AS/NZS 1554.7:2014
(Incorporating Amendment No. 1)

Australian/New Zealand Standard™

Structural steel welding

Part 7: Welding of sheet steel structures

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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 24 September 2014 and on behalf of the Council of Standards New Zealand on 12 September 2014.
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PREFACE

This Standard was prepared by the Joint Standards Australia/Standards New Zealand Committee WD-003, Welding of Structures, to supersede AS/NZS 1554.7:2006.

This Standard incorporates Amendment No. 1 (September 2015). 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 light gauge steel constructions designed in accordance with the requirements of AS/NZS 4600. Although this Standard has been specifically prepared for steel structures, it may be usefully applied to machine frames and other types of steel constructions.

Given the historical links between the requirements of AS/NZS 4600, *Cold-formed steel structures* and the American Welding Society's AWS D1.3, *Structural Welding Code—Sheet Steel*, this Standard takes cognizance of the requirements and practices associated with AWS D1.3, and the similar requirements contained within AS/NZS 1554.1, *Structural steel welding* Part 1: *Welding of steel structures*, for category GP quality welds.

This edition incorporates the following major changes to the 2006 edition:

(a) *Changes to the following Clauses*:

1.1, 1.7 (new title and text), 2.3.1, 2.3.3, 3.3.3, 4.1.2 [new Items (d), (f)-(j)], 4.2(b), 4.2(d) (correction), 4.3(e), 4.5.5.1, 4.5.5.3, 4.6.1.1, 4.6.1.2 (new Note), 4.7.1, 4.7.7, 4.8, 4.12.1, 4.12.2, 5.1, 5.2.4, 5.3.4, 6.1.2, 6.4 (Note 2), 6.5 (new Note), 7.2, 7.4, Appendix H (new), Bibliography (new).

(b) *Changes to the following Tables*:

4.6.1(A), 4.6.1(B), 4.6.1(C), 4.11(A), 4.11(B), 4.11(C) (new), 4.12.2(A), 4.12.2(B), 5.3.4(A), E1, E2.

(c) *Changes to the following Figures*:

3.2.5, 4.5.5.1 (Note 2 and title), 4.5.5.4 (title).

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 caters specifically for statically loaded structures and, similarly to AS/NZS 4600, does not consider brittle fracture requirements. Under circumstances where brittle fracture is considered likely, the user is instead referred to AS/NZS 1554.1. Whilst AS/NZS 4600 now caters for dynamic loading conditions, both AS/NZS 4600 and this Standard also refer the user to the more appropriate requirements of AS/NZS 1554.1 Category SP, or for high levels of dynamic loading (fatigue), to AS/NZS 1554.5, *Structural steel welding*, Part 5: *Welding of steel structures subject to high levels of fatigue loading*. This 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.

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SECTION 1 SCOPE AND GENERAL

1.1 SCOPE

This Standard specifies requirements for the arc welding of steel structures made up of combinations of steel plate, sheet or sections, including pipe, hollow sections and built up sections (collectively referred to herein as sheet steels) up to 4.8 mm in thickness by the following processes:

(a) Manual metal arc welding (MMAW).

(b) Gas metal arc welding (GMAW or MIG), including pulsed mode.

(c) Gas tungsten-arc welding (GTAW or TIG).

(d) Flux-cored arc welding (FCAW).

The Standard is limited to the welding of steel parent material with a specified minimum yield strength not exceeding 550 MPa.

The Standard applies to the welding of steelwork in structures complying with AS/NZS 4600. The following limitations apply:

(i) For other than fatigue conditions where welded joints are governed by dynamic loading conditions, AS/NZS 1554.1 category SP applies.

(ii) For welded joints subject to fatigue conditions (i.e. weld categories higher than detail category 118 of AS/NZS 4600), AS/NZS 1554.5 category FP.

Consistent with AS/NZS 4600, brittle fracture provisions have not been included in this Standard. For service temperatures colder than −10°C, the brittle fracture provisions of AS/NZS 1554.1 for materials and welding consumables apply (see Appendix B).

In addition to the aforementioned structures, the Standard applies to the welding of steelwork in applications other than structural.

The Standard specifies requirements equivalent to AS/NZS 1554.1 category GP arc welding. For the welding of sheet steels thicker than 4.8 mm, the requirements of AS/NZS 1554.1 apply.

For stud welding through the flat portion of decking or roofing onto supporting structural members, AS/NZS 1554.2 applies.

NOTES:

1 Further information on this Standard is given in WTIA Technical Note 11.

2 GMAW includes waveform controlled welding such as ‘synergic’, ‘programmable’, and ‘microprocessor controlled’ processes’ e.g. pulsed spray transfer, controlled short circuit transfer.