



Manual of uniform traffic control devices

Part 3: Traffic control for works on roads



AS 1742.3:2019

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Part 3: Traffic control for works on roads

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Preface

This Standard was prepared by the Standards Australia Committee MS-012, Road Signs and Traffic Signals, to supersede AS 1742.3—2009. It was prepared with major contributions from a working group comprising committee members from road agencies, work safety authorities and road working organizations.

The objective of this Standard, together with the Austroads *Guide to Temporary Traffic Management* is to provide organizations and individuals carrying out such works with a set of uniform practices for the signing, delineation and use of devices for works on roads which will promote the safety of workers and the safe and efficient movement of road users at the work site.

This Standard is one in a series of 14 Standards which together form the *Manual of uniform traffic control devices*. The series comprises the following Standards:

AS 1742.1, *Manual of uniform traffic control devices, Part 1: General introduction and index of signs*

AS 1742.2, *Manual of uniform traffic control devices, Part 2: Traffic control devices for general use*

AS 1742.3, *Manual of uniform traffic control devices, Part 3: Traffic control for works on roads* (this Standard)

AS 1742.4, *Manual of uniform traffic control devices, Part 4: Speed controls*

AS 1742.5, *Manual of uniform traffic control devices, Part 5: Street name and community facility name signs*

AS 1742.6, *Manual of uniform traffic control devices, Part 6: Tourist and service signs*

AS 1742.7, *Manual of uniform traffic control devices, Part 7: Railway crossings*

AS 1742.9, *Manual of uniform traffic control devices, Part 9: Bicycle facilities*

AS 1742.10, *Manual of uniform traffic control devices, Part 10: Pedestrian control and protection*

AS 1742.11, *Manual of uniform traffic control devices, Part 11: Parking controls*

AS 1742.12, *Manual of uniform traffic control devices, Part 12: Bus, transit, tram and truck lanes*

AS 1742.13, *Manual of uniform traffic control devices, Part 13: Local area traffic management*

AS 1742.14, *Manual of uniform traffic control devices, Part 14: Traffic signals*

AS 1742.15, *Manual of uniform traffic control devices, Part 15: Direction signs, information signs and route numbering*

This edition of the Standard includes substantial variations to the previous (2009) edition. The more significant of these are as follows:

- (a) A complete restructure of the Standard to concentrate on the essential and regulatory traffic control requirements to safely and effectively carry out works on roads.
- (b) Removal of a large amount of the guideline information that appeared in the previous (2009) edition, in recognition that this information has now been enhanced and included in the Austroads *Guide to Temporary Traffic Management*.
- (c) Alteration of information on temporary speed limits, traffic controllers and traffic signals in recognition that the controls place mandatory requirements on road workers and road users, and the inclusion of information relating to vulnerable pedestrians and cyclists.
- (d) Changes to the former Section 3 (Description and use of signs and devices) which is in [Section 4](#) (Function, description and use of standard signs and devices) of this edition, including the

addition of an alternative series of “multi-message” signs, which comprise a maximum of three logically related messages in a single display.

- (e) Clarification of the terms “traffic management plan” and “traffic guidance scheme”.

The relationship between Australian Standards and publications produced by Austroads should be noted. The former provide specifications and procedures that ensure that products and services are safe and reliable, and consistently perform the way they are intended. Austroads provides guidance documents that deal with the design, construction maintenance and operation of the road network. Austroads documents are also used by road authorities in New Zealand.

In cases of similar subject matter, this is dealt with across both sets of documents. Where this occurs, each document aims to provide information that is consistent, complimentary and supportive of the other.

The terms “normative” and “informative” are used in Standards to define the application of the appendices to which they apply. A “normative” appendix is an integral part of a Standard, whereas an “informative” appendix is only for information and guidance.

Contents

Preface	ii
Section 1 Scope and general	1
1.1 Scope	1
1.2 Normative references	1
1.3 Terms and definitions	2
1.4 Responsibility for safety at work sites	4
Section 2 Traffic management plans	5
2.1 General	5
2.2 Preparation of traffic management plans	5
Section 3 Traffic guidance scheme	6
3.1 General	6
3.2 Preparation of traffic guidance schemes	6
3.3 Implementation of traffic guidance schemes	6
3.4 Creating a temporary speed zone	7
3.4.1 General	7
3.4.2 Requirements and recommendations	7
3.4.3 Duration	7
3.4.4 Advance warning of temporary speed zones (buffer zones)	7
3.4.5 Temporary speed zone	8
3.4.6 Temporary offset speed zones	8
Section 4 Function, description and use of standard signs and devices	9
4.1 Functions of devices	9
4.2 Selection and use	9
4.2.1 General	9
4.2.2 Multi-message signs	10
4.2.3 Delineation	10
4.2.4 Night conditions	10
4.2.5 Adjustment to existing devices	11
4.2.6 Covering of signs and devices	11
4.2.7 Safety barriers	11
4.2.8 Vehicle size and load restrictions	12
4.3 Installation and removal	12
4.3.1 Condition of devices	12
4.3.2 Positioning of devices	12
4.3.3 Setting out of devices	13
4.3.4 Orientation of sign	13
4.3.5 Inspection	14
4.3.6 Public awareness	14
4.3.7 Removal	14
4.4 Format and size of signs	15
4.4.1 Format of signs	15
4.4.2 Retroreflective material	15
4.4.3 Sign sizes in the T Series (excludes multi-message signs)	15
4.4.4 Sign panel sizes in the TM Series (for use in multi-message sign frames)	16
4.5 Sign mountings	16
4.5.1 General	16
4.5.2 Multi-message sign frame	16
4.6 Signs and devices for work site approaches and departures	17
4.6.1 General	17
4.6.2 ROADWORK AHEAD (T1-1, TM1-1, T1-31), ROADWORK X km AHEAD (T1-16)	17
4.6.3 BRIDGEWORK AHEAD (T1-2, TM1-2), BRIDGEWORK X km AHEAD (T1-29)	19

4.6.4	ROAD PLANT AHEAD (T1-3-1, TM1-3-1, T1-3-2, TM1-3-2), GRADER AHEAD (T1-4, TM1-4).....	20
4.6.5	Workers (symbolic) (T1-5, TM1-5).....	21
4.6.6	ROADWORK NEXT X km (T1-24).....	22
4.6.7	ROADWORK ON SIDE ROAD (T1-25, TM1-25), ROAD PLANT ON SIDE ROAD (T1-27, TM1-27).....	23
4.6.8	NEXT X km (T1-28, TM1-28).....	24
4.6.9	SIDE ROAD CLOSED (T1-32, TM1-32).....	25
4.6.10	END ROADWORK (T2-16, T2-17, TM2-17).....	25
4.7	Signs and devices for regulatory control of traffic.....	27
4.7.1	General.....	27
4.7.2	Manual control.....	27
4.7.3	Sign control, single lane operation.....	29
4.7.4	Traffic signal control.....	31
4.7.5	Boom Barrier.....	33
4.7.6	Temporary speed limits.....	35
4.8	Detour signs.....	38
4.8.1	DETOUR AHEAD (T1-6, TM1-6).....	38
4.8.2	END DETOUR (T2-23, TM2-23).....	39
4.8.3	DETOUR (T5-1, TM5-1).....	40
4.8.4	Detour marker (T5-6, TM5-6A).....	41
4.8.5	LOW BRIDGE AHEAD ... m, HIGH VEHICLES DETOUR (G9-3) LOAD LIMIT ON BRIDGE ... t, HEAVY VEHICLES DETOUR (G9-4).....	41
4.8.6	DETOUR FOR ... VEHICLES (G9-5).....	42
4.8.7	Two-way Traffic (W4-11, T2-24, TM2-24).....	43
4.8.8	All Traffic Turn (R2-14, RM2-14).....	44
4.8.9	No Left Turn [R2-6(L), RM2-6(L)], No Right Turn [R-6(R), RM2-6(R)], NO ENTRY (R2-4, RM2-4).....	45
4.8.10	LOCAL TRAFFIC ONLY (G9-40-2, GM9-40-2).....	46
4.9	Road condition signs.....	47
4.9.1	Slippery, (T3-3, TM3-3), SOFT EDGES (T3-6, TM3-6), ROUGH SURFACE (T3-7, TM3-7), Loose Stones (T3-9, TM3-9), GRAVEL ROAD (T3-13, TM3-13), LOOSE SURFACE (T3-14, TM3-14).....	47
4.9.2	Advisory Speed signs (T3-16, TM6-16).....	50
4.9.3	NEW WORK, NO LINES MARKED (T3-11, TM3-11) NO LINES DO NOT OVERTAKE UNLESS SAFE (T3-12, TM3-12) NO LINES DO NOT OVERTAKE (G9-89, GM9-89).....	51
4.10	Signs and devices for road and lane closures.....	53
4.10.1	Signs.....	53
4.10.2	Barricades.....	56
4.11	Devices for delineating and indicating the travelled path.....	57
4.11.1	Traffic cones and temporary bollards.....	57
4.11.2	Roadworks temporary guideposts.....	58
4.11.3	Temporary Hazard markers (T5-4, T5-5, T5-7).....	59
4.11.4	Pavement markings.....	60
4.11.5	Raised retroreflective pavement markers.....	61
4.11.6	Temporary kerbing.....	61
4.12	Containment fences and road safety barrier systems.....	61
4.12.1	Containment fences.....	61
4.12.2	Longitudinal channelizing devices.....	62
4.12.3	Road safety barrier systems.....	62
4.12.4	Temporary crash attenuators.....	63
4.13	Lamps.....	63
4.14	Vehicle-mounted signs and devices.....	63
4.14.1	Vehicle-mounted warning device.....	63
4.14.2	Illuminated flashing arrow sign.....	64
4.14.3	Supplementary vehicle-mounted signs.....	65
4.14.4	Variable message signs.....	65

4.14.5	Truck-mounted and trailer mounted crash attenuator	65
4.15	Roadwork pilot vehicle.....	65
4.16	BLASTING WORK signs.....	67
4.17	Signs and devices for managing pedestrians.....	68
4.18	Signs and devices for managing cyclists.....	71
4.19	Signs and devices for vehicle height and mass restrictions	71
4.20	Other signs and devices.....	73
4.20.1	General.....	73
4.20.2	Antiglare screen.....	75
4.20.3	Work site screens (anti-gawking or anti-debris screen).....	75
4.21	High-visibility clothing for work personnel.....	75
4.22	Variable message signs used at roadworks	76
4.22.1	General.....	76
4.22.2	Application.....	76
4.22.3	Message screens.....	77
Appendix A (normative) Additional multi-message signs.....		78
Appendix B (informative) Multi-message sign combinations.....		97
Bibliography		98

Australian Standard®

Manual of uniform traffic control devices

Part 3: Traffic control for works on roads

Section 1 Scope and general

1.1 Scope

This Standard specifies the principles relating to the devices for the control of traffic for works on roads. It specifies the traffic control measures and devices to be used to warn, instruct and guide road users in the safe negotiation of work sites on roads including unsealed roads and footpaths. The principles may also be appropriate for work on shared paths and bicycle paths. It is applicable to traffic guidance schemes for road and bridge construction and maintenance sites, works associated with other public utilities and services, or any other activities which cause interference or obstruction to the normal use of a road or path by any road user.

NOTE 1 Detailed specifications for the design and manufacture of the standard signs in this Standard are given in AS 1743. At the time of the publication of this Standard, AS 1743 does not yet cover multi-message signs.

NOTE 2 This Standard is intended for use in conjunction with the relevant Austroads guidelines, including the *Austroads Guide to Temporary Traffic Management* and various Commonwealth, state and territory requirements relating to safe work and works on roads.

1.2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document.

NOTE Documents for informative purposes are listed in the Bibliography.

AS 1428.1, *Design for access and mobility Part 1: General requirements for access—New building work*

AS 1742.2, *Manual of uniform traffic control devices, Part 2: Traffic control devices for general use*

AS 1742.4, *Manual of uniform traffic control devices, Part 4: Speed controls*

AS 1742.14, *Manual of uniform traffic control devices, Part 14: Traffic signals*

AS 1743, *Road signs—Specifications*

AS 1744, *Standard alphabets for road signs*

AS 1906.3, *Retroreflective materials and devices for road traffic control purposes, Part 3: Raised pavement markers (retroreflective and non-retroreflective)*

AS 2187.2, *Explosives—Storage and use, Part 2: Use of explosives*

AS 4852.1, *Variable message signs, Part 1: Fixed signs*

AS 4852.2, *Variable message signs, Part 2: Portable signs*

AS/NZS 1906.1, *Retroreflective materials and devices for road traffic control purposes, Part 1: Retroreflective sheeting*

AS/NZS 1906.2, *Retroreflective materials and devices for road traffic control purposes, Part 2: Retroreflective devices (non-pavement application)*

AS/NZS 3845.2, *Road safety barrier systems, Part 2: Road safety devices*

AS/NZS 4192, *Illuminated flashing arrow signs*

AS/NZS 4602, *High visibility safety garments*

Austroads, AP-C87-15, *Glossary of Terms*

Austroads, *Guide to Temporary Traffic Management*

1.3 Terms and definitions

For the purpose of this Standard, the terms and definitions in Austroads *Glossary of Terms* (AP-C87-15) and those below apply.

1.3.1

built-up area

roadside development comprising property accesses at spacings averaging less than 100 m over distances of at least 500 m or where street lights are provided and are not more than 100 m apart

1.3.2

competent person

person who has, through a combination of training, qualification and experience, acquired knowledge and skills enabling that person to correctly perform a specified task

Note 1 to entry: Competency requirements have been defined by Austroads *Guide to Temporary Traffic Management*.

1.3.3

frequently changing work area

where the area that work activities are carried out in is variable

Note 1 to entry: Examples include where minor maintenance is carried out along a pavement or shoulder, and longitudinal survey work and road furniture maintenance at successive closely spaced locations.

Note 2 to entry: Guidelines for frequently changing work areas are given in the Austroads *Guide to Temporary Traffic Management*.

1.3.4

long-term

where a traffic guidance scheme is required to operate both day and night and may be left unattended

1.3.5

may

indicates the existence of an option

1.3.6

multilane

two or more running lanes in one direction

1.3.7

open road area

roadside development less frequent than that specified for a built-up area ([1.3.1](#))

1.3.8

road safety barrier system

physical barrier separating the work area and the travelled path, designed to resist penetration by an out-of-control vehicle and as far as reasonably practicable, to redirect out of control vehicles back into the travelled path

1.3.9

road user

any driver, rider, passenger or pedestrian, including people with disabilities, using the road

1.3.10**road worker**

any person who works on a roadway, including the traffic management personnel

1.3.11**roadway**

that portion of the road devoted particularly to the use of vehicles, inclusive of shoulders and auxiliary lanes

Note 1 to entry: This definition does not match any definition in the Australian Road Rules. Furthermore, the term “road” is used in this Standard in its common, all-embracing sense as defined in dictionaries and not as more narrowly defined in the Australian Road Rules.

1.3.12**running lane**

portion of the roadway allotted for a single line of moving vehicles

1.3.13**shall**

indicates that a statement is mandatory

1.3.14**should**

indicates a recommendation

1.3.15**short-term**

where a traffic guidance scheme is required only while work personnel are in attendance. The duration is generally limited to a single work shift or lesser period where road conditions are returned to normal when the shift or lesser period ends

1.3.16**speed of traffic****traffic speed**

estimate of the speed of the majority of vehicles in the stream if considered to be significantly different from the speed limit (see Note 2), either above or below, or the speed limit applying at a location

Note 1 to entry: This estimate can be made by travelling in the stream when there is a sufficient volume of traffic to match and observe the speed of the majority of vehicles. Occasional vehicles clearly travelling faster than the majority are ignored.

If the 85th percentile speed measured in accordance with AS 1742.2 is known at the location, this should be used in lieu.

Note 2 to entry: A variation from the speed limit of ± 10 km/h or more is considered significant.

1.3.17**traffic**

all vehicles or persons travelling on a road unless the context indicates otherwise

1.3.18**traffic control device**

sign, delineation device or any other device that provides essential information to warn, instruct and guide road users around, through or past work sites

1.3.19**traffic controller**

competent person whose duty it is to control traffic at a work site

1.3.20**two-way roadway**

roadway having running lanes allotted for use by traffic in opposing directions without either physical separation or a painted median between them

1.3.21**travelled path**

that part of the roadway which is made available to vehicles, including bicycles and which may consist of one or more running lanes

1.3.22**work area**

specific area where work is being done

1.3.23**work site**

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

1.4 Responsibility for safety at work sites

Organizations and individuals responsible for works in accordance with this Standard need to be cognizant of their responsibilities for any injury to road users or damage to property as a result of such operations. There is an equally important obligation to provide a safe workplace environment that eliminates, as far as is reasonably practicable, the likelihood of injury to workers by traffic within or adjacent to the work area. Principals and contractors need to be aware of the appropriate Commonwealth and state or territory safe work requirements and implement them as they apply to this obligation.

Steps shall be taken to eliminate, shield or delineate the hazards which may pose a risk to road users. Care should also be taken to avoid, wherever possible, long delays or detours which may cause unnecessary inconvenience to road users.

The designer of a traffic management plan has a duty of care to ensure the scheme is suitable for the operating environment.

Supervisory personnel carrying out construction, maintenance or other works that require the management of traffic have a duty of care to implement the traffic management plan. The traffic management plan shall —

- (a) provide, as far as is reasonably practicable, a safe workplace for personnel and plant under their control, and safe travelling conditions for road users;
- (b) ensure that personnel under their control are at all times courteous to road users;

NOTE Personnel should not allow themselves to become distracted by provocation from members of the public.
- (c) ensure that all personnel at a work site are aware of their responsibilities and that traffic controllers are appropriately trained and informed of their duties; and
- (d) operate, as far as is reasonably practicable, in accordance with the provisions of this Standard.

Any decision to vary or not follow a requirement or recommendation shall be based on sound traffic management judgement by a competent person and be documented.

Section 2 Traffic management plans

2.1 General

A traffic management plan provides the means of planning and implementing a road work operation that will ensure as far as is reasonably practicable —

- (a) the safety of the road workers;
- (b) road users in particular vulnerable road users (e.g. pedestrians, people with disabilities, cyclists and motorcyclists) are safely and efficiently guided around, through or past a road work site; and
- (c) the performance of the road network is not unduly impacted and, the disruption and inconvenience to all road users are minimized for the duration of the works.

Traffic management plans shall be prepared by a competent person.

2.2 Preparation of traffic management plans

Generally, each road work site is unique, requiring an individual traffic management plan. Furthermore, additional road work activities for major long term works may require additional traffic management plans to be prepared during the progress of the work.

Consideration shall be given to the operation of the work site, no matter how brief the occupation of the site may be.

In preparing a traffic management plan, the following elements shall be addressed:

- (a) Identify the issues, hazards and risks using the appropriate risk assessment methods relating to road workers, road users and the road environment at the work site.
- (b) Determine the options to control the risks.
- (c) Document all aspects of the plan.
- (d) Approval(s) from the relevant authorities.
- (e) Appropriate traffic guidance scheme(s).
- (f) Management of community expectations, including stakeholder consultation.
- (g) Implementation process.
- (h) Monitoring, maintaining, improving and keeping of records.
- (i) Traffic control devices removal process.
- (j) Review and evaluation process.

Further detailed information relating to traffic management plans is given in the Austroads *Guide to Temporary Traffic Management*.

NOTE Consideration should also be given to the need for a road safety audit of the traffic management plan by an independent road safety auditor familiar with the requirements of this Standard and the Austroads *Guide to Temporary Traffic Management*.

Section 3 Traffic guidance scheme

3.1 General

A traffic guidance scheme typically describes the arrangement of signs and devices to warn, instruct and safely guide road users around, through or past a works site or temporary hazard. It usually includes one or more drawings or procedures for how, where and when to install the signs and devices.

A traffic guidance scheme forms part of a traffic management plan. They are site specific or site suitable, and mitigate and treat the risks identified in the Traffic Management Plan.

Traffic guidance schemes shall be prepared and implemented by competent persons.

3.2 Preparation of traffic guidance schemes

A traffic guidance scheme shall cover all aspects of the design, implementation, operation, record keeping and removal.

The following elements apply to the preparation of a traffic guidance scheme design:

- (a) Selection of appropriate level of control in accordance with the requirements of the traffic management plan.
- (b) Signs and devices shall be appropriate to the conditions at the work site.
- (c) Signs and devices shall be clear and consistent so that they can be readily understood and followed by road users.
- (d) Any adjacent planned work sites are identified and the traffic guidance schemes shall be coordinated.
- (e) Signs and devices shall be used in accordance with this Standard, and the Austroads *Guide to Temporary Traffic Management* unless a risk assessment by a competent person indicates that an alternative arrangement is satisfactory. State or territory jurisdictional requirements may also apply.

3.3 Implementation of traffic guidance schemes

The following elements apply to the implementation of a traffic guidance scheme:

- (a) On-site risk assessment shall be carried out to ensure the appropriateness of the traffic guidance scheme with the road environment.
- (b) Signs and devices shall be erected and displayed in a defined order before work commences at a work site.
- (c) A routine of monitoring and maintaining the signs and delineation arrangements of the scheme, including the keeping of records, shall be undertaken by a competent person, to ensure the safe and efficient operation of the implemented traffic guidance scheme. Records shall also be kept of any incident.
- (d) Signs and devices shall be removed in a defined order from a work site when no longer applicable or required. However, appropriate signs shall remain in place until all work (including loose stone removal and line marking following bituminous surfacing) has been completed.
- (e) Where works require the relocation of regulatory traffic control items, they shall be relocated or reinstalled promptly in positions where they are visible and can perform their regulatory function.

Detailed guidance regarding the preparation of traffic guidance schemes is given in the Austroads *Guide to Temporary Traffic Management*.

3.4 Creating a temporary speed zone

3.4.1 General

All stakeholders, including road authorities, road infrastructure managers, road working organizations, road workers and road users have a responsibility to ensure traffic travels at safe speeds through work sites.

Temporary speed zones may be required for workplace safety or for the safety of road users. Temporary speed zones shall be appropriate for the work site. These shall be created by using regulatory speed limit signs and may require additional traffic control devices so that the speed limit is complied with. Further guidance regarding managing speeds at work sites is given in the Austroads *Guide to Temporary Traffic Management*.

3.4.2 Requirements and recommendations

Requirements and recommendations for the use of temporary speed zones at works on roads are as follows:

- (a) *Workplace safety* — Appropriate action to reduce the speed of traffic (see [Clause 1.3.16](#)) at a work site to either 80 km/h, 60 km/h, 40 km/h or less to meet certain specified safe workplace requirements, which includes the protection of traffic controllers, is a requirement of this Standard.

Temporary speed zone signs used for workplace safety shall be displayed only when workers, plant or traffic controllers are on site. At long-term works the signs shall be removed or covered at other times unless they are deemed necessary for traffic safety purposes.

- (b) *Traffic safety* — In the application of temporary speed zones for traffic safety purposes at road work sites, this Standard provides guidance only. However, where a decision has been made to create a temporary speed zone, requirements may be specified for its implementation. Workplace safety requirements [see Item (a)] shall take precedence over traffic safety guidelines wherever the former requires a lower speed limit to be imposed.

A guide to the selection of temporary speed zones is given in the Austroads *Guide to Temporary Traffic Management*.

3.4.3 Duration

The temporary speed zone shall apply only while the relevant conditions exist. It shall be removed after the need for its imposition passes. This requirement applies to either of the purposes in [Clause 3.4.2](#) for which the speed zone is used.

A record shall be kept of the dates and times temporary speed zones are in operation including any changes made, with the names of personnel erecting, changing or removing signs.

3.4.4 Advance warning of temporary speed zones (buffer zones)

Advance warning is required if the speed of traffic (see [Clause 1.3.16](#)) on the approach to the temporary speed zone is more than 30 km/h higher than the temporary limit. If road conditions restrict the speed of traffic to a value below the speed limit on the approach, the lower speed shall be used to determine the need for advance warning.

Advance warning shall be provided by means of a buffer zone comprising either —

- (a) the Speed Limit AHEAD (G9-79 or GM9-79) (see [Clause 4.7.6](#)) sign; or

- (b) a speed zone of intermediate value (e.g. 80 km/h where the reduction is from 100 km/h to 60 km/h).

A speed limit reduction of 60 km/h or more should be effected in two steps. The steps may comprise either two successive speed zone steps in accordance with Item (b), or a speed zone step and a step using the Speed Limit AHEAD sign in accordance with Item (a).

NOTE A change from 100 km/h to 40 km/h may comprise an 80 km/h buffer zone within which is placed a 40 km/h AHEAD sign.

3.4.5 Temporary speed zone

A temporary speed zone shall have a start of zone Speed Restriction sign and a sign to return to the posted speed limit. See [Clause 4.7.6](#).

Repeater Speed Restriction signs may be required for situations such as for long lengths of temporary speed zone. Further details are provided in Austroads *Guide to Temporary Traffic Management*.

3.4.6 Temporary offset speed zones

Offset speed zones are speed zones on a particular length of road that have different speed limits for each direction of travel.

Offset speed zones may present risks at particular work sites; these risks shall be identified and mitigated at the traffic management planning stage.

A guide to the use of temporary offset speed zones is given in the Austroads *Guide to Temporary Traffic Management*.

Section 4 Function, description and use of standard signs and devices

4.1 Functions of devices

The functions of the various traffic control devices are as follows:

- (a) To warn, instruct and guide road users, e.g. signs, barriers, channelizing devices and temporary ramps.
- (b) To draw attention to the work area, personnel and equipment.
- (c) To regulate vehicle movements and to control the speed or the passage of traffic within and adjacent to the work area, e.g. signals, boom barriers, stop/slow bat, speed limit signs and other regulatory devices.
- (d) To manage drivers' behaviour and vehicle speed, e.g. Variable Message Signs, speed humps, rumble strips, chicanes and reduced lane widths.
- (e) To indicate the direction and width of the available travelled path, e.g. delineators.
- (f) To discourage access to the whole or portion of the work area, e.g. barrier boards and mesh fence.
- (g) To provide physical protection for the work area and its occupants, e.g. safety barriers.

More detailed guidelines, including examples of the layout of signs and devices are given in the *Austroads Guide to Temporary Traffic Management*.

4.2 Selection and use

4.2.1 General

This Standard specifies the signs and devices required —

- (a) to provide advance warning;
- (b) to instruct and guide road users around, through or past the work area; and
- (c) to minimize the possibility of confusion and misinterpretation of the intended instructions.

Signs and devices shall allow adequate time for correct response under the anticipated worst conditions. All approaches to the work area, including any side roads, shall be provided for.

Approval for erection or removal of certain regulatory traffic control devices may need to be obtained from the appropriate authority.

Signs specified in this Standard shall be used. However, there will be instances where there is no suitable standard sign. In such cases, the sign developed shall conform to the format requirements specified in [Clause 4.4](#).

Emerging technologies in development of electronic variable message signs (See [Clause 4.22](#)) are providing alternative methods of displaying standard signs and are providing further opportunities to display more information to road users beyond that covered in this Standard. The use of such signs should be considered within the risk assessment planning stage (see [Clause 2.2](#)). The signs shall be in accordance with AS 4852.2.

Determination of letter sizes for signs shall be in accordance with AS 1743.

Prior to the use of any sign or device not specified in this Standard, approval shall be obtained from the relevant state or territory authority.

4.2.2 Multi-message signs

Multi-message signs offer an alternative sign display to that of standard signs in the Temporary (T Series), Regulatory (R Series), Warning (W Series) and Traffic Instruction (G Series) which are displayed singularly or sometimes as two signs with related messages. Multi-message signs, designated within the TM, RM, WM and GM Series, allow for the display of up to three logically related messages within a single uniform modular frame (see [Clause 4.5.2](#)).

Additional multi-message sign panels in common use for which there are no standard sign alternatives may be selected from [Appendix A](#).

Further multi-message sign panels may be developed by state and territory authorities. Where this occurs, the sign specifications, conditions of use and permissible panel combinations should be consistently applied across all jurisdictions.

The conditions of use for multi-message signs are as follows, except when used to control pedestrians only:

- (a) Multi-message sign shall have relevant messages consisting a minimum of —
 - (i) two 600 mm × 600 mm panels; or
 - (ii) one 600 mm × 600 mm panel and one 1200 mm × 300 mm panel; or
 - (iii) one 1200 mm × 600 mm panel.
- (b) There shall be no more than one regulatory sign panel in the same multi-message sign frame displayed facing the direction of traffic.
- (c) When used, regulatory sign panels shall be placed in the top position of the frame on the side closest to the traffic.
- (d) For multi-message signs facing traffic, within one frame, there should be no more than two message panels consisting of words only. If the 1200 mm × 600 mm space is filled with two separate 600 mm × 600 mm message panels, at least one of the 600 mm × 600 mm panels should be symbolic or a blank retroreflective yellow panel.
- (e) A blank retroreflective yellow panel shall be placed within any unused module of the frame so that all panels in the frame are filled.
- (f) Multi-message sign panels (TM, RM, WM, GM Series) shall only be used in multi-message frames.

Further information regarding the multi-message signs and examples are provided in this Section, [Appendices A](#) and [B](#), and the Austroads *Guide to Temporary Traffic Management*.

4.2.3 Delineation

The travelled path on the approaches and past the work area shall be delineated so as to properly define which part of the roadway is available to road users, or the path that traffic is required to follow, under all reasonably expected weather and atmospheric conditions, day or night, as applicable.

Safety barriers alone shall not be used as delineating devices.

4.2.4 Night conditions

Signs shall be illuminated if outside the headlight beams, see [Clause 4.3.1](#). Delineating devices shall comprise or incorporate retroreflectors. Flashing lamps may be used to draw attention to certain advance signs.

Flashing lamps may also be used for delineation purposes if connected electronically to provide a pathway of sequentially flashing lamps (see [Clause 4.13](#)).

Pavement markings through the work site shall be retroreflective. This may be achieved by means such as reflectorizing paint using surface applied glass beads, temporary tapes, retroreflective preformed materials or raised retroreflective pavement markers.

Hazards or barriers may require illuminating to make them more conspicuous. Care should be taken that illumination does not cause disabling glare for approaching drivers. Illumination should not be provided by use of vehicle headlights.

Further requirements for the use of devices used for delineation are given in [Clause 4.11.2](#).

4.2.5 Adjustment to existing devices

Any signs and traffic control devices, including regulatory, warning, guide signs and pavement marking, which are inappropriate to, or conflict with the temporary work site situation shall be covered, obliterated or removed (see [Clause 4.2.6](#)). This shall be indicated in the traffic guidance scheme.

For certain regulatory traffic control devices, prior approval may need to be obtained from the appropriate authority. Reference should be made to the appropriate state or territory authority.

Where works require the relocation of regulatory traffic control devices, they shall be relocated or reinstated promptly in positions where they are visible and can perform their regulatory function. Record of any changes shall be made [see [Clause 3.3\(c\)](#)].

4.2.6 Covering of signs and devices

Where signs or devices need to be covered, it shall be done using opaque materials. Open weave materials such as hessian are not suitable as the retroreflective performance of the sign is not sufficiently inhibited when viewed at night using vehicle headlights. Covering signs with black or dark coloured plastic materials can result in excessive temperature and moisture cycling which may damage the sign. Best results are obtained by using a dense fabric that allows entrapped moisture, e.g. condensation, to dissipate in a natural manner.

Covered signs should be inspected at night to ensure that they are not visible, and hence, do not provide conflicting messages to drivers. When signs are only partially covered, care should be taken to ensure that adhesive tapes are not applied directly to the reflective sign face as damage to the sign face could result from adhesive ageing.

Signs should be checked also in unusual weather conditions including high winds for loss or disturbance of the covering.

4.2.7 Safety barriers

Safety barriers should be provided for the following situations:

- (a) When workers are working on roads that have high traffic volumes or are exposed to high speed traffic.
- (b) Inadequate safe clearance between moving traffic and workers or plant on site.
- (c) Hazardous traffic conflicts (e.g. potential head-on collisions).
- (d) Collisions with hazardous fixed objects, construction works or falls into excavations close to the travelled way.
- (e) Inadequate separation of temporary footpaths, shared paths or bicycle paths from vehicular traffic paths.

Requirements and recommendations for the selection, positioning and end treatment of safety barriers are given in [Clause 4.12.3](#).

4.2.8 Vehicle size and load restrictions

Where the width, height or load-carrying capacity of the roadway or structure is to be temporarily reduced during works, the appropriate authority shall be informed in advance so that arrangements may be made to divert traffic which would exceed the temporary limitations. The authority shall also be advised when the restriction is removed so that all traffic can resume use of the roadway or structure. Possible ground clearance problems for long, low vehicles should also be made known.

Low clearance warning gauges may be required in advance of falsework structures (see [Clause 4.19\(e\)](#)).

4.3 Installation and removal

4.3.1 Condition of devices

Individual signs, multi-message sign panels, and all other devices shall be examined before installation to ensure that they are in good condition and their performance is not impaired. The following checks are required:

- (a) *Mechanical condition* — Items that are bent, broken or show surface damage shall not be used.
- (b) *Cleanliness* — Items shall be free from accumulated dirt, road grime or other contamination.
- (c) *Colour* — Signs and devices that have become colour faded to a point where they have lost their daylight impact shall be replaced.
- (d) *Retroreflectivity* — Signs and devices required to be effective at night or in low-light conditions shall be checked for retroreflectivity as soon as possible after installation. Those whose retroreflectivity is degraded either from long use or surface damage shall be replaced. Retroreflective effectiveness can best be checked by viewing the signs by vehicle low beam headlights in dark conditions.

Functional inspections are also required (see [Clause 4.3.5](#)).

4.3.2 Positioning of devices

Signs and devices shall be positioned and erected so that they —

- (a) are properly displayed and securely mounted (see [Clause 4.5](#));
- (b) are within the line of sight of the intended road user;
- (c) are not and cannot be obscured from view (e.g. by vegetation or parked cars);
- (d) do not obscure other devices from the line of sight of the intended road user;
- (e) do not become a possible hazard to workers, pedestrians, people with disabilities (e.g. trip hazards for people with vision impairment), cyclists or vehicles;
- (f) do not direct pedestrians, cyclists or vehicles into an undesirable path;
- (g) do not restrict sight distance for drivers entering from side roads or streets, or private driveways; and
- (h) are not installed using supports that could be a hazard if struck by a vehicle.

Fixed delineation devices (e.g. guideposts) should be placed 1 m clear of the travelled path. Other delineation devices (e.g. traffic cones and bollards) may be placed closer if necessary to assist in controlling the speed of traffic.

In open road areas and on unkerbed roads in built-up areas where signs are to be mounted on posts, they should normally be placed on the outer edge of shoulder and at least 2 m but not more than 5 m

clear of the travelled path. They should be erected 1.5 m minimum above the level of the nearest edge of the travelled path to the underside of the sign.

On kerbed roads in built-up areas where signs are mounted on posts adjacent to a footpath or where vehicle parking may occur, they should be placed a minimum of 300 mm clear distance behind the kerb and erected a minimum of 2.2 m above the level of the kerb or footpath to the underside of the sign, to reduce interference from parked vehicles. Where neither pedestrians nor parked vehicles have to be considered, e.g. on a traffic island or median, a mounting height of 1.5 m may be more appropriate.

Signs mounted on portable supports used for short-term operation (see [Clause 4.5](#)) should generally be located as follows:

- (i) *In open road areas* — On the road shoulder a minimum of 1 m clear of the travelled path.
- (ii) *In built-up areas* — Behind the kerb if visible to oncoming traffic and not obstructing pedestrians, otherwise on the pavement as near as practicable to the kerb without the sign becoming obscured and without obstructing moving traffic. Signs should not be located in operating bicycle lanes or in shoulders if used by cyclists.

Where an instruction sign and a road condition sign would normally be required at the same location, the former shall take precedence and the latter should be positioned at the best alternative location.

Signs shall be erected on both sides of the roadway on multilane roads. The exception would be where it is impractical to install a sign in a narrow median or on an undivided multilane road. This treatment should also be considered for curved alignments.

The visibility of a sign can be affected by deep shade, the direction of the sunlight, background conditions (including lighting) and oncoming headlights. These factors should be considered when signs and devices are erected to ensure that they can be clearly seen at all times.

4.3.3 Setting out of devices

Before work commences at a typical roadwork site, signs and devices at the approaches to and within the work area should be set out in accordance with the traffic guidance scheme.

Signs and devices that are erected before they are required shall be covered by a suitable material, see [Clause 4.2.6](#). The cover shall be removed immediately prior to the commencement of work.

Further information regarding setting out of devices is given in the Austroads *Guide to Temporary Traffic Management*.

4.3.4 Orientation of sign

Signs shall face towards approaching traffic approximately at right angles to the line of sight from the driver to the sign.

At curved alignments, the sign should be placed approximately at right angles to the line of sight of a motorist 50 m in advance of the sign as shown in [Figure 4.1](#).

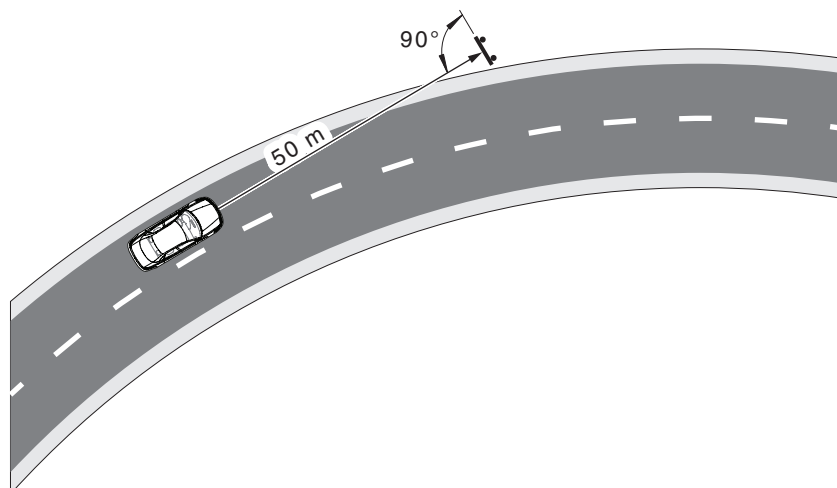


Figure 4.1 — Orientation of sign at curved alignments

4.3.5 Inspection

At a static work site, when the erection of the signs and devices is completed and the condition of devices has been checked in accordance with [Clause 4.3.1](#), a competent person on site shall carry out a functional inspection.

The inspection should be carried out from within the traffic stream at the normal traffic speed taking into consideration all signs and devices. The same inspection should be carried out at night with low beam headlights.

A separate inspection shall be undertaken by foot or by bicycle to check paths used by pedestrians or cyclists considering all signs, delineation and accessibility for these road users. The same inspection should be carried out at night considering visibility of all signs, devices and path surface.

If the arrangement is considered confusing or unsatisfactory, any changes to the traffic guidance scheme shall be documented and approved by a competent person. A similar functional inspection shall be carried out after any change is made to the arrangement.

4.3.6 Public awareness

Depending on the complexity of the traffic guidance scheme and the length of time it is to operate, it may be necessary to erect special signs to inform the public of the traffic guidance scheme. Advice on the determination of letter sizes for special signs is given in AS 1743.

NOTE It may also be advisable to implement a publicity campaign using printed material and local media, radio, websites and social media.

4.3.7 Removal

The relevant signs and devices shall be removed or concealed from view as soon as any activity is completed or a hazard ceases to exist. When all work is complete, signs and devices should be removed as specified in the traffic guidance scheme.

4.4 Format and size of signs

4.4.1 Format of signs

The format of signs used at works on roads shall be as follows:

- (a) *Signs warning of workers on foot* — These shall be rectangular or square with a black legend and border on a retroreflective fluorescent orange background. Signs warning of workers on foot shall be displayed only when there are workers on foot present at the site.
- (b) *PREPARE TO STOP signs and signs associated with blasting operations* — These shall be rectangular or square with a white retroreflective legend and either a white retroreflective or black border on a red retroreflective background.
- (c) *Regulatory, warning and traffic instruction signs used for roadworks purposes* — Signs in the R, W and G Series and multi-message signs in the RM, WM and GM Series are described in this Standard and in other parts of AS 1742.
- (d) *Direction and other roadworks signs* — All other roadworks signs including temporary direction signs shall be rectangular or square with a black legend and border on a yellow retroreflective background.

NOTE Retroreflective fluorescent yellow may be used.

4.4.2 Retroreflective material

Retroreflective material used on signs for works on roads shall meet at least the requirement for Class 400T sheeting as specified in AS/NZS 1906.1.

4.4.3 Sign sizes in the T Series (excludes multi-message signs)

The application of the sign size designations A and B in the T Series in this Section are as follows:

- (a) *A size* — Applicable to all signs in T Series. This size will be suitable for —
 - (i) traffic speeds up to 90 km/h where the lateral offset of the sign from the travelled path used by motor vehicles is not more than 8.0 m; or
 - (ii) at traffic speeds up to 110 km/h where the lateral offset of the sign from the travelled path used by motor vehicles is not more than 4.5 m; or
 - (iii) signs directed at pedestrians.
- (b) *B size* — Applicable where an oversize sign may be required —
 - (i) because the recommendations in Item (a) are exceeded; or
 - (ii) on expressway type roads for added emphasis of the onset of works, detours or closures; or
 - (iii) for other critical safety messages.

NOTE B size signs should also be considered for all T1 Series signs where the A size signboard is less than 1 m² in area and traffic speeds exceed 70 km/h.

4.4.4 Sign panel sizes in the TM Series (for use in multi-message sign frames)

Multi-message sign frames are designed to cater for four possible sign panel sizes within the frame (see [Clause 4.5.2](#)). The application of the sign size designations A, B, C and D in the TM, RM, WM and the GM Series relates to the size of the panels within the multi-message sign frame and are as follows:

- (a) *A size* — 600 mm square. This size may not be suitable for expressway type roads.
- (b) *B size* — 1200 mm wide by 300 mm high. This size may not be suitable for expressway type roads.
- (c) *C size* — 1200 mm wide by 600 mm high.
- (d) *D size* — 600 mm wide by 900 mm high.
- (e) *E size* — 600 mm wide by 300 mm high.

4.5 Sign mountings

4.5.1 General

Mountings for signs at works on roads are required to suit a variety of maintenance and construction situations.

Signs and mountings used for short-term operations or where staging of works requires their frequent relocation, should be portable, easily erected and stored. The mountings should —

- (a) be quick and easy to install;
- (b) provide secure sign attachment;
- (c) be stable in windy conditions and from the effects of moving traffic;
- (d) provide for installation on all types of road, shoulder or verge surface;
- (e) have the flexibility to handle the sizes of signs involved;
- (f) be easily handled, transported and stored; and
- (g) not be a hazard to road users if struck in their normal upright position or after being knocked over.

Mountings for short-term operations should be arranged so that the signs are prominently displayed to traffic and will command attention. The minimum mounting height of the lower edge of the sign shall be 200 mm above the level of the nearest lane and the sign shall be horizontal.

For work of longer duration consideration should be given for mounting signs on normal (frangible) fixed supports so that they are less likely to be disturbed by the weather, vandals or traffic (see [Clause 4.3.2](#)). Other requirements regarding sign installation shall be in accordance with AS 1742.2.

Stand-alone barricade or safety barrier units shall not be used as sign supports in locations exposed to traffic.

4.5.2 Multi-message sign frame

A multi-message sign frame shall conform to the following:

- (a) Be capable of securely holding either (see [Figure 4.2](#)) —
 - (i) two 600 mm square panels together with one 1200 mm wide × 300 mm high panel which may be at either the bottom or at the top of the frame;

- (ii) one 1200 mm wide × 600 mm high message panel, together with one 1200 mm wide × 300 mm high panel which may be at either the bottom or at the top of the frame;
 - (iii) two 600 mm wide × 900 mm high panels; or
 - (iv) one 600 mm wide × 900 mm high panel together with one 600 mm square panel and one 600 mm × 300 mm panel.
- (b) Be black in colour.
- (c) Be capable of displaying the sign in such a way as to ensure the message is horizontal in all environments.
- (d) Conform to the requirements of [Clause 4.5.1](#) of this Standard.

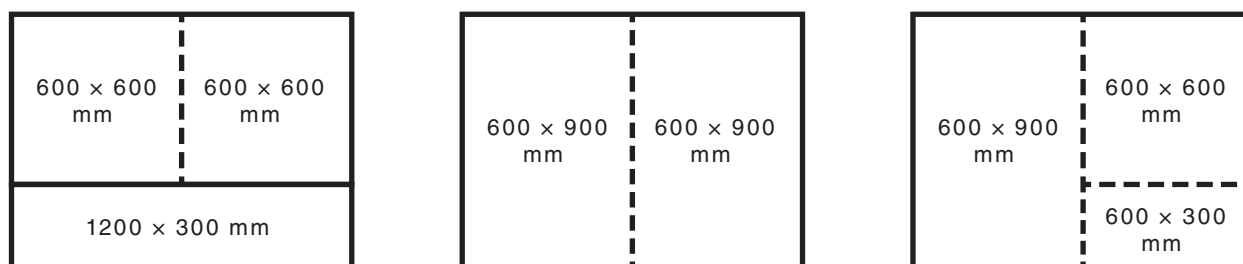


Figure 4.2 — Multi-message sign frame

4.6 Signs and devices for work site approaches and departures

4.6.1 General

Signs used for work site approaches and departures are listed in [Tables 4.1\(A\)](#) to [4.1\(I\)](#).

4.6.2 ROADWORK AHEAD (T1-1, TM1-1, T1-31), ROADWORK X km AHEAD (T1-16)

Table 4.1(A) — Signs for work site approaches and departures — Size table — Road work ahead, ROADWORK X km AHEAD

Sign	Sign number	Size ^a , mm
ROADWORK AHEAD	T1-1A	1800 × 600
	T1-1B	2400 × 900
	TM1-1A	600 × 600
	TM1-1B	1200 × 300
	TM1-1C	1200 × 600
ROADWORK X km AHEAD	T1-16A	1800 × 600
	T1-16B	2400 × 900
ROAD WORK AHEAD (Narrow format)	T1-31	900 × 1200
^a Guidance on sign size selection is given in Clause 4.4.3 .		



**ROADWORK
AHEAD**

T1-1



**ROAD
WORK
AHEAD**

TM1-1A



ROADWORK AHEAD

TM1-1B



**ROADWORK
AHEAD**

TM1-1C



**ROADWORK
8 km AHEAD**

T1-16



**ROAD
WORK
AHEAD**

T1-31

The sign ROADWORK AHEAD shall be used to give advance warning of all long-term work sites other than bridgeworks.

The sign may also be used at short-term works where additional advance warning is considered necessary. The T1-1 sign is preferred wherever space available at the site allows it to be used.

The ROADWORK X km AHEAD sign should be used X km in advance of a road work site, where additional advance warning is necessary.

Where ROADWORK AHEAD or ROADWORK X km AHEAD sign is used the END ROADWORK sign shall be used at the end of the work site (See [Clause 4.6.10](#)).

4.6.3 BRIDGEWORK AHEAD (T1-2, TM1-2), BRIDGEWORK X km AHEAD(T1-29)

Table 4.1(B) — Signs for work site approaches and departures — Size table — BRIDGEWORK AHEAD, BRIDGEWORK X km AHEAD

Sign	Sign number	Size ^a , mm
BRIDGEWORK AHEAD	T1-2A	1800 × 600
	TM1-2A	600 × 600
	TM1-2C	1200 × 600
BRIDGEWORK X km AHEAD	T1-29	1800 × 600
^a Guidance on sign size selection is given in Clause 4.4.3 .		



T1-2



TM1-2A



TM1-2C

The sign BRIDGEWORK AHEAD shall be used to give advance warning of long-term works on bridges.

The sign may also be used at short-term works where additional advance warning is considered necessary.



T1-29

The sign BRIDGEWORK X km AHEAD shall be used on the approach to a bridgework site under the same conditions as specified for the ROADWORKS X km AHEAD (T1-16) in [Clause 4.6.2](#).

4.6.4 ROAD PLANT AHEAD (T1-3-1, TM1-3-1, T1-3-2, TM1-3-2), GRADER AHEAD (T1-4, TM1-4)

Table 4.1(C) — Signs for work site approaches and departures — Size table — ROAD PLANT AHEAD, GRADER AHEAD

Sign	Sign number	Size ^a , mm
ROAD PLANT AHEAD	T1-3-1A	900 × 600
	T1-3-2B	1800 × 600
	TM1-3-1A	600 × 600
	TM1-3-2C	1200 × 600
GRADER AHEAD	T1-4A	900 × 600
	TM1-4A	600 × 600

^a Guidance on sign size selection is given in [Clause 4.4.3](#).



T1-3-1



TM1-3-1A



T1-3-2



TM1-3-2C



T1-4



TM1-4A

The sign ROAD PLANT AHEAD shall be used at work sites where machinery is working on the roadway and no form of traffic control, barrier or delineation is present to separate traffic from the work area. Where a grader alone is engaged in pavement, shoulder or roadside maintenance, the alternative sign GRADER AHEAD (T1-4, TM1-4) may be used.

The smaller ROAD PLANT AHEAD (T1-3-1, TM1-3-1) sign or the GRADER AHEAD sign should be used in conjunction with the NEXT 2 km (T1-28, TM1-28) sign at a frequently changing work area involving maintenance work carried out on the shoulder or verge by a grader or other machine. At a frequently changing work area where there are workers on foot the Worker (symbolic) (T1-5, TM1-5) sign shall be used instead of these signs.

The signs should only be displayed when workers are on site and machinery is being used at various times during the works.

4.6.5 Workers (symbolic) (T1-5, TM1-5)

Table 4.1(D) — Signs for work site approaches and departures — Size table — Workers (symbolic)

Sign	Sign number	Size ^a , mm
Workers (symbolic)	T1-5A	900 × 600
	T1-5B	1200 × 900
	TM1-5A	600 × 600
	TM1-5C	1200 × 600
^a Guidance on sign size selection is given in Clause 4.4.3 .		

**T1-5****TM1-5A****TM1-5C**

The Workers (symbolic) sign shall be used to give warning of personnel engaged in short-term or long-term works on or adjacent to the travelled path. It shall comprise a black symbol on a retroreflective fluorescent orange background.

As this sign is used to warn of the presence of personnel, it shall only be displayed when they are visible and not protected from direct conflict with traffic.

The sign NEXT X km (T1-28, TM1-28) (see [Clause 4.6.8](#)) shall be used in conjunction with this sign when it is used for frequently changing work areas in accordance with the details in the Austroads *Guide to Temporary Traffic Management*.

4.6.6 ROADWORK NEXT X km (T1-24)

**Table 4.1(E) — Signs for work site approaches and departures — Size table —
ROADWORK NEXT X km**

Sign	Sign number	Size ^a , mm
ROADWORK NEXT X km	T1-24A	1800 × 600
	T1-24B	2400 × 900
^a Guidance on sign size selection is given in Clause 4.4.3 .		



T1-24

The ROADWORK NEXT X km may be used to supplement other advance signs wherever, over a distance of 2 km or more, there are a series of two or more work areas within the one work site separated such that road users may not be aware that they are still within the work site. Advance signing shall be provided in advance of each individual work area.

4.6.7 ROADWORK ON SIDE ROAD (T1-25, TM1-25), ROAD PLANT ON SIDE ROAD (T1-27, TM1-27)

Table 4.1(F) — Signs for work site approaches and departures — Size table — ROADWORK ON SIDE ROAD, ROAD PLANT ON SIDE ROAD

Sign	Sign number	Size ^a , mm
ROADWORK ON SIDE ROAD	T1-25	1800 × 600
	TM1-25C	1200 × 600
ROAD PLANT ON SIDE ROAD	T1-27	1800 × 600
	TM1-27C	
^a Guidance on sign size selection is given in Clause 4.4.3 .		



T1-25



TM1-25C



T1-27



TM1-27C

The ROADWORK ON SIDE ROAD and ROAD PLANT ON SIDE ROAD signs shall be used in advance of an intersection to warn of the relevant activities on the side road where there is insufficient distance from the through road at the intersection to the start of the works for turning traffic to be given adequate warning. A direction arrow multi-message sign (e.g. TM5-8B) may be used together with these signs.

Where works are on an intersecting road and are only in one direction from the intersection, an arrow should be used in conjunction with the primary sign (e.g. ROADWORK AHEAD) to indicate which direction.

The ROADWORK ON SIDE ROAD sign shall not be used on a side road to warn of relevant activities on the through road. The ROAD WORK AHEAD (TM1-1A) with a direction arrow (TM5-8A) should be used instead.

4.6.8 NEXT X km (T1-28, TM1-28)

Table 4.1(G) — Signs for work site approaches and departures — Size table — NEXT X km

Sign	Sign number	Size ^a , mm
NEXT 2 km	T1-28A	600 × 600
	T1-28B	900 × 900
	TM1-28A	600 × 600
	TM1-28B	1200 × 300
^a Guidance on sign size selection is given in Clause 4.4.3 .		



T1-28A



TM1-28A



TM1-28B

The NEXT X km sign shall be used in conjunction with either the Worker (symbolic) (T1-5), the ROAD PLANT AHEAD (T1-3-1) or the GRADER AHEAD (T1-4) signs where they are used to warn of a frequently changing work area.

For shoulder grading and verge mowing on sealed roads in open road areas and for maintenance grading on unsealed roads the distance may be increased up to 10 km.

4.6.9 SIDE ROAD CLOSED (T1-32, TM1-32)

**Table 4.1(H) — Signs for work site approaches and departures — Size table —
SIDE ROAD CLOSED**

Sign	Sign number	Size ^a , mm
SIDE ROAD CLOSED	T1-32	1500 × 600
	TM1-32A	600 × 600
^a Guidance on sign size selection is given in Clause 4.4.3 .		



T1-32



TM1-32A

The SIDE ROAD CLOSED sign shall be used in advance of an intersection where the side road is closed to all traffic.

4.6.10 END ROADWORK (T2-16, T2-17, TM2-17)