

Australian Standard<sup>®</sup>

**Steel structures**



This Australian Standard® was prepared by Committee BD-001, Steel Structures. It was approved on behalf of the Council of Standards Australia on 17 April 1998. This Standard was published on 5 June 1998.

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  - Australian Institute of Steel Construction
  - AUSTROADS
  - Building Management Authority, W.A.
  - Bureau of Steel Manufacturers of Australia
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- 

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Standards Australia wishes to acknowledge the participation of the expert individuals that contributed to the development of this Standard through their representation on the Committee and through the public comment period.

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AS 4100—1998  
(Incorporating Amendment No. 1 )

Australian Standard<sup>®</sup>

**Steel structures**

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 9034. 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.)

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*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.

## CONTENTS

	<i>Page</i>
SECTION 1 SCOPE AND GENERAL	
1.1 SCOPE AND APPLICATION.....	8
1.2 REFERENCED DOCUMENTS.....	8
1.3 DEFINITIONS.....	8
1.4 NOTATION.....	12
1.5 USE OF ALTERNATIVE MATERIALS OR METHODS .....	21
1.6 DESIGN .....	24
1.7 CONSTRUCTION.....	24
SECTION 2 MATERIALS	
2.1 YIELD STRESS AND TENSILE STRENGTH USED IN DESIGN.....	25
2.2 STRUCTURAL STEEL.....	25
2.3 FASTENERS .....	25
2.4 STEEL CASTINGS .....	27
SECTION 3 GENERAL DESIGN REQUIREMENTS	
3.1 DESIGN .....	30
3.2 LOADS AND OTHER ACTIONS.....	30
3.3 STABILITY LIMIT STATE.....	31
3.4 STRENGTH LIMIT STATE.....	31
3.5 SERVICEABILITY LIMIT STATE .....	32
3.6 STRENGTH AND SERVICEABILITY LIMIT STATES BY LOAD TESTING .....	33
3.7 BRITTLE FRACTURE.....	34
3.8 FATIGUE.....	34
3.9 FIRE .....	34
3.10 EARTHQUAKE .....	34
3.11 OTHER DESIGN REQUIREMENTS.....	34
SECTION 4 METHODS OF STRUCTURAL ANALYSIS	
4.1 METHODS OF DETERMINING ACTION EFFECTS .....	35
4.2 FORMS OF CONSTRUCTION ASSUMED FOR STRUCTURAL ANALYSIS .....	35
4.3 ASSUMPTIONS FOR ANALYSIS .....	36
4.4 ELASTIC ANALYSIS.....	37
4.5 PLASTIC ANALYSIS.....	42
4.6 MEMBER BUCKLING ANALYSIS.....	43
4.7 FRAME BUCKLING ANALYSIS .....	47
SECTION 5 MEMBERS SUBJECT TO BENDING	
5.1 DESIGN FOR BENDING MOMENT .....	49
5.2 SECTION MOMENT CAPACITY FOR BENDING ABOUT A PRINCIPAL AXIS.....	50
5.3 MEMBER CAPACITY OF SEGMENTS WITH FULL LATERAL RESTRAINT ...	52
5.4 RESTRAINTS .....	54
5.5 CRITICAL FLANGE.....	58
5.6 MEMBER CAPACITY OF SEGMENTS WITHOUT FULL LATERAL RESTRAINT .....	58
5.7 BENDING IN A NON-PRINCIPAL PLANE .....	65
5.8 SEPARATORS AND DIAPHRAGMS .....	65
5.9 DESIGN OF WEBS.....	66

	<i>Page</i>
5.10 ARRANGEMENT OF WEBS .....	66
5.11 SHEAR CAPACITY OF WEBS .....	68
5.12 INTERACTION OF SHEAR AND BENDING .....	71
5.13 COMPRESSIVE BEARING ACTION ON THE EDGE OF A WEB .....	72
5.14 DESIGN OF LOAD BEARING STIFFENERS .....	77
5.15 DESIGN OF INTERMEDIATE TRANSVERSE WEB STIFFENERS.....	78
5.16 DESIGN OF LONGITUDINAL WEB STIFFENERS .....	80
<b>SECTION 6 MEMBERS SUBJECT TO AXIAL COMPRESSION</b>	
6.1 DESIGN FOR AXIAL COMPRESSION .....	81
6.2 NOMINAL SECTION CAPACITY .....	81
6.3 NOMINAL MEMBER CAPACITY .....	83
6.4 LACED AND BATTENED COMPRESSION MEMBERS .....	87
6.5 COMPRESSION MEMBERS BACK TO BACK .....	90
6.6 RESTRAINTS .....	91
<b>SECTION 7 MEMBERS SUBJECT TO AXIAL TENSION</b>	
7.1 DESIGN FOR AXIAL TENSION .....	93
7.2 NOMINAL SECTION CAPACITY .....	93
7.3 DISTRIBUTION OF FORCES .....	93
7.4 TENSION MEMBERS WITH TWO OR MORE MAIN COMPONENTS .....	94
7.5 MEMBERS WITH PIN CONNECTIONS .....	96
<b>SECTION 8 MEMBERS SUBJECT TO COMBINED ACTIONS</b>	
8.1 GENERAL.....	97
8.2 DESIGN ACTIONS.....	97
8.3 SECTION CAPACITY .....	98
8.4 MEMBER CAPACITY.....	99
<b>SECTION 9 CONNECTIONS</b>	
9.1 GENERAL.....	107
9.2 DEFINITIONS.....	111
9.3 DESIGN OF BOLTS .....	112
9.4 ASSESSMENT OF THE STRENGTH OF A BOLT GROUP .....	115
9.5 DESIGN OF A PIN CONNECTION .....	116
9.6 DESIGN DETAILS FOR BOLTS AND PINS.....	117
9.7 DESIGN OF WELDS .....	118
9.8 ASSESSMENT OF THE STRENGTH OF A WELD GROUP .....	130
9.9 PACKING IN CONSTRUCTION .....	131
<b>SECTION 10 BRITTLE FRACTURE</b>	
10.1 METHODS .....	132
10.2 NOTCH-DUCTILE RANGE METHOD.....	132
10.3 DESIGN SERVICE TEMPERATURE .....	132
10.4 MATERIAL SELECTION.....	133
10.5 FRACTURE ASSESSMENT.....	137
<b>SECTION 11 FATIGUE</b>	
11.1 GENERAL.....	138
11.2 FATIGUE LOADING .....	141
11.3 DESIGN SPECTRUM .....	141
11.4 EXEMPTION FROM ASSESSMENT .....	142
11.5 DETAIL CATEGORY.....	142

	<i>Page</i>
11.6 FATIGUE STRENGTH.....	154
11.7 EXEMPTION FROM FURTHER ASSESSMENT .....	155
11.8 FATIGUE ASSESSMENT .....	156
11.9 PUNCHING LIMITATION.....	156
<b>SECTION 12 FIRE</b>	
12.1 REQUIREMENTS.....	157
12.2 DEFINITIONS.....	157
12.3 DETERMINATION OF PERIOD OF STRUCTURAL ADEQUACY.....	158
12.4 VARIATION OF MECHANICAL PROPERTIES OF STEEL WITH TEMPERATURE .....	158
12.5 DETERMINATION OF LIMITING STEEL TEMPERATURE .....	159
12.6 DETERMINATION OF TIME AT WHICH LIMITING TEMPERATURE IS ATTAINED FOR PROTECTED MEMBERS .....	159
12.7 DETERMINATION OF TIME AT WHICH LIMITING TEMPERATURE IS ATTAINED FOR UNPROTECTED MEMBERS.....	161
12.8 DETERMINATION OF PSA FROM A SINGLE TEST .....	162
12.9 THREE-SIDED FIRE EXPOSURE CONDITION.....	162
12.10 SPECIAL CONSIDERATIONS .....	163
<b>SECTION 13 EARTHQUAKE</b>	
13.1 GENERAL.....	165
13.2 DEFINITIONS.....	165
13.3 DESIGN AND DETAILING REQUIREMENTS .....	165
<b>SECTION 14 FABRICATION</b>	
14.1 GENERAL.....	168
14.2 MATERIAL.....	168
14.3 FABRICATION PROCEDURES .....	168
14.4 TOLERANCES.....	172
<b>SECTION 15 ERECTION</b>	
15.1 GENERAL.....	177
15.2 ERECTION PROCEDURES .....	177
15.3 TOLERANCES.....	181
15.4 INSPECTION OF BOLTED CONNECTIONS.....	185
15.5 GROUTING AT SUPPORTS .....	185
<b>SECTION 16 MODIFICATION OF EXISTING STRUCTURES</b>	
16.1 GENERAL.....	186
16.2 MATERIALS.....	186
16.3 CLEANING.....	186
16.4 SPECIAL PROVISIONS .....	186
<b>SECTION 17 TESTING OF STRUCTURES OR ELEMENTS</b>	
17.1 GENERAL.....	187
17.2 DEFINITIONS.....	187
17.3 TEST REQUIREMENTS.....	187
17.4 PROOF TESTING .....	187
17.5 PROTOTYPE TESTING .....	188
17.6 REPORT OF TESTS .....	189

*Page*

## APPENDICES

A	REFERENCED DOCUMENTS.....	190
B	SUGGESTED DEFLECTION LIMITS .....	193
C	CORROSION PROTECTION .....	195
D	ADVANCED STRUCTURAL ANALYSIS .....	197
E	SECOND ORDER ELASTIC ANALYSIS .....	198
F	MOMENT AMPLIFICATION FOR A SWAY MEMBER.....	199
G	BRACED MEMBER BUCKLING IN FRAMES.....	200
H	ELASTIC RESISTANCE TO LATERAL BUCKLING .....	202
I	STRENGTH OF STIFFENED WEB PANELS UNDER COMBINED ACTIONS .....	203
J	STANDARD TEST FOR EVALUATION OF SLIP FACTOR .....	210
K	INSPECTION OF BOLT TENSION USING A TORQUE WRENCH .....	215

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## STANDARDS AUSTRALIA

**Australian Standard**  
**Steel structures**

## 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.