Information update

Temporary Traffic Management Update

March 2025

Queensland Government

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Feedback

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Contents

Temporary Traffic Management (TTM) Update

Changes in the March 2025 publication cycle

The following documents will be updated:

- *Queensland Manual of Uniform Traffic Control Devices* (Queensland MUTCD) Part 3
- *Queensland Guide to Temporary Traffic Management* (QGTTM) Parts 2, 3, 4, 5, 6, 7 and 8
- *Guideline – Traffic Management at Works on Roads* (TMWOR)
- MRTS02 *Provision for Traffic* suite, (specifically MRTS02), and
- MRTS14 *Road Furniture* suite, (specifically MRTS14).

This *TTM Update* provides advance notice of forthcoming changes and provides the TTM industry time to plan and prepare for implementation of changes when the relevant source documents are published on 31 March 2025.

- Grey text boxes are a commentary about the changes.
- Yellow highlights are used to show the changes to existing Queensland MUTCD, QGTTM, TMWOR, MRTS02 *Provision for Traffic* suite or MRTS14 *Road Furniture* suite clauses or sections.
- Unhighlighted clauses or sections indicate the whole clause or section is new information.
- Text that has a 'strikethrough' has been deleted.

This *TTM Update* provides information on changes in the Queensland MUTCD, QGTTM, TMWOR, MRTS02 *Provision for Traffic* suite and the MRTS14 *Road Furniture* suite prior to their republication on 31 March 2025 to allow industry time to prepare and plan for the upcoming changes which come into effect on 31 March 2025. This *TTM Update* supports, but does not replace, these source documents, which are issued under the *Transport Operations (Road Use Management) Act 1994* as the Queensland MUTCD and approved notices, and which take precedence over this document and advice published by Austroads or Standards Australia where Queensland exceptions are applied.

While every care has been taken in preparing this publication, the State of Queensland accepts no responsibility for decisions or actions taken as a result of any data, information, statement or advice, expressed or implied, contained within. To the best of our knowledge, the content was correct at the time of publishing. Please email TrafficEngineering.Support@tmr.qld.gov.au regarding any discrepancy identified between this document and those primary documents.

Minor and editorial style changes have not been included in this document, which should be read in conjunction with the amendment registers (once published). Amendment registers for the Queensland MUTCD, QGTTM, and Transport and Main Roads Specifications detail the clauses and sections where changes have been made and provide a brief description of the change.

Queensland MUTCD Part 3

Added a definition of ‘recommended’.

1 Scope and general

1.3 Terms and definitions

1.3.25 Recommended

New

A recommendation is the same as a ‘should’ requirement. Where the word ‘recommended’ is used, it is considered to be recommended use, but not mandatory. Any recommendation that is not applied must be based on sound traffic engineering judgement and documented.

Restructure of Clause 1.*5* Innovation, and information added into new Clauses 1.5.1 Level of service and 1.5.2 Innovative devices, treatments, and practices.

Identified the different processes and contacts for ITS and electrical devices and static devices.

See changes highlighted yellow following.

1.5 Innovation

New

Innovative treatments that provide improved safety, efficiency and/or value-for-money outcomes are encouraged. Such treatments may include:

a) planning for greater network impacts through reducing the level of service for the road user typically enables works to be undertaken in a more time- and cost-efficient manner

b) innovative deployment of devices, and/or

c) alternative device layouts using new and/or improved devices.

New or improved devices, treatments or practices require approval by the Department of Transport and Main Roads (see Clause 1.9 for guidance about variation to optimal treatments).

~~For trials of new or innovative traffic control devices, treatments or practices, a submission in accordance with the requirements of the Queensland *Manual of Uniform Traffic Control Devices* (MUTCD) Part 1 Clause 1.13 shall be submitted to TrafficEngineering.Support@tmr.qld.gov.au.~~

1.5.1 Level of service

New

For proposals that involve planning for greater network impacts through reducing the level of service for the road user, contact the relevant road owner(s) with all details and supporting information regarding the proposal. The approval of the relevant road owner(s) is required prior to implementation.

1.5.2 Innovative devices, treatments, or practices

New

For trials of new or innovative static or non-electrical traffic control devices, treatments or practices, a submission in accordance with the requirements of the Queensland *Manual of Uniform Traffic Control Devices* (MUTCD) Part 1 Clause 1.13 shall be submitted to TrafficEngineering.Support@tmr.qld.gov.au.

In addition, for new or innovative ITS or electrical products or systems, treatments or practices the *Applicant's Guide Products evaluation process for ITS, Electrical and Traffic Engineering specified and innovative products* outlines the Department of Transport and Main Roads product evaluation process for ITS, Electrical and Traffic Engineering specified and innovative field products. It is Transport and Main Roads' primary reference for manufacturers and/or suppliers (Applicants) seeking approval or acceptance of specified or innovative products for road transport infrastructure. Refer to the web page Intelligent transport systems and electrical (Department of Transport and Main Roads) for further details.

Defined the person responsible (TMD) for forwarding details of any mandatory requirements which are not adopted to TrafficEngineering.Support@tmr.qld.gov.au.

See changes highlighted yellow following.

1.9 Variation to treatments and Registered Professional Engineer of Queensland certification

New

This Part of the *Manual* contains mandatory requirements (*shall*), recommendations (*should*) and options (*may*). 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 in preparing a TMP or TGS, a risk assessment, in accordance with the QGTTM shall be undertaken by a TMD.

b) Where mandatory requirements (*shall*) are not adopted in preparing a TMP or TGS, a risk assessment, in accordance with the QGTTM, shall be undertaken by a TMD.

   Both the risk assessment and the TMP or TGS shall be certified by a Registered Professional Engineer of Queensland (RPEQ) with at least a TMD competency.

   Where mandatory requirements (shall) are not adopted, the TMD preparing the TMP or TGS shall email ~~N~~notifications of variations to mandatory requirements (including all relevant information and RPEQ details) ~~shall be emailed~~ to TrafficEngineering.Support@tmr.qld.gov.au for information purposes and for the benefit of identifying potential future practice changes – not for approval or endorsement. These variations may include learnings that may be attributed to the variation of a *shall* requirement, such as operational, cost or safety impacts.

c) Where innovative treatments (see Clause 1.5) that are outside the scope of the Queensland MUTCD are proposed to be adopted in a TMP or TGS, a risk assessment, in accordance with the QGTTM, shall be undertaken by a Competent Person with at least TMD competency. Both the risk assessment and the TMP or TGS shall be certified by an RPEQ who may be required to hold TMD competency.

   All proposed innovative treatments require approval by Transport and Main Roads prior to their use or adoption. Requests for approval of innovative treatments (including all relevant information) shall be emailed to TrafficEngineering.Support@tmr.qld.gov.au. As part of an approval to use or trial an innovative treatment, Transport and Main Roads may require that the applicant provides a detailed evaluation report on the performance and effectiveness of the treatment. Transport and Main Roads may use the results of the evaluation to identify potential future practice changes to this Part of the *Manual*.

d) The use of options (*may*), when adopted in preparing a TMP or TGS, are not a variation to the optimal treatment and do not require certification by an RPEQ.

Very few roadworks sites should fall within scope of the RPEQ requirement in addition to subclauses (b) and (c). Examples include TMPs or TGSs which involve complex geometric changes that require the application of engineering design principles or complex diversions that might require detailed analysis (such as micro-simulation traffic modelling) to establish the network impacts.

Risk assessments for TTM activities shall be prepared in accordance with the requirements in QGTTM Part 10 Section 2 *Risk Management for TTM*.

Added item i) for the Speed Limit AHEAD and END speed limit MMS panels.

Clarified that requirements in b) for a single regulatory panel do not apply to additional regulatory panels which relate to, condition, or otherwise the regulatory panel and combine to form the one regulatory message.

Added U-turn message to text regarding the use of the DETOUR panel.

See changes highlighted yellow following.

4 Function, description and use of standard signs and devices

4.2 Selection and use

4.2.2 Multi-message signs

Addition

g) There shall be no more than one blank retroreflective yellow panel used in a multi-message sign.

h) Where multi-message signs are used and a sign is required at the same location for both directions of travel, the following options may be applied:

i. use two separate multi-message sign assemblies, placed back-to-back to face opposing directions of traffic, or

ii. if orientation and sight lines to opposing directions of traffic can be achieved, the one multi-message assembly may be used with the panels installed back-to-back on the one frame.

i) When used, the Speed Limit AHEAD and the END speed limit panels in MMS arrangements shall be placed in the top position of the frame on the side closest to the traffic.

Addition

The requirements in b) for a single regulatory sign panel do not apply to additional regulatory supplementary panels relating to and conditioning or otherwise the regulatory sign panel and which combine to form a single regulatory message.

Addition

The requirements in c) for regulatory sign panels do not apply to No Left (RM2-6A-L) or No Right (RM2-6A-R) Turn prohibition panels, with these panels installed on the side of the multi-message assembly where the turn prohibition applies (see examples in Figure 4.2.2(a) following).

Figure 4.2.2(a) – Example multi-message signs with No Left / No Right Turn prohibition panels

Addition

The requirements in d) for text-only multi-message panels do not apply to the following arrangements:

i. multi-message signs installed in accordance with section 46 of the *Transport Infrastructure Act 1994* for restricted road use notices, where, in most cases, three panels containing words are required (see examples in Figure 4.2.2(b) following)

ii. where police are performing traffic control duties and the 600 x 600 worded panels POLICE CONTROL AHEAD and PREPARE TO STOP are both required, see Figure 4.2.2(c) for examples, and

iii. where the 600 x 600 worded panels ROAD CLOSED AHEAD and LOCAL TRAFFIC ONLY are required, see Figure 4.2.2(d) for examples.

Figure 4.2.2(b) – Examples of multi-message signs in accordance with the Transport Infrastructure Act 1994.

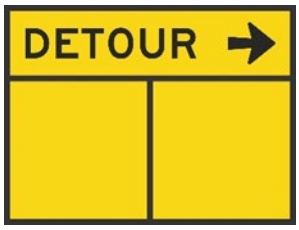
Figure 4.2.2(c) – Examples of multi-message signs for police

Figure 4.2.2(d) – Examples of multi-message signs for road closures

Addition

The requirements in a) and g) do not apply when using the 1200 x 300 multi-message panel (TM5-1B) DETOUR with a small arrow, or (TM5-1Q01) DETOUR with U-Turn symbol and there are no relevant messages that may be added to this assembly. In this case, a single TM5-1B or TM5-1-Q01 panel may be used as the top panel in a multi-message frame with two blanks (see example in Figure 4.2.2(e) following).

Figure 4.2.2(e) – Example of TM5-1B with two blanks



Added TM10-1A may be used with or without the ON SIDE ROAD message to indicate a direction where the long arrow TM5-8B is not suitable.

Clarified when the ROADWORK ON SIDE ROAD message may be used.

See changes highlighted yellow following.

4.6 Signs and devices for work site approaches and departures

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

Difference

Replace:

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

with:

> The ROADWORK ON SIDE ROAD sign shall not be used on a side road to warn of relevant activities on the through road. The ROAD WORK AHEAD (TM1-1A or TM1-1C) with a direction arrow (TM5-8B) should be used instead.
>
> The standard MMS Lane Status panel TM10-1A may be used with or without the ON SIDE ROAD message to indicate a direction where the long arrow TM5-8B is not suitable.

Addition

The ROADWORK ON SIDE road sign shall not be used where there is an impact for traffic on the through road. Impacts on the through road may include but not be limited to any need for reduced speed zones, additional delineation, changes to alignment or surface condition, use of traffic control or traffic queueing which extends onto the through road. Where there are impacts on the through road, the ROADWORK AHEAD sign (see Clause 4.6.2) should be used.

Added reference to new Clause 4.6.11.

See changes highlighted yellow following.

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

Difference

Replace:

> The END ROADWORK sign shall be used whenever there is a ROADWORK AHEAD or ROADWORK NEXT X km sign is used on the approach to the work site.

with:

> The END ROADWORK sign shall be used whenever there is a ROADWORK AHEAD or ROADWORK NEXT X km sign is used on the approach to the work site, except where the requirements of Clause 4.6.11 would be applicable.

Addition

The END ROADWORK sign shall be used whenever a BRIDGEWORK AHEAD or BRIDGEWORK NEXT X km sign is used on the approach to the roadworks site.

The END ROADWORK sign may be used whenever a ROAD PLANT AHEAD or GRADER AHEAD, (with or without a NEXT X km sign) is used on the approach to the roadworks site.

Added new Clause to outline with example figures the various requirements for advance warning signs (ROADWORK AHEAD, ROADWORK ON SIDE ROAD) and termination signs (END ROADWORK) for works on a “No Through Road” or “Cul-de-sac” or located partly or wholly on through or side roads.

See changes highlighted yellow following.

4.6.11 ROADWORK AHEAD, ROADWORK ON SIDE ROAD, and END ROADWORK signs

New

This clause will outline with examples, the various requirements for advance warning signs (ROADWORK AHEAD, ROADWORK ON SIDE ROAD) and termination signs (END ROADWORK) for works on a ‘No Through Road’ or ‘Cul-de-sac’ or located partly or wholly on through or side roads.

This clause does not vary or alter the requirements or options in Clause 4.6.2 for when a ROADWORKS AHEAD or ROADWORKS X km AHEAD sign shall be or may be used. It also does not vary or alter the requirements in Clause 4.6.7 for the use of the ROADWORKS ON SIDE ROAD signs.

In accordance with the technical requirements, roads may require ROADWORK AHEAD signs or other signs warning of the works on another road, however this does not automatically mean that the END ROADWORK signs are required for traffic in the opposing direction. This clause will identify those locations or situations where the END ROADWORK sign may not be required.

Where roadworks is located on a side road with no impact on the through road the ROADWORK ON SIDE ROAD advance warning sign is used on the through road, see example Figure 4.6.11(a). The END ROADWORK sign is not required on the through road, except where the END ROADWORK sign is not able to be installed prior to the end of the side road. Where the END ROADWOK signs are not installed on the through road, the END ROADWORKS sign shall be installed on the side road prior to exiting the side road onto the through road.

Impacts on the through road from works on a side road may include but not be limited to any need for reduced speed zones, additional delineation, changes to alignment or surface condition, use of traffic control or traffic queueing which extends onto the through road.

Where roadworks is located on a side road which impact the through road, the ROADWORK AHEAD and END ROADWORK signs shall be used on both the through road and the side road, see example Figure 4.6.11(b).

Where roadworks are located on a ‘No Through Road’ or ‘Cul-de-sac’ the END ROADWORK sign may be omitted on the departure from the work area when travelling towards the terminating end of the road or cul-de-sac where there are no intersections between the end of the works and the terminating end of the road, and the end of the road or cul-de-sac is either visible from or within 500 m of the end of the work area, see example in Figure 4.6.11(c).

Where roadworks is located on a through road with no impact on a side road (located within the advance warning area), see example Figure 4.6.11(d), the ROADWORK AHEAD and END ROADWORK signs shall be installed on the through road. The ROADWORK AHEAD sign with a direction arrow shall be installed on the side road. On the side road, when departing the through road where road works are occurring via the side road (either before or after the road work area) and the road works have no impact on the side road or operation of the intersection with the side road, there is no requirement for an END ROADWORK sign on the side road, however it may be installed if desired.

Where roadworks is located on a through road which impact a side road, see example Figure 4.6.11(e), the ROADWORK AHEAD and END ROADWORK signs shall be installed on both the through road and the side road.

Figures 4.6.11(a), (b), (c), (d) and (e) are examples showing ROADWORK AHEAD and END ROADWORK signs only and do not include all traffic control devices required.

Figure 4.6.11(a) – Roadworks on a side road with no impact on the through road

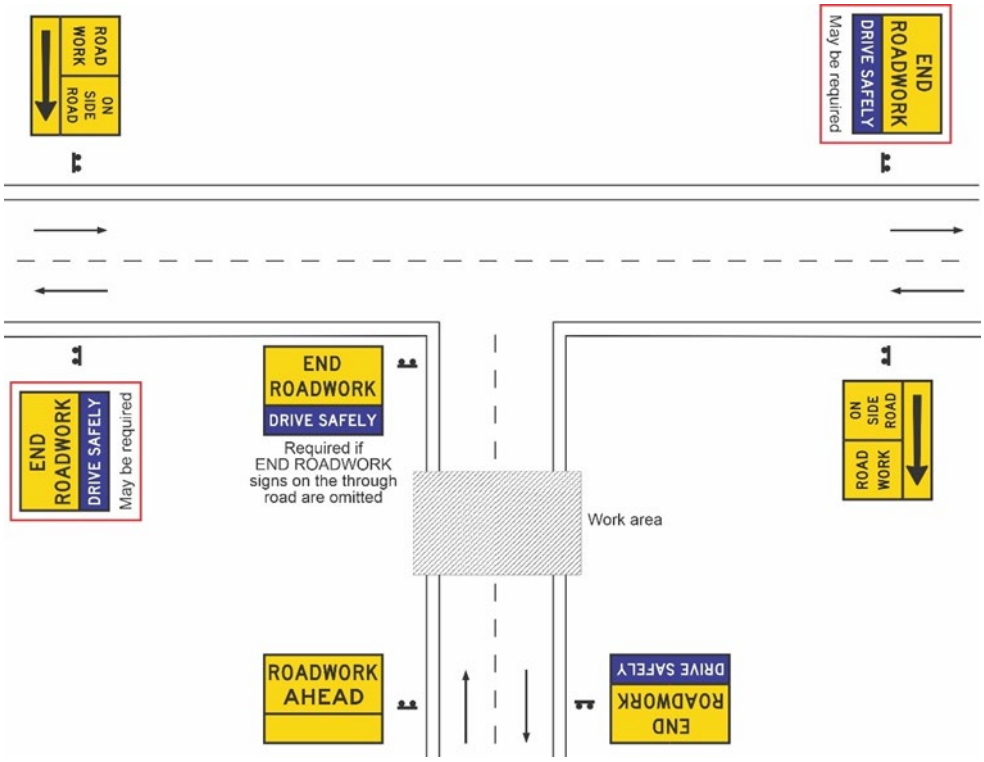


Figure 4.6.11(b) – Roadworks on a side road which has an impact on the through road

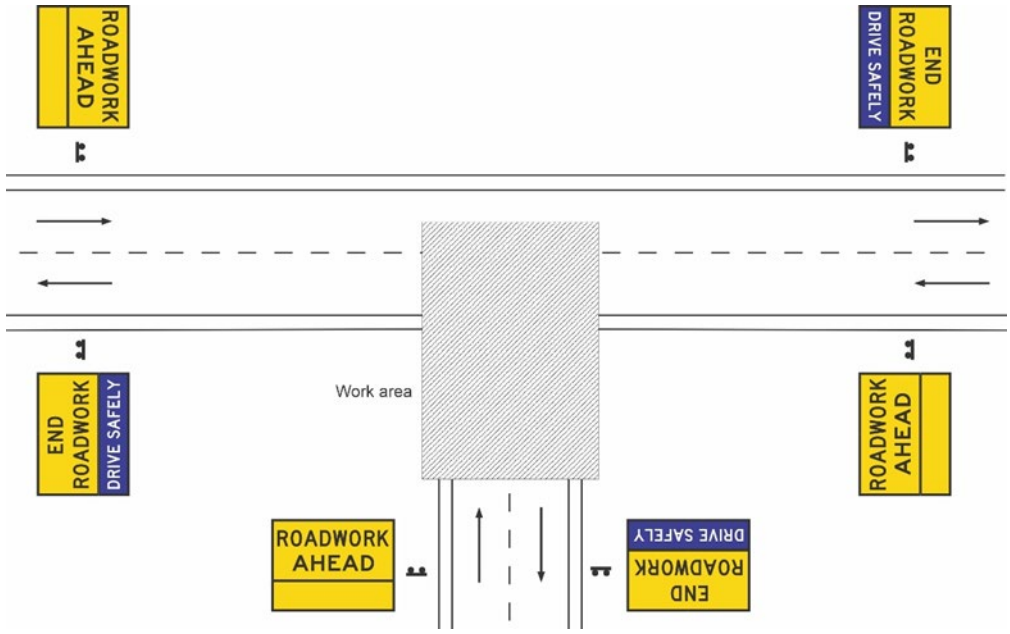


Figure 4.6.11(c) – Roadworks on a 'No Through Road' or 'Cul-de-sac'

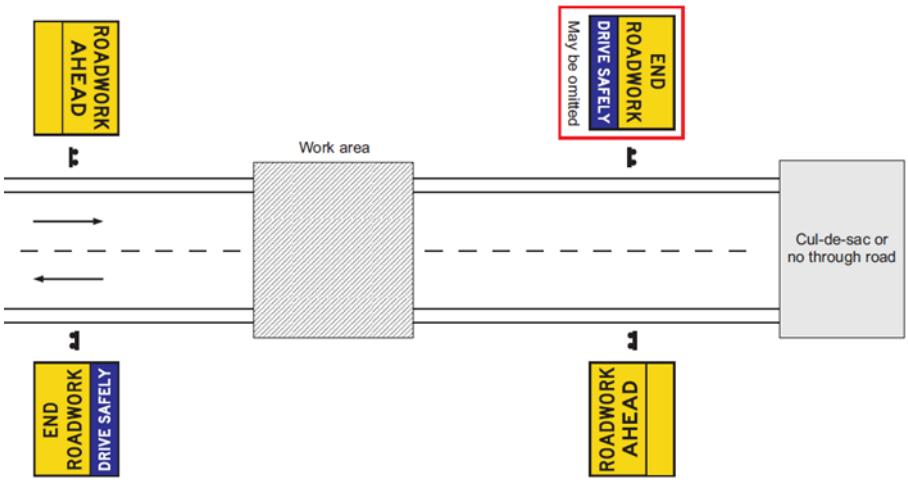


Figure 4.6.11(d) – Roadworks on a through road with no impact on the side road

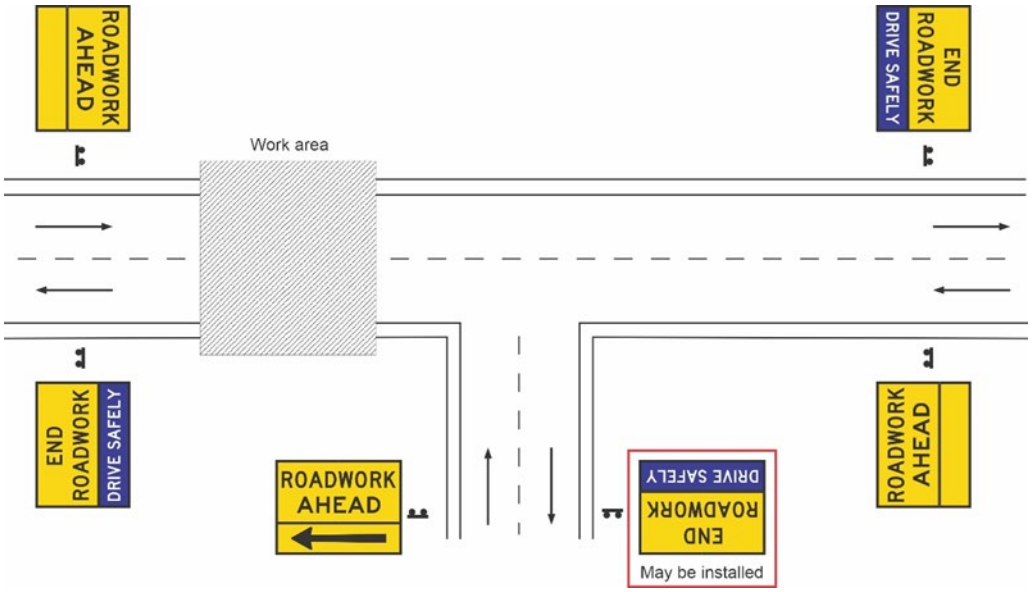
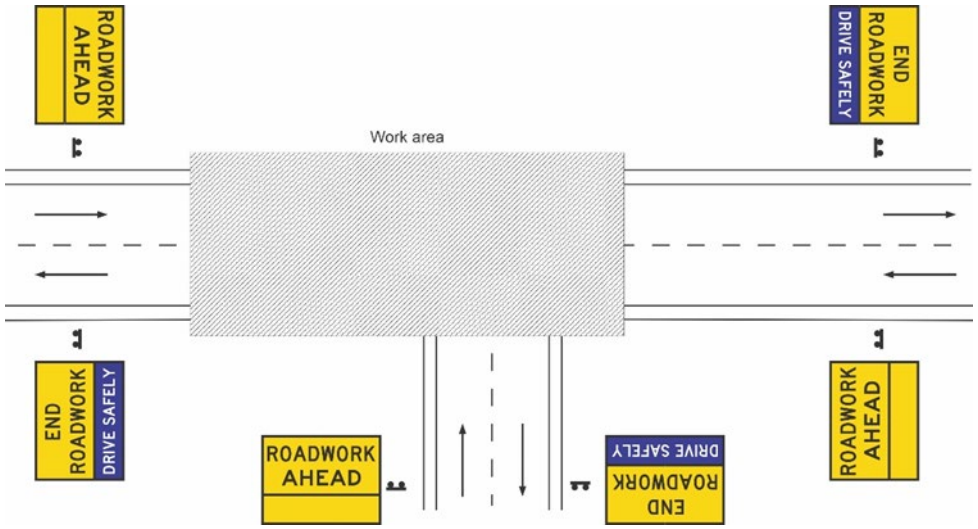


Figure 4.6.11(e) – Roadworks on a through road which has an impact on the side road



Add new MMS sign panel options panels for use in GIVE WAY traffic control arrangements.

Changed length requirement from the 'work area' to the 'length of single lane or shuttle flow segment'.

See changes highlighted yellow following.

4.7 Signs and devices for regulatory control of traffic

4.7.3 Sign control, single lane operation

Difference

Replace the GIVE WAY and ONE LANE rows in Table 4.2(B):

Sign	Sign number	Size, mm
GIVE WAY	R1-2A R1-2B RM-2A	750 ht 900 ht 600 x 600
ONE LANE	R9-9A R9-9B RM9-9A	600 x 400 750 x 500 600 x 600

with:

Sign	Sign number	Size, mm
GIVE WAY	R1-2A R1-2B RM1-2-Q01A RM1-2-Q01C	750 ht 900 ht 600 x 600 1200 x 600
ONE LANE	R9-9A R9-9B RM9-9-Q01A RM9-9-Q01B	600 x 400 750 x 500 600 x 600 1200 x 600

(a) GIVE WAY (R1-2), GIVE WAY AHEAD (W3-2, WM3-2), ONE LANE (R9-9)

Difference

Replace dot points (i) and (iii):

(i) the traffic volume is 150 vpd or less and the traffic speed (see Clause 1.3.16) is 70 km/h or less;

(iii) the work area is less than 100 m in length; and

with

(i) the traffic volume is 150 vph or less and the traffic speed (see Clause 1.3.16) is 70 km/h or less;

(iii) the single lane or shuttle flow segment is less than 120 m in length; and

Addition

Add the following GIVE WAY and ONE LANE sign options.

RM1-2-Q01A

RM1-2-Q01C

RM9-9-Q01A

RM9-9-Q01B

Added a new option for a C size (1200 x 600) Speed Restriction MMS panel.

Added information about the speed limit which would apply after an END Speed Limit sign is used in Queensland.

4.7.6 Temporary speed limits

Difference

Replace the Speed Restriction row in Table 4.2(E):

Sign	Sign number	Size, mm
Speed Restriction	R4-1A R4-1B R4-1C R4-1D RM4-1A	450 x 600 600 x 800 900 x 1200 1200 x 1600 600 x 600

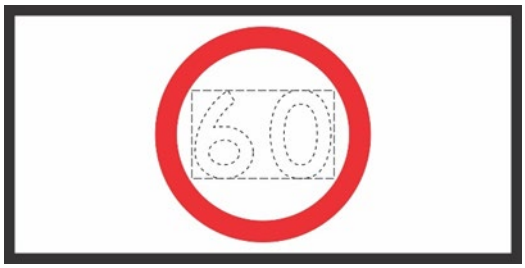
with:

Sign	Sign number	Size, mm
Speed Restriction	R4-1A R4-1B R4-1C R4-1D RM4-1A RM4-1-Q01	450 x 600 600 x 800 900 x 1200 1200 x 1600 600 x 600 1200 x 600

(a) Speed Restriction (R4-1, RM4-1)

Addition

Add the following Speed Restriction sign option.



RM4-1-Q01

(c) END Speed Limit (R4-12, RM4-12)

Addition

In Queensland where an END Speed Limit is used, the speed limit which applies following this sign is the default speed limit applicable for that road environment of either an open rural road of 100 km/h or a built-up area of 50 km/h.

Added signs for detours which include a U-turn movement.

4.8 Detour signs

4.8.3 DETOUR (T5-1, TM5-1)

Addition

Add the following rows to Table 4.3(C):

Sign	Sign number	Size, mm
DETOUR (U-Turn)	TM5-1-Q01	DETOUR (U-Turn)
Detour (U-Turn) Symbolic	TM5-1-Q02	600 x 600
U-TURN FACILITY AHEAD	TM5-1-Q03	600 x 600

Addition

For detour routes that include a U-turn requirement, the DETOUR U-turn (TM5-1-Q01), Detour U-turn (symbolic) (TM5-1-Q02), or the U-TURN FACILITY AHEAD (TM5-1-Q03) signs may be used.

The Detour U-turn (symbolic) (TM5-1-Q02) panel shall be used with a DETOUR panel (TM5-7A or TM5-7B).

TM5-1-Q01

TM5-1-Q02

TM5-1-Q03

Added information to replace the entire Clause 4.14.1 from AS 1742.3.

Converted the various arrangements of VMWDs into a Table.

See changes highlighted yellow following.

4.14 Vehicle mounted signs and devices

4.14.1 Vehicle mounted warning device

Difference

~~Replace:~~

~~(a) A single flashing yellow lamp for emergency or other infrequent use on a vehicle not normally used for roadworks purposes, or for use on a plant item working within a static work area, or an inspection vehicle.~~

~~(b) A pair of flashing yellow lamps for use on vehicles (e.g. patrol trucks) working on roads with traffic volumes up to 1500 vpd, and positioned on the vehicle so that at least one, and preferably both lamps are visible from any direction.~~

~~with:~~

~~(a) A single flashing yellow lamp or LED light assembly~~

~~– for emergency or other infrequent use on a vehicle not normally used for either roadworks or inspection purposes.~~

~~– for use on a plant item working within a static work area.~~

~~(b) A pair of separated flashing yellow lamps or LED light assemblies (placed as far apart as practical) for use on vehicles on all roads without the protection of a static roadworks site, and positioned on the vehicle so that at least one, and preferably both lamps are visible to all road users from any direction. Additional flashing yellow lamp(s) or LED assemblies may be required to be added on the vehicle to ensure visibility is provided to all road users in any direction.~~

~~*Addition*~~

~~If not specified elsewhere, the minimum sight distance from approaching road users to the vehicle mounted warning device shall be:~~

- ~~150 m if the speed is 60 km/h or less~~
- ~~250 m if the speed is more than 60 km/h.~~

Replace entire Clause 4.14.1 with the following:

A vehicle mounted warning device shall consist of one of the following arrangements in Table 4.14.1.

Table 4.14.1 – Vehicle mounted warning devices

Arrangement	Vehicle Mounted Warning Device (VMWD)	Use conditions / requirements
1	A single flashing yellow lamp or LED light assembly	• For emergency or other infrequent use on a vehicle not normally used for either roadworks or inspection purposes. • For use on a plant item working within a static work area.
2	A pair of flashing yellow lamps or LED light assemblies (placed as far apart as practical)	• For use on vehicles on all roads without the protection of a static roadworks site. • Positioned on the vehicle so that at least one, and preferably both lamps are visible to all road users from any direction. • Additional flashing yellow lamp(s) or LED assemblies may be required to be added on the vehicle to ensure visibility is provided to all road users in any direction.
3	An illuminated flashing arrow sign (see MUTCD Part 3 Clause 4.14.2)	• For any situation where option 1 or 2 is not appropriate. • May be used for any type of work (including mobile works). • May be used in combination with options 1 or 2. • If required, supplementary signs (static or variable message signs) are mounted in conjunction or elsewhere in a prominent position on the vehicle. • The illuminated flashing arrow sign must be capable of being removed from view (e.g. covering, folding down, or turning off) when not needed.

The vehicle-mounted warning device shall be mounted as high as practicable on the vehicle for best visibility to other traffic, e.g. on top of the cab of a truck. It may need to be placed near the rear of the vehicle if a cab-mounted sign could be obscured by a load. Supplementary signs used in conjunction with the illuminated flashing arrow sign (see Clause 4.14.3), may be mounted either in conjunction with that sign or elsewhere in a prominent position on the vehicle.

Where signs are mounted on the device or elsewhere on a vehicle, they shall be capable of being removed from view (e.g. by covering, folding, or turning off) when not needed.

If not specified elsewhere, the minimum sight distance from approaching road users to the vehicle mounted warning device shall be:

- 150 m if the speed is 60 km/h or less
- 250 m if the speed is more than 60 km/h.

While the requirements in this document apply once published

Transport and Main Roads recognises that making immediate changes to flashing lamps on inspection vehicles may require a greater lead in time to ensure compliance.

In recognition of this, inspection vehicles (other than those used for emergency or other infrequent use) shall comply with the requirements in item (b) by the 31st July 2027.

Table A.1

Added DO NOT OVERTAKE (GM9-90B) and additional notes relating to the use of this MMS panel. The DO NOT OVERTAKE panel shall only be used where overtaking is or was possible (or may be attempted), however due to a change in conditions overtaking is no longer possible or considered safe and is to be prohibited.

Added the horizontal arrow (TM5-8B) and additional notes relating to the use of this MMS panel. Add notes to TM5-8B (long arrow panel) that it may be used with other relevant panels (excluding regulatory panels) to indicate a direction where the warning applies. When used on a through road it should be used with an ON SIDE ROAD message, however when used on a side road to warn of activities on a through road the ON SIDE ROAD message shall not be used.

Added notes to the use of the ON SIDE ROAD panel and corrected the 600 x 600 arrow sign reference number.

Table A.2

Added new GIVE WAY (RM1-2-Q01A and RM1-2-Q01C) sign options for MMS panels.

Added new 1200 x 600 Speed Limit (RM4-1-Q01) MMS panel.

Added new ONE LANE (RM9-9-Q01A and RM9-9-Q01B) MMS panels.

Added new DETOUR U-Turn sign (TM5-1-Q01).

Added new Detour U-Turn (symbolic) sign (TM5-1-Q02).

Added new U-TURN FACILITY AHEAD sign (TM5-1-Q03).

Changed Direction Arrow TM2-Q03 to TM10-1A and added addition notes.

Added new EVENT Parking sign (ETM15), by adding a parking “P” symbol to an EVENT MMS sign to allow easier identification of event parking locations and directions.

See changes highlighted yellow following.

Appendices

Appendix A – Additional multi-message signs (normative)

A.3 List of additional multi-message sign panels

Difference

The following replaces the corresponding signs included in Table A.1 in AS 1742. These revised multi-message sign panels are for use in Queensland only.

Table A.1 — List of additional multi-message sign panels

Sign	Sign number	Size (mm)	Figure	Notes
SURVEYORS AHEAD	TM1-37C	1200 x 600		The SURVEYORS AHEAD sign may be used for surveying works, in lieu of the Workers (symbolic) (T1-5, TM1-5A or TM1-5C sign).
DO NOT OVERTAKE	GM9-90B	1200 × 300		This sign may be used in conjunction with another panel placed above it describing why overtaking is prohibited. The DO NOT OVERTAKE panel shall only be used where overtaking is or was possible (or may be attempted), however due to a change in conditions overtaking is no longer possible or considered safe and is to be prohibited.
SURVEYORS	TM2-35B	1200 x 300		The SURVEYORS sign may be used for surveying works, in lieu of the Workers (symbolic) (T1-5, TM1-5A or TM1-5C sign).

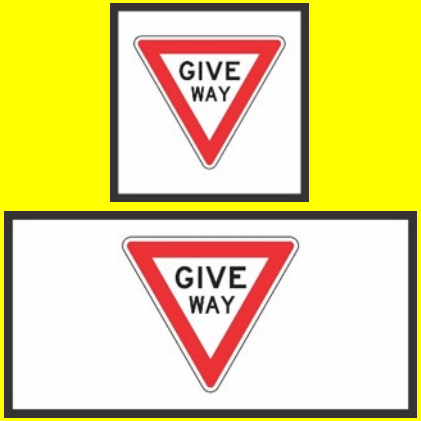
Sign	Sign number	Size (mm)	Figure	Notes
Horizontal Arrow	TM5-8B	1200 × 300		This sign shall not be used with a regulatory sign. This sign may be used with an ON SIDE ROAD panel to indicate the direction of the side road where road work is being carried out as shown below.  This sign may be used with other relevant panels (excluding regulatory panels) to indicate a direction where the warning applies. When used on a through road it should be used with an ON SIDE ROAD message, however when used on a side road to warn of activities on a through road the ON SIDE ROAD message shall not be used.
ON SIDE ROAD	TM5-9A	600 x 600	 	This sign shall not be used with a regulatory sign. This sign shall not be used with the Detour marker (TM5-6A), with the preferred arrow to indicate the direction of the side road where road work is being carried out, being the 1200 x 300 Horizontal Arrow (TM5-8B) as shown following. This sign may be used on a through road to warn of works on a side road, however this sign shall not be used when used on a side road to warn of activities on a through road. The ROAD WORK AHEAD (TM1-1A or TM1-1C) with a direction arrow (TM5-8B) should be used instead.  In Queensland, the 600 x 600 arrow (TM2-Q03) may be used if the TM5-8B arrow is not suitable.
	TM5-9B	1200 x 300	 	

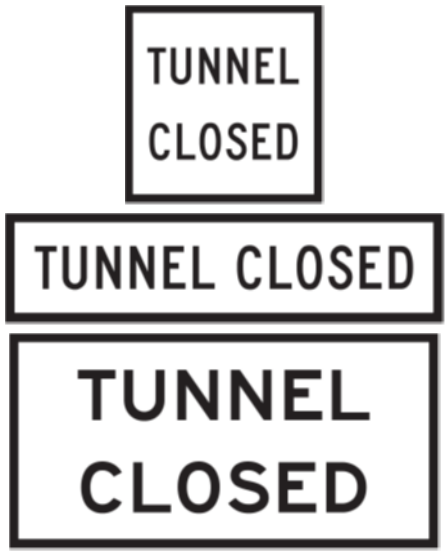
Sign	Sign number	Size (mm)	Figure	Notes
EVENT ON SIDE ROAD L / R	TM9-5B (L)	1200 x 300		This sign shall not be used with a regulatory sign.

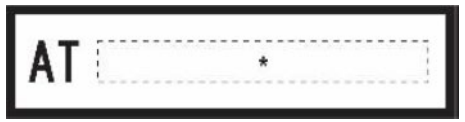
Addition

The additional multi-message sign panels detailed in Table A.2 are accepted for use in Queensland.

Table A.2 — List of additional multi-message sign panels for use in Queensland

Sign	Sign number	Size (mm)	Figure	Notes
Regulatory				
GIVE WAY	RM1-2-Q01A RM1-2-Q01C	600 x 600 1200 x 600		

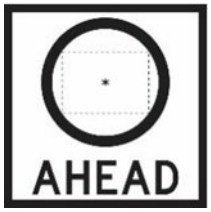
Sign	Sign number	Size (mm)	Figure	Notes
TUNNEL CLOSED	TM2-4-Q02A TM2-4-Q02B TM2-4-Q02C	600 x 600 1200 x 300 1200 x 600		
Speed limit	RM4-1-Q01	1200 x 600		Examples 

Sign	Sign number	Size (mm)	Figure	Notes
Load Information Panels	RM6-Q01_1 RM6-Q01_1 RM6-Q01_1 RM6-Q01_2	1200 x 300		See Clause 4.2.8.
FOUR WHEEL DRIVE VEHICLES EXCEPTED	RM7-Q01	1200 x 300		Refer to Q-series sign notes.
AT ... (STREET / ROAD NAME)	GM-91-Q01	1200 x 300		May only be used on advance warning signs to advise of regulatory controls on intersecting streets / roads.
GROSS LOAD LIMIT	RM6-Q03_1	600 x 600		See Clause 4.2.8 and Q-series sign notes.

Sign	Sign number	Size (mm)	Figure	Notes
MAXIMUM PENALTY 200 PENALTY UNITS	RM6-Q02	600 x 600		Refer to Q-series sign notes.
LOCAL TRAFFIC EXCEPTED	RM9-Q01_A~~1~~ RM9-Q01_B~~2~~	600 x 600 1200 x 300		See Clause 4.8.10 and Q-series sign notes.
LOCAL ACCESS PERMITS EXCEPTED	GM9-40-2-Q02	1200 x 300		Refer to Q-series sign notes.
END Speed Limit	RM4-12-Q01	600 x 600		See Clause 4.7.6(c) and Q-series sign notes.
WORK VEHICLES EXCEPTED	TM2-Q10	1200 x 300		

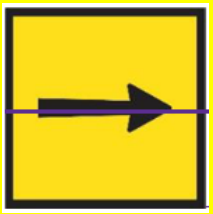
Sign	Sign number	Size (mm)	Figure	Notes
ONE LANE	RM9-9-Q01A RM9-9-Q01B	600 x 600 1200 x 300		
Advance				
LINE MARKERS AHEAD	TM1-40-Q01_1	600 x 600		The LINE MARKERS AHEAD sign may be used where line markers are on foot, in lieu of Workers (symbolic) (T1-5 or TM1-5A or TMI-5C). See T1-Q08 in Appendix C.
SURVEYORS AHEAD	TM1-37-Q01	600 x 600		The SURVEYORS AHEAD sign may be used for surveying works, in lieu of the Workers (symbolic) (T1-5, TM1-5A or TM1-5C sign).

Sign	Sign number	Size (mm)	Figure	Notes
TUNNEL CLOSED AHEAD	TM1-43-Q01A TM1-43-Q01C	600 x 600 1200 x 600		
REDUCE SPEED	TM1-Q01_1 TM1-Q01_2	600 x 600 1200 x 300		The REDUCE SPEED sign shall only be used to supplement: • a Speed Restriction sign at the start of a reduced speed limit (temporary or permanent), or • the first Speed Restriction sign on approach to the works (which may be a repeater Speed Restriction sign for the permanent speed zone), or • a Speed Limit AHEAD sign.

Sign	Sign number	Size (mm)	Figure	Notes
Tractor / Slasher MOWING	TM2-30-Q01A TM2-30-Q01C	600 x 600 1200 x 600		Refer to QGTTM Part 5 Clause 5, T1-Q10 in Appendix C, Q-series sign notes, and examples below. 
RUMBLE STRIPS AHEAD	TM1-Q02	600 x 600		Refer to QGTTM Part 3 Clause 5.5.3 and Q-series sign notes.
Speed Limit AHEAD	GM9-79-Q01	600 x 600		See Clause 4.7.6(d) and Q-series sign notes.
PROBABLE DELAY 15 MIN	TM1-Q03	600 x 600		To be used to inform motorists of probable delay. Where delays greater than 15 minutes may be experienced, refer to the requirements of QGTTM Part 3 Section 3.4.

Sign	Sign number	Size (mm)	Figure	Notes
RAMP SPEED	RM4-Q01	600 x 600		Refer to Q-series sign notes.
Merging Traffic (L / R)	TM2-Q01(L) TM2-Q01(R)	600 x 600 600 x 600		Refer to Q-series sign notes.
CROSSING ROAD AHEAD	TM1-Q04	600 x 600		Refer to Q-series sign notes.
Deep Edge Drop (symbolic)	TM3-25-Q01	600 x 600		The DEEP EDGE DROP sign shall be used to give warning of a deep drop or excavation adjacent to the travelled path. Should be used withTM3-25A.

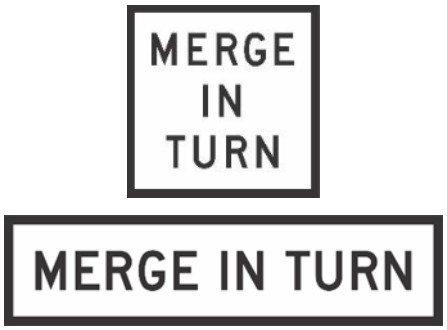
Sign	Sign number	Size (mm)	Figure	Notes
Shoulder Drop Off (symbolic)	TM3-Q01_2	600 x 600		Refer to Q-series sign notes.
ELECTRIC WIRES DOWN	TM4-Q01	600 x 600		Refer to Q-series sign notes.
Temporary Hazard Marker	TM5-5A	600 x 600		See example following and sign design notes 
DETOUR U-Turn	TM5-1-Q01	1200 x 300		
Detour U-Turn (symbolic)	TM5-1-Q02	600 x 600		Shall be used with a DETOUR panel (TM5-7A or TM5-7B). Examples 

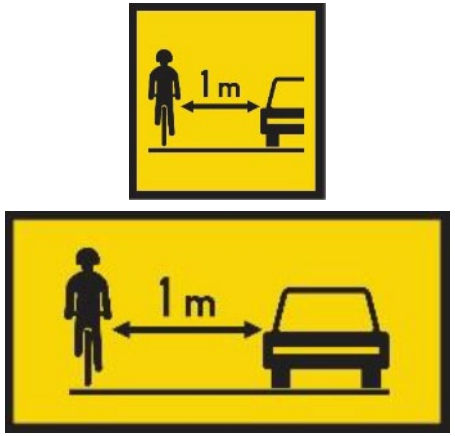
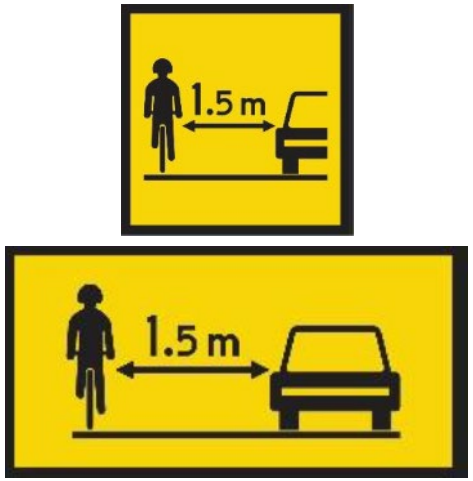
Sign	Sign number	Size (mm)	Figure	Notes
U-TURN FACILITY AHEAD	TM5-1-Q03	600 x 600		
Lateral Shift marker	TM8-Q01	1200 x 300		See Clause 4.11.3 and Q-series sign notes.
LAND SLIP	TM3-Q02	1200 x 300		The LAND SLIP sign may be used to give advance warning of a land slip.
SIGNALS UNDER REPAIR	TM2-50-Q01	1200 x 300		Refer to Q-series sign notes.
~~Directional Arrow~~	~~TM2-Q03~~	~~600 x 600~~		~~For use only with TM5-9A or TM5-9B ON SIDE ROAD. See Q-series sign notes.~~
Direction Arrow	Use TM10-1A	600 x 600		The standard MMS Lane Status panel TM10-1A may be used indicate a direction where required. For example, with ETM15. May be used with the ON SIDE ROAD message where the long arrow TM5-8B is not suitable. TM10-1A shall not be used to indicate a direction for a DETOUR (use the Detour marker TM5 6A).

Sign	Sign number	Size (mm)	Figure	Notes
DRIVE SLOWLY	TM2-Q09	1200 x 300		
PLANT AHEAD	TM1-27-Q01	1200 x 300		
TREE WORK	TM2-Q13	1200 x 300		
ROAD WORK	TM1-5-Q01A TM1-5-Q01B	600 x 600 1200 x 300		
TURN ON HAZARD LIGHTS WHEN QUEUED	TC2362_1	1200 x 600		Refer to TC sign notes and example below. 

Sign	Sign number	Size (mm)	Figure	Notes
TURN OFF HAZARD LIGHTS	TC2362_2	1200 x 600		Refer to TC sign notes and example below. 
SITE ACCESS ONLY	TM2-Q11	600 x 600		
EXIT / EXIT No / DIRECTION ARROW	TM2-Q12	600 x 600		Refer to Q-series sign notes

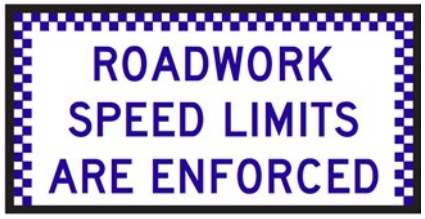
Sign	Sign number	Size (mm)	Figure	Notes
Position				
Lane Status	TM10-Q01_7	600 x 600		See Clause 4.10.1(b) and Q-series sign notes.
Lane Status	TM10-Q01_8	600 x 600		See Clause 4.10.1(b) and Q-series sign notes.
Lane Status	TM10-Q01_4	600 x 600		See Clause 4.10.1(b) and Q-series sign notes.
Lane Status	TM10-Q01_5	600 x 600		See Clause 4.10.1(b) and Q-series sign notes.
WHEN QUEUING USE BOTH LANES	TM2-Q04	600 x 600		Refer to Q-series sign notes.

Sign	Sign number	Size (mm)	Figure	Notes
MERGE IN TURN	TM2-Q05A TM2-Q05B	600 x 600 1200 x 300		Refer to Q-series sign notes.
Pedestrians and cyclists				
Pedestrians Left / Right (symbolic)	TM8-Q02(R) TM8-Q02(L)	600 x 600 600 x 600		See Clause 4.17(b).

Sign	Sign number	Size (mm)	Figure	Notes
Share The Road (for roads with 60 km/h or less speed zones) (symbolic)	TM8-Q03_1 TM8-Q03_2	600 x 600 1200 x 600		For speed zones 60 km/h or less. Refer to Q-series sign notes.
Share The Road (for roads greater than 60 km/h speed zones) (symbolic)	TM8-Q04_1 TM8-Q04_2	600 x 600 1200 x 600		For speed zones greater than 60 km/h. Refer to Q-series sign notes.

Sign	Sign number	Size (mm)	Figure	Notes
SHARE THE ROAD	TM8-Q05_1 TM8-Q05_2	600 x 600 1200 x 300		Refer to Q-series sign notes.
Road condition				
Potholes Ahead (symbolic)	TM3-Q03	600 x 600		See Clause 4.9.1.
Slippery – OIL	TM3-3-Q01	600 x 600		See Clause 4.9.1 and Q-series sign notes.
WET TAR	TM3-20-Q01	600 x 600		See Clause 4.9.1.

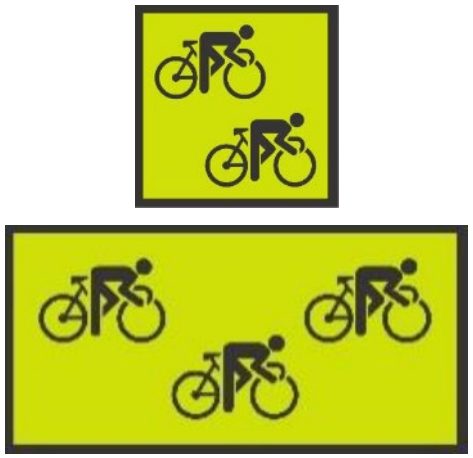
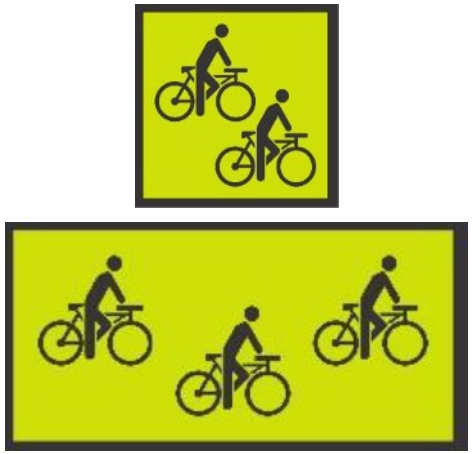
Sign	Sign number	Size (mm)	Figure	Notes
WATER OVER ROAD	TM3-21-Q01	1200 x 300		Refer to Q-series sign notes.
DAMAGED ROAD	TM3-Q04	1200 x 300		See Clause 4.9.1.
RUMBLE STRIPS	TM2-Q02	600 x 600		Refer to QGTTM Part 3 Clause 5.5.3 and Q-series sign notes.
DO NOT OVERTAKE UNLESS SAFE	TM3-12-Q01	1200 x 600		Refer to Q-series sign notes and example below. 
Termination				
END FIRE FIGHTING	TM4-Q02_2	600 x 600		Refer to Q-series sign notes.

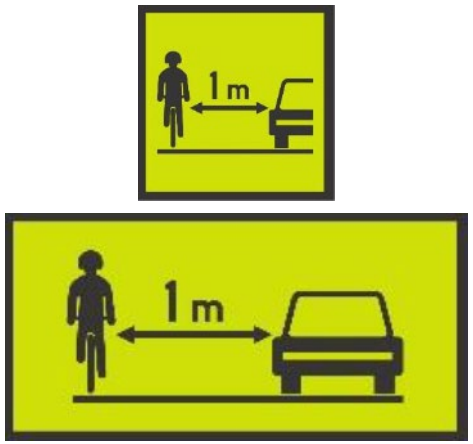
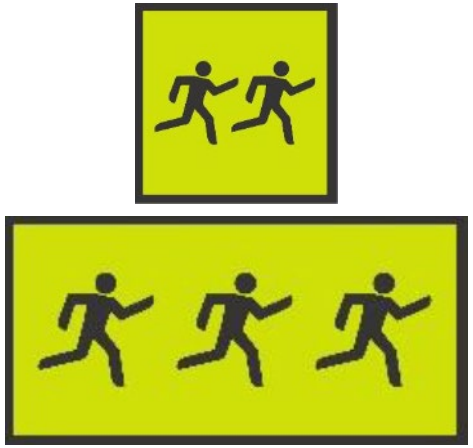
Sign	Sign number	Size (mm)	Figure	Notes
END LOAD LIMIT	RM6-Q03_2	600 x 600		Shall be used to indicate the end of a vehicle load limit. See Clause 4.2.8 and Q-series sign notes.
DRIVE SAFELY	TM2-Q06	1200 x 300		The DRIVE SAFELY sign shall only be used with the END ROADWORK, END DETOUR or END EVENT panels in place of a yellow blank panel.
Incident, Fire and Emergency				
FIRE FIGHTERS AHEAD	TM4-Q02_1	1200 x 600		May be used in advance of a firefighting activity.
Enforcement				
ROADWORK SPEED LIMITS ARE ENFORCED	TC2361C	1200 x 600		Refer to TC sign notes, QGTTM Part 3 Section 5.5.4 and examples below.  

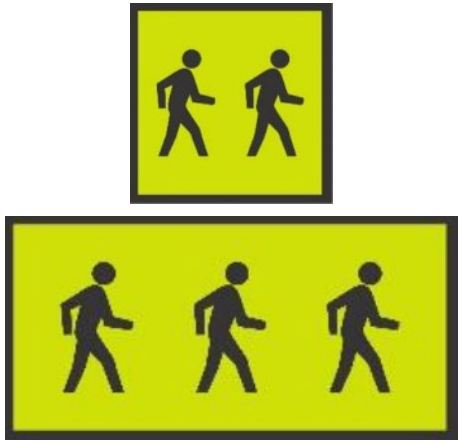
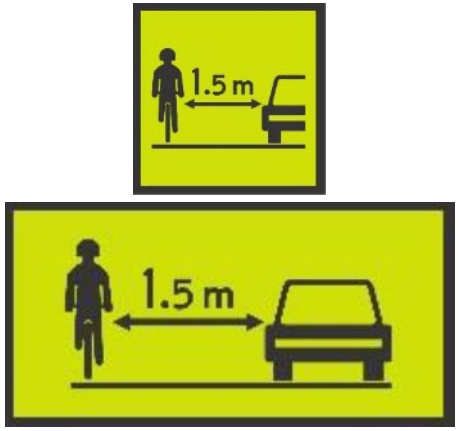
Sign	Sign number	Size (mm)	Figure	Notes
Camera (symbolic)	TC2361B	1200 x 300		Refer to TC sign notes and QGTTM Part 3 Section 5.5.4. This sign shall only be used with TC2361C as shown below. 
Orange Target Board to Multi-message sign frame	TC2365	1400 x 1100		A 100 mm-wide fluorescent orange border may be added to a multi-message frame (examples shown below). 
Miscellaneous				
OVERSIZED Farm Machinery	TM2-45-Q01	600 x 600		Refer to Q-series sign notes.
POLICE CONTROL AHEAD	TM1-Q05	600 x 600		Refer to Q-series sign notes.

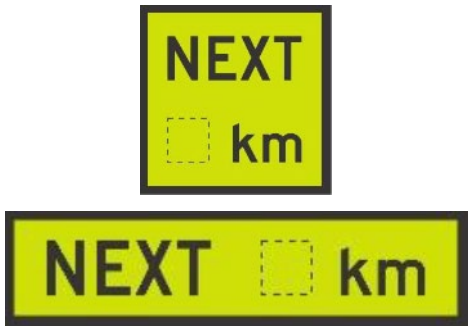
Sign	Sign number	Size (mm)	Figure	Notes
DRIVER BEHAVIOUR MONITORING	TM2-Q07_1	600 x 600		Refer to Q-series sign notes.
Monitoring Camera (symbolic)	TM2-Q07_2	600 x 600		
Wandering Animals (Cow–Sheep) (symbolic)	TM1-50-Q01_1	600 x 600		Refer to Q-series sign notes.
Wandering Animals (Horse) (symbolic)	TM1-50-Q01_2	600 x 600		

Sign	Sign number	Size (mm)	Figure	Notes
KEEP INTERSECTION CLEAR	TM2-Q08	1200 x 600		
Event				
EVENT AHEAD	ETM01_2	1200 x 600		Refer to *Event traffic management design guidelines* Clause 3.2.2.
EVENT IN PROGRESS	ETM02_2	1200 x 600		Refer to *Event traffic management design guidelines* Clause 3.2.3.
END EVENT	ETM03_2	1200 x 600		Refer to *Event traffic management design guidelines* Clause 3.2.4.

Sign	Sign number	Size (mm)	Figure	Notes
Cyclists Racing (symbolic)	ETM04_1 ETM04_2	600 x 600 1200 x 600		Refer to *Event traffic management design guidelines* Clause 3.2.5.
Cyclists Riding (symbolic)	ETM05_1 ETM05_2	600 x 600 1200 x 600		Refer to *Event traffic management design guidelines* Clause 3.2.6.

Sign	Sign number	Size (mm)	Figure	Notes
Share The Road (for roads 60 km/h or less speed zones) (symbolic)	ETM06_1 ETM06_2	600 x 600 1200 x 600		Refer to *Event traffic management design guidelines* Clause 3.2.7.
Runners (symbolic)	ETM07_1 ETM07_2	600 x 600 1200 x 600		Refer to *Event traffic management design guidelines* Clause 3.2.8.

Sign	Sign number	Size (mm)	Figure	Notes
Walkers (symbolic)	ETM08_1 ETM08_2	600 x 600 1200 x 600		Refer to *Event traffic management design guidelines* Clause 3.2.9.
Share The Road (for roads greater than 60 km/h speed zones) (symbolic)	ETM09_1 ETM09_2	600 x 600 1200 x 600		Refer to *Event traffic management design guidelines* Clause 3.2.7.

Sign	Sign number	Size (mm)	Figure	Notes
NEXT … km	ETM10_1 ETM10_2	600 x 600 1200 x 600		Refer to *Event traffic management design guidelines* Clause 3.2.10.
CYCLING EVENT	ETM11_1	1200 x 600		Refer to *Event traffic management design guidelines* Clause 3.2.11.
CYCLING EVENT	ETM11_2	1200 x 300		Refer to *Event traffic management design guidelines* Clause 3.2.11.
CYCLISTS AHEAD	ETM12_1	1200 x 300		Refer to *Event traffic management design guidelines* Clause 3.2.12.
CYCLISTS FOLLOWING	ETM12_2	1200 x 300		Refer to *Event traffic management design guidelines* Clause 3.2.12.

Sign	Sign number	Size (mm)	Figure	Notes
SHARE THE ROAD	ETM13_1 ETM13_2	600 x 600 1200 x 300		Refer to *Event traffic management design guidelines* Clause 3.2.7.
EVENT Parking	ETM15	600 x 600		The EVENT Parking panel may be used with the Direction Arrow (TM10-1A) or the long arrow (TM5-8B) to indicate a direction to the Event Parking. The direction arrow shall not point toward the Parking symbol. Example 

New Figure B1 replaces the current Figure B1 in AS1742.3.

Added new Figure B2.

Appendix B – Multi-message sign combinations (informative)

Difference

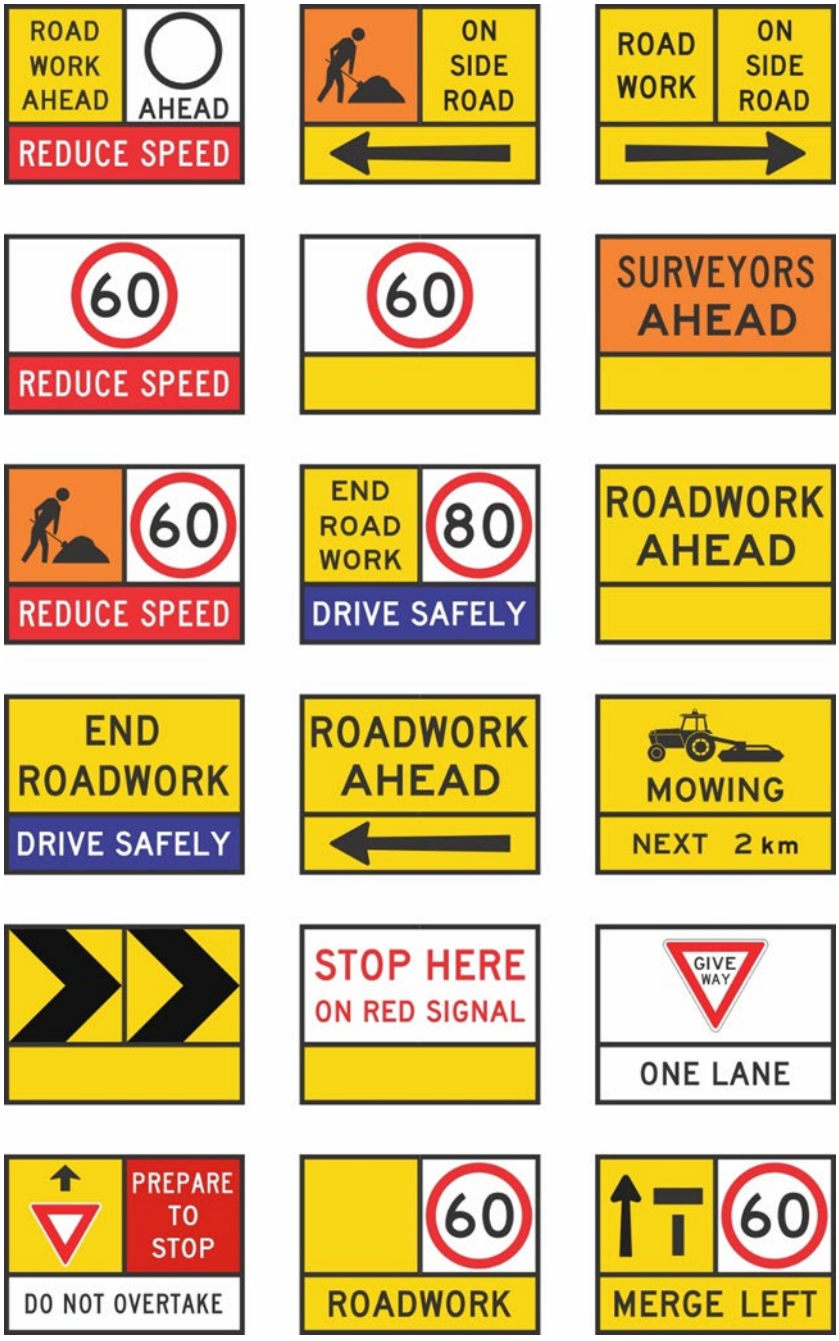
The following replaces Figure B1 - Multi-message sign combination examples.

Figure B1 – Multi-message sign combination examples with traffic travelling to the right side of the signs

Addition

The following Figure B2 provides additional multi-message sign combination examples.

Figure B2 – Additional multi-message sign combination examples with traffic travelling to the right side of the signs



Deleted entire Appendix D.

See changes highlighted yellow following.

~~Appendix D – Supplementary list of temporary roadworks signs (informative)~~

~~*D.1 Traffic control signs equivalent to multi-message Australian Standard signs*~~

~~*New*~~

~~This Appendix provides a list of traffic control signs developed by Queensland's Transport and Main Roads which are mapped to multi-message signs included in the Australian Standard AS 1742.3 that are yet to be developed by Standards Australia. These signs may continue to be used until such time that the relevant Australian Standard signs have been developed and published in AS 1743 *Road sign layout and size specifications* by Standards Australia. Further details of the design of the signs may be obtained from the Traffic Engineering team (TrafficEngineering.Support@tmr.qld.gov.au) at Transport and Main Roads, Brisbane.~~

~~These Queensland traffic control signs are available on the department's MUTCD Q-Series and Traffic Control (TC) signs webpage.~~

~~Table D.1 maps the Queensland traffic control signs to the Australian Standard multi-message signs.~~

~~***Table D.1 – Australian Standard multi-message signs and Queensland equivalent.***~~

~~AS~~	~~TC~~	~~Title~~
~~GM9-40-2A~~	~~TC1930~~	~~LOCAL TRAFFIC ONLY~~
~~GM9-90B~~	~~TC1174~~	~~DO NOT OVERTAKE~~
~~RM2-4A~~	~~TC1884~~	~~NO ENTRY~~
~~RM2-6A~~	~~TC1818~~	~~NO LEFT TURN / NO RIGHT TURN~~
~~RM4-1A~~	~~TC1217~~	~~SPEED LIMIT~~
~~TM5-6~~	~~TC1901~~	~~DETOUR MARKER~~
~~TM10-3A, 4A, 5A, 6A, 7A, 8A, 9A, 10A, 24A~~	~~TM10-Q01~~	~~LANE STATUS~~
~~TM1-18A~~	~~TC1173~~	~~PREPARE TO STOP~~
~~TM1-18B~~	~~TC1362~~	~~PREPARE TO STOP~~
~~TM1-1A~~	~~TC1169~~	~~ROADWORK AHEAD~~
~~TM1-1B~~	~~TC1178~~	~~ROADWORK AHEAD~~
~~TM1-28B~~	~~TC1403~~	~~NEXT ... km~~
~~TM1-2A~~	~~TC1270~~	~~BRIDGEWORK AHEAD~~
~~TM1-30A~~	~~TC1216~~	~~SIGNALS AHEAD~~
~~TM1-3-1A~~	~~TC1214~~	~~ROAD PLANT AHEAD~~
~~TM1-32A~~	~~TC1819~~	~~SIDE ROAD CLOSED~~
~~TM1-34A~~	~~TC1257~~	~~Traffic Controller (SYMBOLIC)~~
~~TM1-38A~~	~~TC1668~~	~~ROAD HUMP AHEAD~~

AS	TC	Title
TM1-40A	TM1-40-Q01	LINE MARKING AHEAD
TM1-42A, TM2-55A	TC2299	TRAM WORKS AHEAD / TRAM WORKS
TM1-43A, TM1-43C	TC1803	ROAD CLOSED AHEAD
TM1-45A	TC1510	TRAFFIC INCIDENT AHEAD
TM1-46A, TM1-47A	TC1947	QUEUED TRAFFIC AHEAD / QUEUED TRAFFIC SYMBOL
TM1-4A	TC1215	GRADER AHEAD
TM1-50A	TC2083	WATCH FOR WANDERING ANIMALS
TM1-5A	TC1332	Workers (SYMBOLIC)
TM1-6A	TC1903	DETOUR AHEAD
TM2-17A	TC1170	END ROADWORK
TM2-23A	TC2001	END DETOUR
TM2-25A	TC1828	TRUCKS
TM2-29B	TC2037	TRENCHING WORKS
TM2-38A, TM2-38BB	TC1950	ON RAMP
TM2-39A / TM2-40A	TC1843	MERGE LEFT / MERGE RIGHT
TM2-39B / TM2-40B	TC1844	MERGE LEFT / MERGE RIGHT
TM2-42A	TC1526	SLOW MOVING VEHICLE
TM2-44A	TC1804	CHANGED TRAFFIC CONDITIONS
TM2-48A, TM2-50A	TC1311	Signal Not Operating (SYMBOLIC)
TM2-4B	TM2-4-Q01	ROAD CLOSED
TM2-51A	TC1667	ROAD HUMP
TM2-52A	TC2254	Boom Barrier (SYMBOLIC)
TM3-13A	TC1501	GRAVEL ROAD
TM3-14A	TC2282	LOOSE SURFACE
TM3-16-1A	TC2253	X km/h
TM3-17A	TC1172	NO LINES
TM3-21A	TC1466	WATER OVER ROAD
TM3-22B	TC1869	DUE TO FLOODING
TM3-23B	TC1951	FALLEN ROCKS
TM3-25A	TC2036	DEEP EDGE DROP
TM3-3A	TC1218	SLIPPERY
TM3-7A	TC1467	ROUGH SURFACE
TM3-9A	TC1219	LOOSE STONES
TM4-6A, TM4-6B	TC1396	SMOKE HAZARD
TM4-8A, TM4-8B	TC2301	UHF CHANNEL No
TM5-1B	TC2291	DETOUR (ARROW)
TM5-7B	TC1902	DETOUR

~~AS~~	~~TC~~	~~Title~~
~~TM5-8B~~	~~TC1822~~	~~HORIZONTAL ARROW~~
~~TM5-9A, TM5-9B~~	~~TC1820~~	~~ON SIDE ROAD~~
~~TM8-12A~~	~~TC2217~~	~~PATH CLOSED~~
~~TM8-16A~~	~~TC2279~~	~~BICYCLE LANE CLOSED~~
~~TM8-17A~~	~~TC1397~~	~~SYMBOLIC BICYCLE AHEAD~~
~~TM8-2B~~	~~TC2215~~	~~PEDESTRIANS (ARROW)~~
~~TM8-3A~~	~~TC2214~~	~~USE OTHER FOOTPATH~~
~~TM8-7A~~	~~TC2213~~	~~WATCH YOUR STEP~~
~~TM8-9A~~	~~TC2216~~	~~FOOTPATH CLOSED AHEAD~~
~~WM3-2A~~	~~TC1452~~	~~GIVE WAY AHEAD~~

QGTTM Part 2

When using GIVE WAY and ONE LANE arrangements the 100 m maximum length of the work area has changed to a 120 m maximum length of single lane flow.

When operating under natural give and take, requirements for the use of tapers at 45 degrees and a maximum remaining lane width of 3.5 m have been added.

See changes highlighted yellow following.

3 Preparation of a Traffic Management Plan

3.3 Risk assessment

3.3.4 Identify treatment options

Addition

Add the following dot point to the treatment options to be considered:

- Mobile works – some work types and locations may be suited to implementation by a mobile works convoy. The controls applied and work arrangements for mobile work methods are set in QGTTM Part 4.

Addition

In the subsection '**Length of single-lane operation under reversible traffic flow**', add the following:

Generally, when using Table 3.5, and where the lengths are within the maximum limits, single-lane operation using active control by portable traffic control devices or traffic controllers will lead to a relatively short and consistent or stable queue length; however, additional traffic engineering input and consideration (risk assessments) are required to support longer lengths of single-lane operation which will generally lead to longer maximum queue lengths and queue lengths that are not easily managed, or are variable and unstable. Contingency planning for longer than expected or continually growing queue lengths shall be included as part of the TGS design. End-of-queue protection measures (refer to QGTTM Part 3 Section 4.8.3) shall be considered.

Difference

Replace the following:

Traffic control may not be required if:

- there is clear visibility past the work area and beyond it for at least 75 m, or to the end of the road if less than 75 m away and the length of the shuttle lane does not exceed 60 m
- road users have clear visibility of the work area and the opposing approach for a distance greater than 150 m and either one of the following:
  - traffic volume in both directions is 40 vph or less, and the speed is 70 km/h or less, and the length of the single lane is 60 m or less
  - the length of the single lane is 100 m or less, and GIVE WAY and ONE LANE signs are provided at one end of the shuttle lane
  - it is a residential street and the length of the shuttle is 60 m or less.

with

Active traffic control (by traffic controllers or PTCDs) may not be required where:

- GIVE WAY and ONE LANE signs are provided at one end of the shuttle lane and the NO OVERTAKING OR PASSING sign is also to be erected at the start of the single lane for traffic in the opposite direction and all the following apply:
  - traffic volume in both directions is 150 vph or less
  - the traffic speed is 70 km/h or less
  - each entry to the work area is visible from the other
  - the length of the single lane or shuttle flow segment ~~work area~~ is 120~~00~~ m or less, and
  - there is sight distance to opposing traffic of at least 200 m beyond the far end of the work area for traffic facing the GIVE WAY, ONE LANE assembly.
- No specific traffic control signs are required for the single lane section, and traffic operates under natural give and take using the one open lane and either one of the following applies:
  - it is a residential street (permanent posted speed is 50 km/h or less) and there is clear visibility past the work area and beyond it for at least 75 m, or to the end of the road if less than 75 m away and the length of the shuttle lane does not exceed 60 m, or
  - road users have clear visibility of the work area and the opposing approach for a distance greater than 150 m or to the end of the road if less than 150 m away, the traffic volume in both directions is 40 vph or less, the permanent posted speed is 70 km/h or less, and the length of the shuttle lane is 60 m or less.

Addition

Where active traffic control is not provided (working under natural give and take, or where GIVE WAY and ONE LANE signs are in operation), the taper should be at 45 degrees on both the approach and departure sides of the work area and the remaining open single lane section should have a maximum width of 3.5 m. See QGTTM Part 3 Figure 5.4.4(a) for an example layout.

Difference

In the subsection **'Other traffic assessment elements – Lane widths'**

Replace Table 3.6 with the following:

Table 3.6 – Lane widths

Criteria	Lane width (m)
General lane widths	
≤60 km/h	Minimum 3.0*
70, 80 or 90 km/h	Minimum 3.2*
≥100 km/h	Minimum 3.4*
Curve with radius 100–250 m	Add curve widening of 0.5 m per lane
Curve with radius <100 m	In addition to the curve widening of 0.5 m per lane, consider the swept path of long vehicles (for example, buses, trams)
Two-way residential street	Minimum of 5.5 (sum both ways)
Shuttle flow operation	
Shuttle flow with active control (by traffic controllers or PTCDs)	Minimum 3.0*
Shuttle flow, without active control on residential streets, includes no control or the use of GIVE WAY and ONE WAY signs (see Section 5.4.4).	Minimum 3.0* and Maximum 3.5 to ensure vehicles take turns using a single lane

* Temporary minimum lane widths are not to be greater than existing lane widths. This minimum temporary lane width 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 previously to accommodate large vehicles. The speed to be used when considering lane width requirements is the speed limit (permanent or reduced) which is applicable to that length of road.

Added requirements for applying tolerances to TGSs, including the addition of a new Figure.

4 Documenting Traffic Management Plans

4.7 Traffic management planning and design

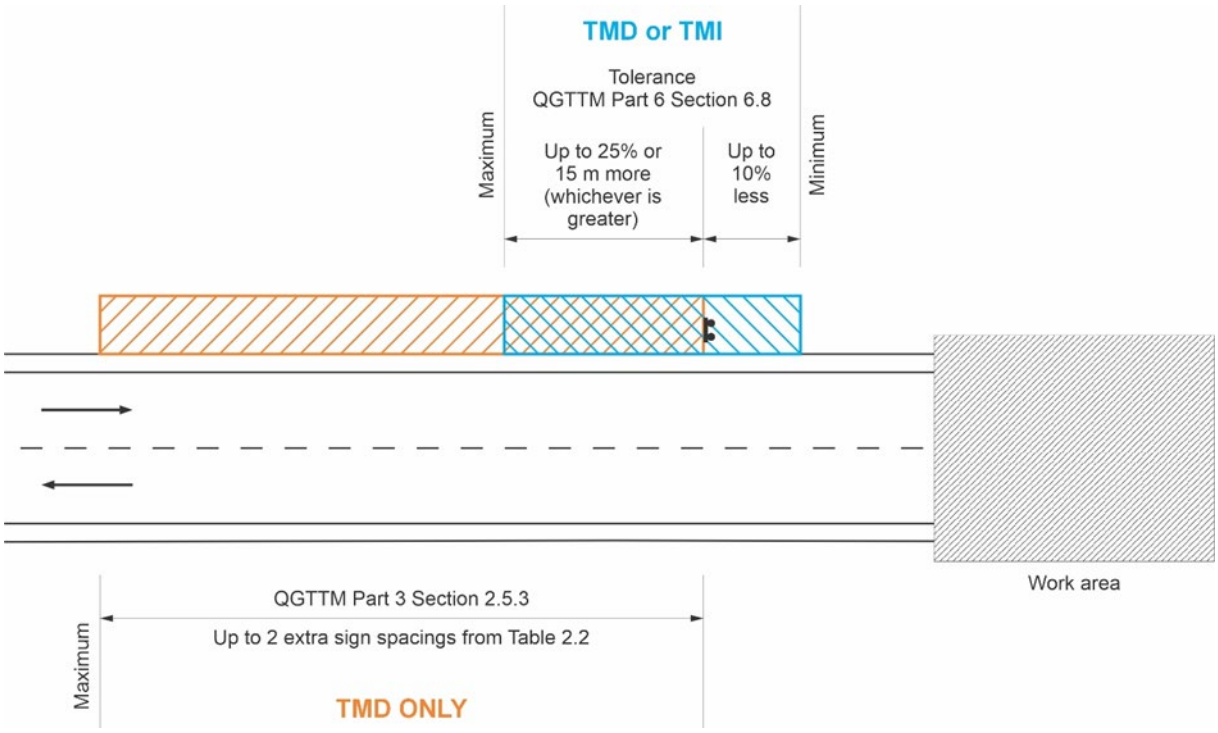
4.7.3 Traffic Guidance Schemes

Addition

A TMD may apply tolerances (see AGTTM Part 6 Section 6.8) to the spacing requirements or increase the spacing requirements in accordance with QGTTM Part 3 Section 2.5.3 for signs and devices when preparing the design of a TGS. See Figure 4.7.3 for the tolerances that apply to a sign spacing.

If a TMD applies a tolerance, which is either the minimum or maximum allowable (as AGTTM Part 6 Section 6.8), or is so close to the maximum or minimum such that a TMI also applying the maximum tolerance as per AGTTM Part 6 Section 6.8 on site may exceed the total allowable tolerance, or uses the provisions of QGTTM Part 3 Section 2.5.3, the TMD must specify this distance as either a minimum or maximum (or provide the maximum or minimum value) on the TGS so that a tolerance is not also applied on site by the TMI which would then exceed any applicable limits.

Figure 4.7.3 – Sign spacing tolerances



QGTTM Part 3

Reword paragraph related to variations to requirements.

See changes highlighted yellow following.

2 Design process

2.2 Risk assessment

Difference

Replace:

> It is important to note that a Design Exceptions Report shall be approved by the relevant Road Infrastructure Manager (RIM) and road authority if design exceptions are made or published standards or the AGTTM are not adhered to.

with:

> ~~Where variations to the requirements of the Queensland MUTCD Part 3, or the QGTTM are required, they shall be documented and a risk assessment certified in accordance with Clause 1.9 of Queensland MUTCD Part 3.~~
>
> Where variations to the treatments in the Queensland MUTCD Part 3 or QGTTM are proposed, a risk assessment certified in accordance with the requirements of Clause 1.9 of Queensland MUTCD Part 3 shall be undertaken.

Added requirements for applying tolerances to TGSs, including the addition of a new Figure.

Change requirement from a ‘should’ to a ‘must’ for the TMD to document an alternative where duplication of signs is not possible.

Change existing Figure 2.5.3 number to Figure 2.5.3(b).

See changes highlighted yellow following.

2.5 Essential design principles

2.5.3 Signs

Difference

Replace:

> Signs must be positioned a distance equal to that shown in Table 2.2 from the worksite or hazard (e.g. taper). Space successive signs (after the primary sign) the same distance as shown in Table2.2 unless stated otherwise. If there is only a single advance warning sign on the approach, the sign must be positioned at double the spacing shown in Table 2.2 from the worksite or hazard.

with:

Signs must be positioned a distance equal to that shown in Table 2.2 from the worksite or hazard (e.g. taper). Space successive signs (after the primary sign) the same distance as shown in Table 2.2 unless stated otherwise. If there is only a single advance warning sign on the approach, the sign must be positioned at double the spacing shown in Table 2.2 from the worksite or hazard.

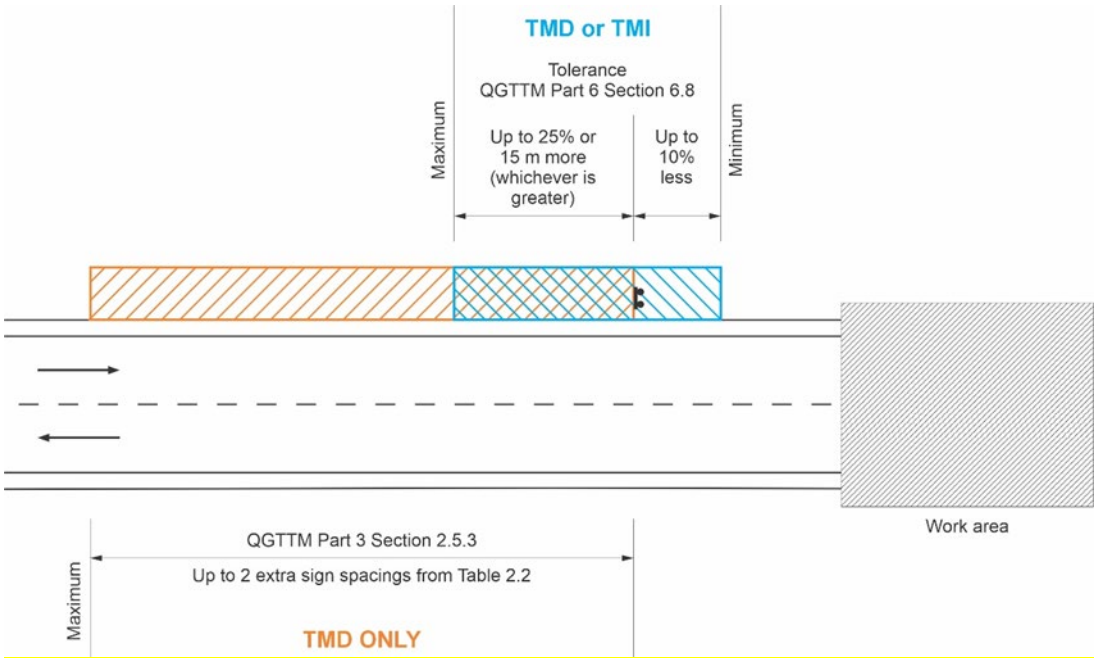
Where a physical constraint on site impacts locating the sign(s) as per the spacing requirements in Table 2.2 and it is supported by a risk assessment, the TMD may increase this spacing requirement (up to a total maximum spacing of three times the spacing in Table 2.2) to suit the site conditions without requiring an RPEQ sign off.

A TMD may apply tolerances (see AGTTM Part 6 Section 6.8) to the spacing requirements for signs and devices when preparing the design of a TGS.

See Figure 2.5.3(a) for the tolerances that apply to a sign spacing.

If a TMD applies a tolerance, which is either the minimum or maximum allowable (as per the above or AGTTM Part 6 Section 6.8), or is so close to the maximum or minimum such that a TMI also applying the maximum tolerance as per AGTTM Part 6 Section 6.8 on site may exceed the total allowable tolerance, or uses the provisions above to increase the spacing, the TMD must specify this distance as either a minimum or maximum (or provide the maximum or minimum value) on the TGS so that a tolerance is not also applied on site by the TMI which would then exceed any applicable limits.

Figure 2.5.3(a) – Sign spacing tolerances



Difference

Replace:

> Signs required for works which will be in progress for longer than 14 days may be installed in a more permanent manner on posts sunk into the ground. Check that underground utilities are not located below and making holes is approved by the relevant road authority. Ensure regular site inspection, maintenance and securing practices occur in these circumstances. In these situations, the installation height of all temporary signs mounted in a permanent manner must be based on the principles illustrated in AS 1742.2.

with:

> While any sign may be installed in a permanent manner on posts sunk into the ground, it is recommended that signs required for works which will be in progress for longer than 14 days should be installed in a permanent manner on posts sunk into the ground. Check that underground utilities are not located below and making holes is approved by the relevant road authority. Ensure regular site inspection, maintenance and securing practices occur in these circumstances. In these situations, the installation height of all temporary signs mounted in a permanent manner must be based on the principles illustrated in AS 1742.2.

Difference

Replace the dot point:

- Signs should be placed on both sides of multilane and high-volume roads to effectively communicate relevant messages to road users. For temporary speed restriction signs, refer to section 5.5.1 for requirements to install on both sides of the road. If sign duplication is not possible (e.g. vegetation, barrier, inadequate width), the designer should document an alternative to ensure all road users are able to see signs. This may involve:
  - placing signs on high temporary frames
  - duplicating signs on one side of the road
  - closing one lane to be used for sign placement
  - use of a variable message sign (VMS).

with:

- To effectively communicate relevant messages to road users, signs should be placed on both sides of all multilane roads and should also be placed on both sides of high-volume roads. For temporary speed restriction signs, refer to Section 5.5.1 for requirements to install on both sides of the road. If sign duplication is not possible (for example, vegetation, barrier, inadequate width), the designer ~~should~~ must document an alternative to ensure all road users are able to see signs. This may involve:
  - placing signs on high temporary frames
  - repeating signs on one side of the road
  - closing one lane to be used for sign placement, and/or
  - use of a variable message sign (VMS).

Addition

For merge tapers where the posted permanent speed limit of the road is 80 km/h or greater, the sign spacing between the lane status sign and the start of the merge taper may be increased to a distance of two sign spacings.

For merge tapers at any speed limit, where more than one lane is being closed, the sign spacing between the lane status sign and the start of the initial merge taper may be increased to a distance of two sign spacings.

A distance plate (TC2287) may be added to the lane status multi-message sign to indicate the distance from the lane status sign to the start of the merge taper.

Addition

Add the following to Figure 2.2:

> Where a sign spacing is partially within the 200 m zone after a speed limit change, use the higher speed limit in determining the relevant full spacing (even though only part of this spacing may be within this zone).
>
> Tapers which are partially within the 200 m zone after a speed limit change are to use the higher speed limit in determining the relevant full taper length (even though only part of the taper length may be within this zone).
>
> The following figures illustrate the relationship between a speed zone change and the spacing / distance applicable to signs or hazards (such as a taper).
>
> Where traffic speed is substantially different (+/- 10 km/h or more) to the posted or temporary speed zone values, refer to Section 2.5.9 for the speed value to use in the tables.

Figure 2.2(a) – Sign or hazard within 200 m of a speed zone change

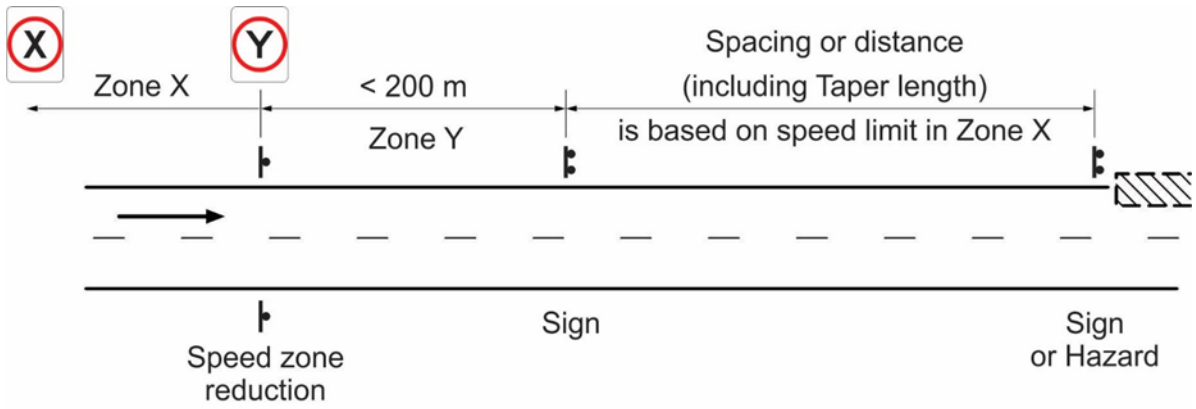
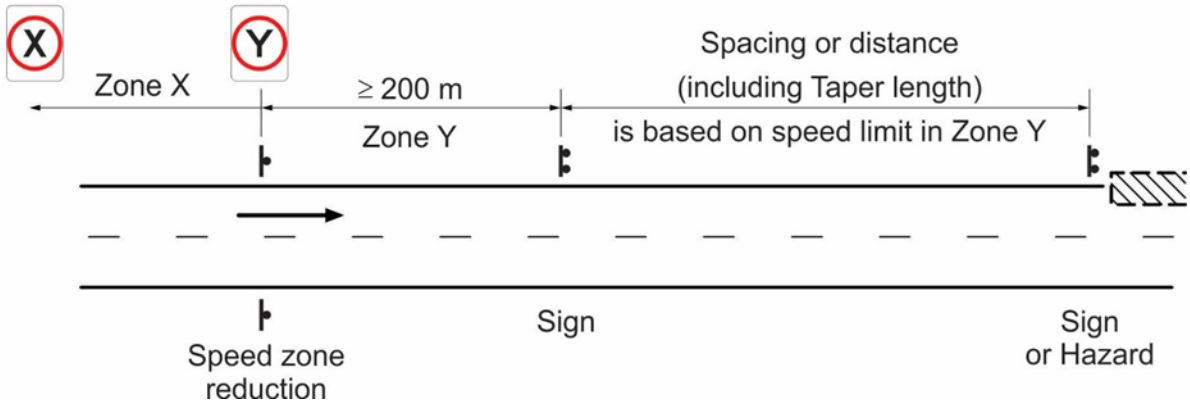


Figure 2.2(b) – Sign or hazard greater than or equal to 200 m from a speed zone change



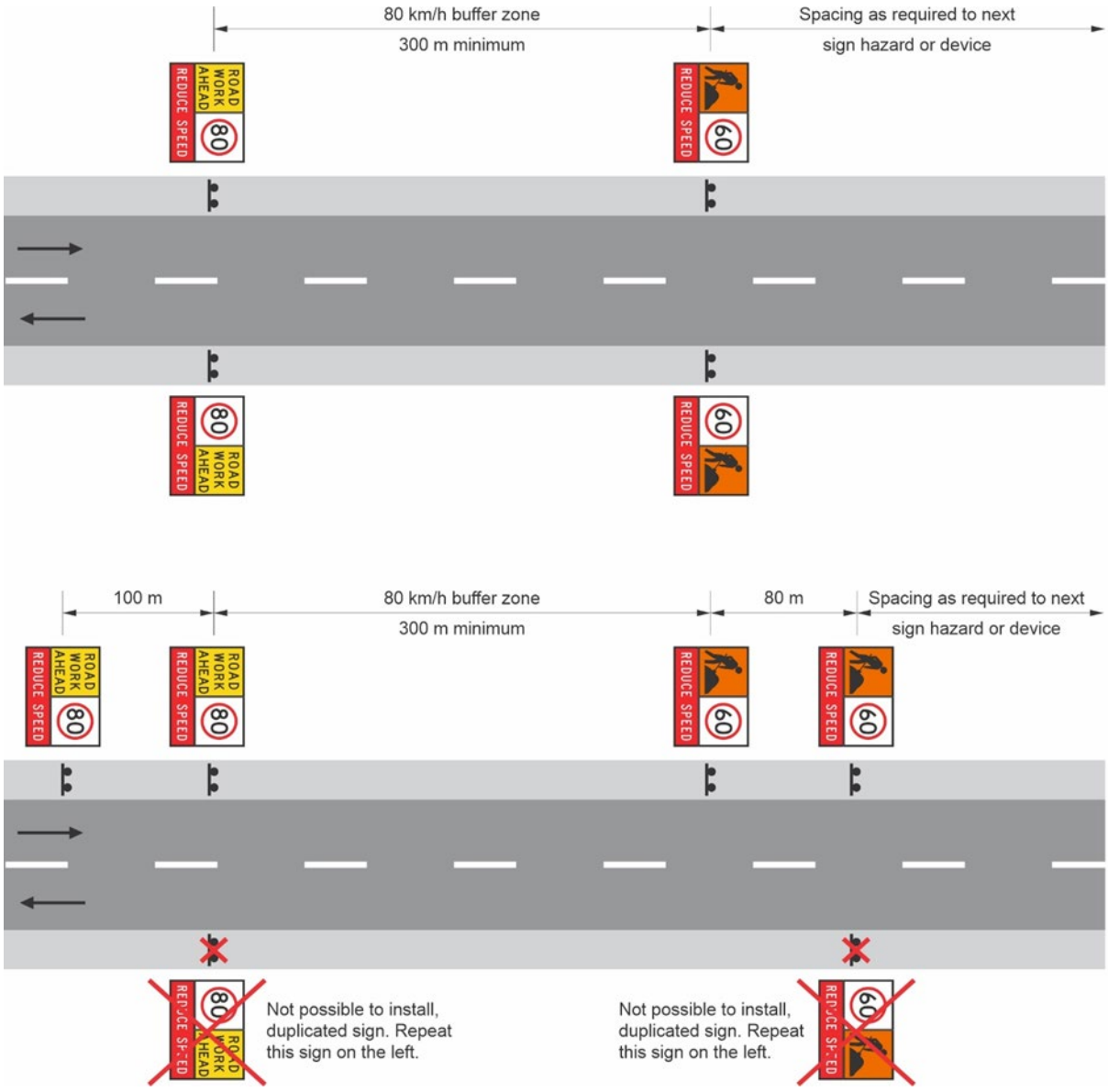
Addition

If sign duplication is not possible and the designer has chosen to repeat signs on the one side of the road, repeated signs are located a minimum of one sign spacing from the original sign.

If there are spacing requirements between the original sign being repeated and another sign, device, or hazard beyond the sign (in the direction of travel), then this spacing requirement will now apply to the repeated sign. Any spacing requirements between the original sign being repeated and another sign, device, or hazard prior to the sign (in the direction of travel), will remain as a requirement to the original sign being repeated.

See Figure 2.5.3(b) for an example showing signs for one direction of travel only on a two-way road. This figure does not include all traffic control devices required and is not to be used as a TGS diagram.

Figure 2.5.3(b) – Example showing duplicated signs and repeated signs when signs are not able to be duplicated



Add reference to Figure 2.2 for the 200 m value.

See changes highlighted yellow following.

2.5.8 Lane widths

Difference

Replace the entire Section 2.5.8 with the following:

Lanes carrying traffic around, through or past a roadworks site shall be as per Table 2.5. Lane widths should consider accommodating the swept path of large vehicles expected to negotiate the roadworks site.

Table 2.5 – Lane widths

Criteria	Lane width (m)
General lane widths	
≤60 km/h	Minimum 3.0*
70, 80 or 90 km/h	Minimum 3.2*
≥100 km/h	Minimum 3.4*
Curve with radius 100–250 m	Add curve widening of 0.5 m per lane
Curve with radius <100 m	In addition to the curve widening of 0.5 m per lane, consider the swept path of long vehicles (for example, buses, trams)
Two-way residential street	Minimum of 5.5 (sum both ways)
Shuttle flow operation	
Shuttle flow with active control (by traffic controllers or PTCDs)	Minimum 3.0*
Shuttle flow, without active control on residential streets, includes no control or the use of GIVE WAY and ONE WAY signs (see Section 5.4.4).	Minimum 3.0* and Maximum 3.5 to ensure vehicles take turns using a single lane

*Temporary minimum lane widths are not to be greater than existing lane widths. This minimum temporary lane width 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 previously to accommodate large vehicles. The speed to be used when considering lane width requirements is the speed limit (permanent or reduced) which is applicable to that length of road.

Consideration shall also be given to cyclists and pedestrians (see Sections 3.10, 4.10 and 5.13 for further details on traffic management regarding pedestrians and cyclists).

Where there is a change in speed limit, the minimum lane width requirements may also change with lane widths based on the applicable speed limit at that location. Changes to lane widths will apply at the change in speed limit, with the transition to the new lane width commencing at the speed limit change location. The transition to the new lane width shall occur at a rate which matches the transition rate for a lateral shift (see Table 5.7) of the same distance (the lane width change) in the same location (note the 200 m value for Figure 2.2 applies to taper lengths): for example, for a lane width reduction of 0.4 m, as the lateral shift values are based on a full 3.5 m shift, the equivalent recommended lateral shift distance would be divided by approximately 8.7 (3.5 / 0.4) to establish the taper length required for the 0.4 m transition in lane widths.

As an example, a transition distance for a new speed limit (60 km/h) and lane width (3.0 m), from a 100 km/h zone with an existing 3.5 m lane width, will commence at the 60 km/h sign and transition the 0.5 m change in width over a distance of approximately 15 m, based on a 3.5 m lateral shift at 100 km/h being 100 m long (100 / (3.5 / 0.5) = 14.3).

Added details for detours that include a U-turn movement.

See changes highlighted yellow following.

3 Around the worksite

3.8 Design and Traffic Management

3.8.1 Detours

Difference

Replace:

> Detour markers must be erected at all subsequent changes of direction and intersections along the route to reassure road users they are on the correct path (e.g. detour in a built-up area through side streets) and they can continue their journey using permanent road sign information. This usually involves directing road users back onto their original route of travel at a point past the worksite. Signs must be erected for each direction of travel affected by the closure and checked to ensure all detour signs are prominently displayed with clear sight distance (see Section 2.5.3 Table 2.3).

with:

> Detour markers must be erected at all subsequent changes of direction. Detour markers should also be installed at intersections along the route where drivers may consider turning or where they may require reassurance that they are on the correct detour path (e.g. detour in a built-up area through side streets) and they can continue their journey using permanent road sign information. This usually involves directing road users back onto their original route of travel at a point past the worksite. Signs must be erected for each direction of travel affected by the closure and checked to ensure all detour signs are prominently displayed with clear sight distance (see Section 2.5.3 Table 2.3).

Difference

Replace:

> END DETOUR sign must be placed at the end of the detour, indicating to road users that they have returned to their original route and permanent signs can be followed.

with:

> END DETOUR sign should be placed at the end of the detour, indicating to road users that they have returned to their original route and permanent signs can be followed.

Addition

For detour routes that include a U-turn requirement, these should only be used where a U-turn would normally be permitted (excluding signals which are not operating and are under other controls such as Police or Traffic Controllers who can manage the need for the U-turn movement). Where a U-turn would not normally be permitted, the turning paths and characteristics of the expected vehicle types should be reviewed in conjunction with advice from the RIM. A U-TURN NOT SUITABLE FOR LONGER VEHICLES (TC1972) sign may be required.

Added reference to Section 5.12.

3.9 Termination Area

Addition

Additional guidance is provided in Section 5.12.

Added text relating to when the speed zone is greater than 60 km/h.

See changes highlighted yellow following.

4 Through the worksite

4.7 Traffic control and site entry

Addition

Refer to Section 4.8 of this document for the placement of the 60 km/h speed zone when the speed zone in advance of the traffic control station is above 60 kmh.

Change existing Figure 4.8 number to Figure 4.8(a).

Reword Item 8 and add additional information when speed of traffic is less than 60 km/h, to address the issue of reducing speeds on a through road (when there is no impact on the operation of the through road) because of a traffic control station / queue located down a side road.

Add new Item 11 for the location of the start of the traffic control taper.

Add requirements for the location of the PREPARE TO STOP panel (from Part 7) including Figure 4.8(b).

Change requirement from a 'will need to' to a 'must' for the TMD to estimate the maximum stopping time.

See changes highlighted yellow following.

4.8 Advance warning area

Difference

Replace Items 1 through 7 with the following:

1. Identify the PTCD or traffic controller position.
2. STOP HERE ON RED SIGNAL and STOP HERE WHEN DIRECTED shall be installed where warranted in accordance with Queensland MUTCD Part 3. When used, they shall be installed 6 m before the PTCD / traffic control position in the direction of travel. A temporary STOP line may be installed using temporary removable road marking tape.
3. Four cones should be placed on the centreline spaced 4 m apart starting from the STOP HERE ON RED SIGNAL or STOP HERE WHEN DIRECTED sign position (downstream). A Temporary Hazard marker (T5-7) or KEEP LEFT sign (R2-3-Q01) may be installed at the start of the row of four cones (on both ends of the four cones) to direct traffic to the correct travel path if needed.
4. Estimate end-of-queue position (see box instructions in Austroads *Guide to Temporary Traffic Management* Part 3 Section 4.8).

   A marker (for example, a cone or bollard) should be placed on the shoulder at the predicted end-of-queue to assist the traffic controller and traffic management implementer to monitor queue lengths.
5. A PREPARE TO STOP sign shall be placed in conjunction with the Boom Barrier or Traffic Controller (symbolic) or Signals Ahead sign a minimum distance as shown in Table 2.3 from the predicted end-of-queue, not the PTCD / traffic controller position. This is the primary PREPARE TO STOP sign.

   If the PREPARE TO STOP sign is more than 240 m from the traffic controller, an additional PREPARE TO STOP sign shall be placed 120 m from the traffic controller (see Figure 4.4 and Figure 4.5). The primary purpose of this sign is to protect the traffic controller. This is the additional PREPARE TO STOP sign.

If visibility is lost or the distance from the PREPARE TO STOP sign to the PTCD / traffic controller is more than 300 m, the use of repeater PREPARE TO STOP signs should be considered as per Table 4.4(a).

Where these conditions are met and the additional or repeater PREPARE TO STOP signage is required, a Queued Traffic Ahead multi-message sign assembly may be used as the primary PREPARE TO STOP sign. If used, this multi-message sign assembly shall include the Queued Traffic (symbolic) (TM1 47A), QUEUED TRAFFIC AHEAD (TM1 46A) and the PREPARE TO STOP (TM1-18B), see Figure 4.8(a) following.

The primary PREPARE TO STOP shall be installed in advance of the predicted end-of-queue in accordance with Austroads *Guide to Temporary Traffic Management* Part 3 Table 2.3.

Figure 4.8(a) – Queued traffic ahead multi-message sign assembly

Where this assembly is used, the preferred method of display is to locate the QUEUED TRAFFIC AHEAD text panel (TM1-46A) closest to traffic.

6. A ROADWORK AHEAD sign, or VMS shall be placed as per Table 4.4(b) in advance of the primary PREPARE TO STOP sign position discussed in Step 5, except for advance signs on side roads, where the requirement of Step 9 will apply.
7. Surges in traffic demand can occur so adequate monitoring of the queue shall be undertaken to minimise the risk of end-of-queue collision. If the end of queue extends beyond the estimated end-of-queue position, adequate warning of the end of queue shall be provided. The options available include:
    a) initially, when traffic queues are approaching the estimated end-of-queue position, the traffic controllers should advise the site supervisor that traffic queues are approaching their maximum length and contingency planning may need to be implemented
    b) as an interim measure, the traffic controllers may adjust their timing or give priority to one approach to minimise queuing from the key direction
    c) if adjusting timings is not successful in managing queue lengths, implement a pre-designed contingency plan to cater for the longer queue lengths being experienced – this will need to be completed by the traffic management implementer while traffic controllers continue to control traffic, and

d) if a pre-designed contingency plan is not provided, seek urgent advice from the traffic management designer for the works.

8. A 60 km/h speed zone shall be established at least one sign spacing in advance of the traffic control station where the speed zone on the approach to the traffic control station is higher than 60 km/h. ~~The 60 km/h speed zone shall be commenced at least one sign spacing (Table 2.2) in advance of the primary PREPARE TO STOP sign.~~ Duplicate the speed limit signs ~~on both sides of the road~~ and install any required repeater speed limit signs as per the requirements~~d~~ in Section 5.5.1. If the speed of traffic on approach to the traffic control station and the end of queue is less than 60 km/h through other controls (such as the traffic control station and end of queue is down a side road), a 60 km/h speed zone in advance of the primary PREPARE TO STOP sign (for example on the through road) may not be required.

9. Where intersections are located within the advance warning area (between the traffic control station and the ROADWORK AHEAD or VMS sign), see Section 4.8.1 for the signing requirements for traffic on or entering from side roads.

10. Provide additional devices and methods for avoiding end-of-queue collisions as required in Section 4.8.3.

11. For shuttle flow operations, the traffic control taper must start a minimum of 6 m from the traffic control station.

Addition

As per AGTTM Part 7 Section 2.6.3, when used side-by-side in a multi-message situation, the PREPARE TO STOP panel must be placed closest to the travel way and that the 600 x 600 version of this sign is used as illustrated in Figure 4.8(b), excluding where the use of the 1200 x 300 version is specifically permitted by QGTTM.

Figure 4.8(b) – Multi message sign assembly examples (sign located on left side of the road)

Difference

Replace Table 4.4 with the following:

Table 4.4(a) – Maximum spacing for repeater PREPARE TO STOP signs

Speed (km/h)*	Distance (m)
≤55	60
≥56	180

* The 'Speed' value to be used for the maximum spacing for repeater PREPARE TO STOP signs is the actual posted speed (temporary or permanent) which applies (this will generally be 60 km/h but may be less) where the repeater spacing is required. If the speed limit changes within a repeater spacing, use the spacing for the lower speed limit.

Note: The 200 m zone in Figure 2.2 does not apply.

Table 4.4(b) – Minimum distance from ROADWORK AHEAD or variable message sign to primary PREPARE TO STOP sign

Speed (km/h)^	Distance (m)
≤55	30
≥56–65	90
≥66–75	140
≥76–85	240
≥86	Four times the speed (km/h)

^The 'Speed' value to be used for the minimum distance from the ROADWORK AHEAD or variable message sign to the primary PREPARE TO STOP sign is the actual permanent posted speed of the road prior to any reduction for the roadworks.

Addition

For the purpose of estimating the end-of-queue position only, replace the term

'oversized vehicles'

used in AGTTM with the term

'heavy vehicles'.

Addition

Add the following to the **'Estimate end-of-queue position'** text box:

An estimated end-of-queue position is to be determined for the approach to each traffic control station and is to be based on the maximum expected traffic flow on that approach during the time traffic control will be in operation.

The count or estimate of the number of average and heavy vehicles during a five-minute period at a site may be completed using the following in order of preference:

1. Actual five-minute count of vehicles during the peak time the site will be occupied. This five-minute count is based on the vehicles approaching the selected traffic control station from the approach to be controlled by that station (not a sum of both directions of traffic). Consideration of peak traffic flow direction may be needed.
2. If a five-minute count is not possible, use annual average daily traffic (AADT) values with hourly breakdowns and percentage heavy vehicle data. To estimate the five-minute count, select the peak hourly period during the time the site will be occupied and divide by 12 to get an estimated five-minute value. Divide this by two if the AADT is for a two-way road. Use the percentage heavy vehicles information with this value to estimate the number of heavy vehicles for this five-minute period.
3. If a five-minute count is not possible, and AADT values with hourly breakdowns are not available, use AADT values and percentage heavy vehicle data. To estimate the five-minute count, firstly divide the AADT by a factor of 10 (to get an estimated hourly count) and then divide this by 12 to get an estimated five-minute value. Divide this by two if the AADT is for a two-way road. Use the percentage heavy vehicles information with this value to estimate the number of heavy vehicles for this five-minute period.

AADT information for state-controlled roads can be located on the Queensland Open Data Portal – Traffic Census data.

Addition

Add the following to Table 4.3

> When estimating the queue length, Table 4.3 uses an average vehicle length of 6 m and an average heavy vehicle length of 20 m for a five-minute stopping time (based on the five-minute traffic count) and then adjusts the multipliers for other stopping time values.
>
> Where very long vehicles are expected (for example outback and mining routes or routes where most vehicles are towing), then to ensure estimated queue lengths are as accurate as possible, an average length per vehicle that matches the actual traffic mix expected at that location should be used.
>
> The estimated queue length shall be at least a minimum of one average vehicle plus one heavy vehicle (of a length which may be applicable to the site). Part lengths of vehicles shall be rounded up when estimating queue lengths.

Addition

To calculate the 'maximum stopping time' value used in Table 4.3 for each approach, the Traffic Management Designer must~~will need to~~ estimate the likely duration of time that queued traffic will be stopped at a traffic control station. Calculating the maximum stopping time needs to include the total time from when the traffic controller stops traffic, through until the same traffic controller releases traffic for the next cycle from that approach. This would typically include the following considerations:

- the time taken for the traffic queue from one approach to pass the traffic control station and travel the length of the closure
- the time for the queue at the other end of the site to leave that traffic control station and also travel the length of the closure (this may commence at the same time as the other queue or following the completion of the other queues travel if shuttle flow is in operation)
- if traffic queues are held for a period (with no traffic traveling through or past the site), then this hold time will also need to be included
- a factor of safety may also be allowed for vehicles travelling the closure below the signed speed limit, and
- if more than two traffic control stations (one each end) are in operation, depending on the operating characteristics of the roadworks site, the time for each queue to be released and travel through the roadworks site may need to be considered and included.

The 'maximum stopping time' value will be used in Table 4.3 to determine the multipliers to be used with the number and type of vehicle (average or heavy) from the five-minute count or calculation.

Addition

Add the following note to Figures 4.4, 4.5 and 4.6:

> The duplication of the advance warning signs for a traffic control station as indicated in Figures 4.4, 4.5 and 4.6 is not a specific requirement. Signs are to be duplicated in accordance with the requirements in Section 2.5.3 and Section 5.5.1 for speed signs.

Reworded to bring mandatory requirements to the top and to ensure it is clear that the options for treatments in TMWOR are optional at any time but if mandated by this section, then at least one of the treatments must be used.

See changes highlighted yellow following.

4.8.3 Additional end-of-queue protection

New

~~Traffic queues may form where vehicles are stopped or slowed by roadworks. This may be due to traffic control at the roadworks or congestion due to the roadworks, because of heavy traffic or lengthy delays, or a combination of the two. Depending on the speed of approaching traffic and sight distance to the end of a traffic queue, additional advance warning may be required to manage the risk of end-of-queue crashes.~~

~~End-of-queue risk control measures may also be considered where poor weather (for example rain or fog), poor road conditions, a downhill approach, vertical curves, night works (driver fatigue or visibility) or a slippery road surface are present.~~

Where traffic control is in use, one or a combination of end-of-queue risk control measures in ~~accordance with~~ Chapter 1, Clause 2 of the *Guideline – Traffic Management at Works on Roads* must ~~shall~~ be implemented ~~used~~ to manage the risk of rear end crashes ~~in situations~~ where either of the following apply:

- the speed limit is 80 km/h or higher (prior to any reductions for the roadworks), or
- where sight-distance to the end of the traffic queue is restricted (less than the value from Table 2.3).

End-of-queue risk control measures ~~may~~ must also be implemented ~~also~~ when nominated ~~be triggered by the requirements in Clause 6.5.7 of the Transport and Main Roads Technical Specification, MRTS02 *Provision for Traffic* or nominated as mandatory control measures~~ in Clause 5.8 of Annexure MRTS02.1 *Provision for Traffic*.

~~For projects not subject to the requirements of MRTS02, the requirements in MRTS02 may be adopted.~~

In addition to the requirements above, end-of-queue risk control measures should be considered and implemented to address end of queue risks at any site. Some considerations include:

- Where traffic slows significantly, or queues are formed due to congestion or roadworks.
- Where environmental or geometric issues exist that limit visibility or impact normal stopping distances such as poor weather conditions (for example rain or fog), poor road conditions, a downhill approach, vertical curves, night works (driver fatigue or visibility) or a slippery road surface are present.
- Where significant volumes of heavy vehicles are present or expected.

Added reference to Section 5.12.

4.9 Termination Area

Addition

Additional guidance is provided in Section 5.12.

When using GIVE WAY and ONE LANE arrangements the 100 m maximum length of the work area has changed to a 120 m maximum length of single lane flow.

When operating under natural give and take, requirements for the use of tapers at 45 degrees and a maximum remaining lane width of 3.5 m have been added.

Added new Figure 5.4.4(a).

Reword the requirement for maximum single lane section lengths to a ‘should’.

Delete ‘residential street’ row from Table 5.4.

Change existing Figure 5.4.4 number to Figure 5.4.4(b).

See changes highlighted yellow following.

5 Past the worksite

5.4 Delineate the route

5.4.4 Shuttle flow

Difference

Replace:

When using shuttle flow, the following are requirements and recommendations:

- Lane width should be reduced in accordance with Table 2.5. For further guidance on lane widths see Section 2.5.8.
- The swept path shall accommodate heavy and over-dimensional vehicles if required.
- Traffic control shall be provided at each end of the operation (see Section 5.10). Traffic control is not required if:
  - there is clear visibility past the work area and beyond it for at least 75 m, or to the end of the road if less than 75 m away

  - road users have clear visibility of the work area and the opposing approach for a distance greater than 150 m and either one of the following:
    - traffic volume in both directions is 40 vph or less, and the speed is 70 km/h or less, and the length of the single lane is 60 m or less
    - the length of the single lane is 100 m or less, and GIVE WAY and ONE LANE signs are provided at one end of the shuttle lane
    - it is a residential street and the length of the shuttle is 60 m or less.
- Ensure single lane section lengths are a maximum distance as shown in Table 5.4.

with:

When using shuttle flow, the following are requirements and recommendations:

- Lane widths shall be in accordance with Table 2.5. For further guidance on lane widths, see Section 2.5.8.
- The swept path shall accommodate heavy and over-dimensional vehicles if required.
- Active traffic control (by traffic controllers or PTCDs) shall be provided at each end of the operation (see Section 5.10), except as follows:
  - GIVE WAY and ONE LANE signs are provided at one end of the shuttle lane and the NO OVERTAKING OR PASSING sign is also to be erected at the start of the single lane for traffic in the opposite direction and all the following apply:
    - traffic volume in both directions is 150 vph or less
    - the traffic speed is 70 km/h or less
    - each entry to the work area is visible from the other
    - the length of the single lane or shuttle flow segment ~~work area~~ is 120~~100~~ m or less, and
    - there is sight distance to opposing traffic of at least 200 m beyond the far end of the work area for traffic facing the GIVE WAY, ONE LANE assembly.
  - No specific traffic control signs are required for the single lane section, and traffic operates under natural give and take using the one open lane and either one of the following applies:
    - it is a residential street (permanent posted speed is 50 km/h or less) and there is clear visibility past the work area and beyond it for at least 75 m, or to the end of the road if less than 75 m away and the length of the shuttle lane does not exceed 60 m, or

- road users have clear visibility of the work area and the opposing approach for a distance greater than 150 m or to the end of the road if less than 150 m away, the traffic volume in both directions is 40 vph or less, the permanent posted speed is 70 km/h or less, and the length of the shuttle lane is 60 m or less.

- Where active traffic control is not provided (working under natural give and take, or where GIVE WAY and ONE LANE signs are in operation), the taper should be at 45 degrees on both the approach and departure sides of the work area and the remaining open single lane section should have a maximum width of 3.5 m. See Figure 5.4.4(a) for an example layout.~~:~~

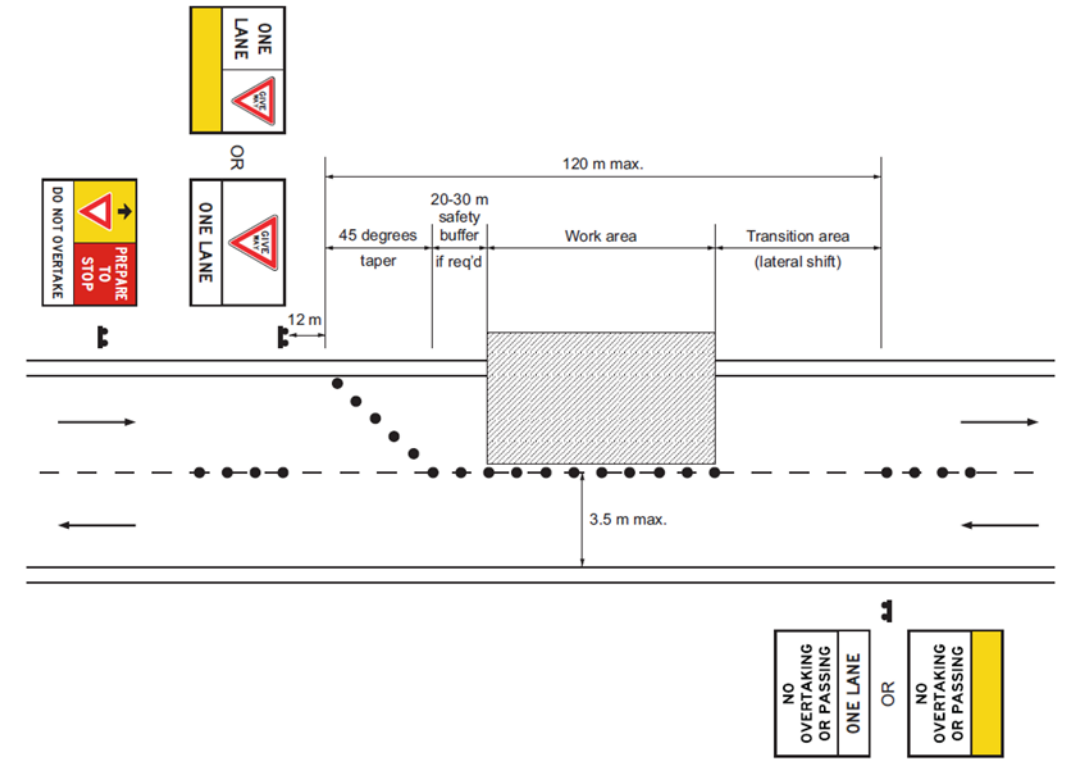
  ~~– the length of the approach taper should be approximately 15 m where two-way operation is maintained, and~~

  ~~– where working under natural give and take, or where GIVE WAY and ONE LANE signs are in operation, the taper should be at 45 degrees on both the approach and departure sides of the work area.~~

- ~~Ensure~~ Single-lane section lengths should be ~~are~~ a maximum distance as shown in Table 5.4.

Figure 5.4.4(a) does not include all traffic control devices required and is not to be used as a TGS diagram.

Figure 5.4.4(a) – Example layout using GIVE WAY signs



Difference

Replace Table 5.4 with the following:

Table 5.4 – Maximum length of operation under shuttle flow

Traffic volume (Total for both directions) (vph)	Length of single lane section (m)
701 - 800	70
601 - 700	100
501 - 600	150
401 - 500	250
351 - 400	400
301 - 350	600
≤ 300	800

Addition

When GIVE WAY and ONE LANE signs are provided at one end of the shuttle lane (in accordance with this section), and advance warning of this arrangement is required, the Give Way Sign Ahead sign (W3-2 or WM3-2A in a multi-message sign assembly – see Figure 5.4.4) should be used.

Figure 5.4.4(b) – Advance PREPARE TO STOP sign for Give Way control

Addition

The volumes in Table 5.4 have been determined to allow a quick analysis without referring to a traffic engineering professional. Additional traffic engineering input is required to support a longer length of single-lane operation.

Generally, when using Table 5.4, and where the lengths are within the maximum limits, single-lane operation using active control by portable traffic control devices or traffic controllers will lead to a relatively short and consistent or stable queue length; however, additional traffic engineering input and considerations (risk assessments) are required to support longer lengths of single-lane operation which will generally lead to longer maximum queue lengths and queue lengths that are not easily managed, or are variable and unstable. Contingency planning for longer than expected or continually-growing queue lengths shall be included as part of the TGS design. End-of-queue protection measures (see Section 4.8.3) shall be considered.

Change requirement from ‘are to’ to ‘should’ for the distance to commence a speed zone in advance of the active work area.

Modify the requirements for the duplication of Speed Restriction signs from all changes in speed limit to a more balanced approach considering the road environment and type of speed limit change.

Add reference to the default speed limit applying when and END speed limit sign is used.

Reword reference to Section 2.5.3 when duplication of speed signs is not possible.

Add types of multi-lane divided roads to the requirements for repeater speed limit signs.

Reword requirements for speed signs at the end of a temporary speed zone.

See changes highlighted yellow following.

5.5 Safe traffic speed

5.5.1 Temporary speed limits

Addition

Add the following guidance:

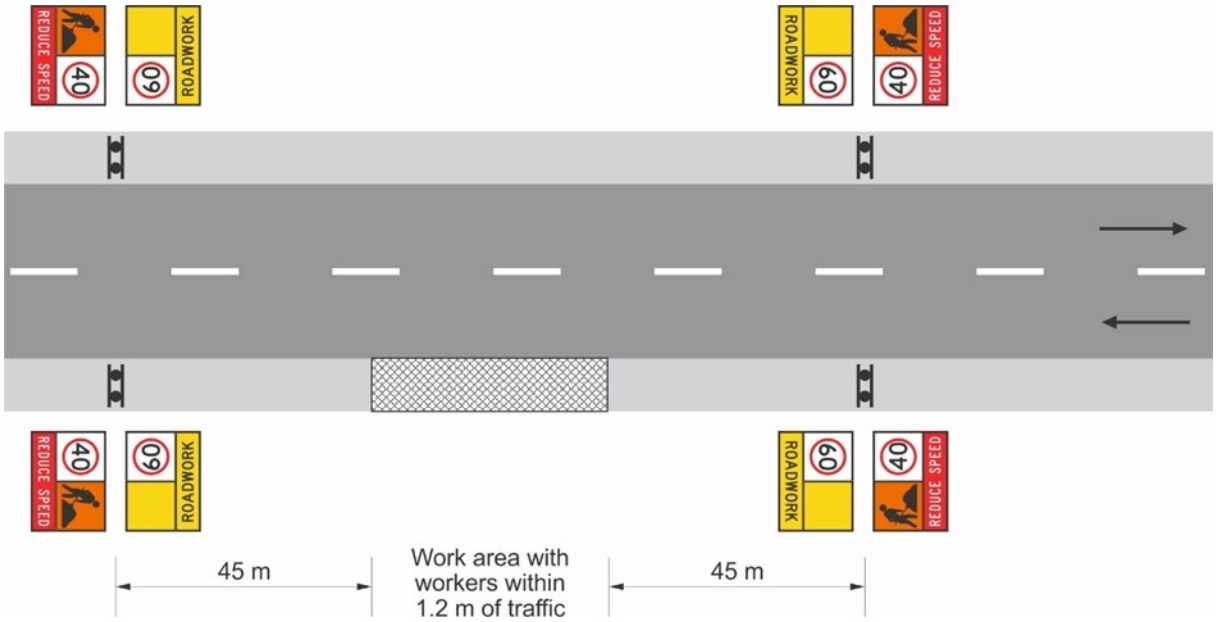
The Designer should ensure reduced speed zones are as short as possible and that they are not commenced so far prior to the hazard (or workers) that drivers start to disregard them and speed up. There is a balance between ensuring drivers can reduce speed prior to a hazard and not making that distance so long that compliance becomes an issue.

Speed limits implemented to meet specified safe workplace requirements for the protection of workers in an active work area ~~are to~~ should commence a minimum of a single sign spacing in advance of the active work area. The 200 m zone requirements past a speed limit reduction apply when determining this sign spacing value.

When considering the extent of the reduced speed beyond the work area, the guidance in Section 5.12 should be used, while remembering that offset speed zone requirements and the need to reduce traffic speeds past the work area for the other direction of travel may dictate the speed sign locations.

Figure 5.5.1 illustrates an example of a speed reduction arrangement for road worker safety on a 60 km/h road where road workers will be working within 1.2 m of the traffic lane and the speed past the workers is to be reduced to 40 km/h. The distance in advance of the workers for the start of the 40 km/h reduced speed zone is based on appropriate sign spacing in Table 2.2. As this spacing is within 200 m of a speed limit change (to 40 km/h), the speed value to use in Table 2.2 is 60 km/h which equates to a distance of 45 m. This Figure does not include all traffic control devices required and is not to be used as a TGS diagram.

Figure 5.5.1 – Speed limit sign location for road worker safety



Difference

In subsection **'Selecting the speed limit'**, replace Table 5.5 with the following:

Table 5.5 – Recommended length of temporary speed zone

Temporary speed limit (km/h)	Length of zone (m)	Conditions
<40	100–200	• unusually high level of hazard for workers on foot or road users (pedestrians or cyclists) • it is impractical to separate pedestrians or cyclists from vehicular traffic in the work area
40	100 (minimum)–500 (maximum)*	• workers on foot within 1.2 m of traffic with no physical barrier • structural danger to bridges • high level of hazard for workers on foot or road users (pedestrians or cyclists)
60	150 (minimum)	• workers on foot between 1.2 m and 3 m of traffic or plant within 3 m of traffic with no physical barrier (that is, road safety barrier) • on approach to the traffic controller or PTCD • reduced visibility (for example, dust or smoke) • reduced standard alignment • degraded pavement surface • newly laid bituminous seal
80	500 (minimum)	• workers on foot or plant between 3 m and 6 m of traffic with no physical barrier • disturbance to alignment or pavement surface
80 (buffer)	300 (minimum)	• for advance warning of a 40 km/h or 60 km/h when speed is 100 km/h or more

*Subject to a risk assessment, the maximum length for a 40 km/h temporary speed limit may be extended to 1000 m.

Difference

In subsection **'Designing the speed limit'**, replace the following ~~two dot points on temporary speed zones (regarding the use of the speed limit AHEAD signs and the Speed Restriction signs at the start of a zone)~~:

Temporary speed zones are communicated clearly to road users with the following traffic control devices in order for them to recognise the need to adjust their speed:

- a Speed Limit AHEAD sign is located a distance double the speed in advance of the Speed Restriction sign

- a Supplementary ROAD WORK and Speed Restriction signs at the start of temporary speed zone. Speed Restriction signs are to be placed on both sides of the roadway where practicable

- a Speed Restriction sign (indicating the speed limit past the termination area) or END Speed Limit sign to terminate the temporary speed zone on both sides of the roadway where practicable. An END ROADWORK sign can be placed beyond the temporary speed zone or concurrent with a Speed Limit sign or the END Speed Limit sign on both sides of the roadway where practicable.

with:

Temporary speed zones are communicated clearly to road users with the following traffic control devices in order for them to recognise the need to adjust their speed:

- a Speed Limit AHEAD sign must ~~shall~~ be located a distance double the speed in advance of the Speed Restriction sign and must ~~shall~~ be located on the left-hand side of the road and should be duplicated (placed on both sides of the roadway) where practicable. Refer to Table 5.6 – *Methods for reducing speed limit* for the use of the Speed Limit AHEAD sign

- ~~a Supplementary ROAD WORK and Speed Restriction sign or a Speed Restriction sign in a multi-message panel at the start of temporary speed zone. Speed Restriction signs at the start of a temporary speed zone shall be placed on both sides of the roadway where practicable.~~

- a Supplementary ROAD WORK and Speed Restriction sign or a Speed Restriction sign in a multi message panel at the start of temporary speed zone as follows:
  - Speed Restriction signs must be placed on the left-hand side of the road at the start of a temporary speed zone (either a speed reduction or speed increase).
  - Speed Restriction signs should be duplicated (also placed on the right-hand side of the road) where practicable in the following situations:
    - At the start of a reduced temporary speed zone on a road with a permanent posted speed limit greater than 60 km/h, or
    - On a multi-lane road (includes divided, undivided, one-way or ramps).
  - In addition to the above, any Speed Restriction sign may be duplicated (also placed on the right-hand side of the road).

- an END Speed Limit sign to terminate the temporary speed zone must be placed as per the requirements for a Speed Restriction sign above. In this case, the speed limit beyond the END Speed Limit sign will revert to the default speed limit.

- an END ROADWORK sign may be placed beyond the termination of the temporary speed zone or concurrent with a Speed Restriction sign or the END Speed Limit sign.

- If sign duplication is not practicable or possible (due to for example, vegetation, safety barrier, inadequate width), the designer must document an alternative to ensure all road users are able to see the speed limit signs (refer to Section 2.5.3 for options).

~~*Addition*~~

~~Add the following additional guidance:~~

> ~~Where it is not practicable to duplicate speed signage, the designer should document (generally through a risk assessment approach) an alternative to ensure all road users are able to see signs. The options in Section 2.5.3 may be considered.~~

Difference

In subsection **'Designing the speed limit'**, replace the following paragraph on repeater speed limit signs:

> Repeater signs must be used to confirm and remind users of the speed limit where the zone is long and there are locations which could seem like the temporary speed limit no longer applies (e.g. between work areas in an extended worksite), or to advise road users entering the temporary speed limit. Repeater signs must be placed on the left-hand side of the road at a maximum spacing of 500 m and on both sides on multilane roads.

with:

> Repeater speed limit signs shall be used to confirm and remind users of the speed limit where the zone is long and there are locations which could seem like the temporary speed limit no longer applies (for example, between work areas in an extended worksite), or to advise road users entering the temporary speed limit. Repeater speed limit signs may be used as required above, and shall be placed on the left-hand side of the road at a maximum spacing of 500 m. On ~~multilane~~ multi-lane road (including divided, undivided, one-way or ramps) ~~divided roads~~, repeater speed limit signs should also be placed at a maximum spacing of 500 m on the right-hand side of the roadway where practicable.

Difference

In subsection **'Designing the speed limit'**, replace the following:

> At the end of the temporary speed zone, the following requirements apply:
>
> - A speed sign must be used to exit the temporary zone. When using this sign at the end of the roadworks, the ROAD WORK supplementary signs are not to be used in conjunction.
> - Signs are to be placed on both sides of the carriageway where practicable.

with:

> At the end of the temporary speed zone, the following requirements apply:
>
> - Speed Restriction or END speed limit signs must be used to end the temporary zone.
> - When using these signs at the end of the roadworks, the ROAD WORK supplementary signs must not be used in conjunction.
> - Speed Restriction and END speed limit signs must be placed as per the requirements for a Speed Restriction sign above.

Difference

In subsection '**Operational**', replace third dot point:

- Signs shall be placed on both sides of the roadway where practicable to ensure road users have clear visibility of speed limit signs.

with:

- Speed Restriction signs where required to be duplicated in the **'Designing the speed limit'** section should be placed on both sides of the roadway where practicable to ensure road users have clear visibility of speed limit signs.

Addition

Add the following additional guidance:

> Guidance on the use of temporary variable speed limit signs in construction and maintenance work areas on motorways is given in the *Guideline – Traffic Management at Works on Roads*.

Add location requirements for the start of the traffic control taper.

See changes highlighted yellow following.

5.9 Transition area

5.9.1 Tapers

Addition

In subsection **'Traffic control taper'**, add the following:

For shuttle flow operations, the traffic control taper must start a minimum of 6 m from the traffic controller or PTCD.

Difference

Replace the title for Table 5.8:

> Table 5.8: Distance between tapers

with

> Table 5.8: Minimum distance between tapers

Difference

Replace the text following Table 5.8:

> The speed to use in Table 2.2 and 5.8 must be as per Figure 2.2 of Section 2.5.3.
>
> For details on how to use delineation devices see Section 5.4.

with

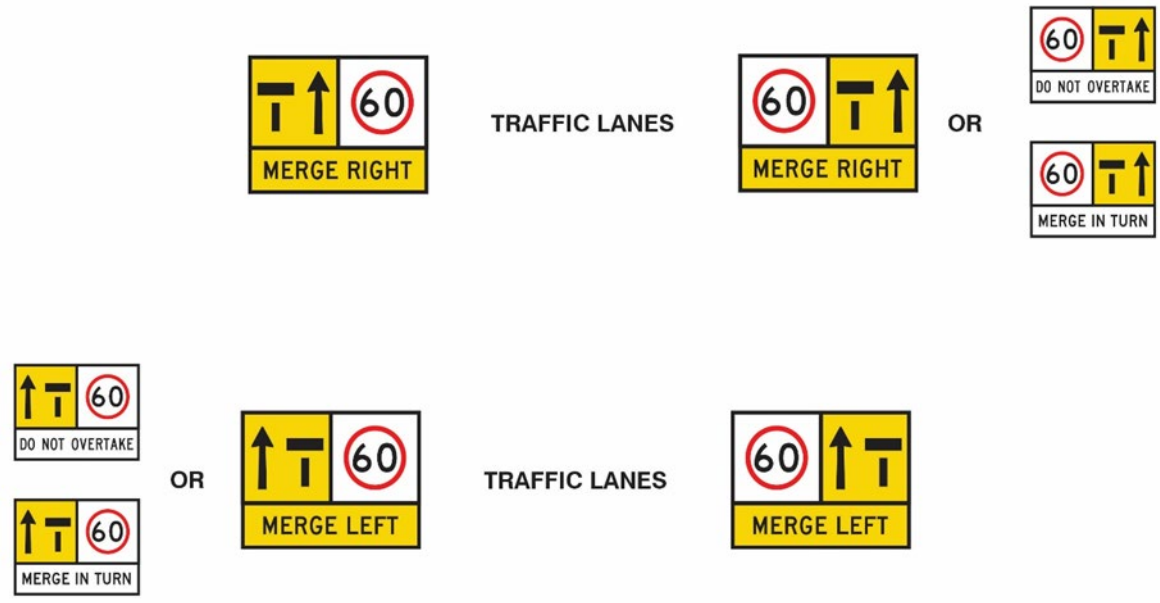
> The speed value used in Tables 5.7 and 5.8 shall be as per Figure 2.2 of Section 2.5.3 – the 200 m zone in Figure 2.2 applies to the recommended length and recommended spacing of tapers.
>
> For the spacing of delineation devices at tapers, see Section 5.4. The 200 m zone in Figure 2.2 does not apply to delineation spacing.
>
> Where the posted permanent speed limit of the road is 80 km/h or greater, the recommended taper length for merge tapers (Table 5.7) and the recommended distance between merge tapers (Table 5.8) may be increased and be based on the posted permanent speed limit of the road.

Addition

In subsection '**Merge taper**', add the following:

When signing merge tapers, the multi-message signs on each side of the multilane road on approach to the merge taper may be different. The MERGE LEFT / MERGE RIGHT panel should be included with the lane status panel for the lane which is required to merge (must change lanes); however, for the lane where no action is required as this lane continues, the MERGE LEFT / MERGE RIGHT panel may be replaced with either a DO NOT OVERTAKE or MERGE IN TURN panel as shown in the following Figure 5.9.1(a).

Figure 5.9.1(a) – Lane status signs for merge tapers



Addition

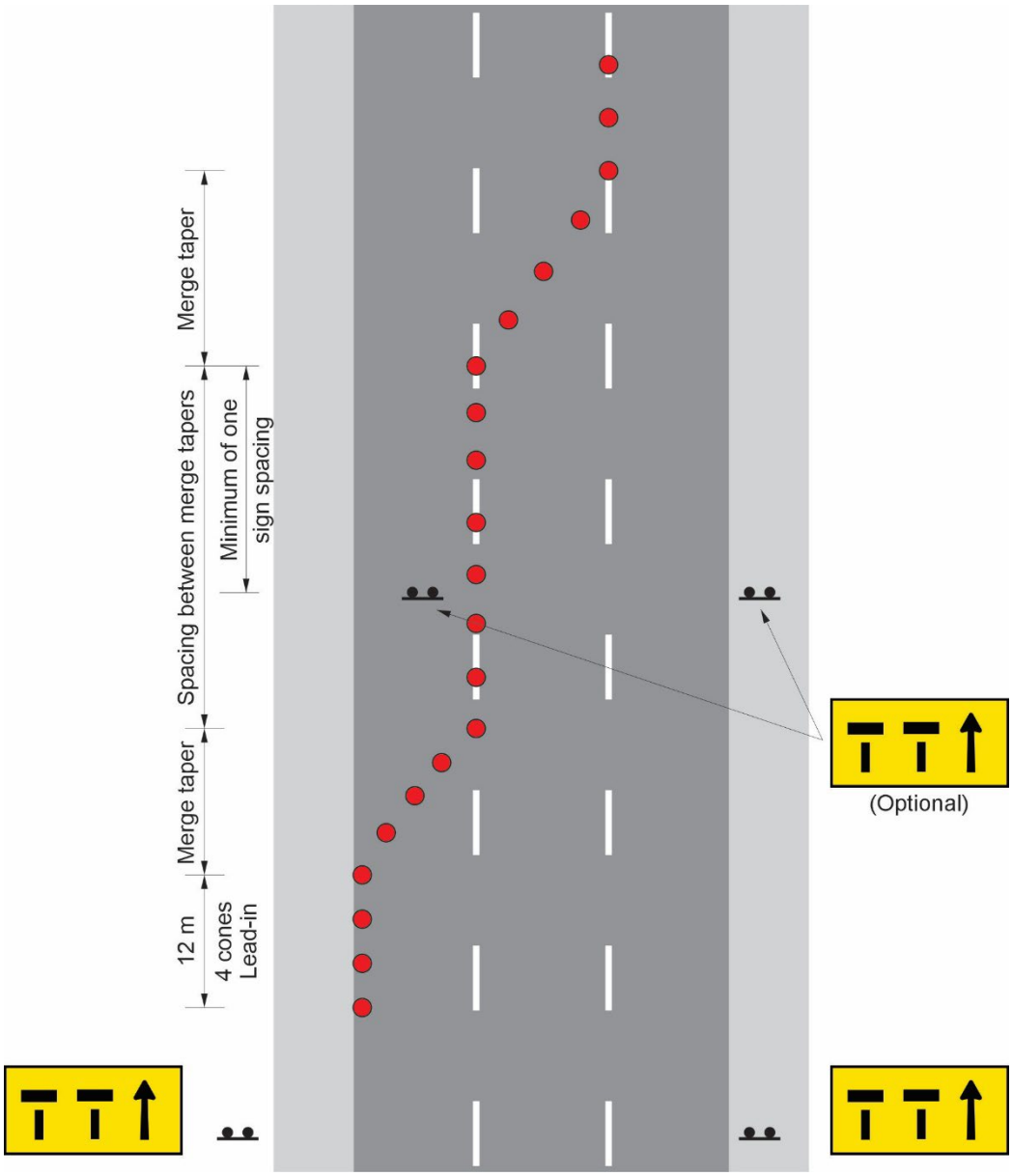
In subsection '**Multiple tapers**', add the following:

When signing multiple merge tapers, the following lane status sign configuration and location requirements will apply:

- All lane status signs shall display the final lane configuration regardless of their location.
- A lane status sign shall be located a minimum of a single sign spacing prior to the start of the first merge taper; however, as more than one lane is merging, this spacing may be increased to a distance of two sign spacings (see Section 2.5.3).
- A repeater lane status sign may be installed in the area between the two merge tapers and, if used, should be located a minimum of a single sign spacing prior to the start of the second merge taper.

The following Figure 5.9.1(b) is an example of the lane status sign configuration and location for a road with multiple merge tapers. This Figure does not include all traffic control devices required and is not to be used as a TGS diagram.

Figure 5.9.1(b) – Lane status signs for multiple merge tapers



Difference

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

- Tapers shall 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 shall 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 shall 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 shall not be implemented through / across an intersection or ramp.
- Lateral shift tapers (excluding at contraflow transition points) shall not be implemented through / across an intersection or ramp. Where provided at contraflow transition points, the management of the other approaches to the intersection will be critical.

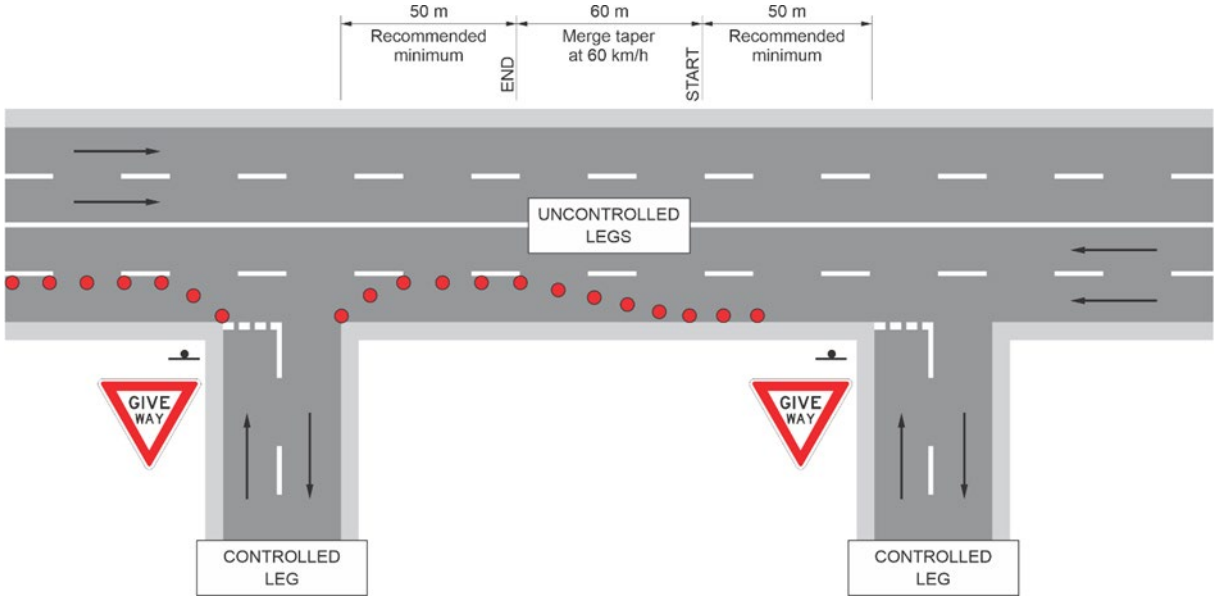
Addition

In subsection **'Designing a taper'**, add the following:

When considering the space requirements for a merge taper, the terminology referring to a controlled leg or uncontrolled leg of an intersection on a Category 2 road is different to a controlled intersection. Controlled legs are those approaches to an intersection controlled by traffic signals, roundabout give way signs, give way signs, or stop signs. In some cases, a controlled intersection may have uncontrolled legs, which are not subject to any formal control method.

Figure 5.9.1(c) shows an example of a merge taper on a Category 2 road with a 60 km/h speed limit that includes intersections with minor side streets (GIVE WAY or STOP signs on the side streets only). The side street legs are controlled while the multilane road has uncontrolled legs through these controlled intersections.

Figure 5.9.1(c) – Controlled and uncontrolled legs on a multi-lane road



Clarify Item 7 related to the considerations that impact the choice of a PTCD.

Add new item g) to Item 8, recommending PTSS to be operated in paired mode when used to manually control shuttle flow arrangements.

Reword Item 12 to mandate qualified Traffic Controllers when PTCDs are operated in manual mode.

Reword Item 17 and sub dot points.

Add speed of traffic to the requirements for reducing speed on approach to a PTCD.

See changes highlighted yellow following.

5.10 Traffic control

5.10.1 Portable traffic control devices

Difference

Replace Section 5.10.1 with the following:

PTCDs are used to enhance the safety and protection of road users and road workers, specifically traffic controllers.

When using PTCDs, and situations occur where vehicles can bypass the temporary traffic control station, the placement of additional cones along the centreline shall be installed to provide a sufficient distance to prevent the vehicle passing the PTCD. Prior to including a PTCD in a TGS, a risk assessment shall be undertaken to ensure the suitability and choice of PTCD. Other considerations that impact the choice of a PTCD are as follows:

1. impacts of equipment failure on road workers and road users; employ back-up traffic controllers in case of failure
2. background impacts on the visibility of the PTCDs for approaching road users
3. clear visibility and available sight distance (see Section 2.5.4); install PTCDs on the left-hand side of each approach – if they are not readily visible in that location, they should be placed in a more visible position
4. speed of traffic
5. traffic volumes
6. duration of works, and
7. whether or not the PTCD needs to be operated when unattended.~~can only be manually operated.~~

PTCD options include:

8. portable traffic signal systems (PTSS):
    a) intended for shuttle flow (see Section 5.4.4) or gating (all stop) operation
    b) available to provide control at intersections (see *Guideline – Traffic Management at Works on Roads* Chapter 5 Clause 2.5.3.1)

c) signals automatically respond to traffic demands via vehicle actuated operation (unmanned)

d) option of fixed time operation that used fixed timed cycles when traffic flow is relatively constant

e) may be used in manual mode but require qualified operators (that is, traffic controller) – operators with two-way radio can monitor signal performance, warn the roadworks site and manage road users, and

f) do not use where side roads intersect the roadworks site and are not controlled by a traffic controller or other PTSS.

g) While PTSS devices may be operated in a few different modes, when using PTSS Type 1 or Type 2 devices, for manually controlled shuttle flow arrangements, they should be used in paired mode using a single HRC whenever possible or suitable. This will prevent a green signal being displayed to both approaches at the same time.

9. Portable boom barriers:

    a) are intended to stop traffic

    b) manage shuttle flow or gating (all stop) operation, and

    c) require qualified operators to operate in manual mode (that is, traffic controller).

When using PTCDs:

10. four cones should be placed on the centreline spaced 4 m apart starting from the STOP HERE ON RED SIGNAL or the STOP HERE WHEN DIRECTED sign position (downstream), and

11. undertake a risk assessment.

Consider the following when using PTCDs:

12. PTCDs must only be manually controlled by ~~require~~ qualified operators (that is, traffic controllers).

13. They are intended for traffic control of relatively short duration: for roadworks sites that will continue for a longer period without work area location changes, consider installing temporary, rather than portable, traffic signals (see AS 1742.3).

14. Where traffic is required to stop, temporary road markings may be installed 6 m in advance of the PTCD to indicate a stop line. The STOP HERE ON RED SIGNAL or STOP HERE WHEN DIRECTED must ~~shall~~ be installed in accordance with the Queensland MUTCD Part 3.

15. Provide warning signs (for example, Signals AHEAD) an appropriate sight distance in advance of any PTCD as shown in Section 2.5.3 (see QGTTM Part 3 Section 4.8 for advance sign options). For PTCD, the Traffic Controller (symbolic) sign must be ~~is~~ replaced with the relevant PTCD (symbolic) sign.

16. Apply a temporary speed limit of 60 km/h or less if speed is above 60 km/h (see Section 5.5.1) on approach to the PTCD.

17. ~~Regularly monitor~~ PTCDs must be regularly monitored to ensure they are operating effectively and safely by checking that:
    a) the time settings are appropriate
    b) the alignment of the signal displays is appropriate for the speed zone ~~correct~~
    c) the associated signs are intact and properly displayed
    d) detectors are functioning correctly
    e) there are no burnt out lanterns ~~lamps~~, and
    f) batteries are charged.

Figure 5.23 illustrates an example of PTCD and sign placement. This diagram does not include all traffic control devices required and is not to be used as a TGS diagram (see Section 4.8 for avoiding end-of-queue collision options and placement of signs). The speed of traffic must be reduced to a maximum of 60 km/h on the approach to a PTCD and an advance warning sign (ROADWORK AHEAD) is to be located in accordance with Section 4.8.

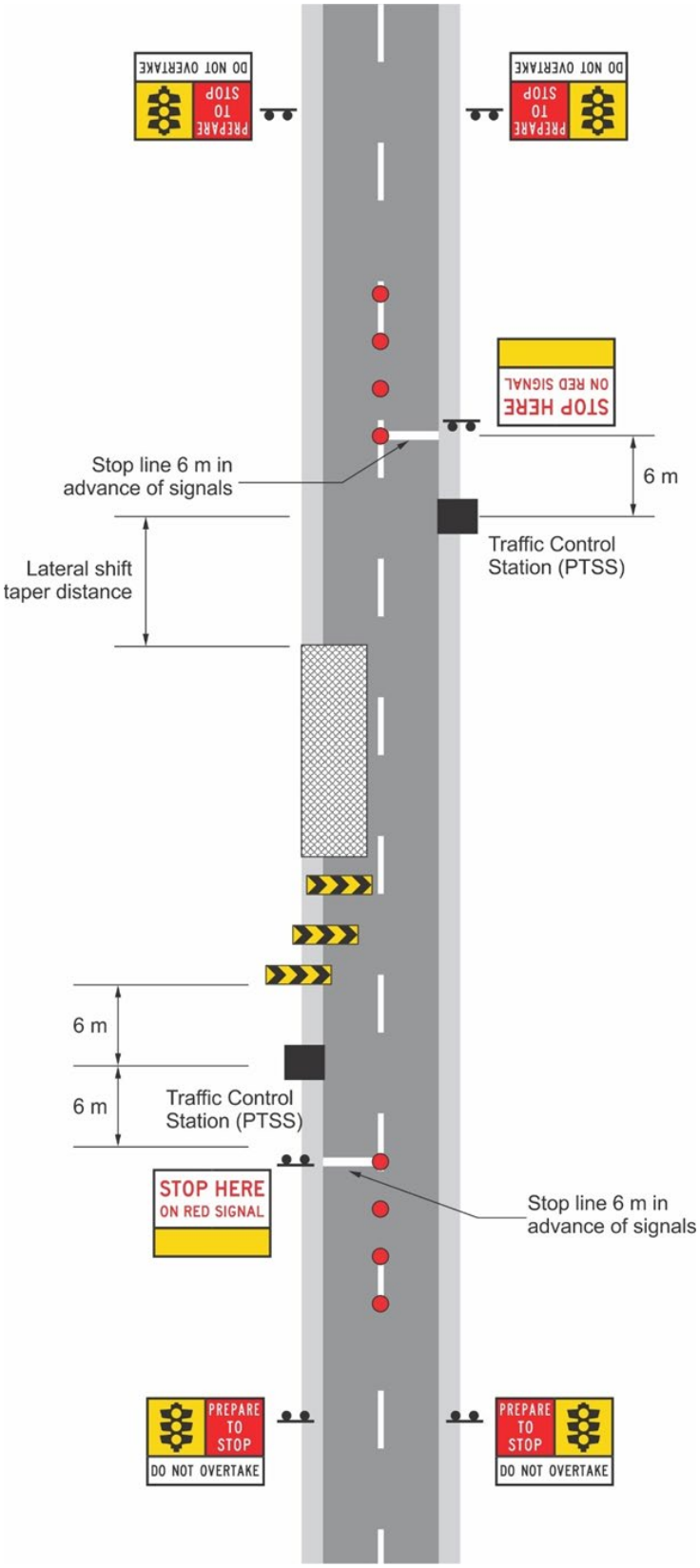
PTCDs may be used on any road environment; however, PTCDs should be used in lieu of traffic controllers using a STOP / SLOW bat on all roads with an annual average daily traffic (total vehicle count in both directions of travel per day) of over 500 vehicles per day and a permanent posted speed limit of 70 km/h or greater.

Where a PTCD is not used as recommended here, a risk assessment in accordance with the requirements of Clause 1.9 of the Queensland MUTCD Part 3 shall be undertaken. See also the risk assessments requirements for using TC's in place of PTCDs, in the *Guideline – Traffic Management at Works on Roads* Chapter 5 Section 2.2.

Only PTCDs included on the current list of approved products in the Transport and Main Roads ITS Approved Products document shall be used at roadworks sites in Queensland.

Additional guidance on the use, installation and operation of PTCDs, including Type 1 and 2 PTSS and boom barriers, is available in the *Guideline – Traffic Management at Works on Roads*.

Figure 5.23 – Typical use of portable traffic control devices, 60 km/h road



Note:

1. Traffic speed must be reduced to a maximum of 60 km/h on the approach to a PTCD, and
2. An advance warning sign (ROADWORK AHEAD) or VMS shall be installed in accordance with Section 4.8.

Reword to remove the term ‘ensure’ and to clarify the requirements for lighting and number of lanes a traffic controller may control.

See changes highlighted yellow following.

5.10.2 Traffic controllers

Difference

Replace:

> Worksites are hazardous areas so use manual traffic control only where PTCDs are insufficient to provide the safety, capacity and efficiency required for effective traffic control. When traffic controllers are used, traffic controllers cannot direct a road user to contradict upcoming intersection signals. Traffic controllers are to coordinate activities with operating signals. If traffic controllers are operating within close proximity to a signalised intersection and the lights are flashing yellow or are off, a traffic controller must only control one lane and the approach to this intersection must be reduced to one lane of traffic. Where works cause delays to traffic flow or a side road intersects the worksite, do not use an automated PTCD, a traffic controller is required. The following requirements and recommendations apply when using traffic controllers:

with

> Worksites are hazardous areas so use manual traffic control only where PTCDs are insufficient to provide the safety, capacity and efficiency required for effective traffic control. When traffic controllers are used, traffic controllers cannot direct a road user to contradict upcoming intersection signals. Traffic controllers are to coordinate activities with operating signals. If traffic controllers are operating within close proximity to a signalised intersection and the lights are flashing yellow or are off, a traffic controller must only control one lane and the approach to this intersection must be reduced to one lane of traffic. Where works cause delays to traffic flow, or a side road intersects the worksite, do not use an automated PTCD, a traffic controller using a STOP/SLOW bat or controlling a PTCD is required. The following requirements and recommendations apply when using traffic controllers:

Difference

Replace the following dot point:

- Ensure that traffic controllers are well illuminated at night. Where required, provide additional lighting.
- Ensure a single traffic controller never controls more than one lane of traffic or more than one approach. A single traffic controller can operate two PTSS at one time in special circumstances.

with

- ~~Ensure that~~ The ~~traffic controllers~~ traffic control station and the area where traffic controllers are operating PTCDs from ~~are~~ must be well illuminated at night. Where required, provide additional lighting. See Section 6.7 *Night works* for greater detail about working at night.

- ~~Ensure a~~ A single traffic controller must never control~~s~~ more than one lane of traffic or more than one approach when using a STOP/SLOW bat or a PTCD. This may only be varied where a traffic controller is using a PTCD which is capable of alternative arrangements and both the device and manner of operation is approved by the department. See Section 2.6.2 of AGTTM Part 7 for additional requirements and considerations when designing and using PTCDs for traffic control.

Add reference to the MUTCD Part 3 Clause 4.6.11. Add various considerations for the design of the termination area.

5.12 Termination area

Addition

Refer to the Queensland MUTCD Part 3 Clause 4.6.11 for various requirements for advance warning signs (ROADWORK AHEAD, ROADWORK ON SIDE ROAD) and termination signs (END ROADWORK) for works on a 'No Through Road' or 'Cul-de-sac' or located partly or wholly on through or side roads.

Addition

Consider the following when designing the termination area:

1. The intent is that the END ROADWORK sign is located beyond the last point on the road effected or impacted by the works (which would include the traffic control station, speed limit reductions and traffic queues for the opposing direction of traffic).
2. Often the END ROADWORK sign is located opposite the ROADWORK AHEAD sign for the opposing direction of traffic, but this is not a requirement.
3. Offset speed zones need to be considered when co-locating the END ROADWORK sign with a speed limit reinstatement sign and this often (but not always) dictates where the END ROADWORK sign is located.
4. While a buffer speed zone may create an offset speed zone, the 60 km/h zone prior to a traffic control station is a required speed zone and speed zones for both directions of travel in this area must be the same.
5. For a site with traffic control, the final speed reinstatement heading away from the work area generally occurs opposite the 60 km/h Speed Restriction sign in advance of the Primary PTS sign and this is where the END ROADWRK sign may be co-located with the final speed reinstatement sign.
6. In the case of a road with a permanent 60 km/h speed limit in place, as the traffic control station and subsequent traffic queue and warning signs would be considered to have an effect or impact on the road, the END ROADWORK sign should still be located opposite the initial Speed Restriction sign (in this case a repeater 60 km/h Speed Restriction sign) located prior to the Primary PTS sign.

Add paragraph related to the aiming distance and viewing angle for the TVMS.

See changes highlighted yellow following.

6 Design for additional issues

6.10 Placement and operation of Portable Variable Message Sign (VMS)

6.10.2 Aiming distance

Difference

Replace:

> Wherever practicable, a VMS should be aimed to the centre of the nearest lane for approaching traffic, using the desirable aiming distance specified in Table 6.1 below, and as shown in Figure 6.2. If the VMS displays two screens, more distance is required for motorists to read and comprehend the sign.

with:

> Wherever practicable, a VMS should be aimed to the centre of the nearest lane for approaching traffic, using the desirable aiming distance specified in Table 6.2 below, and as shown in Figure 6.1. If the VMS displays two screens, more distance is required for motorists to read and comprehend the sign.

Addition

The TVMS aiming distances (Table 6.2) and angle to approaching vehicles (Figure 6.1) are recommendations which may need to be modified based on the design and visibility characteristics of the message on the TVMS, and the road geometry. See Section 6.10.7 for the drive through requirements.

Clarify location requirements for VMS to be as per this section or outside clear zone.

Add reference to clear zone requirements.

See changes highlighted yellow following.

6.10.4 Lateral placement

Difference

Replace item (c):

> Where practicable, the portable VMS should be positioned behind semi-rigid or rigid protection (e.g. guard fence, wire rope).

with:

> Where practicable, the TVMS should be positioned behind semi-rigid or rigid protection (for example, guard fence, wire rope) and outside the appropriate deflection zone clearance area behind the barrier.

Addition

Add after the dot points:

The TVMS should be located in accordance with the provisions of this section (items (a) to (e), as applicable) or outside the applicable clear zone (see Section 6.11).

The further a TVMS can be located from the traffic lane (lateral clearance, see Figure 6.12), the less likely it will be impacted by errant vehicles; however, to perform satisfactorily, the TVMS must be located where drivers will easily see and read the messages displayed.

Clarified when the clear zone requirements would apply.

Change requirement from 'shall' to 'should' for roadside hazards being located outside the clear zone.

See changes highlighted yellow following.

6.11 Clear Zone

New

This section on clear zones will apply when clear zones are identified as being required elsewhere in the TTM technical documents. Typically, clear zones will apply to stored plant or materials (see Section 7.4.1), and when traffic is laterally shifted onto a different alignment (see Section 6.5).

The identification of hazards is generally based on the use of the clear zone concept to define the area beside the road that is of most interest in terms of roadside safety.

A clear zone is the area adjacent to the traffic lane that should be kept free from features that would be potentially hazardous to errant vehicles. The clear zone is a compromise between the recovery area for every errant vehicle (allowing a driver to stop safely or safely regain control of a vehicle that has left the road), the cost of providing that area and the probability of an errant vehicle encountering a hazard. The clear zone should be kept free of non-frangible hazards where economically and environmentally possible. Alternatively, hazards within the clear zone should be treated to make them safe or be shielded by a safety barrier.

The clear zone commences from the closest edge of the through travelled way for the direction of travel and is the total roadside border area available for safe use by errant vehicles. This clear zone area may consist of a shoulder, a verge, and a recoverable slope.

While the clear zone concept draws on a wide range of experience and research, engineering judgement should also be applied in the determination of lateral position requirements. The guidance here should be regarded as a supplement to aid in exercising this judgement and not as a substitute for it.

Roadside hazards should ~~shall~~ be located outside the clear zone or be protected by a suitable and approved safety barrier. If a safety barrier is installed no portion of the hazard is to be located within the deflection limits of the safety barrier.

Hazards that lie outside the clear zone will generally not require assessment because the locations are a sufficient distance from the edge of the road that the probability of a collision is relatively small.

Add new Note 5 to Table 6.11.2.

See changes highlighted yellow following.

6.11.2 Determination of clear zone requirements

New

The influence of the above-mentioned variables on the width of the clear zone is determined by assessing the roadside environment in accordance with the following:

- The clear zone is measured by extending a horizontal plane from the edge of the travelled way to the edge of the hazard, as indicated in Figure 6.11.2(a).
- Either Table 6.11.2 or Figure 6.11.2(b) may be used to establish the required clear zone distance for hazards located on straight roads, given a designated speed environment, AADT and the slope of the roadside.
- A combination of Table 6.11.2 or Figure 6.11.2(b), and Figure 6.11.2(c) is used when the device is located on a curve in the road alignment. The horizontal curve multiplier established from Figure 6.11.2(c) recognises the higher risk and larger encroachment distance for errant vehicles on the outside of curved road alignments. See Figure 6.11.2(e) for transition requirements between the curve clear zone and the straight clear zone.
- A combination of Table 6.11.2 or Figure 6.11.2(b), and Figure 6.11.2(d) is used to assess the influence of cut height and slope on traversability when the device is located on a cut slope. Non-traversable cuttings typically prevent vehicles from travelling further away from the travel path and reduce the clear zone distance for other hazards beyond the cutting (as vehicles will not reach these hazards), However the non-traversable cutting may also be considered a hazard.
- Consideration of fill slopes. It may be necessary to approximate the contributory influence of each slope element in a roadside environment, noting that non-recoverable fill slopes are disregarded in the calculation of a clear zone. Typically, a vehicle will travel to the bottom of any non-recoverable fill slope and an errant vehicle recovery area beyond the toe of the non-recoverable fill slope will be required. See Figure 6.11.2(f) for fill slope examples.

Figure 6.11.2(a) – Clear zone base parameters on a straight road

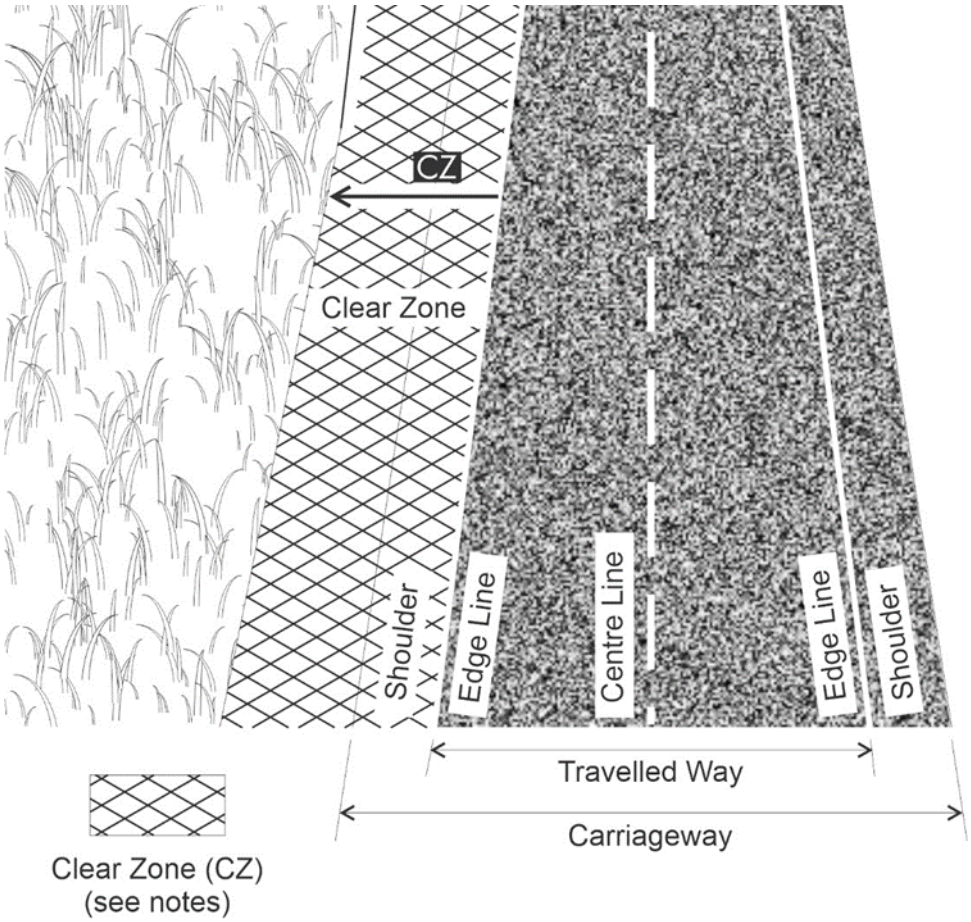


Table 6.11.2 – Clear zone distances from edge of through travelled way (extracted from Table 3.1 (AASHTO 2011))

Design speed (km/h)	Design ADT	Clear zone width (m)					
		Fill batter			Cut batter		
		6:1 to flat	4:1 to 5:1	3:1 and steeper[2]	6:1 to flat	4:1 to 5:1	3:1 and steeper[2]
≤ 60	< 750	3.0	3.0	[2]	3.0	3.0	3.0
	750 – 1500	3.5	4.5	[2]	3.5	3.5	3.5
	1501 – 6000	4.5	5.0	[2]	4.5	4.5	4.5
	> 6000	5.0	5.5	[2]	5.0	5.0	5.0
70 – 80	< 750	3.5	4.5	[2]	3.5	3.0	3.0
	750 – 1500	5.0	6.0	[2]	5.0	4.5	3.5
	1501 – 6000	5.5	8.0	[2]	5.5	5.0	4.5
	> 6000	6.5	8.5	[2]	6.5	6.0	5.0
90	< 750	4.5	5.5	[2]	3.5	3.5	3.0
	750 – 1500	5.5	7.5	[2]	5.5	5.0	3.5
	1501 – 6000	6.5	9.0	[2]	6.5	5.5	5.0
	> 6000	7.5	10.0[1]	[2]	7.5	6.5	5.5
100	< 750	5.5	7.5	[2]	5.0	4.5	3.5
	750 – 1500	7.5	10.0[1]	[2]	6.5	5.5	4.5
	1501 – 6000	9.0	12.0[1]	[2]	8.0	6.5	5.5
	> 6000	10.0[1]	13.5[1]	[2]	8.5	8.0	6.5
110	< 750	6.0	8.0	[2]	5.0	5.0	3.5
	750 – 1500	8.0	11.0[1]	[2]	6.5	6.0	5.0
	1501 – 6000	10.0[1]	13.0[1]	[2]	8.5	7.5	6.0
	> 6000	10.5[1]	14.0[1]	[2]	9.0	9.0	7.5

Notes:

1. Where a site-specific investigation indicates a high probability of continuing crashes, or such occurrences are indicated by crash history, the designer may provide clear zone distances greater than the clear zone shown in this Table.

2. Since recovery is less likely on the unshielded, traversable 3:1 slopes, fixed objects should not be present in the vicinity of the toe of these slopes. Recovery of high-speed vehicles that encroach beyond the edge of the shoulder may be expected to occur beyond the toe of the slope. Determination of the recovery area at the toe of the slope should take into consideration available road reservation, environmental concerns, economic factors, safety needs, and crash histories. Also, the distance between the edge of the travelled lane and the beginning of the 3:1 slope should influence the recovery area provided at the toe of the slope. While the application may be limited by several factors, the fill slope parameters which may enter into determining a maximum desirable recovery area are illustrated in Figure 6.11.2(f).

3. The design ADT in the table is the average daily traffic volume in both directions and in all lanes, other than for divided roads where it is the total traffic in all lanes in one direction.

4. Where the road is curved the values in Table 6.11.2 should be adjusted by the curve correction factors in Figure 6.11.2(c).

5. Design speeds used in Table 6.11.2 are to be determined in accordance with Section 2.5.9 *Speed*.

Figure 6.11.2(b) – Clear zone distance curves for straight roads (extracted from Figure 3.1 (AASHTO 1996))

Example 1
1:6 Fill Slope
100 km/h Speed Environment
5000 V.P.D.
Clear Zone = 9 m

Example 2
1:6 Cut Slope
100 km/h Speed Environment
750 V.P.D.
Clear Zone = 6 m

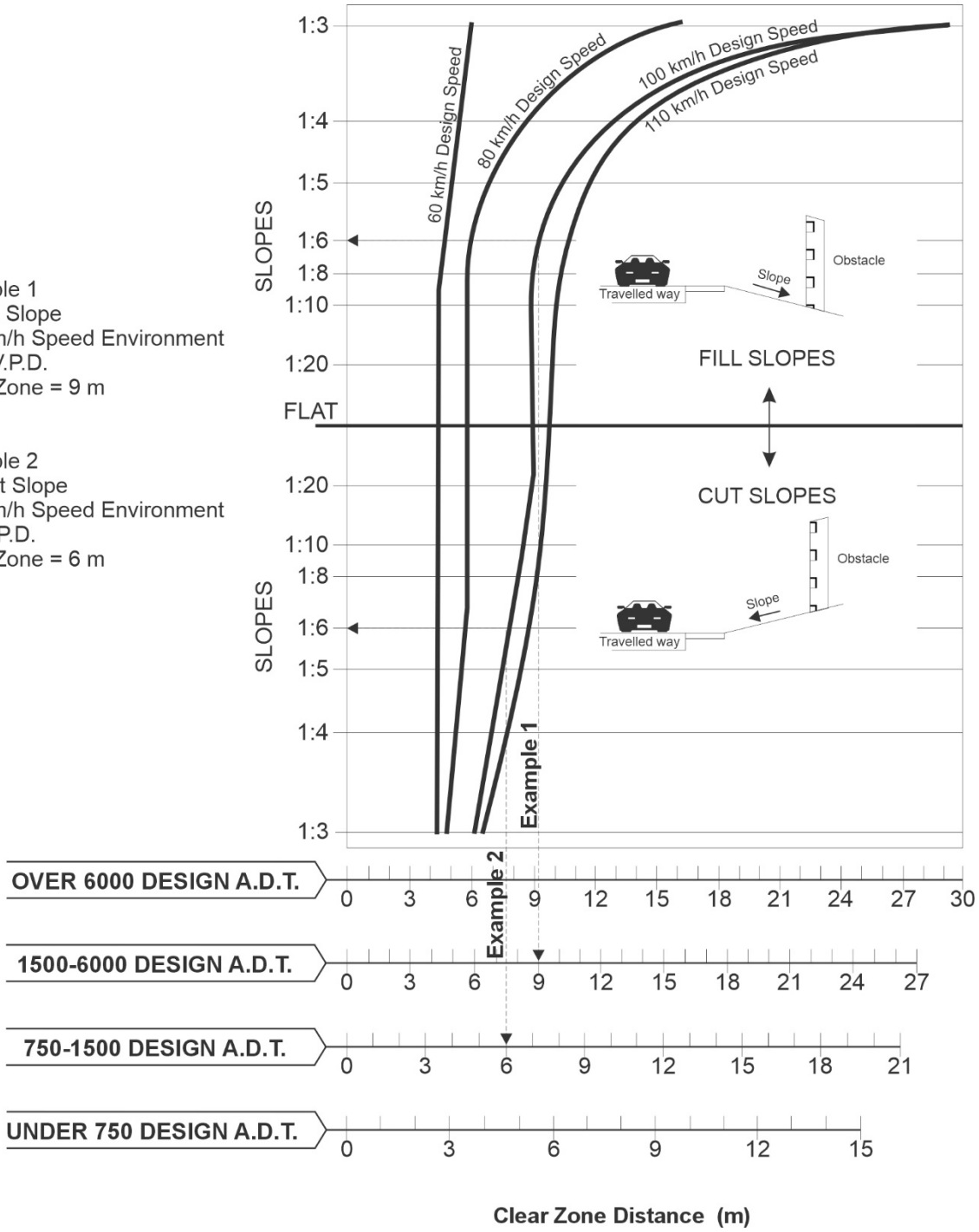
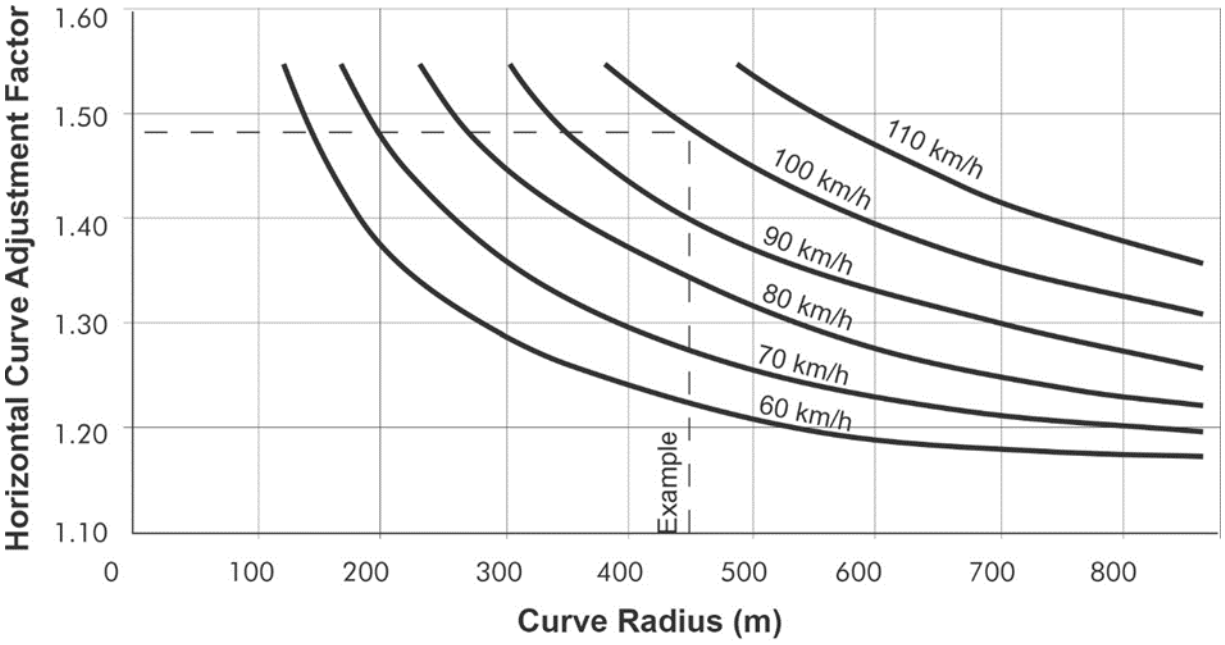
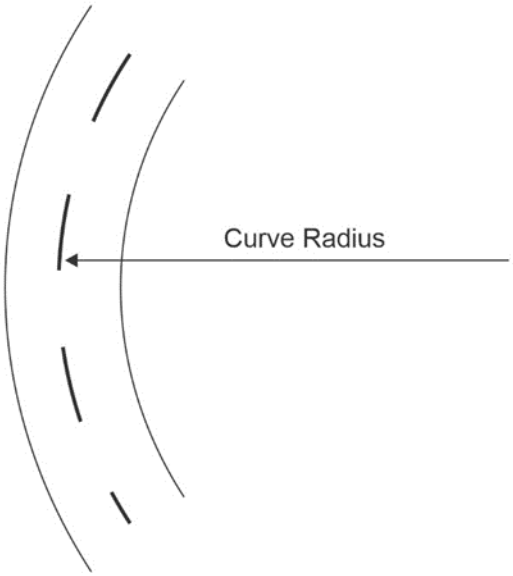


Figure 6.11.2(c) – Clear zone horizontal curve adjustment factors





Example

450m Radius Curve
100 km/h Speed Enviroment

CZ required on flat straight road = 9m (Figure B1)
Curve Adjustment Factor (Figure B2 above) = 1.48

Required Clear Zone = 9 x 1.48 = 13.5m

Figure 6.11.2(d) – Influence of cut height and slope on traversability

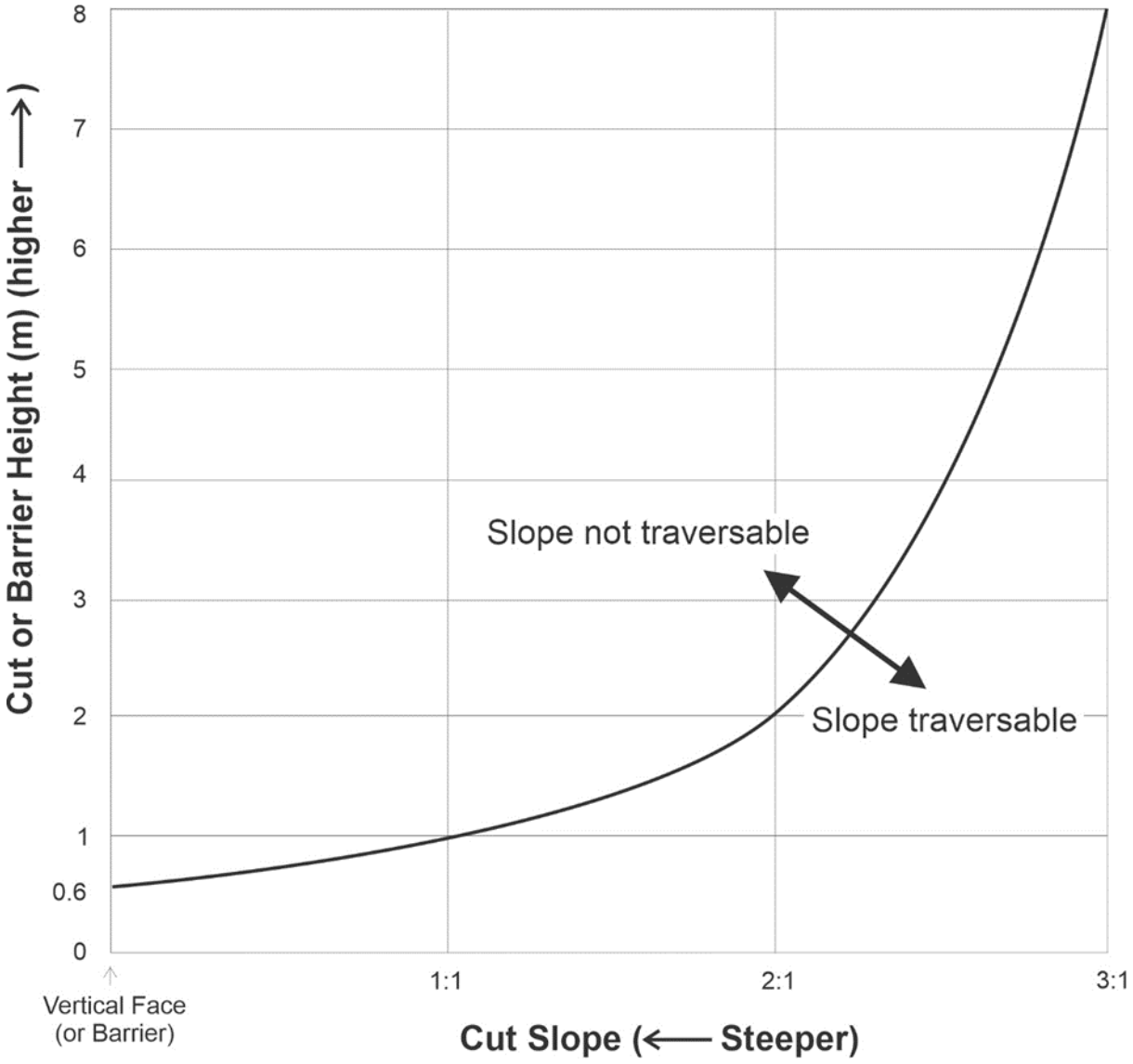


Figure 6.11.2(e) – Influence of curve adjustment factors and transitions (source: Austroads Guide to Road Design Part 6 (2010))

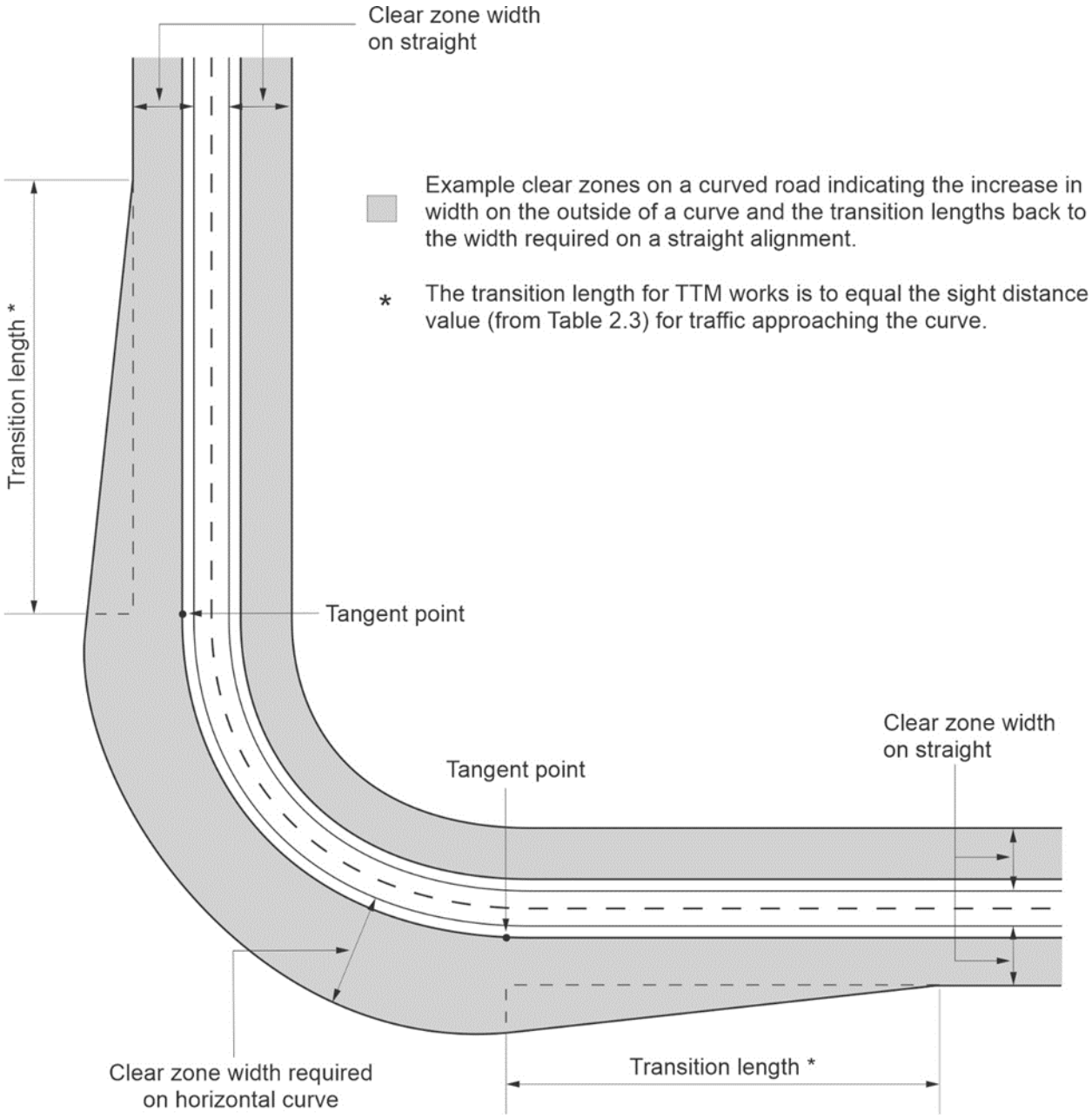
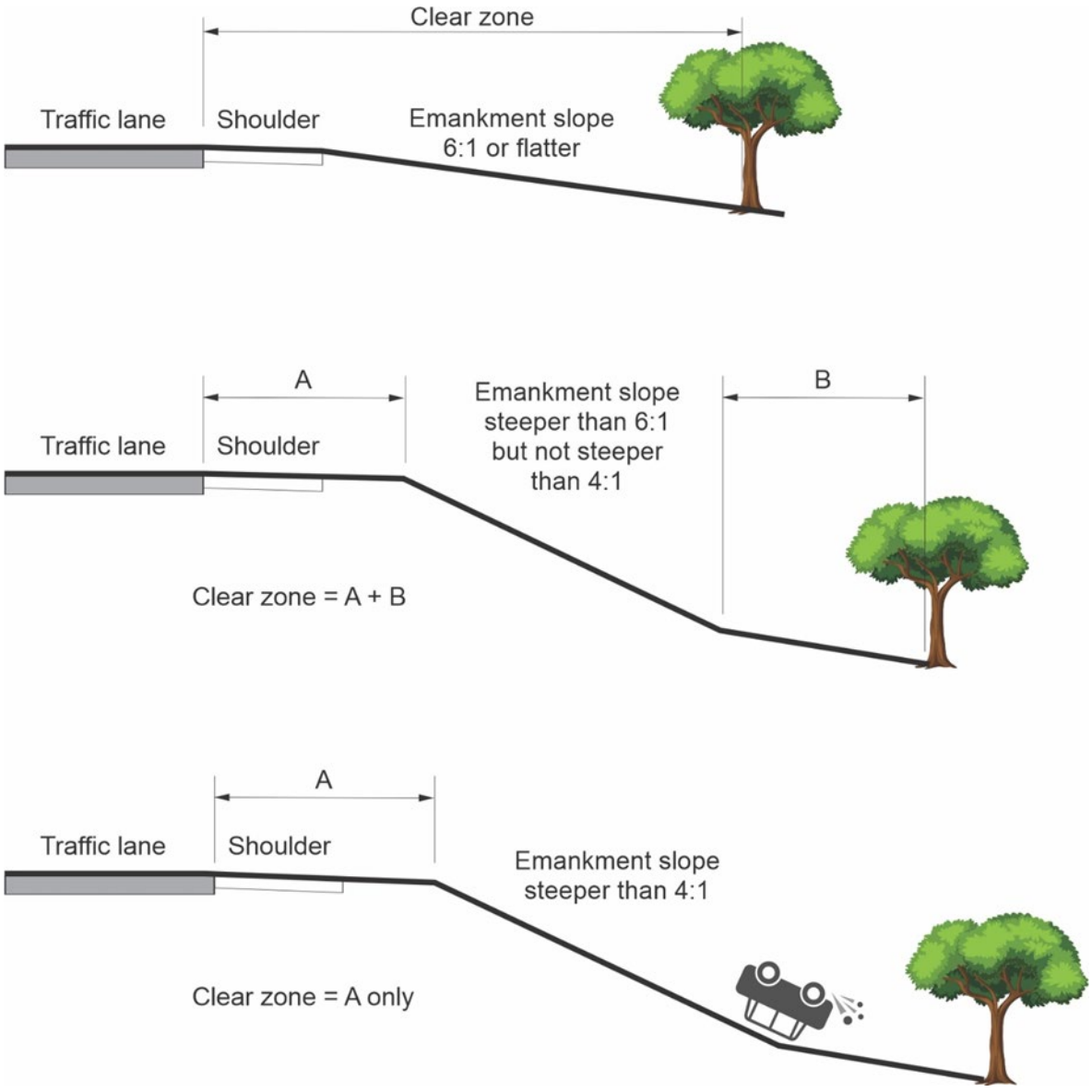


Figure 6.11.2(f) – Examples illustrating clear zones on fill slopes (source: Austroads Guide to Road Design Part 6)



Modify the requirements for star pickets based on speed limits.

Reword requirements for providing delineation on star pickets.

See changes highlighted yellow following.

6.12 Star pickets

New

Star pickets have many uses at roadwork sites, including:

- as supports for temporary fencing and flagging
- as supports for delineators (reflectors), and
- as sign supports or to stabilise temporary signs.

It is important that careful consideration is given to how star pickets are used because if used incorrectly they may present a safety hazard.

The use of star pickets must be supported by a risk assessment.

In addition, the use of star pickets is subject to the following:

- Star pickets must not be used within 1 m of the edge of the traffic lane on roads with speed limits of 80 km/h or more ~~in any speed environment~~.
- Star pickets should not be used within 1 m of the edge of the traffic lane on roads with speed limits of less than 80 km/h.
- Star pickets must be fitted with end caps to reduce the potential of piercing injuries.
- Star pickets must be inspected regularly as per the inspection requirements for temporary traffic management devices, and if they are bent or damaged, they must be replaced or repaired immediately.
- Star pickets must be installed vertically, as installing them at an angle may result in a spearing hazard.
- Star pickets are generally black but may be any colour.
- The presence of underground services must be checked before installing star pickets.
- Star pickets must not be used to support standard signposts by placing a post over the top of an installed star picket.
- Star pickets should be delineated when they are installed within 3 m of traffic, pedestrian or cyclist paths.

QGTTM Part 4

Reword paragraph related to variations to requirements.

See changes highlighted yellow following.

2 Design Process

2.2 Risk Assessment

Difference

Replace:

> It is important to note that a Design Exceptions Report shall be approved by the relevant Road Infrastructure Manager (RIM) and road authority if design exceptions are made or published standards or the AGTTM are not adhered to.

with:

> ~~Where variations to the requirements of the Queensland MUTCD Part 3 or the QGTTM are required, they shall be documented by a risk assessment certified in accordance with the Clause 1.9 of Queensland MUTCD Part 3.~~
>
> Where variations to the treatments in the Queensland MUTCD Part 3 or QGTTM are proposed, a risk assessment certified in accordance with the requirements of Clause 1.9 of Queensland MUTCD Part 3 shall be undertaken.

Reworded requirements for vehicle mounted warning devices fitted with illuminated arrow signs.

Deleted paragraph in AGTTM requiring all vehicles and larger items of plant in a mobile works convoy to be fitted with vehicle mounted warning devices and illuminated arrow signs.

See changes highlighted yellow following.

3 TGS Design for Mobile Works

3.7 Step 5 – Determine the Signs and Devices to Use

3.7.2 Signs mounted on vehicles

Difference

Replace:

> Vehicle mounted warning devices fitted with illuminated arrow signs must be fitted to all convoy vehicles and plant items. This excludes small plant items protected by a work vehicle and shadow vehicle. The sign mounted to the vehicle and illuminated flashing arrow sign must be the minimum size of:

with:

> Vehicle mounted warning devices fitted with illuminated arrow signs must be fitted to all TTM vehicles in the convoy.
>
> All work vehicles and items of plant in the mobile works convoy, other than minor items of plant protected by a works vehicle or a shadow vehicle, must display a vehicle-mounted warning device which when suitable may be fitted with an illuminated flashing arrow sign.
>
> The sign mounted to the vehicle and illuminated flashing arrow sign must be the minimum size of:

Deletion

In subsection **Vehicle mounted warning device**, delete the first paragraph:

> All vehicles and items of plant in the mobile works convoy, other than minor items of plant protected by a works vehicle and shadow vehicle must carry a vehicle-mounted warning device fitted with an illuminated flashing arrow sign.

Addition

In subsection **Vehicle mounted warning device**, add the following:

> On two-way roads, vehicle mounted warning devices fitted with illuminated arrow signs must be visible to road users from both approaches where warning for both approaches is required (see Figure 3.9).

QGTTM Part 5

Reword paragraph related to variations to requirements.

See changes highlighted yellow following.

2 Design process

2.2 Risk assessment

Difference

Replace:

> It is important to note that a Design Exceptions Report shall be approved by the relevant Road Infrastructure Manager (RIM) and road authority if design exceptions are made or published standards or the AGTTM are not adhered to.

with:

> ~~Where variations to the requirements of the Queensland MUTCD Part 3 or the QGTTM are required, they shall be documented by a risk assessment certified in accordance with Clause 1.9 of Queensland MUTCD Part 3.~~
>
> Where variations to the treatments in the Queensland MUTCD Part 3 or QGTTM are proposed, a risk assessment certified in accordance with the requirements of Clause 1.9 of Queensland MUTCD Part 3 shall be undertaken.

In Table 3.1, change title for type of works under Section 6.1 from 'Traffic investigations' to 'Investigations and inspections'.

See changes highlighted yellow following.

3 General considerations

3.2 Short-term low-impact options

Addition

Add the following to Table 3.1

Type of works	Examples, not limited to	Duration*	See Section
Short-term works outside of a traffic lane	• road signs or street furniture maintenance • litter or graffiti removal • garden maintenance • minor tree clearing • minor cleaning of culverts, pipes and pits • footpath repair	• ≤ 5 min if within 1.2 m of a traffic lane • ≤ 20 min if greater than 1.2 m from a traffic lane	5.4
~~Traffic~~ Investigations and inspections	Traffic engineering investigations or inspecting, viewing or measuring a section of roadway or road feature (for example, for maintenance or planning purposes)	< one working shift	6.1
Road lighting or signal works	Maintenance and installation of power poles, lights, wires and traffic signals	• ≤ 5 min if in a traffic lane or within 1.2 m of a traffic lane • ≤ 20 min if greater than 1.2 m from a traffic lane • ≤ 1 hour if the vehicle is positioned where parking would normally be permitted and does not obstruct the traffic flow	6.2

Added information to replace the entire Section 3.4.

Converted the various arrangements of VMWDs into a Table.

See changes highlighted yellow following.

3.4 Vehicle Mounted Warning Device

Difference

Replace ~~items 1 and 2~~ entire Section 3.4 with the following:

A vehicle mounted warning device provides advance warning and information to road users regarding works being carried out and any hazard.

A vehicle mounted warning device must consist of one of the following arrangements in Table 3.4:

Table 3.4 – Vehicle mounted warning devices

Arrangement	Vehicle Mounted Warning Device (VMWD)	Use conditions / requirements
1	A single flashing yellow lamp or LED light assembly	• For emergency or other infrequent use on a vehicle not normally used for either roadworks or inspection purposes. • For use on a plant item working within a static work area.
2	A pair of flashing yellow lamps or LED light assemblies (placed as far apart as practical)	• For use on vehicles on all roads without the protection of a static roadworks site. • Positioned on the vehicle so that at least one, and preferably both lamps are visible to all road users from any direction. • Additional flashing yellow lamp(s) or LED assemblies may be required to be added on the vehicle to ensure visibility is provided to all road users in any direction.
3	An illuminated flashing arrow sign (see Queensland MUTCD Part 3 Clause 4.14.2)	• For any situation where option 1 or 2 is not appropriate. • May be used for any type of work (including mobile works). • May be used in combination with options 1 or 2. • If required, supplementary signs (static or variable message signs) are mounted in conjunction or elsewhere in a prominent position on the vehicle. • The illuminated flashing arrow sign must be capable of being removed from view (e.g. covering, folding down, or turning off) when not needed.

The vehicle mounted warning device should be mounted as high as practicable on the vehicle for best visibility to all road users (e.g. on the roof (cab) of the truck). This helps to ensure the device is not obscured (e.g. overhanging vegetation, raised truck body, permanent signs). It may be moved near the rear of the vehicle if a roof-mounted sign could be obscured by a load.

1. A single flashing yellow lamp
   - for emergency or other infrequent use on a vehicle not normally used for roadworks purposes
   - for an inspection vehicle
   - for use on a plant item working wholly within a static work area (see AGTTM Part 3)
2. A pair of flashing yellow lamps
   - for use on vehicles (e.g. patrol trucks) working on roads with traffic volumes up to 1500 vpd
   - positioned on the vehicle so that at least one (preferably both) lamps are visible from any direction

with:

1. A single flashing yellow lamp or LED light assembly
   - for emergency or other infrequent use on a vehicle not normally used for either roadworks or inspection purposes
   - for use on a plant item working within a roadworks site.
2. A pair of separated flashing yellow lamps or LED assemblies (placed as far apart as practical)
   - for use on work vehicles on all roads without the protection of a static roadworks site (see QGTTM Part 3)
   - positioned on the vehicle so that at least one (preferably both) lamps are visible to all road users from any direction, and
   - additional flashing yellow lamps or LED assemblies may be required to be added on the vehicle to ensure visibility is provided to all road users in any direction.

While the requirements in this document apply once published, Transport and Main Roads recognises that making immediate changes to flashing lamps on inspection vehicles may require a greater lead in time to ensure compliance.

In recognition of this, inspection vehicles (other than those used for emergency or other infrequent use) shall comply with the requirements in item (b) by the 31st July 2027.

Changed title of Section 6 from Traffic investigations, road lighting or signal works to Investigations, inspections, road lighting or signal works.

Changed title of Section 6.1 from Traffic investigations to Investigations and inspections.

Reworded to remove link from traffic investigations to a more general work activity of investigations or inspections or similar activities.

See changes highlighted yellow following.

6 ~~Traffic~~ Investigations, inspections, road lighting or signal works

6.1 ~~Traffic~~ Investigations and inspections

6.1.1 Description and criteria

New

Prior to undertaking these work activities, a risk assessment shall be undertaken to ensure the works can be safely completed. Risk considerations are outlined in Section 2.2.1.

For activities associated with ~~traffic engineering~~ investigations or inspections ~~inspecting~~, including the viewing or measuring a section of roadway or road feature (for example, for maintenance or planning purposes), or a similar activity where road works are not being undertaken, no specific TTM controls are required where:

a) the activity is clear of the roadway: the exception to this would be where the activity is carried out while crossing the road, for example, measuring the lane width – if the activity cannot be carried out while crossing the road and may take longer to complete, the works may be undertaken in accordance with Section 4.2 (work between gaps in traffic)

b) the vehicle used for the investigation or inspection is parked well clear of the traffic lanes or parked where parking would be legal and the safety of other road users is not compromised and a vehicle-mounted warning device in accordance with Section 3.4 is displayed on the work vehicle and has a minimum sight distance (see Table 6.1.1) for approaching road users

c) personnel use existing footpaths or verges, and

d) investigating~~on~~ or inspecting personnel may cross the road safely within gaps in traffic. In this case, the minimum sight distance to personnel for approaching drivers is to be as per Table 6.1.1.

Personnel carrying out investigations or inspections should wear high-visibility clothing at all times when they are not in their vehicles.

The works vehicle placement should consider the effect on vulnerable road users including cyclists and the road worker should always have a clear exit path from the road and ensure that this is not blocked by the placement of the work vehicle.

~~Traffic~~ Investigations or inspections do not require a TGS when the works are completed in accordance with this section; however, a TGS may be developed and included in a generic TGS selection system for ~~traffic~~ investigation or inspection activities.

Table 6.1.1 – Sight distance for personnel crossing roads from oncoming traffic and to the vehicle-mounted warning device

Speed (km/h)	Distance (m)
≤45	80
46–55	100
56–65	120
66–75	140
76–85	160
86–95	180
96–105	200
≥106	220

QGTTM Part 6

Added information to replace the entire Section 6.8.

Added an option to increase the spacing by 15 m when this would be greater than 25% of the distance given.

See changes highlighted yellow following.

6 TGS installation

6.8 Tolerances

Difference~~Addition~~

Replace entire Section 6.8 with the following:

Adjustments to a TTM installation are the relocation of signs and devices within approved tolerances. Any changes that exceed tolerances are classed as a modification and must be endorsed and authorised by a TMD. If signs and devices are required to be moved due to obstructions, and relocation exceeds tolerances, the TMI must contact the TMD for instruction on alternate installation methods or options.

Local constraints may not allow signs and devices to be placed exactly in accordance with the relevant TGS. Judgement will therefore be necessary to place signs and devices as close as possible to the locations / spacings indicated. Should variations to the recommended spacing be required then it is generally preferable to increase the spacing within tolerances.

Applicable tolerances include:

a) Tolerances for placement of signs are:
   i. up to 10% less than the distances given, or
   ii. up to 25% or 15 m more than the distances given (whichever is greater).
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, or
   ii. up to 25% more than the distances given.

Any sign or device location adjustments are to be marked and initialled on the TGS held on site, with the name of the person making the adjustments clearly shown.

If a TMD has specified maximum or minimum values on the TGS, the TMI shall not increase the value above the maximum or reduce the value below the minimum without prior approval from the TMD.

QGTTM Part 7

Added new requirement for PTSS to be operated in paired mode when used to manually control shuttle flow arrangements.

See changes highlighted yellow following.

2 Traffic controller requirements

2.6 What to use

2.6.2 Portable traffic control devices

Addition

When operating a PTCD, and where suitable, the traffic controller may be seated while performing traffic control duties.

Unless specified otherwise by the TMD on the TGS, when using PTSS Type 1 or Type 2 devices, for manually controlled shuttle flow arrangements, they should be used in paired mode using a single HRC whenever possible / suitable. This will prevent a green signal being displayed to both approaches at the same time.

Additional guidance on the use, installation and operation of portable traffic control devices (PTCDs), including Type 1 and 2 portable traffic signal systems (PTSS) and boom barriers, is available in the *Guideline – Traffic Management at Works on Roads*.

Only PTCDs included on the current list of approved devices on the Transport and Main Roads *ITS Approved Products list* shall be used at roadwork sites in Queensland.

Addition

In the subsection **'Location'**, add the following dot point:

- is not next to the PTCD, or on the road or road shoulder close to the PTCD.

Reword the requirement to cover the SLOW face of a STOP / SLOW bat to managing the risk of traffic responding to the reverse face.

See changes highlighted yellow following.

2.9 Traffic control station operation

2.9.8 At or near traffic signals

Difference

Replace 6th dot point:

- if the conditions only allow one traffic controller to work on a multilane road, the approach should be reduced to a single lane.

with:

- if the conditions only allow one traffic controller to work on a multilane road, the approach shall be reduced to a single lane.

Difference

Replace last dot point:

- if traffic controllers are using a STOP / SLOW bat to control traffic at an intersection, they must have the “SLOW” sign covered or removed to ensure that vehicles on other approaches do not proceed into the intersection.

with:

- if traffic controllers are using a STOP / SLOW bat to control traffic at an intersection, they must manage the risk of traffic from the opposite direction seeing the reverse face of the STOP / SLOW bat and responding to that direction (which would not be intended). It is important to ensure approaching traffic is aware of the controls applicable for that direction which would likely be another traffic controller with a STOP / SLOW bat for that approach.

Addition

Add the following dot points:

- Traffic controllers operating between 50 m and 100 m of a signalised intersection should consider the impact of the signals on their operations and the impact of their operations on the signals.
- A traffic controller shall not direct traffic contrary to an operating traffic signal.

QGTTM Part 8

Replaced ‘specific training’ with ‘temporary road safety barrier design training’ in a number of locations.

Removed the word ‘deemed’ from competent.

See changes highlighted yellow following.

5 Powers, roles and responsibilities

5.5 Roles and responsibilities for special applications

5.5.1 Road safety barrier systems

Difference

Replace Table 5.14 with the following:

Table 5.14 – Temporary road safety barriers

Task	Description	Competent Person
Determine the need for a temporary road safety barrier	Works require the use of a temporary road safety barrier system due to worker or road user safety	TMD
Selection of temporary road safety barrier system	Compare various temporary road safety barrier systems and select the most suitable for the specific site	TMD who has completed temporary road safety barrier design ~~specific~~ training and is ~~deemed~~ competent in the design of temporary road safety barrier systems or Specialist temporary road safety barrier designer in consultation with the TMD or Engineer with temporary road safety barrier design expertise
Design of temporary road safety barrier in complete accordance with approved guidelines	Complete the design of the barrier system including (but not limited to) the location / length of need / fixing / deflection limits and end treatment requirements	
Design of temporary road safety barrier which is outside the scope of the manufacturer’s supplied manuals / guidelines	Engineer certification is required for all areas of the design and installation which are outside the scope of (or not included in) the manufacturer’s supplied manuals / guidelines	Engineer with temporary road safety barrier design expertise
Install a temporary road safety barrier system	Install the temporary road safety barrier as nominated on the TGS, in accordance with the manufacturer’s supplied manuals / guidelines and instructions from the competent person	TMI competent with the installation of the selected temporary road safety barrier or Specialist temporary road safety barrier installer

Task	Description	Competent Person
Certification of manufacturer's supplied manuals / guidelines	Temporary road safety barrier suppliers must ensure all manufacturer's supplied manuals / guidelines are appropriately certified by an Engineer	Engineer or equivalent with temporary road safety barrier design expertise

Addition

Add the following commentary to Table 5.14:

The Road Safety Barrier Awareness course Transport and Main Roads offers is an awareness course which does not issue attendees with a certificate or competency in road safety barrier design. While the Transport and Main Roads Road Safety Barrier Awareness course will provide some knowledge on temporary road safety barriers, the 'completed temporary road safety barrier design ~~specific~~ training and is ~~deemed~~ competent in the design of temporary road safety barrier systems' requirement in Table 5.14 would require more than just the completion of the Transport and Main Roads Road Safety Barrier Awareness course.

The following is provided to expand on the requirements in Table 5.14:

- A TMD may determine the need for a temporary road safety barrier.
- A TMD who has completed ~~specific~~ temporary road safety barrier design training and is ~~deemed~~ competent in the design of temporary road safety barrier systems may, based on site parameters and manufacturer specifications, select or recommend a particular temporary road safety barrier system which will suit the works and the roadworks site.
- A TMD ~~may~~must use the manufacturer's supplied manuals / guidelines to design the temporary road safety barrier system; however, the TMD would need some expertise in designing temporary road safety barriers and have completed temporary road safety barrier design ~~specific~~ training and is ~~deemed~~ competent in the design of temporary road safety barriers systems including, at a minimum, training in designing the selected temporary road safety barrier system from the manufacturer's supplied manuals / guidelines.
- If the temporary road safety barrier design is outside the manufacturer's supplied manuals / guidelines, then this will require the design to be completed and signed off by an RPEQ with temporary road safety barrier design expertise.

Only road safety barrier systems included on the current list of products in the Transport and Main Roads *Accepted Road Safety Barrier Systems and Devices* document shall be used at roadwork sites in Queensland.

Reworded paragraph as the Installer course is now available.

Removed reference to 1 July 2024 for the requirement to hold new ASHTAS licences.

See changes highlighted yellow following.

5.5.2 Austroads Safety Hardware Training and Accreditation Scheme (ASHTAS)

New

In addition to the requirements above, ultimately the Austroads Safety Hardware Training and Accreditation Scheme (ASHTAS) will, over time, offer courses for Safety Barrier Operative (Entry Level), Installers (Permanent and Temporary Safety Barriers), Designers (Permanent and Temporary Safety Barriers), and more.

Austroads has released the Safety Barrier Operative (Entry Level) course and the Installer course for permanent barriers (excluding concrete). Concrete barriers will be included in future updates. ~~Currently, the Safety Barrier Operative (Entry Level) course has been created and is available.~~ Completion of the Safety Barrier Operative (Entry Level) course is a prerequisite for the Installer course. It is expected that Austroads over time will develop Design and Inspection courses. ~~Austroads is in the final stages of completing the Installer course for permanent barriers, which will be released in the near future.~~

However, Austroads hasn't established a specific date or timeframe for the Installer - Temporary Barrier course and the ~~yet. The~~ Designer - Temporary Barrier course which would be ~~is~~ further away in development.

Once the Installer - Temporary Barrier and Designer - Temporary Barrier courses are available, they will be significantly more effective than the general awareness courses currently available. These ASHTAS courses will have direct input from each product manufacturer and will provide practical training.

~~From 1 July 2024,~~ Transport and Main Roads ~~TMR will~~ requires all individuals involved in the design, installation, and maintenance of temporary roadside safety barriers to obtain an ASHTAS license. The required licence will be based on the training developed and available at that time. For further information on these training requirements, please visit our webpage ~~For more information, visit~~ https://www.tmr.qld.gov.au/business-industry/technical-standards-publications/ASHTAS.

Added a reference to Section 2.2.4 in Part 7 for supervision of a TC in training.

See changes highlighted yellow following.

5.6 Supervising a Traffic Controller (TC) in training

New

When a TC in training is acquiring experience to satisfy the practical assessment component of their training, they shall be directly supervised by a TC deemed competent at the relevant TTM Category.

For further information regarding the supervision of a TC in training see QGTTM Part 7 Section 2.2.4.

Guideline – Traffic Management at Works on Roads

Updated to ensure it is clear that the options for end-of-queue risk control measures in TMWOR are optional at any time but if mandated by QGTTM Part 3, Section 4.8.3 or when specified in Clause 5.8 of the Annexure, then at least one of the treatments must be used.

See changes highlighted yellow following.

Chapter 1: Signs and devices

1 Use of supplementary devices at roadworks to reduce speed

1.1 Purpose

The purpose of this section is to provide options and guidance on the use of supplementary traffic control devices at roadwork sites to reduce the incidence of speeding within roadwork zones.

One or a combination of treatment options shall be used when required by QGTTM Part 3, Section 4.8.3 or when specified in Clause 5.8 of Annexure MRTS02.1 *Provision for Traffic*.

In addition to the requirements above, the use of supplementary traffic control devices at roadwork sites to reduce the incidence of speeding within roadwork zones may be considered and implemented at any site.

Updated to clarify that speed indicator devices should be in advance of locations where speed compliance is critical.

See changes highlighted yellow following.

1.3 Speed indicator devices

1.3.1 General

Speed indicator devices use a radar unit which displays a vehicle's speed with messages requesting a driver to SLOW DOWN if they are exceeding the speed limit or thanking those who are observed to be complying with the speed limit. The speed display is set to not display a speed in excess of 10 km/h over the speed limit to avoid drivers trying to record a high reading.

Speed indicator devices are also capable of recording the speed of every vehicle that approaches the roadwork zone and can be used to determine speed characteristics through the roadwork zone.

Speed indicator devices may be installed at a roadwork site where speed compliance with the reduced roadwork speed limit is poor. The speed indicator device should be installed sufficiently in advance of locations where speed compliance is critical so ~~the roadwork~~ that motorists have adequate time to read, comprehend the message and react accordingly to reduce speed.

The speed indicator device should be programmed to display the speed and a SLOW DOWN message only to vehicles that are travelling over a set threshold.

Updated to clarify locations where speed indicator devices may be installed.

See changes highlighted yellow following.

1.3.4 Site installation

The speed indicator device may ~~shall~~ be installed to improve speed compliance. Example locations include:

1. ~~in advance of~~ near excavations
2. where cyclists and pedestrians are present
3. where a Traffic Controller is operating~~es~~
4. ~~or~~ where traffic signals or give way signs are installed ~~within the 60 km/h speed zone.,~~ or
5. where workers on foot are present.

When used, ~~T~~the device shall be installed:

1. to face traffic approaching the roadwork zone
2. on the shoulder of the road, a minimum of 1.5 m clear of the traffic lane, and
3. radar should be angled to capture traffic approaching the roadwork zone and not traffic leaving the roadwork zone.

Updated to remove the 80 km/h maximum speed when using rumble strips and replace with the manufacturer's recommended maximum speed.

See changes highlighted yellow following.

1.4 Rumble strips / rumble mats

1.4.2 Installation

Rumble strips shall only be installed where the following conditions are met:

1. the speed of traffic is ~~limit~~ less than ~~80 km/h~~ the manufacturer's recommended maximum, and
2. there is a minimum visibility distance of 80 m to the rumble strips / rumble mats.

Note: A trial conducted in Queensland showed speed reduction was greatest when rumble strips were set up in sets of two with three rows of strips in each set. The two sets of rumble strips on the approach were separated by a distance of 200 m.

Updated to ensure it is clear that the options for end-of-queue risk control measures in TMWOR are optional at any time but if mandated by QGTTM Part 3, Section 4.8.3 or when specified in Clause 5.8 of the Annexure, then at least one of the treatments must be used.

Added a recommendation that end of end-of-queue risk control measures should be considered and implemented to address end of queue risks at any site.

See changes highlighted yellow following.

2 End-of-queue risk control measures

Additional advance warning ~~may be required~~ shall be used to manage the risk of end-of-queue crashes when required by~~.~~ QGTTM Part 3, Section 4.8.3 or when specified in Clause 5.8 of Annexure MRTS02.1 *Provision of Traffic*.~~identifies when end-of-queue risk control measures are required.~~

In addition to the requirements above, end-of-queue risk control measures should be considered and implemented to address end-of-queue risks at any site.

The use of a combination of different end-of-queue risk control measures on approach to the end of a traffic queue is permitted. Different end-of-queue risk control measures may be applied on approach to different traffic queues at the one work site.

End-of-queue risk control measures (in order of preference) for managing the risk of end-of-queue crashes include:

1. managing speed on approach to the traffic queue (Clause 2.1)
2. use of enhanced queued traffic warning signs, TM1-46-Q01 (Clause 2.2)
3. use of an additional Traffic Controller (Clause 2.3)
4. use of signs to encourage the use of hazard lights by last vehicle in queue (Clause 2.4)

Updated to include a recommendation that PTSS be operated in paired mode when used to manually control shuttle flow arrangements.

See changes highlighted yellow following.

Chapter 5: Methods for controlling traffic and lookout persons

2 Portable traffic control device (PTCD)

2.5 Portable traffic signals

2.5.5 Control types

2.5.5.1 Shuttle control

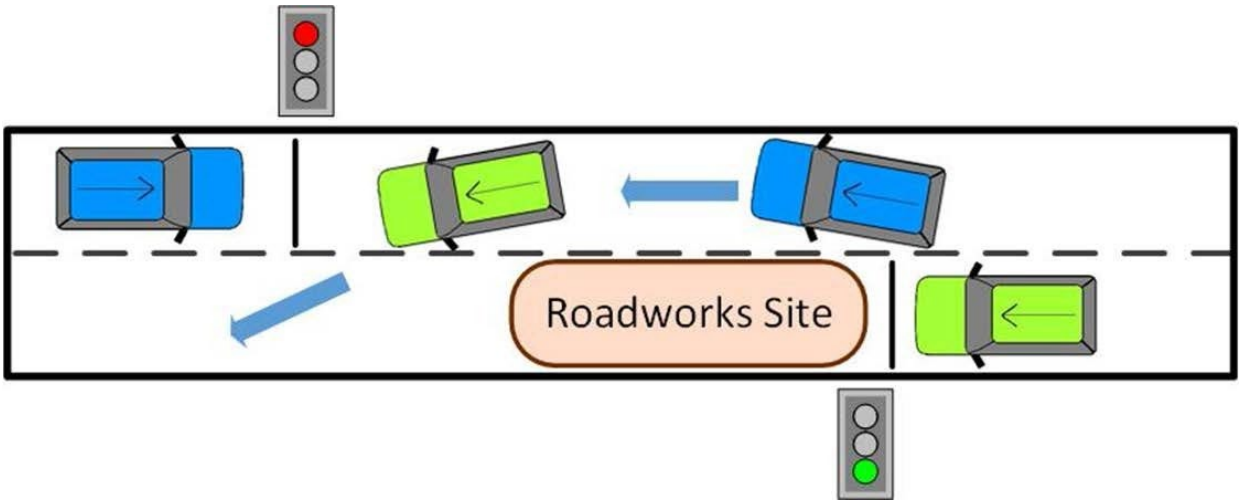
PTSS may be used in lieu of Traffic Controllers for shuttle control operations. This type of control is generally used on a two-lane two-way road, where one lane is closed for maintenance and the other is shared by traffic from both approaches.

Shuttle control uses two PTSUs.

Each PTSU indicates which direction of the traffic flow may proceed past the roadworks site. A PTSU is used at each end of the work zone, and only one PTSU can be green at a time. When there is a need for complete access to the roadway for a short period, both PTSUs can be red.

When using PTSS Type 1 or Type 2 devices, for manually controlled shuttle flow arrangements, they should be used in paired mode using a single HRC whenever possible / suitable. This will prevent a green signal being displayed to both approaches at the same time.

Figure 2.5.5.1 – Shuttle control



Transport and Main Roads Specification - MRTS02 Provision for Traffic

Remove specific requirements for star pickets and provide reference to QGTTM Part 3 Section 6.12.

See changes highlighted yellow following.

6 Traffic guidance scheme (TGS)

6.5 *Traffic guidance provisions*

6.5.8 Delineation of trafficked corridors

6.5.8.2 Materials

Materials used for temporary pavement markings shall be subject to the approval of the Administrator. Only materials which can be removed without damaging the pavement surface, shall be used for temporary marking of the final pavement surface.

Delineation shall consist of bollards, traffic cones, hollow plastic ballasted barrier elements, or mesh fencing, using a heavy, highly visible plastic safety mesh.

When used as delineators, plastic water-ballasted TRSB shall comply with the requirements of QGTTM Part 3 Section 5.3.1. Stand-alone, non-interconnected lightweight modules, which do not meet the requirements for a TRSB, shall not be used as temporary delineators.

Drums and cylinders, which can roll if dislodged by impact or wind, shall not be used as temporary delineators.

~~Star pickets shall not be used within 1 metre of the edge of traffic lanes for speeds of 80 km/h or more. Where used, star pickets shall be fitted with end caps.~~

Refer to QGTTM Part 3, Section 6.12 for the requirements of use of star pickets.

Transport and Main Roads Specification – MRTS14 Road Furniture

Add flexible fabric to the substrate materials available for flexible (roll up) temporary signs.

See changes highlighted yellow following.

13 Supply of road sign faces

13.3 Material requirements

13.3.1 Sign substrate

13.3.1.1 General

The sign substrate shall be manufactured from aluminium except that regulatory parking signs (see Clause 13.3.1.6) may be manufactured from zinc / aluminium coated steel and temporary signs (see Clause 13.3.1.7) may be manufactured from zinc / aluminium coated steel, colorbond steel, ~~or~~ corflute, or flexible material.

Other materials may be considered but evidence of the full approval of the department will be provided to the Administrator prior to their use. **Hold Point 3**

The sign substrate shall be free of cracks, tears and other surface blemishes and the edges shall be true and smooth.

Tolerances on the overall dimensions of the sign substrate for signs other than guide signs and signs that are individually designed shall be ± 3 mm or 0.25% of the largest dimension, whichever is the greater. For guide signs and other signs that are individually designed refer to Clause 13.4.1. The maximum allowable warp, twist or other departure from flatness of the sign substrate shall be 2.5 mm/m in any direction.

Add performance requirements for flexible fabric signs.

See changes highlighted yellow following.

13.3.1.7 Temporary signs

Signs classified as temporary signs in the MUTCD may be manufactured from 1.0 mm thick hot-dipped zinc coated, aluminium / zinc coated or colour bonded steel complying with the requirements of AS 1397.

Temporary signs used at roadworks may be manufactured using 6 mm corflute that has been UV treated for external use.

Where specifically documented as part of the sign design (in the Queensland MUTCD, TC sign or MUTCD Q series sign design file), temporary signs used at roadworks may be manufactured using flexible material (printed onto or sheeting attached to a flexible substate). Where flexible material is used as the sign substrate, the sign must perform and function to the equivalent of a non-flexible (metal or corflute substate) sign. The sign size, colour, retroreflectivity and design must match the non-flexible sign. The design of the flexible sign must include provisions to ensure it is easily and effectively mounted and hangs such that the flexibility of the sign does not distort the message or move in the wind.