

AS 4100 Supp1—1999

AS 4100 Supplement 1—1999

---

**Steel structures—Commentary**  
**(Supplement to AS 4100—1998)**

---

This Australian Standard was prepared by Committee BD/1, Steel Structures. It was approved on behalf of the Council of Standards Australia on 23 October 1998 and published on 5 March 1999.

---

The following interests are represented on Committee BD/1:

Association of Consulting Engineers Australia  
Australasian Railway Association  
Australian Building Codes Board  
Australian Chamber of Commerce and Industry  
Australian Industry Group  
Australian Institute of Steel Construction  
AUSTROADS  
Bureau of Steel Manufacturers of Australia  
CSIRO, Division of Building, Construction and Engineering  
Institution of Engineers Australia  
Metal Building Products Manufacturers Association  
New Zealand Heavy Engineering Research Association  
University of New South Wales  
University of Queensland  
University of Sydney  
Welding Technology Institute of Australia

---

**Review of Australian Standards.** *To keep abreast of progress in industry, Australian Standards are subject to periodic review and are kept up to date by the issue of amendments or new editions as necessary. It is important therefore that Standards users ensure that they are in possession of the latest edition, and any amendments thereto.*

*Full details of all Australian Standards and related publications will be found in the Standards Australia Catalogue of Publications; this information is supplemented each month by the magazine 'The Australian Standard', which subscribing members receive, and which gives details of new publications, new editions and amendments, and of withdrawn Standards.*

*Suggestions for improvements to Australian Standards, addressed to the head office of Standards Australia, are welcomed. Notification of any inaccuracy or ambiguity found in an Australian Standard should be made without delay in order that the matter may be investigated and appropriate action taken.*

AS 4100 Supp1—1999

# AS 4100 Supplement 1—1999

---

**Steel structures**

**(Supplement to AS 4100— 1998)**

---

First published as AS 4100 Supp1—1990.  
Second edition 1999.

## PREFACE

This Commentary is intended to be read in conjunction with AS 4100—1998, *Steel structures*.

The objective of this edition of the Commentary is to align it with the revised edition of AS 4100 which was published in 1998, and to provide users with—

- (a) background reference material to AS 4100—1998;
- (b) the origins of particular requirements;
- (c) explanation to the application of certain clauses; and
- (d) guidance in the use of AS 4100—1998.

In this Commentary, AS 4100—1998 is referred to as ‘the Standard’.

The clause numbers and titles used in this Commentary are the same as those in AS 4100—1998 except that the clause numbers are prefixed by the letter ‘C’, e.g. C7.2. To avoid possible confusion between Commentary and Standard clauses, a Commentary Clause is referred to as ‘Clause C . . .’ in accordance with Standards Australia policy.

---

## ACKNOWLEDGEMENTS

The authors of this Commentary wish to acknowledge and thank all members of Standards Australia Committee BD/1, Steel Structures, and its Subcommittees whose discussions and suggestions contributed significantly to this Commentary.

The authors would also like to thank the following organizations for making it possible for them to contribute to this Commentary:

Australian Institute of Steel Construction  
BHP Melbourne Research Laboratories  
CSIRO, Division of Building, Construction and Engineering  
SCP Consulting Pty Ltd  
University of New South Wales  
University of Sydney  
University of Western Sydney

The authors are grateful for the facilities, services and assistance provided by Standards Australia and in particular to Mr E. Go, Projects Manager, Committee BD/1.

## CONTENTS

<b>SECTION C1 SCOPE AND GENERAL</b>	
C1.1 SCOPE.....	7
C1.2 REFERENCED DOCUMENTS.....	8
C1.3 DEFINITIONS.....	8
C1.4 NOTATION.....	8
C1.5 USE OF ALTERNATIVE MATERIALS OR METHODS.....	8
C1.6 DESIGN.....	8
C1.7 CONSTRUCTION.....	8
<b>SECTION C2 MATERIALS</b>	
C2.1 YIELD STRESS AND TENSILE STRENGTH USED IN DESIGN.....	9
C2.2 STRUCTURAL STEEL.....	9
C2.3 FASTENERS.....	9
C2.4 STEEL CASTINGS.....	9
<b>SECTION C3 GENERAL DESIGN REQUIREMENTS</b>	
C3.1 DESIGN.....	11
C3.2 LOADS AND OTHER ACTIONS.....	11
C3.3 STABILITY LIMIT STATE.....	12
C3.4 STRENGTH LIMIT STATE.....	12
C3.5 SERVICEABILITY LIMIT STATE.....	13
<b>SECTION C4 METHODS OF STRUCTURAL ANALYSIS</b>	
C4.1 METHODS OF DETERMINING ACTION EFFECTS.....	17
C4.2 FORMS OF CONSTRUCTION ASSUMED FOR STRUCTURAL ANALYSIS ...	18
C4.3 ASSUMPTIONS FOR ANALYSIS.....	19
C4.4 ELASTIC ANALYSIS.....	20
C4.5 PLASTIC ANALYSIS.....	23
C4.6 MEMBER BUCKLING ANALYSIS.....	23
C4.7 FRAME BUCKLING ANALYSIS.....	25
<b>SECTION C5 MEMBERS SUBJECT TO BENDING</b>	
C5.1 DESIGN FOR BENDING MOMENT.....	28
C5.2 SECTION MOMENT CAPACITY FOR BENDING ABOUT A PRINCIPAL AXIS.....	29
C5.3 MEMBER CAPACITY OF SEGMENTS WITH FULL LATERAL RESTRAINT.....	32
C5.4 RESTRAINTS.....	34
C5.5 CRITICAL FLANGE.....	36
C5.6 MEMBER CAPACITY OF SEGMENTS WITHOUT FULL LATERAL RESTRAINT.....	36
C5.7 BENDING IN A NON-PRINCIPAL PLANE.....	41
C5.8 SEPARATORS AND DIAPHRAGMS.....	41
C5.9 DESIGN OF WEBS.....	41
C5.10 ARRANGEMENT OF WEBS.....	42

This is a free preview. Purchase the entire publication at the link below:

[Product Page](#)

- 
- [Looking for additional Standards? Visit Intertek Inform Infostore](#)
  - [Learn about LexConnect, All Jurisdictions, Standards referenced in Australian legislation](#)
-