

Design And Construction Of High Performance Homes Building Envelopes Renewable Energies And Integrated Practice

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Green from the Ground Up - David Johnston 2008

Highlighted by more than 350 full-color photographs and illustrations, a comprehensive study of sustainable, energy-efficient, and healthful home construction offers a detailed explanation of green building fundamentals that covers such topics as site planning, materials selection, efficient energy alternatives, indoor air quality, and more at every stage in the construction process, from framing to finishes. Original.

Handbook of Green Building Design and Construction - Sam Kubba 2016-10-15

Handbook of Green Building Design and Construction: LEED, BREEAM, and Green Globes, Second Edition directly addresses the needs of building professionals interested in the evolving principles, strategies, and concepts of green/sustainable design. Written in an easy to understand style, the book is updated to reflect new standards to LEED. In addition, readers will find sections that cover the new standards to BREEAM that involve new construction Infrastructure, data centers, warehouses, and existing buildings. Provides vital information and penetrating insights into three of the top Green Building Codes and Standards applied Internationally Includes the latest updates for complying with LEED v4 Practices and BREEAM Presents case studies that draws on over 35 years of personal experience from across the world

Zero Net Energy Case Study Homes - Edward Dean 2018-12-26

This is the first volume of in-depth case studies of zero-net-energy (ZNE) residential structures. Following the same descriptive approach and format of Volumes 1-3 of the previously published Zero Net Energy Case Study Buildings, this book focuses entirely on examples of housing archetypes in the United States. These include the single-family private house, one-off spec houses, manufactured housing, tract house developments and mixed-use multifamily projects. In this well-illustrated book, all the case study projects are described in terms of how they were built to achieve verified ZNE performance, that is, the energy used by the building over the course of a year was equal to the amount of energy supplied by its on-site renewable energy system. This book goes beyond recent publications on ZNE buildings with its reporting and analysis of the actual measured energy use and renewable energy production, including graphs and charts of this performance over a full year, verifying actual achievement of the zero-net-energy goal. As in the previous volumes, each case study concludes with a candid discussion of post-occupancy issues and "lessons learned" for the project. Enhanced by many beautiful photographs, architectural drawings and illustrations, it is attractive and easy to read, while still providing detailed technical information common to all the case study residential projects.

Passive Houses - Chris van Uffelen 2012

The new generation of ecological architecture building owners today are increasingly confronted with the question of energy efficiency. Depending on the climatic zone, passive houses require very different technologies, interventions and steps to be taken by the architects. This volume portrays 60 single family passive houses.

Building a Sustainable Home - Melissa Rappaport Schifman 2018-08-07

The green building movement has produced hundreds of "how-to" books and websites that are filled with tips about green building and what homeowners should do to go green. While helpful and informative, when it comes to making actual purchasing and installation decisions, these books do not make it any easier for a homeowner to prioritize against a budget. Here, Schifman shares her knowledge and experience for others to use in their journey toward a greener way of living. Whether the reader is building a new home or doing a minor remodel, a homeowner needs a framework by which to guide their decisions. These decisions are based on values, and the author posits that there are really only three reasons to go green: For Our Health: By building more sustainably, we reduce our exposure to harmful chemicals and toxins. For Our Wealth: By building a more durable home and being more efficient with resources like water and electricity, we reduce our monthly utility bills and ongoing maintenance expenses. For Our Soul: Collectively doing the right thing for our planet does make a difference—and that is soul-nourishing. Learn the logistics of choosing windows, insulation, appliances, and lighting. Find out about FSC certified wood and about using reclaimed materials. Here is everything you need to make your home sustainable.

Architecture and Energy - William W. Braham 2013-07-18

Does energy consumption influence architectural style? Should more energy-efficient buildings look different? Can that "look" be used to explain or enhance their performance? Architecture and Energy provides architects and architectural theorists with more durable arguments for environmental design decisions, arguments addressing three different scales or aspects of contemporary construction. By drawing together essays from the leading experts in the field, this book engages with crucial issues in sustainable design, such as: The larger role of energy in forming the cultural and economic systems in which architecture is conceived, constructed, and evaluated The different measures and meanings of energy "performance" and how those measures are realized in buildings The specific ways in which energy use translates into the visible aspects of architectural style. Drawing on research from the UK, US, Europe, and Asia the book outlines the problems surrounding energy and architecture and provides the reader with a considered overview of this important topic.

Water Management Guide - Joseph W. Lstiburek 2006-01-01

Green Building Strategies - Jeannie Leggett Sikora 2012

A concise guide to current best practices for designing, constructing, testing, and ensuring longevity for new high-performance homes, Green Building Strategies explains in plain language what's happening in the rapidly evolving field of building science. Green Building Strategies has condensed current information about green building from credible sources in a format you can easily digest. With this book you'll learn how to - Comply with new energy code requirements - Understand green building standards - Sort out product manufacturers' claims - Answer buyers' questions about high performance homes - Build high-

performance energy-efficient green homes to satisfy buyers and stay ahead of your competitors Green Building Strategies takes you step-by-step from design through site development and construction, quality assurance, marketing, and customer service. It provides the information you need to systematically create green projects with a price tag both you and your buyers can accept. This comprehensive resource includes URLs for essential online green building resources, illustrations, and a glossary. "This very readable and easy-to-use guide will help builders and other industry professionals understand and apply cutting-edge building science to construct high performance homes that meet consumer demand." Donald Ferrier, CGB Ferrier Companies NAHB Green Building Advocate of the Year Energy Value Housing Award Remodeler of the Year Fort Worth, Texas

The Passivhaus Designer's Manual - Christina J. Hopfe 2015-10-05

Passivhaus is the fastest growing energy performance standard in the world, with almost 50,000 buildings realised to date. Applicable to both domestic and non-domestic building types, the strength of Passivhaus lies in the simplicity of the concept. As European and global energy directives move ever closer towards Zero (fossil) Energy standards, Passivhaus provides a robust 'fabric first' approach from which to make the next step. The Passivhaus Designers Manual is the most comprehensive technical guide available to those wishing to design and build Passivhaus and Zero Energy Buildings. As a technical reference for architects, engineers and construction professionals The Passivhaus Designers Manual provides: State of the art guidance for anyone designing or working on a Passivhaus project; In depth information on building services, including high performance ventilation systems and ultra-low energy heating and cooling systems; Holistic design guidance encompassing: daylight design, ecological materials, thermal comfort, indoor air quality and economics; Practical advice on procurement methods, project management and quality assurance; Renewable energy systems suitable for Passivhaus and Zero Energy Buildings; Practical case studies from the UK, USA, and Germany amongst others; Detailed worked examples to show you how it's done and what to look out for; Expert advice from 20 world renowned Passivhaus designers, architects, building physicists and engineers. Lavishly illustrated with nearly 200 full colour illustrations, and presented by two highly experienced specialists, this is your one-stop shop for comprehensive practical information on Passivhaus and Zero Energy buildings.

Home Builder's Guide to Coastal Construction - Technical Fact Sheet Series - 2010

Hut Pavilion Shrine: Architectural Archetypes in Mid-Century Modernism - Miles David Samson 2016-03-09

The phase of American architectural history we call 'mid-century modernism,' 1940-1980, saw the spread of Modern Movement tenets of functionalism, social service and anonymity into mainstream practice. It also saw the spread of their seeming opposites. Temples, arcades, domes, and other traditional types occur in both modernist and traditionalist forms from the 1950s to the 1970s. Hut Pavilion Shrine examines this crossroads of modernism and the archetypal, and critiques its buildings and theory. The book centers on one particularly important and omnipresent type, the pavilion - a type which was the basis of major work by Louis I. Kahn, Paul Rudolph, Philip Johnson, Minoru Yamasaki, and other eminent architects. While focusing primarily on the architecture culture of the United States, it also includes the work of British, European Team X, and Scandinavian designers and writers. Making connections between formal analysis, historical context, and theory, the book continues lines of inquiry which have been pursued by Neil Levine and Anthony Vidler on representation, and by Sarah Goldhagen and Alice Friedman on modernism's 'forbidden' elements of the honorific and the visually pleasurable. It highlights the significance of 'pavilionizing' mid-century designers such as Victor Lundy, John Johansen, Eero Saarinen, and Edward Durrell Stone, and shows how frequently essentialist and traditionalist types appeared in the roadside vernacular of drive-in restaurants, gas stations, furniture and car showrooms, branch banks, and motels. The book ties together the threads in mid-century architectural theory that addressed aspects of type, 'essential' structure, and primal 'humanistic' aspects of environment-making and discusses how these concerns outlived the mid-century moment, and in the designs and writings of Aldo Rossi and others they paved the way for Post-Modernism.

Residential Construction Performance Guidelines, Consumer Reference (Pack of 10) - National Association of Home Builders 2016

NAHB's Residential Construction Performance Guidelines were created to offer a third-party view of quality issues in residential construction (both new homes and remodeling). The Consumer Reference makes it easy to provide a copy of the guidelines to every customer. Sold in affordable packs of 10, the Consumer Reference is a great addition to your warranty claims process and: Help customers understand the basics of a properly constructed home and how it should perform during the warranty period Take action to resolve customer concerns before they escalate to complaints Exhibit your professionalism by showing that you consistently meet or exceed accepted industry guidelines Includes Residential Construction Performance Guidelines for: Site Work and Foundation Floors, Walls, and Roofs

Architect's Guide to Feng Shui - Cate Bramble 2007-06-01

Cate Bramble has devoted her career to highlighting the differences between 'feng shui-lite' as a fashionable pursuit in contrast to the original intentions of the Chinese masters. Here she presents the authentic principles in a technical, no-nonsense pocket book specifically for architects. As clients become more demanding and the competition for projects heats up, the architect is well advised to have many strings to their bow. This practical guide includes line illustrations that present the principles of feng shui, the Chinese art or practice in which a structure or site is chosen or configured so as to harmonize with the spiritual forces that inhabit it, and their application in architecture through planning principles, services, building elements and materials, in an accessible, easy reference format. The feng shui-savvy architect can also benefit from feng shui's ability to match structures and land, and the peculiar capacity of authentic feng shui to forecast development-related concerns including cost overruns, quality issues - even worker injuries and trade disputes! The author explains feng shui from archaeological sources and evidence of practice in the east, contrasting it with what passes for feng shui in the west. She analyses the practice in terms of such concepts as western systems theory, viewshed, space syntax and the 'pattern landscape' theory of urban planning. For the first time, the Sustainable implications of feng shui design are explained with reference to the latest developments in behavioural and cognitive sciences, evolutionary biology and other western viewpoints.

Pretty Good House - Michael Maines 2022-05-24

Pretty Good House provides a framework and set of guidelines for building or renovating a high-performance home that focus on its inhabitants and the environment--but keeps in mind that few people have pockets deep enough to achieve a "perfect" solution. The essential idea is for homeowners to work within their financial and practical constraints both to meet their own needs and do as much for the planet as possible. A Pretty Good House is: * A house that's as small as possible * Simple and durable, but also well designed * Insulated and air-sealed * Above all, it is affordable, healthy, responsible, and resilient.

Blueprint for Greening Affordable Housing - Global Green USA 2012-06-22

Blueprint for Green Affordable Housing is a guide for housing developers, advocates, public agency staff, and the financial community that offers specific guidance on incorporating green building strategies into the design, construction, and operation of affordable housing developments. A completely revised and expanded second edition of the groundbreaking 1999 publication, this new book focuses on topics of specific relevance to affordable housing including: how green building adds value to affordable housing the integrated design process best practices in green design for affordable housing green operations and maintenance innovative funding and finance emerging programs, partnerships, and policies Edited by national green affordable housing expert Walker Wells and featuring a foreword by Matt Petersen, president and chief executive officer of Global Green USA, the book presents 12 case studies of model developments and projects, including rental, home ownership, special needs, senior, self-help, and co-housing from around the United States. Each case study describes the unique green features of the development, discusses how they were successfully incorporated, considers the project's financing and savings associated with the green measures, and outlines lessons learned. Blueprint for Green Affordable Housing is the first book of its kind to present information regarding green building that is specifically tailored to the affordable housing development community.

Pocket Neighborhoods - Ross Chapin 2011

This book by architect and author Chapin describes existing pocket neighborhoods and co-housing communities--and provides inspiration for creating new ones.

Design and Construction of High-Performance Homes - Franca Trubiano 2013-03-05

Both professionals and students are increasingly committed to achieving high-performance metrics in the design, construction and operation of residential buildings. This book responds to this demand by offering a comprehensive guide which features: architectural innovations in building skin technologies which make lighter more transparent buildings high performing; energy-free architectural design principles and advances in building-integrated photovoltaics; essential engineering principles, controls and approaches to simulation for achieving net zero; the advantages of integrated design in residential construction and the challenges and opportunities it engenders; detailed case studies of innovative homes which have incorporated low-energy design solutions, new materials, alternative building assemblies, digital fabrication, integrated engineering systems and operational controls. Divided into four parts, the book discusses the requisite AEC (Architecture, Engineering and Construction) knowledge needed when building a high-performance home. It also communicates this information across four case studies, which provide the reader with a thorough overview of all aspects to be considered in the design and construction of sustainable homes. With contributions from experts in the field, the book provides a well-rounded and multi-faceted approach. This book is essential reading for students and professionals in design, architecture, engineering (civil, mechanical and electrical), construction and energy management.

Factory Design for Modular Homebuilding - Michael A. Mullens 2011

Utilizing modern industrial technology, modular homebuilding offers the promise of building a higher quality home, faster and at a lower cost. Dr. Mullens uses his 20 years of experience in the industry to examine the theory and practice of modular homebuilding, identifying its strengths and weaknesses and introducing a structured engineering design approach for configuring a high performance modular factory. The book integrates three invaluable sources of knowledge: 1) the practices and experience of current modular producers, many of whom are industry pioneers who helped create and develop the industry, 2) emerging best business practices, such as lean production and mass customization, that are transforming the industry, and 3) current scientific research findings that provide additional insight. The goal of this book is to equip stakeholders inside and outside the industry - factory designers, product designers, operating managers, investors, and researchers - so they can design and operate high performance modular factories. This book is directed to several groups: 1) industry professionals that are responsible for owning, designing and operating a modular factory, 2) advanced undergraduate and graduate students that are studying residential construction, construction science, construction management, building technology or industrial engineering and who are enrolled in courses addressing prefabricated homebuilding, and 3) faculty and students that are engaged in academic research involving prefabricated homebuilding. The book is rich in technical detail. Graphs of benchmarking results document production performance across the industry. Individual production processes are described. A conceptual Value Stream Map is developed to show how product can flow between production processes to create the overall production system. Common production layouts are provided with commentary, including material handling and storage options. Numerous photos are used to document layout and equipment choices.

LEED Reference Guide for Homes Design and Construction, V4 - U.S. Green Building Council 2013-11-01

The New Net Zero - Bill Maclay 2014

The new threshold for green building is not just low energy, it's net-zero energy. In *The New Net Zero*, sustainable architect Bill Maclay charts the path for designers and builders interested in exploring green design's new-frontier net-zero-energy structures that produce as much energy as they consume and are carbon neutral. In a nation where traditional buildings use roughly 40 percent of the total fossil energy, the interest in net-zero building is growing enormously--among both designers interested in addressing climate change and consumers interested in energy efficiency and long-term savings. Maclay, an award-winning net-zero designer whose buildings have achieved high-performance goals at affordable costs, makes the case for a net-zero future; explains net-zero building metrics, integrated design practices, and renewable energy options; and shares his lessons learned on net-zero teambuilding. Designers and builders will find a wealth of state-of-the-art information on such considerations as air, water, and vapor barriers; embodied

energy; residential and commercial net-zero standards; monitoring and commissioning; insulation options; costs; and more. The comprehensive overview is accompanied by several case studies, which include institutional buildings, commercial projects, and residences. Both new-building and renovation projects are covered in detail. *The New Net Zero* is geared toward professionals exploring net-zero design, but also suitable for nonprofessionals seeking ideas and strategies on net-zero options that are beautiful and renewably powered.

Designed to Perform - Tom Dollard 2019-07-25

This book is an illustrated practical design guide to delivering better energy performance in all types of new build homes. It takes the form of an annotated details book, with photos taken from live construction sites, with the content based around diagrams, drawings and photos by the author, which demonstrates valuable best practice knowledge and advice. Chapter 1 is an introduction to the performance gap and the quality of design and construction in new build homes, explaining the typical construction sequence of homebuilding, and highlights common issues that designers need to engage with. Chapters 2-7 look at each construction fabric in turn, including a series of detailed drawings, diagrams and photos illustrating the key elements of good design. Chapter 8 contains a checklist of all performance gap issues that designers need to look for. This book will provide valuable guidance to architects and designers on how to improve their detailing at construction stage, and therefore the overall quality of design and performance of new homes.

Moisture Control Guidance for Building Design, Construction and Maintenance -

Prefabulous + Almost Off the Grid - Sheri Koones 2012-11-15

A beautiful, user-friendly overview to building more energy-efficient and environmentally friendly homes using prefabrication. *Prefabulous + Almost Off the Grid* explores the many ways of using prefabrication to build beautiful homes that are not only environmentally friendly, but also incredibly energy efficient. Profiling more than thirty of the most energy-efficient homes in the United States, this user-friendly guide reveals how homebuilders can achieve similar results—whether they want to earn an advanced green certification or just incorporate a few energy-saving measures—with the help of floor plans, detailed resource lists, explanations of the latest technologies, and brilliant photographs. Author Sheri Koones shows that building green doesn't have to be more expensive, and in fact, can lead to dramatic savings. Koones's almost-off-the-grid homes, which take energy from the grid when necessary and return any excess energy produced, are healthier, quieter inside, and far cheaper to operate. As energy costs continue to rise, energy independence is becoming increasingly essential, and as this guide shows, the almost-off-the-grid home is a solution that is achievable for everyone. Recipient of the 2013 Robert Bruss Gold Book Award from the National Association of Real Estate Editors (NAREE) Praise for *Prefabulous + Almost Off the Grid* "The time has come to throw out the old stereotypes and to embrace prefab building techniques as the way of the future?and the best approach for today. For anyone wanting to create a house that's sustainable in every sense of the word, this book is an excellent place to start." —Sarah Susanka, architect and author of *The Not So Big House* series "You can build a high quality, environmentally friendly and efficient home at a reasonable price with a look and feel of a traditional home. Advancements like those used in our house and the other houses in this book will transform the homebuilding industry." —Christine Todd Whitman, former governor of New Jersey and administrator of the Environmental Protection Agency "This is an easy-on-the-eyes guide that includes floor plans and multiple images of the exterior and interior of each home. It is not a manual for green construction, but a general overview of aspects of prefab and green construction. And it does that well." —Natural Life magazine

Building the Timber Frame House - Tedd Benson 1981-09-01

For centuries, post-and-beam construction has proved to be one of the most durable building techniques. It is being enthusiastically revived today not only for its sturdiness but because it can be easily insulated, it is attractive, and it offers the builder the unique satisfaction of working with timbers. *Building the Timber Frame House* is the most comprehensive manual available on the technique. In it you will find a short history, of timber framing and a fully illustrated discussion of the different kinds of joinery, assembly of timbers, and raising of the frame. There are also detailed sections on present-day design and materials, house plans, site development, foundation laying, insulation, tools, and methods.

High Performance Building Guidelines - Andrea Woodner 1999-04-01

High performance buildings maximize operational energy savings; improve comfort, health, & safety of occupants & visitors; & limit detrimental effects on the environment. These Guidelines provide instruction in the new methodologies that form the underpinnings of high performance buildings. They further indicate how these practices may be accommodated within existing frameworks of capital project administration & facility management. Chapters: city process; design process; site design & planning; building energy use; indoor environment; material & product selection; water mgmt.; construction admin.; commissioning; & operations & maintenance.

Housing 2.0 - Sam Rashkin 2021-09-15

Home is the ultimate consumer product. It has to be. We spend nearly 70 percent of our lives in our homes. Which leads to the "why" for Housing 2.0: Home is where life happens. Moreover, housing is one our nation's largest industries with a profound impact on our national economy. However, five crises are historically converging on the industry causing exponentially increasing pain. Housing 2.0 is about connecting the dots by identifying four market-ready innovations that will effectively mitigate these crises. In essence, it is a guide how to prepare for the inevitable disruption looming ahead. And it all begins by shifting the housing industry to a user experience optimization business model. Housing 2.0 uniquely serves this transition with an actionable framework for consistently delivering homes that meet and exceed homebuyer expectations. It includes: 19 strategies for optimizing 5 key user experiences? 150+ proven user experience best practices? 400+ pages of meticulously organized content? 360+ citations supporting key findings and recommendations? Hundreds of charts, graphs, and illustrations? Eight thought leaders essays providing expert insights in key principles. Adapting the Housing 2.0 framework provides an opportunity to build homes with substantially greater user value at significantly lower cost. This finding is supported by detailed tabulations throughout the book and empirical case studies in the final chapter. But one warning. Housing 2.0 is a lot to take in all at once. Do not be overwhelmed by all of the exciting opportunities provided to optimize how we build communities and individual homes. Instead, every housing organization should be inspired to start getting on their own optimization path. One where they customize the comprehensive Housing 2.0 framework for their regional constraints and business constraints, and then start applying it to actual projects. Towards that end, all housing professionals are invited to join Housing 2.0 Workshops and Action Groups provided by Green Builder Media and to start their own journey to user experience leadership. Housing 2.0 is about homes where life happens better.

Building Theories - Franca Trubiano 2022-10-31

Building Theories speaks to the value of words in architecture. It addresses the author's fascination with the voices of architects, engineers, builders, and craftspeople whose ideas about building have been captured in text. It discusses the content of treatises, essays, articles, and letters by those who have been, throughout history, committed to the art of building. In this, Building Theories argues for the return of a practice of architectural theory that is set amongst building, buildings, and builders. This journey of close reading reinterprets the words of Vitruvius, Alberti, de L'Orme, Le Camus de Mézières, Boullée, Laugier, Rondelet, Semper, Viollet-le-Duc, Hübsch, Bötticher, Berlage, Muthesius, Wagner, Behrendt, Gropius, and Arup. With chapters dedicated to texts from antiquity, the Renaissance, and the nineteenth century, and with a critical eye on architectural theory popularized in the Anglo-Saxon world post-1968, readers are introduced to a wider, more inclusive definition of architectural ideas. Building Theories considers how contemporary scholarship has steered away from the topic of building in its reluctance to admit that both design and construction are central to its concerns. In response, it argues for a realignment of architecture with the concept of techné, with a dual commitment to fabrica e ratio, with a productive return to l'art de bien bastir, with the accurate translation of the term Baukunst, and with an appeal to the architect's 'composite mind.' Students, practitioners, and educators will identify in Building Theories ways of thinking that strive for the integration of design with construction; reject the supposed primacy of the former over the latter; recognize how aesthetics are an insufficient scaffold for subtending the subject of architectural ethics; and accept, without reservation, that material transformations have always been at the origins of built form.

Design and Construction of High-performance Homes - Franca Trubiano 2013

Both professionals and students are increasingly committed to achieving high-performance metrics in the design, construction and operation of residential buildings. This book responds to this demand by offering a comprehensive guide which features: architectural innovations in building skin technologies which make lighter more transparent buildings high performing energy-free architectural design principles and advances in building-integrated photovoltaics essential engineering principles, controls and approaches to simulation for achieving net zero the advantages of integrated design in residential construction and the challenges and opportunities it engenders detailed case studies of innovative homes which have incorporated low-energy design solutions, new materials, alternative building assemblies, digital fabrication, integrated engineering systems and operational controls. Divided into four parts, the book discusses the requisite AEC (Architecture, Engineering and Construction) knowledge needed when building a high-performance home. It also communicates this information across four case studies, which provide the reader with a thorough overview of all aspects to be considered in the design and construction of sustainable homes. With contributions from experts in the field, the book provides a well-rounded and multi-faceted approach. This book is essential reading for students and professionals in design, architecture, engineering (civil, mechanical and electrical), construction and energy management.

Understanding Passivhaus - Emma Walshaw 2020-09-08

Understanding Passivhaus is a simple guide to the Passivhaus standard. The book explains the principles behind Passivhaus thinking, and explores numerous construction methods for achieving the Passivhaus standard. What is Passivhaus? Why design a Passivhaus? PHPP Certification Principles of Passivhaus Design Technical requirements Building fabric Form factor Insulation Thermal bridge Airtightness and air leakage Building services and ventilation Windows Solar design Shading Summer ventilation Roof lights Types of Construction Masonry construction Timber frame Structural Insulated Panels (SIPS) Insulated Concrete Formwork (ICF) Mixed methods of construction Construction Details Solid concrete with rendered external insulation Insulated concrete formwork Solid masonry with larsen trusses Masonry cavity wall Timber frame with larsen trusses Timber I joist frame SIPS construction Timber frame with external render Case Studies A selection of wonderful examples of Passivhaus designs and construction methods, with more case studies added for this second edition.

Issues in Science and Technology - 2011

Architecting High-Performance Embedded Systems - Jim Ledin 2021-02-05

Explore the complete process of developing systems based on field-programmable gate arrays (FPGAs), including the design of electronic circuits and the construction and debugging of prototype embedded devices Key Features Learn the basics of embedded systems and real-time operating systems Understand how FPGAs implement processing algorithms in hardware Design, construct, and debug custom digital systems from scratch using KiCad Book Description Modern digital devices used in homes, cars, and wearables contain highly sophisticated computing capabilities composed of embedded systems that generate, receive, and process digital data streams at rates up to multiple gigabits per second. This book will show you how to use Field Programmable Gate Arrays (FPGAs) and high-speed digital circuit design to create your own cutting-edge digital systems. Architecting High-Performance Embedded Systems takes you through the fundamental concepts of embedded systems, including real-time operation and the Internet of Things (IoT), and the architecture and capabilities of the latest generation of FPGAs. Using powerful free tools for FPGA design and electronic circuit design, you'll learn how to design, build, test, and debug high-performance FPGA-based IoT devices. The book will also help you get up to speed with embedded system design, circuit design, hardware construction, firmware development, and debugging to produce a high-performance embedded device - a network-based digital oscilloscope. You'll explore techniques such as designing four-layer printed circuit boards with high-speed differential signal pairs and assembling the board using surface-mount components. By the end of the book, you'll have a solid understanding of the concepts underlying embedded systems and FPGAs and will be able to design and construct your own sophisticated digital devices. What you will learn Understand the fundamentals of real-time embedded systems and sensors Discover the capabilities of FPGAs and how to use FPGA development tools Learn the principles of digital circuit design and PCB layout with KiCad Construct high-speed circuit board prototypes

at low cost
Design and develop high-performance algorithms for FPGAs
Develop robust, reliable, and efficient firmware in C
Thoroughly test and debug embedded device hardware and firmware
Who this book is for
This book is for software developers, IoT engineers, and anyone who wants to understand the process of developing high-performance embedded systems. You'll also find this book useful if you want to learn about the fundamentals of FPGA development and all aspects of firmware development in C and C++. Familiarity with the C language, digital circuits, and electronic soldering is necessary to get started.

Design, Technology and the Development Process in the Built Environment - Tom Collier
2003-09-02

This second book in the BEST series explores the fundamental generators and contextual issues - philosophical, physical and political - that influence built environments. It draws on international examples to show how societies and cultures in different parts of the world react to similar problems. It contrasts dramatically different types of buildings and enclosures from primitive shelters to space laboratories. They show how mankind endeavours to control the environment - whatever it is.

Essential Building Science - Jacob Deva Racusin 2016-11-28

Down and dirty - a complete step-by-step guide to making, installing and living with beautiful, all-natural earthen floors
Poor heat and moisture management are the enemies of durable, comfortable, and efficient housing, and good building design and construction starts with a solid understanding of good building science. Essential Building Science provides a highly visual and accessible introduction to the fundamentals of building science for residential construction. Part one covers the rationale behind high-performance design and the fundamentals of building physics, including thermal dynamics, moisture transfer, and hygro-thermal dynamics such as vapor drive and condensation. Part two teaches the vital critical thinking skills needed to consider buildings as whole systems and to develop thermal and moisture control strategies regardless of the specifics of the design. Case studies and examples from across North American climatic zones illuminate real-life problems and offer builders, designers, and DIYers the insights and tools required for creating better new buildings and dramatically improving old ones. Good science plus critical thinking equals high performance buildings.

Flood Resistant Design and Construction - 2015

Standard ASCE/SEI 24-14 provides minimum requirements for design and construction of structures located in flood hazard areas and subject to building code requirements.

Passive House Details - Donald B. Corner 2017-08-09

Passive House Details introduces the concepts, principles, and design processes of building ultralow-energy buildings. The objective of this book is to provide design goals, research, analysis, systems, details, and inspiring images of some of the most energy-efficient, carbon-neutral, healthy, and satisfying buildings currently built in the region. Other topics included: heat transfer, moisture management, performance targets, and climatic zones. Illustrated with more than 375 color images, the book is a visual catalog of construction details, materials, and systems drawn from projects contributed from forty firms. Fourteen in-depth case studies demonstrate the most energy-efficient systems for foundations, walls, floors, roofs, windows, doors, and more.

Energy-efficient Construction Methods - 1982

Living Homes - Thomas J. Elpel 2010

The house of your Dreams does not have to be expensive. The key is all in the planning. How much a house costs, how it looks, how comfortable it is, how energy-efficient it is--all these things occur on paper before you pick up even one tool. A little extra time in the planning process can save you tens of thousands of dollars in construction and maintenance. That is time well spent! Living Homes takes you through the planning process to design an energy and resource efficient home that won't break the bank. Then, from the footings on up to the roof, author Thomas J. Elpel guides you through the nuts and bolts of construction for slipform stone masonry, tilt-up stone walls, log home construction, building with strawbales, making your own terra tile floors, windows and doors, solar water systems, masonry heaters, framing, plumbing, greywater, septic systems, swamp filters, concrete-fly ash countertops, painting and more. Living Homes was completely re-organized and revised for the new sixth edition, based on five additional years of building experience with low-cost, high efficiency construction methods. Get the latest ideas on how to build a high-performance house that will stand the test of time! The sixth edition includes fifteen pages of new material covering the latest stone masonry tips, plus revised and expanded tips and techniques throughout the book.

The Not So Big House - Sarah Susanka 2001

Provides a review of social trends and their effect on architecture and design.

A House in the Sun - Daniel A. Barber 2016

"A House in the Sun' describes a number of solar house experiments in the 1940s and 1950s. The houses relied on the materials and ideas of modern architecture for both energy efficiency and claims to cultural relevance, and also developed out of a growing concern over global resource limits"--Provided by publisher.

Energy Free - Ann V. Edminster 2009

Energy Free is designed to equip building professionals and homeowners alike with a toolkit for creating homes that use no more energy than they produce--this means homes that are free from the vagaries of energy-price fluctuations and that help to free society of the high political and environmental costs of fossil fuels. Individuals and institutions have been working toward "zero-energy" homes for decades. This volume is the first record of those collective efforts, distilling their experience into a practical and comprehensive how-to guide. The author includes resource information and step-by-step guidance on how to make decisions that will yield an energy-free residential project, whether a single-family home or multifamily building, new or existing, in an urban or a rural setting. The unique needs and opportunities of each context are addressed. The principal topics include: Project boundaries (why you have to consider not only your home's behavior, but also your own) Prioritizing strategies (e.g., insulation vs. photovoltaics) Economics (including payback periods and incentives) How to minimize a building's energy needs How to minimize your energy needs How to power the energy needs that remain The critical role of integrated project planning Energy Free offers a wide array of resource information, including detailed window and insulation comparisons; assessments of the relative contribution of different building elements; and overall performance. It draws on research and empirical data from myriad sources, including the Department of Energy's Building America program; Sacramento Municipal Utility District's House of the Future; Passiv Haus Institute in Europe and the Passive House Institute of the U.S.; Florida Solar Energy Center; Living Building Challenge; Affordable Comfort, Inc.'s, Thousand Home Challenge; and many pioneering individual home projects across North America.