

Master Specification

Part RD-EW-C3

Boring

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Contents

Contents	3
RD-EW-C3 Boring	4
1 General	4
2 Documentation	4
3 Installation	5
4 Boring under roads	5
5 Boring under railway tracks	5
6 Hold Points	6
7 Verification requirements and records	6

RD-EW-C3 Boring

1 General

- a) This Master Specification Part specifies the requirements for the installation of culverts, cables, conduits and pipes under roads, railway tracks and structures by boring including by any trenchless methods (such as thrust boring, directional boring/drilling and tunnelling), including:
 - i) the documentation requirements, as set out in section 2;
 - ii) the installation requirements, as set out in section 3;
 - iii) the boring under roads requirements, as set out in section 4;
 - iv) the boring under railway tracks requirements, as set out in section 5;
 - v) the Hold Point requirements, as set out in section 6; and
 - vi) the verification requirements and records, as set out in section 7.
- b) Boring must comply with the Reference Documents, including AS 4799 Installation of underground utility services and pipelines within railway boundaries.
- c) Boring must be undertaken (in accordance with Best Industry Practices) whenever:
 - i) the bore diameter exceeds 500 mm;
 - ii) multiple conduits are installed in a single bore; or
 - iii) culverts, cables, conduits, or pipes are to be installed under a railway.
- d) The Contractor is responsible for all required geotechnical investigations to confirm subsurface conditions, including confirmation of the adequacy of any available existing geotechnical information.
- e) Where Utility Service infrastructure is being installed, boring must comply with the requirements of the applicable Utility Service Authority.

2 Documentation

2.1 Construction Documentation

In addition to the requirements of PC-CN3 “Construction Management”, the Construction Documentation must include:

- a) full details of the methodology to be used for boring;
- b) details of equipment to be used for boring;
- c) details of existing services located near the boring works;
- d) a detailed monitoring plan to ensure the detection of movements at the surface of any road and rail infrastructure affected by the relevant boring operations; and
- e) a detailed review of the geotechnical information used to confirm the subsurface conditions in the areas affected by boring.

2.2 Quality Management Records

In addition to the requirements of PC-QA1 “Quality Management Requirements” or PC-QA2 “Quality Management Requirements for Major Projects” (as applicable), the Quality Management Records must include the completion report required by section 7a).

3 Installation

- a) Where multiple bores or tunnels are used, there must be a minimum spacing of 10D (where D is the diameter of the largest conduit or service) between individual bores or tunnels to ensure the combined surrounding cavities of multiple bores or tunnels do not undermine any pavement, railway tracks, formation, or structure.
- b) Boring by water jetting is not permitted.
- c) In relation to the installation of culverts, cables, conduits, or pipes by boring:
 - i) the installation must not disturb or damage any pavement, railway infrastructure or other structure in any way;
 - ii) where the culvert, cable, conduit or pipe is installed by thrusting, the initial borehole must not be less than 90% of the overall diameter of the relevant culvert, cable, conduit or pipe;
 - iii) culverts, cables, conduits, or pipes installed under road pavement and shoulders by under-road boring must have a minimum cover of 1.5 m below the surface; and
 - iv) culverts, cables, conduits, or pipes installed under railway tracks by under track boring must have a minimum of 2.0 m cover from the top of the existing rail track and a minimum cover of 1.5 m below the surface elsewhere.

4 Boring under roads

- a) Where a culvert, cable, conduit, or pipe is to be installed longitudinally under an existing road pavement, the use of under-road boring in preference to the excavation and reinstatement of trenches is encouraged.
- b) Where a culvert, cable, conduit, or pipe is to be installed transversely under an existing road pavement, the Contractor must use under-road boring to install the culvert, cable, conduit, or pipe.

5 Boring under railway tracks

5.1 General

- a) Boring must be used for the installation of culverts, cables, conduits, and pipes installed under railway tracks, unless:
 - i) the culvert, cable, conduit, or pipe is to be installed in conjunction with new formation work; or
 - ii) the geotechnical conditions (such as the presence of rock or loose sand) makes the use of boring impracticable.
- b) All boring under railway tracks must be in accordance with AS 4799 Installation of underground utility services and pipelines within railway boundaries.
- c) Any bore larger than 150 mm in diameter under railway tracks must not be carried out whilst trains are operating.

5.2 Adelaide metropolitan passenger rail network (AMPRN)

- a) Where a culvert, cable, conduit or pipe is to be installed under railway tracks forming part of the AMPRN, the Contractor must arrange a track inspector in accordance with the Contract Documents to inspect the completed works prior to the commencement of any train services.
- b) The track inspection required by section 5.2a) constitutes a **Hold Point**.

5.3 Other rail authorities' railway tracks

- a) Where a culvert, cable, conduit, or pipe is to be installed under railway tracks that are outside the AMPRN, the Contractor must arrange with the relevant rail authority, as applicable, to inspect the track in the vicinity of the completed bore and certify that the track is safe for train operations prior to the commencement of any train services.
- b) The track inspection and certification required by section 5.3a) constitutes a **Hold Point**.

6 Hold Points

Table RD-EW-C3 6-1 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 RD-EW-C3 6-1 Hold Points

Section reference	Hold Point	Documentation or construction quality	Review period or notification period
5.2b)	Inspection of completed boring under railway tracks forming part of the AMPRN	Construction quality	24 hours notification
5.3b)	Inspection and certification of completed boring under railway tracks that are outside the AMPRN	Construction quality	24 hours notification

7 Verification requirements and records

- a) The Contractor must submit a completion report for each bore within 14 days of completion, as part of the Quality Management Records.
- b) Each completion report required by section 7a) must:
 - i) include:
 - A. all bore logs;
 - B. as-built surveys; and
 - C. records of ground surface movements;
 - ii) guarantee the appropriateness of the method used (including covering depth) and the quality of work; and
 - iii) be prepared by a professional engineer who has experience with trenchless installation methodologies.