

**Information update**

# **Temporary Traffic Management Update**

**November 2023**



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## Temporary Traffic Management (TTM) Update

### *Changes in the November 2023 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, 5, 6 and 8, and
- [MRTS02 Provision for Traffic](#) (MRTS02 only).

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 July 2023.

- **Grey text boxes** are a commentary about the changes.
- **Yellow highlights** are used to show the changes to existing Queensland MUTCD, QGTTM or MRTS02 *Provision for Traffic* 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, and the MRTS02 *Provision for Traffic* suite prior to their republication on 30 November 2023 to allow industry time to prepare and plan for the upcoming changes which come into effect on 30 November 2023. 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](mailto: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

Adjust the text for various definitions to include notes regarding the definition, rather than the notes forming part of the definition.

This matched the approach in AS 1742.3.

See changes highlighted yellow following.

### 1 Scope and general

#### 1.3 Terms and definitions

##### 1.3.2 Competent person

###### Difference

Replace Clause 1.3.2 with the following:

~~A person who has, through a combination of training, qualification and experience, acquired knowledge and skills enabling that person to perform a specified task correctly, and who is appropriately authorised to perform that role.~~

~~Refer to Clause 1.7 for prescribed training.~~

~~A competent person may only undertake activities in accordance with the Queensland Guide to Temporary Traffic Management (QTTM) Part 8 Appendix A.~~

###### Addition

Add the following notes to the definition:

2. Competent persons must be authorised by Transport and Main Roads to perform that task in Queensland.
3. A competent person may only undertake TTM activities in accordance with *Queensland Guide to Temporary Traffic Management (QTTM) Part 8 Appendix A*.
4. Prescribed training for TTM activities is provided in Clause 1.7.

##### 1.3.5 May

###### Addition

~~Indicates the existence of an option.~~

Add the following note to the definition:

Where the word 'may' is used, it indicates that use of the device is conditional, or optional. Usually, no specific requirement for design or application is intended.

### 1.3.13 Shall

#### Addition

~~Indicates that a statement is mandatory.~~

Add the following note to the definition:

Where certain requirements in the design or application of the device are described with the 'shall' stipulation, it is mandatory that, when an installation is made, these requirements be met.

### 1.3.14 Should

#### Addition

~~Indicates a recommendation.~~

Add the following note to the definition:

Where the word 'should' 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.

### 1.3.24 Registered Professional Engineer of Queensland (RPEQ)

#### New

A person who is registered as a Registered Professional Engineer of Queensland (RPEQ), under the *Professional Engineers Act 2002* (Queensland) with the Board of Professional Engineers of Queensland, to provide a professional engineering service.

#### Note:

A professional engineering service is an engineering service that requires or is based on the application of engineering principles and data to a design or to a construction, production, operation, or maintenance activity relating to engineering and does not include an engineering service that is provided only in accordance with a prescriptive standard.

Adjust the text to 'the person'.

See changes highlighted yellow following.

## 1.7 Prescribed training

#### New

A person is only authorised to perform the role in Queensland if ~~he or she~~ the person holds an authority card that is applicable to that role (that is, where such an authority is a mandatory regulatory requirement). To obtain an authority card in Queensland, a person must undertake the relevant prescribed training course and meet any additional requirements relevant to the appropriate authority card. Prescribed training courses shall be those developed by the Department of Transport and Main Roads and delivered by approved registered training organisations.

Prescribed training courses are outlined following:

- a) [Working in proximity to traffic awareness Part 1](#): Required for persons who work on or adjacent to a road in accordance with the QGTTM Part 8 Table A7
- b) [Working in proximity to traffic awareness Part 2](#): Required for persons who have completed *Working in proximity to traffic awareness Part 1*, and are required to select and implement work method practices as per the short-term, low-impact works provisions (with exceptions) in accordance with the QGTTM Part 8 Table A7
- c) [Traffic management implementation](#) (TMI): Required for persons implementing Traffic Management Plans (TMPs) and Traffic Guidance Schemes (TGSs) in accordance with the QGTTM Part 8 Table A5
- d) [Traffic management design](#) (TMD): Required for persons that design, develop, review and inspect TMPs and TGSs in accordance with the QGTTM Part 8 Table A3
- e) [Traffic Controller](#): Required for person who holds an appointment to perform the functions of a Traffic Controller (see Clause 1.3.19) in accordance with the QGTTM Part 8 Table A4, and
- f) [Event Traffic Marshal](#): Required for persons undertaking event traffic management in accordance with the QGTTM Part 8 Table A7.

Additional temporary traffic management (TTM) workers shall act in accordance with the following:

- g) *lookout person*: For persons who have completed *Working in proximity to traffic awareness Part 1* and *Part 2* and are required to act in accordance with the QGTTM Part 8 Table A7
- h) *roadworks pilot vehicle driver*: For persons who act in accordance with the QGTTM Part 8 Table A7
- i) *truck-mounted attenuator (TMA) vehicle driver*: For persons who have completed TMI and are required to act in accordance with the QGTTM Part 8 Table A7, and
- j) *authorised person*: For persons who act in accordance with the QGTTM Part 8 Table A7.

Change value of 150 vpd to 150 vph as the requirement for GIVE WAY and ONE LANE signs.  
This matches the change in QGTTM Parts 2 and 3.

## **4 Function, description and use of standard signs and devices**

### **4.7 Signs and devices for regulatory control of traffic**

#### **4.7.3 Sign control, single lane operation**

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

###### Difference

Replace dot point (i):

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



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;

Change sign number GM9-40-Q01\_1 and \_2, to RM9-Q01\_1 and \_2, and reorder in the table.

Join the two REDUCE SPEED panels TM1-Q01\_1 and TM1-Q01\_2 into the one row.

Change sign number TM1-Q05-Q01 to TM2-50-Q01.

Change sign number TC1261C to TC2361C.

See changes highlighted yellow following.

## Appendices


### Appendix A – Additional multi-message signs (normative)






#### A.3 List of additional multi-message sign panels

##### 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
<b>Regulatory</b>				
LOCAL TRAFFIC EXCEPTED	<del>GM9-40-2-Q01_1</del> <del>GM9-40-2-Q01_2</del> RM9-Q01_1 RM9-Q01_2	600 x 600 1200 x 300		See Clause 4.8.1 and Q-series sign notes.

Sign	Sign number	Size (mm)	Figure	Notes
<b>Advance</b>				
REDUCE SPEED	TM1-Q01_1 TM1-Q01_2	600 x 600 1200 x 300		May be used to supplement a speed restriction (or Speed Limit AHEAD) panel and, when used, shall only be used: <ul style="list-style-type: none"> <li>where a speed limit reduction is implemented (not on repeated Speed Restriction signs), or</li> </ul> on the first Speed Restriction sign on approach to the works which may be a repeater Speed Restriction sign for the permanent speed zone.
SIGNALS UNDER REPAIR	TM1-Q05-Q04 TM2-50-Q01	1200 x 300		Refer to Q-series sign notes.
<b>Enforcement</b>				
ROADWORK SPEED LIMITS ARE ENFORCED	TC1261C TC2361C	1200 x 600		Refer to TC sign notes, QGTTM Part 3 Section 5.5.4 and examples below. <div style="display: flex; justify-content: space-around; align-items: center;">   </div>

## QGTTM Part 2

Removed reference to minimum requirements in Section 2.6.1 as Appendix A is an indicative list and not the minimum requirements.

## 2 Objectives and principles of Traffic Management Plans

### 2.6 *Review and approval*

#### 2.6.1 Minimum requirements for traffic management plan

##### Difference

Replace guidance with following:

The checklist outlined in Appendix A provides an indicative list of requirements for consideration in developing a TMP. Where a requirement is not discussed in a TMP, explanation should be provided as to why.

Added mobile works into the treatment options.

Change value of 150 vpd to 150 vph as the requirement for GIVE WAY and ONE LANE signs. Given the requirements for no traffic control in the next section below use 40 vph or approx. 400 vpd, it would seem that more traffic would be trigger for the extra controls (not less), also pointing toward vph in lieu of vpd.

Where no signs are required, the two existing options were reviewed as the first option would always apply if the second one did. Reworded to reflect residential street and then other roads.

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 PTCs) 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 work area is 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:

~~— 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 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 shuttle lane is 60 m or less, or~~

~~▪ it is a residential street, and the length of the shuttle lane is 60 m or less.~~

– 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.

### 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)
<b>General lane widths</b>	
≤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)

Criteria	Lane width (m)
<b>Shuttle flow operation</b>	
Shuttle flow with active control (by traffic controllers or PTCs)	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.

The requirements in this section were updated to match the requirements for end-of-queue treatments in QGTMM Part 3 Section 4.8.3 which now apply on all roads and the MRTS02 annexure.

See changes highlighted yellow following.

### 3.3.8 End-of-queue treatments

#### New

Requirements for additional devices and methods for avoiding end-of-queue collisions are included in Chapter 1, Clause 2 of the Guideline – Traffic Management at Works on Roads and Clause 6.5.7 of the Transport and Main Roads Technical Specification, MRTS02 Provision for Traffic. For projects not subject to the requirements of MRTS02, the requirements in MRTS02 may be adopted.

End-of-queue risk control measures, in accordance with Chapter 1, Clause 2 of the Guideline – Traffic Management at Works on Roads shall be used if required by QGTMM Part 3, Section 4.8.3.

End-of-queue risk control measures may also 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

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

Removed the daily requirement for unattended sites and provided reference to QGTTM Part 6.

#### **4.11 Monitoring**

##### **4.11.2 Site inspections and record keeping**

###### Difference

Replace the subsection '**Inspections**' with:

Inspections should be undertaken:

- at least daily (for attended sites), or more frequently depending on location and likelihood of traffic management being disturbed
- before work starts each day
- immediately following the installation of a TGS
- before the start of work activities on site
- during the hours of work
- closing down at the end of the shift period
- periodic inspections after work hours and at night, and at unattended sites. For unattended sites, see QGTTM Part 6 Section 7.4 for requirements
- after any change in the traffic management arrangement on site, and
- following any environmental or weather events.

Provide templates for inspection registers allowing indication of:

- when traffic controls were erected
- when changes to controls occurred and why the changes were undertaken, and
- any significant observations associated with the traffic controls and their impacts on road users or adjacent properties.

Collecting information is particularly important in the event of an incident, in case legal proceedings result.



## QGTTM Part 3

Added guidance where sign duplication is not possible, and signs are to be repeated on the one side of the road.

See changes highlighted yellow following.

## 2 Design process

### 2.5 Essential design principles

#### 2.5.3 Signs

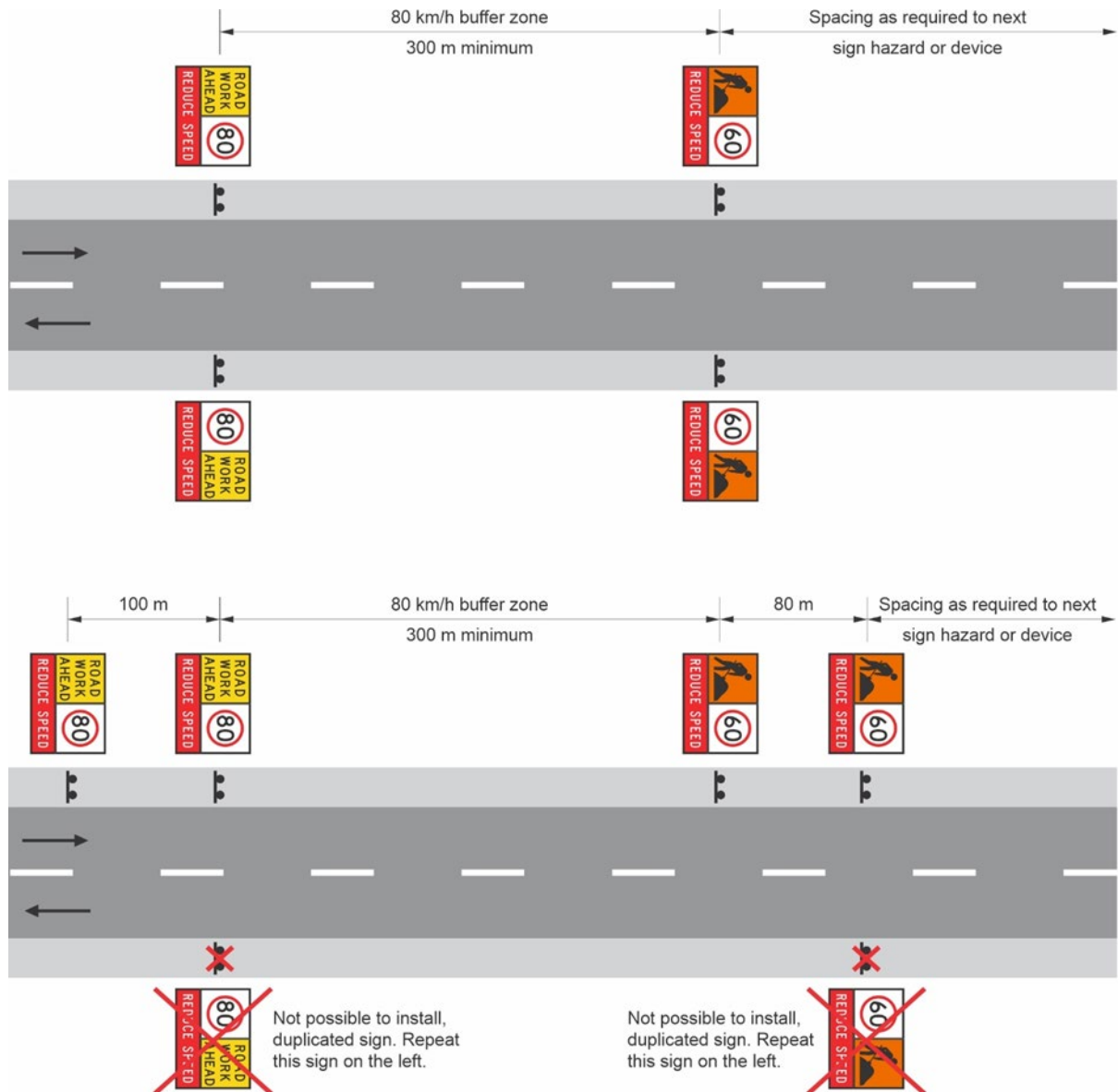
##### **Addition**

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 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 – Example showing duplicated signs and repeated signs when signs are not able to be duplicated**



Added option and diagrams for safety buffers when traffic is travelling toward the work area.

Added the option to omit the safety buffer on roads with a speed limit of 80 km/h or less, when supported by a risk assessment.

See changes highlighted yellow following.

### 3 Around the worksite

#### 3.6 Safety buffer

##### Difference

Replace the fourth paragraph:

A safety buffer must be provided immediately in advance of the work area where the speed is 60 km/h or higher. An area 20 m to 30 m in length is generally sufficient. However, if the work area is hidden from approaching traffic (e.g. by a crest or curve), the length of the safety buffer should be extended to a point which can be clearly seen by approaching traffic. On multilane roads, this may be increased up to 100 m.

with the following:

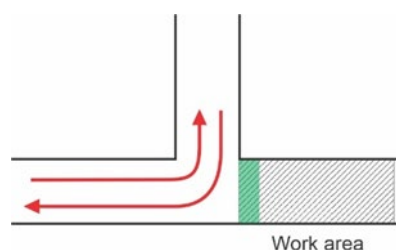
A safety buffer must be provided immediately in advance of the work area where the speed is 60 km/h or higher and either of the following apply:

- local traffic may continue beyond the detour point towards the work area (as indicated by Figure 3.2), or
- the work area is within 50 m of traffic at the detour point and traffic is travelling toward the work area before being detoured (see Figures 3.6(a), 3.6(b), 3.6(c) and 3.6(d) with the green zone indicating a safety buffer).

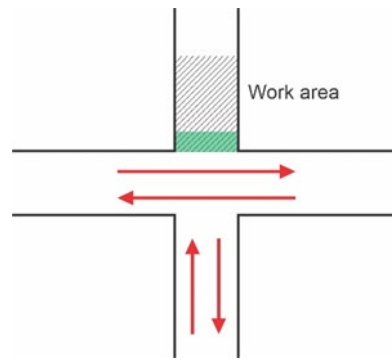
An area 20 m to 30 m in length is generally sufficient: however, if the work area is hidden from approaching traffic (for example by a crest or curve), the length of the safety buffer should be extended to a point which can be clearly seen by approaching traffic. On multilane roads, this may be increased up to 100 m.

On roads with a permanent speed limit (prior to any reductions for the works) of less than or equal to 80 km/h, the safety buffer may be omitted where the works (including the work area, all workers, vehicles, equipment and materials) are at least 6 m clear of traffic and is supported by a risk assessment.

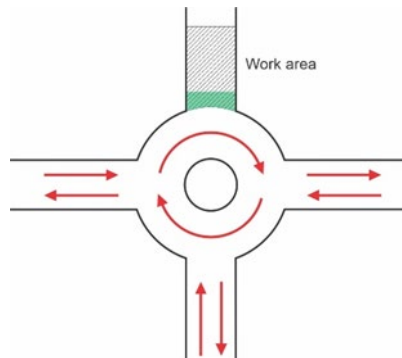
**Figure 3.6(a) – Safety buffer for T-intersection**



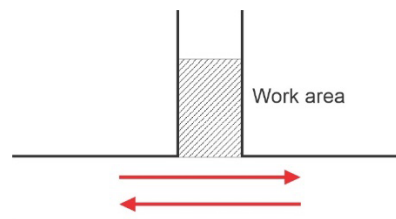
**Figure 3.6(b) – Safety buffer for cross intersection**



**Figure 3.6(c) - Safety buffer for roundabout**



**Figure 3.6(d) – Safety buffer for terminating leg of T-intersection**



Note: For works areas that extend close to the traffic lanes of the continuing leg of the T-intersection, 'past' methods of control (see Section 5) may be more appropriate.

Updated to include the requirements for end-of-queue treatments in the MRTS02 *Provision of Traffic* and the MRTS02.1 Annexure.

See changes highlighted yellow following.

## 4 Through the worksite

### 4.8 Advance warning area

#### 4.8.3 End-of-queue crash risk control measures

##### 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, end-of-queue risk control measures in accordance with Chapter 1, Clause 2 of the *Guideline – Traffic Management at Works on Roads* shall be 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).

Options and requirements for end-of-queue risk control measures are included in Chapter 1, Clause 2 of the *Guideline – Traffic Management at Works on Roads*.

End-of-queue risk control measures may also 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.

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

Added information regarding the Austroads Safety Hardware Training and Accreditation Scheme (ASHTAS).

See changes highlighted yellow following.

## **5 Past the worksite**

### **5.3 Separate the work area**

#### **5.3.1 Road safety barrier system**

##### Difference

Replace the first paragraph:

The road safety barrier system provides a physical barrier between the work area and moving traffic, designed to resist intrusion by errant vehicles and as far as practicable, redirect errant vehicles back into the travelled path. While safety barriers can be considered for all projects, this method may be inappropriate due to physical space requirements and limited edge clearances. If a road safety barrier is to be used, its design shall be based on the posted speed outside of works and not for the posted speed during works.

with the following:

The road safety barrier system provides a physical barrier between the work area and moving traffic, designed to resist intrusion by errant vehicles and, as far as practicable, redirect errant vehicles back into the travelled path. While safety barriers can be considered for all projects, this method may be inappropriate due to physical space requirements and limited edge clearances.

If a road safety barrier is to be used, its design shall be based on the speed of traffic past the barrier. In most cases, this will be a semi-permanent reduced speed limit posted at the site which generally applies 24 hours a day / 7 days a week, with other further temporary reductions only applicable when required for works which are occurring. Where a general reduction in speed limit past the site has not been implemented, the permanent posted speed limit shall be used as the design speed for the road safety barrier design.

The requirements of Section 2.5.9 are applicable to the design speed. If the traffic speed is greater than 10 km/h higher or lower than the speed limit past the road safety barrier, the speed of traffic shall be used as the design speed for the road safety barrier design.

Speed limits past the road safety barrier shall be monitored throughout the completion of works to ensure compliance with the road safety barrier design speed.

##### Difference

Delete the following dot point for end treatment options:

- flaring the barrier system away from the road when the end of a barrier is further away from a traffic lane. Barrier design will provide guidance on the rate of flare.

Difference

Replace:

End treatments are not required if the temporary road safety barrier system is flared behind a permanent road safety barrier or is outside of the adjacent clearance area and therefore not regarded as a hazard.

with:

End treatments are not required if the temporary road safety barrier system is flared behind a permanent road safety barrier (or another temporary road safety barrier) and is outside the deflection zone requirements for that barrier system and therefore not regarded as a hazard.

Difference

Replace:

A clearance between the road safety barrier system and the edge of the nearest traffic lane must be provided as shown in Table 5.1. These clearances are a recommendation only. There are no minimum clearances for permanent road safety barriers so the minimum for temporary systems if equally rated should be the same. Consider that road users often increase their travel speed during times the worksite is unattended.

with:

A clearance between road safety barriers and traffic should be provided. The recommended minimum clearance between the road safety barrier system and the edge of the nearest traffic lane is shown in Table 5.1. When determining the appropriate speed to select in Table 5.1, consider the range of speed limits and vehicle speeds that may occur while the safety barrier is in place and the likelihood that road users often increase their travel speed during times the worksite is unattended.

Difference

Replace Table 5.1 with the following:

**Table 5.1 – Road safety barrier system clearance to traffic lane**

Speed (km/h)	Recommended minimum Distance (m)*
≤ 40	0.3
41–60	0.5
61–80	0.5
> 80	1

\*Clearance is measured in front of the barrier system and not behind the barrier system in the deflection zone.

Addition

For additional guidance on road safety barriers in Queensland, see the [Road Planning and Design Manual Edition 2: Volume 3, Supplement to Austroads Guide to Road Design Part 6: Roadside Design, Safety and Barriers](#), with Section 6.8 of this document detailing the requirements for temporary road safety barriers.

Only road safety barriers 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.

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. See QGTTM Part 8 Section 5.5.12 for more details.

For more ASHTAS details see the departmental web page [Austroads Safety Hardware Training and Accreditation Scheme \(ASHTAS\)](#).

Change traffic volume for GIVE WAY sign control from 150 vpd to 150 vph.

Rewrite the dot points for the use of no specific traffic control.

See changes highlighted yellow following.

## **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 PTCs) 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 vpd/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 work area is 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:
    - ~~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 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 shuttle lane is 60 m or less, or~~
      - ~~it is a residential street, and the length of the shuttle lane is 60 m or less.~~
    - 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:
  - 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 are a maximum distance as shown in Table 5.4.

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 – 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.

Added the requirement for support by a risk assessment to the option to omit the safety buffer on roads with a speed limit of 80 km/h or less.

See changes highlighted yellow following.

## 5.6 Safety buffer

### Addition

On roads with a permanent speed limit (prior to any reductions for the works) of less than or equal to 80 km/h, the safety buffer may be omitted where the works (including the work area, all workers, vehicles, equipment and materials) are at least 6 m clear of traffic **and is supported by a risk assessment**.

Improved the wording regarding the use of automated PTCDs where works cause delays, or a side road intersects the worksite and what other traffic control options exist.

Clarified the number of lanes and approach requirements for traffic control using either a STOP/SLOW bat or PTCD.

See changes highlighted yellow following.

## 5.10 Traffic control

### 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 traffic controllers are well illuminated at night. Where required, provide additional lighting. See Section 6.7 *Night works* for greater detail about working at night.
- Ensure a single traffic controller never controls 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.

Added reference to new Section 6.11 for clear zone requirements.

## **6 Design for additional issues**

### **6.5 Shoulder as a Temporary Lane**

#### Difference

Replace:

- moving road users to the shoulder may bring roadside hazards within the clear zone.

with:

- moving road users to the shoulder may bring roadside hazards within the clear zone. See Section 6.11 for details on the clear zone.

Clarify the treatment requirements where an excavation is readily accessible to any vulnerable road users.

See changes highlighted yellow following.

## 6.8 Excavations

### Difference

Replace the lead-in sentence for the list following:

Where an excavation is readily accessible to any person and likely to collect or retain water of such a depth as to constitute a danger, or is left unattended, it is required that:

- the excavation is fully covered, fenced or backfilled when the worksite is unattended.
- the excavation is covered, fenced or filled when work is completed.
- only approved skid resistant plating must be used to cover an excavation.
- fully enclose the excavation. Do not use barricades, traffic cones or plastic mesh fencing that is not supported by a solid frame as they are not sufficient to adequately protect road users from excavations.

with:

Where an excavation is readily accessible to vulnerable road users any person and is either likely to collect or retain water of such a depth as to constitute a danger, or is left unattended, it shall be protected by one of the following as follows:

- the excavation is fully covered, fenced or backfilled when the worksite is unattended.
- the excavation is covered, fenced or filled when the worksite is attended and works on the excavation are not active.
- fully enclose the excavation.

Do not use barricades, traffic cones or plastic mesh fencing that is not supported by a solid frame as they are not sufficient to adequately protect vulnerable road users from excavations.

When excavations are covered with plating, only approved skid resistant plating shall be used.

### Difference

Replace the lead-in sentence for the list:

Table 6.1 shows clearance between an excavation, or any ground level hazard associated with the excavation, and the nearest traffic lane, relative to speed and traffic volume. The delineation method is also shown as one of three options. These are as follows:

with:

Table 6.1 defines the recommended protection method for an excavation based on clearance between an excavation or any ground level hazard associated with the excavation, and the nearest traffic lane, relative to speed and traffic volume, and depth of excavation. The protection method which should be implemented is one of the three following options:

### Addition

Designers should also consider the stability of the excavation face and material (angle of repose and zone of influence) for the depth of excavation. In addition, the proximity of load-bearing sources on the high side of excavations to items such as safety barriers, delineation, traffic, works vehicles or stored material may affect the stability of the excavation face. The presence of shoring as well as the strength of the shoring will also have an impact on the loads and proximity of loads to the excavated face. Greater clearances between the excavation and these items may be required.

Where safety barriers are provided to protect excavations, the requirements of Section 5.3.1 must also be considered. When excavations are located behind safety barriers, the designer is to consider the deflection zone behind the barrier which shall be clear of personnel, equipment, and materials at all times. The designer must also take into account the location and clearance to the excavated face and ensure the safety barrier, if impacted by traffic, does not encroach into the excavation or move close enough to the excavation such that the weight of the safety barrier system affects the stability of the excavated face.

Designers are only responsible for considering the temporary traffic management impact of excavations, such as proximity of temporary traffic management workers, traffic (road users including vulnerable road users) or other temporary traffic management measures (such as safety barriers) to ensure they do not negatively impact the excavated face or are negatively impacted by the excavation.

Designers are not trained to calculate or determine elements related to excavations such as the angle of repose, zone of influence, shoring requirements, or the stability of an excavated face. It is the responsibility of others (such as the Person Conducting a Business or Undertaking (PCBU)) to supply the designer with the necessary input data for excavations, so that the designer may then adequately design the temporary traffic management measures for sites with excavations.

Added a new Section 6.11 on clear zones.

## **6.11 Clear Zone**

### New

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 shall be located outside the clear zone or 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.

### **6.11.1 Factors influencing the clear zone**

#### New

The variables that influence the determination of the clear zone include:

- traffic volumes
- vehicle speeds
- road curvature (geometry)
- roadside slopes (cut and fill), and
- presence of physical devices that limit or prevent errant vehicle incursion (e.g. safety barrier or steep cutting).

It is important to consider both objects (hazards) and terrain that may cause vehicles to rollover.

## 6.11.2 Determination of clear zone requirements

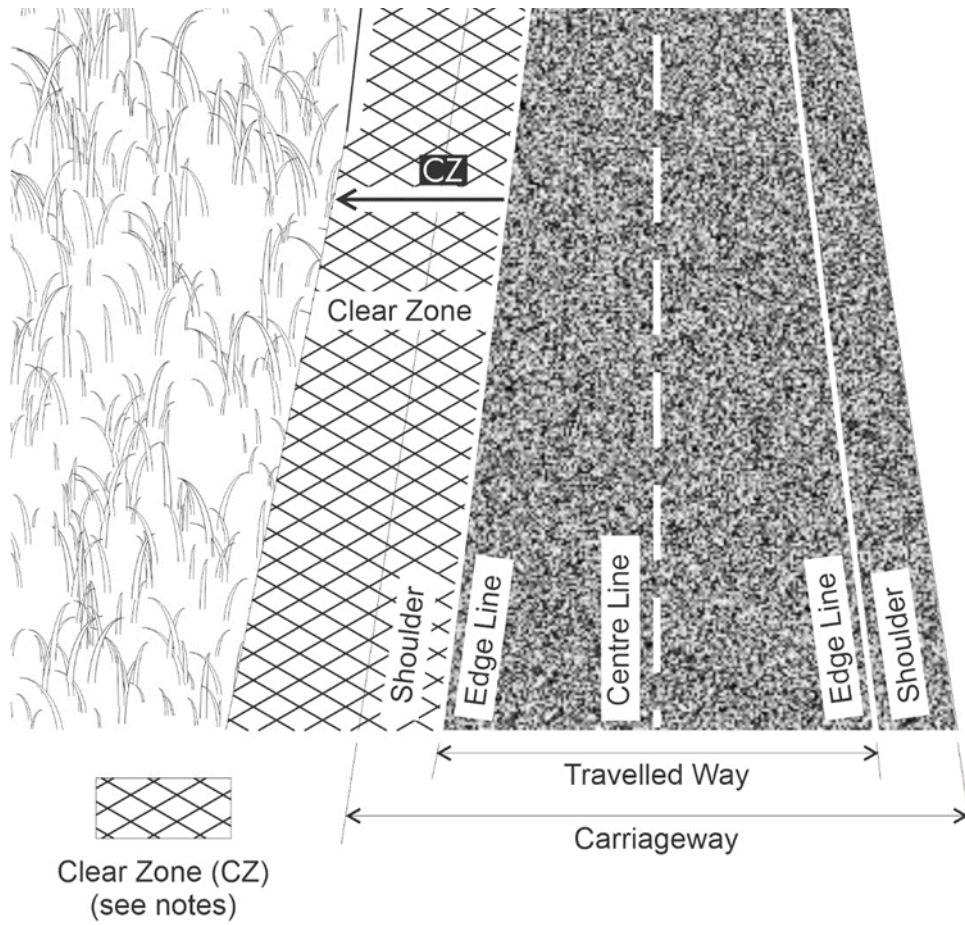
### New

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-transversable 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-transversable 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 <sup>(2)</sup>	6:1 to flat	4:1 to 5:1	3:1 and steeper <sup>(2)</sup>
≤ 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 <sup>(1)</sup>	(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 <sup>(1)</sup>	(2)	6.5	5.5	4.5
	1501 – 6000	9.0	12.0 <sup>(1)</sup>	(2)	8.0	6.5	5.5
	> 6000	10.0 <sup>(1)</sup>	13.5 <sup>(1)</sup>	(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 <sup>(1)</sup>	(2)	6.5	6.0	5.0
	1501 – 6000	10.0 <sup>(1)</sup>	13.0 <sup>(1)</sup>	(2)	8.5	7.5	6.0
	> 6000	10.5 <sup>(1)</sup>	14.0 <sup>(1)</sup>	(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).

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

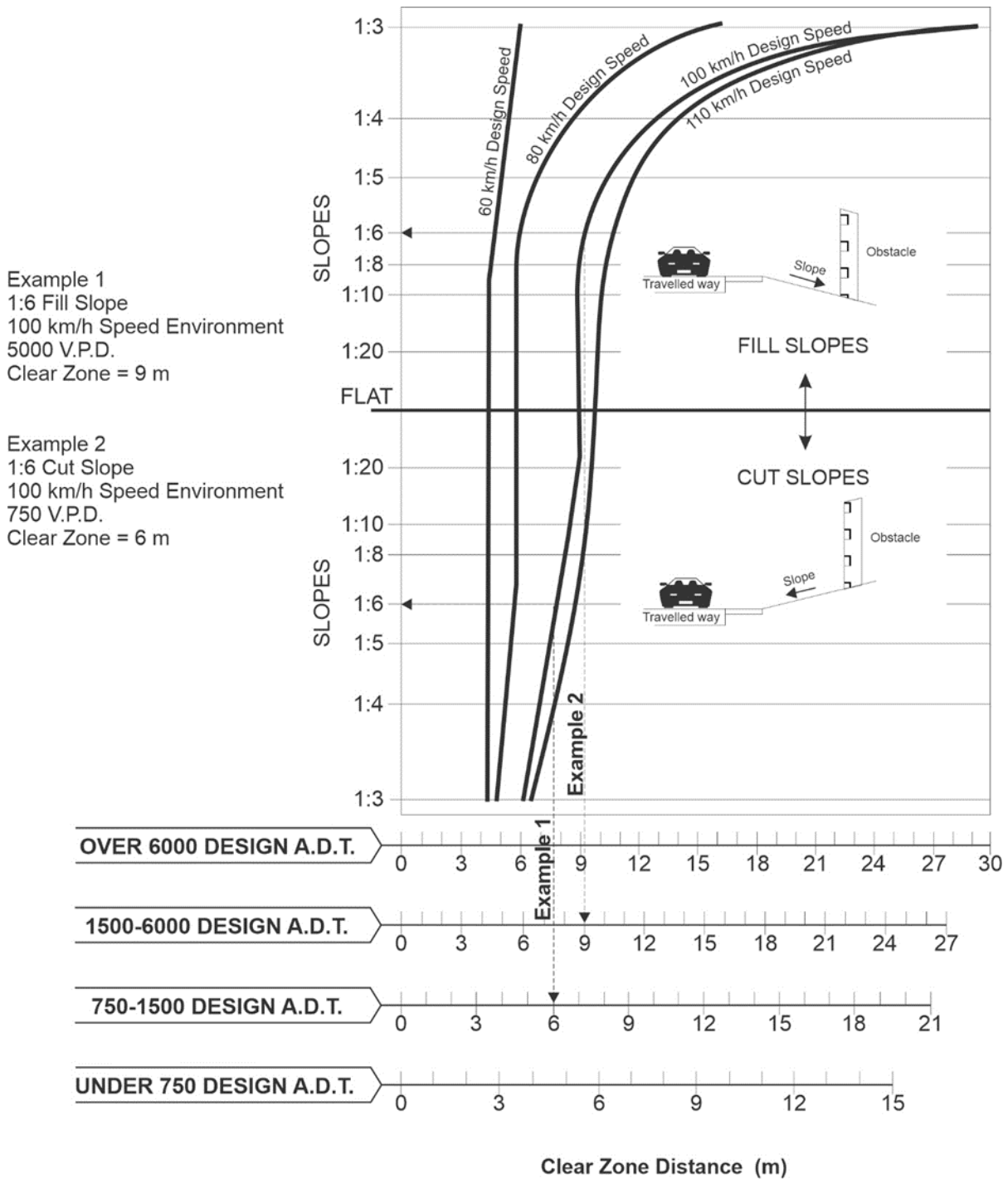
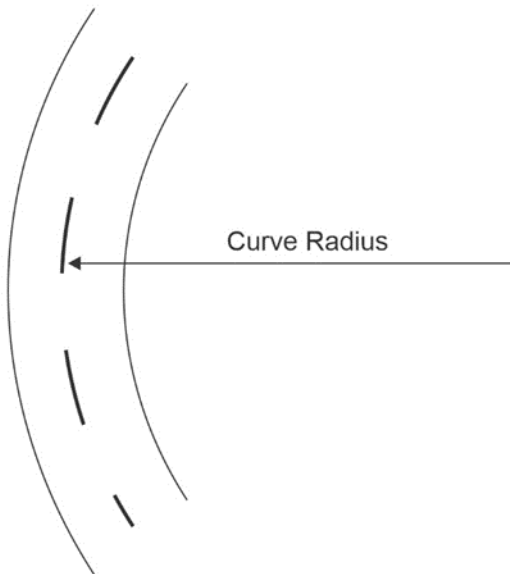
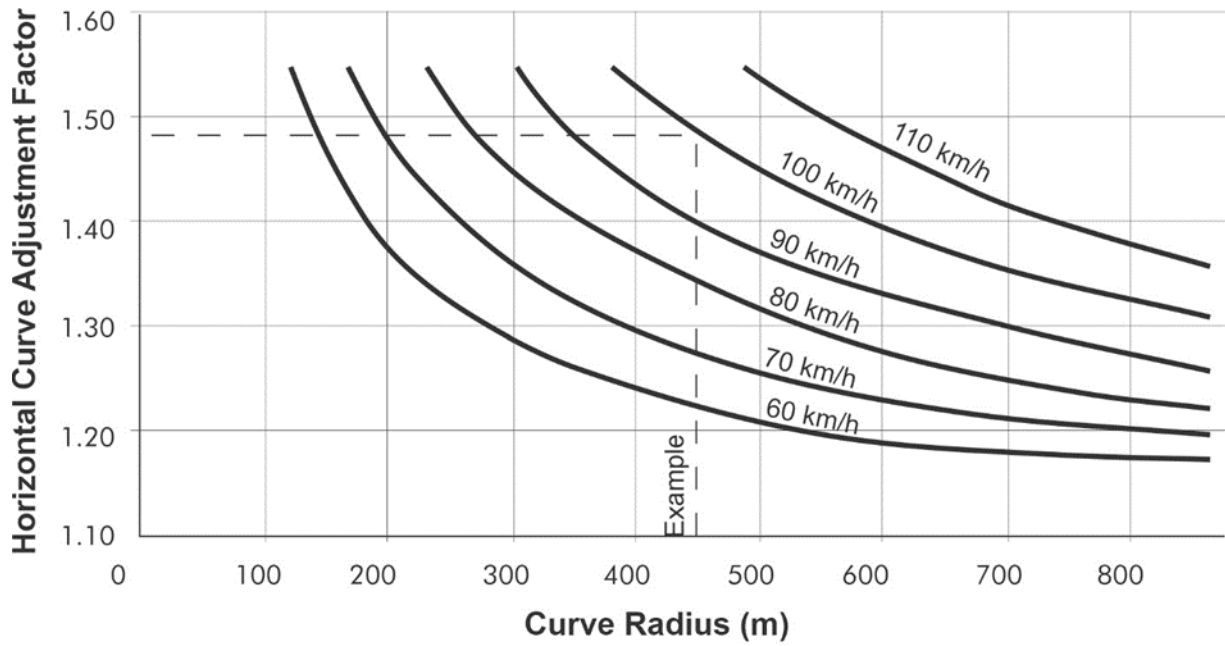


Figure 6.11.2(c) – Clear zone horizontal curve adjustment factors



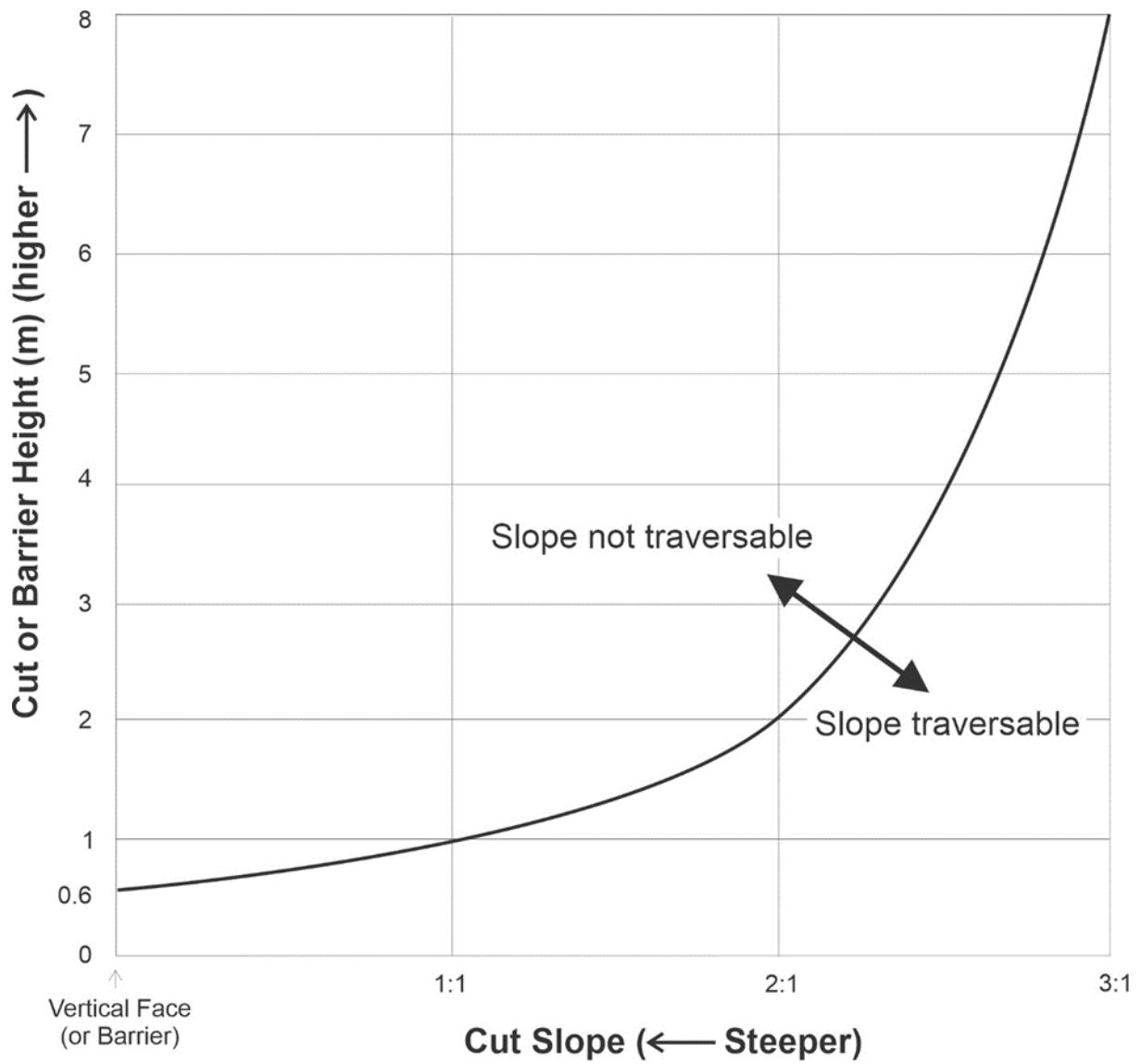
Example

450m Radius Curve  
100 km/h Speed Environment

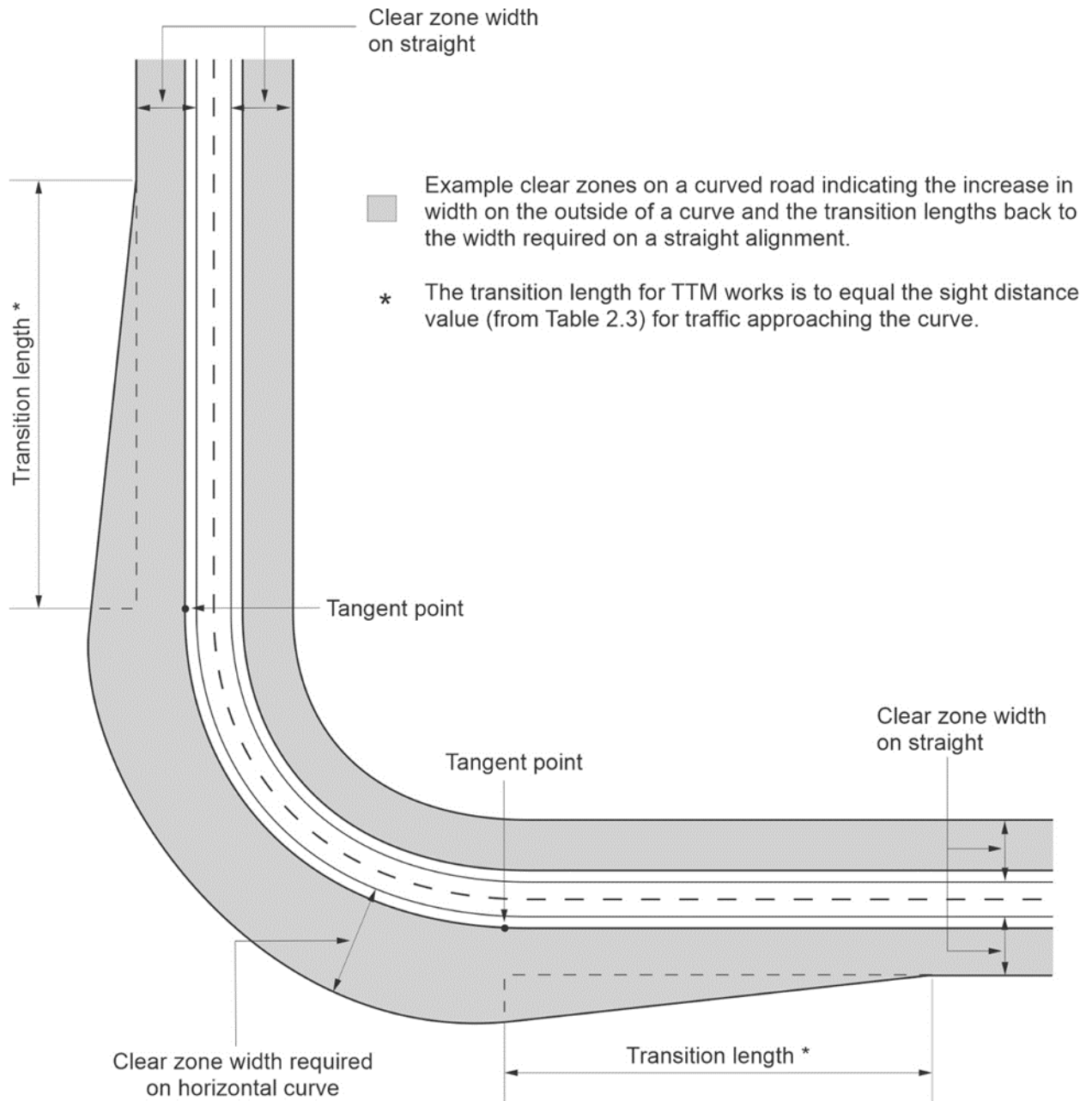
CZ required on flat straight road = 9m (Figure B1)  
Curve Adjustment Factor (Figure B2 above) = 1.48

Required Clear Zone =  $9 \times 1.48 = 13.5\text{m}$

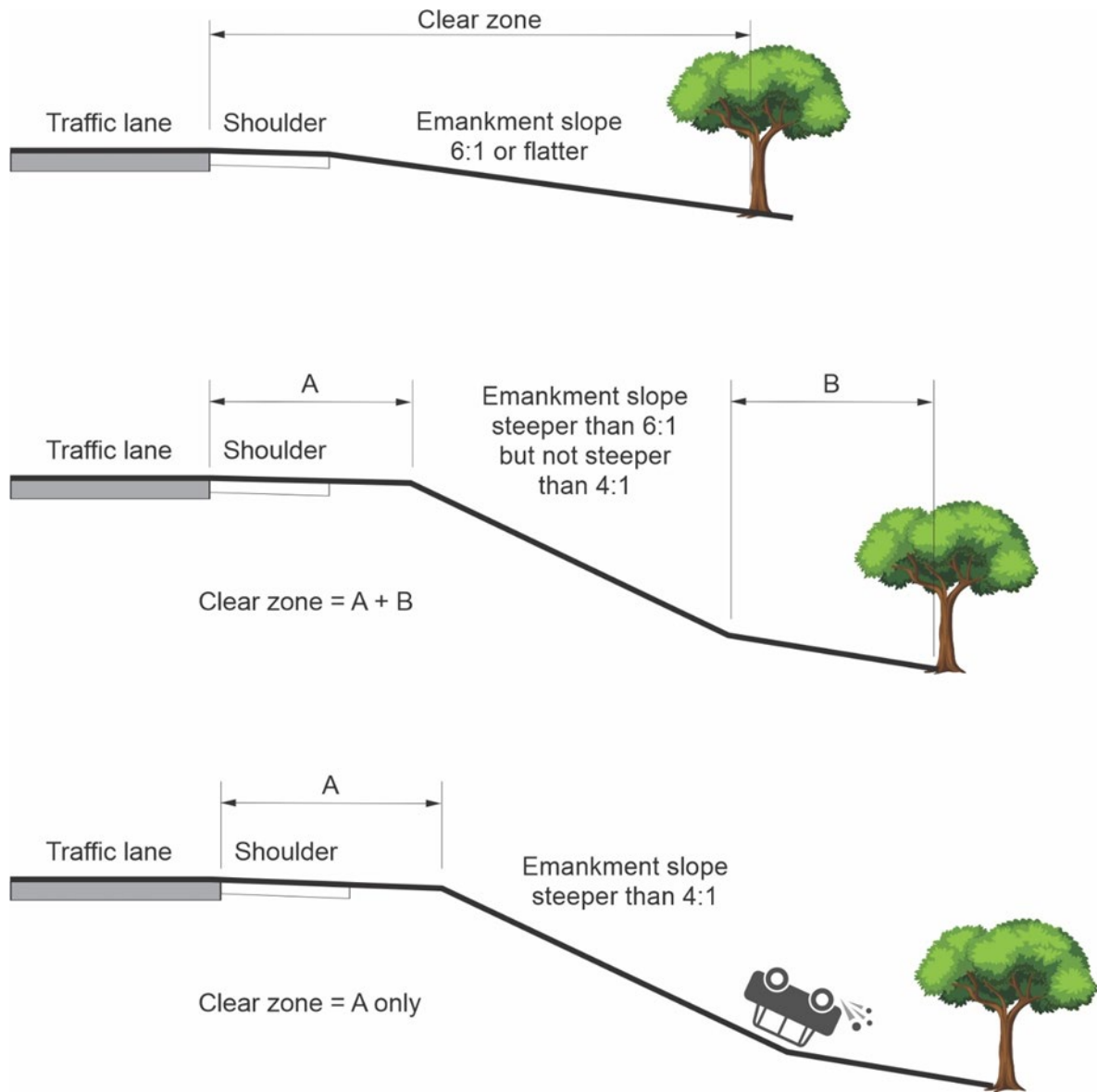
Figure 6.11.2(d) – Influence of cut height and slope on traversability



**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)**



Added reference to new Section 6.11 for clear zone requirements.

Added requirements from MRTS02 for delineation of redundant devices.

## **7 How to apply the Traffic Guidance Scheme**

### **7.4 Removal**

#### **7.4.1 Redundant devices**

##### Difference

Replace:

- The equipment is stored at least 6 m clear from traffic.

with:

- The equipment is stored outside the clear zone (see Section 6.11) and when located within nine metres of the edge of a traffic lane shall be delineated, unless located behind a safety barrier.



## QGTTM Part 5

Added a new section defining the requirements for combining different TGS protection methods at the one work site.

### 3 General consideration

#### 3.6 Combining different works protection methods

##### New

Combining different works protection methods at the one site is permitted where the requirements for the different works protection methods are met.

Different short-term low-impact provisions may be used for different activities when appropriate and when satisfying the risk assessment and other provisions and criteria at the one work site.

Short-term low-impact provisions may be used when appropriate and when satisfying the risk assessment and other provisions and criteria on a static work site where the temporary traffic management arrangements at the static work site are in place and required for other work activities. The static site must not be created solely for enabling a speed reduction which would permit short-term low-impact work protection methods which require a lower speed limit than applies to be used.

Where appropriate, and when satisfying the risk assessment and other provisions and criteria, short-term low-impact provisions may be used as part of a mobile work site.

Signs and devices used in static works sites or for mobile works must be installed in accordance with the requirements of QGTTM Part 3 or Part 4 respectively.

Deleted 'approved' from description of the TGS.

See changes highlighted yellow following.

## 4 Works on road – within traffic lane

### 4.4 Frequently changing work area – in lane

#### 4.4.5 Installation (TGS instruction)

##### Difference

In the subsection '**Set-out**', replace the following:

All signs and devices shall be placed as shown on the TGS. The preferred order to erect signs and devices is as follows:

with:

An ~~approved~~ TGS is required for frequently changing work area – in lane works, and all signs and devices shall be placed as shown on the TGS.

The preferred order to erect signs and devices is as follows:

Difference

In the subsection '**Operation**', replace the following:

See AS 1742.3 for more information.

with:

Guidance on the placement of signs is given in the QGTTM Part 6 Section 6.6.2 and Queensland MUTCD Part 3 Clause 4.3.2.

Addition

In the subsection '**Operation**', add the following:

When using lookouts in Queensland, additional guidance and requirements for the Lookout Protection Method, in the [Guideline – Traffic Management at Works on Roads](#) shall be applied.

Difference

In the subsection '**Operation**', replace the note under Table 4.8:

Note: \*These distances are based on a maximum distance of 3.5 m between road workers' location and their escape to a shoulder or median. For longer escape routes seek specialist design guidance as additional sight distance will be required.

with

Note: \*These distances are based on a maximum distance of 3.5 m between road workers' location and their escape to a shoulder or median. For longer escape routes additional sight distance will be required and the sight distance provisions for the Lookout Protection Method, in the [Guideline – Traffic Management at Works on Roads](#) shall be applied.

Deleted 'approved' from description of the TGS.

See changes highlighted yellow following.

#### **4.5 Constantly moving work area**

##### **4.5.5 Installation (TGS instruction)**

Difference

In the subsection '**Set-out**', replace the following:

All signs and devices shall be placed as shown on the TGS. The preferred order to erect signs and devices is as follows:

with:

An ~~approved~~ TGS is required for constantly moving work area – in lane works, and all signs and devices shall be placed as shown on the TGS.

The preferred order to erect signs and devices is as follows:

### Difference

In the subsection '**Operation**', replace the following:

See AS 1742.3 for more information.

with:

Guidance on the placement of signs is given in the QGTTM Part 6 Section 6.6.2 and Queensland MUTCD Part 3 Clause 4.3.2.

### Addition

In the subsection '**Operation**', add the following:

When using lookouts in Queensland, additional guidance and requirements for the Lookout Protection Method, in the [Guideline – Traffic Management at Works on Roads](#) shall be applied.

### Difference

In the subsection '**Operation**', replace the note under Table 4.11:

Note: \*These distances are based on a maximum distance of 3.5 m between road workers' location and their escape to a shoulder or median. For longer escape routes seek specialist design guidance as additional sight distance will be required.

with

Note: \*These distances are based on a maximum distance of 3.5 m between road workers' location and their escape to a shoulder or median. For longer escape routes additional sight distance will be required and the sight distance provisions for the Lookout Protection Method, in the [Guideline – Traffic Management at Works on Roads](#) shall be applied.

Deleted 'approved' from description of the TGS.

See changes highlighted yellow following.

## **5 Works outside of traffic lane**

### **5.1 Shoulders, medians, verges and footpaths with workers on foot or small plant items only**

#### **5.1.5 Installation (TGS instruction)**

### Difference

In the subsection '**Set-out**', replace:

All signs and devices must be placed as shown on the TGS. Advance signs are to be located a distance as per Table 2.3 from the start of the worksite or hazard.

Vehicles used to install signage and equipment shall have a yellow flashing lamp(s) that is visible to all approaching traffic.

Before any equipment or materials are brought onto the work area, a drive through check of the work site traffic management set up should be made in all directions, including all side roads if required. This is to confirm that the work area is safe for all workers and road users, and signs and devices are placed as indicated on the TGS.

with:

An approved TGS is not required but may be developed for shoulders, medians, verges and footpaths with workers on foot or small plant items only activities. If provided, all signs and devices shall be placed as shown on the TGS.

Advance signs are to be located a distance as per Table 2.3 from the start of the worksite or hazard.

Vehicles used to install signage and equipment must, at a minimum, have a yellow flashing lamp(s) visible to all approaching traffic.

Before any equipment or materials are brought onto the work area, a visual check of the worksite traffic management set up (vehicle-mounted warning devices and signs are in place, and sight distance requirements are met) should be made in all directions, including all side roads and property accesses if required. This is to confirm that the work area is safe for workers and road users, and signs and devices are placed as required by this section, or as indicated on the TGS (if provided). This may require a drive-through check.

#### Difference

In the subsection '**Operation**', replace:

See AS 1742.3 for more information

with:

Guidance on the placement of signs is given in the QGTTM Part 6 Section 6.6.2 and Queensland MUTCD Part 3 Clause 4.3.2.

#### Difference

In the subsection '**Operation**', replace:

The preferred location of the work vehicle is parked adjacent to the works with the vehicle mounted warning device activated and parked clear of traffic lanes.

with:

The preferred location of the work vehicle is parked adjacent to the works with the vehicle mounted warning device activated and parked clear of traffic lanes or parked where parking would be legal, and the safety of other road users is not compromised.

Deleted 'approved' from description of the TGS.

See changes highlighted yellow following.

## **5.2 Shoulders, medians, verges and footpaths with large plant items only**

### **5.2.5 Installation (TGS instruction)**

#### Difference

In the subsection '**Set-out**', replace:

All signs and devices must be placed as shown on the TGS. Advance signs are to be located a distance as per Table 2.3 from the start of the work site or hazard.

Vehicles used to install signage and equipment must have a yellow flashing lamp(s) that is visible to all approaching traffic.

Before any equipment or materials are brought onto the work area, it is recommended that a drive-through check of the worksite traffic management set up be made in all directions, including all side roads if required. This is to confirm that the work area is safe for all workers and road users, and signs and devices are placed as indicated on the TGS.

with:

An approved TGS is not required but may be developed for shoulders, medians, verges and footpaths with large plant item only activities. If provided, all signs and devices shall be placed as shown on the TGS.

Advance signs are to be located a distance as per Table 2.3 from the start of the worksite or hazard.

Vehicles used to install signage and equipment must, at a minimum, have a yellow flashing lamp(s) visible to all approaching traffic.

Before any equipment or materials are brought onto the work area, a visual check of the worksite traffic management set-up (vehicle-mounted warning devices and signs are in place, and sight distance requirements are met) should be made in all directions, including all side roads and property accesses if required. This is to confirm that the work area is safe for all workers and road users, and signs and devices are placed as required by this section, or as indicated on the TGS (if provided). This may require a drive-through check.

#### Difference

In the subsection '**Operation**', replace:

See AS 1742.3 for more information.

with:

Guidance on the placement of signs is given in the QGTTM Part 6 Section 6.6.2 and Queensland MUTCD Part 3 Clause 4.3.2.

Deleted 'approved' from description of the TGS.

See changes highlighted yellow following.

### **5.3 Frequently changing work area outside of a traffic lane**

#### **5.2.5 Installation (TGS instruction)**

##### Difference

In the subsection '**Set-out**', replace:

All signs and devices must be placed as shown on the TGS. Advance signs are to be located a distance as per Table 2.3 from the start of the work site or hazard.

Vehicles used to install signage and equipment must have a yellow flashing lamp(s) that is visible to all approaching traffic.

Before any equipment or materials are brought onto the work area, it is recommended that a drive through check of the work site traffic management set up be made in all directions, including all side roads if required. This is to confirm that the work area is safe for all workers and road users, and signs and devices are placed as indicated on the TGS.

with:

An approved TGS is not required but may be developed for frequently changing work area outside of a traffic lane activities. If provided, all signs and devices shall be placed as shown on the TGS.

Advance signs are to be located a distance as per Table 2.3 from the start of the worksite or hazard.

Vehicles used to install signage and equipment must, at a minimum, have a yellow flashing lamp(s) visible to all approaching traffic.

Before any equipment or materials are brought onto the work area, a visual check of the worksite traffic management set-up (vehicle-mounted warning devices and signs are in place, and sight distance requirements are met) should be made in all directions, including all side roads and property accesses if required. This is to confirm that the work area is safe for all workers and road users, and signs and devices are placed as required by this section, or as indicated on the TGS (if provided). This may require a drive-through check.

##### Difference

In the subsection '**Operation**', replace:

See AS 1742.3 for more information.

with:

Guidance on the placement of signs is given in the QGTTM Part 6 Section 6.6.2 and Queensland MUTCD Part 3 Clause 4.3.2.

Deleted 'approved' from description of the TGS.

See changes highlighted yellow following.

## **5.4 Short term works outside of a traffic lane**

### **5.4.5 Installation (TGS instruction)**

#### New

Short-term works outside a traffic lane do not require an ~~approved~~ TGS diagram 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 short-term works outside of a traffic lane activities. If provided, all signs and devices shall be placed as shown on the TGS.

Before any equipment or materials are brought onto the work area, a visual check of the worksite traffic management set-up (vehicle-mounted warning devices and lookout (if required) are in place, and sight distance requirements are met) should be made in all directions, including all side roads and property accesses if required. This is to confirm that the work area is safe for all workers and road users, and signs and devices are placed as required by this section, or as indicated on the TGS (if provided).

#### **Operation**

Equipment or materials which are brought onto the work area should be unloaded from the non-traffic side of a stationary work vehicle.

The work vehicle shall be located clear of traffic or parked where parking would be legal, and the safety of other road users is not compromised, and is adjacent to, or on approach (within 40 m), to the worksite in the primary direction of travel to the works if undertaking works in a single location. The works vehicle is the primary traffic management warning device for short-term works outside a traffic lane. If it is not possible to locate the work vehicle as described, for example due to inability to find an appropriate area to park the vehicle, then this works practice shall not be used.

The vehicle-mounted warning device shall be on at all times while work is in progress.

The lookout person (for works within 1.2 m of a traffic lane) shall be positioned adjacent to the worker so that they can view approaching traffic in time to warn workers to vacate the roadway before arrival of traffic. The recommended sight distance at which the lookout person should be able to see approaching traffic is as per Table 5.4.5(a). This distance allows for the worker to respond to a warning and vacate the roadway. When using lookouts in Queensland, additional guidance and requirements for the Lookout Protection Method in the [Guideline – Traffic Management at Works on Roads](#) shall be applied.

At all times when conducting these activities, the lookout person (for works within 1.2 m of a traffic lane) and worker shall be within a reasonable proximity (no more than 40 m) of the vehicle with a vehicle-mounted warning device, which is parked clear of traffic lanes, and the safety of other road users is not compromised.

Variable message signs may be used for short-term works outside a traffic lane as a means of secondary protection to workers. The use of variable message signs shall be within 40 m of workers. A distance of greater than 40 m between the variable message sign and workers may be misleading to approaching road users about the location of works.

**Table 5.4.5(a) – Sight distance for lookout person – Short term works outside a traffic lane – but within 1.2 m of a traffic lane**

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

\* Note: These distances are based on a maximum distance of 3.5 m between road workers' location and their escape to a shoulder or median. For longer escape routes additional sight distance will be required and the sight distance provisions for the Lookout Protection Method, in the [Guideline – Traffic Management at Works on Roads](#) shall be applied.

**Table 5.4.5(b) – Sight distance to both the vehicle-mounted warning device and the worker – Short term works outside a traffic lane – but within 1.2 m of a traffic lane – lookout not required**

Speed (km/h)	Distance (m)
≤ 45	140
46–55	180
56–65	210
66–75	250
76–85	280
86–95	320
96–110	350
> 110	A lookout person is required



Deleted 'approved' from description of the TGS.

See changes highlighted yellow following.

## **6 Traffic investigations, road lighting or signal works**

### **6.1 Traffic investigations**

#### **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 inspecting, viewing or measuring a section of roadway or road feature (for example, for maintenance or planning purposes), 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 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) 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 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 do not require an ~~approved~~ 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 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

Deleted 'approved' from description of the TGS.

See changes highlighted yellow following.

## 6.2 Road Lighting or signal works

### 6.2.1 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.

Examples of work appropriate for this treatment include, but are not limited to, maintenance and installation of power poles, lights, wires and traffic signals.

Road lighting or signal works may be undertaken by workers on foot with a vehicle equipped with a vehicle-mounted warning device (see Section 3.4) without the use of advance warning signs under the following conditions:

- a) where the vehicle is positioned where parking is legal and the safety of other road users is not compromised, and the vehicle does not obstruct the traffic flow:
  - i. the maximum work period at any one location shall be one hour, and
  - ii. a minimum clearance of 5.5 m must be maintained above the road surface to any part of the maintenance vehicle that encroaches upon the open traffic lane, or
- b) where the vehicle is positioned other than outlined in Item a):
  - i. the maximum work period at any one location shall be:
    - A. five minutes if on the roadway or within 1.2 m of moving traffic, or
    - B. 20 minutes if within 3 m of moving traffic but more than 1.2 m from moving traffic, and

- ii. the following sight distance to the vehicle-mounted warning device for approaching drivers shall be:
    - A. in a residential street, 75 m or to the end of the street, or
    - B. in all other locations, a minimum as per Table 6.2.1(a), and
  - iii. the vehicle-mounted warning device shall not be obscured by either overhanging vegetation or a raised truck body, and
  - iv. the work shall not reduce:
    - A. the overall width to less than required for safe passage for two-way traffic (or one-way traffic if the volume is less than 50 vehicles per day), or
    - B. the running lane width adjacent to a barrier line to less than that needed to allow vehicles to proceed without crossing the line.
- c) A lookout person shall be posted to warn workers on foot of the approach of any vehicle whose size or speed may constitute a safety threat. The lookout person is not required if the works are more than 1.2 m clear of moving traffic.

If required, the lookout person shall be positioned adjacent to the worker so that they can view approaching traffic in time to warn workers to vacate the roadway before arrival of traffic. The recommended sight distance at which the lookout person should be able to see approaching traffic is as per Table 6.2.1(b). This distance allows for the worker to respond to a warning and vacate the roadway.

When using lookouts in Queensland, additional guidance and requirements for the Lookout Protection Method, in the [Guideline – Traffic Management at Works on Roads](#) shall be applied.

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

Road lighting or signal works do not require an approved 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 road lighting or signal works activities.

Vehicles used to install signage and equipment must, at a minimum, have a yellow flashing lamp(s) visible to all approaching traffic.

Before any equipment or materials are brought onto the work area, a visual check of the worksite traffic management set-up (vehicle-mounted warning devices and lookout (if required) are in place, and sight distance requirements are met) should be made in all directions, including all side roads and property accesses if required. This is to confirm that the work area is safe for all workers and road users, and signs and devices are placed as required by this section, or as indicated on the TGS (if provided).

Where the requirements of this section or another suitable section in this Part cannot be met, the treatments of a fully-protected static worksite (see QGTTM Part 3) or mobile works convoy (see QGTTM Part 4) shall be applied.

**Table 6.2.1(a) – Sight distance 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

**Table 6.2.1(b) – Sight distance for lookout person**

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

Note: \*These distances are based on a maximum distance of 3.5 m between road workers' location and their escape to a shoulder or median. For longer escape routes additional sight distance will be required and the sight distance provisions for the Lookout Protection Method, in the [Guideline – Traffic Management at Works on Roads](#) shall be applied.

## QGTTM Part 6

Adding reporting incidents and near misses to the TMI responsibilities.

### 3 Roles and Responsibilities

#### 3.3 TTM Relationships

##### 3.3.3 TMI responsibilities for TTM on a worksite include:

###### Addition

Add the following dot point:

- reporting incidents and near misses.

Adjusted the requirements for aftercare inspections.

## 7 TGS Operations and Maintenance

#### 7.4 Aftercare – worksite arrangements outside working hours

###### Difference

Replace Section 7.4 with the following:

Periodic inspections of the worksite should be undertaken during aftercare periods to ensure that:

- a. all traffic control devices are operating effectively. It is particularly important that the devices are visible at low light in the low headlight beam of passing vehicles.
- b. adequate provision has been made for pedestrians (including those with disabilities) and cyclists to pass safely through the worksite, especially at times when the temporary worksite speed limits may have been removed and traffic controllers are not present to provide assistance.
- c. sites at or near locations with high numbers of pedestrians (especially near licensed venues) are inspected on a risk-based approach.

The frequency of after-hours inspections and records is dependent on the type of traffic control devices left at an unattended site, length of time the site is unattended, the general environment around the site and the likelihood the traffic control devices will remain in place or be interfered with.

See Section 10 for further information on unattended sites.

Adjusted the requirements for aftercare inspections.

### **7.11 Near misses**

#### New

In addition to the requirements in Section 7.6 for incidents, the TMI is also responsible for identifying and reporting near misses.

The TMI shall be alert to any near misses as these may indicate a problem or emerging problem, and report all near misses immediately to the site supervisor. Paperwork for near misses may be completed at the end of the shift.

Near misses are a measure of perception of risk. Reporting near misses assists with identifying events that may result in a future incident (e.g. serious injury or fatality) and can lead to improved practices to prevent this occurring. It is important that any near miss reports describe the 'potential damage scenario', e.g. a vehicle has run past a traffic control station and may possibly have resulted in actual or potential injury to people, damage to plant/equipment, environment, reputation or the project.

See QGTTM Part 7 Section 2.10 for further information on incidents and near miss reporting for traffic controllers.

## QGTTM Part 8

Added a new section with information regarding the Austroads Safety Hardware Training and Accreditation Scheme (ASHTAS).

### 5 Powers, roles and responsibilities

#### 5.5 *Roles and responsibilities for special applications*

##### 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.

Currently, the Safety Barrier Operative (Entry Level) course has been created and is available. 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 yet. The Designer - Temporary Barrier course 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, TMR will require 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 more information, visit <https://www.tmr.qld.gov.au/business-industry/technical-standards-publications/ASHTAS>.

Added a new section outlining the requirements for supervising a TC in training and a reference to where to find the detailed requirements in Part 7.

#### 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.

## Transport and Main Roads Specification - MRTS02 Provision for Traffic

Changed the reference for record keeping arrangements from the Queensland MUTCD Part 3 to QGTTM.

Added a reference to TMWOR Chapter 6 for video record keeping.

See changes highlighted yellow following.

### 5 Traffic management planning

#### 5.6 Administration of the traffic management plan

##### 5.6.4 Inspection and records

The Contractor shall inspect all traffic control devices and traffic control arrangements in accordance with QGTTM Part 6 Clause 7.

As an alternative to the record keeping arrangements outlined in the Queensland MUTCD Part 3 QGTTM, photographic and/or video evidence of the TGS is permitted (refer to TMWOR Chapter 6). Photographic and/or video evidence shall include date and time stamps and GPS location and be of sufficient resolution to accurately identify and locate traffic control devices. GPS coordinates shall be in World Geodetic System 1984 (WGS84) format or Geocentric Datum of Australia 2020 (GDA 2020) format, with latitude and longitude in decimal degrees. Time and date stamping shall be in Australian Eastern Standard Time (Coordinated Universal Time [UTC] + 10 hours).

Records shall be retained by the Contractor in accordance with the *Limitation of Actions Act 1974* (Qld), for actions associated with personal injury (plus as long as required for any claims to be resolved). Records, including the photographic and/or video evidence, shall be provided to the Administrator at the end of each month and at other times upon request by the Administrator. Where requested by the Administrator, records shall be provided in a timely manner.

When required, the Contractor and in particular the Nominated Traffic Officer, shall provide evidence in Court in the event that a speeding infringement notice is challenged, or in the event of a traffic incident within the site, or outside the site but contributed to by activities of the site.



Remove the reference to the Queensland MUTCD Part 3 in the subsection for measuring traffic delays.

See changes highlighted yellow following.

## **5.7 Traffic management provisions**

### **5.7.3 Traffic lane restrictions**

Lane restrictions shall conform to the following principles unless approved otherwise.

**Minimum lane requirements** – the minimum number of lanes to be maintained on a midblock section of road will be determined from:

- the requirements of Clause 3.2 of Annexure MRTS02.1 which sets out the minimum requirements for various time periods and for various locations in the work site
- the requirements of Table 2.4 QGTTM Part 3, or
- where specified in Clause 3.2 of Annexure MRTS02.1, the required lane availability shall be determined through a traffic operational Level of Service assessment in accordance with the requirements of TMWOR Chapter 2 Section 3.

Where the number of traffic lanes is not listed in Clause 3.2 of Annexure MRTS02.1, recent historical traffic information shall be used to provide data for the assessments under b) and c) of Clause 3.2 of Annexure MRTS02.1.

The 24-hour traffic count information at the site is to conform to the following requirements:

- be less than 12 months old
- not be collected during school holidays, and
- be undertaken on a day of the week which is expected to have the greatest traffic volumes.

The source of the traffic count information shall be documented and, in addition to confirmation of adherence to the requirements listed above, shall be provided to the Administrator upon request.

The use and interpretation of any traffic count information is entirely at the Contractor's own risk.

The minimum lane requirements to be maintained at an intersection, shall be determined as per method (A), (B) or (C) of Clause 3.3 of Annexure MRTS02.1.

**Single lane reversible flow (Shuttle flow)** – where single lane reversible flow (to serve both directions) is allowed, the Contractor shall maintain traffic flow under the control of traffic controllers, or portable traffic signals, in such a way that no road user is delayed in excess of the maximum delay specified in Clause 3.4 of Annexure MRTS02.1. In all cases, the length of one-lane, two-way operation shall be limited to one kilometre. See also QGTTM Part 3 Table 5.4.

**Stopping traffic in both directions** – the Contractor may stop traffic in both directions simultaneously only for purposes of construction of specific work and during the specific period stated in Clause 3.5 of Annexure MRTS02.1. The maximum delay to any road user shall be as stated in Clause 3.5 of Annexure MRTS02.1.

**Specific periods where lane closures are not permitted** – work under the Contract involving lane closures, stop / slow arrangements, or construction traffic entering or leaving any through traffic lanes, shall not be carried out during any periods stated in Clause 3.6 of Annexure MRTS02.1 and unless otherwise stated, such restrictions shall apply 24 hours per day.

**Measuring traffic delays** – where stated in Clause 3.7 of Annexure MRTS02.1, the Contractor shall undertake **travel time** surveys prior to, and following, any changes to the TTM provisions to monitor the impact of the activities on the road user.

**Traffic Travel time** surveys shall be undertaken as stated in Clause 3.7 of Annexure MRTS02.1 **and according to the Queensland Manual of Uniform Traffic Control Devices Part 3: Traffic control for works on roads**. Typical periods during which delays shall be recorded, include during full road closures and during all road closures which require detours off site. Baseline traffic conditions **and travel times** prior to the commencement of works shall be measured for comparison.

Added a reference to QGTMM Part 2 and removed references to on-path, on-road or off-road cyclists.

See changes highlighted yellow following.

### 5.7.7 Vulnerable

Vulnerable road users (VRUs) include pedestrians (children, elderly, persons with a disability, **on-path cyclists**), **on-road** cyclists, **off-road cyclists** and motorcyclists. Works that impact the road, road shoulder, bike lanes, crossings or pathways, are likely to impact on these users.

Where VRUs are present, it is necessary to provide for VRU access through past, or around portions of the work under the Contract, the Contractor shall provide such temporary VRU facilities as necessary, in accordance with the requirements of the QGTMM Parts **2 and 3** and the clauses following.

The following additional resources are available regarding the management and protection of vulnerable road users:

- Austroads Crossing Selection tool
- Transport and Main Roads' Cycling and Pedestrian training for planners and managers, and
- [Cyclist and pedestrian safety at roadworks training](#).

Added references to the TMWOR and the TGS.

See changes highlighted yellow following.

## **6 Traffic guidance scheme (TGS)**

### **6.1 General**

A TGS shows all traffic control devices and their layouts on a plan and shall be consistent with the approved TMP.

Where any change to existing traffic arrangements is proposed, or where construction conflicts with normal traffic movements, the Contractor shall prepare a TGS which clearly details the revised traffic arrangements at all locations affected by the change or conflict. A separate TGS is required for each stage of the works where changes are made to the traffic control devices.

Traffic shall be controlled at all times, during construction, in accordance with the provisions of the Queensland MUTCD Part 3, QGTTM, **TMWOR, the TMP** and **the TGSMP**.

The requirements and recommendations set out in the Queensland MUTCD Part 3, QGTTM, **TMWOR** and this Technical Specification and its Annexure, do not preclude innovative or alternative traffic management solutions, as outlined in Clause 1.2.

Changed the reference for clear zones from the RPDM to QGTTM Part 3 Section 6.11.

See changes highlighted yellow following.

### **6.5 Traffic guidance provisions**

#### **6.5.6 Stored plant and material**

Where plant or materials are stored on the site, the Contractor shall comply with the minimum clear zone requirements **of the Road Planning and Design Manual (RPDM) from QGTTM Part 3 Section 6.11**. Any plant or materials stored overnight within nine metres of the edge of any trafficked lane, shall be delineated in accordance with the QGTTM Part 3, unless located behind a safety barrier.

Minor text edit.

See changes highlighted yellow following.

## 6.5.11 Temporary road safety barriers

### 6.5.11.1 General

Temporary Road Safety Barriers (TRSB) shall be used to contain and redirect errant vehicles, ~~so as~~ to reduce the likelihood of them entering the work site. They may also be used to separate opposing traffic.

Updated the reference to the *TMR Accepted Road Safety Barrier Systems and Devices*.

See changes highlighted yellow following.

### 6.5.11.3 Barrier types

Only those TRSB which are included in the ~~Transport and Main Roads – Road Safety Barrier Systems and Devices (Assessed as accepted for use on state-controlled roads in Queensland)~~ *TMR Accepted Road Safety Barrier Systems and Devices* shall be used. Where TRSB are manufactured according to Transport and Main Roads Standard Drawings referenced within this document, they shall be manufactured in accordance with MRTS14 *Road Furniture*.

Steel Beam Guardrail, in accordance with Standard Drawings 1474 and 1475, may be used instead of TRSB in some locations subject to the approval of the Administrator. End treatments shall be in accordance with Standard Drawings 1470, 1474 and 1475, or with an approved proprietary end treatment listed in the ~~Transport and Main Roads – Road Safety Barrier Systems and Devices (Assessed as accepted for use on state-controlled roads in Queensland)~~ *TMR Accepted Road Safety Barrier Systems and Devices*.

Steel Beam Guardrail shall not be used for temporary erection where posts have to be installed through pavements which remain part of the permanent works.

Added the reference to the *TMR Accepted Road Safety Barrier Systems and Devices*.

See changes highlighted yellow following.

### 6.5.11.4 End treatments

Provision shall be made to treat the approach and/or departure ends of both permanent and TRSB that are exposed to oncoming traffic, including barriers that are flared to terminate outside the clear zone.

Only those end treatments listed in the **Transport and Main Roads – Road Safety Barrier Systems and Devices (Assessed as accepted for use on state-controlled roads in Queensland) TMR Accepted Road Safety Barrier Systems and Devices** shall be used.

Added the reference to the *TMR Accepted Road Safety Barrier Systems and Devices*.

See changes highlighted yellow following.

#### 6.5.11.5 Design of barrier system

The performance of a TRSB system is dependent not only on the design of the barrier segment, but also in the correct design of the entire TRSB system including the minimum length of TRSB and the location and form of end treatments.

Any TRSB placement shall be designed in accordance with the requirements stated in:

- AS 3845 *Road safety barrier systems*
- MRTS14 *Road Furniture*
- Queensland MUTCD Part 3
- QGTTM Part 3 Clause 5.3.1, and
- *Road Planning and Design Manual (RPDM)* Volume 3, Part 6, and
- *TMR Accepted Road Safety Barrier Systems and Devices*.

Care shall be taken at intersections to prevent visibility problems for motorists negotiating the intersection.

When a need for TRSB is identified, the barrier type shall be determined on the basis of:

- a) the type, shape, deflection performance and test characteristics of the TRSB
- b) the speed of traffic travelling through the work site, and
- c) the clearance between the traffic and the work area.

Added the reference to the *TMR Accepted Road Safety Barrier Systems and Devices*.

Added requirements to submit proposed post / pin / anchor types to the Administrator.

See changes highlighted yellow following.

#### 6.5.11.6 Installation

All TRSB and end treatments shall be installed in accordance with the department's Standard Drawings and/or the manufacturer's specifications.

Water-filled plastic barriers shall be filled with water to the level specified in the manufacturer's specifications.

TRSB shall have recesses at their base to allow drainage at ground surface level under the barriers.

Only post / pin / anchor types that have been approved by Austroads and are included in the *TMR Accepted Road Safety Barrier Systems and Devices* are permissible for use.

The proposed post / pin / anchor type, quantity, and location shall be submitted to the Administrator (for approval) at least four weeks prior scheduled TRSB installation. At a discretion of the Administrator, these requirements may be exempted if the TRSB is installed on a temporary pavement that will be fully removed upon project completion.

Added a new clause defining the requirements for the removal of post / pin / anchor types and reinstatement of any holes.

#### 6.5.11.8 Removal and reinstatement

All TRSB and end treatments shall be removed in accordance with the department's Standard Drawings and/or the manufacturer's specifications.

The contractor shall fully remove the post / pin / anchor type from the work site after the designated installation period.

The contractor shall reinstate the post / pin / anchor hole to the satisfaction of the Administrator and Registered Professional Pavement Engineer of Queensland.

Deleted reference to Queensland MUTCD Part 4 and added reference to the *Queensland Road Safety Technical User Volumes (QRSTUV): Guide to Speed Management*.

See changes highlighted yellow following.

## Appendix A – Speed Management

### A3 Documentation

#### A3.2 Speed monitoring

Speed surveys for sites in place  $\geq 2$  weeks shall be undertaken in accordance with one of the following:

1. *Austroads Guide to Traffic Management*, Part 3 *Traffic Studies and Analysis*
2. ~~Queensland MUTCD Part 4 – Speed Controls~~ *Queensland Road Safety Technical User Volumes (QRSTUV): Guide to Speed Management* Appendix A, or
3. Speed indicator devices as per TMWOR Chapter 1.

Speed surveys for sites in place < 2 weeks may be undertaken in accordance with one of the following:

1. speed indicator devices as per TMWOR Chapter 1
2. manual travel time surveys, see Clause A3.2.1 of this Appendix, or
3. other industry accepted method, subject to a risk assessment by the traffic management designer and acceptance by the Administrator.

Documentation should address the following:

- Speed monitoring arrangements:
  - contractual requirements, and
  - risk assessed additional requirements.
- Collection frequency, and
- Reporting arrangements.

Deleted reference to Queensland MUTCD Part 4 and added reference to the *Queensland Road Safety Technical User Volumes (QRSTUV): Guide to Speed Management*.

See changes highlighted yellow following.

### **A3.2.1 Manual time travel surveys**

Manual travel time surveys involve recording the time it takes a vehicle to go from one datum to another and may be undertaken by a traffic management implementer, a site worker under the direct supervision of a traffic management implementer, or a traffic controller. Time travel surveys should comply with the following steps:

1. A start and end datum are to be established within the site by placing an additional delineating device at each point.

The added delineating device is to be different to the general devices used in the vicinity for identification, that is, where 450 mm cones are the typical device, an additional 700 mm cone may be placed to identify the datums.

These points are to be sufficiently distanced from the traffic control point, is not to be within the safety buffer and is not to be in a location where changes in speed, due to manoeuvring, are likely to occur.

2. The distance between these points is to be measured in metres.
3. A competent site worker is to be suitably positioned to allow observation of both points. This location is to be offset from the travelled path and must have a suitable escape path.

4. Site worker is to record the time required for each vehicle to travel between the datums using a stopwatch or device with similar capability. The following also apply:
  - a) Stopwatch, or similar, must be capable of recording times to 1/10<sup>th</sup> of a second.
  - b) Ideally there is to be at least four seconds headway between each vehicle, to ensure free flow speeds are observed. Where platooning is frequently observed, which often occurs under PTCO or STOP / SLOW control, this requirement may be reduced to two seconds.
  - c) Minimum sample sizes, as per the Table A3.2.1 following, are to be observed as far as reasonably practicable.

**Table A3.2.1 – Minimum sample sizes (Queensland MUTCD Part 4 Appendix A Queensland Road Safety Technical Volumes (QRSTUV): Guide to Speed Management)**

Permanent posted speed (km/h)	40	50	60	70	80	90	100	110
Minimum sample size	55	65	85	95	110	130	155	200

5. Samples including their respective times are to be tabulated and the 85<sup>th</sup> percentile speed calculated. Example manual calculation below:

- a) Count number of samples (N).

$$N = 25 \text{ (assumed for example)}$$

- b) Multiply N by 0.85 to get the 85<sup>th</sup> percentile sample (n), round down to nearest whole number:

$$n = 0.85 * N = 0.85 * 25 = 21.25 \approx 21$$

- c) Arrange samples from largest to smallest based on travel time and select n<sup>th</sup> sample from step (b).

Sample	Time (s)	Sample	Time (s)	Sample	Time (s)	Sample	Time (s)	Sample	Time (s)
1	5.4	6	5	11	4.6	16	4.5	21	4.3
2	5.3	7	4.8	12	4.6	17	4.4	22	4.3
3	5.2	8	4.8	13	4.5	18	4.4	23	4.1
4	5.1	9	4.7	14	4.5	19	4.4	24	4
5	5.1	10	4.6	15	4.5	20	4.4	25	4

- d) Convert time to speed (v) in km/h:

$$v = \frac{3.6 \times \text{distance}}{\text{time}} = \frac{3.6 * 80m \text{ (assumed distance for example)}}{4.3 \text{ sec}} = 66.9km/h$$

- e) Check 85<sup>th</sup> percentile speed against the posted roadwork speed limit as per Clause A3.3 following.

Speeds surveys are typically appropriate for any area on site where a speed reduction occurs, as such surveys on approach to the sites and within the site are usually considered appropriate.



