

# Maintenance

## Master Specification

## M13 Pavement Marking

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## Document Management

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# Contents

Contents	3
M13 Pavement Marking	4
1 General	4
2 Quality System Requirements	4
3 Additional Requirements	4
4 Inspections of site prior to work	5
5 Annual Renewal Works Program (ARWP)	5
6 Recording of Activities	5
7 Measurement	6
8 Provision for Traffic	8
9 Verification Requirements and Records	8
10 Appendix 1 – Pavement Marking Completion Data	9
11 Appendix 2 – Standard Area for Pavement Messages and Symbols	10
12 Appendix 3 – Lot Definition of Intersections	11

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## M13 Pavement Marking

### 1 General

- 1.1 This Part specifies the requirements for the pavement marking and the installation of retroreflective raised pavement markers.
- 1.2 Works shall be undertaken in accordance with M16 “Application of Pavement Marking”.
- 1.3 Work types include:
  - a) Pavement marking maintenance (ARWP replacement of existing);
  - b) Pavement marking for Specific Maintenance Services (e.g. heavy patching); and
  - c) Pavement marking for new works if directed.
- 1.4 The scope of Works includes:
  - a) Surface preparation of the road pavement;
  - b) Setting-out of pavement marking (spotting) according to design (if required);
  - c) Installation and maintenance of Retroreflective Raised Pavement Markers (RRPM); and
  - d) Application of pavement marking including:
    - i) Longitudinal lines (clearway, edge line, lane, and median line markings);
    - ii) Concrete kerbing;
    - iii) Stop and Give Way lines;
    - iv) Turn lines;
    - v) Pedestrian cross-walk lines;
    - vi) Arrows, letters, and numerals
    - vii) Clearway and edge line markings; and
    - viii) “No Standing” zones.

### 2 Quality System Requirements

- 2.1 The Contractor shall prepare and implement a Quality Management Plan vide PC-QA1 “Quality Management Requirements” that includes detailed procedures and Work Instructions for pavement marking activities.

### 3 Additional Requirements

#### Program Constraints

- 3.1 Pavement marking activities shall be undertaken between 1 September and 30 April of each year, unless otherwise agreed with the Superintendent.

#### Hierarchy of Marking

- 3.2 Where pavement marking drawings have been supplied by the Superintendent, and these drawings differ from what is currently on the road, the Contractor must install the pavement markings and retroreflective raised pavement markers on the road as per the drawing provided.

#### Repositioning of Retroreflective Raised Pavement Markers

- 3.3 No separate payment will be made for the repositioning of retroreflective raised pavement markers to any revised Standards.

## Relocation

- 3.4 Relocation will only be paid for works located more than 100 km from the Adelaide CBD.
- 3.5 Where Works require a change in location of the Contractor's Field Unit in excess of 100 km, payment will be made for each kilometre of travel (in excess of 100 km) at the rate included in the Schedule of Rates. No payment will be made for the first 100 km.
- 3.6 When there is more than one work location, payment for relocation will be paid based on travel to the furthest site only (if exceeding 100 km).
- 3.7 Measurement for relocation will be based on one-way travel only, the Schedule of Rates shall allow for return to the original work site for the Field Units engaged, including all support vehicles. Separate payment will not be made for additional accommodation, loss of productivity, or other costs associated with the relocation.
- 3.8 Relocation will not be paid for:
  - a) Retroreflective Raised Pavement Marker maintenance projects; or
  - b) Minor RRPM work that can be completed by a Field Unit already on site.

## 4 Inspections of site prior to work

- 4.1 At least 4 weeks prior to commencement of pavement marking activities, the Contractor shall conduct an inspection of the included roads. The Contractor shall determine any surface preparation requirements that may affect pavement marking operations.
- 4.2 Following the inspection, the Contractor shall provide a Site Inspection Report with photos for any issues found on site.
- 4.3 The Contractor's Field Unit shall retain a copy of the Site Inspection Report on site at all times and adhere to any surface preparation requirements.

## 5 Annual Renewal Works Program (ARWP)

### General

- 5.1 Pavement marking Works are divided into a number of different Work Zones. Maps showing the location of these Work Zones, the associated roads, and their Road Classification are provided in the **Contract Documents**.
- 5.2 The Principal shall determine the ARWP pavement marking scope of works and will provide the individual scope requirements covering the list of roads and each type of pavement marking required for each Work Zone.

### Works Program

- 5.3 The Contractor shall submit a Works Program in accordance with M6 "Data, Reporting, and Governance".

## 6 Recording of Activities

- 6.1 To substantiate any Payment Claim, the Contractor must submit completion data to the Superintendent in the format provided in Appendix 1 – Pavement Marking Completion Data.
- 6.2 The Contractor shall also provide copies of the entire data set every 6 months as part of the Asset Register data requirements of M6 Clause 5.
- 6.3 The Contractor must supply the data in accordance with the following format and principles:
  - a) all information must be provided in a single spreadsheet and the spreadsheet must be complete for an entire work zone;

- b) the attributes are to be entered in the format shown and are not to change unless instructed by the Superintendent;
  - c) the data must be consistent and is not to have any of the following issues:
    - i) All fields must be populated; and
    - ii) The same attributes must not be spelt or described differently anywhere in the spreadsheet as this cannot be filtered. e.g. Standard, STD, Stand, Stnd;
  - d) GPS based geographic coordinates:
    - i) GPS location data must be captured for all work type (maintenance and new pavement marking);
    - ii) geographic coordinates must be in the WGS84 Datum format;
    - iii) accuracy is to be to 5 decimal points;
    - iv) latitude must be shown as a negative number; and
    - v) if any information is captured in the MM and offset format, they must be converted to GPS coordinates as above prior to submitting the data;
  - e) Crew No – this data field must be entered as “LLNN”, Example BU20, LM02, WA03 etc.;
  - f) Road No – this data Field must be either the 4 or 5 digit number as per DIT road numbering system;
  - g) Date field must be entered as “dd/mm/yyyy”;
  - h) Location – This is a description field. This is free text but must be kept below 50 characters;
  - i) STD Code – This data field must be entered as “LLNN”, where LL equals NW (New Work) or MW (Maintenance Work). Where NN identifies the Contract Zone (01, 02, 03) for the Regional North, Metro, and Regional South Contract Zones;
  - j) Schedule / Job No. will be as per the schedule No. This must be in the exact format as provided by the Principal;
  - k) Lot No. will be as per the schedule provided. This must be in the exact format as provided by the Principal;
  - l) Schedule of Rates Number will be the Item number from 0 to 999;
  - m) Qty – The quantity must be a number only and in the units which were specified as per the schedules; and
  - n) Rate \$ and Total must be entered in Excel in the currency format.
- 6.4 The size of a Lot shall not exceed one day's output, except where maintenance or a single New Work project continues at a particular site for more than one day.
- 6.5 The Lot number shall be consistent with the Line entries as follows:
- a) "Maintenance Schedule" and "Lot No." for routine maintenance repainting (Lot Groups relating to Intersection and Kerbing work will collectively match "Longitudinal" pavement marking Lot Groups); and
  - b) "Work Order" (forming a discrete Lot) for new or altered work projects.
- 6.6 Each Lot shall be identifiable in the field (Refer Appendix 3 – Lot Definition of Intersections).

## 7 Measurement

- 7.1 Standard areas for pavement messages and symbols are detailed in Appendix 2 – Standard Area for Pavement Messages and Symbols.
- 7.2 Measurement for Schedule of Rate items shall be in accordance with Table M13 7-1.

Table M13 7-1 Measurement for Schedule Rate

Description	Unit	Recorded Measurement
Line patterns	km	Overall length of completed line (km or m), including stripes and gaps with respect to different patterns.
No overtaking zone	km	Length of barrier lines by type: 'Single' (solid + broken) and 'Double' (two solid lines) shall be measured and paid for at the rate for the appropriate line pattern.
Transverse treatment	m <sup>2</sup>	Areas (m <sup>2</sup> ); refer Appendix 2 – Standard Area for Pavement Messages and Symbols for standard areas
White kerb paint	m	Length of concrete kerb painted by application type.
Kerb stripping	m	Length of concrete kerb stripped (other than by normal preparation methods).
Retroreflective Raised Pavement Markers (RRPMs)	number	Number of RRPMs (by type) installed or removed including disposal and repair of surface.
Pavement Bars	number	- Number of bars painted for maintenance re-paint only - Number of pre-painted bars installed. - Number of bars removed including disposal and repair of surface.
Removal of painted markings	m <sup>2</sup>	Area of paint removed.
Black-out of painted markings	m <sup>2</sup>	Area of paint blacked-out.
Sweeping (suction sweeper)	hour	"On site" hours. The rate shall include disposal of material, labour, plant, travelling, and other expenses.
Sweeping (mechanical broom)	hour	"On site" hours. The rate shall include, labour, plant, travelling, and other expenses.
Grass cutting / edge trimming	m	Per metre of kerbing.
Spotting	hour	"On site" (2-person) crew hours (rate covers all costs for labour, plant, travelling to and from site, and any other expenses).
Longitudinal Spotting	hour	Hours of longitudinal spotting usually to replace lines removed through patching of roads (rate covers all costs for labour, plant, travelling to and from site, and any other expenses).
Removal of temporary devices	number	Number of "stick and stomp" removal and disposal of devices removed.

## 8 Provision for Traffic

8.1 Notwithstanding the requirements of PC-SM1, the following provisions for traffic must apply:

### Escort vehicles

8.2 With respect to "mobile" operations (i.e. pavement marking and RRPM installation) both rear and lead pilot vehicles shall be used in conjunction with the line marking vehicle except on divided roads (refer to DIT Field Guide "Traffic Control Devices for Workzone Traffic Management").

### Mobile Speed Zone

8.3 A Mobile Speed Zone must be used for all longitudinal pavement marking (refer to DIT Field Guide "Traffic Control Devices for Workzone Traffic Management").

### Vehicle Mounted Crash Attenuator

8.4 With respect to "mobile" operations (i.e. pavement marking and RRPM installation) a vehicle mounted crash attenuator rated for the appropriate approach speeds as referenced in AS 1742.3 Part 3.12.5 shall be used on the rear pilot vehicle on all roads where the posted speed limit is  $\geq 70$  km/h. The vehicles fitted with crash attenuators shall comply with regulations under the Road Traffic Act 1961

## 9 Verification Requirements and Records

9.1 The Contractor shall supply the following documentation to demonstrate that the requirements of this Part have been complied with and where appropriate, supply the documentation with the lot package.

**Table M13 9-1 Verification Records**

Document Ref.	Subject	Record to be Provided
6	Recording of Activities	Completion data





## 11 Appendix 2 – Standard Area for Pavement Messages and Symbols

Area of Symbols / Lines				
<b>Arrows</b>				<b>m<sup>2</sup></b>
Straight-ahead	(6 m)			1.4
Combo	(6 m)			2.5
Triple head	(6 m)			3.5
Turn	(4 m)			1.6
Turn	(6 m)			2.5
Double turn	(6 m)			2.7
U turn				2.7
45 turn				1.5
Overtaking Lane Merge	(7.5 m)			3.0
<b>Messages</b>				<b>m<sup>2</sup></b>
FERRY				3.4
KEEP CLEAR				5.9
SCHOOL				3.9
SCHOOL XING				6.1
RAIL X	(5 m)			7.7
BUS LANE	(2.5 m)			4.9
ONLY	(5 m)			2.6
BL	(2.5 m)			1.4
AHEAD	(2.5 m)			3.3
SIGNALS	(2.5 m)			4.3
BIKE SYMBOL	(1.8 m)			0.6
RIGHT TURN ONLY	(2.5 m)			8.8
NO RIGHT TURN	(2.5 m)			7.7
RIGHT TURN ONLY FROM THIS LANE	(2.5 m)			16.7
BUS ONLY	(2.5 m)			3.9
BUS ONLY	(5 m)			9.2
HANDICAP SYMBOL				1.8
<b>Letters (2.5 m)</b>				<b>m<sup>2</sup></b>
A		0.6	I	0.3
B		0.9	L	0.5
C		0.5	N	0.7
D		0.6	X	0.6
E		0.7	R	0.6
G		0.6	O	0.5
H		0.7	S	0.7
END		2.3		
<b>Letters (5 m)</b>				<b>m<sup>2</sup></b>
B		1.7	N	1.45
U		1.2	L	1.6
S		1.2	Y	1.0
O		1.3		
<b>Lines</b>				<b>m<sup>2</sup></b>
CROSS WALK LINES			PER STRIPE	0.09
HOLDING LINES	(450 mm)		PER BLOCK	0.27
HOLDING LINES	(600 mm)		PER BLOCK	0.36
STOP LINES	(450 mm)		PER LINEAR METRE	0.45
STOP LINES	(600 mm)		PER LINEAR METRE	0.60

### 12 Appendix 3 – Lot Definition of Intersections

