Master Specification
Part RW-SE-D1

Signalling

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Contents

RW-SE-D1 Signalling

1 General

a) This Master Specification Part sets out the requirements for the design of railway signalling systems including:

i) the documentation requirements, as set out in section 2;

ii) the Contractor competency requirements, as set out in section 3;

iii) the signalling scheme plan requirements, as set out in section 4;

iv) the Requirements Definition Design Documentation requirements, as set out in section 5;

v) the Preliminary Design Documentation requirements, as set out in section 6;

vi) the Detailed Design Documentation requirements, as set out in section 7;

vii) the Final Design Documentation requirements, as set out in section 8;

viii) the requirements for the construction specification, as set out in section 9; and

ix) the Hold Point requirements, as set out in section 10.

b) The design of the railway signalling system must comply with the Reference Documents, including:

i) AS 7716 Signal testing process;

ii) AS 7717 Signal testing and commissioning;

iii) PTS-MS-10-SG-STD-00000094 Pit and conduit standard for signalling and communication cables;

iv) SG1-DOC-000375 - Signalling design process and design production standard for Contractors; and

v) SG1-DOC-000452 Testing & Commissioning of Signalling System.

c) Notwithstanding the order of precedence for Reference Documents set out in PC-IN1 “Interpretation”, in relation to the interpretation of this Master Specification Part, the Reference Documents in order of precedence are as follows:

i) Department policies, procedures, processes and engineering standards;

ii) Department directives, guidelines and specifications;

iii) Australian Standards issued by the RISSB;

iv) the relevant standards, codes and guides of Standards Australia and Standards New Zealand;

v) Utility Service Authority standards, procedures and guidelines; and

vi) where an Australian standard or a New Zealand standard does not exist, the relevant British standard or international standard.

d) All deliverables must comply with SG1-DOC-000375 Signalling Design Process and Design Production Standard for Contractors.

e) The Contractor must ensure the management of design complies with PC-RW30 “Design” and PC-EDM1 “Design Management”.

2 Documentation

2.1 Design Documents

2.1.1 General

In addition to the requirements of PC-EDM1 “Design Management” and PC-RW30 “Design”, the Design Documentation must include:

a) the Requirements Definition Design Documentation inclusions, as required by section 5;

b) the Preliminary Design Documentation inclusions, as required by section 6;

c) the Detailed Design Documentation inclusions, as required by section 7;

d) the Final Design Documentation inclusions, as required by section 8; and

e) the construction specification requirements as required in section 9.

2.1.2 Design Report

In addition to the requirements of PC-EDM1 “Design Management” and PC-RW30 “Design”, Design Reports for the railway signalling system must comply with SG1-DOC-000375 Signalling design process and design production standard for Contractors.

2.1.3 Design Basis Report

In addition to the requirements of PC-EDM1 “Design Management”, the Design Basis must include the operational specification in accordance with SG1-DOC-000375 Signalling design process and design production standard for Contractors.

3 Contractor competency

In addition to the requirements of PC-PM3 “Contractor’s Personnel and Training”, the Contractor must ensure all personnel working on the design of railway signalling systems satisfy with the requirements of SG1-DOC-000375 Signalling design process and design production standard for Contractors.

4 Signalling scheme plans

a) The Contractor must submit to the Principal concept signalling scheme plans for operational and engineering input in accordance with SG1-DOC-000375 Signalling Design Process and Design Production Standard for Contractors and incorporate these inputs into the Requirements Definition Design Documentation.

b) This submission of the signalling scheme plans constitutes a **Hold Point** and the Contractor must not proceed to the Requirements Definition Design Documentation until this Hold Point is released.

5 Requirements Definition Design Documentation

a) In addition to the requirements of PC-RW30 “Design”, the Requirements Definition Design Documentation for the design of railway signalling systems must include:

   i) detailed site survey drawings including:

      A. major monuments (e.g. railway stations, side roads, over bridges, etc.);

      B. existing master signalling plan and trackside signalling equipment, including asset numbers and descriptions;

      C. existing railway services;

D. existing Utility Services;

E. track and civil plan;

F. existing OHWS infrastructure; and

G. existing railway corridor access points;

ii) Design Drawings for primary cable containment route including:

A. proposed location of the primary cable containment (up / down track side) and under track crossings;

B. a bonding plan including bonding and cable running;

C. number of conduits where the preferred primary cable conduit consists of pit and conduit system, in accordance with the requirements of PTS-MS-10-SG-STD-00000094 Pit and conduit standard for signalling and communication cables; and

D. details of the containment route where make-up of the non-preferred primary cable containment consists of ground level trough or galvanized steel trunking; and

iii) a Design Report, in accordance with the requirements of PC-EDM1 “Design Management”, including:

A. programme and schedule of works including WBS;

B. master signalling plan in accordance with SG1-DOC-000375 Signalling Design Process and Design Production Standard for Contractors; and

C. a bill of materials.

b) The Requirements Definition Design Documentation Hold Point in PC-RW30 “Design” must not be released until the requirements of section 5 are met.

6 Preliminary Design Documentation

a) In addition to the requirements of PC-EDM1 “Design Management”, the Preliminary Design Documentation for the design of railway signalling systems must include:

i) progressive update of information required by section 5, substituting ‘Requirements Definition Design Documentation’ with ‘Preliminary Design Documentation’; and

ii) the documents comprising the Preliminary Design Stage design package as described SG1-DOC-000375 - Signalling design process and design production standard for Contractors.

b) The Preliminary Design Documentation Hold Point in PC-EDM1 “Design Management” must not be released until the requirements of section 6 are met.

7 Detailed Design Documentation

a) In addition to the requirements of PC-EDM1 “Design Management”, the Detailed Design Documentation for the design of railway signalling systems must include:

i) progressive update of information required by section 6, substituting ‘Preliminary Design’ with ‘Detailed Design’; and

ii) the documents comprising the Detailed Design Stage design package as described SG1-DOC-000375 - Signalling design process and design production standard for Contractors.

b) The Detailed Design Documentation Hold Point in PC-EDM1 “Design Management” must not be released until the requirements of section 7 are met.

8 Final Design Documentation

a) In addition to the requirements of PC-EDM1 “Design Management”, the Final Design Documentation for the design of railway signalling systems must include:

i) progressive update of information required by section 7, in a finalised form, substituting the term ‘Detailed Design’ with ‘Final Design’; and

ii) the documents comprising the Final Design Stage design package as described SG1-DOC-000375 - Signalling design process and design production standard for Contractors.

b) The Final Design Documentation Hold Point in PC-EDM1 “Design Management” must not be released until the requirements of section 8 are met.

9 Requirements for construction specification

a) In addition to the construction specification requirements in PC-RW30 “Design”, the Hold Points listed in Table RW-SE-D1 9-1 must be included for the construction specification of signalling systems on the AMPRN.

b) In addition to the requirements of PC-RW50 “Inspection, Testing and Commissioning” with respect to railway signalling, the construction specification requirements in PC-RW30 “Design” must include:

i) all requirements specified in:

A. AS 7717 Signal testing and commissioning;

B. AS 7716 Signal testing process; and

C. SG1-DOC-000452 Testing & Commissioning of Signalling Systems;

ii) the As Built record alterations to circuit plans, application and systems data after each level of stagework; and

iii) the final As Built Records after the test As Built Records have been returned and the commissioning is complete.

Table RW-SE-D1 9-1 Additional Hold Point requirements to be incorporated into the construction specification

Hold Point	Documentation or construction quality	Hold Point occurrence point
Acceptance by the Principal of the signal design and issued for construction site plans	Documentation	Prior to commencement of construction or installation works
Signal sighting desktop design and modelling approval / sign off by the Rail Commissioner	Documentation	Prior to commencement of installation of signal foundations and gantries
Track engineering sign off by the Rail Commissioner for any structural clearance conflicts	Documentation	Prior to commencement of installation of signal foundations and gantries
Signalling installation work	Construction quality	Prior to burying of conduits / cables and earth grid
Software FAT, signed certificates and close out reports	Documentation	15 Business Days prior to delivery to site
Certificate of compliance (CoC) for the signalling power distribution for all cable runs	Documentation	Before energisation
Certificate for signal base	Construction quality	Before installation
Certificate for location base	Construction quality	Before installation
Certificate for level crossing base	Construction quality	Before installation

Hold Point	Documentation or construction quality	Hold Point occurrence point
Certificate for conduit routes, depth, back filling, warning tape between location cases, pits and equipment	Construction quality	Before installation
Certificate for axle counter disconnection post, controlled balise disconnection bootleg and automatic warning system transformer boxes	Construction quality	Before installation
Quality and acceptance of the installation of point machine and adjustment of points	Construction quality	Prior to the commencement of inspection, testing and commissioning.

10 Hold Points

Table RW-SE-D1 10-1 details the review period or notification period, and type (documentation or construction quality) for each Hold Point referred to in this Master Specification Part.

Table RW-SE-D1 10-1 Hold Points

Section reference	Hold Point	Documentation or construction quality	Review period or notification period
4b)	Concept signalling scheme plans	Documentation	10 Business Days review