

RISSB

RAIL INDUSTRY SAFETY AND STANDARDS BOARD

STANDARDS

AS 7721

Lineside Signals,
Indicators and Signage



Australian
STANDARD

Notice to users

This RISSB product has been developed using input from rail experts from across the rail industry and represents good practice for the industry. The reliance upon or manner of use of this RISSB product is the sole responsibility of the user who is to assess whether it meets their organisation's operational environment and risk profile.

Development of this Standard was prepared by a Rail Industry Safety and Standards Board (RISSB) Development Group consisting of representatives from the following organisations:

Aurizon, ARC Infrastructure, ARTC, Blue Tongue Skills, Downer Rail, and Rio Tinto.

The Train Control Systems Standing Committee verified that RISSB's accredited process was followed in developing the product, before the RISSB Board approved the document for publication.

RISSB wishes to acknowledge the positive contribution of subject matter experts in the development of this Standard. Their efforts ranged from membership of the Development Group through to individuals providing comments on a draft of the Standard during the open review.

I commend this Standard to the Australasian rail industry as it represents industry good practice and has been developed through a rigorous process.



Alan Fedda
Chief Executive Officer
Rail Industry Safety and Standards Board

Keeping RISSB products up-to-date

Products developed by RISSB are living documents that reflect progress in science, technology and systems. To maintain their currency, RISSB products are periodically reviewed, and new editions published when required. Between editions, amendments may be issued. Products developed by RISSB could also be withdrawn.

It is important that readers assure themselves that the RISSB product they are using is current, including any amendments that have been issued since the product was published. Information about RISSB products, including amendments, can be found by visiting www.rissb.com.au.

RISSB welcomes suggestions for improvements and asks readers to notify us immediately of any apparent inaccuracies or ambiguities. Members are encouraged to use the change request feature of the RISSB website at: <http://www.rissb.com.au/products/>. Otherwise, please contact us via email at info@rissb.com.au or write to Rail Industry Safety and Standards Board, GPO Box 1267, Brisbane QLD 4001, Australia.

Document details

First published as: AS 7721:2016 Lineside Signals, Indicators and Signal Signage

ISBN: 978 1 76175 367 1

Document history

Publication Version	Effective Date	Reason for and Extent of Change(s)
2025	17 September 2025	This document has been reviewed to ensure it remains relevant and applicable. The latest review assessed the content, confirming that while updates were made to align with current industry practices, technologies, and regulatory requirements, the original authorship and copyright have been acknowledged as required.

Approval

Name	Date
Rail Industry Safety and Standards Board	17 September 2025

Copyright

© RISSB

All rights are reserved. No part of this work can be reproduced or copied in any form or by any means, electronic or mechanical, including photocopying, without the written permission of RISSB, unless otherwise permitted under the Copyright Act 1968.

Published by the Rail Industry Safety and Standards Board, GPO Box 1267, Brisbane QLD 4001, Australia.

Preface

This standard was prepared by the Lineside Signals, Indicators and Signal Signage Development Group, overseen by the RISSB Train Control Systems Standing Committee.

The major changes in this edition are as follows:

- (a) Updated to reflect changes in technology.
- (b) Requirements relating to signal sighting and signage covered by AS 7631 and AS 7632 have been removed.

Objective

The objective of this Standard is to seek to achieve a common level of safety and performance across all operators, encourage good practice in human factors issues and achieve economies of scale by encouraging a reduction in the differences between the signalling equipment and materials used in the various rail networks in Australia.

Compliance

There are four types of provisions contained within Australian Standards developed by RISSB:

- (c) Requirements.
- (d) Recommendations.
- (e) Permissions.
- (f) Constraints.

Requirements – it is mandatory to follow all requirements to claim full compliance with the Standard. Requirements are identified within the text by the term 'shall'.

Recommendations – do not mention or exclude other possibilities but do offer the one that is preferred. Recommendations are identified within the text by the term 'should'.

Recommendations recognize that there could be limitations to the universal application of the control, i.e. the identified control is not able to be applied or other controls are more appropriate or better.

Permissions – conveys consent by providing an allowable option. Permissions are identified within the text by the term 'may'.

Constraints – provided by an external source such as legislation. Constraints are identified within the text by the term 'must'.

For compliance purposes, where a recommended control is not applied as written in the standard it could be incumbent on the adopter of the standard to demonstrate their actual method of controlling the risk as part of their WHS or Rail Safety National Law obligations. Similarly, it could also be incumbent on an adopter of the standard to demonstrate their method of controlling the risk to contracting entities or interfacing organisations where the risk may be shared.

RISSB Standards address known hazards within the railway industry. Hazards, and clauses within this Standard that address those hazards, are listed in Appendix A.

Appendices in RISSB Standards may be designated either "normative" or "informative". A "normative" appendix is an integral part of a Standard and compliance with it is a requirement, whereas an "informative" appendix is only for information and guidance.

Table of Contents

Section 1	Scope and general	7
1.1	Scope	7
1.2	Normative references	7
1.3	Defined terms and abbreviations	8
Section 2	Materials	10
2.1	Signal light units in operational and environmental conditions	10
2.2	Types of luminaires	10
2.2.1	Maximum luminance	10
2.2.2	Chromaticity	11
2.2.3	Pulse rate for flashing signals	12
2.3	Veiling reflections and sun-phantom	12
2.4	Electrical performance	12
2.5	Signal head and fittings	13
2.6	Signal structure	13
2.7	Signal mast foundation	14
2.8	Concrete mast foundations	14
2.9	Ladders and landings	14
2.10	Signage	15
2.11	Main signal heads and subsidiary signal heads	15
2.12	Signal head brackets	16
2.12.1	Signal head brackets on posts	16
2.12.2	Signal head brackets on tunnel walls	17
2.13	Profile of signals	17
2.14	Signal background	18
2.15	Signal hoods	18
Section 3	Design	20
3.1	Trackside location of signal masts and structures	20
3.1.1	Spacing from track	20
3.1.2	Spacing from other equipment	20
3.1.3	Signal height from rail level	21
3.1.4	Signal access	21
3.1.5	Signals on embankment or viaduct	21
3.1.6	Ladders, landings and platforms	21
3.1.7	Signal structure construction	22
3.2	Electrical clearances	22
3.3	Signal sighting	23
3.3.1	Signal sighting – General requirements	23
3.3.2	Signal sighting times and distances	23
3.3.3	Signal luminaire type	24
3.3.4	Selection of ranges of signal luminaire	24

3.3.5	Signal heights and sighting factors.....	24
3.3.6	Multiple track signal design factors	25
3.3.7	Signal read-through.....	25
3.3.8	Close viewing signal sighting	25
3.3.9	Signal sighting hazards and controls.....	25
3.3.10	General visibility.....	25
3.3.11	Documentation of signal sighting	25
3.4	Signal electrical design	26
3.4.1	Lightning and surge protection.....	26
3.4.2	Signal light (lamp) proving requirements.....	26
3.4.3	Interfacing with existing signals.....	26
3.4.4	Signal design documentation.....	26
3.4.5	Signal feed cabling - cable length limits	27
Section 4	Construction	28
4.1	Site survey	28
4.2	Signal structure construction.....	28
4.3	Installation of signals.....	29
4.4	Signal mast wiring and terminations at base.....	29
4.5	Inspections during construction	29
4.6	Inspections after construction	30
Section 5	Testing and commissioning.....	31
5.1	Management and planning	31
5.2	Recovery, removal and site clean-up works.....	31
5.3	Disposal	31
Section 6	Monitoring and Maintenance	32
6.1	Maintenance of sighting distances and alignment of signals and signs.....	32
6.2	LED partial failure (degradation)	32
6.3	Maintenance of signal heads.....	33
6.4	Electrical maintenance	33
6.5	Tilt and telescopic signal mast maintenance.....	33
6.6	Incandescent lamp units.....	33
6.7	Lamp replacement	34
6.8	Led light and indicator unit maintenance.....	34
6.9	Semaphore signal maintenance	34
6.10	Signal structure maintenance.....	35
6.11	Maintenance planning.....	35
6.12	Mechanical points indicators	35
Appendix A	Hazard Register (Informative)	36
	Bibliography (Informative)	38

Tables

Table 2-1 Chromaticity Limits	11
Table 2-2 Signal Indication Ranges	16
Table 2-3 Signal Head Spacing	16
Table 2-4 Minimum Length and Cover for Signal Hoods	19

AS 7721 PREVIEW ONLY

Section 1 Scope and general

1.1 Scope

This document applies to new and modified lineside signals, indicators and signal signage.

The document covers materials, design, construction, testing, commissioning and maintenance of lineside signals, indicators and signal signage.

Temporary signage (e.g., for speed restrictions) is not covered by this document.

Interfacing systems such as cab signalling, train protection, and electric traction infrastructure, as well as level crossing requirements, are not covered by this document unless specifically related to lineside signals.

This document does not intend to cover heritage railways but items from this document may be applied to such networks as deemed appropriate by the relevant rail infrastructure manager (RIM).

1.2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document:

- AS 1397, *Continuous Hot-Dip Metallic Coated Steel Sheet and Strip-Coatings of Zinc and Zinc alloyed with Aluminium and Magnesium*
- AS 1657, *Fixed Platforms, Walkways, Stairways and Ladders - Design, Construction and Installation*
- AS 1744, *Standard Alphabets for Road Signs*
- AS 1768, *Lightning Protection*
- AS 1874, *Aluminium and Aluminium Alloys - Ingots and Castings*
- AS 4791, *Hot-Dip Galvanized (zinc) Coatings on Ferrous Open Sections, Applied by an In-Line Process*
- AS 4792, *Hot-Dip Galvanized (zinc) Coatings on Ferrous Hollow Sections, Applied by a Continuous or a Specialized Process*
- AS 7507, *Rolling Stock Outlines*
- AS 7631, *Railway Infrastructure – Sighting*
- AS 7632, *Railway Infrastructure – Signage*
- AS 7717, *Signal Testing and Commissioning Management*
- AS 60529, *Degrees of Protection Provided by Enclosures (IP Code)*
- AS/NZS 1170.2:2021, *Structural Design Actions – Part 2: Wind actions*
- AS/NZS 2144, *Traffic Signal Lanterns*
- AS/NZS 3000, *Wiring Rules*
- BS EN 50121-4:2006/IEC 62236-4:2008, *Railway applications - Electromagnetic compatibility – Part 4: Emission and immunity of the signalling and telecommunications apparatus*
- BS 1376:1974, *Specification for Colour of Light Signals*
- AREMA *Communications & Signals Manual – Part: 7.1.10*

NOTE:

Documents for informative purposes are listed in a Bibliography at the back of the Standard.