

Specification (Measurement)

**Transport and Main Roads Specifications
MRS203 Provision of Weigh-in-Motion System**

November 2022

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1 Introduction

This Specification applies to the supply and installation of weigh-in-motion systems and equipment as an integral part of Transport and Main Roads wider requirement for traffic 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 |
|--|--|---------------------|
| Vehicle detectors and sensors | | |
| 61401 | Supply and Installation of vehicle detector loops, [<i>description</i>] | lump sum |
| 61402 | Supply and Installation of piezo-electric vehicle sensors [<i>description</i>] | lump sum |
| 61403 | Supply and Installation of strain gauge vehicle sensors | lump sum |
| 61404 | Survey of site to identify installation location and suitability of existing pavement. | each |
| 61405 | Design for supply and installation of weigh-in-motion site | each |
| 61406 | Construction works to modify existing pavement to suit weigh-in-motion supply and installation | each |
| Weigh-in-motion Site Processor unit | | |
| 61431 | Supply of weigh-in-motion Site Processor unit [<i>description</i>] and ancillary components | each |
| 61432 | Installation of weigh-in-motion Site Processor [<i>description</i>] and ancillary components | each |
| 61433 | Supply and Installation of weigh-in-motion Site Processor unit [<i>description</i>] and ancillary components | each |
| Removal for salvage or disposal | | |
| 61491 | Removal of existing weigh-in-motion equipment for salvage [<i>description</i>] | each |
| 61492 | Removal of existing weigh-in-motion equipment for disposal [<i>description</i>] | each |

2.2 Work Operations

Item 61401 Supply and Installation of vehicle detector loops [description]

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 loop wire and conduit
- c) supply of PU200 epoxy resin and jointing kit
- d) dry cutting of slot as per standard drawings
- e) installation of conduit to pit
- f) installation of loop cable
- g) filling of slot, and
- h) jointing of loop cable to detector feed cable.

Item 61402 Supply and Installation of piezo-electric vehicle sensors [brass linguini piezo | quartz piezo]

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 piezo sensor and conduit as per SD1906 *ITS – WIM Piezo Sensor Installation Details*
- c) supply of epoxy resin / grouting compound as per SD1906 *ITS – WIM Piezo Sensor Installation Details*
- d) dry cutting of slot as per SD1906 *ITS – WIM Piezo Sensor Installation Details*
- e) installation of conduit to pit
- f) installation of sensor cable
- g) filling of slot, and
- h) connection and testing of sensor as per SD1906 *ITS – WIM Piezo Sensor Installation Details*.

Item 61403 Supply and Installation of strain gauge vehicle sensors

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 strain gauges, pits, enclosures and conduit as per SD1911 *ITS – WIM Sensor Configuration Strain Gauge Sensor*
- c) localised excavation as per SD1911 *ITS – WIM Sensor Configuration Strain Gauge Sensor*
- d) supply of sensor cables
- e) provision for core hole drilling through culvert roof as per SD1911 *ITS – WIM Sensor Configuration Strain Gauge Sensor*, and
- f) installation and mounting of strain gauges, pits, enclosures and conduits where necessary as per SD1911 *ITS – WIM Sensor Configuration Strain Gauge Sensor*.

Item 61404 Survey of site to identify installation location and suitability of existing pavement

Work operations incorporated in the above item include:

- a) Work operations listed in Clause 2.1.5 of MRS01 *Introduction to Specifications*
- b) geographical survey work appropriate to the task, and
- c) all work associated with the provision of high-speed weigh-in-motion system, including site survey, details of the exact location, and pavement alignment and gradient checks as set out in the WiM site selection conditions of MRTS203.

Item 61405 Design for supply and installation of weigh-in-motion site

Work operations incorporated in the above item include:

- a) Work operations listed in Clause 2.1.5 of MRS01 *Introduction to Specifications*
- b) design for all civil earth works and pavement modification works
- c) design the required electrical works
- d) design the required communications and control links, and
- e) design of weigh-in-motion and associated ITS integration components.

Item 61406 Construction works to modify existing pavement to suit weigh-in-motion supply and installation

Work operations incorporated in the above item include:

- a) Pavement works to incorporate piezo sensor, and
- b) In the event that the site fails the surface evenness test and another site is not able to be chosen, the Principal shall advise if a corrective course and tie-in to the existing pavement is required. The preparation and application for the corrective course and tie-in layer shall comply to MRTS30 Asphalt Pavements.

Item 61431 Supply of weigh-in-motion Site Processor unit [*description*] 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*, and
- b) supply only of weigh-in-motion Site Processor unit with required components.

Item 61432 Installation of weigh-in-motion Site Processor unit [*description*] 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*, and
- b) installation, testing and commissioning of weigh-in-motion Site Processor unit with required components.

Item 61433 Supply and Installation of weigh-in-motion Site Processor unit [description] 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*, and
- b) supply, installation, testing and commissioning of weigh-in-motion Site Processor unit with required components.

Item 61491 Removal of existing weigh-in-motion equipment for salvage [description]

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
- c) disconnection of Telecommunications connection
- d) removal of equipment, and
- e) transport of all components to Principal's storage facility or designated site storage area of re-use.

Item 61492 Removal of existing weigh-in-motion equipment for disposal [description]

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
- c) disconnection of Telecommunications connection
- d) removal of Equipment, and
- e) transport of all components and disposal.

2.3 Method of measurement of provision of weigh-in-motion system

This Specification provides Standard Work Items for the following weigh-in-motion components:

- c) supply only
- d) installation only, and
- e) supply and installation

of weigh-in-motion 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 C7827. 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 C7827. Transport to the Site of all other materials shall be the responsibility of the Contractor.

