

Specification (Measurement)

**Transport and Main Roads Specifications
MRS207 Traffic Survey Data Management (TSDM)
Foundation Equipment**

July 2018

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1 Introduction

This Specification applies to the supply and installation of Traffic Survey Data Management (TSDM) roadside field equipment as an integral part of Transport and Main Roads wider requirement for roads operation data acquisition systems.

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

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

2 Measurement of Works

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
TSDM Cabinet Plinth Base		
61801	Supply of single field cabinet plinth base	each
61802	Installation of single field cabinet plinth base	each
61803	Supply and Installation of single field cabinet plinth	each
TSDM Plinth Mounted Field Cabinets		
61811	Supply of single plinth [<i>metered</i> <i>unmetered</i>] field cabinet	each
61812	Installation of single plinth [<i>metered</i> <i>unmetered</i>] field cabinet	each
61813	Supply and Installation of single plinth [<i>metered</i> <i>unmetered</i>] field cabinet	each
TSDM Cabinet Ancillary Equipment		
61831	Supply of field cabinet [<i>fan</i> <i>filter</i> <i>shelf</i>]	each
61832	Installation of field cabinet [<i>fan</i> <i>filter</i> <i>shelf</i>]	each
61833	Supply and Installation of field cabinet [<i>fan</i> <i>filter</i> <i>shelf</i>]	each
61834	Supply of ELV power supply hardware [<i>12v DC Rectifier</i> <i>48v DC converter</i> <i>DC power distribution board 4 or 8 outputs</i>] and ancillary components	each
61835	Installation of ELV power supply hardware [<i>12v DC Rectifier</i> <i>48v DC converter</i> <i>DC power distribution board 4 or 8 outputs</i>] and ancillary components	each
61836	Supply and Installation of ELV power supply hardware [<i>12v DC Rectifier</i> <i>48v DC converter</i> <i>DC power distribution board 4 or 8 outputs</i>] and ancillary components	each
61837	Supply of DC batteries and ancillary equipment	each
61838	Installation of DC batteries and ancillary equipment	each
61839	Supply and Installation of DC batteries and ancillary equipment	each

Standard Item No	Description	Unit of Measurement
61840	Supply of Communications equipment [<i>Wireless modem Unmanaged Network Switch</i>] and ancillary components	each
61841	Installation of Communications equipment [<i>Wireless modem Unmanaged Network Switch</i>] and ancillary components	each
61842	Supply and Installation of Communications equipment [<i>Wireless modem Unmanaged Network Switch</i>] and ancillary components	each
61843	Supply of Bluetooth data logger and ancillary components	each
61844	Installation of Bluetooth data logger and ancillary components	each
61845	Supply and Installation of Bluetooth data logger and ancillary components	each
61846	Supply of Bluetooth Antenna with IP 66 rated enclosure	each
61847	Installation of Bluetooth Antenna with IP 66 rated enclosure	each
61848	Supply and Installation of Bluetooth Antenna with IP 66 Rated enclosure	each
Removal of Existing Equipment		
61891	Removal of field cabinet, [<i>for salvage for disposal</i>]	each
61892	Removal of field cabinet plinth base	each
61893	Removal existing TSDM field equipment [<i>description</i>]	each

2.2 Work Operations

Item 61801 Supply of single field cabinet plinth base

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 of field cabinet plinth in accordance with SD1679 *ITS – Telecommunications field cabinet base installation details* and MRTS226 *Telecommunications Field Cabinets*.

Item 61802 Installation of single field cabinet plinth base

Work Operations incorporated in the above item include:

- a) Work Operations listed in Clause 2.1.5 of MRS01 *Introduction to Specifications*
- b) localised excavation
- c) provision of formwork for concrete pad surrounding plinth base
- d) supply and installation of conduit from plinth base to electrical and communications pits, where necessary
- e) sealing of gap between enclosure and plinth, where necessary

- f) supply, placement and finishing of concrete pad surrounding plinth base, where necessary, and
- g) supply and installation of all fixing bolts, nuts and washers as appropriate.

Item 61803 Supply and Installation of single field cabinet plinth base

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 field cabinet plinth in accordance with SD1679 *ITS – Telecommunications field cabinet base installation details* and MRTS226 *Telecommunications Field Cabinets*
- c) localised excavation
- d) provision of formwork for concrete pad surrounding plinth base
- e) supply and installation of conduit from plinth base to electrical and communications pits, where necessary
- f) supply and installation of plinth base
- g) sealing of gap between enclosure and plinth, where necessary
- h) supply, placement and finishing of concrete pad surrounding plinth base, where necessary, and
- i) supply and installation of all fixing bolts, nuts and washers as appropriate.

Item 61811 Supply of single plinth [*metered* | *unmetered*] field cabinet

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 [*metered* | *unmetered*] plinth-mounted field cabinet complete with all necessary components including cabinet switchboard and internal wiring as per MRTS226 *Telecommunications Field Cabinet*, MRTS207 *Traffic Survey Data Management (TSDM) Foundation Equipment* and Standard Drawing 1901.

Item 61812 Installation of single plinth [*metered* | *unmetered*] field cabinet

Work Operations incorporated in the above item include:

- a) Work Operations listed in Clause 2.1.5 of MRS01 *Introduction to Specifications*
- b) mounting of field cabinet on plinth or pole / post, as appropriate
- c) installation of [*metered* | *unmetered*] field cabinet, as appropriate, complete with all necessary components including cabinet switchboard and internal wiring
- d) earthing of installation including supply of earthing materials, and
- e) electrical testing of field cabinet.

Item 61813 Supply and Installation of single plinth [*metered* | *unmetered*] field cabinet

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 installation of [*metered* | *unmetered*] field cabinet, as appropriate, complete with all necessary components including cabinet switchboard and internal wiring
- c) mounting of field cabinet on plinth or pole / post, as appropriate
- d) earthing of installation including supply of earthing materials, and
- e) electrical testing of field cabinet.

Item 61831 Supply of field cabinet [*fan* | *filter* | *shelf*]

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 of field cabinet [*fan* | *filter* | *shelf*] complete with all necessary components.

Item 61832 Installation of field cabinet [*fan* | *filter* | *shelf*]

Work Operations incorporated in the above item include:

- a) Work Operations listed in Clause 2.1.5 of MRS01 *Introduction to Specifications*
- b) installation of field cabinet [*fan* | *filter* | *shelf*] complete with all necessary components, and
- c) testing of the operation of installed fans.

Item 61833 Supply and installation of field cabinet [*fan* | *filter* | *shelf*]

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 installation of field cabinet [*fan* | *filter* | *shelf*] complete with all necessary components, and
- c) testing of the operation of installed fans.

Item 61834 Supply of ELV power supply hardware [*12v DC Rectifier* | *48v DC converter* | *DC power distribution board 4 or 8 outputs*] and ancillary components

Work Operations incorporated in the above item include:

- a) Work Operations listed in Clause 2.1.5 of MRS01 *Introduction to Specifications*
- b) general equipment requirements stated in MRTS201 *General Equipment Requirements*
- c) supply only of ELV power supply hardware with all necessary components in accordance with the requirements of Standard Drawing 1905 and MRTS207 *Traffic Survey Data Management (TSDM) Foundation Equipment*.

Item 61835 Installation of ELV power supply hardware [12v DC Rectifier | 48v DC converter | DC power distribution board 4 or 8 outputs] and ancillary components

Work Operations incorporated in the above item include:

- a) Work Operations listed in Clause 2.1.5 of MRS01 *Introduction to Specifications*
- b) general equipment requirements stated in MRTS201 *General Equipment Requirements*
- c) installation, testing, commissioning of ELV power supply hardware with all necessary components in accordance with the requirements of Standard Drawing 1905 and MRTS207 *Traffic Survey Data Management (TSDM) Foundation Equipment*.

Item 61836 Supply and Installation of ELV power supply hardware [12v DC Rectifier | 48v DC converter | DC power distribution board 4 or 8 outputs] and ancillary components

Work Operations incorporated in the above item include:

- a) Work Operations listed in Clause 2.1.5 of MRS01 *Introduction to Specifications*
- b) general equipment requirements stated in MRTS201 *General Equipment Requirements*
- c) supply, installation, testing, commissioning and full documentation of ELV power supply hardware with all necessary components in accordance with the requirements of Standard Drawing 1905 and MRTS207 *Traffic Survey Data Management (TSDM) Foundation Equipment*.

Item 61837 Supply of DC batteries and ancillary components

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 [qty] batteries and ancillary components in accordance with Standard Drawing 1905
- c) supply of DC power cabling and connection to 12v Rectifier
- d) handover of battery documentation in accordance with the requirements of Standard Drawing 1905 and MRTS207 *Traffic Survey Data Management (TSDM) Foundation Equipment*.

Item 61838 Installation of DC batteries and ancillary components

Work Operations incorporated in the above item include:

- a) Work Operations listed in Clause 2.1.5 of MRS01 *Introduction to Specifications*
- b) Installation and alignment of all batteries, cabling and connection to 12v rectifier
- c) Completion of commissioning tests, and
- d) handover of all documents of the test reports to the Principal in accordance with the requirements of Standard Drawing 1905 and MRTS207 *Traffic Survey Data Management (TSDM) Foundation Equipment*.

Item 61839 Supply and Installation of DC batteries and ancillary components

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 [*qty*] batteries and ancillary components in accordance with Standard Drawing 1905
- c) supply of DC power cabling and connection to 12v Rectifier
- d) handover of battery documentation
- e) Installation and alignment of all batteries, cabling and connection to 12v rectifier
- f) Completion of commissioning tests, and
- g) handover of all documents of the test reports to the Principal in accordance with the requirements of Standard Drawing 1905 and MRS207 *Traffic Survey Data Management (TSDM) Foundation Equipment*.

Item 61840 Supply of Communications equipment [*Wireless modem* | *Unmanaged Network Switch*] and ancillary components

Work Operations incorporated in the above item include:

- a) Work Operations listed in Clause 2.1.5 of MRS01 *Introduction to Specifications*
- b) general equipment requirements stated in MRS201 *General Equipment Requirements*
- c) supply only of communications equipment with all necessary components in accordance with the requirements of Standard Drawing 1905 and MRS207 *Traffic Survey Data Management (TSDM) Foundation Equipment*.

Item 61841 Installation of Communications equipment [*Wireless modem* | *Unmanaged Network Switch*] and ancillary components

Work Operations incorporated in the above item include:

- a) Work Operations listed in Clause 2.1.5 of MRS01 *Introduction to Specifications*
- b) general equipment requirements stated in MRS201 *General Equipment Requirements*
- c) installation and testing of communications equipment with all necessary components in accordance with the requirements of Standard Drawing 1905 and MRS207 *Traffic Survey Data Management (TSDM) Foundation Equipment*.

Item 61842 Supply and installation of Communications equipment [*Wireless modem* | *Unmanaged Network Switch*] and ancillary components

Work Operations incorporated in the above item include:

- a) Work Operations listed in Clause 2.1.5 of MRS01 *Introduction to Specifications*
- b) general equipment requirements stated in MRS201 *General Equipment Requirements*
- c) supply, installation, testing, commissioning and full documentation of communications equipment with all necessary components in accordance with the requirements of Standard Drawing 1905 and MRS207 *Traffic Survey Data Management (TSDM) Foundation Equipment*.

Item 61843 Supply of Bluetooth data logger and ancillary components

Work Operations incorporated in the above item include:

- a) Work Operations listed in Clause 2.1.5 of MRS01 *Introduction to Specifications*
- b) general equipment requirements stated in MRS201 *General Equipment Requirements*

- c) supply only of Bluetooth data logger with all necessary components in accordance with the requirements of Standard Drawing 1905 and MRTS207 *Traffic Survey Data Management (TSDM) Foundation Equipment*.

Item 61844 Installation of Bluetooth data logger and ancillary components

Work Operations incorporated in the above item include:

- a) Work Operations listed in Clause 2.1.5 of MRS01 *Introduction to Specifications*
- b) general equipment requirements stated in MRTS201 *General Equipment Requirements*, and
- c) installation, testing and commissioning of Bluetooth data logger with all necessary components in accordance with the requirements of Standard Drawing 1905 and MRTS207 *Traffic Survey Data Management (TSDM) Foundation Equipment*.

Item 61845 Supply and Installation of Bluetooth data logger and ancillary components

Work Operations incorporated in the above item include:

- a) Work Operations listed in Clause 2.1.5 of MRS01 *Introduction to Specifications*
- b) general equipment requirements stated in MRTS201 *General Equipment Requirements*, and
- c) supply, installation, testing, commissioning and full documentation of Bluetooth data logger with all necessary components in accordance with the requirements of Standard Drawing 1905 and MRTS207 *Traffic Survey Data Management (TSDM) Foundation Equipment*.

Item 61846 Supply of Bluetooth antenna with IP 66 rated enclosure

Work Operations incorporated in the above item include:

- a) Work Operations listed in Clause 2.1.5 of MRS01 *Introduction to Specifications*
- b) general equipment requirements stated in MRTS201 *General Equipment Requirements*
- c) supply of all fixing bolts, nuts and washers as appropriate, and
- d) Supply only of Bluetooth antenna with all necessary components in accordance with the requirements of Standard Drawing 1905 and MRTS207 *Traffic Survey Data Management (TSDM) Foundation Equipment*.

Item 61847 Installation of Bluetooth antenna with IP 66 rated enclosure

Work Operations incorporated in the above item include:

- a) Work Operations listed in Clause 2.1.5 of MRS01 *Introduction to Specifications*
- b) general equipment requirements stated in MRTS201 *General Equipment Requirements*
- c) all works associated with externally mounting a Bluetooth antenna within an IP66 rated enclosure on the cabinet as required
- d) installation of all fixing bolts, nuts and washers as appropriate
- e) installation of all cabling to and from Bluetooth antenna
- f) sealing of gap between enclosure and cabinet, where necessary

- g) installation, testing and commissioning of Bluetooth antenna and all necessary components in accordance with the requirements of Standard Drawing 1905 and MRS207 *Traffic Survey Data Management (TSDM) Foundation Equipment*.

Item 61848 Supply and Installation of Bluetooth antenna with IP 66 rated enclosure

Work Operations incorporated in the above item include:

- a) Work Operations listed in Clause 2.1.5 of MRS01 *Introduction to Specifications*
- b) general equipment requirements stated in MRS201 *General Equipment Requirements*
- c) all works associated with externally mounting an IP rated enclosure and Antenna on the cabinet as required
- d) supply and installation of all fixing bolts, nuts and washers as appropriate
- e) supply and installation of all cabling to and from Bluetooth antenna
- f) sealing of gap between enclosure and cabinet, where necessary
- g) supply, installation, testing, commissioning and full documentation of Bluetooth antenna and all necessary components in accordance with the requirements of Standard Drawing 1905 and MRS207 *Traffic Survey Data Management (TSDM) Foundation Equipment*.

Item 61891 Removal of field cabinet, [for salvage | for disposal]

Work Operations incorporated in the above item include:

- a) Work Operations listed in Clause 2.1.5 of MRS01 *Introduction to Specifications*
- b) de-energisation and disconnection of cabling to field cabinet
- c) removal of cabinet and all internal cabling and associated components, as appropriate
- d) for pole / post mounted field cabinets:
 - i. removal of [pole | post]
 - ii. dismantling of [pole | post] and components, where appropriate, and
 - iii. transporting of [pole | post] and associated components to designated storage facility or another station for re-use.
- e) for field cabinets to be salvaged:
 - i. dismantling of equipment, where appropriate, and
 - ii. transporting of field cabinets to designated storage facility or another station for re-use.
- f) for field cabinets to be disposed:
 - i. disposal of field cabinets, and
 - ii. disposal of components.

Item 61892 Removal of field cabinet plinth base

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 plinth base and associated surrounding concrete pad, as required

- c) removal of conduits from plinth to associated electrical and communications pits
- d) disposal of materials, and
- e) backfilling of hole.

Item 61893 Removal of existing TSDM field equipment [description]

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 equipment and ancillary components as required, and
- c) disposal of materials.

2.3 Method of Measurement of TSDM Foundation Equipment Components

This Specification provides Standard Work Items for:

- a) supply only
- b) installation only, and
- c) supply and installation.

of TSDM field cabinet components.

Any combination of Standard Work Items relating to these methods of measurement may be used in the Schedule of Rates. However, where a Standard Work Item for supply and installation of a particular component or group of components is included in the Schedule of Rates, no supply only nor installation only Standard Work Item shall also apply to that component or group of components, as applicable.

2.4 Supply of Materials

Any materials to be supplied by the Principal will be as stated in the *Principal Supplied Material List*, Form C6827. All other material shall be supplied by the Contractor.

The responsibility for transport to the Site of materials supplied by the Principal shall be as stated in the *Principal Supplied Material List*, Form C6827. Transport to the Site of all other materials shall be the responsibility of the Contractor.

