Supplement to AS 1742.12:2000
Manual of uniform traffic control devices

Part 12: Bus, transit, tram and truck lanes

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Table of Contents

1. Introduction

1.1 General

All road agencies across Australia are working towards greater consistency between States/Territories in how road networks are managed. In order to achieve this, the Austroads Guide to Traffic Management and Australian Standards relating to traffic management have been adopted to assist in providing that level of consistency and harmonisation across all jurisdictions. This agreement means that these Austroads Guides and the Australian Standards are the primary technical references.

Australian Standard AS 1742.12:2000 - *Manual of uniform traffic control devices – Part 12: Bus, transit, tram and truck lanes* is a nationally agreed standards document outlining the use of traffic control devices on the road network and has been adopted by all jurisdictions, including VicRoads.

All jurisdictions will be developing their own supplement to clearly identify where its practices currently differ and to provide additional guidance to that contained within AS 1742.12:2000. This document is the VicRoads supplement and shall be read in conjunction with AS 1742.12:2000.

1.2 How to Use this Supplement

There are two key parts to this document:

Classification of Supplement Information: this table classifies supplement information as a Departure, Additional Information or both. This information assists with identifying its hierarchy in relation to the Australian Standard.

- **Details of Supplement Information:** this section provides the details of the supplement information.
  - **Departures:** where VicRoads practices differ from the guidance in the Australian Standard. Where this occurs, these differences or 'Departures' will be highlighted in a box. The information inside the box **takes precedence** over the Australian Standard clause. The Australian Standard clause is not applicable in these instances.
  - **Additional Information:** all information not identified as a departure provides further guidance to the Australian Standard and is read and applied **in conjunction** with the Australian Standard clause.

Where a clause does not appear in the body of this supplement, the Australian Standard requirements are followed.

2. Classification of Supplement Information

The classification of each clause as a Departure, Additional Information or both is shown in the table below.

SCOPE

Clause	Classification
1	Additional Information

REFERENCES AND SIGN SUMMARY

Clause	Classification
3	Departure
5	Additional Information

BUS LANES

Clause	Classification
5.2	Additional Information
6.2	Additional Information
7.1	Additional Information
7.2	Additional Information

TRANSIT LANES

Clause	Classification
5.3	Additional Information
7.2	Departure & Additional Information

TRUCK LANES

Clause	Classification
5.4	Additional Information

TRAM LANES

Clause	Classification
5.5	Additional Information
6.1	Additional Information
7.1	Additional Information
7.2	Additional Information

TRUCK PROHIBITION

Clause	Classification
5.6	Additional Information
5.7	Additional Information
Attachment A1	Additional Information
Attachment A2	Additional Information

3. Details of Supplement Information

Clause 1 – Scope

In special circumstances, approval may be given by the VicRoads Manager Network Standards for the installation of other word or symbol markings, but such approval will only be granted where it can be shown that conventional traffic signs or markings will not be effective. If other markings are approved, the letters should conform to Clause 5.5.2.2 of AS1742.2:2009 – Traffic control devices for general use.

References and Sign Summary

Clause 3 – Referenced Documents

DEPARTURE

The Australian Road Rules have been updated since 2000. The applicable reference is now the Road Safety Road Rules 2009.

Clause 5 – Signs

The VicRoads Supplement to AS1743(2001) Road Signs – Specifications, includes a significant number of additional signs applicable to Bus, Transit, Tram and Truck Lanes, as listed in Table 1. Refer to this Supplement for details of these standard drawings.

Table 1: Additional signs

Sign	Sign number	Size, mm	VicRoads Standard Drawing No.
Give Way to Trams	R2-V110	800 (w) x 730 (h)	443290A
Give Way to Merging Tram	R2-V124	800 (w) x 900 (h)	658436
Give Way to Turning Tram	R2-V125	800 (w) x 900 (h)	658437
Pedestrians Give Way to Trams	R3-V100	600 (w) x 600 (h)	443297
Truck Prohibition Ahead	R6-V106	A - 600 (w) x 600 (h) B – 900 (w) x 900 (w) C – 1200 (w) x 1200 (h)	541751
Truck Ban Right Lane	R6-V110	A – 900 (w) x 1575 (h) B – 1200 (w) x 2100 (h)	658350
Truck Ban Right Lane On Fwy	R6-V111	900 (w) x 1800 (h)	658351
Truck Ban ↓	R6-V112	A – 900 (w) x 1473 (h) B - 1200 (w) x 1964 (h)	658352
Tram Lane End	R7-V100	600 (w) x 900 (h)	443307E
Part Time Tram Lane ↓	R7-V101	600 (w) x 1200 (h)	443311D

Sign	Sign number	Size, mm	VicRoads Standard Drawing No.
Tram Lane Ahead	R7-V104	600 (w) x 900 (h)	443312B
Taxi VHA/B/C May Use This Lane	R7-V106	C – 600 (w) x 600 (h) D – 900 (w) x 900 (h) E – 1200 (w) x 1200 (h)	453532A
Bicycle VHA/B/C May Use This Lane	R7-V107	600 (w) x 670 (h)	453911A
Transit Lane Advance Information	R7-V120	3000 (w) x 3100 (h)	443327
Transit Lane (T2) 500 m or 1 km Ahead	R7-V121	900 (w) x 1050 (h)	453517
Transit Lane (T2) 500 m or 1 km Ahead, 7-9:30 AM Mon-Fri At Least Two People In Vehicle	R7-V122	1762 (w) x 1100 (h)	453515
Transit Lane (T2) 7-9:30 AM Mon-Fri ↓	R7-V123	1762 (w) x 1058 (h)	453519
Transit Lane (T2) Right Lane on Freeway 7-9:30 AM Mon-Fri	R7-V124	900 (w) x 1460 (h)	453518
Transit Lane (T2) At Least Two People In Vehicle	R7-V125	900 (w) x 1100 (h)	453516
Do Not Delay Trams	R7-V126	600 (w) x 800 (h)	453933
Transit Lane T2	R7-V127	600 (w) x 800 (h)	541110A
Merge Left ←	R7-V129	600 (w) x 800 (h)	541153
Bus and Truck Lane	R7-V130	600 (w) x 800 (h)	541493
T2 and Truck Lane	R7-V131	600 (w) x 800 (h)	541907
Merge Left 7:30-9:30 AM Mon-Fri ←	R7-V132	600 (w) x 1000 (h)	541971
Tram Only	R7-V133	600 (w) x 800 (h)	658117
Tram Only / End	R7-V134	600 (w) x 1000 (h)	658118

Sign	Sign number	Size, mm	VicRoads Standard Drawing No.
(Emergency Stopping Lane) Buses Taxis VHA/B/C Excepted	R9-V101-2	1500 (w) x 550 (h)	442640
(Emergency Stopping Lane) Buses/Taxis/ VHA/B/C Excepted 7-9:30 AM Mon-Fri	R9-V101-3	1500 (w) x 800 (h)	445436
Trams Excepted	R9-V106	A - 450 (w) x 300 (h) B – 600 (w) x 400 (h) C – 750 (w) x 500 (h)	453527
Over xx t	R9-V107-1	A - 450 (w) x 300 (h) B – 600 (w) x 400 (h) C – 750 (w) x 500 (h)	453528
Over xx m Wide	R9-V107-2	A - 450 (w) x 400 (h) B – 600 (w) x 535 (h) C – 750 (w) x 670 (h)	453529
Over xx m Long	R9-V107-3	A - 450 (w) x 400 (h) B – 600 (w) x 535 (h) C – 750 (w) x 670 (h)	453530
Advisory Tram Speed	W5-V110	450 (w) x 600 (h)	445438A
Buses Taxis VHA/B/C Merge Right	GE9-V103	1600 (w) x 500 (h)	442645A

Bus Lanes

Clause 5.2 – Signs for bus lanes

Road Rules 154, 158 and 159 apply to a Bus Lane. A Bus Lane is a marked lane starting with a Bus Lane sign R7-1-1 and ending with the same sign with an 'END' supplementary plate R7-4 below it.

R7-1-1

R7-1-1 & R7-4

Sign R7-1-1 supersedes the 'Bus Only' sign and 'Bus End' sign which incorporated a green annulus. Although these signs still have legal significance they shall cease to be used for new installations and replacement signs.

A Bus Lane sign and an End Bus Lane sign are Major Traffic Control Devices (MTCDs) that require appropriate authorisation to install, modify or remove in accordance with Additional Network Standards & Guidelines Part 2.2 (ANSG 2.2) – Authorisation of Major Traffic Control Devices (2015).

Drivers of vehicles other than buses are permitted to drive in a bus lane where information shown on the R7-1-1 sign, or an associated supplementary sign, indicates that a driver may drive in that lane as follows:

- Supplementary sign R7-V106 shall be used in association with the R7-1-1 sign to designate a lane for the exclusive use of both buses and other vehicle types. Typically, supplementary sign R7-V106 may include taxis and VHA or VHC number plate vehicles when they are permitted to use bus lanes
- Bus (Other Vehicle) LANE sign (R7-1-6) shall be used to designate a lane for the exclusive use of both buses and other vehicle types when shown on the sign. A symbol (or words if there is no standard symbol) representing the other kind of vehicle shall be included under the bus symbol. Typically, sign R7-1-6 is used for a combined Bus and Bicycle Lane.

Other vehicles may use a bus lane for up to 100 m in advance of a turn into a side street or a driveway.

Signs R7-1-1 and R7-1-6 shall not be used where the lane can be used by high occupancy vehicles. The Transit Lane sign is used for this purpose, refer to Clause 5.3 – Signs for transit lanes.

R7-1-6

R7-V106

Clause 6.2 – Pavement messages

The BUS LANE AHEAD, BUS LANE and BL markings are illustrated in Figure 4 of AS 1742.12:2000. In lieu of the range of spacings between words in Figure 4 of AS 1742.12:2000 the spacing shall be 2.5 m.

These markings may be placed on a traffic lane, shoulder or emergency stopping lane to supplement Bus Lane signs required under Road Rule 154 and as shown in Figures 5, 6 and 7 of AS 1742.12:2000.

The word ONLY is used on the approach to traffic signals where an exclusive bus lane is provided and the lane is controlled by a "B" signal, see Figure 7 of AS 1742.12:2000.

Clause 7.1 – General principles

Levels of Bus Priority

There are four levels of Bus Priority ranging from Level 1, where buses deserve high priority to Level 4 where frequency is quite low. These are defined in Table 2 – Guide to selection of level of priority for road sections carrying bus services.

Table 2 – Guide to selection of level of priority for road sections carrying bus services

Status of road section in terms of bus operations	Projected number of buses operating per direction per peak hour 3 years from time of assessment (time between buses)					
	More than 14 (≤ 4 min)	**8 to 14 (4-7 min)**	**4 to 7 (8-15 min)**	**3 (16-24 min)**	**Less than 3 (≥ 25 min)**	**None**
Existing SmartBus route or planned within 3 years	Level 1	Level 1	Level 2	Level 2	Level 3	NA
Planned SmartBus route beyond 3 years	Level 1	Level 2 (L1)+	Level 2	Level 2	Level 3 (L2)+	NA (L2)^
PPTN not yet earmarked as SmartBus route	Level 1	Level 2	Level 2	Level 3	Level 4	NA (L4)^
Non-PPTN road section with services or earmarked for them within 3 years	Level 3*	Level 3*	Level 3	Level 4	Level 4	NA

**** Although unlikely to occur, if it does occur, it is possible the route's status should be reviewed for inclusion in the Principal Public Transport Network***
+ Planning should be done for the higher (bracketed) priority level, although implementation at the lower level is justifiable
^ Planning should be done for the bracketed level but no implementation required

The types of treatment applicable to each of the priority levels may involve:

- Signal operations (priority for buses)
- Lane management (bus or transit lanes)
- Parking management; or
- Access management (Bus priority at Bus Stops).

The treatment to be applied to each priority level is provided in Table 3.

Table 3 – Bus facilities applying to each priority level

Level	1	2	3	4
Signal Operations	Highest levels of traffic signal priority to be provided as well as traffic signal management strategies to favour buses. Note that traffic signal priority should only be provided if buses are equipped with tracking equipment suitable for calling priority – if not available, implementation of signal priority should be planned for when the technology is available. This does not apply to the technology needed to trigger special B phases, which generally involves loops embedded within exclusive bus road space.		Signal priority should be provided if buses are equipped with the top-down tracking system, and the level of signal priority provided may be more basic than Levels 2 and 1. Use B phases where needed for facilitating bus movements	
Lane Management	Allocate exclusive road space to buses for whole blocks (ie long bus lanes), whether through constructing additional lanes or reallocating existing lanes to buses, and manage other traffic accordingly, in line with Network Operating Plans. Measures can be time of day dependent or full time, depending on bus needs. Note if new road space is being constructed, unless there is high off-peak parking demand, the lane should operate as a full time bus lane. Also use non-conflicting Level 2 & 3 measures.	Allocate exclusive road space to buses on any flared intersection approaches, and as set back lanes on the approach to an intersection. Consider the use of transit lanes where bus lanes are not achievable. Seek opportunities to use road space set aside as emergency lanes, tram lanes etc., where achievable. Also include non-conflicting Level 3 measures.	Provide adequate road reserve to construct larger traffic islands at left turn slip lanes to permit buses to stop there in their own lanes. Allow buses to use left turn lanes to jump traffic queues. Select bus stop sites with bus priority measures in mind.	These sites will not generally be the subject of bus priority works.
Parking Management	In relation to bus facilities, parking management may be needed in conjunction with a bus lane (either as a Clearway or No Stopping area). Where it is necessary to remove existing kerbside parking, special provision may be made for indented parking or other parking facilities. At bus stops, the road rules currently provide 20 metres on the approach and 10 metres on the departure to be free of parking unless otherwise signed. A longer distance of 36 metres in total is recommended to allow buses to pull in parallel to the kerb.			
Access Management	Provide assistance for buses making difficult movements, such as turning out of side streets, assisting buses exiting from bus bays or assisting right turns with hook turns or pre-signals, with higher priority where many buses experience problems.			Provide only in locations where a problem exists
	Provide for DDA compliant bus stops at sensible locations according to bus stop location guidelines, and in consultation with Public Transport Victoria (PTV) and local government. Works programs may affect existing and future bus stops. For existing bus stops and those known to be required within 3 years, once the bus stop location has been confirmed, works should include the bus stop passenger hard stand area, a link to the nearest footpath, the barrier kerb at the stop and the tactile ground surface indicators. Any bus stops for future use (beyond 3 years) where the location can be determined should be constructed to the extent of the barrier kerb at the stop. In both cases, if bus bays apply to the site, they should also be constructed at the time of the works. Bus bays should only be provided in line with the Bus Stop Guidelines. The above is the default, but PTV and/or local government may request less works, for example if a shelter or SmartBus totem is to be provided later, this may affect the level of works required.			

Clause 7.2 – Typical treatments

The following additional notes apply to Figure 5 of AS 1742.12:2000.

- All pavement markings to be white.
- BUS LANE and BL to be located centrally in Bus Lane when used. BUS LANE AHEAD to be located centrally in kerbside lane.
- BL to be repeated at regular intervals when used. It is usual to repeat them after each side street, or at about 200 m spacing in the absence of a side street. Replace each BL with BUS LANE each 1 km.
- On freeways and other high speed road, markings are placed after each major intersection or entry ramp, and repeated at spacings up to 1 km.
- Tapered continuity line is 150 mm wide.

Type of Bus Lane

Bus lanes can be full-time or part-time. The following are different types of bus lanes which are currently installed across the road network. Each bus lane type can be seen in Figure 1, Figure 2 and Figure 3.

- Continuous bus lane - continue from one intersection to the next and often through many signalised intersections. Continuous bus lanes are often used on important strategic routes where a high level of bus priority is required.
- Set back bus lane - end at a set distance from a signalised intersection to provide additional intersection capacity. Buses will generally clear the intersection in a single traffic signal cycle to minimise the impact on intersection capacity.
- Queue jump bus lane - a short bus lane at the approach to an intersection that allows buses to reach the head of the queue and be given signal priority with a ‘B-lantern’.

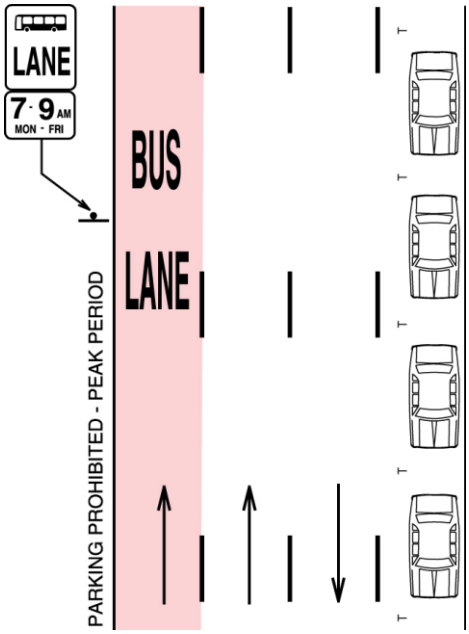


Figure 1: Continuous Lane

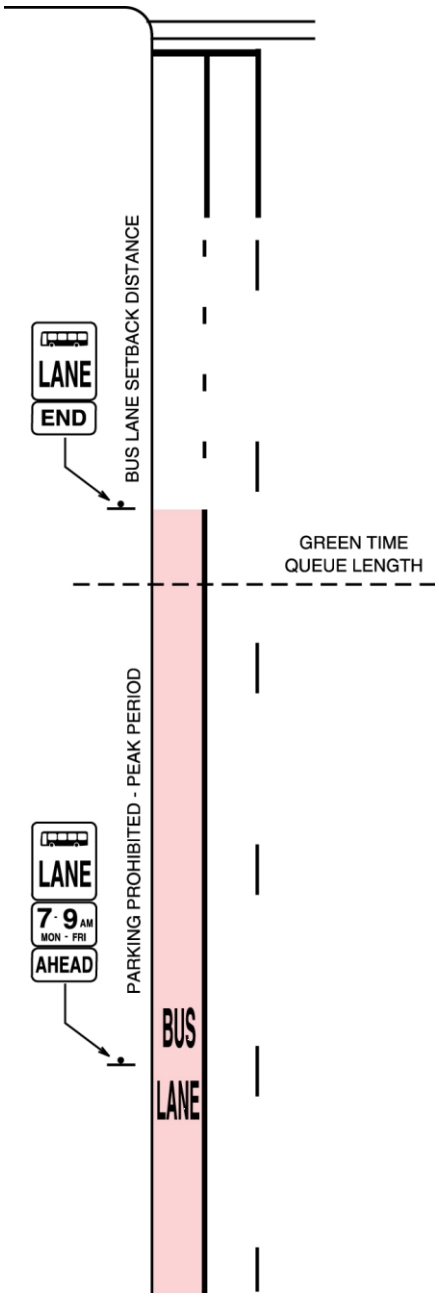


Figure 2: Set Back Bus Lane

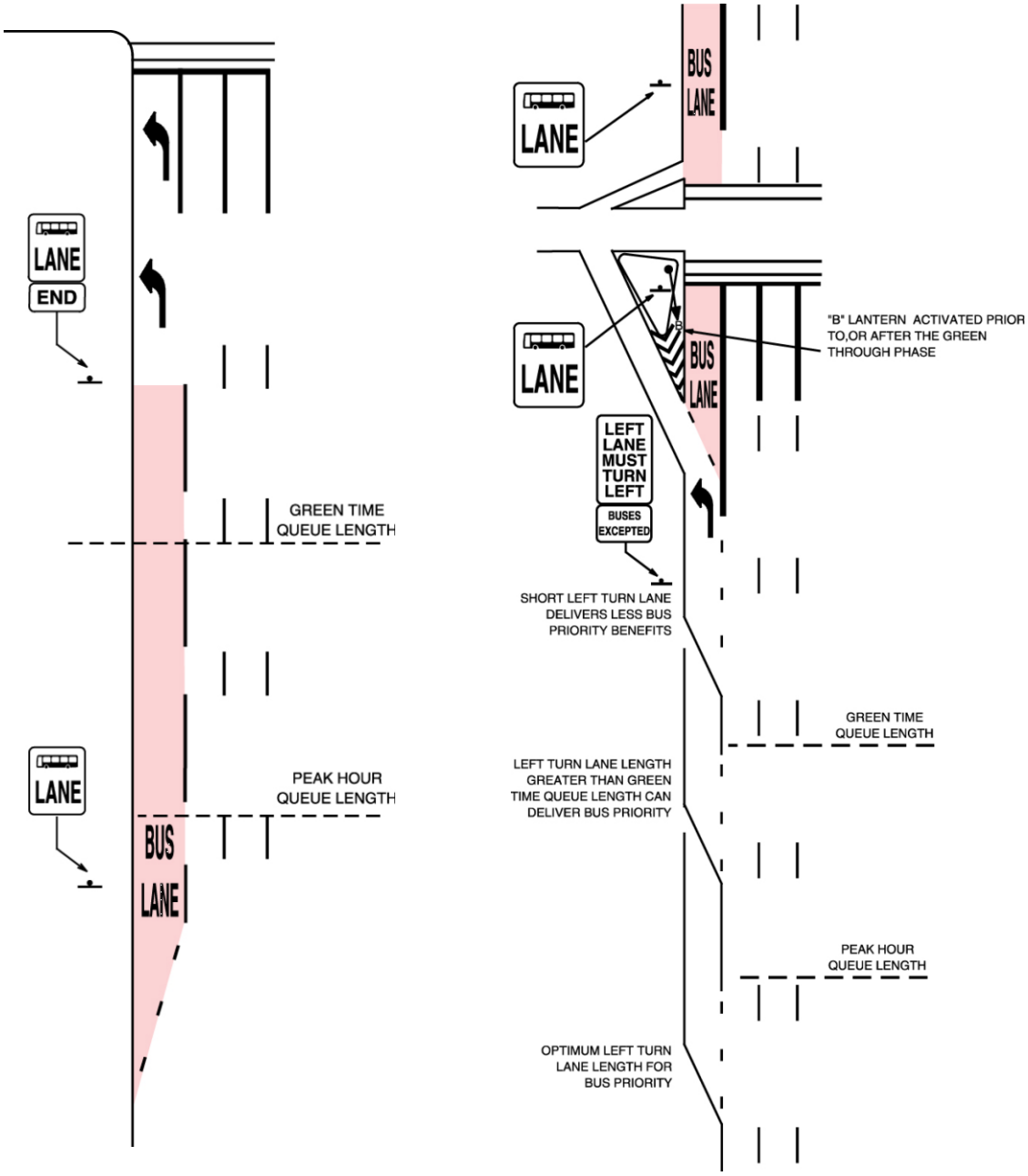


Figure 3: Queue Jump Bus Lanes

Coloured surface treatment of bus lanes

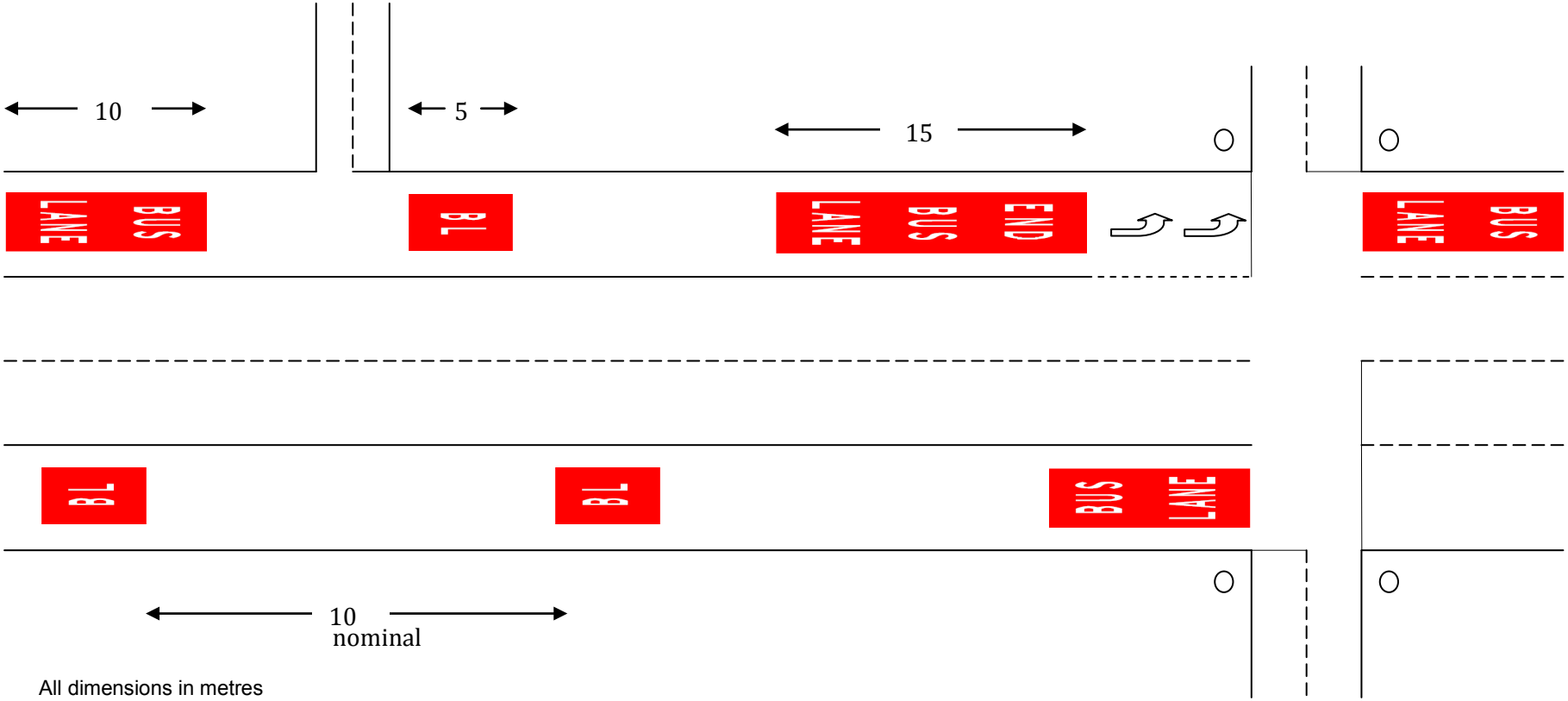
Coloured surface treatment is used on bus lanes to improve delineation and increase motorists' awareness of the bus lanes. Coloured surface treatment does not by itself define a bus lane under the Road Rules. The current practice in Victoria is to use red coloured surface treatment on all part-time and full-time bus lanes.

Red bus lanes are typically provided in two ways:

- Surface treatments placed on road pavement using specialised binders and coloured aggregates which have high skid resistance characteristics, or
- Coloured asphalt used as the surface layer of road pavement

For bus lanes shorter than 200 metres, full coloured lane treatments, such as those shown in Figure 1, Figure 2 and Figure 3. should apply to all new bus lanes installed on the arterial network.

The use of red coloured patches containing the letters BL and red pavement surfacing containing ‘BUS LANE’ and ‘END BUS LANE’ marking is permitted for all new bus lanes longer than 200 metres, as shown in Figure 4.



All dimensions in metres

Figure 4: Example of red colour patch Bus Lane markings

Transit Lanes

Clause 5.3 – Signs for transit lanes

Road Rule 156 applies to Transit Lanes. A Transit Lane is a marked lane which begins with a Transit Lane sign R7-7-1 or R7-7-2 and ends with an End Transit Lane sign R7-9-1 or R7-9-2.

R7-7-1

R7-7-2

R7-9-1

R7-9-2

Signs R7-7-1, R7-7-2, R7-9-1 and R7-9-2 supersede the 'Transit Lane' sign and 'Transit Lane End' sign, which incorporate a green annulus. Although these signs still have legal significance they shall cease to be used for new installations and for replacement signs.

A Transit Lane sign and an End Transit Lane sign are MTCDs that require appropriate authorisation to install, modify or remove in accordance with ANSG 2.2 – Authorisation of Major Traffic Control Devices (2015).

Under Road Rule 156, the following vehicles may travel in a transit lane:

- public buses, including public minibuses
- trams
- vehicles with two or more occupants, (lanes with T2 signs)
- vehicles with three or more occupants, (lanes with T3 signs)
- taxis
- motorcycles.

Other vehicles may enter a transit lane within 100 m of an intersection in order to:

- enter or leave the road
- overtake a right-turning vehicle in the centre of the road
- enter an ordinary vehicle lane from the side of the road
- avoid a collision.

Transit Lane signs may incorporate associated supplementary information on the same sign face as an alternative to the erection of separate signs (see Figure 5).

Figure 5: Combined Transit Lane and supplementary information sign

Clause 7.2 – Typical treatments

DEPARTURE

A typical treatment for part-time transit lane markings and signs on low speed roads is illustrated in Figure 6. Figure 6 shall be used **instead of** Figure 8 in AS 1742.12:2000.

The markings may be placed on a traffic lane, shoulder, or emergency stopping lane to supplement Transit Lane signs required under Road Rule 156. Further details regarding transit lane markings are in Sections 6 and 7 of AS 1742.12:2000.

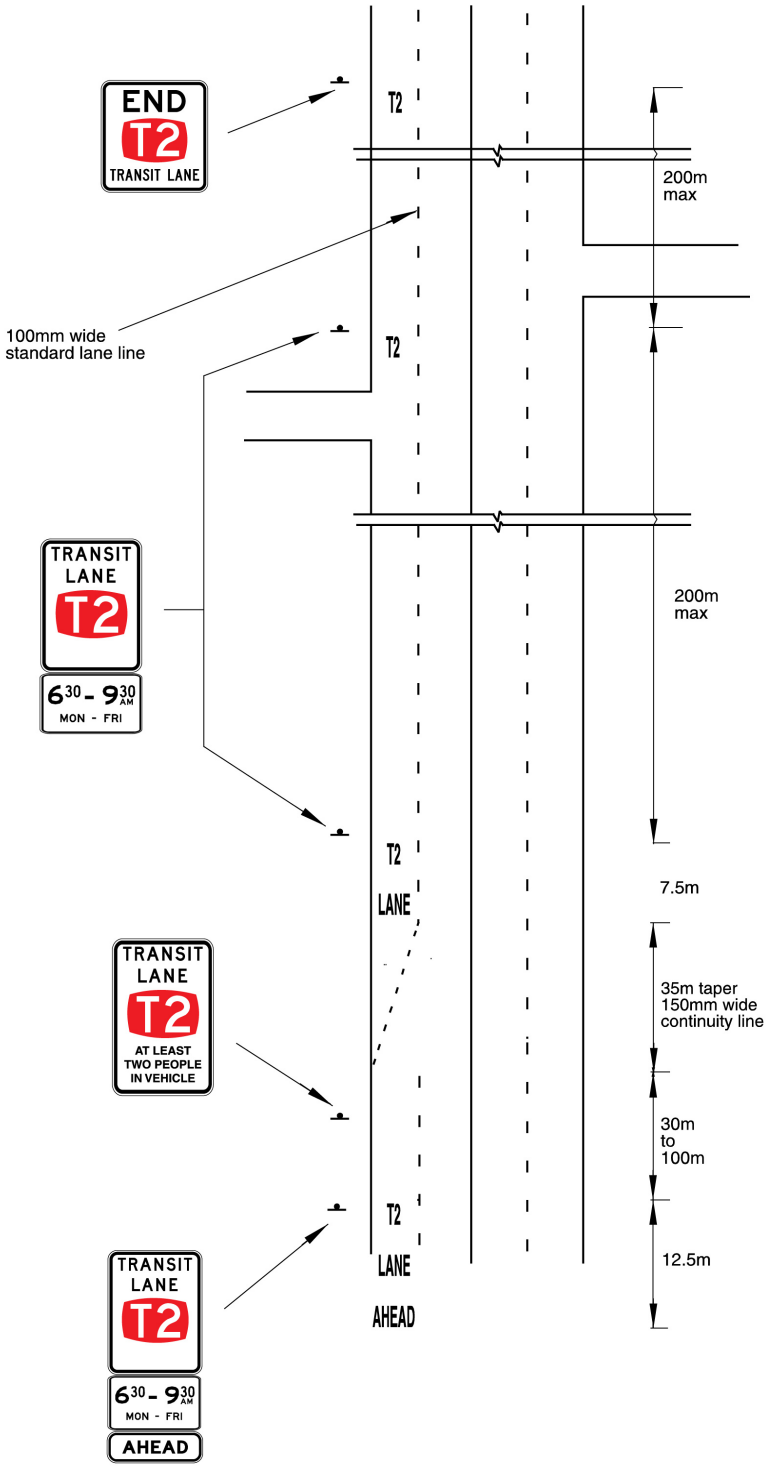


Figure 5: Part-time Transit Lane

Notes to Figure 6:

1. ***All pavement markings are to be white and are placed centrally in the lane.***
2. ***T2 or T3 pavement marking and TRANSIT LANE sign should be repeated after each side street, or at 200 m spacing maximum for roads where speed limit < 80 km/h.***
3. ***On freeways and other high speed roads, markings are placed after each major intersection or entry ramp, and repeated at spacings up to 1 km.***
4. ***On high speed roads (> 80 km/h), character lengths should be at least 5 m and spacings between characters up to 20 m. The words are arranged to read sequentially on high speed roads, i.e. with the first word nearest to the driver.***

Truck Lanes

Clause 5.4 – Truck Lane (R7-1-3)

Road Rules 157 to 159 apply to a Truck Lane. A Truck Lane is a marked lane starting with a Truck Lane sign R7-1-3 and ending with the same sign with an 'END' supplementary plate R7-4 below it.

R7-1-3

R7-1-3 & R7-4

Truck Lane and End Truck Lane signs are MTCDs that require appropriate authorisation to install, modify or remove in accordance with ANSG 2.2 – Authorisation of Major Traffic Control Devices (2015).

Truck lanes may be used by vehicles exceeding 4.5 tonnes. However buses, trams and tractors are specifically excluded from the definition of 'Truck'. Truck lanes may be used to give priority to trucks in general or to classes of trucks. A truck driver is not obliged to use a Truck Lane unless required to by another sign.

Truck Lane regulatory signs may incorporate associated supplementary information on the same sign face as an alternative to the erection of separate signs.

Sign R7-1-3 supersedes the 'Truck Only' sign and 'Truck End' sign which incorporate a green annulus. Although these signs still have legal significance they shall cease to be used for new installations and replacement signs.

Tram Lanes

Clause 5.5 – Tram Lane (R7-1-5)

Tram Lanes are traffic lanes containing a tram track, where there are restrictions on use of the lane by other vehicles, either full or part-time. A Tram Lane is a marked lane starting with a Tram Lane sign R7-1-5 and ending with a Tram Lane END sign R7-V100 or a Tram Lane sign R7-1-5 with a supplementary plate R7-4 below it.

Tram Lane and End Tram Lane signs are MTCDs that require appropriate authorisation to install, modify or remove in accordance with ANSG Part 2.2 – Authorisation of Major Traffic Control Devices (2015).

Tram LANE (R7-1-5) sign supersedes the 'Tram Only' sign and 'Tram End' sign, which incorporate a green annulus. Although these signs still have legal significance they shall cease to be used for new installations and replacement signs.

Tramways

A Tramway is a section of road starting with a Tramway sign R7-V133 and ending with an End Tramway sign R7-V134 and where other vehicles are not permitted to encroach at any time. Tramways are marked with continuous double yellow lines or separation kerbing on the left side of tram tracks. Refer to Figure 7.

Separation kerbs shall be used for all tramways except where approval is given by the VicRoads Director – Network Policy & Standards for use of double continuous yellow lines.

Signs used for Tramways

R7-V129

R7-V133

R7-V134

Full Time Tram Lanes

A Full Time Tram Lane is a lane where other vehicles are not permitted to encroach at any time except as specified in Road Rule 155 or 158. For Full Time Tram Lanes, separation kerbing on solid yellow lines are used to separate traffic lanes and the tram tracks. Refer to Figure 7 and Figure 8.

Signs used for Full-Time Tram Lane

R7-V129

R7-1-5

R7-V100

Part Tme Tram Lanes

A Part Time Tram Lane includes supplementary signing that indicates the time(s) when drivers of other vehicles must not encroach onto the tram track. A Part Time Tram Lane has a continuous yellow line. Outside the hours specified, the lane is available to other traffic. Refer to Figure 9 and Figure 10. To avoid confusion to other road users, it is important to include dividing lines on part time tram lanes to clarify the ability to undertake U turns.

Signs used for Part-Time Tram Lane

R7-V132

R7-V101

R7-V100

The supply, erection and maintenance of overhead signs associated with Tram Lanes and Tramways are the responsibility of the responsible road authority.

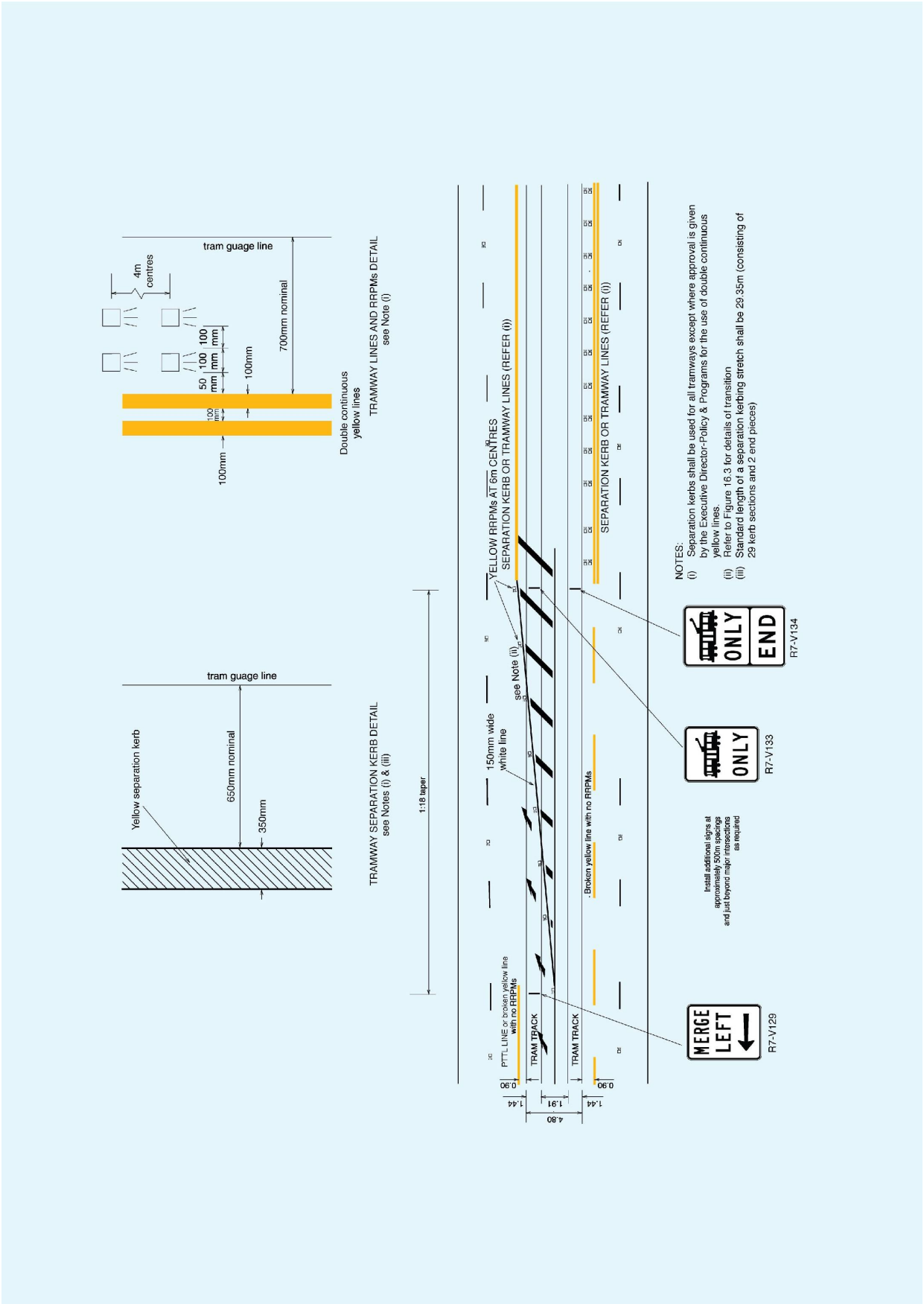


Figure 6: Typical layout for separation kerbing, linemarking and RRPMs of a tramway

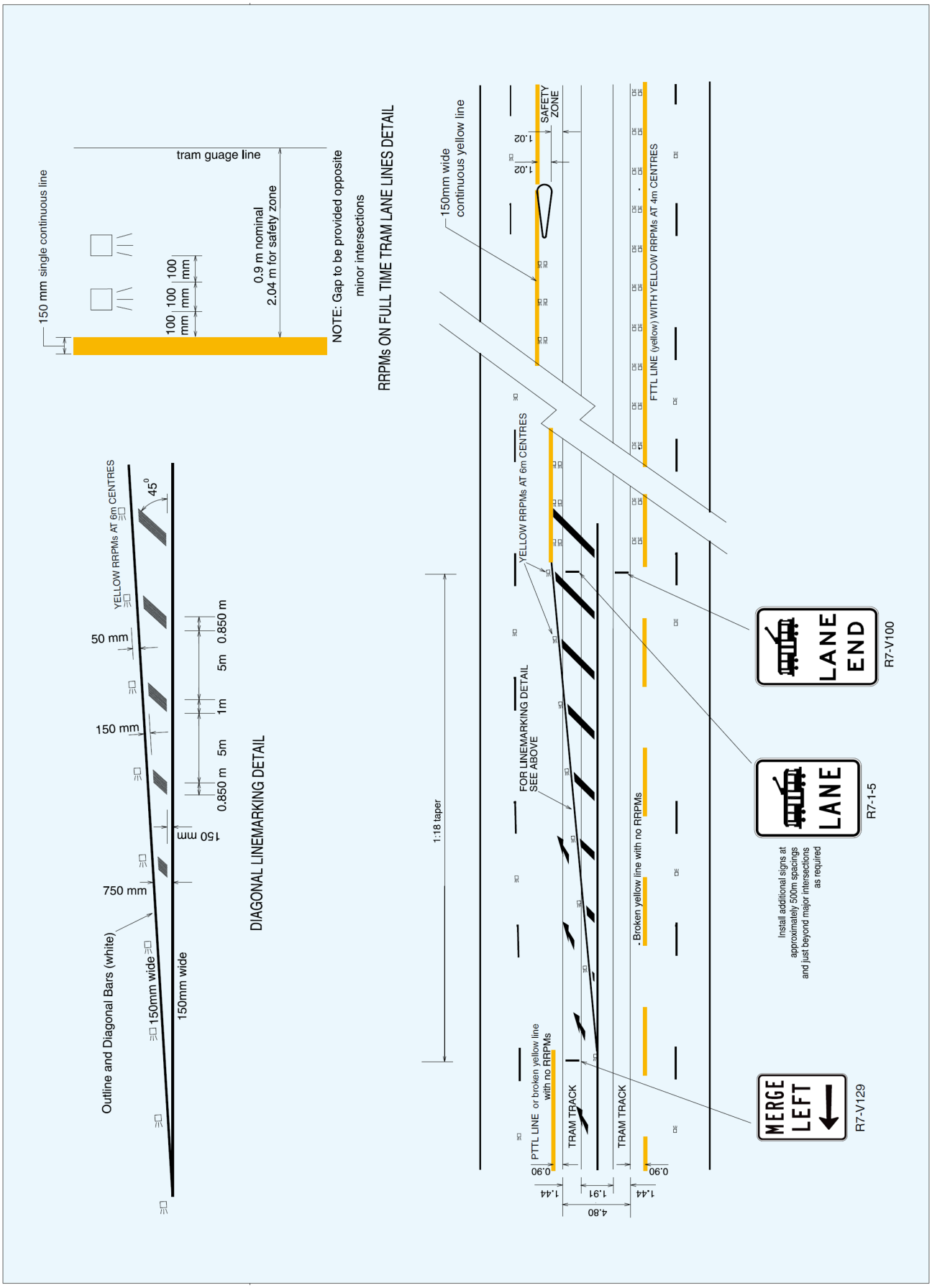


Figure 7: Typical layout for linemarking and RRPMs transition to full-time tram lane line including safety zone treatment

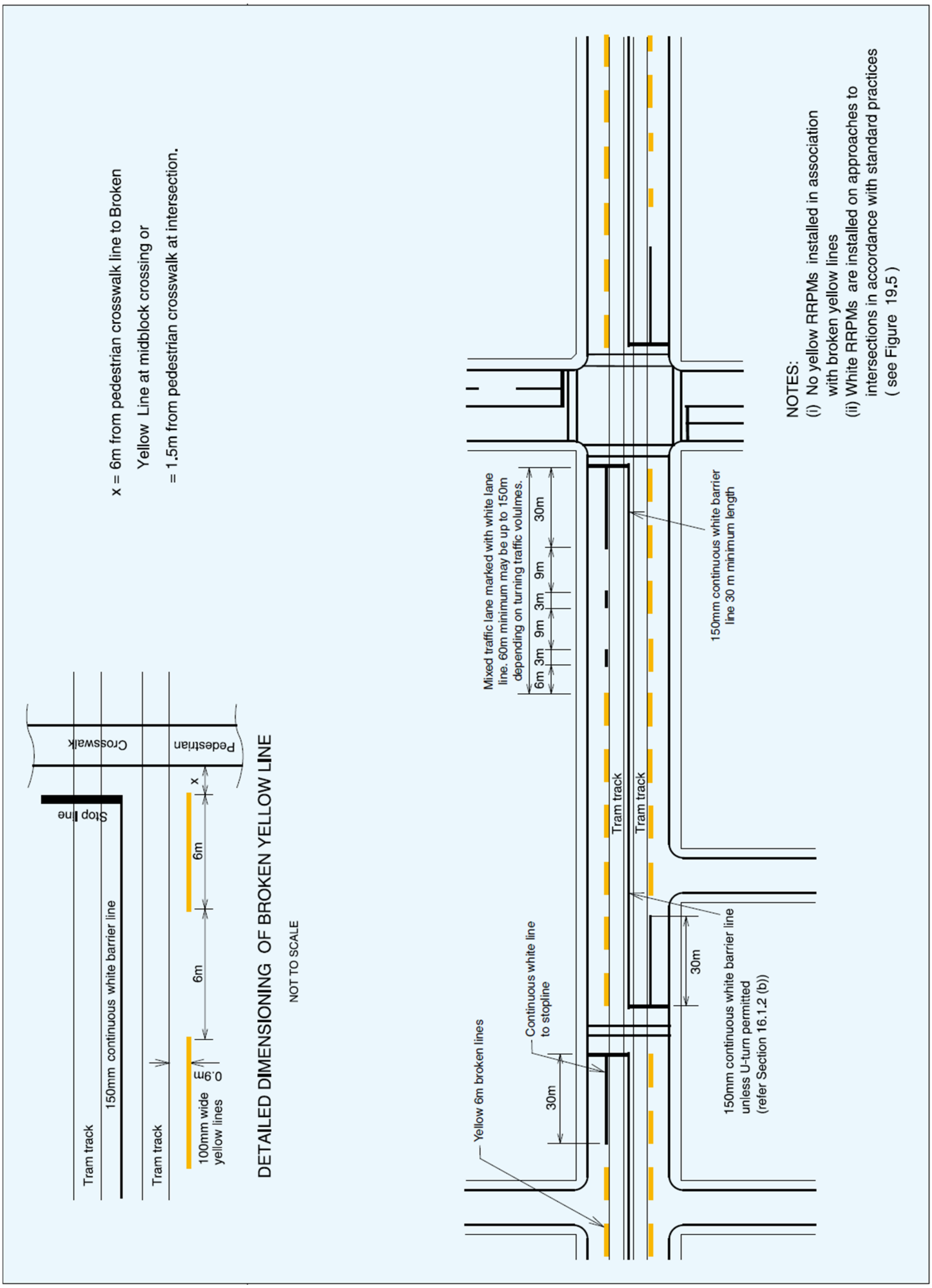


Figure 8: Typical layout broken yellow linemarking

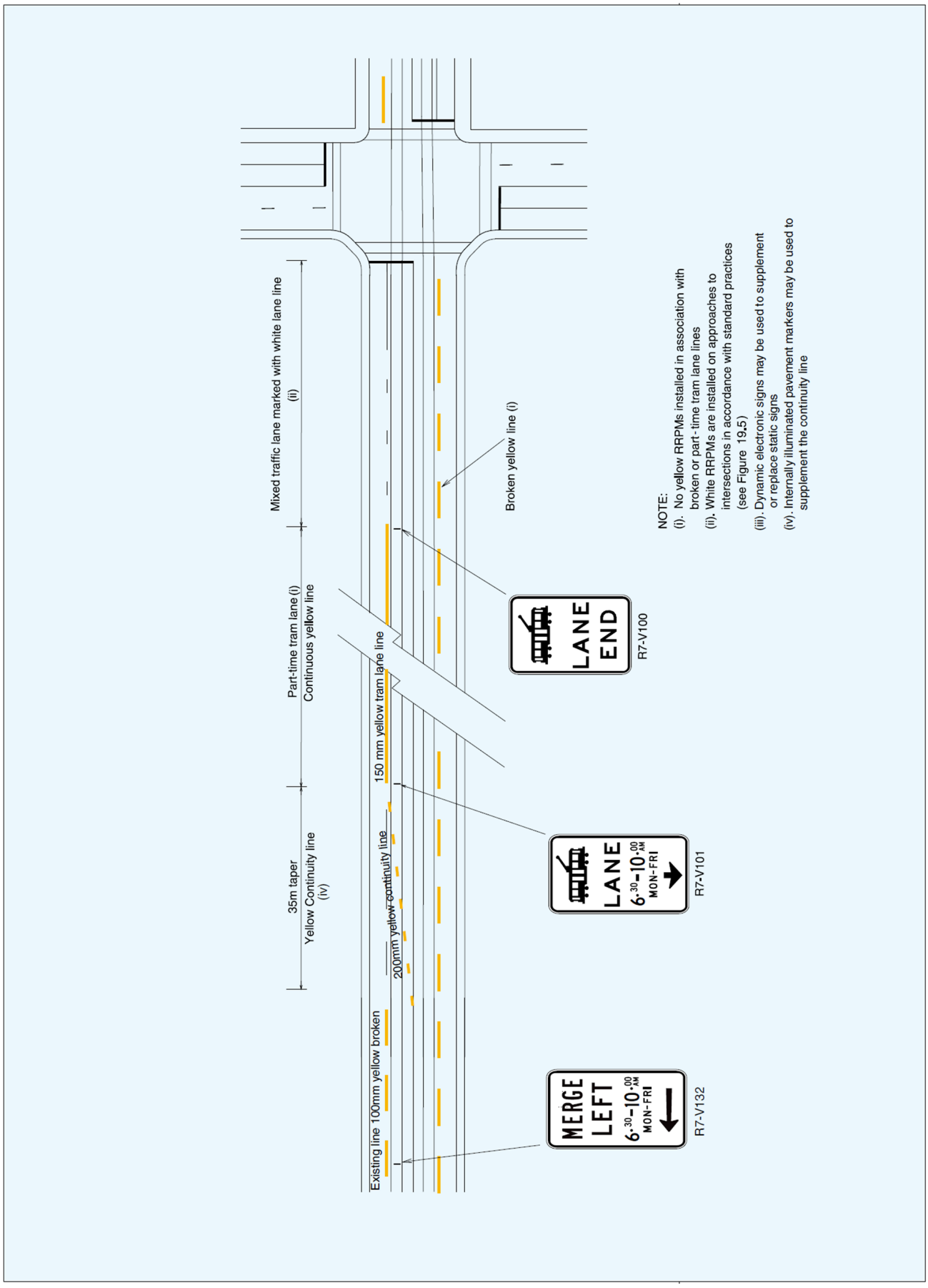
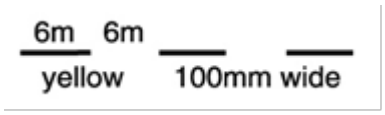
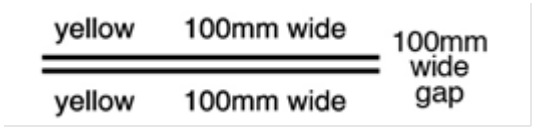


Figure 9: Typical layout of part-time tram lane on a four-lane undivided road

Clause 6.1 – Longitudinal markings

Tram Lane and Tramway lines are described in Table 4.

Table 4: Tram lane and tramway lines

Patterns and Dimensions	Usage
	Lane in which vehicles are not to delay trams
	Full-Time or Part-Time Tram Lane
	Continuity Line for start of Part-Time Tram Lines
	Tramways

Clause 7.1 – General principles

Levels of Tram Priority

There are three levels of Tram Priority resulting from strategic importance and service frequency. The strategic importance of the location of the tram track together with the service frequency is defined in Table 5.

Table 5: Guide to Selection of Level of Priority for Road Sections Carrying Tram Services

Strategic importance	Number of trams operating per direction per peak hour (time between trams)				
	More than 20 (≤ 3 min)	12 to 19 (3-5 min)	7 to 11 (6-8 min)	5 to 6 (9-12 min)	Less than 5 (≥ 12 min)
All Off-Road Tram Routes	Level 1	Level 1	Level 1	Level 1	Level 1
Identified On-Road Priority Routes	Level 2	Level 2	Level 2	Level 2	Level 3
All Other On-Road Tram Routes	Level 2	Level 2	Level 3	Level 3	Level 3

The types of treatments available to prioritise trams are:

- Signal operations
- Lane management
- Parking management; or
- Access management.

Treatments which operate in off road tram routes or medians are generally separated from other traffic and only interact at intersections, median openings or roundabouts. Traffic signals should be configured to prioritise trams at these intersections and tram lines which cross them should either be signalised or red pavement installed in order to prevent traffic queuing across tracks and delaying trams.

The treatments suitable for on road tram routes may not be suitable for off road routes. Table 6 provides details of which facility is suitable to which priority level.

Table 6: Tram facilities applying to each priority level

	1	2	3
Signal Operations	Trams generally have absolute (level-crossing style) priority along off-road sections of route. This should be maintained and improvements made if possible. Dynamic signal priority will not assist where absolute priority already exists.	Highest possible levels of traffic signal priority to be provided, using Dynamic Signal Priority when available. Provide T phases and operate them as many times within the cycle as possible. Favour peak direction when trading off competing calls for priority. Traffic signal management strategies at the broader network level to favour trams, including promoting traffic onto nearby preferred traffic routes.	Provide traffic signal priority, using Dynamic Signal Priority when available. Provide T phases to facilitate tram movements. Favour peak direction when trading off competing calls for priority. Traffic signal management strategies at the broader network level to favour trams, including promoting traffic onto nearby preferred traffic routes, depending on local priorities.
Access Management	If necessary, access to level crossings can be managed with boom gates. Pedestrian access to tram stops should comply with the requirements of the Disability Discrimination Act (DDA) and access points across the tram lines should be established, using crib crossings if necessary. Consideration should be given to installation of surfacing between tram tracks to ensure safe wheelchair crossing.	Right hand turn bans at signals for four lane roads should be considered during peak hours, particularly in the context of paired right turn bans. At side streets bans may be introduced or facilitated in order to reduce delays at particular trouble spots. U-turn bans could be considered for all tram routes. Where Tramways are implemented on six lane roads, consideration should be given to restricting U-turns and right turn access to side streets (i.e. not creating gaps along the Tramway) except at key locations. When trams operate in medians, limit the number of tram crossings and control them as per the Driving with Trams standards. Stop spacing could be reviewed to meet the European standard of 400m in inner areas and 500-600 m in outer areas. As an alternative, lower use stops could be skipped during peak periods as a way of promoting "express" tram services.	Prioritise access control into side streets on the basis of particular need. Limit the number of opportunities to cross tram tracks for trams operating in the median. Stop spacing could be reviewed to meet the European standard of 400 m in inner areas and 500-600 m in outer areas. Stop removals should be considered on a location by location basis, taking into account factors specific to each local environment, rather than applying general rules.
Parking Management	Not applicable.	Installation of Clearways should include Tow Away provisions wherever possible. It is strongly considered that installation of Clearways on four lane undivided roads should be paired with introduction of part time tram lanes. On existing Clearways or where No Stopping provisions apply, consideration should be given to the introduction of part time tram lanes wherever possible. Removal of parking in order to enable better signalised intersection operation in a way that benefits trams. Special provision may be made for indented parking or other parking facilities where appropriate.	Introduce Clearways to promote tram priority. Removal of small amounts of parking near signalised intersections to provide additional tram priority functionality.
Lane Management	Not applicable.	Full time tram lanes to operate wherever there is a six lane road environment. Part time tram lanes should be introduced wherever possible, in conjunction with Tow Away Clearways. Enforcement of tram lanes and of the parking next to them should be encouraged.	Consider possible "Moving Tram Lanes" (currently being researched as a possibility) that are only activated when trams are approaching. Full time tram lanes to operate wherever there is a six lane road environment. Part time tram lanes if possible.

Clause 7.2 – Typical treatments

For Victoria, typical Tramway, Full Time Tram Lane and Part Time Tram Lane treatments are illustrated in Figures 7, 8, 9 and 10. These figures should be used as best practice tram treatments in Victoria.

Separation kerbing

To provide a higher level of priority for trams in tram lanes, it is desirable to limit the permitted manoeuvres to designated locations. This is done by installing separation kerbing, dividing strips, traffic islands, or perhaps even using a row of bollards to physically separate the general traffic lanes from the tram lane. An opening in the separation device will then designate where motor vehicles can enter or cross the tram lane. The use of physical separation is supported by the Road Rules. A dividing strip is defined in the Road Rules as an area or structure that divides a road lengthways. Road Rules 137 and 139(4) explain that a driver must not drive on a dividing strip that is raised above the level of the road unless they are avoiding an obstruction.

The most common method of providing a dividing strip adjacent to a tram lane is to use separation kerbing. There is a range of profiles of separation kerbing that can be used. This includes low profile rubber kerbing, low profile concrete kerbing, semi-mountable concrete kerbing and concrete barrier kerbing as shown in Figures 11, 12, 13 and 14. Choosing the type of separation kerbing to use at a particular location is based on a trade-off between providing a high level of tram priority with the needs of particular road user groups and a range of urban design considerations.

When considering separation kerbing types, the following points should be considered:

- Low profile rubber kerbing is an ideal short to medium term measure that can be trialled prior to installing permanent kerbing. Rubber kerbing can easily be altered to suit local needs
- Vehicles can easily (illegally) drive over low profile kerbing, and hence tram drivers are forced to proceed more cautiously. Increasing the compliance of vehicles will usually require using separation kerbing with an increased height
- Semi-mountable kerbing is 125 mm high and barrier kerbing is 150 mm high. These kerb types will result in a higher level of compliance by motorists and provide greater certainty of a clear run to tram drivers
- Road safety should be considered when choosing between semi mountable kerbing and barrier kerbing
- The width of the carriageway adjacent to the tram lane is a factor. Ideally, there should be sufficient space to go around an obstruction such as a disabled vehicle. If not, semi mountable kerbing may be more appropriate than barrier kerbing
- Many tram lanes are on roads where there are considerable urban design considerations. The type and style of separation may be influenced by these considerations.

When tram tracks are being renewed, there is an opportunity for them to be raised higher than the adjacent carriageway. This would allow semi mountable or barrier kerbing to be used as an integral part of the raised track section.

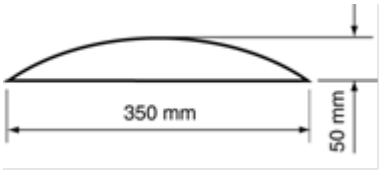


Figure 10: Rubber kerbing profile

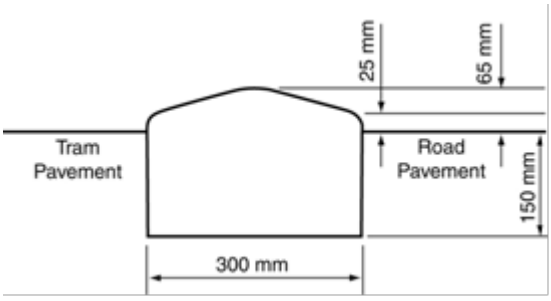


Figure 11: Low profile concrete kerbing

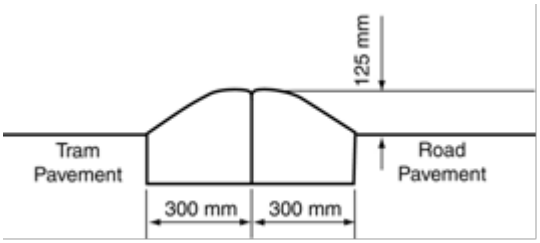


Figure 12: Semi mounted kerb profiles

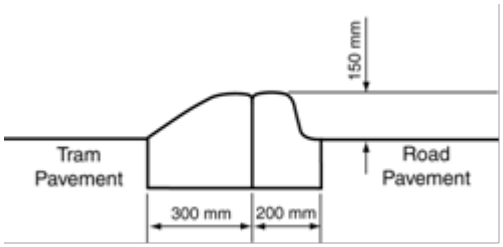


Figure 13: Barrier and semi mountable kerbs

Separation kerbing can impact on pedestrian and bicycle movements when crossing the road. It is therefore recommended that 1200 mm wide gaps in the kerbing be provided at side roads to allow pedestrians and cyclists to cross the road at these locations. If at a midblock location there is an obvious pedestrian desire line, gaps should also be provided at these locations.

At side roads, the gaps in the separation kerbing should be in line with the footpaths in the side roads. This will provide for pedestrians and in some instances will also be acceptable for bicycles. There will be some side roads where gaps for bicycles will also need to be provided closer to the centre of the side road. This is where bicycles usually cross so as to avoid conflict with the left turning vehicles that are turning out of the side road.

Truck Prohibition

Clause 5.6 – Supplementary plates

A supplementary plate or sign which indicates one of the following may be used in conjunction with a No Trucks Sign, R6-10-2:

- a length limit
- a different mass limit
- time periods over which the sign applies, and/or
- that the sign applies only to a particular lane or particular lanes.

Clause 5.7 – Vehicle Prohibition Signs

No Trucks (R6-10-2)

Road Rule 104 applies to a No Trucks sign. The Rule prohibits a driver going past the sign, rather than prohibiting travel on the section of road beyond the sign. Under Road Rule 104, a driver of a truck is permitted to pass the sign if the driver:

- will load or unload goods or equipment at a location beyond the sign abutting the road or in close proximity to the road and no other route is available
- is escorted by a police officer or an authorised VicRoads officer, or
- has a VicRoads permit authorising the vehicle on that road at that time.

The No Trucks sign is a MTCD that requires appropriate authorisation to install, modify or remove in accordance with ANSG 2.2 – Authorisation of Major Traffic Control Devices (2015). A proposal to use it must be submitted to the VicRoads Regional Director for reference to the Truck Operations Committee (TOC). The proposal must be supported with the "Checklist for No Trucks or Load Limit Sign Applications" form found in Attachment A1. Information to assist with filling out the proposal is included in Attachment A2 titled "Information Bulletin – Load Limit and No Truck Signs". Further details on the TOC can be found in the VicRoads Supplement to AS1742.2:2009 – Manual of uniform traffic control devices Part 2 – Traffic control devices for general use, Clause 1.6.

A truck is defined in the Road Rules as a rigid motor vehicle with a manufacturer's laden vehicle rating of more than 4.5 tonnes that is principally constructed as a load carrying vehicle, but it does not include a bus, tram or tractor. In the absence of signing to the contrary, the vehicle mass limit of a truck permitted to proceed past a No Trucks sign is 4.5 tonnes (see the Road Safety Road Rules 2009 for the exact definition).

Examples of a No Trucks sign (R6-10-2)

Under Schedule 11 of the Local Government Act 1989, a Council may prohibit or restrict vehicles of a certain size or weight from using a road. The Road Safety (Vehicles) Regulations 2009 also allows a Council to prohibit vehicles of more than 5 tonnes mass from using a road under its care or management if it believes the road construction or condition warrants such a prohibition. Although a Load Limit sign may be appropriate, the No Trucks sign should also be considered.

Guidelines for the use of No Trucks signs (where they apply to all lanes on a road) include the following:

Full time and day time application:

- Full time use at locations on the road network where the road pavement is not sufficiently strong or sound to carry vehicles of a certain weight or size
- Otherwise, not applicable on a traffic route, bus route, commercial/industrial access route or emergency vehicle trunk route
- Where amenity or safety is threatened on a local street in a zoned residential area or is threatened in an area regularly used by pedestrians
- In all cases an easily accessible alternative route must be available.

Night time & weekend application:

- Not applicable on a freeway standard road
- Not applicable on the majority of traffic routes. Applicable only where unusual and pronounced amenity or safety problems can be established
- Not applicable on a road with over 200 trucks in the applicable time on any day, or any road where the trucks would simply shift to another road of similar traffic function and performance standard
- The detour for trucks must not exceed 4 km nor increase journey time by more than 50%
- Preferred times: 8 pm to 6 am weeknights and 1 pm Saturday to 6 am Monday.

It is important that warnings of the restriction are located where a driver is able to identify the location and nature of the restriction and select an alternative route, without the need for reversing or back-tracking. A reasonable alternative route must be available for the affected vehicles. Advance warning of a No Trucks sign should consist of a No Trucks Advisory sign, R6-V106 (i.e. a No Trucks sign with a black annulus instead of red), with a supplementary sign stating 'AHEAD', 'ON SIDE ROAD' or other legend which clearly indicates where the restriction starts, and a further supplementary plate advising of the times of operation if not full time.

No Trucks Advisory Sign (R6-V106)

LOAD LIMIT (Bridge Load Limit R6-3; Gross Load Limit R6-4; Load limit per axle group R6-17; END LOAD LIMIT R6-5)

A sign of this type may only be used to protect a road surface or bridge structure from damage by heavy vehicles. For all other purposes (including residential amenity) the No Trucks sign is the applicable sign. Even for protecting a road surface (though not a bridge) from damage, use of a No Trucks sign can provide more consistent signing for drivers.

Although this type of sign is not a MTCD, its effect is similar to a No Trucks sign. Section 208 of the Local Government Act 1989 states that Council must not exercise its powers inconsistently with the functions and powers of VicRoads under the Transport Act 1983 and the Road Safety Act 1986 and the regulations under these Acts. A proposal to use it must be submitted to the VicRoads Regional Director for reference to the Truck Operations Committee. The proposal must be supported with the "Checklist for No Trucks or Load Limit Sign Applications" form found in Attachment A1. Information to assist with filling out the proposal is included in Attachment A2 titled "Information Bulletin – Load Limit and No Truck Signs".

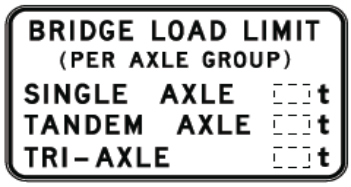
Regulation 252 of the Road Safety (Vehicles) Regulations 2009 prohibits all vehicles over a signposted mass from passing a sign inscribed with a mass limit. Exemptions for access require Council permission; there is no exemption for loading or unloading nearby, as there is with the No Trucks sign.

It is important that warnings of the restriction are located where a driver is able to identify the location and nature of the restriction and select an alternative route, without the need for reversing or back-tracking. A reasonable alternative route must be available for the affected vehicles.

The BRIDGE LOAD LIMIT sign (R6-3) is used to put into effect a load limit imposed on a bridge under the Transport Act or the Local Government Act based on the gross load of the vehicle.

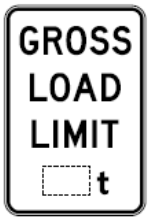
R6-3

The BRIDGE LOAD LIMIT PER AXLE GROUP sign (R6-17) is used where the load limit to be imposed on the bridge is based on the mass per axle group. These signs shall only be used to protect bridges from structural damage by trucks. They shall be erected sufficiently far in advance of the bridge to enable any truck over the signed limit to be driven via a safe alternative route.



R6-17

GROSS LOAD LIMIT sign (R6-4) is used to put into effect a load limit imposed under the Transport Act or the Local Government Act. It shall only be used to protect a road from damage by trucks.



R6-4

END LOAD LIMIT sign (R6-5) shall be used at the end of a section of road, which is subject to a load limit, unless other circumstances make the end point obvious.

R6-5

4. Additional Information - Buses

Bus Stop Guidelines

Introduction

Bus stops are an important interface between buses and passengers. They provide facilities for waiting passengers and facilities for the bus. Appropriate traffic management issues also need to be addressed to allow the bus to enter and leave the stop. This approach means that bus stops can be divided into the two distinct components of passenger waiting area and bus stopping area. The following guidelines provide information on the design and intended operation of both passenger waiting and bus stopping areas for rigid buses up to 14.5 m in length. Guidance on bus stops for articulated buses is not covered in this document.

Passenger waiting area

The passenger waiting area at bus stops should have a consistent and predictable layout, taking into account waiting, boarding and alighting passengers, passing pedestrians, access for people with vision or physical impairments, and interaction with the bus and bus driver.

All new bus stops must now comply with the requirements of the Disability Discrimination Act (1992) and the Disability Standards for Accessible Public Transport (2002). The Standards outline the requirements in areas such as access paths, manoeuvring areas, ramps, waiting areas, surfaces and tactile ground surface indicators (TGSIs). These bus stop guidelines use ‘accessible’ design principles, but should be read in conjunction with the Disability Standards.

Bus stop post and flag

A bus stop post and flag (i.e. sign) are used to identify the bus stop, and provide a “marker” for the bus driver to stop with the front of the bus in line with the post. This provides a “control point” for the layout of bus stop facilities, and allows a consistent and predictable environment to be created. This is particularly important to passengers with vision or physical impairments.

Boarding and alighting clear areas

To provide unobstructed access to the front and rear doors of the bus, an area adjacent to the doors should be free from obstacles such as street furniture, trees, and poles. This is particularly important for wheelchair access to the bus, for the efficient loading and unloading of passengers, and to provide a consistent bus stop layout.

Figure 15 illustrates the minimum clear areas. These dimensions are based on:

- Provision of manoeuvring space for a wheelchair adjacent to the doors, as low floor buses may have ramps at either the front or rear doors
- A wider clear area at the rear door to provide improved egress with passengers being able to easily exit in a number of directions once off the bus, and
- The rear door location varying with different length buses.

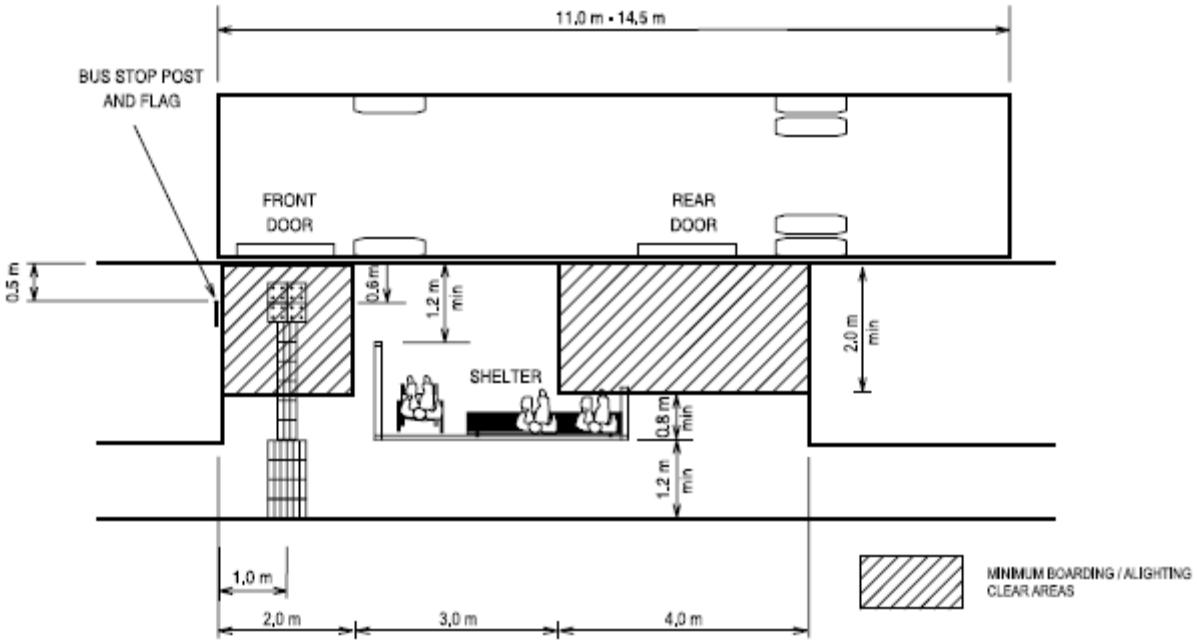


Figure 14: Preferred bus stop layout – roadside width > 3.2m (with 3m long shelter) or > 4.0m (with larger shelter as shown)

Passenger hardstand area

A passenger hardstand area with a sealed smooth surface provides a connection between the bus doors and the nearby footpath, particularly for wheelchair users. It also defines the waiting and circulating space around the bus stop passenger facilities. The extent of the hardstand area may vary depending upon the bus stop environment. It should consist of one of the following:

- The boarding/alighting clear area adjacent to the door with wheelchair access (suitable if all buses using the stop deploy ramps from the same door)
- The boarding/alighting clear areas adjacent to both doors
- The boarding/alighting clear areas plus the space between them, or
- The options described above, but with a connection to the footpath.

Additional hardstand area may be required on the other side of the post if timetable cases face the opposite direction, and can't be spun around.

Tactile ground surface indicators

Tactile ground surface indicators (TGSIs) assist people with vision impairment to access the bus from the adjoining footpath. Tactile directional indicators direct people from the footpath to the kerb where the bus front door will be, and from the bus back to the footpath. Tactile warning indicators warn people of the kerb and potential hazard beyond it. The layout and specification of TGSIs should generally be in accordance with the Australian Standard AS1428.4.1 Means to assist the orientation of people with vision impairment – tactile ground surface indicators.

The TGSI layout shown in Figure 15 provides good guidance for people who are vision impaired by directing them to where the front door of the bus will be. It also minimises the impact of the tiles on wheelchair users if they are boarding or alighting from the front door. This is achieved by locating the directional tiles central to the front doors so the wheelchair can straddle them. In addition to this, it should be noted that most of the tactile warning indicators will be covered by the ramp when it is deployed from the bus.

Bus passenger shelter

Bus passenger shelters provide an important service to waiting passengers. The design and layout of shelters should meet a number of requirements including:

- Providing shelter from the sun, wind, and rain
- Allowing passengers to see the approaching bus and for the bus driver to see the passengers
- Being accessible with the necessary clearance and circulation spaces, particularly for people with physical or vision impairments, and
- Providing a safe shelter for passengers while not posing unnecessary dangers to the occupants or riders of passing vehicles.

Bus shelters should be positioned so that sight distance requirements for road users are not significantly impacted. Where there is ample width, bus shelters should be located outside the Clear Zone. However, in most cases this will not be possible, so shelters should be made of materials to minimise injury to errant road users.

In a constrained environment the preferred location for a bus passenger shelter is as shown in Figure 15. A minimum width of 1200 mm is shown on each side of the shelter to provide a continuous accessible path of travel. If the shelter has an advertising panel that is 1500 mm wide, a minimum roadside width of 3.9 metres would be required. If there were 800 mm end panels, the minimum roadside width would be reduced to 3.2 metres.

When the roadside width is less than 3.2 metres, it can be difficult to locate a bus passenger shelter and maintain the appropriate clearances.

The minimum requirements to be maintained are as follows:

- A continuous accessible path of travel of 1200 mm is to be maintained throughout the bus stop
- People waiting (seated or standing) occupy an 800 mm width, and if more than this space is occupied (for example by a wheelchair user) then this additional space could be shared with the continuous accessible path of travel
- The area to 500 mm from the back of the kerb is to be free of fixed obstacles to allow for overhang of the bus and its mirrors on entry and exit, and
- The boarding and alighting clear areas shown in Figure 15 are to be free from fixed obstacles.

Using the above criteria, the following four options have been identified for roadsides narrower than 3.2 metres. Each option has advantages and disadvantages that will need to be considered prior to determining the most appropriate solution for a particular site.

Shelter Option A set back behind the footpath as shown in Figure 16. This usually requires negotiations with the adjoining landowner. However, this option provides a solution for roadside widths as narrow as 2.0 metres. An advertising end panel could be provided on the shelter. Adequate clearances and sight lines should be provided around the shelter for maintenance, passenger security and visibility between waiting passengers and bus drivers.

Sites with fences, vegetation or other obstructions adjacent to the proposed set back shelter may not be suitable for Shelter Option A.

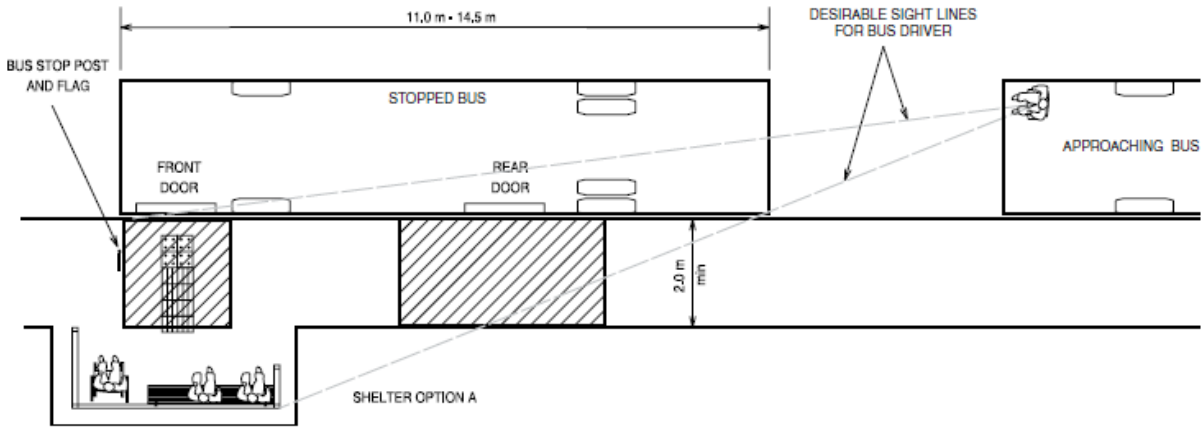


Figure 15: Bus passenger shelter location option A – roadside width >2.0 m

Shelter Option B provides a bus passenger shelter without seats or end panels and is located against the property line as shown in Figure 17. It could be fitted with a leaning rest to provide some support for waiting passengers, but would need to be of minimum width and have tapered ends to minimise its impact on people with vision impairment.

Shelter Options C and D position a bus passenger shelter with its back to the kerb as shown in Figure 18. The proximity of the shelter to the kerb increases the risk of it being hit by an errant vehicle. Whilst there is a low incidence of this type of crash, it is nevertheless an issue for consideration. Figure 18 is considered to be appropriate only in low-speed environments or where nearby parking creates a buffer, as shown in Figure 21.

Visibility between waiting passengers and drivers can be compromised with shelters facing away from the road. Good sight lines should be maintained with these options, which may be preferred on the basis of providing better weather protection in some circumstances.

Advertising end panels may not be possible if the minimum clearances and adequate sight lines are to be maintained.

Option C is shown downstream of the bus stop post and flag. This location may impact on sight lines for vehicles exiting nearby driveways. Option D is between the boarding and alighting clear area. However with only 3000 mm between the areas, a smaller shelter would be required.

Timetable information

Timetable information should be provided on the bus stop pole. At high use stops, it is desirable to display timetable information more prominently, such as on the bus passenger shelter. However it should be noted that the current contract (June 2003) between the bus operators and the Government of Victoria requires the operator to “display a clearly legible timetable in display case for at least 30% of all bus stops”.

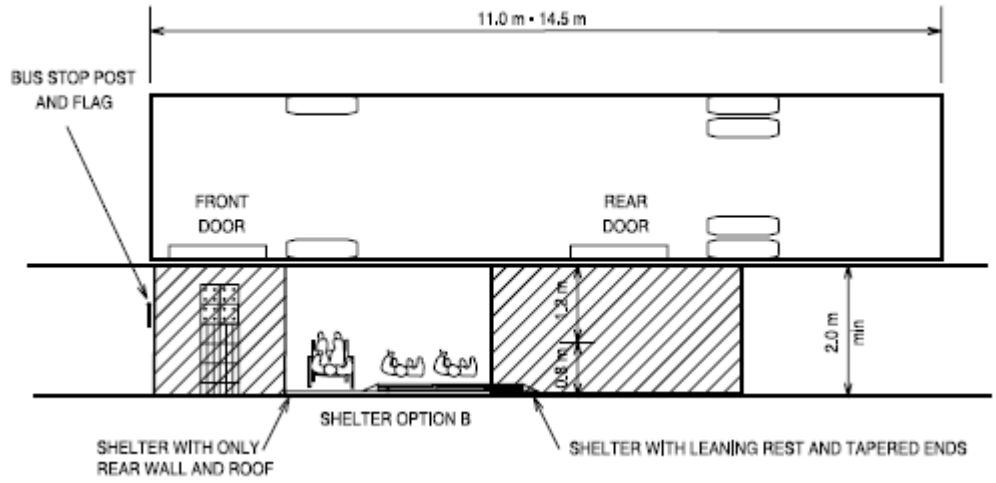


Figure 16: Bus passenger shelter location option B – roadside width >2.0 m

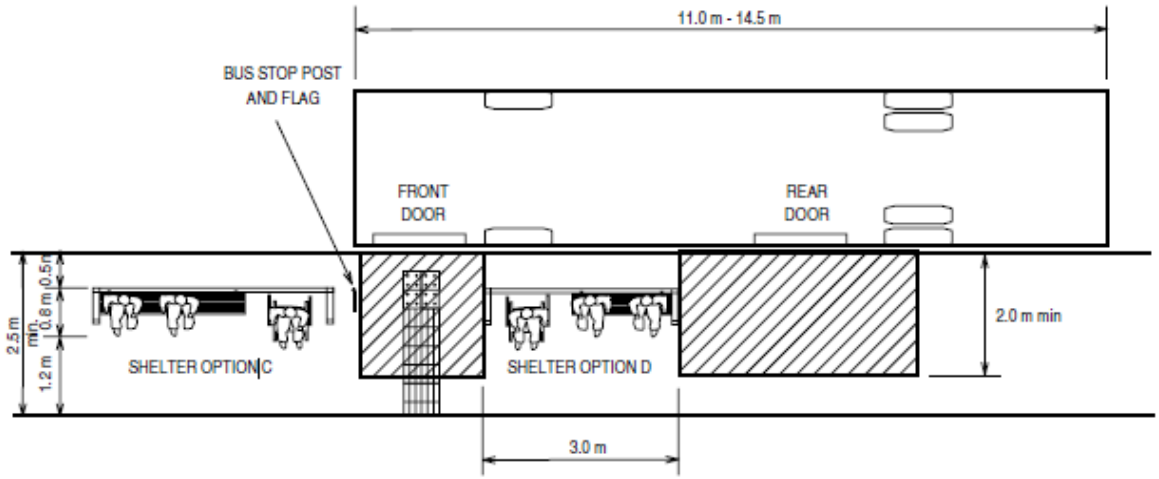


Figure 17: Bus passenger shelter location options C and D – roadside width >2.5 m

Other street furniture

Other street furniture such as rubbish bins, seats in lieu of bus passenger shelters, real-time information signs, and bus service information totems may also be provided. These should be located such that the boarding and alighting clear areas are maintained, and the 1200 mm continuous accessible path of travel is provided throughout the bus stop area. All street furniture should be set back from the kerb by 500 mm to allow for bus overhangs.

Lighting

Lighting at bus stops serves a number of purposes. It provides illumination for accessing the stop, waiting, boarding, and alighting. It also provides an increased level of perceived safety and security. The minimum lighting standard is to meet the requirements of the Public Lighting Code AS/NZS 1158 (2010). Lighting levels above the Code should be considered at locations where there is a high demand for the service.

Bus stop kerbing

Where a kerb is provided at a bus stop, it should be 150 mm high barrier kerb as per VicRoads Standard Design Drawing SD 2001. This type of kerb provides good guidance for the bus driver, provides some protection to the waiting bus passengers, and meets the ramp height requirements of the Disability Standards for Accessible Public Transport (2002). If kerb is not provided, consideration must be given to otherwise achieving the minimum required gradient for ramps deployed from the bus.

Bus stopping area

Defining a bus stopping area

A bus stop is designated by a bus stop flag or sign. Stopping at or near a bus stop is defined in the Road Rules. Rule 195 states that “A driver (except the driver of a public bus) must not stop at a bus stop, or on the road, within 20 metres before a sign, and within 10 metres after the sign, unless the driver stops at a place on a length of road, or in an area, to which a parking control sign applies and the driver is permitted to stop at that place under the Road Rules”.

If the bus stop area is other than 30 metres in length, or additional parking control is needed, parking control signs and/or Bus Zone signs as shown in Figure 19 are required.

Pavement markings as shown in Figure 19 may be installed to support the Bus Zone signs. However, the pavement markings do not have regulatory significance.

Bus zone signs and pavement markings may also be used:

- at bus stops abutting parking areas
- where problems exist with illegal parking at bus stops, or
- where it is desirable to improve the conspicuity of a bus stop for intending passengers, or for traffic operational reasons.

It is not appropriate to use bus zone pavement markings at indented bus bays.

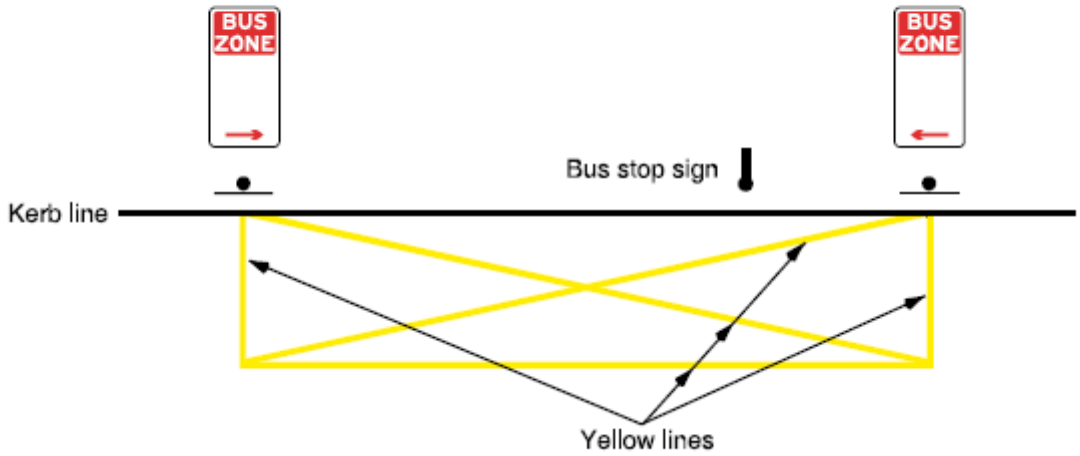


Figure 18: Bus Zone sign and Bus Zone pavement markings

Bus stop bays

Bus stops may be indented into the adjacent road side area so that the bus is out of the traffic stream while it is setting down or taking up passengers. Figure 20 shows the layout of a typical bus stop bay. Road Rule 77 requires drivers to give way to buses displaying a “Give Way to Buses” sign, however bus operators experience difficulty exiting from bus bays due to other traffic being reluctant to allow the bus to re-enter the traffic stream.

VicRoads has adopted a policy to limit the use of bus stop bays, which considers the views and experiences of bus operators, and also operational characteristics of a road. As a result of the policy, the following guidelines have been established when considering bus stop bays:

- Bus bays should not be constructed in 60 km/h zones unless there is physically no way another vehicle could overtake the stopped bus, or the stop is very close to the departure side of a signalised intersection in a way that would severely impact intersection operation
- Bus bays should not be constructed in 70 km/h zones unless there is only one lane in the bus direction, or the stop is close to the departure side of a signalised intersection
- Bus bays should not be constructed in 80 km/h zones unless there are only one or two lanes in the bus direction, or the stop is close to the departure side of a signalised intersection, and
- Bus bays may be constructed in 90 km/h and 100 km/h zones. Consideration should be given, where the bus bay is in a shoulder, to providing a longer acceleration zone to assist re-entering the traffic stream.

In places where the bus is stopping in traffic, consideration of markings and signage to increase the conspicuity of stops is required (refer to Figure 19).

Bus bays may, however, be constructed where the stop:

- Is used as a timing point, where buses may need to wait for several minutes if running early
- Is used as a bus driver change-over point, requiring the bus to stop for longer periods, or
- Is a particularly high loading bus stop, where the time taken to load passengers can regularly take minutes.

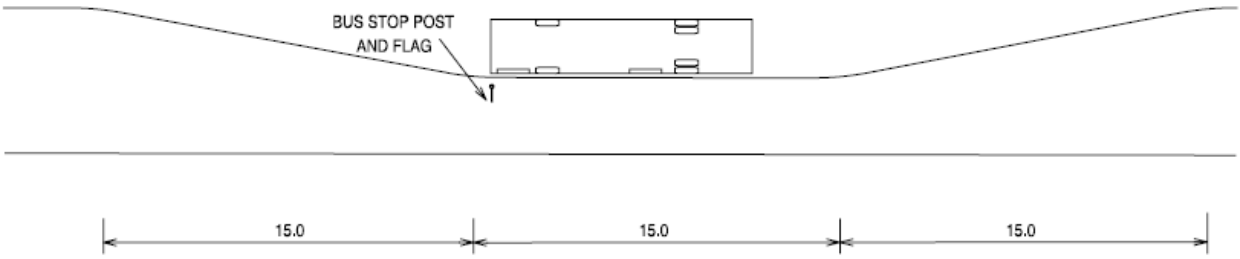
In places where a bus bay is considered as necessary, it is also important to obtain written agreement from the operator and to consider means of assisting the bus exiting the bay through measures such as:

- Linemarking, pavement markings or static roadside signs to advise motorists of the bus bay and the need to give way to exiting buses, and
- Assisting bus exit manoeuvre through the use of nearby signals to create a gap in the traffic stream.

Bus stops and road shoulders

Where bus stops are situated on road shoulders, the width of the shoulder and the nature and condition of the surface should be carefully considered, taking account of vehicle volumes and sight distance. Sites and treatments should provide safe and convenient conditions for:

- passenger access and waiting
- buses stopping and re-entering the traffic flow
- vehicles to pass or overtake a stopped bus.



For detailed layout of Bus Stop passenger facilities, Refer to Figures 14 - 17

Figure 19: Typical bus bay layout

Kerbside bus stops

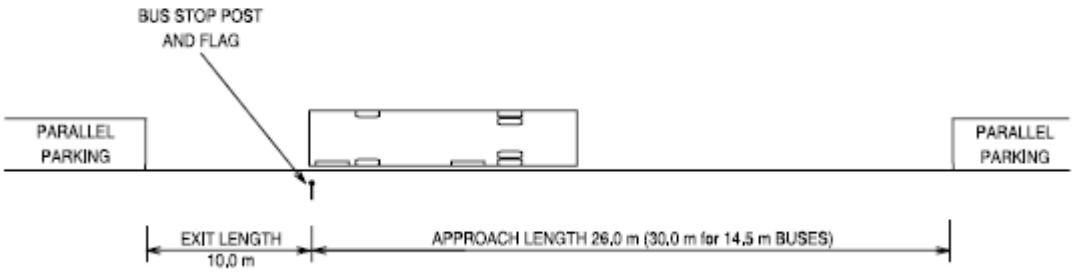
It is necessary to have sufficient clear kerbside space to allow a bus to enter the bus stop, straighten up, and stop at the bus stop flag with its front and rear doors close to the kerb. The bus must then be able to exit the bus stop without encroaching into the next traffic lane.

Computer modelling using “AutoTURN” and field tests have been used to determine the minimum clear kerbside length needed for the rear doors of the bus to be not more than 300 mm from the kerb. For a 12.5 metre long bus, an approach length of 26 metres and an exit length of 10 metres are required. For a 14.5 metre long bus, an approach length of 30 metres and an exit length of 10 metres are needed. These recommended minimum dimensions are illustrated in Figure 21.

Using other road space

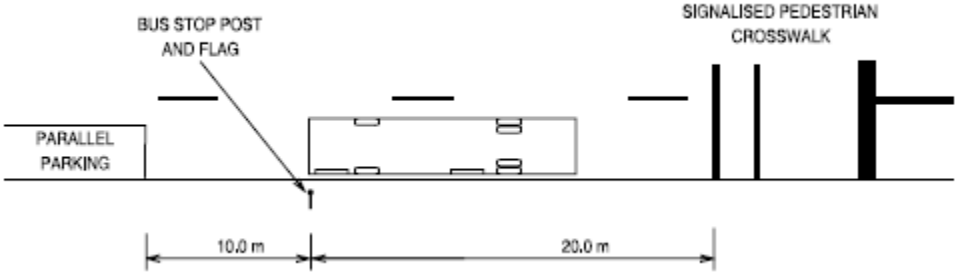
Prohibiting 36 or 40 metres of kerbside parking may be difficult at some sites. Locating the bus stop so that the bus makes use of other road space on the approach or exit to the stop can reduce the amount of clear kerbside space required. For example, Figure 22 shows a bus zone on the downstream side of a midblock pedestrian crossing with the bus making use of the space from the pedestrian signals.

In some locations where parking is at a premium, it may be acceptable to provide a kerb outstand and have the bus stop in the traffic stream as shown in Figure 23. Whilst this has a momentary impact on the general traffic flow, it significantly reduces the amount of parking that needs to be removed and removes the delays to the bus associated with exiting a conventional bus stop. Careful consideration to bicycle movements should be made, particularly on roads with bicycle lanes.



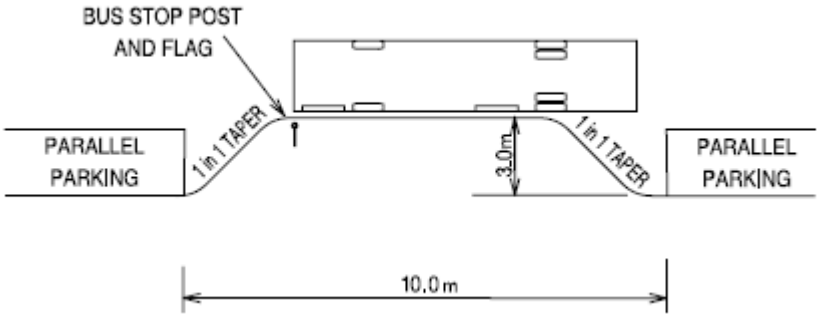
For detailed layout of Bus Stop passenger facilities, Refer to Figures 14 - 17

Figure 20: Kerbside stop with parking on approach and exit



For detailed layout of Bus Stop passenger facilities, Refer to Figures 14 - 17

Figure 21: Kerbside stop on departure side of pedestrian signals



For detailed layout of Bus Stop passenger facilities, Refer to Figures 14 - 17

Figure 22: Kerbside stop with kerb outstand

5. Additional Information - Trams

Tram Stops

Tram stops may be sited at various locations and the selection will depend on road geometry and usage. In general the site will be:

- At the stop line
- Set back from the stop line
- On the departure side
- Mid block with pedestrian crossing, or
- Mid block without pedestrian crossing.

The traditional tram stop has been located at the kerb, where the trams stops, the traffic stops and passengers cross the traffic lane to board or alight form the trams. These traditional stops were not DDA compliant and required extended times to load/unload passengers because of the requirements to climb up into the tram. There are also stops in the centre of the road (in safety zones) which alleviate the need to cross traffic lanes but which are not DDA compliant and require extended periods to load/unload.

The implementation of DDA compliant trams stops needs careful consideration because of the possible negative impact on vehicular traffic. Accessible tram stops require a platform and access ramps and these can be provided in medians or safety zones without too much impact, if designed in accordance with VicRoads Road Design Notes:

- RDN 03 – 02 Accessible tram stops in medians
- RDN 03 – 03 Accessible trams in safety zones
- RDN 03 – 05 Accessible central island platform stops (CIPS) for trams in mixed traffic
- RDN 03 – 06 Easy Access Stops (EAS) for trams in mixed traffic.

All Road Design Notes can be found on the VicRoads website at www.vicroads.vic.gov.au under Business & industry > Design & management > Design standards & manuals > Guidelines for public transport.

Things to be considered for DDA compliant intersection tram stops in four lane undivided roads are provided in Table 7 – Considerations for DDA compliant intersection tram stop options in four lane undivided arterials.

Table 7: Considerations for DDA compliant intersection tram stop options in four lane undivided arterials.

Configuration	Cost considerations	Situation when a tram is not present	Situation when a tram is present	Compatibility with tram priority measures
Kerb access tram stops, one traffic lane (See Figure 24)	High due to track work and platform works	All traffic still needs to form one lane	All traffic forms one lane and stops during loading and unloading	Does not separate trams from traffic, does not effectively deal with turning traffic, does not provide intersection capacity
Centre island platform stops, no vehicular traffic adjacent to tram tracks (See Figure 25)	High due to track work and platform works	All traffic is impeded	All traffic is impeded	Separates trams from traffic, removes turning traffic from tram path
Centre island platform stops, vehicles permitted adjacent to tram tracks (See Figure 26)	High due to track work and platform works	All traffic is impeded	Traffic in lanes adjacent to tram tracks can pass the tram during loading and unloading. Traffic on tram tracks changes lanes or waits behind the tram	Operates similar to existing lane allocations, provides close to existing intersection capacity
Trafficable platform, one traffic lane (See Figure 27)	Moderate due to platform works	All traffic still needs to form one lane	All traffic forms one lane and stops during loading and unloading	Does separate trams from traffic, removes turning traffic from tram path, does not provide intersection capacity
Trafficable platform, two traffic lanes (See Figure 28)	Very high due to track work, platform work and widening	Traffic progresses in two lanes, a bit slower than existing	Traffic in two lanes, both lanes stopped during loading and unloading	Apart from slower two-level environment, can operate similar to existing lane allocations, provides close to existing intersection capacity

Figure 23: Kerb access tram stop – High St, Northcote

Figure 24: Centre island platform stop, no vehicular traffic adjacent to tram tracks – Flinders St / Russell St, Melbourne

Figure 25: Centre island platform stop, vehicles permitted adjacent to tram tracks (during Clearway times) – High St / Westgarth St, Northcote

Figure 26: Trafficable platform, one traffic lane – Macarthur St, Melbourne

Figure 27: Trafficable platform, two traffic lanes – Bridge Rd, Richmond

Attachment A1 – Checklist for No Trucks or Load Limit Sign Applications

CHECKLIST **Municipality:**_____

This checklist must be completed and submitted, with the supporting information, to the relevant VicRoads Regional Director for referral to the Truck Operations Committee.

Location (road)_____from_____

to_____(locality/suburb-) _____

Map reference: Melway / VicRoads Directory: _____ Date: __ / __ / __

Presenting Officer: _____Contact phone: _____

PRESENTATION CHECKLIST: Sign Type: No Trucks / Load Limit (delete one)

1	**Route Map Provided**	**YES/NO**
a	Road, subject of proposal, is identified on a map	
b	Adjacent road network is identified	
c	Alternative routes identified	

2	**Traffic Volumes Provided**	**YES/NO**
a	12 or 24 hour volumes	
b	7 day volumes (note: single day volumes not acceptable)	
c	Commercial vehicle volumes & origin/destination by category	

3	**Accident Data Provided**	**YES/NO**
a	5 year accident history on proposed route and alternate routes – by accident type	

4	**Details of Proposed Treatment Provided**	**YES/NO**
a	Do treatments comply with Traffic Engineering Manual Volume 1 (Chapters 1, 2, 10) ?	
b	Has the officer responsible for approval of Major Traffic Control Devices reviewed the proposal?	
c	Impacts on heavy vehicles are identified and documented	
d	Impact on local heavy vehicle traffic (e.g. garbage vehicles, emergency vehicles) identified and documented	

5	**Details of Consultation Provided**	**YES/NO**
a	with community	
b	with freight industry (incl bus operators, emergency services)	
c	with neighbouring or affected municipalities	

6	**Photographs Provided**	**YES/NO**
a	Extent of problem described	
b	Proposed effect of treatment described	

7	**Existing Conditions of Road Provided**	**YES/NO**
a	Documentation of the physical condition of the road	

8	**Road Safety Audit**	**YES/NO**
a	Road safety audit of the proposal undertaken?	
b	Audit results and project manager responses provided	

9	**Proposal for Review of the Treatment**	**YES/NO**
a	Process provided	
b	Review date for Truck Operations Committee	

Signed:_____Position:_____

Attachment A2 – Information Bulletin – Load Limit and No Truck Signs

The purpose of this Information Bulletin is to clarify when “no truck” signs and “load limit” signs should be used.

When should a Load Limit sign be used?

Load Limit signs (including but not limited to the example above) are used to prevent damage to a road or structure, such as a bridge. Load limits are usually applied once a structural analysis has determined that a vehicle load or a combination of vehicle loads would result in immediate damage to infrastructure or pose a danger to road users.

As the limit is related to the structural strength of the infrastructure there are no exceptions. Any vehicle exceeding the load limit must not proceed past this sign, including emergency vehicles, garbage trucks, maintenance vehicles, cars towing caravans, council vehicles and buses.

When should a No Trucks sign be used?

No Trucks signs are used to eliminate the inappropriate use of roads by trucks which do not have a justifiable purpose or a destination in or near the road. They are often used to restore amenity degraded by high levels of through truck traffic.

No Trucks signs may be time based if appropriate. VicRoads aims to standardise the times for truck bans to provide a more consistent message to drivers. The adopted times are 8pm to 6am Monday to Saturday and 1pm Saturday to 6am Monday. These are often referred to as night time and weekend restrictions.

The Road Rules provide exceptions for trucks loading and unloading goods if a location can only be reached by passing a sign e.g. garbage trucks, maintenance trucks, vans delivering furniture to a house, trucks delivering to a local shop or factory, and buses.

The following table provides a summary of the main features of the two different sign types.

	Sign Type	
Feature	**Load Limit**	**No Truck**
Main Purpose	Prevent structural damage. Ensure safety for road users.	Residential amenity.
Value of restriction	As signed.	4.5 tonne unless otherwise signed. Restriction can also be based on length, height or width if signed accordingly.
Vehicles affected	All vehicles exceeding the signed limit.	Trucks, i.e. vehicles with a GVM of 4.5 tonnes or greater, principally constructed as a load carrying vehicle.
Exceptions	No exceptions.*	Trucks loading or unloading goods to a location which can only be reached by passing the sign. Trucks with a VicRoads permit. Trucks with police or VicRoads escort. Emergency vehicles. Garbage vehicles. Buses.
Time of restriction	Applies at all times the sign is displayed.	Can be timed based if signed accordingly.
Approval for installation	Not a Major Traffic Control Item but may require VicRoads approval.	Major Traffic Control Device requiring VicRoads authorisation.
Process	Install immediately limit is identified. Truck Operations Committee advised in due course.	Must be referred to Truck Operations Committee before implementation.

** Generally no exceptions, however VicRoads can provide an exception for emergency vehicles in accordance with the Road Safety (Vehicles) Regulations 2009.*

Truck Operations Committee

The Truck Operations Committee is a committee chaired by VicRoads that provides advice on the impacts to industry and business in regard to truck restriction proposals. It seeks to ensure greater communication with local government, the general community, transportation providers and industry. All requests for No Trucks signs are referred to the Truck Operations Committee prior to VicRoads approval.

The committee is comprised of representatives from VicRoads, the Victorian Transport Association, Transport Workers Union, Police, RACV, Municipal Association of Victoria, Institute of Public Works Engineering Australasia, Metropolitan Fire Brigade, Metropolitan Ambulance Service, Bus Association of Victoria and the community.

Advance Warning Signs

When signing a No Trucks restriction, advance warning signs should be used to advise drivers of the restriction and allow them to avoid the restricted section of infrastructure. Refer to Clause 5.7 in this supplement. In some cases it may also be desirable to guide drivers around the restriction through the signing of alternative routes.

Further Reading

- Road Safety Road Rules Victoria 2009
- Road Safety (Vehicles) Regulations 2009
- Local Government Act

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AS 1742.12:2000 – Edition 1	All	October 2015	First Edition – • Provides details of Victorian practice of part-time transit lanes • Provides details of Victorian typical tramway treatments

Previous versions of this document are available on request by contacting the VicRoads – Network Standards team.

For enquiries regarding this supplement, please contact the VicRoads – Network Standards team via tem@roads.vic.gov.au or 9854 2417.