T MU RS 17003 ST

Standard

Signage for Passenger Rolling Stock

Version 2.0

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Standard governance

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Document history

Version	Summary of changes
1.0	First issued 03 November 2016.
2.0	Second issue. Applicability of light rail included within the scope.

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Preface

The Asset Standards Authority (ASA) is a key strategic branch of Transport for NSW (TfNSW). As the network design and standards authority for NSW Transport Assets, as specified in the *ASA Charter*, the ASA identifies, selects, develops, publishes, maintains and controls a suite of requirements documents on behalf of TfNSW, the asset owner.

The ASA deploys TfNSW requirements for asset and safety assurance by creating and managing TfNSW's governance models, documents and processes. To achieve this, the ASA focuses on four primary tasks:

- publishing and managing TfNSW's process and requirements documents including TfNSW plans, standards, manuals and guides
- deploying TfNSW's Authorised Engineering Organisation (AEO) framework
- continuously improving TfNSW's Asset Management Framework
- collaborating with the Transport cluster and industry through open engagement

The AEO framework authorises engineering organisations to supply and provide asset-related products and services to TfNSW. It works to assure the safety, quality and fitness for purpose of those products and services over the asset's whole-of-life. AEOs are expected to demonstrate how they have applied the requirements of ASA documents, including TfNSW plans, standards and guides, when delivering assets and related services for TfNSW.

Compliance with ASA requirements by itself is not sufficient to ensure satisfactory outcomes for NSW Transport Assets. The ASA expects that professional judgement be used by competent personnel when using ASA requirements to produce those outcomes.

About this document

This standard defines the ASA requirements for signage on rolling stock and is based on the RailCorp specification FE 157 *Signs - for Passenger Fleet*.

This standard was prepared by the ASA in consultation with TfNSW agencies, and industry and supplier representatives.

This standard is the second issue. The changes from the previous version include the applicability of light rail within the scope of the standard.

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1. Introduction

This standard provides the requirements for the consistent design and positioning of signage to enable customers and staff to easily identify, read, feel and understand information and where required, to respond promptly.

2. Purpose

This standard details the requirements for the selection and installation of rolling stock specific signage for use on Transport for NSW (TfNSW) passenger rolling stock.

Rolling stock for the purpose of this standard includes heavy rail and light rail.

2.1. Scope

This document is applicable to all signage used on TfNSW passenger rolling stock. Signage for the purpose of this standard includes signs, decals, labels and advertising materials.

This document does not contain generic signage requirements. The generic signage requirements are contained in TN 070: 2016 *Signage – general requirements*.

This document does not contain requirements relating to electronic passenger displays. These requirements are contained in T MU TE 61005 ST *Customer Information Systems for Public Transport Buildings and Conveyances*.

2.2. Application

This standard applies to new heavy rail and light rail passenger rolling stock. It applies to the refurbishment or modification to existing rolling stock assets.

3. Reference documents

The following documents are cited in the text. For dated references, only the cited edition applies. For undated references, the latest edition of the referenced document applies.

International standards

ISO 17398:2004 Safety colours and safety signs - Classification, performance and durability of safety signs

Australian standards

AS 1319 Safety signs for the occupational environment

AS 2342 Development, testing and implementation of information and safety symbols and symbolic signs

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AS 2444 Portable fire extinguishers and fire blankets – Selection and location

AS 4833 Pressure-sensitive labels for stock-paper, stock-plastic and general purpose use

AS/NZS 1906.1 Retroreflective materials and devices for road traffic control purposes Part 1: Retroreflective sheeting

Transport for NSW standards

T HR RS 00600 ST RSU 600 Series - Minimum Operating Standards for Rolling Stock - Multiple Unit Train Specific Interface Standards

T HR RS 00890 ST RSU Appendix I – Reflective Delineators

T HR RS 17010 ST Passenger Rolling Stock Fire Safety

T LR RS 00200 ST LRU 200 Series - Minimum Operating Standards for Light Rail Vehicles - Common Interface Requirements

T LR RS 17010 ST Light Rail Vehicle Fire Safety

T MU HF 00001 ST Human Factors Integration – General Requirements

T MU RS 17001 ST Environmental Conditions for Rolling Stock

T MU RS 17002 ST Prohibited and Restricted Materials

T MU TE 61005 ST Customer Information Systems for Public Transport Buildings and Conveyances

TN 070: 2016 Signage – general requirements

Legislation

Disability Standards for Accessible Public Transport 2002

Road Rules 2014

4. Terms and definitions

The following terms and definitions apply in this document:

AEO Authorised Engineering Organisation

ASA Asset Standards Authority

CRS Centre for Road Safety

DSAPT Disability Standards for Accessible Public Transport 2002

operator (in the context of this standard) the party that has responsibility for defining the technical requirements for the railway vehicle so that it will perform the intended operation

RMS Roads and Maritime Services

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TfNSW Transport for NSW

5. General requirements for signs

Signs on passenger rolling stock shall be legible, readable and comprehendible to passengers and personnel, and shall be compliant with the requirements of the following:

- T MU HF 00001 ST *Human Factors Integration – General Requirements*
- TN 070: 2016 *Signage – general requirements*

The emphasis shall be on standard symbols with no text or minimum text. Any text that is used shall be clear, concise and easily understood.

Statutory information and signage shall be manufactured and installed to meet TfNSW's legislative obligations.

One of the key considerations when developing signage is consistency of signs and symbols throughout the entire fleet.

To achieve this consistency, refer to current TfNSW and operator guidelines and catalogues for current designs. For behavioural, regulatory and wayfinding signage, the TfNSW division responsible for customer services shall be consulted. For emergency and procedural signage, the relevant operator shall be consulted.

Additionally, the NSW Centre for Road Safety (CRS) and the Roads and Maritime Services (RMS) shall be consulted on the development of any non-standard external regulatory signage that does not feature in the *Road Rules 2014* and is not available on the RMS signs register.

Changes or additions should be made in accordance with the responsible organisations' engineering change procedures and shall ensure the change does not impact existing signage, especially emergency signage.

The rolling stock operator and maintainer shall have published procedures for the control, maintenance and inspection of all signage. Such procedures shall include the following:

- correct location of signs
- development of signage
- engineering instructions for the replacement of all signage types

AS 1319 *Safety signs for the occupational environment* defines specific colours and some specific sign types. All specific sign types shall comply with AS 1319.

All signs for heavy rail passenger vehicles shall comply with the requirements of T HR RS 00600 ST *RSU 600 Series - Minimum Operating Standards for Rolling Stock - Multiple Unit Train Specific Interface Standards*.

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All signs for light rail vehicles shall comply with the requirements of T LR RS 00200 ST *LRU 200 Series - Minimum Operating Standards for Light Rail Vehicles - Common Interface Requirements.*

All signs containing passenger information shall comply with the *Disability Standards for Accessible Public Transport 2002* (DSAPT).

6. Sign location

The location of signs shall take into account the location of the eyes of those using the sign, opportunity to read, proximity to associated equipment and the impact that the sign has on the movement of passengers.

The location chosen for any sign shall consider the location of other signage and shall not detract or confuse the information presented by either sign.

> *Note: There should be adequate clearance and contrast between other signs, and emergency signage should take priority. Visual clutter should be avoided. The location chosen should consider lighting levels and glare sources to ensure the sign can be read.*

The location chosen for self-adhesive signs shall consider the substrate surface, smoothness and texture.

Self-adhesive signs shall not be applied over a change in substrate material or over a gap, unless it functions as a security seal.

Self-adhesive signs shall not be located on objects including motors and alternators where environmental factors such as high temperature will reduce the life of the sign.

6.1. Internal

Signs including advertising should not create additional hazards and shall not be placed in the following areas:

- on windows or glass partitions; however, if no alternative location exists, information signs that relate to safety or operation may be placed on glass, provided the sign does not impair the intended use of the glass
- on cooling grills or on loudspeakers
- on side walls of stairwells or stair risers
- on doors, unless necessary for passenger safety or instruction if no alternative location exists

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6.2. External

The use of illuminated advertising to the exterior of rolling stock is strictly prohibited.

External signage shall not contravene the *Disability Standards for Accessible Public Transport 2002* (DSAPT).

Rolling stock used on a road or road-related area shall comply with the *Road Rules 2014.*

6.3. Advertising

All advertising shall comply with the marking and identification requirements of the following standards, as applicable:

- T HR RS 00600 ST
- T LR RS 00200 ST

Advertising signage shall not be installed in any way that may obscure safety, maintenance or passenger information signage.

6.3.1. Internal advertising

Internal advertising shall not:

- cover or obscure any safety equipment
- cover or obscure passenger information displays
- prevent the access of locker doors
- impact or prevent maintainability of items in proximity

6.3.2. External advertising

External advertising shall not:

- contravene the requirements of the DSAPT
- cover or obscure any of the contrasting coloured area at the front of the vehicle as defined in the following standards, as applicable:
    - T HR RS 00600 ST
    - T LR RS 00200 ST
- negatively impact the identification of passenger doors as defined in the following standards, as applicable:
    - T HR RS 00600 ST
    - T LR RS 00200 ST

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- cover or obscure any or part of any of the reflective delineators fitted to the vehicle as defined in the following standards, as applicable:
  - T HR RS 00890 ST
  - T LR RS 00200 ST
- cover or obscure any or part of any driving cab windscreen or side window
- cover, obscure or detract from any exterior safety or maintenance signage
- cover or obscure any exterior operational or safety equipment including lights
- be reflective if the colours red and or green are used

For operational, security and safety purposes external advertising shall:

- allow the observation of passenger activity from the outside of the vehicle
- allow passengers to view out of the window
- not significantly reduce the internal ambient lighting within passenger areas

External advertising shall have been assessed and approved in accordance with the operator's engineering change procedures and shall take into consideration the following:

- the requirements of this standard
- the duration of the advertising campaign
- the service duty of the train during the advertising campaign

7. Sign materials

The materials used in the manufacture and installation of all signs shall be compliant with the requirements of the following standards, as applicable to the mode of transport:

- T MU RS 17002 ST *Prohibited and Restricted Materials*
- T HR RS 17010 ST *Passenger Rolling Stock Fire Safety*
- T LR RS 17010 ST *Light Rail Vehicle Fire Safety*

The materials used in the manufacture and installation of all signs, in particular signs used on the exterior of vehicles, shall be selected to withstand the environmental conditions detailed in T MU RS 17001 ST *Environmental Conditions for Rolling Stock*.

Signs classified as 'permanent', that is, a sign that is to remain fixed in the application position for life of the sign, shall have a minimum life of five years on the outside of the car and seven years on the interior of the car before there is any indication of the sign being affected by the elements (that is, ageing).

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Performance of sign materials shall comply with AS 4833 *Pressure-sensitive labels for stock-paper, stock-plastic and general purpose use*.

Performance of sign materials shall meet the following requirements:

- adhesion strength to be not less than 17.5 N / 25 mm^2
- tensile strength of material to be not less than 20 N / mm^2

7.1. Non-reflective signs

All signs that do not provide critical information for emergencies in poor lighting conditions shall be non-reflective.

7.2. Retroreflective signs

All external fire and emergency signs shall be retroreflective.

All hazard and safety signs, in the compartments normally used only by crew and maintenance staff, shall be retroreflective. If the reflection of a sign impedes the ability of a staff member to perform their duties, and the sign cannot be suitably relocated, then it shall be of a non-reflective material.

Retroreflective signs shall be Class 1W in accordance with AS/NZS 1906.1 *Retroreflective materials and devices for road traffic control purposes Part 1: Retroreflective sheeting*.

7.3. Self-luminous (phosphorescent) signs

Signs inside the passenger area that provide critical information during emergencies shall be self-luminous. This includes emergency exit, firefighting, detrainment instructions and safety signs.

Signs that are manufactured from a self-luminous material shall be located in a conspicuous position that is not in the shadow of any other fixture or fitting or obscured in any way. The self-luminous material shall have a wide angle of visibility from within the target compartment.

The self-luminous requirements shall be in accordance with paragraph 5.5 Class C of ISO 17398:2004 *Safety colours and safety signs - Classification, performance and durability of safety signs*.

7.4. Engraved signs

Engraved signs may be used underneath the carriage or power car or in any other area not accessible or visible to the public.

Engraved signs shall not be used in any area that will allow the sign to be damaged by moving objects, such as loose ballast.

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Engraved signs shall only be used in situations in which a non-reflective sign is allowable.

Material used for engraved signs shall be rated as fire-resistant and compliant with the requirements of T HR RS 17010 ST and T LR RS 17010 ST.

The primary colour shall be used on the top layer and black shall be used on second layer for line work and text.

The primary colour of engraved signs shall be chosen to provide sufficient contrast to allow the sign to be read in the expected lighting conditions.

Note: The second layer needs to be black to ensure that the sign remains readable in case dirt or other airborne contaminants become embedded into the engraving.

7.5. Painted signs

Painted signs shall only be used on equipment such as bogies and axle boxes. Painted signs shall only be used to indicate maintenance cycles or other engineering information.

Paint used for painted signs shall be suitable for painting on metal surfaces, be non-toxic and outdoor weather resistant.

8. Firefighting appliance signs

Firefighting appliance signs shall comply with AS 2444 *Portable fire extinguishers and fire blankets – Selection and location* with the following modification:

- The specified location and size of a sign may be at variance to AS 2444 to the extent that the location and size shall be similar to the standard (due to the confinement of space within carriages).

9. Design of signs

Where applicable, new signs shall incorporate symbols from the relevant Australian standard.

New or modified symbols shall be developed in accordance with AS 2342 *Development, testing and implementation of information and safety symbols and symbolic signs*.

Part of the requirement for a new sign or symbol is that evidence of the development shall be available.

If raised lettering is required, then it shall comply with the requirements of the DSAPT at a minimum.

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9.1. Design parameters

The design parameters for the signs are as follows:

- all instructional text shall be based on a viewing distance of 1 m
- signs shall be sized according to the actual viewing distance, with a minimum of 1 m and a maximum of 10 m
- individual letters and numbers that do not have a background colour shall be supplied without a clear surround or as otherwise specified
- an application film shall be used to ensure the correct interrelationship alignment
- all corners shall have a 10 mm radius unless otherwise specified
- if carriage space constraints prohibit the correct size of a sign, then the sign may be reduced by a maximum of 30%

9.2. Sign layout

The layout of signs shall be consistent with the following existing operator layouts:

- title at top, secondary instruction line (if required)
- graphic if required for main purpose of sign
- number steps followed by icon or graphic
- followed by instruction or command wording

9.3. Emergency sign layout

The use of consistent styles promotes understanding. Current emergency sign layout contains title, secondary information text, followed by information in the following order of priority:

i. a train graphic depicting locations of emergency assets and exits

ii. numbered emergency guidance

iii. lesser priority emergency information

iv. prohibitory information

Prohibitory information should not overtake the emergency information and should appear visually distinct to that of the emergency information.

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10. Graffiti protection

All permanent signs, except for engraved and painted signs, shall be protected by a graffiti-proof laminate cover adhering to the display side of the sign.

The laminate covering shall have the following properties:

- be a clear film – spray-type laminates shall not be used
- have a minimum life expectancy of seven years for interior use and five years for exterior use
- have an adhesive that is clear in colour and will not discolour the printed sign or impinge on retroreflective and self-luminous properties of signs
- have an adhesive that will bond it permanently to the sign
- withstand repeated cleaning and removal of graffiti using a commercially available solvent solution, paint remover or other commercially available cleaning product without residual staining or discolouration
- be a single piece, the exact size of the printed sign

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