ROADS AND MARITIME SERVICES

TRAFFIC SYSTEMS

SPECIFICATION NO. TSI-SP-054

TRAFFIC SIGNAL MAST ARMS

Issue: 1.0
Dated: 2/11/2017
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## RECORD OF AMENDMENTS

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<th>Summary</th>
<th>Date</th>
<th>Approved by</th>
</tr>
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<tr>
<td>0.1</td>
<td>Specification MA/1 (1991, RTA) converted into TSI-SP-000 Specification Template. Review and update obsolete items and references.</td>
<td>Nov 2015</td>
<td></td>
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<tr>
<td>0.2</td>
<td>Review and update obsolete items and references.</td>
<td>May 2017</td>
<td></td>
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<tr>
<td>0.3</td>
<td>Consolidate feedback followed TES internal review. Review and update all mast arm engineering drawings, types and dimensions.</td>
<td>Jul 2017</td>
<td></td>
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<tr>
<td>0.4</td>
<td>List of engineering drawing update. Mast arm outreach joining review and update.</td>
<td>Aug 2017</td>
<td></td>
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<tr>
<td>0.5</td>
<td>Update on the Clause 5.7 table as well as the list of engineering drawing in clause 2.3 have been updated</td>
<td>13/9/2017</td>
<td></td>
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<td>1.0</td>
<td>Official release</td>
<td>2/11/2017</td>
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1 SCOPE

This Specification covers the requirements for the manufacture of mast arms and the associated upper lantern support assemblies for use in New South Wales for traffic control signals.

This specification covers standard traffic signal mast arms (mast arms). This specification excludes the requirement of the joint-use mast arms that combine the functions of a traffic signal posts and a lighting poles.

Note: This Specification supersedes Specification MA/1.

2 REFERENCES AND APPLICABLE DOCUMENTS

2.1 Australian and International Standards

[1] AS 2339  Traffic Signal Posts, Mast Arms and Attachments

2.2 RMS Documents

[3] TS201  Approval of ITS Field Equipment

2.3 RMS Standard Reference Engineering Drawings

[4] ME10728  Type 10 Mast arm
[5] ME10729  Type 11 Mast arm
[7] VM203-26  Mechanical Details of Mast Arm type 4
[8] VM204-23  Traffic Signal Mast-Arm Type 3 Mechanical Details of Mast Arm
[9] VM204-24  Traffic Signal Mast-Arm Type 3 Arm Details
[10] VM211-22  Mechanical Details of Mast Arm type 5 Column
[11] VM211-23  Mechanical Details of Outreach for Mast Arm type 5L
[12] VM211-24  Mechanical Details of Outreach for Mast Arm type 5S.
[13] VM211-26  Assembly Details of Mast Arm Type 5
[14] VM211-28  Mechanical Details of Outreach for Mast Arm type 5XL.
[15] VM215-01  General Arrangement of Mast Arm Type 9
[16] VM215-02  Mechanical Details of Mast Arm Type 9 Column.
[17] VM215-03  Mechanical Details of Mast Arm Type 9 Outreach Arm
[18] VM215-04  Mechanical Details of Upper Lantern Support Assembly for 300mm Lanterns.
[20] VM215-06  Mechanical Details of Upper Lantern Support Assembly for 200mm Lanterns.
3 DEFINITIONS AND GLOSSARY OF TERMS

For the purposes of this Specification, the following definitions and abbreviations shall apply:

- **Accessible Columns** – Columns that are collapsible through mechanism to facilitate access to mounted equipment on the post without ladder

- **Joint-use mast arms** – Traffic signal mast arms that incorporate lighting outreach assembly for the support of a road lighting luminaire.

- **Mast arms** – Same as standard traffic signal mast arms

- **RMS** – Roads and Maritime Services, a New South Wales government agency

- **Traffic signal mast arms** – A freestanding structure used for the support of traffic signal lanterns and associated equipment.
4  ENGINEERING DRAWING

This specification uses standard reference engineering drawings to convey technical requirements. These engineering drawings form part of a suite of specifications.

5  REQUIREMENTS

5.1  General

The mast arms are used for the support of lanterns providing signal indications to both vehicle and pedestrian traffic, and the mounting of pedestrian push-button switches as well as signs.

5.2  Components

The three main components of the mast arms, namely column, outreach arm; and upper lantern support assembly.

Assembly of these components will be carried out by others at the sites where the mast arms are to be installed.

5.2.1  Column

Except Type 4 mast arm which the column and the outreach arm shall be manufactured in one piece, all other types of mast arm shall comprise of separate column and outreach arm.

The accessible column, where the column is collapsible through mechanism to facilitate access to mounted equipment on the post without ladder, shall not be used in the mast arms.

The details of the columns are as per the relevant engineering drawing.

5.2.2  Outreach Arm

There are various versions of outreach lengths from 2.50m to 15.24m, depending on the RMS type of mast arms, which are used where signal indications are to be projected out above the carriageway.

The details of the outreach arm are as per the relevant engineering drawing.

5.2.3  Upper Lantern Support Assembly

Upper lantern support assemblies are either 200mm as per VM215-06 [20] or 300mm as per VM215-04 [18].

5.3  Material

Material, construction and fabrication for each RMS type of mast arm must be as per associated relevant engineering drawings.

5.4  Construction

Type 4 mast arms shall have column and mast arm as one piece.
Type 5 mast arms shall have the column and outreach sections be manufactured from single lengths of tube. The joining of similar tube sections to achieve the required length is not permitted.

For Type 9, 10 and 11 mast arms, the column of mast arms may be joined once, using similar tube sections. The joints shall be as per engineering drawing no ME10728 [4] and ME10729 [5].

### 5.5 Finish

Finish must be per Section 3.7 of AS 2339:2017.

### 5.6 Marking and Identification

Marking must be per Section 3.10 of AS 2339:2017.

Identification plate must be provided in accordance with engineering drawing VM215-05 [19]

### 5.7 Mast Arm Summary

The RMS type of mast arms, their outreach length, constructions its associate engineering drawings are summarised as followed:

<table>
<thead>
<tr>
<th>RMS Type</th>
<th>Outreach Length</th>
<th>Remark</th>
<th>Engineering Drawing</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>4.255m</td>
<td>No new deployment. Maintenance only</td>
<td>VM204-23 [8], VM204-24 [9]</td>
</tr>
<tr>
<td>4</td>
<td>N/A as this is one piece</td>
<td>One piece with column</td>
<td>VM203-26 [7]</td>
</tr>
<tr>
<td>5</td>
<td>5S: 2.50m; 5L: 5.00m; 5XL: 5.50m</td>
<td>Shall not be joined with similar tube</td>
<td>VM211-23 [11], VM211-24 [12], VM211-28 [14]</td>
</tr>
<tr>
<td>9</td>
<td>2.50m to 7.00m incremented every 0.50m</td>
<td>Shall not be joined with similar tube</td>
<td>VM215-03 [17]</td>
</tr>
<tr>
<td>10</td>
<td>Outreach length make to order</td>
<td>Shall not be joined with similar tube</td>
<td>ME10728 sheet 1, 7 [4]</td>
</tr>
<tr>
<td>11</td>
<td>Outreach length make to order</td>
<td>Shall not be joined with similar tube</td>
<td>ME10729 sheet 1, 7 [5]</td>
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</table>

### 6 QUALITY ASSURANCE AND CONTROL

#### 6.1 General

The Supplier and the Manufacturer shall operate a quality management system complying with AS/NZS/ISO 9001 [2].
6.2 Third Party Certification

The Supplier and the Manufacturer shall have obtained third-party certification under AS/NZS/ISO 9001 [2] by an accredited independent organisation.

6.3 Quality Plan

The Manufacturer shall document a quality plan appropriate to the item detailing the quality control tests and assessments which the Manufacturer will conduct during manufacture prior to release. This shall include sampling plans and test frequency, and a description of the records to be made.

6.4 Quality Audits

RMS reserves the right to examine the Supplier’s and Manufacturer's quality records. RMS also reserves the right to arrange for an independent quality audit.

7 PRE-DELIVERY INSPECTION

Tests and assessments related to the products shall be carried out by the Manufacturer as defined in the Manufacturer’s quality plan.

RMS reserves the right to carry out, or appoint a representative to carry out, a pre-delivery inspection at the Supplier's premises in the Sydney area prior to delivery.

8 WARRANTY

Purchase of any items under this Specification shall be subject to a warranty period, to be confirmed by the Supplier, of not less than 24 months following the date of despatch from the Supplier's premises.

9 APPROVAL

To gain approval the Supplier shall follow the process defined in TS201 [3]. The Supplier shall submit the following documentation, as a minimum, in support of a submission for product approval via email to the ITS Help Desk: (ITSHelpDesk@rms.nsw.gov.au).

a) A clause-by-clause statement of compliance, and associated evidence, referenced to each compliance item, with this Specification and applicable sections of referenced standards;

b) Datasheet(s) of the equipment, which shall include parameters of physical characteristics;

c) A copy of the Manufacturer’s quality plan for the equipment. Evidence of third party certification of the Supplier and Manufacturer’s quality systems;

d) Any other documentation requested by RMS under the processes defined in TS201 [3]

e) A full list and description of all departures from the requirements of this Specification.