

Eurocode 8: Design provisions for earthquake resistance of structures

Part 3: Towers, masts and chimneys

ICS 91.120.25

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Committees responsible for this Draft for Development

The preparation of this Draft for Development was entrusted by Technical Committee B/525, Building and civil engineering structures, to Subcommittee B/525/8, Structures in seismic regions, upon which the following bodies were represented:

- Association of Consulting Engineers
- British Geological Survey
- Department of the Environment (Building Research Establishment)
- Department of the Environment (Property and Building Directorate)
- Federation of Civil Engineering Contractors
- Institution of Civil Engineers
- Steel Construction Institute

This Draft for Development, having been prepared under the direction of the Sector Board for Building and Civil Engineering, was published under the authority of the Standards Board and comes into effect on 15 April 1997

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National foreword

This Draft for Development has been prepared by Subcommittee B/525/8 and is the English language version of ENV 1998-3:1996 *Eurocode 8: Design provisions for earthquake resistance of structures — Part 3: Towers, masts and chimneys*, published by the European Committee for Standardization (CEN).

ENV 1998-3:1996 results from a programme of work sponsored by the European Commission to make available a common set of rules for the structural and geotechnical design of buildings and civil engineering works. The full range of codes covers the basis of design and actions, the design of structures in concrete, steel, composite construction, timber, masonry and aluminium alloy, and also geotechnical and seismic design.

This publication is not to be regarded as a British Standard.

An ENV or European Prestandard is made available for provisional application, but does not have the status of a European Standard. The aim is to use the experience gained to modify the ENV so that it can be adopted as a European Standard (EN).

There is no existing British Standard equivalent to ENV 1998-3 and there is no requirement in the Building Regulations to consider seismic actions on buildings and civil engineering works in the UK.

ENV 1998-3 states that the provisions of Eurocode 8 may be simplified or not observed in regions of low seismicity. Within the UK, the application of Eurocode 8 should not be necessary, unless the client or user of the works assesses that the associated seismic risk is such that it needs to be addressed.

Users of this document are invited to comment on its technical content, ease of use and any ambiguities or anomalies, both with respect to use in the UK and also in other more actively seismic areas. These comments will be taken into account when preparing the UK national response to CEN on the question of whether the ENV can be converted into an EN.

Comments should be sent in writing to the Secretary of B/525/8 at BSI, 389 Chiswick High Road, London W4 4AL, quoting the document reference, the relevant clause and, where possible, a proposed revision, by 30 April 1998. Comments after this time will still be possible through corporate bodies, such as the engineering institutions.

Summary of pages

This document comprises a front cover, an inside front cover, pages i and ii, the ENV title page, pages 2 to 18 and a back cover.

This standard has been updated (see copyright date) and may have had amendments incorporated. This will be indicated in the amendment table on the inside front cover.

ICS 91.040.00; 91.060.40; 91.120.20

Descriptors: Civil engineering, buildings, structures, earthquake resistant structures, earthquake-resistant design, tower body, chimneys, computation

English version

Eurocode 8 — Design provisions for earthquake resistance of structures — Part 3: Towers, masts and chimneys

Eurocode 8 — Conception et dimensionnement des structures pour la résistance aux séismes — Partie 3: Tours, mâts et cheminées

Eurocode 8 — Auslegung von Bauwerken gegen Erdbeben — Teil 3: Türme, Maste und Schornsteine

This European Prestandard (ENV) was approved by CEN on 1996-06-11 as a prospective standard for provisional application the period of validity of this ENV is limited initially to three years. After two years the members of CEN will be requested to submit their comments, particularly on the question whether the ENV can be converted into a European Standard (EN).

CEN members are required to announce the existence of this ENV in the same way as for an EN and to make the ENV available promptly at national level in an appropriate form. It is permissible to keep conflicting national standards in force (in parallel to the ENV) until the final decision about the possible conversion of the ENV into an EN is reached.

CEN members are the national standards bodies of Austria, Belgium, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and United Kingdom.

CEN

European Committee for Standardization
Comité Européen de Normalisation
Europäisches Komitee für Normung

Central Secretariat: rue de Stassart 36, B-1050 Brussels

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Foreword

Objectives of the Eurocodes

- 1) The “Structural Eurocodes” comprise a group of standards for the structural and geotechnical design of buildings and civil engineering works.
- 2) They cover execution and control only to the extent that is necessary to indicate the quality of the construction products, and the standard of the workmanship needed to comply with the assumptions of the design rules.
- 3) Until the necessary set of harmonised technical specifications for products and for the methods of testing their performance is available, some of the Structural Eurocodes cover some of these aspects in informative Annexes.

Background to the Eurocode Programme

- 4) The Commission of the European Communities (CEC) initiated the work of establishing a set of harmonised technical rules for the design of building and civil engineering works which would initially serve as an alternative to the different rules in force in the various Member States and would ultimately replace them. These technical rules became known as the “Structural Eurocodes”.
- 5) In 1990, after consulting their respective Member States, the CEC transferred the work of further development, issue and updating of the Structural Eurocodes to CEN, and the EFTA Secretariat agreed to support the CEN work.
- 6) CEN Technical Committee CEN/TC 250 is responsible for all Structural Eurocodes.

Eurocode Programme

- 7) Work is in hand on the following Structural Eurocodes, each generally consisting of a number of parts:
 - EN 1991 Eurocode 1 — Basis of design and 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 provisions for earthquake resistance of structures
 - EN 1999 Eurocode 9 — Design of aluminum alloy structures

8) Separate sub-committees have been formed by CEN/TC 250 for the various Eurocodes listed above.

9) This Prestandard is being published as an European Prestandard (ENV) with an initial life of three years.

10) This Prestandard is intended for experimental application and for the submission of comments.

11) After approximately two years, CEN members will be invited to submit formal comments to be taken into account in determining future actions.

12) Meanwhile, feedback and comments on this Prestandard should be sent to the Secretariat of CEN/TC250/SC8 at the following address:

IPQ c/o LNEC
Avenida do Brasil 101
P-1799 LISBOA Codex
PORTUGAL

or to your national standards organization

National Application Documents (NAD's)

13) In view of the responsibilities of authorities in member countries for safety, health and other matters covered by the essential requirements of the Construction Products Directive (CPD), certain safety elements in this ENV have been assigned indicative values which are identified by [] (“boxed values”). The authorities in each member country are expected to assign definitive values to these safety elements.

14) Some of the harmonized supporting standards may not be available by the time this Prestandard is issued. It is therefore anticipated that a National Application Document (NAD) giving definitive values for safety elements, referencing compatible supporting standards and providing guidance on the application of this Prestandard, will be issued by each member country or its Standards Organization.

15) It is intended that this Pre-standard is used in conjunction with the NAD valid in the country where the building or civil engineering works are located.

Matters specific to this Prestandard

16) The scope of Eurocode 8 is defined in 1.1.1 of ENV 1998-1-1:1994 and the scope of this Prestandard is defined in 1.1 Additional parts of Eurocode 8 which are planned are indicated in 1.1.3 of ENV 1998-1-1:1994.

17) For the design of structures in seismic regions the provisions of this Prestandard are to be applied in addition to the provisions of the other relevant parts of Eurocode 8 and the other relevant Eurocodes. In particular, the provisions of this Prestandard complement those of Eurocode 3, Part 3 “Towers, Masts and Chimneys”, which do not cover the special requirements of seismic design.

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