

Designing good quality off-road cycling facilities

Purpose

This note aims to improve the quality of off-road cycling facilities by encouraging good design processes and appropriate design for expected type of use.

Introduction

Design of off-road facilities requires an understanding of the patterns and habits of potential users of the facility. Getting the design right the first time will save expense in the long run. Local governments in Queensland that have installed shared or separated cycling facilities that are too narrow have found widening them to be difficult and expensive. It is important to keep in mind there is often a high latent demand for cycling facilities. A design approach which allows for future expansion, for example, adjusting line markings or providing space for future construction of a separate or parallel facility, may be required.

Aim

This series of notes is designed to assist planners and engineers to provide for cycling in their local area.

The Cycle Notes should be read in conjunction with:

- Guide to Traffic Engineering Practice, Part 14 - Bicycles (Austroads, 1999), and
- Queensland Manual of Uniform Traffic Control Devices, Part 9 Bicycle Facilities.

Contents

- Types of off-road facilities
- Key design considerations
- Line markings, symbols and signs

Types of off-road facilities

Types of off-road paths for people on bicycles are contained in the tables below.



Figure 1 Shared path



Figure 2 Separated path



Figure 3 Exclusive path

Table 1:
Shared paths

Shared paths: appropriate applications	
<p>The shared path is the most common off-road facility. It provides flexibility of use and is relatively low cost. The range of potential users of a shared facility is listed in Section 6.2 of <i>Austroads Part 14</i> and is expanded in Note C2. A shared path may be appropriate when:</p> <ul style="list-style-type: none"> - there is demand for both pedestrian and bicycle facilities but level of use is not great (less than 300 users per hour) - an existing footpath that has low pedestrian usage can be modified to provide a legal, safe shared facility (this can be particularly relevant at squeeze points on the road eg. on bridges or on heavy traffic roads. - there is a safe existing road nearby which is available for faster cyclists to use, to limit the extent of user conflict on the shared path. <p><i>Part 14</i> recommends that a shared use path has a designated central line and direction arrow.</p>	
Width	Function
2.0m	Only acceptable on paths that have very low use at all times on all days
2.5 to 3.0m	Absolute minimums for predominant commuting and recreation use respectively, during peak periods
3.0m	Minimum width where high speeds (>30 km/h) occur and no on-road alternative is available for faster riders
3.5m	Minimum width where commuting and recreational use occurs simultaneously
<p>The various widths and separation arrangements are clearly demonstrated in Figure 6-19 of <i>Austroads Part 14</i>.</p>	

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Table 2:
Separated paths

Separated paths: appropriate applications			
The separated path is clearly separated into two designated areas using pavement markings, contrasting surfaces and appropriate signs. It can be designed for either one or two way traffic flow. Separated facilities should be provided when use by either cyclists or pedestrians is expected to be moderate to high (more than 300 users per hour) in locations such as along rivers and foreshores and major inner city bridges. These facilities are not common and there may be confusion without sufficient clear marking and signing. One-way applications of this facility include assisting bicycle riders along busy roads to negotiate squeeze points, for example at S-treatments at T-Junctions (See Figure 5-20 of <i>Austroads Part 14</i>). Avoid installing separated paths in busy shopping centres/strips where there may be significant pedestrian cross flow.			
Path width (m)			
	Bicycle path	Footpath	Total
Desirable	2.5	2.0	4.5
Acceptable range	2.0 - 3.0	1.5 +	3.5 +

Table 3:
Exclusive paths

Exclusive paths: appropriate applications		
The exclusive bicycle path permits fast bicycle travel and is the most desirable off-road alternative for commuters, particularly if placed along a route serving many local destinations including schools, bus interchanges and railway stations. When planning to install an exclusive bicycle lane there needs to be significant cycling demand and either very few pedestrians or an opportunity to install an alternative pedestrian path. This will help ensure there will be no need for pedestrians to use this facility, avoiding difficulty with managing the mix of users. There are few crossings with roads or driveways along this path. Alignments must allow for safe cycling travel at relatively high speed (> 20 kph) with suitable treatments approaching intersections with roads or other paths (See sections 6.7 and 6.8 of <i>Part 14</i>).		
Path width (m)		
	Local Access Path	Main Path
Desirable	2.5	3.0
Acceptable range	2.0 - 3.0	2.0 - 3.0

Key design considerations

Other issues to consider are outlined in *Austroads Part 14*. The references to each relevant section are contained in Table 4.

Line markings, symbols and signs

Statutory signs are set out clearly in the *Queensland Manual of Uniform Traffic Control Devices (MUTCD)*, *Part 9 Bicycle Facilities*. Regulatory, warning and guide sign requirements are outlined in Sections 9.2,

9.3, 9.4 and 9.5 of *Austroads Part 14*. This also includes some helpful signs that are not in the MUTCD. Pavement markings for off-road facilities are presented in Section 9.6.2 of *Part 14*.

Table 4:
Key design considerations

Design consideration	<i>Austroads Part 14</i> - Reference
Horizontal curvature	Section 6.3.2
Capacity of paths	Section 6.3.3
Clearances	Section 6.3.5
Gradients	Section 6.3.6
Sight distance	Section 6.3.7
Superelevation, crossfall and drainage	Section 6.3.8
Surface tolerances	Section 8.5.1
Pavements - materials and construction	Section 8.5.2, Figure 8.8
Bituminous	Section 8.5.2.1
Concrete	Section 8.5.2.2
Stabilised unsealed	Section 8.5.2.3
Timber	Section 8.5.3

Other references

- Information on planning schemes and cycling under the Integrated Planning Act is available at the Queensland Transport website. Go to <http://www.transport.qld.gov.au/projects> and follow the links to *QT IPA Guidelines*.
- Designers need to also ensure access is provided for people with disabilities. See information available under the Commonwealth Disability Discrimination Act, at http://www.hreoc.gov.au/disability_rights/buildings/access_to_premises.html.
- AS 1428.2 - 1992 Design for access and mobility - Enhanced and additional requirements - Buildings and facilities, Standards Australia.
- Newer methods of construction of concrete paths are described in Road Note 56, published by the Cement and Concrete Association of Australia, June 1999. Available on their website at <http://www.concrete.net.au> (search for Road Note 56).
- Austroads, 1994, Road Safety Audit, Standards Australia.

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