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Bases for design of structures — General principles on risk assessment of systems involving structures

Bases du calcul des constructions — Principes généraux sur l'évaluation du risque pour les systèmes comprenant des structures

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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.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

The main task of technical committees is to prepare International Standards. Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights.

ISO 13824 was prepared by Technical Committee ISO/TC 98, *Bases for design of structures*, Subcommittee SC 2, *Reliability of structures*.

Introduction

Recently, special attention has been has been focused on risk. Although risk assessment of structures is done with a common basis, it has been implemented under various contexts in diversified ways. Therefore, this International Standard provides a common basis for assessing risk relevant to design, assessment, maintenance and decommissioning of structures. This International Standard accords with the umbrella International Standard of risk management being prepared as ISO 31000 by ISO/TMB.

In a risk assessment, hazard identification and the estimation of consequence are primary major procedures. For these, it is necessary to assess the risk of systems involving structures rather than just the structures, since structural failure has significant consequence for systems, and a failure of systems such as fire protection systems can cause serious consequences. However, actions for risk treatment are taken within the scope of structural design. Such considerations are reflected in the title of this International Standard.

This International Standard is intented to serve as a basic document, along with other relevant standards on risk management, for those assessing risk for systems involving structures.

Annexes A to H of this International Standard are for information only.

Bases for design of structures — General principles on risk assessment of systems involving structures

1 Scope

This International Standard specifies general principles of risk assessment for systems involving structures. The focus is on strategic and operational decision-making related to design, assessment, maintenance and decommissioning of structures. This also includes formulation and calibration of related codes and standards. Systems involving structures can expose stakeholders at various levels in society to significant risks. The aim of this International Standard is to facilitate and enhance decision-making with regard to monitoring, reducing and managing risks in an efficient, cost-effective and transparent manner. Within the broader context of risk management, risk assessment provides decision-makers with procedures to determine whether or not and in what manner it is appropriate to treat risks.

This International Standard provides a general framework as well as a procedure for identifying hazards and estimating, evaluating and treating risks of structures and systems involving structures. This International Standard also provides a basis for code writers as well as designers to set reasonable target-reliability levels, such as stated in ISO 2394, based on the result of risk considerations. For existing structures, assessment of the risks associated with the events that were not considered in the original design or with changes in use shall be implemented according to the principles stated in this International Standard. This International Standard can also be used for risk assessment of exceptional structures, the design of which is usually beyond the scope of existing codes.

2 Normative references

The following referenced documents are indispensable for the application 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/TS 16732, *Fire safety engineering — Guidance on fire risk assessment*

ISO/IEC Guide 51:1999, *Safety aspects — Guidelines for their inclusion in standards*

ISO Guide 73, *Risk management — Vocabulary*