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KEY=TEST - KYLAN CALLAHAN

CENTRIFUGE MODEL TEST STUDY OF STATIC AND CYCLIC BEHAVIOR OF A PILE FOUNDATION FOR AN OFFSHORE WIND GENERATOR

The use of large-diameter piles as foundations for offshore wind-driven generators has become increasingly common in recent years. These piles are usually located in saturated soft clay and experience a wide variety of static and dynamic loads. A new approach was described to simulate different types of loads on a large-diameter pile under high g levels in centrifuge model tests by simplifying the complex horizontal load combinations to which such a pile is typically subjected. A series of centrifuge model tests was conducted to assess the influence of several factors. An image-based measurement system, together with a transducer-based measurement, was used to obtain a comprehensive understanding of the response of the soil. The horizontal load-induced bending moment of the pile exhibited a nearly triangular distribution. A critical load, which can be estimated as approximately half of the ultimate load, was found to exist, beyond which the rate of displacement of the pile increased significantly with increasing load. The pile-induced deformation of the soil, concentrated within zones on both sides of the pile, gradually increased as the load increased and became nearly constant when the load was close to the ultimate load. Significant separation occurred between the pile and the neighboring soil in the upper part of the pile. The critical and ultimate loads of the pile were significantly dependent on the behavior of the soil in the upper layer, the depth, and the diameter of the pile.

FOUNDATION DESIGN CODES AND SOIL INVESTIGATION IN VIEW OF INTERNATIONAL HARMONIZATION AND PERFORMANCE BASED

DESIGN

PROCEEDINGS OF THE IWS KAMAKURA 2002 CONFERENCE, JAPAN, 10-12 APRIL 2002

CRC Press The contributions contained in these proceedings are divided into three main sections: theme lectures presented during the pre-workshop lecture series; keynote lectures and other contributed papers; and a translation of the Japanese geotechnical design code.

SOFT SOIL ENGINEERING

Routledge This volume contains seven keynote lectures and over 100 technical contributions by scientists, researchers, engineers and students from more than 25 countries and regions worldwide on the subject of soft soil engineering.

ADVANCES IN DEEP FOUNDATIONS

INTERNATIONAL WORKSHOP ON RECENT ADVANCES OF DEEP FOUNDATIONS (IWDPF07) 1-2 FEBRUARY 2007, PORT AND AIRPORT RESEARCH INSTITUTE, YOKOSUKA, JAPAN

Taylor & Francis 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 rese

PILE FOUNDATIONS IN ENGINEERING PRACTICE

John Wiley & Sons This is a concise, systematic and complete treatment of the design and construction of pile foundations. Discusses pile behavior under various loadings and types of piles and their installation, including consideration of soil parameters. It provides step-by-step design procedures for piles subject to vertical loading and pullout, lateral, inclined and eccentric loads, or dynamic loads, and for piles in permafrost. Also describes load test procedures and their interpretation and buckling of long, slender piles with and without supported length. The closing chapter presents case histories of prediction and performance of piles and pile groups. Includes numerous solved problems.

PROCEEDINGS OF GEOSHANGHAI 2018 INTERNATIONAL CONFERENCE: ADVANCES IN SOIL DYNAMICS AND FOUNDATION ENGINEERING

Springer This book is the sixth volume of the proceedings of the 4th GeoShanghai International Conference that was held on May 27 - 30, 2018. This volume, entitled “Advances in Soil Dynamics and Foundation Engineering”, covers the recent advances and technologies in soil dynamics and foundation engineering. These papers are grouped into four categories: (1) soil dynamics and earthquake

engineering, (2) deep excavations and retaining structures, (3) shafts and deep foundations, and (4) offshore geotechnics. It presents the state-of-the-art theories, experiments, methodologies and findings in the related areas. The book may benefit researchers and scientists from the academic fields of soil dynamics and earthquake engineering, geotechnical engineering, geoenvironmental engineering, transportation engineering, geology, mining and energy, as well as practical engineers from the 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.

SUSTAINABLE CONSTRUCTION MATERIALS AND TECHNOLOGIES

PROCEEDINGS OF THE CONFERENCE ON SUSTAINABLE CONSTRUCTION MATERIALS AND TECHNOLOGIES, 11-13 JUNE 2007, COVENTRY, UNITED KINGDOM

CRC Press The construction materials industry is a major user of the world's resources. While enormous progress has been made towards sustainability, the scope and opportunities for improvements are significant. To further the effort for sustainable development, a conference on Sustainable Construction Materials and Technologies was held at Coventry University, Coventry, U.K., from June 11th - 13th, 2007, to highlight case studies and research on new and innovative ways of achieving sustainability of construction materials and technologies. This book presents selected, important contributions made at the conference. Over 190 papers from over 45 countries were accepted for presentation at the conference, of which approximately 100 selected papers are published in this book. The rest of the papers are published in two supplementary books. Topics covered in this book include: sustainable alternatives to natural sand, stone, and Portland cement in concrete; sustainable use of recyclable resources such as fly ash, ground municipal waste slag, pozzolan, rice-husk ash, silica fume, gypsum plasterboard (drywall), and lime in construction; sustainable mortar, concrete, bricks, blocks, and backfill; the economics and environmental impact of sustainable materials and structures; use of construction and demolition wastes, and organic materials (straw bale, hemp, etc.) in construction; sustainable use of soil, timber, and wood products; and related sustainable construction and rehabilitation technologies.

FRONTIERS IN OFFSHORE GEOTECHNICS III

CRC Press Frontiers in Offshore Geotechnics III comprises the contributions presented at the Third International Symposium on Frontiers in Offshore Geotechnics (ISFOG, Oslo, Norway, 10-12 June 2015), organised by the Norwegian Geotechnical Institute (NGI). The papers address current and emerging geotechnical engineering challenges facing those working in off

PHYSICAL MODELLING IN GEOTECHNICS, TWO VOLUME SET

PROCEEDINGS OF THE 7TH INTERNATIONAL CONFERENCE ON PHYSICAL MODELLING IN GEOTECHNICS (ICPMG 2010), 28TH JUNE - 1ST JULY, ZURICH, SWITZERLAND

CRC Press This book results from the 7th ICPMG meeting in Zurich 2010 and covers a broad range of aspects of physical modelling in geotechnics, linking across to other modelling techniques to consider the entire spectrum required in providing innovative geotechnical engineering solutions. Topics presented at the conference: Soil – Structure – Interaction; Natural Hazards; Earthquake Engineering: Soft Soil Engineering; New Geotechnical Physical; Modelling Facilities; Advanced Experimental Techniques; Comparisons between Physical and Numerical Modelling Specific Topics: Offshore Engineering; Ground Improvement and Foundations; Tunnelling, Excavations and Retaining Structures; Dams and slopes; Process Modelling; Goenvironmental Modelling; Education

PHYSICAL MODELLING IN GEOTECHNICS, TWO VOLUME SET

PROCEEDINGS OF THE SIXTH INTERNATIONAL CONFERENCE ON PHYSICAL MODELLING IN GEOTECHNICS, 6TH ICPMG '06, HONG KONG, 4 - 6 AUGUST 2006

CRC Press An excellent source of reference on the current practice of physical modelling in geotechnics and environmental engineering. Volume One concentrates on physical modelling facilities and experimental techniques, soil characterisation, slopes, dams, liquefaction, ground improvement and reinforcement, offshore foundations and anchors, and pipelines. V

GEOSYNTHETICS IN CIVIL AND ENVIRONMENTAL ENGINEERING

GEOSYNTHETICS ASIA 2008 PROCEEDINGS OF THE 4TH ASIAN REGIONAL CONFERENCE ON GEOSYNTHETICS IN SHANGHAI, CHINA

Springer Science & Business Media Geosynthetics in Civil and Environmental Engineering presents contributions from the 4th Asian Regional Conference on Geosynthetics held in Shanghai, China. The book covers a broad range of topics, such as: fundamental principles and properties of geosynthetics, testing and standards, reinforcement, soil improvement and ground improvement, filter and drainage, landfill engineering, geosystem, transport, geosynthetics-pile support system and geocell, hydraulic application, and ecological techniques. Special case studies as well as selected government-sponsored projects such as the Three Gorges Dam, Qinghai-Tibet Railway, and Changi Land reclamation project are also discussed. The book will be an invaluable reference in this field.

PROGRESS IN SCALE MODELING, VOLUME II

SELECTIONS FROM THE INTERNATIONAL SYMPOSIA ON SCALE MODELING, ISSM VI (2009) AND ISSM VII (2013)

Springer This volume thoroughly covers scale modeling and serves as the definitive

source of information on scale modeling as a powerful simplifying and clarifying tool used by scientists and engineers across many disciplines. The bookelucidates techniques used when it would be too expensive, or too difficult, to test a system of interest in the field. Topics addressed in the current edition include scale modeling to study weather systems, diffusion of pollution in air or water, chemical process in 3-D turbulent flow, multiphase combustion, flame propagation, biological systems, behavior of materials at nano- and micro-scales, and many more. This is an ideal book for students, both graduate and undergraduate, as well as engineers and scientists interested in the latest developments in scale modeling. This book also: Enables readers to evaluate essential and salient aspects of profoundly complex systems, mechanisms, and phenomena at scale Offers engineers and designers a new point of view, liberating creative and innovative ideas and solutions Serves the widest range of readers across the engineering disciplines and in science and medicine

PROCEEDINGS OF GEOSHANGHAI 2018 INTERNATIONAL CONFERENCE: TUNNELLING AND UNDERGROUND CONSTRUCTION

Springer This book is the fifth volume of the proceedings of the 4th GeoShanghai International Conference that was held on May 27 - 30, 2018. This volume, entitled “Tunneling and Underground Construction”, covers the recent advances and technologies in tunneling and underground structure engineering. It presents the state-of-the-art planning philosophy, theories, experiments, methodologies and findings in the related areas. The importance of underground space utilization to the development of human society is also addressed. The challenges and future directions of underground engineering are highlighted. The topics include but are not limited to the tunneling and underground construction induced ground deformation, mechanical behaviors of segmental lining systems, tunneling in challenging situations, maintenance tactic and emergency counter-measures. The book may benefit researchers and scientists from the academic fields of tunneling and underground structure engineering as well as practical engineers from the 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.

ICPMG2014 - PHYSICAL MODELLING IN GEOTECHNICS

PROCEEDINGS OF THE 8TH INTERNATIONAL CONFERENCE ON PHYSICAL MODELLING IN GEOTECHNICS 2014 (ICPMG2014), PERTH, AUSTRALIA, 14-17 JANUARY 2014

CRC Press The 8th International Conference on Physical Modelling in Geotechnics (ICPMG2014) was organised by the Centre for Offshore Foundation Systems at the University of Western Australia under the auspices of the Technical Committee 104 for Physical Modelling in Geotechnics of the International Society of Soil Mechanics and Geotechnical Engineering. This quadrennial conference is the traditional focal point for the physical modelling community of academics, scientists and engineers to

present and exchange the latest developments on a wide range of physical modelling aspects associated with geotechnical engineering. These proceedings, together with the seven previous proceedings dating from 1988, present an inestimable collection of the technical and scientific developments and breakthroughs established over the last 25 years. These proceedings include 10 keynote lectures from scientific leaders within the physical modelling community and 160 peer-reviewed papers from 26 countries. They are organised in 14 themes, presenting the latest developments in physical modelling technology, modelling techniques and sensors, through a wide range of soil-structure interaction problems, including shallow and deep foundations, offshore geotechnics, dams and embankments, excavations and retaining structures and slope stability. Fundamental aspects of earthquake engineering, geohazards, ground reinforcements and improvements, and soil properties and behaviour are also covered, demonstrating the increasing complexity of modelling arising from state-of-the-art technological developments and increased understanding of similitude principles. A special theme on education presents the latest developments in the use of physical modelling techniques for instructing undergraduate and postgraduate students in geotechnical engineering.

SAFETY AND RELIABILITY: METHODOLOGY AND APPLICATIONS

CRC Press Within the last fifty years the performance requirements for technical objects and systems were supplemented with: customer expectations (quality), abilities to prevent the loss of the object properties in operation time (reliability and maintainability), protection against the effects of undesirable events (safety and security) and the ability to restore performance (resilience). The need to adapt the operation of complex systems in such an uncertain and volatile environment has caused the necessity to formulate new and well established achievements associated with modeling, testing and evaluation of these properties. The concept of a complex system applies not only to the technical ones but also the infrastructure of major importance for social life such as transportation and logistics systems, buildings, power systems, water distribution systems or health services. Safety and Reliability: Methodology and Applications contains the proceedings of the 24th European Safety and Reliability Conference (ESREL 2014, Wroclaw, Poland, 14-18 September 2014), and discusses theories and methods and their applications in the areas of risk, safety and reliability. The abstracts book (408 pages) + full paper CD-ROM (2496 pages) will be of interest to researchers and practitioners, academics and engineers working in academic, industrial and governmental sectors.

PILING AND DEEP FOUNDATIONS

PROCEEDINGS OF THE INTERNATIONAL CONFERENCE ON PILING AND DEEP FOUNDATIONS, LONDON, 15-18 MAY 1989

CRC Press

ANALYTICAL METHODS IN PETROLEUM UPSTREAM APPLICATIONS

CRC 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.

GEOTECHNICAL CENTRIFUGE TECHNOLOGY

CRC Press This book provides a thorough review of this powerful and sophisticated technique for modelling soil structure interactions. It has been written by an international team of authors.

SOIL-FOUNDATION-STRUCTURE INTERACTION

CRC Press Soil-Foundation-Structure Interaction contains selected papers presented at the International Workshop on Soil-Foundation-Structure Interaction held in Auckland, New Zealand from 26-27 November 2009. The workshop was the venue for an international exchange of ideas, disseminating information about experiments, numerical models and practical en

NUMERICAL METHODS IN GEOTECHNICAL ENGINEERING

(NUMGE 2010)

CRC Press 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 pra

CONSTRUCTION IN GEOTECHNICAL ENGINEERING

PROCEEDINGS OF IGC 2018

Springer Nature 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.

MODELING AND COMPUTATION IN ENGINEERING II

CRC Press Modeling and Computation in Engineering II (CMCE 2013, Hong Kong, 22-23 June 2013) includes 50 contributions on modeling and simulation technology, which were presented at the 2nd SREE Conference on Modeling and Computation in Engineering (CMCE 2013) and the 3rd SREE Workshop on Applied Mechanics and Civil Engineering (AMCE 2013), both held in Hong

DEFORMATION AND PROGRESSIVE FAILURE IN GEOMECHANICS

Elsevier Progressive failure has been a classical problem in the field of geotechnical engineering and has attracted considerable attention in connection with slope stability and foundation problems. It is associated with strain localization or shear banding and is also related to damage in material structures. As knowledge of the progressive failure mechanism increases, it is now necessary to establish effective communications between researchers and engineers. The International Symposium on Deformation and Progressive Failure in Geomechanics provided an opportunity for discussing recent advances in this area. A total of 136 papers were contributed from 22 countries. As well as these, the symposium proceedings also contain 8 interim technical reports on the subject by the members of the Asian Technical Committee of the International Society for Soil Mechanics and Foundation Engineering and the Japanese Geotechnical Society National Committee on Progressive Failure in Geo-structures.

FRONTIERS IN OFFSHORE GEOTECHNICS II

CRC Press Frontiers in Offshore Geotechnics II comprises the Proceedings of the Second International Symposium on Frontiers in Offshore Geotechnics (ISFOG), organised by the Centre for Offshore Foundation Systems (COFS) and held at the University of Western Australia (UWA), Perth from 8 10 November 2010. The volume addresses current and emerging challenges

ADVANCES IN CIVIL ENGINEERING AND BUILDING MATERIALS

CRC Press Advances in Civil Engineering and Building Materials presents the state-of-

the-art development in: - Structural Engineering - Road & Bridge Engineering - Geotechnical Engineering - Architecture & Urban Planning - Transportation Engineering - Hydraulic Engineering - Engineering Management - Computational Mechanics - Construction Technology - Building Materials - Environmental Engineering - Computer Simulation - CAD/CAE Emphasis was given to basic methodologies, scientific development and engineering applications. Advances in Civil Engineering and Building Materials will be useful to professionals, academics, and Ph.D. students interested in the above mentioned areas.

DESIGN OF PILE FOUNDATIONS IN LIQUEFIABLE SOILS

World Scientific Pile foundations are the most common form of deep foundations that are used both onshore and offshore to transfer large superstructural loads into competent soil strata. This book provides many case histories of failure of pile foundations due to earthquake loading and soil liquefaction. Based on the observed case histories, the possible mechanisms of failure of the pile foundations are postulated. The book also deals with the additional loading attracted by piles in liquefiable soils due to lateral spreading of sloping ground. Recent research at Cambridge forms the backbone of this book with the design methodologies being developed directly based on quantified centrifuge test results and numerical analysis.The book provides designers and practicing civil engineers with a sound knowledge of pile behaviour in liquefiable soils and easy-to-use methods to design pile foundations in seismic regions. For graduate students and researchers, it brings together the latest research findings on pile foundations in a way that is relevant to geotechnical practice.

RAPID LOAD TESTING ON PILES

CRC Press To obtain data about the stiffness and bearing capacity of a foundation pile, the Rapid Load Test could be an effective and economic alternative for a static load test. In order to judge this, the influence of rate effects in clay and pore water pressures in sand should first be understood. This book presents the latest developments in the research

TUNNELLING. A DECADE OF PROGRESS. GEODELFT 1995-2005

CRC Press Following years of research, the first bored tunnel in soft soil in the Netherlands, the Tweede Heinenoord tunnel, was completed in 1998. Since then, Dutch engineers have increased their knowledge of soft soil tunnelling, with a significant and important part of this research being carried out by GeoDelft, the Dutch National Institute of Geo-Engineering. This book contains the most important publications by GeoDelft on the subject of soft soil tunnelling, focusing on the period from 1992 to the present, it is divided into four main headings: field measurements; grout behaviour; model testing; and numerical analysis. This impressive overview of the progress made in the Netherlands in soft soil tunnelling research over more than a decade is a valuable resource to those working in soft soil tunnelling worldwide.

PROCEEDINGS OF THE 4TH INTERNATIONAL CONFERENCE ON PERFORMANCE BASED DESIGN IN EARTHQUAKE GEOTECHNICAL ENGINEERING (BEIJING 2022)

Springer Nature The 4th International Conference on Performance-based Design in Earthquake Geotechnical Engineering (PBD-IV) is held in Beijing, China. The PBD-IV Conference is organized under the auspices of the International Society of Soil Mechanics and Geotechnical Engineering - Technical Committee TC203 on Earthquake Geotechnical Engineering and Associated Problems (ISSMGE-TC203). The PBD-I, PBD-II, and PBD-III events in Japan (2009), Italy (2012), and Canada (2017) respectively, were highly successful events for the international earthquake geotechnical engineering community. The PBD events have been excellent companions to the International Conference on Earthquake Geotechnical Engineering (ICEGE) series that TC203 has held in Japan (1995), Portugal (1999), USA (2004), Greece (2007), Chile (2011), New Zealand (2015), and Italy (2019). The goal of PBD-IV is to provide an open forum for delegates to interact with their international colleagues and advance performance-based design research and practices for earthquake geotechnical engineering.

BGA INTERNATIONAL CONFERENCE ON FOUNDATIONS

INNOVATIONS, OBSERVATIONS, DESIGN AND PRACTICE : PROCEEDINGS OF THE INTERNATIONAL CONFERENCE ORGANISED BY BRITISH GEOTECHNICAL ASSOCIATION AND HELD IN DUNDEE, SCOTLAND ON 2-5TH SEPTEMBER 2003

Thomas Telford Although foundation engineering is recognised as a mature discipline with geotechnics, the diversity of applications and studies evident in this book demonstrates that the field is still developing and will continue to provide challenges for engineers for many years.

GEOTECHNICAL ASPECTS OF UNDERGROUND CONSTRUCTION IN SOFT GROUND

PROCEEDINGS OF THE 5TH INTERNATIONAL SYMPOSIUM TC28. AMSTERDAM, THE NETHERLANDS, 15-17 JUNE 2005

CRC Press A valuable source of reference on the current practices of analysis, design and construction of tunnels and underground structures in soft ground. This collection of reviewed papers covers a wide range of tunnelling practice, from deep excavations in Singapore to the construction of a new metro line in Barcelona. The international scope of the contributors makes this a truly comprehensive collection of work on the geotechnical aspects of soft ground excavation.

PROCEEDINGS OF THE 2ND INTERNATIONAL CIVIL ENGINEERING AND ARCHITECTURE CONFERENCE

CEAC 2022, 11-14 MARCH 2022, SINGAPORE

Springer Nature This book collects the scientific proceedings presented during the “2022 The 2nd International Civil Engineering and Architecture Conference” held in Singapore in March 2022 with the aim of showing the latest advancements in theoretical and applied research in the architecture, engineering, and construction sector (AEC). The book is organized into 4 main parts, namely (1) Sustainable Urban Planning and Architecture; (2) Architectural and Environmental Design; (3) Built Environment Materials and Construction Technology; and (4) Civil Engineering and Construction Management. The goal of the book is to provide readers with an overview of the ongoing transformation of the AEC industry presenting a thorough investigation of the emerging trends in the fields of green building design, construction, and operation.

UNDERGROUND SPACE – THE 4TH DIMENSION OF METROPOLISES, THREE VOLUME SET +CD-ROM

PROCEEDINGS OF THE WORLD TUNNEL CONGRESS 2007 AND 33RD ITA/AITES ANNUAL GENERAL ASSEMBLY, PRAGUE, MAY 2007

CRC Press The so-called fourth dimension of a metropolis is the underground space beneath a city which typically includes structures such as tunnels, which facilitate transport and provide gas, water and other supplies. Underground space may also be utilised for living, working and recreational facilities and industrial storage. These volumes focus on underground city design and planning; geotechnical survey and improvement of ground mass; and research, development and design of underground constructions in built-up areas. Also covered is the construction and monitoring of urban tunnels, including underground constructions executed from the surface; distribution and management of risks and accidents during tunnelling; tunnel equipment; fire and operational safety. This collection of papers will be invaluable to researchers, scientists, engineers and professionals working in the underground space.

ADVANCES IN SPATIO-TEMPORAL ANALYSIS

CRC Press Developments in Geographic Information Technology have raised the expectations of users. A static map is no longer enough; there is now demand for a dynamic representation. Time is of great importance when operating on real world geographical phenomena, especially when these are dynamic. Researchers in the field of Temporal Geographical Information Systems (TGIS) have been developing methods of incorporating time into geographical information systems. Spatio-temporal analysis embodies spatial modelling, spatio-temporal modelling and spatial reasoning and data mining. Advances in Spatio-Temporal Analysis contributes to the field of spatio-temporal analysis, presenting innovative ideas and examples that reflect current progress and achievements.

GEOTECHNICS FOR SUSTAINABLE INFRASTRUCTURE DEVELOPMENT

Springer Nature This book presents 09 keynote and invited lectures and 177 technical papers from the 4th International Conference on Geotechnics for Sustainable Infrastructure Development, held on 28-29 Nov 2019 in Hanoi, Vietnam. The papers come from 35 countries of the five different continents, and are grouped in six conference themes: 1) Deep Foundations; 2) Tunnelling and Underground Spaces; 3) Ground Improvement; 4) Landslide and Erosion; 5) Geotechnical Modelling and Monitoring; and 6) Coastal Foundation Engineering. The keynote lectures are devoted by Prof. Harry Poulos (Australia), Prof. Adam Bezuijen (Belgium), Prof. Delwyn Fredlund (Canada), Prof. Lidija Zdravkovic (UK), Prof. Masaki Kitazume (Japan), and Prof. Mark Randolph (Australia). Four invited lectures are given by Prof. Charles Ng, ISSMGE President, Prof.Eun Chul Shin, ISSMGE Vice-President for Asia, Prof. Norikazu Shimizu (Japan), and Dr.Kenji Mori (Japan).

GEOTECHNICAL ASPECTS OF UNDERGROUND CONSTRUCTION IN SOFT GROUND

PROCEEDINGS OF THE 6TH INTERNATIONAL SYMPOSIUM (IS-SHANGHAI 2008)

CRC Press This volume comprises a collection of four special lectures, six general reports and 112 papers presented at the Sixth International Symposium of Geotechnical Aspects of Underground Construction in Soft Ground (IS-Shanghai) held between 10 and 12 April 2008 in Shanghai, China.The Symposium was organised by Tongji University and the following t

DEVELOPMENT OF A DESIGN GUIDELINE FOR PILE FOUNDATIONS SUBJECTED TO LIQUEFACTION-INDUCED LATERAL SPREADING

Extensive loss of stiffness and strength in liquefied soils can cause large ground deformations during strong earthquake shaking. One of the major sources of damage in pile foundations in liquefied soil is the excessive deformation due to lateral spreading. Pile-supported wharves subjected to earthquake motions are expected to accommodate inertial loads imposed at pile head from the superstructure as well as the kinematic loads imposed on piles from the lateral ground deformations. Current design codes significantly vary on how to combine inertia and kinematic demands. Recent research on soil-foundation-structure interaction suffers from lack of experiment-based data. There is a serious need to fill the knowledge gap and help designers to better evaluate risk and design cost-effective pile foundations. In this research, the interaction of inertial and kinematic demands is investigated using data from five well-instrumented centrifuge tests on pile-supported wharves. The observations from these tests were used to investigate the time- and depth-dependent nature of kinematic and inertial demands on the deep foundations during earthquake loading. The test results were analyzed to provide the relative contributions of peak inertial loads and peak soil displacements during critical cycles, and the data revealed the depth-dependency of these factors. The results were used to refine existing guidelines for design of pile-supported wharves subjected to

foundation deformations. The observations from centrifuge tests were then used to evaluate the accuracy of the equivalent static analysis (ESA) procedure using p-y models for the design of pile-supported wharves subjected to lateral ground deformations during earthquake loading. The piles in these centrifuge tests were subjected to the combined effects of wharf deck inertial loads and ground deformations. The experiments included soil properties ranging from nonliquefiable to fully liquefied cases which provided a wide range of conditions against which the ESA method could be evaluated. Finally, a nonlinear dynamic model of a pile-supported wharf was created and calibrated using recorded data from a centrifuge test. The objective of the numerical modeling was to create a calibrated numerical model that captures key responses of the wharf and the soil in order to be used in subsequent studies that are too costly and time-consuming to do using physical modeling. The calibrated numerical model was then used in an incremental dynamic analysis to evaluate the effects of ground motion duration on the dynamic response of a pile-supported wharf subjected to liquefaction-induced lateral ground deformations. The analysis results provided insights on the relative contribution of inertial and kinematic demands on the response of the wharf with respect to motion duration.

SOFT SOIL ENGINEERING

CRC Press This volume contains seven keynote lectures and over 100 technical contributions by scientists, researchers, engineers and students from more than 25 countries and regions worldwide on the subject of soft soil engineering.

SOIL DYNAMICS AND FOUNDATION MODELING

OFFSHORE AND EARTHQUAKE ENGINEERING

Springer This book presents a comprehensive topical overview on soil dynamics and foundation modeling in offshore and earthquake engineering. The spectrum of topics include, but is not limited to, soil behavior, soil dynamics, earthquake site response analysis, soil liquefactions, as well as the modeling and assessment of shallow and deep foundations. The author provides the reader with both theory and practical applications, and thoroughly links the methodological approaches with engineering applications. The book also contains cutting-edge developments in offshore foundation engineering such as anchor piles, suction piles, pile torsion modeling, soil ageing effects and scour estimation. The target audience primarily comprises research experts and practitioners in the field of offshore engineering, but the book may also be beneficial for graduate students.

GEOTECHNICAL ENGINEERING

MEETING SOCIETY'S NEEDS : PROCEEDINGS OF THE FOURTEENTH SOUTHEAST ASIAN GEOTECHNICAL CONFERENCE, HONG KONG, 10-14 DECEMBER 2001

CRC Press