Construction Materials, Methods and Techniques 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.

Sustainability of Construction Materials The two volumes of these Proceedings contain about 200 conference papers and 10 keynote papers presented at the First International Conference on Construction Materials and Structures, held in Johannesburg, South Africa from 24 to 26 November 2014. It includes sections on Materials and characterization; Durability of construction materials; Structural implications, performance, service life; Sustainability, waste utilization, the environment; and Building science and construction.
Sustainable Construction Technologies

The Art of Reading Buildings  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.

Advances in Best-Worst Method  This volume contains selects papers presented during the 2nd International Conference on Environmental Geotechnology, Recycled Waste Materials and Sustainable Engineering, held in the University of Illinois at Chicago. It covers the recent innovations, trends, and concerns, practical challenges encountered, and the solutions adopted in waste management and engineering, geotechnical and geoenvironmental engineering, infrastructure engineering, and sustainable engineering. This book will be useful for academics, educators, policy makers and professionals working in the field of civil engineering, chemical engineering, environmental sciences and public policy.

Sustainable Construction Materials  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.

Construction Materials, Methods and Techniques: Building for a Sustainable Future  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.

Sustainable Construction and Building 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.

Life Cycle Sustainability Assessment (LCSA) 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.

CONTENT


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Sustainable Environment and Infrastructure The leading green building reference, updated with the latest advances in the field Sustainable Construction is the leading reference for the design, construction, and operation of high performance green buildings. With broad coverage including architecture, engineering, and construction, this book nevertheless delivers detailed information on all aspects of the green building process, from materials selection to building systems and more. This new fourth edition has been updated to reflect the latest codes and standards, including LEED v4, and includes new coverage of carbon accounting. The discussion has been updated to align with the current thinking on economics, climate change, net zero buildings, and more, with contributions by leaders in the field that illustrate the most recent shifts in thinking and practice. Ancillary materials including an instructor's manual and PowerPoint presentations for each chapter help bring this clear and up-to-date information into the classroom, making this book a valuable reference for working construction professionals. Also, Interactive graphics found throughout the course help activate the content and highlight key concepts for students. Sustainable construction has gone mainstream, and will one day be the industry norm. This book provides a comprehensive reference to all aspects of a project to show you how green building concepts and principles apply throughout the design and construction process. Get up to date on the latest green building codes and standards Learn about the newest technology in green building materials Adopt the best practices in procurement and delivery systems Apply sustainability concepts to all aspects of construction and design

Green buildings operate at a very high level of efficiency, which is made possible only by careful consideration every step of the way. Appropriate land use, landscaping, construction materials, siting, water use, and more all play a role in a structure's ultimate carbon footprint. Sustainable Construction provides clear guidance for all aspects of green building, including the most recent advances and the latest technology.
Materials for Sustainable Sites 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

Organic Materials for Sustainable Civil Engineering This book offers an introduction to various models and methods for green supplier evaluation and selection (GSES) within different information settings. As such, it provides valuable knowledge, useful GSES methods and practical examples that can be considered by manufacturers in selecting appropriate green suppliers to improve their environmental performance and customer satisfaction. This book is useful for practitioners and researchers working in the fields of supply chain management, operation management, information science, industrial engineering, and management science. It is also useful as a textbook for postgraduate and senior undergraduate students.

Construction Materials Reference Book The Art of Reading Buildings focuses on the practical art of reading a building and applying its positive and negative attributes in developing a size-up for fireground operations that center on structure fires. First-due company officers, incident commanders, and safety officers will appreciate the practical “street-wise” lessons captured in the book. Chief officers, training officers, engineers, firefighters, and fire science degree candidates will benefit from the wide range of building construction topics covered in this text. Features include: • Understand the technical and practical aspects of building construction • Learn on-the-spot building construction assessment using the authors’ custom Rapid Street-Read Guides • Develop a quick construction size-up for immediate application to fireground operations • Recognize firefighter traps in newer and alternative construction methods • This text covers objectives for the National Fire Academy’s Fire and Emergency Services in Higher Education (FESHE) Building Construction for Fire Protection course

Sustainable Airport Construction Practices 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

Green Supplier Evaluation and Selection: Models, Methods and Applications Sustainable and Nonconventional Construction Materials Using Inorganic Bonded Fiber Composites presents a concise overview of non-conventional construction materials with a strong focus on alternative inorganic bonded fiber composites and their applications as construction components. It outlines the processing and characterization of non-conventional cementitious composites, which will be of great benefit to both academic and industrial professionals interested in research, development, and innovation on inorganic bonded fiber composites. The book gives a comprehensive review of the innovative research associated with building components based on inorganic bonded composites. Exploring both natural fibers as reinforcing elements and alternative inorganic binders based on agricultural and industrial wastes, this book also considers the performance and applications of fibrous composites as construction materials and components. Dedicated to analyzing recent developments in inorganic fiber composites research Discusses the broader subjects of processing, characterization, performance, and applications of non-conventional construction materials

Construction Materials, Methods and Techniques Clay Nanoparticles: Properties and Applications sets out the major properties of clay nanoparticles and their technological applications. The first part of the book focuses on the characterization of nanoclays, including layered, fibrous and tubular clay minerals. The second part illustrates the current and potential applications of nanoclays within material science and biotechnology. These include the development of geopolymers and biocomposites based on sustainable polymers filled with eco-compatible nanoclay. The potential use of nanoclays as flame retardants is also discussed, along with the correlation between the properties and potential applications of several nanoclay types. In particular, the applications explored include nanoclays as drug delivery systems and for environmental protection. The book provides a complete and multidisciplinary exploration of nanoclays, highlighting a range of perspectives within current nanotechnology research. Assesses the advantages of using nanoclays instead of conventional clay materials in product design Describes the major characterization techniques – both experimental and computational – for nanoclays Explores new fabrication techniques based on pristine and modified clay nanoparticles that are being used both in materials science and biotechnology

Advances in Sustainable Construction Materials 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.

Material Strategies 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.

Environmental Design of Urban Buildings GREEN BUILDING: PRINCIPLES AND PRACTICES IN RESIDENTIAL CONSTRUCTION provides a current, comprehensive guide to this exciting, emerging field. From core concepts to innovative applications of cutting-edge technology and the latest industry trends, this text offers an in-depth introduction to the construction of green homes. Unlike many texts that adopt a product-oriented approach, this book emphasizes the crucial planning, processes, and execution methods necessary for effective, environmentally sound construction. This text demonstrates that Earth-friendly products and energy-efficient materials take planning in order to make a building truly green. This visionary text helps students and professionals develop the knowledge and skills to think green from start to finish, empowering and inspiring them to build truly sustainable homes. Important Notice: Media content referenced within the product description or the product text may not be available in the ebook version.

Sustainable Construction and Building Materials 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

Sustainable Construction 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.
Performance of Bio-based Building Materials The main purpose of this research is to select the most appropriate set of SIs to address all three pillars of highway sustainability by a new group decision-making approach. The proposed approach accounts for risk attitudes of experts and entropy measures under a triangular intuitionistic fuzzy (TIF) environment, to handle the inherent uncertainty and vagueness that is present throughout the evaluation process.

Sustainable Construction Materials 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

Sustainable Construction Materials Sustainability of Construction Materials, Second Edition, explores an increasingly important aspect of construction. In recent years, serious consideration has been given to environmental and societal issues in the manufacturing, use, disposal, and recycling of construction materials. This book provides comprehensive and detailed analysis of the sustainability issues associated with these materials, mainly in relation to the constituent materials, processing, recycling, and lifecycle environmental impacts. The contents of each chapter reflect the individual aspects of the material that affect sustainability, such as the preservation and repair of timber, the use of cement replacements in concrete, the prevention and control of metal corrosion and the crucial role of adhesives in wood products. Provides helpful guidance on lifecycle assessment, durability, recycling, and the engineering properties of construction materials. Fully updated to take on new developments, with an additional nineteen chapters added to include natural stone, polymers and plastics, and plaster products. Provides essential reading for individuals at all levels who are involved in the construction and selection, assessment and use, and maintenance of materials.
Sustainable Construction Techniques 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 and Nonconventional Construction Materials using Inorganic Bonded Fiber Composites 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 Materials and Technologies 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.

Advances in Construction Materials and Sustainable Environment 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.

The Ecology of Building Materials 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

Construction Materials and Structures

Clay Nanoparticles

Sustainable Construction 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 'Sustainable Construction' uses the latest US Green Building Council's Leadership in Energy and Environmental Design standard to explain the best practices in building procurement and delivery systems.

Advances in Sustainable Construction Materials 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.

Sustainability Indicator Selection by a Novel Triangular Intuitionistic Fuzzy Decision-Making Approach in Highway Construction Projects 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
Read Free Construction Materials Methods Techniques Sustainable

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.

Smart Technologies for Sustainable Development 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.

Sustainability of Construction Materials 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.

Sustainability in Engineering Design and Construction This book provides an inventory of organic materials and products, the major components of all civil engineering projects, in terms of their scientific and technical background, including theregulations that cover their use and their predicted useful life. Such materials include: bitumen on the roads; geotextiles for retaining walls; membranes for bridges; tunnel and reservoir waterproofing; paint binders to protect metallic and concrete structures or to realize road markings; injection resins; gluing products; concrete admixtures; and composite materials. The presentation is based on a physicochemical approach, which is essential if these products are to be considered as part of sustainable development: as such, those studying or working in these fields will find this an invaluable source of information.

The Complete Guide to Alternative Home Building Materials & Methods This book presents select papers from the International Conference on Smart Materials
and Techniques for Sustainable Development (SMTS) 2019. The contents focus on a wide range of methods and techniques related to sustainable development fields like smart structures and materials, innovation in water resource development, optical fiber communication, green construction materials, optimization and innovation in structural design, structural dynamics and earthquake engineering, structural health monitoring, nanomaterials, nanotechnology and sensors, smart biomaterials and medical devices, materials for energy conversion and storage devices, and IoT in sustainable development. This book aims to provide up-to-date and authoritative knowledge from both industrial and academic worlds, sharing best practice in the field of smart materials analysis. The contents of this book will be beneficial to students, researchers, and professionals working in the field of smart materials and sustainable development.

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