3.6 EXCLUSIVE BICYCLE PATHS

Exclusive bicycle paths shall be designated by means of the Bicycle Path ONLY (R8-1) sign which shall be provided as specified for Separated Path signs in Clause 3.5. Bicycle pavement symbols shall be provided at up to 200 m spacing. Either pavement arrows, a separation line as specified in Clause 3.3(a) or both may be used to encourage cyclists to travel on the left side of the path.

Typical exclusive bicycle path treatments are shown in Figure 3.5.

Warning signs as specified in Clause 3.2(g) may be required where a bicycle path crosses another path.

3.7 ROAD CROSSINGS MID-BLOCK

3.7.1 Summary of treatments

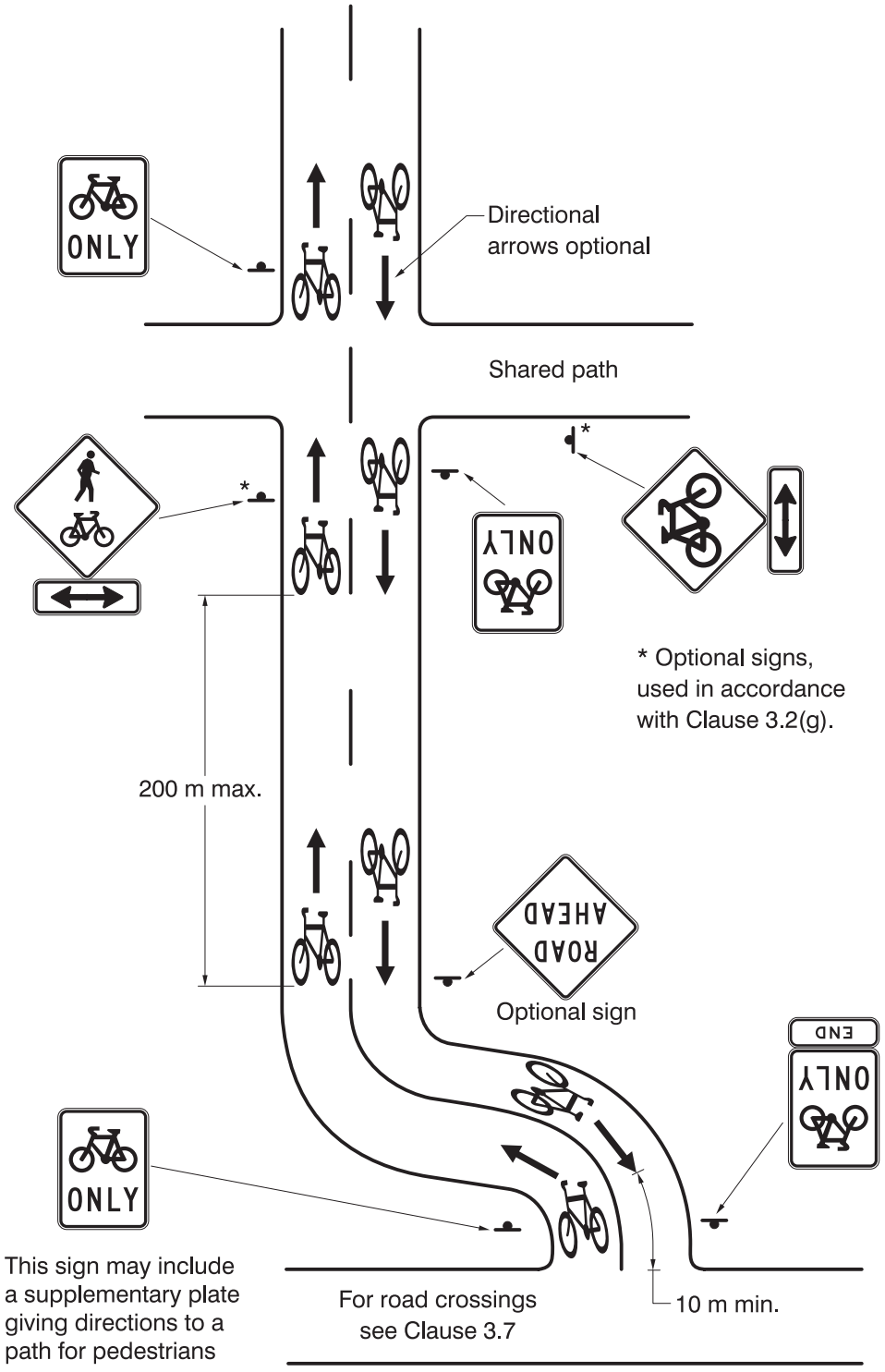
Treatments and use limitations on mid-block road crossings of exclusive bicycle or joint-use bicycle/pedestrian paths are summarized in Table 3.2.

NOTE: More detail on the geometric design, together with additional guidance on the use of the treatments, is given in Austroads Guide to Traffic Engineering Practice, Part 14: Bicycles (HB 69.14).

Table 3.2 BICYCLE AND JOINT-USE PATH TREATMENTS AT MID-BLOCK ROAD CROSSINGS

Case	Treatment (see Note)	Limitations on Use	Reference
(a) Road traffic gives way	(i) A pedestrian (zebra) crossing across the road.	(i) Use only where a warrant for a pedestrian (zebra) crossing is met.	Clause 3.7.2(a)
	(ii) GIVE WAY or STOP signs facing road traffic.	(ii) Intended primarily for an exclusive bicycle path crossing a minor road. Limitations on use need to be strictly observed.	Clause 3.7.2(b)
(b) Path traffic gives way	(i) No control other than road rules requirements.	(i) Unsigned crossing. Suitable only where pedestrians/cyclists can use natural gaps in the road traffic.	Clause 3.7.3(a)
	(ii) At-grade intersection. GIVE WAY or STOP signs facing bicycle traffic.	(ii) GIVE WAY or STOP sign warrants apply.	Clause 3.7.3(b)
(c) Traffic signal control	(i) Pedestrian actuated traffic signals (mid-block). 2-aspect pedestrian signal lanterns.	(i) Signalized crossing warrants apply.	Clause 3.7.4(a)
	(ii) Signalized at-grade intersection. 3-aspect bicycle signal lanterns.	(ii) Exclusive bicycle path only. Intersection signal warrants apply.	Clause 3.7.4(b)

NOTE: The treatments are suitable for all path types covered by this Part of the Manual unless shown otherwise in the third column.



NOTE: Where a broken separation line is shown, the separation line may be omitted altogether if there will be an orderly flow of user traffic without it.

Figure 3.5 TREATMENT OF EXCLUSIVE BICYCLE PATHS

3.7.2 Road traffic gives way

When road traffic is to be required to give way to path traffic the following types of crossing, controlled by either a marked pedestrian crossing or regulatory priority control signs as indicated shall be used:

(a) *Joint-use paths* Road traffic shall be controlled by a pedestrian (zebra) crossing in accordance with Part 10 of this Manual.

Cyclists are required to dismount before using the crossing. To encourage cyclists to dismount consideration should be given to providing a physical device such as posts or a crib, or in more hazardous situations a deflection fence at the road kerb. Where a deflection fence is used the crossing shall be offset from the path alignment. Physical devices may in themselves cause a hazard to cyclists under certain conditions, e.g. if an unlit path is used at night. An assessment aimed at balancing the conflicting risk situations should be made as part of the consideration. If the crossing is to be used by significant numbers of primary school students a deflection fence at the road kerb shall be provided.

A typical treatment using a pedestrian (zebra) crossing is shown in Figure 3.6.

The treatment in Item (b) may also be applied to joint-use paths. However before doing so, it should be established whether the greater protection afforded pedestrians by the treatment, in (b) below, is required in each particular case.

(b) *Exclusive bicycle paths* Road traffic shall be controlled by GIVE WAY signs as shown in Figure 3.7, or STOP signs if warranted*. This treatment may be appropriate for commuter or recreational type use but shall not be used where significant numbers of primary school children use the path. Where used, the following general requirements and limitations shall be observed:

(i) The road shall be a minor residential type street less than 8 m wide at the crossing point.

(ii) Traffic speeds on the minor road shall be either consistently below the general urban speed limit or controlled in the vicinity of the crossing by local area traffic management measures.

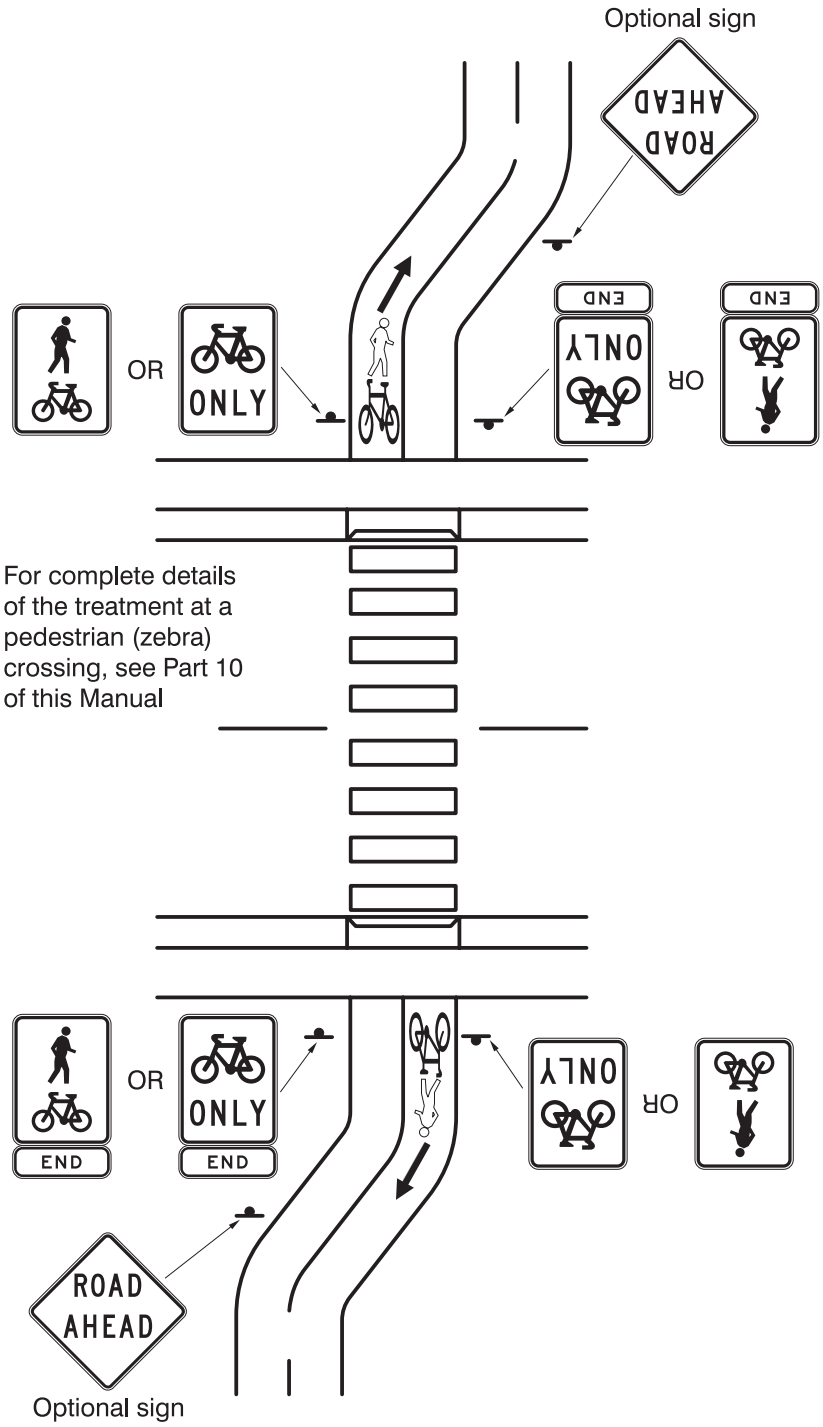
(iii) The path crossing shall be located on a flat-top road hump.

(iv) Adequate sight distance shall be provided for approaching traffic on all crossing approaches.

(v) The crossing shall be remote from any intersection, curve, or other roadway feature likely to be a distraction.

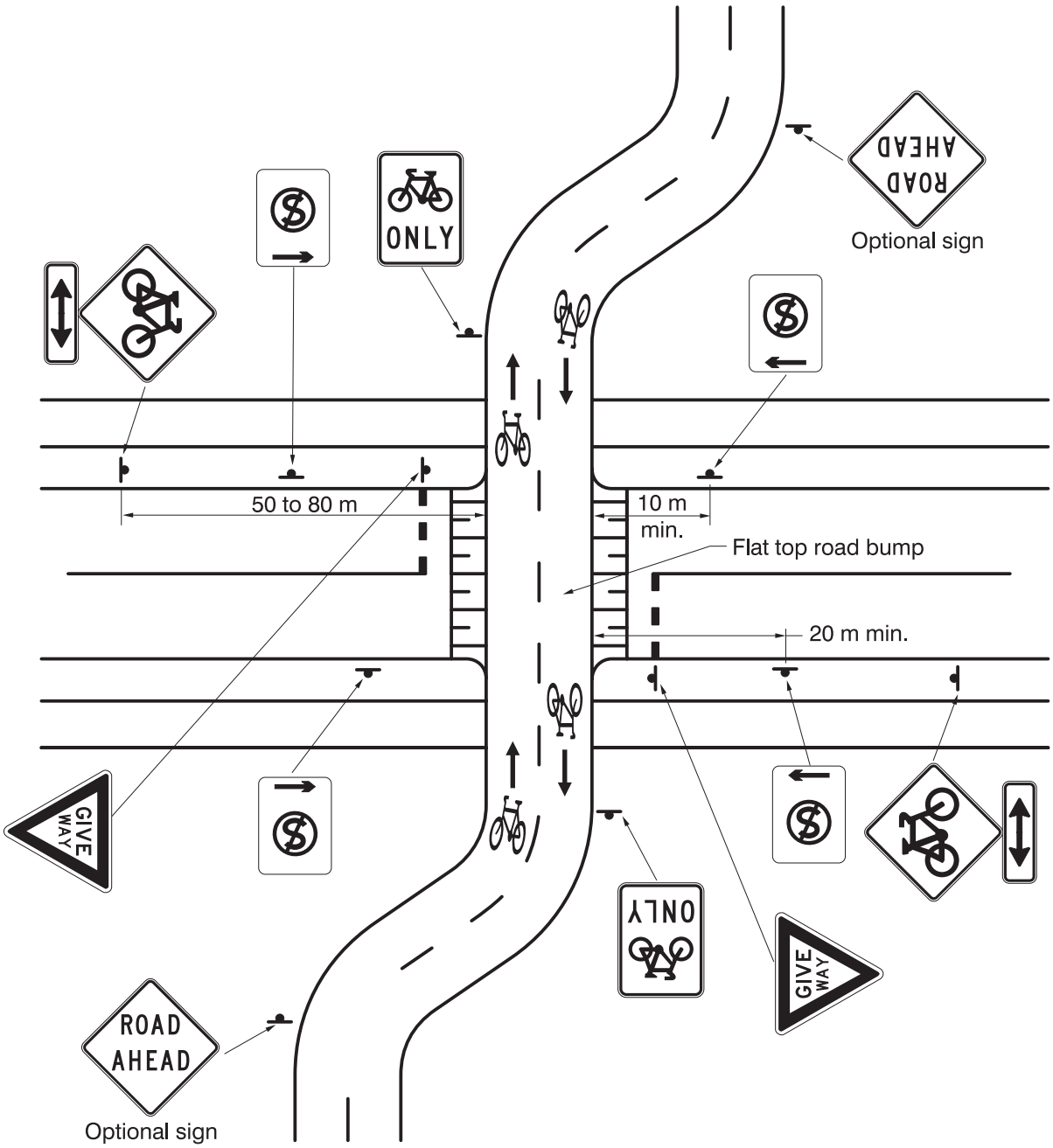
(vi) The treatment shall not be used if a warrant set down in this Manual is met for any higher form of control at the crossing or where policy or safety requirements preclude its use.

* Warrants for STOP signs are given in Part 2 of this Manual.



NOTE: CYCLISTS DISMOUNT signs (G9-58, see Clause 2.2(h)) may be required in conjunction with the END path signs to remind cyclists that they may not ride across the crossing.

Figure 3.6 BICYCLE OR JOINT-USE PATH CROSSING A ROAD AT A PEDESTRIAN (ZEBRA) CROSSING



NOTES:

1 This treatment may also be applied to a joint-use path, see Clause 3.7.2(a).

2 STOP signs and stop lines may need to be substituted for GIVE WAY signs and holding lines if sight distance to approaching cyclists is poor.

Figure 3.7 EXCLUSIVE BICYCLE PATH CROSSING A MINOR RESIDENTIAL TYPE STREET WITH ROAD TRAFFIC CONTROLLED BY STOP OR GIVE WAY SIGNS

3.7.3 Path traffic gives way

When path traffic is required to give way to road traffic, one of the following treatments, as appropriate, should be used:

(a) *No regulatory control* Where road traffic volumes are low enough to allow safe gaps for crossing traffic, either exclusive bicycle path crossings or joint-use path crossings may be provided without any regulatory controls (i.e. signs, signals or pavement markings).

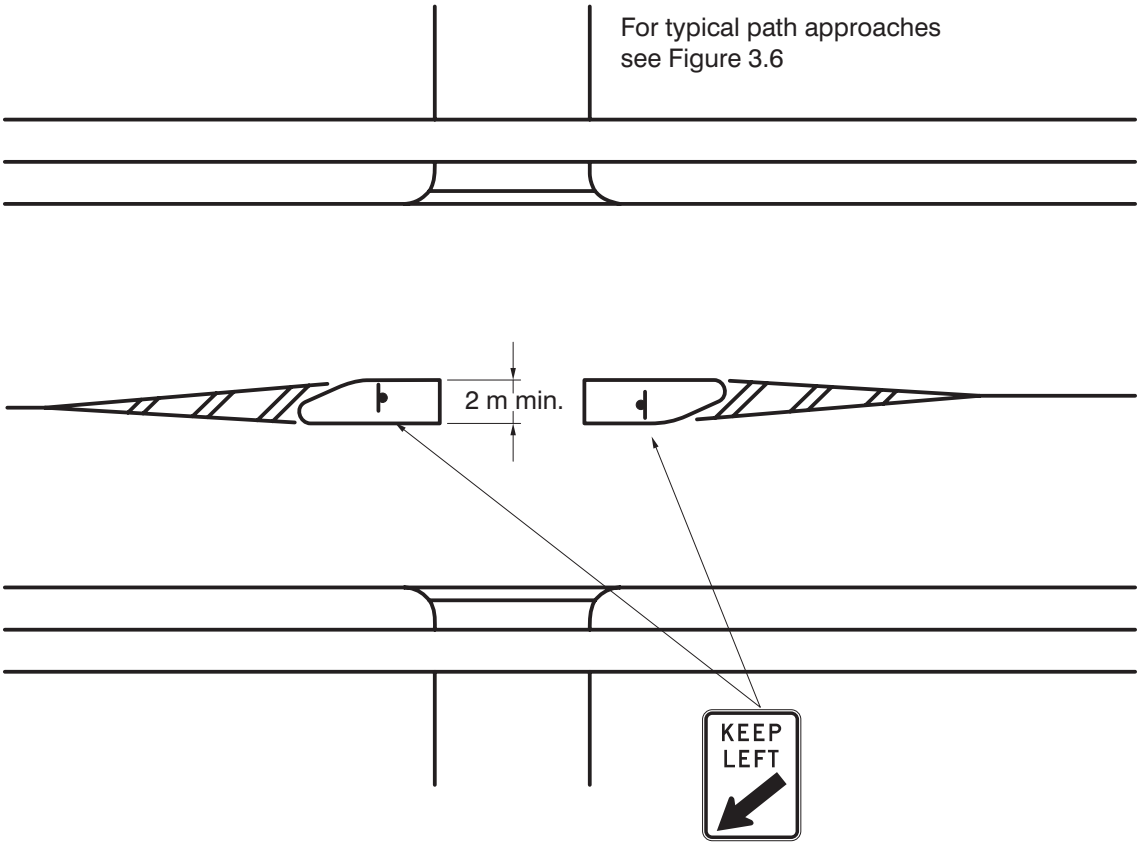
If needed to enhance the safety of crossing traffic, the following additional measures should be considered:

(i) Where road width, approach geometry and sight distance permit, a refuge island may be installed to stage path traffic across the road as shown in the example in Figure 3.8*.

(ii) The crossing distance may be reduced by providing kerb extensions on one or both sides of the crossing.

(iii) Direct access to the crossing may be eliminated by means of a reverse curved approach similar to that shown in Figure 3.7 or a physical device as described in Clause 3.7.2(a), or both.

(iv) Where sight distance to the crossing for cyclists is restricted, steps may need to be taken to warn them of the approach to the road by means of warning signs, e.g. ROAD AHEAD (W6-8) or a reverse curved approach.



NOTE: Parking restrictions may be required on the approaches to the crossing.

FIGURE 3.8 USE OF A REFUGE ISLAND TO STAGE PATH TRAFFIC ACROSS A HIGH VOLUME ROAD

* Recommendations for the design and provision of refuge islands can be found in Austroads Guide to Traffic Engineering Practice, Part 14: Bicycles (HB 69.14).

(b) *At-grade intersection* As an alternative to Item (a) above, a bicycle path crossing may be treated as an at-grade intersection. If it is to be treated this way the intersection shall be set up such that the road kerb line returns into the bicycle path to at least the road boundary and pedestrians using the road footpath cross the bicycle path in the same manner they would cross an intersecting road.

STOP* or GIVE WAY signs and associated markings shall be used to control the bicycle path approaches. No Turns (R2-7) signs with BICYCLES EXCEPTED supplementary plates may be needed to face both directions of road traffic.

The intersection layout displaying the GIVE WAY sign example at an exclusive bicycle path is shown in Figure 3.9.

If the path is a joint-use path, STOP and GIVE WAY signs and associated markings are only relevant for bicycle traffic.

3.7.4 Traffic signal control

Traffic signals may be used to control exclusive bicycle or joint-use path crossings, or at-grade exclusive bicycle path intersections with a road. When traffic signals are used the following requirements and recommendations apply:

(a) *Road crossings* The treatment shown in Figure 3.10 is suitable for both exclusive bicycle and joint-use path crossings. Where the treatment is intended to be used only by cyclists, two- or three-aspect bicycle signals shall be provided. In all cases where pedestrians are likely to use the crossing, two-aspect pedestrian lanterns shall be used, and pedestrian walk and clearance times shall be provided.

Cyclists are required by law to dismount before using a joint-use path crossing. To encourage cyclists to dismount, consideration should be given to providing a physical device as recommended in Clause 3.7.2(a) or a CYCLISTS DISMOUNT (G9-58) sign, or both.

(b) *At-grade intersections* The treatment shown in Figure 3.9 for exclusive bicycle path crossings may be adapted to traffic signal control. Three-aspect bicycle signal lanterns shall be used to control bicycle path approaches. Circle aspects shall control the road approaches. No Turns (R2-7) signs with BICYCLES EXCEPTED supplementary plates may be needed to face both directions of road traffic.

Traffic signals should be designed in accordance with State or National guidelines.

3.8 ROAD CROSSINGS AT INTERSECTIONS

3.8.1 Unsignalized intersections

No special provision is required for footpaths where they cross unsignalized side streets at intersections. An exclusive bicycle path or joint-use path may require an appropriate treatment of a type specified in Clause 3.7.3(a). If an exclusive bicycle path has been diverted at the intersection to cross the side street some distance from the intersection, treatments specified in Clauses 3.7.2 or 3.7.3(b) may be required.

3.8.2 Signalized intersections

For exclusive bicycle and joint-use path crossings at signalized intersections, the requirements and recommendations in Clause 3.7.4 apply. If a crossing is intended to be used exclusively by bicycle traffic, adequate provision shall be made elsewhere for any pedestrians in the vicinity who wish to cross.

* Warrants for STOP signs are given in Part 2 of this Manual.

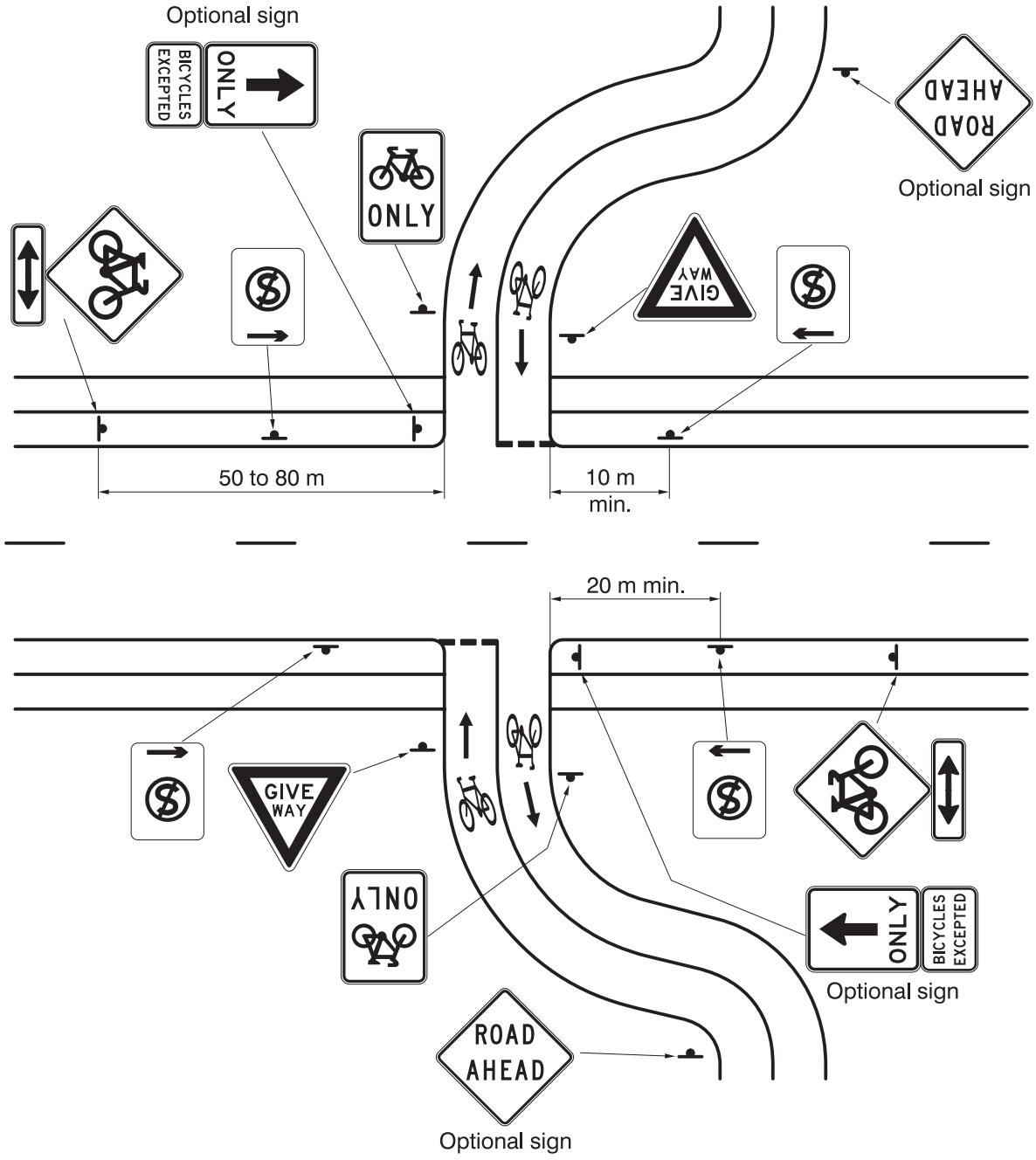
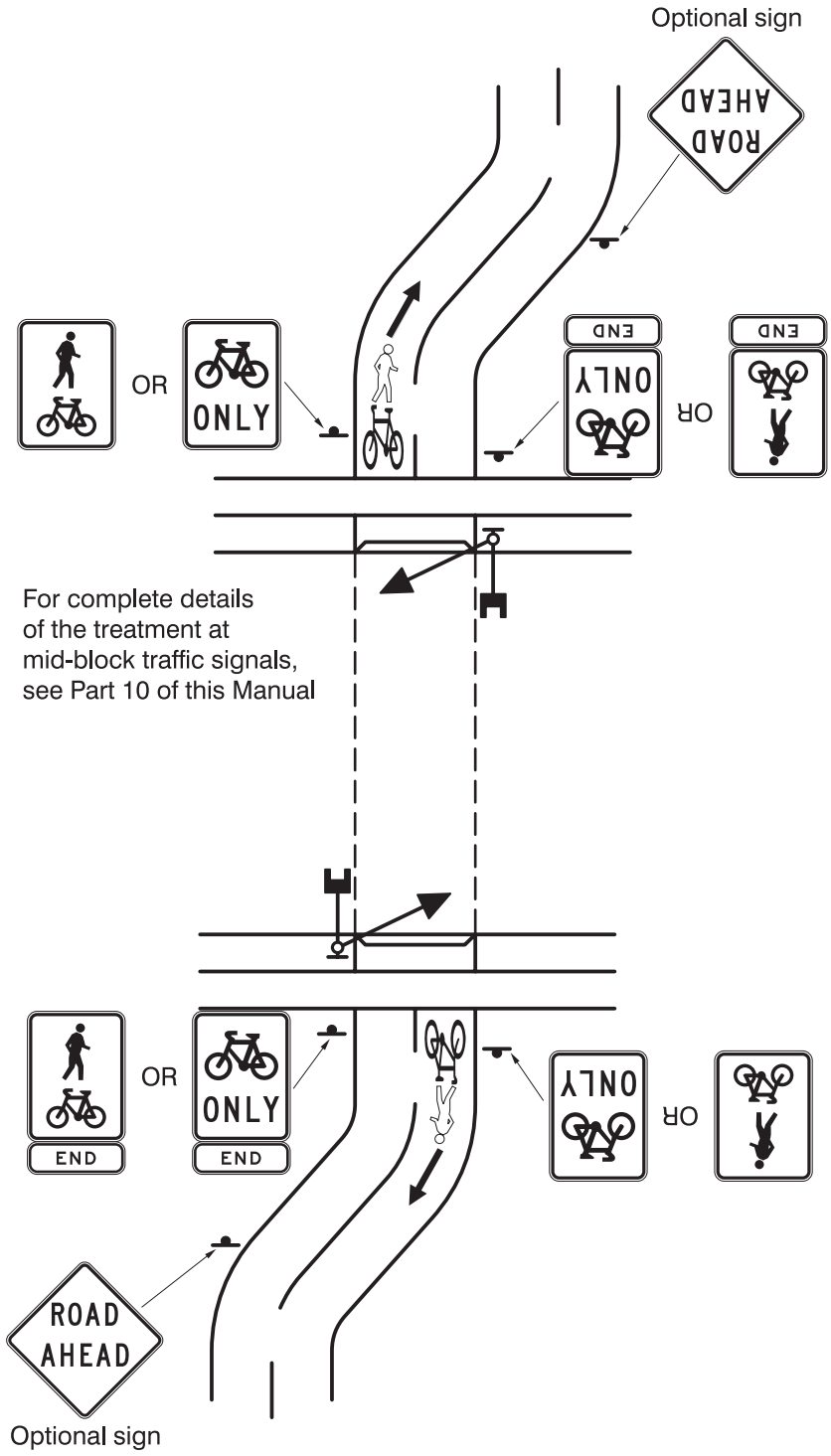


Figure 3.9 EXCLUSIVE BICYCLE PATH/ROAD CROSSING DESIGNED AS AN INTERSECTION AT GRADE



NOTE: CYCLISTS DISMOUNT signs (G9-58, see Clause 2.2(h)) may be required in conjunction with the END path signs to remind cyclists that they are not permitted to ride across the crossing.

FIGURE 3.10 USE OF MID-BLOCK PEDESTRIAN/CYCLIST OPERATED TRAFFIC SIGNALS AT AN EXCLUSIVE BICYCLE OR JOINT-USE CROSSING

SECTION 4. BICYCLE PROVISIONS ON FREEWAYS

4.1 GENERAL

This Section deals with provisions for bicycles on freeways* and assumes that all bicycle movement along the freeway is by means of the left hand sealed shoulder. Any signs regulating the use of the shoulder by traffic generally shall be modified as necessary to ensure that use by bicycles is permitted. Provisions at interchanges for bicycles are in three basic categories as follows:

(a) Bicycles permitted to proceed beyond the interchange but must travel via the exit ramp and return via a subsequent entrance ramp.

(b) Bicycles permitted to proceed through the interchange via the left hand freeway shoulder using designated ramp crossings.

(c) Bicycles not permitted beyond the interchange and must leave the freeway via the ramp.

Use of the devices and treatments specified in this Section is applicable only to freeways deemed suitable for use by cyclists by virtue of appropriate geometric design features and other relevant provisions, more advice on which can be found in Austroads Guide to Traffic Engineering Practice, Part 14: Bicycles. Provision may be made for bicycles to use rural freeways, where appropriate. Because of the difficulties and hazards which would confront them in high volume, high speed environments, bicycles are not permitted on urban freeways.

Provisions for bicycles at facilities other than freeways where there are entry and exit ramps similar to those provided on freeways, shall be adapted from those given in this Section.

4.2 SIGNS

Where bicycles are to be permitted on freeways as indicated in Clause 4.1 above, signs used to control bicycle traffic on the freeway are listed in Table 4.1. These signs are used as follows:

(a) *No bicycles (R6-10-3) On freeway (R9-5)*

R6-10-3

R9-5

The No Bicycles sign shall be used to prohibit bicycles from using a freeway or parts of a freeway from which they are to be excluded.

The No Bicycles, ON FREEWAY (R6-10-3/R9-5) assembly shall be placed on the freeway just beyond the exit ramp nose where bicycles are prohibited on the freeway, through and beyond the interchange. The No Bicycles sign alone shall be placed on the freeway just beyond the exit ramp nose where bicycles are not prohibited beyond the interchange, but are required to negotiate the interchange via the exit and entrance ramps.

(b) *Bicycles excepted (R9-3D)*

R9-3D

This supplementary plate shall be used in conjunction with signs controlling the use of the left shoulder on the freeway by other traffic, to confirm that cyclists are permitted to use the shoulder. It is typically mounted below the sign EMERGENCY STOPPING LANE ONLY (R5-58) (see Part 8 of this Manual).

Where the No Bicycles sign is used at the start of an entrance ramp to prohibit movement of bicycles onto the freeway, the supplementary plate, ON FREEWAY shall be placed below it. This sign assembly is not needed in this position if a sign of the type NO PEDESTRIAN, BICYCLES ... , BEYOND THIS POINT (R6-13) (see Part 8 of this Manual) is placed at the start of the entrance ramp.

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* These provisions also apply to facilities designated as MOTORWAYS or TOLL ROADS. Legends on signs may be adjusted accordingly, as necessary.

Table 4.1 SIGNS FOR CONTROL OF BICYCLES ON FREEWAYS*

Sign	Sign number	Size (mm)
No Bicycles	R6-10-3C	750 x 750
	R6-10-3D	900 x 900
BICYCLES EXCEPTED	R9-3D	1500 x 300
ON FREEWAY	R9-5C	750 x 375
	R9-5D	900 x 450
Bicycles (symbolic)	W6-7B	750 x 750
	W6-7C	900 x 900
CROSSING RAMP	W8-28B	750 x 500
	W8-28C	900 x 600
Bicycles USE RAMP	G9-62	600 x 1200
Bicycles CROSS HERE WITH CARE	G9-63 (L or R)	900 x 900
Bicycles USE LEFT SHOULDER	G9-64	750 x 600
Bicycles MUST EXIT	G9-65	600 x 1200

* The legend FREEWAY, where it occurs on any of the above signs may be replaced with MOTORWAY or TOLL ROAD, if appropriate.

(c) *Bicycles (symbolic) (W6-7), Crossing ramp (W8-28)*

W6-7

W8-28

This sign shall be used in advance of a designated bicycle ramp crossing to warn drivers of motor vehicles that bicycles may be crossing the ramp.

(d) *Bicycles use ramp (G9-62)*

G9-62

This sign shall be used on the freeway in advance of the start of an exit ramp where all bicycles must negotiate the interchange by leaving the freeway via the exit ramp and returning via the entrance ramp.

(e) *Cross here with care (G9-63)*

G9-63(L)

This sign shall be used at designated ramp crossing points where bicycles are permitted to use the freeway through an interchange and must cross both the exit ramp and the entrance ramp at those crossing points in order to do so.

(f) *Bicycles use left shoulder (G9-64)*

G9-64

This sign shall be used to remind cyclists that whilst on the freeway and ramps they must use the left shoulder.

(g) *Bicycles must exit (G9-65)*

G9-65

This sign shall be used to direct bicycles off the freeway when they are not permitted to travel any further along the freeway. The No Bicycles, ON FREEWAY (R6-10-3, R9-5) assembly shall be placed adjacent to the through traffic lanes of the freeway just beyond the start of the exit ramp in this case.

4.3 APPLICATION OF SIGNS TO FREEWAY INTERCHANGES

Provisions for bicycles at freeway interchanges are illustrated in Figures 4.1, 4.2 and 4.3.

NOTE: Figures 4.1, 4.2 and 4.3 have been adapted from Austroads Guide to Traffic Engineering Practice, Part 14: Bicycles (HB 69.14). Further details on geometric layouts for bicycle ramp crossings required in the case illustrated in Figure 4.1 are given in that publication.

Any exclusive bicycle paths provided for the negotiation of an interchange shall be treated in accordance with Clause 3.6.

4.4 PAVEMENT MARKINGS

Where bicycles are permitted to use the left hand sealed shoulder on a rural freeway and appropriate interchange signing is provided for cyclists, bicycle pavement symbols may be considered for use on the freeway shoulder. Bicycle pavement symbols at up to 1 km spacing will generally be adequate. Where provisions are made for cyclists to cross a freeway ramp (see Figure 4.1), a bicycle pavement symbol may be placed on the shoulder in advance of the crossing location. In these situations, the bicycle symbol may be a yellow marking.

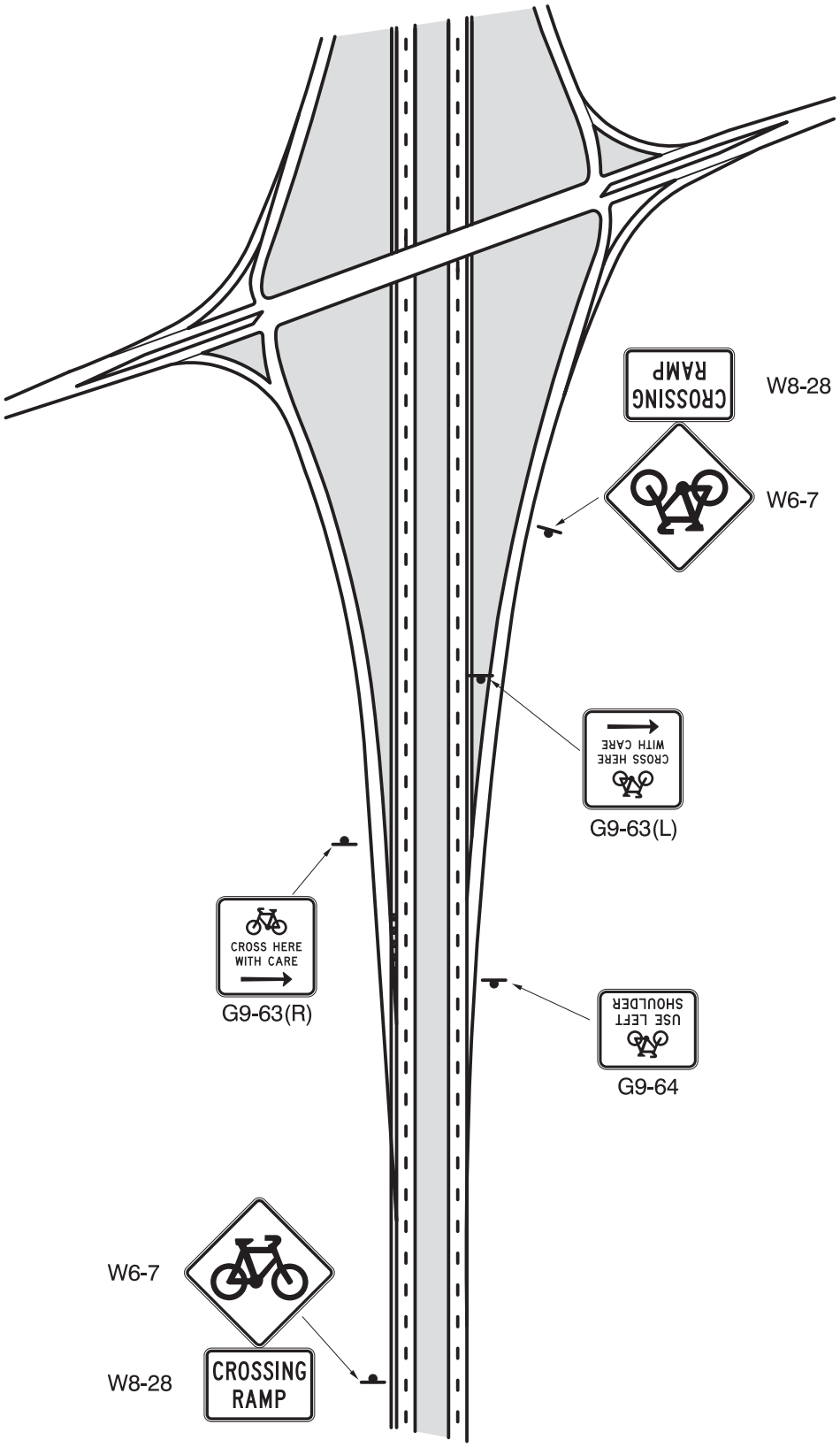


Figure 4.1 SIGNING FOR BICYCLES AT FREEWAY INTERCHANGES - BICYCLES PERMITTED TO CROSS RAMPS

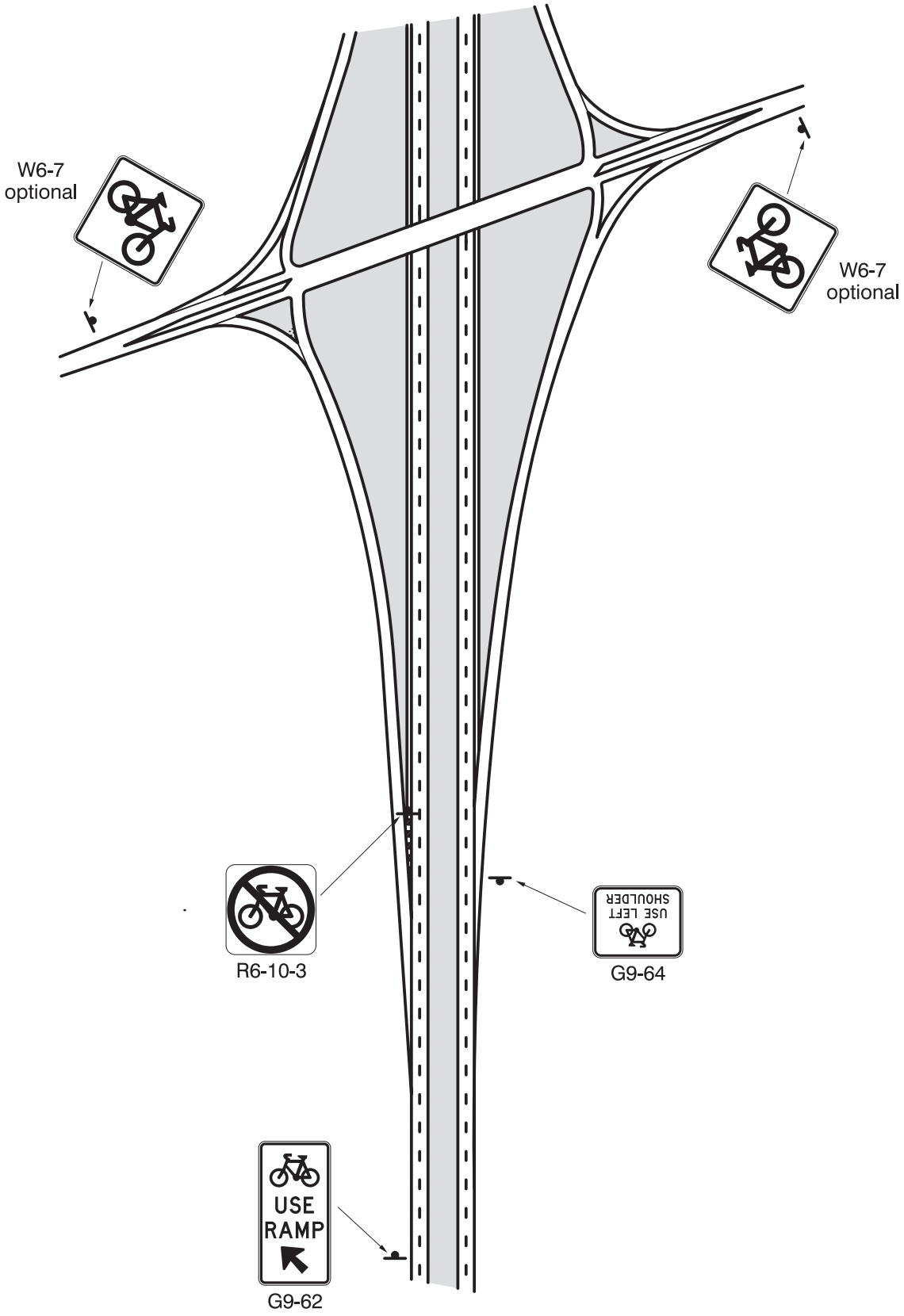
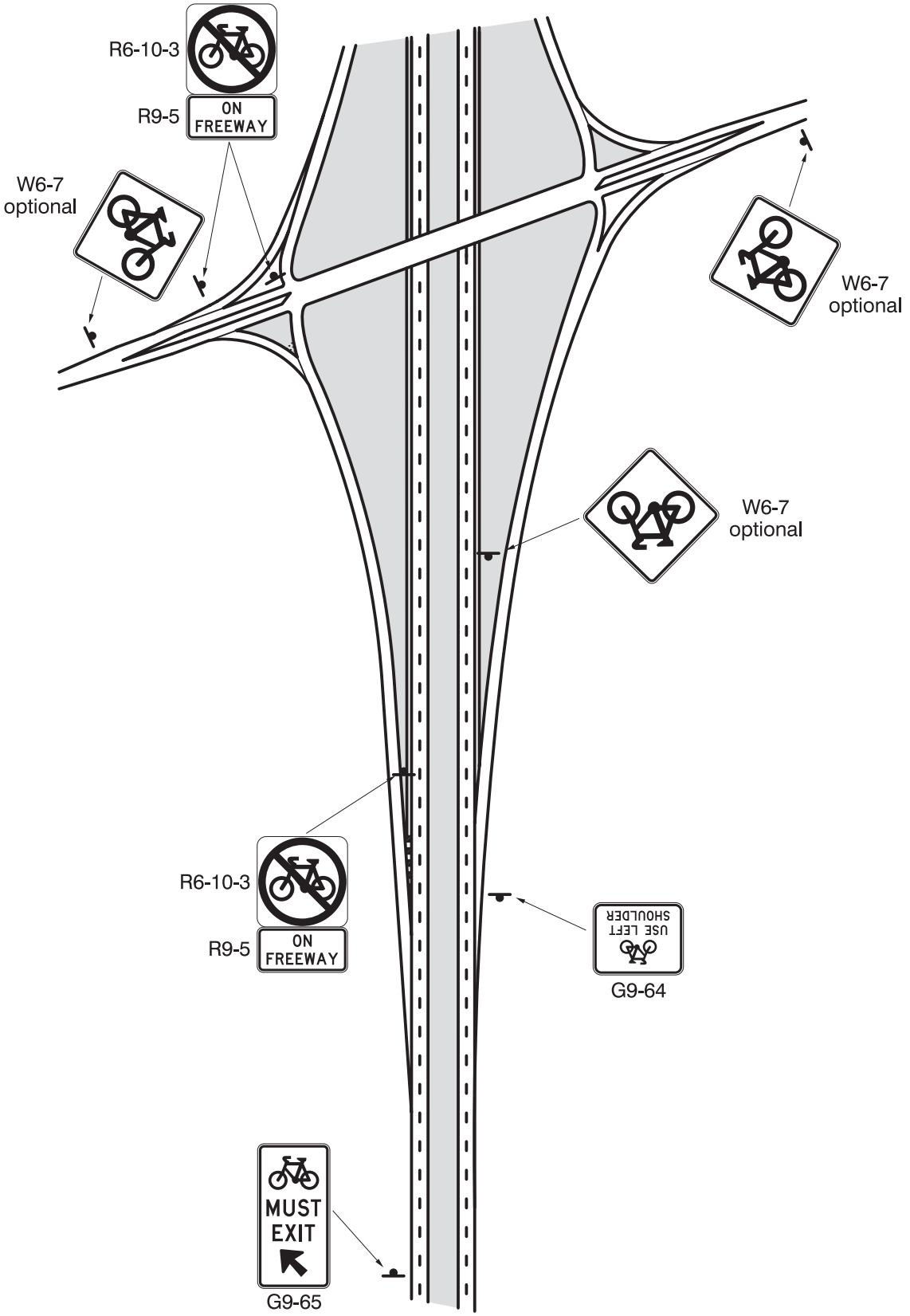


Figure 4.2 SIGNING FOR BICYCLES AT FREEWAY INTERCHANGES - BICYCLES NOT PERMITTED TO CROSS RAMPS



NOTE: Direction signs to enable bicycle traffic directed off the freeway to continue their journey, should be considered.

Figure 4.3 SIGNING FOR BICYCLES AT FREEWAY INTERCHANGES - BICYCLES NOT PERMITTED ON FREEWAY BEYOND INTERCHANGE

SECTION 5. NAVIGATIONAL AIDS FOR CYCLISTS

5.1 GENERAL

The purpose of this Section is to specify a series of principles on which the design and provision of navigational aids such as direction signs, route markers and route schematic signs are to be based. It is intended that subject to adherence to these principles, some flexibility in the design and presentation of navigational information will be permitted. The objectives of these principles are as follows:

(a) To maintain a degree of consistency which will allow a cyclist encountering signs for the first time to immediately recognize them as navigational aids aimed specifically at cyclists.

(b) To ensure that bicycle navigational information cannot be misread by motor vehicle drivers in situations where this could create a hazard.

(c) To ensure that safety principles in the use of colour and sign reflectorization are observed.

5.2 BICYCLE SYMBOL

Every direction sign, single assembly of direction signs, free standing bicycle route marker or other navigational aid shall include at least one bicycle symbol as shown in Figure 5.1. The overall height of the symbol shall be not less than the height of the principal legend on the sign.

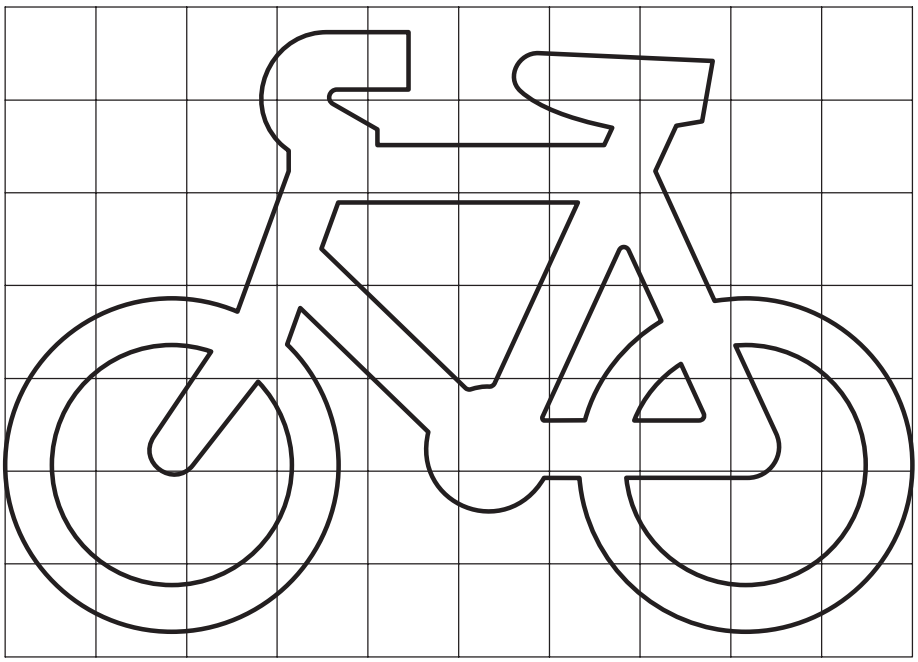


Figure 5.1 BICYCLE SYMBOL FOR USE ON SIGNS

5.3 COLOUR AND REFLECTORIZATION

5.3.1 Colour

The following colour schemes are preferred for bicycle direction signs and route markers:

(a) White legend on blue background for both on- and off-road bicycle route markers.

(b) Blue legend on white background with bicycle symbol in reverse colours for both on- and off-road direction signs.

(c) White legend on brown background for directions to tourist facilities or points of tourist interest.

The colours yellow (background only) and red (legend or background) are reserved for safety signs and shall not be used on any navigational aids.

5.3.2 Reflectorization

Many cyclists, particularly those commuting to and from work, travel during dusk and dawn. Signs along commuter routes should therefore have retroreflective sign face sheeting material.

Whilst some bicycle headlamps may not be powerful, others are bright enough to illuminate well located retroreflective signs. Also, there may be a substantial volume of motor traffic adjacent to or crossing bicycle commuter routes and the car headlights will often illuminate the signs provided for cyclists.

Reflectorization of bicycle signs shall be carried out in accordance with Part 1 of this Manual.

5.4 DIRECTION SIGNS

The following are requirements and recommendations for the design of direction signs:

(a) *Legend size* Destination names, route names and other directional information intended to be read by a cyclist while riding, should have a legend height of not less than 80 mm for capitals nor 60 mm for the 'x' height of lower case letters. Legend meeting the requirements of AS 1744, Series C, D, E or Modified E/lower case, shall be used.

(b) *Directional indication* Directional indication shall be by means of either chevrons, signs with pointed ends, or fully formed arrows.

Where arrows are used they shall be similar in proportion to sign arrows specified in AS 1743 with the overall width of the arrow head not less than the height of the principal legend on the sign.

Where chevrons are used they shall be applied in a manner similar to that specified for intersection direction signs in AS 1743. The height of the chevron shall be not less than 1.5 times the height of the principal legend on the sign. Signs using chevrons shall have pointed ends.

The use of pointed ends without other directional indication shall be restricted to signs with a light coloured background. The point angle shall be between 70 and 90 degrees.

(c) *Layout design* The design of direction signs shall follow the principles set out for the design of general purpose direction signs in Part 2 of this Manual. Typical examples of direction signs for cyclists are shown in Figure 5.2.

5.5 ROUTE MARKERS

Bicycle route markers are used to indicate routes which are most appropriate for cyclists.

A bicycle route marker shall comprise at least a bicycle symbol and arrow. It may also include a number or letter to distinguish it from other routes in the area or the name of the route, or both.

If the route number is incorporated into a direction sign, it shall have a border the same shape as the marker when used as a free standing sign.

5.6 LOCATION OF SIGNS

Care is needed that direction signs for cyclists are not read by motor vehicle drivers as applying to them, especially where following the cycling direction would be inappropriate or lead to an unsafe condition for motor vehicles. This can be avoided by one or a combination of the following:

(a) Placing signs where they either cannot be seen by motor vehicle drivers or are too remote from their line of sight to have any significance.

(b) Ensuring that all bicycle signs prominently display the bicycle symbol.

The possibility of cyclists being misled by signs for motor traffic may also need to be considered.

NOTE: Navigation aids for cyclists should generally be located and mounted in accordance with Part 1 of this Manual.

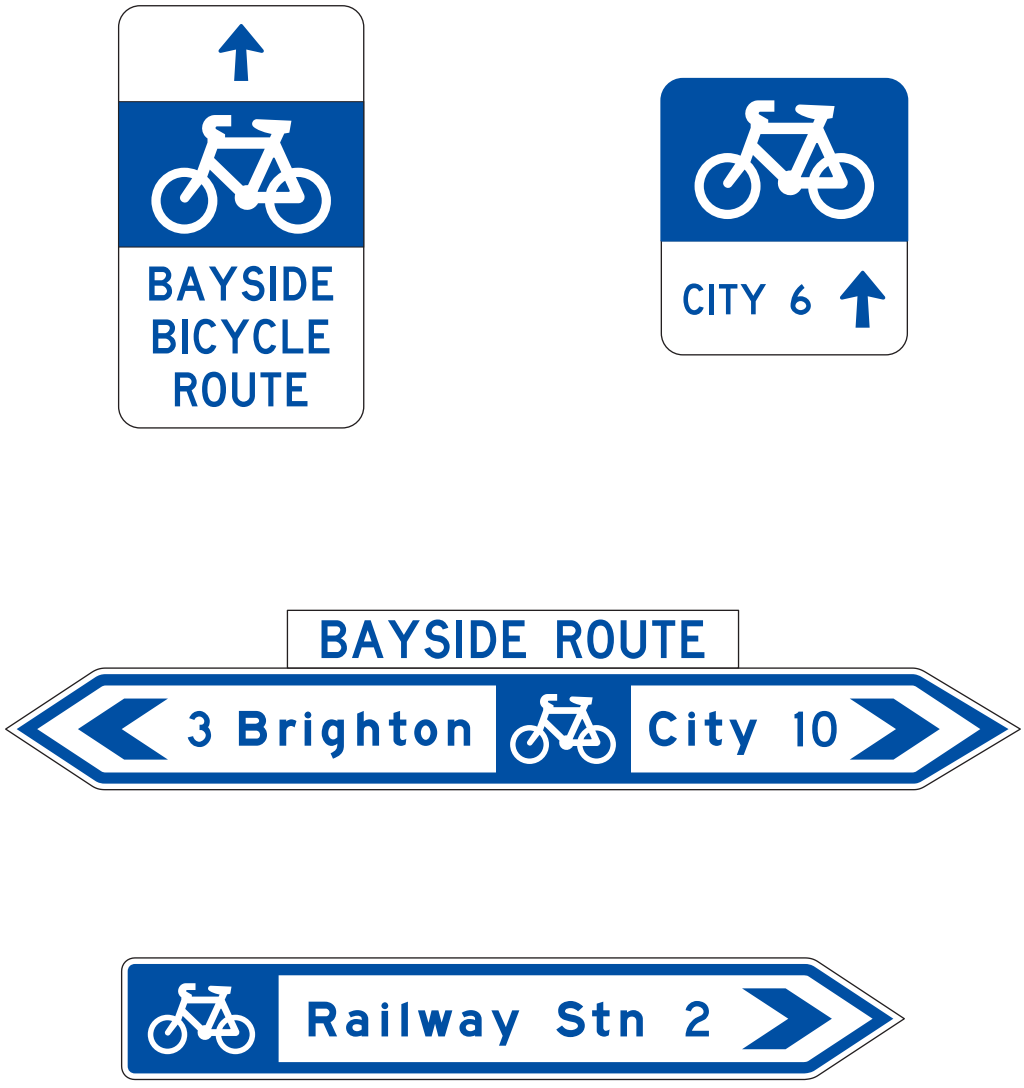


Figure 5.2 EXAMPLES OF DIRECTION SIGNS FOR CYCLISTS