Construction Materials Methods Techniques Sustainable

The most comprehensive guide to material selection & installation It takes a wise choice of building materials and details to create durable, attractive, and affordable custom homes and remodeling projects. Best Practices Guide to Residential Construction provides up-to-date, field-tested recommendations that help professionals balance cost and performance when designing and building residential projects. Steven Bliss, former editorial director of The Journal of Light Construction and founding editor of Progressive Builder, draws on his extensive knowledge as a practicing builder, designer, and construction editor to help building professionals select the right materials for every job and install them with confidence. This one-stop resource covers the real-world challenges of material selection and installation so designers, contractors, and building owners can make informed decisions for all major building components. Useful to architects, designers, and specifiers--as well as contractors, builders, and developers--Best Practices Guide to Residential Construction features: * More than 200 photos and illustrations of critical residential construction details * Installation tips and cautions that help prevent costly product failures * Descriptions of the latest composites and synthetics that are changing the way we build * Easy-to-use charts for making quick product comparisons * An authoritative guide to indoor air quality and healthy

house construction

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.

Sustainable Construction Materials: Sewage Sludge Ash, part of a series of five, aims to promote the use of sustainable construction materials. It is different from the norm, with its uniqueness lying in the development of a data matrix sourced from over 600 publications and contributed by 1107 authors from 442 institutions in 48 countries from 1970 to 2016, all focusing on the subject of sewage sludge ash as a construction material, and systematically analyzing, evaluating, and modeling the information for use in cement, concrete, ceramics, geotechnics, and road pavement applications. Related environmental issues, case studies, and standards are also discussed. The book helps

users avoid repetitive research and save valuable resources, giving them more latitude to explore new research to progress the use of sustainable construction materials. It is structured in an incisive and easy to digest manner. As an excellent reference source, the book is particularly suited for researchers, academics, design engineers, specifiers, contractors, developers, and certifying and regulatory authorities who seek to promote sustainability within the construction sector. Provides an extensive source of valuable database information supported by an exhaustive and comprehensively organized list of globally published literature spanning 40-50 years, up to 2016, with 5000 references Offers an analysis, evaluation, repackaging, and modeling of existing knowledge, encouraging more responsible use of waste materials in construction Presents a wealth of knowledge for use in many sectors relating to the construction profession

To properly select and specify green building materials, architects need advice on how to select and use nontoxic, recycled, and recyclable products, and how to integrate these products into the design process in order to capitalize on their many practical and economic advantages. This fully updated new edition is a reliable, up-to-date resource for professionals and students alike. Written by two nationally known experts on green building methods and materials, Green Building Materials, Third Edition offers in-depth, practical information on the product selection, product specification, and construction process. This new Third Edition is an excellent hands-on guide to today's newest range of green building materials- what they are, where to find them, how to use them

effectively, and how to address LEED requirements. Organized by CSI MasterFormat® categories for fast access to specific information.

Environmentally responsible building involves resolving many conflicting issues and requirements. Each stage in the design process from the fundamental decisions about what, where and even whether to build has implications for the environment. Evolving out of the success of Green Building Digest, a publication described by Building Design as well-researched, authoritative and exhaustive, this practical new handbook considers the environmental issues which relate to the production, use and disposal of key building products and materials. It is designed to help specifiers and purchasers gain awareness of the potential environmental impact of their decisions. Chapter by chapter Green Building Handbook looks at a different sector of the trade from flooring to roofing, comparing the environmental effects of commonly available products with less well known green alternatives. A Best Buy section then ranks these products from lowest to highest impact.

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.

Can we ‘save the Planet’? For a resilient, durable and sustainable future for human society, we need to repurpose, reinvent, redesign, remake and recover our human-made world so that our built environment is benignly and seamlessly biointegrated with Nature to function synergistically with it. These are the multiple tasks that humanity must carry out imminently if there is to be a future for human society and all lifeforms and their environments on the Planet. Addressing this is the most compelling question for those whose daily work impacts on Nature, such as architects, engineers, landscape architects, town planners, environmental policy makers, builders and others, but it is a question that all of humanity needs to urgently address. Presented here are two key principles as the means to carry out these tasks – ‘ecocentricity’ being guided by the science of ecology, and ‘ecomimesis’ as designing and making the built environment including all artefacts based on the emulation and replication of the ‘ecosystem’ concept. Designing with ecology is contended here as the authentic approach to green design from which the next generation of green design will emerge, going beyond current use of accreditation systems. For those who subscribe to this principle, this is articulated here, showing how it can be implemented by design. Adopting these

principles is fundamental in our endeavour to save our Planet Earth, and changes profoundly and in entirety the way we design, make, manage and operate our built environment.

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

This book sheds light on recent advances in sustainable construction and building materials with special emphasis on the characterization of natural and composite hydraulic mortars, advanced concrete technology, green building materials, and application of nanotechnology to the improvement of the design of building materials. The book covers in detail the characterization of natural hydraulic lime mortars, a decade of research on self-healing concrete, biocomposite cement binding process and performance, development of sustainable building materials from agro-industrial wastes, applications of sugarcane biomass ash for developing sustainable construction materials, oil-contaminated sand: sources, properties, remediation, and engineering applications, oil shale ash addition effect in concrete to freezing/thawing, connection node design and performance optimization of girders, functionally graded concrete structures, cumulative tensile damage and consolidation effects on fracture properties of sandstone, key performance criteria influencing the selection of construction methods used for the fabrication of building components in the Middle East, fly ash as a resource material for the construction industry, degradation monitoring systems for a building information modeling maintenance approach, durability of composite-modified asphalt mixtures based on inherent and improved performance, and bitumen and its modifiers.

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
Given the great impacts associated with the construction and maintenance of infrastructures in both the environmental, the economic and the social dimensions, a sustainable approach to their design appears essential to ease the fulfilment of the Sustainable Development Goals set by the United Nations. Multicriteria decision-making methods are usually applied to address the complex and often conflicting criteria that characterise sustainability. *e present study aims to review the current state of the art regarding the application of such techniques in the

sustainability assessment of infrastructures, analysing as well the sustainability impacts and criteria included in the assessments. Analytic Hierarchy Process is the most frequently used weighting technique. Simple Additive Weighting has turned out to be the most applied decision-making method to assess the weighted criteria. Although a life cycle assessment approach is recurrently used to evaluate sustainability, standardised concepts, such as cost discounting, or presentation of the assumed functional unit or system boundaries, as required by ISO 14040, are still only marginally used. Additionally, a need for further research in the inclusion of fuzziness in the handling of linguistic variables is identified.

The importance of an integrated approach in urban design is becoming increasingly apparent. This book explains how to overcome related challenges in environmental design of urban buildings and offers guidance on the use of new materials and techniques and the integration of new philosophies. Supported by the EC's SAVE 13 programme, Environmental Design of Urban Buildings includes contributions from experts at the National and Kapodistrian University of Athens, Greece, the Hellenic Open University, Greece, Cambridge Architectural Research, UK and REHVA/University of Ljubljana, Slovenia.A free CD-ROM containing multi-media software tools and climatic data accompanies the book.CONTENTSEnvironmental Urban Design * Architectural Design, Passive Environmental and Building Engineering Systems * Environmental Issues of Building Design * Sustainable Design, Construction and Operation * Intelligent Controls and Advanced Building Management Systems * Urban Building Climatology * Heat and Mass Transfer Phenomena in Urban Buildings * Applied Lighting Technologies for Urban Buildings * Case Studies * Guidelines to Integrate Energy Conservation * Indoor Air Quality * Applied Energy and Resources Management in the Urban Environment * Economic

Methodologies * Integrated Building Design * Bibliography, IndexPublished with SAVE
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.
Blaine Brownell s best-selling Transmaterial series has introduced designers to hundreds of emergent materials that have the potential to transform our built environment. In our new Architecture Brief, Material Strategies, Brownell shows architects how creative applications of these materials achieve such transformations. Chapters based on fundamental material categories examine historical precedents, current opportunities, and future environmental challenges. Case studies featuring detailed illustrations showcase pioneering buildings from today s most forward-thinking architectural firms.
TRB's Airport Cooperative Research Program (ACRP) Report 42: Sustainable Airport Construction Practices explores a set of best practices, methods, procedures, and materials that if implemented during construction may have a sustainable, positive economic,

operational, environmental, or social effect. The report includes the collection of sustainable airport construction practices in a searchable, filterable spreadsheet format on a CD-ROM, which is packaged with the report. The CD-ROM included as part of ACRP Report 42 is also available for download from TRB's website as an ISO image--Ch. 1. Introduction -- Ch. 2. Data Collection -- Ch. 3. Data Collection -- Ch. 4. Organization of the Collection -- Ch. 5. How to Use the Collection -- Ch. 6. Case Studies.

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

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

If you want to be muscular, lean, and strong as quickly as possible without steroids, good genetics, or wasting ridiculous amounts of time in the gym and money on supplements...then you want to read this book. Here's the deal: Getting into awesome shape isn't nearly as complicated as the fitness industry wants you to believe. You don't need to spend hundreds of dollars per month on the worthless supplements that steroid freaks shill in advertisements. You don't need to constantly change up your exercise routines to "confuse" your muscles. I'm pretty sure muscles lack cognitive abilities, but this approach is a good way to just confuse you instead. You don't need to burn through buckets of protein powder every month, stuffing down enough protein each day

to feed a third world village. You don't need to toil away in the gym for a couple of hours per day, doing tons of sets, supersets, drop sets, giant sets, etc. (As a matter of fact, this is a great way to stunt gains and get nowhere.) You don't need to grind out hours and hours of boring cardio to shed ugly belly fat and love handles and get a shredded six-pack. (How many flabby treadmillers have you come across over the years?) You don't need to completely abstain from "cheat" foods while getting down to single-digit body fat percentages. If you plan cheat meals correctly, you can actually speed your metabolism up and accelerate fat loss. In this book you're going to learn something most guys will never know: The exact formula of exercise and eating that makes putting on 10 to 15 pounds of quality lean mass a breeze...and it only takes 8-12 weeks. This book reveals secrets like... The 6 biggest myths and mistakes of building muscle that stunt 99% of guys' muscle gains. (These BS lies are pushed by all the big magazines and even by many trainers.) How to get a lean, cut physique that you love (and that girls drool over) by spending no more than 5 percent of your time each day. The 4 laws of muscle growth that, when applied, turn your body into an anabolic, muscle-building machine. You'll be shocked at how easy it really is to get big once you know what you're doing... How to develop a lightning-fast metabolism that burns up fat quickly and leaves you feeling full of energy all day long. The carefully-selected exercises that deliver MAXIMUM results for your efforts, helping you build a big, full chest, a wide, tapered back, and bulging biceps. A no-BS guide to supplements that will save you

hundreds if not THOUSANDS of dollars each year that you would've wasted on products that are nothing more than bunk science and marketing hype. How to get shredded while still indulging in the "cheat" foods that you love every week like pasta, pizza, and ice cream. And a whole lot more! The bottom line is you CAN achieve that "Hollywood hunk" body without having your life revolve around it--no long hours in the gym, no starving yourself, no grueling cardio that turns your stomach. Imagine, just 12 weeks from now, being constantly complimented on how you look and asked what the heck you're doing to make such startling gains. Imagine enjoying the added benefits of high energy levels, no aches and pains, better spirits, and knowing that you're getting healthier every day. SPECIAL BONUS FOR READERS! With this book you'll also get a free 75-page bonus report from the author called "The Year One Challenge." In this bonus report, you'll learn exactly how to train, eat, and supplement to make maximum gains in your first year of training. By applying what you learn in the book and in this report, you can make more progress in one year than most guys make in three, four, or even five (seriously!). Scroll up, click the "Buy" button now, and begin your journey to a bigger, leaner, and stronger you!

This book presents select proceedings of National Conference on Advances in Sustainable Construction Materials (ASCM 2020) and examines a range of durable, energy-efficient, and next-generation construction materials produced from industrial wastes and by-products. The topics covered include sustainable materials and

construction, innovations in recycling concrete, green buildings and innovative structures, utilization of waste materials in construction, geopolymer concrete, self-compacting concrete by using industrial waste materials, nanotechnology and sustainability of concrete, environmental sustainability and development, recycling solid wastes as road construction materials, emerging sustainable practices in highway pavements construction, plastic roads, pavement analysis and design, application of geosynthetics for ground improvement, sustainability in offshore geotechnics, green tunnel construction technology and application, ground improvement techniques and municipal solid waste landfill. Given the scope of contents, the book will be useful for researchers and professionals working in the field of civil engineering and especially sustainable structures and green buildings.

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.

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.

Nanohertz Gravitational Wave Astronomy explores the exciting hunt for low frequency gravitational waves by using the extraordinary timing precision of pulsars. The book takes the reader on a tour across the expansive gravitational-wave landscape, from LIGO detections to the search for polarization patterns in the Cosmic Microwave Background, then hones in on the band of nanohertz frequencies that Pulsar Timing Arrays (PTAs) are sensitive to. Within this band may lie many pairs of the most massive

black holes in the entire Universe, all radiating in chorus to produce a background of gravitational waves. The book shows how such extra-Galactic gravitational waves can alter the arrival times of radio pulses emanating from monitored Galactic pulsars, and how we can use the pattern of correlated timing deviations from many pulsars to tease out the elusive signal. The book takes a pragmatic approach to data analysis, explaining how it is performed in practice within classical and Bayesian statistics, as well as the numerous strategies one can use to optimize numerical Bayesian searches in PTA analyses. It closes with a complete discussion of the data model for nanohertz gravitational wave searches, and an overview of the past achievements, present efforts, and future prospects for PTAs. The book is accessible to upper division undergraduate students and graduate students of astronomy, and also serves as a useful desk reference for experts in the field. Key features: Contains a complete derivation of the pulsar timing response to gravitational waves, and the overlap reduction function for PTAs. Presents a comprehensive overview of source astrophysics, and the dynamical influences that shape the gravitational wave signals that PTAs are sensitive to. Serves as a detailed primer on gravitational-wave data analysis and numerical Bayesian techniques for PTAs.

For thousands of years, the underground has provided humans refuge, useful resources, physical support for surface structures, and a place for spiritual or artistic expression. More recently, many urban services have been placed underground. Over

this time, humans have rarely considered how underground space can contribute to or be engineered to maximize its contribution to the sustainability of society. As human activities begin to change the planet and population struggle to maintain satisfactory standards of living, placing new infrastructure and related facilities underground may be the most successful way to encourage or support the redirection of urban development into sustainable patterns. Well maintained, resilient, and adequately performing underground infrastructure, therefore, becomes an essential part of sustainability, but much remains to be learned about improving the sustainability of underground infrastructure itself. At the request of the National Science Foundation (NSF), the National Research Council (NRC) conducted a study to consider sustainable underground development in the urban environment, to identify research needed to maximize opportunities for using underground space, and to enhance understanding among the public and technical communities of the role of underground engineering in urban sustainability. Underground Engineering for Sustainable Urban Development explains the findings of researchers and practitioners with expertise in geotechnical engineering, underground design and construction, trenchless technologies, risk assessment, visualization techniques for geotechnical applications, sustainable infrastructure development, life cycle assessment, infrastructure policy and planning, and fire prevention, safety and ventilation in the underground. This report is intended to inform a future research track and will be of interest to a broad audience including those

in the private and public sectors engaged in urban and facility planning and design, underground construction, and safety and security.

Ideal for non-math majors, Advanced and Multivariate Statistical Methods teaches students to interpret, present, and write up results for each statistical technique without overemphasizing advanced math. This highly applied approach covers the why, what, when and how of advanced and multivariate statistics in a way that is neither too technical nor too mathematical. Students also learn how to compute each technique using SPSS software. New to the Sixth Edition Instructor ancillaries are now available with the sixth edition. All SPSS directions and screenshots have been updated to Version 23 of the software. Student learning objectives have been added as a means for students to target their learning and for instructors to focus their instruction. Key words are reviewed and reinforced in the end of chapter material to ensure that students understand the vocabulary of advanced and multivariate statistics.

Building Materials is a textbook designed for undergraduate civil engineering students who are offered courses on Building and Construction Materials. The book primarily covers the AICTE syllabus on Materials, Testing, and Evaluation. It provides detailed and up-to-date information on variousbuilding and construction materials, including green materials.The book discusses the usual building materials like stones, bricks, lime, cement, aggregates, mortars, concrete and special concretes, wood, ferrous materials, steel, plastics, non-

ferrous materials, glass, ceramic materials, plastics, paints, etc. Wherever necessary, the substitute materials andthe greenness of the material are identified and explained.The book provides a thorough discussion of various materials using appropriate illustrations, real-life photographs, examples, and case studies for better understanding.

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

This book presents select proceedings of the National Conference on Advances in Sustainable Construction Materials (ASCM 2019) held at the National Institute of Technology, Warangal, India. The book includes contributions from academics and practitioners on low-energy cement technologies, innovative materials and structural technologies towards cost-effective, environment friendly, durable, energy-efficient, and sustainable construction. The topics covered emphasize on cutting-edge, economically viable, and sustainable solutions with an aim to increase profitability, and decrease construction time and overall impact on the built environment. The book will be useful for researchers and practitioners interested in sustainable construction and allied fields.

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.

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.

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.

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.

Eco-efficient Construction and Building Materials reviews ways of assessing the environmental impact of construction and building materials. Part one discusses the application of life cycle assessment (LCA) methodology to building materials as well as eco-labeling. Part two includes case studies showing the application of LCA methodology to different types of building material, from cement and concrete to wood and adhesives used in building. Part three includes case studies applying LCA methodology to particular structures and components. Reviews ways of assessing the environmental impact of construction and building materials Provides a thorough overview, including strengths and shortcomings, of the life cycle assessment (LCA) and eco-labeling of eco-efficient construction and building materials Includes case studies showing the application of LCA methodology to different types of building material, from cement and concrete to wood and adhesives used in building

Sustainability is a key issue and its impact on the construction industry, as one of the major users of the Earth's resources, is starting to take hold. This book deals with sustainability as it affects the construction industry, looking at the techniques and issues which designers, engineers, planners and construction managers will have to deal with in their day-to-day activities. It covers methods of analysis such as environmental impact assessment and cost-benefit analysis as well as topics on design

and energy regulation and conservation. The book is an important introduction to the subject for senior undergraduate and postgraduate students. Given the importance and novelty of the subject, professionals in the construction industry will also find the book valuable.

Construction Materials, Methods and TechniquesCengage Learning

This comprehensive text provides a thorough overview of sustainable methods for site, residential and commercial building construction, covering both traditional and contemporary materials, current industry standards and new and emerging technologies. Organized according to the Construction Specifications Institute (CSI) MasterFormat standards, the text follows a logical structure that charts the sequence of construction step-by-step from project inception to completion. Readers will find ample, up-to-date information on the latest industry advances and best practices, as well as relevant building codes, all within a dynamic, reader-friendly new design. This proven text can help your students gain a clear understanding of today's construction materials, methods and techniques, providing a critical foundation for career success. Important Notice: Media content referenced within the product description or the product text may not be available in the ebook version.

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

Illustrates the Global Relevance of SustainabilityApplicable to roads, bridges, and other

elements of the infrastructure, Green Building with Concrete: Sustainable Design and Construction, Second Edition provides an overview of all available information on the role of concrete in green building. A handbook offering viewpoints from worldwide experts

Successfully Measure the Benefits of Green Design and Construction Sustainability in Engineering Design and Construction outlines the sustainable practices used in engineering design and construction operations for all types of engineering and construction projects. Aimed at ushering the engineering and construction industry into embracing sustainable practices and green construction techniques, this book addresses sustainability in engineering design and construction operations from a historical and global perspective, and delves into specific sustainability concepts and processes. The book explains the concepts of sustainable development, corporate social responsibility (CSR), the Dow Jones Global Sustainability Index (DJGSI), key performance indicators (KPIs), corporate sustainability, and the triple bottom line (economic, environmental, and social values in design and construction). Relevant to sustainability in every facet of engineering and construction, it also covers life-cycle environmental cost analysis, discusses sustainable engineering and site selection, the economic considerations evaluated when making sustainability decisions, and explains how to measure and quantify sustainable performance and apply these practices in the real world. It also covers project and corporate level sustainability practices, sustainable

construction materials and processes, sustainable heavy construction equipment, traditional and alternative energy sources, provides implementation resources for starting and evaluating sustainability programs, and includes a checklist for measuring the sustainability of construction operations. The text contains detailed information on sustainable construction materials and processes, heavy construction equipment, and traditional and alternative energy sources. It presents information on sustainable designs, selecting sustainable sites, designing for passive survivability, designing for disassembly, and the ISO 14,000 standards. It provides implementation resources for starting and evaluating sustainability programs and a checklist for measuring the sustainability of construction operations In addition, it provides definitions of sustainability terms and expressions, as well as case studies, examples, discussion questions, and a list of supplemental references at the end of each chapter. This book provides information on: Definitions for sustainability terms Sources for locating global sustainability requirements Current sustainability issues Environmental laws related to sustainability and their implications Sustainable design Life-cycle cost assessment models Sustainable practices currently being used in the engineering and construction (E&C) industry Corporate-level sustainability practices Project-level sustainability practices Global sustainability trends and implications Sustainable materials Sustainable heavy construction equipment Traditional and alternative energy sources LEED Green Building Rating System Sustainability organizations and certification

programs Sustainability implementation resources A summary of sustainable engineering design and construction

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.

Rapid industrial growth has witnessed the ever-increasing utilization of sand from rivers for various construction purposes, which has caused disruption to natural ecosystems. Sustainable Construction Materials: Recycled Spent Garnet presents an investigation into the capacity for these minerals to serve as a sand replacement and as a viable, sustainable construction material to help mitigate the current rate of exploitation of river sand. Features: Presents the effects of spent garnet on the fresh and hardened characteristics of self-compacting geopolymer concrete in terms of workability and mechanical strength. Examines spent garnet with regard to concrete durability in response to carbonation, as well as sulphate and acid attack. Includes a

comprehensive review of the existing literature in the field, including past developments in self-compacting geopolymer concrete, as well as the ongoing activities in the field of spent garnet-based concrete production.