DESIGN GUIDELINES

PINE RIVERS SHIRE COUNCIL

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DG 01

ROUNDABOUTS

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1.0.0 INTRODUCTION

1.1.0 PURPOSE

To outline the minimum design requirements for roundabouts in various road classification intersection categories.

1.2.0 SCOPE

This guideline sets out recommended design parameters for roundabouts:-

- on Access and Collector streets
- on Collector and Bus Collector / Trunk Collector streets
- on Bus Collector and Trunk Collector streets
- on Collector / Bus Collector / Trunk Collector and Sub-Arterial roads
- on Sub-Arterial and Arterial roads

1.3.0 REFERENCE DOCUMENTS

This guideline is based on the following reference documents:-

- AUSTROADS - Guide to Traffic Engineering Practice Part 6 - Roundabouts, 1993. The geometric design shall generally be in accordance with this reference document. Roundabouts at the intersection of roads of higher classification than residential and rural residential collector streets shall fully comply with the AUSTROADS design guides.

- AS 1158 - Road Lighting

2.0.0 PARAMETERS

2.0.1 The parameters in Table 2.0 are to be used for design purposes.

Table 2.0

STREET TYPE	ACCESS	COLLECTOR	>COLLECTOR
Number of Approach Lanes	1	1 or 2	In accordance with AUSTROADS Guidelines
Minimum Approach Lane Width (m)	3.1	3.5	
Approach Speed – km/h * (refer to pages 27 to 29)	Design speed of street / road		
Speed through Roundabout – km/h (V on Page 27 f = 0.3 max)	20 (max)	25 (max)	50 (max)
Minimum Radius of Centre Island	5	5	In accordance with AUSTROADS Guidelines
Stopping Sight Distance - 1.15m to Zero (Table 4.2 Page 28)	45	45	

Note:-

*** Reference to AUSTROADS Guide to Traffic Engineering Practice Part 6 – Roundabouts**

1. Small radius central islands may not provide sufficient deflection to reduce vehicle speeds through the intersection. (Refer to Section 2 of the Pine Rivers Shire Council Design Standards for Roadworks.)

2. Minimum lane widths may need to be increased in some cases to suit the vehicle width plus working clearances.

2.0.2 The extended centrelines of the last 20m of approach roadways must pass through the centrepoint of the roundabout.

2.0.3 Vehicle turning or manoeuvring templates to be used in design shall be those shown in the Pine Rivers Shire Council Design Manual.

2.0.4 The design shall accommodate vehicles as shown Table 2.1 below.

"C" indicates that the swept path envelope plus working clearances shall be contained within the carriageway. Clearances for Pine Rivers Shire Council templates are:-

- 0.3 metres for “manoeuvring” templates
- 0.5 metres for “low speed turning” templates
- 0.6 metres for “medium speed turning” templates

"I" indicates that the vehicle swept path shall be allowed to encroach up to 1.5 metre onto the central island, subject to detailed design. The relevant working clearance shall be maintained between the swept path envelope and any vertical obstructions.

"T" indicates that the design vehicle "Turning" template is to be used.

"M" indicates that the design vehicle "Manoeuvring" template is to be used.

“R-no” indicates the design vehicle minimum turn radius in metres.

Table 2.1

INTERSECTION	DESIGN CAR	REFUSE VEHICLE	HEAVY RIGID VEHICLE or COACH	ARTICULATED VEHICLE
Access / Access	C (T) (R8)	C (T) (R11)	I (M) (R11)	N/A
Access / Collector	C (T) (R8)	C (T) (R11)	I (M) (R11)	I (M) (R11)
Access / Bus Col.	C (T) (R8)	C (T) (R11)	C (T) (R12.5)	C (M) (R11)
Collector / Collector	C (T) (R8)	C (T) (R11)	I (T) (R12.5)	I (M) (R11)
Collector / Bus Col.	C (T) (R8)	C (T) (R11)	C (T) (R12.5)	C (M) (R11)
Collector / Trunk Col.	C (T) (R8)	C (T) (R11)	C (T) (R12.5)	C (M) (R11)
Bus collector / Trunk Collector	C (T) (R8)	C (T) (R11)	C (T) (R12.5)	C (M) (R11)
Collector / Sub-Arterial	C (T) (R8)	C (T) (R15)	C (T) (R15)	C (T) (R15)
Bus Collector / Sub Arterial	C (T) (R8)	C (T) (R15)	C (T) (R15)	C (T) (R15)
Trunk / Sub-Arterial	C (T) (R8)	C (T) (R15)	C (T) (R15)	C (T) (R15)
Sub-Arterial / Sub-Arterial	C (T) (R8)	C (T) (R15)	C (T) (R15)	C (T) (R15)
Sub-Arterial / Arterial	C (T) (R8)	C (T) (R15)	C (T) (R15)	C (T) (R15)

Indicates “Medium Speed Turning” Templates to be used.

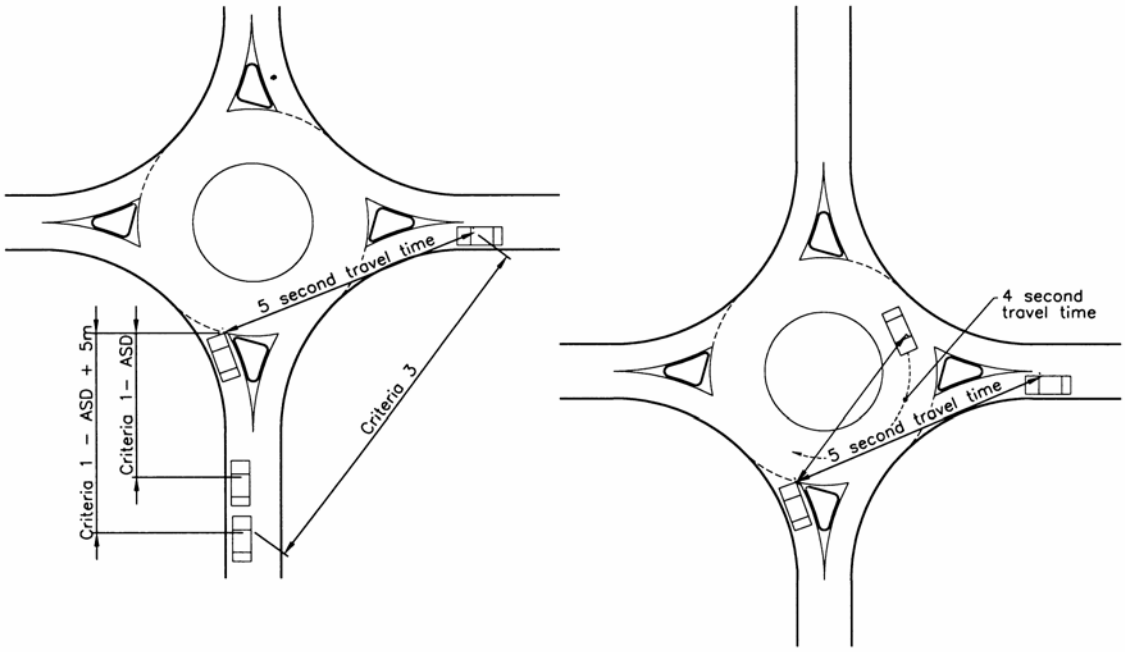
Indicates “Low Speed Turning” or “Manoeuvring” Templates to be used.

Indicates may not be suitable for bus routes - provision should be made for the swept path envelope plus working clearances as indicated on the “low speed turning” template for the design bus to be contained within the carriageway.

2.0.5 The distances in Table 2.2 are required as the minimum sight distance for Criteria 1, 2 and 3

Table 2.2

RIGHT TURN Criteria 2	THROUGH MOVEMENT Criteria 1 & Criteria 3	SPEED		CRITERIA 1	CRITERIA 2		CRITERIA 3	
		Km/h	m/s	ASD 1.15m-0m (m)	4s travel (m)	5s travel (m)	ASD + 5m (m)	5s travel (m)
		10	2.78	5	11	14	9.9	13.9
Access Place - Collector		15	4.17	8	17	21	12.8	20.8
	Access Place	20	5.56	11	22	28	16.1	27.8
Trunk Collector	Access Street	25	6.94	15	28	35	19.8	34.7
	Collector / Bus Collector	30	8.33	19	33	42	23.8	41.7
Sub-Arterial & Arterial		35	9.72	24	39	49	28.9	48.6
		40	11.11	29	44	56	33.8	55.6
	Trunk Collector	45	12.50	34	50	63	39.1	62.5
		50	13.89	40	56	69	44.8	69.4
	Sub-Arterial & Arterial	60	16.67	55				
		70	19.44	70				
		80	22.22	105				
		90	25.00	130				
		100	27.78	160				



SIGHT DISTANCE REQUIREMENTS - RESIDENTIAL STREETS

Figure 2.3

2.0.6 Central islands of 15m radius or greater (or similar area) shall drain to an internal system and not direct sheet flow of stormwater onto the circulating roadway.

2.0.7 Crossfall shall generally be 2% minimum to 3% maximum away from the centre island.

2.0.8 Grades through the intersection shall be to the satisfaction of a Pine Rivers Shire Council engineer. Generally the maximum grade is 7%.

2.0.9 The minimum verge width at roundabouts shall be in accordance with the Design Standards for each class of street.

Unkerbed shoulders shall have a minimum width of 2.5 metres.

2.0.10 Linemarking and signage shall be in accordance with the Queensland Manual of Uniform Traffic Control Devices. Also refer to AUSTROADS Guide to Traffic Engineering Practice - Roundabouts

2.0.11 Fully dimensioned and detailed drawings of the proposed layout and construction are required. In addition contours, signage, linemarking and lighting are to be shown.

2.0.12 Full details of any landscaped islands, together with the associated drainage/irrigation system shall be provided. Maximum planting height in visibility areas to be 400 mm above pavement unless otherwise approved by a Pine Rivers Shire Council engineer. Also refer to the Pine Rivers Shire Council requirements for landscaping.

2.0.13 For intersections of streets/roads of greater than collector classifications where the design radius of turn is less than 30m a minimum working clearance of 600 mm must be adopted.

2.0.14 For high-mast lighting on roundabouts, an Energex approved mid-hinged, counter balanced, base plate mounted pole is required. (Refer Energex Public Lighting Manual Standards)