



Railway Infrastructure: Railway Level Crossings



Infrastructure Standard



This Australian Standard® AS 7658 Railway Infrastructure: Railway Level Crossings was prepared by a RISSB Development Group consisting of representatives from the following organisations:

ARTC	TransAdelaide	Pacific National
QR Ltd	RailCorp	Regional Rail Link Authority Vic DoT
Brookfield (West Net)	PTA.WA	CQU

The Standard was approved by the Development Group and the Infrastructure Standing Committee in November, 2011. On November 23, 2011 the RISSB Board approved the Standard for release.

This standard was issued for public consultation and was independently validated before being approved.

Development of the standard was undertaken in accordance with RISSB's accredited process, which includes an independent validation. As part of the approval process, the Standing Committee verified that proper process was followed in developing the standard.

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 comment 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.



Kevin Taylor
Chief Executive Officer
Rail Industry Safety and Standards Board

Keeping Standards up-to-date

Australian Standards developed by RISSB are living documents that reflect progress in science, technology and systems. To maintain their currency, Standards are reviewed every seven years, and new editions are published. Between editions, amendments may be issued. Australian Standards developed by RISSB may also be withdrawn.

It is important that readers assure themselves they are using a current RISSB Standard, which should include any amendments that may have been issued since the Standard was published. Information about Australian Standards developed by RISSB, 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 rissb@rissb.com.au or write to Rail Industry Safety and Standards Board, PO Box 4271, Kingston, ACT 2604.

AS 7658:2012

Railway Infrastructure: Railway Level Crossings

Document Details

First published as: AS 7658: 2012

ISBN 978-1-74342-028-7

Published by Rail Industry Safety and Standards Board (RISSB) ABN: 58 105 001 465

PO Box 4271, Kingston, ACT, Australia 2604

Copyright

©RISSB

All rights are reserved. No part of this work may 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.

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.

Document Control

Identification

Document Title
AS 7658:2012 Railway Infrastructure: Railway Level Crossings

Document History

Publication Version	Effective Date	Reason for and Extent of Change(s)
Version 2012	November 23, 2011	

Approval

Name	Date
Rail Industry Safety and Standards Board (RISSB)	23/11/2011

Contents

1	Introduction.....	7
1.1	Purpose	7
1.2	Scope	7
1.3	Exclusions	8
1.4	Compliance.....	8
1.5	Referenced Documents	8
1.6	Definitions.....	9
2	General Requirements for Level Crossings	11
2.1	General.....	11
2.2	Road and Pedestrian Lighting System	11
2.3	Competency Management.....	11
2.4	Interface Management.....	12
2.5	Records Management.....	12
2.6	Types of Level Crossing Controls	12
2.6.1	Passive Control.....	12
2.6.2	Active Control	12
2.7	Access Types	13
2.7.1	Public Level Crossings.....	13
2.7.2	Private (Occupation) Level Crossings	13
2.7.3	Service (Operations or Maintenance) Level Crossings.....	13
2.7.4	Pedestrian Level Crossings	14
2.7.5	Closed Level Crossings	14
2.8	Risk Management	14
3	Rail Signalling for Actively Controlled Level Crossings	14
3.1	Performance Requirements	14
3.2	Design Process Requirements.....	16
3.3	Construction, Testing and Commissioning Requirements	16
3.3.1	General.....	16
3.3.2	Reactivation of Seasonal or Out-of-Service Level Crossings	16
3.4	Active Traffic Control Devices	16
3.4.1	General.....	16
3.4.2	Flashing Lights.....	17
3.4.3	Boom Barriers.....	17
3.4.4	Audible Warning Devices	17
3.4.5	Illuminated Pedestrian Signs.....	18
3.4.6	Sequence of Operation of Active Traffic Control Devices	18
3.5	Train Detection System.....	19
3.5.1	General.....	19
3.5.2	Track Circuits.....	19

3.5.3	Axle Counters	19
3.5.4	Treadles.....	20
3.5.5	Predictors	20
3.5.6	Specific Requirements	20
3.6	Power Supply.....	20
3.7	Monitoring System	21
4	Track and Civil for Level Crossings	21
4.1	Performance Requirements	21
4.2	Track.....	23
4.2.1	General.....	23
4.2.2	Rails	23
4.2.3	Sleepers	23
4.2.4	Drainage	23
4.2.5	Flangeway Gaps.....	24
4.3	Road	24
4.3.1	General.....	24
4.3.2	Surface	24
4.4	Road Traffic Control.....	26
4.5	Pedestrian Level Crossings	26
4.6	Passive Traffic Control Devices	27
4.7	Passive Track-Side Signage.....	27
5	Maintenance and Decommissioning of Level Crossings	27
5.1	General Maintenance Requirements.....	27
5.2	Track and Civil Maintenance.....	28
5.3	Rail Signalling Maintenance.....	29
5.4	Decommissioning Requirements.....	29

Appendix Contents

Appendix A	Risk management	30
A.1	General.....	30
A.2	Alcam.....	31
A.3	Risk assessment process	31
A.4	Risk mitigation	32
Appendix B	Characteristics, controls and accident mechanisms at road level crossings..	33
B.1	Road level crossing characteristics	33
B.2	Road level crossing controls	34
B.3	Road level crossing accident mechanisms.....	35
Appendix C	Characteristics, controls and accident mechanisms at pedestrian level crossings	36
C.1	Pedestrian level crossing characteristics.....	36

C.2	Pedestrian level crossing controls.....	37
C.3	Pedestrian level crossing accident mechanisms	38
Appendix D	Operational timing of active traffic control devices.....	38
D.1	Active level crossing with flashing lights but without boom barriers	38
D.2	Active level crossing with flashing lights and boom barriers	39
D.3	Active pedestrian crossing with pedestrian lights	39
D.4	Active pedestrian crossing with pedestrian lights and gates.....	39
D.5	Calculation of level crossing warning time.....	40

1 Introduction

1.1 Purpose

The objective of this standard is to provide the Australian rail industry with a set of mandatory and recommended requirements to be used to control level crossing risks, and to promote a consistent treatment of Australian level crossings.

The standard is intended to:

- (a) provide a uniform basis for compliance with AS 4292;
- (b) be able to cover differing rail operations across Australia; and
- (c) identify the risks (hazards) being controlled.

1.2 Scope

This standard specifies level crossing safety requirements for any member or participant of the Australian rail industry that is involved in any phase of the life cycle of a level crossing.

This standard applies to all heavy railways over 600mm track gauge, including rail freight and passenger networks, heritage and tourist railways and cane railways where appropriate.

This standard applies to level crossings as defined in Section 1.6 of this standard, as limited by Section 1.2 and 1.3.

This standard provides the minimum level crossing requirements, but is not intended to supplant higher performance standards based on local experience and good engineering practice, which may be contained in the level crossing standards, codes, guidelines and procedures of individual States or rail transport operators.

The major level crossing elements addressed in this standard are:

- (a) Safety practices within the level crossing lifecycle, which consists of the following processes:
 - i. requirements definition and analysis;
 - ii. design;
 - iii. construction;
 - iv. testing and commissioning;
 - v. maintenance;
 - vi. modification; and
 - vii. decommissioning.
- (b) Safety requirements for level crossing infrastructure, which may consist of a combination of these components:
 - i. passive traffic control devices;
 - ii. active traffic control devices;
 - iii. train detection system;
 - iv. power supply for level crossing equipment;
 - v. monitoring systems;
 - vi. railway signals for rail vehicles;