DESIGNERS' GUIDES TO THE EUROCODES

**DESIGNERS' GUIDE TO EUROCODE 4:
DESIGN OF COMPOSITE STEEL AND
CONCRETE STRUCTURES
EN 1994-1-1**

Second edition

Eurocode Designers' Guide series

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ROGER P. JOHNSON
University of Warwick, UK

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Preface to the first edition

EN 1994, also known as Eurocode 4, is one standard of the Eurocode suite and describes the principles and requirements for safety, serviceability and durability of composite steel and concrete structures. It is subdivided into three parts:

- Part 1-1: ‘General rules and rules for buildings’
- Part 1-2: ‘Structural fire design’
- Part 2: ‘Bridges’.

It is intended to be used in conjunction with EN 1990 (‘Basis of structural design’), EN 1991 (‘Actions on structures’) and the other design Eurocodes.

Aims and objectives of this guide

The principal aim of this book is to provide the user with guidance on the interpretation and use of EN 1994-1-1 and to present worked examples. The guide explains the relationship with the other Eurocode parts to which it refers and with the relevant British codes. It also provides background information and references to enable users of Eurocode 4 to understand the origin and objectives of its provisions.

Layout of this guide

EN 1994-1-1 has a foreword and nine sections, together with three annexes. This guide has an introduction that corresponds to the foreword of EN 1994-1-1, and Chapters 1 to 9 of the guide correspond to Sections 1 to 9 of the Eurocode. Chapters 10 and 11 correspond to Annexes A and B of the Eurocode, respectively. Appendices A to D of this guide include useful material from the draft Eurocode ENV 1994-1-1.

The numbering and titles of the sections in this guide also correspond to those of the clauses of EN 1994-1-1. Some subsections are also numbered (e.g. 1.1.2). This implies correspondence with the subclause in EN 1994-1-1 of the same number. Their titles also correspond. There are extensive references to lower-level clause and paragraph numbers. The first significant reference is in **bold italic** type (e.g. **clause 1.1.1(2)**). These are in strict numerical sequence throughout the book, to help readers to find comment on particular provisions of the code. Some comments on clauses are necessarily out of sequence, but use of the index should enable these to be found.

All cross-references in this guide to sections, clauses, subclauses, paragraphs, annexes, figures, tables and expressions of EN 1994-1-1 are in *italic* type, which is also used where text from a clause in EN 1994-1-1 has been directly reproduced (conversely, cross-references to and quotations from other sources, including other Eurocodes, are in roman type). Expressions repeated from EN 1994-1-1 retain their number; other expressions have numbers prefixed by D (for *Designers’ Guide*); e.g. Equation D6.1 in Chapter 6.

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R.P. Johnson

D. Anderson

Preface to the second edition

The preceding preface is fully applicable to this edition. The British National Annexes to EN 1990 to EN 1994 have now been published. Their values for the Nationally Determined Parameters are mostly those recommended in the Eurocodes, which were used in the first edition. Attention will be drawn, as appropriate, to those that differ.

Most of the new material arises from changes in the materials and products for which the Eurocodes are used, problems with their interpretation, questions from industry on unfamiliar methods, and recent research. There are significant changes in Chapter 8, on joints, and Chapter 9, on composite slabs.

Advice and comment provided by David Anderson, the co-author of the first edition, is very much appreciated.

R.P. Johnson

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