

Railway

Master Specification

RW-ST-D1 Structures

Document Information

K Net Number:	13244828
Document Version:	1
Document Date:	23/04/2020

DEPARTMENT FOR
INFRASTRUCTURE
AND TRANSPORT



Government of South Australia

Department for Infrastructure
and Transport

Document Amendment Record

Version	Change Description	Date
1	Initial issue	23/04/2020

Document Management

This document is the Property of the Department for Infrastructure and Transport and contains information that is confidential to the Department. It must not be copied or reproduced in any way without the written consent of the Department. This is a controlled document and it will be updated and reissued as approved changes are made.

Contents

Contents	2
RW-ST-D1 Structures	4
1 General	4
2 Engineering Standards	4
3 Design Requirements for Structures	4
4 Construction and Commissioning	5
5 Asset Handover	5
6 Hold Points	5

RW-ST-D1 Structures

1 General

- 1.1 This Part specifies the requirements for Railway Structures including road and rail bridges, buildings, tunnels, subways, footbridges and culverts.

2 Engineering Standards

- 2.1 The Contractor must comply with the following minimum, relevant engineering standards for any work related to the structures on the Adelaide Metropolitan Passenger Rail Network (AMPRN).
- a) AS 7636 Railway Structures.
 - b) AS 5100 Bridge Design.
 - c) AS 4799 Installation of underground utility service and pipelines within railway boundaries.
 - d) TC1-DOC-001642 Structures – Train System.
 - e) Code of Practice CPTS977 – Structures – Tram.
 - f) TC4-DOC-000357 Non-Rail Service Installations within the Rail Corridor.
 - g) PR-AM-GE-807 Development and Approval of Engineering Waivers.
 - h) PTS-MU-10-EG-PRC-00000016 Design Decision Records Procedure.
 - i) AM4-DOC-000466 Type Approval for Railway Products.
 - j) PTS-MS-05-AM-PRS-00000091 Asset Management Technical Data Requirements Specification.
 - k) FR-AM-GE-806 Identification and Numbering of Public Transport Technical Documents, Records and Drawings.
 - l) PL-AM-GE-865 Rail Drawings Acceptance Procedure.
 - m) AM4-DOC-000364 Drafting requirements for Rail AutoCAD Drawings.
 - n) PR-AM-GE-847 Engineering Notices Procedure.
 - o) PR-AM-GE-762 Punch List Management Procedure for Public Transport Projects.
 - p) AM4-DOC-000940 Asset Management Handover Requirements Standard.
 - q) AR-EL-STD-0102 Guidelines for Protective Provisions Related to Electrical Earthing and Bonding for the Adelaide Metro Electrified Rail Network.
 - r) DSAPT - Disability Standards for Accessible Public Transport.
 - s) AS1428 .1 Design for access and mobility – General requirements for access - New Building work.
 - t) AS1428 .1 Design for access and mobility – Enhanced and additional requirements – Buildings and facilities.
- 2.2 Advice must be sought from the Principal's or Track and Civil Engineering's representative for any clarification or conflict regarding the standards listed in above clause.
- 2.3 The Contractor must develop, implement and comply with a standards register.

3 Design Requirements for Structures

- 3.1 The structure must be in accordance TC1-DOC-001642 Structures - Train system

- 3.2 The Contractor must review, assess and propose the structure type (or structure types) to achieve the project objectives for review, including:
 - a) material type (e.g. concrete / steel);
 - b) nature of structure (beam type / simply supported / multispan, etc.);
 - c) optimal span lengths; and
 - d) rail stress to bridge joint interaction.
- 3.3 The Contractor, with support from the designer must review, and recommend the structure type (or types) for written approval by the Unit Manager Track & Civil Engineering. This shall constitute a **Hold Point**.
- 3.4 Rail axle loading must be in accordance with the TC1-DOC-001642 Structures - Train.
- 3.5 Structural design must enable efficient and safe replacement of bridge bearings. Uplift bearings must be avoided unless agreed in writing by the Principal.
- 3.6 Information on inspection, maintenance and replacement of bearings must be included in the maintenance and commissioning information.
- 3.7 Submission and acceptance of bearing type and details shall constitute a **Hold Point**.
- 3.8 Bridge joints must be integrated with the management of rail stress and rail joint requirements as detailed in RW-TC-D1 "Track and Civil (Design and Construction)".
- 3.9 Submission and acceptance of joint details and integration with the management of rail stress shall constitute a **Hold Point**.
- 3.10 The structure design must have provisions for future overhead wiring system in accordance with the Contract Scope and Technical Requirements (CSTR).
- 3.11 The aesthetics of structures including retaining walls and barriers must be integrated with the reference urban design and accordance with the requirements included in PR-LS-D1 "Landscaping Design" where there is significant variability.
- 3.12 The structure design must have provisions for future installation of advertising signage in accordance with the project's CSTR.
- 3.13 The bridge must consider pedestrian and cycling connectivity in accordance with the CSTR.
- 3.14 All concrete elements that are able to be accessed within a distance of 3.0 m must be treated with an approved anti-graffiti coating. Where surfaces are able to be accessed adjacent to horizontal or near-horizontal surfaces, this distance must be increased to 4.0m. The Contractor is responsible for removing graffiti from any structural element until practical completion.
- 3.15 Earthing and bonding design must be in accordance with AR-EL-STD-0102 Guidelines for Protective Provisions Related to Electrical Earthing and Bonding for the Adelaide Metro Electrified Rail Network

4 Construction and Commissioning

- 4.1 The railway structure must be constructed and commissioned in accordance with TC1-DOC-001642 Structures - Train and AS 7636 Railway Structures.
- 4.2 The submission of construction methodology and commissioning requirements shall constitute a **Hold Point**.

5 Asset Handover

- 5.1 The Contractor must comply with PC-RW60 "Asset Management Handover".

6 Hold Points

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

Document Ref.	Hold Point	Timing
3.4	Recommendation of Structure Type	10 Working days
3.8	Submission and acceptance of bearing type and details	10 Working days
3.10	Submission and acceptance of joint details and integration with the management of rail stress	10 Working days
4.2	Submission of construction methodology and commissioning requirements	10 Working days
