

Construction Materials Methods And Techniques

Performance of Bio-based Building Materials provides guidance on the use of bio-based building materials (BBBM) with respect to their performance. The book focuses on BBBM currently present on the European market. The state-of-the-art is presented regarding material properties, recommended uses, performance expectancies, testing methodology, and related standards. Chapters cover both 'old and traditional' BBBM since quite a few of them are experiencing a comeback on the market. Promising developments that could become commercial in the near future are presented as well. The book will be a valuable reference resource for those working in the bio-based materials research community, architects and agencies dealing with sustainable construction, and graduate students in civil engineering. Takes a unique approach to bio-based materials and presents a broad overview of the topics on relevant areas necessary for application and promotion in construction. Contains a general description, notable properties related to performance, and applications. Presents standards that are structured according to performance types. With over 750 illustrations, Roman Buildings is a thorough and systematic examination of Roman architecture and building practice, looking at large-scale public buildings as well as more modest homes and shops. Placing emphasis on the technical aspects of the subject, the author follows the process of building through each stage -- from quarry to standing wall, from tree to roof timbers -- and describes how these materials were obtained or manufactured. The author also discusses interior decoration and looks at the practical aspects of water supply, heating and roads.

Master the latest commercial building construction components and practices in an easy-to-read comprehensive textbook. This hands-on textbook introduces you to commercial building construction methods and materials currently used in the United States and Canada. Easy to read and logically organized to reflect real-world practices, Commercial Building Construction: Materials and Methods includes detailed examples along with hundreds of 3D illustrations that accurately reflect the style of construction drawings and techniques applied in the field today. You will get a complete set of commercial drawings that is referred to and described throughout the text to correlate related construction practices. Every figure in the book is provided in an image library for viewing on your computer. Included is the most comprehensive construction glossary available. Each chapter has correlated tests, print reading problems, and critical thinking problems. Current content-related actual commercial construction building projects are provided throughout to provide real-world applications. Coverage includes: Construction plans, specifications, and construction management with complete building information modeling content. Sustainable technology. Construction site and excavation with erosion and sediment control and basic site and construction surveying practices. Concrete construction and foundation systems. Masonry construction. Steel construction. Wood and heavy timber construction. Roof construction and materials. Doors and windows with sloped glazing, storefronts, curtain walls, and window walls. Insulation and barriers with indoor air quality and safety. Stair construction. Finish work and materials. Mechanical, plumbing, and electrical systems.

Get a thorough overview of sustainable methods for site, residential and commercial building construction with this comprehensive text, which covers both traditional and contemporary materials, current industry standards and new and emerging technologies. The only text organized according to the Construction Specifications Institute (CSI) MasterFormat standards, CONSTRUCTION MATERIALS, METHODS AND TECHNIQUES: BUILDING FOR A SUSTAINABLE FUTURE, Fifth Edition, features a reader-friendly style and logical structure, which follows the construction process step-by-step from project inception to completion. The new edition provides up-to-date coverage of dramatic changes underway in the construction industry, including advances in pre-fabricated construction; increased use of drones, robotics and artificial intelligence; net-zero buildings and lean construction. You'll learn about key current industry developments and standards, as well as latest relevant building codes, all presented within a dynamic, richly illustrated new design. Beyond the text itself, you can access a wealth of helpful learning resources to help you gain a clear understanding of today's construction materials, methods and techniques, providing a critical foundation for your career success.

This book comprises select and peer-reviewed proceedings of the International Conference on Recent Trends in Construction Materials and Structures (ICON 2019). The contents cover various latest developments and emerging technologies in sustainable construction materials, utilization of waste materials in concrete, special concrete, maintenance of heritage structures, earthquake engineering, and structural dynamics. The book also provides effective and feasible solutions to current problems in sustainable construction materials and structures. This book is useful for students, researchers, and industry professionals interested in concrete technology and structures.

This book is the definitive reference source for professionals involved in the conception, design and specification stages of a construction project. The theory and practical aspects of each material is covered, with an emphasis being placed on properties and appropriate use, enabling broader, deeper understanding of each material leading to greater confidence in their application. Containing fifty chapters written by subject specialists, Construction Materials Reference Book covers the wide range of materials that are encountered in the construction process, from traditional materials such as stone through masonry and steel to advanced plastics and composites. With increased significance being placed on broader environmental issues, issues of whole life cost and sustainability are covered, along with health and safety aspects of both use and installation.

Prev. ed: Construction methods, materials, and techniques, Clifton Park, N.Y., Thomas Delmar Learning, c2006.

Explore the most up-to-date green and sustainable methods for residential and commercial building construction as well as the latest materials, standards, and practices with CONSTRUCTION MATERIALS, METHODS AND TECHNIQUES: BUILDING FOR A SUSTAINABLE FUTURE, 4E. This comprehensive book's logical, well-structured format follows the natural sequence of a construction project. The book is the only one with an organization based on the Construction Specifications Institute (CSI) MasterFormat standards. Readers will find the most current industry developments and standards as well as latest relevant building codes within a dynamic new design. This edition emphasizes coverage of today's construction materials, methods and techniques that is critical to success in the industry. Important Notice: Media content referenced within the product description or the product text may not be available in the ebook version.

Learn how to identify, locate, and effectively use alternative building materials, including cob, adobe, rammed earth, bamboo, cork, wool carpeting, and more. You will also learn about the structure, climate control, siting, foundations, and flooring options you gain when using these materials. Ultimately, you will come to understand that these materials are cheaper, easier to build with, stronger, more durable, and more fire resistant.

Sustainable Construction Technologies: Life-Cycle Assessment provides practitioners with a tool to help them select technologies that are

financially advantageous even though they have a higher initial cost. Chapters provide an overview of LCA and how it can be used in conjunction with other indicators to manage construction. Topics covered include indoor environment quality, energy efficiency, transport, water reuse, materials, land use and ecology, and more. The book presents a valuable tool for construction professionals and researchers that want to apply sustainable construction techniques to their projects. Practitioners will find the international case studies and discussions of worldwide regulation and standards particularly useful. Provides a framework for analyzing sustainable construction technologies and economic viability Introduces key credit criteria for different sustainable construction technologies Covers the most relevant construction areas Includes technologies that can be employed during the process of construction, or to the product of the construction process, i.e. buildings Analyzes international rating systems and provides supporting case studies

The leading guide to professional home construction—now updated and revised! *Fundamentals of Residential Construction, Third Edition* features the most up-to-date explanations of today's residential construction systems. From foundation to roof and exterior finishes to interior details, this new edition thoroughly addresses the latest developments in materials and methods of house construction, including energy efficiency, framing, and roofing. Abundantly illustrated with more than 1,250 drawings and photographs, including new photorealistic illustrations that bring the text to life, this Third Edition provides authoritative coverage on wood light-frame construction, industrialized systems of construction, insulating concrete forms, light-gauge steel frame, panelized construction, and a new chapter on multifamily construction. Topics covered include: Plumbing Building codes Heating and cooling Financing Wiring Roofing Thermal insulation Environmental concerns Foundations Finish sitework Rough sitework Wood and light-gauge steel framing Engineered materials Exterior and interior finishes Organized in a logical, easy-to-follow format, *Fundamentals of Residential Construction, Third Edition* is the one-stop source for building professionals to gain a working knowledge of codes, management procedures, material, and all home building concerns.

This comprehensive book containing essential information on the applicability of thermal analysis techniques to evaluate inorganic and organic materials in construction technology should serve as a useful reference for the scientist, engineer, construction technologist, architect, manufacturer, and user of construction materials, standard-writing bodies, and analytical chemists. The material scientists at the National Research Council of Canada have established one of the best thermal analysis laboratories in the world. Various types of thermal analysis techniques have been applied successfully to the investigation of inorganic and organic construction materials. These studies have provided important information on the characterization of raw as well as finished materials, quality control, quantitative estimation, interrelationships between physical, chemical, mechanical, and durability characteristics. Information on the application of thermal analysis to construction materials is dispersed in literature and hence the IRC scientists embarked on producing a handbook, the first of its kind, incorporating the latest knowledge available in this field of activity. Almost all important construction materials have been included.

This book provides an understanding of peer-reviewed international construction materials and their testing methods in a simplified manner at a high technical level. It focuses on specific construction materials, such as cement, concrete, bricks, lime, paints, steel and so forth, distributed in ten different chapters. Using real-time quality control as the underlying determinant, the book material exclusively follows Indian, American, European, German and South African standards. Relevant modern sophisticated material testing techniques, like scanning electron microscope (SEM), thermo gravimetric analysis (TGA) and X-Ray diffraction (XRD), are also described. Aimed at undergraduate, senior undergraduate and early career professionals in civil engineering and construction engineering, this book Gives a clear background of material testing and its importance Includes step-by-step procedures for easy understanding of and for performing the tests Covers Indian, ASTM, South African, DIN German and European Standards Includes basic and advanced techniques for chemical admixtures Each chapter concludes with practice questions, including 400+ solved questions and 50+ test procedures in total

This book addresses the concepts of material selection and analysis, choice of structural form, construction methods, environmental loads, health monitoring, non-destructive testing, and repair methodologies and rehabilitation of ocean structures. It examines various types of ocean and offshore structures, including drilling platforms, processing platforms and vessels, towers, sea walls and surge barriers, and more. It also explores the use of MEMS in offshore structures, with regard to military and oil exploration applications. Full-color figures as well as numerous solved problems and examples are included to help readers understand the applied concepts.

Designing buildings and physical environments depends on social structure, social needs, economic data, environment, and technological development. Planning these environments is heavily influenced by cultural and regional need, the existing environment, and the materials available. *Reusable and Sustainable Building Materials in Modern Architecture* is an essential reference source that discusses the shaping of building design through culture and materials as well as the influence of environment on building design. Featuring research on topics such as passive design, ecological design, and urban design, this book is ideal for academicians, specialists, and researchers seeking coverage on culture, environment, and building design.

Until recently, much of the development of building materials has predominantly focused on producing cheaper, stronger and more durable construction materials. More recently attention has been given to the environmental issues in manufacturing, using, disposing and recycling of construction materials. Sustainability of construction materials brings together a wealth of recent research on the subject. The first part of the book gives a comprehensive and detailed analysis of the sustainability of the following building materials: aggregates; timber, wood and bamboo; vegetable fibres; masonry; cement, concrete and cement replacement materials; metals and alloys; glass; and engineered wood products. A final group of chapters cover the use of waste tyre rubber in civil engineering works, the durability of sustainable construction materials and nanotechnologies for sustainable construction. With its distinguished editor and international team of contributors, *Sustainability of construction materials* is a standard reference for anyone involved in the construction and civil engineering industries with an interest in the highly important topic of sustainability. Provides a comprehensive and detailed analysis of the sustainability of a variety of construction materials ranging from wood and bamboo to cement and concrete Assesses the durability of sustainable construction materials including the utilisation of waste tyre rubber and vegetable fibres Collates a wealth of recent research including relevant case studies as well as an investigation into future trends

Comprehensive in nature, this newly updated book extensively explores construction materials and properties, as well as current methods of residential and commercial building construction. Revisions reflect changes based on the 2004 Edition of Construction Specifications Institute (CSI) MasterFormat? and follow the logical sequence of a construction project. The Second Edition is complete with current information including new technologies, products and product upgrades, from hundreds of manufacturers and professional and trade organizations, and references building codes and standards relating to various construction materials and methods.

Recent years have seen enormous advances in the technology of concrete as a material, through which its strength, compactness and ductility can reach levels never dreamed of before. Thanks to these improved material properties, the strength and durability of concrete structures is greatly improved, their weight and dimensions reduced, the scope of concrete as a structural material is widened and – despite the higher material costs – overall economy is possible, with positive impacts on sustainability as well. Similar advances are underway in reinforcing materials, notably high strength steel and fibre-reinforced polymers, and in the way they are combined with concrete into high performance structures.

Developments in materials and equipment, as well as new concepts, have lead to innovative construction techniques, reducing cost and construction time and making possible the application of concrete under extreme conditions of construction or environment. All these advances will be highlighted in the book by the top experts in the field of concrete structures, namely those currently active in the field's leading and truly international scientific and technical association: the International Federation of Structural Concrete (fib) www.fib-international.org. Audience: Practicing engineers and firms, academics, researchers and graduate students, will all find the book timely, informative and very interesting. Modern Residential Construction Practices provides easy-to-read, comprehensive and highly illustrated coverage of residential building construction practices that conform to industry standards in the United States and Canada. Each chapter provides complete descriptions, real-world practices, realistic examples, three-dimensional (3D) illustrations, and related tests and problems. Chapters cover practices related to every construction phase including: planning, funding, permitting, codes, inspections, site planning, excavation, foundations and flatwork, floors, walls, roofs, finish work and cabinetry; heating, ventilating, and air conditioning (HVAC); electrical, and plumbing. The book is organized in a format that is consistent with the process used to take residential construction projects from preliminary concept through all phases of residential building construction. An ideal textbook for secondary and college level construction programs, the book is packed with useful features such as problems that challenge students to identify materials and practices, along with research and document information about construction materials and practices, useful summaries, key notes, a detailed glossary, and online materials for both students and educators.

The construction of buildings and structures relies on having a thorough understanding of building materials. Without this knowledge it would not be possible to build safe, efficient and long-lasting buildings, structures and dwellings. Building materials in civil engineering provides an overview of the complete range of building materials available to civil engineers and all those involved in the building and construction industries. The book begins with an introductory chapter describing the basic properties of building materials. Further chapters cover the basic properties of building materials, air hardening cement materials, cement, concrete, building mortar, wall and roof materials, construction steel, wood, waterproof materials, building plastics, heat-insulating materials and sound-absorbing materials and finishing materials. Each chapter includes a series of questions, allowing readers to test the knowledge they have gained. A detailed appendix gives information on the testing of building materials. With its distinguished editor and eminent editorial committee, Building materials in civil engineering is a standard introductory reference book on the complete range of building materials. It is aimed at students of civil engineering, construction engineering and allied courses including water supply and drainage engineering. It also serves as a source of essential background information for engineers and professionals in the civil engineering and construction sector. Provides an overview of the complete range of building materials available to civil engineers and all those involved in the building and construction industries Explores the basic properties of building materials featuring air hardening cement materials, wall and roof materials and sound-absorbing materials Each chapter includes a series of questions, allowing readers to test the knowledge they have gained

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In the quest to mitigate the buildup of greenhouse gases in Earth's atmosphere, researchers and policymakers have increasingly turned their attention to techniques for capturing greenhouse gases such as carbon dioxide and methane, either from the locations where they are emitted or directly from the atmosphere. Once captured, these gases can be stored or put to use. While both carbon storage and carbon utilization have costs, utilization offers the opportunity to recover some of the cost and even generate economic value. While current carbon utilization projects operate at a relatively small scale, some estimates suggest the market for waste carbon-derived products could grow to hundreds of billions of dollars within a few decades, utilizing several thousand teragrams of waste carbon gases per year. Gaseous Carbon Waste Streams Utilization: Status and Research Needs assesses research and development needs relevant to understanding and improving the commercial viability of waste carbon utilization technologies and defines a research agenda to address key challenges. The report is intended to help inform decision making surrounding the development and deployment of waste carbon utilization technologies under a variety of circumstances, whether motivated by a goal to improve processes for making carbon-based products, to generate revenue, or to achieve environmental goals.

Civil Engineering Materials explains why construction materials behave the way they do. It covers the construction materials content for undergraduate courses in civil engineering and related subjects and serves as a valuable reference for professionals working in the construction industry. The book concentrates on demonstrating methods to obtain, analyse and use information rather than focusing on presenting large amounts of data. Beginning with basic properties of materials, it moves on to more complex areas such as the theory of concrete durability and corrosion of steel. Discusses the broad scope of traditional, emerging, and non-structural materials Explains what material properties such as specific heat, thermal conductivity and electrical resistivity are and how they can be used to calculate the performance of construction materials. Contains numerous worked examples with detailed solutions that provide precise references to the relevant equations in the text. Includes a detailed section on how to write reports as well as a full section on how to use and interpret publications, giving students and early career professionals valuable practical guidance.

Materials Characterization Using Nondestructive Evaluation (NDE) Methods discusses NDT methods and how they are highly desirable for both long-term monitoring and short-term assessment of materials, providing crucial early warning that the fatigue life of a material has elapsed, thus helping to prevent service failures. Materials Characterization Using Nondestructive Evaluation (NDE) Methods gives an overview of established and new NDT techniques for the characterization of materials, with a focus on materials used in the automotive, aerospace, power plants, and infrastructure construction industries. Each chapter focuses on a different NDT technique and indicates the potential of the method by selected examples of applications. Methods covered include scanning and transmission electron microscopy, X-ray microtomography and diffraction, ultrasonic, electromagnetic, microwave, and hybrid techniques. The authors review both the determination of microstructure properties, including phase content and grain size, and the determination of mechanical properties, such as hardness, toughness, yield strength, texture, and residual stress. Gives an overview of established and new NDT techniques, including scanning and transmission electron microscopy, X-ray microtomography and diffraction, ultrasonic, electromagnetic, microwave, and hybrid techniques Reviews the determination of microstructural and mechanical properties Focuses on materials used in the automotive, aerospace, power plants, and infrastructure construction industries Serves as a highly desirable resource for both long-term monitoring and short-term assessment of materials

The Ecology of Building Materials explores key questions surrounding sustainability of building materials. It provides technical data to enable design and building professionals to choose the most appropriate materials for a project: those that are least polluting, most energy efficient, and from sustainable sources. The book also gives information and guidance on a wide range of issues such as recycling, detailing for increased durability and Life Cycle Analysis. Berge's book, translated from the Norwegian by Chris Butters and Filip Henley, offers safe and environmentally friendly material options. It provides an essential and easy-to-use reference guide to this complex subject for the building industry professional. New to this edition: • Thorough exploration of building materials in relation to climate change issues • Extensive updating of basic data, as well as the introduction of a wide range of new materials • Methods for recycling and reuse of materials • More information on the interaction between materials and the indoor environment, ventilation and energy use • Full colour text and user-friendly larger format Bjørn Berge is a practicing architect, researcher and lecturer. Since the 1970s, he has written several books on building ecology for the Scandinavian public. He is one of the founders of Gaia Architects who have developed a wide range of pioneering techniques in sustainable building.

From China to Kuala Lumpur to Dubai to downtown New York, amazing buildings and unusual structures create attention with the uniqueness of their design. While attractive to developers and investors, the safe and economic design and construction of reinforced concrete buildings can sometimes be problematic. Advanced Materials and Techniques for Rein

The construction materials industry is a major user of the world's resources. While enormous progress has been made towards sustainability, the scope and opportunities for improvements are significant. To further the effort for sustainable development, a conference on Sustainable Construction Materials and Technologies was held at Coventry University, Coventry, U.K., from June 11th - 13th, 2007, to highlight case studies and research on new and innovative ways of achieving sustainability of construction materials and technologies. This book presents selected, important contributions made at the conference. Over 190 papers from over 45 countries were accepted for presentation at the conference, of which approximately 100 selected papers are published in this book. The rest of the papers are published in two supplementary books. Topics covered in this book include: sustainable alternatives to natural sand, stone, and Portland cement in concrete; sustainable use of recyclable resources such as fly ash, ground municipal waste slag, pozzolan, rice-husk ash, silica fume, gypsum plasterboard (drywall), and lime in construction; sustainable mortar, concrete, bricks, blocks, and backfill; the economics and environmental impact of sustainable materials and structures; use of construction and demolition wastes, and organic materials (straw bale, hemp, etc.) in construction; sustainable use of soil, timber, and wood products; and related sustainable construction and rehabilitation technologies.

This complete guide to the evaluation, selection, and use of sustainable materials in the landscape features strategies to minimize environmental and human health impacts of conventional site construction materials as well as green materials. Providing detailed current information on construction materials for sustainable sites, the book introduces tools, techniques, ideologies and resources for evaluating, sourcing, and specifying sustainable site materials. Chapters cover types of materials, both conventional and emerging green materials, environmental and human health impacts of the material, and detailed strategies to minimize these impacts. Case studies share cost and performance information and lessons learned.

Over the concluding decades of the twentieth century, the historic preservation community increasingly turned its attention to modern buildings, including bungalows from the 1930s, gas stations and diners from the 1940s, and office buildings and architectural homes from the 1950s. Conservation efforts, however, were often hampered by a lack of technical information about the products used in these structures, and to fill this gap Twentieth-Century Building Materials was developed by the U.S. Department of the Interior's National Park Service and first published in 1995. Now, this invaluable guide is being reissued—with a new preface by the book's original editor. With more than 250 illustrations, including a full-color photographic essay, the volume remains an indispensable reference on the history and conservation of modern building materials. Thirty-seven essays written by leading experts offer insights into the history, manufacturing processes, and uses of a wide range of materials, including glass block, aluminum, plywood, linoleum, and gypsum board. Readers will also learn about how these materials perform over time and discover valuable conservation and repair techniques. Bibliographies and sources for further research complete the volume. The book is intended for a wide range of conservation professionals including architects, engineers, conservators, and material scientists engaged in the conservation of modern buildings, as well as scholars in related disciplines.

Organized by CSI divisions II to XVI, this practical, easy-to-read text is the most comprehensive treatment of construction materials and methods on the market today. Uniquely detailed in material properties, the text covers all current materials and their applications in

commercial and residential buildings. Carpentry chapters pay special attention to light-frame construction with both wood and metal. The book's engaging chapter glossaries, review questions, applications, and references give the student vital tools for grasping concepts and exploring topics further. Special chapters on plumbing, HVAC, and electrical systems help set the text apart. Suitable for courses in construction technology, architecture, civil technology, and building trades.

This book presents select proceedings of the International Conference on Sustainable Construction and Building Materials (ICSCBM 2018), and examines a range of durable, energy-efficient, and next-generation construction and building materials produced from industrial wastes and byproducts. The topics covered include alternative, eco-friendly construction and building materials, next-generation concretes, energy efficiency in construction, and sustainability in construction project management. The book also discusses various properties and performance attributes of modern-age concretes including their durability, workability, and carbon footprint. As such, it offers a valuable reference for beginners, researchers, and professionals interested in sustainable construction and allied fields.

Construction Materials, Methods and Techniques Cengage Learning

An illustrated guide to the materials, tools, and methods used in exterior and interior construction

Sustainable Construction Materials: Recycled Aggregate focuses on the massive systematic need that is necessary to encourage the uptake of recycled and secondary materials (RSM) in the construction industry. This book is the fifth and the last of the series on sustainable construction materials and like the previous four, it is also different to the norm. Its uniqueness lies in using the newly developed, Analytical Systemisation Method, in building the data-matrix sourced from 1413 publications, contributed by 2213 authors from 965 institutions in 67 countries, from 1977 to 2018, on the subject of recycled aggregate as a construction material, and systematically analysing, evaluating and modelling this information for use of the material as an aggregate concrete and mortar, geotechnics and road pavement applications. Environmental issues, case studies and standards are also discussed. The work establishes what is already known and can be used to further progress the use of sustainable construction materials. It can also help to avoid repetitive research and save valuable resources. The book is structured in an incisive and easy to digest manner and is particularly suited for researchers, academics, design engineers, specifiers, contractors, and government bodies dealing with construction works. Provides an exhaustive and comprehensively organized list of globally-based published literature spanning 5000 references Offers an analysis, evaluation, repackaging and modeling of existing knowledge that encourages more responsible use of waste materials Provides a wealth of knowledge for use in many sectors relating to the construction profession, including academia, research, practice and adoption of RSM

New Materials in Civil Engineering provides engineers and scientists with the tools and methods needed to meet the challenge of designing and constructing more resilient and sustainable infrastructures. This book is a valuable guide to the properties, selection criteria, products, applications, lifecycle and recyclability of advanced materials. It presents an A-to-Z approach to all types of materials, highlighting their key performance properties, principal characteristics and applications. Traditional materials covered include concrete, soil, steel, timber, fly ash, geosynthetic, fiber-reinforced concrete, smart materials, carbon fiber and reinforced polymers. In addition, the book covers nanotechnology and biotechnology in the development of new materials. Covers a variety of materials, including fly ash, geosynthetic, fiber-reinforced concrete, smart materials, carbon fiber reinforced polymer and waste materials Provides a "one-stop resource of information for the latest materials and practical applications Includes a variety of different use case studies

Materials Science in Construction explains the science behind the properties and behaviour of construction's most fundamental materials (metals, cement and concrete, polymers, timber, bricks and blocks, glass and plaster). In particular, the critical factors affecting in situ materials are examined, such as deterioration and the behaviour and durability of materials under performance. An accessible, easy-to-follow approach makes this book ideal for all diploma and undergraduate students on construction-related courses taking a module in construction materials.

Building Construction Materials and Techniques follows a unique approach to the subject by including both materials and construction techniques in a combined text as per the latest trends in university curriculums. It also caters to the needs of the universities where these subjects are offered across two semesters as well. Of the 32 chapters in this book, 13 are dedicated to building construction materials while the remaining 19 focus on conventional as well as modern techniques in construction. The chapters are supplemented by a plethora of self-explanatory illustrations for easy comprehension. Relevant references to IS codes and standards make this text ideal for extended learning.

What makes building materials sustainable? How to reduce the amount of embodied energy in building constructions? And how does a Life Cycle Analysis work? These are questions which are becoming increasingly more common in the context of sustainable construction. The DETAIL Green Book "Sustainable Construction Techniques" offers a thorough guide to ecological building design and sustainable construction methods, which will be particularly valuable for architects. The authors provide an overview of the most relevant databases and certification standards for building products and illustrate how a Life Cycle Analysis is conducted. They also identify key ways of optimising the planning process in line with ecological criteria, while offering advice for the selection of building materials and elements. Detailed documentation from five buildings constructed in Europe and North America serve to illustrate the associated assessment processes in this book.

3D Concrete Printing Technology provides valuable insights into the new manufacturing techniques and technologies needed to produce concrete materials. In this book, the editors explain the concrete printing process for mix design and the fresh properties for the high-performance printing of concrete, along with commentary regarding their extrudability, workability and buildability. This is followed by a discussion of three large-scale 3D printings of ultra-high performance concretes, including their processing setup, computational design, printing process and materials characterization. Properties of 3D-printed fiber-reinforced Portland cement paste and its flexural and compressive strength, density and porosity and the 3D-printing of hierarchical materials is also covered. Explores the factors influencing the mechanical properties of 3D printed products out of magnesium potassium phosphate cement material Includes methods for developing Concrete Polymer Building Components for 3D Printing Provides methods for formulating geopolymers for 3D printing for construction applications

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