ICS 91.010.30, 91.080.30 SLOVENSKÁ TECHNICKÁ NORMA August 2022

STN	**Eurokód 6 Navrhovanie murovaných konštrukcií Časť 1-1: Všeobecné pravidlá pre vystužené a nevystužené murované konštrukcie**	**STN EN 1996-1-1 73 1101**

Eurocode 6 - Design of masonry structures - Part 1-1: General rules for reinforced and unreinforced masonry structures

Táto norma obsahuje anglickú verziu európskej normy.
This standard includes the English version of the European Standard.

Táto norma bola oznámená vo Vestníku ÚNMS SR č. 07/22

Obsahuje: EN 1996-1-1:2022

Oznámením tejto normy sa od 30.04.2024 ruší
STN EN 1996-1-1+A1 (73 1101) z apríla 2013

135128

EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN 1996-1-1

April 2022

ICS 91.010.30; 91.080.30

Supersedes EN 1996-1-1:2005+A1:2012

English Version

Eurocode 6 - Design of masonry structures - Part 1-1: General rules for reinforced and unreinforced masonry structures

Eurocode 6 : Calcul des ouvrages en maçonnerie - Partie 1-1: Règles générales pour ouvrages en maçonnerie armée et non armée

Eurocode 6 - Bemessung und Konstruktion von Mauerwerksbauten - Teil 1-1: Allgemeine Regeln für bewehrtes und unbewehrtes Mauerwerk

This European Standard was approved by CEN on 3 January 2022.

This European Standard was corrected and reissued by the CEN-CENELEC Management Centre on 20 April 2022.

EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
EUROPÄISCHES KOMITEE FÜR NORMUNG

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

Ref. No. EN 1996-1-1:2022 E

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European foreword

This document (EN 1996-1-1:2022) 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.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by September 2027, and conflicting national standards shall be withdrawn at the latest by March 2028.

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

This document supersedes EN 1996-1-1:2005+A1:2012.

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 a Mandate M/515 given 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 main changes compared to the previous edition are listed below:

— improvement of the verification of combined loading;

— improvement of the capacity reduction factor for slenderness and eccentricity;

— addition of the out-of-plane shear friction coefficient;

— addition of rules for confined masonry;

— addition of informative annexes for complex shapes and mean material properties.

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.

Any feedback and questions on this document should be directed to the users’ national standards body. A complete listing of these bodies can be found on the CEN website.

According to the CEN-CENELEC Internal Regulations, the national standards organisations of the following countries are bound to implement this European Standard: Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Republic of North Macedonia, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

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

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, soft-ware 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 1996 Eurocode 6

EN 1996 Eurocode 6 standards apply to the design of building and civil engineering works, or parts thereof, in unreinforced, reinforced, prestressed and confined masonry.

EN 1996 (all parts) deal only with the requirements for resistance, serviceability and durability of structures. Other requirements, for example, concerning thermal or sound insulation, are not considered.

EN 1996 (all parts) do not cover the specific requirements of seismic design. Provisions related to such requirements are given in EN 1998 (all parts), which complements, and is consistent with EN 1996 (all parts).

EN 1996 (all parts) do not cover numerical values of the actions on building and civil engineering works to be taken into account in the design. They are provided in EN 1991(all parts).

0.3 Introduction to EN 1996-1-1

For the design of new structures, EN 1996-1-1 is intended to be used, for direct application, together with the other Eurocodes where applicable.

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 EN 1996-1-1

National choice is allowed in this standard where explicitly stated within notes. National choice includes the selection of values for Nationally Determined Parameters (NDPs).

The national standard implementing EN 1996-1-1 can have a National Annex containing all national choices to be used for the design of buildings and civil engineering works to be constructed in the relevant country.

When no national choice is given, the default choice given in this standard is to be used.

When no national choice is made and no default is given in this standard, the choice can be specified by a relevant authority or, where not specified, agreed for a specific project by appropriate parties.

National choice is allowed in EN 1996-1-1 through notes to the following:

4.4.4(2)	5.2.2(2)	5.7.1.2(1)	5.7.1.3(2)
5.7.2.1(1)	5.7.2.1(2)	5.7.2.2(4)	5.7.4(4) – 3 choices
5.8.2(3)	5.8.4(3)	6.3.3(2)	6.3.3(3)
7.5.1.4(4)	8.3.1(2)	8.10.3.1(2)	10.1.2(2)
10.5.2.2(2)	10.5.2.3(2)	10.6.2(1)	10.6.3(1)

National choice is allowed in EN 1996-1-1 on the application of the following informative annexes:

Annex A	Annex B	Annex C	Annex D
Annex E	Annex F	Annex G	Annex H
Annex I	Annex J	Annex K	

The National Annex can contain, directly or by reference, non-contradictory complementary information for ease of implementation, provided it does not alter any provisions of the Eurocodes.

1 Scope

1.1 Scope of EN 1996-1-1

(1) The basis for the design of building and civil engineering works in masonry is given in this document, which deals with unreinforced masonry, reinforced masonry and confined masonry. Principles for the design of prestressed masonry are also given.

(2) This document is not valid for masonry elements with a plan area of less than 0,04 m^2.

(3) Reinforced masonry and confined masonry built with Group 4 units and subjected to mainly vertical loading are not covered by this document.

(4) This document gives detailed rules which are mainly applicable to ordinary buildings. The applicability of these rules can be limited, for practical reasons or due to simplifications; any limits of applicability are given in the text where necessary.

(5) Execution is covered to the extent that is necessary to indicate the quality of the construction materials and products that are to be used and the standard of workmanship on site needed to comply with the assumptions made in the design rules.

(6) For those types of structures not covered entirely, for new structural uses for established materials, for new materials, or where actions and other influences outside normal experience have to be resisted, the provisions given in this document can be applied, but with possible need for supplements.

(7) This document does not cover:

— resistance to fire (which is dealt with in EN 1996-1-2);

— particular aspects of special types of building (for example, dynamic effects on tall buildings);

— particular aspects of special types of civil engineering works (such as masonry bridges, dams, chimneys or liquid-retaining structures);

— particular aspects of special types of structures (such as arches or domes);

— masonry where gypsum, with or without cement, mortars are used;

— masonry where the units are not laid in a regular pattern of courses (rubble masonry);

— masonry reinforced with other materials than steel.

1.2 Assumptions

(1) The assumptions of EN 1990 apply to this document.

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.

NOTE See the Bibliography for a list of other documents cited that are not normative references, including those referenced as recommendations (i.e. in ‘should’ clauses), permissions (‘may’ clauses), possibilities ('can' clauses), and in notes.

EN 206, *Concrete. Specification, performance, production and conformity*

EN 771-1, *Specification for masonry units - Part 1: Clay masonry units*

EN 771-2, *Specification for masonry units - Part 2: Calcium silicate masonry units*

EN 771-3, *Specification for masonry units - Part 3: Aggregate concrete masonry units (Dense and lightweight aggregates)*

EN 771-4, *Specification for masonry units - Part 4: Autoclaved aerated concrete masonry units*

EN 771-5, *Specification for masonry units - Part 5: Manufactured stone masonry units*

EN 771-6, *Specification for masonry units - Part 6: Natural stone masonry units*

EN 845-1, *Specification for ancillary components for masonry - Part 1: Ties, tension straps, hangers and brackets*

EN 845-2, *Specification for ancillary components for masonry - Part 2: Lintels*

EN 845-3, *Specification for ancillary components for masonry - Part 3: Bed joint reinforcement of steel meshwork*

EN 998-1, *Specification for mortar for masonry - Part 1: Rendering and plastering mortar*

EN 998-2, *Specification for mortar for masonry - Part 2: Masonry mortar*

EN 1015-11, *Methods of test for mortar for masonry - Part 11: Determination of flexural and compressive strength of hardened mortar*

EN 1052-1, *Methods of test for masonry - Part 1: Determination of compressive strength*

EN 1052-2, *Methods of test for masonry - Part 2: Determination of flexural strength*

EN 1052-3, *Methods of test for masonry - Part 3: Determination of initial shear strength*

EN 1052-4, *Methods of test for masonry - Part 4: Determination of shear strength including damp proof course*

EN 1052-5, *Methods of test for masonry - Part 5: Determination of bond strength by the bond wrench method*

EN 1990, *Eurocode - Basis of structural and geotechnical design*

EN 1991 (all parts), *Eurocode 1 - Actions on structures*

EN 1992-1-1, *Eurocode 2: Design of concrete structures - Part 1-1: General rules - Rules for buildings, bridges and civil engineering structures*

EN 1996-2, *Eurocode 6 - Design of masonry structures - Part 2: Design considerations, selection of materials and execution of masonry*