Australian Standard®

Steel structures

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The following are represented on Committee BD-001:

- Association of Consulting Engineers Australia
- Australian Construction Services
- Australian Institute of Steel Construction
- AUSTROADS
- Building Management Authority, W.A.
- Bureau of Steel Manufacturers of Australia
- CSIRO, Division of Building, Construction and Engineering
- Confederation of Australian Industry
- Institution of Engineers, Australia
- Metal Trades Industry Association of Australia
- New Zealand Heavy Engineering Research Association
- Public Works Department, N.S.W.
- Railways of Australia Committee
- University of New South Wales
- University of Queensland
- University of Sydney
- Welding Technology Institute of Australia

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Originated in part as SAA INT 351—1956.
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PREFACE

This Standard was prepared by the Standards Australia Committee BD-001, Steel Structures, to supersede AS 4100—1990.

This Standard incorporates Amendment No. 1 (February 2012). 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 designers of steel structures with specifications for steel structural members used for load-carrying purposes in buildings and other structures.

This new edition of the Standard incorporates Amendments No. 1—1992, No. 2—1993, No. 3—1995 and draft Amendment No. 4 issued for public comment as DR 95247. Draft Amendment No. 4 was not published separately as a green slip.

Amendment No. 1—1992 includes the following major changes:

(a) Strength of steels complying with AS 1163 and AS/NZS 1594. (Table 2.1.)

(b) Shear buckling capacity for stiffened web. (Clause 5.11.5.2.)

(c) Bearing buckling capacity. (Clause 5.13.4.)

Amendment No. 2—1993 includes the following major changes:

(a) Shear and bending interaction method. (Clause 5.12.3.)

(b) Minimum area for the design of intermediate transverse web stiffeners. (Clause 5.15.3.)

(c) Section capacity of members subject to combined actions. (Clause 8.3.)

(d) Strength assessment of a butt weld. (Clause 9.7.2.7.)

(e) Fatigue. (Section 11.)

Amendment No. 3—1993 includes the following major changes:

(a) Compressive bearing action on the edge of a web. (Clause 5.13.)

(b) Section capacity of members subject to combined actions. (Clause 8.3.)

(c) In-plane and out-of-plane capacity of compression members. (Clauses 8.4.2.2 and 8.4.41.)

(d) Strength assessment of a butt weld. (Clause 9.7.2.7.)

(e) Earthquake. (Section 13.)

Amendment No. 4 includes the following major changes:

(a) Strengths of steels complying with AS/NZS 3678, AS/NZS 3679.1 and AS/NZS 3679.2. (Table 2.1.)

(b) Minimum edge distance of fasteners. (Clause 9.6.2.)

(c) Permissible service temperatures according to steel type and thickness. (Table 10.4.1.)

(d) Steel type relationship to steel grade. (Table 10.4.4.)

(e) Welding of concentrically braced frames for structures of earthquake Design Category D and E. (Clause 13.3.4.2.)

A1 *Amendment No. 1—2012 to the 1998 edition* includes the following major changes:

(a) Revisions to AS/NZS 1163, AS/NZS 3678, AS/NZS 3679.1 and AS/NZS 3679.2 reflected by amendments to Sections 2 and 10.

(b) Revisions to AS/NZS 1554.1, AS/NZS 1554.4 and AS/NZS 1554.5 reflected by amendments to Sections 9 and 10.

(c) Section 13 brought into line with revisions to AS 1170.4.

(d) Quenched and tempered steels included by adding 'AS 3597' to listed material Standards in Section 2.

(e) Typographical errors corrected.

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 AND APPLICATION

1.1.1 Scope

This Standard sets out minimum requirements for the design, fabrication, erection, and modification of steelwork in structures in accordance with the limit states design method.

This Standard applies to buildings, structures and cranes constructed of steel.

A1 **'Text deleted'**

This Standard does not apply to the following structures and materials:

A1 (a) Steel elements less than 3 mm thick, with the exception of sections complying with AS/NZS 1163 and packers.

A1 (b) Steel members for which the value of the yield stress used in design (f_y) exceeds 690 MPa.

A1 (c) Cold-formed members, other than those complying with AS/NZS 1163, which shall be designed in accordance with AS/NZS 4600.

(d) Composite steel-concrete members, which shall be designed in accordance with AS 2327.

A1 (e) Road, railway and pedestrian bridges, which shall be designed in accordance with AS 5100.1, AS 5100.2 and AS 5100.6.

NOTE: The general principles of design, fabrication, erection, and modification embodied in this Standard may be applied to steel-framed structures or members not specifically mentioned herein.

A1 **1.1.2 'Text deleted'**

1.2 REFERENCED DOCUMENTS

The documents referred to in this Standard are listed in Appendix A.

1.3 DEFINITIONS

For the purpose of this Standard, the definitions below apply. Definitions peculiar to a particular Clause or Section are also given in that Clause or Section.

Action—the cause of stress or deformations in a structure.

Action effect or load effect—the internal force or bending moment due to actions or loads.

Authority—a body having statutory powers to control the design and erection of a structure.