



BSI Standards Publication

Eurocode 4 — Design of composite steel and concrete structures

Part 2: Bridges

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National foreword

This British Standard is the UK implementation of EN 1994-2:2026. It supersedes BS EN 1994-2:2005, which will be withdrawn on 30 March 2028.

The UK participation in its preparation was entrusted to Technical Committee B/525/4, Composite structures.

A list of organizations represented on this committee can be obtained on request to its committee manager.

National choice is allowed in this standard where explicitly stated within notes. The National Annex to this standard contains the national choices to be used for buildings and civil engineering works constructed in the UK.

The first generation of EN Eurocodes was published between 2002 and 2007, with conflicting British Standards withdrawn in 2010. This document forms part of the second generation of EN Eurocodes.

The second generation of EN Eurocodes is expected to be published between 2023 and 2026. These documents are being published as soon as they are available. This is being done to enable users to prepare for the transition from the first generation to second generation of EN Eurocodes.

UK adoptions of the first generation of EN Eurocodes will be withdrawn by BSI on 30 March 2028. Until that date, the first generation documents should be considered as the applicable standards for buildings and civil engineering works constructed in the UK unless otherwise specified by the relevant authority or in the specification for a particular project.

This standard is intended to be used with its National Annex and other referenced documents, including other second generation Eurocodes, as an interdependent suite of documents.

While the use of provisions in this standard in conjunction with first generation Eurocodes is not precluded, it should be undertaken with care and should only be done when users are satisfied that it will not result in a lower level of reliability than the minimum level set in the first generation Eurocodes and associated UK National Annexes.

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Compliance with a British Standard cannot confer immunity from legal obligations.

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Amendments/corrigenda issued since publication

Date	Text affected
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EUROPÄISCHE NORM

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English Version

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Eurocode 4 - Calcul des structures mixtes acier-béton -
Partie 2: PontsEurocode 4 - Bemessung und Konstruktion von
Verbundtragwerken aus Stahl und Beton - Teil 2:
Brücken

This European Standard was approved by CEN on 28 December 2025.

CEN members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration. Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the CEN-CENELEC Management Centre or to any CEN member.

This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CEN member into its own language and notified to the CEN-CENELEC Management Centre has the same status as the official versions.

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COMITÉ EUROPÉEN DE NORMALISATION
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European foreword

This document (EN 1994-2:2026) 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 1994-2:2005.

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.

The main changes compared to the previous edition are listed below:

- This document does not repeat rules that are already contained in EN 1994-1-1. Instead, reference is made to EN 1994-1-1.
- New rules for shear connectors under tension and under combined tension and shear in the case of fatigue have been added.

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, Türkiye and the United Kingdom.

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Introduction

0.1 Introduction to the Eurocodes

The Structural Eurocodes comprise of 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
- EN 19100 Eurocode 10 — Design of glass structures
- New parts are under development, e.g. Eurocode for design of fibre-polymer composite structures and design of tensioned membrane 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, 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 1994 (all parts)

EN 1994 (all parts) applies to the design of steel-concrete composite structures and members for buildings and civil engineering works. It complies with the rules for the safety and serviceability of structures, the basis of their design and verification that are given in EN 1990-1 Basis of structural and geotechnical design — Part 1: New structures.

EN 1994 (all parts) is concerned only with requirements for resistance, serviceability, durability and fire resistance of steel-concrete composite structures. Other requirements, e.g. concerning thermal or sound insulation, are not considered.

EN 1994 is subdivided in various parts:

EN 1994-1-1, *Eurocode 4 — Design of composite steel and concrete structures — Part 1 1: General rules and rules for buildings;*

EN 1994-1-2, *Eurocode 4 — Design of composite steel and concrete structures — Part 1 2: Structural fire design;*

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EN 1994-2, Eurocode 4 — Design of composite steel and concrete structures — Part 2: Bridges.

0.3 Introduction to EN 1994-2

EN 1994-2 refers to the rules for safety, serviceability and durability of composite steel and concrete structures, as described in EN 1994-1-1, and provides specific provisions for the design of steel-concrete composite bridges and composite members of bridges. It is based on the limit state concept used in conjunction with a partial factor method.

Numerical values for partial factors and other reliability parameters are provided 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.

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 1994-2

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 1994-2 can have a National Annex containing all national choices to be used for the design of bridges 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 1994-2 through notes to the following clauses:

4.4.1.2(3)	7.4.4(2)	8.2.2(2)	8.6.1(1)
8.7.1(2)	8.7.6.2(4)	8.7.7.2(1)	8.7.7.2(2)
9.4.1(2) - 2 choices			

National choice is allowed in EN 1994-2 on the application of the following informative annexes:

None.

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.

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1 Scope

1.1 Scope of EN 1994-2

(1) EN 1994-2 gives design rules for steel-concrete composite bridges or members of bridges, e.g. members of the superstructure or composite columns. It identifies those rules in EN 1994-1-1 that do and do not apply as well as giving supplementary rules for bridges.

1.2 Assumptions

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

(2) In addition to the general assumptions of EN 1990-1, the assumptions given in 1.2 to EN 1992-1-1, EN 1993-2 and EN 1994-1-1 apply to this document.

(3) EN 1994-2 is intended to be used in conjunction with EN 1990-1, EN 1991 (all parts), EN 1992 (all parts), EN 1993 (all parts), EN 1994-1-1, EN 1997 (all parts), EN 1998 (all parts) when steel-concrete composite structures are built in seismic regions, EN 1090-1, EN 1090-2 and EN 13670.

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. through 'should' clauses) and permissions (i.e. through 'may' clauses).

EN 1990-1:2023+A1:2026, *Eurocode — Basis of structural and geotechnical design — Part 1: New structures*

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

EN 1992-1-1:2023, *Eurocode 2 — Design of concrete structures — Part 1-1: General rules and rules for buildings, bridges and civil engineering structures*

EN 1993-1-1:2022, *Eurocode 3 — Design of steel structures — Part 1-1: General rules and rules for buildings*

EN 1993-2:2026, *Eurocode 3 — Design of steel structures — Part 2: Bridges*

EN 1994-1-1:2026, *Eurocode 4 — Design of composite steel and concrete structures — Part 1-1: General rules and rules for buildings*

3 Terms, definitions and symbols

3.1 Terms and definitions

For the purposes of this document, the terms and definitions given in EN 1990-1, EN 1992-1-1, EN 1993-1-1, EN 1994-1-1 and the following apply.

3.1.1

filler beam deck

deck consisting of a reinforced concrete slab and partially concrete-encased hot-rolled or welded steel beams, having their bottom flange on the level of the slab bottom