Transport and Traffic Facilities Planning Scheme Policy

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1 Introduction

In the City of Brisbane, transport and traffic facilities planning and design is undertaken in accordance with the requirements of Austroads guidelines and *Queensland Streets—Design Guidelines for Subdivisional Streetworks*, including the *Australian Model Code for Residential Development* (*AMCORD*).

The following sections highlight Council's preferred solutions for aspects covered by these documents. Generally these have been developed with experience over time from the application of the standards/ guidelines.

For information on detail design, the Council's **Subdivision and Development Guidelines** should be consulted.

2 Pedestrian facilities

Provision for pedestrians is to be primarily on footpaths within road reserves, although walkways through developments, residential subdivisions and open space areas, particularly as linkages to public transport routes and activity nodes, are also required.

Verges are normally to be 4.25m wide, with a 1.2m footpath. In commercial and high activity areas they are to be fully paved.

Footpaths are to be provided along both sides of all major roads and neighbourhood accesses that serve as bus routes. Other neighbourhood accesses have a footpath on one side. On low speed, low volume local accesses, pedestrians share the carriageway with vehicles and bicycles.

Pedestrian walkways through developments and residential estates are to be a minimum of 5m wide with a minimum 1.2m footpath, which is to be increased to 2.5m when required to provide a shared facility with bicycles. Walkways are to be as wide and short as is feasible to make them as obvious, convenient and secure as possible, e.g. the ideal walkway between a residential cul–de–sac and a major road has the full width residential street right of way contiguous with that of the major road, so that a concrete strip of the order of only 5m length would form the link.

3 Cyclist facilities

Cyclist facilities are generally to be provided for on the carriageway on all of the major road system, in accordance with the Bicycle Brisbane Plan, by means of marked bicycle lanes or wide kerbside lanes. Bikeways on verges or through open space areas are not attractive to commuter cyclists and are mostly provided in the vicinity of schools for school children and for recreational cycling.

On the minor road system cyclists share the carriageway with other road users.

Because of conflicts between cyclists and pedestrians, in some situations shared pathways are not appropriate and segregated facilities are required.

Bikeways are to be a minimum of 2.5m wide, 3m being required in areas of heavy usage.

4 Public transport

Public transport relies fundamentally on pedestrian access to stations, terminals and stops for its success and viability.

Provision for access is often required through developments, subdivisions and open space areas. It is desirable to encourage highest people generating land uses to locate as close as possible to public transport facilities and conversely, not give over valuable land in the vicinity of these facilities to carparking or passive open space.

The maximum straight line distance is to be 400m to existing and future stops on a public transport route for 90% of the lots proposed in a subdivision.

The preference is for buses to be routed on traffic routes carrying more than 3,000 vehicles per day. Indented bus bays and associated facilities are to be provided where appropriate along the route, in particular at signalised intersections that enable pedestrians to cross safely.

It is difficult to achieve speed control on neighbourhood accesses if they are to be used as bus routes. Buses are to travel at a maximum of 40kph, the same as other vehicles. The most appropriate treatment, because mounting of kerblines at speed control devices by buses is not acceptable, is shown in *Figure a*.

Pedestrian links are to be provided from adjacent minor roads and particularly from cul–de–sac heads to public transport routes.

In large developments provision for rail and busway stations, ferry terminals or bus interchanges may be required.

5 Road hierarchy

The road hierarchy is shown in the Planning Scheme Maps. It enables the development of a safe and efficient road system catering for the movement of people and goods while maintaining the amenity of urban areas.

The road hierarchy is divided into two broad categories:

- minor roads, which provide for local movement and individual property access. They comprise the larger proportion of the road system and hence provide the majority of walkways and bikeways
- major roads, which provide the major movement function for people and goods.

The intent for each of the components of the Road Hierarchy is described below. Details of road construction standards for each of the road types indicated in this section are contained in the Council's **Subdivision and Development Guidelines**.

5.1 Motorways

These provide for inter and intra–regional connections, and direct longer distance traffic around heavily developed areas. It is intended that motorways will:

- be constructed to limited access arterial standard
- be designed for the efficient and safe movement of high volumes of people and goods
- be designed to help present attractive landscaped entrances and routes through Brisbane
- incorporate design measures to minimise environmental impacts on surrounding land uses
- provide for bikeways separate from vehicle carriageways
- typically have four or six lanes when fully developed
- not provide property access.

5.2 Arterial routes

Arterial routes provide intra–city connections between major activity centres and residential areas of the City. It is intended that arterial routes will:

- be constructed to type F standard or better
- be designed for the efficient and safe movement of high volumes of people and goods
- be designed to help present attractive landscaped entrances and routes through Brisbane
- incorporate design measures to minimise environmental impacts on surrounding land uses
- avoid pedestrian, bicycle and vehicular traffic conflicts
- where practicable be designed to provide bikeways on the carriageway of the road
- typically have four or six lanes when fully developed
- ideally have no direct property access.

5.3 Suburban routes

Suburban routes connect arterial roads through and around suburbs. It is intended that suburban routes will:

- be constructed to type D standard
- be designed for the efficient and safe movement of moderate to high volumes of people and goods
- be designed to present attractive landscaped routes
- incorporate design measures to minimise environmental impacts on surrounding developments
- avoid pedestrian, bicycle and vehicular traffic conflicts
- where practicable be designed to provide bikeways on the carriageway of the road
- typically have two to four lanes when fully developed
- ideally have no direct property access.

5.4 District access routes

District access routes carry primarily district based traffic. It is intended that district accesses will:

- be constructed to type D standard
- be designed to carry freight associated with the local or suburban area
- minimise environmental impacts on surrounding activities
- provide walkways and bikeways and bus routes. Where practicable, bikeways should be provided on the carriageway of the road
- typically have two lanes
- ideally have no direct property access.

In Brisbane, many of these routes have direct property access allowed and therefore traffic management is to reflect and protect residential amenity while providing the traffic movement function.

5.5 Neighbourhood access

Neighbourhood accesses collect low volumes of local traffic. It is intended that neighbourhood accesses will:

- be constructed to type C standard
- provide direct property access
- minimise environmental impacts on surrounding activities
- be designed to provide safe use by pedestrians and cyclists and avoid conflicts between pedestrians, bicycles and vehicular traffic.

5.6 Local access

Local accesses provide for individual property access. It is intended that local accesses will:

- be constructed to type A or B standard
- minimise environmental impacts on surrounding activities
- provide a pedestrian and cyclist preferred environment
- be designed to provide safe use by pedestrians and cyclists and avoid conflicts between pedestrians, bicycles and vehicular traffic.

5.7 Industrial access

Industrial accesses provide for individual property access. It is intended that industrial accesses will:

- be constructed to type E standard
- minimise environmental impacts on surrounding activities
- provide a pedestrian and cyclist preferred environment
- be designed to provide safe use by pedestrians and cyclists and avoid conflicts between pedestrians, bicycles and vehicular traffic
- serve industrial areas and link directly to district access routes.

6 Major roads

Existing and proposed major roads are shown on the Road Hierarchy Planning Scheme Map.

Direct access to new developments and subdivisions is usually not appropriate to these roads which currently carry or in the future will be carrying in excess of 3,000 vehicles per day at speeds generally in excess of 60kph. Major roads are used as bus public transport routes and commuter cycling routes.

The typical cross–sections used in Council are as shown in *Figure b*. Although cross–sections showing bikeways on the verges are included, they are infrequently used in practice, because of commuter preference for on–carriageway facilities and other design factors. The 6m median is used to enable most vehicles to completely shelter during crossing or turning manoeuvres and to provide for landscaping. *Table 1* provides a summary of road design elements applicable to major roads.

Intersections with other major roads and some higher order minor roads would normally be signalised. Two lane roundabouts are generally considered to be inappropriate options, primarily because of their incompatibility with pedestrians and cyclists and shortcomings in terms of capacity, coordination, control of priority and driver performance.

7 Minor roads

Existing minor roads are shown on the Planning Scheme Maps. *Table 1* provides a summary of road design elements applicable to minor roads. The following approach is used for the planning and design of elements of the minor road system for subdivisions, both residential and industrial.

7.1 Residential subdivisions

While drivers have the expectation of high speed/high traffic volume conditions on major roads, they should expect that speed and volumes are constrained in residential areas.

Although speed control is commonly achieved by the use of speed control devices, it is not the preferred approach. In retrofitting exercises, such as in local area traffic management (LATM) schemes where the road network is fixed, alternatives are usually not possible.

In new subdivision layouts, however, a tight road alignment design is the preferred approach. Speed control devices generally are not well perceived by either road users or nearby residents, and designers should look to better alternatives where practicable. If the installation of speed control devices has to be resorted to, acceptable standards are given below.

Road design in higher density residential areas is similar to that used in lower density areas, but with the exception that the requirements for on–road parking are greater.

In rural residential areas, higher maximum speeds are appropriate and on–road parking needs are lower.

7.1.1 Layout design

Following are the guidelines for layout design:

- circulation between near neighbourhoods is to promote travel via roads used for local access rather than state controlled roads
- good pedestrian/cyclist connectivity internally and to the road network is to be provided
- cul–de–sac and loop layouts are to ensure strict control of traffic speeds and volumes
- no more than three minor roads should need be traversed from the most remote lot to the nearest accessible district access
- travel time for a vehicle in a low speed residential environment should be no greater than 90 seconds
- for network legibility, consistent forms of speed control treatment are to be used along Neighbourhood Accesses
- priority at intersections is to be defined by means of paving or a concrete strip across the minor leg. This will also assist network legibility
- to minimise maintenance commitments and improve visual amenity, signs and pavement markings would not normally be used, except at:
  - roundabouts
  - entrances to low speed residential areas, where 'Local Traffic Area 40kph' signs are to be used
  - locations where isolated devices might be installed, where standard manual of uniform traffic control devices (MUTCD) practice applies
- night time conspicuity of speed control devices is to be enhanced by street lighting and reflector markers on kerb faces, where considered appropriate
- the design vehicle for residential minor roads, including cul–de–sacs, is the Council standard design refuse collection vehicle.

7.1.2 Volume limits on minor roads

Following are the guidelines for volume limits on minor roads:

- to determine traffic volumes on individual roads, assume a generation rate of 10 vehicles per day (vpd) per lot in a typical low density subdivision and 6vpd per residential unit for a higher density development. Allow greater provision for higher generating development, such as where shops, sporting venues or schools are proposed
- potential rat–running is to be prevented through appropriate layout design, i.e. ensure that a local residential neighbourhood is not permeable to vehicular traffic although it should be to pedestrians and cyclists
- individual lot access is to be permitted only on minor roads that will ultimately carry less than 3,000vpd
- maximum acceptable volumes are 3,000vpd on minor roads with 7.5m pavement (neighbourhood access), and 750vpd on minor roads with 5.5m pavement (local access)
- where a residential area is accessed by one road and that road is likely to carry more than 1,000vpd, alternative emergency access is to be provided.

7.1.3 Speed control

Following are the design guidelines for speed control:

- designers are to aim to restrict vehicle speed to a maximum of 40kph on district accesses and 30kph on local accesses. Speed control by tight bends is preferred although speed control devices may also be used.

  Satisfactory control can be achieved by restricting car paths (2m wide between lines of kerb) to a maximum of 20mR, typically at spacings of 120m in a 40kph zone and 75m in a 30kph zone. Horizontal deflection devices are preferred to the vertical deflection type. A tight bend has an inside kerb radius of 10mR.
- the most useful devices are:
  - deflected T, with splitter islands (shown in *Figure c*)
  - traffic islands (shown in *Figure d*)
  - roundabout (12mR outside radius) (shown in *Figure e*).

  Where centre–median traffic islands are used, mountable kerbing is required so as to encourage trucks to mount the islands rather than the verges. Landscaping in the locations shown in the figures,

as well as discouraging mounting of verges, also contributes to the slowing effect and is to be included for installations.

- effective speed control for cars through use of devices typically requires negotiation by a design refuse vehicle mounting kerbs, usually internal to the device. Mountable kerb height and profile on islands/medians are to be as shown in *Figure f*.
- the overall length of treatments and of islands within treatments are to be minimised to reduce impact on access to abutting allotments and to on–road parking.

7.1.4 Cross–sections

Following are the guidelines for cross–sections:

- design is to be based on the 'single moving lane' concept. Special passing provision is usually not required in residential minor roads
- **local access**—pavement width is to be a minimum of 5.5m where up to 750vpd (750 vpd equates to 75 lots in a Low Density Residential Area catchment)—this 5.5m width provides for one moving lane and one parking lane
- **neighbourhood access not carrying buses**—pavement width is to be a minimum 7.5m up to 3,000vpd (300 lots in Low Density Residential Area catchment)—this provides for one moving lane and two parking lanes
- **neighbourhood access carrying buses**—pavement width is to be a minimum of 6m plus two 2.5m wide parking lanes—this provides for two moving lanes and two parking lanes with kerb buildouts primarily to narrow the effective width of the street and enhance landscaping opportunities
- the maximum acceptable length of 3.5m wide access driveways is 20m. Before approval would be given to such driveways, acceptance from the Waste Management Unit for refuse collection is required
- verges are generally 4.25m wide. This may be reduced to 3m at localised points of constriction such as at speed control devices or at cul–de–sac heads.

7.1.5 On–road parking

Following are the guidelines for on–road parking:

- parallel parking is generally to be adequately provided for within the standard carriageway cross–section
- visitor parking is to be available at the rate of 1 space on road per 2 residential lots; in higher density areas more is required
- Cul–de–sac and small lot (less than 15m frontage) locations may require, in addition, indented bays or other special provision. Additional on–road parking space may also be required near parks and other community facilities
- where designs allow for cars to be parked opposite a verge crossover on roads less than 7.5m in width, the crossover is to be 5m wide at the kerbline
- cul–de–sac design is to ensure no blockage by parked vehicles by appropriate location of driveways at heads.

7.1.6 Geometric design

Following are the guidelines for geometric design:

- sight distance, because of the single moving lane concept, is double the stopping distance. This is particularly relevant at tight bends
- general minimum sight distances—from eye height to eye height—should be 60m in a 40kph zone and 40m in a 30kph zone. Eye height from a car is to be taken to be 1.15m
- curve widening is required on tight bends on 5.5m wide streets—1m for less than 20mR and 0.5m for between 20mR and 30mR
- a kerb return radius of 6m at street intersections is generally appropriate
- a typical approach at an intersection between a neighbourhood access and a major road is shown in *Figure g*
- a typical approach to alter the priority of one street with another at a T–intersection is shown in *Figure h*.

7.2 Industrial subdivisions

Industrial subdivisions require wide carriageways and large turnaround areas to accommodate semi–trailers and possibly larger design vehicles such as B–doubles.

In Brisbane, a 14m carriageway is used for all industrial minor roads to provide for movement, manoeuvring, parking and on–road bicycles.

Table 1 Major and minor road design elements

Road design criteria	Minor roads			Major roads			
	Local Access	Neighbourhood access		Industrial access	District access	Suburban route	Arterial route
		Non bus route	Bus route				
Individual lot access	yes	yes	yes	yes	no	no	no
Reserve width (min)	14m(1)	16m(1)	19.5m(1)	22.5m	19.5m–24m	33m–38m	40m–45m
Verge width (min)(2)	4.25m(3)	4.25m	4.25m	4.25m	4.25m(4)	4.25m(4)	4.25m(4)
Traffic catchment (max)	100 lots	300 lots	300 lots				
Traffic volume (range)	0–750vpd	750–3,000vpd	3,000vpd (max)		3,000–15,000vpd or more	15,000–35,000vpd or more	>35,000vpd or more
Design speed	40kph (max)	40kph (max)	40kph (max)	60kph (max)	60kph (min)	80kph (min)	80kph (min)
Carriageway:							
- width	5.5m	7.5m	11m	14m	11m	2 x 7.3–9.25m and 6m median	2 x 10.8–12.75m and 6m median
- of lanes—moving	1	1 or 2	2	2	2	4(5)	6(6)
- parking	1	2 or 1	2	2	none	none	none
Constructed footpaths	not required	one side	both sides	both sides	both sides	both sides	both sides
Cycle provision	on carriageway	on carriageway	on carriageway	on carriageway	on carriageway	on carriageway	on carriageway
Grade:							
- desirable maximum	10%	10%	6%	5%	6%	6%	6%
- absolute maximum	16.7%	16.7%	10%	8%	10%	10%	10%
Sight distance (general)	as per Qld Streets	as per Qld Streets	as per *AUSTROADS*	as per *AUSTROADS*	as per *AUSTROADS*	as per *AUSTROADS*	as per *AUSTROADS*

(1) Relaxable subject to verge width

(2) Verge width for roads providing frontage to open space relaxable to 1.5m subject to service corridor considerations

(3) Verge widths for local access roads servicing less than 30 lots relaxable to 3m where justified by additional streetscaping and landscaping provision. Total minimum reserve width of 11.5m

(4) Where a bikeway is proposed on the verge, verge width is 6.5m

(5) In some instances a suburban route may have 2 lanes, depending on expected traffic volume

(6) In some instances an arterial route may have 4 lanes, depending on expected traffic volume.

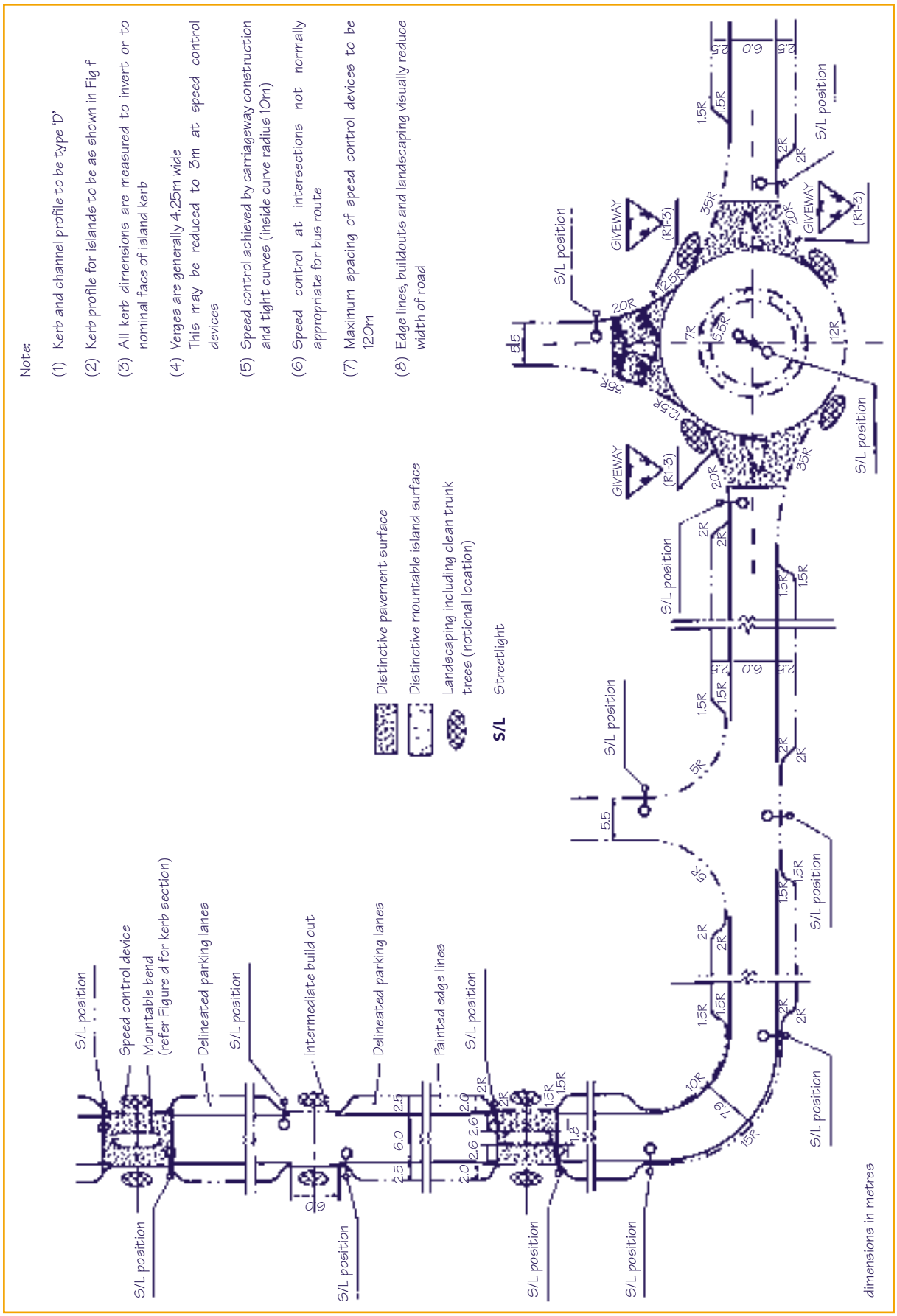
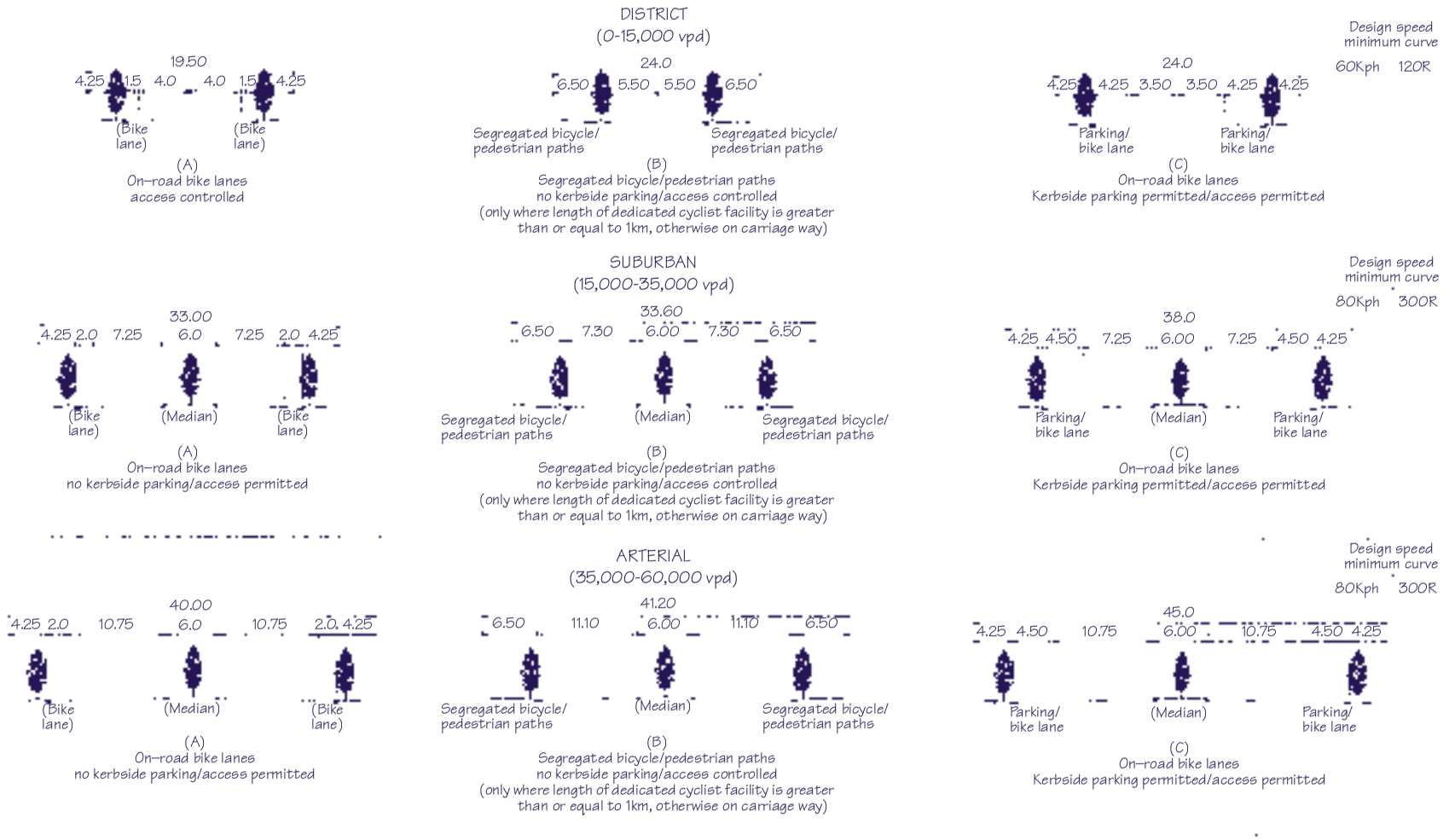


Figure a Neighbourhood access—Bus route

Figure b Typical road cross–sections



Note

High occupancy vehicle lanes can be accommodated in cross–section if required. (Busways within corridor will require special treatment)

Bus stops to be provided as required (indented bus bays with widening into property)

Median may be narrowed to 2m minimum away from intersections to ensure safe staging for pedestrians, cyclists and wheelchairs

At intersections, cross–sections will often flare out to accommodate passing lanes, turn lanes and bus priority 'queue jump' lanes and to maintain capacity

Dimensions of verge and bike lanes cross–sections may vary according to traffic composition, speed, topography, etc.

Provision for noise attenuation is to be outside of these cross–sections

Use of half cross–sections may be appropriate, e.g. where parking provision is required on one side only

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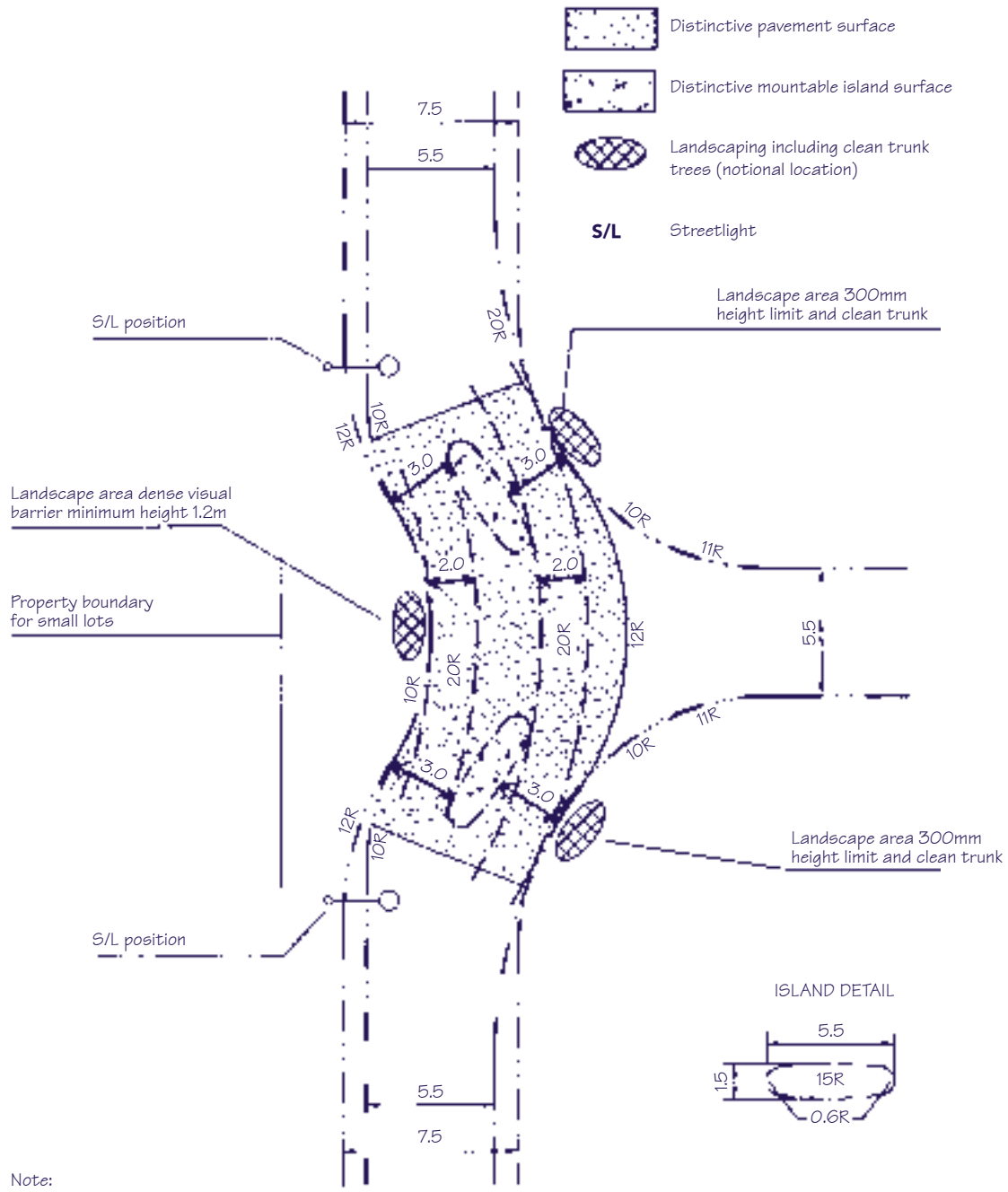
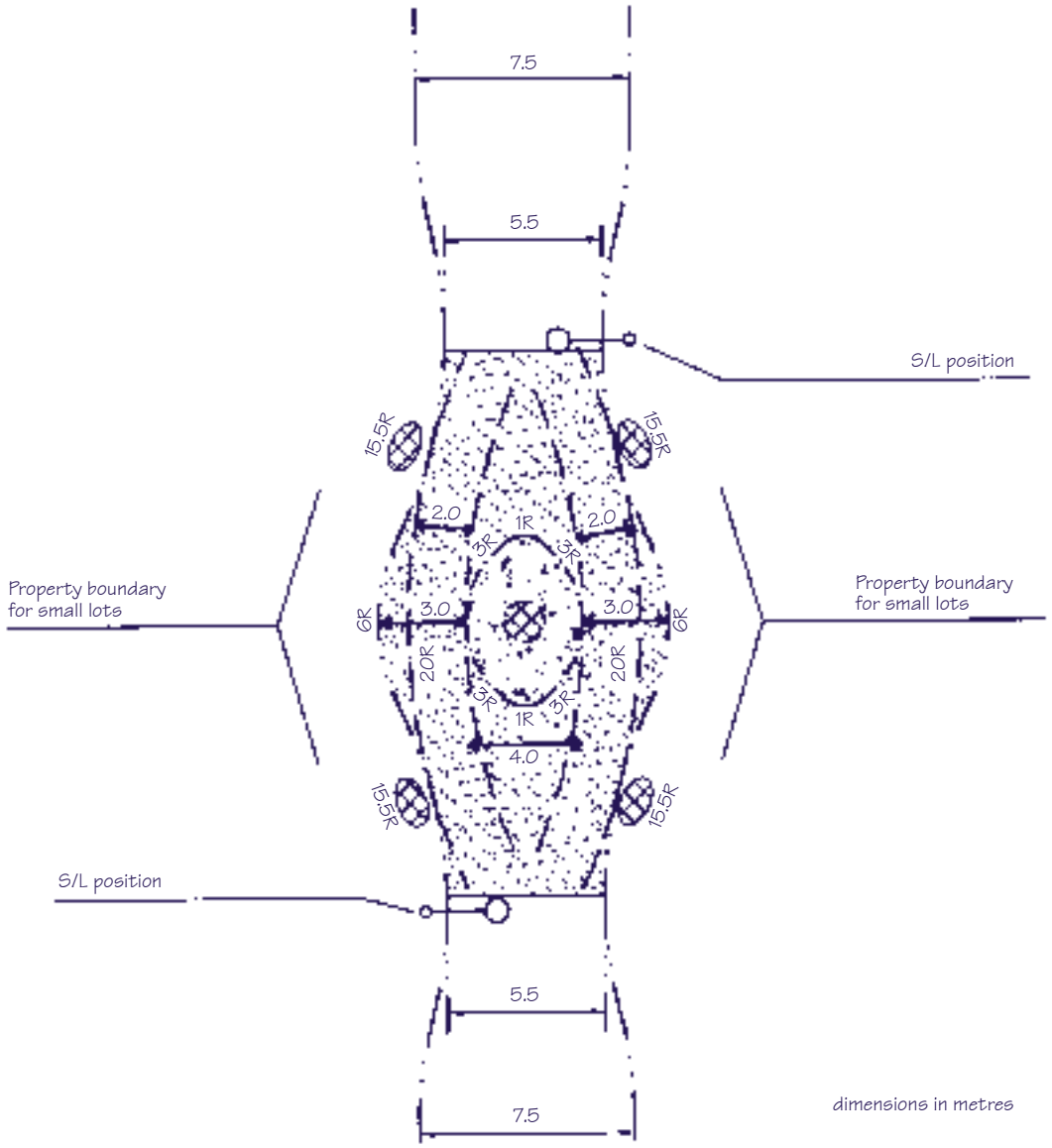


Figure c Deflected T–intersection speed control device



Note:

(1) Kerb and channel profile to be type 'D'

(2) Kerb profile for islands to be as shown in Fig f

(3) All kerb dimensions are measured to invert or to nominal face of island kerb

(4) Verges are generally 4.25m wide
This may be reduced to 3m at speed control devices

Figure d Traffic island speed control device

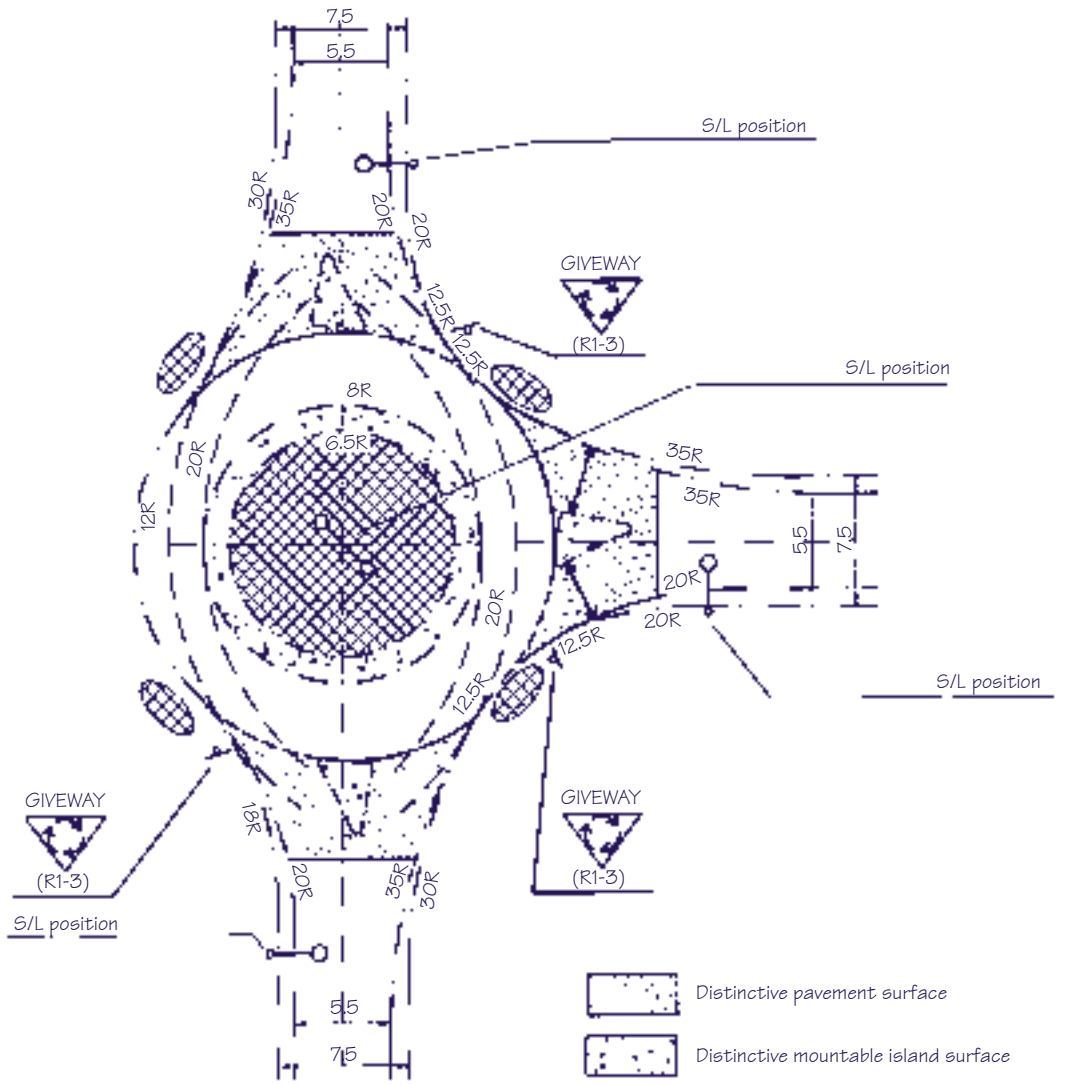


Figure e Minor road roundabout

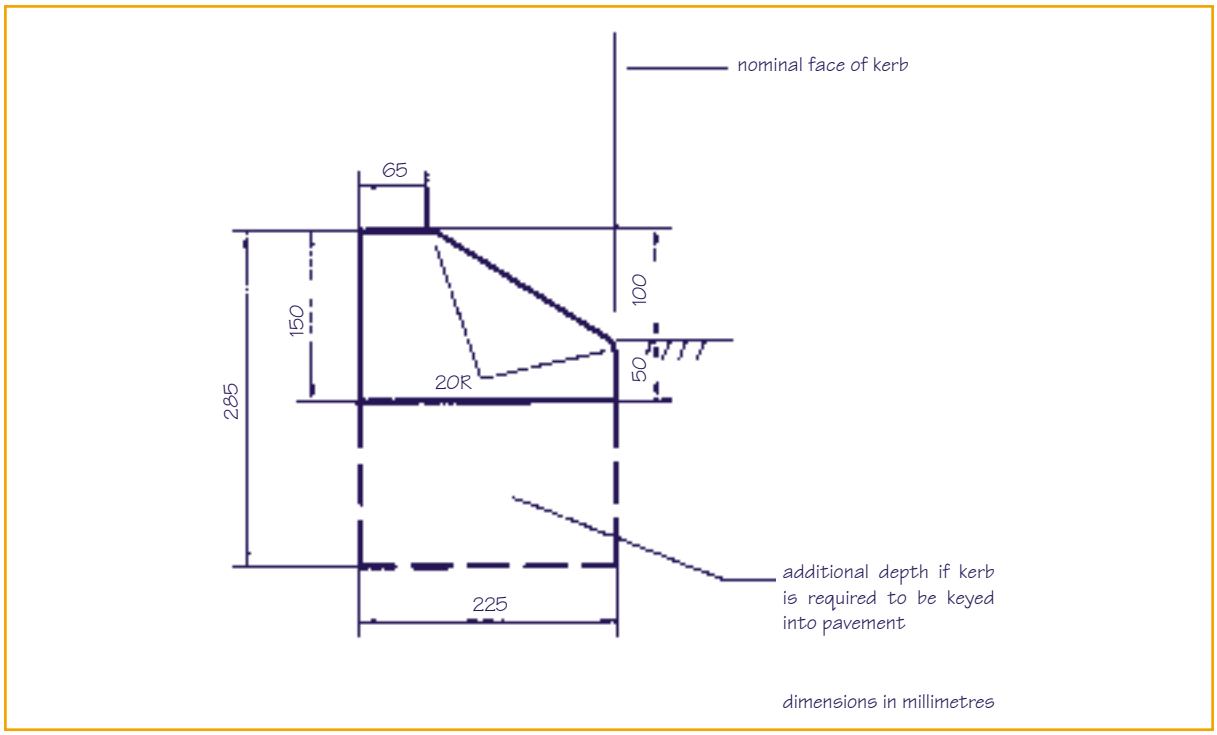


Figure f Mountable kerb profile

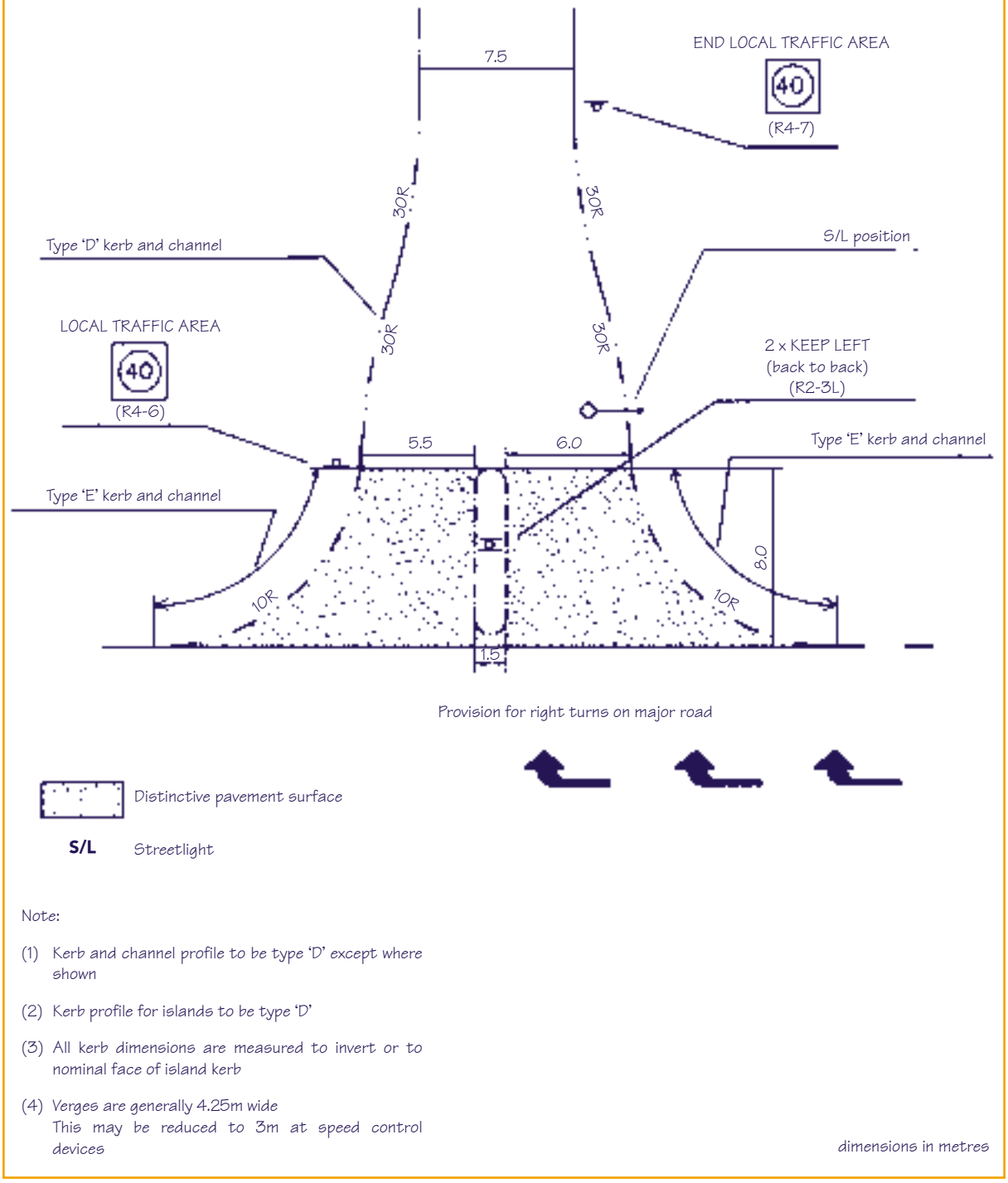


Figure g Neighbourhood access/major road intersection treatment

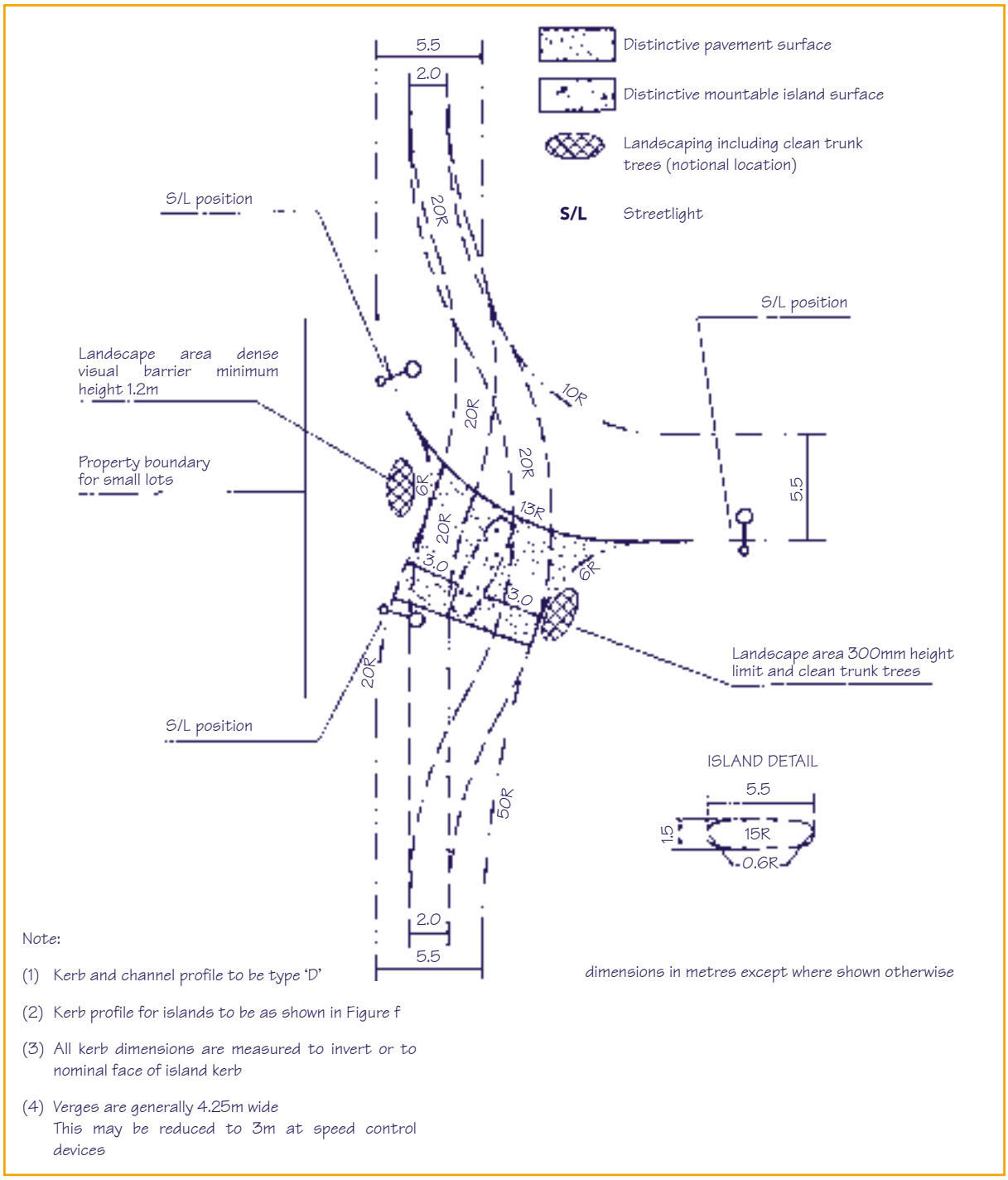


Figure h Priority altered T–intersection speed control device