

Main Roads Specification

MRS91

Conduits and Pits

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Conduits and Pits

1 INTRODUCTION

This Specification applies to the supply, installation and testing of materials, pits, conduits and conduit fittings used to form a segregated wiring enclosure for the housing and protection of either electrical or telecommunication cables.

The wiring enclosure may be either –

- underground;
- in a structure or barrier; or
- on a surface.

This Specification shall be read in conjunction with MRS01 *Introduction to Specifications* and other Specifications as appropriate.

This Specification forms part of the Main Roads Specifications and Technical Standards Manual.

2 MEASUREMENT OF WORKS

2.1 Standard Work Items

In accordance with the provisions of Clause 2 of MRS01 *Introduction to Specifications*, the standard work items covered by this Specification are listed in Table 2.1.

Table 2.1 – Standard Work Items

Standard Item No.	Description	Unit of Measurement
Conduit and Conduit Fittings Underground		
6501	Supply of [<i>diameter</i>] mm, [<i>material</i>], [<i>type</i>] conduit.	m
6502	Supply of [<i>diameter</i>] mm, [<i>material</i>], [<i>type</i>] conduit for boring or jacking.	m
6503	Supply of [<i>diameter</i>] mm, [<i>angle</i>] °, [<i>material</i>], [<i>type</i>] conduit bend.	each
6504	Installation of [<i>No.</i>] of [<i>diameter</i>] mm, [<i>material</i>], [<i>type</i>] conduit(s), in [<i>surface</i>].	m
6505	Installation of [<i>No.</i>] of [<i>diameter</i>] mm, [<i>material</i>], [<i>type</i>] conduit(s) and [<i>No.</i>] of [<i>diameter</i>] mm, [<i>material</i>], [<i>type</i>] conduit(s), in a shared trench, in [<i>surface</i>].	m
6506	Installation of [<i>diameter</i>] mm, [<i>material</i>], [<i>type</i>] conduit, bored or jacked.	m
6507	Supply and installation of [<i>No.</i>] of [<i>diameter</i>] mm, [<i>material</i>], [<i>type</i>] conduit(s), in [<i>surface</i>].	m
6508	Supply and installation of [<i>No.</i>] of [<i>diameter</i>] mm, [<i>material</i>], [<i>type</i>] conduit(s) and [<i>No.</i>] of [<i>diameter</i>] mm, [<i>material</i>], [<i>type</i>] conduit(s), in a shared trench, in [<i>surface</i>].	m
6509	Supply and installation of [<i>diameter</i>] mm, [<i>material</i>], [<i>type</i>] conduit, bored or jacked.	m
Conduit and Conduit Fittings Mounted in Concrete Structure / Barrier		
6513	Installation of [<i>No.</i>] of [<i>diameter</i>] mm, [<i>material</i>], [<i>type</i>] conduit(s) in concrete structure / barrier.	m
6516	Supply and installation of [<i>No.</i>] of [<i>diameter</i>] mm, [<i>material</i>], [<i>type</i>] conduit(s) in concrete structure / barrier.	m

Standard Item No.	Description	Unit of Measurement
Conduit and Conduit Fittings Mounted on the Surface		
6521	Supply of [<i>diameter</i>] mm, [<i>material</i>], [<i>type</i>] conduit, suitable for mounting on a surface.	m
6522	Supply of [<i>diameter</i>] mm, [<i>angle</i>] °, [<i>material</i>], [<i>type</i>] conduit bend suitable for mounting on a surface.	each
6523	Installation of [<i>No.</i>] of [<i>diameter</i>] mm, [<i>material</i>], [<i>type</i>] conduit(s), surface mounted.	m
6526	Supply and installation of [<i>No.</i>] of [<i>diameter</i>] mm, [<i>material</i>], [<i>type</i>] conduit(s), surface mounted.	m
Ancillary Works		
6531	Supply of draw rope.	m
6532	Installation of draw rope in existing conduit.	m
6533	Supply and installation of draw rope in existing conduit.	m
6534	Flush and clear conduit (All types).	m
6535	Removal and transport of conduit(s), (all diameters, all materials, all types).	m
6536	Removal of cable joining pit(s) (all types).	each
Cable Jointing Pits		
6551	Supply of cable jointing pit [<i>type</i>].	each
6552	Supply of conduit bell mouth of [<i>diameter</i>] to suit pit [<i>type</i>].	each
6553	Installation of cable jointing pit [<i>type</i>].	each
6554	Supply and installation of cable jointing pit [<i>type</i>].	each
6555	Construction of pit surround.	each
6556	Supply of maintenance marker post.	each
6557	Installation of maintenance marker post.	each
6558	Supply and installation of maintenance marker post.	each

2.2 Work Operations

Item 6501 Supply of [*diameter*] mm, [*material*], [*type*] conduit.

Item 6502 Supply of [*diameter*] mm, [*material*], [*type*] conduit for boring or jacking.

Work Operations incorporated in the above item include –

- a) Work Operations listed in Clause 2.1.5 of MRS01 *Introduction to Specifications*; and
- b) Supply and delivery conduit.

Item 6503 Supply of [*diameter*] mm, [*angle*] °, [*material*], [*type*] conduit bend.

Work Operations incorporated in the above item include –

- a) Work Operations listed in Clause 2.1.5 of MRS01 *Introduction to Specifications*; and
- b) Supply and delivery conduit bends.

Item 6504 Installation of [No.] of [diameter] mm, [material], [type] conduit(s), in [surface].

Item 6505 Installation of [No.] of [diameter] mm, [material], [type] conduit(s) and [No.] of [diameter] mm, [material], [type] conduit(s), in a shared trench, in [surface].

Work Operations incorporated in the above items include –

- a) Work Operations listed in Clause 2.1.5 of MRS01 *Introduction to Specifications*;
- b) Excavation of trench;
- c) Utilising or disposing of surplus excavated material;
- d) Supply and installation of bedding and backfill materials;
- e) Supply of primer and adhesive for jointing;
- f) Installation of conduit and conduit bends;
- g) Supply and installation of marker tape;
- h) Supply and installation of draw rope;
- i) Reinstatement of original surface; and
- j) Testing of installed conduit.

Item 6506 Installation of [diameter] mm, [material], [type] conduit, bored or jacked.

Work Operations incorporated in the above item include –

- a) Work Operations listed in Clause 2.1.5 of MRS01 *Introduction to Specifications*;
- b) Provision of boring/ jacking equipment;
- c) Excavation of working spaces;
- d) Utilising or disposing of surplus excavated material;
- e) Operation of boring/ jacking equipment;
- f) Supply of primer and adhesive for jointing;
- g) Installation of conduit;
- h) Supply and installation of draw rope;
- i) Reinstatement of working spaces; and
- j) Testing of installed conduit.

Item 6507 Supply and installation of [No.] of [diameter] mm, [material], [type] conduit(s), in [surface].

Item 6508 Supply and installation of [No.] of [diameter] mm, [material], [type] conduit(s) and [No.] of [diameter] mm, [material], [type] conduit(s), in a shared trench, in [surface].

Work Operations incorporated in the above item include –

- a) Work Operations listed in Clause 2.1.5 of MRS01 *Introduction to Specifications*;
- b) Supply and delivery of conduit and conduit bends;
- c) Excavation of trench;
- d) Utilising or disposing of surplus excavated material;
- e) Supply of primer and adhesive for jointing;
- f) Installation of conduit and conduit bends;
- g) Supply and installation of bedding and backfill materials;
- h) Supply and installation of marker tape;
- i) Supply and installation of draw rope;

- j) Reinstatement of original surface; and
- k) Testing of installed conduit.

Item 6509 Supply and installation of [diameter] mm, [material], [type] conduit, bored or jacked.

Work Operations incorporated in the above item include –

- a) Work Operations listed in Clause 2.1.5 of MRS01 *Introduction to Specifications*;
- b) Supply and delivery of conduit;
- c) Provision of boring/ jacking equipment;
- d) Excavation of working spaces;
- e) Utilising or disposing of surplus excavated material;
- f) Operation of boring/ jacking equipment;
- g) Supply of primer and adhesive for jointing;
- h) Installation of conduit;
- i) Supply and installation of draw rope;
- j) Reinstatement of working spaces; and
- k) Testing of installed conduit.

Item 6513 Installation of [No.] of [diameter] mm, [material], [type] conduit(s) in concrete structure / barrier.

Work Operations incorporated in the above item include –

- a) Work Operations listed in Clause 2.1.5 of MRS01 *Introduction to Specifications*;
- b) Temporary fixing of conduit as necessary prior to construction of barrier;
- c) Supply of primer and adhesive for jointing;
- d) Installation of conduit within barrier;
- e) Supply and installation of cable access points as required;
- f) Supply and installation of draw rope; and
- g) Testing of installed conduit.

Item 6516 Supply and installation of [No.] of [diameter] mm, [material], [type] conduit(s) in concrete structure / barrier.

Work Operations incorporated in the above item include –

- a) Work Operations listed in Clause 2.1.5 of MRS01 *Introduction to Specifications*;
- b) Supply and delivery of conduit;
- c) Temporary fixing of conduit as necessary prior to construction of barrier;
- d) Supply of primer and adhesive for jointing;
- e) Installation of conduit within barrier;
- f) Supply and installation of cable access points as required;
- g) Supply and installation of draw rope; and
- h) Testing of installed conduit.

Item 6521 Supply of [diameter] mm, [material], [type] conduit, suitable for mounting on a surface.

Work Operations incorporated in the above item include –

- a) Work Operations listed in Clause 2.1.5 of MRS01 *Introduction to Specifications*; and
- b) Supply and delivery of conduit.

Item 6522 Supply of [diameter] mm, [angle] °, [material], [type] conduit bend suitable for mounting on a surface.

Work Operations incorporated in the above item include –

- a) Work Operations listed in Clause 2.1.5 of MRS01 *Introduction to Specifications*; and
- b) Supply and delivery of conduit bends.

Item 6523 Installation of [No.] of [diameter] mm, [material], [type] conduit(s), surface mounted.

Work Operations incorporated in the above item include –

- a) Work Operations listed in Clause 2.1.5 of MRS01 *Introduction to Specifications*;
- b) Supply of all fixings and supports;
- c) Supply of primer and adhesive for jointing;
- d) Installation of conduit, surface mounted on to a structure;
- e) Supply and installation of expansion joints and cable access points as required;
- f) Supply and installation of draw rope; and
- g) Testing of installed conduit.

Item 6526 Supply and installation of [No.] of [diameter] mm, [material], [type] conduit(s), surface mounted.

Work Operations incorporated in the above item include –

- a) Work Operations listed in Clause 2.1.5 of MRS01 *Introduction to Specifications*;
- b) Supply and delivery of conduit and conduit bends;
- c) Supply of all fixings and supports;
- d) Supply of primer and adhesive for jointing;
- e) Installation of conduit, surface mounted on to a structure;
- f) Supply and installation of expansion joints and cable access points as required;
- g) Supply and installation of draw rope; and
- h) Testing of installed conduit.

Item 6531 Supply of draw rope.

Work Operations incorporated in the above item include –

- a) Work Operations listed in Clause 2.1.5 of MRS01 *Introduction to Specifications*; and
- b) Supply and delivery of draw rope.

Item 6532 Installation of draw rope in existing conduit.

Work Operations incorporated in the above item include –

- a) Work Operations listed in Clause 2.1.5 of MRS01 *Introduction to Specifications*; and
- b) Installation of draw rope in existing conduit installations.

Item 6533 Supply and installation of draw rope in existing conduit.

Work Operations incorporated in the above item include –

- a) Work Operations listed in Clause 2.1.5 of MRS01 *Introduction to Specifications*; and
- b) Supply and installation of draw rope in existing conduit installations.

Item 6534 Flush and clear conduit (All types).

Work Operations incorporated in the above item include –

- a) Work Operations listed in Clause 2.1.5 of MRS01 *Introduction to Specifications*; and
- b) Flushing of conduits and clearing of blockages.

Item 6535 Removal and transport of conduit(s), (all diameters, all materials, all types).

Work Operations incorporated in the above item include –

- a) Work Operations listed in Clause 2.1.5 of MRS01 *Introduction to Specifications*;
- b) Removal of conduit and disposal or transport to Principal's store; and
- c) Backfill and reinstatement of disturbed areas.

Item 6536 Removal of cable joining pit (all types).

Work Operations incorporated in the above item include –

- a) Work Operations listed in Clause 2.1.5 of MRS01 *Introduction to Specifications*;
- b) Removal of pit and disposal or transport to Principal's store; and
- c) Backfill and reinstatement of disturbed areas.

Item 6551 Supply of cable jointing pit [type].

Work Operations incorporated in the above item include –

- a) Work Operations listed in Clause 2.1.5 of MRS01 *Introduction to Specifications*; and
- b) Supply and delivery of pit and pit cover.

Item 6552 Supply of conduit bell mouth of [diameter] to suit pit [type].

Work Operations incorporated in the above item include –

- a) Work Operations listed in Clause 2.1.5 of MRS01 *Introduction to Specifications*; and
- c) Supply and delivery conduit bell mouth.

Item 6553 Installation of cable jointing pit [type].

Work Operations incorporated in the above item include –

- a) Work Operations listed in Clause 2.1.5 of MRS01 *Introduction to Specifications*;
- b) Excavation for pit;
- c) Utilising or disposing of surplus excavated material;
- d) Supply and installation of bedding and backfill materials;
- e) Installation of pit and pit cover; and
- f) Installation of conduit bell mouths and conduits to pit.

Item 6554 Supply and installation of cable jointing pit [type].

Work Operations incorporated in the above item include –

- a) Work Operations listed in Clause 2.1.5 of MRS01 *Introduction to Specifications*;
- b) Supply and delivery pit, pit cover and conduit bell mouths;
- c) Excavation for pit;
- d) Utilising or disposing of surplus excavated material;
- e) Supply and installation of bedding and backfill materials;
- f) Installation of pit and pit cover; and
- g) Installation of conduit bell mouths and conduits to pit.

Item 6555 Construction of pit surround.

Work Operations incorporated in the above item include –

- a) Work Operations listed in Clause 2.1.5 of MRS01 *Introduction to Specifications*;
- b) Supply of all materials;
- c) Local excavation where necessary;
- d) Utilising or disposing of surplus excavated material;
- e) Construction of pit surround; and
- f) Backfill and compaction of disturbed areas.

Item 6556 Supply of maintenance marker post.

Work Operations incorporated in the above item include –

- a) Work Operations listed in Clause 2.1.5 of MRS01 *Introduction to Specifications*; and
- b) Supply and delivery of maintenance marker post.

Item 6557 Installation of maintenance marker post.

Work Operations incorporated in the above item include –

- a) Work Operations listed in Clause 2.1.5 of MRS01 *Introduction to Specifications*;
- b) Supply of concrete;
- c) Local excavation where necessary;
- d) Utilising or disposing of surplus excavated material; and
- e) Installation of maintenance marker post in concrete pad.

Item 6558 Supply and installation of maintenance marker post.

Work Operations incorporated in the above item include –

- a) Work Operations listed in Clause 2.1.5 of MRS01 *Introduction to Specifications*;
- b) Supply and delivery of maintenance marker post;
- c) Supply of concrete;
- d) Local excavation where necessary;
- e) Utilising or disposing of surplus excavated material; and
- f) Installation of maintenance marker post in concrete pad.

2.3 Calculation of Quantities

Supply and installation of conduits shall be measured from pit centre to pit centre or to the termination point of the conduit as shown on the Drawings.

Sections of conduit installed between a backbone or road crossing pit and an item of equipment installed in the field, including traffic signals, road lighting and other Intelligent Transport Systems equipment, shall not be measured separately. Such lengths shall be measured as part of the supply and installation of the relevant item of equipment. Backbone and road crossing conduits are shown and defined in Figure 1 of Appendix A to this Specification.

Supply and installation of pits shall be measured per each for each type of pit.