

Advanced Rail Geotechnology Ballasted Track

This volume brings together scientific experts in different areas that contribute to the Railway Track & Transportation Engineering challenges, evaluate the State-of-the-Art, identify the shortcomings and opportunities for research and promote the interaction with the industry. In particular, scientific topics that are addressed in this volume include railway ballasted track degradation/settlement problems and stabilization/reinforcement technologies, switches and crossings and related derailments causes, train-induced vibrations and mitigation measures, operations, management and performance of ground transportation, and traffic congestion and safety procedures. This volume is part of the proceedings of the 1st GeoMEast International Congress and Exhibition on Sustainable Civil Infrastructures, Egypt 2017.

This book highlights current research and developments in the area of Structural Engineering and Construction Management, which are important disciplines in Civil Engineering. It covers the following topics and categories of Structural Engineering. The main chapters/sections of the proceedings are Structural and Solid Mechanics, Construction Materials, Systems and Management, Loading Effects, Construction Safety, Architecture & Architectural Engineering, Coastal Engineering, Foundation engineering, Materials, Sustainability. The content of this book provides necessary knowledge for construction management practices, new tools and technologies on local and global levels in civil engineering which can mitigate the negative effects of built environment.?

This book is designed to serve as a comprehensive resource on cellular confinement systems or geocells, covering technologies and their applications in geotechnical engineering. The book discusses all aspects of geocells and related technologies, and covers the subjects from conceptual basics to recent advances. The chapters of this book are written by renowned international experts and its contents include detailed case studies from both academic and industry experts. This book is a one-stop reference work for academicians, students, and practicing engineers in the global geotechnical community.

This new edition of the handbook of Quay Walls provides the reader with essential knowledge for the planning, design, execution and maintenance of quay walls, as well as general information about historical developments and lessons learned from the observation of ports in various countries. Technical chapters are followed by a detailed calculation of a quay wall based on a semi-probabilistic design procedure, which applies the theory presented earlier. Since the publication of the Dutch edition in 2003 and the English version in 2005, considerable new experience has been obtained by the many practitioners using the book, prompting the update of this handbook. Moreover, the introduction of the Eurocodes in 2012 has prompted a complete revision of the Design chapter, which is now compliant with the Eurocodes. Furthermore, additional recommendations for using FEM-analysis in quay wall design have been included. In response to ongoing discussions within the industry about buckling criteria for steel pipe piles, a thorough research project was carried out on steel pipe piles filled with sand and on piles without sand. The results of this research programme have also been incorporated in this new version. Finally, the section on corrosion has been updated to reflect the latest knowledge and attention has been given to the latest global developments in quay wall engineering. The new edition was made possible thanks to the contributions of numerous experts from the Netherlands and Belgium.

Construction materials are the most widely used materials for civil infrastructure in our daily lives. However, from an environmental point of view, they consume a huge amount of natural resources and generate the majority of greenhouse gasses. Therefore, many new and novel technologies for designing environmentally friendly construction materials have been developed recently. This Special Issue, "Environment-Friendly Construction Materials", has been proposed and organized as a means to present recent developments in the field of construction materials. It covers a wide range of selected topics on construction materials.

Transport Infrastructure Asset management in transport infrastructure, financial viability of transport engineering projects/ Life cycle Cost Analysis, Life-Cycle Assessment and Sustainability Assessment of transport infrastructure/ Infrastructures financing and pricing with equity appraisal, operation optimization and energy management/ Low-Volume roads: planning, maintenance, operations, environmental and social issues/ Public-Private Partnership (PPP) experience in transport infrastructure in different countries and economic conditions/ Airport Pavement Management Systems, runway design and maintenance/ Port maintenance and development issues, technology relating to cargo handling, landside access, cruise operations/ Infrastructure Building Information Modelling (I-BIM) / Pavement design and innovative bituminous materials/ Recycling and re-use in road pavements, environmentally sustainable technologies/ Stone pavements, ancient roads and historic railways/ Cementitious stabilization of materials used in the rehabilitation of transportation infrastructure. Transport Systems Sustainable transport and the environment protection including green vehicles/ Urban transport, land use development, spatial and transport planning/ Bicycling, bike, bike-sharing systems, cycling mobility/ Human factor in transport systems/ Intelligent Mobility: emerging technologies to enable the smarter movement of people and goods/Airport landside: access roads, parking facilities, terminal facilities, aircraft apron and the adjacent taxiway/ Transportation policy, planning and design, modelling and decision making/ Transport economics, finance and pricing issues, optimization problems, equity appraisal/ Road safety impact assessments, road safety audits, the management of road network safety and safety inspections/ Tunnels and underground structures: preventing incidents-accidents mitigating their effects for both people and goods/ Traffic flow characteristics, traffic control devices, work zone traffic control, highway capacity and quality of service/ Track-vehicle interactions in railway systems, capacity analysis of railway networks/ Risk assessment and safety in air and railway transport, reliability aspects/ Maritime transport and inland waterways transport research/ Intermodal freight transport: terminals and logistics.

This book of the GeoMEast 2019 proceedings includes a collection of research and practical papers from an international research and technology activities on recent developments in pavement design, modeling and performance, and effects on infrastructure, green energy, technology, and integration. Sustainability is increasingly a key priority in engineering practices. With the aging transportation infrastructure and renewed emphasis on infrastructure renovation by transportation agencies, innovations are urgently needed to develop materials, designs, and practices to ensure the sustainability of transportation infrastructure.

Incorporates More Than 25 Years of Research and Experience Railway Transportation Systems: Design, Construction and Operation presents a comprehensive overview of railway passenger and freight transport systems, from design through to construction and operation. It covers the range of railway passenger systems, from conventional and high speed inter-urban systems through to suburban, regional and urban ones. Moreover, it thoroughly covers freight railway systems transporting conventional loads, heavy loads and dangerous goods. For each system it provides a definition, a brief overview of its evolution and examples of good practice, the main design, construction and operational characteristics, the preconditions for its selection, and the steps required to check the feasibility of its implementation. Developed for Engineers, Designers, and Operators of Railway Systems The book also provides a general overview of issues related to safety, interface with the environment, cutting-edge technologies, and finally the techniques that govern the stability and guidance of railway vehicles on track. Contains information on the three main constituents of all railway systems: railway infrastructure, rolling stock, railway operations Provides a methodology for testing the applicability of the implementation of railway systems Offers an overview of issues related to the safety of railway systems in general Describes their interfaces with the environment, the cutting-edge technologies that are already in place as well as those that are under research, and the techniques that govern the stability and guidance of railway vehicles on track Railway Transportation Systems: Design, Construction and Operation suits students, and also those in the industry ? engineers, consultants, manufacturers, transport company executives ? who need some breadth of knowledge to guide them over the course of their careers.

Ballast plays a vital role in transmitting and distributing train wheel loads to the underlying sub-ballast and subgrade. Bearing capacity of track, train speed, riding quality and passenger comfort all depend on the stability of ballast through mechanical interlocking of particles. Ballast attrition and breakage occur progressively under heavy cyclic loading, causing track deterioration and rail misalignment—affecting safety and demanding frequent and costly track maintenance. In the absence of realistic constitutive models, the track substructure is traditionally designed using empirical approaches. In *Advanced Rail Geotechnology: Ballasted Track*, the authors present detailed information on the strength, deformation and degradation, and aspects of fresh and recycled ballast under monotonic, cyclic, and impact loading using innovative geotechnical testing devices. The book presents a new stress-strain constitutive model for ballast incorporating particle breakage and validates mathematical formulations and numerical models using experimental evidence and field trials. The text also elucidates the effectiveness of various commercially available geosynthetics for enhancing track drainage and stability. It presents revised ballast gradations for modern high-speed trains capturing particle breakage and describes the use of geosynthetics in track design. It also provides insight into track design, capturing particle degradation, fouling, and drainage. This book is ideal for final year civil engineering students and postgraduates and is a solid reference for practicing railway engineers and researchers with the task of modernizing existing track designs for heavier and faster trains.

The inverse dynamics problem was developed in order to provide researchers with the state of the art in inverse problems for dynamic and vibrational systems. Contrasted with a forward problem, which solves for the system output in a straightforward manner, an inverse problem searches for the system input through a procedure contaminated with errors and uncertainties. An inverse problem, with a focus on structural dynamics, determines the changes made to the system and estimates the inputs, including forces and moments, to the system, utilizing measurements of structural vibration responses only. With its complex mathematical structure and need for more reliable input estimations, the inverse problem is still a fundamental subject of research among mathematicians and engineering scientists. This book contains 11 articles that touch upon various aspects of inverse dynamic problems.

Cities across the globe are looking to develop affordable, environmentally friendly, and socially responsible transportation solutions that can meet the accessibility needs of expanding metropolitan populations and support future economic and urban development. When appropriately planned and properly implemented as part of a larger public transportation network, urban rail systems can provide rapid mobility and vital access to city centers from surrounding districts. High-performing urban rail services, when carefully approached as development projects, can help enhance quality of life by giving citizens access to employment opportunities, essential services, urban amenities, and neighboring communities. The purpose of this Handbook is to synthesize and disseminate knowledge to inform the planning, implementation, and operations of urban rail projects with a view towards: -- Emphasizing the need for early studies and project planning; -- Making projects more sustainable (economically, socially, and environmentally); -- Improving socioeconomic returns and access to opportunities for users; -- Maximizing the value of private participation, where appropriate; and -- Building capacity within project implementing and managing institutions This Handbook provides experiential advice to tackle the technical, institutional, and financial challenges faced by decision makers considering urban rail projects. It brings together the expertise of World Bank staff and the input of numerous specialists to synthesize international 'good practices' and recommendations that are independent of commercial, financial political, or other interests. The material presented is intended as an honest-broker guide to maximize the impact and manage the challenges of urban rail systems in cities in both developed and developing countries. Rather than identify a single approach, this Handbook acknowledges the complexities and context necessary when approaching an urban rail development by helping to prepare decision makers to ask the right questions, consider the key issues, perform the necessary studies, apply adequate tools, and learn from international good practice all at the right time in the project development process.

The rail network plays an essential role in transport infrastructure worldwide. A ballasted track is commonly used for several reasons, including economic considerations, load bearing capacity, rapid drainage and ease of maintenance. Given the ever-increasing demand for trains to carry heavier axle loads at greater speeds, traditional design and construction must undergo inevitable changes for sustainable performance. Ballast is an unbounded granular assembly that displaces when subjected to repeated train loading affecting track stability. During heavy haul operations, ballast progressively deteriorates and the infiltration of fluidized fines (mud pumping) from the underlying substructure and subgrade decreases its shear strength and also impedes drainage, while increasing track deformation and associated maintenance. Features: serves as a useful guide to assist the practitioner in new track design as well as remediating existing tracks. research discussed in this book has made considerable impact on the railway industry. resulting from collaborative research between academia and industry, incorporating sophisticated laboratory tests, computational modelling and field studies. This book presents a

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comprehensive procedure for the design of ballasted tracks based on a rational approach that combines extensive laboratory testing, computational modelling and field measurements conducted over the past two decades. Ballast Railroad Design: SMART-UOW Approach will not only become an imperative design aid for rail practitioners, but will also be a valuable resource for postgraduate students and researchers alike in railway engineering.

Advanced Rail Geotechnology - Ballasted TrackCRC Press

Effective measurement of the composition and properties of petroleum is essential for its exploration, production, and refining; however, new technologies and methodologies are not adequately documented in much of the current literature. Analytical Methods in Petroleum Upstream Applications explores advances in the analytical methods and instrumentation that allow more accurate determination of the components, classes of compounds, properties, and features of petroleum and its fractions. Recognized experts explore a host of topics, including: A petroleum molecular composition continuity model as a context for other analytical measurements A modern modular sampling system for use in the lab or the process area to collect and control samples for subsequent analysis The importance of oil-in-water measurements and monitoring The chemical and physical properties of heavy oils, their fractions, and products from their upgrading Analytical measurements using gas chromatography and nuclear magnetic resonance (NMR) applications Asphaltene and heavy ends analysis Chemometrics and modeling approaches for understanding petroleum composition and properties to improve upstream, midstream, and downstream operations Due to the renaissance of gas and oil production in North America, interest has grown in analytical methods for a wide range of applications. The understanding provided in this text is designed to help chemists, geologists, and chemical and petroleum engineers make more accurate estimates of the crude value to specific refinery configurations, providing insight into optimum development and extraction schemes.

This book is the fourth volume of the proceedings of the 4th GeoShanghai International Conference that was held on May 27 - 30, 2018. This volume, entitled "Transportation Geotechnics and Pavement Engineering", represents the recent advances and technologies in transportation geotechnics and pavement engineering. This book covers a wide range of topics, from transportation geotechnics, to geomechanics at various length scales, to pavement materials and structures. The book offers a unique mix of numerical modeling studies, experimental studies, and case studies from industry. It may be of interest to researchers and practitioners in the fields of transportation engineering and pavement engineering. Each of the papers included in this book received at least two positive peer reviews. The editors would like to express their sincerest appreciation to all of the anonymous reviewers all over the world, for their diligent work.

Numerical Methods in Geotechnical Engineering IX contains 204 technical and scientific papers presented at the 9th European Conference on Numerical Methods in Geotechnical Engineering (NUMGE2018, Porto, Portugal, 25—27 June 2018). The papers cover a wide range of topics in the field of computational geotechnics, providing an overview of recent developments on scientific achievements, innovations and engineering applications related to or employing numerical methods. They deal with subjects from emerging research to engineering practice, and are grouped under the following themes: Constitutive modelling and numerical implementation Finite element, discrete element and other numerical methods. Coupling of diverse methods Reliability and probability analysis Large deformation – large strain analysis Artificial intelligence and neural networks Ground flow, thermal and coupled analysis Earthquake engineering, soil dynamics and soil-structure interactions Rock mechanics Application of numerical methods in the context of the Eurocodes Shallow and deep foundations Slopes and cuts Supported excavations and retaining walls Embankments and dams Tunnels and caverns (and pipelines) Ground improvement and reinforcement Offshore geotechnical engineering Propagation of vibrations Following the objectives of previous eight thematic conferences, (1986 Stuttgart, Germany; 1990 Santander, Spain; 1994 Manchester, United Kingdom; 1998 Udine, Italy; 2002 Paris, France; 2006 Graz, Austria; 2010 Trondheim, Norway; 2014 Delft, The Netherlands), Numerical Methods in Geotechnical Engineering IX updates the state-of-the-art regarding the application of numerical methods in geotechnics, both in a scientific perspective and in what concerns its application for solving practical boundary value problems. The book will be much of interest to engineers, academics and professionals involved or interested in Geotechnical Engineering.

In this book, the authors discuss testing of ballast, including the strength, deformation and degradation aspects of fresh and recycled ballast under monotonic and cyclic loading. The effectiveness of geosynthetics in stabilising recycled ballast has also been examined. A new stress-strain constitutive model for ballast incorporating particle breakage is presented. Finally, a new range of particle gradations, balancing the strength and permeability requirements, has been proposed for future rail tracks. This book is intended as a reference text for final year civil engineering students and postgraduates, and for practicing railway engineers with the task of modernizing existing designs.

Written by an international group of contributors, Ground Improvement Case Histories: Compaction, Grouting and Geosynthetics provides over 700 pages of international case-histories. Each case-history provides an overview of the specific technology followed by applications, with some cases offering a comprehensive back-analysis through numerical modelling. Specific case-histories include: The Use of Alternative and Improved Construction Materials and Geosynthetics in Pavements, Case Histories of Embankments on Soft Soils and Stabilisation with Geosynthetics, Ground Improvement with Geotextile Reinforcements, Use of Geosynthetics to aid Construction over Soft Soils and Soil Improvement and Foundation Systems with Encased Columns and Reinforced Bearing Layers. Comprehensive analysis methods using numerical modelling methods Features over 700 pages of contributor generated case-histories from all over the world Offers field data and clear observations based on the practical aspects of the construction procedures and treatment effectiveness

Links Geotechnics with Railway Track Engineering and Railway Operation Good railway track and railway operations depend on good geotechnics, in several different ways and at varying levels. Railway Geotechnics covers track, track substructure, load environment, materials, mechanics, design, construction, measurements, and management. Illustrated by

The rail human factors/ergonomics community has grown quickly and extensively, and there is much increased recognition of the vital importance of ergonomics/human factors by rail infrastructure owners, rail operating companies, system developers, regulators and national and trans-national government. This book, the fourth on rail human factors, is

The work of geotechnical engineers contributes to the creation of safe, economic and pleasant spaces to live, work and relax all over the world. Advances are constantly being made, and the expertise of the profession becomes ever more important with the increased pressure on space and resources. This book presents the proceedings of the 15th Pan-American Conference on Soil Mechanics and Geotechnical Engineering (XV PCSMGE), held in Buenos Aires, Argentina, in November 2015. This conference, held every four years, is an important opportunity for international experts, researchers, academics, professionals and geo-engineering companies to meet and exchange ideas and research findings in the areas of soil mechanics, rock mechanics, and their applications in civil, mining and environmental engineering. The articles are divided into nine sections: transportation geotechnics; in-situ testing; geo-engineering for energy and sustainability; numerical modeling in geotechnics; foundations and ground improvement; unsaturated soil behavior; embankments, dams and tailings; excavations and tunnels; and

geo-risks, and cover a wide spectrum of issues from fundamentals to applications in geotechnics. This book will undoubtedly represent an essential reference for academics, researchers and practitioners in the field of soil mechanics and geotechnical engineering. In this proceedings, approximately 65% of the contributions are in English, and 35% of the contributions are in Spanish or Portuguese.

Microscopic re-examination of geomaterials consisting of aggregates can shed light on macroscopic behaviour, including compressibility, anisotropy, yielding, creep, cyclic liquefaction and shear rupture. As a result of this process of examination, new methods of material characterization emerge, leading to a greater degree of accuracy in the specification of new constitutive models with physically-meaningful parameters. The impetus behind this development is an increasing awareness on sustainability, leading to the more efficient use of recycled materials for geotechnical applications. The characteristics of recycled materials, such as compressibility and self-hardening, may differ significantly from those of natural materials, and it is crucial that evaluation is made from a specifically particulate perspective.

This volume comprises select papers presented during TRANSOILCOLD 2019. It covers the challenges and problems faced by engineers, designers, contractors, and infrastructure owners during planning and building of transport infrastructure in Arctic and cold regions. The contents of this book will be of use to researchers and professional engineers alike.

TCRP report 155 provides guidelines and descriptions for the design of various common types of light rail transit (LRT) track. The track structure types include ballasted track, direct fixation ("ballastless") track, and embedded track. The report considers the characteristics and interfaces of vehicle wheels and rail, tracks and wheel gauges, rail sections, alignments, speeds, and track moduli. The report includes chapters on vehicles, alignment, track structures, track components, special track work, aerial structures/bridges, corrosion control, noise and vibration, signals, traction power, and the integration of LRT track into urban streets.

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Contemporary disaster investigation reports into the Shuttle, Three Mile Island, or the World Trade Centre did not happen by chance, but were the result of an evolution of the discourse communities involved with investigating technological accidents. The relationships of private companies, coroners, outside experts, and government investigators all had to be developed and experimented with before a genre of investigation reports could exist. This book is the story of the evolution of these investigation discourse communities in published reports written between 1833 and 1879. Using the reports generated by seven different accidents on railroads and steamboats between 1833 and 1876, it is possible to observe the changes in how these reports interacted and changed over the course of the nineteenth century: The Explosion of the Steamboat New England in the Connecticut River, 1833; The Explosion of the Locomotive Engine Richmond near Reading Pennsylvania, 1844; The Explosion of the Steam Boat Moselle in Cincinnati, 1838; The Camden and Amboy Railroad Collision in Burlington, New Jersey, 1855; The Gasconade Bridge Collapse on the Pacific Railroad in Missouri, 1855; The Eastern Railroad Collision in Revere, Massachusetts, 1871; The Ashtabula Railroad Bridge Collapse in Ohio, 1876 Bearing Capacity of Roads, Railways and Airfields includes the contributions to the 10th International Conference on the Bearing Capacity of Roads, Railways and Airfields (BCRRA 2017, 28-30 June 2017, Athens, Greece). The papers cover aspects related to materials, laboratory testing, design, construction, maintenance and management systems of transport infrastructure, and focus on roads, railways and airfields. Additional aspects that concern new materials and characterization, alternative rehabilitation techniques, technological advances as well as pavement and railway track substructure sustainability are included. The contributions discuss new concepts and innovative solutions, and are concentrated but not limited on the following topics: · Unbound aggregate materials and soil properties · Bound materials characteristics, mechanical properties and testing · Effect of traffic loading · In-situ measurements techniques and monitoring · Structural evaluation · Pavement serviceability condition · Rehabilitation and maintenance issues · Geophysical assessment · Stabilization and reinforcement · Performance modeling · Environmental challenges · Life cycle assessment and sustainability Bearing Capacity of Roads, Railways and Airfields is essential reading for academics and professionals involved or interested in transport infrastructure systems, in particular roads, railways and airfields.

This book presents selected papers from the International Symposium on Geotechnics for Transportation Infrastructure (ISGTI 2018). The research papers cover geotechnical interventions for the diverse fields of policy formulation, design, implementation, operation and management of the different modes of travel, namely road, air, rail and waterways. This book will be of interest to academic and industry researchers working in transportation geotechnics, as also to practicing engineers, policy makers, and civil agencies.

This volume presents selected papers presented during the 4th International Conference on Transportation Geotechnics. The papers address the geotechnical challenges in design, construction, maintenance, monitoring, and upgrading of roads, railways, airfields, and harbor facilities and other ground transportation infrastructure with the goal of providing safe, economic, environmental, reliable and sustainable infrastructures. This volume will be of interest to postgraduate students, academics, researchers, and consultants working in the field of civil and transport infrastructure.

Design and Construction of Pavements and Rail Tracks - Geotechnical Aspects and Processed Materials is a compilation of selected contributions produced between 2002 and 2005 by the International Committee TC3 - Geotechnics of Pavements of the International Society of Soil Mechanics and Geotechnical Engineering (ISSMGE), a committee dedicated to gat

This volume brings together scientific experts in different areas that contribute to the railway track and transportation engineering challenges, evaluate the state-of-the-art, identify the shortcomings and opportunities for research and promote the interaction with the industry. In particular, scientific topics that are addressed in this volume include railway ballasted track degradation/settlement problems and stabilization/reinforcement technologies, switches and crossings and related derailments causes, train-induced vibrations and mitigation measures, operations, management and performance of ground transportation, and traffic congestion and safety procedures. The volume is based on the best contributions to the 2nd GeoMEast International Congress and Exhibition on Sustainable Civil Infrastructures, Egypt 2018 – The official international congress of the Soil-Structure Interaction Group in Egypt (SSIGE).

The International Symposium on Dynamics of Vehicles on Roads and Tracks is the leading international gathering of scientists and engineers from academia and industry in the field of ground

vehicle dynamics to present and exchange their latest innovations and breakthroughs. Established in Vienna in 1977, the International Association of Vehicle System Dynamics (IAVSD) has since held its biennial symposia throughout Europe and in the USA, Canada, Japan, South Africa and China. The main objectives of IAVSD are to promote the development of the science of vehicle dynamics and to encourage engineering applications of this field of science, to inform scientists and engineers on the current state-of-the-art in the field of vehicle dynamics and to broaden contacts among persons and organisations of the various countries engaged in scientific research and development in the field of vehicle dynamics and related areas. IAVSD 2017, the 25th Symposium of the International Association of Vehicle System Dynamics was hosted by the Centre for Railway Engineering at Central Queensland University, Rockhampton, Australia in August 2017. The symposium focused on the following topics related to road and rail vehicles and trains: dynamics and stability; vibration and comfort; suspension; steering; traction and braking; active safety systems; advanced driver assistance systems; autonomous road and rail vehicles; adhesion and friction; wheel-rail contact; tyre-road interaction; aerodynamics and crosswind; pantograph-catenary dynamics; modelling and simulation; driver-vehicle interaction; field and laboratory testing; vehicle control and mechatronics; performance and optimization; instrumentation and condition monitoring; and environmental considerations. Providing a comprehensive review of the latest innovative developments and practical applications in road and rail vehicle dynamics, the 213 papers now published in these proceedings will contribute greatly to a better understanding of related problems and will serve as a reference for researchers and engineers active in this specialised field.

This comprehensive study provides practical advice and guidance on the important topics of rail transport and ground engineering, the use of which will result in optimum quality with the minimum maintenance effort and the most economical use of resources. The authors have synthesized all of their international knowledge and experience in this field, and produced, for the first time, a definitive guide for the design, construction, maintenance and renewal of railway track as they relate to geotechnology.

This volume comprises select papers presented during the Indian Geotechnical Conference 2018, discussing issues and challenges relating to the characterization of geomaterials, modelling approaches, and geotechnical engineering education. With a combination of field studies, laboratory experiments and modelling approaches, the chapters in this volume address some of the most widely investigated geotechnical engineering topics. This volume will be of interest to researchers and practitioners alike.

Até as pedras sabem que transporte de carga de milhões de toneladas, sejam de produção agrícola ou mineral, entre outras, é realizado com eficiência e economia sobre trilhos. Transporte maciço de passageiros nas metrópoles, igualmente. No final do Segundo Império, o Brasil exibiu uma das redes ferroviárias mais extensas do mundo. Em 1889 havia 53 ferrovias no País, percorrendo 9.572 km! A opção por transporte rodoviário inibiu os investimentos em modernização e ampliação das ferrovias, que, todavia, encontra muitos técnicos (e cidadãos) entusiastas por elas. Esta obra vem apoiar um renascimento do transporte sobre trilhos, oferecendo os subsídios necessários para os estudos, projeto, construção e operação de ferrovias. Reunindo o conhecimento de profissionais com anos de experiência em estudos operacionais, projeto, manutenção e material rodante, o Manual Básico de Engenharia Ferroviária vem suprir a carência de materiais de consulta atualizados e abrangentes em transporte ferroviário, área de crescente investimento da iniciativa privada e do Governo. A obra aborda de maneira prática e detalhada os conceitos básicos; as principais noções sobre equipamentos, operação e manutenção da via permanente; e todas as etapas de um projeto de ferrovia, englobando estudos operacionais, básicos e de infraestrutura, além de projeto de obras de arte especiais, de sistemas e de obras complementares. Uma importante referência para estudantes, empresas operadoras ferroviárias e profissionais em Engenharia Ferroviária. Explica em detalhes todas as etapas envolvidas no projeto de ferrovias, desde estudos de traçado e licenciamento ambiental até projetos de túneis, superestruturas e obras de arte especiais. Trata também da operação e manutenção, além dos principais conceitos sobre o material rodante. Uma iniciativa da ABPv, preparando subsídios para o crescimento ferroviário.

This volume comprises select papers presented during the Indian Geotechnical Conference 2018. This volume discusses construction challenges and issues in geotechnical engineering. The contents cover foundation design and analysis, issues related to geotechnical structures, including dams, retaining walls, embankments and pavements, and rock mechanics and construction in rocks and rocky environments. Many of the papers discuss live case studies related to important geotechnical engineering projects worldwide, providing useful insights into the realistic designs and constructions. This volume will be of interest to students, researchers and practitioners alike.

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