USP
THE UNIVERSITY OF THE SOUTH PACIFIC



MANUAL

FOR

TRAFFIC SIGNS

AND

ROAD MARKINGS

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1 Introduction

1.1 Purpose of Line Marking

A system of clear and effective pavement markings is essential for the proper guidance and control of vehicles and pedestrians.

Pavement markings may simply guide traffic or give advance warning, or they may impose restrictions that are supported by traffic regulations. They may act as a supplement to other road devices, but they are often the only effective means of conveying certain regulations and warnings to drivers.

It is essential to check their use against the traffic laws and regulations before they are installed or removed, to avoid possible conflict or confusion.

1.2 Limitations

Pavement markings have the following limitations:

(a) They may not be clearly visible if the road is wet or dusty, e.g. near an edge or a median.

(b) They are subject to traffic wear and usually require frequent maintenance.

(c) They can be obscured by traffic.

(d) Their effect on skid resistance requires careful choice of materials particularly when there are large marked surface areas. Markings within a traffic lane may be a hazard to motorcycles and should, where practicable, be avoided on curves.

In spite of these limitations they have the advantage under favourable conditions of conveying information to drivers without diverting their attention from the road.

1.3 Types of Line Marking

The following types of markings that may be used are described in detail in AS 1742.2:

(a) Longitudinal lines

Dividing lines
Barrier lines
Lane lines
Edge lines
Continuity lines
Turn lines
Longitudinal lines at intersections

(b) Transverse lines
Stop lines
Give-way lines
Markings at STOP and GIVE WAY signs
Pedestrian crosswalk lines

(c) Other markings

Diagonal and chevron markings
Messages on pavements including words, numerals and arrows
Marking of parking and loading areas
Kerb markings

(d) Raised pavement markers

The design and pattern variations to AS 1742.2 are described below.

2 Fiji's Current Road Rules

FRA is in the process of transitioning to Australian Standards for linemarking. This guide is based on a combination of current Fiji Regulations and Australian Standards.

Fiji's current linemarking regulations are summarised in Appendix B. FRA should be consulted prior to adoption of the Australian Standards, whilst these regulations remain in place.

3 Variations to Australian Standard 1742.2

FRA proposes to adopt AS 1742.2 in the future. These changed standards need to be supported with changes to Fiji's Regulations.

This document provides supplementary material to AS 1742.2 and needs to be read along with Fiji's standards and regulations.

3.1 Longitudinal Lines (Clause 5.3, AS 1742.2)

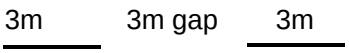
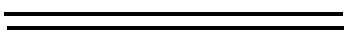
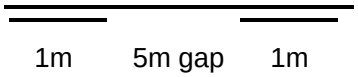
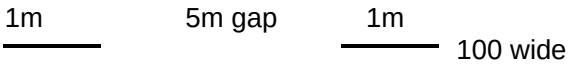
3.1.1 General (Clause 5.3.1, AS 1742.2)

The patterns identified in AS 1742.2 shall be replaced with Table 1.

Refer also to Austroads Guide to Traffic Management Part 10 – 2016, Section 6.1.1 for additional guidance.

Table 1: Summary of longitudinal lines

	CURRENT USE	C0MMENTS
	Dividing Lines	
Regulated Treatment 5 (RT5)	Two-lane Two way (standard) 1m 5m gap 1m 100 wide	Used to indicate centre of 2 lane carriageway or to provide lane lines.
Regulated Treatment 6 (RT6)	4m 2m gap 4m 100 wide	Used as a warning line to warn vehicular traffic when approaching or negotiating a hazard not to cross or straddle the line unless it is seen by the driver to be safe to do so.

Regulated Treatment 7 (RT7)	Multi-lane undivided - Centre line 	Used as a centre line on a 4 or 6 lane undivided road.
Regulated Treatment 9 (RT9)	15m or 30m solid 100mm line 	On street approaches to STOP or GIVEWAY markings at intersections. Used on all approaches. (15m) Where it is only a one-lane approach, and parking allowed but less than 3m is available between dividing line and parked vehicles. The line may be omitted On approaches to traffic lights (30m)
	Barrier Lines – Clause AS 1742.2, Clause 5.3.3	
Regulated Treatment 4a (RT4a)	Double two-way 	Barrier line to restrict overtaking in both directions
Regulated Treatment 4b (RT4b)	Double one-way 	Barrier line to restrict overtaking in one direction
Unregulated Treatment 1 (UT1)		Special purpose barrier line
	Lane Lines – Clause AS 1742.2, Clause 5.3.4	
Regulated Treatment 5 (RT5)	Standard Broken 	Used as lane lines on multi lane roads.
	Edge Lines – Clause AS 1742.2, Clause 5.3.5	
Regulated Treatment 8 (RT8)	Bus bays 	Used to mark edge of bus bays from main carriageway
Regulated Treatment 9 (RT9)	Standard Edge Line – default 	Used to define edge of carriageway on unlighted and heavily trafficked roads where the after dark conditions call for special delineation of the edge of the carriage-way.

Regulated Treatment 10 (RT10)	Special Purpose – where parking prohibited 100mm wide yellow	A continuous yellow line marking 100 mm in width to indicate the length of a Road over which stopping and parking is prohibited.
Unregulated Treatment 2 UT2	Continuity line 1m 3m gap 1m 100 wide	Used to delineate edge of carriageway across side road
Unregulated Treatment 3 UT3	Continuity line 0.6m 0.6m gap 100 wide	Used as an intersection continuity line and median opening continuity line

3.1.2 Dividing Lines (Clause 5.3.2, AS 1742.2)

The treatment to be adopted for dividing lines on two lane two way roads is **RT5** – See Table 1 and Appendix B.



RT5 Dividing Lines

Note, in Fiji special purpose lines are **RT6** are used to warn motorists of an upcoming hazard.

The treatment to be adopted for dividing lines on 4 and 6 lane roads is **RT7** – See Table 1 and Appendix B.



RT7 Treatment

Dividing lines should be used:

- On urban arterial roads and rural roads with sealed width of 5.5 m or more, where traffic volumes exceed the following:
    - arterial urban roads: 2500 AADT
    - rural roads: 300 AADT

The above is subject to:

- Sealed pavements less than 6.2 m wide should only have dividing lines if the shoulders have adequate width and strength to cope with the higher shoulder usage that might be expected as a consequence of a dividing line.
- Where there is evidence of high pedestrian usage and a need to help separate pedestrians from traffic.
- At bridges less than 5.5 m between kerbs, the dividing line is discontinued 20 m to 30 m from each abutment (AS 1742.2:2009, Clause 4.6.2.2).
- The practicality of maintaining pavement markings on short isolated lengths of rural roads remote from other markings should be considered.

3.1.3 Barrier Lines (Clause 5.3.3, AS 1742.2)

The treatments to be adopted for barrier lines on two lane two way roads are **RT4a and 4b** – See Table 1 and Appendix B.



Typical RT4a Treatment

An example of a double barrier line is also provided in Appendix A – A1.

Note – In Fiji RT6 type line (4m x 2m) are used as an advanced warning to barrier lines (7 bars to be provided). See also Appendix A – A1.



Standard RT5 Line with Special Purpose RT6 line before barrier line

For guidance on the use of lane lines, refer AS 1742.2, Clause 5.3.3

A 150 mm wide single barrier (**UT1** – Table 1) line may be used in the following situations:

- On long lengths of winding road in hilly or mountainous terrain where speeds are relatively low, and which would otherwise require double barrier lines.

- At isolated curves and crests on narrow rural roads not meeting the dividing line width guideline (Clause 5.3.2 of AS 1742.2:2009), but where barrier lines would be warranted on sight distance criteria, and shoulders are of an adequate standard.
- Where the demand for gaps in double barrier lines (for property access) would otherwise destroy the integrity of the double barrier line. As a guide, this applies if there are more than 10 breaks in a 500 m length of road.
- Urban locations where a double barrier line is required but is not practical because of the frequency of driveways.

3.1.4 Lane Lines (Clause 5.3.4, AS 1742.2)

For details concerning lane lines refer to Clause 5.3.4 of AS 1742.2.

The treatment to be adopted for lane lines is **RT5** – See Table 1 and Appendix B.



RT5 Lane Lines

Lane lines separate traffic flows travelling in the same direction. The colour of the lines is white unless otherwise noted.

Urban two-way roadways with a continuous width of 12.5 m or greater should be lane lined, or may be marked with parking lanes where appropriate.

Standard continuous lane lines are used in the following situations:

Table 2 Continuous Lane Line

Usage	Notes
To separate lanes on approaches to traffic signals and stop/give-way/roundabout holding lines (RT9)	The normal length of these lines is 30m for traffic signals and 15m for Stop/Give Way signs
To separate a through lane and an auxiliary (acceleration, deceleration or turning) lane (UT2)	To avoid continuous lane lines which unnecessarily or inappropriately prevent lane changing, alternative lane lines may be used - refer to e) below

A continuity line **(UT2)** is used across the lead-in tapers as described in Clause 5.3.6 of AS 1742.2:2009 – see Figure 2 & 3

For turning lanes that are particularly short or long, a continuous lane line may be too restrictive and a balance may be required between the lengths of continuous lane line and continuity line. See Figure 2 below.

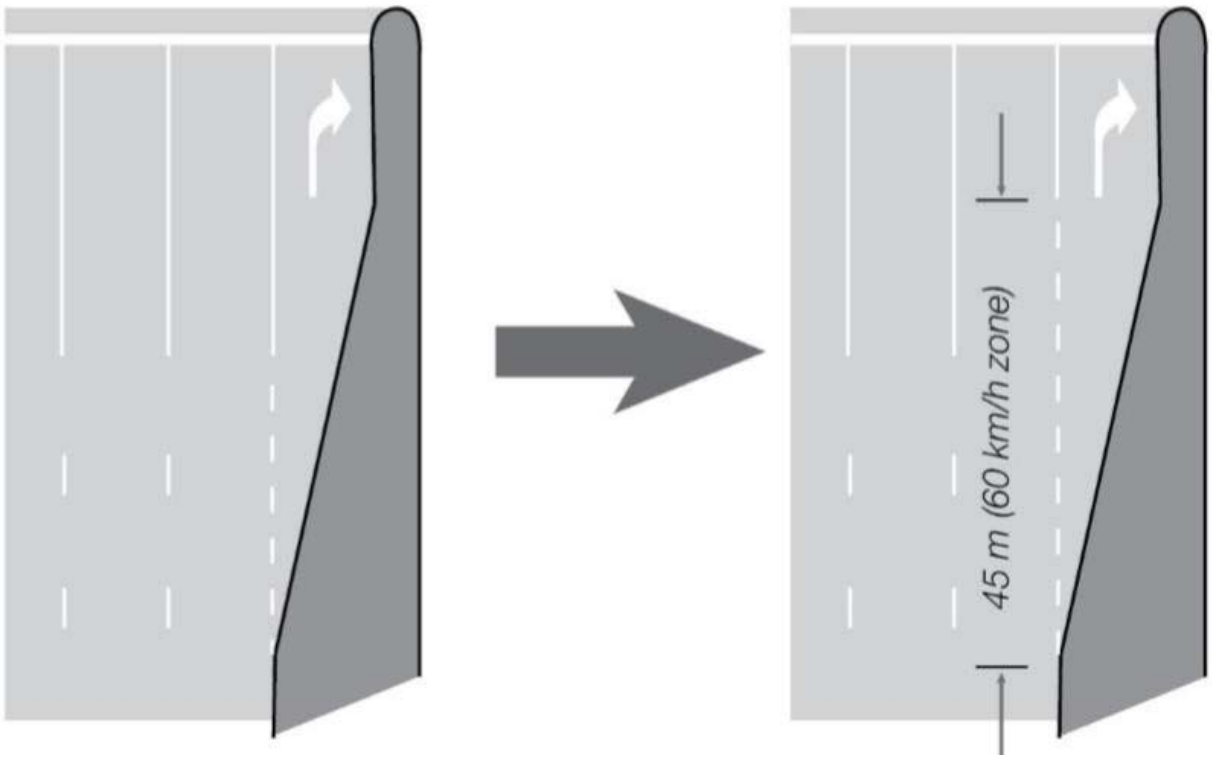


Figure 2
Short turning lanes - minimum continuity line provided, continuous lane line shortened

Note: Refer to Clause 5.5.2 of AS 1742.2:2009 for arrow pavement marking locations.

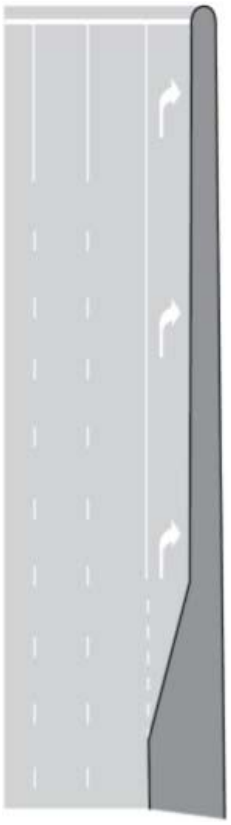


Figure 3
Long turning lanes

Note: Refer to Clause 5.5.2 of AS 1742.2:2009 for arrow pavement marking locations.

3.1.5 Edge lines (Clause 5.3.5, AS 1742.2)

For details concerning edge lines refer to Clause 5.3.5 of AS 1742.2.

Table 3 and the information below provide further guidance on the use of edge lines in Fiji.

Table 3: Overview of edge lines

Patterns and Dimensions	Usage
100mm **wide**	Normal Use to define the edge of the carriageway - **RT8**
150mm wide	Special uses lanes **(UT1)**
100mm wide	Yellow edge line may be used to ban parking **(RT10)**



Typical rural edge line

Edge lines should not be painted on a two-way carriageway unless it has a dividing or barrier line and has a sealed width of at least 6.2 m.

The minimum length of an edge line should be 500 m, and wherever practical, edge lines should be placed on both sides of the carriageway.

Edge lines are placed:

- on all M and S Routes in rural areas
- on C Routes with a sealed width of at least 6.2 m and with dividing or barrier lines. Edge lines can still be placed when the sealed width is less than 6.2 m wide for small sections (not over 1 km in length}, provided that the sealed width is not less than 5.9 m.

Gaps should be left in edge lines at all intersections with minor roads which have no controlled intersection markings. A standard continuity line may be placed across the gap if delineation is required, or to continue a bicycle lane through the intersection.

Edge lines may be placed on roads additional to those above in accordance with the following guidelines:

- Other rural roads:
    - AADT 2000 or greater
    - AADT 1000 or greater, and the average annual rainfall exceeds 1000 mm, or where the road is subject to fog or wet days of appreciably greater than average frequency
    - truck volumes of 200 vpd or greater.
- Urban arterial roads:
    - unkerbed roads carrying at least 2500 vpd
    - roads in unlit or poorly lit areas where there is a kerb immediately adjacent to the running lane, and there is a need for extra delineation
    - kerbed arterial roads where the edge of the running lane is more than 1 metre from the kerb.

A continuous yellow edge line (RT10) is a regulatory line which can be used to ban stopping and parking as an alternative to No Stopping. This rule applies to yellow edge lines marked adjacent to kerbs, or at the edge of traffic lanes.



RT10 Parking Line

3.1.6 Continuity Lines (Clause 5.3.6, AS 1742.2)

For details concerning continuity lines refer to Clause 5.3.6 of AS 1742.2.

Table 4 and the information below provide guidance on the use of continuity lines in Fiji.

Table 4: Continuity Lines used in Fiji

Patterns and Dimensions	Usage
1m 1m - - - - - 3m gap, 100mm wide	Unregulated Continuity Line (UT2)
0.6m line - - - - - - - - - - - - - - - 0.6m gap, 100mm wide	Intersection continuity line and median opening continuity line (UT3)
1m 1m gap	Regulated Continuity Line (RT8)

Continuity lanes may be provided:

- To separate traffic lane from full time parking lane or bicycle lane (RT8) – (Parking lane - refer to AS 1742.11; Bicycle lane - refer to AS 1742.9)



- To separate a bus bay from a through lane (RT8). See Appendix A, A9 and A10.



- Across stop and give way controlled intersections with edge lines on the main road (UT2). See also Appendix A, A2 and A4.
- Across the entry taper of right and left turn lanes (RT8)
- At a mid block lane drop on urban roads at the end of added lane treatments (RT8)
- Where there is a need to define the edge of a through carriageway or lane at a point where some traffic may turn or diverge across it, and no other markings, such as intersection or median opening continuity type lines, are provided (UT2)
- To define short sections of two-way median turn lanes, and across local street openings where two - way median turn lanes are installed (RT8)
- at median openings and outer separators (UT3);

- across high entry angle left turn roadways where the opening is less than 50 m in length (UT3),

These markings are installed to provide continuity of the driving line for the through traffic as an extension of the kerb line. This is particularly important in the case of wide or flared intersections, and those on the outside of curves.

3.2 Transverse Lines (Clause 5.4, AS 1742.2)

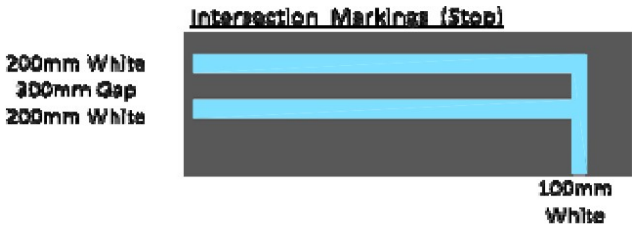
3.2.1 General (Clause 5.4 1, AS 1742.2)

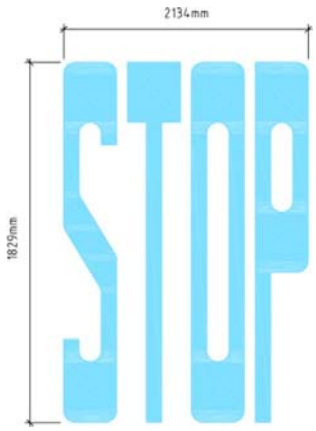
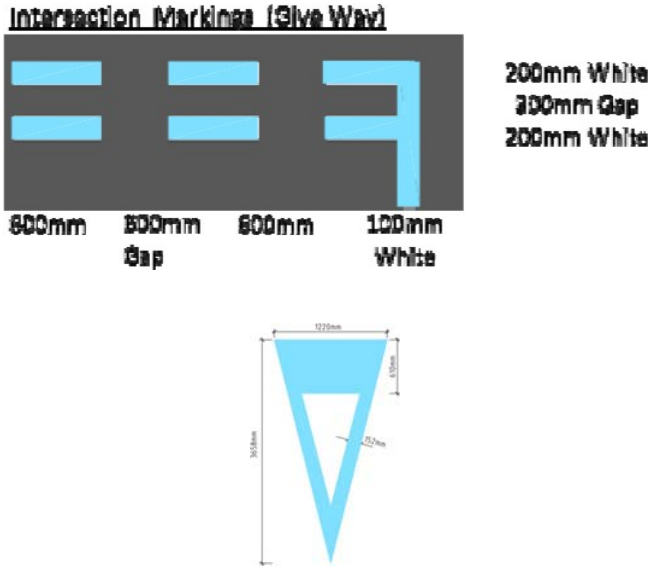
Where a sign or linemarking are required to be installed and it is possible to do so, both a sign and linemarking shall be used, as both serve a specific purpose as follows:

- The sign provides better conspicuity under adverse road conditions (i.e. linemarking can be undetectable in dark and/or wet conditions). The sign is retroreflective and can be seen from a greater distance,
- The linemarking provides guidance to the driver on where to stop prior to entering an intersection, and reduces the possibility of inadvertently entering or stopping within the intersection.

As well as gravel roads, an exception to the above is in low speed off-road environments, i.e. car park aisles where markings may be used without signs. In these cases, the erection of signs may be undesirable, or in many cases impractical. Yellow markings may also be considered in an off-road environment if white would not provide sufficient contrast to the pavement colour, i.e. on concrete surfaces.

Table 6: Summary of Transverse lines used in Fiji

Use	Pattern and Dimensions
Transverse line (stop) to indicate position beyond which vehicular traffic must proceed when required to stop by light signals or the police. Also used as holding line Regulated Treatment 1 (RT1)	 300mm
At STOP Sign (stop line) Regulated Treatment 2 (RT2) and Regulated Treatment 12 (RT12)	

	
At GIVE WAY Sign (holding line) Regulated Treatment 3 (RT3) and Regulated Treatment 13 (RT13)	

3.2.2 Give-way lines (Clause 5 4 2, AS 1742.2)

On an intersection approach controlled by a GIVE WAY sign and/or a give-way line. Give way markings are as per **RT3** and **RT13**. Refer Appendix A, A2 and A3

The approach line **(RT9)** is normally 15m long unless there are width or parking restrictions.



3.2.3 Stop lines (Clause 5.4 3, AS 1742.2)

On an intersection approach controlled by a STOP sign (not including at traffic signals or at a railway crossing).. Stop sign markings **RT2** and **RT12**. Refer Appendix A, A4 to A6

The approach line is normally 15m long unless there are width or parking restrictions.



3.2.4 Kerbed carriageways

On kerbed carriageways, give-way and stop lines are generally located so that the leading edge (i.e. the edge nearer the major road) is set 0.5 m behind the line of the lip of kerb. See Appendix A, A3, A5 and A6

Where traffic islands are installed, the leading edge of the stop or give-way line forms a prolongation of the painted outline of the adjacent island, in line with the kerb.

Stop or give-way lines may be set further back from the line of the kerb defining the through carriageway if there is a sound reason to do so, such as large vehicles requiring additional space to turn into a side road. Stop or give-way lines may also be located to suit the geometry of specific intersection layouts.

Where there is a left turn auxiliary lane on the major road, an adjacent continuity line across the entrance into the minor road is marked as a prolongation of the kerb.

At modified or complex intersections, stop or give-way lines may be curved or angled where required to maintain the width and alignment of the major road.

3.2.5 Unkerbed carriageways Two-lane two-way

On unkerbed two-lane two-way roads, the leading edge of a give-way or stop line should be located 0.5m from the edge line or edge of seal if no edge line is provided.

A UT3 continuity line is also provided across the road opening – See Appendix A, A2 and A4.

3.2.6 Holding Line

Where a right turn lane is provided, a holding line (RT1) is also provided to ensure turning vehicles are appropriately positioned. The location of the holding lane shall be checked for turning conflicts, It is normally placed in line with the left side lip of kerb on the intersecting road.



3.2.7 Roundabout Markings

The pattern and dimensions for holding lines at roundabouts are based on Appendix B, treatment 3. Holding lines at roundabouts are installed in accordance with the principles that apply to other intersection types. The leading edge of the holding line forms a prolongation of the kerb and the painted outline of the traffic island on the approach, as illustrated in Figure 9.



Application of general linemarking principles to various roundabouts is illustrated in Figure 10. For roundabouts, no line is marked across the exit from the roundabout, but exit linemarking is installed on multi-lane roundabouts, as illustrated in Figure 10 - see also Clause 5.3.6 of AS 1742.2:2009. It is also essential that pavement arrows be provided on all multi-lane approaches to roundabouts to promote lane discipline within the roundabout in accordance with Clause 5.5.2 of AS 1742.2:2009.

Refer to AS 1742.15:2007 for a typical signing and linemarking arrangement for roundabouts. Provision for cyclists at roundabouts is discussed in detail in the Austroads Guide to Road Design Part 48 Section 5.3 (2011).

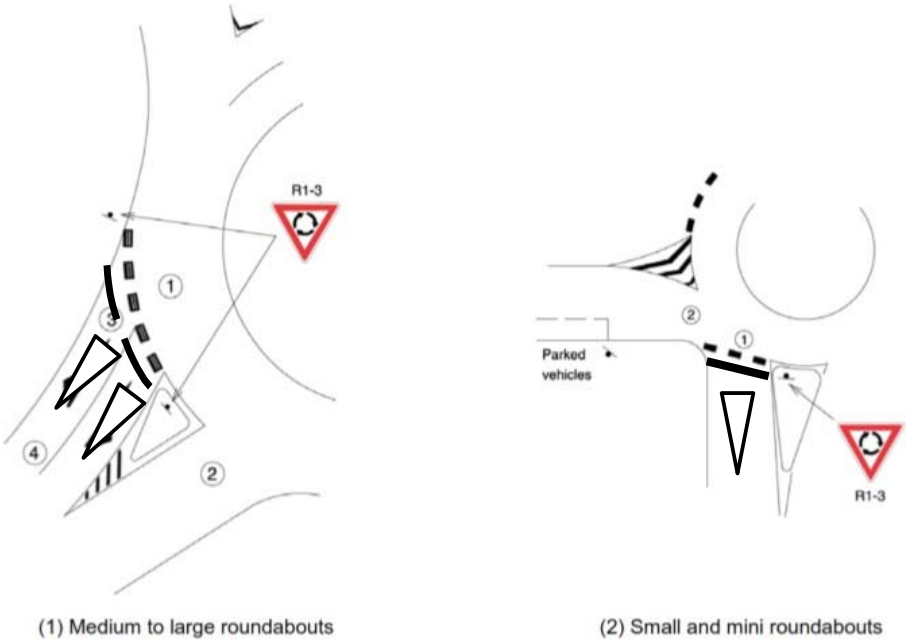


Figure 9: Roundabout holding lines

(2) Small and mini roundabouts

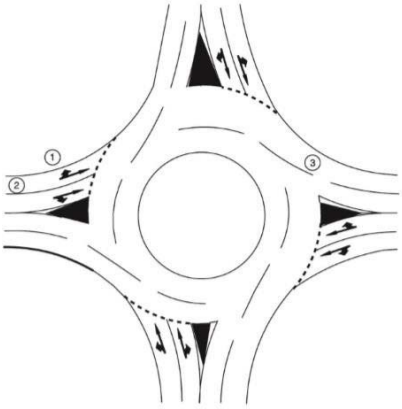
Notes:

1. The holding line curve radius and location shall provide a smooth guiding linefor circulating traffic to follow into the next exit (except where inappropriate at small and mini T-intersectionroundabouts, see Example (2))-

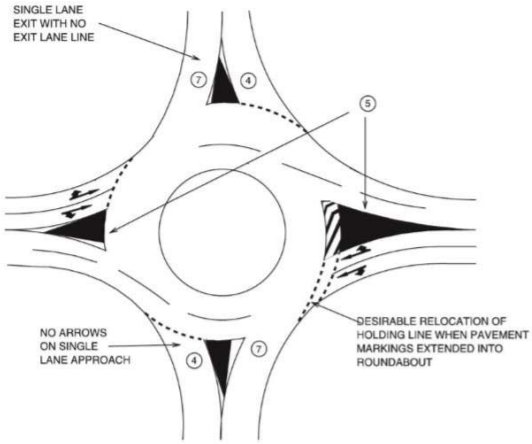
2. Continuity lines are not to be marked across exits.

3. Pavement arrows are installed on all multi-lane approaches, except at T-intersections as shown in Figure 10, Example (7).

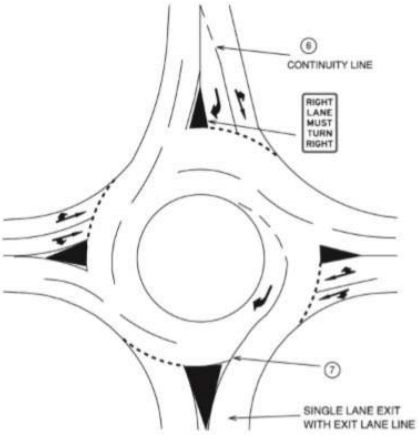
4. Continuous lane lines on approaches are 30 m minimum length and may be extended to beyond the approach curve when necessary for delineation.



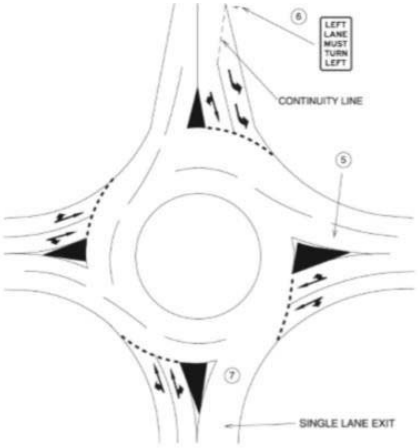
Example (1): Typical multi-lane roundabout showing two-lane approaches and two-lane exit



Example (2): Typical multi-lane roundabout showing two single lane approaches and two single-lane exits

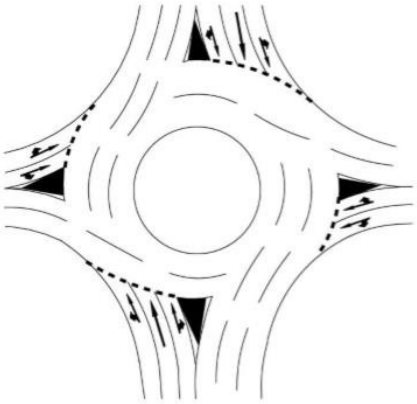


Example (3): Typical multi-lane roundabout showing two approach lanes, one exit lane, and featuring an exclusive right turn lane

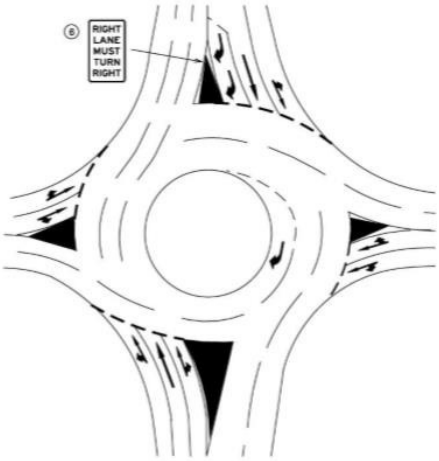


Example (4): Typical multi-lane roundabout showing two approach lanes, one exit lane, and featuring an exclusive left turn lane

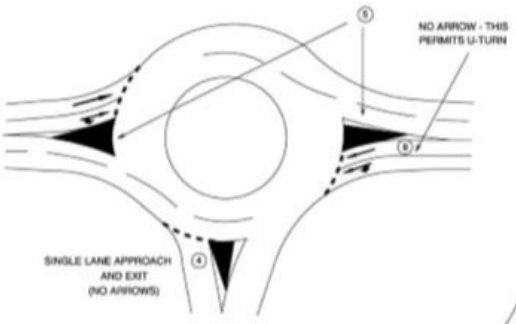
Figure 10: Typical roundabout layouts (schematic diagrams only)



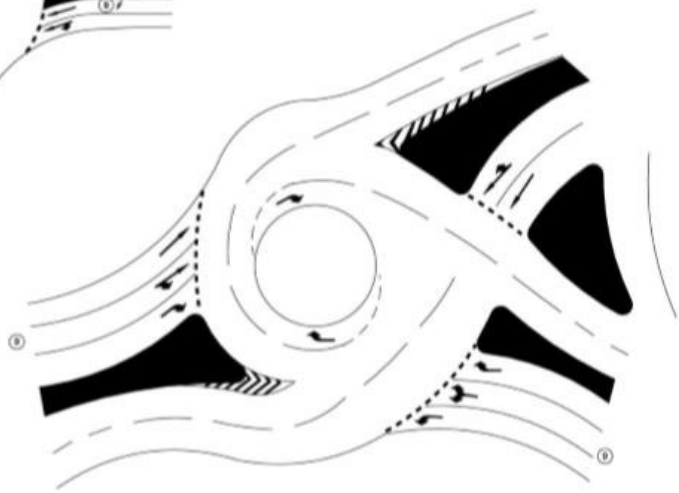
Example (5): Typical multi-lane roundabout showing two 3-lane approaches and two 2-lane approaches



Example (6): Typical multi-lane roundabout showing two 3-lane approaches & two 2-lane approaches featuring an exclusive right turn lane



Example (7): Typical multi-lane roundabout at t-intersection single lane on stem of T



Example (8): Typical multi-lane roundabout featuring spiral markings

Figure 10 (cont.): Typical roundabout layouts (schematic diagrams only)

Notes:

1. Location and number of arrows similar to conventional pavement arrow requirements (refer to Clause 5.5.2.3 of AS 1742.2:2009) with the direction of the arrow for the through movement parallel to the approach lane lines.
2. Use curved lane lines on approaches.
3. Exit lane lines consist of 9 m long continuous lines with 3 m gaps, 100 mm wide. For information on setting out exit lane markings, see Attachment A of this Supplement.
4. Single lane approaches do not need lane arrows.
5. Multi-lane approaches have lane arrows on all lanes
6. On complex layouts, lane diagrammatic signs should be used to promote lane discipline



3.3 Other Markings (Clause 5.5, AS 1742.2)

Note – For Fiji Regulations See Appendix B, Section B4)

3.3.1 Diagonal and chevron markings (Clause 5.5.1, AS 1742.2)

3.3.1.1 General (Clause 5.5.1.1, AS 1742.2)

Diagonal and chevron markings are used to delineate painted traffic islands, medians and separators. They are also used on the approaches to raised islands and other obstructions.

The regulated treatments for chevron markings are provided in Appendix B, Treatments 13 and 14.

Current practice is to use solid rather than broken longitudinal lines and to not require a gap between the transverse and longitudinal lines as shown below.

The spacing between diagonal bars or chevrons is shown below.

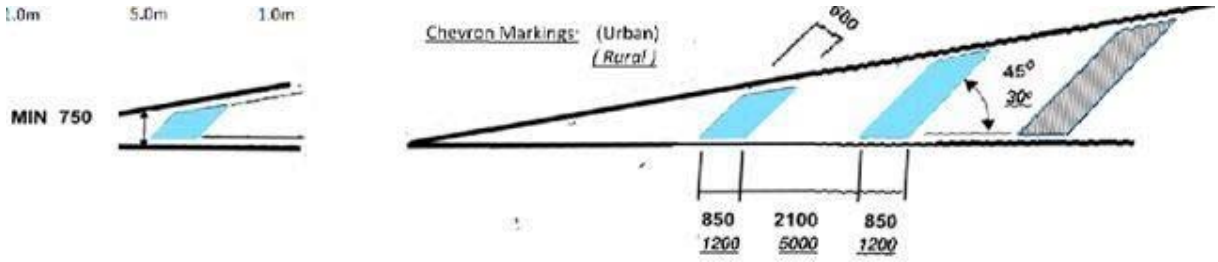


Figure 11 – Chevron Marking





The following diagram shows typical median markings at intersections.

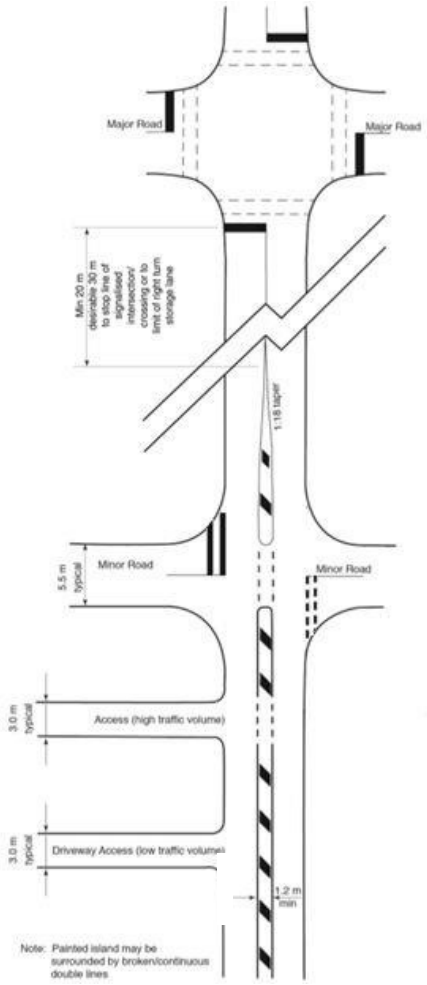


Figure 12: Typical layout for diagonal (flush) median markings at intersections I accesses

3.3.1.2 Median turning lane pavement markings

Pavement markings for median turning lanes are installed in accordance with the following guidelines:

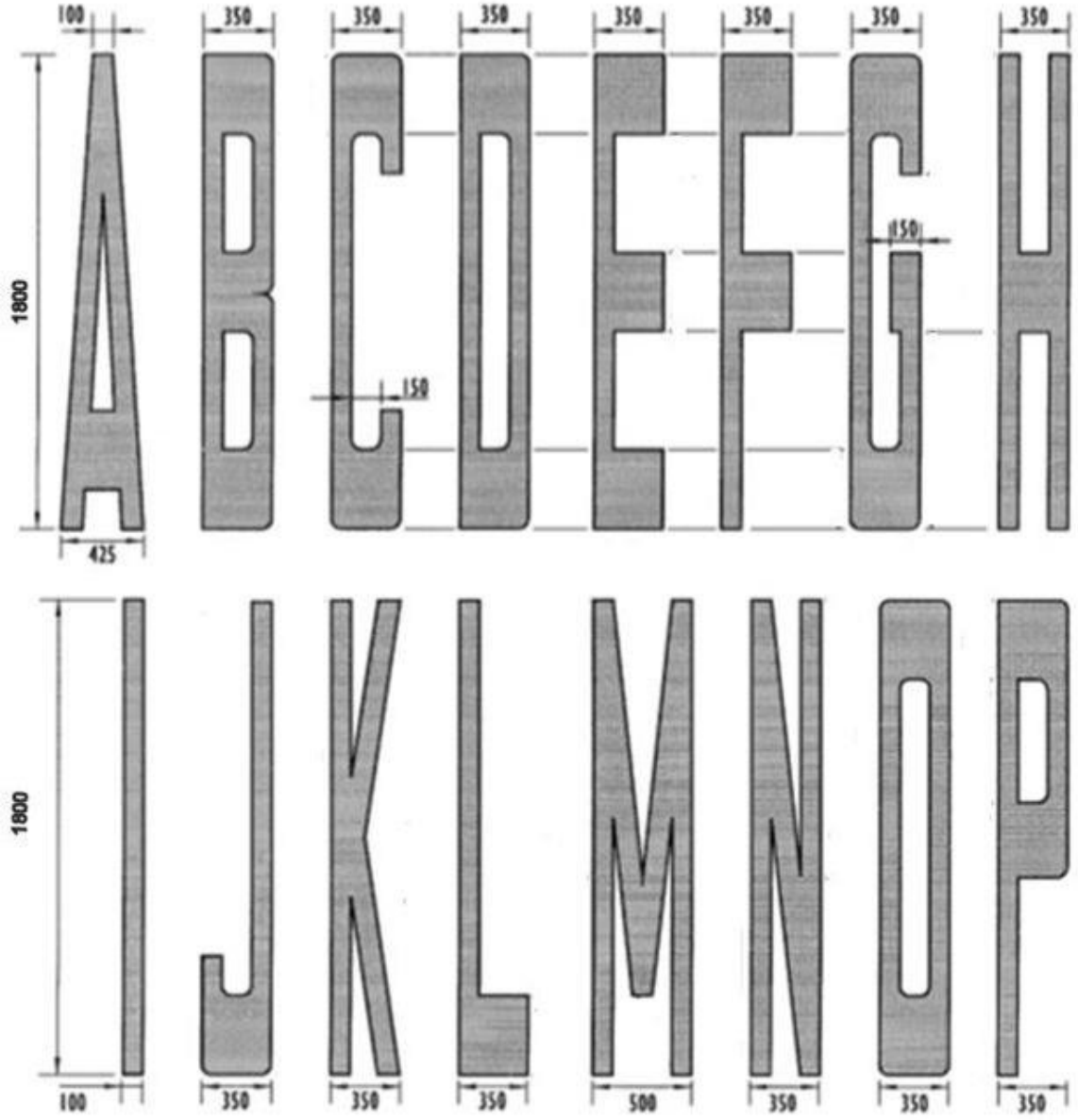
- Median turning lanes should be at least 3.0 m wide.
- Edges of the lane are marked with 100mm lines
- At intersections with local streets, continuous lines are replaced with continuity lines to the prolongation of the local road kerbs.
- Head to head arrow markings are painted:
    - at a nominal spacing of 150 m between arrow pairs (this spacing should be reduced at significant bends/crests if necessary to ensure that motorists can always see at least one pair of arrows)
    - with an initial set of arrows 30 m after the start of the median turning lane
    - no closer than 30 m to a local street intersection
    - at 75% of the normal size of standard turning lane arrows.



Typical treatment at a cross road. Note the provision of the holding line for right turning vehicles.

3.3.2 Messages on pavements (Clause 5.5.2, AS 1742.2)

In special circumstances, approval may be given by the Manager Design 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 with the following which are based on the New Zealand MOTSAM.


100
350
350
350
350
350
350
350
1800
150
150
425
1800
100
350
350
350
500
350
350
350

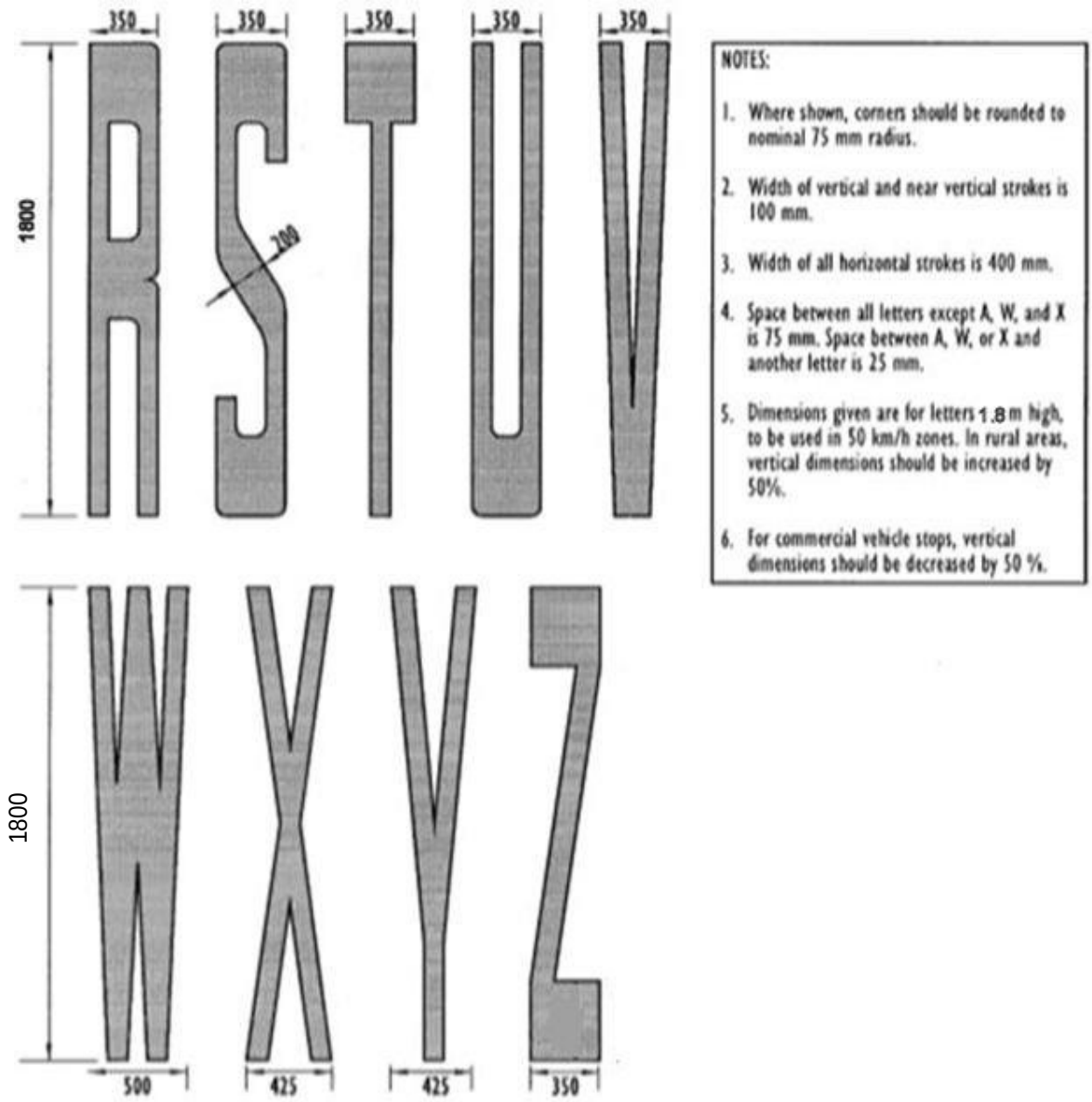


Figure 14 – Letter Symbols

3.3.2.1 Intersection arrows (Clause 5.5.2.3 AS 1742.2)

a) General

Pavement Arrow designs are provided in Appendix B, Treatments 20, 21 and 22.

Pavement arrows should generally be used in the following circumstances:

- On single and two-lane approaches to intersections, arrows are generally used only where there are full-time regulatory restrictions applicable to one or more movements that a driver might otherwise expect to be able to make.
- At signalised intersection approaches having four or more lanes, arrows are placed in all lanes

- At unsignalised intersections, arrows are placed only in the exclusive turning lanes(if any). They are not provided in the through lanes.
- If wrong-way movement into a carriageway is a demonstrated problem, arrows may be painted in all lanes on that approach despite the foregoing.

Pavement arrows shall be installed in accordance with Appendix B, treatments 20 to 22.

b) Principles

In addition to the guidance provided, the following principles shall also be adopted:

Turning lanes

- Where the lane is not controlled by a stop or give-way line and there is no channelisation of the turn, the front arrow is placed 6 m back from the projection of the kerb line of the intersecting road.
- Where the turn is channelised, (i.e. slip lane) the front arrow is placed at the diverge point.
- For continuous lanes which become exclusive turning lanes, the rear arrow should be placed far enough in advance of the turn location so as to be in advance of the normal maximum queue length, but no further than any upstream intersection.
- For continuous lanes which become shared through and turn lanes, but which are not the left-most or right-most lane at the turning point, the rear arrow should be placed far enough in advance of the turn location so as to be in advance of the normal maximum queue length, but no further than any upstream intersection.

Through lanes

- Multiple straight arrows may be used to indicate a lane where a turn which a driver might otherwise expect to be able to make is banned in accordance with full-time regulatory restrictions, or where it would otherwise be permitted.
- Multiple straight arrows may also be used where an intersection approach is sharply curved or on a summit vertical curve in order to provide advance information to drivers.

At Roundabouts

- Arrows are not used at single lane roundabouts.
- On the approach lanes to a multi-lane roundabout, lane arrows are placed 3 m to 6 m back from the give way line.
- A second set of arrows is generally located 25 m in advance of the front set of arrows.
- Additional sets of arrows may be installed, at a spacing of approximately 25 m, where abnormal lane arrangemenst apply and the maximum queues or curves or crests are likely to obscure the second set of arrows.

c) Multi-lane roundabouts

Intersection arrows are painted on multi-lane approaches to roundabouts. Arrows are used in all lanes to ensure that drivers pass through the intersection in the correct lanes, and that conflict due to lane changing is minimised, refer to Clause 5.5.2.3 of AS 1742.2:2009.

d) Signalised intersections with four or more lanes

Intersection arrows are placed in all lanes to ensure that drivers pass through the intersection in the correct lanes, and to make multiple turn lanes (where provided) more clearly defined against the through lanes.

e) Additional arrows

Additional arrows may be considered on approaches to intersections and roundabouts to improve lane discipline if the intersection is hidden beyond a curve or crest, or arrows are obscured by queued traffic.

f) Angled arrows

In special circumstances, through pavement arrows may need to be angled to take into account a skewed road alignment such as:

- where there is a need to differentiate between lanes to be used for a standard left turn and those to be used for a diverge to the left
- where lanes on the approach to a multi-lane roundabout do not "line up" with the appropriate lanes within the roundabout.

(g) Angled Arrows, Appendix B Treatment 22

Treatment 22 is used to warn vehicular traffic approaching a length of road on which are placed longitudinal lines shown as Treatment 4, of the need to keep to the left or nearside of both these lines.

3.3.2.2 Lane Change Pavement Arrows

Lane change pavement arrows should be positioned centrally within the traffic lane and generally not closer than 0.6 m to the edge of the lane.

3.3.2.3 KEEP CLEAR marking

A KEEP CLEAR marking is generally provided to allow emergency vehicles to egress their depot or station.

A KEEP CLEAR marking should only be provided to mitigate safety or traffic congestion issues at an intersection, by facilitating the movement of vehicles into abutting properties where the numbers or size of vehicles may be significant.

When assessing the requirement for a KEEP CLEAR marking, the following aspects need to be considered:

- Where traffic in two lanes is stationary while the far third lane is free flowing, there can be a higher risk of "right turn against through" traffic accidents due to the visibility of drivers being obstructed by the stationary queue of traffic.
- A KEEP CLEAR marking is primarily for the operational and safety benefits of major road traffic. The greatest benefits are where the intersection regularly needs to be kept clear for right turning vehicles from a major road into a side road, generally where there is no dedicated right turn lane on the major road (refer to Figure 15).
- A KEEP CLEAR marking for the benefit of side road traffic entering a major road should only be considered in exceptional circumstances, such as where a reasonable volume of traffic from a side road needs to cross multiple one way traffic lanes on the major road to access a nearby right hand turn lane.

A KEEP CLEAR marking should be marked in each individual lane, as shown in Figure 5.13 of AS 1742.2:2009.

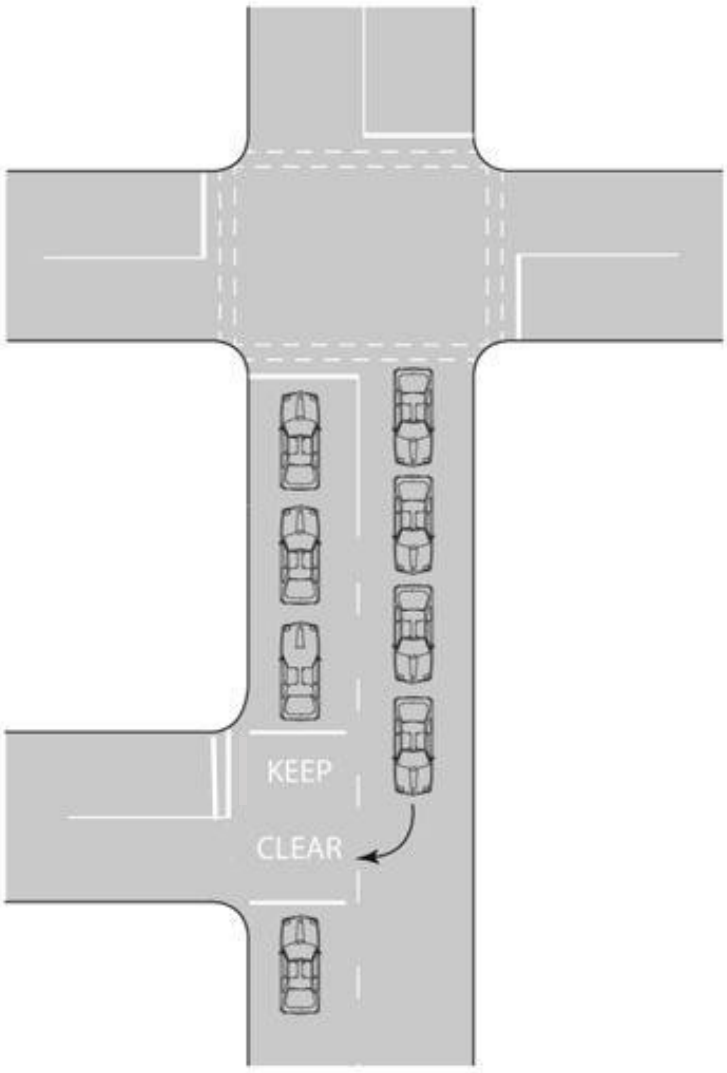


Figure 15: Example location of a "KEEP CLEAR" marking

A KEEP CLEAR marking that does not meet this guideline should be allowed to wear out and should not be reinstated when a road is resurfaced.

3.3.2.4 Bus Stop marking

Bus stop markings shall be in accordance with Appendix A, A9 and A10



3.3.2.5 Pedestrian Crossings

Pedestrian Crossing markings shall be in accordance with Appendix A, A11



Pedestrian Crossing with holding bars

3.3.2.6 Speed Hump marking

Speed hump markings shall be in accordance with Appendix A, A12.



Typical Speed Hump Treatment

3.3.2.7 Threshold Bars – Village Entry

Threshold bars at the approach to villages shall be in accordance with Appendix A, A13.



Village Threshold Bars

3.4 Raised Pavement Markers (Clause 5.6, AS 1742.2)

RRPMs are used to augment painted lines, stripes and chevrons to improve their visual properties.

Requirements for placement of pavement markers are covered in Section 5.6 of AS 1742.2.

4 Pedestrian control and protection (AS 1742.10)

4.1 Childrens Crossings (Section 7, AS 1742.10)

The requirements for Childrens Crossings are provided in Section 7 of AS1742.10.

4.1.1 Children's Crossing, Description (Clause 7.2, AS1742.10)

Figure 3: Children's Crossing – Type 1 The dividing line in Fiji should be at least 10m long.

The Stop line shall be 305 mm wide.

Two parallel cross walk lines shall be installed at all Children's Crossings. These lines shall be in the broken line pattern as outlined in Clause 7.2, AS 1742.10..

5 Traffic Signals (AS 1742.14)

Details for linemarking Traffic Signals are provided in AS 1742.14. The following supplementary information is provided for traffic signals.

5.1 Pavement Markings (Clause 6.2, AS 1742.14)

5.1.1 Stop Lines (Clause 6.2.1, AS 1742.14)

The width of all stop lines at signalised intersections shall be 305 mm in Fiji. This line thickness is consi9stent with current regulations.

5.1.2 Pedestrian Crosswalks (Clause 6.2.2, AS 1742.14)

Pedestrian crosswalk lines in Victoria now use the broken line pattern as described in AS 1742.14:2014 Clause 6.2.2. The following strategy has been adopted to transition to the broken line standard. Where an existing intersection / crossing is being resurfaced, which contains crosswalk lines of the previous continuous line pattern, the guidance below shall be followed:

- If the works involve the removal of the entire crosswalk line, then a crosswalk line in the new broken pattern shall be installed.
- If only a portion of the crosswalk line is removed (e.g. only one of the two lines), then a crosswalk line using the previous continuous line pattern should be installed to match the rest of the existing line.

Pedestrian cross walk lines are located to:

- minimise the pedestrian crossing distances
- be as near as possible to pedestrian desire lines Pedestrian cross walk lines should be as near as possible to the corner to:
- ensure maximum visibility of pedestrians by turning motorists to minimise the distance from the stop line to the point where left turns conflict with the parallel pedestrian movement so that the speed of left turning vehicles at the conflict point is minimised

- minimise the distance from the stop line to the cross walk on the far side of the intersection so that the time for through vehicles to clear the intersection is minimised. The relationship between the stop and pedestrian cross walk lines is shown in Figure 16.

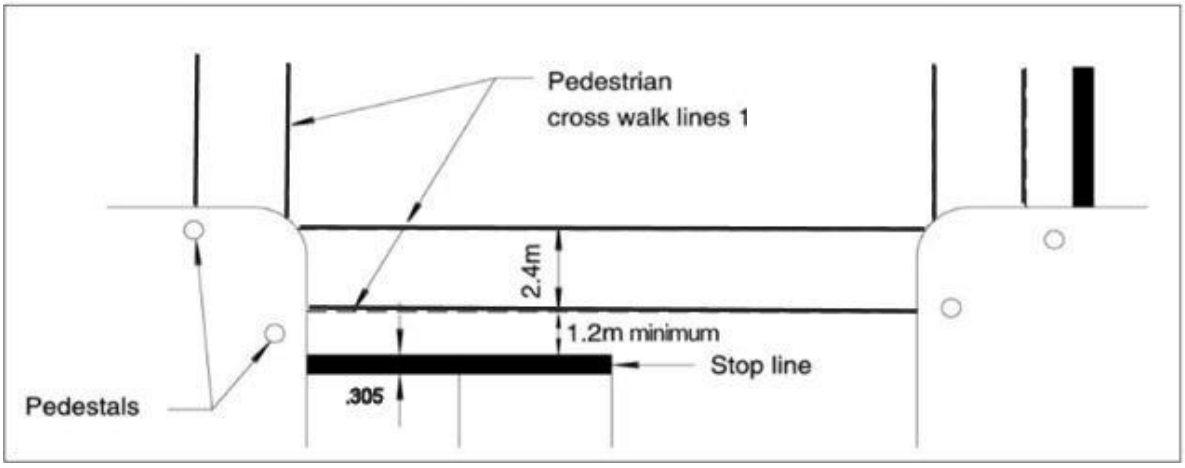


Figure 16: Typical pedestal and linemarking arrangement

Pedestrian crosswalk lines are only used at:

- signalised crossings
- unsignalised school or children's crossings.

They are not used at unsignalised crossings such as at unsignalised left turn slip lanes, or pedestrian refuges to define pedestrian walking paths.

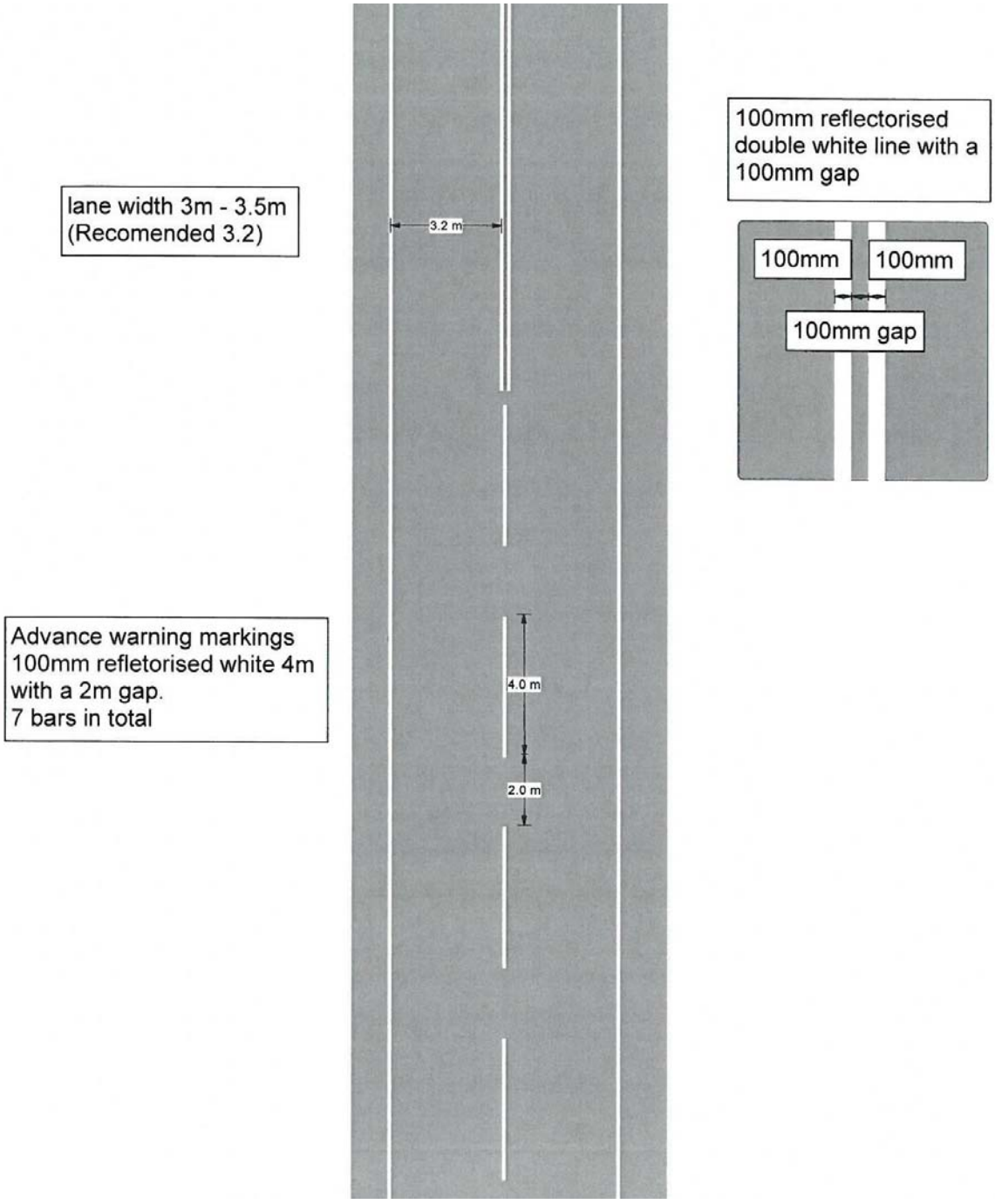
At intersections, the line nearer the intersection should be a minimum of 1.2 m clear of the edge of the cross traffic lane.



APPENDIX A – Linemarking Examples

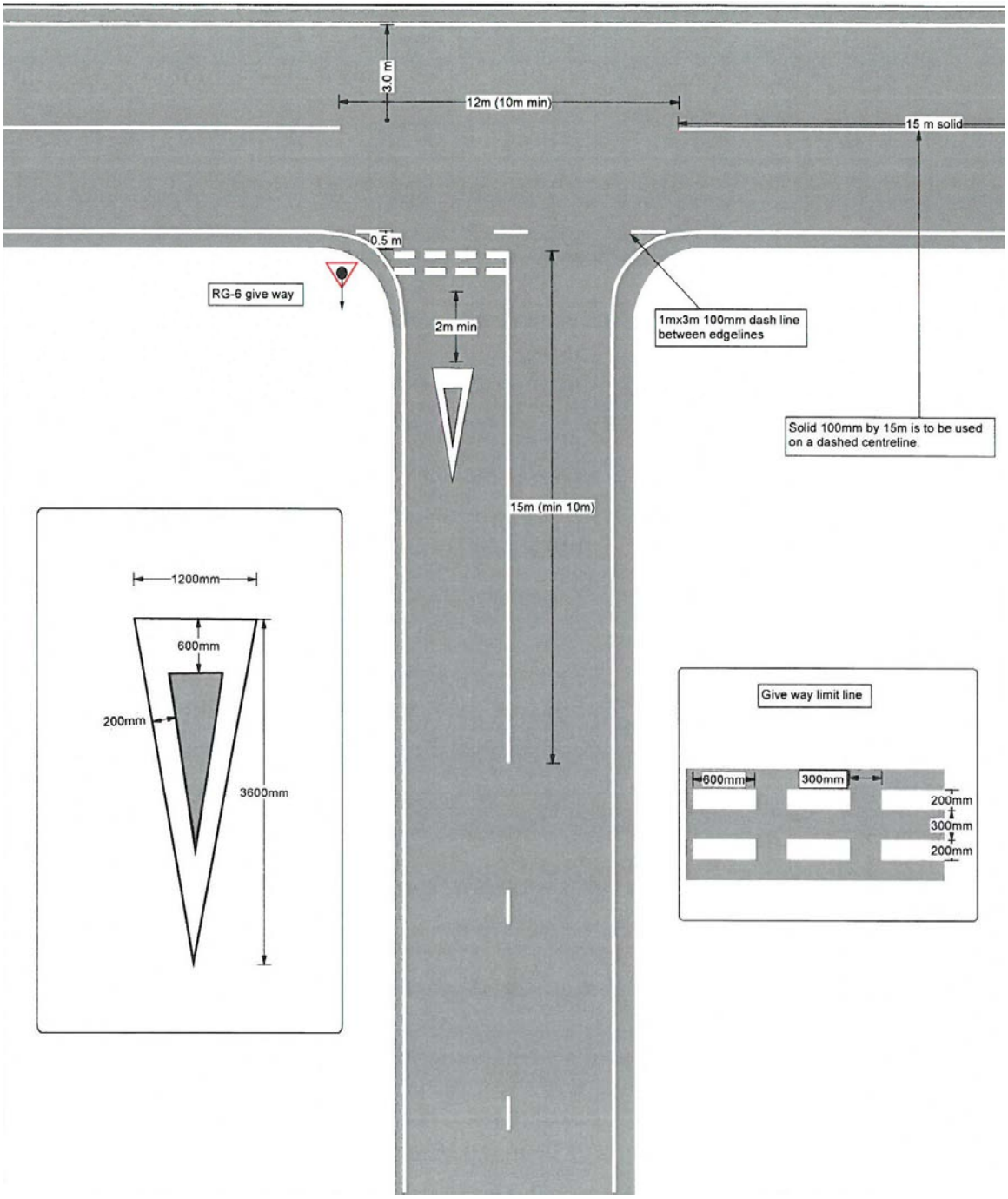
A1 – Centre Line Markings no-overtaking lines

RT4a Line with RT6 approach



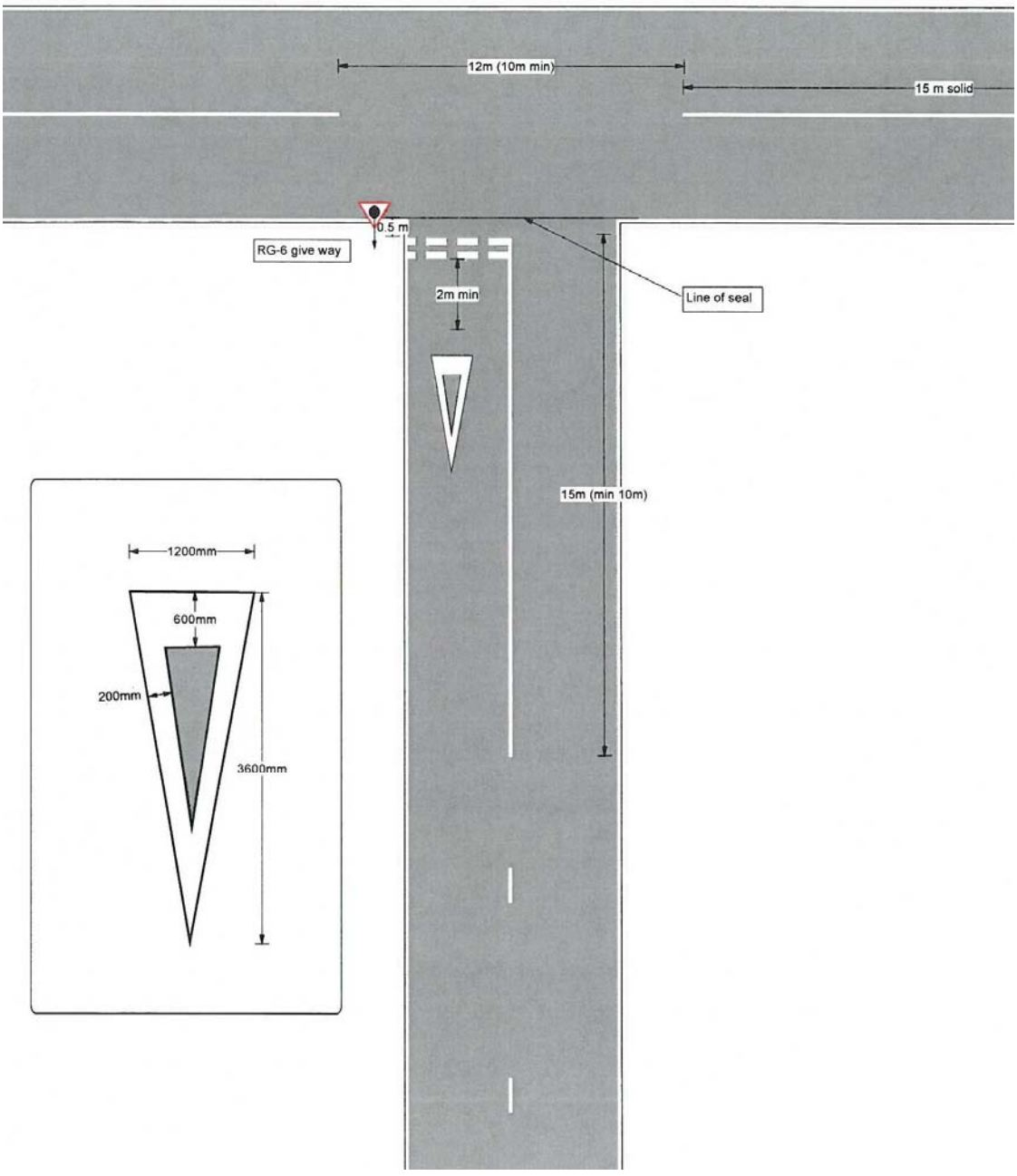
A2 – Give Way Controlled Intersection with Edge Lines

RT3 and RT13 with RT9 approaches and UT2 Continuity Line



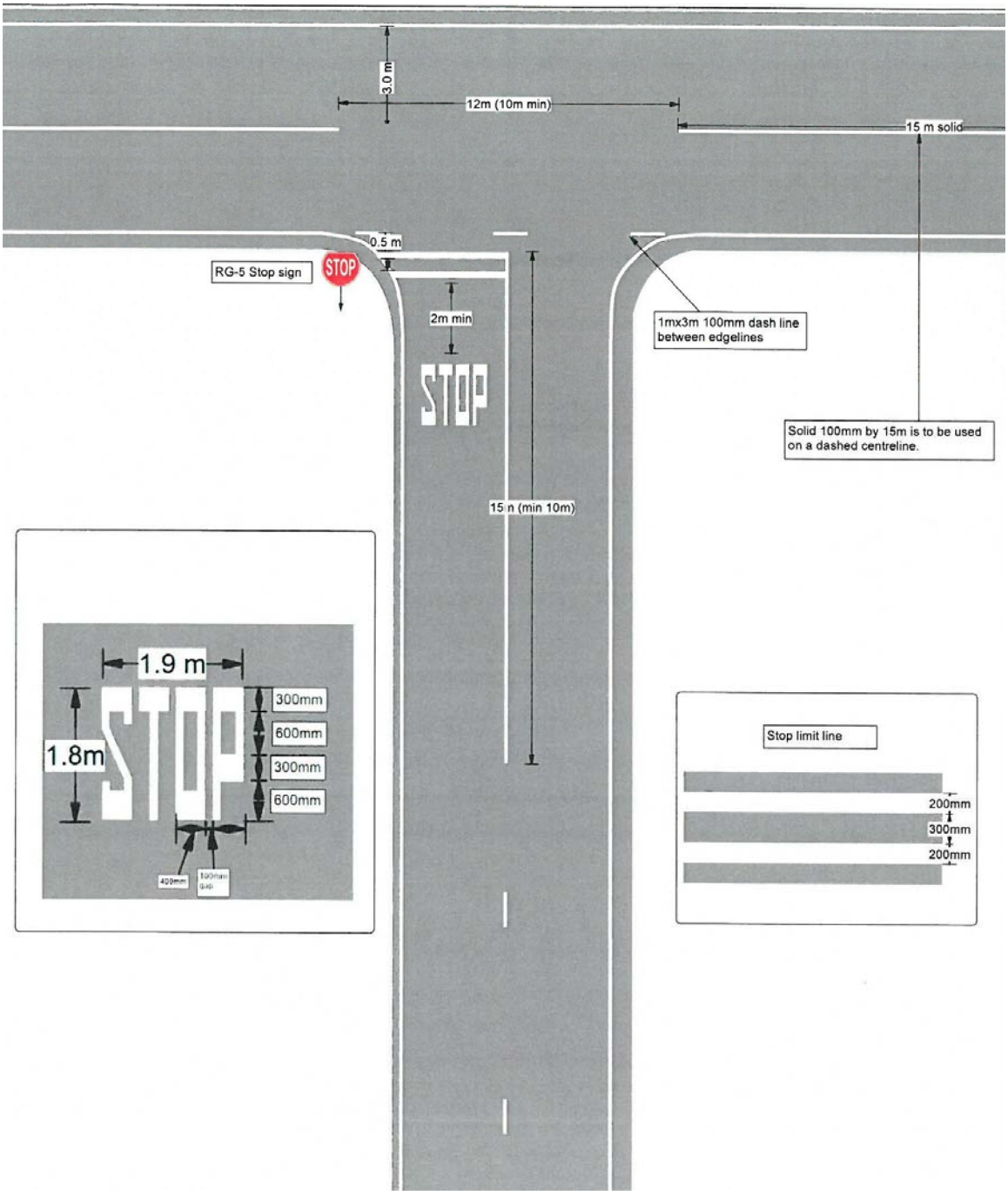
A3 – Give Way Controlled Intersection without Edge Lines

RT3 and RT13 with RT9 approaches



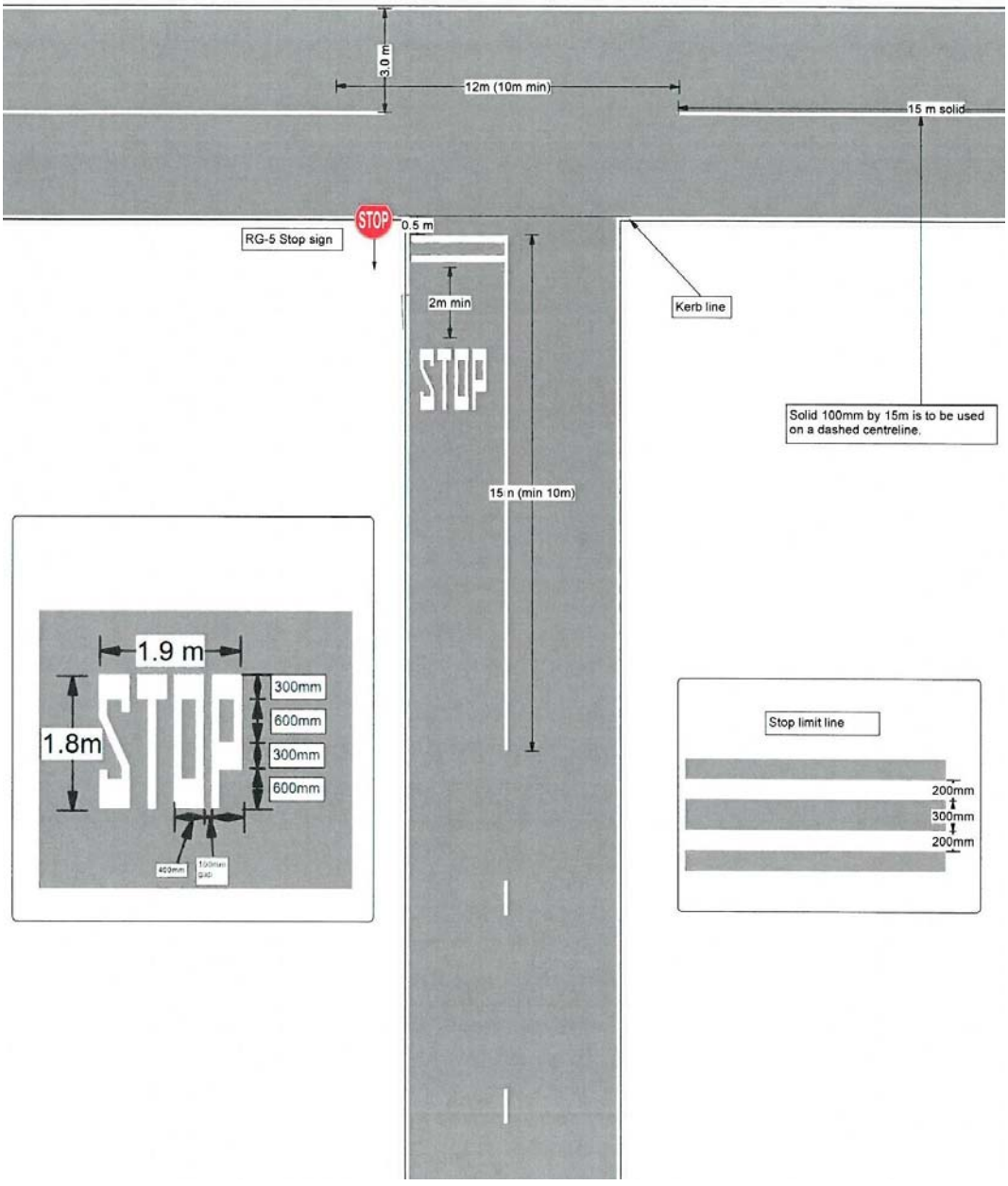
A4 – Stop Controlled Intersection with Edge Lines

RT2 and RT12 with RT9 approaches and UT2 Continuity Line



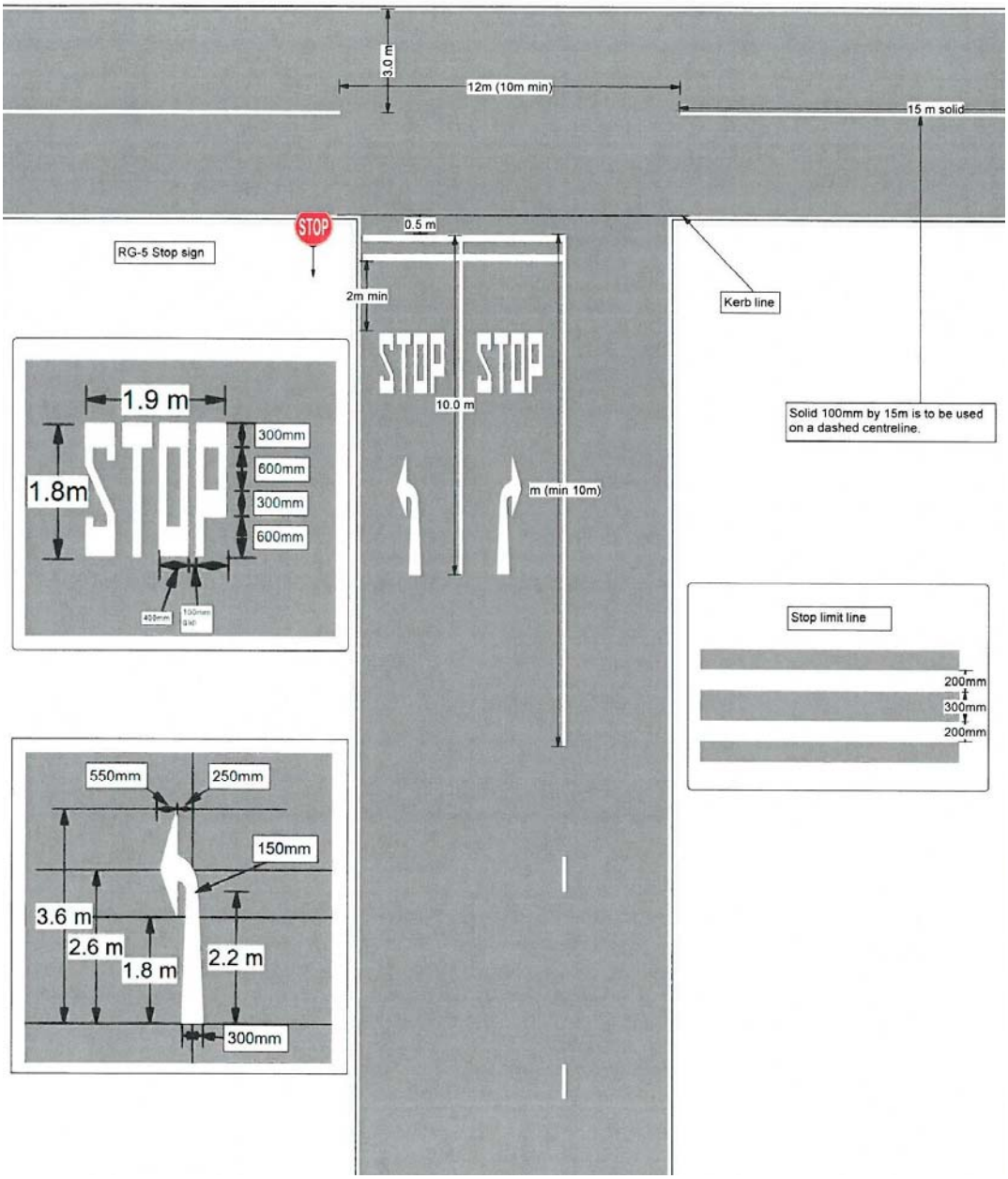
A5 – Stop Controlled Intersection without Edge Lines

RT2 and RT12 with RT9 approaches

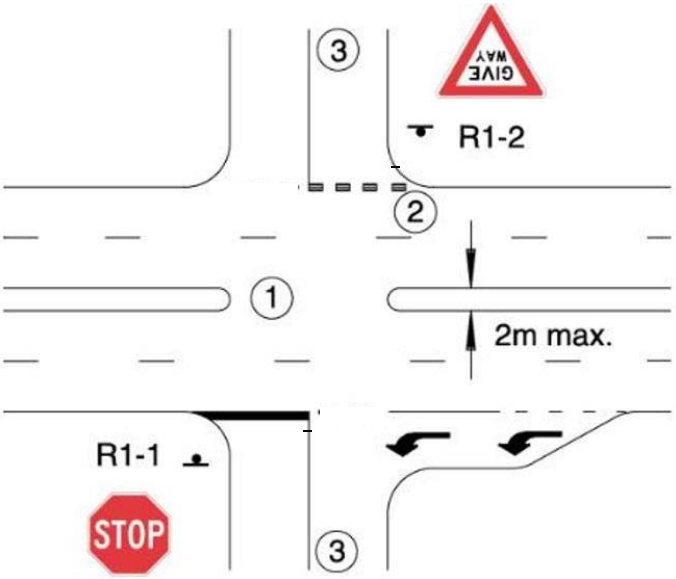


A6 – Stop Controlled Intersection Multi Lane

RT2 and RT12 with RT9 approaches

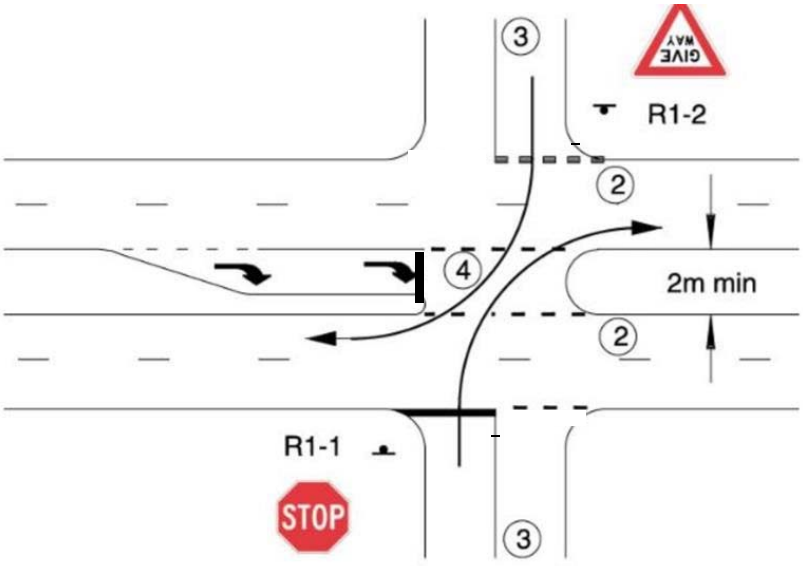


A7 – Stop / Give Way Controlled Intersection Multi Lane with Median

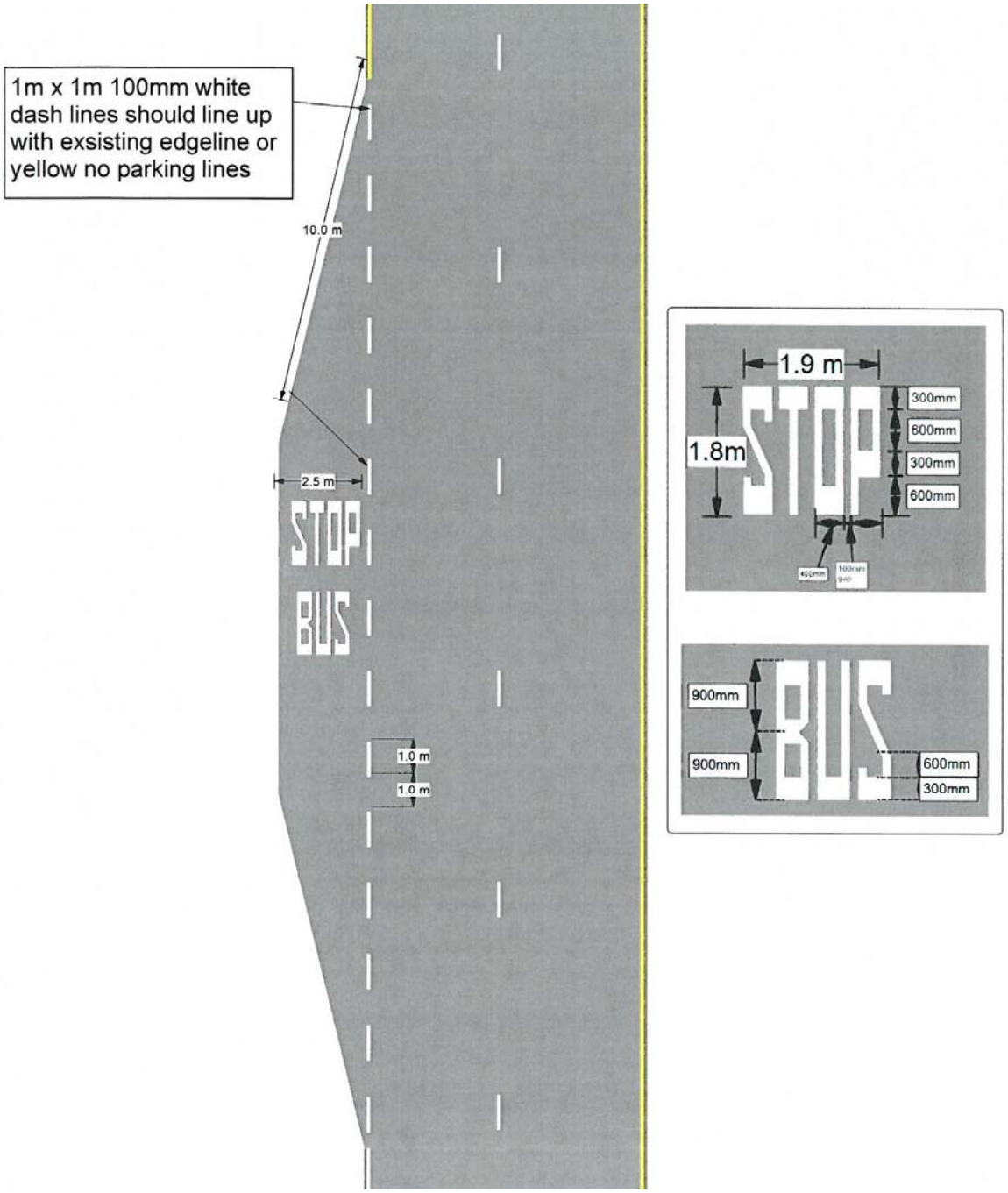


(1) Median up to 2m wide

and Holding Line
A8 – Stop / Give Way Controlled Intersection Multi Lane with Median

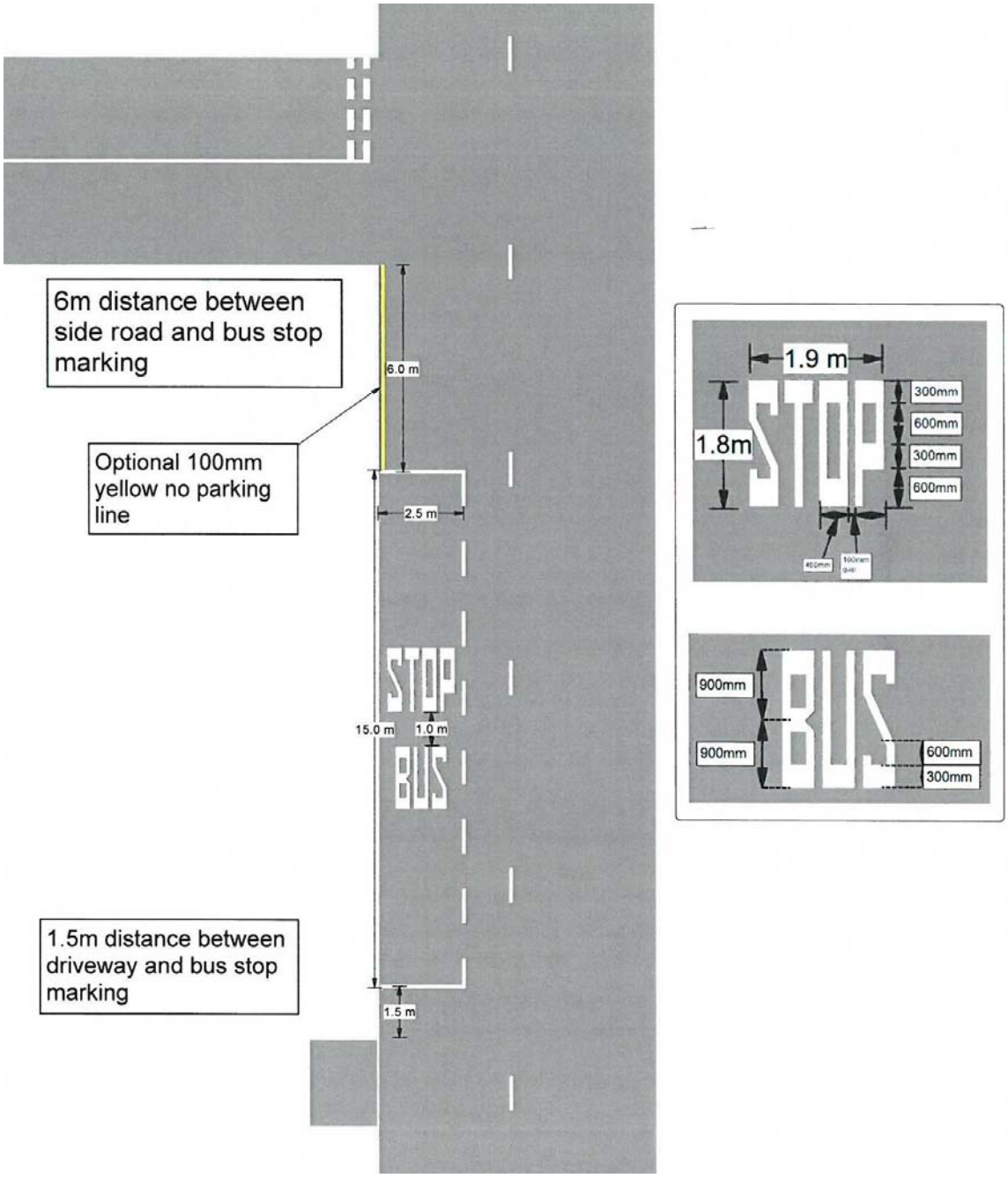


2) Median wider than 2m and diamond turns can be made


1m x 1m 100mm white dash lines should line up with exsisting edgeline or yellow no parking lines
10.0 m
2.5 m
STOP
BUS
1.0 m
1.0 m
1.9 m
1.8m
STOP
300mm
600mm
300mm
600mm
BUS
900mm
900mm
600mm
300mm

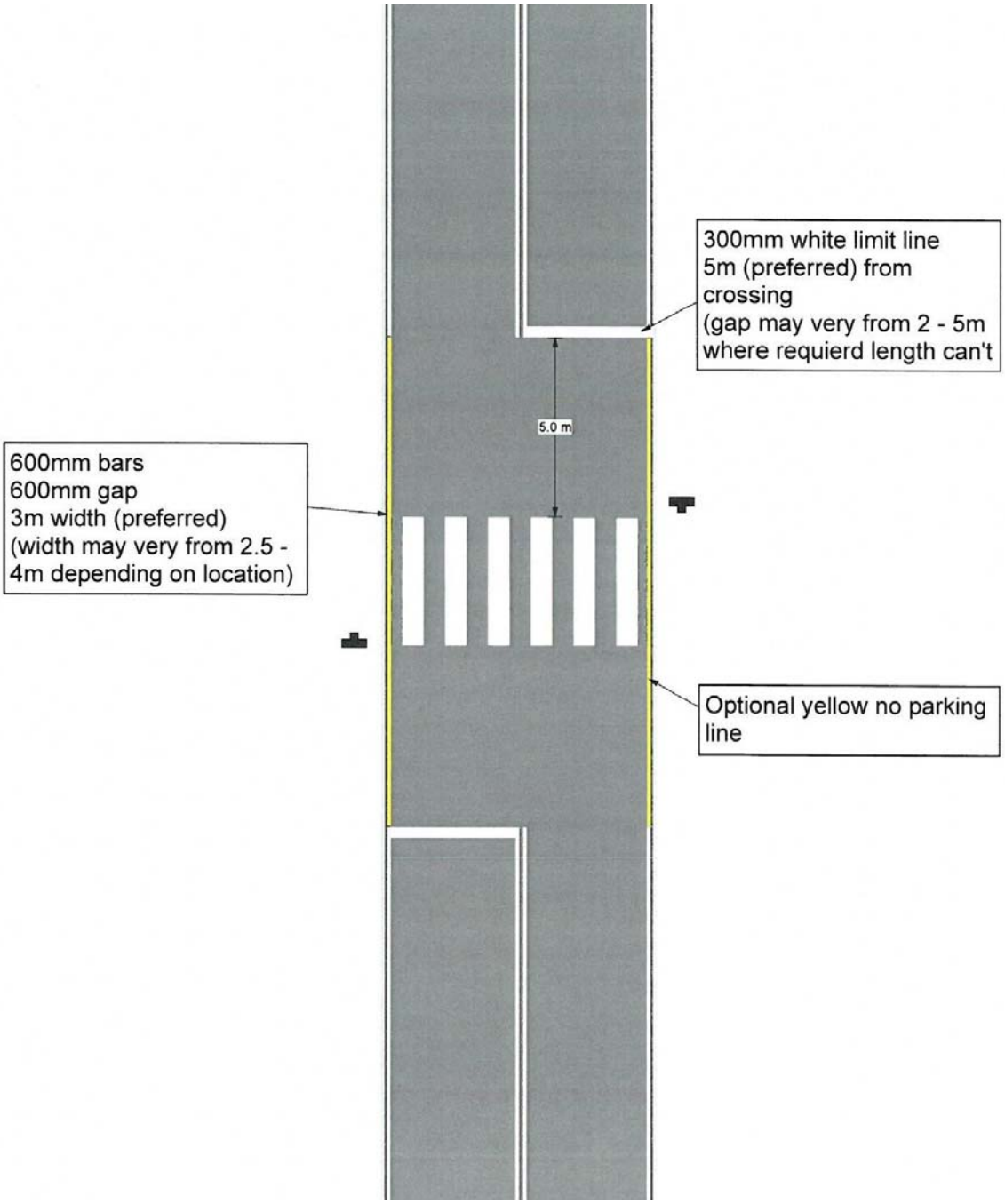
A10 – Bus Stop Marking

RT8 continuity and RT23 Lettering and RT10 Parking Line



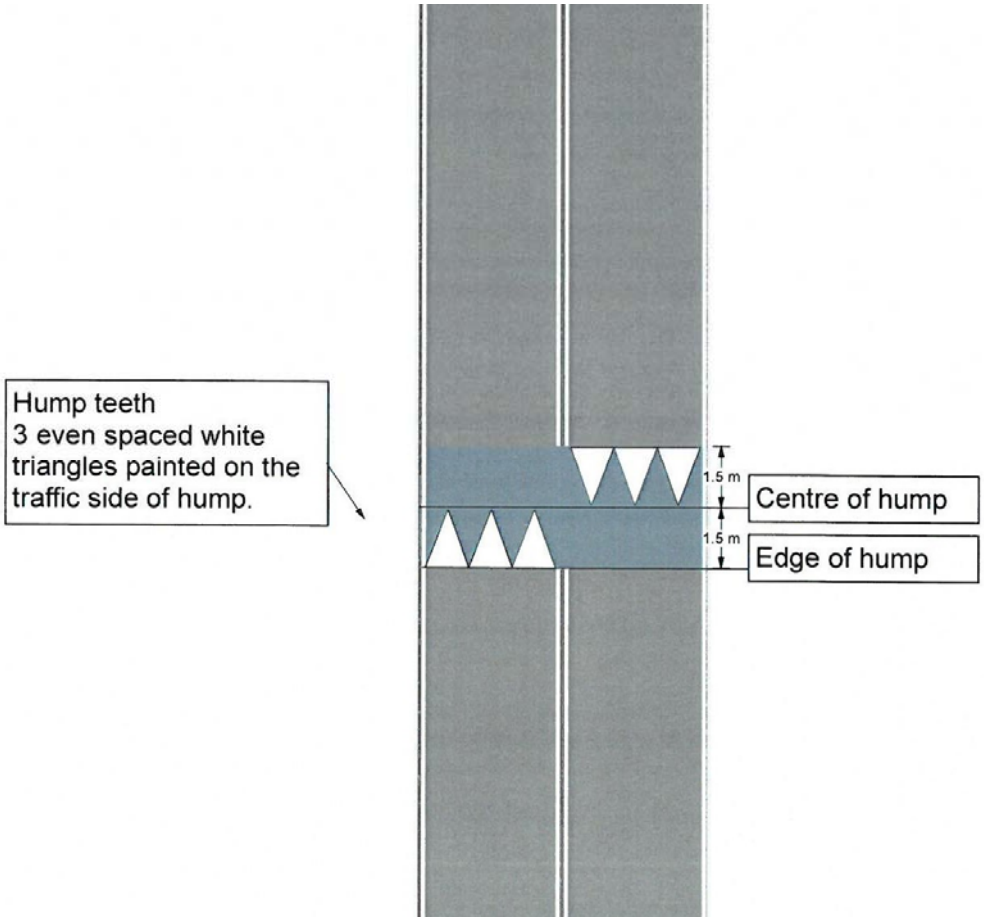
A11 – Controlled Pedestrian Crossing

RT7 Bars and RT1 Holding Line and RT10 Parking Line



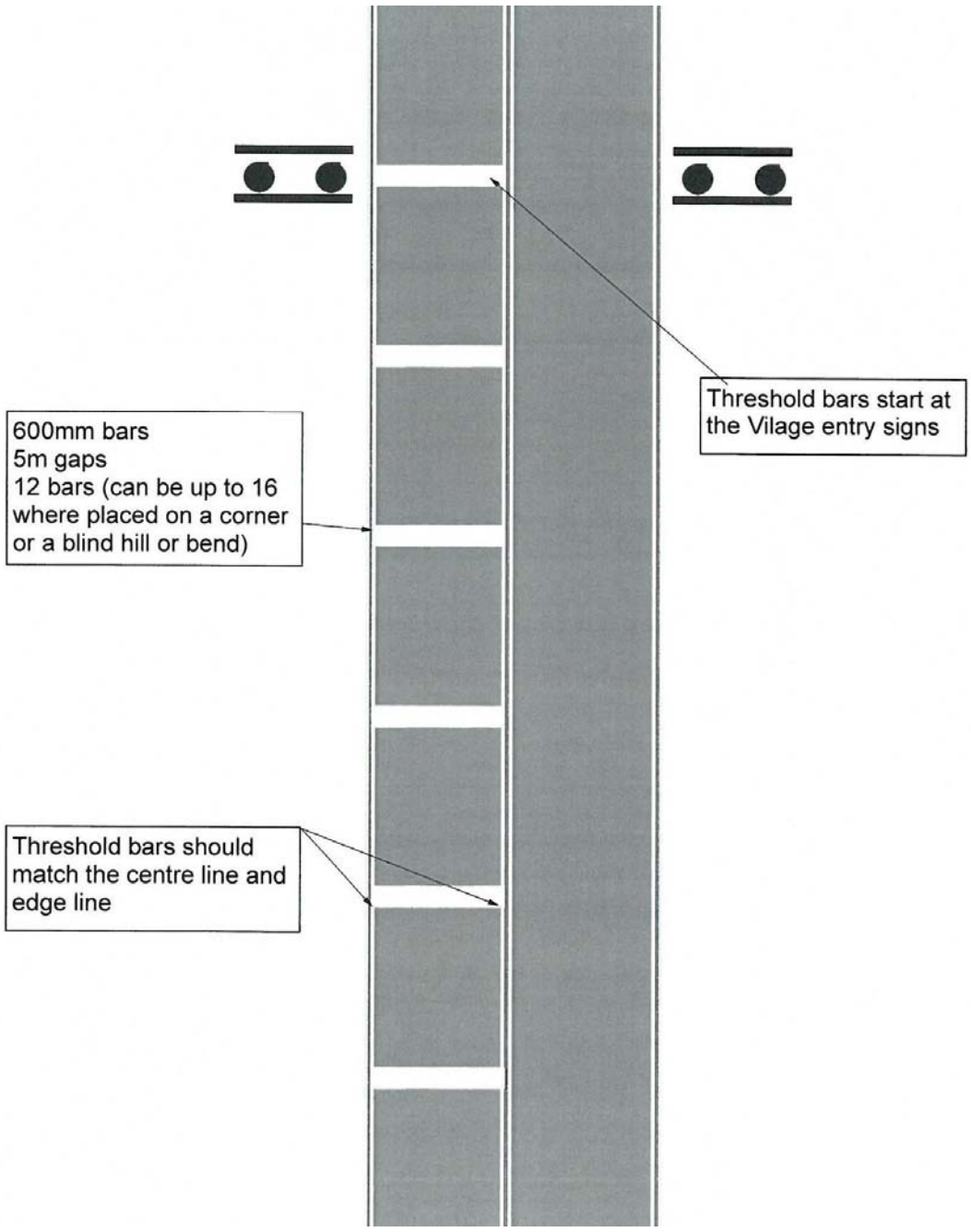
A12 – Speed Humps - Teeth

No regulation



A13 – Threshold Bars, Village Entry

No regulation



APPENDIX B – LAND TRANSPORT REGULATIONS (LAT 13,560)

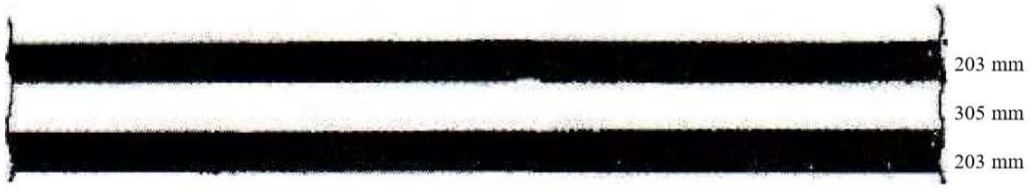
B.1 Transverse Lines

Below is a summary of transverse lines as laid down in LTA Regulations:

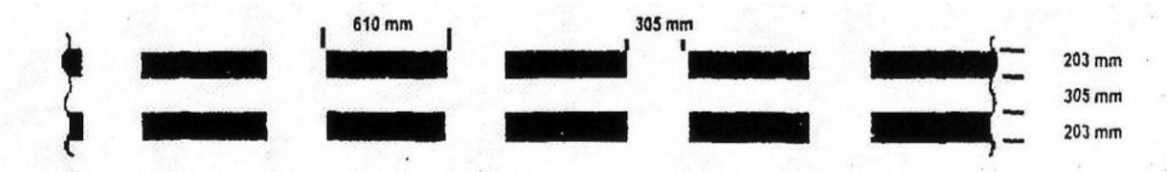
1. Transverse line (stop) to indicate position beyond which vehicular traffic must proceed when required to stop by light signals or the police. Refer Regulation 74(1).



2. Transverse lines (stop) to indicate position beyond which vehicular traffic must proceed when required to stop by Stop Sign (No 2 of Part 1) and as prescribed by regulation 74(4).



3. Transverse lines (give way) to indicate to vehicular traffic the requirements prescribed by regulation 74(2).



B.2 Longitudinal Lines - Standard Lane Separation Lines

Barrier Lines

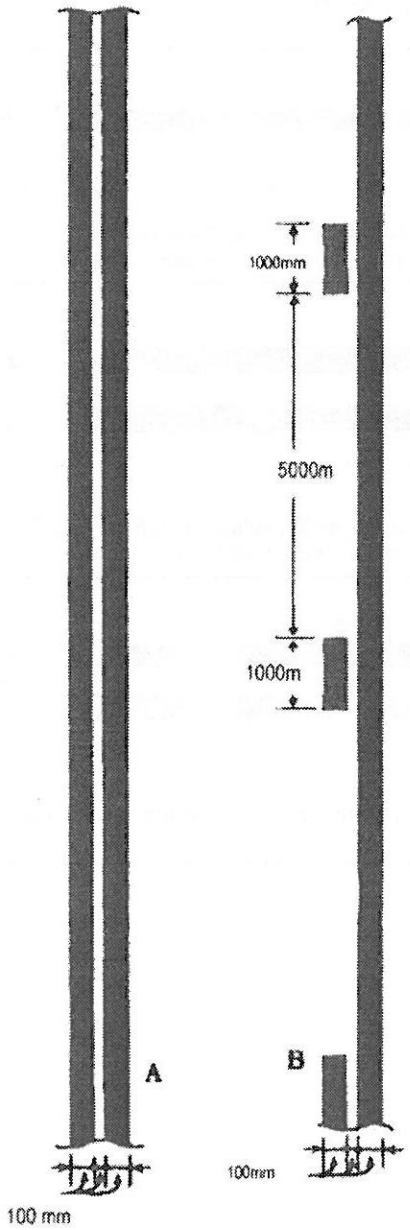
Barrier lines are longitudinal lines to indicate to vehicular carriage-way the requirements and warning prescribed by regulation 72. Two types are regulated:

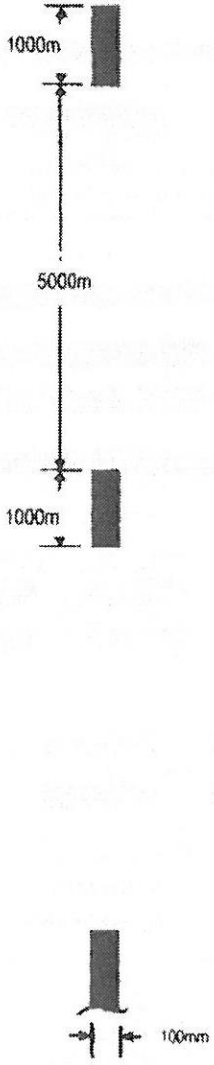
Treatment 4A - No overtaking both directions.

Treatment 4B - No overtaking one direction.

Centre Lines or Lane Lines

Treatment 5 - Longitudinal line to indicate to vehicular traffic centre line of 2 lane carriage-way or lane lines of carriageway with more than 2 lanes





Treatment 4A **Treatment 4B** **Treatment 5**

B.3 Other Longitudinal Lines

Treatment 6 - Warning line to warn vehicular traffic when approaching or negotiating a hazard not to cross or straddle the line unless it is seen by the driver to be safe to do so.

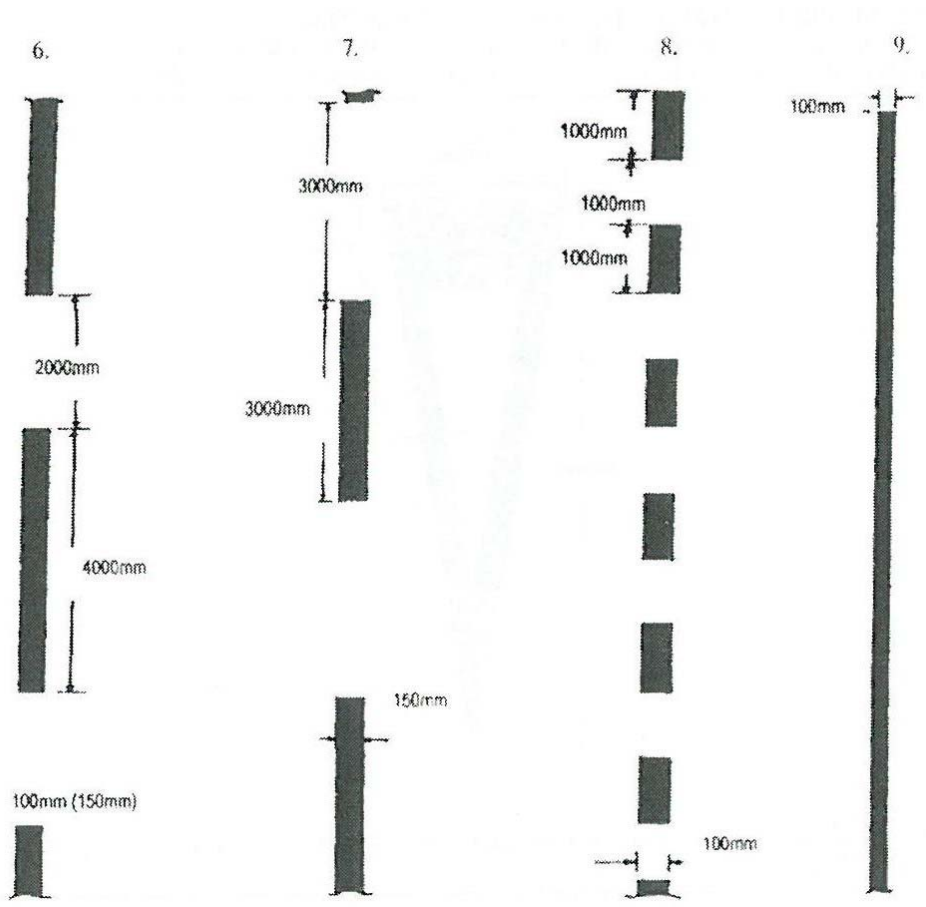
Treatment 7 - Centre line of 4 or 6 lane carriage-way.

Treatment 8 - Edge of carriage-way marking at omnibus bays and lay bys.

Treatment 9 –

(1) Edge of carriage-way marking on unlighted and heavily trafficked roads where the after dark conditions call for special delineation of the edge of the carriage-way; or

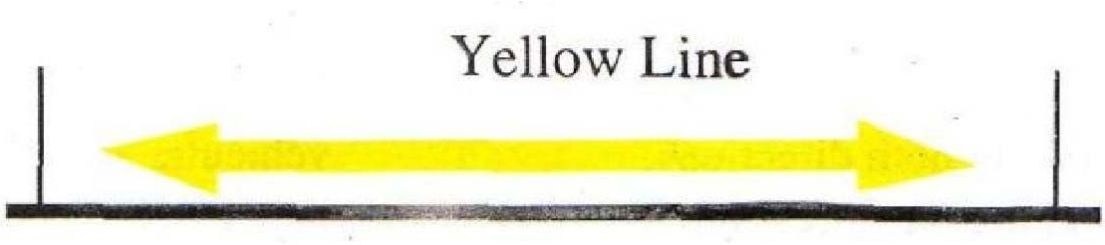
(2) Transverse line to indicate position and limits of a controlled pedestrian crossing.



Treatment 6 **Treatment 7** **Treatment 8** **Treatment 9**

Treatment 10

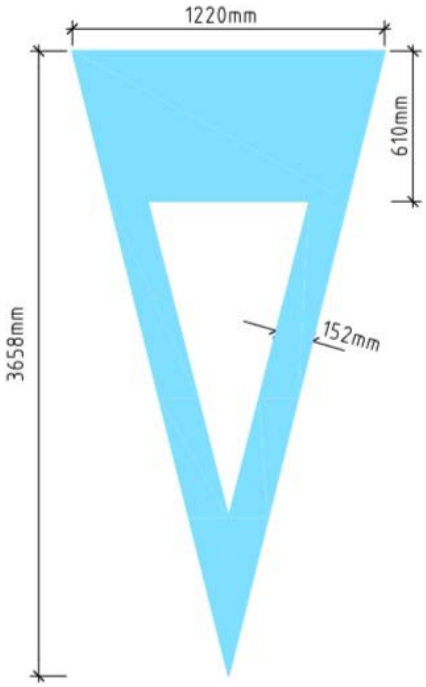
STANDARD ROAD MARKING (PARKING PROHIBITED) "A continuous yellow line marking 100 mm in width to indicate the length of a Road over which stopping and parking is prohibited".

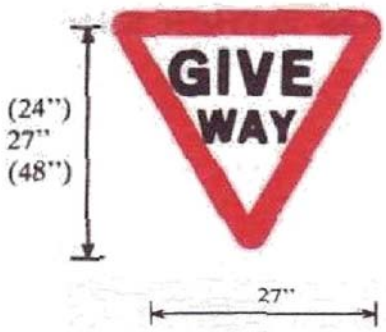


B.4 Other Regulated Treatments

Treatment 11

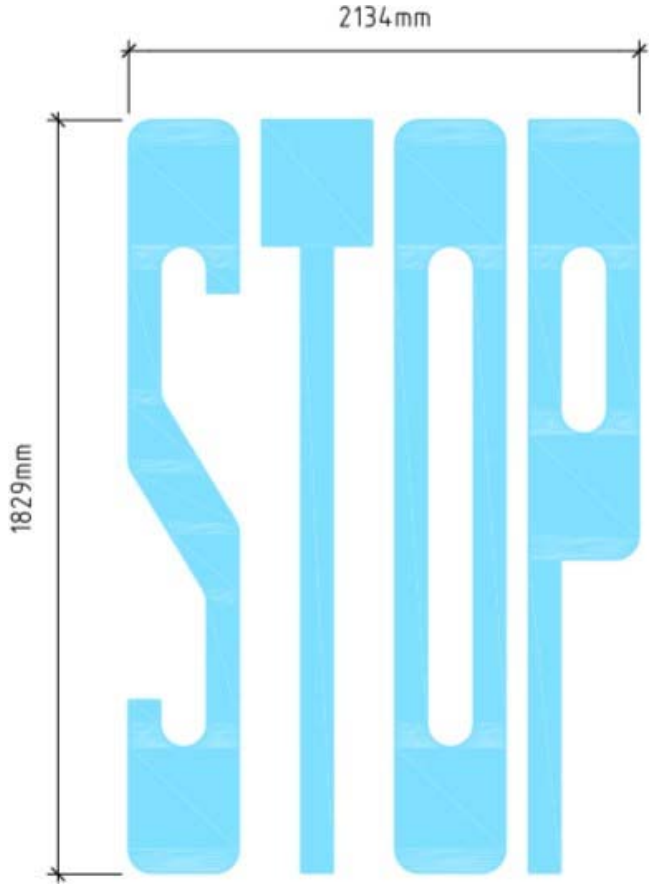
To indicate to vehicular traffic the approach to a road junction at or near which is placed Sign No. 1 and/or No. 3.

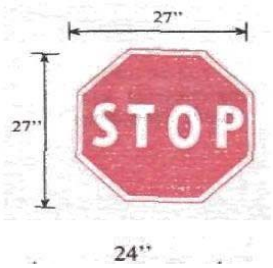




Treatment 12

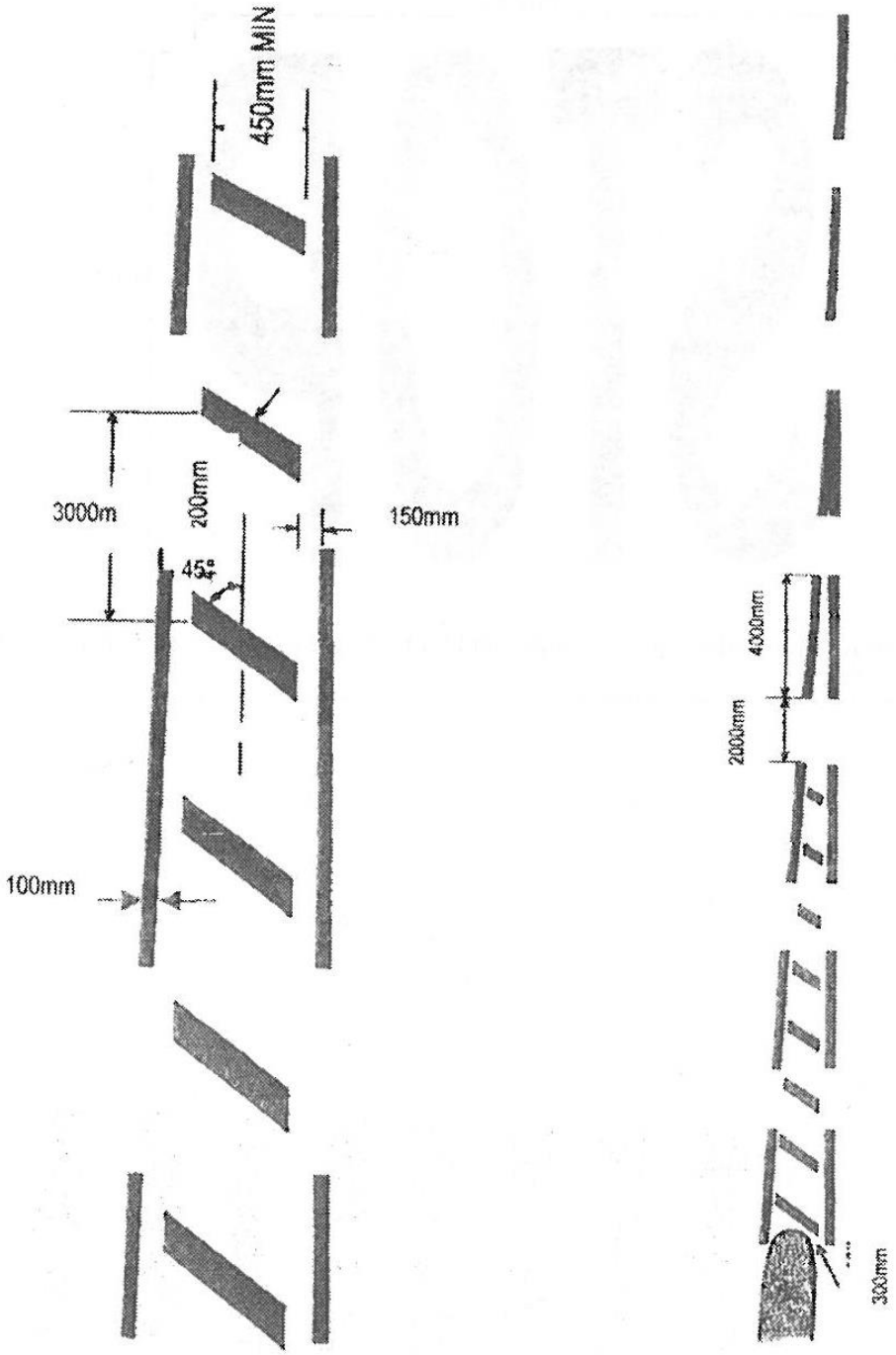
To indicate to vehicular traffic the approach to a road junction at or near which is placed Sign No.4.





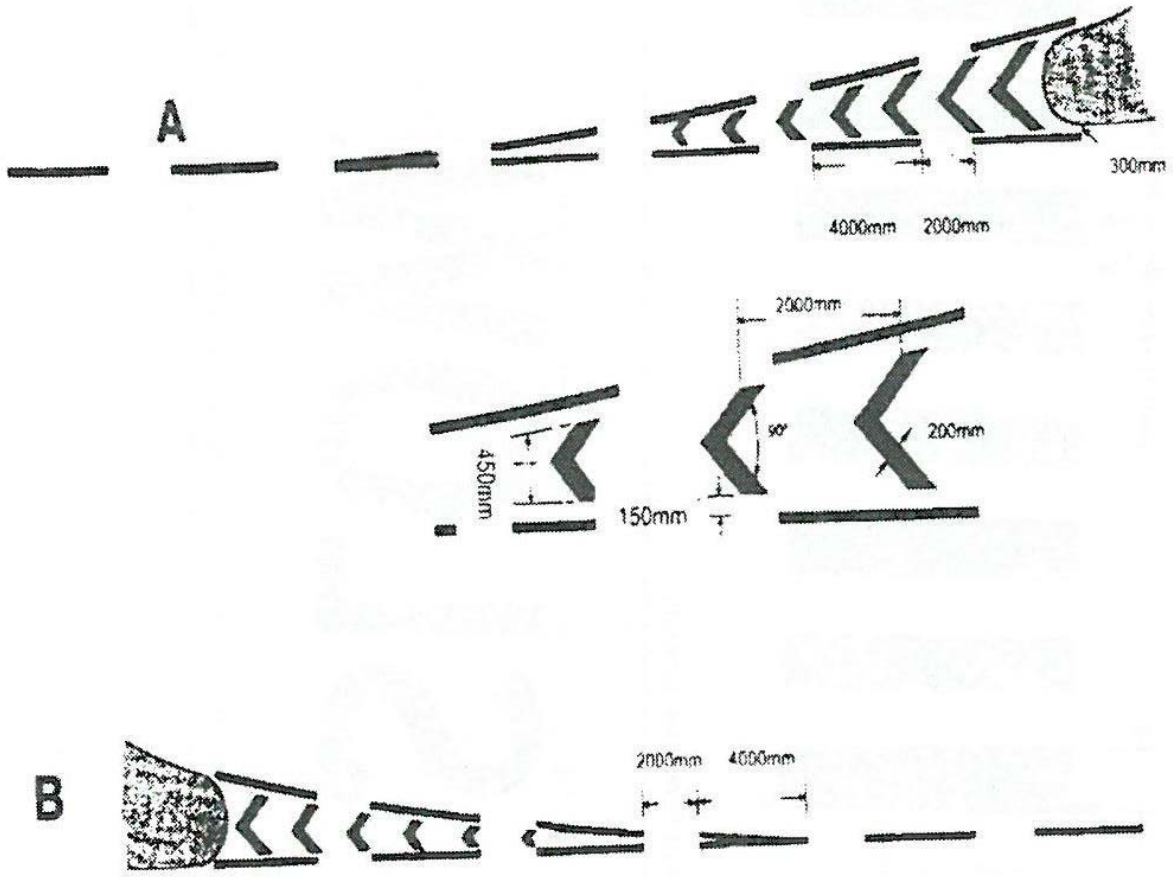
Treatment 13

Cross hatching at approach to islands separating crossing flows of traffic

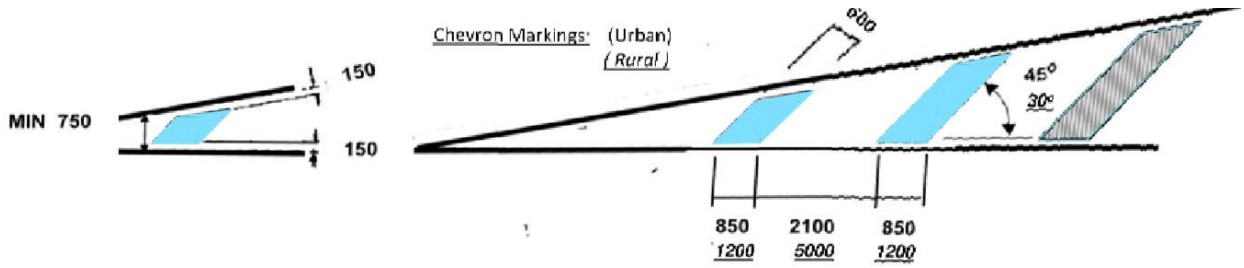


Treatment 14

Chevron marking at approach to islands “A” Diverging traffic “B” Merging Traffic.

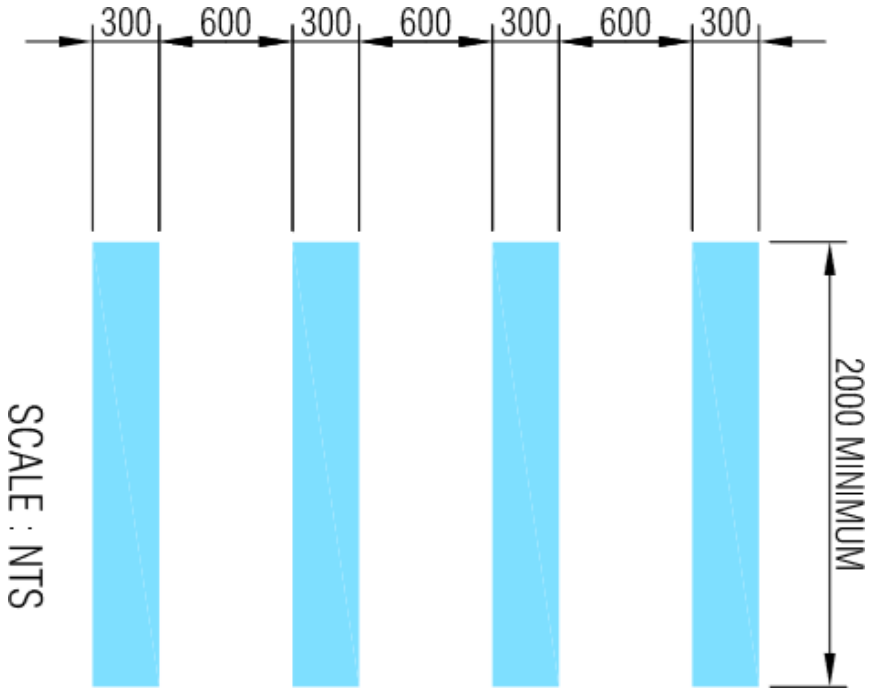


Treatments 13 and 14 are regulated. However actual linemarking used in Fiji is shown below:


MIN 750
150
150
Chevron Markings (Urban)
(Rural)
45°
30°
850
1200
2100
5000
850
1200

Treatment 15

Uncontrolled Pedestrian Crossing.



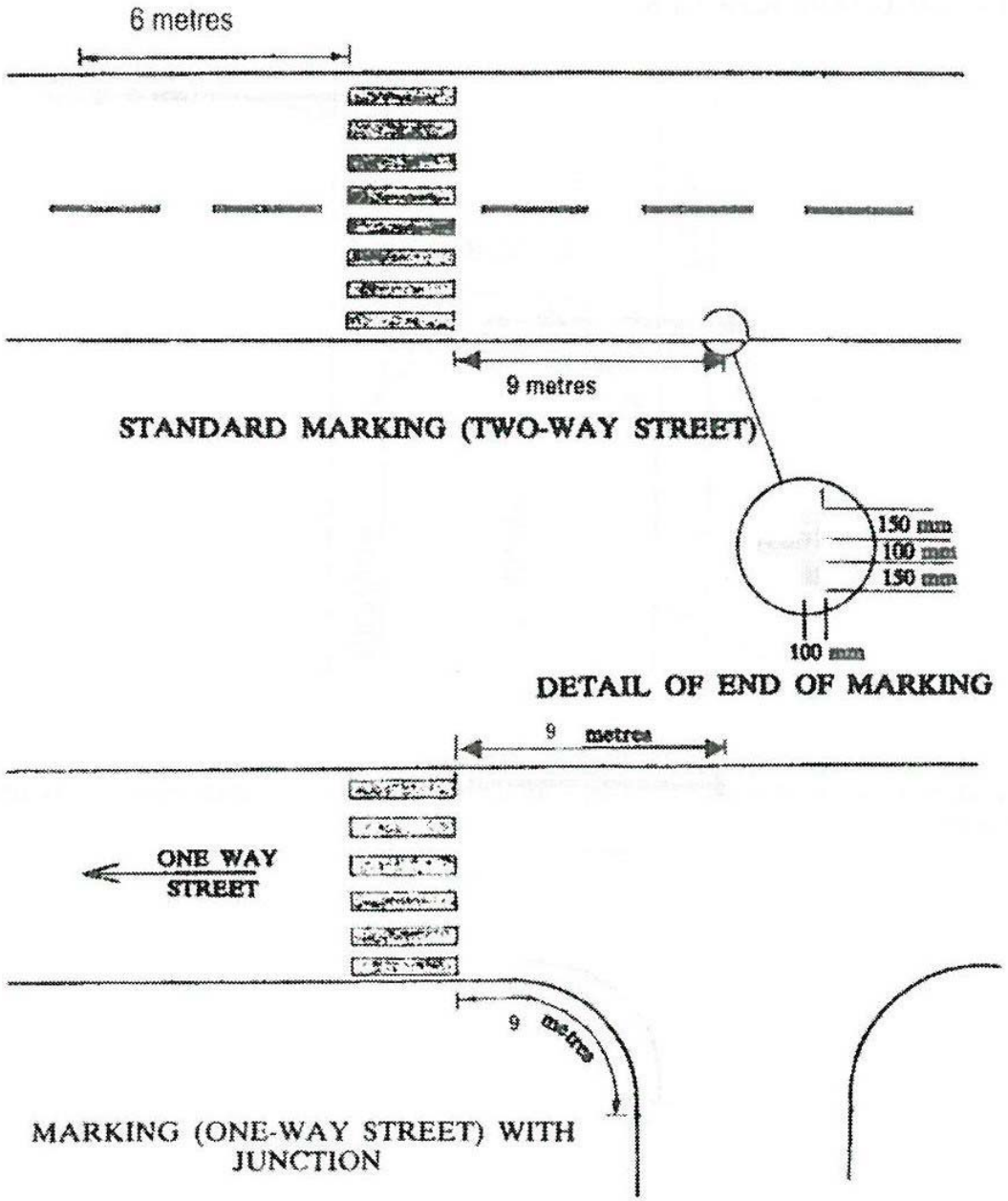
Treatment 16

To indicate to vehicular traffic potential danger ahead and need to proceed with caution.


2300 mm
SLOW
1600mm

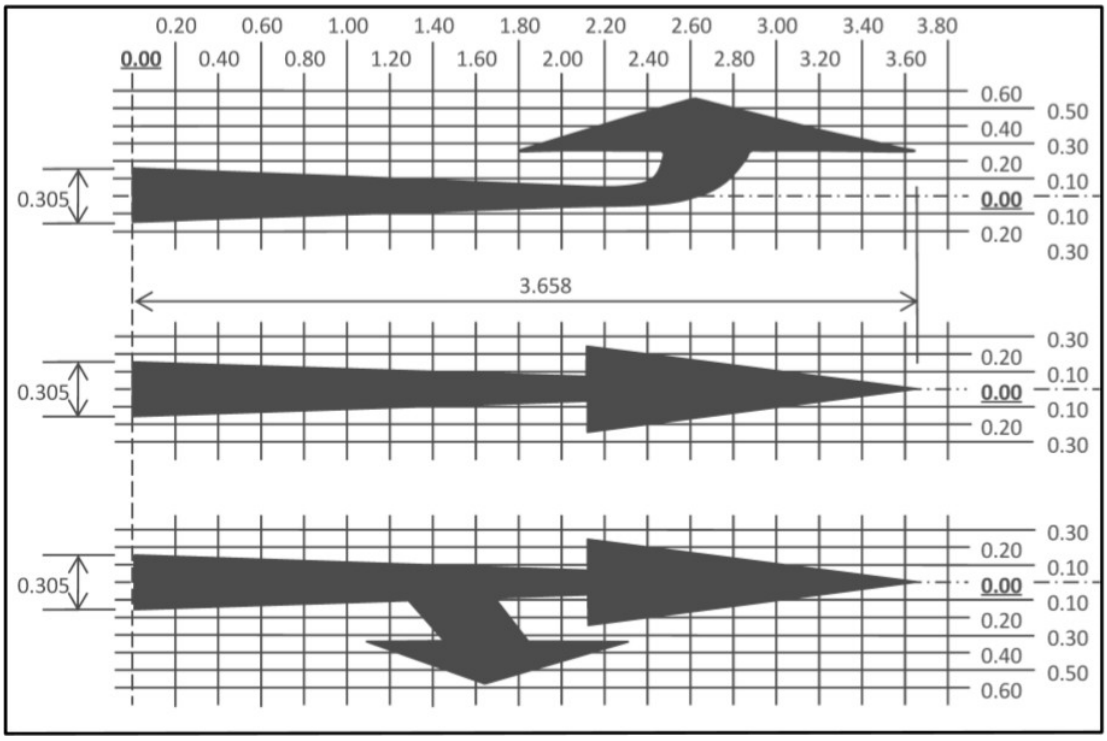
Treatment 17

Uncontrolled Pedestrian Crossing. Yellow line on the approach to indicate the length of road over which stopping and parking is prohibited.



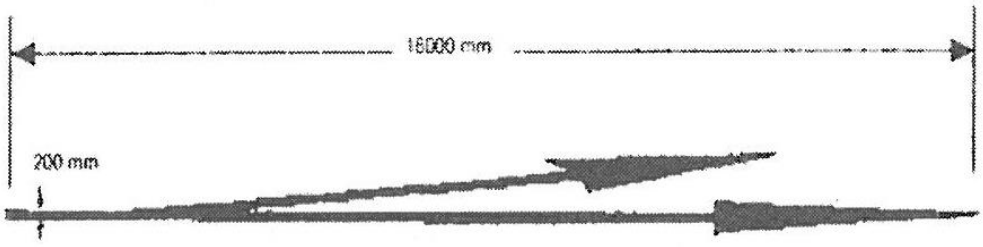
Treatment 20

To indicate to vehicular traffic, approach traffic lanes



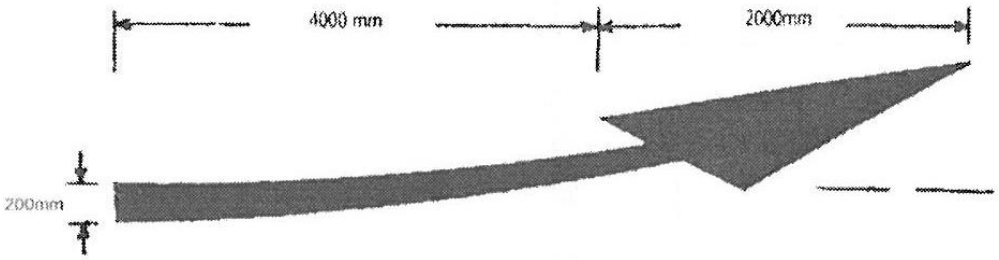
Treatment 21

To indicate to vehicular traffic the entrance to a deceleration lane at a road junction.



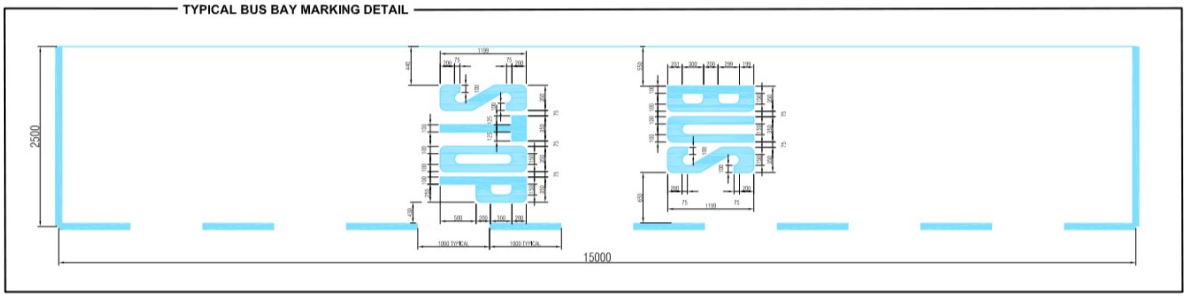
Treatment 22

To warn vehicular traffic approaching a length of road on which are placed longitudinal lines shown as Treatment 4, of the need to keep to the left or nearside of both these lines.



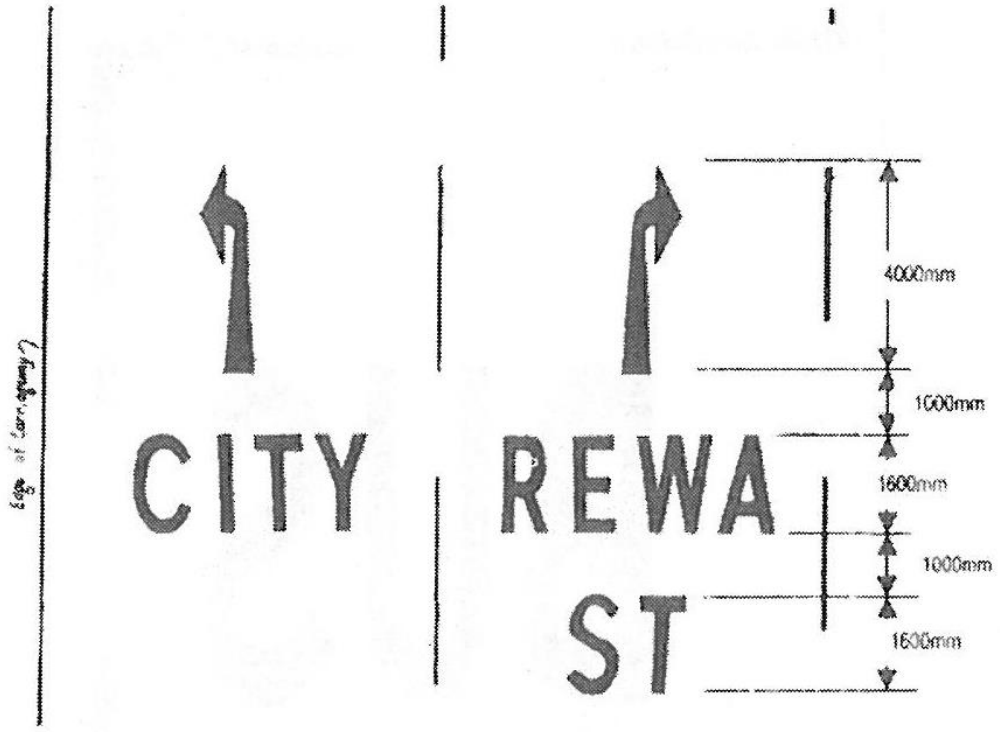
Treatment 23

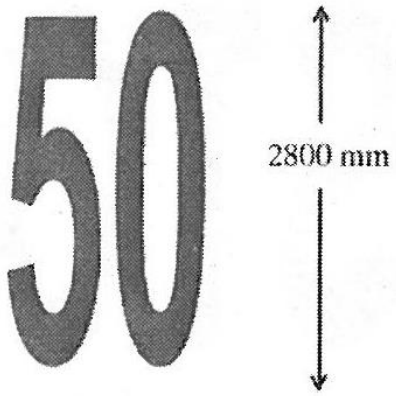
To indicate the location of a bus stop.



Treatment 25

To indicate to vehicular traffic the existence of a maximum speed limit. This may not be used by itself.


CITY
REWA
ST
4000mm
1000mm
1600mm
1000mm
1600mm


50
2800 mm