

AS/NZS 1170.1 Supplement 1:2002

Structural design actions—Permanent, imposed and other actions— Commentary (Supplement to AS/NZS 1170.1:2002)



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AS/NZS 1170.1 Supp 1:2002

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(Supplement to AS/NZS 1170.1:2002)

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NOTES

AS/NZS 1170.1 Supplement 1:2002

Structural design actions—Permanent, imposed and other actions— Commentary (Supplement to AS/NZS 1170.1:2002)

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PREFACE

This Commentary was prepared by the Joint Standards Australia/Standards New Zealand Committee BD-006, General Design Requirements and Loading on Structures, as a Supplement to AS/NZS 1170.1, *Structural design actions*, Part 1: *Permanent, imposed and other actions*. This Commentary supersedes in part AS 1170.1—1989, *Minimum design loads on structures*, Part 1: *Dead and live loads and load combinations* and in part NZS 4203:1992, *Code of practice for general structural design and design loadings for buildings* (Vol. 2).

The Commentary provides background material and guidance to the requirements of the Standard.

The clause numbers of this Commentary are prefixed by the letter 'C' to distinguish them from references to the Standard clauses to which they directly relate. Where a commentary to certain Clauses is non-existent, it is because no explanation of the Clause is necessary.

ACKNOWLEDGEMENT

Standards Australia wishes to acknowledge and thank the following member who has contributed significantly to this Commentary:

Peter Kleeman

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Australian/New Zealand Standard**Structural design actions—Permanent, imposed and other actions—
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SECTION C 1 SCOPE AND GENERAL

C1.1 SCOPE

This Commentary is intended to be read in conjunction with AS/NZS 1170.1:2002. The commentary includes explanations of the provisions and in some cases suggests approaches that may satisfy the intent of the Standard. Commentary Clauses are not mandatory. Lists of references are also given for further reading.

Construction actions are now specifically covered in AS/NZS 1170.0. Some comment on construction activity is given under Clause C3.1.

C1.2 APPLICATION**C1.3 DETERMINATION OF DESIGN ACTIONS**

This Clause reflects the philosophy outlined in AS/NZS 1170.0 that design should be verified using appropriate loads.

C1.4 REFERENCED DOCUMENTS

The following documents are referred to in this Commentary:

AS

- 2156 Walking tracks
- 2156.1 Part 1: Classification and signage
- 2156.2 Part 2: Infrastructure design
- 2867 Farm structures—General requirements for structural design
- 3610 Formwork for concrete
- 4678 Earth retaining structures

AS/NZS

- 1170 Structural design actions
- 1170.0 Part 0: General principles
- 1576 Scaffolding
- 1576.1 Part 1: General requirements

NZS

- 4203 Code of practice for general structural design and design loadings for buildings (Volume 1, Code of practice; Volume 2, Commentary)

BS

- 6399 Loads for buildings
- 6399.1 Part 1: Code of practice for dead and imposed loads

EN

- 1991 Basis of design and actions on structures (Eurocode 1)
- 1991-2-1 Part 2.1: Actions on structures—Densities, self-weight and imposed loads

ANSI/ASCE

7-95 Minimum Design Loads for Buildings and Other Structures

ISO

2394 General principles on reliability for structures

9194 Bases for design of structures—Actions due to self-weight of structures, non-structural elements and stored materials—Density

10137 Bases for designs of structures—Serviceability of buildings against vibration

BRANZ

Bulletin 227 Weights and measures of building materials

C1.5 DEFINITIONS

Definitions have been drawn from ISO 2394, where appropriate.

C1.6 NOTATION

Notation follows the guidelines laid out in ISO 3898.

The notation used in this Commentary is as given in AS/NZS 1170.1, together with the following:

F = impact or braking force, in newtons

h = height of handrail, in millimetres

l = length between handrail supports (verticals), in millimetres

m = gross mass of the vehicles, in kilograms

s = mean of the lengths of the adjoining spans of a slab supported by walls, in metres

V = velocity of the vehicles, in metres per second

Δ = deceleration length, in metres

S E C T I O N C 2 P E R M A N E N T A C T I O N

C2.1 GENERAL

The variation in magnitude of the action with time is intended to cover loads where for most of the time the load will remain constant. For example, a tank intended to be kept full with suitable overflow control may be considered a permanent action. Of course the case should also be considered where the tank is emptied in the short term for maintenance.

The permanent equipment may include some machinery items if it is envisaged that the service life of the machinery is of the same order as the design working life of the structure.

C2.2 SELF-WEIGHT

The self-weight values given in this Commentary in Appendix CA are mean values. Unit weights of some materials are given as follows:

- (a) For international purposes in Tables CA2(A), CA2(B), and CA2(C) (ISO 9194).
- (b) For Australian conditions in Table CA1.
- (c) For New Zealand conditions, 'Weights and measures of building materials' may be used (BRANZ Bulletin 227).

C2.3 PROVISION FOR PARTITIONS

Movable partitions are included as permanent actions, to ensure that their mass is considered in an earthquake situation. The minimum value of 0.5 kPa is sufficient to provide for most partitions fabricated from studs supporting glass, plywood and plasterboard.

C2.4 REMOVABLE LOADS

Tanks and other receptacles and their contents, service equipment, and the like, are considered as permanent action due to their small variability for the application of a load factor but should not be relied on for resisting overturning or wind uplift.