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Eurocode 2: Bemessung und Konstruktion von Stahlbeton- und Spannbetontragwerken - Teil 1-1: Allgemeine Regeln - Regeln für Hochbauten, Brücken und Ingenieurbauwerke

Eurocode 2: Calcul des structures en béton - Partie 1-1: Règles générales - Règles pour les bâtiments, les ponts et les ouvrages de génie civil

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Eurocode 2: Calcul des structures en béton - Partie 1-1:
Règles générales - Règles pour les bâtiments, les ponts
et les ouvrages de génie civil

Eurocode 2: Bemessung und Konstruktion von
Stahlbeton- und Spannbetontragwerken - Teil 1-1:
Allgemeine Regeln - Regeln für Hochbauten, Brücken
und Ingenieurbauwerke

This draft European Standard is submitted to CEN members for enquiry. It has been drawn up by the Technical Committee CEN/TC 250.

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EUROPÄISCHES KOMITEE FÜR NORMUNG

CEN-CENELEC Management Centre: Rue de la Science 23, B-1040 Brussels

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European foreword

This document (prEN 1992-1-1:2021) has been prepared by Technical Committee CEN/TC 250 “Structural Eurocodes”, the secretariat of which is held by BSI. CEN/TC 250 is responsible for all Structural Eurocodes and has been assigned responsibility for structural and geotechnical design matters by CEN.

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This document will supersede EN 1992-1-1:2004, EN 1992-2:2005 and EN 1992-3:2006 and their amendments and corrigenda.

The first generation of EN Eurocodes was published between 2002 and 2007. This document forms part of the second generation of the Eurocodes, which have been prepared under Mandate M/515 issued to CEN by the European Commission and the European Free Trade Association.

The Eurocodes have been drafted to be used in conjunction with relevant execution, material, product and test standards, and to identify requirements for execution, materials, products and testing that are relied upon by the Eurocodes.

The Eurocodes recognize the responsibility of each Member State and have safeguarded their right to determine values related to regulatory safety matters at national level through the use of National Annexes.

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0 Introduction

0.1 Introduction to the Eurocodes

The Structural Eurocodes comprise the following standards generally consisting of a number of Parts:

- EN 1990, *Eurocode: Basis of structural and geotechnical design*
- EN 1991, *Eurocode 1: Actions on structures*
- EN 1992, *Eurocode 2: Design of concrete structures*
- EN 1993, *Eurocode 3: Design of steel structures*
- EN 1994, *Eurocode 4: Design of composite steel and concrete structures*
- EN 1995, *Eurocode 5: Design of timber structures*
- EN 1996, *Eurocode 6: Design of masonry structures*
- EN 1997, *Eurocode 7: Geotechnical design*
- EN 1998, *Eurocode 8: Design of structures for earthquake resistance*
- EN 1999, *Eurocode 9: Design of aluminium structures*
- <New parts>

The Eurocodes are intended for use by designers, clients, manufacturers, constructors, relevant authorities (in exercising their duties in accordance with national or international regulations), educators, software developers, and committees drafting standards for related product, testing and execution standards.

NOTE Some aspects of design are most appropriately specified by relevant authorities or, where not specified, can be agreed on a project-specific basis between relevant parties such as designers and clients. The Eurocodes identify such aspects making explicit reference to relevant authorities and relevant parties.

0.2 Introduction to EN 1992 Eurocode 2

(1) EN 1992 applies to the design of buildings, bridges and civil engineering structures in plain, reinforced and prestressed concrete. It complies with the principles and requirements for the safety and serviceability of structures, the basis of their design and verification that are given in prEN 1990, *Basis of structural and geotechnical design*.

(2) EN 1992 is only concerned with the requirements for resistance, serviceability, durability and fire resistance of concrete structures. Other requirements, e.g. concerning thermal or sound insulation, are not considered.

(3) EN 1992 is subdivided into the following parts:

- *Part 1-1: General rules — Rules for buildings, bridges and civil engineering structures,*
- *Part 1-2: General rules — Structural fire design,*
- *Part 4: Design of fastenings for use in concrete.*

0.3 Introduction to prEN 1992-1-1

(1) prEN 1992-1-1 describes the principles and requirements for safety, serviceability and durability of concrete structures. It is based on the limit state concept used in conjunction with a partial factor method.

(2) prEN 1992-1-1 also serves as a reference document for other CEN TCs concerning structural matters.

(3) Numerical values for partial factors and other reliability parameters are recommended as basic values that provide an acceptable level of reliability. They have been selected assuming that an appropriate level of workmanship and of quality management applies. When prEN 1992-1-1 is used as a base document by other CEN/TCs the same values need to be taken.

0.4 Verbal forms used in the Eurocodes

The verb "shall" expresses a requirement strictly to be followed and from which no deviation is permitted in order to comply with the Eurocodes.

The verb "should" expresses a highly recommended choice or course of action. Subject to national regulation and/or any relevant contractual provisions, alternative approaches could be used/adopted where technically justified.

The verb "may" expresses a course of action permissible within the limits of the Eurocodes.

The verb "can" expresses possibility and capability: it is used for statements of fact and clarification of concepts.

0.5 National Annex for prEN 1992-1-1

This Eurocode gives values with notes indicating where national choices may be made. Therefore, the national standard implementing prEN 1992-1-1 should have a National Annex containing all Nationally Determined Parameters to be used for the design of buildings and civil engineering works to be constructed in the relevant country.

A National Annex can contain, directly or by reference, non-contradictory complementary information (NCCI). To assist the user in applying the Eurocode, provided it does not alter any provisions of the Eurocodes.

National choice is allowed in prEN 1992-1-1 through the following clauses:

| | | | | |
|------------|------------|-------------|-------------|------------|
| 4.2.1.5(3) | 5.2.1(4) | 6.5.2.2(9) | 11.4.2(2) | B.6(1) |
| 4.2.2(1) | 5.2.2(4) | 6.5.2.2(10) | 11.4.2(3) | C.4(1) |
| 4.3.1.1(1) | 5.3.1(3) | 6.5.3(1) | 12.3.1(1) | C.6(3) |
| 4.3.1.2(1) | 5.3.2(2) | 7.3.2(4) | 12.4.1(1) | C.7(2) |
| 4.3.1.2(2) | 6.3(3) | 7.8.3(3) | 12.6.1(1) | C.8(2) |
| 4.3.1.3(1) | 6.4(1) | 8.2.1(3) | 12.7.1(2) | E.4.2(1) |
| 4.3.3(3) | 6.5.2.1(2) | 8.2.1(4) | 12.9.3(1) | F.5.2(1) |
| 5.1.3(3) | 6.5.2.2(1) | 8.2.2(5) | 14.2(1) | F.7(2) |
| 5.1.4(2) | 6.5.2.2(2) | 8.4.2(1) | 14.4.5.2(1) | F.7(8) |
| 5.1.5(4) | 6.5.2.2(3) | 8.4.4(3) | A(1) | H.4.2(4) |
| 5.1.6(1) | 6.5.2.2(7) | 9.2.1(5) | A(3) | I.4.2.1(2) |
| 5.1.6(2) | 6.5.2.2(8) | 9.2.4(2) | A(6) | I.5.2.1(3) |