

Australian Standard™

**General principles on reliability for
structures**

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Cement and Concrete Association of Australia
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CSIRO, Building, Construction and Engineering
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PREFACE

This Standard was prepared by the Standards Australia Committee BD-006, General Design Requirements and Loading on Structures.

This Standard is identical with and has been reproduced from ISO 2394:1998, *General principles on reliability for structures*.

The objective of this Standard is to provide writers of Standards and designers of structures with reliability principles for design of structures.

ISO 2394 has been adopted in order to provide information on the background of the Australian Standards on structural design. It provides useful guidance on the basic approach to structural design for safety. Guidance is also provided for control of design and construction processes.

As this Standard is reproduced from an International Standard, the following applies.

- (a) Its number does not appear on each page of text and its identity is shown only on the cover and title page.
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CONTENTS

Page

1	Scope	1
2	Definitions	2
3	Symbols	5
4	Requirements and concepts	6
	4.1 Fundamental requirements	6
	4.2 Reliability differentiation of structures	7
	4.3 Structural design	8
	4.4 Compliance	9
	4.5 Durability and maintenance	10
5	Principles of limit states design	11
	5.1 Limit states	11
	5.2 Design	12
6	Basic variables	13
	6.1 General	13
	6.2 Actions	14
	6.3 Environmental influences	15
	6.4 Properties of materials	16
	6.5 Geometrical quantities	16
7	Models	16
	7.1 General	16
	7.2 Types of models	17
	7.3 Model uncertainties	20
	7.4 Design based on experimental models	21

8	Principles of probability-based design	21
8.1	General.....	21
8.2	Systems reliability versus element reliability	22
8.3	Specified degrees of required reliability	23
8.4	Calculation of failure probabilities.....	23
8.5	Implementation of probability-based design	24
9	Partial factors format	24
9.1	Design conditions and design values	24
9.2	Representative values of actions.....	26
9.3	Characteristic values of properties of materials including soils	26
9.4	Characteristic values of geometrical quantities.....	27
9.5	Load cases and load combinations	27
9.6	Action effects and resistance	27
9.7	Verification for fatigue.....	28
9.8	Calibration	28
10	Assessment of existing structures	28
10.1	Relevant cases	28
10.2	Principles of assessment.....	28
10.3	Basic variables.....	29
10.4	Investigation.....	29
10.5	Assessment in the case of damage.....	30
	Annex A: Quality management and quality assurance.....	31
	Annex B: Examples of permanent, variable and accidental actions	35
	Annex C: Models for fatigue	37
	Annex D: Design based on experimental models.....	40
	Annex E: Principles of reliability-based design.....	50
	Annex F: Combination of actions and estimation of action values	62
	Annex G: Example of a method of combination of actions.....	71
	Annex H: Index of definitions	73

INTRODUCTION

This International Standard constitutes a common basis for defining design rules relevant to the construction and use of the wide majority of buildings and civil engineering works, whatever the nature or combination of the materials used. However, their application to each type of material (concrete, steel, timber, masonry, etc.) will require specific adaptation to ensure a degree of reliability which, as far as possible, is consistent with the objectives of the code drafting committees for each material.

This International Standard is intended to serve as a basis for those committees responsible for the task of preparing national standards or codes of practice in accordance with the technical and economic conditions in a particular country, and which take into account the nature, type and conditions of use of the structure and the properties of the materials during its design working life. It will also provide a common basis for other International Standards (e.g. ENV 1991-1 EC1) dealing with load bearing structures. Thus it has a conceptual character and it is of a fairly general nature.

It is important to recognize that structural reliability is an overall concept comprising models for describing actions, design rules, reliability elements, structural response and resistance, workmanship, quality control procedures and national requirements, all of which are mutually dependent.

The modification of one factor in isolation could therefore disturb the balance of reliability inherent in the overall concept.

It is therefore important that the modification of any one factor should be accompanied by a study of the implications relating to the overall reliability concept.

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AUSTRALIAN STANDARD

General principles on reliability for structures

1 Scope

This International Standard specifies general principles for the verification of the reliability of structures subjected to known or foreseeable types of action. Reliability is considered in relation to the performance of the structure throughout its design working life.

The general principles are applicable to the design of complete structures (buildings, bridges, industrial structures, etc.), the structural elements making up the structure and the foundations.

This International Standard is also applicable to the successive stages in construction, namely the fabrication of structural elements, the transport and handling of the structural elements, their erection and all work on site, as well as the use of the structure during its design working life, including maintenance and repair.

To allow for the differences in design practice between different countries, the national standards or codes of practice may be simpler or more detailed in comparison with this International Standard.

Generally the principles are also applicable to the structural appraisal of existing constructions or assessing changes of use. However in some respects this is associated with special aspects of the basic variables and calculation models. Such aspects are considered in clause 10.

NOTE — When this International Standard is applied in a particular country for the development of its standards, it is admissible not to use those clauses which are not in accordance with the regulations of that particular country.

2 Definitions

For the purposes of this International Standard, the following definitions apply.

NOTE — An alphabetical index of the definitions is given in annex H.

2.1 General terms

2.1.1 structure: Organized combination of connected parts designed to provide some measure of rigidity.

2.1.2 structural element: Physically distinguishable part of a structure.

EXAMPLES: Column, beam, plate.

2.1.3 structural system: Load-bearing elements of a building or civil engineering works and the way in which these elements function together.

2.1.4 compliance: Fulfilment of specified requirements.