

# Main Roads Specification

## **MRS94**

## **Road Lighting**

**June 09**

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# Table of Contents

	Page
1 INTRODUCTION.....	1
2 MEASUREMENT OF WORKS.....	1
2.1 Standard Work Items.....	1
2.2 Work Operations.....	2
2.3 Method of Measurement of Road Lighting Components.....	7
2.4 Supply of Materials.....	7



# Road Lighting

## 1 INTRODUCTION

This Specification applies to the supply and installation of Rates 2 and 3 Road Lighting Equipment, including the requirements for the manufacture, testing and delivery of poles, slip base mounts, outreach arms, extensions, luminaire headframes, luminaire terminal panels, luminaires and pedestrian crossing floodlights.

This Specification does not apply to Rate 1 Road Lighting.

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
	<b>Road Lighting</b>	
6711	Supply of [ <i>fixed base   slip base   impact absorbent</i> ] road pole, [ <i>height</i> ] mm vertical height.	each
6712	Supply of [ <i>single   double</i> ] road lighting outreach arm, [ <i>length</i> ] mm long.	each
6713	Supply of road lighting outreach arm extension, 1.5 metres long.	each
6714	Supply of road lighting luminaire headframe, [ <i>number of spigots</i> ] way headframe.	each
6721	Supply of pedestrian crossing floodlight bracket, [ <i>length</i> ] mm long.	each
6722	Supply of underbridge road lighting bracket, [ <i>height</i> ] mm high.	each
6723	Supply of wall mounted road lighting bracket, [ <i>length</i> ] mm long.	each
6731	Supply of road lighting luminaire, [ <i>name of manufacturer</i> ], [ <i>type of luminaire</i> ].	each
6732	Supply of pedestrian crossing floodlight, [ <i>with   without</i> ] louvre, [ <i>name of manufacturer</i> ], [ <i>type of luminaire</i> ].	each
6741	Installation of [ <i>fixed base   slip base   impact absorbent</i> ] road lighting pole.	each
6742	Installation of road lighting outreach arm.	each
6743	Installation of road lighting outreach arm extension.	each
6744	Installation of road lighting luminaire headframe.	each
6751	Installation of pedestrian crossing floodlight mounting bracket.	each
6752	Installation of underbridge road lighting bracket.	each
6753	Installation of wall mounted road lighting bracket.	each
6761	Installation of road lighting luminaire.	each
6762	Installation of pedestrian crossing floodlight.	each

Standard Item No.	Description	Unit of Measurement
6771	Supply and installation of [ <i>fixed base   slip base   impact absorbent</i> ] road lighting pole, [ <i>height</i> ] mm vertical height, [ <i>length</i> ] mm long [ <i>single   double</i> ] outreach arm, [ <i>with   without</i> ] outreach arm extension, [ <i>with aerial supply</i> ], [ <i>with loop in loop out cabling</i> ].	each
6772	Supply and installation of [ <i>fixed base   slip base   impact absorbent</i> ] high mast road lighting pole, [ <i>height</i> ] mm vertical height, [ <i>number of spigots</i> ] way headframe, [ <i>with aerial supply</i> ], [ <i>with loop in loop out cabling</i> ].	each
6773	Supply and installation of pedestrian crossing floodlight mounting bracket.	each
6774	Supply and installation of underbridge road lighting bracket, [ <i>height</i> ] mm high.	each
6775	Supply and installation of wall mounted road lighting bracket, [ <i>length</i> ] mm long.	each
6776	Supply and installation of road lighting luminaire, [ <i>name of manufacturer</i> ], [ <i>type of luminaire</i> ].	each
6777	Supply and installation of pedestrian crossing floodlight, [ <i>with   without</i> ] louvre, [ <i>name of manufacturer</i> ], [ <i>type of luminaire</i> ].	each
6778	Supply and installation of cabling for luminaire on bridge balustrade with loop in, loop out supply.	each
6781	Removal of road lighting equipment for salvage, [ <i>description</i> ].	each
6782	Removal of road lighting equipment for disposal, [ <i>description</i> ].	each
6783	Removal of road lighting luminaire.	each
6784	Removal of pedestrian crossing floodlight.	each

## 2.2 Work Operations

### Item 6711 Supply of [*fixed base | slip base | impact absorbent*] road lighting pole, [*height*] mm vertical height.

Work Operations incorporated in the above item include –

- Work Operations listed in Clause 2.1.5 of MRS01 *Introduction to Specifications*;
- Supply and fabrication of road lighting pole;
- For fixed base poles, supply and installation of eyebolt and bushing for aerial supply if appropriate;
- For slip base poles, supply of slip base mount, shear washer and clamping bolts; and
- Supply of all fixing bolts, nuts and washers as appropriate.

### Item 6712 Supply of [*single | double*] road lighting outreach arm, [*length*] mm long.

Work Operations incorporated in the above item include –

- Work Operations listed in Clause 2.1.5 of MRS01 *Introduction to Specifications*; and
- Supply and fabrication of road lighting outreach arm including stainless steel clamping setscrews.

### Item 6713 Supply of road lighting outreach arm extension, 1.5 metres long.

Work Operations incorporated in the above item include –

- Work Operations listed in Clause 2.1.5 of MRS01 *Introduction to Specifications*; and
- Supply and fabrication of road lighting outreach arm extension including galvanised fixing bolts, nuts and washers.

**Item 6714 Supply of road lighting luminaire headframe, [*number of spigots*] way headframe.**

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 fabrication of road lighting luminaire headframe including cap, terminal block and stainless steel clamping setscrews.

**Item 6721 Supply of pedestrian crossing floodlight mounting bracket, [*length*] mm long.**

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 fabrication of pedestrian crossing floodlight mounting bracket, clamps and bolts, nuts and washers.

**Item 6722 Supply of underbridge road lighting bracket, [*height*] mm high.**

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 fabrication of underbridge road lighting bracket.

**Item 6723 Supply of wall mounted road lighting bracket, [*length*] mm long.**

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 fabrication of wall mounted road lighting bracket.

**Item 6731 Supply of road lighting luminaire, [*name of manufacturer*], [*type of luminaire*].**

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 luminaire, lamp and –
  - i) PE cell for Rate 2; or
  - ii) shorting plug for Rate 3.

**Item 6732 Supply of pedestrian crossing floodlight, [*with / without*] louvre, [*name of manufacturer*], [*type of luminaire*].**

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 floodlight and lamp;
- c) Supply of external control gear for Rate 2; and
- d) Supply of floodlight louvre, if applicable.

**Item 6741 Installation of [*fixed base / slip base / impact absorbent*] road lighting pole.**

Work Operations incorporated in the above item include –

- a) Work Operations listed in Clause 2.1.5 of MRS01 *Introduction to Specifications*;
- b) For fixed base pole – supply and installation of luminaire terminal panel;
- c) For slip base pole, installation of slip base mounts, shear washer, clamping bolts and nuts and cable clamping blocks;
- d) For impact absorbent and slip base poles, supply and installation of cable clamping blocks;
- e) Supply, installation and termination of all internal cabling from terminal panel, slip base connectors or aerial connectors as appropriate, to luminaires including, as appropriate, flexible conduit and all connectors, bushings, lugs, bolts, nuts and washers;

- f) Installation of pole, as appropriate;
- g) Supply, installation and termination of cabling from terminal panel or slip base connectors to pit including supply and installation of pit junction box, if applicable; and
- h) Testing of installation.

**Item 6742 Installation of road lighting outreach arm.**

**Item 6743 Installation of road lighting outreach arm extension.**

**Item 6744 Installation of road lighting luminaire headframe.**

Work Operations incorporated in the above items include –

- a) Work Operations listed in Clause 2.1.5 of MRS01 *Introduction to Specifications*;
- b) Supply and installation of internal cabling in outreach arm, outreach arm extension, or luminaire headframe, as appropriate; and
- c) Attachment of outreach arm, outreach arm extension or luminaire headframe to pole or outreach arm, as appropriate.

**Item 6751 Installation of pedestrian crossing floodlight mounting bracket.**

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 pedestrian crossing floodlight mounting bracket on outreach arm.

**Item 6752 Installation of underbridge road lighting bracket.**

**Item 6753 Installation of wall mounted road lighting bracket.**

Work Operations incorporated in the above items include –

- a) Work Operations listed in Clause 2.1.5 of MRS01 *Introduction to Specifications*;
- b) Installation of bracket to underside of bridge deck or to wall or to pole, as appropriate, including masonry anchors;
- c) Supply and installation of fused junction box and earth stake in pit; and
- d) Supply, installation and termination of all internal cabling from pit to luminaire including, as appropriate, all connectors, lugs, bolts, nuts and washers.

**Item 6761 Installation of road lighting luminaire.**

**Item 6762 Installation of pedestrian crossing floodlight.**

Work Operations incorporated in the above items include –

- a) Work Operations listed in Clause 2.1.5 of MRS01 *Introduction to Specifications*;
- b) Installation of luminaire or floodlight;
- c) Connection of luminaire or floodlight control gear to lighting circuit; and
- d) Testing of installation.

**Item 6771 Supply and installation of [fixed base / slip base / impact absorbent] road lighting pole, [height] mm vertical height, [length] mm long [single / double] outreach arm, [with / without] outreach arm extension, [with aerial supply], [with loop in loop out cabling].**

Work Operations incorporated in the above items include –

- a) Work Operations listed in Clause 2.1.5 of MRS01 *Introduction to Specifications*;
- b) Supply, fabrication and assembly of road lighting pole, outreach arm, outreach arm extension including all clamping setscrews, eyebolt and eyenut, if applicable, and fixing bolts, nuts and washers;
- c) For fixed base poles, supply and installation of luminaire terminal panel;

- d) For slip base poles, supply and installation of slip base mount, shear washer, clamping bolts and nuts and cable clamping blocks;
- e) For impact absorbent and slip base poles, supply and installation of cable clamping blocks;
- f) Supply, installation and termination of all internal cabling from terminal panel, slip base connectors or aerial connectors as appropriate, to luminaires including, as appropriate, flexible conduit and all connectors, bushings, lugs, bolts, nuts and washers;
- g) Installation of pole, as appropriate;
- h) Supply, installation and termination of cabling from terminal panel or slip base connectors to pit including supply and installation of pit junction box, if applicable; and
- i) Testing of installation.

**Item 6772 Supply and installation of [fixed base / slip base / impact absorbent] high mast road lighting pole, [height] mm vertical height, [number of spigots] way headframe, [with aerial supply], [with loop in loop out cabling].**

Work Operations incorporated in the above item include –

- a) Work Operations listed in Clause 2.1.5 of MRS01 *Introduction to Specifications*;
- b) Supply, fabrication and assembly of road lighting pole and headframe including all clamping setscrews, eyebolt and eyenut, if applicable, and fixing bolts, nuts and washers;
- c) For fixed base poles, supply and installation of luminaire terminal panel;
- d) For slip base poles, supply and assembly of slip base mount, shear washer, clamping bolts and nuts and cable clamping blocks;
- e) For impact absorbent poles, supply and assembly of cable clamping blocks;
- f) Supply, installation and termination of all internal cabling from terminal panel, slip base connectors or aerial connectors as appropriate, to luminaires including, as appropriate, flexible conduit and all connectors, bushings, lugs, bolts, nuts and washers;
- g) Installation of pole, as appropriate;
- h) Supply, installation and termination of cabling from terminal panel or slip base connectors to pit including supply and installation of pit junction box, if applicable; and
- i) Testing of installation.

**Item 6773 Supply and installation of pedestrian crossing floodlight mounting bracket.**

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, fabrication and installation of pedestrian crossing floodlight mounting bracket, clamps and bolts, nuts and washers.

**Item 6774 Supply and installation of underbridge road lighting bracket, [height] mm high.**

Work Operations incorporated in the above item include –

- a) Work Operations listed in Clause 2.1.5 of MRS01 *Introduction to Specifications*;
- b) Supply, fabrication and installation of underbridge road lighting bracket including masonry anchors;
- c) Supply and installation of fused junction box and earth stake in pit; and
- d) Supply, installation and termination of all internal cabling from pit to luminaire including, as appropriate all connectors, lugs, bolts, nuts and washers.

**Item 6775 Supply and installation of wall mounted road lighting bracket, [length] mm long.**

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, fabrication and installation of wall mounted road lighting bracket including masonry anchors;

- c) Supply and installation of fused junction box and earth stake in pit; and
- d) Supply, installation and termination of all internal cabling from pit to luminaire including, as appropriate, all connectors, lugs, bolts, nuts and washers.

**Item 6776 Supply and installation of road lighting luminaire, [name of manufacturer], [type of luminaire].**

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 luminaire, lamp and –
  - i) PE cell for Rate 2; or
  - ii) shorting plug for Rate 3.

**Item 6777 Supply and installation of pedestrian crossing floodlight, [with / without] louvre, [name of manufacturer], [type of luminaire].**

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 floodlight and lamp;
- c) Supply and installation of external control gear for Rate 2; and
- d) Supply and installation of floodlight louvre, if applicable.

**Item 6778 Supply and installation of cabling for luminaire on bridge balustrade with loop in, loop out supply.**

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 luminaire terminal panel;
- c) Supply, installation and termination of internal cabling from terminal panel to luminaire;
- d) Supply and installation of cabling from terminal panel to pit including supply and installation of pit junction box if applicable; and
- e) Transport of all components to Principal's storage facility or designated site storage area for re-use.

**Item 6781 Removal of road lighting 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) De-energisation of circuits;
- c) Disconnection of electricity supply to pole;
- d) Removal of pole / outreach arm / outreach arm extension / luminaire headframe, as appropriate;
- e) Removal of internal cabling and internal electrical components;
- f) Dismantling of pole and components, where appropriate; and
- g) Transport of all components to Principal's storage facility or designated site storage area for re-use.

**Item 6782 Removal of road lighting 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) De-energisation of circuits;
- c) Disconnection of electricity supply to pole;
- d) Demolition of existing installation, as appropriate; and

- e) Disposal of demolished materials.

**Item 6783 Removal of road lighting luminaire.**

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 of luminaire;
- c) Disconnection of luminaire control gear from lighting circuit; and
- d) Removal of luminaire.

**Item 6784 Removal of pedestrian crossing floodlight.**

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 of floodlight;
- c) Disconnection of floodlight control gear from lighting circuit;
- d) Removal of floodlight; and
- e) Transport of all components to Principal's storage facility or designated site storage area for re-use.

**2.3 Method of Measurement of Road Lighting Components**

This specification provides Standard Work Items for –

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

of road lighting 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.