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Rock dynamics has become one of the most important topics in the field of rock mechanics and rock engineering, and involves a wide variety of topics, from earthquake engineering, blasting, impacts, failure of rock engineering structures as well as the occurrence and prediction of earthquakes, induced seismicity, rock bursts to non-destructive testing and explorations. Rock dynamics has wide applications in civil and infrastructural, resources and energy, geological and environmental engineering, geothermal energy, and earthquake hazard management, and has become one of the most topical areas. 2019 Rock Dynamics Summit contains 8 keynote addresses and 128 regular full papers that were presented at the 2019 Rock Dynamics Summit (2019 RDS, Okinawa, Japan, 7-11 May 2019), a specialized conference jointly organized by the Rock Dynamics Committee of the Japanese Society of Civil Engineers (JSCE-RDC), the Japanese Society for Rock Mechanics (JSRM), and which was supported by the International Society for Rock Mechanics and Rock Engineering (ISRM) and the Turkish National Society for Rock Mechanics (TNSRM). The contributions cover a wide range of topics on the dynamic behavior of rock and rock masses and scientific and engineering applications, and include: - Laboratory tests on Dynamic Responses of Rocks and Rock Masses / Fracturing of Rocks and Associated Strong Motions - Estimation Procedures and Numerical Techniques of Strong Motions Associated with the Rupture of Earth's Crust and Some Strong Motion - Dynamic Response and Stability of Rock Foundations, Underground Excavations in Rock, Rock Slopes Dynamic

Responses and Stability of Stone Masonry Historical Structures and Monuments - Induced Seismicity - Dynamic Simulation of Loading and Excavation - Blasting and machinery induced vibrations - Rockburst, Outburst, Impacts - Nondestructive Testing Using Shock Waves - Case Histories of Failure Phenomenon in Rock Engineering 2019 Rock Dynamics Summit contains the state-of-the-art in rock dynamics, and will be invaluable to professionals and academics interested in the latest advances in new techniques for experiments, analytical and numerical modelling as well as monitoring in dynamics of rocks and rock engineering structures. 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. Numerical Methods in Geotechnical Engineering

contains 153 scientific papers presented at the 7th European Conference on Numerical Methods in Geotechnical Engineering, NUMGE 2010, held at Norwegian University of Science and Technology (NTNU) in Trondheim, Norway, 2 4 June 2010. The contributions cover topics from emerging research to engineering practice This work focuses on the impact of human activity on the geological environment and contains over 100 papers dealing with laboratory and field research investigations in geomechanics, geoengineering and mathematical modelling. Topics covered are grouped into eight main themes: response of the rock mass to human impact; slope stability; field research; laboratory research; stability of underground openings; mathematical modelling; stress measurements, and mineral and rock disintegration. Large landslides affect many mountain valleys in Europe. They are characterised by a low probability of evolution into a catastrophic event but can have very large impacts on population, infrastructures and the environment. This impact is becoming more and more pronounced due to increasing tourism and the construction of new roads and railways in mountainous areas. Methodologies for the assessment and mitigation of risks are therefore a major issue. Since very large slope movements are quite often directly or indirectly implicated in disasters, like landslides, secondary slides or debris flow, their early identification is essential to an adequate risk assessment of the zones involved. The assessment of risks due to large landslides in the alpine environment is the first activity carried out within the IMIRILAND Project. This project involves seven partners representing five European countries and is funded by the European Commission within the Fifth Framework Program (Research and Technological Development, Activities of a Generic Nature: the Fight against Major Natural and Technological Hazards). The objective of this cooperation is to develop risk management methodologies and mitigation strategies that can be applied at a European level as useful tools for administrators and land users. To this end, by means of a multidisciplinary approach the hazard analysis of some selected large landslides was examined with a particular focus on geological, geomorphological and geo-mechanical methods. In addition, vulnerability

and risk analyses were carried out to enable the consideration of direct and indirect consequences, as well as technical and social impacts. The developed risk assessment procedure was critically examined through application to some selected landslides. Identification and Mitigation of Large Landslide Risks in Europe - Advances in Risk Assessment presents the risk assessment procedure developed and the case studies that were performed within the framework of the IMIRILAND Project. It is edited by Arpa Piemonte, Ecole Polytechnique Fédérale de Lausanne and Politecnico di Torino This book is intended for geotechnical engineers, engineering geologists, geomorphologists and planners who are involved in landslides and in assessing the stability of natural slopes. This book includes keynote presentations, invited speeches, and general session papers presented at the 7th International Symposium on Environmental Vibration and Transportation Geodynamics (formerly the International Symposium on Environmental Vibration), held from October 28 to 30, 2016 at Zhejiang University, Hangzhou, China. It discusses topics such as the dynamic and cyclic behaviors of soils, dynamic interaction of vehicle and transportation infrastructure; traffic-induced structure and soil vibrations and wave propagation; soil-structure dynamic interaction problems in transportation; environmental vibration analysis and testing; vehicle, machine and human-induced vibrations; monitoring, evaluation and control of traffic induced vibrations; transportation foundation deformation and deterioration induced by vibration; structural safety and serviceability of railways, metros, roadways and bridges; and application of geosynthetics in transportation infrastructure. It is a valuable resource for government managers, scientific researchers, and engineering professionals engaged in the field of geotechnical and transportation engineering. Collection of selected, peer reviewed papers from the 2013 4th International Conference on Advances in Materials and Manufacturing (ICAMMP 2013), 18-19 December, 2013, Kunming, China. The 342 papers are grouped as follows: Chapter 1: Computer-Aided Design and Research in Mechanical Engineering, Chapter 2: Research and Design Solutions in Machinery Industry, Chapter 3: Mathematical Modeling and Optimization in Engineering Sciences, Chapter 4:

Technology of Measurement and Signal Processing, Chapter 5: Sensor Technology, Chapter 6: Microelectronics, Circuit Technology and Embedded Systems, Chapter 7: Mechatronics and Control, Chapter 8: Technologies of Machine Vision and Identification, Chapter 9: Industrial Robotics and Automated Manufacturing, Chapter 10: Applied Information Technologies, Chapter 11: Construction Technologies, Structural Strength and Reliability, Chapter 12: Product Design, Chapter 13: Operations and Production Management, Chapter 14: Environmental Engineering, Chapter 15: Multidisciplinary Engineering Education Civil Engineering has recently seen enormous progress in the core field of the construction of deep foundations. This book is the result of the International Workshop on Recent Advances in Deep Foundations (IWDPF07), which was held in Yokosuka, Japan from the 1st to the 2nd of February, 2007. Topics under discussion in this book include recent research 270 Expert contributions on aspects of landslide hazards, encompassing geological modeling and soil and rock mechanics, landslide processes, causes and effects, and damage avoidance and limitation strategies. Reference source for academics and professionals in geo-mechanical and geo-technical engineering, and others involved with research, des This book contains the Proceedings of EUROCK 2013 - The 2013 ISRM International Symposium, which was held on 23-26 September 2013 in Wroclaw, Poland. The Symposium was organized by the ISRM National Group POLAND and the Institute of Geotechnics and Hydrotechnics of the Wroclaw Institute of Technology. The focus of the Symposium was on recent developments This book is the international edition of the proceedings of IS-Seoul 2011, the Fifth International Symposium on Deformation Characteristics of Geomaterials, held in Seoul, South Korea, in September 2011. The book includes 7 invited lectures, as well as 158 technical papers selected from the 182 submitted. The symposium explored ideas about the complex load-deformation response in geomaterials, including laboratory methods for small and large strains; anisotropy and localization; time-dependent responses in soils; characteristics of treated, unsaturated, and natural geomaterials; applications in field methods; evaluation of field performance in

geotechnical structures; and physical and numerical modeling in geomechanics. These topics were grouped under a number of main themes, including experimental investigations from very small strains to beyond failure; behavior, characterization and modeling of various geomaterials; and practical prediction and interpretation of ground response: field observation and case histories. Both the symposium and this book represent an important contribution to the exchange of advanced knowledge and ideas in geotechnical engineering and promote partnership among participants worldwide. 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 interdisciplinary volume comprises papers from several fields related to compaction. Topics include: soil compaction for pavements and roads; deep soil compaction by vibration, impact and underground explosion; compaction control; and compaction processes in engineering. This book presents the latest advances in Discrete Element Methods (DEM) and technology. It is the proceeding of 7th International Conference on DEM which was held at Dalian University of Technology on August 1 - 4, 2016. The subject of this book are the DEM and related computational techniques such as DDA, FEM/DEM, molecular dynamics, SPH, Meshless methods, etc., which are the main computational methods for modeling discontinua. In comparison to continua which have been already studied for a long time, the research of discontinua is relatively new, but increases dramatically in recent years and has already become an important field. This book will benefit

researchers and scientists from the academic fields of physics, engineering and applied mathematics, as well as from industry and national laboratories who are interested in the DEM. Given that for centuries, the standard tool to understand diseases in tissues was the microscope and that its major limitation was that only excised tissue could be used, recent technology now permits the examination of diseased tissue in vivo. Optical coherence tomography (OCT) has promising potential when applied to coronary artery disease. OCT has the capability to identify coronary plaque and to distinguish between plaques that are stable and unstable. If the plaques are stable then OCT can direct percutaneous intervention (angioplasty or stenting). Optical coherence tomography is a light-based imaging technology that allows for very high resolution imaging in biological tissues. It has been first applied in ophthalmology, where it soon became the golden standard for the assessment of (epi-) retinal processes. The unique imaging capabilities have raised the interest of researchers and clinicians in the field of cardiovascular disease, since OCT offers unique possibilities to study atherosclerosis pathophysiology in vivo. With over 1.1M Americans having a heart attack this year because of unstable plaque rupture, OCT may have an increasingly important role in the early diagnosis of coronary artery disease. This unique publication offers the reader the basic background to OCT and its role in the diagnosis and management of coronary artery disease. The Handbook of Optical Coherence Tomography in Cardiovascular Research introduces the cardiovascular application of this technology. Clinicians, biologists, engineers and physicist are discussing different aspects of cardiovascular OCT application in a multidisciplinary approach. The handbook offers the readership a concise overview on the current state of the art of vascular OCT imaging and sheds light on a variety of exciting new developments. The physics, technical principles of OCT and its application in a broad spectrum of cardiovascular research areas are summarized by highly recognized specialists. The potential of OCT in peripheral and coronary arteries and in developmental cardiology are described. Each research area is introduced by a clinical expert in the field followed by discussion

of different aspects from an engineering, biomedical and clinical perspective. Specifically, the current capabilities for plaque characterization, detection of vulnerable plaque, guidance of interventional procedures, Doppler-assessment, and molecular contrast imaging are being described. The Handbook of Optical Coherence Tomography in Cardiovascular Research targets researchers and clinicians involved in the field of atherosclerosis. The summary of basic physics, engineering solutions, pre-clinical and clinical application covers all relevant aspects and will be a valuable reference source. This is an up-to-date review of developments in the field of bifurcations and instabilities in geomechanics from some of the world's leading experts. Leading international researchers and practitioners of the topics debate the developments and applications which have occurred over the last few decades. Beside fundamental research findings, applications in geotechnical, petroleum, mining, and bulk materials engineering are emphasised. This collection of symposium papers covers a wide range of topics on rock fragmentation, from carefully documented case studies to attempts, for example, at fractal representation of the fracture process itself. Rockfall Engineering is an up-to-date, international picture of the state of the art in rockfall engineering. The three basic stages of rockfalls are considered: the triggering stage, the motion stage, and the interaction with a structure stage; along with contributions including structural characterization of cliffs, remote monitoring, stability analysis, boulder propagation, design of protection structures and risk assessment. Academic contributions are illustrated by practical examples, and completed by engineering contributions where practical purposes are thoroughly considered. This title is intended for engineers, students as well as researchers. The aim of this book is intended, through parallel expounding, to help readers comprehensively grasp the intrinsic features of typical advanced computational methods. These methods are created in recent three decades for the understanding of the post-failure of geo-materials accompanied with discontinuous and finite deformation/dislocation, as well as the violent fluid-structure interaction accompanied with strong distortion of water

surface. The strong points and weak points of the formalisms for governing equations, the discretization schemes, the nodal interpolation /approximation of field variables, and their connectivity (via support domains, covers, or enrichments), the basic algorithms, etc., are clarified. Being aware of that the differences in these methods are not so large as at the first glance, this book will help readers to select appropriate methods, to improve the methods for their specific purpose, and to evaluate the reliability/applicability of the outcomes in the hazard evaluation of geotechnical (hydraulic) structures beyond extreme work situation. This book may be looked at as an advanced continuation of "Computational Geomechanics and Hydraulic Structures" by the author (2018) (Springer-Verlag, ISBN 978-981-10-8134-7) which elaborates the fundamental computational methods in geomechanics for the routine design of geotechnical (hydraulic) engineering. These volumes comprise the Proceedings of the Ninth International Symposium on Landslides, held in Rio de Janeiro, Brazil, from June 28 to July 2, 2004. Information on the latest developments in Landslide Studies is presented by invited lecture reports, specialized panel contributions and over two hundred and forty technical papers, grouped in the Geomechanics from Micro to Macro contains 268 papers presented at the International Symposium on Geomechanics from Micro and Macro (IS-Cambridge, UK, 1-3 September 2014). The symposium created a forum for the dissemination of new advances in the micro-macro relations of geomaterial behaviour and its modelling. The papers on experimental investigation The variety of applications of PFC has continued to increase in the ten years since the first release of these programs. This volume contains a collection of fifty-two papers selected for presentation at the 2nd PFC Symposium, held 27-29 October 2004, in Kyoto, Japan. These contributions cover a wide range of engineering applications and theoretical developments using PFC, and discrete methods in general. Topics include applications in civil engineering, slope and wall stability, rock fracture, shear flows, geology and industrial engineering. New developments are also described for contact bond models, fluid coupling and model calibration. This proceedings volume illustrates the great variety of PFC applications in



different engineering fields, and includes case-studies and general applications as well as research presentations. There has been a considerable progress made during the recent past on mathematical techniques for studying dynamical systems that arise in science and engineering. This progress has been, to a large extent, due to our increasing ability to mathematically model physical processes and to analyze and solve them, both analytically and numerically. With its eleven chapters, this book brings together important contributions from renowned international researchers to provide an excellent survey of recent advances in dynamical systems theory and applications. The first section consists of seven chapters that focus on analytical techniques, while the next section is composed of four chapters that center on computational techniques. This collection of 501 peer-reviewed papers, presented as a three-volume set, covers the latest advances in micromechanical characterization, mechanical properties, durability analysis, failure mechanisms and non-destructive evaluation of building materials. The first Pan-American Conference on Soil Mechanics and Geotechnical Engineering (PCSMGE) was held in Mexico in 1959. Every 4 years since then, PCSMGE has brought together the geotechnical engineering community from all over the world to discuss the problems, solutions and future challenges facing this engineering sector. Sixty years after the first conference, the 2019 edition returns to Mexico. This book, *Geotechnical Engineering in the XXI Century: Lessons learned and future challenges*, presents the proceedings of the XVI Pan-American Conference on Soil Mechanics and Geotechnical Engineering (XVI PCSMGE), held in Cancun, Mexico, from 17 - 20 November 2019. Of the 393 full papers submitted, 335 were accepted for publication after peer review. They are included here organized into 19 technical sessions, and cover a wide range of themes related to geotechnical engineering in the 21st century. Topics covered include: laboratory and in-situ testing; analytical and physical modeling in geotechnics; numerical modeling in geotechnics; unsaturated soils; soft soils; foundations and retaining structures; excavations and tunnels; offshore geotechnics; transportation in geotechnics; natural hazards; embankments and tailings dams; soils

dynamics and earthquake engineering; ground improvement; sustainability and geo-environment; preservation of historic sites; forensics engineering; rock mechanics; education; and energy geotechnics. Providing a state-of-the-art overview of research into innovative and challenging applications in the field, the book will be of interest to all those working in soil mechanics and geotechnical engineering. In this proceedings, 58% of the contributions are in English, and 42% of the contributions are in Spanish or Portuguese. *Rock Mechanics: Achievements and Ambitions* contains the papers accepted for the 2nd ISRM International Young Scholars' Symposium on Rock Mechanics, which was sponsored by the ISRM and held on 14-16 October 2011 in Beijing, China, immediately preceding the 12th ISRM Congress on Rock Mechanics. Highlighting the work of young teachers, researchers and practitioners, the present work provides an important stimulus for the next generation of rock engineers, because in the future there will be more emphasis on the use of the Earth's resources and their sustainability, and more accountability of engineers' decisions. In this context, it is entirely appropriate that the Symposium venue for the young scholars was in China — because of the rock mechanics related work that is anticipated in the future. For example, in the Chinese Academy of Sciences report, "Energy Science and Technology in China: A Roadmap to 2050", it is predicted that China's total energy demand will reach 31, 45, 61 and 66 x 10<sup>8</sup> tce (tonnes of coal equivalent) in 2010, 2020, 2035, 2050. The associated per capita energy consumption for the same years is estimated at 2.3, 3.1, 4.1 and 4.6 tce. This increasing demand will be met, inter alia, by the continued operation and development of new coal mines, hydroelectric plants and nuclear power stations with one or more underground nuclear waste repositories, all of which will be improved by more modern methods of rock engineering design developed by young scholars. In particular, enhanced methods of site investigation, rock characterisation, rock failure understanding, computer modelling, and rock excavation and support are needed. The topics in the book include contributions on: - Field investigation and observation - Rock constitutive relations and property testing -

Numerical and physical modeling for rock engineering - Information technology, artificial intelligence and other advanced techniques - Underground and surface excavation and reinforcement techniques - Dynamic rock mechanics and blasting - Predication and prevention of geo-environmental hazard - Case studies of typical rock engineering

Many of the 200 papers address these topics and demonstrate the skills of the young scholars, indicating that we can be confident in the continuing development of rock mechanics and rock engineering, leading to more efficient, safer and economical structures built on and in rock masses. *Rock Mechanics: Achievements and Ambitions* will appeal to professionals, engineers and academics in rock mechanics, rock engineering, tunnelling, mining, earthquake engineering, rock dynamics and geotechnical engineering. *Analysis, Modeling & Design* is the third volume of the five-volume set *Rock Mechanics and Engineering* and contains twenty-eight chapters from key experts in the following fields: - Numerical Modeling Methods; - Back Analysis; - Risk Analysis; - Design and Stability Analysis: Overviews; - Design and Stability Analysis: Coupling Process Analysis; - Design and Stability Analysis: Blast Analysis and Design; - Rock Slope Stability Analysis and Design; - Analysis and Design of Tunnels, Caverns and Stopes. The five-volume set “*Comprehensive Rock Engineering*”, which was published in 1993, has had an important influence on the development of rock mechanics and rock engineering. Significant and extensive advances and achievements in these fields over the last 20 years now justify the publishing of a comparable, new compilation. *Rock Mechanics and Engineering* represents a highly prestigious, multi-volume work edited by Professor Xia-Ting Feng, with the editorial advice of Professor John A. Hudson. This new compilation offers an extremely wideranging and comprehensive overview of the state-of-the-art in rock mechanics and rock engineering and is composed of peer-reviewed, dedicated contributions by all the key experts worldwide. Key features of this set are that it provides a systematic, global summary of new developments in rock mechanics and rock engineering practices as well as looking ahead to future developments in the fields. Contributors are worldrenowned

experts in the fields of rock mechanics and rock engineering, though younger, talented researchers have also been included. The individual volumes cover an extremely wide array of topics grouped under five overarching themes: Principles (Vol. 1), Laboratory and Field Testing (Vol. 2), Analysis, Modelling and Design (Vol. 3), Excavation, Support and Monitoring (Vol. 4) and Surface and Underground Projects (Vol. 5). This multi-volume work sets a new standard for rock mechanics and engineering compendia and will be the go-to resource for all engineering professionals and academics involved in rock mechanics and engineering for years to come. Particle methods have seen increasing use in several engineering and scientific fields, both because of their unique modelling capabilities and the availability of the necessary computational power. This title focuses on their theory and application. Proceedings of the Third International Conference on Discrete Element Methods, held in Santa Fe, New Mexico on September 23-25, 2002. This Geotechnical Special Publication contains 72 technical papers on discrete element methods (DEM), a suite of numerical techniques developed to model granular materials, rock, and other discontinua at the grain scale. Topics include: DEM formulation and implementation approaches, coupled methods, experimental validation, and techniques, including three-dimensional particle representations, efficient contact detection algorithms, particle packing schemes, and code design. Coupled methods include approaches to linking solid continuum and fluid models with DEM to simulate multiscale and multiphase phenomena. Applications include fundamental investigations of granular mechanics; micromechanical studies of powder, soil, and rock behavior; and large-scale modeling of geotechnical, material processing, mining, and petroleum engineering problems. *Laboratory and Field Testing* is the second volume of the five-volume set *Rock Mechanics and Engineering* and contains nineteen chapters from key experts in the following fields: - Triaxial or True-triaxial Tests under Condition of Loading and Unloading; - Joint Tests; - Dynamic and Creep Tests; - Physical Modeling Tests; - Field Testing and URLs. The five-volume set “*Comprehensive Rock Engineering*”, which was published in 1993, has had an important

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m Scour and Erosion includes four keynote lectures from world leading researchers cutting across the themes of scour and erosion, together with 132 peer-reviewed papers from 34 countries, covering the principal themes of: - internal erosion - sediment transport - grain scale to continuum scale - advanced numerical modelling of scour and erosion - terrestrial scour and erosion- river and estuarine erosion including scour around structures, and - management of scour/erosion and sediment, including hazard management and sedimentation in dams and reservoirs. Scour and Erosion is ideal for researchers and industry working at the forefront of scour and erosion, and has applications in both the freshwater and marine environments. The 8th International Conference on Scour and Erosion (ICSE 2016, Oxford, UK, 12-15 September 2016) was organized by HR Wallingford under the guidance of the Technical Committee 213 for Scour and Erosion of the International Society of Soil Mechanics and Geotechnical Engineering (ISSMGE). This biennial conference draws together leading academics, scientists and engineers engaged in scour and erosion research to present and exchange their latest scientific findings. Scour and Erosion, together with the eight previous proceedings dating from 2002, present a solid collection of technical and scientific developments in scour and erosion research which have been established over the last 14 years. This book presents recent research into developing and applying computational tools to estimate the performance and safety of hydraulic structures from the planning and construction stage to the service period. Based on the results of a close collaboration between the author and his colleagues, friends, students and field engineers, it shows how to achieve a good correlation between numerical computation and the actual in situ behavior of hydraulic structures. The book's heuristic and visualized style disseminates the philosophy and road map as well as the findings of the research. The chapters reflect the various aspects of the three typical and practical methods (the finite element method, the block element method, the composite element method) that the author has been working on and made essential contributions to since the 1980s. This book is an advanced continuation of Hydraulic Structures by the same



author, published by Springer in 2015. This book is the second volume of the proceedings of the 4th GeoShanghai International Conference that was held on May 27 - 30, 2018. The book, entitled "Fundamentals of Soil Behaviours", presents the recent advances and technology in the understanding and modelling of fundamentals of soil's behaviours. The subject of this book covers a wide range of topics related to soil behaviours in geotechnical engineering, geoenvironmental engineering and transportation engineering. The state-of-the-art theories, methodologies and findings in the related topics are included. This book may benefit researchers and scientists from the academic fields of soil and rock mechanics, geotechnical engineering, geoenvironmental engineering, transportation engineering, geology, mining and energy, as well as practical engineers from industry. 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.

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