

DEPARTMENT of INFRASTRUCTURE, ENERGY and RESOURCES, TASMANIA

ROADWORKS SPECIFICATION

R63 – SIGNS

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R63.1 SCOPE

This specification sets out the requirements for the fabrication and installation of new signs and the removal and relocation of existing signs.

R63.2 OBJECTIVE

To ensure that road signs are manufactured and installed to best practice

R63.3 REFERENCES

All works shall be in accordance with the following Australian Standards:

- A.S. 1074 Steel Tubes and Tubulars for Ordinary Service
- A.S. 1170 SAA Loading Code Part 2 Wind Forces
- A.S. 1734 Aluminium and Aluminium Alloys – Flat Sheet, Coiled Sheet and Plate
- A.S. 1742 Manual of Uniform Traffic Control Devices
- A.S. 1743 Road Signs - Specifications
- A.S. 1744 Forms of Letters and Numerals for Road Signs
- A.S. 1906 Retro Reflective Materials and Devices for Road Traffic Control Purposes
Part 1 Retro Reflective Materials
- A.S. 2700. Colour Standards for General Purposes

R63.4 MATERIALS**R63.4.1 Sign Panels**

The sign panel shall be manufactured from 1.6-mm thick aluminium alloy, Type 5251 or 5052 of temper H36 or H38. It shall be free from scratches or other surface blemishes and the edges shall be true and smooth.

At sites of high impact incidence a UV stabilised polypropylene panel may be used for Keep Left signs

R63.4.2 Stiffeners and Brackets

Stiffeners shall be galvanised cold rolled steel channels or extruded aluminium channel section with internal clamping ridges.

Brackets for attachment of the signs to the posts shall suit the stiffener and the required post.

R63.4.3 Sign Facing

Sign facing material shall comply with the Australian Standard and shall have the following minimum durability grades.

<u>Material Class</u>	<u>Designated Minimum Life</u>	<u>Residual CIL</u>
Class 1A or 1W	Ten years	50%
Class 1	Twelve years	80%
Class 2A	Ten years	50%
Class 2	Seven years	50%
Fluorescent 1A	Three years	50%
Fluorescent 1W	Seven years	50%
Fluorescent	Eighteen months	Not Applicable
Non Reflective	Seven years	Not Applicable

Non reflective pressure sensitive adhesive tape may be replaced by screen printing ink.

When a colour photographic design is included on a sign the design shall be printed using translucent inks or electronic cuttable films on at least a class 2 retro-reflective background.

Joins in electronic cuttable films and Class 1A or W sheeting shall be butt with no overlap.

R63.4.4 Posts and Fittings

(i) Metal Posts

Posts, including bracing where required, shall be medium galvanised pipe, plain end, in accordance with AS 1074 fitted with a waterproof pipe cap. 50mm diameter pipe may be 3mm wall thickness when installed within 1.2m of traffic (typically on traffic islands).

(ii) Timber Posts

Seasoned hardwood timber posts with drilled holes to achieve a frangible section may be used as an option for breakaway posts. Details of the post weakening are given in A.S.1742.2 Appendix C

(iii) Reboundable Posts

A durable post with a spring or rebounding rubber or plastic insert installed just above ground level may be installed in traffic islands at locations specified.

(iv) Breakaway Posts

Breakaway posts shall be professionally designed to fail under impact conditions and shall incorporate a frangible base and a fuse point just below the bottom of the sign. Standard Drawings issued by an Australian State Road Authority are deemed to meet these criteria.

(v) Fittings

Vandal resistant bolts shall be used for the assembly of signs. Evidence of strength and durability shall be required prior to the acceptance of plastic brackets.

R63.4.5 Concrete

The concrete for footings and foundations shall comply with the requirements of Specification R81, Minor Concrete Structures. Set accelerator additive, not containing chlorides, may be approved on application to the Superintendent.

R63.5 PREPARATION OF SIGN PANELS

R63.5.1 Size of Panel

Sign panels with dimensions less than 1,800 mm by 1,200 mm shall be constructed from a single sheet of aluminium. Where a sign panel is made up from more than one sheet it shall be constructed from the minimum number of pieces.

R63.5.2 Size Tolerance

The finished sign panel shall have a maximum tolerance of 0.5 percent in any dimension or ± 5 mm whichever is the greater.

R63.5.3 Sign Panel Joints

All joints shall be in the horizontal or vertical plane.

R63.5.4 Backing of Sign Panel Joints

All joints shall be butt jointed and backed by a 60 mm wide strip of aluminium 1.6 mm thick. The backing strip shall not pass over or under the stiffeners but shall abut the stiffeners. Use of an appropriately placed stiffener as a backing strip shall be permitted. When a stiffener is used as a backing strip it must be attached to the sign mounting posts.

R63.6 SIGN FACINGR63.6.1 Materials and Colours ◆

The following materials and colours shall be used on the surface of signs. Technical Advice Sheet No 3 details material requirements for specific signs.

- (i) Advance Direction, Intersection Direction, Reassurance Direction Signs and kilometre markers
 - (a) Route Codes: Yellow retro-reflective Class 1 pressure sensitive adhesive.
 - (b) Destination, Distance, kilometre, Arrow, Diagram and Border: White retro-reflective Class 1 pressure sensitive adhesive.
 - (c) Background: Standard green retro-reflective Class 1 pressure sensitive adhesive.
 - (d) National Route Shield: Yellow retro-reflective Class 1 pressure sensitive adhesive numeral and border on Standard Green retro-reflective Class 2 pressure sensitive adhesive.
- (ii) Fingerboard Signs
 - (a) Route Codes: Yellow retro-reflective Class 2 sensitive adhesive legend on Standard Green non-reflective pressure sensitive adhesive background.
 - (b) Destinations and Distances: Black non-reflective pressure sensitive adhesive.
 - (c) Background: White retro-reflective Class 2 pressure sensitive adhesive.
 - (d) National Route Shields: Yellow retro-reflective Class 1 pressure sensitive adhesive numeral and border on Standard Green retro-reflective Class 2 pressure sensitive adhesive.
- (iii) Service Signs
 - (a) Symbols, legend and border: White retro-reflective Class 1 pressure sensitive adhesive.
 - (b) Background: Blue retro-reflective Class 1 pressure sensitive adhesive.
- (iv) Tourist Signs
 - (a) Shields, legends and border: White retro-reflective Class 2 pressure sensitive adhesive. Where additional colours are required on the shields, details of these shall be supplied to the Contractor.
 - (b) Background: Brown retro-reflective Class 2 pressure sensitive adhesive.
 - (c) Pictures: Translucent inks on a class 2 retro-reflective background.
- (v) Tasmanian Tourist Information Signs
 - (a) Shields, legends and borders: Yellow retro-reflective Class 2 pressure sensitive adhesive.
 - (b) Background: Blue retro-reflective Class 2 pressure sensitive adhesive.
 - (c) Pictures: Translucent inks or electronic cuttable film on a class 2 retro-reflective background.
- (vi) Warning Signs ◆
 - (a) Symbols, legend and border: Black non-reflective pressure sensitive adhesive.
 - (b) Background: Yellow retro-reflective Class 1 or 1W pressure sensitive adhesive.

NOTE: On chevron alignment markers (Type D 4-6) retro-reflective materials shall be Class 2. but on pedestrian refuges hazard markers shall be Class 1W.

- (vii) Regulatory Signs and Hazard Boards
- (a) Legends, borders and symbols: Black non-reflective pressure sensitive adhesive and/or red retro-reflective Class 1 pressure sensitive adhesive. Red screen process ink, as specified by the Manufacturer of the background material, may be used as an alternative to the adhesive.
- (b) Background: White retro-reflective Class 1 or Class 1W pressure sensitive adhesive.

Designers shall refer to Technical Advice Sheet No 3 to determine where Class 1 or 1W shall be used.

- (viii) Overtaking Lane, Feature and Town Name Signs
- (a) Legends and borders: Black non-reflective pressure sensitive adhesive.
- (b) Background: White retro-reflective Class 2 pressure sensitive adhesive.
- (ix) Project Identification Signs or
Federally Funded Road Project Signs and Auxiliary Plates - As per Standard Drawings.
- (x) Pedestrian related signs ◆
- (a) Legends and borders: Black non-reflective pressure sensitive adhesive.
- (b) Background: Fluorescent yellow – green Class 1W

R63.6.2 Sign Face Splices and Colour Matching

On panels 900 mm or less in width or length, no splices initiated by the fabricator shall be permitted in the sheeting of the pressure sensitive adhesives. Parallel splices shall not be less than 900 mm apart.

Splices shall be lapped 5 mm to 10 mm except for Class 1A, 1W or electronic cuttable film where butt joints shall be used.

Retro-reflective sheeting on both sides of a panel joint or splice shall be matched for colour, when viewed in daylight, and retro-reflective uniformity.

R63.6.3 Service Symbols, Tourist Shields, Maps and Logos ◆

All service symbols, tourist shields, maps and logos shall be in accordance with Australian Standards or Department of Infrastructure, Energy & Resources Standard Drawings. Copies of the appropriate detail design Drawings shall be provided to the Contractor by the Superintendent.

R63.7 STIFFENING OF SIGNS

R63.7.1 General

Stiffeners shall be securely fastened to the rear of the sign panel so that the sign resists dead loads during handling and design wind loads with a deflection less than 10% of the support span.

R63.7.2 Fittings

Where the sign is to be supported by two (2) or more posts, brackets for attaching the sign to the sign posts shall be secured to the sign stiffeners in such a manner as to allow for lateral adjustment to suit post spacings.

R63.8 IDENTIFICATION MARKS ◆

The Manufacturer's symbol or name, appropriate design identification and the month and year of manufacture shall be clearly and permanently stamped or engraved on the rear of each sign panel. The ciphers used shall be between 5mm and 15 mm high and located on the bottom left corner of the panel when viewed from the rear of the sign. Marking shall be done in such a manner that the front face of the sign is not damaged or marked in any way. The attachment of a tag on which the identification marks are stamped or engraved may be used providing the tag is of aluminium or similar material and is securely fastened to the sign. Self-adhesive labels shall only be used as secondary identification.

R63.9 INSTALLATION OF SIGNS

R63.9.1 Location

Signs shall be mounted clear of roadside vegetation and shall be clearly visible under headlight illumination at night. Where necessary, bushes and shrubs shall be cut back to ensure visibility of the signs. It should be noted that DIER Standard Drawings provide minimum details that are deemed to comply but no longer reflect contemporary practice.

R63.9.2 Footings

Footings for posts, and braces where required, shall be designed to support the sign in a 41-m/sec wind with the post to fail in bending before the footing rotates. At the request of the Superintendent the Contractor shall produce evidence of design to verify the type and size of footing proposed or installed for any sign.

Proprietary driven sleeves may be used under the following conditions:

1. Minimum length to be 450 mm.
2. Single 50mm dia. post installations with a maximum sign area of point 6 (0.6) square metre facing any one direction.
3. Installation shall be in paved areas only, i.e. traffic islands.
4. Sign post wall thickness installed in sleeves to be 3 mm which is less than otherwise specified.

R63.9.3 Posts



Attention is drawn to AS1742 requirements for the installation of breakaway posts within the clear zone. The design shall specify where breakaway posts are not required. AS1742.2 shall be utilised to assess the number, size and frangible nature of the sign support posts. Post braces are not suitable for use with breakaway posts.

Posts may be welded using a full structural butt weld provided the weld is prepared for coating and coated with a high performance cold galvanising paint complying with APAS 0014/1 and the joint is not visually apparent after the post is erected.

Posts of nominal diameter greater than 50 mm and braces shall be set directly into the concrete footing or be mounted on a footing capable of developing the full bending moment of the post.

50mm diameter posts shall normally be mounted in a 65mm diameter sleeve and locked in place by a post key.

Breakaway posts shall be set such that the frangible base, or centre of the lower hole of the timber post, is between 50 and 125mm above the finished ground surface at the base of the post. The fuse point shall be less than 150mm below the bottom edge sign

Signs up to the size of a B Regulatory sign with a B auxiliary plate may be mounted on a 50mm post.

R63.9.4 Bracing



Bracing may be provided for signs to make the post size structurally adequate **if the sign is to be installed outside the clear zone.**

R63.9.5 Sign Mounting

The concrete footings shall be allowed to cure for at least 48 hours before the signs are attached.

Signs shall be vertical both longitudinally and laterally, with their top edge horizontal.

R63.9.6 Transport and covering

Sign panels shall be handled, transported and stored so that the sign face is not damaged. When temporary covering is required the covering material shall prevent the sign legend being visible, especially at night, but shall not allow the sign face to overheat. Incorrect covering will void any facing material manufacturer's warranty.

R63.10 REMOVAL OF EXISTING SIGNS ◆

Where shown on the Drawings, existing signs shall be removed and stored by the Contractor if required for further use. Signs no longer required by the Principal shall become the property of the Contractor.

Posts, concrete footings and braces for signs removed and not replaced at the same location shall be removed to flush with ground level or by excavation and the holes backfilled with compacted earth so that no depression remains at the end of the defects liability period. Footings located on batters, in table drains or in areas to be maintained by mowing or grading shall be fully removed.

R63.11 COMPLIANCE

The Contractor shall demonstrate compliance with all the requirements of this specification as a condition of payment. A sign installation record and documentation for the sign facing material shall be required with other aspects detailed in the Contract Management Plan.

R63.12 PAYMENT

Payment for supply and installation, relocation or removal of road signs shall be based on the rates for the different categories of signs in the Schedule of Rates or specific items of a works order which shall include all traffic control costs.

The rate for supply and installation of signs shall include the cost of the supply of all materials, plant and labour, packaging and transportation of signs to the site, storage, excavation of footings, disposal of excavated material and the supply, placing and compaction of concrete to the footings.

The rate for supply and installation of signs to an existing structure shall include the cost of supply of all materials, plant and labour, packaging and transportation of signs to site, storage and fixing the signs to the structure.

The rate for relocation of existing signs shall include the cost of dismantling, storage, excavation of footings, disposal of excavated material, the supply, placing and compaction of concrete to the footings, the replacement of any damaged components and re-erection.

The rate for removal only of existing signs shall include the cost of storage of the signs, removal of the posts, braces and footings, and reinstatement of the holes.

R63.12 HOLD POINTS

The following hold points have been identified in this Specification:

- Prior to the use of concrete set accelerant additive. (R63.4.5)