

Railway

Master Specification

RW-STS-D1 Stations

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RW-STIS-D1 Stations

1 General

- 1.1 This Part defines the Requirements for the design of rail stations and related amenities such as bus interchanges, car parks, pedestrian crossings, and bicycle facilities.
- 1.2 Chainages at Stations shall be based on the rail track chainages.
- 1.3 All elements of the station should be designed to be installed with minimum interference to railway operations.
- 1.4 Where it is proposed that the rail stations and related amenities design cannot meet a Departmental standard, approval must be obtained for a waiver using the process detailed in PR-AM-GE-807 Development and Approval of Engineering Waivers.
- 1.5 Acceptance of the final track & civil design must be obtained from the Unit Manager Track & Civil Engineering before any construction is undertaken. This shall constitute a **Hold Point**.

References

- 1.6 The following DIT Engineering Standards shall be used, as a minimum, for the design and construction of rail stations and related amenities:
 - a) Railway Technical Requirement - Technical Standards and Infrastructure Track and Civil Code of Practice (Volume 2 Train Systems) and more specifically:
 - i) AR-PW-PM-SPE-00129002 Technical Standard - Stations – Earthing and Bonding (D061).
 - ii) AR-PW-PM-SPE-00129003 Station Platforms – Train System (D062).
 - iii) AR-PW-PM-SPE-00129004 Station Overpasses - Train System (D063).
 - iv) CS1-DOC-002336 Lifts for Public Transport Infrastructure – Engineering Specification.
 - v) AR-PW-PM-SPE-00129005 Station Shelters - Train System (D064).
 - vi) AR-PW-PM-SPE-00129006 Station Pedestrian Access - Train System (D065).
 - vii) AR-PW-PM-SPE-00129007 Station Furniture - Train System (D066).
 - viii) AR-PW-PM-SPE-00129008 Station Toilet Facilities - Train System (D067).
 - ix) AR-PW-PM-SPE-00129009 Station Fencing –Train System (D068).
 - x) AR-PW-PM-SPE-00129010 Station Signage and Pavement Marking –Train System (D070).
 - xi) AR-PW-PM-SPE-00129011 Station Bus Interchanges - Train System (D071).
 - xii) AR-PW-PM-SPE-00129012 Station Parking - Train System (D072).
 - xiii) AR-PW-PM-SPE-00129013 Station Bicycle Facilities - Train System (D073).
 - xiv) AR-PW-PM-SPE-00129014 Technical Standard - Stations – Electrical Infrastructure (D074).
 - xv) CS1-DOC-002336 Lifts – Public Transport – Engineering Specification
 - xvi) PI4-DOC-000897 Public Transport Infrastructure Security Systems Engineering Specification.
 - xvii) AR-PW-PM-SPE-00129016 Technical Standard - Stations – Passenger Information Systems (D076).
 - xviii) AR-PW-PM-SPE-00129017 Technical Standard - Stations – Equipment Room (D077).
 - xix) AR-PW-PM-SPE-00129018 Technical Standard - Stations – Landscaping (D078).
 - xx) CS1-DOC-000454 Standard for Fencing and Gates for Rail Corridors and Facilities.

- xxi) CS1-DOC-000883 Engineering Instruction - Design Requirements for Platform Stopping Markers for Rail Cars.
 - xxii) CS4-DOC-000446 Standard for Railway Pedestrian Crossings.
 - xxiii) PI4-DOC-000897 Engineering Specification – Public Transport Infrastructure Security Systems.
 - xxiv) PTS-MS-10-SG-STD-00000094 Pit and Conduit Standard for Signalling and Communication Cables.
 - xxv) PTS-MS-10-TR-00000047 Structural Clearances – Design and Rating.
 - xxvi) PTS-MS-10-SG-STD-00000033 Signal sighting for Railway Signals.
 - xxvii) TP1-DOC-000389 Electrical and Mechanical Clearances for the 25kV Electrified Train Network.
 - xxviii) TC1-DOC-000954 Engineering Instruction - Excavation and Ground Penetration.
 - xxix) TC4-DOC-000357 Non-Rail Service Installations within the Rail Corridor.
- 1.7 The following DIT Standards shall also be used for station design and construction:
- a) Design Technical Standards and Guidelines – Access Road, Rail & Marine.
 - b) Road and Traffic Management Standards and Guidelines.
- 1.8 Other Engineering Standards applicable to station design and construction are as follows:
- a) Rail Safety National Law.
 - b) Disability (Access to Premises – Buildings) Standards 2010.
 - c) DSAPT - Disability Standards for Accessible Public Transport.
 - d) Building Code of Australia.
 - e) AS 1428 Design for access and mobility.
 - f) AS 1742.1 to 15 Manual of Uniform Traffic Control Devices.
 - g) AS 1891 Industrial Fall Arrest Systems and Devices.
 - h) AS 2700 Colours for General Purposes.
 - i) AS 2890 Parking.
 - j) AS 3500.3 Plumbing and Drainage - Stormwater Drainage.
 - k) AS 3600 Concrete Structures.
 - l) AS 3700 Masonry Structures.
 - m) AS 3845 Road Safety Barrier Systems.
 - n) AS 4100 Steel Structures.
 - o) AS 4799 Installation of Underground utility services and pipelines within railway boundaries.
 - p) AS 7631 Railway Infrastructure Sighting.
 - q) AS 7632 Railway Infrastructure Signage.
 - r) AS 7633 Clearances.
 - s) Austroads Guide to Road Design.
 - t) Austroads Guide to Traffic Management.
 - u) Austroads Guide to Road Safety.
 - v) Austroads Design Vehicles and Turning Path Templates.
- 1.9 A full listing of the principle DIT Rail Engineering standards and associated drawings for all engineering disciplines can be found at AM4-DOC-00218 Register of Rail Engineering Standards.

Compliance with Disability Discrimination Act

- 1.10 For the purpose of clarification, should it be required, an order of precedence of Standards, in descending order shall apply as follows:
 - a) Disability (Access to Premises – Buildings) Standards 2010;
 - b) Disability Standards for Accessible Public Transport 2002 (DSAPT);
 - c) AS 1428 Design for Access and Mobility;
 - d) relevant Departmental Standards and Codes of Practices; and
 - e) other applicable Australian Standards.
- 1.11 Where an existing site constraint prohibits meeting a requirement of a premises standard, a consultative process will be followed in accordance with PR-PF-D1 “Designing for Accessibility”.
- 1.12 A Certificate of Compliance with respect to the DDA, in accordance with the above Standards, is required to be submitted to the Department’s Access and Inclusion Unit and Rail Infrastructure Management prior to approval of the IFC designs.
- 1.13 A DDA audit shall be carried out on the upgraded or newly constructed station and associated infrastructure and amenities, prior to use (where the station is currently not in use) or as soon as possible on completion of the works (where the station is in continual use) by an independent third party, without links or close affiliation with the Contractor.
- 1.14 The auditor shall have relevant access consultant qualifications and a minimum of 3 years relevant experience in the application of the DSAPT and / or Premises Standards.
- 1.15 The report shall be provided by the auditor to the Contractor, the Department’s Access and Inclusion Unit and Rail Infrastructure Management.
- 1.16 The provision of the DDA Certificate of Compliance shall constitute a **Hold Point**.

Urban Design and Amenity

- 1.17 All rail stations and related amenities shall be developed to provide good urban design outcomes to ensure that the environs are functional, safe, comfortable, accessible and inclusive.
- 1.18 Urban design shall be integrated with technical aspects to provide a holistic response with a focus on delivering great places for people that are desirable to use.
- 1.19 Rail stations and related amenities shall have a well-defined identity, be integrated into and well connected to the surrounding environment and provide opportunities to reflect the local identity of the community they serve.
- 1.20 The urban design of rail stations and related amenities should also consider the Principles of Good Design prepared by the Office for Design and Architecture SA https://www.odasa.sa.gov.au/wp-content/uploads/ODASA-Principles-of-Good-Design_WEB-FINAL.pdf

CPTED Principles

- 1.21 For more information refer to:
 - a) SAPOL web link <https://www.police.sa.gov.au/your-safety/crime-prevention-and-security/safety-and-security-tips>;
 - b) QLD Government, Crime Prevention Through Environmental Design, Part A: Essential Features of Safety Places, 2007 <http://www.police.qld.gov.au/programs/cscp/safetyPublic/>; and
 - c) QLD Government, Crime Prevention through Environmental Design, Part B: Implementation Guidelines 2007 <https://www.police.qld.gov.au/programs/cscp/safetyPublic/Documents/CPTEDPartB.pdf>.

2 Stormwater Drainage

- 2.1 Design of stormwater shall be undertaken in accordance with CS1-DOC-001218 Drainage, AR-PW-PM-SPE-00129003 (D062) Station Platforms – Train System Engineering Standard and AS 3500.3 Plumbing and Drainage – Stormwater Design.
- 2.2 Stormwater shall be directed into landscaped areas where possible and otherwise into drainage systems. Stormwater shall not be permitted to flow into or impact the rail formation.

3 Earthing and Bonding

- 3.1 Earthing and Bonding shall be designed for stations and related amenities in accordance with AR-PW-PM-SPE-00129002 Stations – Earthing and Bonding to allow for current or future electrification.
- 3.2 The method of concealment of bonding connections shall constitute a **Hold Point**.

4 Platforms

- 4.1 Platforms shall be designed for stations in accordance with AR-PW-PM-SPE-00129003 (D062) Station Platforms – Train System.
- 4.2 The Contractor shall be responsible for determining allowable construction loads that can be applied to structures and ensure that these allowable loads are not exceeded during construction.
- 4.3 The Contractor shall obtain all necessary approvals relating to the station precinct drainage design in accordance with AS 3500.3 Plumbing and Drainage – Stormwater Drainage.

5 Overpasses

- 5.1 Overpasses shall be designed in accordance with AR-PW-PM-SPE-00129004 (D063) Station Overpasses – Train System Engineering Standard.
- 5.2 Existing underground services that are to remain in place shall be protected from loads during and post construction. Design details shall be submitted for approval to both the Service Authority and the Department.

6 Lifts

- 6.1 Lifts shall comply with CS1-DOC-002336 Lifts – Public Transport – Engineering Specification.

7 Shelters

- 7.1 Shelters shall be designed for rail stations and bus interchanges in accordance with AR-PW-PM-SPE-00129005 (D064) Station Shelters – Train System.

8 Pedestrian Access & Maze ways

- 8.1 Pedestrian access and maze ways at rail stations or along the rail corridor shall be designed in accordance with AR-PW-PM-SPE-00129006 (D065) Station Pedestrian Access – Train System CS4-DOC-000446 Standard – Railway Pedestrian Crossings.

9 Furniture

- 9.1 Furniture at rail stations and related amenities such as seating, bins, bollards and lean rails shall be designed for stations in accordance with AR-PW-PM-SPE-00129007 (D066) Station Furniture – Train System Engineering Standard.

10 Toilet Facilities

- 10.1 Toilet facilities shall be designed in accordance with AR-PW-PM-SPE-00129008 (D067) Station Toilet Facilities – Train System Engineering Standard.
- 10.2 The Contractor shall subcontract the maintenance, servicing and cleaning of the toilet facility to the manufacturer of the toilet facility for a period of 12 months from the Date of Practical Completion.
- 10.3 The Contractor shall arrange a joint inspection with Contractor, the manufacturer and the Department two weeks prior to the 12 month maintenance period expiring. The Department shall be given at least 14 days' notice of the inspection.
- 10.4 The Contractor shall ensure the manufacturer warrants the construction on the unit and performance of the individual components, including all parts repaired or replaced during the maintenance period, at no additional cost to the Department for a period of 12 months from the Date of Practical Completion.
- 10.5 The joint inspection shall constitute a **Hold Point**.

11 Fencing

- 11.1 Fencing shall be designed for stations and related amenities in accordance with AR-PW-PM-SPE-00129009 Technical Standard - Stations – Fencing (D068) and along the rail corridor as per CS1-DOC-000454 Standard for Fencing and Gates for Rail Corridors and Facilities.

12 Signage and Pavement Marking

- 12.1 Signage and pavement marking shall be designed for station facilities and maze ways in accordance with AR-PW-PM-SPE-00129010 (D070) Station Signage & Pavement Marking – Train System.
- 12.2 If a facility to be provided by the Contractor is not yet operational, a “Not in Operation” sign shall be used. “Out of Order” signs shall not be used.
- 12.3 The Contractor shall seek approval from the Department before the installation of signage and pavement marking including where signage and pavement marking:
 - a) is to be installed, altered or removed on roads (including access roads and bus interchanges) that are currently, or will become public roads, or on road related areas; or
 - b) does not comply with AS 1742.
- 12.4 Where there is a requirement for a sign to be placed on land not in the ownership / management of the Department, the Contractor shall seek and obtain written consent from the relevant land owner(s) for installation and subsequent access permissions (for maintenance).
- 12.5 Should the land owner request a monetary payment to allow a sign to be installed, the Contractor shall notify the Department. Subsequently, the Department will manage the negotiations with the respective land owner.
- 12.6 In the event a non-standard sign is required or proposed, the Contractor shall undertake a suggested sign design, including pantone colours. Suggested sign designs shall be submitted to the Department for review and approval 28 days prior to placement of the sign order.
- 12.7 Bus only areas shall be provided in accordance with AR-PW-PM-SPE-00129010. The Contractor shall submit evidence that the performance requirements set out in AR-PW-PM-SPE-00129010 will be met - this shall constitute a **Hold Point**.

Provision of Pavement Marking

- 12.8 Prior to any area in the station precinct being opened to the public, the minimum pavement marking that is required shall be in accordance with Table RW-STSD1 12-1.

Table RW-STS-D1 12-1 Provision of Pavement Marking

Pavement Marking Description	Installation
Platform Edge Hazard Line	At all times whilst platform open to the public
Platform “stand behind” line	At all times whilst platform open to the public
Platform “stand behind the white line” advisory warning	At all times whilst platform open to the public
Platform Stopping Marker for Rail Cars	At all times whilst platform open to the public
Accessible boarding indicator patch	At all times whilst platform open to the public
Maze edge hazard line / TGSIs	At all times whilst platform open to the public
Maze “stand behind” lines	At all times whilst platform open to the public
Car parking spaces	Prior to opening parking facility
Accessible parking spaces	Prior to opening parking facility
Motor cycle spaces	Prior to opening parking facility
Restricted access / parking areas	Prior to opening parking facility
Kerb ramp areas	Prior to opening parking facility
Dedicated bus lanes	Prior to opening bus interchange facility
Cycle lanes	Prior to opening cycle lanes

13 Bus Interchanges

- 13.1 Design of roads and associated pavements shall be undertaken in accordance with AR-PW-PM-SPE-00129011 (D071) Station Bus Interchanges – Train System and AR-PW-PM-SPE-00129012 (D072) Station Parking – Train System.

14 Car Parking

- 14.1 Design of carparks and associated pavements shall be undertaken in accordance with AR-PW-PM-SPE-00129012 (D072) Station Parking – Train System and AR-PW-PM-SPE-00129011 (D071) Station Bus Interchanges – Train System.
- 14.2 The Contractor shall liaise with the relevant local authority regarding drainage requirements.

15 Bicycle Facilities

- 15.1 Bicycle facilities shall be designed for stations and bus interchanges in accordance with AR-PW-PM-SPE-00129013 (D073) Station Bicycle Facilities.
- 15.2 The Stationary Validator (SV), model Proxibus CAB411 will be supplied by the Department. The Contractor shall provide for the SV requirements in accordance with AR-PW-PM-SPE-00129013 Bike facilities.

16 Electrical Infrastructure

- 16.1 Electrical infrastructure shall be designed in accordance with AR-PW-PM-SPE-00129014 Technical Standard - Stations – Electrical Infrastructure (D074).
- 16.2 Design of conduit systems shall be undertaken in accordance with AR-PW-PM-SPE-00129014 Technical Standard - Stations – Electrical Infrastructure (D074).

Security & Terrorism

- 16.3 Security systems shall be designed for rail stations and related amenities in accordance with P14-DOC-000897 Public Transport Infrastructure - Security Systems.
- 16.4 The final level shall be agreed with the Department’s Risk, Security and Emergency Management and the Department’s Rail Infrastructure/Bus Infrastructure Management.
- 16.5 Refer to the following web links for information:
- a) https://www.nationalsecurity.gov.au/Media-and-publications/Publications/Pages/default.aspx#_hvmg; and

- b) <https://www.nationalsecurity.gov.au/Securityandyourcommunity/Pages/australias-strategy-for-protecting-crowded-places-from-terrorism.aspx>.
- 16.6 The Contractor shall also consider the need for Safety Barriers for the safety of motorists at Station Precincts in accordance with Austroads, Guide to Road Design – Part 6: Roadside Design, Safety and Barriers.

17 Passenger Information Systems

- 17.1 Passenger Information Systems shall be designed for rail stations and bus interchanges in accordance with AR-PW-PM-SPE-00129016 Technical Standard - Stations – Passenger Information Systems (D076).

18 Equipment Room

- 18.1 Rail station equipment rooms shall be designed in accordance with AR-PW-PM-SPE-00129017 Technical Standard - Stations – Equipment Room (D077).

19 Landscaping

- 19.1 Landscaping shall be designed for all rail stations and related amenities in accordance with D37 Urban and Landscape Design – Landscaping and AR-PW-PM-SPE-00129018 Technical Standard - Stations – Landscaping (D078).
- 19.2 Ongoing maintenance of the irrigation system shall begin immediately after planting and continue for the period of 24 months following Practical Completion of the project to promote effective establishment.

20 Luminance and Contrast

- 20.1 Certain elements of stations and associated infrastructure and amenities are required to achieve a minimum of 30% luminance contrast, refer to DSAPT for detailed requirements.
- 20.2 The Department's Access and Inclusion Unit and Rail Infrastructure Management shall require the designers to demonstrate compliance with this requirement.

21 Asset Ownership & Maintenance

- 21.1 The Asset ownership and maintenance of the station and surrounding related amenities shall be confirmed and documented, in both spreadsheets and drawings, in liaison with the Department's Rail & Road Assets Units and the relevant Councils early in the design phase.
- 21.2 The applicable standards of the owner and maintainer are to be adhered to and the reviews are to include these respective organisations / departments.
- 21.3 Where a certain feature from the rail station is shared across both the Department and Council the asset shall be separated in totality; for example lighting of a shared path owned by council shall be run from a separate switchboard, so that the lighting not contribute the lighting of the station platform owned by the Department.
- 21.4 Where a station is considered high risk in terms of crime, consultation with the relevant council shall be undertaken on ways to minimise the risk, including working with Council to make security and CPTED improvements on their own / adjacent land.
- 21.5 Prior to the completion of the project the Contractor shall work with the Department's Property Unit and the respective councils in providing relevant information to assist in the preparation of relevant documents such as easements, licence agreements, safety interface agreements, maintenance arrangement.

22 Design Development Report

- 22.1 A Design Development Report must be provided at the final design stage of the Station Design.
- 22.2 The Design Development Report shall include:
- a) All design interpretations, assumptions, bases and parameters used in the track and civil design;
 - b) issues and solutions;
 - c) a list of station waivers; and
 - d) a list of station Design Decision Records (DDR).
- 22.3 The provision of the Design Development Report shall constitute a **Hold Point**.

23 Traffic Impact Statement

- 23.1 The Contractor shall submit a Traffic Impact Statement, with approval forms to the Department's Traffic Operations Unit, for traffic control devices (new, amended, etc.) in the following road related areas:
- a) bus interchange;
 - b) car parks;
 - c) Kiss n Go;
 - d) shared paths; and
 - e) other road related areas.
- 23.2 Endorsement for signage, way finding and pavement marking, etc. for Platforms, Pedestrian Crossings (including maze ways) shall be obtained from the Department's Rail Infrastructure Management.

24 Hold Points

- 24.1 The following is a summary of Hold Points referenced in this Part:

Document Ref.	Hold Point	Timing
1.5	Acceptance of the final track and civil design obtained from Unit Manager Track and Civil Engineering (or delegate)	At final design
1.16	DDA Certificate of Compliance	At final design
3.2	Method of concealment of bonding connections	At final design
10.5	Joint inspection of toilet facilities	2 working days
12.7	Bus only areas meet performance requirements	24 hours
22.3	Provision of Design Development Report	At final design