

# Concrete International Journal

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Advances in Protective Structures Research Hong Hao 2012-08-17 The International Association of Protective Structures (IAPS) was launched on 1 October 2010 in Manchester, UK during the first International Conference of Protective Structures. The primary purpose of IAPS is to bring researchers and engineers working in the area of protective structures together, and to promote research and development work for better life and structure protection against shock and impact loads. More information can be found at <http://www.protectivestructures.org/contact.html>. Advances in Protective Structures Research is the first publication in a series of planned publications by IAPS. It contains 13 chapters prepared by active and prominent researchers around the world in the area of protective structures. It covers the dynamic material model and material properties, structural response analysis, structural reliability analysis, impact loads and ground shock. The contents of the book reflect well the current research achievements and practice in structural protection against blast and impact loads. They represent the advanced international research status in theoretical derivations, numerical simulations, and laboratory and field tests for structure protections.

Sustainable Construction and Building Materials Bibhuti Bhusan Das 2018-12-30 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.

Current Trends in Concrete Fracture Research Zdenek P. Bazant 2012-12-06 From time to time the International Journal of Fracture has presented matters thought to be of special interest to its readers. The last special topic review was presented by Drs W.G. Knauss and A.J. Rosakis as Guest Editors in four issues, January-April 1990, under the general title of Non Linear Fracture. It contained sections on damage mechanisms, interfaces and creep, time dependence, and continuum plasticity insofar as they affect the mechanisms of the fracture process. Continuing this policy, which is consistent with our stated objectives, the two September issues deal with the behavior of concrete and cementitious materials during fracture initiation and propagation. We hope that the ensuing state-of-the-art review will yield another instructive and timely product which readers will find useful. To assist us in presenting this subject, we have prevailed upon a well-known international expert in concrete behavior, Dr. Z.P. Bazant, Walter P. Murphy Professor of Civil Engineering, of Northwestern University to act as Guest Editor. On behalf of the editors and publishers, I wish to thank Professor Bazant and his invited authors for undertaking this special effort. M.L. WILLIAMS Pittsburgh, Pennsylvania Editor-in-Chief September 1991 International Journal of Fracture 51: ix-xv, 1991. Z.P. Bazant (ed.), Current Trends in Concrete Fracture Research.

Recent Advancements in Geotechnical Engineering B. Soundara 2021-10-15 Geotechnical engineering has become an important discipline of civil engineering due to its rapid advancements and environmental challenges. Special emphasis is placed on innovative materials in the fields of geotechnical engineering, pavement engineering, health monitoring of structures and sustainability. Keywords: Green Building Materials, Cement Based Materials, Concrete Applications, Photocatalytic Effect on Paver Blocks, Stabilization of Black Cotton Soil, Concrete Filled Steel Tube Columns, Cenosphere, Fly Ash Brick, Stone Columns, Reinforced Concrete Beams, Interlocking Masonry Units, Lightweight Filler Materials, Soil Stabilization Using Fibres, Friction Stir Welding of Aluminum and Magnesium.

Structural Investigation for Reinforcing Congestion Alleviation in Concrete Members and Connections Yu Huang 2014-01-03 In this book, three potential solutions to the issue of steel congestion in reinforced concrete (RC) structures are researched. The first method examines RC mixed with steel fibers. The use of steel fibers instead of stirrups results in the reduction of reinforcing congestion in a manner which is both effective in reducing the effects of congestion and practical to implement. In the second method, reinforcing congestion in RC or prestressed concrete (PC) structures is effectively reduced by t ...

Recent Advances in Materials, Mechanics and Management Sheela Evangeline 2019-05-14 These proceedings present a selection of papers presented at the 3rd International Conference on Materials Mechanics and Management 2017 (IMMM 2017), which was jointly organized by the Departments of Civil Engineering, Mechanical Engineering and Architecture of College of Engineering Trivandrum.

Developments in the fields of materials, mechanics and management have paved the way for overall improvements in all aspects of human life. The quest for meeting the requirements of the rapidly increasing population has led to revolutionary construction and production technologies aiming at optimum management and use of natural resources. The objective of this conference was to bring together experts from academic institutions, industries, research organizations and professionals for sharing of knowledge, expertise and experience in the emerging trends related to Civil Engineering, Mechanical Engineering and Architecture. IMMM 2017 provided opportunities for young researchers to actively engage in research discussions, new research interests, research ethics and professional development.

Smart Nanoconcretes and Cement-Based Materials Mohd Shahir Liew 2019-11-16 Smart Nanoconcretes and Cement-Based Materials: Properties, Modelling and Applications explores the fundamental concepts and applications of smart nanoconcretes with self-healing, self-cleaning, photocatalytic, antibacterial, piezoelectrical, heating and conducting properties and how they are used in modern high-rise buildings, hydraulic engineering, highways, tunnels and bridges. This book is an important reference source for materials scientists and civil engineers who are looking to enhance the properties of smart nanomaterials to create stronger, more durable concrete. Explores the mechanisms through which active agents are released from nanocontainers inside concrete Shows how embedded smart nanosensors, including carbon cement-based smart sensors and micro/nano strain-sensors, are used to increase concrete performance Discusses the major challenges of integrating smart nanomaterials into concrete composites

Computational Modelling of Concrete and Concrete Structures Günther Meschke 2022-05-19 Computational Modelling of Concrete and Concrete Structures contains the contributions to the EURO-C 2022 conference (Vienna, Austria, 23-26 May 2022). The papers review and discuss research advancements and assess the applicability and robustness of methods and models for the analysis and design of

concrete, fibre-reinforced and prestressed concrete structures, as well as masonry structures. Recent developments include methods of machine learning, novel discretisation methods, probabilistic models, and consideration of a growing number of micro-structural aspects in multi-scale and multi-physics settings. In addition, trends towards the material scale with new fibres and 3D printable concretes, and life-cycle oriented models for ageing and durability of existing and new concrete infrastructure are clearly visible. Overall computational robustness of numerical predictions and mathematical rigour have further increased, accompanied by careful model validation based on respective experimental programmes. The book will serve as an important reference for both academics and professionals, stimulating new research directions in the field of computational modelling of concrete and its application to the analysis of concrete structures. EURO-C 2022 is the eighth edition of the EURO-C conference series after Innsbruck 1994, Bad Gastein 1998, St. Johann im Pongau 2003, Mayrhofen 2006, Schladming 2010, St. Anton am Arlberg 2014, and Bad Hofgastein 2018. The overarching focus of the conferences is on computational methods and numerical models for the analysis of concrete and concrete structures.

Advances and Trends in Engineering Sciences and Technologies III Mohamad Al Ali 2019-03-25 These are the proceedings of the 3rd International Conference on Engineering Sciences and Technologies (ESaT 2018), held from 12th - 14th September 2018 in the High Tatras Mountains, Tatranské Matliare, Slovak Republic. ESaT 2018 was organized under the auspices of the Faculty of Civil Engineering, Technical University of Košice - Slovak Republic in collaboration with Peter the Great St. Petersburg Polytechnic University - Russia after the successful organization with excellent feedback of the previous international conferences ESaT 2015 and ESaT 2016. The proceedings is covering various topics and disciplines in civil engineering sciences, such as Buildings and Architectural Engineering, Bearing Structures, Material and Environmental Engineering, Construction Technology and Management, Building Physics and Facilities, Geodesy, Surveying and Mapping, Geotechnics and Traffic Engineering. The proceedings report on new and original progress and trends in various fields of engineering sciences that will be of interest to a wide range of academics and professionals from university and industry. 116 papers originating from more than 10 countries have been accepted for publication in the conference proceedings. Each accepted paper was reviewed by two reviewers, selected according to the scientific area and orientation of the paper, which guarantees topicality, quality and an advanced level of the presented results.

Sustainability and Automation in Smart Constructions Hugo Rodrigues 2020-09-14 This book gathers outstanding papers presented at the Conference on Automation Innovation in Construction (CIAC-2019). In recent years, there have been significant transformations in the construction sector regarding production and the use of computers and automation to create smart and autonomous systems. At the same time, innovative construction materials and alternative technologies are crucial to overcoming the challenges currently facing the building materials industry. The book presents numerous examples of smart construction technologies, discusses the applications of new construction materials and technologies, and includes studies on recent trends in automation as applied to the construction sector.

Computational Modelling of Concrete Structures Gunther Meschke 2006-03-16 This conference proceedings brings together the work of researchers and practising engineers concerned with computational modelling of complex concrete, reinforced concrete and prestressed concrete structures in engineering practice. The subjects considered include computational mechanics of concrete and other cementitious materials, including masonry. Advanced discretisation methods and microstructural aspects within multi-field and multi-scale settings are discussed, as well as modelling formulations and constitutive modelling frameworks and novel experimental programmes. The conference also considered the need for reliable, high-quality analysis and design of concrete structures in regard to safety-critical structures, with a view to adopting these in codes of practice or recommendations. The book is of special interest to researchers in computational mechanics, and industry experts in complex nonlinear simulations of concrete structures.

International Journal of Engineering Research in Africa Trans Tech Publications, Limited 2018-06-01 We present to our readers the 36th volume of the International Journal of Engineering Research in Africa. This volume contains articles describing the results of engineering research and technical solutions in the fields of the applied mechanics, research of materials and processing technologies in the mechanical engineering, construction materials, optimization of reactive power dispatch, technological processes in the chemical and food production, environmental engineering and engineering management. The articles will be useful for the professionals concerned with mechanical engineering, materials science, chemical engineering, power production and engineering management as well as for academic teachers and students majoring in these fields of engineering science.

Advances in Applied Mechanics 2010-11-03 The Advances in Applied Mechanics book series draws together recent significant advances in various topics in applied mechanics. Published since 1948, Advances in Applied Mechanics aims to provide authoritative review articles on topics in the mechanical sciences, primarily of interest to scientists and engineers working in the various branches of mechanics. This content is also relevant to the many who use the results of investigations in mechanics in various application areas, such as aerospace, chemical, civil, environmental, mechanical and nuclear engineering. Covers all fields of the mechanical sciences Highlights classical and modern areas of mechanics that are prime for review Provides comprehensive coverage of applied mechanics for scientists and engineers as well as those in various application areas

Applications of Fracture Mechanics to Reinforced Concrete Alberto Carpinteri 1992-02-27 This volume emphasises the most recent advances in fracture mechanics as specifically applied to steel bar reinforced concrete. Fracture mechanics has been applied to plain and fibre reinforced concrete with increasing success over recent years. This workshop extended these concepts to steel bar reinforced and pre-stressed concrete design. Particularly for high strength concrete, which is a very brittle material, and in the case of large structural members, the application of fracture mechanics appears to be very useful for improving the present design rules. The pre-eminent participants at the Turin workshop contributed extensive expert opinions in four selected areas for which a rational approach, using fracture mechanics, could introduce variations into the concrete design codes: size effects; anchorage and bond; minimum reinforcement for elements in flexure; and shear resistance. The 23 chapters logically address these themes and demonstrate the unique ability of fracture mechanics to capture all the experimentally observed characteristics. The book is primarily directed to the researchers in universities and institutions and will be of value to consultants and engineering companies.

Compressive Strength of Concrete Pavel Krivenko 2020-03-11 Concrete made using mineral cements, the raw materials which on earth are practically endless, is known as one of the oldest building materials and during the last decades of the twentieth century has become a dominant building material for general use. At the same time, the requirements of the quality of concrete and its performance properties, in particular compressive strength, durability, economical efficiency, and low negative impact of its manufacture on the environment have not yet been completely met. Bearing these requirements in mind, researchers and engineers worldwide are working on how to satisfy these requirements. This book has been written by researchers and experts in the field and provides the state of the art on recent progress achieved on the properties of concrete, including concrete in which industrial by-products are utilized. The book is dedicated to graduate students, researchers, and practicing engineers in related fields.

The Structural Integrity of Recycled Aggregate Concrete Produced With Fillers and Pozzolans Paul O. Awoyera 2021-12-01 The Structural Integrity of Recycled Aggregate Concrete Produced with Fillers and Pozzolans presents a review on the use of by-products, fillers and pozzolanic materials in the development of concrete, with an emphasis on structural integrity. The volume is broken down into key sections, including a review of the types of materials that are used as latent hydraulic supplements, fillers and pozzolans for making recycled aggregate concrete, rheology and hydration phenomenon, the mechanical and microscale nature of concrete, and the impact of fillers and pozzolans on the workability of concrete with case studies. Durability and strength development are also discussed. The final section looks at issues such as performance effect, LCA, environmental impact, sustainability and cost benefit analysis. With detailed case studies throughout, this volume will provide useful information for all stakeholders involved in

the built environment, including materials scientists, civil engineers, builders, architects and policymakers. Identifies several potential by-products, fillers and pozzolans for the development of durable concrete Acts as a guidebook for constructors and researchers working in the broad field of material science, engineering and in-situ application Presents the durability properties of concrete made of by-products, fillers and pozzolans

Computational Structural Concrete Ulrich Haussler-Combe 2022-09-22 Concrete is by far the most used building material due to its advantages: it is shapeable, cost-effective and available everywhere.

Combined with reinforcement it provides an immense bandwidth of properties and may be customized for a huge range of purposes. Thus, concrete is the building material of the 20th century. To be the building material of the 21st century its sustainability has to move into focus. Reinforced concrete structures have to be designed expending less material whereby their load carrying potential has to be fully utilized.

Computational methods such as Finite Element Method (FEM) provide essential tools to reach the goal. In combination with experimental validation, they enable a deeper understanding of load carrying mechanisms. A more realistic estimation of ultimate and serviceability limit states can be reached compared to traditional approaches. This allows for a significantly improved utilization of construction materials and a broader horizon for innovative structural designs opens up. However, sophisticated computational methods are usually provided as black boxes. Data is fed in, the output is accepted as it is, but an understanding of the steps in between is often rudimentary. This has the risk of misinterpretations, not to say invalid results compared to initial problem definitions. The risk is in particular high for nonlinear problems. As a composite material, reinforced concrete exhibits nonlinear behaviour in its limit states, caused by interaction of concrete and reinforcement via bond and the nonlinear properties of the components. Its cracking is a regular behaviour. The book aims to make the mechanisms of reinforced concrete transparent from the perspective of numerical methods. In this way, black boxes should also become transparent. Appropriate methods are described for beams, plates, slabs and shells regarding quasi-statics and dynamics. Concrete creeping, temperature effects, prestressing, large displacements are treated as examples. State of the art concrete material models are presented. Both the opportunities and the pitfalls of numerical methods are shown. Theory is illustrated by a variety of examples. Most of them are performed with the ConFem software package implemented in Python and available under open-source conditions.

Crack Analysis in Structural Concrete Zihai Shi 2009-06-17 This new book on the fracture mechanics of concrete focuses on the latest developments in computational theories, and how to apply those theories to solve real engineering problems. Zihai Shi uses his extensive research experience to present detailed examination of multiple-crack analysis and mixed-mode fracture. Compared with other mature engineering disciplines, fracture mechanics of concrete is still a developing field with extensive new research and development. In recent years many different models and applications have been proposed for crack analysis; the author assesses these in turn, identifying their limitations and offering a detailed treatment of those which have been proved to be robust by comprehensive use. After introducing stress singularity in numerical modelling and some basic modelling techniques, the Extended Fictitious Crack Model (EFCM) for multiple-crack analysis is explained with numerical application examples. This theoretical model is then applied to study two important issues in fracture mechanics - crack interaction and localization, and fracture modes and maximum loads. The EFCM is then reformulated to include the shear transfer mechanism on crack surfaces and the method is used to study experimental problems. With a carefully balanced mixture of theory, experiment and application, Crack Analysis in Structural Concrete is an important contribution to this fast-developing field of structural analysis in concrete. Latest theoretical models analysed and tested Detailed assessment of multiple crack analysis and multi-mode fractures

Applications designed for solving real-life engineering problems

International Journal for Housing Science and Its Applications 1991

Understanding the Tensile Properties of Concrete Jaap Weerheijm 2013-07-31 The response of concrete under tensile loading is crucial for most applications because concrete is much weaker in tension than in compression. Understanding the response mechanisms of concrete under tensile conditions is therefore key to understanding and using concrete in structural applications. Understanding the tensile properties of concrete summarises key recent research in this important subject. After an introduction to concrete, the book is divided into two parts: part one on static response and part two on dynamic response. Part one starts with a summary chapter on the most important parameters that affect the tensile response of concrete. Chapters show how multi scale modelling is used to relate concrete composition to tensile properties. Part two focuses on dynamic response and starts with an introduction to the different regimes of dynamic loading, ranging from the low frequency loading by wind or earthquakes up to the extreme dynamic conditions due to explosions and ballistic impacts. Following chapters review dynamic testing techniques and devices that deal with the various regimes of dynamic loading. Later chapters highlight the dynamic behaviour of concrete from different viewpoints, and the book ends with a chapter on practical examples of how detailed knowledge on tensile properties is used by engineers in structural applications. Drawing on the work of some of the leading experts in the field, Understanding the tensile properties of concrete is a valuable reference for civil and structural engineers as well as those researching this important material. Summarises key recent research in the areas of understanding the response mechanisms of concrete under tensile conditions Provides a summary of the most important parameters that affect the tensile response of concrete and shows how multi scale modeling is used to relate concrete composition to tensile properties Highlights the dynamic behaviour of concrete from different viewpoints and provides practical examples of how detailed knowledge on tensile properties is used by engineers in structural applications

Fracture mechanics of concrete: Structural application and numerical calculation George C. Sih 2012-12-06 Concrete has traditionally been known as a material used widely in the construction of roads, bridges and buildings. Since cost effectiveness has always been one of the more important aspects of design, concrete, when reinforced and/or prestressed, is finding more use in other areas of application such as floating marine structures, storage tanks, nuclear vessel containments and a host of other structures. Because of the demand for concrete to operate under different loading and environmental conditions, increasing attention has been paid to study concrete specimens and structure behavior. A subject of major concern is how the localized segregation of the constituents in concrete would affect its global behavior. The degree of nonhomogeneity due to material property and damage. by yielding and/or cracking depends on the size scale and loading rate under consideration. Segregation or clustering of aggregates at the macroscopic level will affect specimen behavior to a larger degree than it would to a large structure such as a dam. Hence, a knowledge of concrete behavior over a wide range of scale is desired. The parameters governing micro-and macro-cracking and the techniques for evaluating and observing the damage in concrete need to be better understood. This volume is intended to be an attempt in this direction. The application of Linear Elastic Fracture Mechanics to concrete is discussed in several of the chapters.

Applications of Computational Intelligence in Concrete Technology Sakshi Gupta 2022-06-23 Computational intelligence (CI) in concrete technology has not yet been fully explored worldwide because of some limitations in data sets. This book discusses the selection and separation of data sets, performance evaluation parameters for different types of concrete and related materials, and sensitivity analysis related to various CI techniques. Fundamental concepts and essential analysis for CI techniques such as artificial neural network, fuzzy system, support vector machine, and how they work together for resolving real-life problems, are explained. Features: It is the first book on this fast-growing research field. It discusses the use of various computation intelligence techniques in concrete technology applications. It explains the effectiveness of the methods used and the wide range of available techniques. It integrates a wide range of disciplines from civil engineering, construction technology, and concrete technology to computation intelligence, soft computing, data science, computer science, and so on. It brings together the experiences of contributors from around the world who are doing research in this field and explores the different

aspects of their research. The technical content included is beneficial for researchers as well as practicing engineers in the concrete and construction industry.

fib Model Code for Concrete Structures 2010 fib - federation internationale du beton 2013-12-04

Emerging Technologies for Sustainability P.C Thomas 2020-08-15 The theme of conference is Emerging Technologies for Sustainability. Sustainability tends to be problem driven and oriented towards guiding decision making. The goal is to raise the global standard of living without increasing the use of resources beyond global sustainable levels. The conference is intended to act as a platform for researchers to share and gain knowledge, showcase their research findings and propose new solutions in policy formulation, design, processing and application of green materials, material selection, analysis, green manufacturing, testing and synthesis, thereby contributing to the creation of a more sustainable world.

Interfacial Transition Zone in Concrete J.C. Maso 2004-03-01 An important new state-of-the-art report prepared by RILEM Technical Committee 108 ICC. It has been written by a team of leading international experts from the UK, USA, Canada, Israel, Germany, Denmark, South Africa, Italy and France. Research studies over recent years in the field of cement science have focused on the behaviour of the interfaces between the components of cement-based materials. The techniques used in other areas of materials science are being applied to the complex materials found in cements and concretes, and this book provides a significant survey of the present state of the art.

Finite-Element Modelling of Structural Concrete Michael D. Kotsovos 2015-05-20 A Powerful Tool for the Analysis and Design of Complex Structural Elements Finite-Element Modelling of Structural Concrete: Short-Term Static and Dynamic Loading Conditions presents a finite-element model of structural concrete under short-term loading, covering the whole range of short-term loading conditions, from static (monotonic and cyclic) to dynamic (seismic and impact) cases. Experimental data on the behavior of concrete at both the material and structural levels reveal the unavoidable development of triaxial stress conditions prior to failure which dictate the collapse and ductility of structural concrete members. Moreover, and in contrast with generally accepted tenets, it can be shown that the post-peak behavior of concrete as a material is realistically described by a complete and immediate loss of load-carrying capacity. Hence rational analysis and design of concrete components in accordance with the currently prevailing limit-state philosophy requires the use of triaxial material data consistent with the notion of a fully brittle material, and this approach is implemented in the book by outlining a finite-element method for the prediction of the strength, deformation, and cracking patterns of arbitrary structural concrete forms. Presents a Unified Approach to Structural Modeling Numerous examples are given that show both the unifying generality of this proposed approach and the reliability of the ensuing numerical procedure for which the sole input is the specified uniaxial cylinder compressive strength of concrete and the yield stress of the steel. This not only offers a better understanding of the phenomenology of structural concrete behavior but also illustrates, by means of suitable examples, the type of revision required for improving design methods in terms of both safety and economy. This book: Highlights the significance of valid experimental information on the behavior of concrete under triaxial stress conditions for interpreting structural behavior Describes the techniques used for obtaining valid test data and modeling concrete behavior Discusses the modeling of steel properties as well as the interaction between concrete and steel Presents numerical techniques for incorporating the material models into nonlinear finite-element analysis for the case of short-term static loading Provides numerical techniques adopted for extending the use of the numerical analysis scheme for the solution of dynamic problems Predicts the response of a wide range of structural-concrete configurations to seismic and impact excitations Using relevant case studies throughout, Finite-Element Modelling of Structural Concrete: Short-Term Static and Dynamic Loading Conditions focuses on the realistic modeling of structural concrete on the basis of existing and reliable material data and aids in the research and study of structural concrete and concrete materials.

Computational Modelling of Concrete Structures Nenad Bicanic 2010-02-24 Since 1984 the EURO-C conference series (Split 1984, Zell am See 1990, Innsbruck 1994, Badgastein 1998, St Johann im Pongau 2003, Mayrhofen 2006, Schladming 2010) has provided a forum for academic discussion of the latest theoretical, algorithmic and modelling developments associated with computational simulations of concrete and concrete structure

Resilient Infrastructure Sreevalsa Kolathayar 2021-10-28 This book presents the select proceedings of the Virtual Conference on Disaster Risk Reduction (VCDRR 2021). This book discusses various relevant topics such as Disaster resilience and Infrastructure, Risk reduction and structural measures, Evidence based approach for DRR Case studies, Numerical modelling and Constructions methods, Prevention Methods and Safety Engineering, Cross cutting issue in DRR and Infrastructure etc. The book is also a comprehensive volume on multi-hazards and their management for a sustainable built environment. This book will be useful for academicians, research scholars and industry professionals working in the area of civil engineering and disaster management.

Integral Waterproofing of Concrete Structures Maher Al-Jabari 2022-06-24 Integral Waterproofing of Concrete Structures demonstrates how integral waterproofing technologies can solve concrete durability problems based on performance and characterization experimental results. This book first establishes a background about concrete structures and porosity linked with concrete hydration, then goes on to consider concrete durability problems from the perspective of water penetration including damages from freeze-thaw cycles, alkali silica reactions, and chloride ion penetration. The mechanisms, applications, performances, and limitations of waterproofing technologies including coatings and integral systems are compared. The book also showcases all application methods of crystallization waterproofing materials, including material spray on cured concrete and on fresh concrete, and their addition to concrete mix designs as enhancers or admixtures. Pore-blocking and lining waterproofing systems including silicate-based and hygroscopic kinds, and other waterproofing materials are also discussed. Includes various, advanced, recent technologies in the field of waterproofing Presents and describes enhanced concrete characteristics and modified structures within the context of material engineering Summarizes the characteristics of waterproofing systems obtained from experimental results

Magazine of Concrete Research 1982

Concrete International 1998

Mine Waste Utilization Ram Chandar Karra 2022-06-16 This book is a comprehensive work on utilization of overburden waste, ash, tailings, and other processed waste produced by mining industry. It details various laboratory tests to identify the suitability of mine waste. It explains varied usage of different types of mine waste as in concrete pavements, bricks and to enhance fertile characteristics of waste lands. Various physico-mechanical properties of mine waste material and their optimum percentage for replacement with sand and coarse aggregate along with additives for optimum strength of concrete / bricks are discussed. Key features: Covers the technical approach in terms of testing and characterizing mine waste Focusses on effective use of mining waste to make sustainable and ecofriendly mining Presents analysis of physical properties of iron ore waste and their usage Describes testing methods for each type of mine waste and its physical property characterization for every application Includes detailed study to use iron ore waste and tailings in concrete pavements This book is aimed at researchers, professionals and graduate students in mining, geotechnical, and civil engineering.

Concrete Solutions 2011 Michael Grantham 2011-09-08 The Concrete Solutions series of International Conferences on Concrete Repair began in 2003, with a conference held in St. Malo, France in association with INSA Rennes, followed by the second conference in 2006 ( with INSA again, at St. Malo, France), and the third conference in 2009 (in Padova and Venice, in association with the University of Padova). Now in 2011, the event is being held in Dresden in Germany and has brought together some 112 papers from 33 countries. Whereas electrochemical repair tended to dominate the papers in earlier years, new developments in structural strengthening with composites have been an increasingly important topic, with a quarter of the papers now focusing on this area. New techniques involving Near Surface Mounted

(NSM) carbon fibre rods, strain hardening composites, and new techniques involving the well established carbon fibre and polyimide wrapping and strengthening systems are presented. Seventeen papers concentrate on case studies which are all-important in such conferences, to learn about what works (and what doesn't work) on real structures. Thirteen papers are devoted to new developments in Non-Destructive Testing (NDT). Other topics include service life modelling, fire damage, surface protection methods and coatings, patch repair, general repair techniques and whole life costing. This book is essential reading for anyone engaged in the concrete repair field, from engineers, to academics and students and also to clients, who, as the end user, are ultimately responsible for funding these projects and making those difficult decisions about which system or method to use.

Sustainable Materials and Smart Practices M. Vasudevan 2022-06-15 This book presents recent research on sustainable building materials and their various applications. Topics include such items as fiber reinforced concrete, the use of mineral admixtures, self-sensing cement composites, the use of nanomaterials for structural health monitoring and the production of geopolymer mortar. Keywords: Light Transmitting Concrete, Self-Compacting Concrete, Light-Weight Concrete, Polymer Concrete, Porous Concrete, Eco-Friendly Building Material, Cement Composite, Geopolymer Composites, Sustainable Bricks, Cement, Sisal Fiber, Glass Fiber, Nanomaterials, Metakaoline, Fly Ash, Silica Fume, Rice Husk Ash, Oyster Shells, Bitumen, Sugarcane Bagasse Ash, Herbocrete, Waste Foundry Sand, Swell Pressure of Clay, Quarry Dust, Sensors, Topology Optimization, Soil Stabilization.

Specifications for Structural Concrete, ACI 301-05, with Selected ACI References 2005

Journal of Ferrocement 2001

Advances in Construction Materials and Sustainable Environment Ashok Kumar Gupta 2022 This book comprises select papers presented at the International Conference on Construction Materials and Environment (ICCME 2021). The topics discussed revolve around the identification and utilization of novel construction materials primarily in the areas of structural engineering, geotechnical engineering, transportation engineering, and environmental engineering. The volume presents a compilation of thoroughly studied and utilized sustainable construction materials in different areas of civil engineering. Newly developed testing methodologies, physical modelling methods, numerical studies, and other latest techniques discussed in this book can prove to be useful for researchers and practitioners across the globe.

Transit Development in Rock Mechanics Meifeng Cai 2014-10-20 Transit Development in Rock Mechanics Recognition, Thinking and Innovation contains 150 papers presented at the 3rd ISRM International Young Scholars Symposium on Rock Mechanics (8-10 November 2014, Xi an, China). The volume focusses on the transitional development in rock mechanics research from surface to underground mining and from shallow to a

Sustainable Construction Materials Ravindra K. Dhir OBE 2016-10-08 Sustainable Construction Materials: Copper Slag, as part of a series of five, the book aims to promote the use of sustainable construction materials. It is different to the norm and its uniqueness lies in developing a data matrix sourced from 400 publications, contributed by 712 authors from 337 institutions in 40 countries from 1964 to 2015, on the subject of copper slag as a construction material, and systematically, analysisng, evaluating and modelling this information for use in cement, concrete, geotechnics and road pavement applications. Related environmental issues, case studies and standards are also discussed. The work establishes what is already known and can be used. It would also help to avoid repetitive research and save valuable resources, which can instead be directed towards new research to progress the use of sustainable construction materials. The book 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, seeking 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 over 400 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

High Performance Concrete Pierre-Claude Aïtcin 1998-07-02 A complete review of the fast-developing topic of high performance concrete (HPC) by one of the leading researchers in the field. It covers all aspects of HPC from materials, properties and technology, to construction and testing. The book will be valuable for all concrete technologists and construction engineers wishing to take advantage of the re