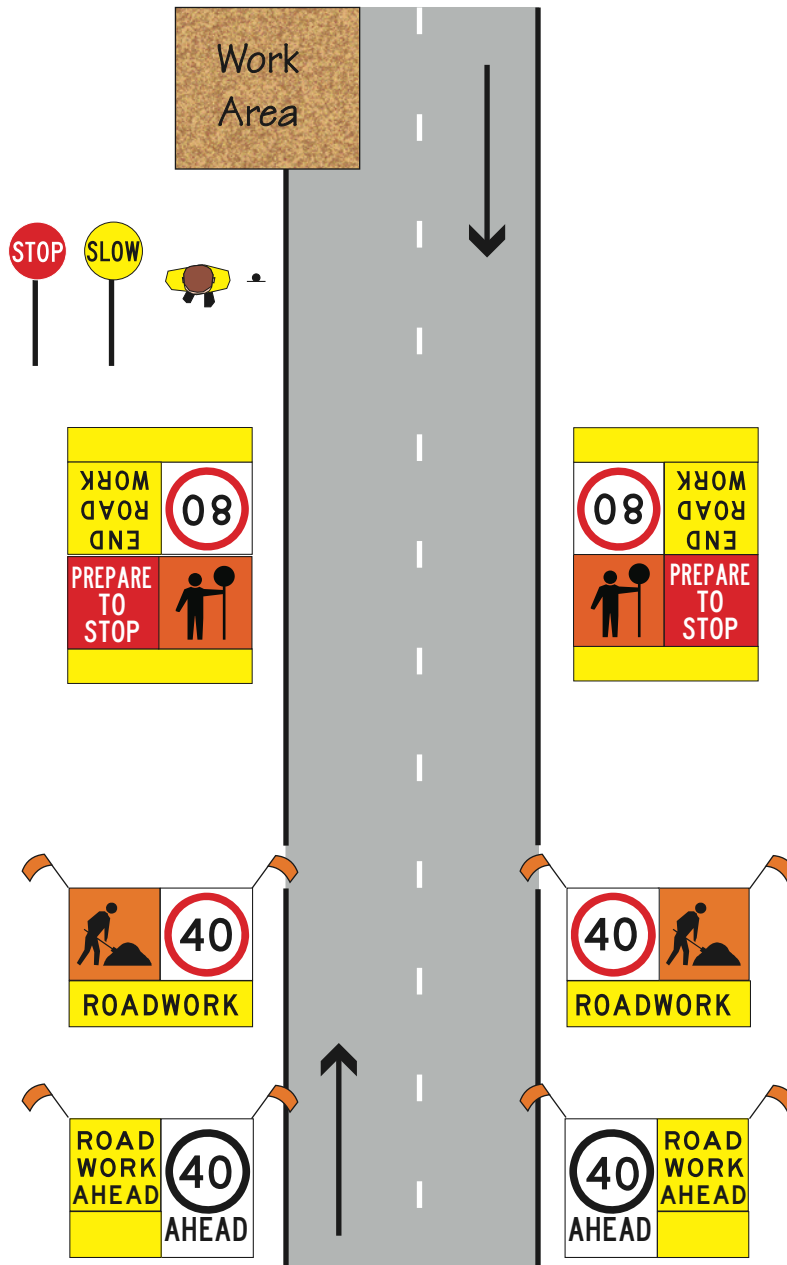
Refer to clause 83 of this Code for information on the placement and spacing of traffic control signs.

**FIGURE E.2
EXAMPLE OF MULTI-MESSAGE SIGNING FOR AN
INTERMEDIATE SPEED (BUFFER) ZONE**



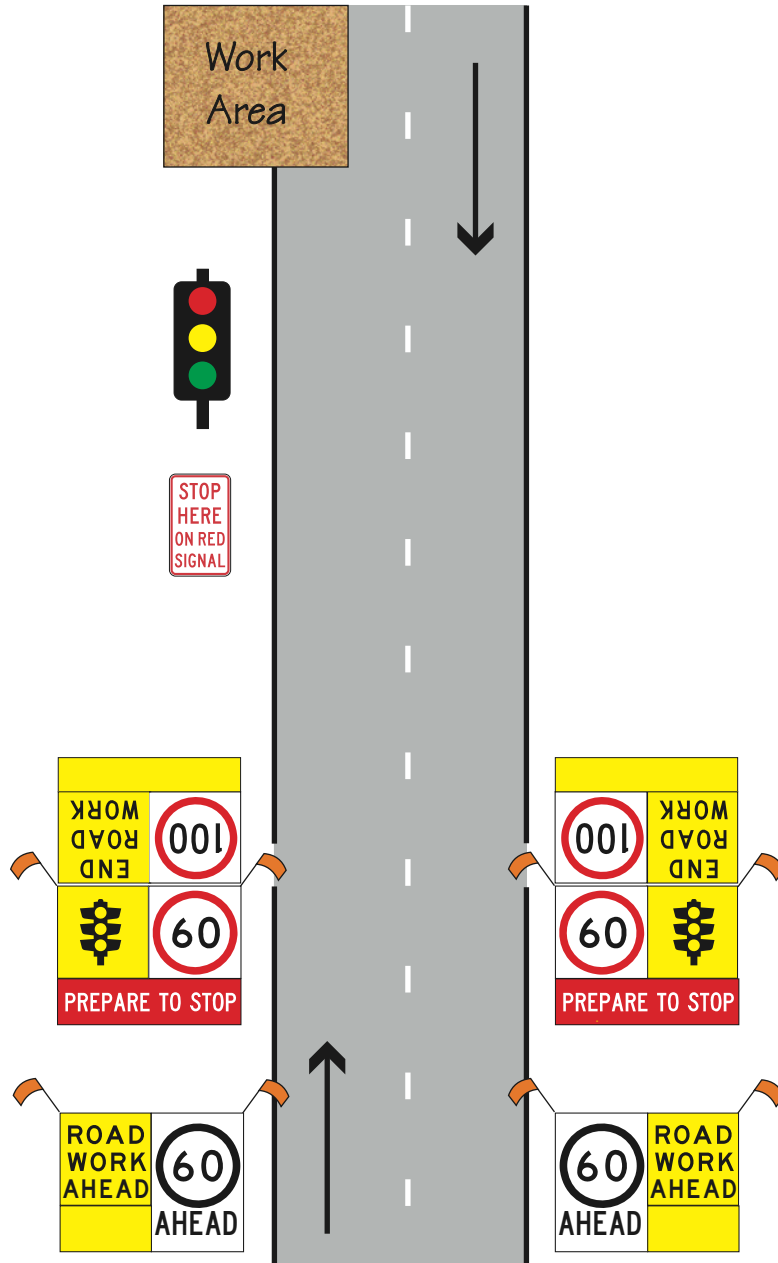
Refer to clause 83 of this Code for information on the placement and spacing of traffic control signs.

FIGURE E.3
EXAMPLE OF MULTI-MESSAGE SIGNING FOR TRAFFIC CONTROLLER



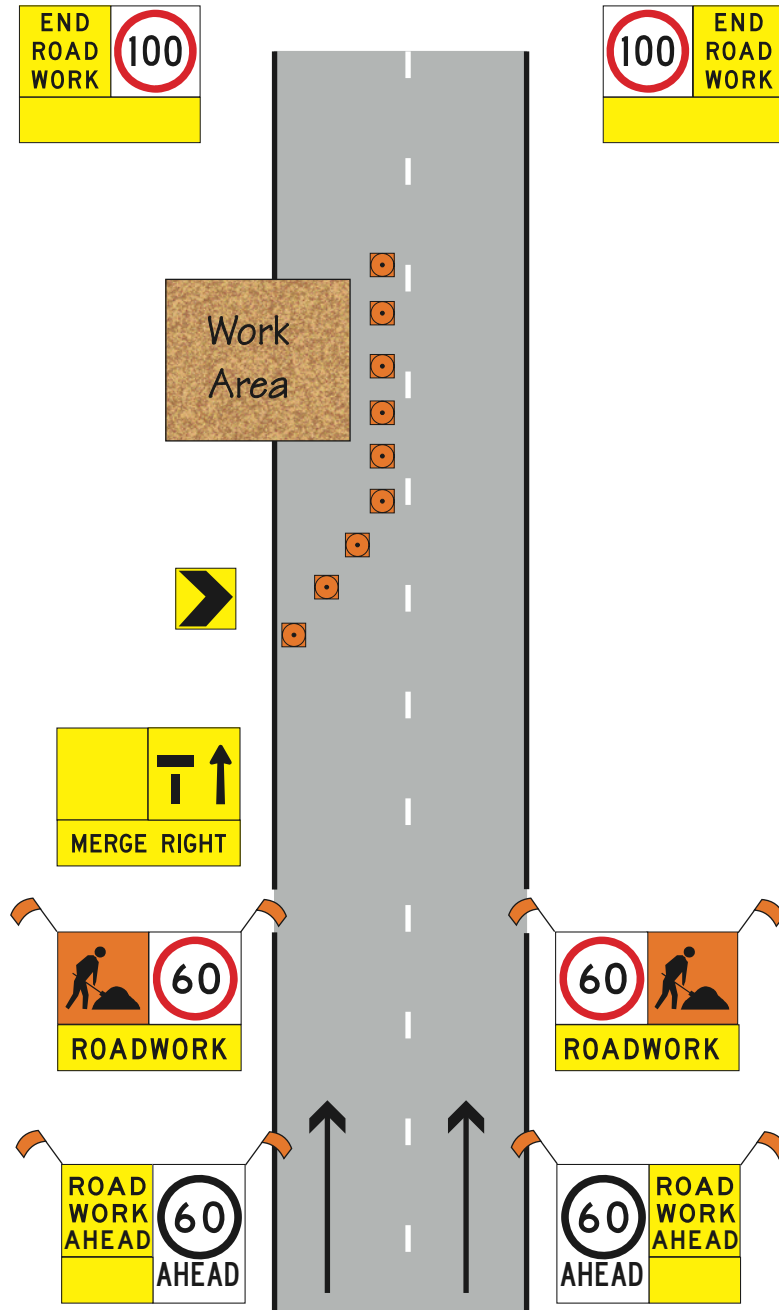
Refer to clause 83 of this Code for information on the placement and spacing of traffic control signs.

FIGURE E.4
EXAMPLE OF MULTI-MESSAGE SIGNING FOR TRAFFIC SIGNALS



Refer to clause 83 of this Code for information on the placement and spacing of traffic control signs.

FIGURE E.5
EXAMPLE OF MULTI-MESSAGE SIGNING FOR LANE CLOSURE



Refer to clause 83 of this Code for information on the placement and spacing of traffic control signs.

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