

Standard Test Methods For Downhole Seismic Testing1

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With chapters culled from the acclaimed Bridge Engineering Handbook, Bridge Engineering: Substructure Design focuses on the various components comprising and affecting bridge substructures. These include bearings, piers and columns, towers, abutments and retaining structures, footings and foundations, and bridge hydraulics. For each component, the contributing author addresses the various types of that component, discusses specific selection or design criteria, and provides thorough references. Other relevant topics studied in this volume include geotechnical considerations, such as field exploration techniques and site characterization, and designing bridges to minimize the potential for and damage resulting from vessel collisions. A comprehensive and detailed reference guide on the integrity and safety of oil and gas pipelines, both onshore and offshore Covers a wide variety of topics, including design, pipe manufacture, pipeline welding, human factors, residual stresses, mechanical damage, fracture and corrosion, protection, inspection and monitoring, pipeline cleaning, direct assessment, repair, risk management, and abandonment Links modern and vintage practices to help integrity engineers better understand their system and apply up-to-date technology to older infrastructure Includes case histories with examples of solutions to complex problems related to pipeline integrity Includes chapters on stress-based and strain-based design, the latter being a novel type of design that has only recently been investigated by designer firms and regulators Provides information to help those who are responsible to establish procedures for ensuring pipeline integrity and safety

This book, written for the benefit of engineering students and practicing engineers alike, is the culmination of the author's four decades of experience related to the subject of electrical measurements, comprising nearly 30 years of experimental research and more than 15 years of teaching at several engineering institutions. The unique feature of this book, apart from covering the syllabi of various universities, is the style of presentation of all important aspects and features of electrical measurements, with neatly and clearly drawn figures, diagrams and colour and b/w photos that illustrate details of instruments among other things, making the text easy to follow and comprehend. Enhancing the chapters are interspersed explanatory comments and, where necessary, footnotes to help better understanding of the chapter contents. Also, each chapter begins with a "recall" to link the subject matter with the related science or phenomenon and fundamental background. The first few chapters of the book comprise "Units, Dimensions and Standards"; "Electricity, Magnetism and Electromagnetism" and "Network Analysis". These topics form the basics of electrical measurements and provide a better understanding of the main topics discussed in later chapters. The last two chapters represent valuable assets of the book, and relate to (a) "Magnetic Measurements", describing many unique features not easily available elsewhere, a good study of which is essential for the design and development of most electric equipment – from motors to transformers and alternators, and (b) "Measurement of Non-electrical Quantities", dealing extensively with the measuring techniques of a number of variables that constitute an important requirement of engineering measurement practices. The book is supplemented by ten appendices covering various aspects dealing with the art and science of electrical measurement and of relevance to some of the topics in main chapters. Other useful features of the book include an elaborate chapter-by-chapter list of symbols, worked examples, exercises and quiz questions at the end of each chapter, and extensive authors' and subject index. This book will be of interest to all students taking courses in electrical measurements as a part of a B.Tech. in electrical engineering. Professionals in the field of electrical engineering will also find the book of use.

Weak rocks encountered in open pit mines cover a wide variety of materials, with properties ranging between soil and rock. As such, they can provide a significant challenge for the slope designer. For these materials, the mass strength can be the primary control in the design of the pit slopes, although structures can also play an important role. Because of the typically weak nature of the materials, groundwater and surface water can also have a controlling influence on stability. Guidelines for Open Pit Slope Design in Weak Rocks is a companion to Guidelines for Open Pit Slope Design, which was published in 2009 and dealt primarily with strong rocks. Both books were commissioned under the Large Open Pit (LOP) project, which is sponsored by major mining companies. These books provide summaries of the current state of practice for the design, implementation and assessment of slopes in open pits, with a view to meeting the requirements of safety, as well as the recovery of anticipated ore reserves. This book, which follows the general cycle of the slope design process for open pits, contains 12 chapters. These chapters were compiled and written by industry experts and contain a large number of case histories. The initial chapters address field data collection, the critical aspects of determining the strength of weak rocks, the role of groundwater in weak rock slope stability and slope design considerations, which can differ somewhat from those applied to strong rock. The subsequent chapters address the principal weak rock types that are encountered in open pit mines, including cemented colluvial sediments, weak sedimentary mudstone rocks, soft coals and chalk, weak limestone, saprolite, soft iron ores and other leached rocks, and hydrothermally altered rocks. A final chapter deals with design implementation aspects, including mine planning, monitoring, surface water control and closure of weak rock slopes. As with the other books in this series, Guidelines for Open Pit Slope Design in Weak Rocks provides guidance to practitioners involved in the design and implementation of open pit slopes, particularly geotechnical engineers, mining engineers, geologists and other personnel working at operating mines.

These proceedings contain the scientific contributions presented at the 2nd Asian Rock Mechanics Symposium (ISRM 2001 - 2nd ARMS). The theme of the symposium was "Frontiers of Rock Mechanics and Sustainable Development in the 21st Century".

Advances in Terrestrial Drilling: Ground, Ice, and Underwater includes the latest drilling and excavation principles and processes for terrestrial environments. The chapters cover the history of

drilling and excavation, drill types, drilling techniques and their advantages and associated issues, rock coring including acquisition, damage control, caching and transport, and data interpretation, as well as unconsolidated soil drilling and borehole stability. This book includes a description of the basic science of the drilling process, associated processes of breaking and penetrating various media, the required hardware, and the process of excavation and analysis of the sampled media. Describes recent advances in terrestrial drilling. Discusses drilling in the broadest range of media including terrestrial surfaces, ice and underwater from shallow penetration to very deep. Provides an in-depth description of key drilling techniques and the unified approach to assessing the required tools for given drilling requirements. Discusses environmental effects on drilling, current challenges of drilling and excavation, and methods that are used to address these. Examines novel drilling and excavation approaches. Dr. Yoseph Bar-Cohen is the Supervisor of the Electroactive Technologies Group (<http://ndea.jpl.nasa.gov/>) and a Senior Research Scientist at the Jet Propulsion Lab/Caltech, Pasadena, CA. His research is focused on electro-mechanics including planetary sample handling mechanisms, novel actuators that are driven by such materials as piezoelectric and EAP (also known as artificial muscles), and biomimetics. Dr. Kris Zacny is a Senior Scientist and Vice President of Exploration Systems at Honeybee Robotics, Altadena, CA. His expertise includes space mining, sample handling, soil and rock mechanics, extraterrestrial drilling, and In Situ Resource Utilization (ISRU). The third edition of Air and Gas Drilling Manual describes the basic simulation models for drilling deep wells with air or gas drilling fluids, gasified two-phase drilling fluids, and stable foam drilling fluids. The models are the basis for the development of a systematic method for planning under balanced deep well drilling operations and for monitoring the drilling operation as well as construction project advances. Air and Gas Drilling Manual discusses both oil and natural gas industry applications, and geotechnical (water well, environmental, mining) industry applications. Important well construction and completion issues are discussed for all applications. The engineering analyses techniques are used to develop pre-operations planning methods, troubleshooting operations monitoring techniques and overall operations risk analysis. The essential objective of the book is drilling and well construction cost management control. The book is in both SI and British Imperial units. Master the air and gas drilling techniques in construction and development of water wells, monitoring wells, geotechnical boreholes, mining operations boreholes and more 30% of all wells drilled use gas and air, according to the U.S. Department of Energy estimates Contains basic simulation equations with examples for direct and reverse circulation drilling models and examples for air and gas, gasified fluids, and stable foam drilling models

This document provides the comprehensive list of Chinese National Standards - Category: GB; GB/T, GBT.

Materials in Marine Technology covers the important aspects of metallurgy and materials engineering which must be taken into account when designing for marine environments. The purpose is to aid materials selection and the incorporation of materials data into the design, manufacture and inspection strategy. Recent advances in materials technology, including the use of new materials for marine applications Alloys, Polymers and Composites are examined in detail. The integrated approach is design oriented and is supported by recent case studies.

This document provides the comprehensive list of Chinese Industry Standards - Category: SY; SY/T; SYT.

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.

This document provides the comprehensive list of Chinese National Standards and Industry Standards (Total 17,000 standards).

One of the most commonly used piping materials for transport of water and wastewater in the United States is ductile iron pipe (DIP). Although this piping normally is installed using open trench cuts, a trenchless installation method that is finding increased popularity for DIP is horizontal directional drilling (HDD). Many HDD installations utilize specialized drilling fluids, commonly called "drilling muds," which may be composed of bentonite clay, various organic and inorganic additives, polymers, lubricants, wetting agents, or polymers mixed with water (or any combination thereof). To evaluate the corrosion characteristics of these fluids in contact with DIP, a 1-year corrosion study involving more than 200 ductile iron pipe specimens was conducted comparing five commercially available directional drilling fluids. Corrosion tests were conducted using electrochemical test methods described in ASTM G59, Standard Test Method for Conducting Potentiodynamic Polarization Resistance Measurements, ASTM G102, Standard Practice for Calculation of Corrosion Rates and Related Information from Electrochemical Measurements, and ASTM G106, Standard Practice for Verification of Algorithm and Equipment for Electrochemical Impedance Measurements, and these results were compared to 1-year weight loss test results obtained using ASTM G162, Standard Practice for Conducting and Evaluating Laboratory Corrosions Tests in Soils. This paper discusses which electrochemical test method and method of analysis gave results closest to those obtained with ASTM G162 weight loss evaluation.

Petroleum Engineer's Guide to Oil Field Chemicals and Fluids, Third Edition delivers all the necessary lists of chemicals by use, their basic components, benefits and environmental implications. Instead of searching through various sources, this updated reference presents a one-stop, non-commercialized approach by organizing products by function, matching the chemical to the process for practical problem-solving, and extending coverage with additional resources and supportive materials. Updates include shale specific fluids and organic additives, including swellable polymers and multi-walled carbon nanotubes. Covering the full spectrum, including fluid loss additives and oil spill treating agents, this book is ideal for every oil and gas operation with its options for lower costs, sustainable use and enhanced production. Helps readers effectively locate and utilize the right chemical application specific to their oil and gas operation Includes updated sections on shale specific fluids, defoamers and organic additives, including biodegradable waste and swellable polymers Covers environmental factors and risks for oil field chemicals, along with the pluses and minuses of each application

Geotechnical Risk and Safety V contains contributions presented at the 5th International Symposium on Geotechnical Safety and Risk (5th ISGSR, Rotterdam, 13-16 October 2015) which was organized under the auspices of the Geotechnical Safety Network (GEOSNet) and the following technical committees of the of the International Society of Soil Mechanics and Geotechnical Engineering (ISSGME): •

TC304 Engineering Practice of Risk Assessment & Management • TC205 Safety and Serviceability in Geotechnical Design • TC212 Deep Foundations • TC302 Forensic Geotechnical Engineering
Geotechnical Risk and Safety V covers seven themes: 1. Geotechnical Risk Management and Risk Communication 2. Variability in Ground Conditions and Site Investigation 3. Reliability and Risk Analysis of Geotechnical Structures 4. Limit-state design in Geotechnical Engineering 5. Assessment and Management of Natural Hazards 6. Contractual and Legal Issues of Foundation and (Under)Ground Works 7. Case Studies, Monitoring and Observational Method The 5th ISGSR is the continuation of a series of symposiums and workshops on geotechnical risk and reliability, starting with LSD2000 (Melbourne, Australia), IWS2002 (Tokyo and Kamakura, Japan), LSD2003 (Cambridge, USA), Georisk2004 (Bangalore, India), Taipei2006 (Taipei, Taiwan), the 1st ISGSR (Shanghai, China, 2007), the 2nd ISGSR (Gifu, Japan, 2009), the 3rd ISGSR (Munich, Germany, 2011) and the 4th ISGSR (Hong Kong, 2013).

Ground vibration consideration is gaining significance with people's decreasing tolerance of vibration, introduction of new environmental legislations, increasing use of equipment sensitive to vibration, ageing of existing buildings and expanding construction sites to/near collapsible/liquefiable/thixotropic soil. This volume bridges the gap that exists between rather limited provisions of engineering codes/standards and complex numerical analyses/small-scale tests. The book contains descriptions of ground vibration measurements, predictions and control for engineers. Effects of most frequent sources of ground vibration arising from construction/demolition, traffic and machinery, ground wave amplification and attenuation as well as foundation kinematic and inertial interaction have been considered by simplified analyses aimed at ease and speed of use for major problems in ground vibration engineering. Comments on assumptions, limitations, and factors affecting the results are given. Case studies and examples worldwide are included to illustrate the accuracy and usefulness of simplified methods. A list of references is provided for further consideration, if desired. Audience: This work is of interest to geotechnical engineers, engineering geologists, earthquake engineers and students. Extra material: Microsoft Excel spreadsheets with the input data and results for the case studies and examples considered in this book are available at <http://extras.springer.com>

Oil and gas engineers today use three main factors in deciding drilling fluids: cost, performance, and environmental impact, making water-based products a much more attractive option. Water-Based Chemicals and Technology for Drilling, Completion, and Workover Fluids effectively delivers all the background and infrastructure needed for an oil and gas engineer to utilize more water-based products that benefit the whole spectrum of the well's life cycle. Helping to mitigate critical well issues such as formation damage, fluid loss control, and borehole repair, more operators demand to know the full selection of water-based products available to consistently keep a peak well performance. This must-have training guide provides the necessary coverage in the area, broken down by type and use, along with an extensive list of supportive materials such as a chemical index of structural formulas and helpful list of references for further reading. In addition to understanding the types, special additives, and chemical compatibilities of the products available, the reader will also learn proper waste disposal techniques, including management of produced water, a component mandatory to hydraulic fracturing operations. Concise and comprehensive, Water-Based Chemicals and Technology for Drilling, Completion, and Workover Fluids details all the necessary educational content and handy references to elevate your well's performance while lowering your environmental impact. Understand the basics and functions on all water-based fluids for drilling, completion, cementing, and enhanced oil recovery operations Get up to date with the growing need for water-based fluids in hydraulic fracturing operations including supportive materials such as an index of trade names, acronyms, and chemicals Stay responsible and know the environmental aspects and current regulations, including disposal and discharge

This book presents comprehensive hazard analysis methods for seismic soil liquefaction, providing an update on soil liquefaction by systematically reviewing the phenomenon's occurrence since the beginning of this century. It also puts forward a range of advanced research methods including in-situ tests, laboratory studies, physical model tests, numerical simulation, and performance-based assessment. Recent seismic liquefaction-related damage to soils and foundations demonstrate the increasing need for the comprehensive hazard analysis of seismic soil liquefaction in order to mitigate this damage and protect human lives. As such the book addresses the comprehensive hazard analysis of seismic soil liquefaction, including factors such as macroscopic characteristics, evaluating the liquefaction potential, dynamic characteristics and deformation processes, providing reliable evaluation results for liquefaction potential and deformation in the context of risk assessment. "p>

All English-translated Chinese codes are available at: www.codeofchina.com

Written by an author with more than 25 years of field and academic experience, Soil Improvement and Ground Modification Methods explains ground improvement technologies for converting marginal soil into soil that will support all types of structures. Soil improvement is the alteration of any property of a soil to improve its engineering performance. Some sort of soil improvement must happen on every construction site. This combined with rapid urbanization and the industrial growth presents a huge dilemma to providing a solid structure at a competitive price. The perfect guide for new or practicing engineers, this reference covers projects involving soil stabilization and soil admixtures, including utilization of industrial waste and by-products, commercially available soil admixtures, conventional soil improvement techniques, and state-of-the-art testing methods. Conventional soil improvement techniques and state-of-the-art testing methods Methods for mitigating or removing the risk of liquefaction in the event of major vibrations Structural elements for stabilization of new or existing construction industrial waste/by-products, commercially available soil Innovative techniques for drainage, filtration, dewatering, stabilization of waste, and contaminant control and removal

This two-volume set includes the latest principles behind the processes of drilling and excavation on Earth and other planets. It covers the categories of drills, the history of drilling and excavation, various drilling techniques and associated issues, rock coring (acquisition, damage control, caching and transport, restoration of "in-situ" conditions and data interpretation), as well as unconsolidated soil drilling and borehole stability. It describes the drilling process from basic science and associated process of breaking and penetrating various media and the required hardware and the process of excavation and analysis of the sampled media.

The topic of site characterization is unique to geotechnical engineering and owes its significance directly to the variability of the natural geologic deposits on the earth's surface. Proper site characterization requires an understanding of various field and laboratory investigation methods. The book discusses the suitability of various methods under different site conditions and presents the procedures to derive design parameters based on interpretation of test results. Recent developments in specialized site characterization methods (such as seismic hazard evaluation) are also included. Three recent case histories are presented, where site characterization played a key role. The three disparate cases include soft natural soil under static loading, coarse and fine-grained soil under seismic impact, and hazardous waste deposits under both static and seismic loading. Site investigation requirements of building codes are discussed and guidelines for preparing a typical site characterization report are presented. The book is aimed at the practicing geotechnical engineer, as well as advanced undergraduate and graduate students.

Pressuremeter testing activities are of great interest for scientists and engineers concerned with the mechanical behaviour of civil engineering materials. The proceedings include the first

Menard Lecture presented by Professor Branko Ladanyi and 57 technical papers from 16 countries. They are related to the application of pressuremeter testing to granular and alluvial soils, clay, rock, concrete and permafrost, and geotechnical design. It also includes a session on technological developments in the design, fabrication and installation of pressuremeters. The present crude oil and natural gas reservoirs around the world have depleted conventional production levels. To continue enhancing productivity for the remaining mature reservoirs, drilling decision-makers could no longer rely on traditional balanced or overbalanced methods of drilling. Derived from conventional air drilling, underbalanced drilling is increasingly necessary to meet today's energy and drilling needs. While more costly and extreme, underbalanced drilling can minimize pressure within the formation, increase drilling rate of penetration, reduce formation damage and lost circulation, making mature reservoirs once again viable and more productive. To further explain this essential drilling procedure, Bill Rehm, an experienced legend in drilling along with his co-editors, has compiled a handbook perfect for the drilling supervisor. Underbalanced Drilling: Limits and Extremes, written under the auspices of the IADC Technical Publications Committee, contain many great features and contributions including: Real case studies shared by major service companies to give the reader guidelines on what might happen in actual operations Questions and answers at the end of the chapters for upcoming engineers to test their knowledge Common procedures, typical and special equipment involved, and most importantly, the limits and challenges that still surround this technology

This book presents state-of-the-art knowledge on problems of the effects of structural irregularities on their seismic response. It also covers specific spatial and rotational seismic loads on these structures. Rapid progress in respective research on irregular structures and unconventional seismic loads requires prompt updates of the state of the art in this area. These problems are of particular interest to both researchers and practitioners because these are non-conservative effects compared with the approach of the traditional seismic design (e.g. Eurocode 8, Uniform Building Code etc.). This book will be of particular interest to researchers, PhD students and engineers dealing with design of structures under seismic excitations.

The objective of this book is to fill some of the gaps in the existing engineering codes and standards related to soil dynamics, concerning issues in earthquake engineering and ground vibrations, by using formulas and hand calculators. The usefulness and accuracy of the simple analyses are demonstrated by their implementation to the case histories available in the literature. Ideally, the users of the volume will be able to comment on the analyses as well as provide more case histories of simple considerations by publishing their results in a number of international journals and conferences. The ultimate aim is to extend the existing codes and standards by adding new widely accepted analyses in engineering practice. The following topics have been considered in this volume: • main ground motion sources and properties • typical ground motions, recording, ground investigations and testing • soil properties used in simple analyses • fast sliding in non-liquefied soil • flow of liquefied sandy soil • massive retaining walls • slender retaining walls • shallow foundations • piled foundations • tunnels, vertical shafts and pipelines • ground vibration caused by industry. Audience: This book is of interest to geotechnical engineers, engineering geologists, earthquake engineers and students

This handbook reflects the petroleum engineering profession as a mature engineering discipline apart from other engineering fields.

More than ten years have passed since the first edition was published. During that period there have been a substantial number of changes in geotechnical engineering, especially in the applications of foundation engineering. As the world population increases, more land is needed and many soil deposits previously deemed unsuitable for residential housing or other construction projects are now being used. Such areas include problematic soil regions, mining subsidence areas, and sanitary landfills. To overcome the problems associated with these natural or man-made soil deposits, new and improved methods of analysis, design, and implementation are needed in foundation construction. As society develops and living standards rise, tall buildings, transportation facilities, and industrial complexes are increasingly being built. Because of the heavy design loads and the complicated environments, the traditional design concepts, construction materials, methods, and equipment also need improvement. Further, recent energy and material shortages have caused additional burdens on the engineering profession and brought about the need to seek alternative or cost-saving methods for foundation design and construction.

Utilizes both Computer- and Hand-Based Calculations... Modern practice in geomechanics is becoming increasingly reliant on computer-based software, much of which can be obtained through the Internet. In Geomechanics in Soil, Rock, and Environmental Engineering the application of these numerical techniques is examined not only for soil mechanics, but also for rock mechanics and environmental applications. ... For Use in Complex Analysis It deals with the modern analysis of shallow foundations, deep foundations, retaining structures, and excavation and tunneling. In recent years, the environment has become more and more important, and so it also deals with municipal and mining waste and solutions for the disposal and containment of the waste. Many fresh solutions to problems are presented to enable more accurate and advanced designs to be carried out. A Practical Reference for Industry Professionals, This Illuminating Book: Offers a broad range of coverage in soil mechanics, rock mechanics, and environmental engineering Incorporates the author's more than 40 years of academic and practical design experience Describes the latest applications that have emerged in the last ten years Supplies references readily available online for further research Geomechanics in Soil, Rock, and Environmental Engineering should appeal to students in their final undergraduate course in geomechanics or master's students, and should also serve as a useful reference to practitioners in the field of geomechanics, reflecting the author's background in both industry and academia.

Cone Penetration Testing 2018 contains the proceedings of the 4th International Symposium on Cone Penetration Testing (CPT'18, Delft, The Netherlands, 21-22 June 2018), and presents the latest developments relating to the use of cone penetration testing in geotechnical engineering. It focuses on the solution of geotechnical challenges using the cone penetration test (CPT), CPT add-on measurements and companion in-situ penetration tools (such as full flow and free fall penetrometers), with an emphasis on practical experience and application of research findings. The peer-reviewed papers have been authored by academics, researchers and practitioners from many countries worldwide and cover numerous important aspects, ranging from the development of innovative theoretical and numerical methods of interpretation, to real field applications. This is an Open Access ebook, and can be found on www.taylorfrancis.com.

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