

**Derailment containment
and protection for
rail underbridges**

Code of Practice

Derailment containment and
protection for rail underbridges
Code of Practice

This Rail Industry Safety and Standards Board (RISSB) product has been developed using input from rail experts from across the Rail Industry. RISSB wishes to acknowledge the positive contribution of all subject matter experts and DG representatives who participated in the development of this product.

The RISSB Development Group for this Code of Practice consisted of representatives from the following organisations:

Arc Infrastructure Pty Ltd	Australian Rail Track Corporation Ltd	Kiwi Rail
Department of Transport (Victoria)	Queensland Rail Limited	Transport for New South Wales
WSP Australia Pty Limited		

Development of this Code of Practice was undertaken in accordance with RISSB's accredited processes. It was approved by the Development Group, endorsed by the Standing Committee, and approved for publication by the RISSB Board.

I commend this Code of Practice to the Australasian rail industry as part of the suite of RISSB products assisting the rail industry to manage rail safety, improve efficiency and achieve safety outcomes through interoperability and harmonisation.



Deb Spring
Chief Executive Officer
Rail Industry Safety and Standards Board

Notice to users

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.

Keeping Codes of Practice up-to-date

To maintain their currency, Code of Practice developed by RISSB are periodically reviewed, and new editions published when required. Between editions, amendments can be issued.

It is important that readers assure themselves of that they are using a current RISSB Code of Practice. Information about RISSB Codes of Practice 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, please contact us via email at info@rissb.com.au or write to Rail Industry Safety and Standards Board, PO Box 518, Spring Hill, QLD 4004, Australia.

RISSB product can be found at: <http://www.rissb.com.au/products/>.

Document Control

Identification

Document Title	Version	Date
Derailment containment and protection for rail underbridge	1.0	25 September 2019

Document History

Publication Version	Effective date	Page(s) Affected	Reason for and extent of changes
First issue	25/09/2019	All	New document

Approval

Name	Date
Rail Industry Safety and Standards Board	25/09/2019

Copyright

© RISSB

All rights are reserved. No part of this work is to 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.

Contents

1	Scope and general	5
1.1	Scope	5
1.2	Definition	5
1.3	Objective	5
2	Derailment containment and protection systems.....	6
3	The underbridge system	6
3.1	General.....	6
3.2	System limits	6
4	System elements.....	7
4.1	Infrastructure	7
4.2	Bridge and track interface.....	9
4.3	Operating environment	10
5	Risk management tools and techniques.....	11
5.1	General.....	11
5.2	Impact of system elements.....	11
5.3	Derailment likelihood.....	12
5.4	Derailment consequences.....	12
5.5	Controls.....	13
5.6	Implementation	14
6	Reference documents.....	14
Appendix A	Types of rail underbridges	15
Appendix B	Types of derailment protection	19
Appendix C	Suitability of protection systems	24
Appendix D	Potential controls.....	25

1 Scope and general

1.1 Scope

This Code of Practice applies to derailment containment and protection for bridges spanning an opening under a railway (rail underbridges).

Except for railway flyovers, it does not apply to bridges that traverse over a railway (rail overbridges).

1.2 Definition

For the purposes of this document, the terms and definitions given in RISSB Glossary:

<https://www.rissb.com.au/products/glossary/> and the following apply:

- a) **rail underbridge**
a bridge that supports a railway infrastructure while crossing over a waterway, road or other railway track.
- b) **railway flyover**
a grade separated rail-over-rail crossing.

NOTE: Appendix A provides photographs and description of the different types of rail underbridges.

1.3 Objective

The objective of this Code of Practice is to:

- a) describe the purpose of derailment containment and protection systems;
- b) introduce the concept of assessing the risks arising from railway operations over a rail underbridge as part of a broader system;
- c) highlight elements that could influence the risk of a derailment, such as:
 - i. the infrastructure,
 - ii. the bridge and track interfaces, and
 - iii. the operating environment.
- d) provide a common approach for risk-based decision making;
- e) offer information related to the types of discrete derailment containment and protection systems, which can also be used in combination; and
- f) collate risk elimination or control measures that duty holders ought reasonably know of.

It does not provide explicit design solutions.

This Code of Practice complements AS 5100 which provides nationally accepted requirements for the design of new bridges intended to support railway loads.