

# Master Specification Part RD-LM-D1

## Traffic Control Device Design

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**Government of South Australia**  
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and Transport

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# RD-LM-D1 Traffic Control Device Design

## 1 General

- a) This Master Specification Part sets out the requirements for the design of permanent traffic control devices (including line marking, traffic signals and signs), including:
- i) the documentation requirements, as set out in section 2;
  - ii) the approval of traffic control device requirements, as set out in section 3;
  - iii) the requirements for sign, major sign structures and other road furniture, as set out in section 4;
  - iv) the requirements for the placement of ITS signs, as set out in section 5; and
  - v) the Hold Point requirements, as set out in section 6.
- b) The design of traffic control devices must comply with the Reference Documents, including:
- i) AGRD Guide to Road Design Part 6: Roadside Design, Safety and Barriers;
  - ii) AS 1742 Manual of uniform traffic control devices;
  - iii) AS 1743 Road signs - Specifications;
  - iv) AS 2700 Colour standards for general purposes;
  - v) AS/NZS 3845 Road safety barrier systems and devices;
  - vi) Department Operational Instruction (available from: [https://dit.sa.gov.au/standards/standards\\_and\\_guidelines](https://dit.sa.gov.au/standards/standards_and_guidelines));
  - vii) Department Pavement Marking Manual (available from: [https://dit.sa.gov.au/standards/standards\\_and\\_guidelines](https://dit.sa.gov.au/standards/standards_and_guidelines));
  - viii) Department Standard Drawings (available from: [https://dit.sa.gov.au/standards/standards\\_and\\_guidelines](https://dit.sa.gov.au/standards/standards_and_guidelines));
  - ix) Department Guideline for the Preparation of a Traffic Impact Statement (available from: [https://dit.sa.gov.au/standards/standards\\_and\\_guidelines](https://dit.sa.gov.au/standards/standards_and_guidelines));
  - x) Department Road Sign Guidelines: Guide to visitor and service road signs in South Australia (available from: [https://dit.sa.gov.au/standards/standards\\_and\\_guidelines](https://dit.sa.gov.au/standards/standards_and_guidelines));
  - xi) Instrument of General Approval and Delegation to Council - Use of Traffic Control Devices, Road Closures and Granting of Exemptions for Events (available from: [https://dit.sa.gov.au/standards/standards\\_and\\_guidelines](https://dit.sa.gov.au/standards/standards_and_guidelines));
  - xii) Instrument from the Commissioner of Highways to Grant General Approval for the temporary use of Traffic Control Devices by Persons other than Road Authorities (available from: [https://dit.sa.gov.au/standards/standards\\_and\\_guidelines](https://dit.sa.gov.au/standards/standards_and_guidelines));
  - xiii) Manual of Legal Responsibilities and Technical Requirements for Traffic Control Devices, Part 2 - Code of Technical Requirements (available from: [https://dit.sa.gov.au/standards/standards\\_and\\_guidelines](https://dit.sa.gov.au/standards/standards_and_guidelines));
  - xiv) Department Traffic Engineering Specification (TES) Specific Road Signs - Specifications, South Australia (TES drawings); and
  - xv) Department Standard Road Sign Index (available from <http://www.dteiapps.com.au/signindx/>).
- c) This Master Specification Part does not apply to the design of temporary traffic control devices, which must comply with PC-SM1 "Traffic and Pedestrian Management".

## 2 Documentation

### 2.1 Design Documentation

In addition to the requirements of PC-EDM1 “Design Management”, the Design Documentation must include:

- a) excluding the Preliminary Design stage, a traffic impact statement prepared in accordance with Department Guideline for the Preparation of a Traffic Impact Statement;
- b) for the IFA submission, evidence of approval to modify, install or remove traffic control devices as required by section 3b); and
- c) as part of the Design Report, evidence that the signs and other road furniture are located and appropriately protected in accordance with the requirements of section 4.1a)ii).

### 2.2 Design Drawings

In addition to the requirements of PC-EDM1 “Design Management”, the Design Drawings must include:

- a) the type, dimension, and location of all signs, including details of the type of supports to be used for gantries in accordance with section 4.1e); and
- b) where the Contractor has designed sign faces in accordance with section 4.1g), details of the proposed route numbering, road names, destinations, and any tourist and service signs.

## 3 Approval of traffic control devices

- a) Traffic control devices must be approved in accordance with the *Road Traffic Act 1961 (SA)*.
- b) Approval to modify, install or remove traffic control devices constitutes a **Hold Point**. The relevant IFA Design Documentation must not be submitted until this Hold Point has been released.
- c) In addition to the requirements of this Master Specification Part, the design of traffic signals must comply with RD-EL-D2 “Traffic Signal Design”.
- d) Where traffic signals are proposed to be modified, installed or removed, the Contractor must, as part of the Hold Point submission in section 3b), provide to the Principal all information required by the Principal’s Network Management Services directorate for their approval of traffic control devices.

## 4 Signs, major sign structures and other road furniture

### 4.1 General

- a) Signs (including major sign structures) and any other road furniture:
  - i) must not be placed within the shoulder; and
  - ii) outside the shoulder, may only be placed within the verge or the remainder of the road reservation where the risk score (calculated in accordance with AGRD Part 6 Roadside Design, Safety and Barriers) is below the nominated NRRIT, with evidence of the risk assessment provided as part of the Design Report.
- b) Road verges must be kept free of road furniture to the greatest extent practicable.
- c) Any non-frangible road furniture which has been approved to be placed within the road reservation must be protected using a safety barrier.
- d) The location of direction signs must comply with AS 1742.15 Manual of uniform traffic control devices Direction signs, information signs and route numbering.

- e) The Contractor must determine the type and location of all signs for the Works and must ensure that the Design Drawings clearly show the dimensions necessary to locate the signs and the type of supports to be used.
- f) The Contractor must ensure that signs are consistent with any authorised sign face drawings that have been provided by the Principal to the Contractor regarding route numbering, road names, destinations, and tourist and service signs, including the Department Standard Road Sign Index.
- g) With the exception of electronic signs, where the Principal has not provided sign face drawings to the Contractor under section 4.1f) the Contractor must:
  - i) design sign faces in accordance with:
    - A. AS 1742.1 Manual of uniform traffic control devices, Part 1: General introduction and index of signs;
    - B. AS 1742.6 Manual of uniform traffic control devices, Part 6: Tourist and services signs;
    - C. AS 1742.15 Manual of uniform traffic control devices, Part 15: Direction signs, information signs and route numbering; and
    - D. AS 1743 Road signs - Specifications; and
  - ii) specify the proposed route numbering, road names, destinations, and tourist and service signs as part of the Design Drawings.
- h) The Contractor must design signs and sign structures for the following minimum Design Life as detailed in Table RD-LM-D1 4-1.

**Table RD-LM-D1 4-1 Design Life of sign structures**

Element	Design Life (years)
Major sign structures, including cantilever signs, gantries and supports for VMS and CMS	In accordance with ST-SD-D1 "Design of Structures"
ITS equipment	In accordance with RD-ITS-D1 "Design of Intelligent Transport Systems (ITS)"
Other sign support structures and other roadside furniture	40
Sign faces	10

## 4.2 Major sign structures

- a) Major sign structures, including cantilever signs, gantries and supports for VMS and portal or cantilever mounted electronic signs, must comply with the requirements of ST-SD-D1 "Design of Structures" and ST-SS-S1 "Fabrication of Structural Steelwork".
- b) Protective treatments for major sign structures must comply with ST-SS-S2 "Protective Treatment of Structural Steelwork".
- c) The design of major sign structures must comply with the following:
  - i) fabrication of sign fasteners must be in accordance with Department Standard Drawing TES 12186;
  - ii) fixings of signs to gantry structures must be the same in principle as shown on Department Drawing S-2894, sheet 87;
  - iii) the geometric shape and appearance of gantries (portal and cantilever types) must match gantries on the adjacent road network;
  - iv) unless otherwise specified in the Contract Documents (including for ITS equipment), the final coating colour of all exposed steel surfaces and the back of the sign plate must be G61 in accordance with AS 2700 Colour standards for general purposes;

- v) gantries must be of rigid type; and
  - vi) gantries must be protected from traffic impacts in accordance with ST-SD-D1 "Design of Structures".
- d) The minimum nearside and offside distance to the edge of the lane and the barrier must comply with AS/NZS 3845 Road safety barrier systems and devices, and AGRD Guide to Road Design Part 6: Roadside Design, Safety and Barriers. The barrier must have sufficient clearance to the gantry to allow for barrier deflection and provide access for maintenance. Refer to RD-ITS-D1 "Design of Intelligent Transport Systems (ITS)" for further maintenance access requirements for structures supporting equipment for ITS.

## 5 Placement of ITS signs

### 5.1 General

ITS signs must:

- a) for lane use management systems (LUMS), each sign must be placed over the centre of the lane so that it is clearly visible to drivers in the lane which it is controlling and there is no driver confusion as to which LUMS relates to which lane for the duration of the sight distance;
- b) for variable speed limit signs (VSLS), at a minimum;
  - i) for single lanes, locate one VSLS on the left verge;
  - ii) for dual lane divided roads separated by a median strip, locate one VSLS on each side with minimal or no offset, operating in a master-slave configuration;
  - iii) for 3 or more lanes, be located as required to ensure visibility, operating in a master-slave configuration, noting that an additional overhead VSLS may be required on an outreach pole if there is a likelihood of occlusion of the VSLS due to heavy vehicle traffic;
- c) for VMS, be located in a position which ensures the required viewing distance and reading time whilst also minimising any requirement for traffic restrictions for required routine maintenance;
- d) provide sufficient vertical and lateral clearances from the running lanes in accordance with this section 5 and not create a hazard to road users;
- e) not be located within an interchange area where merging, frequent braking, or weaving movements are common or are anticipated; and
- f) be placed in locations that allow adequate reading time for all road users and adequate time and travel distance for the road user to act on the message without adversely affect the driving task.

### 5.2 Lateral clearance of VMS

- a) Where a VMS support is not protected by a barrier, the minimum lateral clearance requirements for VMS supports must comply with Table RD-LM-D1 5-1.
- b) Where guardrail or a concrete barrier has been installed, the supports of the VMS must be at least 1.0 m behind the face of the guardrail or concrete barrier (as applicable).
- c) Subject to section 5.2a), the following lateral clearance requirements apply where VMS are not located over traffic lanes:
  - i) the display or face of an overhead VMS must not be further than 5.0 m laterally from the closest running lane;
  - ii) where the ground clearance of the sign face of a roadside VMS is less than 5.5 m, the sign face must be located outside the design clear zone; and
  - iii) the minimum clearance from the edge of a roadside VMS to the outer edge of the shoulder or guidepost must be at least:

- A. for rural areas: 2.0 m; or
- B. for urban areas: 1.5 m.

**Table RD-LM-D1 5-1 Minimum clearance requirements for VMS supports not protected by a barrier**

Speed (km/h)	Lateral clearance (m)
60	4.0
70	5.5
80	7.0
90	8.0
100	9.0
110	9.0
120	9.0

### 5.3 Vertical clearance of ITS signs

The minimum vertical clearance from the ground or road surface to any part of an ITS sign or structure must comply with Table RD-LM-D1 5-2.

**Table RD-LM-D1 5-2 Vertical clearance of VMS and CMS**

Location	Vertical clearance
Overhead VMS and gantry mounted signs - over a road carriageway	a) 5.5 m minimum b) 6.5 m desirable
Overhead VMS and gantry mounted signs - not over a road carriageway:	
a) urban environment with likely pedestrian movements	2.0 m minimum
b) above a defined pathway	2.5 m minimum
c) rural areas not subject to pedestrians	1.5 m minimum

### 5.4 Longitudinal placements of ITS signs

- a) All ITS signs must be positioned to achieve the following:
  - i) be clearly legible to all road users;
  - ii) where possible, not compete with other traffic signs, traffic control devices, or roadside furniture; and
  - iii) not be placed in locations where the ITS signs will be partially hidden by any roadside objects, furniture, or vegetation.
- b) The minimum distance between any ITS sign and a hazard, decision point, intersection, or any other piece of roadside furniture that may take the road users attention must be in accordance with Table RD-LM-D1 5-3.
- c) Where possible, the minimum distance between any ITS sign and another road sign must be in accordance with Table D1 of AS 1742.2 Manual of uniform traffic control devices, Part 2: Traffic control devices for general use, Appendix D.



**Table RD-LM-D1 5-3 Distance between ITS sign and object**

Location / design speed	Distance to ITS sign
Business and residential districts	100 m <sup>(1)</sup>
Rural / arterial roads	In accordance with Table D1 of AS 1742.2 Manual of uniform traffic control devices, Part 2: Traffic control devices for general use, Appendix D.

**Table notes:**

(1) May be lowered to 30 m based on the type of hazard, decision point and overall risk.

## 6 Hold Points

Table RD-LM-D1 6-1 details the review period or notification period, and type (documentation or construction quality) for each Hold Point referred to in this Master Specification Part.

**Table RD-LM-D1 6-1 Hold Points**

Section reference	Hold Point	Documentation or construction quality	Review period or notification period
3b)	Approval to remove or modify a traffic control device	Documentation	a) 15 Business Days for the Principal’s Traffic Operations Group, Norwood Office b) 20 Business Days for the Principal