Specification (Measurement)

Transport and Main Roads Specifications
MRS94 Road Lighting

June 2009
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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 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

<table>
<thead>
<tr>
<th>Standard Item No.</th>
<th>Description</th>
<th>Unit of Measurement</th>
</tr>
</thead>
<tbody>
<tr>
<td>6711</td>
<td>Supply of [fixed base</td>
<td>slip base</td>
</tr>
<tr>
<td>6712</td>
<td>Supply of [single</td>
<td>double] road lighting outreach arm, [length] mm long.</td>
</tr>
<tr>
<td>6713</td>
<td>Supply of road lighting outreach arm extension, 1.5 metres long.</td>
<td>each</td>
</tr>
<tr>
<td>6714</td>
<td>Supply of road lighting luminaire headframe, [number of spigots] way headframe.</td>
<td>each</td>
</tr>
<tr>
<td>6721</td>
<td>Supply of pedestrian crossing floodlight bracket, [length] mm long.</td>
<td>each</td>
</tr>
<tr>
<td>6722</td>
<td>Supply of underbridge road lighting bracket, [height] mm high.</td>
<td>each</td>
</tr>
<tr>
<td>6723</td>
<td>Supply of wall mounted road lighting bracket, [length] mm long.</td>
<td>each</td>
</tr>
<tr>
<td>6731</td>
<td>Supply of road lighting luminaire, [name of manufacturer], [type of luminaire].</td>
<td>each</td>
</tr>
<tr>
<td>6732</td>
<td>Supply of pedestrian crossing floodlight, [with</td>
<td>without] louvre, [name of manufacturer], [type of luminaire].</td>
</tr>
<tr>
<td>6741</td>
<td>Installation of [fixed base</td>
<td>slip base</td>
</tr>
<tr>
<td>6742</td>
<td>Installation of road lighting outreach arm.</td>
<td>each</td>
</tr>
<tr>
<td>6743</td>
<td>Installation of road lighting outreach arm extension.</td>
<td>each</td>
</tr>
<tr>
<td>6744</td>
<td>Installation of road lighting luminaire headframe.</td>
<td>each</td>
</tr>
<tr>
<td>6751</td>
<td>Installation of pedestrian crossing floodlight mounting bracket.</td>
<td>each</td>
</tr>
<tr>
<td>6752</td>
<td>Installation of underbridge road lighting bracket.</td>
<td>each</td>
</tr>
<tr>
<td>6753</td>
<td>Installation of wall mounted road lighting bracket.</td>
<td>each</td>
</tr>
<tr>
<td>6761</td>
<td>Installation of road lighting luminaire.</td>
<td>each</td>
</tr>
</tbody>
</table>
### Standard

<table>
<thead>
<tr>
<th>Standard Item No.</th>
<th>Description</th>
<th>Unit of Measurement</th>
</tr>
</thead>
<tbody>
<tr>
<td>6762</td>
<td>Installation of pedestrian crossing floodlight.</td>
<td>each</td>
</tr>
<tr>
<td>6771</td>
<td>Supply and installation of [fixed base</td>
<td>slip base</td>
</tr>
<tr>
<td>6772</td>
<td>Supply and installation of [fixed base</td>
<td>slip base</td>
</tr>
<tr>
<td>6773</td>
<td>Supply and installation of pedestrian crossing floodlight mounting bracket.</td>
<td>each</td>
</tr>
<tr>
<td>6774</td>
<td>Supply and installation of underbridge road lighting bracket, [height] mm high.</td>
<td>each</td>
</tr>
<tr>
<td>6775</td>
<td>Supply and installation of wall mounted road lighting bracket, [length] mm long.</td>
<td>each</td>
</tr>
<tr>
<td>6776</td>
<td>Supply and installation of road lighting luminaire, [name of manufacturer], [type of luminaire].</td>
<td>each</td>
</tr>
<tr>
<td>6777</td>
<td>Supply and installation of pedestrian crossing floodlight, [with</td>
<td>without] louvre, [name of manufacturer], [type of luminaire].</td>
</tr>
<tr>
<td>6778</td>
<td>Supply and installation of cabling for luminaire on bridge balustrade with loop in, loop out supply.</td>
<td>each</td>
</tr>
<tr>
<td>6781</td>
<td>Removal of road lighting equipment for salvage, [description].</td>
<td>each</td>
</tr>
<tr>
<td>6782</td>
<td>Removal of road lighting equipment for disposal, [description].</td>
<td>each</td>
</tr>
<tr>
<td>6783</td>
<td>Removal of road lighting luminaire.</td>
<td>each</td>
</tr>
<tr>
<td>6784</td>
<td>Removal of pedestrian crossing floodlight.</td>
<td>each</td>
</tr>
</tbody>
</table>

### 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:

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

b) Supply and fabrication of road lighting pole

c) For fixed base poles, supply and installation of eyebolt and bushing for aerial supply if appropriate
d) For slip base poles, supply of slip base mount, shear washer and clamping bolts, and
e) 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:

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

b) 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:

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

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.