AS 4100—1998

Australian Standard™

Steel structures

Building Code of Australia
primary referenced Standard

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STANDARDS AUSTRALIA

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The following interests are represented on Committee BD/1:

Association of Consulting Engineers Australia

Australian Construction Services

Australian Institute of Steel Construction

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Australian Standard™

Steel structures

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PREFACE

This Standard was prepared by the Standards Australia Committee BD/1, Steel Structures, to supersede AS 4100—1990.

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 97347. 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.)

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 intrgal 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.

This Standard is intended to apply also to roadway, railway, and pedestrian bridges. However, the requirements given in this Standard may not always be sufficient for bridge applications. In these circumstances, the specifications of the relevant Authority shall be used.

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

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

(b) Steel members for which the value of the yield stress used in design (f_y) exceeds 450 MPa.

(c) Cold-formed members, other than those complying with AS 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.

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.

1.1.2 Application This Standard will be referenced in the Building Code of Australia by way of BCA Amendment No. 3 to be published by 1 July 1998, thereby superseding the previous edition, AS 4100—1990, which will be withdrawn 12 months from the date of publication of this edition.

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.

Bearing-type connection—connection effected using either snug-tight bolts, or high-strength bolts tightened to induce a specified minimum bolt tension, in which the design action is transferred by shear in the bolts and bearing on the connected parts at the strength limit state.

Bearing-wall system—see AS 1170.4.

Braced frame—see AS 1170.4.

Braced member—one for which the transverse displacement of one end of the member relative to the other is effectively prevented.

Building frame system—see AS 1170.4.

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