

AS/NZS 1554.5:2011

AS/NZS 1554.5:2011

Australian/New Zealand Standard™

Structural steel welding

Part 5: Welding of steel structures subject to high levels of fatigue loading



AS/NZS 1554.5:2011

This Joint Australian/New Zealand Standard was prepared by Joint Technical Committee WD-003, Welding of Structures. It was approved on behalf of the Council of Standards Australia on 18 May 2011 and on behalf of the Council of Standards New Zealand on 1 June 2011.

This Standard was published on 17 June 2011.

The following are represented on Committee WD-003:

Australian Chamber of Commerce and Industry
Australian Industry Group
Australian Steel Institute
AUSTROADS
Bureau of Steel Manufacturers of Australia
Engineers Australia
New Zealand Heavy Engineering Research Association
New Zealand Non-destructive Testing Association
Steel Reinforcement Institute of Australia
The University of Sydney
Welding Technology Institute of Australia

Keeping Standards up-to-date

Standards are living documents which reflect progress in science, technology and systems. To maintain their currency, all Standards are periodically reviewed, and new editions are published. Between editions, amendments may be issued. Standards may also be withdrawn. It is important that readers assure themselves they are using a current Standard, which should include any amendments which may have been published since the Standard was purchased.

Detailed information about joint Australian/New Zealand Standards can be found by visiting the Standards Web Shop at www.saiglobal.com.au or Standards New Zealand web site at www.standards.co.nz and looking up the relevant Standard in the on-line catalogue.

For more frequent listings or notification of revisions, amendments and withdrawals, Standards Australia and Standards New Zealand offer a number of update options. For information about these services, users should contact their respective national Standards organization.

We also welcome suggestions for improvement in our Standards, and especially encourage readers to notify us immediately of any apparent inaccuracies or ambiguities. Please address your comments to the Chief Executive of either Standards Australia or Standards New Zealand at the address shown on the back cover.

AS/NZS 1554.5:2011

Australian/New Zealand Standard™

Structural steel welding

Part 5: Welding of steel structures subject to high levels of fatigue loading

Originated in Australia as AS 1554.5—1989.
Originated in New Zealand as AS/NZS 1554.5:1995.
Previous edition 2004.
Fourth edition 2011.

COPYRIGHT

© Standards Australia Limited/Standards New Zealand

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 the publisher, unless otherwise permitted under the Copyright Act 1968 (Australia) or the Copyright Act 1994 (New Zealand).

Jointly published by SAI Global Limited under licence from Standards Australia Limited, GPO Box 476, Sydney, NSW 2001 and by Standards New Zealand, Private Bag 2439, Wellington 6140

ISBN 978 0 7337 9874 0

PREFACE

This Standard was prepared by the Joint Australian/New Zealand Committee WD-003, Welding of Structures, to supersede AS/NZS 1554.5:2004.

The objective of this Standard is to provide rules for the welding of steel structures subject to high levels of fatigue loading.

The objective of this edition is to update the Standard and bring it in line with the latest edition of AS/NZS 1554.1, *Structural steel welding, Part 1: Welding of steel structures*.

This edition incorporates the following major changes to the 2004 edition:

(a) *Amendments to the following Clauses:*

1.2, 1.6 (new title), 1.6.1 (new), 2.1(c), 2.3.1, 3.2.5 (new paragraph), 4.1.2(d)(f)(h)(j)(k)(iii) (new sub clauses), 4.6.1.2 (d), 4.2 (b), 4.10 (new note), 4.12.2, 5.1.1 (new note), 5.1.2 (note added), 5.3.3 (second paragraph), 5.3.5 (new), 5.7.1 (note added), 6.3.3 (note added), 7.2(a) (new), 7.3 (first paragraph – new), Appendix F (new).

(b) *Amendments to the following Tables:*

4.6.1(A), 4.6.1(B), 4.6.1(C), 4.6.2, 4.7.1 (new notes, notes 1 and 3 amended), 4.11(D) (new), 4.11(A) (items b, e, o, u), 4.11(C) item (d) (note added), 4.12.2.3(A), 4.12.2.3(B) (new), 5.3.4(A), B1 (new steel types added).

(c) *Amendments to the following Figure:*

3.2.5(c) (new).

This Standard specifically applies to welds subject to fatigue loading in excess of the range covered by AS/NZS 1554.1, *Structural steel welding, Part 1: Welding of steel structures* and hence, it should not be specified where AS/NZS 1554.1 is acceptable.

It is expected that welds covered by this Standard will not normally occur with structures such as buildings, tanks or silos, but only in certain classes of machinery and transport equipment.

The Standard requires that weld preparations, welding consumables and welding procedures be qualified before commencement of welding. Prequalified joint preparations, welding consumables and welding procedures are also given in the Standard.

Statements expressed in mandatory terms in notes to Tables and Figures are deemed to be requirements to this Standard.

The terms ‘normative’ and ‘informative’ have been used in this Standard to define the application of the appendix to which they apply. A ‘normative’ appendix is an integral part of a Standard, whereas an ‘informative’ appendix is only for information and guidance.

CONTENTS

	Page
SECTION 1 SCOPE AND GENERAL	
1.1 SCOPE	5
1.2 EXCLUSIONS	6
1.3 INNOVATION	6
1.4 NORMATIVE REFERENCES	6
1.5 DEFINITIONS	6
1.6 MANAGEMENT OF QUALITY	7
1.7 SAFETY	7
SECTION 2 MATERIALS OF CONSTRUCTION	
2.1 PARENT MATERIAL	8
2.2 BACKING MATERIAL	8
2.3 WELDING CONSUMABLES	8
SECTION 3 DETAILS OF WELDED CONNECTIONS	
3.1 GENERAL	10
3.2 BUTT WELDS	10
3.3 FILLET WELDS	11
3.4 COMPOUND WELDS	16
SECTION 4 QUALIFICATION OF PROCEDURES AND PERSONNEL	
4.1 QUALIFICATION OF WELDING PROCEDURE	17
4.2 METHODS FOR QUALIFYING A WELDING PROCEDURE	19
4.3 PREQUALIFIED WELDING PROCEDURES	19
4.4 PORTABILITY OF QUALIFIED WELDING PROCEDURES	20
4.5 PREQUALIFIED JOINT PREPARATIONS	20
4.6 QUALIFICATION OF WELDING CONSUMABLES	21
4.7 QUALIFICATION OF WELDING PROCEDURE BY TESTING	28
4.8 EXTENSION OF QUALIFICATION	32
4.9 COMBINATION OF PROCESSES	32
4.10 RECORDS OF TESTS	32
4.11 REQUALIFICATION OF WELDING PROCEDURES	32
4.12 QUALIFICATION OF WELDING PERSONNEL	36
SECTION 5 WORKMANSHIP	
5.1 PREPARATION OF EDGES FOR WELDING	40
5.2 ASSEMBLY	40
5.3 PREHEATING AND INTER-RUN CONTROL	41
5.4 WELDING UNDER ADVERSE WEATHER CONDITIONS	48
5.5 TACK WELDS	48
5.6 WELD DEPTH-TO-WIDTH RATIO	48
5.7 CONTROL OF DISTORTION AND RESIDUAL STRESS	49
5.8 BACKGOUGING AND REPAIR OF DEFECTS IN WELDS	50
5.9 TEMPORARY ATTACHMENTS	51
5.10 ARC STRIKES	51
5.11 CLEANING OF FINISHED WELDS	51
5.12 DRESSING OF BUTT WELDS	51

This is a free preview. Purchase the entire publication at the link below:

[Product Page](#)

-
- Looking for additional Standards? Visit Intertek Inform Infostore
 - Learn about LexConnect, All Jurisdictions, Standards referenced in Australian legislation
-