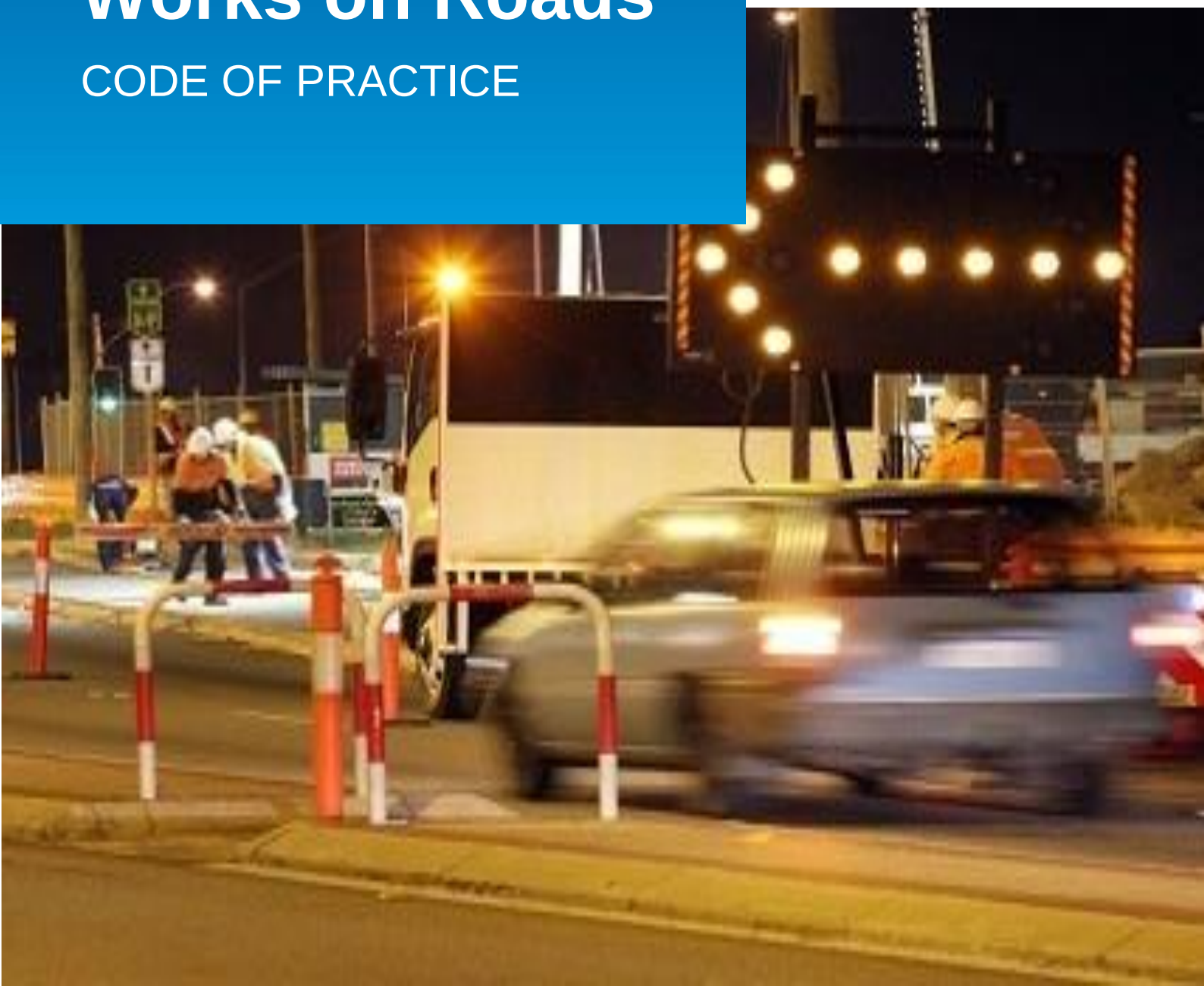
mainroads WESTERN AUSTRALIA

Traffic Management for Works on Roads

CODE OF PRACTICE



MARCH 2025

TRAFFIC MANAGEMENT FOR WORKS ON ROADS
CODE OF PRACTICE

All printed copies are uncontrolled

Main Roads Western Australia
Planning and Technical Services Directorate
Road Safety Branch

March 2025

This document was originally endorsed by the Traffic Management for Works on Roads Advisory Group on 3 March 2004. Revisions are endorsed by the Advisory Group and approved by Main Roads Executive Director Planning and Technical Services. The Advisory Group consists of members from Main Roads Western Australia (Main Roads), Australian Institute of Traffic Planning and Management (WA division) (AITPM), Civil Contractors Federation (CCF), Institute of Public Works Engineering Australia (WA division) (IPWEA), Traffic Management Association (TMAA), WA Local Government Association (WALGA), Traffic Management Training Providers, and Engineers Australia (WA division).

A specialist Technical Committee comprising members from Main Roads, IPWEA (WA division) and WALGA has provided technical advice in regard to various sections of this document.

Amendments to this document may be made from time to time reflecting the changes in technology, standards or legislation as well as the feedback from the industry, subject to endorsement by the Advisory Group. Users of this document are warned to make sure that they are using the current document which is available on Main Roads website at www.mainroads.wa.gov.au; go to 'Technical & Commercial' > 'Working on Roads'

AMENDMENT / REVISION STATUS RECORD

Date	Section	Amendment / Revision Description
March 2025	Section 1.3.2	Update to Austroads National Training
		PTCD Training added
	Section 4.2.1	Site visit photo requirement added
	Section 4.6	New section – Vulnerable Road Users
	Section 6.1	AS1743 updated
	Section 6.1.8	Updates to signs for road and path closures
	Section 6.1.9	Update to sign spacing tolerance
	Section 6.1.12	New section – Detour Signs
	Section 6.2.4	MMS conditions expanded
	Section 6.5.2	Clarification added for varying placement of speed signs
	Section 6.5.4	New section – Length of Temporary Speed Zones
	Section 6.8.2	Main Roads Fact Sheet updated Figures updated
	Section 6.8.3	PTCDs expanded to all State Roads
	Section 6.8.4	Departure from AGTTM for traffic controllers
	Section 6.8.6	New section – Portable Boom Barriers
	Section 6.8.8	Addition of minimum delineation requirement
	Section 6.9 / Appendix 6	Example diagrams relocated from TMA Code of Practice
	Section 6.17	Departures from AGTTM for designing tapers
	Section 8	New accreditation – AWTM-NP
		WTM tasks modified, removal of BWTM exemption
	Appendix 1	Traffic Lane definition added
July 2024	Section 2.1.2	Updates to Registration Scheme
	Section 6.8.2	Figure 4 and 5 – error in table references amended
	Section 6.9.1	Updates to Mandatory Use of TMAs (note amendment to H035 and H058)

	Section 6.9.3	New section Incident Response and Emergency Works (relocated from TMA Code of Practice)
	Section 6.16	Clarification - Speed feedback sign requirements
March 2024	Section 1.3.2	Update to Austroads National Training
	Section 2.1	Link added to determine State Roads and SLK
	Section 2.1.1	Main Roads Policy for Works on High Volume Roads incorporated into Code of Practice
	Section 2.1.2	Updates to Registration Scheme
	Section 2.4	Traffic Modelling Guideline due for release
	Section 4.2.3	Removal of the term ‘metropolitan area’ from item ii Clarification unsignalised turn lanes included in item iii Item ix relocated from Main Roads State Policy
		On site personnel requirement relocated from section 2.1.2
	Section 4.5	Variation to the Code requirements updated
	Section 6.1.9	Sign spacing requirements clarified
	Section 6.3.1	Securing signs updated
	Section 6.5.2	Figure 2 modified, Table 6 updated
	Section 6.5.3	New section - Selecting Temporary Speed limits on State Roads
	Section 6.8.1	STOP HERE WHEN DIRECTED or STOP ON RED SIGNAL placement modified
	Section 6.8.3	Boom barriers must be considered at signalised intersections on roads where PTCDs are required
		Traffic controller position to be identified on TGS
	Section 6.8.6	Removal of maximum queue length
	Section 6.8.8	New section – Traffic Control Near Intersections
	Section 6.9	TMAs to be expanded July 2024
	Section 6.11	Traffic volume requirements modified
	Section 6.15	New section – Traffic Cones and Bollards
	Section 6.16	Speed Feedback Signs section relocated
	Section 6.17	New section – Approach Tapers
	Section 6.18	New section - Emergency Lanes and Vehicle Breakdowns

	Section 6.19	New section - Smart Freeways
	Section 6.20	New section - Worksite Access
	Sections 8.2 and 8.3	RIIWHS201D removed from prerequisites
	Section 8.7	OTMA perquisites updated
	Appendix 1	Definitions added for Long Term Works, High Speed Roads, High Volume Roads Road definition updated
	Appendix 4	Pilbara Region email updated
	Appendix 5	MMS-REG-15 added
September 2023	Section 2.1.2 and 5.2	Video drive through requirements added
	Section 6.3.1	Updates to requirements for securing signs
May 2023	Section 6.1.11	New section – U-Turn DETOUR Ahead Signs
	Section 6.2.4	New section – Selection and Use of MMS
	Appendix 5	MMS-ADV-31 may be used in either side of the frame MMS-DIV-10 added
March 2023	Whole document	Shall updated to must
	Whole document	Figure numbers modified
	Whole document	Table numbers modified
	Section 1.3.2	Austroads Training Framework adoption updated
	Section 2.4	New section – Traffic Modelling
	Section 4.2.1	Details added for TMPs at major projects Watermarks not permitted
	Section 4.2.6	New section – Adjustment and Modification of TMPs
	Section 4.3	WHS Regulations details added
	Section 4.5	Removed reference to maximum length of single lane operation
	Section 6.1.9	Figure added
	Section	New section – Advanced Warning on Freeways and

	6.1.10	High Speed High Volume Roads
	Section 6.8	Vertical alignment details added
	Section 6.8.2	Clarification - end of queue method ‘should’ be used
	Section 6.8.3	PTCDs preferred method of traffic control Clarity on PTCDs on multilane roads
	Section 6.8.6	Updated distance taken between signs
	Section 6.8.7	New section – Roadworks Pilot Vehicles
	Section 6.9	Expansion of TMAs by 2024
	Table 16	Exception at tapers added
	Section 7.1	Reference to AITDSA added
	Section 7.3	Mandatory use of Speed Feedback Signs by Feb 2024 Technical requirements updated
	Section 7.5	New section - Rumble Strips
	Appendix 4	Distribution List updated
May 2022	Whole document	Adoption of WHS laws
	Whole document	Table numbers modified (12-17)
	Section 6.5.2	Figure 1 notes modified; table 5 footnotes removed
	Section 6.8.2	Clarification added for determining queue length
	Section 6.8.3	Mandatory use of PTCDs on MRWA roads as of 1 July 2022
	Section 6.8.6	New section – Shuttle Flow
	Section 6.13	Mandatory use of shadow vehicles added
	Section 6.14	New section – TTM Implementation, Operation and Removal
	Section 7.3	Main Roads to mandate Speed feedback signs in early 2023
	Appendix 1	Addition of ‘State Road’ definition
	Appendix 4	Distribution list updated
	Appendix 5	Addition of blank yellow panels

December 2021	Section 1.3.1	Adoption of AGTTM version 1.1.
	Section 2	Clarification added for approval times
	Section 2.1.1	Reference to Smart Freeway TGS
	Section 2.1.2	Clarification - Traffic Management Registration Scheme required for lane closure or speed limit implementation
	Section 4.2.3	Reference to ‘80km/h’ removed from third dot point in item ii
	Section 4.2.5	New section - Traffic Management Implementation and Removal
	Section 4.3	Clarification – pre-treatment risk rating for works near live traffic
	Section 4.4.1	Clarification - Dot point 4 ‘children’s crossing’ with no Traffic Warden changed to ‘pedestrian crossing’
	Section 6.1	Signs to be manufactured in accordance with Main Roads Specifications
	Section 6.1.9	New section – Sign Spacing
	Section 6.2.2	Reference to AS1742.3 added
	Section 6.2.3	MMS to be manufactured in accordance with Main Roads Specifications
	Section 6.5	Note added to table 5 for approach speeds of 70 km/h
	Section 6.8.1	Modification of centreline cones
	Section 6.8.2	Clarification - stopping distance may exceed table 10. Addition of Queued Traffic signs
	Section 6.8.3	PTCD requirements updated
	Section 6.8.5	New section - Stop-slow bats
	Section 6.9	TMA guideline name change, document updated
	Section 6.10	Warning lamp requirements added
	Section 6.11	Removal of traffic volume departures now included in AGTTM
	Section 6.12	Mobile work departures added for distance of shadow vehicle and advance warning vehicles.
	Section 6.13	New section - Shadow Vehicles

	Section 7.2	Reference to AS 5156 added
	Section 7.3	Speed feedback sign requirements added
	Section 7.4	New section – Traffic Monitoring and Surveillance
	Appendix 1	Addition of 'Must' definition
	Appendix 5	MMS-ADV-22 not to be used in conjunction with a regulatory sign MMS-POS-8 should be used with ON SIDE ROAD MMS-REG-2 may be used on mobile convoys New signs: Advance Warning Series: MMS-ADV-90 to MMS-ADV-101 Event Series: MMS-EVE-10 Regulatory Series: MMS-REG-14

February 2021	Whole document	Adoption of the Austroads Guide to Temporary Traffic Management
	Whole document	References to AS1742.3-2009 changed to AS1742.3-2019.
	Section 1	Scope and Introduction combined. Addition of Austroads Safety at Road Worksites project.
	Sections 2, 3 and 4	Sections moved forward (due to Scope and Introduction combined)
	Section 2.1.2	Traffic management company registration scheme on site personnel requirement added.
	Section 4.4	Children's Crossings and School Zones and Railway Crossings (Including Crossings without Flashing Signals) sub-sections relocated to 4.4.1 Consultation
	Section 5	Sections 5.5 Traffic Management Records and 5.7 Reviewing, Auditing and Approving Traffic Management combined and renamed Review, Inspection, Road Safety Audit and Operation
	Section 6	Due to updates to AS1742.3 and AGTTM the following sub sections removed: Dimension D Signs for Managing Pedestrians Guidelines for use of MMS Offset Speed Zones on Undivided roads Mobile Temporary Speed Zones Excavations and Other hazards

	Overhead Works on or near Roads Pedestrian Protection in Contra-Flow Situations Works on Residential Access Roads Fatality or Serious Injury at Worksite
Section 6.1.7	New section – Repeater Speed Restriction Signs
Section 6.3	Additional guidance for securing signs and devices
Section 6.8	New requirements for where traffic control is not permitted
	Requirements for use of PTCDs
Section 6.10	Recommendation for size of Illuminated Flashing Arrow Sign added
Section 8	Sub-sections rearranged
	New accreditation – BWTM non-practitioner Removal of Provisional Accreditation
	Provisional accreditation removed
Appendix 1	Removal of definitions within AGTTM Part 1
Appendix 4	Notification of Roadworks Form updated – additional HVS requirements
Appendix 5	New signs: MMS-ADV-85, MMS-ADV-85, MMS-ADV-86, MMS-ADV-87, MMS-ADV-88, MMS-ADV-89, MMS-REG-8, MMS-REG-9, MMS-REG-10, MMS-REG-11, MMS-REG-12, MMS-REG-13

Foreword

Western Australia has over 170 000 kilometres of roads, which periodically require re-construction, maintenance or work on services within their road reserve. With current economic recovery efforts, in response to the COVID-19 pandemic being focused on provision of public infrastructure, more than $8 billion of funding has been allocated to transport projects. This will significantly increase the amount of works being conducted on Western Australian roads. If not managed well, these tasks have the potential to create hazardous situations for both road workers and users that may produce serious or even fatal consequences.

Main Roads Western Australia has adopted the Safe System approach to managing the road network and the Traffic Management for Works on Roads Code of Practice utilises these principles. This Code provides mechanisms to protect all road users (including road workers), acknowledging that people are fallible and have limited ability to tolerate impact forces.

I have authority under Regulation 297 of the Road Traffic Code 2000, to erect, establish or display, alter or take down any road sign or traffic control signal. With this comes a duty of care to facilitate the safe and appropriate use of road signs and devices. These requirements have been developed in conjunction with key stakeholders in recognition of this obligation.

The requirements promote safe and consistent traffic management practice at work sites on roads in accordance with state legislation and national standards. They require general compliance with the Austroads Guide to Temporary Traffic Management (AGTTM) and Australian Standard 1742.3 - 2019, with details of additional requirements necessary to meet Western Australian requirements and advise of departures to the requirements of the AGTTM and Australian Standard that I am prepared to allow on Western Australian roads. The requirements also outline the competency requirements for personnel responsible for managing traffic on work sites and the need to hold a qualification relevant to the specific task in traffic management.

This document, initially released in March 2004, has been prepared following extensive consultation with local government, industry and other stakeholders through Advisory Group meetings, Technical Committee meetings, a technical workshop and other forums.

I encourage all persons involved in managing traffic at work sites on roads to fully familiarise themselves with these requirements, to apply them with due consideration to the situations that present to them and to carefully comply with the mandatory requirements. This will result in safer work sites for yourselves, your fellow workers and all road users.

Peter Woronzow
COMMISSIONER OF MAIN ROADS

Contents

1. INTRODUCTION AND SCOPE

1.1 INTRODUCTION

This Code of Practice (herein after referred to as the 'Code') describes the Main Roads Western Australia's (Main Roads) requirements for managing traffic at work sites on roads. It requires traffic management for works on roads to be based on the Austroads Guide to Temporary Traffic Management (AGTTM) and AS 1742.3–2019, unless otherwise specified by a requirement in this Code. In the event that there is a conflict between this Code and AGTTM or AS 1742.3 – 2019, the Code must take precedence.

The purpose of this Code is to specify any variations or additional requirements to AGTTM and AS 1742.3 – 2019 which are required at works on roads in Western Australia.

The prescribed practices are the minimum requirements, on which the Traffic Management Plans (TMPs) for all Western Australian roads must be based. Main Roads recognises that situations sometimes arise where application of these requirements is not appropriate and that variation to these requirements will be necessary. When it becomes apparent that deviation is necessary from the requirements of this Code, persons arranging the works should carefully consider all possible options, using common sense and judgment based on 'risk management' carried out in accordance with sections 4.3 and 4.5. Further, they must ensure that their actions are consistent with related legislation.

See AGTTM Part 1 for more details on Temporary Traffic Management (TTM) purpose, philosophy and principles.

Practitioners should be aware of the document titled Traffic Management for Events Code of Practice that has been placed on Main Roads' website - see 'Technical and Commercial' > 'Working on roads'. This document has been designed to complement the Traffic Management for Works on Roads Code of Practice in respect to the various traffic management issues that are common to works on roads and to events, particularly in respect to the design and implementation of Traffic Management Plans.

1.2 SCOPE

This Code applies to all work conducted within all road reserves throughout Western Australia and the planning of any proposed works.

Where it appears in the Code the term 'work' refers to:

- construction and maintenance work in work sites wholly or partly within the road reserve boundaries and must apply in any situation where traffic control devices are used to warn, instruct and guide road users in the safe negotiation of work sites on roads including unsealed roads together with footpaths, shared paths, and bicycle paths adjacent to the roadway; or
- any other works which cause interference or obstruction to the normal use of a road by any road user.

This Code is applicable to traffic management for road and bridge construction and maintenance sites, as well as works associated with other public utilities and services.

1.3 AUSTROADS SAFETY AT ROAD WORKSITES

1.3.1 Austroads Guide to Temporary Traffic Management

The 2019 update of AS1742.3 by Standards Australia has resulted in the removal of content from the existing standard (2009) that has been determined to be guidance material, which is not appropriate to locate within an Australian Standard. This guidance material has now been substantially transferred into the Austroads Guide to Temporary Traffic Management (AGTTM) with an expansion to the guidance material based on information from Austroads member organisations.

The Guide to Temporary Traffic Management (AGTTM) is a set of comprehensive Austroads publications developed to provide a best practice reference for the development of safe, cost effective and efficient Temporary Traffic Management (TTM) solutions for Australia and New Zealand. Comprised of 10 parts, AGTTM is now freely available on the Austroads website (www.austroads.com.au go to 'Transport Network Operations' > 'Temporary Traffic Management').

AGTTM version 1.1 has now been adopted in Western Australia. Note: no changes were made to AGTTM Part 8.

The table below outlines the WA adoption of AGTTM, sections refer to sections of this Code.

Table 1 – AGTTM Adoption

	Part	Name	WA Adoption and Code of Practice Reference
	1	Introduction and General	Adopted
Planning	2	Traffic Management Planning	Adopted, refer to section 4* for additional WA Traffic Management Planning requirements
Design	3	Static Work Sites	Adopted, refer to section 6* for WA departures and additional requirements
	4	Mobile Works	Adopted, refer to section 6.12 for WA departures
	5	Short Term Low Impact Works	Adopted
Field	6	Field Staff – Implementation and Operation	Adopted, refer to section 5.2* for additional requirements
	7	Traffic Controllers Instructions	Adopted, refer to section 6.8* for departures and additional traffic controller requirements
Support	8	Processes and Procedures	• Road Categories for TTM – see section 1.3.2* • Process for TGS Selection – incorporated in section 4.2.2* • TTM approvals – refer to section 2* • Powers and Responsibilities – adopted with additional WA specific information in section 2* and 3* • TTM Training Framework – see section 1.3.2* • Standard Forms – WA forms on the Main Roads website have been retained
	9	Sample Layouts	Adopted, refer to section 6* for WA departures for TGS design
	10	Supporting Guidance (Risk Management, Surveillance, Events)	• Risk Management for TTM – see section 4.3* • Review, Inspection and Road Safety Audit – see section 5* • Events on Roads – refer to the Traffic Management for Events Code of Practice • Emergency Works - adopted

*All references refer to sections of this Code.

1.3.2 Road Categories and Training

Austroads TTM Categories

A TTM categorisation system has been adopted in the AGTTM based on the New Zealand road levels. While all works on roads are considered high risk, the categorisation into three categories allows design practices and training to be tailored to the different risk levels at each category.

See AGTTM Part 8 for more details.

The WA road network is yet to be categorised, unless this Code states otherwise any recommendations or requirements within regarding TTM categories should be considered as a guide.

Austroads National Training Framework for TTM

The adoption of the national training framework in WA has been put on hold, refer to section 8 for WA training and accreditation requirements.

Details of the National Austroads Training Framework are within AGTTM Part 8 and the Austroads website.

Over the next 18 months further consultation will be undertaken with Austroads, other jurisdictions, training providers and industry to determine the best approach for WA.

Portable Traffic Control Device (PTCD) Training

With the adoption of the Austroads TTM training on hold, there is now a gap in training for the use of Portable Traffic Control Devices (PTCDs), which has been adopted across the rest of Australia:

- RIIWHS206 - Control traffic with portable traffic control devices and temporary traffic signs
- RIIWHS303 - Position, set up and program portable traffic control devices.

Currently, many traffic management workers lack formal training specific to PTCDs, which can impact both safety and efficiency on roadwork sites.

Recognising this issue, Main Roads is actively working on incorporating PTCD training into the WA training framework by March 2026. This initiative aims to standardise best practices, ensure compliance with safety regulations, and enhance the effectiveness of PTCDs. By developing structured training programs, Main Roads seeks to improve operator competency, reduce risks, and support the broader adoption of these devices across the road network.

2. APPROVAL TO WORK WITHIN ROAD RESERVES

Prior to commencing works, approval must be obtained from the agency responsible for the care, control and management of the relevant roads. Care should also be taken to ensure that all other required authorisations are obtained prior to the commencement of works. These might include agreement to any variations to the application of this Code of Practice and/or AGTTM / Australian Standards, as well as any development, heritage, environmental, and cultural clearances. Lengthy delays may be experienced if all necessary approvals are not obtained, increasing the risk of undesired traffic incidents.

In addition to obtaining approval to work within the road reserve from the relevant Road Authority, other agencies such as emergency services, Police, public transport etc. in the area may need to be notified in advance of the impending works as detailed in section 4.4.

All approvals to conduct works on roads issued by Main Roads, local governments or other Authorities responsible for roads, must be suitably noted on the Traffic Management Plan. A mandatory condition requiring traffic management to be carried out in accordance with the requirements of this Code, subject to any agreed variations, must be included with the approval.

Coordination of adjacent worksites to minimise impacts on road users must be considered prior to approval. Approved implementation times for Traffic Management Plans and/or Traffic Guidance Schemes are generally based on traffic capacity. Therefore, unless otherwise stated, no devices are permitted to close traffic lanes prior to the approved start time and all lanes must be reopened to traffic at or prior to the approved finish time.

2.1 ROADS FOR WHICH MAIN ROADS IS RESPONSIBLE

The Commissioner of Main Roads (CMR) is responsible for the care, control and management of the land over which any declared ‘highway’ or ‘main road’ exists (referred to as State Roads). Any party intending to conduct work on any State Road reserve or erect, establish, display, alter or take down such traffic signs and traffic control devices on any State Road must obtain prior approval from Main Roads.

To assist in determining whether a road is a State Road, visit www.mainroads.wa.gov.au and scroll down to the search bar “Which roads do Main Roads manage?”. Alternatively, to view on a map, view the “Roads Information Mapping” map available on Main Roads’ mapping portal at https://portal-mainroads.opendata.arcgis.com the Main Roads GPS-SLK App is also available.

Main Roads has developed comprehensive guidelines and an application kit for those intending to undertake work within any ‘highway’ or ‘main road’ reserve in regard to ‘complex works’, ‘low complexity works’ or ‘utility service works’. These guidelines including contact details and the application kit are available on the Main Roads website at www.mainroads.wa.gov.au; go to ‘Technical and Commercial’ > ‘Working on Roads’ > ‘Third Party Works’.

To facilitate prompt approval of applications to work on roads, persons arranging works should contact the relevant Main Roads Regional Office at an early stage to obtain traffic information, the level of service required on the road during the works and details of any other requirements that need to be considered whilst preparing their Traffic Management Plans (TMPs).

Typically, the proposed works and staging should be determined and approved in principle prior to any TMP being produced. Once in principle approval for the works has been obtained, the TMP designer should gain a comprehensive understanding of the project staging and then an appropriate TMP can be produced. The TMP should be reviewed by the construction / project manager for suitability prior to being submitted to Main Roads to review and authorise. Depending on the complexity of the project, the time allowed for Main Roads to review should be approximately 15 working days. For works at traffic signals refer to section 2.3.

Further information on preparing TMPs is provided in section 4.2.

Main Roads requires submission of a TMP with all applications to work within its road reserves. TMPs for the metropolitan area must be sent to enquiries@mainroads.wa.gov.au. If the works are occurring outside the metropolitan area TMPs must be submitted to the relevant regional office using the generic email address in Appendix 4.

Main Roads will, as it considers necessary, conduct audits of TMPs and refer those that do not comply with the requirements of this Code, back to the proponent for submission of an acceptable TMP prior to allowing commencement of works.

Any organisations with statutory authority to enter Main Roads road reserves in emergency situations must advise the Main Roads Customer Information Centre (Ph. 138 138) of their work either prior to, or as soon as possible after commencing any emergency service.

2.1.1 Main Roads Policy for Works on High Volume Roads

Main Roads requires roadworks on its high-volume roads to be managed with due consideration to traffic efficiency. A policy was established, *Traffic Management at Roadworks on State Roads Policy and Application Guidelines*, to put in place elevated standards of traffic management on high volume roads. The policy has now been superseded and the requirements have now been incorporated into this Code, this includes:

- Controls on speed limits (see section 6.5.3),
- Lane closures (see section 6.11),
- Approach tapers and merges (see section 6.17),
- Emergency lanes (see section 6.18),
- Smart Freeways (see section 6.19), and
- Worksite access (see section 6.20).

2.1.2 Traffic Management Company Registration Scheme

Except in the circumstances outlined below, where traffic management is:

- being implemented on a State Road; or
- being procured by Main Roads or one of its contractors, suppliers or subcontractors (of any tier),

the company implementing the traffic management must be registered under the State Road Traffic Management Company Registration Scheme (Scheme).

Registration is not required under the Scheme where it is an emergency, the traffic management work is being carried out directly by Main Roads or the traffic management devices being implemented on a State Road are:

- such that this Code of Practice does not require the worker to have an accreditation or only requires the worker to have a “Basic Worksite Traffic Management – Non-Practitioner” accreditation (refer section 8);
- detour signage relating to work otherwise being carried out on a non-State Road;

- related to closing a side road (that is not a State Road) from a State Road, but does not otherwise impede road users on the State Road (this may include using signs that are SIDE ROAD CLOSED, NO LEFT TURN, NO ENTRY, etc.);
- involves work that is limited only on a path for cyclists, pedestrians or both, providing that the users of such path are suitably catered for and other road users are not in any way impeded; or
- related to an 'event' as defined in the Traffic Management for Events Code of Practice and the only signage implemented on State Roads is from the Event Series (e.g. EVENT AHEAD, Cyclist (symbolic), EVENT ON SIDE ROAD, etc.).

For the avoidance of doubt, "impeding" includes reducing the normal travel speed (including stopping) or deviating the normal travel path of the relevant road user.

Further information regarding the Scheme is available at
https://www.mainroads.wa.gov.au/technical-commercial/working-on-roads/

2.1.3 Works on Main Roads Roads in the Metropolitan Area

Implementing approved traffic management on the Main Roads road network can often cause congestion that may be flagged by the Road Network Operations Centre (RNOC) as an incident.

To avoid any confusion with RNOC, and potential delays to works, it is recommended that immediately prior to implementing approved traffic management on Main Roads controlled roads in the metropolitan area, the traffic management personnel onsite contact the Main Roads Road Network Operations Centre (RNOC) on 138 111.

2.2 ROADS FOR WHICH LOCAL GOVERNMENT OR OTHERS ARE RESPONSIBLE

Any party including utility service providers who are Authorised Bodies intending to conduct works on a road reserve that is not a declared 'highway' or 'main road', must prior to commencing the works, contact the relevant local government or the other Authority that is responsible for the care, control and management of the road to confirm their requirements.

Table 2 - Where to obtain approval to work in road reserves

Location	Contact
Main Roads reserve in Perth Metropolitan Region	enquiries@mainroads.wa.gov.au
Main Roads reserve outside Perth Metropolitan Region	The relevant Main Roads Regional Office - see Appendix 4
Local government road reserve	The relevant local government
Other road reserves	The Authority responsible for the road

2.3 WORKS AFFECTING TRAFFIC SIGNAL OPERATION

Where the proposed traffic management involves modification to existing signal phasing, number of traffic lanes and / or timing on local OR State Roads; the proposed changes to these devices are to be submitted to Main Roads accordance with the Temporary Traffic

Management: Traffic Signal Approval Policy available on the Main Roads website at www.mainroads.wa.gov.au; go to 'Technical & Commercial' > 'Working on Roads.'

2.4 TRAFFIC MODELLING

As of publication of the Code, The *Modelling Guidelines for Roadworks - Temporary Traffic Management* is in the final approval process and due for release imminently.

The guidelines apply when the proposed temporary traffic management will redistribute traffic, significantly lowering the level of service and safety of the surrounding road network, including isolated intersections. This guideline will help determine the appropriate traffic analysis that will be required.

3. AUTHORITY TO ERECT TRAFFIC CONTROL DEVICES

3.1 MAIN ROADS

The Commissioner of Main Roads (CMR) has authority under the Road Traffic Code, to erect, establish or display and alter or take down any road sign or traffic control signal (subsequently referred to herein as 'to utilise traffic signs and devices'). The CMR has delegated specified officers of Main Roads to administer the utilisation of traffic signs and devices in accordance with the Main Roads Delegation of Authority Manual.

3.2 MAIN ROADS AGENTS

Main Roads agents or contractors must, subject first to the approval of their Main Roads Contract Manager, utilise traffic signs and devices in accordance with this Code for the purpose of managing traffic at works on roads. Main Roads Contract Managers will comply with the Main Roads Delegation of Authority Manual in regard to providing such approvals.

3.3 AUTHORISED BODIES AND THEIR AGENTS

The CMR authorises Authorised Bodies and their agents, in accordance with the provisions of the Road Traffic Code, to utilise traffic signs and devices subject to any conditions attached to their Instrument of Authorisation. An example of a typical 'authorisation' is contained in Appendix 3.

A register of Authorised Bodies is available on Main Roads website at www.mainroads.wa.gov.au; go to 'Technical and Commercial'> 'Working on Roads' > 'Authorised Agreements.'

3.4 OTHERS NOT PARTY TO AN INSTRUMENT OF AUTHORISATION

Others that are not party to an Instrument of Authorisation but need to utilise traffic signs and devices for the purpose of managing traffic for works on a road, must first contact the Authority responsible for the care, control and management of the road to confirm their requirements.

If the Authority responsible for the care, control and management of the road is an Authorised Body, it will determine the requirements and approval process for others not party to an Instrument of Authorisation. Unless advised otherwise by such Authority, the responsibility for ensuring signs and devices are erected and maintained in accordance with this Code will, at all times, remain with the party undertaking the works.

If the Authority responsible for the care, control and management of the road is not an Authorised Body, authority to utilise traffic signs and devices either by such Authority itself, its agents or contractors or, by a third party, must be obtained from Main Roads with the concurrence of such Authority.

3.5 AUTHORISING TRAFFIC MANAGEMENT PLANS

General Requirements

Table 5.3 of AGTTM Part 8 details the responsibilities of the Road Infrastructure Manager, stating they are responsible for:

- ensuring that all TTM measures are in accordance with Jurisdictional requirements, AS1742.3 and the AGTTM.

This refers to the general responsibility of Road Infrastructure Managers to undertake a high-level check of the proposed traffic management focussing on any issues that may present a safety or operational risk to the road network at the location. The Road Authority or Road Infrastructure Manager is not responsible for ensuring every aspect of the TMP is compliant with all TTM requirements, as this is the responsibility of the TMP designer, the person who checks the TMP (from the traffic management company) and the Roadworks Traffic Manager (RTM) who reviews and endorses (if applicable) the TMP to ensure that the plan is compliant with all TTM requirements.

The Road Authority has a duty of care to the safety of road users and road workers within their jurisdiction, and as a result they should conduct a review that focuses on the TMP's suitability in catering for all road users, speed zone appropriateness, traffic efficiency and ensuring after care and staging Traffic Guidance Schemes (TGS) are provided. The Suitability Check checklist may assist officers within the road authority fulfil this obligation (see section 5.1.3).

By signing the 'Road Authority Authorisation' section of a Traffic Management Plan (TMP) the Road Authority (Main Roads and/or LGA) is endorsing the implementation of temporary traffic management on that road.

Traffic Management on Roads Controlled by Main Roads
Main Roads, or Main Roads contractors with an Instrument of Authorisation, must review and authorise the plan as per the general requirements above.

Traffic Management on Local Government Roads
The Local Government Authority must review and authorise the plan as per the general requirements section above.

At permanent traffic signals on local government roads Main Roads will review and authorise the required changes to the Main Roads Traffic Signals only (see the Temporary Traffic Management: Traffic Signal Approval Policy). Additionally, where works are on local government roads, but it is identified that there may be an impact to nearby roads that are controlled by Main Roads, then Main Roads must review and authorise the TMP as per the general requirements section above.

4. PLANNING THE WORKS

4.1 DUTY OF CARE

Any Person Conducting a Business or Undertaking (PCBU) in connection with or pursuant to temporary traffic management or any works on a road, has a 'duty of care', so far as is reasonably practicable, that the health and safety of workers who work for the PCBU or whose activities in carrying out work are influenced or directed by the PCBU, are not exposed to health and safety risks arising from that business or undertaking.

A PCBU must ensure, so far as reasonably practicable, that other road users are not exposed to health and safety risks arising from any TTM business or undertaking.

A PCBU includes all types of working arrangements such as crown agencies, organisations, companies, principals, contractors and sub-contractors.

The Work Health and Safety Act specifically requires all PCBUs to ensure, so far as is reasonably practicable, the health and safety of:

- workers engaged, or caused to be engaged by the person
- workers whose activities in carrying out the work are influenced or directed by the person while the workers are at work in the business or undertaking.
- people who may be at risk from work carried out by the business or undertaking (including road users in case of a at roadwork sites).

4.2 TRAFFIC MANAGEMENT PLANS

4.2.1 General

Any party undertaking work on a road must prepare a Traffic Management Plan (TMP) that adequately provides for the safety of workers and road users while maintaining an adequate level of service to road users. Traffic management planning should be undertaken in accordance with the AGTTM Part 2: Traffic Management Planning.

To ensure a consistent approach is taken when developing a TMP one of the Main Roads TMP templates[1] (see here) must be used as a basis for the development of the plan. Any section headings that are not applicable to the TMP being developed must be kept in the document and noted as not applicable (with the intent of keeping the TMP section numbers the same throughout all TMPs).

For longer term projects with multiple stages and/or activities it is best practice to develop an overarching Project Traffic Management Plan which can cover overall scope of works, staging, project objectives, risk management, traffic analysis, communication plan, etc. and have specific TMPs for specific work activities or stages. The TMPs that sit under the overarching Project TMP must use the TMP template that retains section headings (where information is captured elsewhere this can be referred to rather than it being replicated).

All TMPs must be prepared by a person holding Main Roads accreditation in Advanced Worksite Traffic Management (AWTM). A person holding Main Roads accreditation in Worksite Traffic Management (WTM) may make on-site modifications to the TMP in accordance with its scope and objectives (following any modification the residual risk must not be higher to workers or road users). Further information regarding requirements for WTM / AWTM tasks and accreditation is provided in section 8.

[1] Note: the basic TMP template may be used when conditions in the Basic TMP checklist (section 5) are met. Go to www.mainroads.wa.gov.au > 'Technical & Commercial' > 'Working on Roads'

TMPs must be signed by the person that prepared them, along with their name, AWTM certificate number and the date of endorsement of the plan. In addition, the person preparing a TMP must also include a statement on the plan confirming that a site visit was undertaken by them or another person under their direction, prior to preparing the plan along with a date stamped photo[2] from the site visit (not required for Generic TMPs, see 4.2.2).

With the exception of repositioning of traffic control devices within the allowable tolerances specified in AGTTM, where any on-site changes to a TMP are proposed, such changes must be endorsed by a person holding current WTM or AWTM accreditation. A copy of all documentation relating to the endorsement of the changes must be held on-site by the person managing the works.

All TMPs must contain a contingency plan for fatality and serious injuries which must detail arrangements for preserving the worksite. See section 7.6 of AGTTM Part 6.

All Traffic Guidance Schemes (TGSs) must be signed and dated by the person that prepared the TMP and be appropriately labelled so that those implementing the TGSs implement the correct Traffic Management for the particular work situation (Labelling example: 'when clearance to traffic is less than 1.2 m'). It is recommended that all Site Specific TGSs contain the days and times the TGS is to be implemented.

Where a TMP is to be used on more than one occasion or at a number of generic locations, continuous improvement must be considered. This will ensure the quality of traffic management is maintained or improved where required. The process should include debrief meetings to discuss any issues or risks associated with the plan. TMPs must be kept up to date considering changes in traffic volumes, vehicle types, the road environment, work practices, legislation and/or standards. As a minimum, TMPs must be reviewed at least once in any 12-month period.

TMPs must not contain organisation watermarks or branding within the body of the TMP or TGSs that obscure the text, tables and/or images. Watermarks may be placed in the header and/or footer of the TMP.

4.2.2 Generic TMPs

For routine/repetitive type works such as minor pavement maintenance, a generic TMP may be appropriate. The person preparing the TMP must refer to the Generic/Site Specific TMP Checklist to assist in determining whether the traffic management setup can use a generic or site specific TMP, this is available on the Main Roads website www.mainroads.wa.gov.au ; go to 'Technical & Commercial' > 'Working on Roads.'

For Generic TMPs a site visit by the AWTM that prepared the TMP[3] is not required, however the person responsible for implementing the TMP must be aware of the scope of situations covered in the TMP and ensure it is applicable for the site[4]. Where the generic TMP is not suitable a site specific TMP must be developed.

[2] It is recommended the Main Roads GPS SLK App, or similar, which includes date stamp and location information is used

[3] RTMs may endorse Generic TMPs that do not involve 'complex traffic arrangements' without undertaking a site visit, see section 4.2.3.

[4] The TMP must be authorised for implementation by the relevant road authority, see section 3.

Process for TGS Selection

Generally, Generic TMPs will contain Generic TGSs with no specific location information and may be applicable for use at a number of locations. The Generic TMP must include a selection procedure within the TMP to assist in the selection of the correct TGS for the road type, road environment and the type and location of works to be undertaken (for example on shoulder or in lane). An example TGS selection checklist is located on the Main Roads website, see here.

A TGS is defined as 'Site Suitable' once a Generic TGS has been selected using the defined selection procedure, a site visit or investigation of the site is conducted, and it has been confirmed that the selected TGS is appropriate for use for the works at that site.

All Generic TGS must be confirmed as a Site Suitable TGS prior to commencement of works. Once the Generic TGS is confirmed as suitable for use, location information is added to the Generic TGS. Confirmation that a Generic TGS is Site Suitable must be performed and signed off by a BWTM, WTM or AWTM, details must be recorded in the daily diary.

4.2.3 Traffic Management Plans Involving 'Complex Traffic Arrangements'

'Complex traffic management arrangements' are those activities and traffic management arrangements that include any of the following:

i. Any plan assessed as having a residual risk-rating of H (high-risk) or greater as a result of a risk assessment undertaken during the planning stage.

ii. Any plan that meets all the following:
   1. Occurs on a multilane road; and
   2. Closes or diverts one or more lanes (includes emergency lanes); and
   3. Occurs on any Freeway OR road with a permanent speed limit of 90 km/h or more (or a section of these roads where the speed limit is reduced due to traffic signals); and
   4. Has a traffic volume of 15,000 vpd or more.

iii. Any plan at permanent traffic signals that requires:
   1. Alteration to the function of the traffic signals or signal display (e.g. flashing yellow, masking displays, modifying movements or phasing); or
   2. Closure of a traffic lane, including unsignalised turn lanes (including tapers or road closures):
      a. within a signalised intersection, or
      b. within 30 m of the stop line on the approach, or
      c. within 30 m of the adjacent stop line on the departure, or
   3. Closure of any part of a signalised dedicated turning lane.

   See the Temporary Traffic Management: Traffic Signal Policy for more details.

iv. Any Traffic Management arrangement involving Temporary Road Safety Barriers.

v. Any plan that involves the removal or replacement of permanent road safety barriers that are preventing a potentially catastrophic outcome, e.g. commuter rail or freeway barriers.

vi. Temporary diversion of traffic into the opposite lane of a multilane road creating a free-flowing contra-flow situation (does not apply to contraflow implemented at overtaking lanes).

vii. Plans that will redistribute traffic, significantly lowering the level of service and safety of the surrounding road network, including isolated intersections.

viii. Any other situation where the road authority or authorised body consider the traffic arrangement sufficiently complex to warrant RTM review and endorsement.

ix. Any plan that requires a 40 km/h temporary speed limit on roads that meet all the following:

1. Occurs on a multilane road; and
2. Occurs on Freeway or road with a permanent speed limit of 90 km/h or more (or a section of these roads where the speed limit is reduced due to traffic signals); and
3. Has a traffic volume of 15,000 vpd or more.

TMPs for works involving 'complex traffic arrangements' must be reviewed and endorsed by a Roadworks Traffic Manager (RTM) in the form of their signature, the date, printed name and RTM accreditation number. Further information regarding requirements for RTM accreditation is provided in section 8.

TMPs for works involving 'complex traffic arrangements' that have been prepared by a person holding RTM accreditation must be reviewed and endorsed by another person with RTM accreditation.

RTMs must only endorse finalised Traffic Management Plans[5] that include a documented risk assessment of the proposed works in accordance with Section 4.3 and Appendix 2 of this Code, during the planning stage. A TMP must not contain a residual risk rating VH (very high-risk) for any proposed traffic management treatment. A TMP involving a residual risk rating H (high-risk)[6] must be reviewed and endorsed by an RTM.

Regardless of whether a particular TMP involves 'complex traffic arrangements' or not, the Road Authority/Authorised Body that grants approval for the works to proceed may determine that the TMP requires to be endorsed by an RTM.

Traffic management sites involving 'complex traffic arrangements' on Main Roads controlled roads, must have at least one person with either Worksite Traffic Management or Advanced Worksite Traffic Management accreditation on-site at all times when road workers are present.

With the exception of repositioning of traffic control devices within the allowable tolerances specified in AGTTM, where any on-site changes to a TMP involving 'complex traffic arrangements' as determined in the planning stage are proposed, such changes must be subject to a risk assessment using the same methodology documented in the TMP (unless an alternative methodology has been specified in the TMP). The risk assessment must be undertaken by a person holding current Worksite Traffic Management or Advanced Worksite Traffic Management accreditation. These changes must be within the scope and objectives of the TMP, anything outside this will need to be endorsed by the RTM and authorised by the relevant road authority.

[5] The endorsement must be of the entire TMP not just the parts that are considered 'complex'
[6] Traffic flow may be exempted, traffic flow less than 135 % of the allowable capacity as detailed in AGTTM Part 3 may be endorsed by a person with AWTM accreditation as part of a variation to standards form, see section 6.11.

A copy of all documentation relating to the risk assessment must be held on-site by the person managing the works. Additionally, following the on-site implementation of the changes, a copy of this documentation must be referred back to the Roadworks Traffic Manager that endorsed the design of 'complex traffic arrangements', as soon as practicable for review and feedback to the person/contractor managing the works.

Roadworks Traffic Managers must abide by the Code of Conduct in discharging their professional duties at all times. The Code of Conduct for Roadworks Traffic Managers is available on Main Roads website at www.mainroads.wa.gov.au; go to 'Technical and Commercial' > 'Working on Roads' > 'Training and Accreditation'

As per the RTM Code of Conduct, RTMs are required to make at least one site visit prior to endorsing a site specific[7] Traffic Management Plan. However, in regional areas that do not have access to RTMs based within 200km of the site, RTMs may endorse complex TMPs without the need to undertake a site visit when all the following criteria is met:

- The works associated with the TMP will be completed in less than 5 shifts (5 days).
- The TMP does not include any risks that have a residual risk rating of High or greater,
- The TMP does not involve Temporary Road Safety Barriers,
- A person with AWTM accreditation undertakes a site visit after they have consulted with the RTM to determine what information is required (video, photos, measurements, etc.).

It is important that the RTM collects and maintains photographic and video evidence provided by the AWTM undertaking the site visit. Regardless of the above, a Road Authority / Authorised Body reserves the right to request that an RTM undertakes a site visit in person, in accordance with the RTM Code of Conduct.

4.2.4 Temporary Road Safety Barrier Detail in TMPs

As required in section 4.2.3 of this code any TMP involving Temporary Road Safety Barriers must be reviewed and endorsed by an RTM. It is the responsibility of the RTM to ensure the TMP contains adequate barrier detail. Where temporary barriers are required, these must be designed in accordance with manufacturer's requirements, Austroads and Main Roads technical guidelines. Calculations must be appended to the TMP.

TGSs must provide sufficient detail so that installers can determine offset from traffic lanes, worksite length/width, deflection distances required, containment fences (if required), start and finish points of the barrier, flare rates (if any) and necessary end treatments. Temporary barriers must be rated at the appropriate test level and be an approved barrier type listed on the Main Roads Website (Go to www.mainroads.wa.gov.au 'Technical & Commercial' > 'Technical Library' > 'Road & Traffic Engineering' > 'Roadside Items' > 'List of Approved Road Safety Barrier Systems').

Where temporary barriers are required, implementation methods should be detailed in the TMP and TGSs should be prepared.

[7] Site visit not required for Generic TMPs

4.2.5 Traffic Management Implementation and Removal

The implementation, operation and/or removal of the temporary traffic management must be considered part of the works, therefore the TMP must provide details on how this activity will be conducted safely (refer to AGTTM Part 5 and Part 6) including order of set up and pack down. This may require an additional TGS for the traffic management personnel to follow. The following must be considered:

- The requirement to install and remove traffic management devices in the sequence described in AGTTM Part 6
- Use of shadow vehicle for protection, note a shadow vehicle is only considered a shadow vehicle if it is protecting workers
- Use of a look-out person when workers are no longer protected by the shadow vehicle e.g. crossing the road or unloading the vehicle
- A Truck Mounted Attenuator may be required to protect workers
- Traffic control may be required to safely implement a lane closure or lateral shift.
- Lane closures or traffic control may be required when installing temporary pavement marking or devices, such as barriers.

Note: it is still the responsibility of the person undertaking the traffic management activities to be familiar with the relevant requirements detailed in AGTTM Parts 5 and 6; contents of the TMP, including TMP risk assessment, and to ensure a thorough risk assessment, e.g. Safe Work Method Statement (SWMS), has been prepared that covers all site-specific risks, implemented controls for the task and this is communicated and understood by all the traffic management crew.

4.2.6 Adjustment and Modification of TMPs

A TMP may contain details to assist the person implementing the TGS to make adjustments to ensure the TGS remains suitable. The details provided in the TMP or TGS must not deviate from the conditions permitted elsewhere in this Code of Practice, unless approved as a variation by the Road Infrastructure Manager. Where the TMP or TGS is to include additional instruction, such instruction must align with the following as a minimum:

- Adjustments: a person with BWTM accreditation may make on-site adjustments of traffic control devices within the allowable tolerances indicated in AGTTM (also see below).
- Modifications: a person with WTM or AWTM accreditation may make on-site modifications to traffic control devices outside of tolerances. This includes modifying, adding and/or removing signs and devices where the intent/objectives of the TMP and operation of the road network are not adversely impacted. Changes to the TMP/TGS must not involve adding lane or road closures, speed limit changes, or adding any additional regulatory signs that have not been approved. Adding repeater speed restriction signs is permitted.
- Substantial modifications: more substantial modifications must be made by a person with AWTM accreditation and must be authorised by the Road Infrastructure Manager (with associated RTM endorsement where required). Note: this is likely to result in a new revision of the TMP.

All adjustments and modifications are to be risk assessed, recorded on the TMP and/or TGS and recorded in the daily diary.

For clarity tolerances from AGTTM Part 6 are detailed below:

a. Tolerances for placement of signs are:
    i. up to 10% less than the distances given
    ii. up to 25% more than the distances given
b. Tolerances for placement of delineation is:
    i. no minimum and up to 10% more the distances given
c. Tolerances for taper lengths are:
    i. up to 10% less than the distances given
    ii. up to 25% more than the distances given

4.3 RISK MANAGEMENT

Management of risk is central to a TMP.

The risk management process for the planning of the works must be in accordance with AGTTM Part 2: Traffic Management Planning and Appendix 2 of this Code and included within the TMP.

The risk management process is applicable at all levels of planning, design and operation. Refer to the AGTTM series for additional guidance.

The following must be considered when undertaking the risk management process for any activities on or near roads:

- the Work Health and Safety (General) Regulations 2022 identify construction work on or near roads as high-risk construction work,
- A Safe Work Method Statement must be prepared before high-risk construction work commences (as per WHS Regulations),
- AGTTM indicates that all works on roads are considered high risk,
- Main Roads has corporately identified worker interaction with live traffic as a critical risk,
- Obligations of the PCBU to manage risks to health and safety in accordance with Part 3.1 of the Work Health and Safety (General) Regulations 2022:
    - Duty to identify reasonably foreseeable hazards; and
    - eliminate risks to health and safety so far as is reasonably practicable; and
    - if it is not reasonably practicable to eliminate risks to health and safety – minimise those risks so far as is reasonably practicable, through:
        - implementing the hierarchy of controls; and
        - monitoring and reviewing the effectiveness of the control measures.

Taking this into account it would usually be expected that the pre-treatment risk ratings for works (including traffic management set up and pack down[8]) near live traffic would have a pre-treatment risk rating of high or greater, i.e. it is recognised that it is possible that workers may suffer major injuries or severe permanent disablement when working near traffic with no treatments or controls in place (e.g. engineering, administrative, PPE, etc.). Ensure current Main Roads' risk classification table is used and the alphanumeric codes from Table A2-4 are included as per the example below.

[8] Risk rating must be included in the TMP for traffic management set up and pack down.

Example pre-treatment risk rating (note this is the risk rating with no controls in place):

Risk Event	Consequence	Pre-treatment Risk		
		Likelihood	Consequence	Risk Rating
Distracted or impaired motorist may crash into workers setting up the traffic management.	Serious injury to workers.	Likely (B)	Major (4)	Very High (16)

AGTTM Part 10: Supporting Guidance provides specific guidance on the risk management process for temporary traffic management, this is generally supported in WA however the tables in appendix 2 of this code should be used for:

- consequence / impact (Table A2-1 and A2-2),
- measures of likelihood (Table A2-3),
- risk rating matrix (Table A2-4), and
- treatment / management approach (table A2-5).

4.4 CONSULTATION, COMMUNICATION AND NOTIFICATION OF ROADWORKS

Roadworks have the potential to cause significant delays or access problems, or create adverse impacts on existing road infrastructure such as traffic signals, railway crossings, bridges, etc. Stakeholder consultation and/or communication is an essential part of preparing a TMP. For example, the relocation or diverting of traffic using lane closures or detours can change loading dynamics or introduce additional loadings on nearby bridges to the extent that bridge capacities and load restrictions may be exceeded.

It is important that where traffic is to be detoured via an existing road network, the road authority responsible for roads forming the detour is notified of the traffic arrangements during the planning of the works, i.e. when preparing the Traffic Management Plan (see section 4.2).

It is the responsibility of the individual or organisation proposing to undertake works to ensure all relevant stakeholders are appropriately notified of the works and subsequent impacts on traffic conditions.

4.4.1 Consultation

Consultation is an essential part of the preparation of a TMP, including consultation with the road authority. It is also important to consult with any stakeholders who have an understanding of site features and constraints, and who will be impacted by the implementation of the traffic management plan. Examples of stakeholders to be consulted include:

- road authorities
- residents and landowners
- local businesses
- schools
- public transport providers
- road infrastructure managers

Transperth

If planned road works are impacting Transperth bus services or bus stops* approval must be obtained from a member of the Transperth Service Disruption Team (Transperth.ServiceDisruptions@pta.wa.gov.au) ensuring they are satisfied with proposed detours and bus stop closure or relocations. The PTA will require a minimum of 5 working days' notice to review any plans or traffic guidance schemes. A TGS indicating the bus detour and/or bus stop relocations must be provided.

> ** Transperth approval is not required for any roadworks occurring on residential streets for a short duration (less than two hours and outside of peak times); however, they will still require of Notification of Roadworks form.*

Children's Crossings and School Zones

Children's crossings in Western Australia are installed under the approval of a State Government appointed committee known as the Children's Crossings and Road Safety Committee. Once approved, Main Roads and the relevant local government install children's crossing infrastructure to strict guidelines. Unless in an emergency, under no circumstance must a children's crossing be closed, moved or interfered with for the purpose of any works without seeking advice from the Children's Crossing and Road Safety Committee via the Western Australia Police Children's Crossing Unit.

Where works are located within a School Zone, consideration must be given to undertake the works outside the period indicated on the school zone sign or in school holidays. Where this cannot be done OR where a children's crossing is located within a roadwork's site, the following actions must be taken:

- Consult with the Western Australian Police Children's Crossing Unit at the planning stage to agree on and finalise arrangements for the safe passage of school children and pedestrians.

- Ensure the speed shown on the temporary speed zone and termination signage is less than or equal to the speed shown on the school zone sign during the school zone operating times. In cases where the worksite extends beyond the school zone, termination signage must reflect the posted speed applicable to that section of road.

- Where the children's crossing stop line and side bollard have been removed as part of the roadworks, traffic controllers must be positioned at the location of the children's crossing stop line(s) to guide vehicles where to stop on the approach side of the children's crossing.

- Where roadworks alters normal traffic paths during the operating times of a children's crossing, traffic controllers must assist the Traffic Warden to control vehicles and pedestrians at the children's crossing as required. If a Traffic Warden is not available, the crossing cannot be managed as a children's crossing. However, Main Roads accredited traffic controllers may be utilised to ensure the safe operation of the crossing in the same manner as other priority pedestrian crossings are temporarily managed.

- Provisions for pedestrian and bicycle facilities must be in accordance with AGTTM.

Railway Crossings (Including Crossings without Flashing Signals)

Any works within the distances from a railway level crossing given in Table 3 and are likely to result in realignment of a road section or intersection impacting on the railway level crossing or significantly affecting the existing traffic flow through a railway level crossing, the relevant Rail Infrastructure Manager must be notified at least two (2) weeks prior to the works by the party arranging the works. The Rail Infrastructure Manager may determine a Rail Safety Management Plan (RSMP) is required for roadworks which impact on the safe operation of the railway.

Table 3 - Distances from railway level crossings where significantly impacting crossing

Speed limit (km/h)	Distance from railway (m)
<70	150
70 to 90	200
>90	300

Traffic Controllers need to be aware that motorists will generally follow their directions when they differ from other signals, signs and devices on the road. They need to take special care at railway crossings to ensure they do not direct traffic through signals requiring vehicles to stop, unless it is clearly safe for vehicles to proceed through them.

Where a railway level crossing exists within a section being controlled by a Traffic Controller, a flag person with the relevant Track Access Permit should be stationed at the traffic stop line of the railway crossing at least 3m from the nearest rail, equipped with a two-way radio, to watch for trains and advise the Traffic Controllers to stop traffic in time for train movements through the level crossing.

The flag person should make sure that the relevant Rail Infrastructure Manager has been notified before their commences work. On each day, prior to the commencement of works, the Rail Infrastructure Manager should be advised of the works that will be proceeding on that day, so that train drivers can be warned of the works and advice can be received on the times that trains are expected to use the crossing (this will be determined by the relevant Rail Infrastructure Manager).

If the section of road under traffic control is to one side of the railway level crossing, but within the distances in Table 3, the flag person stationed at the railway level crossing must be stationed on the same side of the crossing as the section under traffic control, at the traffic stop line or at least 3 m from the nearest rail. The flag person stationed at the railway level crossing must be equipped with a hand-held STOP/SLOW sign that has the rear ‘SLOW’ sign covered. This is to prevent vehicles approaching the other side of the railway level crossing following the SLOW instruction and ignoring other signs or flashing signals.

Traffic Controllers must also ensure that vehicles stopped do not queue back over a railway level crossing. If there is a chance of this happening, vehicles should be stopped prior to the railway level crossing.

Refer to the Railway Crossing Control in Western Australia Policy and Guidelines on the Main Roads website at www.mainroads.wa.gov.au > ‘Technical & Commercial > ‘Technical Library’ > ‘Traffic Management’ > ‘Railway Crossing Control’

4.4.2 Notification of Approved Roadworks

Notification of approved Roadworks must be sent using the form in Appendix 4 at least seven (7) days prior to works commencing, in the following situations.
Note: the notification form does not replace the need to consult with relevant stakeholders.
(a 'Word' document version of the Notification of Roadworks Form is available on Main Roads website at www.mainroads.wa.gov.au; go to 'Technical & Commercial' > 'Working on Roads'.)
There may be other stakeholders that require notification that aren't listed. Only stakeholders impacted should be sent the form:

- Works involving the complete closure of any road (may not apply to access roads, however residents must be notified).
- Works on primary and district distributor roads of more than four (4) hours duration where it is expected that traffic delays and congestion will occur.
- Traffic management activities involving the establishment of a contra-flow.
- Traffic management activities resulting in any direct or indirect changes to traffic flows and/or traffic composition on bridges, including situations where such changes are a result of lane closures or traffic detours.
- Works on any primary or district distributor road where construction activities will make it difficult or impossible for the passage of general access or oversize vehicles, and traffic control devices cannot be easily shifted on a temporary basis to allow the vehicle to pass.
- Traffic management activities that prohibit turning movements at signalised intersections.
- Works occurring through any Traffic Warden controlled children's crossing.
- Any other activities where major impact on stakeholders are expected.

It is essential that the relevant road authority is informed of all communications or notifications planned and/or executed to support the implementation of traffic management.

For all works requiring the complete or partial closure of a road, an outline of the planned communications should accompany the Notification of Roadworks form. Where applicable, contact details for the communications coordinator (or equivalent) should also be provided.

4.5 VARIATION TO THE CODE, AGTTM AND STANDARDS

The Code of Practice, AS1742.3 and AGTTM contain mandatory requirements (must or shall) and recommendations (should). The application of these mandatory requirements and recommendations is intended to provide the optimal level of safety and traffic efficiency.

Variations to these treatments may be undertaken as follows:

a) Where recommendations (should) are not adopted when preparing the TMP, this must be included within the risk assessment within the TMP.
b) Where mandatory requirements (must or shall) are not adopted in preparing a TMP, a risk assessment undertaken by a Roadworks Traffic Manager (see section 4.3) must be undertaken and the approval for the variation must be obtained from the relevant Road Infrastructure Manager using the Variation to Standards Application Form available from the Main Roads website www.mainroads.wa.gov.au; go to 'Technical & Commercial > 'Working on Roads' When undertaking the variation to standard the RTM must review and endorse the entire TMP.

4.6 VULNERABLE ROAD USERS

Vulnerable road users include pedestrians (including pedestrians with disabilities) cyclists and motorcyclists. Vulnerable road users must be considered for all works on roads, refer to AGTTM for more information.

Primary Path Closures in the Metropolitan Area

Any planned works in the Perth Metropolitan* area that require a closure of an existing path designated by the Department of Transport as a Primary Route* for a period of 7 days or more:

- Must obtain approval from the Main Roads Planned Interventions (RPI) section, ensuring they are satisfied with the proposed detours. RPI will require a minimum of 15 working days' notice to review the TMP and associated TGS.

- Must include a Traffic Guidance Scheme indicating the path detour; and the proposed signs have been endorsed by a person that holds RTM accreditation (along with endorsing the entire TMP). The RTM must have undertaken a site visit of the proposed detour (visiting the entire proposed route).

- Must have a compliance safety inspection (refer to section 5.1.2) of all Primary Path Route detours, conducted by a person that holds AWTM accreditation within 24 hours of implementation (this must be taken from the perspective of a path user). This must be submitted to Main Roads Planned Interventions (RPI) section via enquiries@mainroads.wa.gov.au

*DoT website: Long-term cycle network (transport.wa.gov.au)
Perth Metropolitan area, as per Perth and Peel Long Term Cycle Network, excludes Peel: i.e. City of Mandurah, Shire of Waroona, and Shire of Murray excluded.

5. REVIEW, INSPECTION, ROAD SAFETY AUDIT AND OPERATION

5.1 REVIEW, INSPECTION AND ROAD SAFETY AUDIT

AGTTM Part 10: Supporting Guidance section 3 provides requirements for conducting reviews, inspections and road safety audits at temporary traffic management. WA has the below variations and additions to AGTTM.

5.1.1 Audits

Generally, in WA rather than Senior Road Safety Auditors conducting Roadworks TMP and TGS design phase road safety audits, Roadworks Traffic Managers (RTM) conduct the below Temporary Traffic Management audits (the RTM may also be a Senior Road Safety Auditor).

Suitability Audit
A Suitability Audit is a systematic and independent examination of the extent to which the proposed Traffic Management Plan addresses specified requirements and provides a measure of the project's capability in meeting those requirements. This audit is conducted by an RTM prior to the implementation of the TMP. The RTM:

- audits the entire TMP and all TGSs;
- audits against contractual requirements;
- considers all safety issues related to the traffic management including crash risks;
- considers traffic flow and efficiency;
- inspects the site;
- writes an audit report, see template here;
- holds a completion meeting with relevant site personnel, e.g. project manager, traffic manager, etc.

Compliance Audit
A Compliance Audit is a systematic and independent examination of the extent to which a project fulfils its traffic management requirements (including the Traffic Management Plan) and provides a measure of the project's performance in meeting specified requirements. This audit is conducted by an RTM after a TMP/TGS has been implemented and may be conducted at various stages of the project. The RTM:

- audits the entire TMP and all TGSs (may only be able to cover off the implementation of the TGS in place at the time of the audit);
- audits against contractual requirements;
- considers all safety issues related to the traffic management including crash risks;
- considers traffic flow and efficiency;
- inspects the site;
- writes an audit report, see template here;
- holds a completion meeting with relevant site personnel, e.g. project manager, traffic manager, etc.

5.1.2 Suitability Reviews and Compliance Safety Inspections

Refer to AGTTM Part 10 (sections 3.3.1 and 3.3.2) for details on Suitability Reviews and Compliance Safety Inspections. These have the same requirements as those listed in the Suitability/Compliance audits above except these are conducted by a person with AWTM accreditation and a full report does not have to be produced (can also be undertaken by an RTM).
Note: Site supervisor compliance (operational) safety inspections, as described in section 3.3.2 of AGTTM Part 10, may be conducted by a person that does not hold AWTM accreditation.

5.1.3 Suitability Check

A suitability check is a check of the traffic management plan to ensure it addresses the specified requirements of the works, all types of traffic and the road environment. This includes a check of compliance with standards and the identification and mitigation of all site specific and operational risks.

This check ensures the TMP is appropriate prior to being implemented.

- Conducted by AWTM or WTM (or person within road authority with equivalent level of knowledge and experience).
- Conducted prior to implementation.
- Does not require a report to be written.
- Desktop check that does not require a site visit.

Note: it is good practice for traffic planners to have someone undertake this type of check before submitting the TMP to the road authority.

5.1.4 Review and Audit Checklists

Checklists have been developed to assist personnel to prepare, review, audit, approve and / or authorise traffic management plans. The checklists are located on the Main Roads website at www.mainroads.wa.gov.au: 'Technical & Commercial' > 'Working on Roads'

5.2 TRAFFIC MANAGEMENT OPERATION AND RECORDS

It is a requirement that any party undertaking work on or alongside a road, must keep a copy of the current approved TMP onsite. Daily records of the sign arrangement or traffic guidance scheme must be kept in a diary in accordance with AGTTM Part 6: Field Staff – Implementation. As a minimum, the Daily Diary must be based on the Daily Diary Template on the Main Roads website www.mainroads.wa.gov.au; go to Technical & Commercial' > 'Working on Roads'

Due to the availability of smart phones and video cameras, when conducting workplace inspections and/or altering the traffic guidance scheme, video evidence should be considered (to support written documented records).

Claims for damages are often made a considerable time after an incident. Under the Limitation Act (WA), claims for negligence must be commenced within six (6) years. However, a defendant may be unaware that an action has commenced for a further year as the plaintiff has this time in which to serve the writ.

Main Roads recommends that traffic management written records (i.e. TMP and daily diary) be securely stored for a period of not less than seven (7) years from the date of completion of the works. The Authorised Body that grants approval to a Traffic Management Plan should keep a copy of the approved Traffic Management Plan and any daily records of their supervisory staff that capture the on-going implementation of the Traffic Management Plan.

In case of all works undertaken for or on behalf of Main Roads, the persons arranging the traffic management works must keep their own daily records in addition to a copy of the approved TMP together with any other relevant records.

For all other works the requirements for record keeping in relation to traffic management must be determined by the Authorised Body responsible for or authorising the work.

Video Drive Throughs

Any organisation implementing temporary traffic management on a Main Roads worksite (i.e. works conducted by or on behalf of Main Roads) must conduct video drive throughs (using a Dash Cam or similar) as per the inspection schedule, to record the implemented traffic guidance scheme.

This video[9] must be stored for a period of 7 days from date of recording and provided to Main Roads when or if requested. After 7 days, if not requested by Main Roads, footage can be deleted or overwritten.

This does not apply to Short Term Low Impact Worksites as per AGTTM Part 5, Mobile Works as per AGTTM Part 4, Events as defined in the *Traffic Management for Events Code of Practice;* or responding to Emergencies or Incident management.

[9] Video to have a frame rate of at least 3 frames per second (FPS)

6. DEPARTURES FROM DESIGN REQUIRMENTS IN AS1742.3 AND AGTTM

The following departures to the requirements of AS 1742.3, AGTTM and other additional requirements are to be applied to temporary traffic management in Western Australia.

6.1 TEMPORARY SIGNAGE

6.1.1 General

Any signage that is not within the AS 1742 series needs to be approved by Main Roads before it can be implemented on the road network. All Main Roads approved signage is on the Main Roads website at www.mainroads.wa.gov.au; go to 'Technical & Commercial' > 'Technical Library' > 'Signs Index'. Warning and regulatory signs should not be altered or modified; particularly regulatory signs which may become unenforceable.

Main Roads is still in the process of transitioning to adopt new Australian Standards signs within AS1743 *Road signs – Specifications* that replicate the Main Roads temporary signs. Until this process is finalised Main Roads signs with sign numbers and specifications should continue to be used. Where there is no Main Roads equivalent sign, signs within the AS1742 / AS1743 series may be used. (Note: signs for road and path closures within AS1742.3 may be used, see section 6.1.8).

The signs must be sourced from an approved sign maker. This ensures the sign sheeting materials are in accordance with the required standards. The list of approved manufacturers is available in Specifications 601 – Signs, which can be found on the Main Roads website www.mainroads.wa.gov.au ('Technical & Commercial' > 'Technical Library') refer to Annexure 601 I 'Sign Makers Accredited by Retroreflective Sheeting Manufacturers'.

Note: Australian Standard or Main Roads signs usually used for permanent installation may be used at temporary traffic management sites as appropriate.

6.1.2 REDUCE SPEED Signs

The REDUCE SPEED sign should be used at worksites with a posted speed limit greater than 60 km/h when reducing the speed by 30 km/h or more.

The signs should be placed on both sides of the carriageway, in advance of the lowest speed zone at the worksite. Distances prior to the sign and the temporary speed limit are provided in the table below.

Speed of Traffic 200 m prior to sign (km/h)	Distance (m)
60 or less	25
70 - 110	Half the traffic speed (km/h)

Table 4 – REDUCE SPEED sign spacing

When used in conjunction with a temporary speed limit sign in a multi-message sign arrangement, the REDUCE SPEED panel should be placed within the same multi message frame.

G9-9

6.1.3 NEW WORK NO LINES MARKED Signing

The NEW WORK NO LINES MARKED signs (T3-11, T3-12 and MMS-RC-3) are used to warn road users of the absence of line marking, see clause 4.9.3 of AS1742.3 – 2019.

Other than at an active work area these signs may be used without requiring the use of other advance warning signs (e.g. ROADWORK AHEAD), provided that the normal running lanes are not obstructed and there are no longer temporary roadside hazards at the worksite.

T3-11

T3-12

6.1.4 ROAD INSPECTION Sign

The below ROAD INSPECTION sign may be displayed on vehicles which are used for road inspections. The signs must be located on the roof or rear of the vehicle and must not obscure vehicle mounted warning devices.

MR-TVM-15

6.1.5 CYCLIST DISMOUNT Sign

Prior to undertaking any works that impact on bicycle paths this Code and AGTTM require these works to be planned to ensure cyclist safety whilst minimising disruption and inconvenience. Bicycle paths should be provided with the same scale and width as existing facilities. However, it is acknowledged that sometimes when conducting short term maintenance works on shared paths and bicycle paths it may not be practical to provide a surface that is suitable for all bicycles.

In the first instance other warning signs to warn riders of the surface condition and the need to reduce speed must be displayed.

As a last resort, where cyclists cannot physically traverse the surface, the CYCLISTS DISMOUNT sign may be used. Therefore, any use of the CYCLIST DISMOUNT sign will only be for short durations and with the approval of the relevant road authority.

Note: The inappropriate use of this sign will result in riders failing to dismount where instructed.

MMS-PED-7

6.1.6 Pedestrian Warning Signs for Motorists

Along with the requirements detailed in section 3.8.3 of AGTTM Part 3 for contraflow arrangements, the use of the Pedestrian Warning sign (MR-TAW-31) may be used to provide warning to motorists at locations that have pedestrian crossings.

MR-TAW-31

6.1.7 Repeater Speed Restriction Signs

At locations where the A size speed restriction sign, R4-1A (450 x 600 mm), is permitted in AS1742.3, the MMS-REG-1 (600 x 600 mm) may be used as a standalone sign only when used as a repeater speed sign and if it is within a purpose made frame.

6.1.8 ROAD CLOSED and FOOTPATH CLOSED Signs

The Australian Standard ROAD CLOSED (T2-4, TM2-4B and TM2-4C) and FOOTPATH CLOSED (T8-4 and TM8-4A) signs with black legend on white background, in AS1742.3 2019, are now supported for use in WA. Signs with black legend on yellow background are still permitted to be used, however these will be phased out in the future.

TM2-4C

6.1.9 Sign Spacing

Where a physical constraint on site impacts locating the sign(s) as per the spacing requirements in Table 2.2 of AGTTM Part 3 signs can be modified by a person with AWTM accreditation to:

i. Up to 10 % less than the distance given
ii. Up to 25 % *or 15 m more than the distance given (whichever is greater)*

Where there is only a single advanced sign, or single advance Multi Message Sign (MMS) frame, for approach speeds of 60 km/h or less, the sign may be positioned at the spacing shown in table 2.2 of AGTTM Part 3, i.e. the sign does not have to be double the spacing as required in section 2.5.3 of AGTTM Part 3. Refer to section 6.5 for setting out temporary speed zones.

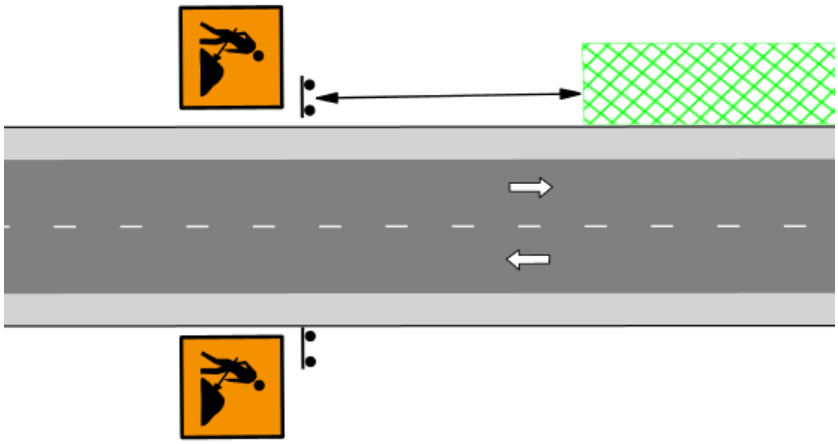


Figure 1: Example single advance sign

Note: sign may not be required on both sides of the road. Figure only shown to indicate a sign on both sides may still be considered a 'single advanced sign.'

6.1.10 Advance Warning on Freeways and High-Speed High-Volume Roads

Where advance warning signs (including vehicle or trailer mounted VMS) are required they may be omitted at worksites where the following applies:

- The removal of the advance warning is supported by a risk assessment undertaken by an RTM; and
- A TMA is deployed to protect the work area (TMA to display required TTM signs) OR the work area is behind a road safety barrier; and
- The work area, including TMA, is not located within a running lane (e.g. works on verge, shoulder or emergency lane); and
- A speed buffer zone is not required prior to the worksite; and
- Approaching vehicles have at least 200 m of sight distance to the worksite.

6.1.11 U-Turn DETOUR Ahead Sign

The U-Turn DETOUR Ahead sign (MMS-DIV-10) may be used where a detour route involves traffic undertaking a U-turn. Traffic should only be directed to undertake a U-turn at roundabouts or at traffic signals where U-turns are permitted.

The U-Turn DETOUR ahead sign may be used as a standalone sign if it is within a purpose made frame. Alternatively, if there are no relevant messages that may be added to the assembly two blanks (600 x 600) may be added to the MMS frame when using the sign.

MMS-DIV-10

6.1.12 Detour Signs

Signing for detours must be in accordance with AS1742.3 and AGTTM. However, the below wording from section 3.7 of AGTTM Part 3 is considered an error and does **not** apply in WA:

> *The first detour marker must be placed no more than 100 m past the DETOUR AHEAD sign (or VMS). Detour markers are mounted horizontally with the arrow either vertically upward, at 45 degrees upwards to the left or right, or horizontally to the left or right.*

6.2 GUIDELINES FOR MULTI-MESSAGE SIGNS

6.2.1 Introduction

Multi Message Signs (MMS) have now been included in both AS1742.3-2019 and AS1743 *Road signs – Specifications*. However, Main Roads is still in the process of determining the transition from Main Roads to the Australian Standard equivalent sign. Until this process is finalised Main Roads MMS should continue to be used, where there is no Main Roads equivalent MMS, signs within the AS1742.3 may be used.

6.2.2 Frames for Multi-Message Signs

See clause 4.5.2 of AS1742.3-2019. Further information on frame specifications can be found on the Main Roads website www.mainroads.wa.gov.au ('Technical & Commercial' > 'Technical Library') and Main Roads Specification 601 – Signs.

6.2.3 Substrates for Multi-Message Signs

A variety of different materials can be used for the sign substrates including the following:

- 5 mm core flute
- Aluminium
- UV stabilised plastic

The substrates for the signs must be of sufficient thickness and rigidity to prevent the signs being blown out of the frame.

The signs must be sourced from an approved sign maker. This ensures the sign sheeting materials are in accordance with the required standards. The list of approved manufacturers is available in Specifications 601 – Signs, which can be found on the Main Roads website www.mainroads.wa.gov.au ('Technical & Commercial' > 'Technical Library') refer to Annexure 601 I 'Sign Makers Accredited by Retroreflective Sheeting Manufacturers'.

The rear of the sign substrate must be non-reflective.

When using core flute multi-message signs at worksites where the signs will be operating both day and night or the signs will be left unattended, there must be at least two (2) 5 mm thick core flute signs back-to-back in the multi-message frame to help prevent the sign from blowing out and /or sliding across (if back-to-back messages are not required the rear set of panels must show the blank/rear plate).

6.2.4 Selection and Use of Multi-Message Signs

The use of multi-message signs must comply with the following requirements, this replaces conditions of use for MMS as detailed in clause 4.2.2 of AS1742.3:

a) All Main Roads approved Multi-Message Signs are on the Main Roads website at www.mainroads.wa.gov.au; go to 'Technical & Commercial' > 'Technical Library' > 'Signs Index' > Multi Message Signs'. For the sign application schedule refer to Appendix 5.

b) Regulatory control message plates, where used must always be positioned closest to traffic and reflect conditions.

c) Regulatory signs must not be used in-conjunction with the NEXT 'x' km or 'x' km AHEAD message plates.

d) Lane status 600 x 600 message plate must only contain two lane instruction (arrow) messages. Lane status 1200 x 600 message plates may contain up to 4 lane instruction messages.

e) Multi–message sign assembly should, where practical, be duplicated on both sides of the road or carriageway, of the road to which the signs apply or as recommended by Australian Standards (note: Speed changes must be duplicated).

f) All sections of the frame assembly must be filled with an approved sign. Messages should be logically linked, and conflicting messages should not be used.

   i. Except as noted in the schedule, where used, at least one of the 600 x 600 panels must be symbolic.
   ii. Duplication of the same messages on the same multi-message sign must be avoided.

g) No company names, advertising or any other words, symbols or markings must be displayed on the front of the multi-message frame or panels.

h) Rear of the message plate must be non-reflective.

i) There must be no more than one regulatory sign panel in the same MMS frame with the exception of using a regulatory sign that displays the vehicles excepted message[10] or the AT STREET NAME sign (MMS-REG-13),

Example use of more than one regulatory sign within the same MMS frame:

[10] MMS-REG-8, MMS-REG-9, MMS-REG-10, MMS-REG-11, MMS-REG-12

6.3 SECURING SIGNS AND DEVICES

6.3.1 Securing Signs

Requirement to Secure Signs

AS 1742.3 requires that signs and devices must be positioned and erected so that they are properly displayed and securely mounted. This requirement applies irrespective of the length of time that the sign is displayed, where the sign is located or the environmental conditions.

Factors that influence the risk of fallen signs are:

- Wind force; travel speeds; sign offset from the edge line; the presence of road trains and expected weather conditions,
- Slope of ground; with steeper batters increasing the risk,
- Duration that the sign is place; longer duration increases risk.

Requirements Where Sign is Required for More than 14 Days

Signs must be mounted on permanent posts[11] where required at that location for more than 14 days, where permanent posts are proposed not to be used, a risk assessment by an RTM must first be undertaken to detail why they are not being installed and provide mitigation such as regular maintenance arrangements or additional supports.

Requirements for Signs not Mounted on Permanent Posts

At locations where signs are not mounted on permanent posts the signs must be securely mounted.

Where workers are not available to immediately identify and rectify fallen signs, the securing of signs must include one of the following methods:

- Sandbags (or similar) on all 4 legs (total weight of at least 40 kg)*
- Affixing to other suitable permanent roadside infrastructure[12]
- Semi-permanent mounting of permanent posts (in accordance with manufacturers specifications) e.g. Oz Spike or similar

*The lateral offset to the travelled way and the speed of passing traffic have a significant impact on the risk of signs falling over, the number of sandbags may be reduced to the figures indicated in the table 5 below (other factors such as number of heavy vehicles and weather conditions must also be considered).

Table 5 – Minimum sandbags to secure signs

Permanent Speed Limit	Clearance of sign to travelled path	Minimum number of 10kg sandbags
90-110 km/h	1 m or less	4
	More than 1 m	2
70-80 km/h	1 m or less	3
	More than 1 m	2
60 km/h or less	any	2

[11] Permanent posts and mounting in accordance with Main Roads Specification 601

[12] Signs must not be affixed to road safety barriers. If affixing to permanent sign posts ensure the permanent sign is covered or removed if required.

Further Requirements and Considerations

Irrespective of the speed environment, the following options must also be considered, to further mitigate the risk if signs do fall over:

- Regular monitoring and maintenance in place to rectify fallen signs
- Use of Portable Variable Message Signs in advance of the work site

There may be a need to use a combination of the above methods on any particular site and some form of monitoring will always be required. For example, use of permanent posts for the ROADWORK AHEAD and initial speed reduction signs required for the entire duration of the project but temporary sign legs for the traffic control warning signs that need to be removed and/or relocated throughout the works.

If a sign has fallen over, measures must be taken to stop this from reoccurring. This may include weighing down the legs, safely fastening the device to suitable objects or post mounting the sign.

Note: Project / Contract Managers should ensure the above is considered in contract documentation, ensuring appropriate resources and personnel are provided for the required method of installation and monitoring.

6.3.2 Securing Cones and Bollards

When using cones or bollards at high-risk locations and it is expected they will blow over due to windy conditions, heavy vehicles or traffic speed, the following must be considered to ensure additional stability:

- bollards to have a base of 12 kg (or two 6 kg bases can be used);
- cones be a minimum of 6 kg (or 3 kg cones can be doubled up, i.e. 2 stacked on top of each other).

Alternatively, bollards or cones can be fixed to the pavement (with approval from the road owner).

Examples of high-risk locations include lateral shifts on high-speed roads, devices separating the work area, devices delineating excavations, etc.

6.4 COVERING EXISTING SIGNAGE AND ROAD MARKING

6.4.1 Existing Signs

In accordance with Clause 4.2.5 of AS 1742.3 - 2019 'Any signs and traffic control devices, including regulatory, warning guide signs and pavement marking, which are inappropriate to, or conflict with, the temporary worksite situation must be covered, obliterated or removed'.

Where it is necessary to cover a sign face temporarily, caution must be exercised as some coverings will cause permanent damage to the sign face following exposure to moisture and sunlight e.g. plastic materials, especially black, is forbidden as it is known that these materials are responsible for severe and permanent damage within 24 hours.

Specifications for covering existing signage can be found in Main Roads Specification 601 – Signs, located on the Main Roads website at www.mainroads.wa.gov.au; go to 'Technical & Commercial' > 'Tender Preparation' > 'Specifications' > '600 Series – Traffic Facilities'

6.4.2 Covering Regulatory Road Marking

In addition to the requirement to remove or cover regulatory devices that the TMP forces road users to contravene; it is recommended that regulatory road marking that portray a speed limit or traffic movement different to that shown in the TMP be covered.

Covering the road marking can be done with sticker products available from most sign makers. The colour of the sticker selected must be similar to colour of the road surface. Long-term work sites should use the grinding and reinstatement method OR undertake routine inspection and maintenance on the stickers.

Where not possible to cover arrow pavement marking, lane status signs must be provided that depict the permitted movements under the TGS.

6.5 SPEED LIMIT ZONES

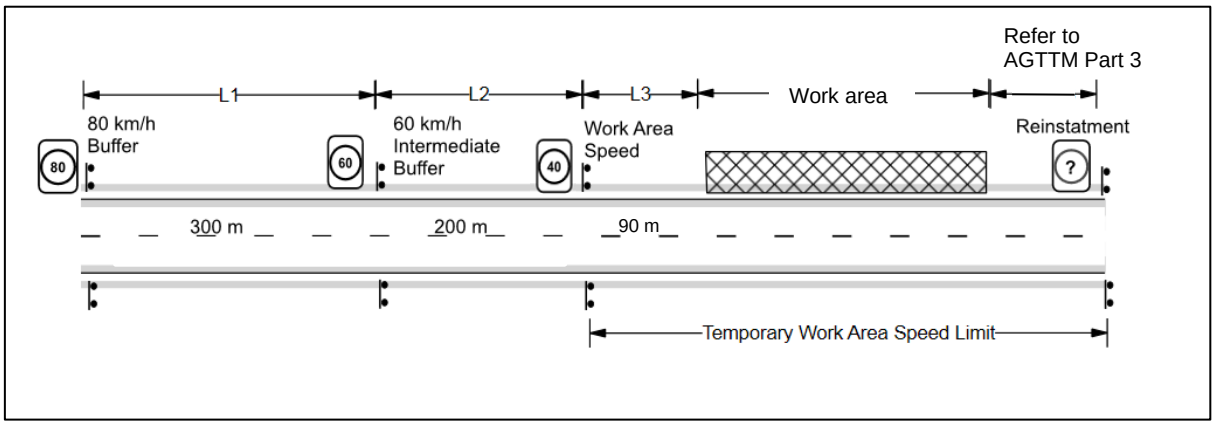
6.5.1 Approval of Temporary Speed Limit Signs

Authorised bodies are permitted to erect temporary speed limit signs without approval from Main Roads. However, all temporary speed limit signs on State Roads must be approved by Main Roads prior to their use, approval must come from the authorised officer listed in section 11.1, Traffic Signs, of the Main Roads Delegation of Authority (note this applies to all traffic signs and devices).

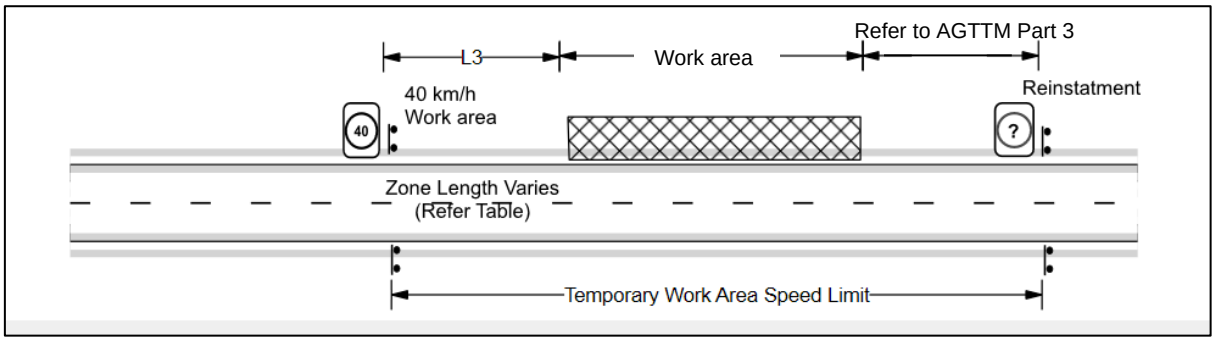
6.5.2 Setting out Temporary Speed Zones

This section has been prepared to provide additional guidance to section 5.5 of AGTTM Part 3 for designing temporary speed zones.

Main Roads requires the values (listed in Table 6) be used whenever temporary speed zones are required, unless a site-specific hazard is identified, and a risk assessment determines the need to extend the sign placement. This must be documented in the risk assessment and response table of the TMP.



(a) Buffer zones – 110 km/h to 40 km/h



(b) No buffer zone required with 40 km/h work area speed limit (where posted speed limit less than 80 km/h).

Notes:

1. Transition Area, e.g. tapers, crossover, etc., may be within speed buffer prior to the work area speed limit;
2. Safety buffer may be within the work area speed limit (based on a risk assessment)
3. Illustrations do not show all signs and devices that will be required at the worksite.
4. Refer to AGTTM Part 3 for details on the termination area

Figure 2: Temporary Speed Signs

Table 6 - Placement of temporary speed limit signs

Approach Speed (km/h)	Works Area Speed (km/h)	80 km/h Speed Buffer Required	L1 (80km/h buffer) (m)	L2 (60km/h buffer) (m)	L3 (m)
110	80	No	N/A	N/A	220
	60	Yes	300	N/A	160
	40	Yes	300	200	90
100	80	No	N/A	N/A	200
	60	Yes	300	N/A	160
	40	Yes	300	200	90
90	80	No	N/A	N/A	180
	60	No	N/A	N/A	180
	40	No	N/A	200	90
80	60	No	N/A	N/A	160
	40	No	N/A	200	90
70	60	No	N/A	N/A	70
	40	No	N/A	N/A	70
60	40	No	N/A	N/A	45

Notes:

These spacings are required for the majority of scenarios. However, where a risk assessment determines that spacings need to be changed they must be changed in line with AS1742.3 and AGTTM Part 3. Where the spacing does not comply with either Table 6 or AGTTM a variation must be undertaken as per section 4.5.

The reduced speed zone should be as short as possible and should not commence so far prior to the hazard (or workers) that drivers start to disregard the speed limit. The distance provided in L3 indicates the distance from the speed limit sign to the hazard, this is a balance between ensuring drivers can reduce speed prior to a hazard and not making that distance so long that compliance becomes an issue.

Where it is unsafe for the buffer speed zones to be applied (e.g. unsealed roads) ‘speed limit ahead’ signs must be used in place of the buffer speed zones (see AGTTM Part 3).

Signs installed within zones must be spaced in accordance with AGTTM.

A safety buffer must be provided in accordance with AGTTM.

6.5.3 Selecting Temporary Speed Limits on State Roads

AS1742.3 specifies that “The temporary speed zone shall apply only while the relevant conditions exist. It shall be removed as soon as practical after the need for its imposition passes”. This typically means that if the speed limit has been implemented for road worker safety, a higher speed limit will be required when road workers are not present.

AGTTM provides guidance on the conditions warranting temporary speed limits at road works. The speed selected may impact on the efficiency of traffic flows and driver compliance at the road work site.

Long Term Works

As a component of planning the works, traffic management must be designed with due consideration to traffic efficiency and the amenity of road users and the community. For any long term works on high volume State Roads, the minimum roadwork speed zone must be no greater than 20 km/h below the posted speed limit and must be in accordance with Table 7.

High volume roads	
Posted Speed	Roadwork Speed
110 km/h	≥ 80 km/h
100 km/h	≥ 80 km/h
90 km/h	≥ 80 km/h(or 70 km/h)
80 km/h	≥ 60 km/h
70 km/h	≥ 60 km/h(or 50 km/h)
60 km/h	≥ 40 km/h
50 km/h	≥ 40 km/h
40 km/h	≥ 40 km/h

Table 7: Minimum roadwork speed limits

When preparing a TMP the allowable traffic speed will be determined by various factors including the distance of separation between workers and moving traffic. Site constraints will often limit the available distance, which in turn necessitates the lowering of traffic speed limits.

Note: Where the temporary speed limit for a project is increased in order to comply with this requirement, then all elements of the traffic management must be designed for the higher limit. For example, the temporary speed limit may require a greater separation between workers and traffic or the installation of an appropriate roadworks road safety barrier system.

Short Term Activities at Long Term Works

Within a long-term work project, it is accepted there will be short periods where speed limits lower than Table 7 may be required to carry out unavoidable high-risk tasks. These circumstances include, but are not limited to, activities such as setting out/ removing barriers, setup/ takedown of traffic management or work vehicles exiting the worksite into free-flowing traffic. In these circumstances, a temporarily reduced limit of 60 km/h or 40 km/h may be warranted where the lower speed limit is only applied while the high-risk activity is taking place (e.g. where unprotected workers are required to be within 3m of traffic).

Where the lower speed limit is needed often the use of electronic speed signs that can be changed remotely should be considered.

It is not necessary to apply to Main Roads for a variation to standards in these circumstances if efforts are made to ensure these temporary reductions are kept to a minimum and/or conducted outside of peak periods wherever possible.

See section 4.2.3 if reducing traffic speeds to 40 km/h on high-speed high volume roads.

6.5.4 Length of Temporary Speed Zones

The eighth (8th) dot point of section 5.5.1 of AGTTM Part 3 states ‘The length of the temporary speed zone **should** be as shown in Table 5.5’.

In WA this must be replaced with:

The length of the temporary speed zone **must** be as shown in Table 5.5

6.6 TEMPORARY ROAD SAFETY BARRIER SYSTEMS

Section 5.3.1 of AGTTM Part 3 provides details on road safety barrier systems used at temporary traffic management sites.

The use, selection and location of temporary barriers should be in accordance with the Main Roads Guide to the Design of Workzone Barriers, located on the Main Roads website at www.mainroads.wa.gov.au; go to 'Technical & Commercial' > 'Road & Traffic Engineering' > 'Roadside Items' > 'Guide to the Design of Workzone Barriers'

Only Main Roads approved road safety barrier systems must be used; a list is located on the Main Roads website at www.mainroads.wa.gov.au; go to Technical & Commercial' > 'Road & Traffic Engineering' > 'Roadside Items' > 'Guide to the Design of Workzone Barriers' 'List of Approved Road Safety Barrier Systems'

6.6.1 Delineation of Temporary Road Safety Barriers

Temporary Road Safety Barriers help protect road workers and road users from hazards, however the barriers themselves can also present a hazard to road users. Barriers must be adequately delineated with raised retroreflective pavement markers (RRPMs) complying with AS 1906.3 or temporary RRPMs (flaps) with retroreflective tape (class 1A minimum) to ensure road users are aware of their presence.

The Pavement Markers providing delineation must be located on top of or on the traffic side of the barriers (< 300mm from the top), spaced at ≤12 m intervals along the barrier. Where used on curves with a radius up to 200 m the spacing must be reduced to 6 m on the outside of the curve.

The retroreflector or tape may either be yellow double sided* on all barrier applications or the following colours may be used:

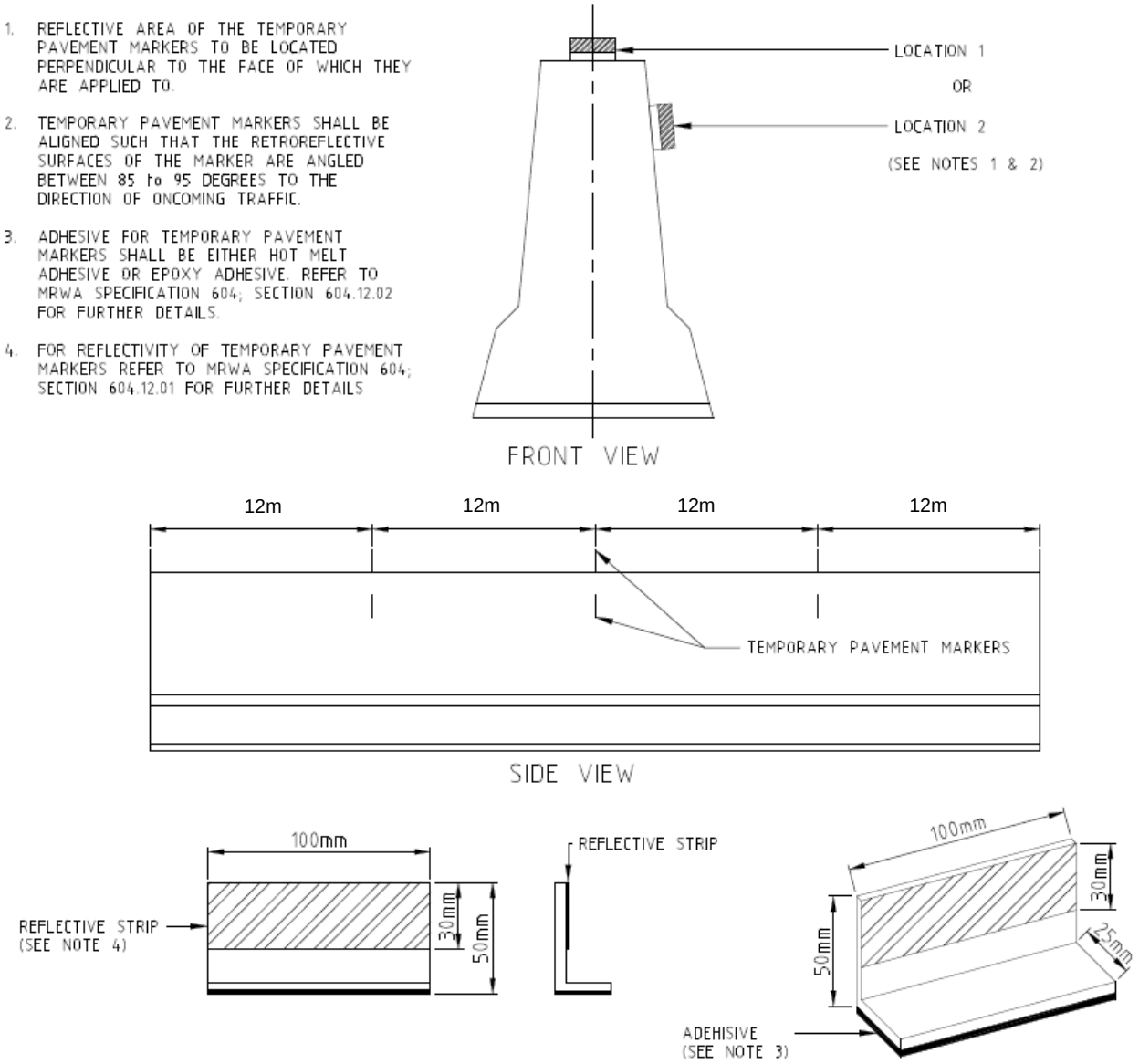
a) Single sided red on barriers installed on the left-hand shoulder or verge.
b) Single sided yellow on barriers installed in the median of a divided road
c) Double sided yellow where the barrier is positioned in between opposing direction of travel and delineator is placed on the top of the barrier
d) Single sided white on barriers installed between lanes in the same direction of travel (rare scenario).

* The use of all yellow retroreflectors must be risk assessed prior to deployment, particularly on 2-way single carriageway applications.

Note: the above does not replace the need to provide temporary delineation of the travelled path in accordance with AS1742.3. This temporary barrier delineation is considered a replacement for guide post delineation where the location of the barrier is close enough to the edge of the road.

Temporary Pavement Markers Material Specifications:
- Extrusion. Polyurethane, 80 shore A
- Cover. PVC Flexible. Clear.

For further details on specifications for the adhesive and reflectivity properties of the Temporary Pavement Markers, see Main Roads Specification 604, located on the Main Roads website at www.mainroads.wa.gov.au; go to 'Technical & Commercial' > 'Tender Preparation' > 'Specifications' > '600 Series – Traffic Facilities'



6.6.2 Barrier Edge Clearances

The below minimum edge clearances are recommended as a variation to table 5.1 of AGTTM Part 3.

Table 8 – Road Safety Barrier System Clearance to Traffic Lane

Speed (km/h)	Distance (m)*
40 km/h or less	0.2
41-60 km/h	0.3
61-80 km/h	0.5
Greater than 80 km/h	1

The above reduced clearance does not apply to the leading edge of the barrier system, Table 5.1 of AGTTM Part 3 should apply. This will reduce the risk of errant vehicles colliding with the end treatment of the barrier.

6.7 MINIMUM LANE WIDTHS

The below variation to the minimum lane widths in section 2.5.8 of AGTTM Part 3 and section 3.3.4 of AGTTM Part 2 may be applied (changes in red):

Table 9 – Minimum Lane Width

Criteria	Lane width (m)*
General lane widths	
≤ 60 km/h	3
61 – 80 km/h	3.2
> 80 km/h	3.5
Curve with radius 100 – 250 m	Curve widening 0.5 per lane
Curve with radius < 100 m	Consider swept path of long vehicles (e.g. buses, trams)
Approach lane is < 3 m wide	Equal to approach lane
Two-way residential street	5.5 (sum both ways)
Shuttle flow operation	
Shuttle flow with traffic control	3.2
Shuttle flow on residential streets	Maximum 3.5

*Note: *This does not apply to curves of radius 250 m or less, or locations where there are fixed vertical obstructions such as fences or safety barriers within 30 cm of the edge of the lane on one or both sides. Where these conditions apply, consider widths wider than those listed above to accommodate large vehicles.*

Refer to AGTTM for other considerations e.g. cyclists, heavy vehicles, etc.

6.8 TRAFFIC CONTROL

The following must be read as a supplement to AGTTM Part 3 and Part 7. WA has not adopted the method for estimating end of queue position or positioning of the PREPARE TO STOP, Traffic Controller (Symbolic), Signals Ahead or Boom Barrier signs within section 4.8 of AGTTM Part 3.

As per section 5.10 in AGTTM Part 3, Traffic control refers to all methods of traffic control including by portable traffic control devices (e.g. portable traffic signals or boom barriers) or by manual traffic controllers.

No form of traffic control is permitted on any Freeway or grade separated highways with:

- a permanent speed limit of 90 km/h or more; and
- a traffic volume of 20,000 vpd or more.

AGTTM Part 2: Traffic Management Planning indicates that inadequate vertical alignment is a potential risk associated with accommodating truck traffic and over-sized loads. In particular, the vertical alignment must be considered when proposing a location to stop vehicles as this may impact both safety and level of service:

- Downgrade: steep downgrades increase the stopping distance of heavy vehicles which increases the risk of high severity end of queue collisions
- Upgrade: stopping heavy vehicles at locations with an upgrade may result in the stopped vehicle rolling back as well as impacting the time for the vehicle to accelerate from the stopped position.

6.8.1 Advanced Warning Signs

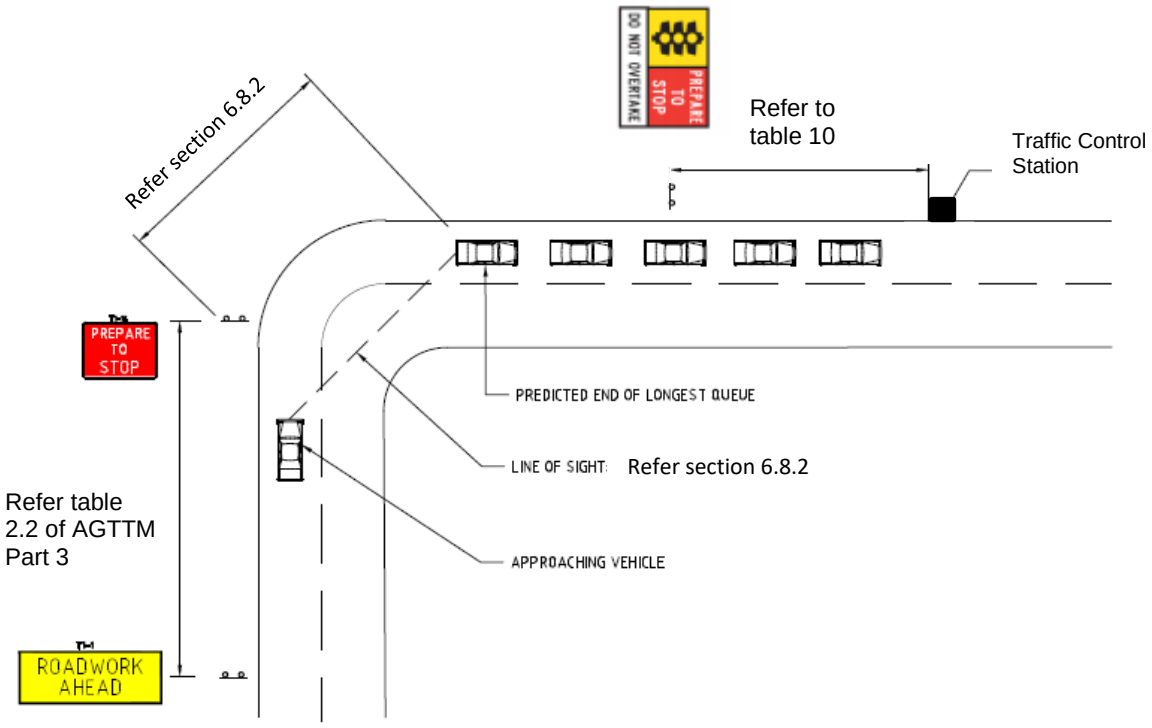
Where traffic may be required to stop due to traffic control, the PREPARE TO STOP sign must be used in conjunction with the Traffic Controller (Symbolic), Signals Ahead or Boom Barrier sign (depending on the method of traffic control). Where possible the signs should be positioned side by side with the PREPARE TO STOP sign closest to the travel way.

The position of the PREPARE TO STOP sign and Traffic Controller (Symbolic), Signals Ahead or Boom Barrier sign must be according to the local prevailing conditions, it is recommended they be placed a minimum distance as shown in table 10 in advance of the Traffic Control station.

Table 10 – Traffic control warning sign spacing from control point

Speed (km/h)	Distance (m)
50 or less	30
60	45
70 or more	Equal to the speed (km/h)

Note: Refer section 6.8.2 for avoiding end of queue collisions.



Notes:
1. Does not include all required signs and devices
2. Signs may need to be placed on both sides of the carriageway.

Figure 3: Placement of Traffic Controller Warning Signs (when using side by side)

The STOP HERE ON RED SIGNAL or STOP HERE WHEN DIRECTED sign must be placed 6 m in advance of the PTCD/traffic controller position. A temporary STOP line must also be considered at this location using temporary removable road marking tape. There should be adequate distance between the PTCD/traffic controller position and the traffic control taper to ensure it can be safely negotiated by all vehicles, considering swept paths of large vehicles.

Section 4.8 of AGTTM Part 3, recommends four cones be placed on the centreline from the STOP HERE ON RED SIGNAL or STOP HERE WHEN DIRECTED sign position, which is encouraged, however where supported by a site-specific risk assessment these cones may be omitted.

It is recognised that there is often limited space on some local roads due to things such as parked cars, footpaths, works occurring close to intersections, etc. The Worker (symbolic) and Traffic Controller (symbolic) signs may be used in the same MMS panel where all the following requirements are met:

- The road is a low-speed local road (permanent speed 60 km/h or below);
- There are site constraints which do not allow the signs to be separated;
- The signs are used with the MMS-ADV-26 PREPARE TO STOP sign;
- The Traffic Controller (symbolic) sign (MMS-ADV-47) must be positioned closest to the traffic;
- The signs must be duplicated on both sides of the road or carriageway;
- The signs must only be displayed when the need exists and removed or replaced when workers are not visible and/or there is no Traffic Controller requiring road users to stop.

6.8.2 Avoiding End of Queue Collisions

Queueing and delay are an expected consequence when any roadworks require the use of traffic control.
Before implementing any type of traffic control, it is the responsibility of the traffic management designer to consider the following:

- The speed of traffic
- The road environment (e.g. horizontal and vertical curves, road surface, road grade[13])
- The sight distance road users will have to the traffic control position
- Driver reaction times (general case assumption = 2.5 sec)
- The traffic volume (including determining the peak traffic volumes within the proposed work period)
- The traffic composition (e.g. large vehicles will require greater stopping sight distance)
- Work times and duration
- Expected time traffic will be stopped
- Worksite length (see section 6.8.7 for maximum length of single lane section)
- Personnel available

[13] Downgrades may require greater stopping sight distance.

Once the traffic management designer has gained the above information the expected queue length should[14] be predicted using the following steps:

1. Determine the hourly traffic volume in the direction of travel at the time of the works[15];
2. Divide the hourly traffic volume by 60 to determine the vehicles expected every minute;
3. Determine the length of time to the nearest minute that vehicles will be required to stop (this includes stop time for work reasons and clearance times);
4. Multiply this number by the vehicles expected per minute (i.e. vehicles per minute X number of minutes);
5. Determine the types of vehicles that will be using the road and multiply its length by the number (include a 3 m space between each vehicle):

Note: When determining expected queue length any decimals should be round up e.g. if it calculated that 1.5 trucks will be stopped during the stopping time, this should be round up to 2 trucks (i.e. there cannot be half a truck in the queue).

Table 11 – Approximate vehicle lengths

Vehicle Type	Approximate length
Car	5.5 m
Truck / Bus	19 m
Trucks (RAV 2-4)	27.5 m
Road Train / B Double	36.5 m
Triple Road Train / Large Combination	53.5 m
Quad Road Train	60 m

End of Queue Protection

The PREPARE TO STOP sign must be placed a minimum distance as shown in table 12 in advance of the end of the queue when the permanent posted speed is greater than 70 km/h or the sight distance of approaching traffic to the end of the queue is:

- less than two times the speed limit in open road areas
- less than 1.5 times the speed limit in built-up areas.

It is important to ensure adequate Stopping Sight Distance is provided to the PREPARE TO STOP sign and the end of queue. This is the distance required to allow a driver to react and stop their vehicle, this distance will generally be the distance shown in table 12 however if there are downgrades, large vehicles, poor surface condition, etc. the stopping distance will exceed these distances (for more details on Stopping Sight Distance see Austroads Guide to Road Design Part 3).

Table 12 – End of queue sign spacing

Speed (km/h)	Distance (m)
50 or less	30
60	90
70 or more	2 times the speed (km/h)

[14] Refer to the Main Roads *Fact Sheet – Avoiding end of queue collisions* for an alternative method.
[15] Traffic volumes can be provided by the relevant road authority. Where no traffic volumes are available the person preparing the plan should attend the site and count vehicles for a 5 minute period. Note that growth rates need to be considered when using data older than 12 months.

The diagrams below depict how these signs should be laid out to ensure adequate advanced warning to road users.

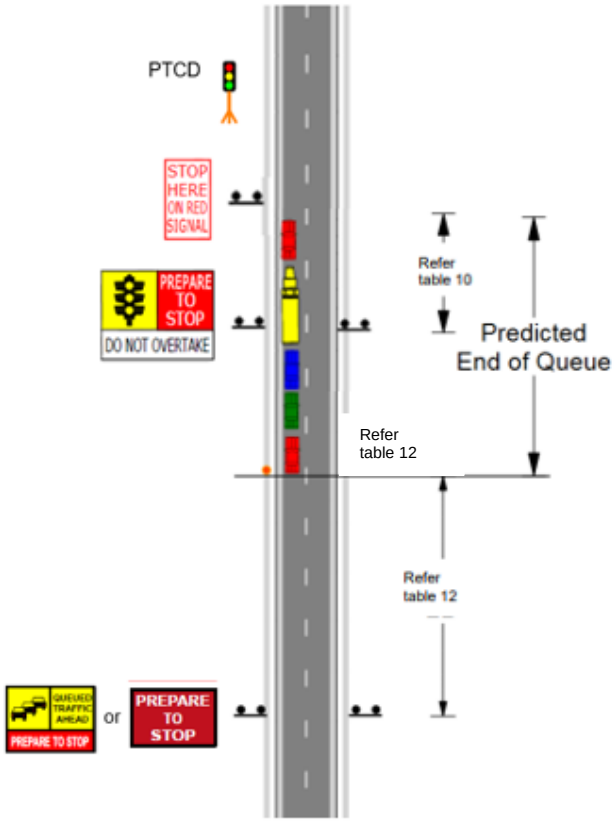


Figure 4: Avoiding end of queue collision

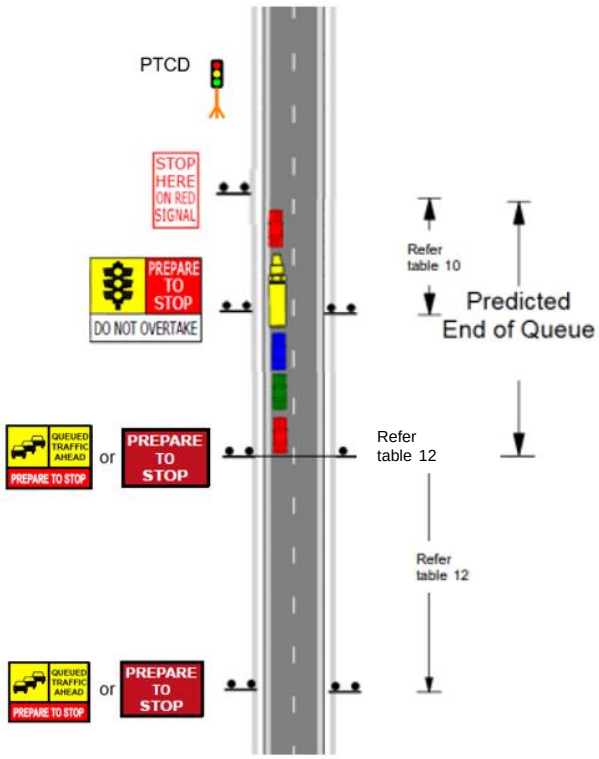


Figure 5: Avoiding end of queue collision (predicted queue length in table 13)

Diagram notes:

- The diagrams do not depict speed reduction and advanced warning signage which must be included (see table 2.2 of AGTTM Part 3 for sign spacing).
- The additional PREPARE TO STOP sign should be installed a distance provided in table 12 from the end of the queue.
- It is recommended the PREPARE TO STOP sign T1-18B or Queued Traffic ahead multi-message sign (MMS-ADV-90, MMS-ADV-91, MMS-ADV-26) is used in advance of the end of queue.
- Provide PREPARE TO STOP and symbolic warning sign in advance of the control point a distance shown in table 10.
- Sight distance to the end of queue should be a minimum distance provided in table 12 from the predicted end of queue for the peak period.
- a Marker (e.g. cone or bollard) may be placed on the shoulder at the predicted end of queue to assist in monitoring the queue lengths (figure 4).
- Where the queue is expected to be more than the distance provided in table 13 additional PREPARE TO STOP sign at the predicted end of queue (figure 5).

Table 13 – Predicted queue length requiring additional Prepare to Stop Sign

Speed (km/h)	Distance (m) requiring additional Prepare to Stop at the end of queue location
50 or less	>60
60	>180
70 or more	>4 times the speed of traffic (km/h)

For further guidance see Traffic Control - Avoiding End of Queue Collisions on High Speed Roads Fact Sheet, go www.mainroads.wa.gov.au > 'Technical & Commercial' > 'Working on roads'.

6.8.3 Portable Traffic Control Devices

As indicated in AGTTM portable traffic control devices (PTCD) are the preferred method to control traffic.

PTCDs must be used as the method of traffic control, for the following roads:

- any road that is under the control of Main Roads*; OR
- any road not controlled by Main Roads with
    - a permanent speed limit of 90 km/h or more and over 2,000 vpd*; OR
    - a permanent speed limit of 70 km/h or more and over 10,000 vpd*.

*refer to exceptions listed below.

Works on roads outside of the above should still consider the use of PTCDs and they may still be required based on a risk assessment. Traffic management planners should also refer to contractual requirements that may require the use of PTCDs regardless of the speed and/or traffic volume.

Traffic control with stop-slow bats may be permitted in the below circumstances:

- At permanent traffic signals based on a risk assessment[16]
- Where the total cumulative time of the stop-slow activity over a 24-hour period is 5 minutes or less based on a risk assessment
- activities 5 to 15 minutes at a single location* based on a documented risk assessment with the following:
    - a site specific TMP, OR
    - a TGS (within an authorised TMP) determined to be site suitable by a person with WTM/AWTM accreditation
- Stop slow permitted for TTM set up and pack up, e.g. holding traffic to set up the signal or implementing a lateral shift on a 2 lane 2-way road
- Emergency and Incident Management
- In the event of failure of the PTCDs (the PTCD must be repaired or replaced in a timely manner)

*may be multiple work locations

Any use of PTCDs, or other traffic control, to be within an authorised TMP prepared in accordance with section 4.2.

Where there are other roadside features that prevent a PTCD from being used these are to be identified and mitigated where possible, with a TC only being used if an RTM has risk assessed and endorsed the variation for Road authority endorsement (see section 4.5).

Refer to section 2.6.2 of AGTTM Part 7 for key considerations for determining a safe location for traffic controllers when using a PTCD. This location should be identified on the TGS. PTCDs primary benefit is separating the traffic controller from direct interaction with traffic. Generally, the traffic controller location should be a minimum of 3 m from the traffic lane.

[16] The use of portable traffic signals at permanent traffic signals may cause confusion to road users, however boom barriers must be considered.

The below examples have been provided to assist in determining the need for PTCDs based on the duration of traffic control (other noted exceptions may apply):

Table 14 – Example traffic control scenarios on roads where PTCDs are mandatory

Scenarios		**Traffic control duration**	**Traffic control required**
Stopping traffic to allow trucks to access the worksite	Traffic stopped for approximately one minute on 4 separate occasions	Total of 5 minutes or less over a 24-hour period	Use of Stop-slow bat permitted if supported by a risk assessment
	Traffic stopped for approximately one minute on 15 separate occasions	Total 15 minutes (or less) over a 24-hour period	Use of Stop-slow bat only permitted if within a site specific TMP or it is assessed as site suitable by a person with WTM or AWTM accreditation.
	Traffic stopped for approximately one minute on 20 separate occasions	Total 20 minutes (or more) over a 24-hour period	Must use PTCD.
Works located within the traffic lane of a 2 lane 2-way highway requiring single lane shuttle	Work duration total 5 minutes	5 minutes (or less) at that worksite	Use of Stop-slow bat permitted if supported by a risk assessment
	Work duration total 15 minutes	15 minutes (or less) at that worksite	Use of Stop-slow bat only permitted if within a site specific TMP or it is assessed as site suitable by a person with WTM or AWTM accreditation.
	Work duration total 20 minutes	20 minutes (or more) at that worksite	Must use PTCD.
5 worksites across a shift, all located within a traffic lane of a 2 lane 2-way highway requiring single lane shuttle	Work duration of less than 15 minutes at each worksite	Less than 15 minutes at each worksite	Use of Stop-slow bat only permitted if within a site specific TMP or it is assessed as site suitable by a person with WTM or AWTM accreditation.

Note: all use of PTCDs, or other traffic control, must be within an authorised TMP prepared in accordance with section 4.2.

A risk assessment must be conducted prior to considering the use of PTCD. This should examine duration of operation (set up time risk), what would happen in the event of failure assessing available sight distances, traffic volumes and traffic speeds. Mitigating factors must include regular inspections and having back up traffic controllers. Wherever back up traffic controllers are provided they must be positioned in a safe but prominent location to ensure drivers are aware that compliance with the PTCD is being observed.

PTCDs are only permitted to control a single lane of traffic, when traffic control is required on multilane roads, merge/s should be introduced in advance so the PTCD is only managing one lane, or temporary fixed traffic signals must be installed where controlling multiple lanes of traffic.

PTCDs must be either:

- a portable traffic signal that complies with AS4191, or
- a PTCD that has been approved for use by Main Roads.

PTCD options include portable traffic signal systems (PTSS) and portable boom barriers. Both types of PTCDs have advantages and disadvantages. A combination of a boom barrier and traffic signal is likely to the best method for controlling traffic, i.e. motorists are more accustomed to traffic signals, the traffic signal aspect is more visible, and the boom barrier provides a physical barrier to prevent motorists running the red light. It is expected, in the near future, the use of a boom barrier and traffic signal combination will be recommended under certain conditions when stopping traffic at temporary traffic management sites, e.g., traffic speed, traffic volume, duration of works, etc.

6.8.4 Traffic Controllers

Traffic Controllers are primarily used to manage, control and stop traffic where other signs and devices are considered insufficient. Accredited Traffic Controllers (see section 8) are required to operate in compliance with AGTTM Part 7: Traffic Controllers.

Section 2.9.7 of AGTTM Part 7 includes methods for Traffic Controllers to control multiple lanes of traffic on multilane roads. This practice is not supported in Western Australia. When traffic control is required on multilane roads, a merge or merges must be introduced in advance of the traffic control position so that only one lane of traffic is being controlled by the Traffic Controller.

6.8.5 Stop-Slow Bats

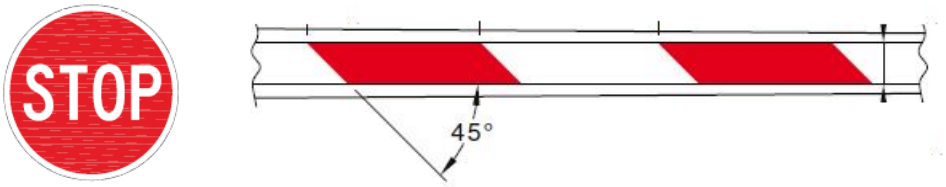
When using a Stop-Slow bat to control traffic the B size, 600 mm diameter, STOP/SLOW face should be used unless the use of the A size, 450 mm diameter, STOP/SLOW face is supported by a risk assessment e.g. due to windy conditions.

6.8.6 Portable Boom Barriers

Portable Boom barriers are a PTCD option that must be operated in accordance with all requirements within AGTTM, AS1742.3 and this Code. The following must also be considered when using a boom barrier:

- It is recommended that there is one traffic controller used per boom barrier. In cases where one traffic controller is operating more than one boom barrier this needs to be adequately justified, and a thorough risk assessment conducted by a person with AWTM accreditation. The traffic controllers must be within 75 m of the boom barrier and have an unobstructed line of sight to oncoming traffic and the boom barriers being operated.

A STOP sign (R6-8B) must be mounted on the boom barrier and the boom barrier stripes must have alternative red and white stripes in accordance with Australian Standard 1742.7.



6.8.7 Shuttle flow

The below variation to the maximum permitted length of single lane shuttle within AGTTM Part 2 and 3 may be applied (changes in red):

Table 15: Maximum length of operation under shuttle flow

Total volume in both directions (vph)	Length of single lane section (m)
Residential street	60
701-800	70
601-700	100
501-600	150
401-500	250
351-400	400
301-350	600
251-300	800
201-250	1200
151-200	1600
≤150	2200

NOTE: Lengths to be taken as the distance between the STOP HERE ON RED SIGNAL or STOP HERE WHEN DIRECTED sign positions for each direction.

Shuttle lengths exceeding the lengths provided within AGTTM must be based on a risk assessment to the satisfaction of the relevant road authority. The risk assessment must consider stopping time, queue length, clearance time, number of worksites along the route, heavy vehicle composition, road geometry and road user compliance. Use of a roadworks pilot vehicle should be considered.

6.8.8 Roadworks Pilot Vehicles

A roadwork pilot vehicle, consistent with the requirements of AGTTM Part 3, should be considered on all Main Roads' roads where all the following conditions apply, unless otherwise supported by a risk assessment:

- the closure of one or more lanes that necessitates the use of a shuttle flow with use of a PTCD or traffic controller; and
- the travel path for vehicles is not clearly delineated for the full length of the lane closure with cones, bollards or similar.*

Further to all the above conditions, a roadwork pilot vehicle must be utilised when all the above apply as well as all the following conditions applying:

- the length of the shuttle flow is greater than 500 m; and
- the traffic volume of the road is greater than 500 vehicles / day (AADT).

The roadworks pilot vehicle driver must have a current driver's licence, BWTM accreditation and be competent to perform roadwork pilot vehicle driver duties.

NOTE: This task is separate to and different from the requirements for pilot vehicles for heavy vehicles in general traffic situations.

*At a minimum delineation with cones, bollards, temporary hazard markers, or similar must be provided at a maximum spacing of 60 m.

6.8.9 Traffic Control Near Intersections

When undertaking any form of Traffic Control the following will be considered two traffic approaches:

- Traffic entering from the side road[17] will enter the lane being controlled by a Traffic Controller and/or Portable Traffic Control Device (PTCD); and
- The centreline of the side road is within 30 m of the position of the STOP HERE WHEN DIRECTED or STOP HERE ON RED SIGNAL sign on the through road.

A single traffic controller must never control more than one traffic approach, therefor when both of the above will be met an additional Traffic Controller and/or PTCD must be positioned on the side road to control traffic entering the through road.

See figure 6 below, a Traffic Controller or PTCD must be positioned on the side road where traffic entering from the through road will be required to stop within the red boxed area.

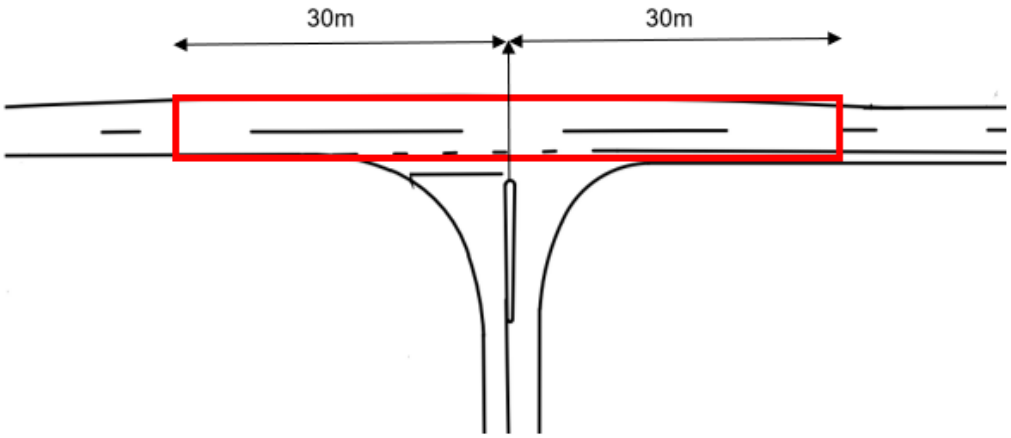


Figure 6: Traffic control near a side road

All other side roads within the worksite must be risk assessed to determine if traffic entering the through road needs to be controlled by a traffic controller or PTCD.

[17] Side road includes accesses to shopping centres, service stations, etc.

6.9 TRUCK MOUNTED ATTENUATORS

A truck mounted attenuator (TMA) is a combination of Host Vehicle with a mounted Crash Attenuator to protect road workers.

Trailer Mounted Attenuators are not permitted in WA.

The Requirements for the use of Truck Mounted Attenuators (TMAs) in WA – Code of Practice (TMA Code of Practice) have been adopted as a minimum requirement in WA (refer to the TMA Code of Practice for Host Vehicle requirements and TMA Deployment example diagrams). A copy is available on the Main Roads website at www.mainroads.wa.gov.au; go to 'Technical & Commercial' > 'Working on roads'.

Example Diagrams
Diagrams in Appendix 6 have been included to provide guidance when preparing TMPs involving the use of TMAs for the following situations:

Diagram 1
TMA Deployment in Emergency Lane or Verge. Multilane one-way carriageway.
Diagram 2
TMA Deployment in shoulder or verge. Two-lane two-way road.
Diagram 3
TMA Deployment in Traffic Lane. Single lane closure (not Freeway).
Diagram 4
TMA Deployment in Traffic Lanes. Two lane closure
Diagram 5
TMA Deployment in Traffic Lane with Blocker Vehicle. Single lane closure on Freeway.
Diagram 6
TMA Deployment in Traffic Lanes with Blocker Vehicle. Three lane closure on Freeway.
Diagram 7
TMA Deployment in Traffic Lanes with Second Blocker Vehicle. Freeway.

6.9.1 Mandatory use of TMAs

This section details the roads and localities where TMAs must be used to protect the work area. TMAs are not required if the work area has been separated or protected by a full road closure or a road safety barrier.

6.9.1.1 Freeways and High Speed Roads

A TL-3 TMA must be used for any works on or within 3 m of a traffic lane on roads detailed in the below table:

Table 16 – Freeways and High Speed Roads at Localities where TMAs are Mandatory within 3 m of a traffic lane

Road Number	Road Name	Locality
H015	Kwinana Fwy	Entire
H016	Mitchell Fwy	Entire
H017	Tonkin Hwy	Entire
H018	Roe Hwy	Entire
H019	Great Eastern Hwy Bypass	Entire
H020	Graham Farmer Fwy	Entire
H021	Reid Hwy	East of Erindale Road (SLK 4.28 – 23.82)
H057	Forrest Hwy	Entire

Blocker Vehicle
There have been instances where vehicles have entered a worksite via the emergency lane or shoulder. As a result, to prevent vehicles entering the work area from the off-road side when only closing a single traffic lane, a blocker vehicle with TMA must be used at static worksites that meet the following:

- Work occurs on a Freeway; and
- Work area is within a traffic lane; and
- Work area is not separated or protected by a full road closure or road safety barrier.

(Refer to diagram 5 of Appendix 6).

Note: A blocker vehicle is not required, subject to a risk assessment, where the shoulder/emergency lane is 2 m wide or less from a road safety barrier.

A blocker vehicle is not required when closing more than one lane of traffic for the following reasons: increased advanced warning, increased available stopping distance to the work area and reduced travel speed of road users (Refer to diagrams 4 and 6 of Appendix 6)

It is also recommended to use a second blocker vehicle (does not have to be TMA) adjacent to the worksite to prevent worksite intrusion by errant vehicles on the roadside (Refer to diagram 7 of Appendix 6).

At other locations a risk assessment must be conducted to determine if a vehicle entering the work area is a significant risk.

6.9.1.2 Other High Volume State Roads

A TMA must be used for works in the traffic lane on:

- Roads listed at clause 6.9.1 and/or in table below; and/or
- State Roads with:
    - 15,000 vehicles per day (AADT) or more; and 90 km/h or more (even if the speed limit is reduced within in a small, localised section of that road to accommodate the operation of traffic control signals); AND/OR
    - A permanent posted speed of 80 km/h or more; and Traffic volume of 20,000 vehicles per day (AADT) or more

Table 17 – Other High Volume Roads at Localities where TMAs are Mandatory

Road Number	Road Name	Locality
H002	Melville Mandurah Hwy (Also known as: Stock Rd, Rockingham Rd, Patterson Rd, Ennis Ave, Mandurah Rd)	Hilton and Mandurah (SLK 1.66 – 56)
H005	Great Eastern Hwy	Darlington to the Lakes (multilane road sections) (SLK 19.71 - 50)
H012	Leach Hwy	Entire (excluding 60km/h section) (SLK 1.65 – 22.89)
H035	Wanneroo Rd	Hester Ave to Carabooda (SLK 33.23 – 43)
H023	Armadale Rd	Atwell to Armadale (80 km/h sections) (SLK 1.42 – 13.52)
H027	Rivervale Wattle Grove Link (Also known as: Orrong Rd, Welshpool Rd East)	Entire
H029	Marmion Ave	Entire
H043	Bussell Hwy	Bunbury to West Busselton (SLK 0 – 53.38)
H058	Wilman Wadandi Hwy (Also known as: Bunbury Outer Ring Rd)	Entire
H059	Willinge Drive	Entire
H069	Ocean Reef Upper Swan Hwy (Also known as: Ocean Reef Rd, Gnangara Rd)	Wangara to Tonkin Hwy (SLK 8.07 – 17.77)
M023	Pinjarra Rd	Entire
M074	Lakeland Lake Clifton Rd (Also known as: Mandjoogoordap Dr, Mandurah Rd, Dawesville Bypass, Old Coast Rd)	Freeway to Dawesville (SLK 0 – 27.4)
H009	South West Hwy (Also known as: Robertson Dr)	Forrest Hwy to Bussell Hwy (SLK 153.10 – 154)

6.9.2 Other use of TMAs

In addition to the mandatory requirements for the use of TMAs as prescribed above consideration must be given to the use of TMAs when all the criteria described below exist at a work site:

- The work area occupies the traffic lane; and
- The work area will not be separated or protected by a full road closure or road safety barrier; and
- The posted speed limit prior to road works is 100 km/h or more; and
- The road is a multilane road.

TMAs may be used at other locations than those detailed above, it is important to note if using a TMA on 2 lane 2 way roads the display of the arrow on the illuminated flashing arrow sign is likely not appropriate, as traffic is likely to need to seek a gap in oncoming traffic to safely pass. Where the arrow cannot be displayed, either the bar of the arrow only or the four corner lights at the extremities of the barbs must be flashed (refer AS1742.3).

Refer to section 8.7 for TMA operator training requirements.

6.9.3 Incident Response and Emergency Works

When responding to incidents and/or emergencies there are many different risks to consider compared with planned works. It is recognised that it will generally not be possible to set up the site to be fully compliant with temporary traffic management requirements, including the use of TMAs where required.

Emergency Management Agencies (and their approved contractors when undertaking these tasks) should consider the following when responding to incidents at locations where a TMA is required:

- The risk posed by the incident if left untreated, i.e. is taking no action deemed a higher risk than if action is taken
- The timeframe to have a TMA or IPPV on site
- The speed of traffic, e.g. has the traffic speed been significantly reduced due to the incident (or general traffic congestion)
- The part of the roadway where the incident has occurred, e.g. will there be an escape path for workers
- The traffic volume at the time of the incident, e.g. will there be sufficient gaps in traffic for workers to treat the incident
- The use of a lookout person to warn workers of oncoming vehicles
- Is the vehicle fitted with a flashing arrow sign, to provide warning to oncoming vehicles and shadow the workers
- Can Variable Message Signs (VMS), the Lane Use Management System (LUMS) and/or other ITS solutions be utilised to warn and/or control motorists.

6.10 ILLUMINATED FLASHING ARROW SIGN

The primary illuminated flashing arrow signs should be used as follows:

Table 18 – Illuminated flashing arrow sign size

Circumstance	Size
Lane closures or mobile works on roads with a permanent speed of 60 km/h or less	Size A 1260 x 650 mm
Lane closures or mobile works on roads with a permanent speed of 70 km/h or more	Size B 1500 x 770 mm
Lane closures or mobile works on: • Any freeway; or • multilane roads with a speed of 90 km/h or more and 15,000 vpd or more; or • where a high level of long-distance advance warning is desirable for safety	Size C 2400 x 1200 mm

Note: the above does not apply to vehicle mounted warning devices on support / work vehicles.

The lamps used on the vehicle mounted warning device should meet the requirements of the Society for Automotive Engineers (SAE) Class 1 warning lights (i.e. be at least 8100 candela).

6.11 TRAFFIC VOLUME

AGTTM Part 2 Traffic Management Planning (table 3.1) and Part 3 Static Worksites (table 2.4) provide details on the number of traffic lanes to be provided, these requirements are accepted in WA, the below table applies if varying from the desirable number of open lanes required in AGTTM. Approval for any variation to the traffic volume requirements detailed in AGTTM must be obtained from the relevant Road Infrastructure Manager.

	Vehicles per hour per lane (AGTTM)	**Vehicles per hour per lane AWTM to undertake a Variation to Standard**	**Vehicles per hour per lane RTM to undertake a Variation to Standard**
Mid-block (one direction)	1000 or less	Less than 1350	1350 or more
Within 200 m of an intersection (one direction)**	500* or less	Less than 675	675 or more

Table 19 – Variations to traffic volumes

**Prohibit right turns out of a single lane if the proportion of heavy vehicles and the volume of opposing traffic is high. Seek further assistance if needed.*
** As per AGTTM 'The word intersection applies where traffic in the considered direction is controlled by signals, a roundabout, stop/give way controls or other control devices.'

The traffic volumes shown in the table may need to be reduced under certain conditions as described below (taken direct from AGTTM for clarity):

- Reduced by 30% if the pavement surface is rough or unsealed.
- Reduced by 50% if the horizontal geometry through the work site is reduced to a speed value of less than 40 km/h.
- Reduced by 20% if the volume of heavy vehicles exceeds 10% and the road is downward, level or easy upgrade.
- Reduced by 40% if the volume of heavy vehicles exceeds 10% and the road has sustained upgrade > 5%.

Traffic Volumes on Freeways and Grade Separated Motorways

Roads with grade separation generally allow traffic to move more freely with fewer interruptions, therefor the below table may be used when determining the number of lanes to be provided. This table recognises that limiting the speed reductions on these roads may allow for a greater volume of traffic.

Between ramps Maximum vehicles per hour per lane (one direction)			Within 200m of an entry-ramp* Maximum vehicles per hour per lane (one direction)		
40 km/h	60 km/h	80 km/h	40 km/h	60 km/h	80 km/h
1200	1400	1600	700	900	1100

Table 20: Traffic volumes on Grade Separated Roads

**Applies from the start of the end of the gore area and start of the continuity or lane line see figure 7 below. This does not apply where the entry-ramp becomes an additional lane.*

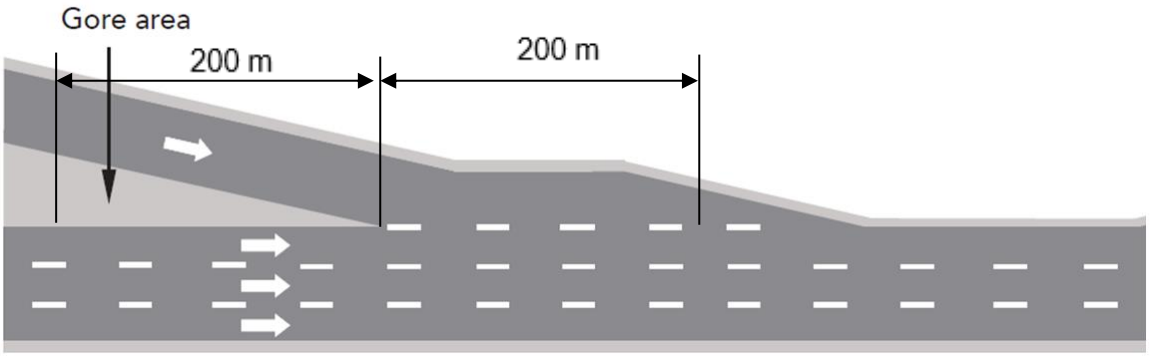


Figure 7: Entry Ramp – desirable traffic volume within 200 m up and downstream of the start of the continuity line or lane line

Table 20 can be used for short-term works and as a guide to long-term works. Where these maximum volumes are present at long-term work sites there will be a need to precisely calculate capacity to ensure that traffic demand can be met. Site-specific calculations are needed to show the relationship between traffic density and the ability of motorists to maintain speed. Site-specific variables need to be considered in the calculations such as lane width, alignment, surface condition and heavy vehicle mix etc. In part, this assessment is necessary to ensure traffic speed through the site is not constrained through the sheer traffic volume or.

6.12 MOBILE WORKS

Austroads Guide to Temporary Traffic Management Part 4: Mobile Works is adopted in WA with the following departures:

Table 21 – Mobile works AGTTM departures

AGTTM Section	Departure / Clarification
3.5.1 Lead Vehicle	A lead vehicle is: • Required when the line marking machine is painting the dividing line; or • Required when workers are on foot in a lane adjacent to oncoming traffic e.g. working in the lane on 2-way 2 lane undivided roads. The lead vehicle may be omitted: • On roads with a speed limit of 60 km/h or less, based on a risk assessment, e.g. if the convoy is determined to be too long for safe overtaking, or • When the work vehicle is in the lane adjacent to oncoming traffic with no workers on foot* *A lead vehicle must be considered, based on a risk assessment, if the work vehicle meets any one of the following: - Does not have an enclosed cab; or - Is conditionally licenced; or - Has a mass less than 4 tonne.
3.5.3 Shadow Vehicle	A shadow vehicle is required in all mobile work convoys in the traffic lane – excludes shoulder grading (except where a risk assessment determines that the use of a shadow vehicle is required to adequately reduce the risk). For line marking activities on rural roads, the distance between the shadow vehicle and work vehicle may be increased to ensure adequate sight distance for approaching vehicles e.g., over a crest or around a bend. This must be based on a risk assessment and the shadow vehicle must always provide protection to the work vehicle. ***Truck Mounted Attenuators*** TMAs are only required at mobile works on: • Roads with a speed limit of 80 km/h or more and 3,000 vpd or more; or • When conducting longitudinal road marking on State Roads with a speed limit 80km/h or more; or • Any other road based on a risk assessment.
3.5.4 Advance Warning Vehicle	As well as stopping for curved sections of road or where visibility is restricted, the advanced warning vehicle may remain stationary on the verge or shoulder at locations where there is limited shoulder or verge for the vehicle to continuously travel along e.g., due to culverts, roadside furniture, trees, steep batters, bridges, etc. The Advance Warning Vehicle does not have to be constantly moving with the convoy, as long as the general principle of it providing advanced warning to motorists is met. This must be based on risk assessment. The maximum spacing between the advanced warning vehicle and shadow vehicle must be included in the TMP and risk assessment.

6.13 SHADOW VEHICLE

For mobile works, AGTTM Part 4 requires a shadow vehicle to provide close protection to the rear of workers on foot. A shadow vehicle should also be considered at static worksites when workers on foot are in close proximity to traffic e.g. to protect workers within 3 m of live traffic.

Shadow vehicles must be used to protect workers on foot (when not protected by Road Safety Barriers) in the scenarios outlined in the table below on Main Roads roads with the following traffic volumes:

- All work on roads with traffic volumes that exceed 15,000 vpd (AADT); OR
- Night works on roads that exceed 2,000 vpd (AADT)

Scenario 1 - Activities / Works within a traffic lane (open or closed)

Scenario 2 - Activities / Works within 2 m of the traffic lane on roads with a permanent speed limit of 80 km/h or more

Scenario 3 - Implementing or removing traffic management on roads with a speed limit less than 80 km/h. (Refer to scenario 2 for speeds 80 km/h or more)

Table 22 – Shadow vehicle scenarios

Scenario	Shadow Vehicle Requirement	Exceptions: Not meeting these requirements must be supported by a risk assessment as per below
1	Shadow vehicle must be used, the shadow vehicle must: • Be fitted with an arrow board • Be positioned 20-40 m in advance of the workers	Risk assessment undertaken by an RTM as part of the TMP. Mitigating factors, as a minimum, must include the use a dedicated lookout person. The distance of the shadow vehicle to traffic management workers may be extended when implementing or removing signs and devices for a taper based on a risk assessment undertaken by a AWTM as part of the TMP or an onsite documented risk assessment undertaken by a person that holds WTM accreditation.
2	Shadow vehicle must be positioned 20-40 m in advance of the workers. An arrow board may not be required. Crossing the road is not permitted.	Risk assessment undertaken by: • a AWTM as part of the TMP; or • an onsite documented risk assessment undertaken by a person that holds WTM accreditation. If a risk assessment supports crossing the road a dedicated lookout person must be used
3	Shadow vehicle may not be required, based on a risk assessment. Crossing the road to implement/remove signs or devices is not permitted.	Risk assessment undertaken by a AWTM as part of the TMP or an onsite documented risk assessment undertaken by a person that holds WTM accreditation. If a risk assessment supports crossing the road a dedicated lookout person must be used

Notes:

1. Refer to the Requirements for the Use of TMAs in WA Code of Practice for when a TMA must be used to protect workers.
2. Workers on foot includes traffic management workers implementing/removing traffic management
3. For works at single lane shuttle flow, the shadow vehicle should be protecting workers from the direction of traffic flow in the closed lane.
4. A lookout person may be omitted when monitoring traffic management e.g. picking up fallen signs, based on a risk assessment when there are adequate gaps in traffic.

The use and location of the shadow vehicle must be outlined in the TMP and TGS, the shadow vehicle must be within a reasonable proximity to workers. This should be based on a risk assessment considering the following:

- likelihood of an errant vehicle impacting the workers
- vehicles entering from nearby intersections that could enter the closed lane
- horizontal and vertical curves near workers
- confusing roadworks layout
- road surface
- proximity of workers to the travel way
- use of a lookout person
- use of a pilot vehicle

Where the ‘active’ works is not in close proximity of the start of the lane closure, i.e. where sight distance and sight line requirements cannot be maintained, an additional illuminated flashing arrow sign is required to assist road users in manoeuvring past the taper.

Where the shadow vehicle is a TMA, the additional illuminated flashing arrow sign at the start of the lane closure is not required to be a TMA, this must be based on a risk assessment.

The below figures illustrate examples of using shadow vehicles to protect workers.

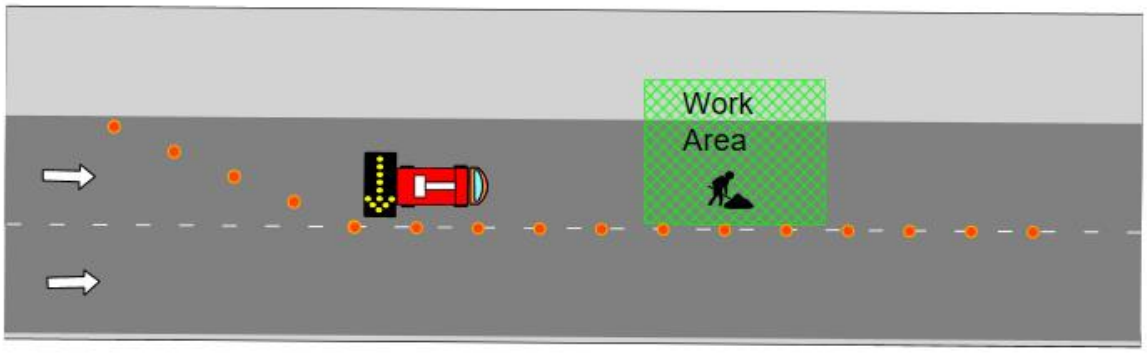


Figure 8: Shadow vehicle scenario 1 – Works in traffic lane on road with two lanes in one direction.

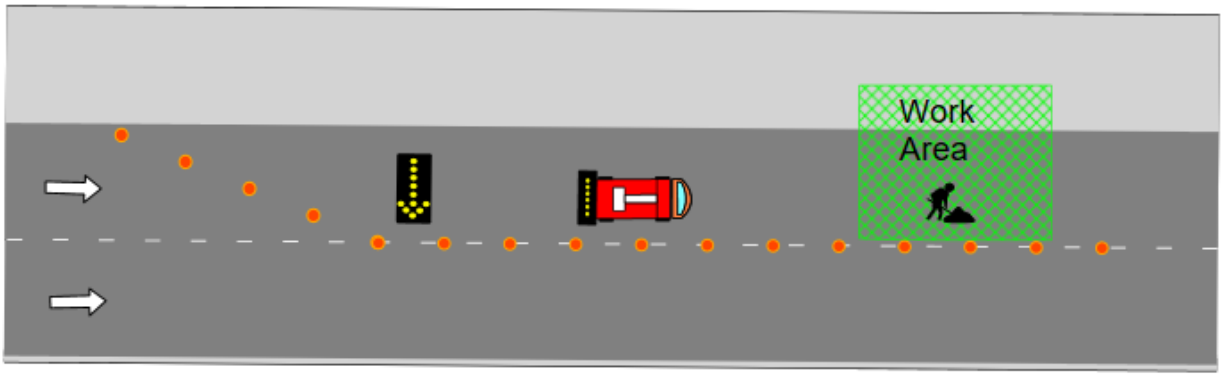


Figure 9: Shadow vehicle scenario 1 – Works in traffic lane on road with two lanes in one direction. Example illustrates where shadow vehicle has been positioned closer to work area and additional arrow board used at the beginning of the lane closure.

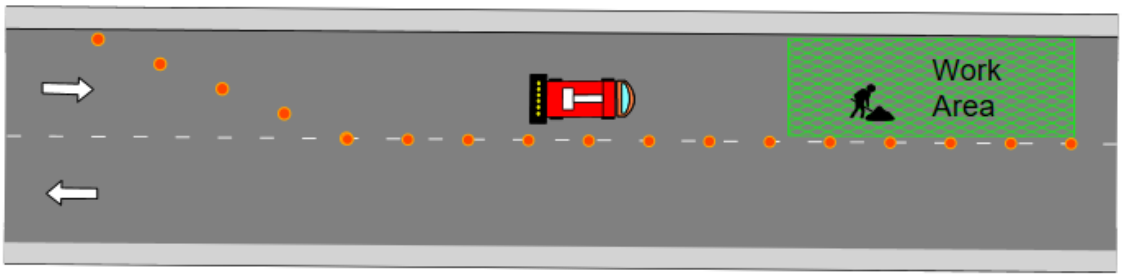


Figure 10: Shadow vehicle scenario 1 – Works in traffic lane of 2 lane 2-way road. Example illustrates the shadow vehicle positioned to protect workers from the direction of traffic flow in the closed lane.

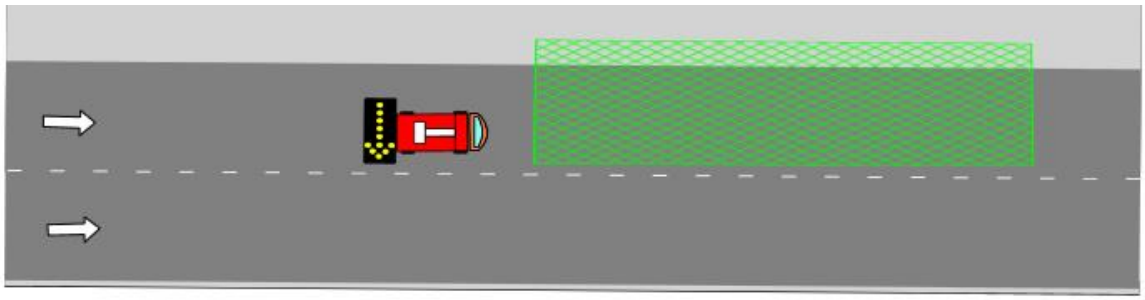


Figure 11: Shadow vehicle scenario 1 – Setting up traffic management within traffic lane on road with two lanes in one direction.

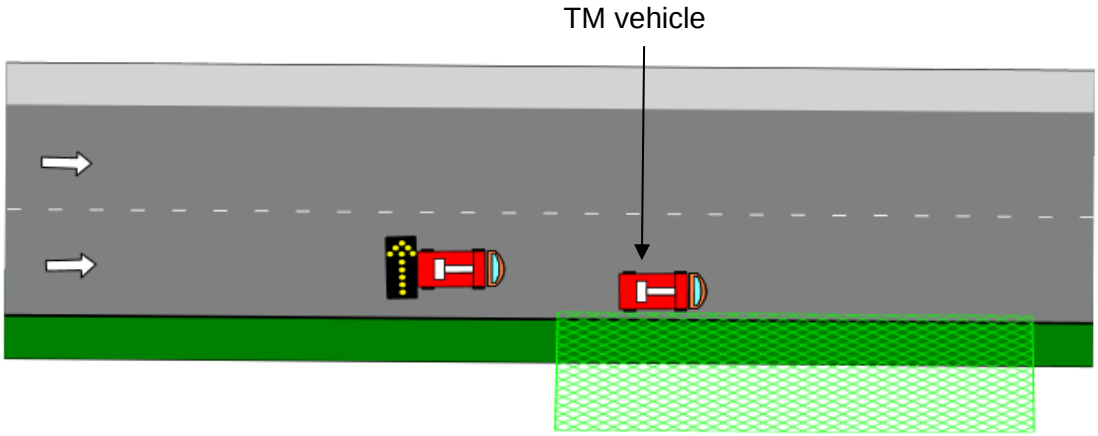


Figure 12: Shadow vehicle scenario 1 – Setting up traffic management from traffic lane. Note example shows scenario where traffic management is required on a kerbed median island.

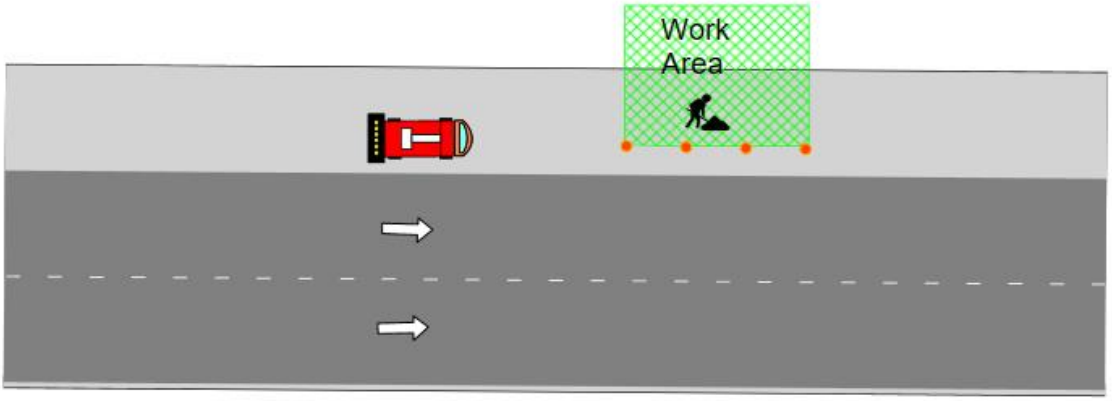


Figure 13: Shadow vehicle scenario 2 – Works within 2 m of traffic lane.

6.14 TTM IMPLEMENTATION, OPERATION AND REMOVAL

AGTTM Part 6: Field Staff – Implementation and Removal provides requirements for installing and removing TTM schemes. AGTTM indicates the preferred method for implementing or removing TTM schemes is to use the TTM vehicle to shadow[18] the TM workers and install/remove signs and devices on one side of the road at a time:

Figure 14: TTM implementation example from AGTTM Part 6 (figure 6.1)

Crossing the road should be avoided where possible and where it is undertaken a look out person/spotter must be used for all activities where required in accordance with AGTTM Part 5.

WA has the below additions to the requirements within AGTTM when implementing, monitoring or removing TTM schemes:

6.14.1 High Speed Multilane Roads

Crossing the road is not permitted on any road where a Truck Mounted Attenuator is required to protect workers, see the Requirements for the Use of Truck Mounted Attenuators in WA – Code of Practice.

[18] See section 6.13 for Shadow Vehicle requirements.

6.14.2 Main Roads Controlled Roads

As per section 6.13, crossing the road to implement/remove signs is not permitted on Main Roads roads with the following traffic volumes:

- All work on roads with traffic volumes that exceed 15,000 vpd (AADT); OR
- Night works on roads that exceed 2,000 vpd (AADT)

Crossing these roads is only permitted when supported by a documented risk assessment undertaken by:

- a AWTM as part of the TMP; or
- an onsite documented risk assessment undertaken by a person that holds at least WTM accreditation.

If a risk assessment supports crossing the road a dedicated lookout person must be used (a lookout person may be omitted when monitoring traffic management e.g. picking up fallen signs, based on a risk assessment when there are adequate gaps in traffic).

6.15 TRAFFIC CONES AND BOLLARDS

The first dot point of section 5.4.1 of AGTTM Part 3 states ‘Maximum spacing of cones and bollards **must** be as shown in Table 5.3.’

In WA this should be replaced with:

- Maximum spacing of cones and bollards **should** be as shown in Table 5.3.

6.16 SPEED FEEDBACK SIGNS

Speed feedback signs (also referred to as speed radar signs, speed LED signs, Vehicle Activated Signs, Speed Indication Devices or speed radar VMS) detect vehicle speeds (using laser speed-detection equipment, for example) and currently the speed and/or a message (e.g. SLOW DOWN) is displayed on an electronic sign. The primary purpose is to make drivers aware of their speed and encourage them to reduce their speed through the worksite. Research indicates that these are very effective in reducing drivers speed for short term purposes.

Speeds above the speed limit must not be displayed on the sign, i.e. just a message, such as SLOW DOWN, should be shown.

Speed feedback signs must be used at static worksites on Main Roads’ roads when all the following apply:

- Traffic is travelling past or through the worksite (as defined in AGTTM Part 3)
- Workers on foot are not protected by a road safety barrier; and
- Works conducted at the location for a duration of 8 hours or more; and
- Traffic volume of 15,000 vpd (AADT) or more; and
- There is a temporary speed reduction of 30 km/h or more

Above does not apply when there are more than 2 lanes of traffic open in a single direction where speed feedback signs are not recommended.

The speed feedback display does not have to be displayed at all times e.g. the display may be turned off and the device used to gather speed data when trialling other speed control measures.

Speed feedback signs may be used at other locations to encourage motorists to reduce speed and/or to collect speed data.

The speed feedback sign must be included in the TGS.

The speed feedback sign may display the temporary speed limit to confirm and remind road users of the speed limit (i.e. as a repeater sign).

Technical Requirements:
Speed feedback signs should meet the following requirements:

- Have a display area of at least 430 mm x 430 mm
- Be positioned within or just in advance of the work area
- Be positioned at least 30 m or the distance as shown in table 2.2 of AGTTM Part 3, whichever is greater, from traffic signals, so as not to cause motorist confusion
- The lower edge of the sign be a minimum of 1 m above the level of the nearest lane
- The display and optical requirements in accordance with AS 4852.2: 2019 Variable message signs Part 2: Portable signs.
- Be calibrated to specified tolerances in accordance with manufacturer specifications and calibrated at intervals specified by the manufacturer.
- Have the ability to display speed and message for a minimum period of five seconds
- Have a minimum 100 metre detection range and the ability to display a message every three seconds
- Have the ability to obtain speed data and prepare reports using proprietary software for export to Excel compatible file

Table 23 – Minimum Distance of Speed Feedback Sign from Traffic Signals (as per table 2.2 AGTTM Part 3)

Speed (km/h)	Distance (m)
55 or less	30
56-65	45
66 or more	Equal to the speed (km/h)

For more information on vehicle activated signs refer to the Main Roads Policy and Guidelines for Vehicle Activated Signs.

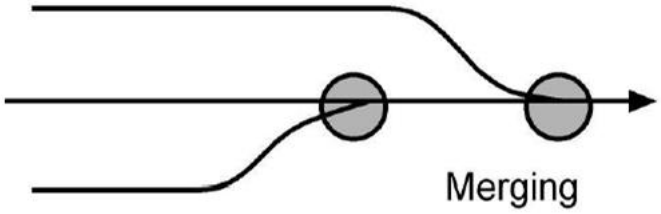
6.17 APPROACH TAPERS

6.17.1 Designing Tapers

Refer to section 5.9.1 of AGTTM Part 3 for requirements for tapers.

When designing tapers points of conflict must be separated, as shown in the below figure from Austroads Guide to Traffic Management.

Figure 3.27: Points of conflict



In the subsection '**Designing a taper'** replace the fifth and sixth dot points:

- 'Tapers must not start or end within 50 m of an intersection on Category 2 roads. In this case, the start of the taper is the point where the shift/merge finishes, and the end of the taper is where closed lanes are re-opened.
- Tapers must not start or end within 100 m of an intersection or on/off-ramp on Category 3 roads. In this case, the start of the taper is the point where the shift/merge finishes, and the end of the taper is where closed lanes are re-opened.

With:

- Merge tapers must not start or end:
  - within 50 m of an intersection (both approach and departure sides) on a controlled leg of an intersection on a Category 2 road,
  - within 100 m of an intersection (both approach and departure side) located on a ramp from / to a Category 3 road, or
  - within 100 m of a ramp (on or off) on a Category 3 road.
- Merge tapers located on an uncontrolled leg of an intersection on a Category 2 road should not start or end within 50 m of the intersection (both approach and departure sides).
- Merge tapers must not be implemented through / across an intersection or ramp.

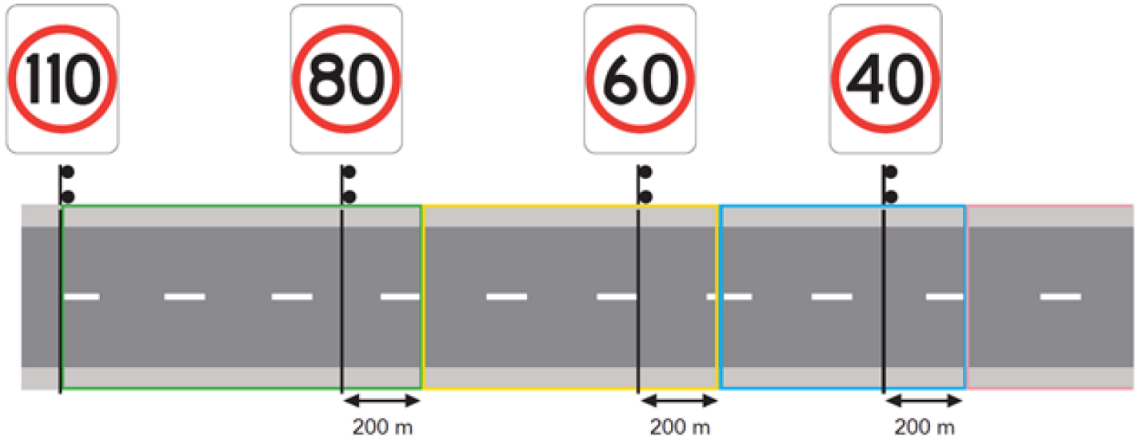
Replace the 7th dot point:

- The length of taper depends on vehicle speeds as shown in Table 5.7. In determining the length of the taper, the speed selected is based on the process outlined in Figure 2.2 to ensure that vehicles have adequate time to slow after passing a speed limit sign.

With:

- The length of taper depends on vehicle speeds as shown in Table 5.7. In determining the length of the taper, the speed selected **must** be based on the process outlined in figure 2.2 to ensure that vehicles have adequate time to slow after passing a speed limit sign.
- Where site constraints, or a site-specific hazard, requires a speed reduction to accommodate reduced taper lengths this must be justified and supported in a variation to standard undertaken by an RTM.

Figure 2.2: Speed to be used for advance warning sign spacing



6.17.2 Tapers at Long Term Works

Lateral shifts or merge tapers have the potential for upstream congestion due to cautionary braking. For this reason, the taper lengths specified in Table 5.7 of AGTTM Part 3 are to be increased at long term works on high volume State Roads with a roadwork speed limit ≥ 80 km/h. Lateral shift tapers should not be less than 1:40 and merge tapers no less than 1:50. For example, a lane requiring a 3.2m lateral shift will require a taper length of at least 128m and 3.2m wide merged lanes will require a merge taper of at least 160m.

Merges at Entry Ramps

Austroads Guide to Road Design Part 4C requires the following when traffic enters a major road from an entry ramp:

- Mutual visibility between the driver on the major road and a driver on the entry ramp.
  - Minimum of 4 seconds of travel at respective operating speeds prior to point where merging lanes are separated by 1 m (1.1 m eye height)
- Parallel section to provide road users an opportunity to merge after reaching the major road speed.
  - Minimum of 4 seconds of travel time.
- Merge taper.
  - Minimum 0.6 m/s lateral shift.
- Run-out area to accommodate those vehicles prevented from merging as they approach the narrowed section.
  - Maintaining a total pavement width in the direction of travel equal to at least the sum of the full lane width plus a sealed shoulder width of 2.0 m over the full length of the taper plus a 3.0 m shoulder for a distance of at least 30 m beyond the end.

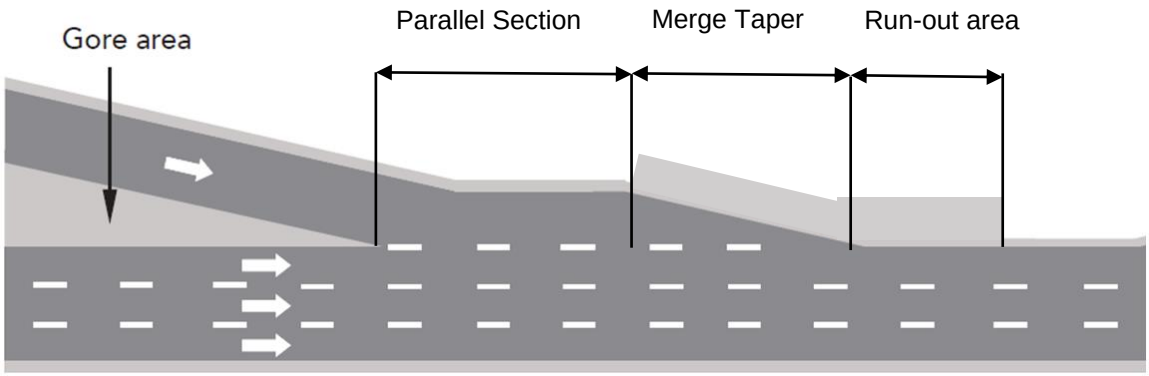


Figure 15: Entry Ramp

All entry ramp merges at long term works should be in accordance with Austroads Guide to Road Design:

Speed (km/h)	Required length, m			
	Mutual Visibility	Parallel Section	Merge Taper	Run-out area[1]
80	90	90	130	30
90	100	100	145	30
100	115	115	160	30

Table 24: Entry ramp merging lengths

[1]Run out area distance beyond the end of the merge taper.

Where the above requirements cannot be provided an application for a variation to standard is required as per section 4.5. In these instances, the following is the absolute minimum that must be provided:

Speed (km/h)	Required length, m			
	Mutual Visibility	Parallel Section[1]	Merge Taper	Run-out area[2]
80	90	65	80	30
90	100	75	90	30
100	115	85	100	30

Table 25: Minimum entry ramp merging lengths (variation approval required)

[1]The full length of the parallel section must allow drivers to legally change lanes on to the major road (i.e. separated by lane or continuity lines).
[2]Run-out area distance beyond the end of the merge taper.

The following must be considered when applying the minimum distances:

- Staging the works so that the reduced distances are only provided during the early stages of the works and installed for as short a duration as possible.
- Providing lane change pavement arrows

The design of entry merges at long-term works must be undertaken by either:

- A specialist road designer in consultation with an RTM; or
- Endorsed by an RTM proficient in Road Design Principles, Austroads Guide to Road Design and Main Roads WA Road Design Guidelines.

6.18 EMERGENCY LANES AND VEHICLE BREAKDOWNS

If long-term works on high volume State Roads remove the emergency lane for the purposes of the works and/or long term works on a Freeway, the following must be provided to reduce the likelihood of congestion if incidents or breakdowns occur and to ensure the safety of road users:

- stopping bays must be provided every 500 m for the duration of the works; and
- a dedicated tow truck must be arranged by the contractor (assessment of the operating hours for tow truck should be coordinated by Main Roads Road Planned Interventions).

6.19 SMART FREEWAYS

Where works are planned on the Smart Freeway sections of the freeway, those planning the works are to contact Road Planned Interventions for guidance prior to the preparation of the TMP (e.g. how to incorporate the Lane Use Management Signs).

Smart Freeway:

- Kwinana Freeway northbound from Farrington Road to the Narrows Bridge; or
- Mitchell Freeway southbound from Hester Ave to Vincent St.

Details regarding the proposed works are to be sent to enquiries@mainroads.wa.gov.au

6.20 WORKSITE ACCESS

Requirements for the entry and exit to the worksite at long term works on high speed high volume State Roads are as follows:

- A diverge transition must be provided to allow work vehicles to leave the traffic stream before entering the worksite.
- Merge sight distance to the diverge and merge points must be provided, where practical avoid placing access points on curves.
- The diverge and access points must be clearly defined for all approaching vehicles that is clearly signed and delineated.
- Where practical, site access points should be placed at on or off ramps to reduce safety and network performance risks.
- A deceleration zone prior to the access point for work vehicles entering the worksite must be provided, as a minimum the deceleration zone must be based on a speed of at least 20 km/h below the posted speed (e.g. 60 km/h in an 80 km/h speed zone).
- An acceleration zone for work vehicles exiting the worksite must be provided.
- Mutual visibility between drivers on the freeway and the work vehicles entering the freeway should be provided. This should be a minimum of 4 seconds of travel at respective operating speeds prior to the point where the work vehicle will enter the freeway.
- The design of access points should be based on the size and weight of the vehicles accessing the worksite (as per Austroads Guide to Road Design) or additional special access points should be provided.

7. BEST PRACTICE

Main Roads encourages the use of the following Traffic Management devices that increase the levels of safety, compliance and/or road user satisfaction at worksites.

7.1 INNOVATIVE TRAFFIC CONTROL DEVICES

When new innovative traffic control products emerge in the market there is a need for Main Roads to review and approve these devices before they are used to ensure they will be safe and effective. In July 2022 the Austroads Innovative Temporary Traffic Management Device and Solution Assessment (AITDSA) Scheme was launched, see information on the Austroads website: Austroads Innovative Temporary Traffic Management Device and Solution Assessment (AITDSA) Scheme | Austroads

This scheme provides a way for all emerging TTM devices to be assessed and recommended for use across Australia and New Zealand.

Main Roads (along with all other state and territory transport agencies) is a member of the AITDSA Panel and expects all new TTM devices to be assessed through this scheme.

A list of recently approved devices and associated guidelines for use can be found on the Main Roads website, go to www.mainroads.wa.gov.au > 'Technical & Commercial > 'Working on roads'.

7.2 ELECTRONIC SPEED LIMIT SIGNS

The Road Traffic Code 2000 allows for the use of electronic speed limit signs.

The use of these on roadworks sites is encouraged, particularly in situations where: there are frequent changes in speed limits required as a part of the works OR it is hazardous to manually change speed limits OR the works are of a long-term nature.

When using electronic speed limit signs; accurate time stamped records on exactly when the speed limits have been changed must be kept. The usual sign inspection regime must be adhered to and back up devices made available to enable prompt replacement of faulty electronic signs.

Refer to AS 5156: 2020 Electronic speed limit signs.

7.3 TRAFFIC MONITORING AND SURVEILLANCE

The use of Body Cameras, Dash Cameras or other video surveillance is encouraged at temporary traffic management sites for the purposes of any of the following:

- Recording traffic incidents
- Recording traffic management inspections
- Site records
- Traffic monitoring
- As a deterrent or to record motorist non-compliance and/or aggressive behaviour.

Please note that anyone that conducts any form of video surveillance must ensure they are following all applicable surveillance and privacy laws. If you are in any doubt as to the legal requirements of the use of such devices, you should seek independent legal advice prior to their use.

The Monitoring Camera (MMS-ADV-83) sign should be used when using body cameras or other video surveillance as a deterrent or to record motorist non-compliance and/or aggressive behaviour.

MMS-ADV-83

7.4 RUMBLE STRIPS

As indicated in section 5.5.3 of AGTTM Part 3, rumble strips can be used on the approach to temporary traffic management sites to make road users aware of the reduced speed limit and influence them to decrease speed.

Temporary portable rumble strips are generally the type of rumble strip used at worksites (refer to Main Roads Guideline Temporary Rumble Strips); however for longer term works the use of thermoplastic strips, typically used for permanent hazards, may be utilised in accordance with the Main Roads Policy Application Approval & Technical Guidelines - Rumble Strips (www.mainroads.wa.gov.au > Technical & Commercial > Technical Library > Road and Traffic Engineering > Traffic Management)

Any use of thermoplastic on the road surface must have the approval of the relevant road infrastructure manager, and the pavement must be repaired to their satisfaction (typically resurfacing will be required).

8. ACCREDITATION REQUIREMENTS

8.1 GENERAL

Persons undertaking any of the tasks listed in Table 26 must hold relevant Main Roads accreditation, as indicated:

Table 26 – Tasks Requiring Main Roads Accreditation

Task	Required Main Roads Accreditation	Austroads role title
On site manual traffic control using a Stop-Slow bat. Operate portable traffic signals systems. Operate portable boom barrier.	*Traffic Controller*	*Traffic Controller*
Selection of appropriate generic TGS, within an approved TMP, assess as site suitable and implement. Selection and Implementation of correct approved site specific TGS, required for the stage of works (or event). Monitor and maintain the performance of the implemented TGS. Adjustment of signs and devices within tolerances.	*Basic Worksite Traffic Management*	*Traffic Management Implementer (TMI)*
Implement traffic signs and devices from an approved TMP in accordance with AGTTM Part 5 – Short Term Low Impact Works e.g. Worker (symbolic), GRADER AHEAD, ROAD PLANT AHEAD or ROADWORK AHEAD.	*Basic Worksite Traffic Management – Non - Practitioner*	*Traffic Management Implementer – Non- Practitioner (TMI-NP)*
Monitoring the effectiveness of, and on-site adjustments or modifications to the Traffic Management Plan / Traffic Guidance Scheme outside tolerance in accordance with its scope and objectives. This includes adjusting, modifying, adding and/or removing signs and devices where the intent/objectives of the TMP and operation of the road network are not adversely impacted. Changes to the TMP/TGS must not involve adding lane or road closures, speed limit changes, or adding any additional regulatory signs that have not been approved (note: WTMs may add repeater signs).	*Worksite Traffic Management*	*Not within the Austroads Training Framework, however the WTM accreditation will be retained in WA*
Review TMPs prepared by a person holding an AWTM accreditation. Monitor implementation and/or undertake surveillance of traffic management schemes.	*Advanced Worksite Traffic Management Non- Practitioner (AWTM-NP)*	*Traffic Management Designer Non-Practitioner (TMD -NP)*
Prepare, review, monitor, adjust and modify Traffic Management Plans and Traffic Guidance Schemes.	*Advanced Worksite Traffic Management*	*Traffic Management Designer (TMD)*
Review and endorsement of Traffic Management Plans involving 'complex traffic arrangements'. Suitability and compliance audits of Traffic Management Plans involving 'complex traffic arrangements', as may be specified for works undertaken for or on behalf of Main Roads. Undertaking 'risk management', and preparation or endorsement of, any Traffic Management Plan proposing to implement a lesser treatment than required by this Code for all works undertaken for or on behalf of Main Roads.	*Roadworks Traffic Manager*	*There is no equivalent in the Austroads framework.* *RTMs to be retained in WA*
The operation of a truck mounted attenuator (TMA) when carrying out traffic management activities.	*Operate Truck Mounted Attenuator*	*TMA operator training is not included.*

Any party intending to conduct works that may impact on traffic within any road reserve must, as a condition of approval by Main Roads, local government or any other authority responsible for the road, ensure that the persons performing the tasks contained in Table 26 hold a relevant and current certificate of accreditation.

A Main Roads certificate is issued for each category of accreditation to individuals who successfully meet the pre-requisites applicable for each level of accreditation. Accreditation certificates are only permitted to be issued by Main Roads approved training providers. Contact details for Main Roads approved training providers are listed on the Main Roads website at www.mainroads.wa.gov.au; go to 'Technical & Commercial' > 'Working on roads' > 'Training and Accreditation'.

See section 1.3.2 for details on the Austroads Training Framework.

8.2 TRAFFIC CONTROLLER ACCREDITATION

A Main Roads Traffic Controller accreditation certificate will be issued to those meeting the following pre-requisites:

- an Australian Qualifications Framework compliant Statement of Attainment in the Resources and Infrastructure Industry Training Package Unit of Competency RIIWHS205E – Control traffic with a stop-slow bat, or equivalent (or the replacement unit of competency if and when applicable);
- an Australian Qualification Framework compliant Statement of Attainment in the Resources and Infrastructure Industry Training Package Unit of Competency RIICOM201E – Communicate in the workplace, or equivalent (or the replacement unit of competency if and when applicable);
- current or previous evidence of holding a valid driver's licence[19];
- evidence of been issued with a valid WorkSafe WA Construction Induction Training card.

Basic Worksite Traffic Management accreditation is also required where Traffic Controllers are responsible for installing and maintaining associated signing and devices, e.g. temporary speed limit signs, 'Prepare to Stop' signs, etc.

Where the above Statement of Attainment is obtained outside of Western Australia, applicants may be requested to undertake further training and assessment in the performance criteria specific to the laws, regulations and Codes of Practice that apply in Western Australia.

Accredited Traffic Controllers at roadwork sites in Western Australia must operate in compliance with the AGTTM Part 7: Traffic Controllers.

[19] The need to hold or have held a drivers' licence is to ensure an understanding of vehicle dynamics. Exemptions may be offered under certain circumstances.

8.3 BASIC WORKSITE TRAFFIC MANAGEMENT ACCREDITATION

A Main Roads accreditation certificate in Basic Worksite Traffic Management will be issued to those meeting the following pre-requisites:

- an Australian Qualifications Framework compliant Statement of Attainment in the Resources and Infrastructure Industry Training Package Unit of Competency RIIWHS302E – Implement traffic management plan, or equivalent (or the replacement unit of competency if and when applicable);
- an Australian Qualification Framework compliant Statement of Attainment in the Resources and Infrastructure Industry Training Package Unit of Competency RIICOM201E – Communicate in the workplace, or equivalent (or the replacement unit of competency if and when applicable);
- evidence of been issued with a valid WorkSafe WA Construction Induction Training card.

Where the Statement of Attainment is obtained outside of Western Australia, applicants may be requested to undertake further training and assessment in the performance criteria specific to the laws, regulations and Codes of Practice that apply in Western Australia.

Where traffic devices are used, all work sites must have at least one person with Basic Worksite Traffic Management accreditation on-site at all times when road workers are present.

Road workers with at least 12 months experience working on roads are permitted to implement signs under direct supervision of someone that holds a BWTM accreditation. This is only permitted on local roads with a permanent speed limit of 50 km/h or less and less than 15,000 vehicles per day.

8.3.1 Basic Worksite Traffic Management - Non - Practitioner

People that do not directly undertake TTM roles at worksites, such as parking inspectors, surveillance officers, grader operators, verge mowers, etc., but have previously gained BWTM accreditation may find it difficult to provide evidence of active industry engagement when applying for re-accreditation. In these cases, rather than re-sitting the full BWTM course they may sit the refresher course and gain BWTM non-practitioner accreditation. This will allow them to implement signs and devices associated with short term low impact works, see AGTTM Part 5, that form part of a TMP.

8.4 WORKSITE TRAFFIC MANAGEMENT ACCREDITATION

A Main Roads accreditation certificate in Worksite Traffic Management will be issued to those meeting the following pre-requisites:

- an Australian Qualifications Framework compliant Statement of Attainment in the Resources and Infrastructure Industry Training Package Unit of Competency RIIRIS402E – Carry out the risk management process, or equivalent (or the replacement unit of competency if and when applicable), and;
- a current certificate of accreditation in Basic Worksite Traffic Management, and;
- evidence of been issued with a valid WorkSafe WA Construction Induction Training card, and;
- attendance of the 4-day course in Advanced Worksite Traffic Management – including national units RIICWD503E - Prepare workzone traffic management plan and RIIRIS402E - Carry out the risk management process.

  This includes successful completion of the in class written assessments which involves participants amending 3 TGSs that require updating. Participants to address site specific issues in the risk assessment and changes to be noted in the daily diary, and;
- documentary evidence of at least 1 year's practical experience in traffic management;

  or
- documentary evidence of at least 2 years practical experience in road construction or maintenance.

Expiry of pre-requisite Basic Worksite Traffic Management accreditation can be deferred to enable re-accreditation to coincide with the expiry of Worksite Traffic Management accreditation.

8.5 ADVANCED WORKSITE TRAFFIC MANAGEMENT ACCREDITATION

A Main Roads accreditation certificate in Advanced Worksite Traffic Management will be issued to those meeting the following pre-requisites:

- Documentary evidence of at least 1 years' experience in traffic management, road asset management, road safety, road design, road construction or road maintenance;
- an Australian Qualifications Framework compliant Statement of Attainment in the Resources and Infrastructure Industry Training Package Unit of Competency RIICWD503E – Prepare work zone traffic management plan, or equivalent (or the replacement unit of competency if and when applicable);
- an Australian Qualifications Framework compliant Statement of Attainment in the Risk Management Unit of Competency RIIRIS402E – Carry out the risk management process, or equivalent (or the replacement unit of competency if and when applicable);
- evidence of holding or having held a Main Roads Western Australia accreditation in Basic Worksite Traffic Management or an Australian Qualification Frameworks compliant Statement of Attainment in 'Implement Traffic Management Plan'.
- evidence of been issued with a valid WorkSafe WA Construction Induction Training card.

8.5.1 Advanced Worksite Traffic Management - Non - Practitioner

The Advanced Worksite Traffic Management - Non – Practitioner (AWTM-NP) will generally be a person within the Road Agency or Authorised Body that's role is to review TMPs, monitor implementation and/or undertake surveillance.

A Main Roads accreditation certificate in AWTM-NP will be issued to those that undertake the 4-day AWTM course and successfully complete all class written assessments but will not be required to undertake the post course TMP assessments.

There are no pre-requisites to undertake the course.

8.6 ROADWORKS TRAFFIC MANAGERS ACCREDITATION

Applications for Roadworks Traffic Manager accreditation are subject to assessment by the RTM Accreditation Panel comprising selected Government, professional and industry representatives. For further detail and application process go to the Main Roads website at www.mainroads.wa.gov.au; go to 'Technical & Commercial' > 'Working on Roads' > 'Training and Accreditation'.

Applicants are assessed based on the following minimum criteria:

- hold a current Main Roads' Advanced Worksite Traffic Management Accreditation;
- Have 5-years practical experience as an AWTM (or equivalent) responsible for the review, approval or design of Traffic Management Plans.
- Have completed the WA Road Safety Audit Course, within the previous 5 years, OR be a current practicing WA accredited Road Safety Auditor
- Have been an Audit Team Member or Audit Team Trainee on at least five Road Safety Audits or Temporary Traffic Management Audits within the previous two years under the guidance of an accredited Senior Road Safety Auditor or accredited Roadworks Traffic Manager
- Have been an Audit Team Member or Audit Team Trainee on at least one detailed design stage audit within the previous two years, under guidance of an accredited Senior Road Safety Auditor
- evidence of attending the Main Roads (or equivalent) Temporary Workzone Barrier design course, within the previous three years;
- Carried out at least one compliance or one suitability audit of a Traffic Management Plan involving 'complex traffic arrangements' under the guidance of an independent[20] Roadworks Traffic Manager.
- signing of Roadworks Traffic Managers Code of Conduct;
- have in place Professional Indemnity / Public Liability insurance certificate of currency*

*It is the responsibility of RTMs, as well as anyone engaging them, to ensure they have the appropriate level of insurance.

Applicants that the Panel assesses to have met these prerequisites will be required to undertake an 'in office' assessment to verify their traffic management knowledge.

[20] Independent is defined as not having the potential for financial gains.

8.7 OPERATE TRUCK MOUNTED ATTENUATOR

A Main Roads accreditation certificate in Operate Truck Mounted Attenuator will be issued to those meeting the following pre-requisites:

- an Australian Qualification Framework compliant Statement of Attainment in the Resources and Infrastructure Industry Training Package Unit of Competency RIIRTM301E – Operate a truck or trailer mounted attenuator, or equivalent (or the replacement unit of competency if and when applicable);
- hold a current and valid heavy vehicle licence of a suitable class to operate the TMA (Medium Rigid licence as a minimum)
- hold a valid Work Safe WA Construction Induction Training card;
- hold a current Main Roads Basic Worksite Traffic Management Accreditation (see 8.3);
- documentary evidence of setting up at least 3 TTM sites in the last 12 months.

8.8 PROOF OF CERTIFICATION

Proof of certification is issued by training providers in the form of a 'Photo ID' card. Persons performing on-site traffic management tasks must always carry this proof of certification with them (a digital ID card is acceptable).

A database of persons holding current accreditation is maintained by training providers on Main Roads website at www.mainroads.wa.gov.au; go to 'Technical & Commercial' > 'Working on Roads' > 'Training and Accreditation'.

8.9 ISSUE OF CERTIFICATION AND RE-ACCREDITATION

The issue of accreditation can only be undertaken by training providers that have the relevant training Unit of Competency in their scope of registration by the WA Training Accreditation Council or Australian Skills Quality Authority, and are separately approved by Main Roads to issue such accreditation. For those seeking accreditation based on Statements of Attainment issued outside of Western Australia, applicants must be able to demonstrate knowledge of relevant laws, regulations, and codes of practice specific to Western Australia.

All Main Roads accreditations are valid for three years, following which re-accreditation is required. Re-accreditation is subject to persons being 'refreshed' on any changes to relevant laws, regulations, standards, and codes of practice that may have occurred since the issue of the previous accreditation. Applicants must have achieved statements of attainment in the current units of competency (or equivalent) prior to being re-accredited (previous unit versions are acceptable e.g., RIIOHS302A and RIIOHS205A).

9. FURTHER INFORMATION

Further information relating to this Code may be obtained from:

Gareth Peers
Main Roads Western Australia
PO Box 6202
EAST PERTH WA 6892

Phone: 138 138
Email: enquiries@mainroads.wa.gov.au

10. REFERENCES

- AS 1742 – Manual of uniform traffic control devices
  - Part 1 – General introduction and index of signs 2021
  - Part 2 – Traffic control for general use 2022
  - Part 3 – Traffic control for works on roads 2019
  - Part 4 – Speed controls 2020
- AS 1743:2023 – Road signs – Specifications
- AS 4852.2: 2019 Variable message signs Part 2: Portable signs.
- AS 5156: 2020 Electronic speed limit signs.
- AS/NZS 1906 – Retroreflective materials and devices for road traffic control purposes
  - Part 1 – Retroreflective sheeting 2017
  - Part 2 – Retroreflective devices (non-pavement application) 2007
  - Part 3 – Raised pavement markers (retroreflective and non-retroreflective) 2017
  - Part 4 – High visibility materials for safety garments 2023
- AS/NZS 3845.1:2015 – Road safety barrier systems and devices – Road safety barrier systems
- AS/NZS 3845.2:2017 Road safety systems and devices – Road safety devices
- AS/NZS ISO 31000:2018 – Risk Management – Guidelines
- AS/NZS 4602.1:2024 – High visibility safety garments – Garments for high risk applications
- Austroads Glossary of Terms
- Austroads Guide to Road Design
- Austroads Guide to Traffic Management
- Austroads Guide to Temporary Traffic Management
- Disability Services Act 1993
- Local Government Act 1995
- Main Roads Act 1930
- Main Roads Policy Application Approval & Technical Guidelines - Rumble Strips

- Main Roads Temporary Rumble Strips Guideline
- Main Roads Specification 601 – Signs
- Main Roads Specification 604 – Pavement Marking
- Work Health and Safety Act 2020
- Work Health and Safety (General) Regulations 2022
- Requirements for the Use of Truck Mounted Attenuators in WA – Code of Practice
- Road Traffic Act 1974
- Road Traffic Code 2000
- Temporary Traffic Management: Traffic Signals Approval Policy
- Traffic Management for Events Code of Practice
- Utility Providers Code of Practice for Western Australia

APPENDIX 1 – Definitions

The following definitions are specific to this Code, refer to AGTTM Part 1 for all definitions relating to temporary traffic management.

Access roads:	As per Metropolitan Functional Road Hierarchy definitions below (1)
Authorised Body:	Being the same definition as that in Regulation 3 of the Road Traffic Code 2000 – means a government department, government instrumentality, statutory authority, local government or a body authorised by the Commissioner of Main Roads for the purposes of Regulation 297(2) of the Road Traffic Code 2000
Carriageway:	Section of the road devoted particularly to the use of vehicles, that is between the guideposts, kerbs or barriers where these are provided, inclusive of shoulders and auxiliary lanes.
Children's Crossing:	Means a warranted children's crossing controlled by a Traffic Warden employed by the WA Police Force.
Direct Supervision:	Within visual and verbal communication of a qualified person
District distributor:	As per Metropolitan Functional Road Hierarchy definitions below(1)
Duty of care:	The legal duty on the part of a person conducting a business or undertaking (PCBU) or worker that have an influence on the potential hazards in a work site, which requires them to take reasonable care to protect the health and safety of others at the work site including road users who may be at a foreseeable risk of harm.
Emergency:	A situation where a life threatening risk exists and the consequences of not taking action are judged to be worse than if action is taken.
High speed roads	For this Code, roads with a permanent speed limit of 90 km/h or more.
High volume roads	For this Code, multi-lane roads with traffic volumes exceeding 4 000 vehicles per day per lane.
Instrument of Authorisation:	A legal instrument through which the Commissioner of Main Roads, under Regulation 297 of the Road Traffic Code 2000, formally delegates to an Authorised Body the authority to erect, establish or display and alter or take down any road sign or traffic control signal for the purpose and duration of any roadworks subject to conditions set out in the instrument. In order to take effect, the instrument must be executed by the Commissioner and the body the subject of the instrument.
Level of Service:	(a) An index of the operational performance of traffic on a given traffic lane, carriageway or road when

	accommodating various traffic volumes under different combinations of operating conditions
Long term works	For this Code, is a static road construction or maintenance project on a road that exceeds: • 4 weeks on Freeways, Tonkin, Reid or Roe Highway • 6 weeks any other road
Metropolitan Area / Region	Main Roads regional boundaries can be found using the Road Information Mapping (RIM) system, go to www.mainroads.wa.gov.au > 'Technical & Commercial' > 'Open Data, Maps & Apps' > 'Road Information Mapping'
Must	Indicates that a statement is mandatory
Primary distributor:	As per Metropolitan Functional Road Hierarchy definitions below[(1)]
Rail Infrastructure Manager	An organisation responsible for managing the safe operation of a railway. This is often separate to the rail owner.
Residential Road / Street	Normally a single carriageway, two-way road in a residential district of an urban area carrying little through traffic and few large vehicles even during peak hours. Such roads have a speed limit not exceeding 60 km/h.
Residual risk:	Risk remaining after risk treatment (process to modify risk). Residual risk can contain unidentified risk. Residual risk can also be known as 'retained risk'.
Road:	For this Code has the same meaning as that defined in Main Roads Act: means any thoroughfare, highway or road that the public is entitled to use and any part of the thoroughfare, highway or road, and all bridges (including any bridge over or under which a road passes), viaducts, tunnels, culverts, grids, approaches, paths for cyclists, pedestrians or both, and other things related to, or used in connection with, the road;
Road reserve:	For this Code includes the land set aside, gazetted under an enactment or commonly used by the public as a road and all verges, traffic islands, median strips and other provisions associated therein for the conveyance or travel persons but does not include private tenements or freehold land.
School Zone:	Means a carriageway or length of carriageway (a) defined at its beginning by means of a 'School Zone' sign and at its end by means of an 'End School Zone 'sign; or (b) that forms part of a network of 2 or more carriageways defined by means of 'school zone' signs erected near the boundary of each carriageway that provide access to the network and 'End School Zone' signs erected near the

boundary of each carriageway that provided exit from the area.

School Zone Period:	Means the days (if any), and the period (if any) during those days, that the speed limit indicates by a 'School Zone' sign has effect.
Shall:	Indicates that a statement is mandatory (note must is the preferred term for mandatory requirements)
Should:	Indicates a recommendation.
Speed zone:	A length of road subject to legally enforceable speed limits
State Road	For this Code 'State Road' refers to roads that have been declared 'highways' or 'main roads' and are managed by the Commissioner of Main Roads under the provisions of the Main Roads Act 1930. May also be referred to as Main Roads road.
Traffic Control Diagram (TCD):	Same as Traffic Guidance Scheme
Traffic Lane	For this Code refers to the portion of roadway allotted for the use a single lane of vehicles, whether or not the lane has been closed to traffic.
Traffic Management Plan (TMP):	A document containing Traffic Guidance Schemes and documentation of project details in regard to traffic management at a work site. The documentation of project details includes, inter alia, responsible personnel, proposed timing of the works, approvals that have been gained, traffic volume/type details, documentation of risk management and special provisions for specific road user types.
Traffic Warden:	Means a person appointed as a warden under regulation 23 Road Traffic (Administration) Act 2008 to control vehicles and pedestrians at children's crossings and pedestrian crossings

NOTES:

[(1)]Metropolitan Functional Road Hierarchy Definitions

Primary Distributors:	These provide for major regional and inter-regional traffic movement and carry large volumes of generally fast moving traffic. Some are strategic freight routes and all are National or State roads. They are managed by Main Roads.
District Distributor A:	These carry traffic between industrial, commercial and residential areas and generally connect to Primary Distributors. These are likely to be truck routes and provide only limited access to adjoining property. They are managed by local government.
District Distributor B:	Perform a similar function to type A District Distributors but with reduced capacity due to flow restrictions caused by access to and roadside parking alongside adjoining property. These are often older roads with a traffic demand in excess of that originally intended. District Distributor A

and B roads run between land-use cells and generally not through them, forming a grid which would ideally space them around 1.5km apart. They are managed by local government.

Local Distributors: Carry traffic within a cell and link District Distributors at the boundary to access roads. The route of the Local Distributor discourages through traffic so that the cell formed by the grid of District Distributors only carries traffic belonging to or serving the area. These roads should accommodate buses but discourage trucks. They are managed by local government.

Access Roads: Provides access to abutting properties with amenity, safety and aesthetic aspects having priority over the vehicle movement function. These roads are bicycle and pedestrian friendly. They are managed by local government.

The decision about which functional type should be designated to each road can only be made by the Authority responsible for managing that road.

APPENDIX 2 – Traffic Risk Classification

In order to clearly understand the risks associated with the works and then outline the manner in which identified risks will be managed, the TMP designer needs to undertake an assessment of all significant foreseeable risks associated with the works and determine the treatment measures that, so far as is reasonably practicable, minimise the risk.

The identification and assessment process is to be undertaken in accordance with AS/NZS ISO 31000 and the likelihood and consequences rated before the application of risk treatments (primary risk) and after (residual risk) the determined controls utilising Table A2-1, Table A2-2, Table A2-3, and Table A2-4 below.

The TMP designer is to, so far as is reasonably practicable, control or reduce identified risks in accordance with the hierarchy of control. Treatment measures are to be in accordance with the below Table A2-5 Management Approach for Residual Risk Rating.

A Residual Risk Rating of Very High is not permissible.

TABLE A2-1 – QUALITATIVE MEASURES OF CONSEQUENCE OR IMPACT

Consequence	Description
Insignificant	Midblock hourly traffic flow per lane is equal to or less than the allowable lane capacity detailed in AGTTM. No impact to the performance of the network. Affected intersection leg operates at a Level of Service (LoS) of A or B. No property damage.
Minor	Midblock hourly traffic flow per lane is greater than the allowable road capacity and less than 110% of the allowable road capacity as detailed in AGTTM. Minor impact to the performance of the network. Intersection performance operates at a Level of Service (LoS) of C. Minor property damage.
Moderate	Midblock hourly traffic flow per lane is equal to and greater than 110% and less than 135% of allowable road capacity as detailed in AGTTM. Moderate impact to the performance of the network. Intersection performance operates at a Level of Service (LoS) of D. Moderate property damage.
Major	Midblock hourly traffic flow per lane is equal to and greater than 135% and less then170% of allowable road capacity as detailed in AGTTM. Major impact to the performance of the network. Intersection performance operates at a Level of Service (LoS) of E. Major property damage.
Catastrophic	Midblock hourly traffic flow per lane is equal to and greater than 170% of allowable road capacity as detailed in AGTTM. Unacceptable impact to the performance of the network. Intersection performance operates at a Level of Service (LoS) of F. Total property damage.

TABLE A2-2 WHS QUALITATIVE MEASURES OF CONSEQUENCE OR IMPACT

Level	Consequence	Description
1	Insignificant	No treatment required
2	Minor	First aid treatment required.
3	Moderate	Medical treatment required or Lost Time Injury
4	Major	Single fatality or major injuries or severe permanent disablement
5	Catastrophic	Multiple fatalities.

TABLE A2-3 – QUALITATIVE MEASURES OF LIKELIHOOD

Likelihood	Description
Rare	The event or hazard: may occur only in exceptional circumstances, will probably occur with a frequency of less than 0.02 times per year (i.e. less than once in 50 years).
Unlikely	The event or hazard: could occur at some time, will probably occur with a frequency of 0.02 to 0.1 times per year (i.e. once in 10 to 50 years).
Possible	The event or hazard: might occur at some time, will probably occur with a frequency of 0.1 to 1 times per year (i.e. once in 1 to 10 years).
Likely	The event or hazard: will probably occur in most circumstances, will probably occur with a frequency of between 1 and 10 times per year.
Almost certain	The event or hazard: is expected to occur in most circumstances, will probably occur with a frequency in excess of 10 times per year.

IMPORTANT NOTE: The likelihood of an event or hazard occurring must first be assessed over the duration of the activity (i.e. “period of exposure”). For risk assessment purposes the assessed likelihood must then be proportioned for a “period of exposure” of one year.

Example: An activity has a duration of 6 weeks (i.e. “period of exposure” = 6 weeks). The event or hazard being considered is assessed as likely to occur once every 20 times the activity occurs (i.e. likelihood or frequency = 1 event/20 times activity occurs = 0.05 times per activity). Assessed annual likelihood or frequency = 0.05 times per activity x 52 weeks/6 weeks = 0.4 times per year. Assessed likelihood = Possible.

TABLE A2-4 – QUALITATIVE RISK ANALYSIS MATRIX – RISK RATING

	Consequence				
Likelihood	Insignificant (1)	Minor (2)	Moderate (3)	Major (4)	Catastrophic (5)
Almost certain (A)	**Low 5**	**High 10**	**High 15**	**Very High 20**	**Very High 25**
Likely (B)	**Low 4**	**Medium 8**	**High 12**	**Very High 16**	**Very High 20**
Possible (C)	**Low 3**	**Low 6**	**Medium 9**	**High 12**	**High 15**
Unlikely (D)	**Low 2**	**Low 4**	**Low 6**	**Medium 8**	**High 10**
Rare (E)	**Low 1**	**Low 2**	**Low 3**	**Low 4**	**Medium 7**

TABLE A2-5 – MANAGEMENT APPROACH FOR RESIDUAL RISK RATING

Residual Risk Rating	**Required Treatment**
Very High	Unacceptable risk. **HOLD POINT**. Work cannot proceed until risk has been reduced.
High	High priority, Roadworks Traffic Manager (RTM) must review the risk assessment and approve the treatment and endorse the TGS prior to its implementation.
Medium	Medium Risk, standard traffic control and work practices subject to review by accredited AWTM personnel prior to implementation.
Low	Managed in accordance with the approved management procedures and traffic control practices.

APPENDIX 3 – Typical Instrument of Authorisation for Local Government

WESTERN AUSTRALIA
ROAD TRAFFIC CODE 2000
REGULATION 297(2)
INSTRUMENT OF AUTHORISATION

Pursuant to Regulation 297(2) of the Road Traffic Code 2000 the Commissioner of Main Roads ('the Commissioner') hereby authorises *(Insert name of Local Government)* ('Authorised Body') by itself, its employees, consultants, agents and contractors (together 'Representatives') to, from the date indicated below, erect, establish, display, alter or take down such traffic signs and traffic control devices of whatsoever type or class (except for permanent traffic control signals) as may be required for the purpose and duration of any works, survey or inspection, associated with the construction, maintenance or repair on a road (other than a main road or highway), any adjoining land or any portion thereof within its jurisdiction, SUBJECT ALWAYS to the following terms and conditions:

(a) the Authorised Body must at all times observe, perform and comply with the provisions of the 'Traffic Management for Works on Roads Code of Practice' (as amended or replaced from time to time in consultation with the Traffic Management for Roadworks Advisory Group) issued by Main Roads Western Australia ('the Code') referring to the version which is current at the time of the relevant works, a copy of which can be obtained from Main Roads Western Australia from www.mainroads.wa.gov.au or by contacting Main Roads by phone;

(b) the Authorised Body must develop and implement procedures that will satisfy the Commissioner that traffic management implemented by the Authorised Body, its employees, agents and contractors will in all respects conform to and comply with the requirements of the Code; and

(c) the Authorised Body must ensure that its Representatives comply with the terms and conditions identified above at paragraphs (a) and (b) as if they were named in those paragraphs in place of the Authorised Body.

By executing and returning the acknowledgment at the foot of this authorisation, the Authorised Body agrees to observe, perform and comply with the above terms and conditions.

This Instrument of Authorisation replaces any prior Instrument of Authorisation under Regulation 297(2) of the Road Traffic Code 2000 between the Commissioner and the Authorised Body. The Commissioner's delegation dated 17 July 1975 to a number of local governments outside the Perth metropolitan area, is not affected by this Instrument of Authorisation except that this Instrument of Authorisation prevails wherever roadworks are concerned. That 1975 delegation was made under Regulation 301 of the Road Traffic Code 1975 and related to non-regulatory signage.

Dated:

THE COMMON SEAL OF THE)
COMMISSIONER OF MAIN ROADS)
WAS AFFIXED BY)
)
)
COMMISSIONER OF MAIN ROADS)
FOR THE TIME BEING IN THE PRESENCE OF:)

_____
Signature of Witness

_____
Name of Witness

ACKNOWLEDGMENT BY AUTHORISED BODY

(Insert name of Local Government) agrees to observe, perform and be bound by the above conditions.

THE COMMON SEAL OF THE)

(Insert name of Local Government))
WAS AFFIXED PURSUANT TO A RESOLUTION)
OF THE COUNCIL IN THE PRESENCE OF)

_____
Chief Executive Officer

_____
Witness

APPENDIX 4 – Sample 'Notification of Roadworks' Form

A sample Notification of Roadworks form is provided on page x. ***NOTE:*** *The distribution list in this form is based on Perth metropolitan area and it needs to be appropriately modified for use elsewhere.*

An electronic version of the sample Notification of Roadworks form is available on Main Roads website www.mainroads.wa.gov.au; go to 'Technical & Commercial' > 'Working on Roads' > 'Traffic Management Templates'.

Contact details of Main Roads Regional Offices for sending the Notification of Roadworks forms and TMPs are given in Table A4-1 below.

Table A4-1 – Main Roads Regional contact details for sending Notification of Roadworks forms and TMPs

Region	Email	Phone
Kimberley (Derby and Kununurra)	Kimreg@mainroads.wa.gov.au	(08) 9158 4333 (Derby) (08) 9167 4777 (Kununurra)
Pilbara (South Hedland)	Pilbaranetworkmanagement@mainroads.wa.gov.au	(08) 9172 8877
Mid West - Gascoyne (Geraldton and Carnarvon)	MWGreg@mainroads.wa.gov.au	(08) 9941 0777 (Carnarvon) (08) 9956 1200 (Geraldton)
Goldfields – Esperance (Kalgoorlie)	GEreg@mainroads.wa.gov.au	(08) 9080 1400
Wheatbelt (Northam and Narrogin)	Wheatbelt@mainroads.wa.gov.au	(08) 9622 4777 (Northam)
Great Southern (Albany)	GSreg@mainroads.wa.gov.au	(08) 9892 0555
South West (Bunbury)	SWreg@mainroads.wa.gov.au	(08) 9724 5656

NOTIFICATION OF ROADWORKS

Notifications are to be distributed at least one (1) week in advance of works
Where the traffic management is to interfere with traffic signal operation, prior approval is required 3wks in advance via enquiries@mainroads.wa.gov.au.

Where the works will place restrictions on Oversize and/or Restricted Access Vehicles Main Roads HVS requires at least 2 weeks' notice.

TMP reference		Communication plan sent to Main Roads	Yes ☐	No ☐	N/A ☐
			If No provide reason. If Yes provide email contact		
Anticipated start date:		Anticipated finish date:			
Daily work hours:		Is weekend work applicable?	Yes ☐	No ☐	
Location of works (Road/Street, Suburb):					
Description of works:					
Description of traffic management arrangements:					
Posted Speed Limit:		Worksite speed limit:		After hours speed limit:	

What is the anticipated effect on traffic flows?				Will there be restricted width for oversize escorted vehicles?		Yes ☐	No ☐
Are lanes closed at signals?	Yes ☐	No ☐	N/A ☐	Are signal loops or hardware affected?	Yes ☐	No ☐	N/A ☐
Will signal phases need time changes?	Yes ☐	No ☐	N/A ☐	Will signals need to revert automatically?	Yes ☐	No ☐	N/A ☐
Date of signal 'black out':				Times of signal 'black out':			
Will Police attendance be required?	Yes ☐	No ☐		Dates for Police attendance:			
Are bridges located in area of works, (inc detours)?	Yes ☐	No ☐		Will changes to traffic flows/composition occur on bridges?		Yes ☐	No ☐
Are the works located within a School Zone?	Yes ☐	No ☐		Will children's crossings be altered during works?		Yes ☐	No ☐

Oversize and/or Restricted Access Vehicle Roadwork Restrictions

Location of works (include – road name, nearest intersection or marked location and SLKs)					
Road Name(s) Bridge number if applicable					
Nearest Intersection / marked location / SLKs					
Additional information					
Will there be a width restriction for oversize vehicles exceeding 2.5m in width?	Yes ☐	No ☐	Will there be a height restriction for oversize vehicles exceeding 4.3m in height?	Yes ☐	No ☐
If yes, what width limit is to be imposed on oversize vehicles travelling through the site?					
Will the width restrictions be in place outside the daily work hours?	Yes ☐	No ☐	If yes, what is the minimum height of the structure causing the restriction?		
Can the width restrictions be removed if operators provide prior notice?	Yes ☐	No ☐	If the width restrictions are fixed in place, are operators able to have a wider oversize combination if a 1.2m ground clearance can be achieved? Do not complete if width restrictions can be removed.	Yes ☐	No ☐
If yes, how much notice will be required? (i.e. 24/48 hours' notice).			If yes, how much notice will be required? (i.e. 24/48 hours' notice).		
Please provide the name and phone number of the best contact for further details in relation to these works.	Name: Contact number (mobile):				
Please provide the name and phone number of the contact for prior notification of	Name:				

movements.	Contact number (mobile):				
Will the work result in a road closure that will impact on Restricted Access Vehicles?	Yes ☐	No ☐	If yes, have discussions been held with Main Roads Heavy Vehicle Services (HVS) in regards to a suitably approved RAV network detour. If no, please contact HVS Route Assessments on 138 486 for assistance. Note: an assessment request for a proposed detour may take up to a week to be processed.	Yes ☐	No ☐

Road Authority:					
Postal Address:					
Telephone:		Email:		Facsimile:	
Contact:					
Telephone:		Email:		Mobile:	

Construction Contractor:					
Postal Address:					
Telephone:		Email:		Facsimile:	
Contact:					
Telephone:		Email:		Mobile:	
After hours contact:		Telephone:		Mobile:	

Traffic Management Contractor:					
Postal Address:					
Telephone:		Email:		Facsimile:	
Contact:					
Telephone:		Email:		Mobile:	
After hours contact:		Telephone:		Mobile:	

Distribution List	Email/Website
Main Roads Real Time Media	roadworks@mainroads.wa.gov.au
Main Roads Customer Information Centre	enquiries@mainroads.wa.gov.au
Main Roads Road Network Operations Centre	RNOC.Control.Room.Information.Desk@mainroads.wa.gov.au
Main Roads Heavy Vehicle Services	hvsnor@mainroads.wa.gov.au
Main Roads Engineer Bridge Loading	DLSEHeavyLoadsGroup@mainroads.wa.gov.au
WA Police State Traffic Coordination	State.Traffic.Intelligence.Planning.&.Co-ordination.Unit.SMAIL@police.wa.gov.au
Children's Crossing Unit	childrenscrossingsunitsmail@police.wa.gov.au
Fire & Emergency Services	dfes@dfes.wa.gov.au
Transperth (metro)	Transperth.ServiceDisruptions@pta.wa.gov.au
Transregional (regional)	transregional@pta.wa.gov.au
Arc Infrastructure	thirdparty.notifications@arcinfra.com
Local Government	For contact details see local government website

Note: the above distribution list is an example and should be modified as required. See section 4.4

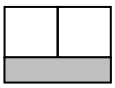
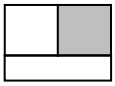
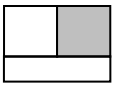
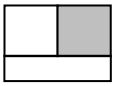
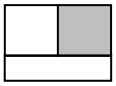
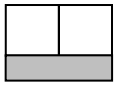
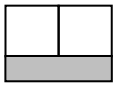
APPENDIX 5

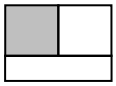
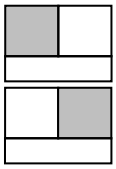
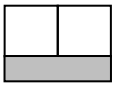
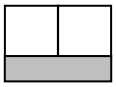
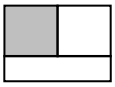
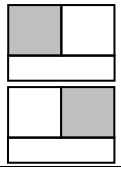
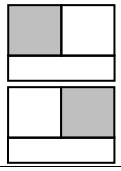
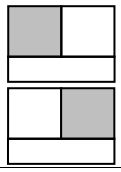
Multi-Messages Sign Inventory

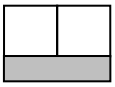
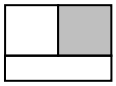
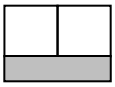
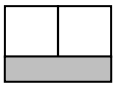
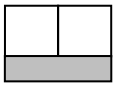
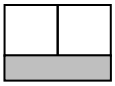
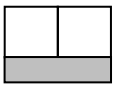
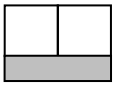
And

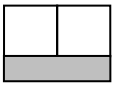
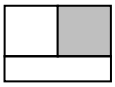
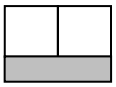
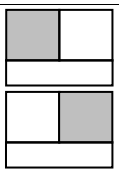
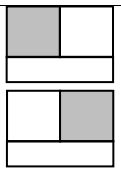
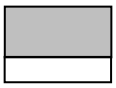
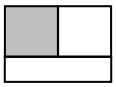
Application Schedule

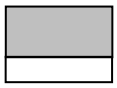
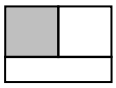
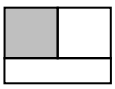
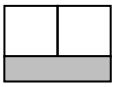
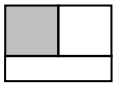
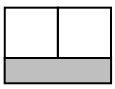
APPENDIX 5 - Multi-Message Sign Inventory and Application Schedule

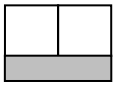
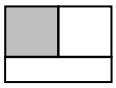
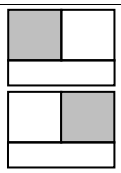
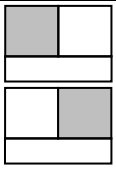
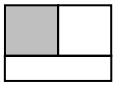
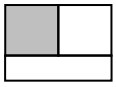
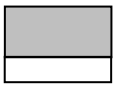
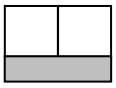
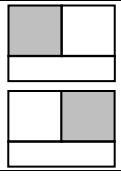
Group	ADVANCE WARNING SERIES SIGNS			SIGN APPLICATION AND DESCRIPTION
	Sign	**Main Roads Sign Number**	**Panel Size (mm)**	1. Sign panels must only be located in the frame location as shown. 2. Left side multi-message sign shown only. 3. Multi-message signs located on both sides of the roadway must form a mirrored image of the signs being displayed. 4. For sign specification go to www.mainroads.wa.gov.au >Technical & Commercial > Technical Library > Signs Index > Multi Message Signs Standards 5. For multi-message signs frame refer to Main Roads standard drawing 201031-0155.
ADV		MMS-ADV-1	1200 x 300	 'X' km AHEAD • Must not be used in conjunction with a regulatory speed sign.
ADV		MMS-ADV-2	600 x 600	 'X' km AHEAD • Must not be used in conjunction with a regulatory speed sign. • Sign may be classified as symbolic.
ADV		MMS-ADV-3	600 x 600	 40 km/h AHEAD SYMBOLIC
ADV		MMS-ADV-3	600 x 600	 60 km/h AHEAD SYMBOLIC
ADV		MMS-ADV-3	600 x 600	 80 km/h AHEAD SYMBOLIC
ADV		MMS-ADV-4	1200 x 300	 AT INTERSECTION • Must not be used in conjunction with a regulatory sign.
ADV		MMS-ADV-5	1200 x 300	 AT SIGNALS • Must not be used in conjunction with a regulatory sign.
ADV		MMS-ADV-6	1200 x 600	 BLASTING AREA SWITCH OFF RADIO TRANSMISSION • Only to be used where the posted speed is less than or equal to 80km/h.

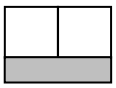
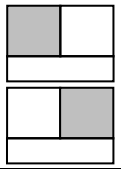
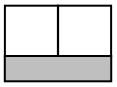
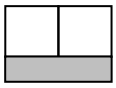
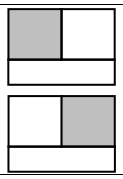
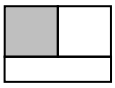
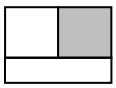
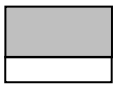
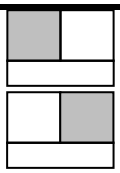
ADV	BRIDGE WORK AHEAD	MMS-ADV-7	600 x 600	BRIDGEWORK AHEAD 
ADV	BRIDGEWORK AHEAD	MMS-ADV-8	1200 x 600	BRIDGEWORK AHEAD 
ADV	DETOUR AHEAD	MMS-ADV-9A	600 x 600	DETOUR AHEAD 
ADV	DETOUR AHEAD	MMS-ADV-9B	1200 x 600	DETOUR AHEAD 
ADV	DO NOT OVERTAKE	MMS-ADV-10	1200 x 300	DO NOT OVERTAKE 
ADV	DRIVE SLOWLY	MMS-ADV-11	1200 x 300	DRIVE SLOWLY 
ADV	GRADER AHEAD	MMS-ADV-12	600 x 600	GRADER AHEAD 
ADV	HEAVY VEHICLES	MMS-ADV-13	600 x 600	HEAVY VEHICLES 
ADV	HIGH VEHICLES	MMS-ADV-14	600 x 600	HIGH VEHICLES 
ADV	LINE MARKING	MMS-ADV-15	600 x 600	LINE MARKING 

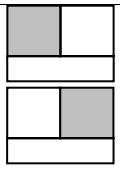
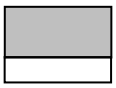
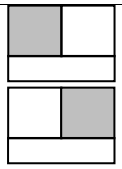
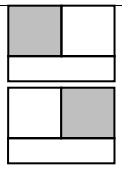
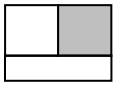
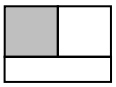
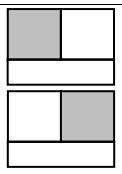
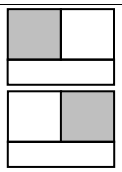
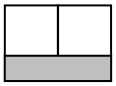
ADV		MMS-ADV-16	1200 x 300		LINE MARKING
ADV		MMS-ADV-17	1200 x 600		LOOK BOTH WAYS TWO WAY TRAFFIC
ADV		MMS-ADV-18	600 x 600		NEXT 'X' km • Must not be used in conjunction with a regulatory speed sign. • Sign may be classified as symbolic.
ADV		MMS-ADV-19	1200 x 300		NEXT 'X' km (WHITE) • Must not be used in conjunction with a regulatory speed sign.
ADV		MMS-ADV-20	1200 x 300		NOW • Must only be used in conjunction with the sign MMS-ADV-30.
ADV		MMS-ADV-21	1200 x 300		OBSTRUCTION MARKER • Must not be used in conjunction with an Advanced Warning message panel.
ADV		MMS-ADV-22	1200 x 300		ON SIDE ROAD • Must not be used in conjunction with a regulatory speed sign.
ADV		MMS-ADV-23	1200 x 300		OVER 'X' m
ADV		MMS-ADV-24	1200 x 300		OVER 'X' GVM
ADV		MMS-ADV-25	1200 x 600		POWER LINE WORKS IN PROGRESS

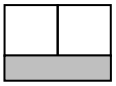
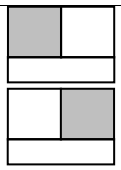
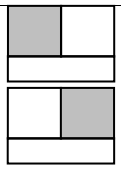
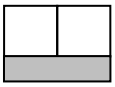
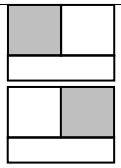
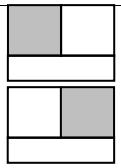
ADV	PREPARE TO STOP	MMS-ADV-26	1200 x 300		PREPARE TO STOP
ADV	PREPARE TO STOP	MMS-ADV-27	600 x 600		PREPARE TO STOP
ADV	REDUCE SPEED	MMS-ADV-28	1200 x 300		REDUCE SPEED
ADV	REDUCE SPEED	MMS-ADV-29	600 x 600		REDUCE SPEED
ADV	REDUCE SPEED	MMS-ADV-30	1200 x 600		REDUCE SPEED • Must only be placed in advance of the primary regulatory speed sign.
ADV	ROAD CLOSED	MMS-ADV-31	600 x 600		ROAD CLOSED
ADV	ROAD CLOSED	MMS-ADV-32	1200 x 600		ROAD CLOSED
ADV	ROAD CLOSED AHEAD	MMS-ADV-33	1200 x 600		ROAD CLOSED AHEAD
ADV	ROAD PLANT AHEAD	MMS-ADV-34	600 x 600		ROAD PLANT AHEAD
ADV	ROAD PLANT AHEAD	MMS-ADV-35	1200 x 600		ROAD PLANT AHEAD

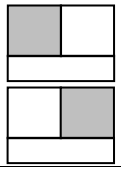
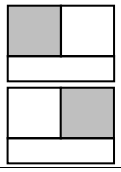
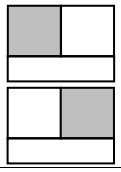
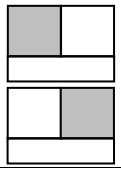
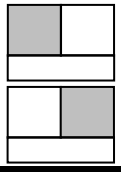
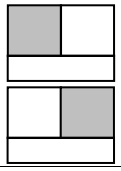
ADV	ROAD PLANT ON SIDE ROAD	MMS-ADV-36	1200 x 600		ROAD PLANT ON SIDE ROAD
ADV	ROAD SIDE HAZARD	MMS-ADV-37	600 x 600		ROAD SIDE HAZARD • Must only be used in conjunction with a speed restriction sign • Must only be used as part of an after-care traffic control scheme
ADV	ROAD WORK AHEAD	MMS-ADV-38	600 x 600		ROAD WORK AHEAD
ADV	ROADWORK AHEAD	MMS-ADV-39	1200 x 600		ROADWORKS AHEAD
ADV	ROADWORKS	MMS-ADV-40	1200 x 300		ROADWORKS
ADV	ROADWORK ON SIDE ROAD	MMS-ADV-41	1200 x 600		ROADWORK ON SIDE ROAD
ADV	SIDE ROAD CLOSED	MMS-ADV-42	600 x 600		SIDE ROAD CLOSED
ADV	SIDE ROAD CLOSED	MMS-ADV-43	1200 x 600		SIDE ROAD CLOSED
ADV		MMS-ADV-44	600 x 600		TEMPORARY HAZARD MARKER
ADV		MMS-ADV-45	1200 x 300		TEMPORARY HAZARD MARKER

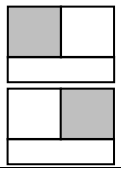
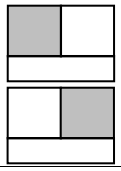
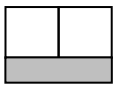
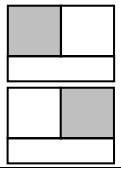
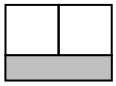
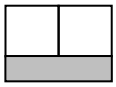
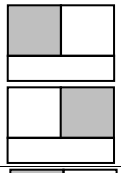
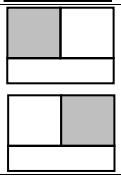
ADV		MMS-ADV-46	1200 x 300		TEMPORARY HAZARD MARKER • Only to be used where the top two (2) panels contain a yellow background. Otherwise, the temporary hazard marker 'MMS-ADV-45' must be used.
ADV		MMS-ADV-47	600 x 600		TRAFFIC CONTROLLER SYMBOLIC
ADV		MMS-ADV-48	600 x 600		TRAFFIC SIGNALS
ADV		MMS-ADV-49	600 x 600		TRAFFIC SIGNALS NOT IN USE
ADV		MMS-ADV-50	600 x 600		TRAFFIC SIGNALS NOT WORKING
ADV		MMS-ADV-51	600 x 600		TRUCK SYMBOLIC
ADV		MMS-ADV-52A	600 x 600		WORKER SYMBOLIC
ADV		MMS-ADV-52B	1200 x 600		WORKER SYMBOLIC
ADV		MMS-ADV-53	1200 x 300		UHF CHANNEL XX • The use of channels 31-38 UHF is prohibited; channels 5 & 35 are for emergency use only.
ADV		MMS-ADV-54	600 x 600		UHF CHANNEL XX • The use of channels 31-38 UHF is prohibited; channels 5 & 35 are for emergency use only.

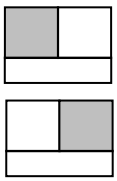
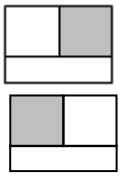
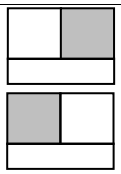
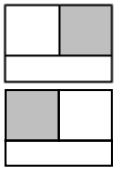
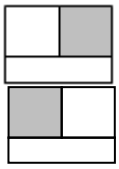
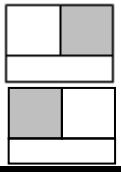
ADV		MMS-ADV-56	1200 x 300		DETOUR AHEAD
ADV		MMS-ADV-57	600 x 600		VERGE WORKS
ADV		MMS-ADV-58	1200 x 600		VERGE WORKS
ADV		MMS-ADV-59	1200 x 300		BRIDGE WORKS
ADV		MMS-ADV-60	1200 x 300		ON RAMP • To be used to give advanced warning of works on the off-ramp.
ADV		MMS-ADV-79	600 x 600		BOOM BARRIER
ADV		MMS-ADV-80	600 x 600		RUMBLE STRIPS • Must only be used in conjunction with the sign MMS-ADV-81.
ADV		MMS-ADV-81	600 x 600		RUMBLE STRIPS • Must only be used in conjunction with the sign MMS-ADV-80.
ADV		MMS-ADV-82	1200 x 600		STOP HERE WHEN DIRECTED
ADV		MMS-ADV-83	600 x 600		MONITORING CAMERA

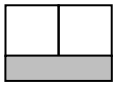
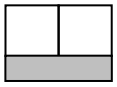
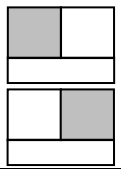
ADV		MMS-ADV-84	600 x 600		WORKS UNDER BRIDGE
ADV		MMS-ADV-85	1200 x 600		RAMP CLOSED AHEAD
ADV		MMS-ADV-86	1200 x 600		RAMP CLOSED
ADV		MMS-ADV-87	600 x 600		RAMP CLOSED
ADV		MMS-ADV-88	600 x 600		CYCLISTS IN LANE
ADV		MMS-ADV-89	1200 x 600		CYCLISTS IN LANE
ADV		MMS-ADV-90	600 x 600		QUEUED TRAFFIC AHEAD • Must only be used in conjunction with the sign MMS-ADV-91.
ADV		MMS-ADV-91	600 x 600		QUEUEED TRAFFIC (SYMBOLIC) • Must only be used in conjunction with the sign MMS-ADV-90.
ADV		MMS-ADV-92	600 x 600		CYCLISTS (SYMBOLIC)
ADV		MMS-ADV-93	600 x 600		BICYCLE LANE CLOSED AHEAD
ADV		MMS-ADV-94	1200 x 300		SLOW BUS AHEAD • To be used to give advance warning of autonomous bus trials

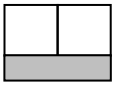
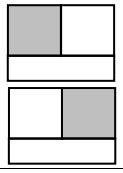
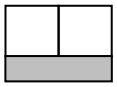
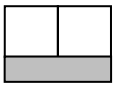
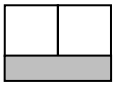
ADV		MMS-ADV-95	1200 x 300		DRIVERLESS BUS • To be used to provide warning of autonomous bus trials
ADV		MMS-ADV-96	600 x 600		AUTONOMOUS BUS
ADV		MMS-ADV-97	600 x 600		MOWING AHEAD
ADV		MMS-ADV-98	1200 x 300		MOWING
ADV		MMS-ADV-99	600 x 600		RIDE ON MOWER SYMBOLIC
ADV		MMS-ADV-100	1200 x 600		PILOT VEHICLE / FOLLOW ME • To be mounted to the roadworks pilot vehicle
ADV		MMS-ADV-101	600 x 600		ON SIDE ROAD • Must not be used in conjunction with a regulatory speed sign.

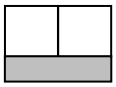
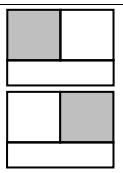
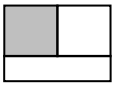
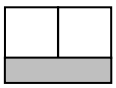
Group	POSITION SERIES SIGNS			SIGN APPLICATION AND DESCRIPTION
	Sign	**Main Roads Sign Number**	**Panel Size (mm)**	1. Sign panels must only be located in the frame location as shown. 2. Left side multi-message sign shown only. 3. Multi-message signs located on both sides of the roadway must form a mirrored image of the signs being displayed. 4. For sign specification go to www.mainroads.wa.gov.au >Technical & Commercial > Technical Library > Signs Index > Multi Message Signs Standards 5. For multi-message signs frame refer to Main Roads standard drawing 201031-0155.
POS		MMS-POS-1(L)	600 x 600	 LANE STATUS
POS		MMS-POS-1(R)	600 x 600	 LANE STATUS
POS		MMS-POS-2(R)	600 x 600	 LANE STATUS
POS		MMS-POS-2(L)	600 x 600	 LANE STATUS
POS		MMS-POS-3(R)	600 x 600	 LANE STATUS
POS		MMS-POS-3(L)	600 x 600	 LANE STATUS
POS		MMS-POS-4	600 x 600	 LANE STATUS
POS		MMS-POS-5	600 x 600	 LANE STATUS
POS		MMS-POS-6(L)	600 x 600	 LANE STATUS

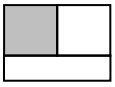
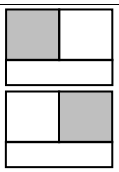
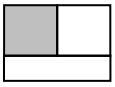
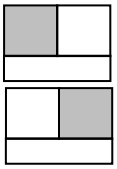
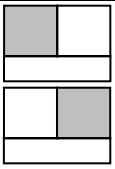
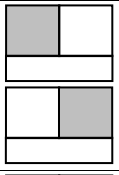
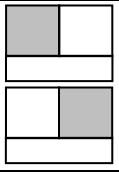
POS		MMS-POS-6(R)	600 x 600		LANE STATUS
POS		MMS-POS-7(L)	600 x 600		LANE STATUS
POS		MMS-POS-7(R)	600 x 600		LANE STATUS
POS		MMS-POS-8	1200 x 300		LANE STATUS • Should be used with the ON SIDE ROAD panel to indicate the direction of the side road where road work is being carried out
POS		MMS-POS-9(L)	600 x 600		MERGE LEFT
POS		MMS-POS-10(L)	1200 x 300		MERGE LEFT
POS		MMS-POS-9(R)	600 x 600		MERGE RIGHT
POS		MMS-POS-10(R)	1200 x 300		MERGE RIGHT
POS		MMS-POS-11	600 x 600		LANE STATUS
POS		MMS-POS-12	600 x 600		LANE STATUS

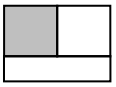
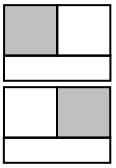
POS		MMS-POS-13 (L)	600 x 600		LANE STATUS
POS		MMS-POS-13(R)	600 x 600		LANE STATUS
POS		MMS-POS-14(L)	600 x 600		LANE STATUS
POS		MMS-POS-14(R)	600 x 600		LANE STATUS
POS		MMS-POS-15(L)	600 x 600		LANE STATUS
POS		MMS-POS-15(R)	600 x 600		LANE STATUS

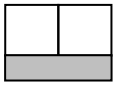
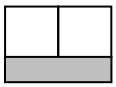
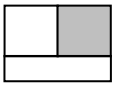
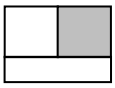
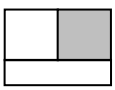
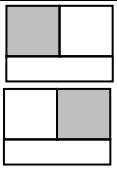
Group	TRAFFIC DIVERSION SERIES SIGNS			SIGN APPLICATION AND DESCRIPTION
	Sign	**Main Roads Sign Number**	**Panel Size (mm)**	1. Sign panels must only be located in the frame location as shown. 2. Left side multi-message sign shown only. 3. Multi-message signs located on both sides of the roadway must form a mirrored image of the signs being displayed. 4. For sign specification go to www.mainroads.wa.gov.au >Technical & Commercial > Technical Library > Signs Index > Multi Message Signs Standards 5. For multi-message signs frame refer to Main Roads standard drawing 201031-0155.
DIV		MMS-DIV-1	600 x 600	 DETOUR
DIV		MMS-DIV-2(L)	1200 x 600	 DETOUR FOR HEAVY VEHICLES LEFT
DIV		MMS-DIV-2(R)	1200 x 600	 DETOUR FOR HEAVY VEHICLES RIGHT
DIV		MMS-DIV-3(L)	1200 x 600	 DETOUR FOR HIGH VEHICLES LEFT
DIV		MMS-DIV-3(R)	1200 x 600	 DETOUR FOR HIGH VEHICLES RIGHT
DIV		MMS-DIV-4(L)	1200 x 300	 DETOUR LEFT ARROW
DIV		MMS-DIV-4(R)	1200 x 300	 DETOUR RIGHT ARROW
DIV		MMS-DIV-5	600 x 600	 DETOUR MARKER

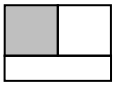
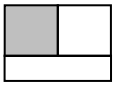
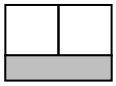
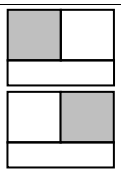
D I V		MMS-DIV-6	1200 x 300		LOCAL TRAFFIC ONLY • Must not be used in conjunction with a regulatory sign.
D I V		MMS-DIV-7	600 x 600		LOCAL TRAFFIC ONLY • Must not be used in conjunction with a regulatory sign.
D I V		MMS-DIV-8	1200 x 300		DETOUR LEFT
D I V		MMS-DIV-9	1200 x 300		DETOUR AHEAD
D I V		MMS-DIV-10	1200 x 300		U-TURN DETOUR AHEAD • Refer section 6.1.11.

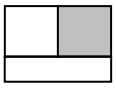
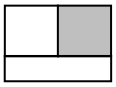
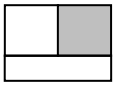
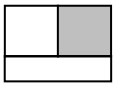
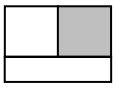
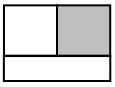
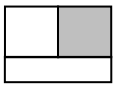
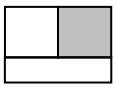
Group	TERMINATION SERIES SIGNS			SIGN APPLICATION AND DESCRIPTION
	Sign	**Main Roads Sign Number**	**Panel Size (mm)**	1. Sign panels must only be located in the frame location as shown. 2. Left side multi-message sign shown only. 3. Multi-message signs located on both sides of the roadway must form a mirrored image of the signs being displayed. 4. For sign specification go to www.mainroads.wa.gov.au >Technical & Commercial > Technical Library > Signs Index > Multi Message Signs Standards 5. For multi-message signs frame refer to Main Roads standard drawing 201031-0155.
TER		MMS-TER-1	1200 x 300	 DRIVE SAFELY
TER		MMS-TER-2	1200 x 600	 END BLASTING AREA
TER		MMS-TER-3	600 x 600	 END DETOUR
TER		MMS-TER-4	600 x 600	 END ROADWORK
TER		MMS-TER-5	1200 x 600	 END ROADWORK
TER		MMS-TER-6	1200 x 300	 THANK YOU

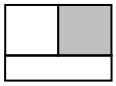
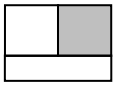
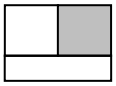
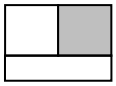
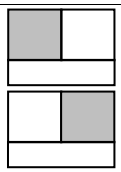
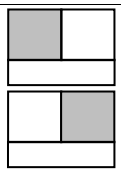
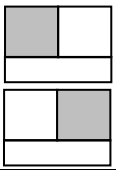
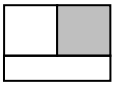
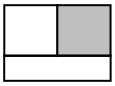
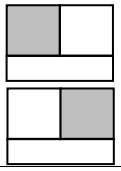
Group	ROAD CONDITION SERIES SIGNS			SIGN APPLICATION AND DESCRIPTION
	Sign	**Main Roads Sign Number**	**Panel Size (mm)**	1. Sign panels must only be located in the frame location as shown. 2. Left side multi-message sign shown only. 3. Multi-message signs located on both sides of the roadway must form a mirrored image of the signs being displayed. 4. For sign specification go to www.mainroads.wa.gov.au >Technical & Commercial > Technical Library > Signs Index > Multi Message Signs Standards. 5. For multi-message signs frame refer to Main Roads standard drawing 201031-0155.
RC		MMS-RC-1	600 x 600	 LOOSE STONES
RC		MMS-RC-2	600 x 600	 LOOSE SURFACE
RC		MMS-RC-3	1200 x 600	 NEW WORK NO LINES MARKED
RC		MMS-RC-4	600 x 600	 NO LINES
RC		MMS-RC-5	600 x 600	 ROUGH SURFACE
RC		MMS-RC-6	600 x 600	 SLIPPERY
RC		MMS-RC-8	600 x 600	 SOFT EDGES
RC		MMS-RC-9	600 x 600	 TRAFFIC HAZARD • For emergency use only, see Clause 4.20.1 of AS 1742.3.
RC		MMS-RC-10	600 x 600	 WATER OVER ROAD

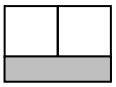
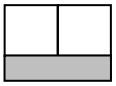
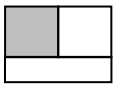
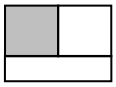
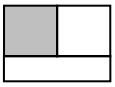
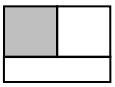
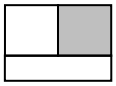
RC		MMS-RC-11	1200 x 600		WATER OVER ROAD
RC		MMS-RC-12	600 x 600		WET BITUMEN
RC		MMS-RC-13	600 x 600		ROUGH SURFACE (CYCLIST)

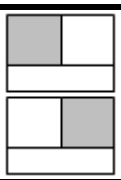
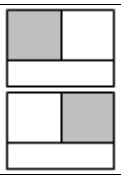
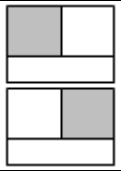
Group	PEDESTRIAN SERIES SIGNS			SIGN APPLICATION AND DESCRIPTION
	Sign	**Main Roads Sign Number**	**Panel Size (mm)**	1. Sign panels must only be located in the frame location as shown. 2. Left side multi-message sign shown only. 3. Multi-message signs located on both sides of the roadway must form a mirrored image of the signs being displayed. 4. For sign specification go to www.mainroads.wa.gov.au >Technical & Commercial > Technical Library > Signs Index > Multi Message Signs Standards 5. For multi-message signs frame refer to Main Roads standard drawing 201031-0155.
PED		MMS-PED-1	600 x 600	 FOOTPATH CLOSED
PED		MMS-PED-2	600 x 600	 FOOTPATH TRIP HAZARD
PED		MMS-PED-3(L)	1200 x 300	 PEDESTRIANS LEFT ARROW
PED		MMS-PED-3(R)	1200 x 300	 PEDESTRIANS RIGHT ARROW
PED		MMS-PED-4	600 x 600	 PEDESTRIANS WATCH YOUR STEP
PED		MMS-PED-5	600 x 600	 SLIPPERY (FOOTPATH)
PED		MMS-PED-6	600 x 600	 USE OTHER FOOTPATH
PED		MMS-PED-7	600 x 600	 CYCLISTS DISMOUNT • See section 6.1.5 for conditions of use
PED		MMS-PED-8	600 x 600	 PATH CLOSED

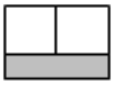
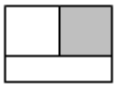
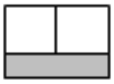
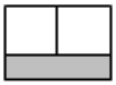
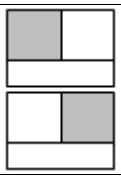
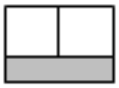
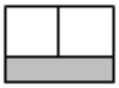
Group	EVENT SERIES SIGNS Sign	Main Roads Sign Number	Panel Size (mm)	SIGN APPLICATION AND DESCRIPTION 1. Sign panels must only be located in the frame location as shown. 2. Left side multi-message sign shown only. 3. Multi-message signs located on both sides of the roadway must form a mirrored image of the signs being displayed. 4. For sign specification go to www.mainroads.wa.gov.au >Technical & Commercial > Technical Library > Signs Index > Multi Message Signs Standards 5. For multi-message signs frame refer to Main Roads standard drawing 201031-0155.
EVE		MMS-EVE-1	600 x 600	 CYCLIST
EVE		MMS-EVE-2	600 x 600	 END EVENT
EVE		MMS-EVE-3	600 x 600	 EVENT AHEAD
EVE		MMS-EVE-4	1200 x 300	 EVENT IN PROGRESS
EVE		MMS-EVE-5	1200 x 600	 EVENT ON SIDE ROAD
EVE		MMS-EVE-6	600 x 600	 PEDESTRIANS
EVE		MMS-EVE-7	600 x 600	 RUNNER
EVE		MMS-EVE-9	1200 x 600	 END EVENT
EVE		MMS-EVE-10	1200 x 600	 EVENT AHEAD

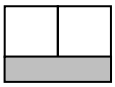
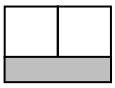
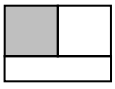
Group	REGULATORY SERIES SIGNS Sign	Main Roads Sign Number	Panel Size (mm)	SIGN APPLICATION AND DESCRIPTION
				1. Sign panels must only be located in the frame location as shown. 2. Left side multi-message sign shown only. 3. Multi-message signs located on both sides of the roadway must form a mirrored image of the signs being displayed. 4. For sign specification go to www.mainroads.wa.gov.au >Technical & Commercial > Technical Library > Signs Index > Multi Message Signs Standards 5. For multi-message signs frame refer to Main Roads standard drawing 201031-0155.
REG		MMS-REG-1(40)	600 x 600	 40 km/h SPEED SIGN
REG		MMS-REG-1(50)	600 x 600	 50 km/h SPEED SIGN • Must only be used to terminate a temporary speed zone.
REG		MMS-REG-1(60)	600 x 600	 60 km/h SPEED SIGN
REG		MMS-REG-1(70)	600 x 600	 70 km/h SPEED SIGN • Must only be used to terminate a temporary speed zone.
REG		MMS-REG-1(80)	600 x 600	 80 km/h SPEED SIGN
REG		MMS-REG-1(90)	600 x 600	 90 km/h SPEED SIGN • Must only be used to terminate a temporary speed zone.
REG		MMS-REG-1(100)	600 x 600	 100 km/h SPEED SIGN • Must only be used to terminate a temporary speed zone.
REG		MMS-REG-1(110)	600 x 600	 110 km/h SPEED SIGN • Must only be used to terminate a temporary speed zone.

REG		MMS-REG-2(40)	600 x 600		END 40 km/h SYMBOLIC • Must only be used to terminate a temporary speed zone on a road that had not been speed zoned, or on a mobile convoy
REG		MMS-REG-2(60)	600 x 600		END 60 km/h SYMBOLIC • Must only be used to terminate a temporary speed zone on a road that had not been speed zoned or on a mobile convoy.
REG		MMS-REG-2(80)	600 x 600		END 80 km/h SYMBOLIC • Must only be used to terminate a temporary speed zone on a road that had not been speed zoned or on a mobile convoy.
REG		MMS-REG-3	600 x 600		NO ENTRY SYMBOLIC
REG		MMS-REG-4(L)	600 x 600		NO LEFT TURN SYMBOLIC
REG		MMS-REG-4(R)	600 x 600		NO RIGHT TURN SYMBOLIC
REG		MMS-REG-5	600 x 600		NO OVERTAKING OR PASSING
REG		MMS-REG-6(L)	600 x 600		LEFT ONLY
REG		MMS-REG-6(R)	600 x 600		RIGHT ONLY
REG		MMS-REG-7	600 x 600		SHARED PATH

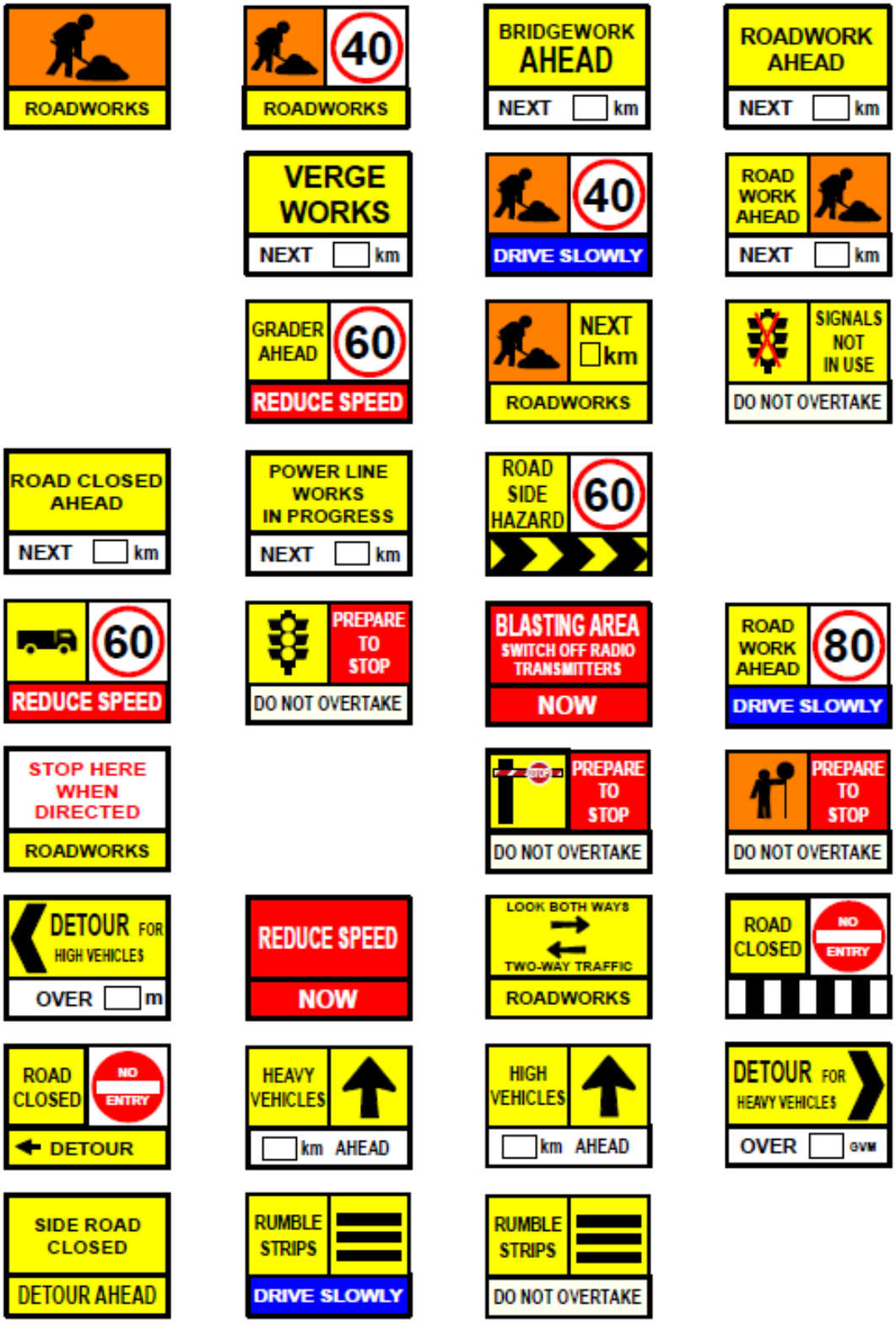
REG	BUSES EXCEPTED	MMS-REG-8	1200 x 300		BUSES EXCEPTED
REG	BICYCLES EXCEPTED	MMS-REG-9	1200 x 300		BICYCLES EXCEPTED
REG	AUTHORISED VEHICLES EXCEPTED	MMS-REG-10	600 x 600		AUTHORISED VEHICLES EXCEPTED
REG	BUSES AND TAXIS EXCEPTED	MMS-REG-11	600 x 600		BUSES AND TAXIS EXCEPTED
REG	BUSES AND BICYCLES EXCEPTED	MMS-REG-12	600 x 600		BUSES AND BICYLCES EXCEPTED
REG	AT STREET NAME	MMS-REG-13	600 x 600		AT STREET NAME
REG	LANE CLOSED	MMS-REG-14	600 x 600		BICYCLE LANE CLOSED (SYMBOLIC)
REG	STOP HERE ON RED SIGNAL	MMS-REG-15	1200 x 600		STOP HERE ON RED SIGNAL

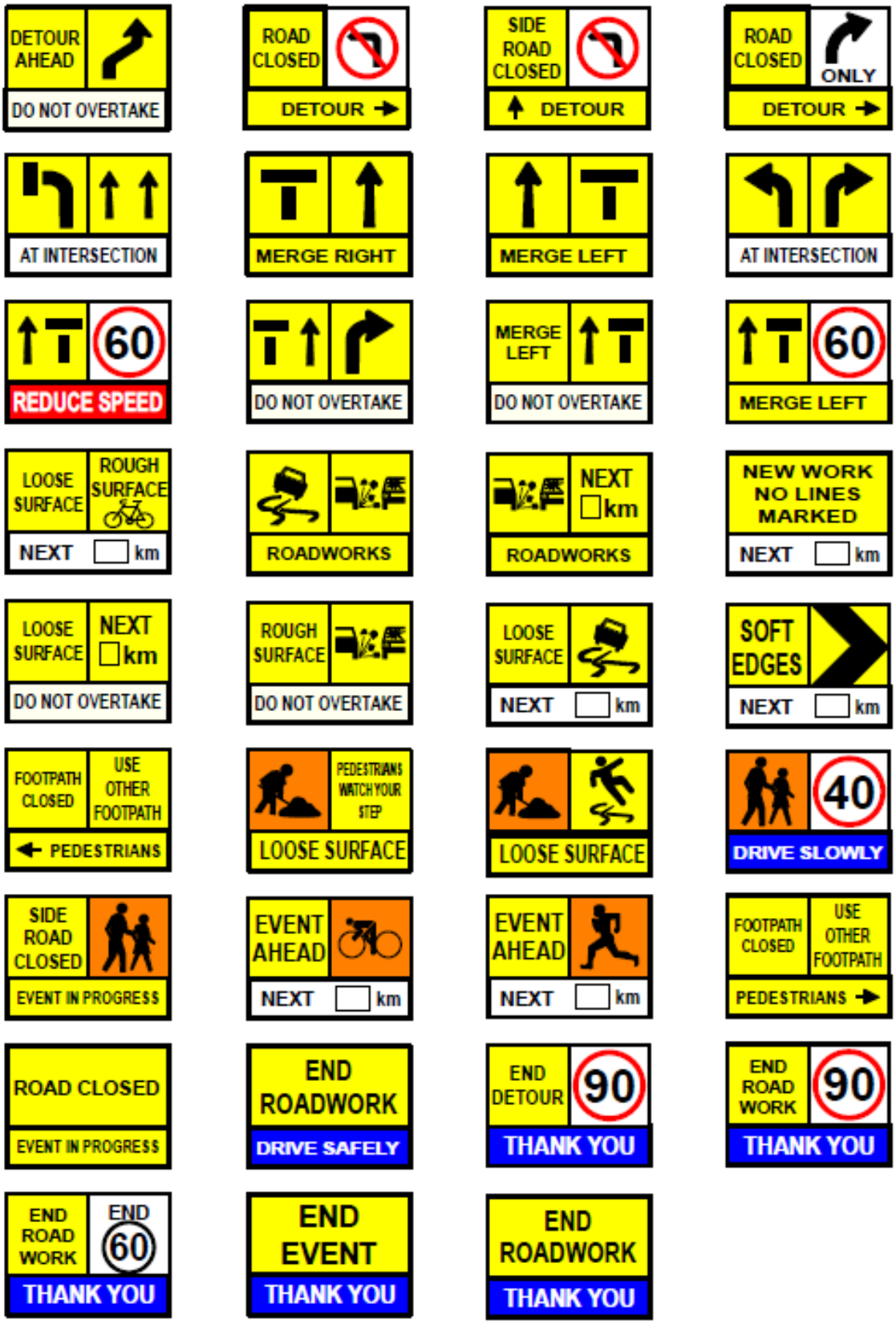
Group	INCIDENT, FIRE AND EMERGENCY SERIES SIGNS			SIGN APPLICATION AND DESCRIPTION
	Sign	**Main Roads Sign Number**	**Panel Size (mm)**	6. Sign panels must only be located in the frame location as shown. 7. Left side multi-message sign shown only. 8. Multi-message signs located on both sides of the roadway must form a mirrored image of the signs being displayed. 9. For sign specification go to www.mainroads.wa.gov.au >Technical & Commercial > Technical Library > Signs Index > Multi Message Signs Standards 10. For multi-message signs frame refer to Main Roads standard drawing 201031-0155.
		MMS-ADV-61	600 x 600	 BUSHFIRE SYMBOLIC
		MMS-ADV-62	600 x 600	 WATER OVER ROAD SYMBOLIC
		MMS-ADV-63	600 x 600	 CRASH SYMBOLIC
		MMS-ADV-64	600 x 600	 HAZARDOUS MATERIAL SYMBOLIC
		MMS-ADV-65	600 x 600	 BUSH FIRE
		MMS-ADV-66	600 x 600	 ROAD FLOODED
		MMS-ADV-67	600 x 600	 ROAD CRASH

		MMS-ADV-68	600 x 600		HAZARDOUS MATERIAL
		MMS-ADV-69	1200 x 300		EMERGENCY AHEAD
		MMS-ADV-70	600 x 600		POLICE CONTROL
		MMS-ADV-71	1200 x 300		POLICE CONTROL AHEAD
		MMS-ADV-73	600 x 600		BURNING OFF
		MMS-ADV-74	1200 x 300		BURNING OFF
		MMS-ADV-75	600 x 600		HEADLIGHTS ON
		MMS-ADV-76	1200 x 300		BUSH FIRE
		MMS-ADV-77	600 x 600		SMOKE HAZARD
		MMS-ADV-78	1200 x 300		SMOKE HAZARD

Group	MISCELLANEOUS SIGNS			SIGN APPLICATION AND DESCRIPTION
	Sign	**Main Roads Sign Number**	**Panel Size (mm)**	1. Sign panels must only be located in the frame location as shown. 2. Left side multi-message sign shown only. 3. Multi-message signs located on both sides of the roadway must form a mirrored image of the signs being displayed. 4. For sign specification go to www.mainroads.wa.gov.au >Technical & Commercial > Technical Library > Signs Index > Multi Message Signs Standards 5. For multi-message signs frame refer to Main Roads standard drawing 201031-0155.
		N/A	1200 x 300	 BLANK - BLACK • May be used in lieu of 'THANK YOU', 'DRIVE SLOWLY' and/or 'DRIVE SAFELY' to reduce redundant messages.
		N/A	1200 x 300	 BLANK - YELLOW • Must be retroreflective
		N/A	600 x 600	 BLANK - YELLOW • Must be retroreflective

Multi-Message Sign Combination Examples (not all combinations shown)
For sign specification go to www.mainroads.wa.gov.au >Technical & Commercial > Technical Library > Signs Index > Multi Message Signs Standards




DETOUR AHEAD
DO NOT OVERTAKE
ROAD CLOSED
DETOUR
SIDE ROAD CLOSED
DETOUR
ROAD CLOSED
ONLY
DETOUR
AT INTERSECTION
MERGE RIGHT
MERGE LEFT
AT INTERSECTION
60
REDUCE SPEED
DO NOT OVERTAKE
MERGE LEFT
DO NOT OVERTAKE
60
MERGE LEFT
LOOSE SURFACE
ROUGH SURFACE
NEXT km
ROADWORKS
NEXT km
ROADWORKS
NEW WORK NO LINES MARKED
NEXT km
LOOSE SURFACE
NEXT km
DO NOT OVERTAKE
ROUGH SURFACE
DO NOT OVERTAKE
LOOSE SURFACE
NEXT km
SOFT EDGES
NEXT km
FOOTPATH CLOSED
USE OTHER FOOTPATH
PEDESTRIANS
PEDESTRIANS WATCH YOUR STEP
LOOSE SURFACE
LOOSE SURFACE
40
DRIVE SLOWLY
SIDE ROAD CLOSED
EVENT IN PROGRESS
EVENT AHEAD
NEXT km
EVENT AHEAD
NEXT km
FOOTPATH CLOSED
USE OTHER FOOTPATH
PEDESTRIANS
ROAD CLOSED
EVENT IN PROGRESS
END ROADWORK
DRIVE SAFELY
END DETOUR
90
THANK YOU
END ROAD WORK
90
THANK YOU
END ROAD WORK
END
60
THANK YOU
END EVENT
THANK YOU
END ROADWORK
THANK YOU

APPENDIX 6

TMA Deployment Example Diagrams

Diagram 1: Static Works - TMA Deployment in Emergency Lane or Verge
Multilane one way carriageway

The TMA, works vehicles or works personnel shall not intrude trafficked lanes.
Diagram does not include all required signs and devices (e.g. speed reduction)

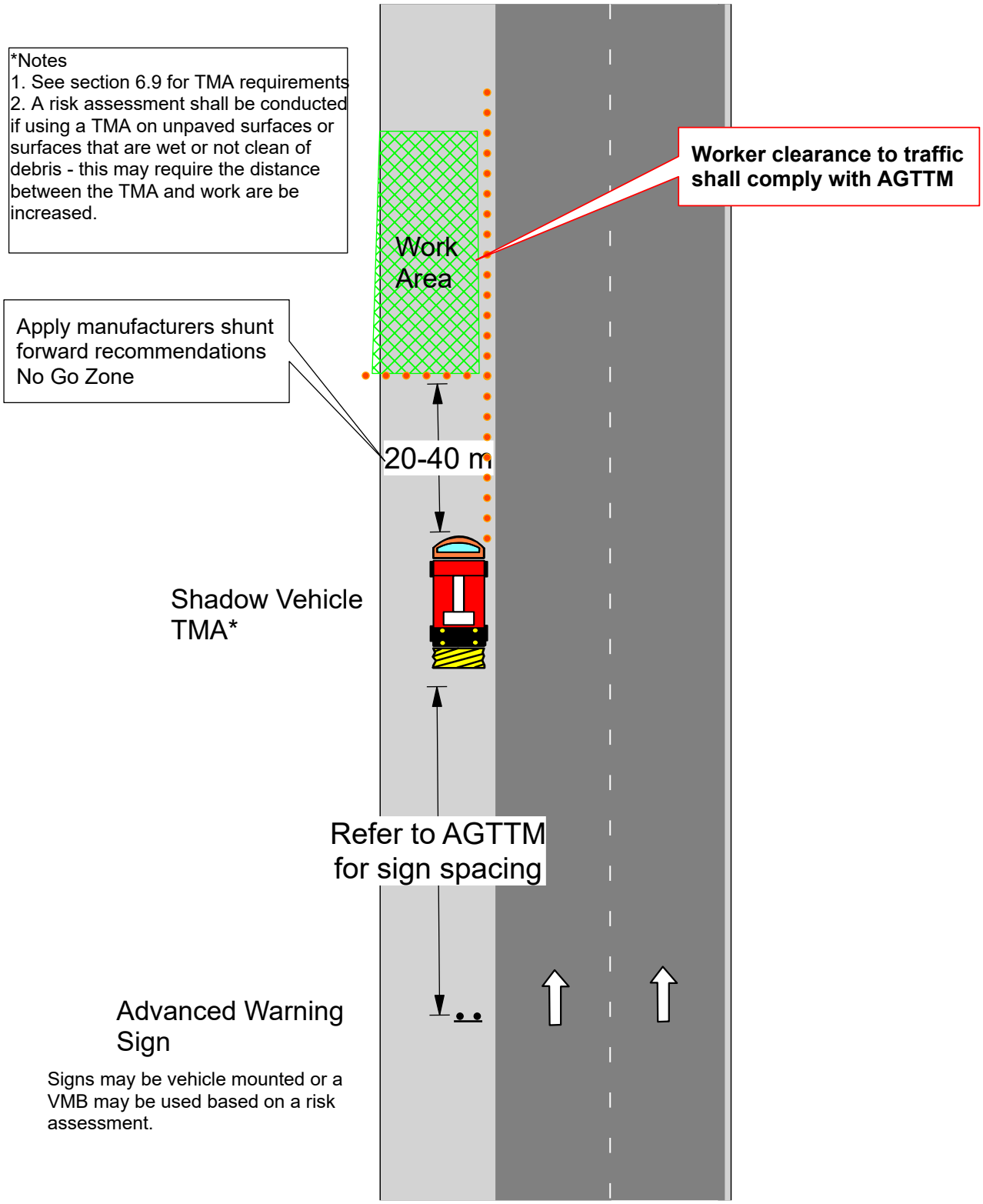


Diagram 2: Static Works -TMA Deployment in Shoulder or Verge Two lane two way road

The TMA, works vehicles or works personnel shall not intrude trafficked lanes.
Diagram does not include all required signs and devices (e.g. speed reduction)

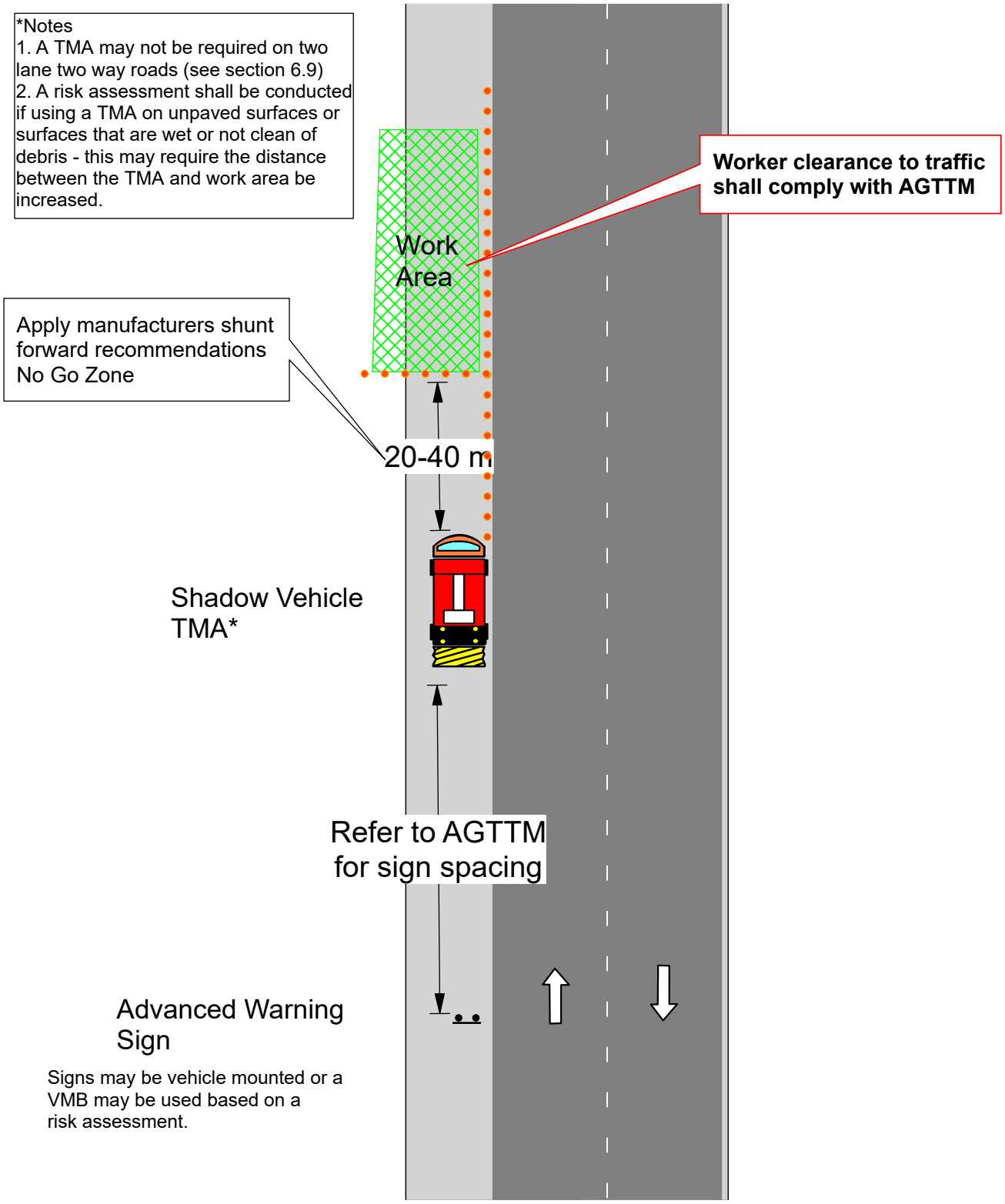


Diagram 3: Static Works - TMA Deployment in Traffic Lane Single lane closure (not Freeway)

Diagram does not include all required signs and devices (e.g. speed reduction, merge taper, etc.)

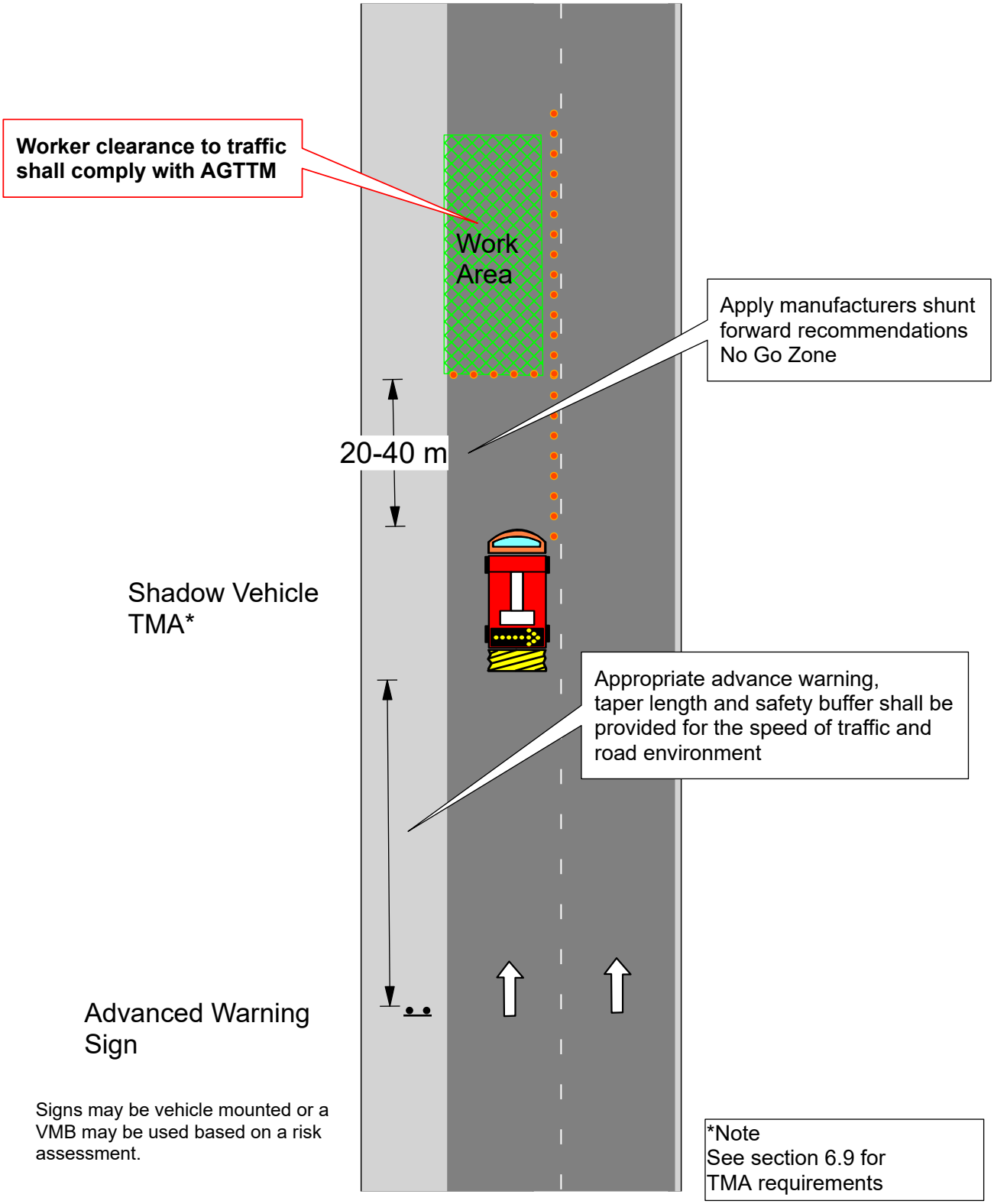


Diagram 4: Static Works - TMA Deployment in Traffic Lanes
Two lane closure

Diagram does not include all required signs and devices (e.g. speed reduction, merge taper, etc.)

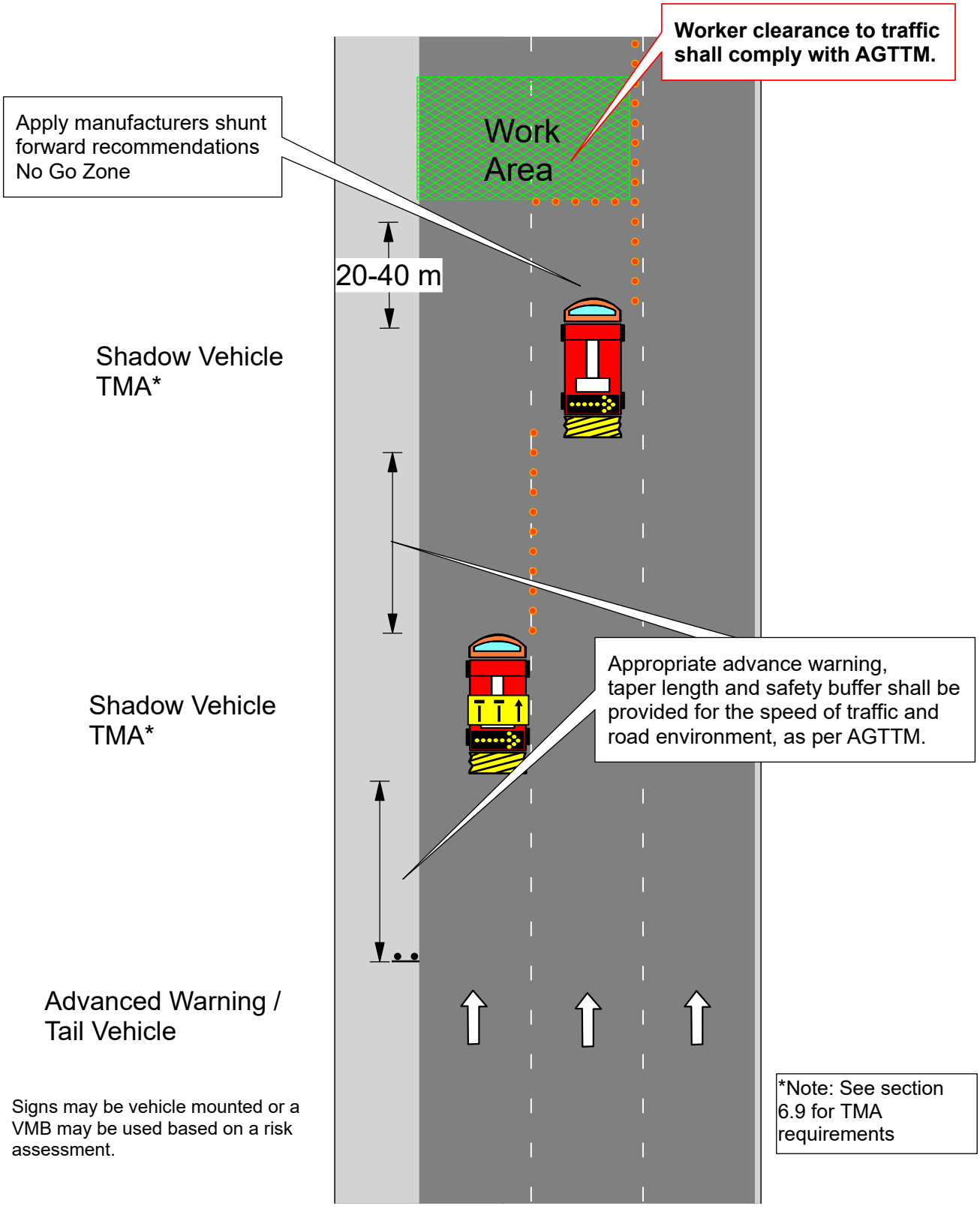


Diagram 5: Static Works - TMA Deployment in Traffic Lane with Blocker Vehicle
Single lane closure on Freeway

A blocker vehicle shall be used when closing a single lane to help prevent road users from cutting down the off-road side of the TMA and entering the worksite.
Diagram does not include all required signs and devices (e.g. speed reductions, merge taper, etc.)

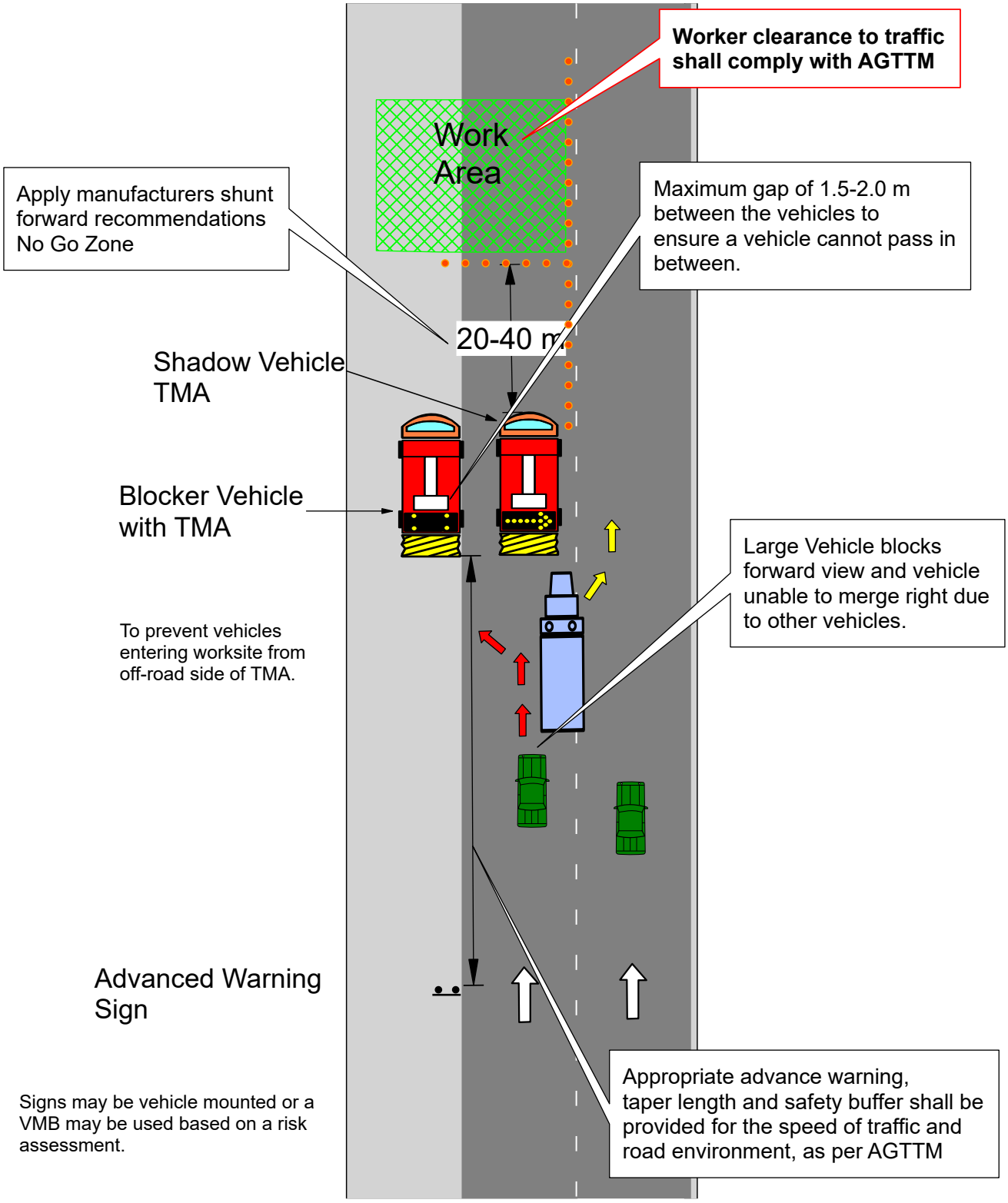


Diagram 6: Static Works - TMA Deployment in Traffic Lanes
Three lane closure on Freeway

Diagram does not include all required signs and devices (e.g. speed reduction, merge taper, etc.)

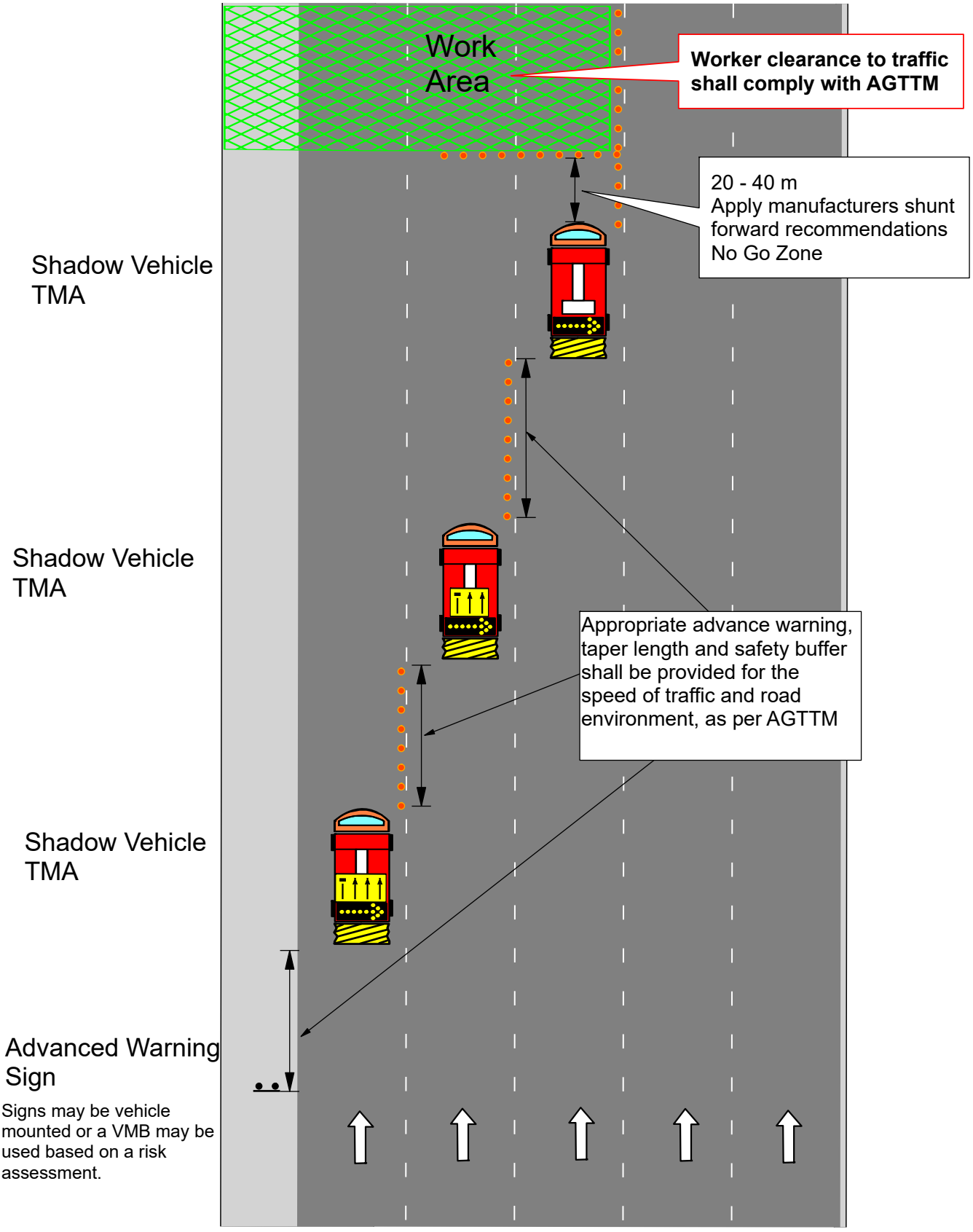
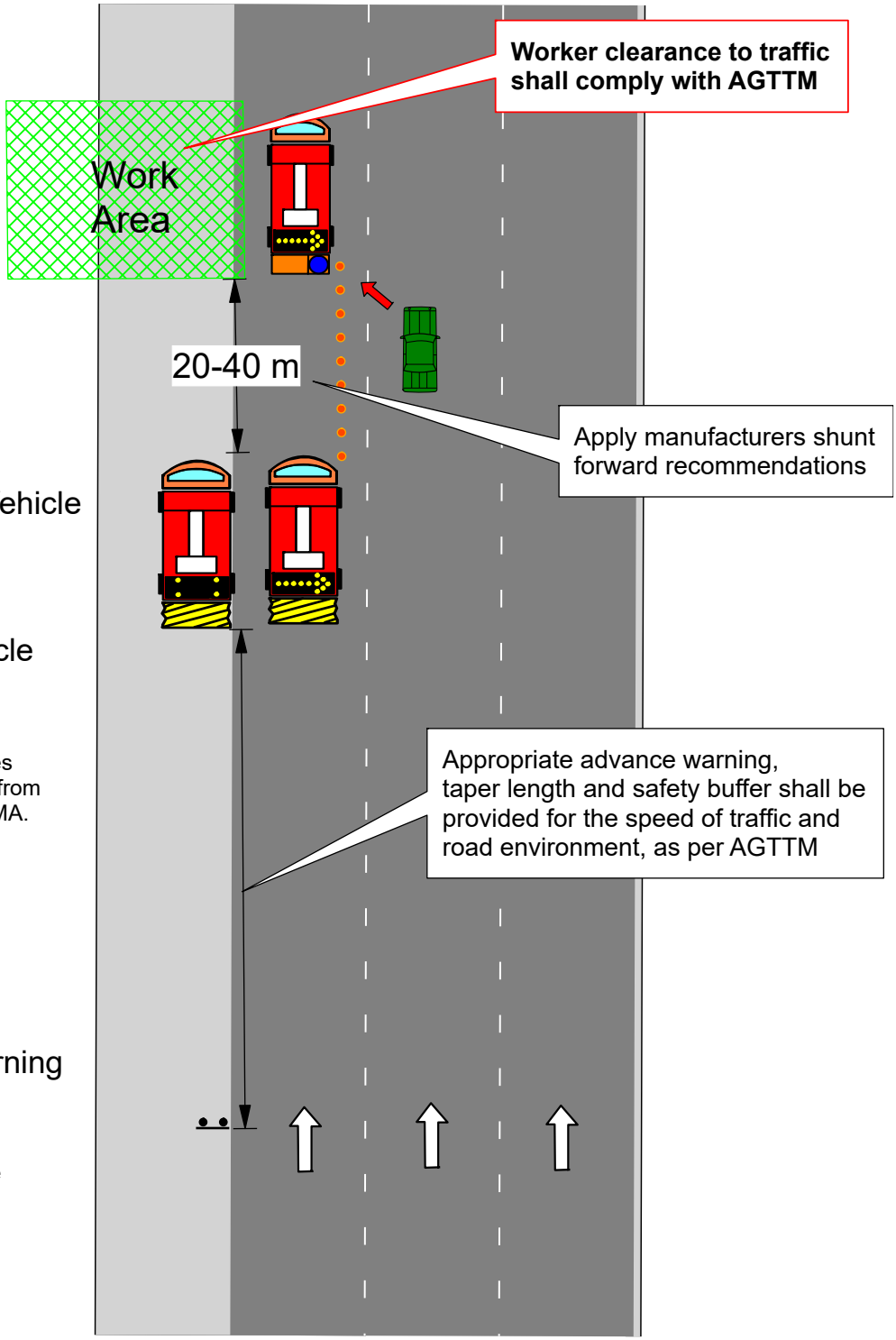


Diagram 7: Static Works -TMA Deployment in Traffic Lane with Second Blocker Vehicle - Freeway

In addition to the blocker vehicle used to help prevent road users from cutting down the off-road side of the TMA an additional vehicle may be used to prevent errant vehicles entering from the road side.
Diagram does not include all required signs and devices (e.g. speed reductions, merge taper, etc.)



END OF DOCUMENT