Government of South Australia
Department for Infrastructure and Transport

Station Bicycle Facilities – Train System

Engineering Standard

Rail Commissioner

AR-PW-PM-SPE-00129013 (D073)

DOCUMENT AMENDMENT RECORD

REVISION	CHANGE DESCRIPTION	DATE	PREPARED	REVIEWED	APPROVED
0	Initial Issue	Feb 11	Josh Ward	Doug Gillott	Rob Taverner
1	Changes in various sections	July 12	Kuldeep Zala	Keith Charlton	Rob Taverner
2	Document number change	July 13	Kuldeep Zala	Keith Charlton	Rob Taverner
3	Section 5.4 updated, new template	March 14	Kuldeep Zala	Keith Charlton	Rob Taverner
4	Updated to accommodate the requirements of CCTV	January 16	Kuldeep Zala	John Grose	Phil Agnew
5	Standards update	April 19	Sophie Wilkinson	Royce Mariadas	Mark Pronk
6	Scheduled update	July 24	Andrew Kalionis	Frank Melino	Naveen Sulake
Document Review Schedule:		July 2027			

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1. Introduction

The Department of Infrastructure and Transport owns the Adelaide Metropolitan Passenger Rail Network (AMPRN) currently operated and maintained under the Rail Accreditation of third party. There are approximately 89 train stations serving the AMPRN.

2. Purpose

The purpose of this standard is to specify the requirements for cycling access and bicycle storage located within a station precinct. This standard should be read in conjunction with the remainder of the DIT Station Standards for the Train System, as listed in DIT Master Specification Part RW-STS-D1 Stations.

3. Scope

This standard applies to all new and upgraded bicycle facilities at DIT train stations on the AMPRN. Existing bicycle facilities may be rated against this standard.

4. Related Documents

DOCUMENT NAME	DOCUMENT NUMBER
Station Precinct Concept – Shelter Furniture	S7071 sheet 22
Standard Drawing Bicycle Enclosure Detail	CS1-DRG-361822
Station Standard – Bicycle Enclosure – Card Reader Circuit Diagram	CS5-DRG-350182

5. References

- AS 1742 Manual of Uniform Traffic Control Devices
- AS 2890.3 Parking Facilities – Bicycle Parking Facilities
- AS/NZS 3500.3 Plumbing and Drainage – Stormwater Drainage
- AS/NZS 4534 Zinc and zinc/aluminium-alloy coatings on steel wire
- AUSTROADS – guide to road Design – Part3 – Geometric Design
- AUSTROADS – guide to Road Design – Part 6A - Pedestrian and Cycling Paths
- DIT Operational Instruction 9.2 – Bicycle Lane Signing
- Government of South Australia – 30 Year Plan for Greater Adelaide – Cycling Strategy "Safety in Numbers"

Legislative Requirements

- *Disability Standards for Accessible Public Transport (DSAPT)*

6. Acronyms

ACRONYM	FULL NAME
AMPRN	Adelaide Metropolitan Passenger Rail Network
CPTED	Crime Prevention Through Environmental Design
DIT	Department of Infrastructure and Transport
DSAPT	Disability Standards for Accessible Public Transport
PTZ	Pan-Tilt-Zoom
SV	Stationary Validator

7. Design Requirements

7.1. General

Bicycle facilities should be incorporated within all station upgrades. Bicycle facilities at railway stations shall:

1. provide adequate space to ride safely;
2. have smooth surfaces - the design of the pavement for the paths shall be sealed pavements;
3. provide vertical and horizontal geometry which enables appropriate sight lines to the oncoming path surface;
4. provide connectivity to and from existing (or proposed) cycle routes;
5. have appropriate way finding signage; and
6. locate storage facilities in a convenient location that provides passive surveillance and allows for CCTV surveillance, are well lit and offer various storage options to meet riders' needs.

The design of bicycle facilities shall take into account:

1. the functional requirements for connecting new paths to the existing path network and where paths terminate; and
2. any existing and proposed plans of the local Council.

Information shall be available on surrounding cycle network details and any future proposals and strategies including information, where applicable from:

- DIT (Office for Cycling and Walking) existing cycle networks;
- Local Government; and
- Developers.

Details of existing bicycle routes can be obtained from the DIT website.

7.2. Types of Bicycle Lanes and Paths

Bicycle lanes and paths can either be on-road (lanes) or a separate facility away from the road (paths). The types of bicycle lanes and paths which generally can be provided within the station precinct include:

1. exclusive bicycle lane – (on-road) usually adjacent to the kerb face and appropriately line marked;
2. bicycle/car parking lane – (on-road) adjacent to parallel parking spaces and appropriately line marked;
3. wide kerbside lane – (on-road) where a dedicated bicycle lane is not provided a wide kerbside lane can be provided to allow vehicles and cyclists to interact safely;
4. exclusive bicycle path – (off-road) separate facility for cyclists only;
5. shared use path – (off-road) generally a path that is wide enough to allow cyclists and pedestrians to share; and
6. separated path – (off-road) similar to a shared path; however the path is usually segregated either by pavement marking or by physical measures such as vertical separation.

7.3. Access to the Station

7.3.1. Grade Separated Access

Stations that are grade separated from adjoining road networks shall provide cycling access from the road level to the station precinct. Refer to the Austroads Guide to Road Design Part 6A for bicycle path from road to station area.

Where stairs are provided from road level to the station precinct, bike wheel channels may be provided with approval from Unit Manager Track & Civil Engineering. Minimum stair width shall be 3 m wide if a wheel channel is provided. Refer to Austroads Guide to Road Design Part 6A for bicycle wheeling ramp details.

Wheel channels shall not be provided on the stairs leading to an overpass on a station platform, in accordance with AR-PW-PM-SPE-00129004 Overpasses.

7.3.2. Crossing the Rail Corridor

Where possible, cycle access shall be provided so that cyclists do not have to cross the rail corridor at track level. Options may include utilising an existing road level crossing or existing/ proposed overpass.

Where there is no road level crossing or grade separated access for cyclists to cross the rail corridor, access shall be integrated with the pedestrian crossings in accordance with AR-PW-PM-SPE-00129006 Pedestrian Access. Separate facilities across the track shall not be installed specifically for cyclists.

All pedestrian/bicycle crossings are required to have Pan-Tilt-Zoom (PTZ) CCTV camera surveillance.

7.3.3. Platforms

Cycling on the station platforms is prohibited and therefore platforms shall not form part of the cycle path, or provide connectivity between cycling lanes. Where connectivity between lanes is required along the length of the platform a dedicated cycle lane separate from the platform shall be provided.

7.4. Cyclist Behaviour

Cyclists are required to dismount (and walk or carry their bicycle) prior to:

1. entering a maze and whilst crossing the tracks;
2. accessing a platform and whilst traversing the platform;
3. accessing a ramp that is less than 3 m wide;
4. entering a lift; and
5. climbing stairs.

7.5. Design Criteria

Bicycle lanes and paths shall be provided in accordance with AS 1742.9, Austroads Guide to Road Design Part 3 – Geometric Design and Part 6A – Pedestrian and Cyclist Paths.

7.6. Bicycle Lane and Path Widths

The minimum widths of bicycle lanes and paths shall be in accordance with Austroads Guide to Road Design Part 3 – Geometric Design and Part 6A – Pedestrian and Cyclist Paths respectively.

7.7. Gradients

7.7.1. Exclusive Bicycle Lanes and Paths

Bicycle lanes shall match the cross fall of the adjacent road pavement and shall have a minimum of 2% and a maximum of 4% crossfall. Bicycle paths that do not have pedestrian usage shall also have a minimum of 2% and a maximum of 4% crossfall.

7.7.2. Shared Use Paths

Bicycle paths which are a shared use path, and which form part of the primary access path shall be provided in accordance with the Disability Standards for Accessible Public Transport (DSAPT) and AR-PW-PM-SPE-00129006 Pedestrian Access.

The crossfall shall be a minimum of 1% and a maximum of 2.5%.

7.8. Sight Distance

Adequate sight distances shall be provided for cyclists to be able to read and understand the terrain and potential conflicts well in advance. Refer Austroads Guide to Road Design Part 6A for sight distance requirements.

Application of Crime Prevention Through Environmental Design (CPTED) principles and appropriate signage and traffic control devices can also assist the cyclist in determining the road environment better, thus reducing the risk of collision or injury.

7.9. Clearances

The minimum vertical clearance for a bicycle lanes and paths shall be 2.5 m above finished surface level.

The minimum clear horizontal distance from the edge of bicycle lanes and paths to any fixed object above ground level shall be 500 mm (i.e. sign posts and light poles adjacent to cycle lane).

7.10. Utility Services in Cycle Paths

Pit access covers shall not be placed within bicycle lanes or paths.

7.11. Pavement Design

All surfaces of bicycle lanes and paths, within the station precinct and for connections to the existing cycling network, shall be asphalt or concrete.

The surfacing of bicycle lanes and paths shall not differ in colour from the rest of the road or path. Where differentiation of lanes and paths for traffic or pedestrians areas is required pavements markings shall be in accordance with AR-PW-PM-SPE-00129010 Signage & Pavement Marking.

Pavements for bicycle lanes forming part of a road shall consist of the same pavement as the adjoining road pavement provided in accordance with RD-PV-D1 Pavement Design (Austroads Supplement).

Pavements for off-road bicycle paths shall be provided in accordance with DIT Master Specification Part R84 Secondary Pavements.

7.12. Drainage

Bicycle lanes, paths and bicycle enclosures shall be free draining and shall not be subject to ponding. Appropriate drainage shall be provided to drain surface water from the lanes and paths. Drainage shall be provided in accordance with AS/NZS 3500.3 Plumbing and Drainage – Stormwater Drainage and Austroads Guide to Road Design Part 6A.

The wearing course of the bicycle lanes and paths shall be flush with (kerb and) gutter lips or surrounding finished surface level as appropriate.

7.13. Lighting

Lighting shall be designed in accordance with CS5-DOC-003511 - Public Transport Standard: Electrical Infrastructure Engineering – Design for the following:

1. bicycle lanes;
2. bicycle paths;
3. shared use paths; and
4. bicycle facilities.

7.14. Signage and Pavement Marking

Signage and pavement marking shall be provided in accordance with AR-PW-PM-SPE-00129010 Signage and Pavement Marking. Pavement marking shall be used to delineate bicycle lanes where applicable.

8. Bicycle Storage Facilities

8.1. Design Life

The bicycle storage facilities shall be designed for a minimum operational life of 30 years.

8.2. General

Bicycle storage facilities shall be provided in accordance with AS 2890.3.

Bicycle storage facilities shall be provided at all railway stations on the AMPRN. Table 8.2 below indicates the types of facilities that shall be provided:

Table 8.2 – Bicycle Storage Facilities at Railway Stations

FACILITY	STANDARD AMENITY STATION	ENHANCED AMENITY STATION
Bicycle Parking Rails	Minimum of 6 at each station	Minimum of 6 at each station
Bicycle Enclosure	Not required *	Bicycle enclosure to accommodate a minimum of 16 bicycles
Bicycle Lockers	Not required unless otherwise specified	Not required unless otherwise specified

* Note: Where car parking capacity exceeds 200 cars a bicycle enclosure to accommodate a minimum of 16 bicycles shall be provided.

Bicycle storage facilities shall be located in a convenient and well-lit location that provides external passive surveillance.

All bicycle facilities shall be designed to reduce the potential for vandalism and shall be coated with an approved anti-graffiti coating. All metal finishes shall have no sharp edges, be de-burred, smooth and shall provide a minimum radius of 3mm. Use of potentially reflective materials in areas that could cause glare for train drivers shall be avoided

8.3. Bicycle Parking Rails

The number of bicycle parking rails, external to the bicycle enclosure, to be provided at stations shall be as indicated in Table 8.2.

Bicycle parking rails shall meet the following requirements:

1. be in close proximity to the station platform(s) but not be located on the station platform;
2. be 50 mm diameter, brushed Grade 316 stainless steel 800 mm long and 750 mm high from ground level to enable the main frame and the wheel to be locked to the rail; and
3. have bend radii along the top of the frame.

The spacing between adjacent bicycle rails shall be at least 1000 mm. The bicycle parking rails shall be cast into concrete footings.

8.4. Bicycle Enclosures

The requirement for a bicycle enclosure and size to be provided at stations shall be as specified in Table 8.2.

Bicycle enclosures shall be provided in accordance with CS1-DRG-361822 and as follows:

1. be designed in a modular format so that the enclosure can be expanded to meet increased demand as required;
2. have a concrete slab floor;
3. be fully enclosed with steel welded mesh with 35% solidity, class W10Z10A in accordance with AS/NZS 4534;

4. have a 16 mm thick translucent UV protective polycarbonate roof sheeting - refer to AR-PW-PM-SPE-00129005 Station Shelters for roof design;
5. incorporate lighting in accordance with CS5-DOC-003511 - Public Transport Standard: Electrical Infrastructure Engineering – Design;
6. have an outdoor grade 15 A general purpose outlet (refer to CS5-DOC-003511 - Public Transport Standard: Electrical Infrastructure Engineering – Design.).
7. have dedicated 240 V electrical supply for the door control mechanism;
8. have bicycle parking rails installed where the number of rails is half the capacity (as two bicycles can be locked to one rail); and
9. have bicycle parking rails cast into concrete footings

The roof style of the bicycle enclosure shall be a curved profile. Refer to drawing CS1-DRG-361822. Structural steelwork, shelter roof and drainage for the bicycle enclosure shall be in accordance with AR-PW-PM-SPE-00129005 Shelters

If the bicycle enclosure is to be located in the car park area, protective impact absorbing bollards in accordance with AR-PW-PM-SPE-00129007 Furniture shall be placed at strategic locations around the enclosure to protect the structure from vehicle impact.

The bicycle enclosure shall have only one door that opens outwards. This enclosure door shall be unpowered lockable self-closing (e.g. spring loaded) that matches the cladding of the bicycle enclosure. The door shall be tamperproof with latch protection or an anti-vandal door handle to prevent unauthorised access.

The enclosure door shall provide the most direct path of access to and from the station facilities and shall have a handle on the outside. From the inside it shall be manually unlocked and opened by pressing a door release button. The door release button must not be reachable from the outside.

The door of bicycle enclosures shall be locked using an outdoor rated electromagnetic door latch which unlocks from the outside via a Stationary Validator (SV), which shall:

1. be mounted within the bicycle enclosure for the SV as close as practicable to the wall and on the hinge side of the main door (such that people are unable to reach the internal door handle from the access port);
2. have a dedicated 240 V power supply to the SV location and a 2–core ELV cable in communication conduit running from the SV to the door mechanism. Refer to drawing number CS5-DRG-350182: Bicycle Enclosure Card Reader Circuit Diagram; and
3. a 180 x 180mm access port in the steel welded mesh wall to facilitate people passing their hand/smartcard through the opening to access the card reader. The card reader shall be mounted at 90 degrees to the access port facing away from the door. The access port shall have a smooth surfaced metallic frame inserted to avoid cutting injuries when people access the card reader.

During power interruption the door lock mechanism shall fail to the unlocked state and shall be manually operable.

8.5. Bicycle Lockers

Bicycle lockers are a fully secure bicycle storage facility where an individual bicycle is wheeled into a padlockable solid steel enclosure.

Bicycle lockers shall not be provided at any new standard amenity or enhanced amenity stations. At upgraded standard amenity stations where there are existing bicycle lockers they shall be refurbished and reinstated.

8.6. CCTV

CCTV system shall be designed in accordance with PI5-DOC-003517 – Public Transport Infrastructure Security Systems – Engineering Specification.

8.6.1. Bicycle Rails

Bicycle rails shall be covered by CCTV surveillance. Where it is possible the bicycle rails shall be covered by CCTV from the car park or the platform.

8.6.2. Bicycle Enclosures

Bicycle enclosures should consist of one entry/exit door being the front door and a minimum of two fixed (2) CCTV cameras inside the enclosure, consisting of;

(i) one fixed CCTV camera positioned to identify all entering users via the front door (located in a rear diagonal corner); and

(ii) one fixed CCTV camera positioned to identify all exiting users via the front door (located in a front diagonal corner).

Both CCTV cameras shall be positioned in diagonal opposite corners to each other.

8.6.3. Bicycle Lockers

If bicycle lockers are provided then independent CCTV surveillance is to be included as part of the CCTV camera design.

8.7. Access to/ from Bicycle Parking Facilities

All bicycle storage facilities shall be located in close proximity to station platforms and adjacent the primary access path. An access path shall be provided from the bicycle facilities to the primary access path.