

AS/NZS 1554.1:2004
(Incorporating Amendment No. 1)

AS/NZS 1554.1:2004

Australian/New Zealand Standard™

Structural steel welding

Part 1: Welding of steel structures



AS/NZS 1554.1:2004

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 19 December 2003 and on behalf of the Council of Standards New Zealand on 5 March 2004.

This Standard 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
Institute of Engineers Australia
New Zealand Heavy Engineering Research Association
New Zealand Non-destructive Testing Association
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 Standards may also be withdrawn.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 or Standards New Zealand at the address shown on the back cover.

AS/NZS 1554.1:2004
(Incorporating Amendment No. 1)

Australian/New Zealand Standard™

Structural steel welding

Part 1: Welding of steel structures

Originated in Australia as AS CA8—1933.
Originated in New Zealand, in part, as NZS 4701:1981.
Previous edition AS/NZS 1554.1:2000.
Seventh edition 2004.
Reissued incorporating Amendment No. 1 (January 2005).

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, GPO Box 5420, Sydney, NSW 2001 and Standards New Zealand, Private Bag 2439, Wellington 6020

ISBN 0 7337 5730 8

PREFACE

This Standard was prepared by the Joint Standards Australia/Standards New Zealand Committee WD-003, Welding of Structures, to supersede AS/NZS 1554.1—2000.

This Standard incorporates Amendment No. 1 (January 2005). The changes required by the Amendment are indicated in the text by a marginal bar and amendment number against the clause, note, table, figure or part thereof affected.

The objective of this Standard is to provide rules for the welding of a wide range of steel constructions and while it is expected that its main use will be for statically loaded welds, it applies also to some welds subject to fatigue. Although this Standard has been specifically prepared for steel structures, it may be usefully applied to machine frames and other types of steel constructions.

A1 This edition incorporates the following major changes to the 2000 edition:

(a) *Amendments to the following Clauses:*

1.6(a)(i), 1.6(a)(ii), 1.6(b)(i), 1.6(b)(ii), 1.6(b)(iii), 1.7 (new NOTE), 1.8.2 (NOTE deleted), 1.8.3 (new Clause), 2.1 (last paragraph and NOTE), 2.3.4, 3.3.1 (first paragraph), 4.1.2 (first sentence), 4.3, 4.4(c), 4.5.5.1 (second paragraph), 4.5.5.3, 4.6.1.1, 4.7.1 (NOTE 1 deleted), 4.7.9 (second paragraph), 4.7.10 (second sentence), 4.11 (new NOTE), 4.12.1, 4.12.2(f)(ii), 4.12.2 (NOTE 2), 5.1.1 (last two sentences), 5.2.2 (second paragraph), 5.3.3, 5.8.1 (new NOTE), 5.8.4 (new NOTE), 7.2, B3.3, B4.2 (first paragraph), Appendix D (new Item (n)).

(b) *Amendments to the following Tables:*

3.3.5 (Title), 4.7.1, 4.11(A) (Items (b), (c), (e) and (k)), 4.12.2 (NOTE 2), 5.3.4(A), C2, E1 (drawings for joints B-C 8a and B-C 8b), E4 (new joints H-C 1c and H-C 1d).

(c) *Amendments to the following Figures:*

3.4.1(c), 4.5.5.2 (new), 4.5.5.3 (NOTES), 5.3.4(A).

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.

The Standard, in catering for structures subject to fatigue conditions as well as statically loaded structures, provides two categories of welds with two differing levels of weld quality assurance associated with the different types of service to which the welds are subjected. The intention is that the designer select the category suited to the severity of the service and nominate this on the drawings. Where a structure contains both categories, this nomination of appropriate categories will ensure that appropriate levels of supervision and inspection will be applied to the relevant parts of the structure.

Statements expressed in mandatory terms in notes to tables and figures are deemed to be requirements of 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 WELD CATEGORIES	7
1.7 BASIC WELDING REQUIREMENTS	7
1.8 SAFETY	8
SECTION 2 MATERIALS OF CONSTRUCTION	
2.1 PARENT MATERIAL	9
2.2 BACKING MATERIAL	9
2.3 WELDING CONSUMABLES	9
SECTION 3 DETAILS OF WELDED CONNECTIONS	
3.1 GENERAL	11
3.2 BUTT WELDS	11
3.3 FILLET WELDS	12
3.4 COMPOUND WELDS	16
3.5 SEAL WELDS	17
3.6 PLUG WELDS	17
3.7 SLOT WELDS	17
3.8 COMBINING STEEL SECTIONS	17
SECTION 4 QUALIFICATION OF PROCEDURES AND PERSONNEL	
4.1 QUALIFICATION OF WELDING PROCEDURE	19
4.2 METHODS FOR QUALIFYING A WELDING PROCEDURE	20
4.3 PREQUALIFIED WELDING PROCEDURES	21
4.4 PORTABILITY OF QUALIFIED WELDING PROCEDURES	21
4.5 PREQUALIFIED JOINT PREPARATIONS	21
4.6 QUALIFICATION OF WELDING CONSUMABLES	29
4.7 QUALIFICATION OF WELDING PROCEDURE BY TESTING	35
4.8 EXTENSION OF QUALIFICATION	39
4.9 COMBINATION OF PROCESSES	40
4.10 RECORDS OF TESTS	40
4.11 REQUALIFICATION OF WELDING PROCEDURES	40
4.12 QUALIFICATION OF WELDING PERSONNEL	43
SECTION 5 WORKMANSHIP	
5.1 PREPARATION OF EDGES FOR WELDING	47
5.2 ASSEMBLY	47
5.3 PREHEATING AND INTER-RUN CONTROL	48
5.4 WELDING UNDER ADVERSE WEATHER CONDITIONS	55
5.5 TACK WELDS	55
5.6 WELD DEPTH-TO-WIDTH RATIO	55
5.7 CONTROL OF DISTORTION AND RESIDUAL STRESS	56
5.8 BACKGOUGING AND REPAIR OF DEFECTS IN WELDS	56
5.9 TEMPORARY ATTACHMENTS	57

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](#)
-