The Institution of StructuralEngineers

SECOND EDITION

Manual for the design of building structures to Eurocode 1 and Basis of structural design

Manual to Eurocode: 1

IStructE Manual

The Institution of Structural Engineers

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Manual for the design of building structures to Eurocode 1 and Basis of structural design

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Foreword (2nd edition)

The use of Eurocodes is now well established and embedded within the structural engineering profession. The 1st edition of this *Manual* has been an important resource for structural engineers, providing clear and concise information to support the use of the Eurocodes. This 2nd edition has been prepared to predominantly include updates to Eurocode 1 for actions due to snow (BS EN 1991-1-3:2003+A1:2015) and wind (BS EN 1991-1-4:2005+A1:2010), together with their associated UK National Annexes, which were published by BSI after the 1st edition was published. Other updates to the Eurocodes and UK National Annexes have also been included within this new edition.

I wish to convey my thanks to the reviewers who have generously given their time; providing constructive support and insight. I am also especially grateful to Lee Baldwin at the Institution whose diligence and hard work has been instrumental in preparing this new edition. I trust that this *Manual* will continue to serve as an invaluable tool for structural engineers.

Andy Yates
Revising author

Foreword (1st edition)

BS EN 1990:2002 Eurocode: Basis of structural design and BS EN 1991:2002 – 2006: Eurocode 1: Actions on structures (in various parts) and their respective UK National Annexes provide the basis for all structural design carried out to the Eurocodes for projects in the UK.

This *Manual* is one volume in a set of Eurocode Manuals published by the Institution of Structural Engineers and is unique in that it covers two Eurocodes, namely BS EN 1990 and BS EN 1991. It is hoped that the set of Manuals will form an invaluable tool for all practising engineers in the UK and further afield and will assist in the transition towards adoption of the Eurocode suite in the UK.

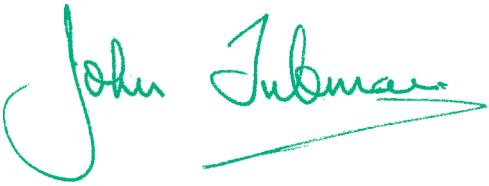
The aim of the Task Group in preparing this *Manual* was to produce a working version of BS EN 1990 and BS EN 1991 that would be of use to practising engineers for the design of the majority of "straightforward" buildings in the UK. The complexity of the source documents has made this an extremely difficult task and there have been long debates as to which material should be included in the main body of the *Manual*, which should be consigned to the Appendices, and which should be omitted altogether. We have strived to achieve the necessary balance but, inevitably, this is a subjective issue. There will undoubtedly be occasions when designers require access to the much wider scope of the source documents.

Institution guidelines require that the *Manual* is not a commentary document. In general therefore, background to clauses in BS EN 1990 and BS EN 1991 cannot be given; however, it is hoped that the form of presentation adopted will reveal at least some of the underlying philosophy in a way that is accessible and useful to readers.

The Eurocodes introduce some terminology and conventions that will not be familiar to those raised on a diet of BS 6399, BS 5950, BS 8110 and the other so-called "current" design standards in the UK. There have been calls for Eurocode terminology to be re-cast in traditional, recognisable UK terms in this *Manual*. Those calls have been rejected as such a course would serve only to postpone the inevitable. The only major exception is the continued use of a decimal point rather than a comma. The reader may derive some consolation from the fact that the source documents are themselves not consistent in their use of terminology; for example, the Eurocodes call for snow and imposed *loads* but wind and accidental *actions*.

I would like to convey my personal thanks to all the members of the Task Group and to the four consultants who assisted to such a great extent with the drafting, the consultants largely funded by DCLG to whom the Institution extends its thanks. The *Manual* would not have been completed without the sterling efforts of Dr John Littler, Secretary to the Task Group and I would like to extend my particular thanks to him for his patience, perseverance and attention to detail. Finally, I must thank the members of the Institution's Technical Publications Panel for providing very constructive criticism which has undoubtedly helped shape and improve the *Manual*.

I hope you will find the content of the following pages of use to you as you address the new era of structural design in the UK — the Eurocodes.



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Chairman