AS ISO 13822—2005

Australian Standard™

Basis for design of structures — Assessment of existing structures (ISO 13822:2001, MOD)

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 3 March 2005.
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Australian Steel Institute
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Basis for design of structures — Assessment of existing structures (ISO 13822:2001, MOD)

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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 has been adopted with national modifications and has been reproduced from ISO 13822:2001, *Bases for design of structures—Assessment of existing structures*. The national modifications link the use of this Standard to the structural design Standards required for use in Australia.

This Standard provides owners, maintainers and designers of structures with general guidance on assessment of existing structures for safety and serviceability to facilitate structural design of additions or alterations to, changes of use of, or maintenance of such structures. It is intended to be used as further background to the AS/NZS 1170 series of Standards. It is not expected to be referred to by any regulations.

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.

(b) In the source text 'this International Standard' should read 'this Australian Standard'.

(c) A full point should be substituted for a comma when referring to a decimal marker.

References to International Standards should be replaced by references to equivalent Australian Standards as follows:

Reference to International Standard		*Australian Standard*	
ISO		AS	
2394	General principles on reliability for structures	5104	General principles on reliability for structures

The national modifications to the text, as reproduced from ISO 13822, are given in annex ZA and the clauses to be modified are marked with margin bars.

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INTRODUCTION

The continued use of existing structures is of great importance because the built environment is a huge economic and political asset, growing larger every year. The assessment of existing structures is now a major engineering task. The structural engineer is increasingly called upon to devise ways for extending the life of structures whilst observing tight cost constraints. The establishment of principles for the assessment of existing structures is needed because it is based on an approach that is substantially different from the design of new structures, and requires knowledge beyond the scope of design codes. This document is intended not only as a standard of principles and procedures for the assessment of existing structures but also as a guide for use by structural engineers and clients. Engineers can apply specific methods for assessment in order to save structures and to reduce a client's expenditure. The ultimate goal is to limit construction intervention to a strict minimum, a goal that is clearly in agreement with the principles of sustainable development.

The basis for the reliability assessment is contained in the performance requirements for safety and serviceability of ISO 2394. Economic, social, and sustainability considerations, however, result in a greater differentiation in structural reliability for the assessment of existing structures than for the design of new structures

NOTES

AUSTRALIAN STANDARD

Basis for design of structures—Assessment of existing structures (ISO 13822:2001, MOD)

1 Scope

1.1 This International Standard provides general requirements and procedures for the assessment of existing structures (buildings, bridges, industrial structures, etc.) based on the principles of structural reliability and consequences of failure. It is based on ISO 2394.

1.2 It is applicable to the assessment of any type of existing structure that was originally designed, analysed and specified based on accepted engineering principles and/or design rules, as well as structures constructed on the basis of good workmanship, historic experience and accepted professional practice. The assessment can be initiated under the following circumstances:

— an anticipated change in use or extension of design working life;

— a reliability check (e.g. for earthquakes, increased traffic actions) as required by authorities, insurance companies, owners, etc.;

— structural deterioration due to time-dependent actions (e.g. corrosion, fatigue);

— structural damage by accidental actions (see ISO 2394).

NOTE 1 This International Standard is applicable to historical structures, provided additional considerations are taken into account concerning the preservation of the historical appearance of the structure and the preservation of its historical materials.

1.3 This International Standard is applicable to existing structures of any material, although specific adaptation can be required depending on the type of material, such as concrete, steel, timber, masonry, etc.

1.4 This International Standard provides principles regarding actions and environmental influences. Further detailed consideration will be necessary for accidental actions such as fire and earthquake.

NOTE 2 Fire resistance requires properties different from those for structural safety and integrity. Also fire hazards can be created by change in use. Special requirements are necessary for seismic hazards, taking the dynamic action and structural response into account.

1.5 This International Standard is intended to serve as a basis for preparing national standards or codes of practice in accordance with current engineering practice and the economic conditions.

2 Normative reference

The following normative document contains provisions which, through reference in this text, constitute provisions of this International Standard. For dated references, subsequent amendments to, or revisions of, any of these publications do not apply. However, parties to agreements based on this International Standard are encouraged to investigate the possibility of applying the most recent edition of the normative document indicated below. For undated references, the latest edition of the normative document referred to applies. Members of ISO and IEC maintain registers of currently valid International Standards.

ISO 2394:1998, *General principles on reliability for structures*