

Superseded

Specification (Measurement)

**Transport and Main Roads Specifications
MRS227 Changeable Message Signs**

March 2023

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1 Introduction

This Specification applies to the supply and installation of Changeable Message Signs (CMS) where three pre-determined alternate messages (which may include a blank sign face) are deployed as an integral part of Transport and Main Roads wider requirement for traveller information 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 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
Changeable Message Signs		
64101	Supply of CMS and mounting structure incorporating an affixed enclosure with CMS Controller	each
64102	Installation of CMS and mounting structure incorporating an affixed enclosure with CMS Controller	each
64103	Supply and installation of CMS and mounting structure incorporating an affixed enclosure with CMS Controller	each
64104	Installation of CMS footing including Anchor Cage for a PAD foundation [<i>insert dimensions or referenced drawing</i>]	each
64105	Installation of CMS footing including Anchor Cage for a bored Piled Foundation incorporating [<i>no. of Piles</i>] at a diameter of [<i>in mm</i>] at a depth of [<i>in m</i>] or as per referenced drawing	each
64106	Foundation Design for CMS on a mounting structure incorporating an affixed enclosure on a [<i>PAD or bored Pile Foundation</i>]	each
64107	Provision of CMS spares [<i>as listed in the contract documents or on drawing reference</i>]	each
Removal of Existing Equipment		
64191	Removal of existing CMS equipment for reuse	each
64192	Removal of existing CMS equipment for disposal	each

2.2 Work Operations

Item 64101 Supply of CMS and mounting structure incorporating an affixed enclosure with CMS controller

Work Operations incorporated in the above item include:

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

- b) general requirements stated in MRTS201 *General Equipment Requirements*, and
- c) supply, fabrication, design, testing and documentation in accordance with the requirements of MRTS227 *Changeable Message Signs* and MRTS61 *Gantries and Support Structures for Road Signs, Tolling Systems and ITS Devices*.

Item 64102 Installation of CMS and mounting structure incorporating an affixed enclosure with CMS controller

Work Operations incorporated in the above item include:

- a) Work Operations listed in Clause 2.1.5 of MRS01 *Introduction to Specifications*
- b) general requirements stated in MRTS201 *General Equipment Requirements*
- c) installation, testing and documentation in accordance with the requirements of MRTS227 *Changeable Message Signs* and MRTS61 *Gantries and Support Structures for Road Signs, Tolling Systems and ITS Devices*, and
- d) the setting out of the CMS including confirmation of vertical clearance from carriageway and lateral offset from carriageway and vehicle restraint systems including horizontal alignment of the sign.

Item 64103 Supply and installation of CMS and mounting structure incorporating an affixed enclosure with CMS controller

Work Operations incorporated in the above item include:

- a) Work Operations listed in Clause 2.1.5 of MRS01 *Introduction to Specifications*
- b) general requirements stated in MRTS201 *General Equipment Requirements*
- c) supply, fabrication, design, installation, testing and documentation in accordance with the requirements of MRTS227 *Changeable Message Signs* and MRTS61 *Gantries and Support Structures for Road Signs, Tolling Systems and ITS Devices*, and
- d) the setting out of the CMS including confirmation of vertical clearance from carriageway and lateral offset from carriageway and vehicle restraint systems including horizontal alignment of the sign.

Item 64104 Installation of CMS footing including Anchor Cage for a PAD foundation [insert dimensions or referenced drawing]

Work Operations incorporated in the above item include:

- a) Work Operations listed in Clause 2.1.5 of MRS01 *Introduction to Specifications*
- b) requirements stated in MRTS61 *Gantries and Support Structures for Road Signs, Tolling Systems and ITS Devices*
- c) the setting out of the CMS including confirmation of vertical clearance from carriageway and lateral offset from carriageway and vehicle restraint systems including horizontal alignment of the sign
- d) geotechnical site investigation to confirm minimum foundation capacity

- e) excavation of foundation to MRTS04 *General Earthworks* to the dimensions shown on the design drawings
- f) supply and installation of blinding concrete to MRTS70 *Concrete*
- g) supply and installation of reinforcing to MRTS70 *Concrete* and MRTS71 *Reinforcing Steel*
- h) pouring, curing and finishing of concrete to MRTS70 *Concrete*, and
- i) reinstatement of soil cover and general making good at site.

Item 64105 Installation of CMS footing including Anchor Cage for a bored Piled Foundation incorporating [no. of Piles] at a diameter of [in mm] at a depth of [in m] or as per referenced drawing

Work Operations incorporated in the above item include:

- a) Work Operations listed in Clause 2.1.5 of MRS01 *Introduction to Specifications*
- b) requirements stated in MRTS61 *Gantries and Support Structures for Road Signs, Tolling Systems and ITS Devices*
- c) the setting out of the CMS including confirmation of vertical clearance from carriageway and lateral offset from carriageway and vehicle restraint systems including horizontal alignment of the sign
- d) geotechnical site investigation to confirm minimum foundation capacity
- e) excavation of foundation to MRTS04 *General Earthworks* to the dimensions shown on the design drawings
- f) supply and installation of blinding concrete to MRTS70 *Concrete*
- g) supply and installation of reinforcing to MRTS70 *Concrete* and MRTS71 *Reinforcing Steel*
- h) pouring, curing and finishing of concrete to MRTS70 *Concrete*, and
- i) reinstatement of soil cover and general making good at site.

Item 64106 Foundation Design for CMS on a mounting structure incorporating an affixed enclosure on a [PAD or bored Pile Foundation]

Work Operations incorporated in the above item include:

- a) Work Operations listed in Clause 2.1.5 of MRS01 *Introduction to Specifications*, and
- b) design drawings, schedules, calculations and Transport and Main Roads approvals in accordance with Transport and Main Roads Specifications.

Item 64107 Provision of CMS spares [as listed in the contract documents or on drawing reference]

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 spares in accordance with the requirements of MRTS201 *General Equipment Requirements* and as listed in the Scheme Documentation, and
- c) transport of all components to the Principal's storage facility.

Item 64191 Removal of existing CMS equipment for reuse

Work Operations incorporated in the above item include:

- a) Work Operations listed in Clause 2.1.5 of MRS01 *Introduction to Specifications*
- b) disconnection of Electrical Supply including termination and "making safe" of supply cable
- c) disconnection of Telecommunications connection
- d) removal of CMS and supporting pole and associated cabinet enclosure
- e) removal of foundations as detailed in the Contract Documentation
- f) reinstatement of soil cover and general making good at site, and
- g) transport of all components to Principal's storage facility or designated site storage area for reuse.

Item 64192 Removal of existing CMS equipment 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) disconnection of Electrical Supply including termination and "making safe" of supply cable
- c) disconnection of Telecommunications connection
- d) removal of CMS and supporting pole and associated cabinet enclosure
- e) removal of foundations as detailed in the Contract Documentation, and
- f) transport of all components and disposal.

2.3 Method of measurement of changeable message signs

This Specification provides Standard Work Items for:

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

of Changeable Message Signs (CMS).

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 Form C7827 *Principal Supplied Material List*. 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 Form C7827 *Principal Supplied Material List*. Transport to the Site of all other materials shall be the responsibility of the Contractor.

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