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Maintenance and repair of concrete structures —

Part 2: Assessment of existing concrete structures

Entretien et réparation des structures en béton —
Partie 2: Évaluation des structures en béton existantes

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ISO copyright office
CP 401 • Ch. de Blandonnet 8
CH-1214 Vernier, Geneva
Phone: +41 22 749 01 11
Email: copyright@iso.org
Website: www.iso.org

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Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular, the different approval criteria needed for the different types of ISO document should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

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For an explanation of the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT), see www.iso.org/iso/foreword.html.

This document was prepared by Technical Committee ISO/TC 71, *Concrete, reinforced concrete and pre-stressed concrete*, Subcommittee SC 7, *Maintenance and repair of concrete structures*.

This second edition cancels and replaces the first edition (ISO 16311-2:2014) which has been technically revised.

The main changes are as follows:

— prediction has been added as Clause 7;

— some terms and definitions have been revised;

— some figures have been revised.

A list of all parts in the ISO 16311 series can be found on the ISO website.

Any feedback or questions on this document should be directed to the user’s national standards body. A complete listing of these bodies can be found at www.iso.org/members.html.

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Introduction

Assessment of an existing concrete structure identifies and defines areas of distress, and verifies structural performance based on the evaluated condition of the structure. It includes the whole process from defining the work through the investigation, evaluation, verification, prediction, and registration to the final report. This is necessary as a basis for the design of the repair and the preparation of procedures to preserve or extend its remaining service life.

The report, concluding the assessment, includes a description of the structure, the investigation, the results of condition assessment, the verified structural performance, the expected future development and a short presentation of possible repair principles and methods, including appropriate cost calculations. A detailed planning and design of the repair work (repair or rehabilitation project specification) is not part of the assessment, see ISO 16311-3.

This document gives the requirements for assessment of concrete structures, including a framework for the assessment, a format for documentation of the condition assessment with assessed condition level and consequence level, and a format for documentation of the performance assessment with verified specific structural performance.

This document is primarily based on the principles given in ISO 13822. ISO 13822:2010, Annex B has a detailed flowchart, included as Figure 1 in this document.

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Maintenance and repair of concrete structures —

Part 2:
Assessment of existing concrete structures

1 Scope

This document describes general requirements and procedures for the assessment of concrete structures.

The assessment can be initiated under the following circumstances, but not limited to:

a) an anticipated change in use or extension of design service life;

b) structural deterioration due to time-dependent actions such as corrosion of reinforcement, fatigue, etc.;

c) safety and/or serviceability check (e.g. for earthquake and increased traffic actions) as required by authorities, insurance companies, owners, etc.;

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

This document does not cover

— qualification of personnel;

— contractual matters;

— health and safety requirements for the protection of workers during the investigation and testing.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 2394, *General principles on reliability for structures*

ISO 13822:2010, *Bases for design of structures — Assessment of existing structures*

ISO 16311-1, *Maintenance and repair of concrete structures — Part 1: General principles*

ISO 16311-3, *Maintenance and repair of concrete structures — Part 3: Design of repairs*

ISO 16311-4, *Maintenance and repair of concrete structures — Part 4: Execution of repairs*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 13822, ISO 16311-1 and the following apply.

ISO and IEC maintain terminology databases for use in standardization at the following addresses:

— ISO Online browsing platform: available at https://www.iso.org/obp

— IEC Electropedia: available at https://www.electropedia.org/

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