AS 1170.4—2007
(Incorporating Amendment Nos 1 and 2)
Reconfirmed 2018

Australian STANDARD

Structural design actions

Part 4: Earthquake actions in Australia

STANDARDS Australia

This Australian Standard® was prepared by Committee BD-006, General Design Requirements and Loading on Structures. It was approved on behalf of the Council of Standards Australia on 22 May 2007.
This Standard was published on 9 October 2007.

The following are represented on Committee BD-006:

- Association of Consulting Engineers Australia
- Australian Building Codes Board
- Australian Steel Institute
- Cement Concrete and Aggregates Australia
- Concrete Masonry Association of Australia
- Department of Building and Housing (New Zealand)
- Engineers Australia
- Housing Industry Association
- Institution of Professional Engineers New Zealand
- James Cook University
- Master Builders Australia
- New Zealand Heavy Engineering Research Association
- Property Council of Australia
- Steel Reinforcement Institute of Australia
- Swinburne University of Technology
- Timber Development Association (NSW)
- University of Canterbury New Zealand
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Additional Interests:

- Australian Defence Force Academy
- Australia Earthquake Engineering Society
- Australian Seismological Centre
- Building Research Association of New Zealand
- Environmental Systems and Services
- Geoscience Australia
- Institute of Geological and Nuclear Science
- New Zealand National Society for Earthquake Engineering
- Primary Industries and Resources South Australia
- Seismology Research Centre, Australia
- University of Adelaide

This Standard was issued in draft form for comment as DR 04303.

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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STANDARDS AUSTRALIA

RECONFIRMATION

OF
AS 1170.4—2007
Structural design actions
Part 4: Earthquake actions in Australia

RECONFIRMATION NOTICE

Technical Committee BD-006 has reviewed the content of this publication and in accordance with Standards Australia procedures for reconfirmation, it has been determined that the publication is still valid and does not require change.

Certain documents referenced in the publication may have been amended since the original date of publication. Users are advised to ensure that they are using the latest versions of such documents as appropriate, unless advised otherwise in this Reconfirmation Notice.

Approved for reconfirmation in accordance with Standards Australia procedures for reconfirmation on 22 February 2018.

The following are represented on Technical Committee BD-006:

Australasian Wind Engineering Society
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Australian Steel Institute
Bureau of Steel Manufacturers of Australia
Cement Concrete & Aggregates Australia – Cement
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James Cook University
New Zealand Heavy Engineering Research Association
Property Council of Australia
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NOTES

AS 1170.4—2007
(Incorporating Amendment Nos 1 and 2)

Australian Standard®

Structural design actions

Part 4: Earthquake actions in Australia

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PREFACE

A2 This Standard was prepared by the Australian members of Joint Standards Australia/Standards New Zealand Committee BD-006, General Design Requirements and Loading on Structures, to supersede AS 1170.4—1993, *Minimum design loads on structures*, Part 4: *Earthquake loads*.

This Standard incorporates Amendment No. 1 (August 2015) and Amendment No. 2 (February 2018). The changes required by the Amendments are indicated in the text by a marginal bar and amendment number against the clause, note, table, figure or part thereof affected.

After consultation with stakeholders in both countries, Standards Australia and Standards New Zealand decided to develop this Standard as an Australian Standard rather than an Australian/New Zealand Standard.

The objective of this Standard is to provide designers of structures with earthquake actions and general detailing requirements for use in the design of structures subject to earthquakes.

This Standard is Part 4 of the 1170 series *Structural design actions*, which comprises the following parts. Parts 0, 1 and 5 have a commentary document published as a Supplement:

AS/NZS
1170 Structural design actions
1170.0 Part 0: General principles
1170.1 Part 1: Permanent, imposed and other actions
1170.2 Part 2: Wind actions
1170.3 Part 3: Snow and ice actions

AS
1170.4 Part 4: Earthquake actions in Australia (this Standard)

NZS
1170.5 Part 5: Earthquake actions—New Zealand

Amendment No. 2 introduces the following changes to AS 1170.4—2007:

(a) Minor editorial and correction amendments.

(b) Introduction of minimum hazard design factor 0.08.

(c) The hazard maps in Figures 3.2(A) to 3.2(G) have been updated to reflect the new minimum hazard design factor of 0.08.

The Standard has been drafted to be applicable to the design of structures constructed of any material or combination thereof. Designers will need to refer to the appropriate material Standard(s) on detailing requirements additional to those contained in this Standard.

This Standard is not equivalent to ISO 3010:2001, *Basis for design of structures—Seismic actions on structures*, but is based on equivalent principles. ISO 3010 gives guidance on a general format and on detail for the drafting of national Standards on seismic actions. The principles of ISO 3010 have been adopted, including some of the detail, with modifications for the low seismicity in Australia. The most significant points are as follows:

(i) ISO 3010 is drafted as a guide for committees preparing Standards on seismic actions.

(ii) Method and notation for presenting the mapped earthquake hazard data has not been adopted.

(iii) Some notation and definitions have not been adopted.

(iv) Details of the equivalent static method have been aligned.

(v) Principles of the dynamic method have been aligned.

A2 The term ‘normative’ has been used in this Standard to define the application of the appendix to which it applies. A ‘normative’ appendix is an integral part of a Standard.

Notes to the text contain information and guidance. They are not an integral part of the Standard.

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SECTION 1 SCOPE AND GENERAL

1.1 SCOPE

This Standard sets out procedures for determining earthquake actions and detailing requirements for structures and components to be used in the design of structures. It also includes requirements for domestic structures.

Importance level 1 structures are not required to be designed for earthquake actions.

The following structures are outside the scope of this Standard:

(a) High-risk structures.

(b) Bridges.

(c) Tanks containing liquids.

(d) Civil structures including dams and bunds.

(e) Offshore structures that are partly or fully immersed.

(f) Soil-retaining structures.

(g) Structures with first mode periods greater than 5 s.

A2 (h) Transmission line towers.

This Standard does not consider the effect on a structure of related earthquake phenomena such as settlement, slides, subsidence, liquefaction or faulting.

NOTES:

1 For structures in New Zealand, see NZS 1170.5.

2 For earth-retaining structures, see AS 4678.

A2 3 For bridges and related structures, see AS 5100.2.

1.2 NORMATIVE REFERENCES

The following referenced documents are indispensable to the application of this Standard.

A1 NOTE: Documents referenced for informative purposes are listed in the Bibliography.

AS

1684 Residential timber-framed construction (all parts)

1720 Timber structures

1720.1 Part 1: Design methods

3600 Concrete structures

3700 Masonry structures

4100 Steel structures

