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Specification (Measurement)

Transport and Main Roads Specifications
MRS91 Conduits and Pits

March 2025

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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.

In this version additional details on the supply and installation of the sand band for circular split pit had been included in Work Items 60201, 60203 and 60204.

The wiring enclosure may be either:

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

This Specification shall be read in conjunction with MRTS91 *Conduits and Pits*, MRS01 *Introduction to Specifications* and other Specifications as appropriate.

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

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2 Measurement of work

2.1 Standard Work Items

In accordance with the provisions of Clause 2.1.3 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		
60001	Supply of [*diameter*] mm, [*material*], [*type*] conduit	m
60002	Supply of [*diameter*] mm, [*material*], [*type*] conduit for boring or jacking	m
60003	Supply of [*diameter*] mm, [*angle*] °, [*material*], [*type*] conduit bend	each
60004	Installation of [*No.*] of [*diameter*] mm, [*material*], [*type*] conduit(s), in [*surface*]	m
60005	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*]	m
60006	Installation of [*diameter*] mm, [*material*], [*type*] conduit, bored or jacked	m
60007	Supply and installation of [*No.*] of [*diameter*] mm, [*material*], [*type*] conduit(s), in [*surface*]	m
60008	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*]	m

Standard Item No.	Description	Unit of measurement
60009	Supply and installation of [*diameter*] mm, [*material*], [*type*] conduit, bored or jacked	m
Conduit and conduit fittings mounted in concrete structure / barrier		
60051	Installation of [*No.*] of [*diameter*] mm, [*material*], [*type*] conduit(s) in concrete structure / barrier	m
60052	Supply and installation of [*No.*] of [*diameter*] mm, [*material*], [*type*] conduit(s) in concrete structure / barrier	m
Conduit and conduit fittings mounted on the surface		
60101	Supply of [*diameter*] mm, [*material*], [*type*] conduit, suitable for mounting on a surface	m
60102	Supply of [*diameter*] mm, [*angle*], [*material*], [*type*] conduit bend suitable for mounting on a surface	each
60103	Installation of [*No.*] of [*diameter*] mm, [*material*], [*type*] conduit(s), surface mounted	m
60104	Supply and installation of [*No.*] of [*diameter*] mm, [*material*], [*type*] conduit(s), surface mounted	m
Ancillary works		
60151	Supply and installation of draw rope in existing conduit	m
60152	Flush and clear conduit (all types)	m
60153	Removal and transport of conduit(s), (all diameters, all materials, all types)	m
60154	Removal of cable jointing pit(s) (all types)	each
60155	Replacement of cable jointing pit cover [*type*]	each
Cable jointing pits		
60201	Supply of cable jointing pit [*type*], [*standard, split*]	each
60202	Supply of conduit bell mouth of [*diameter*] to suit pit [*type*]	each
60203	Installation of cable jointing pit [*type*], [*standard, split*]	each
60204	Supply and installation of cable jointing pit [*type*], [*standard, split*]	each
60205	Construction of pit surround	each
60206	Supply of maintenance marker post	each
60207	Installation of maintenance marker post	each
60208	Supply and installation of maintenance marker post	each
60212	Excavation in excessively hard material, rate additional to rate for Work Items 60004, 60005, 60203, 60204	each
60213	Supply and installation of High Security pit and associated components	each
60214	Modification or hardening of existing pit surround only	each
60215	Modification or hardening of existing pit, includes supply and installation of associated components and hardened pit surround	each
60216	Supply and installation of Transport and Main Roads specific locking mechanisms, includes management and handover	each

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2.2 Work Operations

Work Operations included in the Standard Work Items are specified in the relevant clause adjacent to each Standard Work Item listed in Table 2.1.

Item 60001 Supply of [*diameter*] mm, [*material*], [*type*] conduit

Item 60002 Supply of [*diameter*] mm, [*material*], [*type*] conduit for boring or jacking

Work Operations incorporated in the above include the following as appropriate:

a) Work Operations listed in Clause 2.1.5 of MRS01 *Introduction to Specifications*, and

b) supply and delivery conduit.

Item 60003 Supply of [*diameter*] mm, [*angle*] º, [*material*], [*type*] conduit bend

Work Operations incorporated in the above include the following as appropriate:

a) Work Operations listed in Clause 2.1.5 of MRS01 *Introduction to Specifications*, and

b) supply and delivery conduit bends.

Item 60004 Installation of [*No.*] of [*diameter*] mm, [*material*], [*type*] conduit(s), in [*surface*]

Item 60005 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 include the following as appropriate:

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 joining

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 60006 Installation of [*diameter*] mm, [*material*], [*type*] conduit, bored or jacked

Work Operations incorporated in the above include the following as appropriate:

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 joining

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g) installation of conduit

h) supply and installation of draw rope

i) reinstatement of working spaces, and

j) testing of installed conduit.

Item 60007 Supply and installation of [*No.*] of [*diameter*] mm, [*material*], [*type*] conduit(s), in [*surface*]

Item 60008 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 include the following as appropriate:

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 joining

f) installation of conduit and conduit bends

g) supply and installation of bedding and backfill materials

h) supply and installation of marker tape

i) for Rate-2 work where MD conduit is used, supply and installation of polymeric cable protection cover

j) supply and installation of draw rope

k) reinstatement of original surface, and

l) testing of installed conduit.

Item 60009 Supply and installation of [*diameter*] mm, [*material*], [*type*] conduit, bored or jacked

Work Operations incorporated in the above include the following as appropriate:

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 joining

h) installation of conduit

i) supply and installation of draw rope

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j) reinstatement of working spaces, and

k) testing of installed conduit.

Item 60051 Installation of [*No.*] of [*diameter*] mm, [*material*], [*type*] conduit(s) in concrete structure / barrier

Work Operations incorporated in the above include the following as appropriate:

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 joining

d) installation of conduit within barrier

e) supply and installation of cable access points as required

f) supply and installation of draw rope

g) testing of installed conduit, and

h) installation of bends as required.

Item 60052 Supply and installation of [*No.*] of [*diameter*] mm, [*material*], [*type*] conduit(s) in concrete structure / barrier

Work Operations incorporated in the above include the following as appropriate:

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 joining

e) installation of conduit within barrier

f) supply and installation of cable access points as required

g) supply and installation of draw rope

h) testing of installed conduit, and

i) supply and installation of bends as required.

Item 60101 Supply of [*diameter*] mm, [*material*], [*type*] conduit, suitable for mounting on a surface

Work Operations incorporated in the above include the following as appropriate:

a) Work Operations listed in Clause 2.1.5 of MRS01 *Introduction to Specifications*, and

b) supply and delivery of conduit.

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Item 60102 Supply of [*diameter*] mm, [*angle*] º, [*material*], [*type*] conduit bend suitable for mounting on a surface

Work Operations incorporated in the above include the following as appropriate:

a) Work Operations listed in Clause 2.1.5 of MRS01 *Introduction to Specifications*, and

b) supply and delivery of conduit bends.

Item 60103 Installation of [*No.*] of [*diameter*] mm, [*material*], [*type*] conduit(s), surface mounted

Work Operations incorporated in the above include the following as appropriate:

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 joining

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 60104 Supply and installation of [*No.*] of [*diameter*] mm, [*material*], [*type*] conduit(s), surface mounted

Work Operations incorporated in the above include the following as appropriate:

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 joining

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 60151 Supply and installation of draw rope in existing conduit

Work Operations incorporated in the above include the following as appropriate:

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 60152 Flush and clear conduit (All types)

Work Operations incorporated in the above include the following as appropriate:

a) Work Operations listed in Clause 2.1.5 of MRS01 *Introduction to Specifications*, and

b) flushing of conduits and clearing of blockages.

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Item 60153 Removal and transport of conduit(s), (all diameters, all materials, all types)

Work Operations incorporated in the above include the following as appropriate:

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 60154 Removal of cable jointing pit(s) (all types)

Work Operations incorporated in the above include the following as appropriate:

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 60155 Replacement of cable jointing pit cover [*type*]

Work Operations incorporated in the above include the following as appropriate:

a) Work Operations listed in Clause 2.1.5 of MRS01 *Introduction to Specifications*

b) removal and dispose of damaged pit cover, and

c) supply and installation of new pit cover.

Item 60201 Supply of cable jointing pit [*type*], [*standard, split*]

Work Operations incorporated in the above include the following as appropriate:

a) Work Operations listed in Clause 2.1.5 of MRS01 *Introduction to Specifications*, and

b) supply and delivery of pit, pit riser (for circular pit), pit collar (for circular pit), sand band (for circular split pit) and pit cover.

Item 60202 Supply of conduit bell mouth of [*diameter*] to suit pit [*type*]

Work Operations incorporated in the above include the following as appropriate:

a) Work Operations listed in Clause 2.1.5 of MRS01 *Introduction to Specifications*, and

b) supply and delivery conduit bell mouth.

Item 60203 Installation of cable jointing pit [*type*], [*standard, split*]

Work Operations incorporated in the above include the following as appropriate:

a) Work Operations listed in Clause 2.1.5 of MRS01 *Introduction to Specifications*

b) selection of pit drainage type as per Clause 10.10 of MRTS91

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, pit riser (for circular pit), pit collar (for circular pit), sand band (for circular split pit) and pit cover, and

g) installation of conduit bell mouths and conduits to pit.

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Item 60204 Supply and installation of cable jointing pit [*type*], [*standard, split*]

Work Operations incorporated in the above include the following as appropriate:

a) Work Operations listed in Clause 2.1.5 of MRS01 *Introduction to Specifications*

b) selection of pit drainage type as per Clause 10.10 of MRTS91

c) supply and delivery pit, pit riser (for circular pit), pit collar (for circular pit), sand band (for circular split pit), pit cover and conduit bell mouths

d) excavation for pit

e) utilising or disposing of surplus excavated material

f) supply and installation of bedding and backfill materials

g) installation of pit and pit cover, and

h) installation of conduit bell mouths and conduits to pit.

Item 60205 Construction of pit surround

Work Operations incorporated in the above include the following as appropriate:

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 60206 Supply of maintenance marker post

Work Operations incorporated in the above include the following as appropriate:

a) Work Operations listed in Clause 2.1.5 of MRS01 *Introduction to Specifications*, and

b) supply and delivery of maintenance marker post.

Item 60207 Installation of maintenance marker post

Work Operations incorporated in the above include the following as appropriate:

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.

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Item 60208 Supply and installation of maintenance marker post

Work Operations incorporated in the above include the following as appropriate:

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.

Item 60212 Excavation in excessively hard material, rate additional to rate for Work items 60004, 60005, 60203, 60204

Work Operations incorporated in the above include the following as appropriate:

a) Work Operations listed in Clause 2.1.5 of MRS01 *Introduction to Specifications*, and

b) Additional work associated with the excavation of pits or trenches in excessively hard material.

Item 60213 Supply and installation of High Security pit and associated components

Work Operations incorporated in the above include the following as appropriate:

a) Work Operations listed in Clause 2.1.5 of MRS01 *Introduction to Specifications*

b) selection of pit drainage type as per Clause 10.10 of MRS91

c) supply and delivery high security pit, pit cover and conduit bell mouths

d) excavation for pit

e) utilising or disposing of surplus excavated material

f) supply and installation of bedding and backfill materials

g) supply and installation of security fixings and components

h) supply and installation of locking mechanisms

i) installation of high security pit and pit cover, and

j) installation of conduit bell mouths and conduits to pit.

Item 60214 Modification or hardening of existing pit surround only

Work Operations incorporated in the above include the following as appropriate:

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.

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Item 60215 Modification or hardening of existing pit, includes supply and installation of associated components and hardened pit surround

Work Operations incorporated in the above include the following as appropriate:

a) Work Operations listed in Clause 2.1.5 of MRS01 *Introduction to Specifications*

b) supply of all material

c) local excavation where necessary

d) utilising or disposing of surplus excavated material

e) construction of pit surround

f) backfill and compaction of disturbed areas

g) installation of security fixings and components

h) installation of locking mechanisms, and

i) installation of high security pit cover.

Item 60216 Supply and installation of Transport and Main Roads specific locking mechanisms, includes management and handover

Work Operations incorporated in the above include the following as appropriate:

a) Work Operations listed in Clause 2.1.5 of MRS01 *Introduction to Specifications*

b) supply and installation of all components

c) Principals' approval for use of Transport and Main Roads specific locking systems, and

d) site and system management of electronic and mechanical locking system.

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 Standard 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 A of Appendix A of MRTS91 *Conduits and Pits*.

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

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