AS 4100:2020
(Incorporating Amendment No. 1)

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Steel structures



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AS 4100:2020

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Preface

This Standard was prepared by the Standards Australia Committee BD-001, Steel Structures, to supersede AS 4100—1998.

This Standard incorporates Amendment No. 1 (September 2021). The start and end of changes introduced by the Amendment are indicated in the text by tags including the Amendment number 1.

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.

Major changes to the 1998 edition include the following:

(a) Reference to the "construction specification" (as the document containing the particular design data and details to be provided) as one deliverable from the design process. A definition of the construction specification consistent with that in AS/NZS 5131 has also been provided (Clauses 1.3.16 and 1.6.2).

(b) Introduction of the definition of "construction category" and an informative appendix providing guidance on selection of the appropriate construction category, both consistent with AS/NZS 5131 (Clauses 1.3.15 and 1.7.2, and Appendix L).

(c) Definition and description of "architecturally exposed structural steelwork" (AESS) (Clauses 1.3.3 and 1.7.3)

(d) Definition and treatment of "lamellar tearing" consistent with AS/NZS 1554.1 (Clauses 1.3.40 and 3.8, and Appendix M).

(e) Alignment with AS/NZS 5100.6:2017 (various clauses).

(f) Referencing of AS/NZS 5131:2016 for the majority of requirements in the fabrication and erection sections of this Standard (Sections 14 and 15).

(g) Alignment with AS/NZS 1252.1:2016, which includes introduction of an "alternative bolt assembly type" to EN 14399-3 System HR for grade 8.8 bolts and an "additional bolt assembly type" to EN 14399-3 System HR for grade 10.9 bolts. The Australian Steel Institute (ASI), Technical Note TN-001, *High strength structural bolt assemblies to AS/NZS 1252:2016,* provides background and basis for the revision to AS/NZS 1252:1996 (Clauses 9.1.6, 9.3, 15.2).

(h) New specification of geometrical tolerances for fabrication and erection aligned with AS/NZS 5131 (Clauses 14.4 and 15.3).

(i) New Appendix K "Statistical data", aligned with AS/NZS 5100.6.

(j) Inclusion of shear modulus G at elevated temperature in Clause 12.4.2 and a new Clause 12.4.3, Slenderness at elevated temperature

Table M.2, Criteria affecting the target value of Z_{Ed}, was adapted with permission from Table 3.2 of EN 1993-1-10. Copyright © 2005. CEN, Belgium. www.cen.eu

The terms "normative" and "informative" are used in Standards to define the application of the appendices 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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Steel structures

Section 1 Scope and general

1.1 Scope and exclusions

1.1.1 Scope

This Standard sets out minimum requirements for the design and the engineering aspects of fabrication and 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.

NOTE For design of box and longitudinally stiffened girders, refer to AS/NZS 5100.6.

1.1.2 Exclusions

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

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

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

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

(d) Composite steel-concrete members, which are designed in accordance with AS/NZS 2327.

(e) Road, railway and pedestrian bridges, which are designed in accordance with AS 5100.1, AS 5100.2 and AS/NZS 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.

1.2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document.

NOTE Documents for informative purposes are listed in the Bibliography.

AS 1101.3, *Graphical symbols for general engineering, Part 3: Welding and non-destructive examination*

AS 1110.1, *ISO metric hexagon bolts and screws—Product grades A and B, Part 1: Bolts*

AS 1110.2, *ISO metric hexagon bolts and screws—Product grades A and B, Part 2: Screws*

AS 1111.1, *ISO metric hexagon bolts and screws—Product grade C, Part 1: Bolts*

AS 1111.2, *ISO metric hexagon bolts and screws—Product grade C, Part 2: Screws*

AS 1112.1, *ISO metric hexagon nuts, Part 1: Style 1—Product grades A and B*

AS 1112.2, *ISO metric hexagon nuts, Part 2: Style 2—Product grades A and B*

AS 1112.3, *ISO metric hexagon nuts, Part 3: Product grade C*

AS 1112.4, *ISO metric hexagon nuts, Part 4: Chamfered thin nuts—Product grades A and B*

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