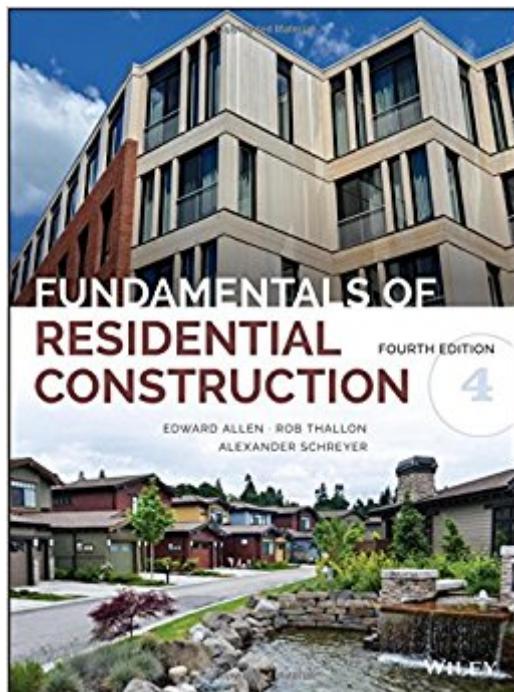


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# Fundamentals Of Residential Construction



## Synopsis

The leading guide to professional home construction, updated and expanded Fundamentals of Residential Construction is the definitive guide to single family and multifamily home building that details every step of the construction process. From siting and foundations to finishing details, this book provides a complete walk-through of professional home construction. Over 1,200 drawings and photographs animate the textbook, while interactive supplementary online resources help facilitate an understanding of the material. This fourth edition accommodates the latest developments in materials and methods, including new coverage of sustainable building and energy efficiency, multifamily construction, prefabricated building components, and CAD/BIM planning tools in residential construction. Authoritative coverage of wood light-frame construction, building systems, industrialized fabrication, insulating concrete forms, light-gauge steel and masonry construction, multi-family buildings, and more provides a solid foundation in residential construction methods, tools, and processes. Building a home requires a deeply integrated understanding of materials, structures, codes, and management procedures. Because the process involves such a broad array of considerations and challenges, construction professionals must regularly draw on a clear body of knowledge to keep a project running smoothly. This book helps you lay the groundwork of expertise required to successfully complete a residential project.

Learn the advantages and disadvantages of common materials and systems Understand site preparation, foundations, and framing Delve into the details of roofing, finishing, and energy efficiency Understand heating/cooling, plumbing, and electrical options Examine the latest codes, costs, and management best practices Designing and constructing a home presents a unique project dynamic; people's homes are their sanctuaries, where they make the memories of a lifetime. They must be designed to be lived in, not simply "used." Lifetime costs play a major role in decision-making, materials must be carefully chosen and sourced, and spaces must be structured to be efficient yet enjoyable. Fundamentals of Residential Construction shows you how to bring it all together to turn a project into a family's cherished home.

## Book Information

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## Customer Reviews

THE DEFINITIVE GUIDE TO RESIDENTIAL BUILDING&#151;UPDATED AND EXPANDED Fundamentals of Residential Construction, Fourth Edition offers the most comprehensive and accessible treatment of single- and multi-family home construction, from site-preparation and foundations to finishing details. This fully revised edition brings content to life with 1,000 drawings and photographs illustrating the latest developments in materials and methods for sustainable building and energy efficiency, wood light-frame construction, off-site and industrialized fabrication, insulating concrete forms, light-gauge steel and masonry construction, and more. An entirely new chapter on green building provides in-depth coverage on the design and construction practices today&#39;s customers and building codes require, and new online resources offer hands-on, virtual practice in 3D. When it needs to be built right, turn to Fundamentals of Residential Construction, Fourth Edition.

EDWARD ALLEN, FAIA, has a teaching career spanning more than thirty years, including as a faculty member at Yale University and the Massachusetts Institute of Technology, and is the best-selling author of *The Architects Studio Companion*; *Architectural Detailing*; *Form and Forces*; and *Fundamentals of Building Construction*, all published by Wiley. ROB THALLON, Associate Professor at the University of Oregon School of Architecture and Allied Arts, is the best-selling author and coauthor of *Graphic Guide to Frame Construction*; *Graphic Guide to Site Construction*; and *Graphic Guide to Interior Details*. ALEXANDER C. SCHREYER is Senior Lecturer and Program Director at the University of Massachusetts, Amherst, where he heads the Building and Construction Technology program and is a faculty member in Architecture. He is a wood engineering researcher

and the author of Architectural Design with SketchUp, Second Edition, published by Wiley.

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A very useful book.

FUNDAMENTALS OF RESIDENTIAL CONSTRUCTION 4th ed. by Allen, Thallon, and Schryer is a 733-page hardcover book on the practical aspects of architecture and mechanical engineering, and civil engineering, as it applies to residential homes. During the past 40 years, I have read many books intended for the novice as well as for seasoned PhD-level scientists, on topics such as circuit diagrams, mechanical engineering, and chemistry. The book will be a great asset for people like me, who write patent applications on mechanical devices. Also, this book will be a perfect asset for people wanting employment in hardware stores and lumber yards. Of course, the book will likely be revered by any person intending to enter the building profession as a blue-collar worker, as well as any person intending to earn a college degree in architecture or engineering. This book by Allen, Thallon, and Schryer, which is a like an encyclopedia written for the novice, is one of the very best-written technical books that I've ever encountered. The authors NEVER talk down to the reader. The writing STAYS ON TOPIC. There is not one ounce of journalistic fluff. The photos, diagrams, and graphs are nicely integrated with the text. There is not one mathematical diagram, which contributes to the book's readability for everybody. DETAILS OF ONE OF THE CHAPTERS (Concrete, Ch. 7). To jump right into the subject matter, the chapter on CONCRETE (pages 179-198) has 20 photos, which include Hariana's Villa (palace built in the years AD125-135), a cross-section of concrete showing embedded stones, an industrial rotary kiln, a photo of air-entrained concrete (bubbles are 1/100th inch wide), and pumping concrete into a framework with aid of a hand-held vibrator. Chapter 7 also has eleven schematic diagrams, e.g., a picture of a hollow metal cone used to test how a stack of wet concrete is able to stand up when unsupported (slump test), a graph showing compressive strengths over 180 days when concrete is kept moist the entire time (highest strength) or when allowed to air-dry starting from day one (results in lowest strength), and a cross-section diagram of steel bar-reinforced concrete showing "stirrups" that carry "diagonal tension" near the ends of the concrete beam, and bottom steel bars to carry "tensile forces." Regarding the accompanying text, we read that wet concrete should be kept moving and agitated in various directions, to prevent solids from aggregating, "the coarse aggregate works its way to the top of the form, and the water and cement paste rise to the top." Regarding reinforcement, we read that concrete and steel stick together well and that they both expand and

contract equivalently with temperature, "If the two materials had grossly different coefficients of thermal expansion, a reinforced concrete structure would tear itself apart during the cycle of temperature variation . . if concrete did not adhere to steel, a very different and more expensive configuration would be necessary."GLOSSARY. Pages 703-726 provide definitions of terms, such as "airtight dry wall approach," "alternating current," "coped connection," "fly ash," and "paneling." As you can see, the GLOSSARY includes the most primitive of terms ("alternating current") as well as advanced terms that most people have never heard ("coped connection").CHAPTERS. There are 28 chapters, including, Ch.5. Wood and Wood Products, Ch.6 Masonry, Ch.7 Concrete, Ch.8 Rough Site Work, Ch.9 Foundations, Ch.10 Floor and Wall Framing, Ch.11 Roof Framing . . Ch.15 Plumbing, Ch.16 Heating and Cooling, Ch.17 Fireplaces and Stoves, Ch.18 Electrical Wiring, Ch.19 Thermal Insulation . . Ch.23 Panelized and Prefabricated Construction.OTHER HIGHLIGHTS.

Other highlights that caught my eye, while thumbing through this captivating and very well-written book, include page 11, which shows assembly of prefabricated houses using a crane (4 photos). Pages 17-23 talk about building codes and permits. Page 34 has a histogram showing plummeting costs of solar electricity from years 1977-2013. Pages 100-103 describe tree growth and we see beautiful pen and ink diagrams renditions of light microscopic pictures of the "cell structure" of softwood and of hardwood. Page 102 teaches which kinds of trees are used for framing, molding, floors, and shingles (makes good topic for a party game among architects). Pages 108-110 talk about lumber defects and lumber grading, and we learn 4 types of distortions (crook, cup, bow, and twist) (also, an interesting topic for a party game for architects and builders). Pages 119-122 discuss plywood, and we read that "veneers for structural panels are rotary sliced . . each log is rotated in a large lathe against a stationary knife . . a machine spreads glue onto the veneers as they are laid atop one another." Pages 128-134 teach nails, screws, lag screws, bolts, plates, staples, and anchors.MINOR GLITCH. All of the photographs show the subject matter in proper perspective, as do most of the line-drawings (FIGS. 8.12 and 9.14 are fine). But FIGS. 10.21, 10.40, 15.18, and 21.13 ignore perspective. Oh well, I guess that I am a bit too picky.

Ã  Ã  As I mention in my video, I first read the first or second edition of this book ... and it's only gotten bigger and better. This is not a coffee table book and it's not a project book. It's a genuine textbook on residential construction from small to larger scale projects. My video goes through much of what I love about this book. It's certainly not 100% comprehensive in every specific area (like wiring or masonry), but it's a great overview. The images are simple but very illustrative. When my wife and I were building our house, I relied heavily on many sections in that earlier edition ... in

particularly, draining and roofing system design illustrations in this book were valuable to us. Written by a team of experienced faculty and builders, this is a very powerful textbook / reference guide.

This is an excellent and encompassing book on residential construction. I have the 2nd edition of this book and this new 4th edition updates it to more modern materials and new methods. There are still a lot of the original photos and texts, but there are new ones in the right places. I have always found this book to be a trustworthy and informative reference for all the fundamentals. It is well written in a concise and understandable way with pertinent illustrations to expand on the text. Worthy of a spot on every builder's, contractor's and remodeler's bookshelf.

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