

Australian/New Zealand Standard™

Structural steel welding

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

AS/NZS 1554.5:2004

This Joint Australian/New Zealand Standard was prepared by Joint Technical Committee WD-003, Welding of Steel Structures. It was approved on behalf of the Council of Standards Australia on 22 December 2003 and on behalf of the Council of Standards New Zealand on 5 March 2004. It was published on 24 March 2004.

The following are represented on Committee WD-003:

Australian Chamber of Commerce and Industry
Australian Industry Group
AUSTROADS
Bureau of Steel Manufacturers of Australia
Electricity Supply Association of Australia
Institution of Engineers Australia
New Zealand Heavy Engineering Research Association
New Zealand Non-destructive Testing Association
New Zealand Welding School
Steel Reinforcement Institute of Australia
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 Standards may also be withdrawn.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.standards.com.au or Standards New Zealand web site at www.standards.co.nz and looking up the relevant Standard in the on-line catalogue.

Alternatively, both organizations publish an annual printed Catalogue with full details of all current Standards. 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 International or Standards New Zealand at the address shown on the back cover.

Australian/New Zealand Standard™

Structural steel welding

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

Originated as AS 1554.5—1989.
Previous edition AS/NZS 1554.5:1995.
Third edition 2004.

COPYRIGHT

© Standards Australia/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.

Jointly published by Standards Australia International Ltd, GPO Box 5420, Sydney, NSW 2001 and Standards New Zealand, Private Bag 2439, Wellington 6020

ISBN 0 7337 5735 9

PREFACE

This Standard was prepared by the Joint Australian/New Zealand Committee WD-003, Welding of Structures, to supersede AS/NZS 1554.5:1995.

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 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

	<i>Page</i>
SECTION 1 SCOPE AND GENERAL	
1.1 SCOPE	5
1.2 EXCLUSIONS	6
1.3 INNOVATION	6
1.4 REFERENCED DOCUMENTS	6
1.5 DEFINITIONS	6
1.6 BASIC WELDING REQUIREMENTS	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	15
SECTION 4 QUALIFICATION OF PROCEDURES AND PERSONNEL	
4.1 QUALIFICATION OF WELDING PROCEDURE	16
4.2 METHODS FOR QUALIFYING A WELDING PROCEDURE	17
4.3 PREQUALIFIED WELDING PROCEDURES	18
4.4 PORTABILITY OF QUALIFIED WELDING PROCEDURES	18
4.5 PREQUALIFIED JOINT PREPARATIONS	18
4.6 QUALIFICATION OF WELDING CONSUMABLES	19
4.7 QUALIFICATION OF WELDING PROCEDURE BY TESTING	25
4.8 EXTENSION OF QUALIFICATION	28
4.9 COMBINATION OF PROCESSES	29
4.10 RECORDS OF TESTS	29
4.11 REQUALIFICATION OF WELDING PROCEDURES	29
4.12 QUALIFICATION OF WELDING PERSONNEL	32
SECTION 5 WORKMANSHIP	
5.1 PREPARATION OF EDGES FOR WELDING	36
5.2 ASSEMBLY	36
5.3 PREHEATING AND INTER-RUN CONTROL	37
5.4 WELDING UNDER ADVERSE WEATHER CONDITIONS	39
5.5 TACK WELDS	39
5.6 WELD DEPTH-TO-WIDTH RATIO	39
5.7 CONTROL OF DISTORTION AND RESIDUAL STRESS	40
5.8 BACKGOUGING AND REPAIR OF DEFECTS IN WELDS	45
5.9 TEMPORARY ATTACHMENTS	46
5.10 ARC STRIKES	46
5.11 CLEANING OF FINISHED WELDS	46
5.12 DRESSING OF BUTT WELDS	46

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](#)
-