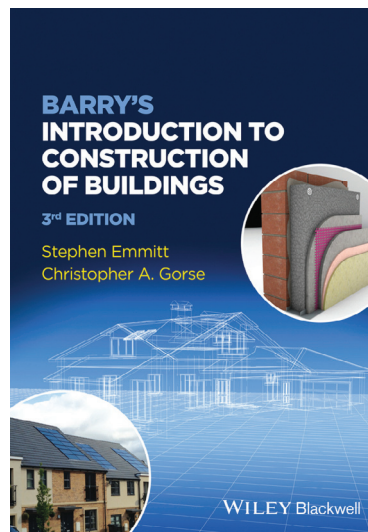


Review



Peter Harris is impressed by the comprehensive subject matter and clear illustrations of this introduction to building construction, which would be of value to both students and practising structural engineers.

Barry's Introduction to Construction of Buildings (3rd ed.)



Authors: Stephen Emmitt and Christopher A. Gorse

Publisher: Wiley-Blackwell

Price: £27.99 (paperback); £22.99 (ebook)

ISBN: 978-1-118-25542-1

This comprehensive book, running to around 800 pages, is – together with the companion book *Barry's Advanced Construction of Buildings*¹ – a redesign and update of the five volumes of Robin Barry's *The Construction of Buildings*.

The authors are respectively Professor of Architectural Practice and Professor of Construction and Project Management; they bring a lucidity of text and clarity of diagrams enabling the reader to readily grasp the principles behind the detail.

The book is essentially written for first-year students of architecture and building technology and is limited to domestic housing and low-level development up to three storeys in height. Chapter 1 introduces the function and performance of buildings, with chapters 2 and 3 providing a useful guide to site investigations, rock and soil types, ground movement, foundation construction and site preparation.

Floors and walls are fully covered in chapters 4 and 5. Ground-bearing floors in concrete are discussed, as are suspended floors in both timber and concrete. Guidance on concrete mixes and strengths is not given. Damp-proof membranes,

different types of floor screed and surface finishes are adequately covered, while ventilation, thermal insulation and sound insulation are treated properly as important design aspects.

Walls are extensively covered in a chapter of 167 pages. Solid and cavity walls in brick and stone construction are covered in depth, as is timber-framed

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construction. The text provides a concise and thorough review of best practice using the various materials and deals well with thermal bridging and its avoidance. Water vapour and fire requirements are discussed and, towards the end of the chapter, there is an in-depth section on straw bale construction. This last section precedes

useful sections on unfired clay brick walls, adobe construction and hempcrete.

Chapter 6 is devoted to roofs, including a section on green roofs. Warm and cold roofs are discussed in detail, as is the positioning of insulation and vapour barriers. Roof construction in timber, including trussed rafters, is shown, although minimum pitch related to tile/slate weathering is not mentioned. Various types of tile and slate, together with their respective gauging, are discussed. Sheet metal coverings and flat roofs in timber and concrete receive attention, as does the use of lead and zinc for roof coverings and drainage goods. Compartmentalisation in roof voids for fire protection is not covered, however.

Chapters 7 and 8 address the function, fire design, security, aesthetics and framing details of windows and doors. These subjects are treated comprehensively and there are appropriate sections on the related ironmongery and on glazing. There are plenty of examples to illustrate prevention of water ingress and thermal bridging.

Chapter 9 is useful as it is devoted to stairs and ramps, with information from the Building Regulations' *Approved Document B*. The use of concrete, stone, timber and structural glass as the medium for staircases is discussed with appropriate accompanying details.

Chapter 10 is entitled 'Surface finishes' and, as the name suggests, covers floor, wall and ceiling finishes in the range that can be expected for domestic and/or commercial development.

Chapter 11, on energy, deals with climate control and renewable energy sources, with an emphasis on promoting renewable forms rather than on their variable efficiency and whole-life costs. Fuel-burning appliances, flues and chimneys are included and the chapter concludes with gas supply details and domestic electrical supply and installations.

Surface water, with sustainable drainage systems (SuDS) in mind, and foul drainage systems are discussed in chapter 12.

"THE TEXT PROVIDES A CONCISE AND THOROUGH REVIEW OF BEST PRACTICE USING THE VARIOUS MATERIALS"



Additionally, cold and hot water supply and distribution systems are described and shown in diagrammatic form, with information on pipe sizes, sanitary ware and refuse storage and recycling.

The final chapter provides the procedure for heat loss calculations with data from *Approved Document L*.

This book is not a design manual and, accordingly, no mention is made of Eurocodes; it is, however, a book full of empirical data and standard details with references to the UK Building Regulations and Approved Documents, and the BSI and National House Building Council

Standards. References to BREEAM assessments are, however, surprisingly omitted. The book is devoted entirely to new sustainable buildings and, consequently, there are no chapters on the conservation and refurbishment of existing building stock.

The two-dimensional plans and sections are excellent and, while the isometrics are equally clear, they appear to come from a different source, as occasionally the line work is comparatively heavy and some lack orientation labelling.

Black-and-white photographs are used throughout and, in the opinion of

this reviewer, they are often grainy and indistinct, which is a drawback to an otherwise excellent publication.

Nevertheless this comprehensive book would be a useful addition to the library of both students and practising structural engineers.

References

- 1) Emmitt S. and Gorse C. A. (2014) *Barry's Advanced Construction of Buildings* (3rd ed.), Chichester, UK: Wiley-Blackwell



Peter Harris

Peter Harris, now retired, was an associate director with Maunsell and was involved with a variety of civil and structural engineering projects in the UK, Hong Kong and France. He is a former member of the Council of the Institution of Structural Engineers (1988–91) and has served on several committees. He retained involvement with the Institution's Journal Editorial Board and Technical Publications Panel until 2011.

Pai Lin Li Lecture:

The use of prefabrication for low-cost, transitional housing in developing countries

The Pai Lin Li Travel Award is presented to Institution members wishing to spend four to six weeks outside their own country studying current practices or trends. This provides an unrivalled opportunity to sample the technical, economic, social and political conditions in another country and to examine how these various factors affect the practice of structural engineering.

The Pai Lin Li Travel Award 2013 was presented to Nathan Fieldsend, who will present his findings at this lecture.

Transitional and semi-permanent shelter programmes are a popular post disaster response. Prefabricated elements can increase the efficiency of such a programme. This investigation looked at four designs in current use, and the lessons engineers involved with shelter programmes can learn from them.

Nathan Fieldsend

Nathan Fieldsend is a structural engineer with WSP. Since graduating from The University of Cambridge in 2012, his design experience has consisted of a substantial refurbishment of an office in central London and three buildings in the redevelopment of the old Shell Centre site.

He has overseas development experience predominantly in South America. At university he was heavily involved with the EcoHouse Initiative, a charity designing sustainable housing solutions for Latin America, and continues to advise the students working for the charity with their design work.



Date | **Wednesday 14 January 2015**
 Time | **Registration from 17:30**
Lecture at 18:00
 Price | **Free**
 Venue | **47-58 Bastwick Street**

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