SECTION 12

ROAD MARKINGS AND DELINEATION

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12. INTRODUCTION

12.1 GENERAL

12.1.1 INTRODUCTION

The markings and delineation details described in this section also apply to high standard high speed roads that are similar in appearance and function to motorways and expressways.

Paragraphs 12.1.1 to 12.1.8 below describe the markings and delineation applicable to all motorways and expressways. Paragraph 12.1.9 is only applicable to unlit motorways and expressways.

Sections 12.2 to 12.8 describe the specific markings and delineation for motorway and expressway:

- on-ramps;
- entrances;
- exits;
- off-ramps;
- merges and diverges;
- lane gains and lane drops;
- auxiliary lanes; and
- bus lanes.

Full design and layout details for motorway/expressway exits and entrances are shown on New Zealand Transport Agency (NZTA) Drawing M1: *Standard Exit and Entrance Geometric Details and Traffic Signs with Exit Numbering* which is shown in FIGURE 2.6 (a).

High Performance Long Life (HPLL) material should be considered for pavement markings on smooth surfaced roads, for improved skid resistance and wearing properties and better delineation in wet conditions. Refer to NZTA specification P30 for further details.

All motorway lane lines comprising Raised Pavement Markers (RPM's) i.e. non-reflective ceramic Type B markers or domes should be replaced with a 2.9 m HPLL marking overlain by Audio Tactile Profile (ATP) at 250 mm centres and a white mono-directional Raised Reflective Pavement Marker (RRPM) at the head of the marking, giving a total length of 3 m. Refer to NZTA specifications M12 for the performance requirements of RRPM's and P14 for details on the installation of RRPM's.

Appropriately coloured internally lit LED studs can be used in place of RRPM's. They should however only be used where there is visibility restrictions on the approach to the exit to provide additional driver guidance in that area. Relevant criteria include:

- short visibility distance to the gore;
- history of crashes;
- sharp off-ramp;
- short diverge.

12.1.2 CENTRELINES

Centreline markings are only used on two-lane two-way and multi-lane undivided sections of motorway and expressway.

(a) Two-lane Two-way Roads

Refer to FIGURE 12.1(a).

(i) Roads with Coarse Textured Surfaces

Except where a solid white line or a yellow no overtaking line is used centrelines on two-lane two-way roads should be marked as broken lines and supplemented with RRPM's, in the following manner:

Colour:	*reflectorised white*	
Width:	*100 mm*	
Stripe:	*3 m*	
Gap	*7 m*	
RRPM's:	Type:	*bi-directional*
	Colour:	*white*
	Spacing:	*nominal 10 m*
	Location:	*central in each gap between centreline stripes.*

On sharp curves a continuous white line supplemented with RRPM's may be used to mark the centreline marking instead of the normal broken line. This alternative centreline should be marked in the following manner:

Colour:	*reflectorised white*	
Width:	*100 mm*	
Stripe:	*continuous*	
Length:	Rural:	*50 m in advance of the curve*
	Urban:	*30 m in advance of the curve*
RRPM's:	Type:	*bi-directional*
	Colour:	*white*
	Spacing:	*nominal 10 m*
	Location:	*on the centreline stripe.*

(ii) Roads with Fine Textured Surfaces

Except where a solid white line or a yellow no overtaking line is used centrelines on these roads should be marked with RPM's. The RPM's shall be set in groups of four at 10 m intervals with a 1.0 m spacing between individual RPM's in each group.

Three RPM's in each group shall be a non-reflective ceramic Type B markers and the fourth, a reflective Type A marker, shall be located in the second or third position in the group, which will give a nominal 10 m RRPM spacing.

(b) Multi-lane Undivided Roads

Refer to FIGURES 12.1(b) and 12.1(c)

(i) Normal Centreline Marking

Centrelines on multi-lane undivided roads should normally be marked as a no-overtaking line in the following manner:

Colour:	*reflectorised yellow*
Width:	*100 mm**
Stripe:	*two continuous parallel lines 130 mm apart with yellow bi-directional RRPM's installed at 10 m intervals in the space between the lines.*

* *Line width should be increased to 150 mm on unlit roads and where it is considered a section of motorway or expressway:*

- *is sub-standard and warrants better delineation, or*
- *has an accident history which indicates a centreline definition problem.*

(ii) Alternative Centreline Marking for use in Urban Areas (i.e. Posted Speed Limit 70 km/h or less)

Centrelines on multi-lane undivided roads in urban areas where there is extensive commercial or industrial development adjacent to the road may be marked as a continuous white line supplemented with white RRPM's, providing:

- it is not dangerous for vehicles to cross the centreline, and
- the road controlling authority agrees to the alternative marking.

The alternative urban area centreline shall be marked in the following manner:

Colour:	*reflectorised white*	
Width:	*150 mm*	
Stripe:	*continuous, except at intersections*	
RRPM's:	Type:	*bi-directional*
	Colour:	*white*
	Spacing:	*nominal 10 m*
	Location:	*on the centreline stripe.*

12.1.3 EDGE LINES

(a) Two-lane Two-way Roads

Edge lines on these roads shall be marked in the following manner:

Colour:	*reflectorised white*
Width:	*100 mm*
Stripe:	*continuous.*

(b) Multi-lane Roads

(i) Left Hand (Shoulder) Edge Line

The left hand edge lines on these roads shall be marked in the following manner:

Colour:	*reflectorised white*
Width:	*100 mm**
Stripe:	*continuous***
Location:	*at least 1.0 m clear of a raised kerb, road safety barrier or the edge of the carriageway.*

* *Line width should be increased to 150 mm:*

- *on unlit roads, and*
- *where it is considered a section of sub-standard motorway or expressway alignment warrants better delineation, or*
- *where the accident history indicates an edge line definition problem, or*
- *if HPLL overlain with ATP.*

** *Left hand edge lines may also be supplemented with mono-directional red RRPM's placed at 20 m spacings on the shoulder side of the line and offset no more than 50 mm from the line in:*

- *locations subject to fog or other adverse visibility conditions, and*
- *at points of special hazard, e.g. approaches to bridges with sub-standard shoulder width.*

(ii) Right Hand (Median) Edge Line

The right hand edge lines on these roads shall be marked in the following manner:

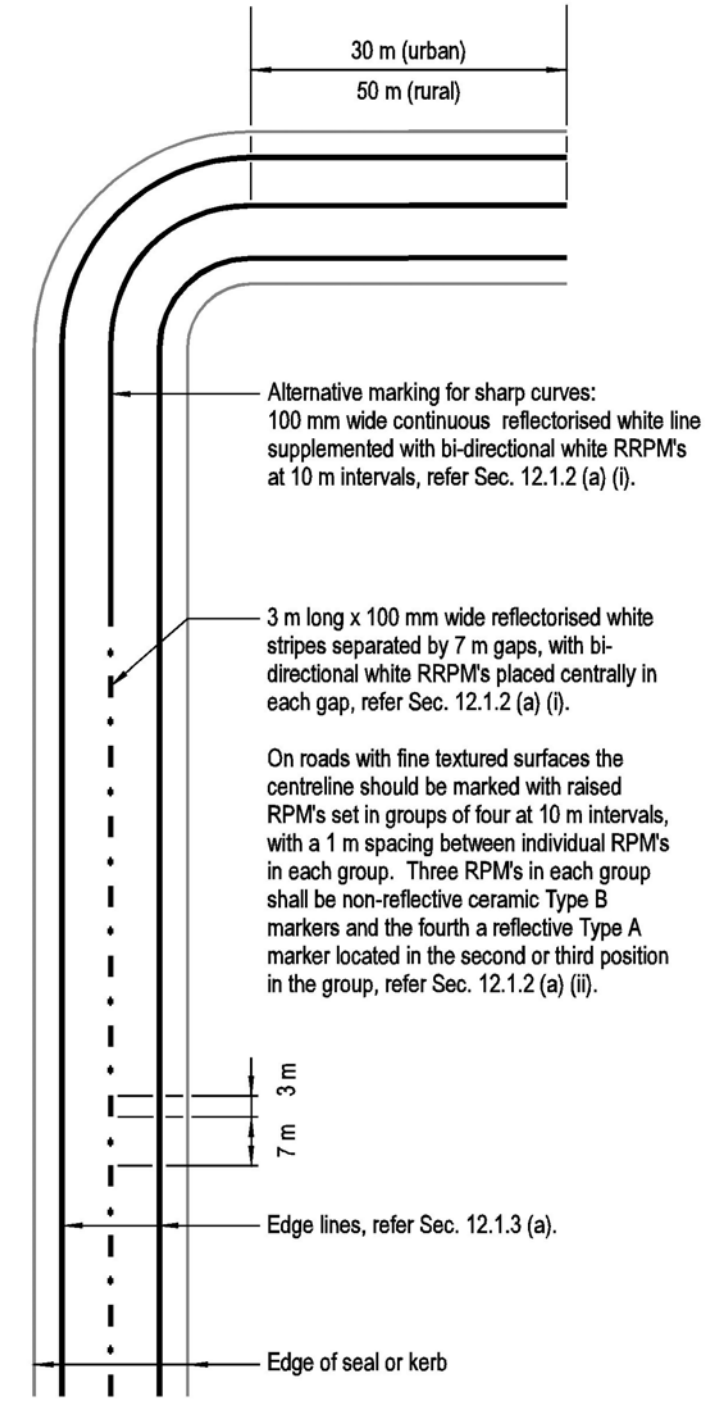
Colour:	*reflectorised white*
Width:	*100 mm**
Stripe:	*continuous***
Location:	*at least 1.0 m clear of a raised kerb, road safety barrier or the edge of the carriageway.*

* *Line width should be increased to 150 mm:*

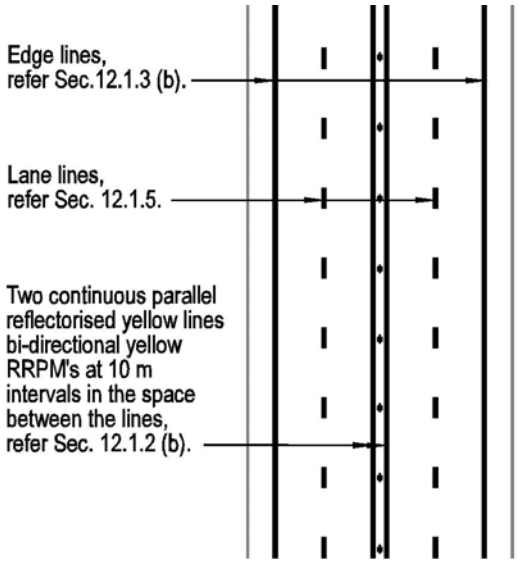
- *on unlit roads, and*
- *where it is considered a section of sub-standard motorway or expressway alignment warrants better delineation, or*
- *where the accident history indicates an edge line definition problem, or*
- *if HPLL overlain with ATP.*

** *Right hand edge lines may be supplemented with yellow mono-directional RRPM's placed at 20 m spacings on the shoulder side of the line and offset no more than 50 mm from the line in:*

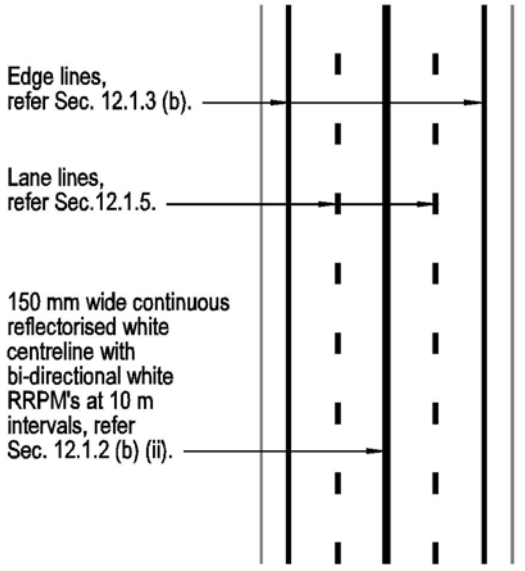
- *locations subject to fog or other adverse visibility conditions, and*
- *at points of special hazard, e.g. approaches to bridges with sub-standard shoulder width.*



(a) TWO-LANE TWO-WAY ROADS



(b) MULTI-LANE ROADS



(c) ALTERNATIVE FOR MULTI-LANE ROADS IN URBAN AREAS

CENTRELINE MARKINGS FOR TWO-LANE TWO-WAY AND MULTI-LANE UNDIVIDED ROADS — FIGURE 12.1

12.1.4 CONTINUITY LINES

Continuity lines are used to indicate the edge of the through carriageway where it is intended that the line be crossed by traffic entering or leaving the main road at an exit or entrance, or entering or leaving an auxiliary lane at the start or end of that lane.

Continuity lines should normally not be supplemented with RRPM's except when a continuity line is used as part of the lane line on the approaches to lane drops and two-lane exits. To enhance the night time visibility of the lane line in these situations white mono-directional RRPM's shall be installed centrally in every second gap.

The left hand edge of motorway and expressway lanes in exit and entrance areas shall be marked with continuity lines, as shown on NZTA Drawing M1: *Standard Exit and Entrance Geometric Details and Traffic Signs with Exit Numbering* which is shown in FIGURE 2.6 (a), and in more detail in FIGURES 12.1, 12.3, 12.4, 12.6, 12.7, 12.8 and 12.13.

Continuity lines shall be marked in the following manner:

Colour:	*reflectorised white*
Width:	*200 mm*
Stripe:	*1 m*
Gap:	*3 m.*

Continuity lines should be marked in thermoplastic or a material of similar skid resistance and wearing properties

12.1.5 LANE LINES

Refer to FIGURE 12.2 Lane Line Markings for Multi-Lane Roads.

Lane lines on multi-lane expressways and motorways, ***regardless of surface type or lighting level***, should be marked with HPLL underlying ATP and RRPM's in the following manner:

(a) Unlit Roads

Lane lines on these roads shall comprise a 2.9 m HPLL marking overlain by ATP at 250 mm centres and a white mono-directional RRPM (Type A) at the head of the marking at nominal 10 m intervals.

(b) Lit Roads

Lane lines on these roads shall comprise a 2.9 m HPLL marking overlain by ATP at 250 mm centres and a white mono-directional RRPM (Type A) at the head of the marking at nominal 10 m intervals.

12.1.6 BORDER LINES

Border lines are used to define areas of motorway and expressway pavement that should not normally be traversed by vehicles, e.g. *'Gore Area'* at motorway/expressway exits.

Border lines must be supplemented with RRPM's when it is considered that additional night time delineation is warranted.

Border lines shall be marked in the following manner:

Colour:	*reflectorised white*	
Width:	*200 mm*	
Stripe:	*continuous*	
RRPM's:	Type:	*mono-directional*
	Colour:	*white*
	Spacing:	*nominal 10 m*
	Location:	*on the gore side of the line and no more than 50 mm clear of the line *.*

* *As the border lines for the gore area at an exit develop a single RRPM shall be placed between them once there is sufficient separation to accommodate it. Thereafter RRPM's shall be located on the gore side of the border lines at nominal 10 m spacings as detailed in FIGURE 12.4(a) Typical Detail for Two - Lane Exit Markings. Where appropriate the RRPM's shall be placed on either side of the length of continuous white reflectorised lane line formed prior to it's separation into the two gore area border lines.*

NOTE: The RRPM's are incorrectly shown on the live lane sides of the gore area border lines in FIGURES 12.3(b), 12.7, 12.9, 12.10 and 12.11.

12.1.7 CHEVRON MARKINGS

Chevrons may be marked on sealed pavements to define areas that should not normally be traversed by vehicles, e.g. the *'gore area'* at motorway/expressway exits.

Chevrons shall be marked in the following manner:

Colour:	*reflectorised white*
Line width:	*900 mm*
Slope:	*2:1*
Spacing:	*nominally 10 m.*

Chevron markings should not be supplemented with RPM's.

12.1.8 SHOULDER MARKINGS

Different surface colours and/or textures together with diagonal lines marked at frequent intervals help to distinguish sealed shoulders from the traffic lanes.

Sealed shoulders wider than 2 m should be marked with diagonal lines to distinguish them from the traffic lanes.

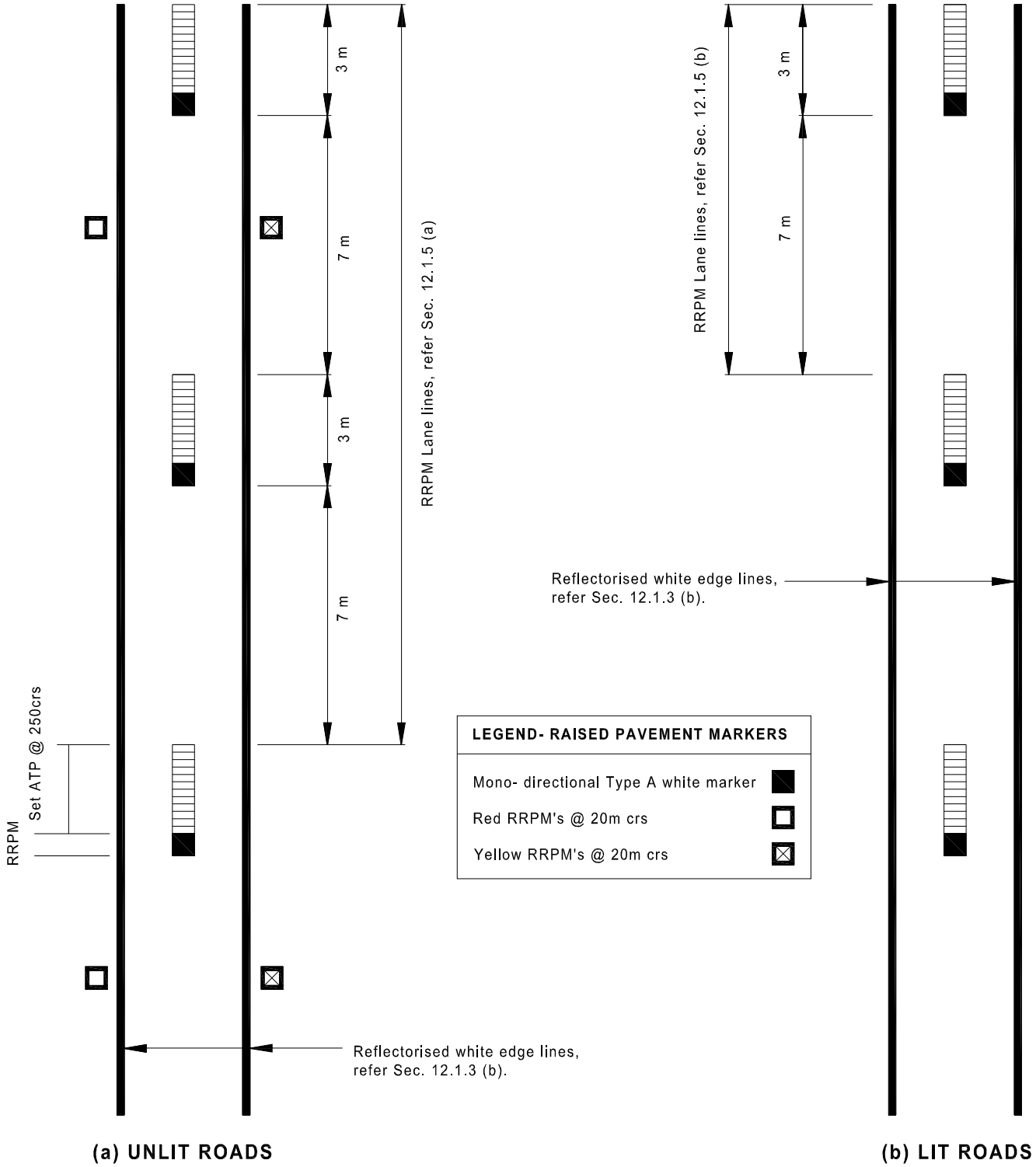
Sealed shoulders 2.5 m wide, or wider, must be marked with diagonal lines.

Diagonal shoulder lines shall be marked in the following manner:

Colour:	*reflectorised white*
Width:	*300 mm*
Slope:	*2:1*
Spacing:	*nominally 50 m *.*

* *Line spacing should not be greater than 50 m in the vicinity of intersections and interchanges but may be increased to a maximum of 100 m on other sections of road.*

Diagonal shoulder markings should not be supplemented with RRPM's.



LANE LINE MARKINGS FOR MULTI-LANE ROADS FIGURE 12.2

12.1.9 EDGE MARKER POSTS

Edge marker posts fitted with retroreflective devices are a primary aid for night time driving on unlit roads. They should be installed on unlit sections of expressways and motorways in a manner similar to that used for two-lane two-way rural state highways.

Edge marker posts shall take the form specified in TNZ Specification M/14: Edge Marker Posts. Post reflectors on the left side of the road shall be white, post reflectors on the right side of the road shall be yellow.

12.2 EXITS

12.2.1 GENERAL

Refer to Figure 12.3: Standard (One-lane) Exit Markings, FIGURE 12.4: Two - Lane Exit Markings, and FIGURE 12.5: Auxiliary Lane Development Markings.

The term *'exit'* refers to the paved area immediately adjacent to the through lanes which is used by vehicles leaving an motorway/expressway en route to an off-ramp which connects to the local road.

The exit area extends from the start of the exit taper to the exit nose and includes the exit lane, or lanes, and the triangular area ahead of the nose which is commonly known as the *'gore area'*.

Motorway/expressway entrances are detailed on NZTA Drawing M1: *Standard Exit and Entrance Geometric Details and Traffic Signs with Exit Numbering* which is shown in FIGURE 2.6 (a).

FIGURE 12.4 is a two - lane exit (taper 8%) that applies to diamond interchanges and is optional. FIGURE 12.10 is a diverge (2% diverge) that is a separation of a lesser route from the motorway/expressway and is not optional.

12.2.2 SHOULDER MARKINGS

Sealed shoulders wider than 2 m should be marked with diagonal lines to distinguish them from traffic lanes.

Sealed shoulders 2.5 m wide, or wider, must be marked with diagonal lines.

12.2.3 GORE AREA

All markings within the gore area, i.e. border lines, chevron marks and continuity lines, should be thermoplastic or a material of similar skid resistance and wearing properties.

(a) Exit nose

The kerb of the exit nose should be painted white to make it more conspicuous.

(b) Chevron Markings

Chevron markings in the gore area are optional.

Chevrons should be marked where there is visibility restrictions on the approach to an exit, to provide additional driver guidance in that area. Relevant criteria include:

- poor visibility due to vertical alignment;
- poor visibility due to the off-ramp being developed from a through lane on a curve;
- where the accident history indicates a visibility issue.

12.2.4 AUXILIARY LANE MARKINGS

Refer to FIGURE 12.5: Auxiliary Lane Development Markings.

An auxiliary lane on a motorway or expressway should be developed with a diverge taper no greater than 1.0 metre per second of travel at the design/operating speed of the road, relative to the alignment of the adjacent traffic lane.

The desirable diverge taper is 3% but where it is necessary to provide the longest length of full width auxiliary lane prior to an exit diverge tapers up to 8% may be used.

The lane line through the diverge taper area shall be marked as a continuity line. From the end of the diverge taper the lane line shall be continued with RRPM lane line markings.

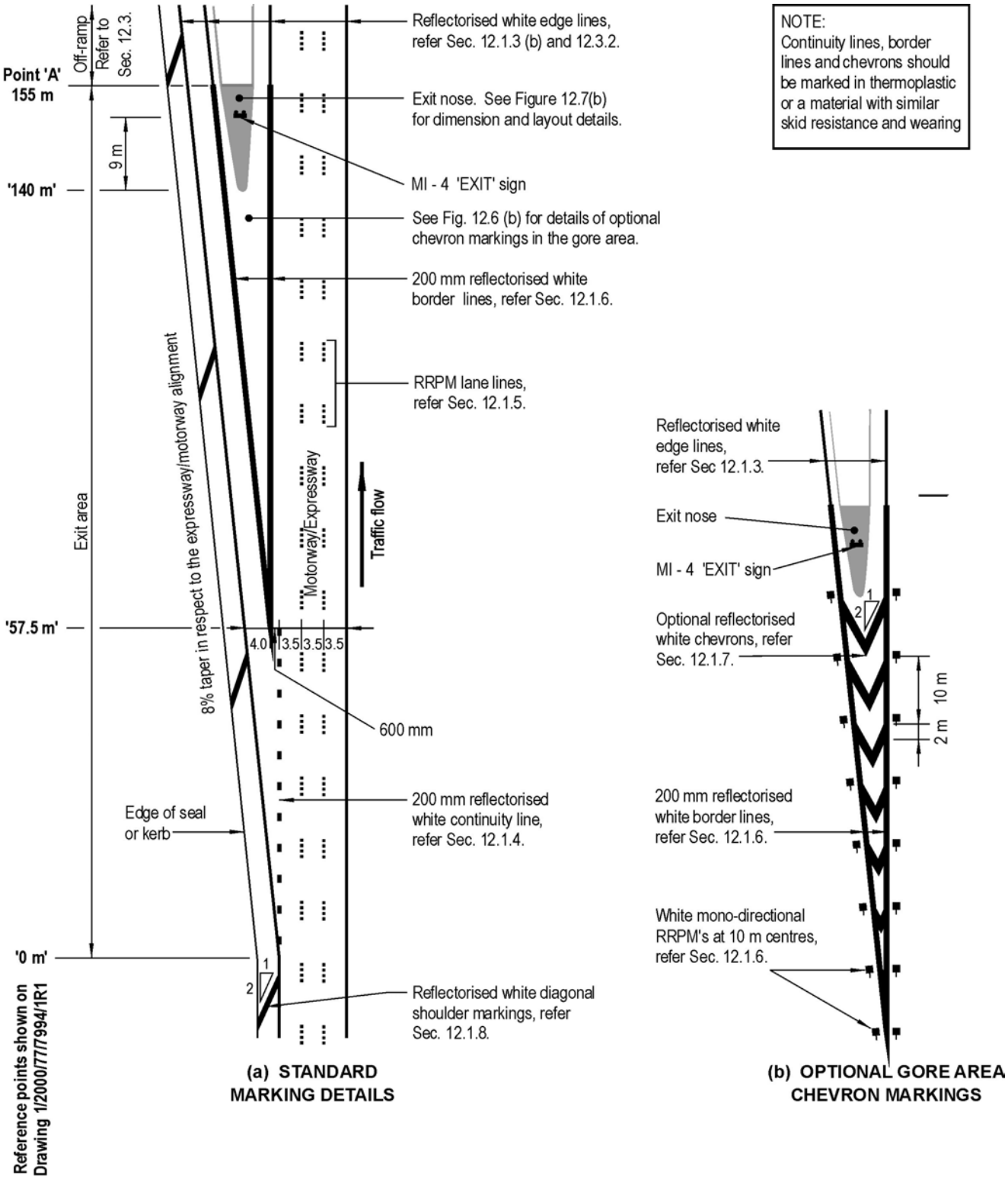
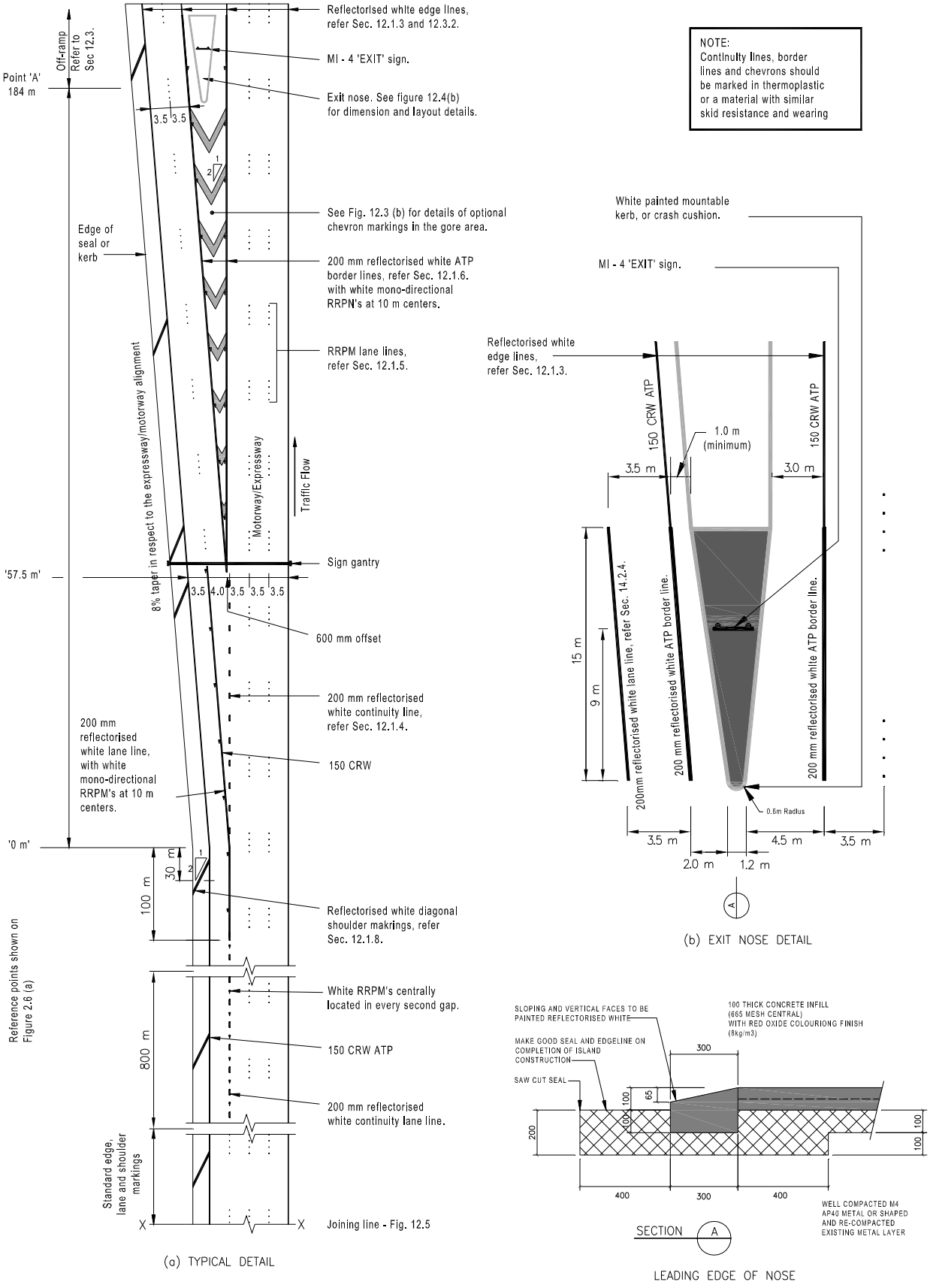


FIGURE 12.3 STANDARD EXIT MARKINGS



TWO - LANE EXIT MARKINGS FIGURE 12.4

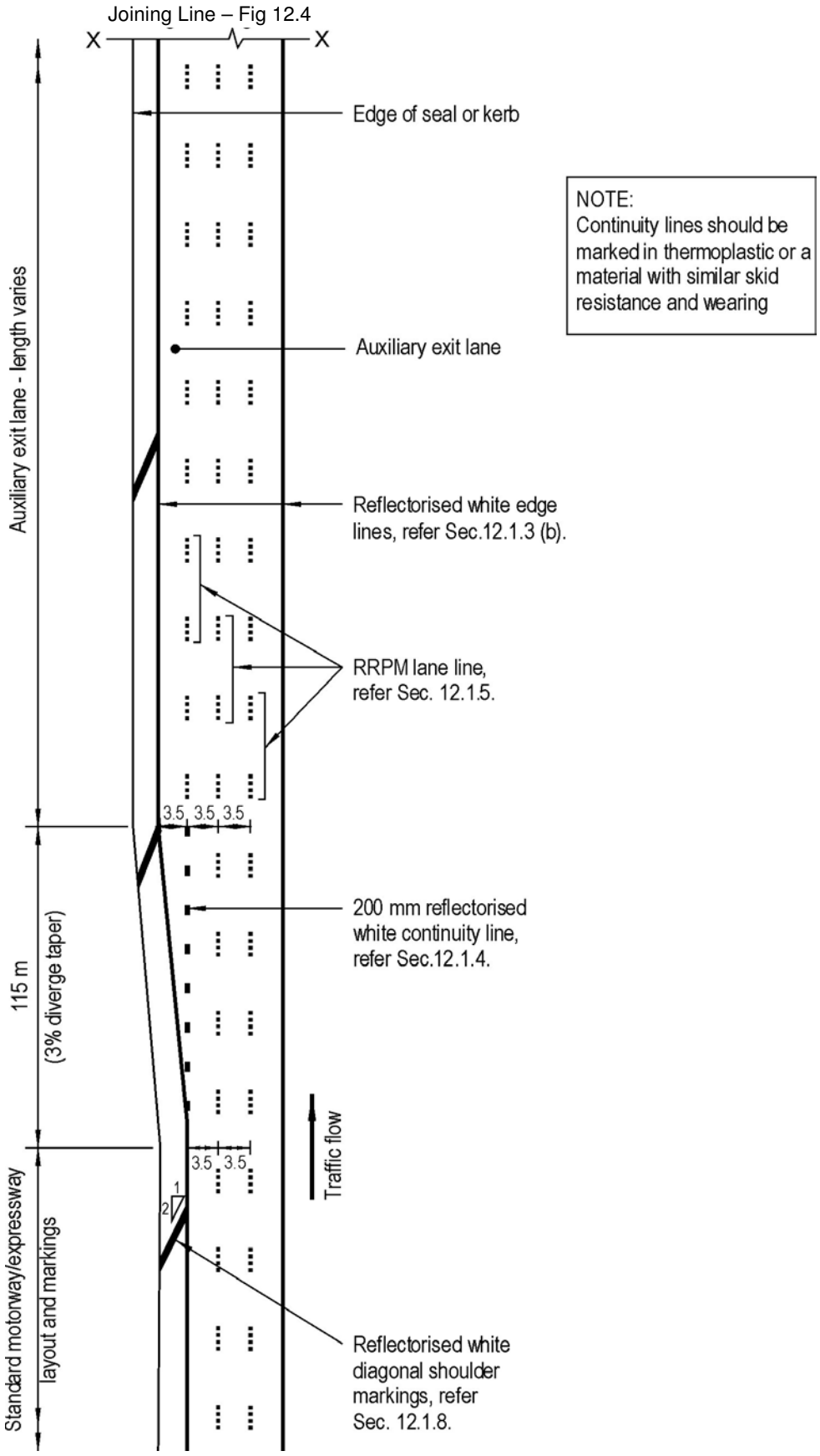


FIGURE 12.5 AUXILIARY LANE DEVELOPMENT MARKINGS

12.3 OFF-RAMPS

12.3.1 GENERAL

Refer to FIGURE 12.6: Typical Off - Ramp markings.

The term 'off-ramp' refers to the section of motorway/expressway between exits and their intersections with local roads. These intersections are known as the 'ramp terminals'.

A single lane motorway/expressway exit normally widens to two or more lanes on the off-ramp prior to the ramp terminal.

12.3.2 SHOULDER MARKINGS

Sealed shoulders wider than 2 m should be marked with diagonal lines to distinguish them from traffic lanes.

Sealed shoulders 2.5 m wide, or wider, must be marked with diagonal lines.

12.3.3 LANE USE ARROWS

Lane use arrows marked on the pavement of multi-lane off-ramps should be provided in the following manner:

- An arrow should be located in each lane at the start of the multi-lane section of off-ramp.
- An arrow should be located 10 m (urban), or 20 m (rural), from the limit lines at the ramp terminal.
- Additional intermediate arrows should be located at nominal 50 to 100 m spacings between the first and last arrows described above.

Arrow colour: Reflectorised white

For details and dimensions of lane arrows refer to MOTSAM Part II: *Markings*, Section 3.05: Lane Arrows.

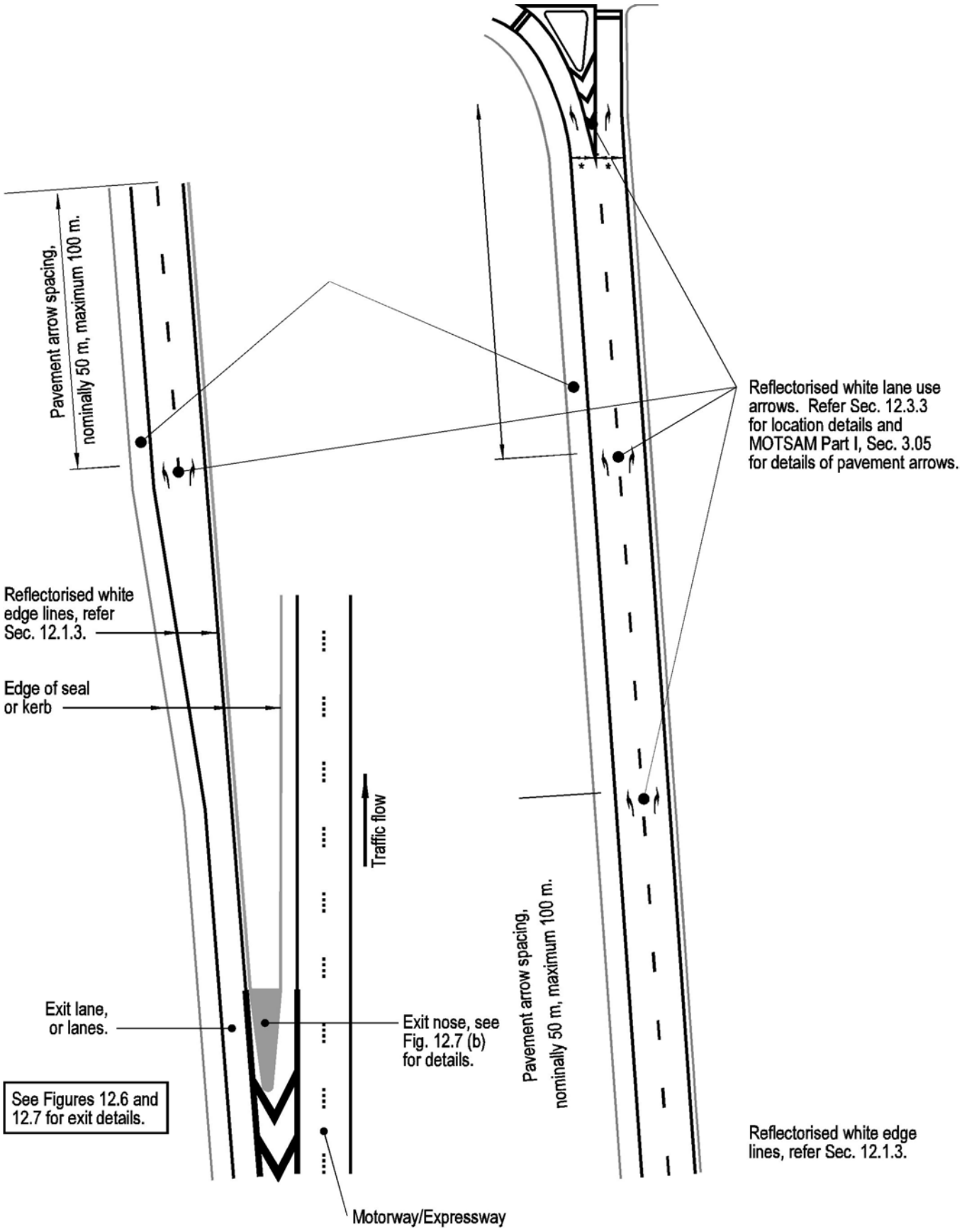


FIGURE 12.6 TYPICAL OFF-RAMP MARKINGS

12.4 ON-RAMPS AND ENTRANCES

12.4.1 GENERAL

Refer to FIGURE 12.7: Standard Entrance Markings, and Figure 12.8: Parallel Entrance Lane Markings.

The term 'on-ramp' refers to that part of the motorway/expressway between the ramp terminal at the local road intersection and the motorway/expressway entrance.

The term 'entrance' refers to the paved area immediately adjacent to the through lanes of the motorway/expressway which is intended for vehicles entering from a local road via the on-ramp.

Standard motorway/expressway entrances are detailed on NZTA Drawing M1: *Standard Exit and Entrance Geometric Details and Traffic Signs* which is shown on FIGURE 2.6 (a).

Where ramp signals are installed, motorway/expressway entrances are detailed on NZTA Drawing M2: *Standard Ramp Meter Entrance Details with Exit Numbering* which is shown in FIGURE 2.6 (b).

12.4.2 CONTINUITY LINE

The left hand edge of the motorway/expressway through lane adjacent to the entrance taper shall be marked with a continuity line, starting Point 'Y" and ending at Point '0' in FIGURE 12.7.

12.4.3 CHEVRON MARKINGS

Chevron markings in entrance areas are optional.

They should be marked when there are visibility restrictions on the approach to an entrance area, to provide additional driver guidance in that area. Relevant criteria include:

- poor visibility due to vertical alignment;
- poor visibility due to the off-ramp being developed from a through lane on a curve;
- where the accident history indicates a visibility issue.

12.4.4 SHOULDER MARKINGS

Sealed shoulders wider than 2 m should be marked with diagonal lines to distinguish them from traffic lanes.

Sealed shoulders 2·5 m wide, or wider, must be marked with diagonal lines.

12.4.5 PARALLEL ENTRANCE LANE

A parallel auxiliary lane entrance configuration may sometimes be used instead of the standard merge entrance where entry traffic volumes are high.

A continuity lane line shall be used as the lane line between the parallel auxiliary entrance lane and the motorway/expressway lanes and the lane terminated with a standard auxiliary lane taper, as shown on FIGURE 12.8.

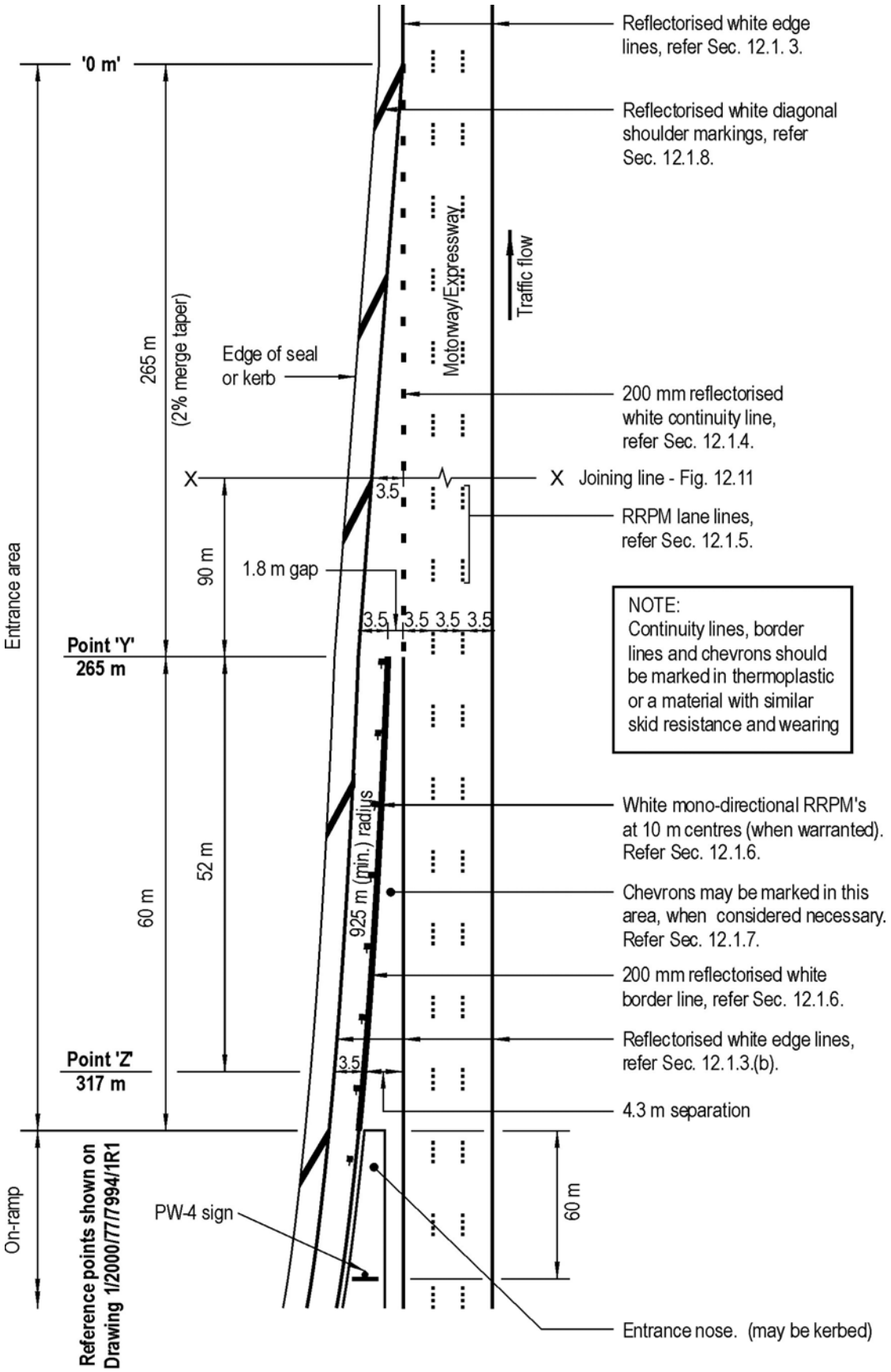
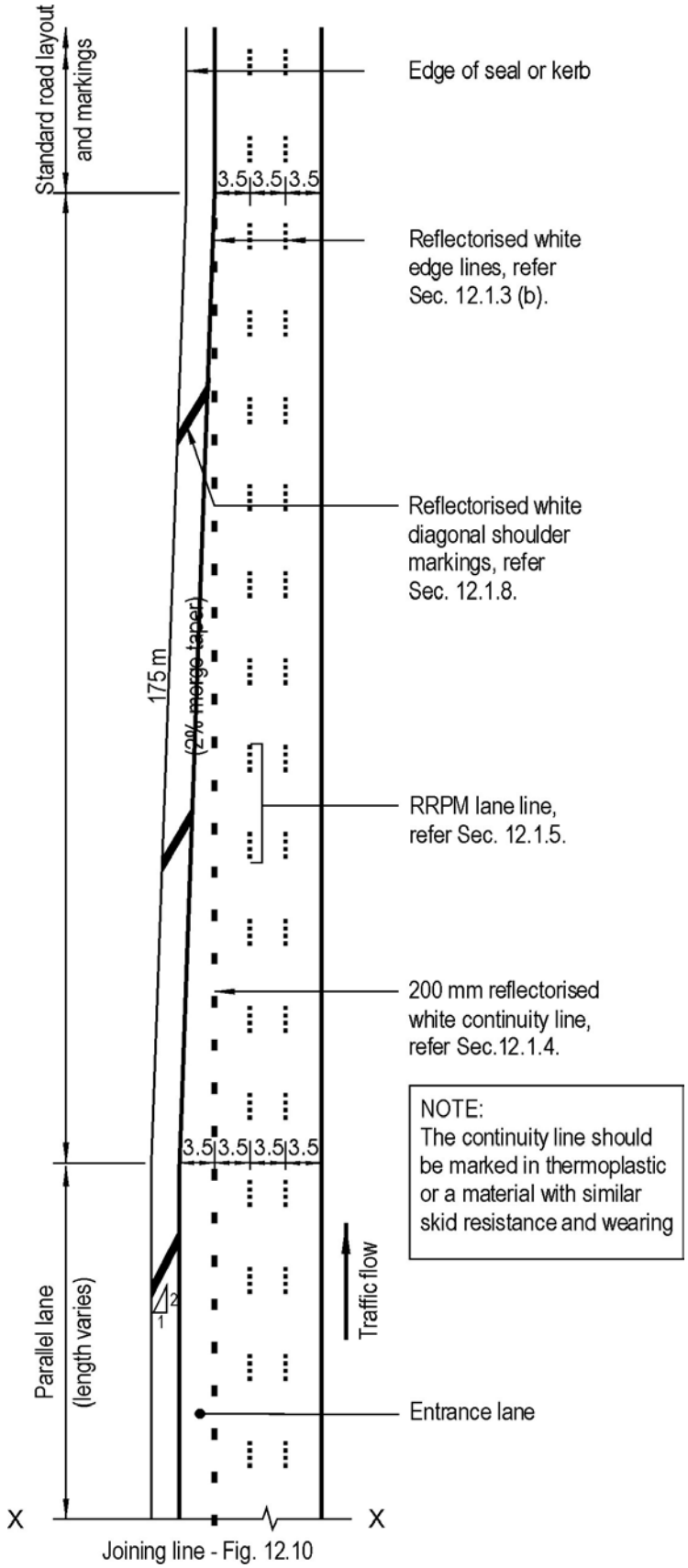


FIGURE 12.7 STANDARD ENTRANCE MARKINGS



Joining line - Fig. 12.10

PARALLEL ENTRANCE LANE MARKINGS FIGURE 12.8

12.5 LANE DROPS AND DIVERGES

12.5.1 GENERAL

Refer to FIGURE 12.9: Typical Lane Drop Markings, and FIGURE 12.10: Typical Multi-lane Diverge Markings.

The term 'lane drop' describes a situation where one lane (usually the left hand lane) of a one-way multi-lane motorway/expressway departs from the main route. The continuation of the motorway/expressway route, therefore, has a lesser number of lanes than it has on the approach to the lane drop.

The term 'diverge' describes a situation where a one-way multi-lane motorway/expressway splits into two separate routes. One route is the continuation of the motorway/expressway and it will have a lesser number of lanes than it has on the approach to the diverge. The most common type of diverge is a three-lane road that splits into a pair of two-lane roads.

The lane drop/diverge area extends from the start of the divergence to the exit nose.

12.5.2 LANE LINES

Lane lines should normally be marked with raised pavement markers, refer to Section 12.1.5.

However, at lane drops, to help drivers identify the correct lane to use to travel to their intended destination, the lane line between the exiting lane and the continuing through traffic lane shall be marked in the following manner:

- a 100 m length of 200 mm wide reflectorised solid white lane line shall be marked in advance of the lane drop diverge border markings. The night time visibility of this line shall be enhanced by installing white RRPM's on the through lane side, at a nominal 10 m spacing and 50 mm clear of the line, and
- an 800 m length of 200 mm wide reflectorised continuity lane line shall be marked in advance of the solid white lane line marking described above. White RRPM's shall be installed centrally in every second gap on the line, i.e. at a nominal 6 m spacing, to enhance its night time visibility, and
- the lane line in advance of the continuity line marking described above should be marked in the normal manner with raised pavement markers, refer to Section 12.1.5.

12.5.3 CHEVRON MARKINGS

Chevron markings in lane drop/diverge areas are optional.

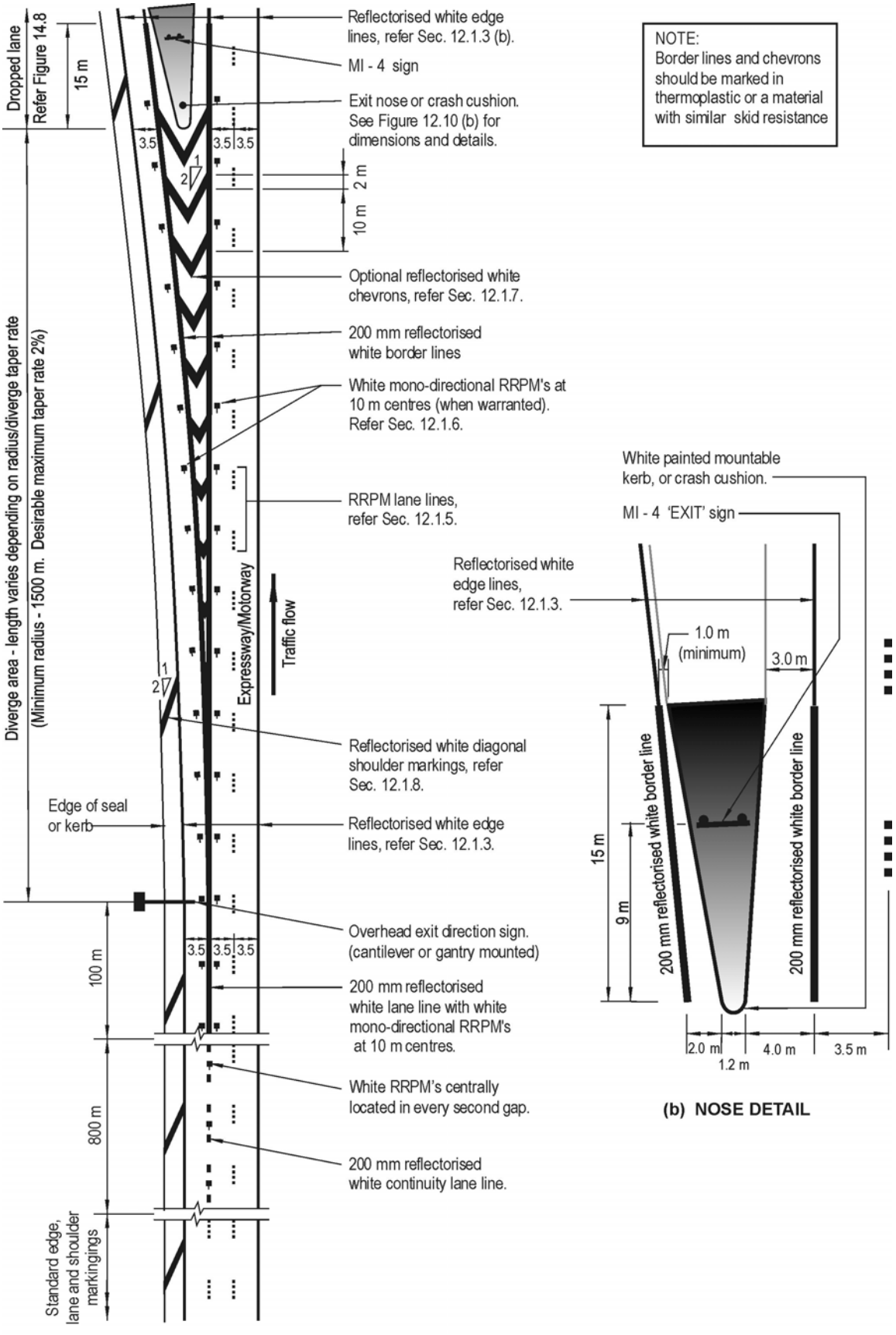
Chevrons should be marked where there are visibility restrictions on the approaches to these areas, to provide additional driver guidance in those areas. Relevant criteria include:

- poor visibility due to vertical alignment;
- poor visibility due to the off-ramp being developed from a through lane on a curve;
- where the accident history indicates a visibility issue.

12.5.4 SHOULDER MARKINGS

Sealed shoulders wider than 2 m should be marked with diagonal lines to distinguish them from traffic lanes.

Sealed shoulders 2.5 m wide, or wider, must be marked with diagonal lines.



TYPICAL LANE DROP MARKINGS FIGURE 12.9

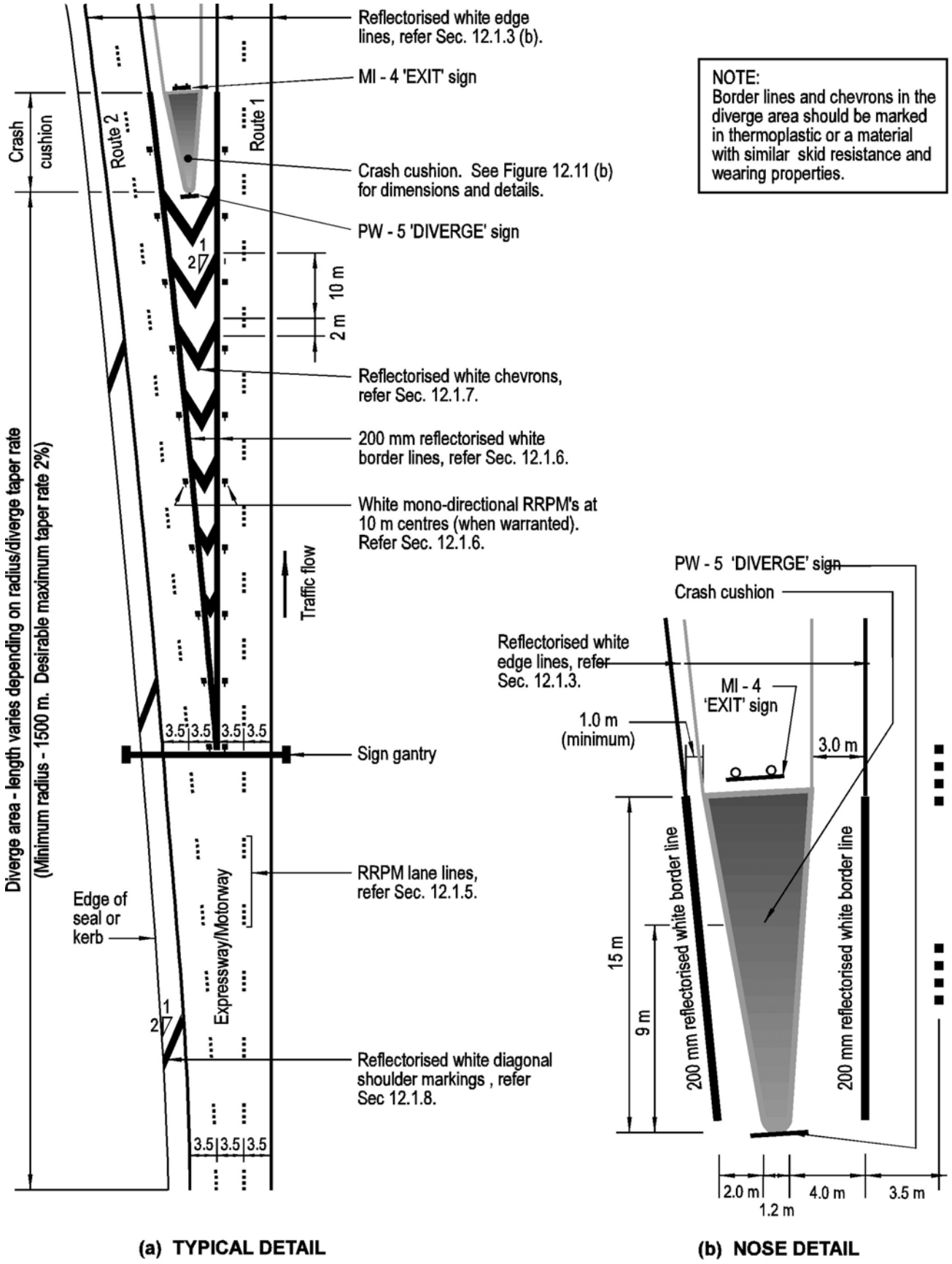


FIGURE 12.10 TYPICAL MULTI - LANE DIVERGE MARKINGS

12.6 LANE GAINS AND MERGES

12.6.1 GENERAL

Refer to FIGURE 12.11: Markings for a Lane Gain, and FIGURE 12.12: Markings for a Multi - Lane Merge.

The term 'lane gain' describes the situation where one or more lanes of a one-way road are added to a section of one-way motorway/expressway, usually on the left hand side of the main route. The continuation of the motorway/expressway route, therefore, has a greater number of lanes than it had on the approach to the lane gain area.

The term 'merge' describes the situation where two separate one-way roads are merged to a single one-way multi-lane motorway/expressway.

The number of lanes on an motorway/expressway route departing from a lane gain is the sum of the number of lanes approaching the lane gain area.

The number of lanes on an motorway/expressway route departing from a merge is usually one less than the total number of lanes approaching the merge area. The most common type of merge in New Zealand is a pair of two-lane one-way roads merging into a three-lane one-way departure road.

The lane gain or merge area extends from:

- the point where the left hand edge line of the left side road is offset 4·3 m from the right hand edge line of the right side road, to
- the point where the full number of lanes on the departure road is first achieved.

12.6.2 CHEVRON MARKINGS

Chevron markings in lane gain and merge areas are optional.

Chevrons should be marked where there are visibility restrictions on the approaches to these areas, to provide additional driver guidance in those areas. Relevant criteria include:

- poor visibility due to vertical alignment;
- poor visibility due to the off-ramp being developed from a through lane on a curve;
- where the accident history indicates a visibility issue.

12.6.3 SHOULDER MARKINGS

Sealed shoulders wider than 2 m should be marked with diagonal lines to distinguish them from traffic lanes.

Sealed shoulders 2·5 m wide, or wider, must be marked with diagonal lines.

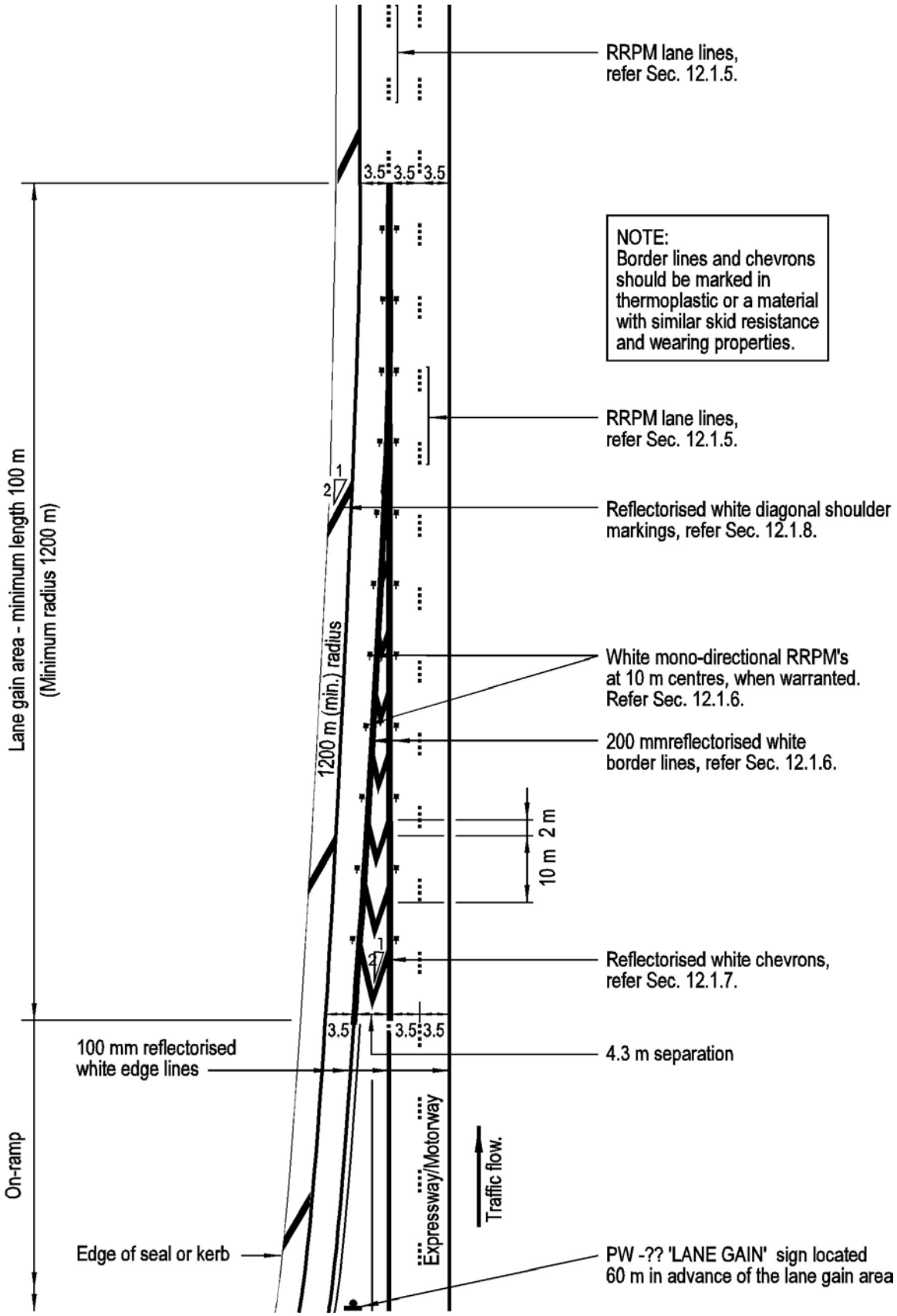
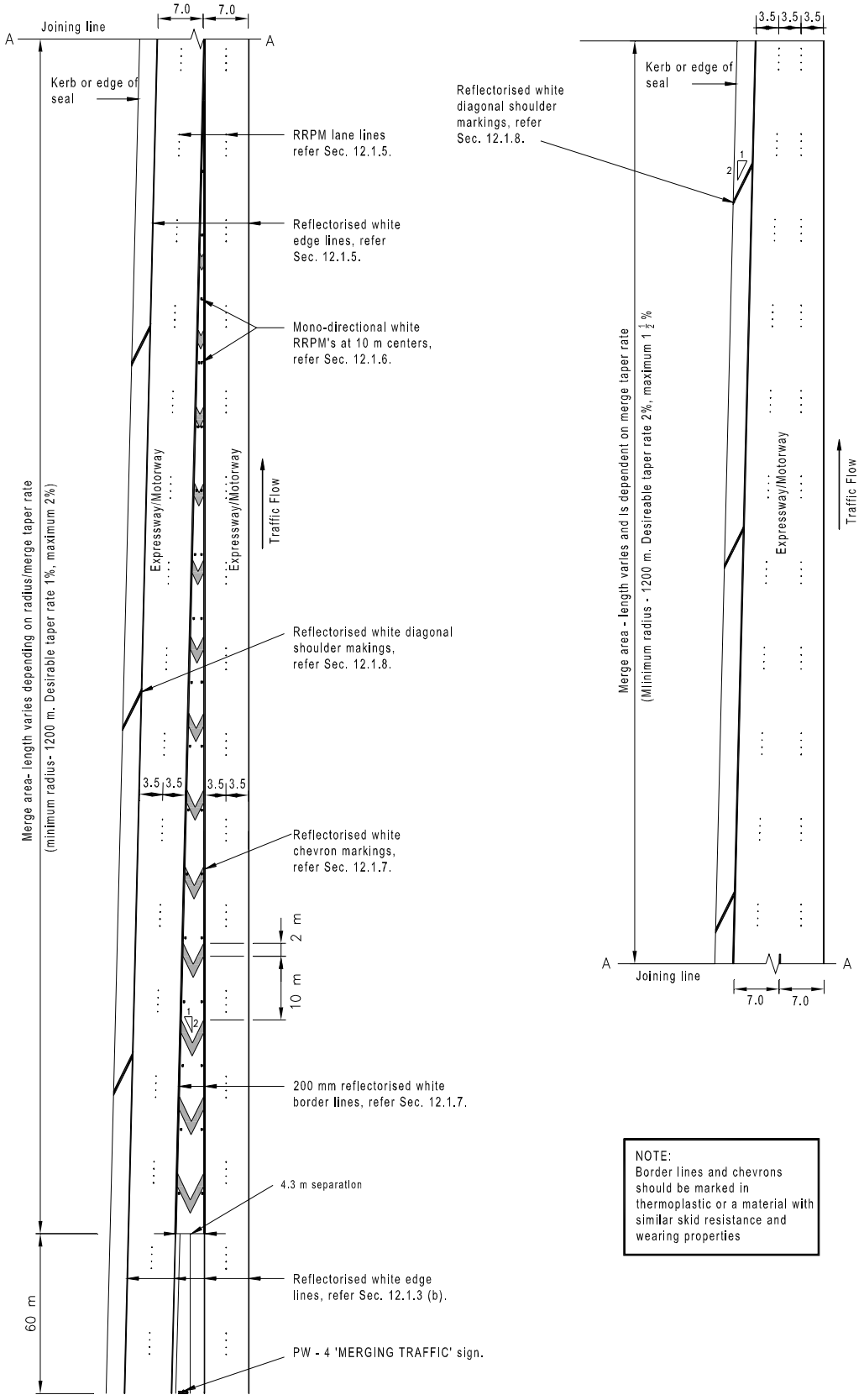


FIGURE 12.11 MARKINGS FOR A LANE GAIN



MARKINGS FOR A MULTI-LANE MERGE FIGURE 12.12

12.7 AUXILIARY LANES

12.7.1 GENERAL

Refer to FIGURE 12.13: Auxiliary Lane Markings.

The term 'auxiliary lane' refers to an additional lane added to a motorway/expressway carriageway in order to increase capacity and/or rationalise traffic flows.

Auxiliary lanes are most commonly used to provide:

- an additional lane at an exit, and
- a slow vehicle lane on a section of multilane motorway/expressway with a steep uphill or downhill grade.

They are also used to develop an additional lane for a two-lane exit and to extend the merge area at a parallel lane type entrance.

12.7.2 LANE GAIN

An auxiliary lane on a motorway or expressway should be developed with a diverge taper no greater than 1·0 metre per second of travel at the design/operating speed of the road, relative to the alignment of the adjacent traffic lane.

The desirable diverge taper is 3% but where it is necessary to provide the longest length of full width auxiliary lane prior to an exit diverge tapers up to 8% may be used.

The lane line through the diverge taper area shall be marked as a continuity line. From the end of the diverge taper the lane line shall be continued with RRPM lane line markings.

12.7.3 LANE DROP/MERGE

An auxiliary lane on a motorway or expressway should be terminated with a merge taper no greater than 0·6 metres per second of travel at the design/operating speed of the road, relative to the alignment of the adjacent traffic lane.

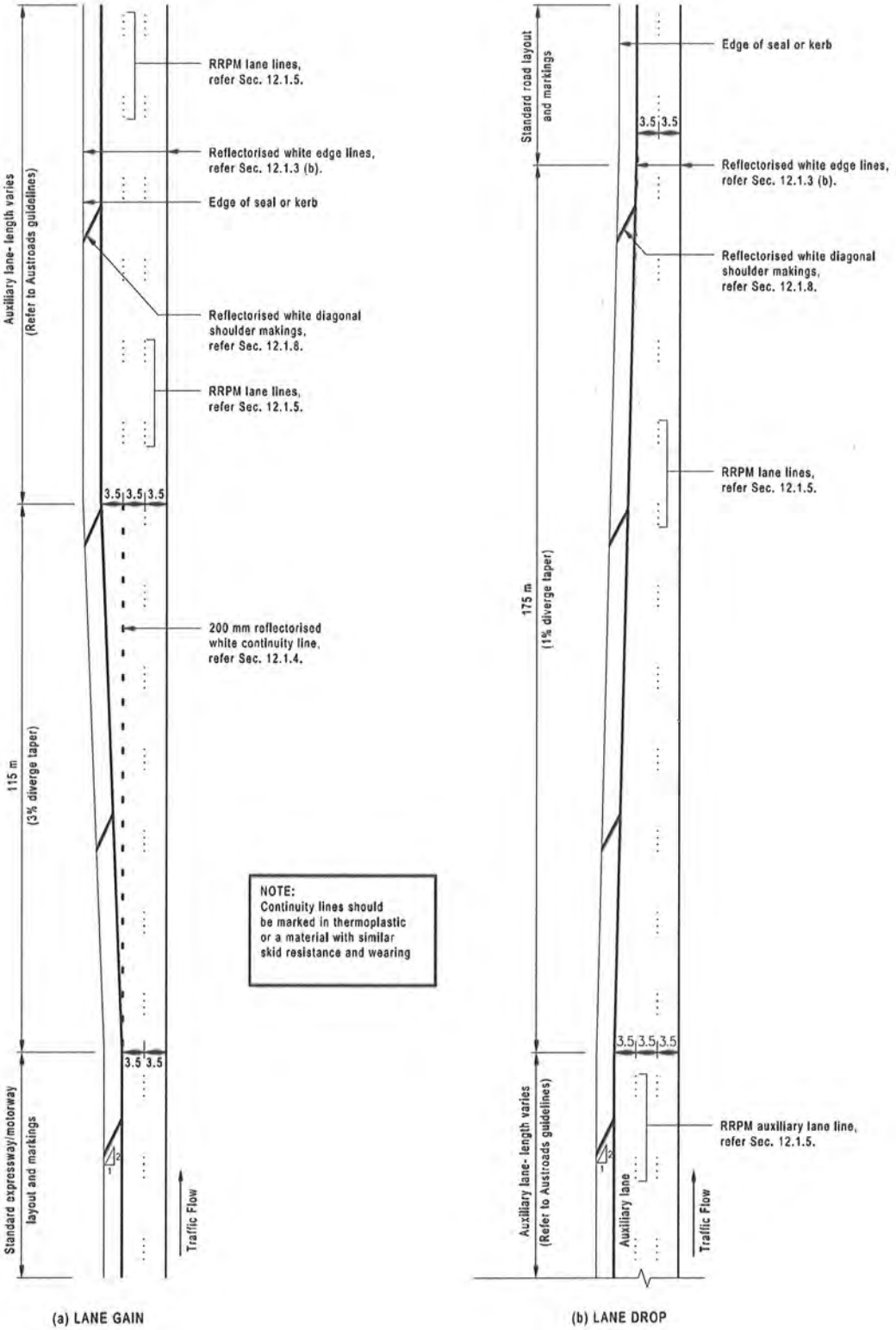
The desirable merge taper for an auxiliary lane drop is 1%.

No lane line shall be marked through the merge taper area.

12.7.4 SHOULDER MARKINGS

Sealed shoulders wider than 2 m should be marked with diagonal lines to distinguish them from traffic lanes.

Sealed shoulders 2·5 m wide, or wider, must be marked with diagonal lines.



AUXILIARY LANE MARKINGS FIGURE 12.13

12.8 BUS LANES

12.8.1 GENERAL

Sections of emergency shoulder on the motorways may be gazetted for use during peak periods as 'bus lane'. If utilised as bus lane the relevant section of emergency shoulder must be signed together with the hours of operation, be 'red chip sealed' and have the appropriate road markings. The bus lane signs are included in FIGURE 11.6, while the bus lane road markings are shown in FIGURE 12.14.

The minimum shoulder width requirements for the use of an emergency shoulder as a bus lane are given in FIGURE 12 14(b).

12.8.2 BUS LANE SIGNS

The bus lane signs in FIGURE 11.6 shall be used in accordance with the arrangement detailed in FIGURE 12.14(a).

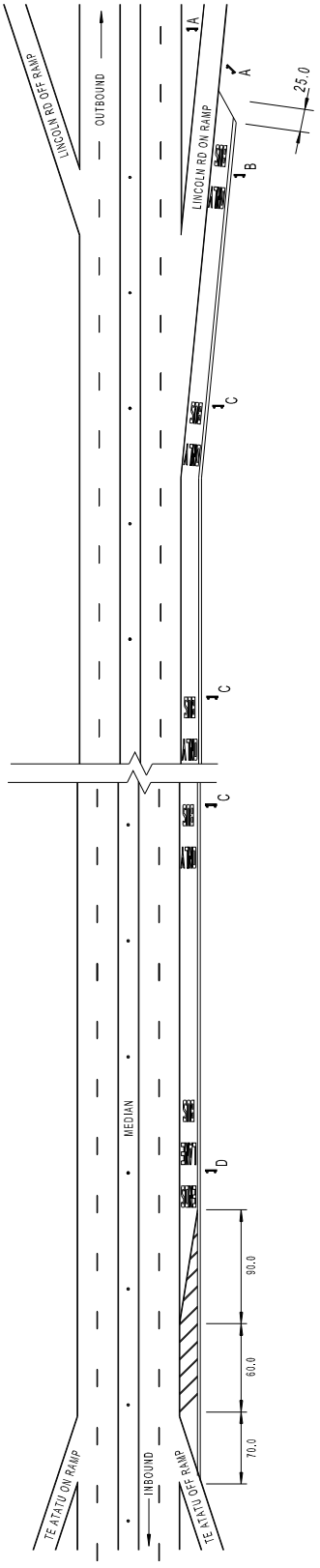
Where the bus lane applies in both the AM and PM peaks the Signs in Schedules B and C respectively shall be replaced with the Signs in Schedules H and J.

The first Sign in Schedule C or J respectively shall be located at an interval of not more than 400 m past the Sign in Schedule B or H. Signs in Schedules C or J shall be repeated at intervals of not more than 400 m.

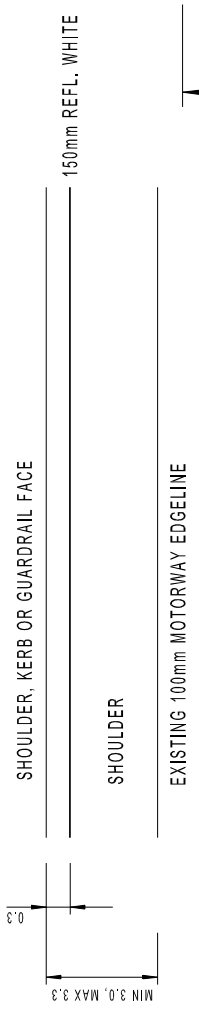
12.8.3 BUS LANE MARKINGS

The bus lane road markings 'BUS ONLY' and 'BUS LANE ENDS' shall be as detailed in FIGURE 12.14(c) and (d). The 'BUS ONLY' road marking shall be repeated at intervals of not more than 400 m.

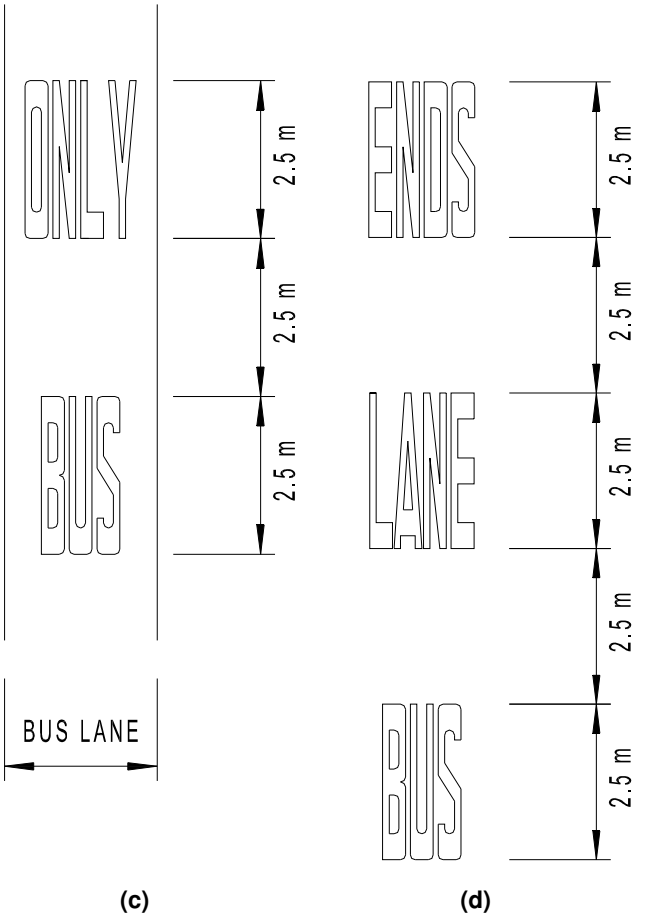
The bus lane shall end in a 90 m taper 60 m prior to the commencement of an off-ramp taper. This will require buses to merge with general traffic on the motorway or expressway prior to the off-ramp.



(a) SIGNS AND MARKINGS GENERAL LAYOUT



(b) SHOULDER WIDTH REQUIREMENTS



(c) **(d)**

ROAD MARKINGS

BUS LANE MARKINGS FIGURE 12.14

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