BSI Standards Publication

Eurocode 3 — Design of steel structures

Part 2: Bridges

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National foreword

This British Standard is the UK implementation of EN 1993-2:2026. It supersedes BS EN 1993-2:2006, which will be withdrawn on 30 March 2028.

The UK participation in its preparation was entrusted to Technical Committee CB/203, Design & execution of steel 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The first generation of EN Eurocodes was published between 2002 and 2007, with conflicting British Standards withdrawn in 2010.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UK adoptions of the first generation of EN Eurocodes will be withdrawn by BSI on 30 March 2028.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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Amendments/corrigenda issued since publication

Date	Text affected

EUROPEAN STANDARD EN 1993-2

NORME EUROPÉENNE

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English Version

Eurocode 3 - Design of steel structures - Part 2: Bridges

Eurocode 3 - Calcul des structures en acier - Partie 2: Ponts

Eurocode 3 - Bemessung und Konstruktion von Stahlbauten - 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.

CEN members are the national standards bodies of 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 United Kingdom.

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

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

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European foreword

This document (EN 1993-2:2026) 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 1993-2:2006 and its corrigenda.

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

— revised rule for the consideration of distortional effects in box-girder members;

— calculation of the restraint forces for considering flexible restraints of a compressed chord by reducing the initial imperfection;

— two bridge specific detail categories: double fillet welds subject to out of plane bending and cantilever / crossbeam to main girder connection detail;

— new annex on the design of hangers for tied-arch bridges;

— supplementary rules for the design of plate girders curved in plan with rigid restraints to the compression flange;

— new annex for the calculation of the damage equivalent factors λ for fatigue verification of road bridges.

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.

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 organizations 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.

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

— EN 19100 Eurocode 10 — Design of glass structures

— New parts are under development, e.g. EN 19101 Eurocode 11 for design of fibre-polymer composite structures and EN 19102 Eurocode 12 for 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 1993 (all parts)

EN 1993 applies to the design of buildings and civil engineering works in steel. 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 EN 1990 — Basis of structural and geotechnical design.

EN 1993 is concerned only with requirements for resistance, serviceability, durability and fire resistance of steel structures. Other requirements, e.g. concerning thermal or sound insulation, are not covered.

EN 1993 is subdivided in various parts:

EN 1993-1-1, *Eurocode 3 — Design of Steel Structures — Part 1-1: General rules and rules for buildings;*

EN 1993-1-2, *Eurocode 3 — Design of Steel Structures — Part 1-2: Structural fire design;*

EN 1993-1-3, *Eurocode 3 — Design of Steel Structures — Part 1-3: Cold-formed members and sheeting;*

NOTE Cold formed hollow sections supplied according to EN 10219 are covered in EN 1993-1-1.

EN 1993-1-4, *Eurocode 3 — Design of Steel Structures — Part 1-4: Stainless steel structures;*

EN 1993-1-5, *Eurocode 3 — Design of Steel Structures — Part 1-5: Plated structural elements;*

EN 1993-1-6, *Eurocode 3 — Design of Steel Structures — Part 1-6: Strength and stability of shell structures;*

EN 1993-1-7, *Eurocode 3 — Design of Steel Structures — Part 1-7: Plate assemblies with elements under transverse loads;*

EN 1993-1-8, *Eurocode 3 — Design of Steel Structures — Part 1-8: Joints;*

EN 1993-1-9, *Eurocode 3 — Design of Steel Structures — Part 1-9: Fatigue;*

EN 1993-1-10, *Eurocode 3 — Design of Steel Structures — Part 1-10: Material toughness and through-thickness properties;*

EN 1993-1-11, *Eurocode 3 — Design of Steel Structures — Part 1-11: Tension components;*

EN 1993-1-12, *Eurocode 3 — Design of Steel Structures — Part 1-12: Additional rules for steel grades up to S960;*

EN 1993-1-13, *Eurocode 3 — Design of Steel Structures — Part 1-13: Beams with large web openings;*

EN 1993-1-14, *Eurocode 3 — Design of Steel Structures — Part 1-14: Design assisted by finite element analysis.*

EN 1993-2, *Eurocode 3 — Design of Steel Structures — Part 2: Bridges;*

EN 1993-3, *Eurocode 3 — Design of Steel Structures — Part 3: Towers, masts and chimneys;*

EN 1993-4-1, *Eurocode 3 — Design of Steel Structures — Part 4-1: Silos;*

EN 1993-4-2, *Eurocode 3 — Design of Steel Structures — Part 4-2: Tanks;*

EN 1993-5, *Eurocode 3 — Design of Steel Structures — Part 5: Piling;*

EN 1993-6, *Eurocode 3 — Design of Steel Structures — Part 6: Crane supporting structures;*

EN 1993-7, *Eurocode 3 — Design of steel structures — Part 7: Sandwich panels.*

All subsequent parts EN 1993-1-1 to EN 1993-1-14 treat general topics that are independent from the structural type like structural fire design, cold-formed members and sheeting, stainless steels, plated structural elements, etc.

All subsequent parts numbered EN 1993-2 to EN 1993-7 treat topics relevant for a specific structural type like steel bridges, towers, masts and chimneys, silos and tanks, piling, crane supporting structures, etc. EN 1993-2 to EN 1993-7 refer to the generic rules in EN 1993-1-1 to EN 1993-1-14 and supplement them.

0.3 Introduction to EN 1993-2

EN 1993-2 is the second part of EN 1993 — Design of Steel Structures and describes the principles and application rules for the safety and serviceability and durability of steel structures for bridges.

EN 1993-2 gives design rules which are supplementary to the generic rules in EN 1993-1.

EN 1993-2 is intended to be used with Eurocodes EN 1990 (all parts), EN 1991 (all parts) and the Parts 2 of EN 1992 to EN 1998 when steel structures or steel components for bridges are referred to.

Matters that are already covered in those documents are not repeated.

EN 1993-2 is intended for use by:

— committees drafting design related product, testing and execution standards,

— clients (e.g. for the formulation of their specific requirements),

— designers and constructors,

— relevant authorities.

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 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 1993-2

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 1993-2 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 1993-2 through notes to the following clauses:

4.1.3(2)	4.3(2) – 2 choices	4.4(1)	4.4(2)
5.2.1(1) – 2 choices	5.2.3(2)	5.2.4(1)	5.3.1.2(1)
5.3.2(2)	5.4(1)	5.5(1)	5.6(1)
5.7(1)	5.7(3)	6(3)	6(8)
7.4.1(2)	8.2.2.3(1)	8.2.2.5(1)	8.3.5(7)
9.1(3)	9.3(1)	9.4(1)	10.1.1(1)
10.1.1(3)	10.1.2(2) – 2 choices	10.1.3(2)	10.2.2(1)
10.2.3(1)	10.4.2(1)	10.4.3(2) – 2 choices	10.4.3(3)
10.5(1) – 2 choices	10.5(3)	10.6(1)	11.1.2(1)

11.1.3(1)	11.1.5(1)	11.2.2(1)	11.2.3(1)
11.2.4(1)	11.2.6(1)	11.3(1)	11.4(1)
C.3.1(1)	C.3.2.2(1)	C.3.2.2(2)	E.4(1)

National choice is allowed in EN 1993-2 on the application of the following informative annexes:

Annex A Annex C Annex F

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 1993-2

(1) This document provides rules for the structural design of steel bridges and steel parts of steel-concrete composite bridges.

(2) This document is applicable to the resistance, serviceability and durability of steel bridge structures.

(3) The design of tension components and related parts is covered by EN 1993-1-11.

NOTE For the design of hangers for tied-arch bridges, additional provisions are given in Annex A.

(4) Supplementary requirements for seismic design are given in EN 1998-2.

1.2 Assumptions

(1) Unless specifically stated, EN 1990-1, EN 1991 (all parts), EN 1998 (all parts) and EN 1993-1 (all parts) apply.

(2) The design methods given in EN 1993-2 are applicable if:

— the execution quality is as specified in EN 1090-2 and EN 1090-4, and

— the construction materials and products used are as specified in the relevant parts of EN 1993, or in the relevant material and product specifications.

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 (i.e. through 'may' clauses), possibilities ('can' clauses), and in notes.

EN 1090-2, *Execution of steel structures and aluminium structures — Part 2: Technical requirements for steel structures*

EN 1090-4, *Execution of steel structures and aluminium structures — Part 4: Technical requirements for cold-formed structural steel elements and cold-formed structures for roof, ceiling, floor and wall applications*

EN 1990-1, *Eurocode — Basis of structural and geotechnical design*

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

EN 1993 (all parts), *Eurocode 3 — Design of steel structures*

EN 1998 (all parts), *Eurocode 8 — Design of structures for earthquake resistance*