OMB No. 6592654318092

Stabilization Of Expansive Soils Using Waste Marble Dust A

Stabilization of Expansive Soils with Lime and Fly Ash Stabilization of Expansive Soil with Various Admixtures: A Brief Review This Is What We Call \"Expansive Soil\" Lime and cement stabilisation of expansive soils Expansive soils Soil stabilization animation Animation of expansive soils Lecture 10: Expansive Soils and Stabilization Techniques SWELLING AND STRENGTH PROPERTIES OF EXPANSIVE SOIL TREATED WITH RICE HUSK ASH Installing The Perimeter Drain And Foundation Sealer Soil Stablization Using Lime Building Cracks Due Expansive Soil How To Complete a Soil Remediation Expansive Soil Improving an Old Home's Crawl Space Support System What are Expansive Clay Soils? I Geotechnical Engineering I TGC Ask Andrew EP 7 How to Solve a Soil Compaction Problem Using an Air Tool! Using cement to harden fresh fill mud during months of rain. Developing spring hill campground. Geosynthetic Application | How \"Wrap-Around Facing Reinforced Soil Structure\" is done? What is Soil Stabilization? Injection Systems for Expansive Soils What is soil stabilization? || Methods of soil stabilization Soil Injection - Tackling Expansive Clay Soil! Pro Tip: Building on Expansive Clay Soil Lime Stabilization in North Texas ICGE2020 | Problematic soils | Deep Soil Mixing Using Fly Ash to Stabilize Expansive Soil Expansive Soil and Foundation Cracks How Soil Destroys Buildings GAF Cement Soil Stabilization How to Deal with Expansive (Clay) Soil in Torrance, CA

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Stabilization Of Expansive Soils Using Waste Marble Dust A

OMB No. 6592654318092 edited by

HINTON REYES

Basic and Applied Soil Mechanics Elsevier
This volume contains contributions by eminent researchers in the field of geotechnical engineering. The chapters of this book are based on the keynote and theme lectures delivered at the Indian Geotechnical Conference 2018, and discuss the recent issues and challenges, while providing perspective on the possible solutions and future directions. A strong emphasis is placed on proving connections between academic research and field practice, with many examples and case studies. Topics covered in this volume include contemporary infrastructural challenges, underground space utilization, sustainable construction, dealing with problematic soils and situations and geo-environmental issues including landfills. This book will be of interest to researchers, practitioners and students alike.

Soil Stabilization Springer
Olive Processing Waste Management contains a comprehensive review of literature and patent survey concerning olive processing waste. Over 1,000 citations are presented. Wastes considered include olive cultivation solid waste, wastes arising from classical, three- and two-phase olive mills and wastes generated during table olive processing. In addition, information is presented concerning the management of spent olive oil (e.g. from cooking). The book is divided into five parts. Part I presents background information concerning the characterization of olive processing wastes, their environmental impacts if disposed untreated and the effect of utilised olive-mill technology on the quantity and quality of generated wastes. Part II presents physical, thermal, physico-chemical, biological and combined or miscellaneous processes for treating olive-mill wastes. Part III concerns information on utilization of such wastes with or without prior treatment. Part IV concentrates on table olive processing waste and presents information regarding its characterization, treatment and uses. Part V presents an economical and legislative overview regarding olive-mill waste. The book contains a bibliography, glossary of terms used in the text,

subject, patent and author indices as well as pertinent internet sites and authorities. Complete coverage of all available literature and patents concerning olive processing waste including economic and legislative issues Critical review of up to date utilized processes concerning treatment and uses of such waste Determination of research needs for further utilization of such wastes

Stabilisation Of Black Cotton Soil By Lime Piles

Elsevier

Thesis (M.A.) from the year 2016 in the subject Engineering - Civil Engineering, grade: Very Good, , course: Master's Thesis Work, language: English, abstract: Expansive soils are the most problematic soils due to their property of swelling and expansion with the influence of variable moisture, a number of civil engineering structures were destroyed. A billions of US dollars spent worldwide each year to mitigate the problem. The presence of expansive sub-grade soil results pavement distress and damage. Removing the expansive soil and replacing with the competent material is applied to mitigate the problem which is very expensive and time consuming for long hauling distance and thick layer expansive soil. This study presented stabilization of local expansive sub-grade soil using marble waste powder with lime. The marble waste powder was collected in Addis Ababa from Ethiomarble processing enterprise Gulele branch and the lime was collected at Gast Solar Mechanics in Addis Ababa. Free swell index test, Atterberg limit test, Proctor test, unconfined compressive test, California Bearing Ratio Tests, swelling potential and swelling pressure test were used to evaluate properties of treated and untreated soils. The expansive subgrade soil was treated using 5%, 10%, 15%, 20%, and 25% marble waste powder with fixed 3% lime respective combinations by weight of the soil. The optimum percent combination for this study was 10% marble waste powder with 3%lime based on soaked CBR swell, soaked CBR, swelling pressure and swelling potential test result values. Optimum proportion of stabilizers improve CBR Value from 0.65% to 4.19%, reduce swelling pressure from 1000kpa to 440kpa, increases MDD from 1.21 to 1.29, and reduce PI from 78% to 48.4%.

Keywords: marble waste powder, lime, expansive soil, CBR, UCS, swelling pressure, MDD, OMC

Problematic Soils and Geoenvironmental Concerns

John Wiley & Sons

Rice is life, for most people living in Asia. Rice has shaped the cultures, diets, and economies of thousands of millions of people. Growing, selling, and eating rice are integral to the culture of many countries. Products of the rice plant are used for a number of different purposes, such as fuel, thatching, industrial starch, and artwork. Rice is the staple food of more than half of the world's population - more than 3.5 billion people depend on rice for more than 20% of their daily calories. Asia accounts for 90% of global rice consumption, exceeding 100 kg per capita annually in many countries. Keeping in view the importance of rice, the United Nations declared 2004 as the International Year of Rice. Food security, which is

the condition of having enough food to provide adequate nutrition for a healthy life, is a critical issue. Sustainable rice production is important for food self-sufficiency and food security in changing climates. Sustainable rice production practices are those which (1) increase rice productivity and its quality, (2) improve soil fertility and health, (3) increase water use efficiency and conservation, and (4) increase diversification of rice fields, growers' income, and climate resilience.

Stabilization of Expansive Soils by Using Aggregate Waste, Rock Powder and Lime CRC Press

This book reviews the techniques used to improve the engineering behaviour of soils, either in situ or when they are used as a construction material. It is a straightforward, well illustrated and readable account of the techniques and includes numerous up-to-date references.

Foundations on Expansive Soils John Wiley & Sons

Expansive Soils provides the reader with easy and specific access to problems associated with expansive soils, characterisitics and treatment, and evaluation and remediation. Set up with contributions from worlwide expert, this main reference guide is intended for engineers, researchers and senior students working on soil

Soil Stabilization Academic Press

Foundations on Expansive Soils provides the practicing engineer with a summary of the state-of-the-art of expansive soils and practical solutions based on the author's experience. The book is organized into two parts. Part I deals with theory and practice, and summarizes some of the theoretical physical properties of expansive soils. It also discusses various techniques employed to found structures on expansive soils such as drilled pier foundation, mat foundation, moisture control, soil replacement, and chemical stabilization. Topics covered include the origin, mineralogical composition, and the basic structure of expansive soils; the migration of water, swelling potential, and swelling pressure; site investigations and laboratory testing; moisture control; and soil stabilization. Part II presents case studies on the following: distress caused by pier uplift; distress caused by the improper design and construction of a drilled pier foundation system; distress caused by heaving of footing pad and floor slab; distress caused by heaving of continuous footings; and distress caused by a rise of ground water.

Modeling in Geotechnical Engineering Nova Science Publishers

This volume includes a collection of technical papers on an important topic in geotechnical engineering; the behavior and treatment of expansive soils. The research studies include investigations into novel stabilization techniques for expansive soils using different admixtures or mechanical consolidation techniques, as well as new experimental approaches to evaluate the behavior of expansive soils. They also include an evaluation of wetting boundary conditions on the volume change of expansive soils, as well as the role of hydrologic boundary conditions in arid climates. The volume is based on the best contributions to the 2nd GeoMEast International

Congress and Exhibition on Sustainable Civil Infrastructures, Egypt 2018 – The official international congress of the Soil-Structure Interaction Group in Egypt (SSIGE).

Quantification and Stabilization of Expansive Soils in Mississippi

Springer
Chemical Stabilization of Expansive Soils Using Liquid Ionic Soil Stabilizers (LISS)
Expansive Soils CRC Press
Modification of black cotton soils by chemical admixtures is a common method for stabilizing the swell-shrink tendency of expansive soils. Advantages of chemical stabilization are that they reduce the swell-shrink tendency of the expansive soils and also render the soils less plastic. Among the chemical stabilization methods for expansive soils, lime stabilization is most widely adopted method for improving the swell-shrink characteristics of expansive soils. Lime stabilization of clays in field is achieved by shallow mixing of lime and soil or by deep stabilization technique. Shallow stabilization involves scarifying the soil to the required depth and lime in powder or slurry form is spread and mixed with the soil using a rotovator. The use of lime as deep stabilizer has been mainly restricted to improve the engineering behaviour of soft clays Deep stabilization using lime can be divided in three main groups: lime columns, lime piles and lime slurry injection. Lime columns refer to creation of deep vertical columns of lime stabilized material. Lime piles are usually holes in the ground filled with lime. Lime slurry pressure injection, as the name suggests, involves the introduction of a lime slurry into the ground under pressure. Literature review brings out that lime stabilization of expansive clays in field is mainly performed by mixing of lime and soil up to shallow depths. The use of lime as deep stabilizer has been mainly restricted to improve the engineering behaviour of soft clays. Use of lime in deep stabilization of expansive soils however has not been given due attention. There exists a definite need to examine methods for deep stabilization of expansive soils to prevent the deeper soil layers from causing distress to the structures in response to the seasonal climatic variations. In addition, there exists a need for in-situ soil stabilization using lime in case of distressed structures founded on expansive soil deposits. The physical mixing of lime and s.
Chemical Soil Stabilization in General, Some Problems of Stabilization in Local Area, and a Study of Problems with Expansive Soils Springer Nature
This publication provides introductory technical guidance for civil engineers, geotechnical engineers and other professional engineers and construction managers interested in soil stabilization with portland cement. Here is what is discussed: 1. STABILIZATION WITH PORTLAND CEMENT, 2. STABILIZATION WITH LIME, 3. STABILIZATION WITH LIME-FLY ASH (LF) AND LIME-CEMENT-FLY ASH (LCF, 4. STABILIZATION WITH BITUMEN, 5. STABILIZATION WITH LIME-CEMENT AND LIME-BITUMEN, 6. LIME TREATMENT OF EXPANSIVE SOILS.

Expansive Soils

Springer Nature
Expansive soils have been known to cause deterioration among all aspects of civil infrastructure for many years primarily due to the presence of clay minerals like Montmorillonite. Replacing these problematic soils is not a viable solution in that it is costly and time consuming. Although many stabilization techniques are available, chemical stabilization has proven to be an important tool in arresting the swell/shrink behavior of expansive soil, which is a major source of distress problems for most infrastructures built on this type of soils. Of the chemical stabilizers available in the market, lime and cement stabilizers are the two most widely used chemical additives for improving expansive clays and increasing the overlying structures integrity; they improve the soil's workability, strength, swelling potential, and bearing capacity. Generally, lime stabilization develops due to base-exchange and cementation between the clay particles and lime (Croft, 1967). On the other hand, cement stabilization improves soil properties as a result of cementitious bonds between the calcium silicate and aluminate hydration products present in cement and soil particles (Nelson and Miller, 1992).
Furthermore, durability of the stabilization is an important aspect for any chemical stabilization design. To assess the durability of the stabilization design, chemically treated soil samples are subjected to wetting/drying studies to understand the longevity of the stabilization under climatic changes from summer to winter and vice versa. The samples are also subjected to leachate studies to determine the permanency of the stabilization due to rainfall infiltration. Both of these studies are often conducted as separate studies on separate soil samples. However, in reality the wetting process and the rainfall infiltration occur simultaneously. Hence, a new research study was undertaken in which an attempt was made to combine both phases of durability studies and perform a combined study that addresses both the wetting/drying and leachate aspects of durability. For this purpose a new device was developed which can replicate rainfall infiltration and wetting processes simultaneously. This process reduces the time required for durability studies by half and the data obtained show that this approach is repeatable and provides new insights in understanding the durability of the chemical stabilization. A total of four soils were chosen along the pipe alignment in the IPL pipeline project for this study. These soils vary from low to high compressibility having plasticity index values ranging from 26 to 62, indicating medium to high expansiveness.
Additionally, if these soils are used in the pipe bedding or haunch regions, they can cause excessive swelling pressures in the presence of water and damage the pipe, hence these soils were stabilized with either lime or cement-fly ash and were tested for durability in the newly developed combined device. Volumetric strains, weight changes, unconfined compressive strength changes and calcium ion

concentrations were monitored over the course of the study. Many mix designs underwent durability, yet all four soils were stabilized effectively with 3% cement-10% fly ash as the treated soils completed 14 cycles of durability and maintained their strength. Although previous studies have shown similar results when tested with the conventional methods, further testing is recommended with both the conventional and combined methods for soils with similar PI. These additional tests will help further understand the similarities in the modified (combined) approach and the conventional methods.

Sustainable Stabilization of Sulfate-bearing Soils with Expansive Soil-rubber Technology

Chemical Stabilization of Expansive Soils Using Liquid Ionic Soil Stabilizers (LISS)Traditional soil stabilizers such as lime and cement are widely used to reduce swell and shrinkage behavior and enhance strength properties of expansive soils through the formation of cementitious products. However, the manufacturing process of these calcium-based stabilizers, such as lime and cement, need large amounts of water and emit gases such as CO, CO2, NOx, and SO2 that are harmful to the environment. Hence, environmentally-friendly techniques are often sought out by the civil infrastructure industry (Puppala et al. 2018a, 2019b, George et al. 2019a, Congress and Puppala 2019).In this research, an alternative stabilizer termed as liquid ionic soil stabilizer(LISS) was used to treat expansive soils from North Texas. Although LISS has shown a reliable record of successful stabilization treatment of subgrades for over 20 years in Texas, there is a lack of in-depth studies which try to identify the probable stabilization mechanisms and quantitatively evaluate the efficacy of such treatments. This research work primarily aimed at addressing these issues through an extensive laboratory testing program encompassing a series of macro-scale engineering tests and micro structural analyses.Two types of expansive soils with different clay mineral compositions were collected from different locations in Texas and are used as control soils in the present laboratory testing program. These soils were modified by treating the soils with three different dilution ratios of LISS additive. The dilution ratio is defined as the volume of concentrated liquid ionic stabilizer per unit volume of water. The research study included four major tasks to study the effects of LISS stabilization and these are: (a) performing physical, chemical and microstructural tests, (b)evaluating engineering properties, (c) assessing stabilization mechanisms, and (d)numerical modeling to evaluate the post-treatment improvements in the performance of slopes and pavement subgrades stabilized with LISS. The collected soil samples were treated at three different dilution ratios to study the effect of stabilizer dosage on the improvements in basic and engineering properties of the problematic soil. Test results and analyses provided comprehensive characterization of the basic and advanced soil properties,improvements in engineering properties of treated soils, and an in-depth understanding of the stabilization processes

at a micro level. The mineralogical and microanalysis studies were also performed to examine the stabilization mechanisms in terms of chemical reactions, mineralogical changes, and other modifications that might have resulted in improvements in the engineering properties at the macro level.The results from the macrotests that included physical, chemical, and engineering tests showed that the LISS is an effective alternative environmental friendly soil stabilizer, which can enhance the strength and stiffness of problematic expansive soils to moderate levels. The LISS also inhibits the swell potential of expansive soils and slightly reduces the plasticity index and linear shrinkage ratio.The reductions in swell potentials were associated with an increase in strength and stiffness (resilient moduli) properties for all the different soil-dilution ratio combinations used in this research study. Among the three dilution ratios used in this research, the double chemical ratio (10 ml/gallon) which had the highest concentration of LISS exhibited the optimum performance based on the overall improvements in engineering properties such as strength, stiffness, and reduction in swell potential.The probable stabilization mechanism was determined by comparing the microstructural test results of Field Emission Scanning Electron Microscopy with Energy Dispersive Spectroscopy (FESEM-EDS) and X-ray Powder Diffraction(XRD) for both untreated and soils treated at the third ratio. Additional macro tests,including variation in moisture content, pH, Consistency Limits and grain size distribution with curing time, were also used to comprehend the changes in the properties of the treated soil. The SEM images depicted that the soil particles flocculated upon addition of LISS and a phospho-rich compound were formed that bonded the soil particles after treatment. The intensity of the clay minerals peaks in the XRD plot was found to decrease when the soil was treated with LISS at the double chemical ratio. The FESEM and XRD results suggest the formation of products formed by the reactions of clay particles with the LISS additive. Moreover,the moisture content of soil gradually decreased by around 3%, and the grain sizeof the treated soils varied with an increase in curing time period, indicating the progressive utilization of water to form reaction products that can bind the clay particles and result in improvement in engineering properties of problematic soils.The pH of LISS increased from 3 to 7.8 in 20 days, which exhibited a progressive chemical reaction in this period of time. However, the consistency limits of LISS treated soils before and after treatments were nearly the same and no major enhancements were noted in the consistency limit values.In order to evaluate the feasibility of using LISS as an alternative soil stabilizer, two case study examples involved with pavement design and slope stability were analyzed. From the results and analysis of the modeling, the pavement design life of treated expansive soil was higher than that of untreated expansive soils. Also, the global factor of safety (FOS) of treated Dallas soil was slightly increased by 13% as compared to the section without any soil treatment.More

studies and field treatment sections will provide more insights into the effectiveness of LISS treatments to enhance soil properties that can provide better support of civil infrastructure.Expansive Soils
This volume includes a collection of technical papers covering two important research topics in geotechnical engineering: (1) the behavior and treatment of expansive soils, and (2) the characterization of rock properties. The twelve studies on expansive soils include investigations into novel stabilization techniques for expansive soils using different admixtures or mechanical consolidation techniques, as well as new experimental approaches to evaluate the behavior of expansive soils. They also include an evaluation of wetting boundary conditions on the volume change of expansive soils, as well as the role of hydrologic boundary conditions in arid climates. The four studies on rock properties include thermo-hydro-mechanical behavior of gypsum rock, role of rock strength in blastability, indirect methods to estimate rock strength, and variations in isotope distributions in Permian rocks. The two broad themes in this collection, as summarized above, are representative of local challenges facing geotechnical engineers in the Middle East, but their contributions can also be extended to other regions of the world. This volume is part of the proceedings of the 1st GeoMEast International Congress and Exhibition on Sustainable Civil Infrastructures, Egypt 2017.

Engineering Treatment of Soils

Springer Nature
Basic And Applied Soil Mechanics Is Intended For Use As An Up-To-Date Text For The Two-Course Sequence Of Soil Mechanics And Foundation Engineering Offered To Undergraduate Civil Engineering Students. It Provides A Modern Coverage Of The Engineering Properties Of Soils And Makes Extensive Reference To The Indian Standard Codes Of Practice While Discussing Practices In Foundation Engineering. Some Topics Of Special Interest, Like The Schmertmann Procedure For Extrapolation Of Field Compressibility, Determination Of Secondary Compression, Lambes Stress - Path Concept, Pressure Meter Testing And Foundation Practices On Expansive Soils Including Certain Widespread Myths, Find A Place In The Text.The Book Includes Over 160 Fully Solved Examples, Which Are Designed To Illustrate The Application Of The Principles Of Soil Mechanics In Practical Situations. Extensive Use Of Si Units, Side By Side With Other Mixed Units, Makes It Easy For The Students As Well As Professionals Who Are Less Conversant With The Si Units, Gain Familiarity With This System Of International Usage. Inclusion Of About 160 Short-Answer Questions And Over 400 Objective Questions In The Question Bank Makes The Book Useful For Engineering Students As Well As For Those Preparing For Gate, Upsc And Other Qualifying Examinations.In Addition To Serving The Needs Of The Civil Engineering Students, The Book Will Serve As A Handy Reference For The Practising Engineers As Well.

Sustainability in Environmental Engineering and Science
GRIN Verlag

New Materials in Civil Engineering provides engineers and scientists with the tools and methods needed to meet the challenge of designing and constructing more resilient and sustainable infrastructures. This book is a valuable guide to the properties, selection criteria, products, applications, lifecycle and recyclability of advanced materials. It presents an A-to-Z approach to all types of materials, highlighting their key performance properties, principal characteristics and applications. Traditional materials covered include concrete, soil, steel, timber, fly ash, geosynthetic, fiber-reinforced concrete, smart materials, carbon fiber and reinforced polymers. In addition, the book covers nanotechnology and biotechnology in the development of new materials. Covers a variety of materials, including fly ash, geosynthetic, fiber-reinforced concrete, smart materials, carbon fiber reinforced polymer and waste materials Provides a “one-stop resource of information for the latest materials and practical applications Includes a variety of different use case studies

New Materials in Civil Engineering John Wiley & Sons

This book comprises select proceedings of the annual conference of the Indian Geotechnical Society. The conference brings together research and case histories on various aspects of geotechnical and geoenvironmental engineering. The book presents papers on geotechnical applications and case histories, covering topics such as (i) Characterization of Geomaterials and Physical Modelling; (ii) Foundations and Deep Excavations; (iii) Soil Stabilization and Ground Improvement; (iv) Geoenvironmental Engineering and Waste Material Utilization; (v) Soil Dynamics and Earthquake Geotechnical Engineering; (vi) Earth Retaining Structures, Dams and Embankments; (vii) Slope Stability and Landslides; (viii) Transportation Geotechnics; (ix) Geosynthetics Applications; (x) Computational, Analytical and Numerical Modelling; (xi) Rock Engineering, Tunnelling and Underground Constructions; (xii) Forensic Geotechnical Engineering and Case Studies; and (xiii) Others Topics: Behaviour of Unsaturated Soils, Offshore and Marine Geotechnics, Remote Sensing and GIS, Field Investigations, Instrumentation and Monitoring, Retrofitting of Geotechnical Structures, Reliability in Geotechnical Engineering, Geotechnical Education, Codes and Standards, and other relevant topics. The contents of this book are of interest to researchers and practicing engineers alike.

Rice Elsevier

Essential technical information for building on expansive soils--complete with practical, proven design methods. Expansive Soils examines factors that influence the design offoundations and pavements built on expansive soils, and exploreskey design procedures and remedial measures that address thesefactors effectively. Backed by the authors' extensive research andexperience --including interviews with practicing engineers workingwith expansive soils --this authoritative volume is an importantreference text for geotechnical and foundation engineers,geologists, construction

professionals, and students. Easy to understand and apply, Expansive Soils contains: * Site investigation techniques for identification andclassification of expansive soils * Heave prediction methods using different types of data -- withrigorous treatment of soil suction theory and measurement,oedometer tests, and more * Alternative design procedures for drilled pier and slab-on-gradefoundations, highway and airfield pavements * Treatment and chemical stabilization techniques --including salttreatment; moisture barriers; lime and cement stabilization; andother procedures * Remedial measures such as drainage control, and removal withreplacement and compaction control * Sample problems illustrating practical applications.

Unsaturated Soil Mechanics in Engineering Practice Butterworth-Heinemann

In the first chapter, Tania Pardo, Teresa Fresno, Vanessa Álvarez-López, and María Touceda-González review central aspects of phytostabilisation techniques for recovering trace elements contaminated soils. The possible future of phytotechnology is evaluated by reflecting on legislation, research evolution, and field implementation. In the second chapter, Essien Udo, Ph.D. presents a study using laboratory investigations to discover problems linked to Coastal residual soils at plain and modified conditions, using the knowledge that residual soil parameters have a substantial effect on the overall performance or non-performance of sub-base and base course formations. Next, in the third chapter, Giovanni Santarato, Anna Albertini, Marco dAttoli, Fabio Navi, Marco Occhi, Federico Fischanger, Gianfranco Morelli, Martino Leoni, Tiziana Apuani, Francesco Loddo, and Gaetano Ranieri present research on techniques of soil consolidation and stabilisation by way of expanding resin injections. Supplementing this, V. Ortega-López, M. Skaf, and A. Santamaría discuss the way Ladle Furnace basic Slags might be used to stabilise natural clayey soils in the fourth chapter. In the fifth chapter, Lucile Saussaye, Lydia Leleyter, Didier Hennequin, Mohamed Boutouil, and Fabienne Baraud assess the effect of nitrate ions on the mechanical performances of soils treated with hydraulic binders, determining that treatment with hydraulic binders improves both the physical and mechanical characteristics of soils, thus permitting them to be used in a variety of geotechnical applications. Afterwards, Shuaishuai Wu, Zhengguo Gao, Shiyang Li, Wenbo Cui, and Xin Huang propose a confined stabilised soil pile as a possible new foundation treatment method in the sixth chapter. In the seventh chapter, Hao Yu, Xin Huang, Jianguo Ning, and Zhanguo Li present a study where three types of composite stabilisers with different AFt formation rates were used to stabilise two kinds of soils. In the eighth and final chapter, Jonathan Oti, PhD expresses findings that it is possible to stabilise clay soil with lime based systems incorporating WS or WTRG for use as improved filling material in road building and other applications.

Stabilization of High Sulfate Soils

Independently Published

Expansive soils are one of

the most serious problems which the foundation engineer faces. Several attempts are being made to control the swell-shrink behavior of these soils. One of the most effective and economical methods is to use chemical additives. Fly ash and desulphogypsum, both of which are by-products of coal burning thermal power plants, are accumulating in large quantities all over the world and pose serious environmental problems. In this study, the expansive soil was stabilized using the fly ash and desulphogypsum obtained from Çayýrhan Thermal Power Plant. Fly ash and desulphogypsum were added to the expansive soil from 0 to 30 percent. Lime was used to see how efficient fly ash and desulphogypsum on expansive soil stabilization were, and was added to the expansive soil from 0 to 8 percent. The properties obtained were chemical composition, grain size distribution, consistency limits, swelling percentage, and rate of swell. Fly ash, desulphogypsum, and lime added samples were cured for 7 days and 28 days, after which they were subjected to free swell tests. Swelling percentage decreased and rate of swell increased with increasing stabilizer percentage. Curing resulted in further reduction in swelling percentage and further increase in rate of swell. 25 percent and 30 percent fly ash and desulphogypsum additions reduced the swelling percentage to levels comparable to lime stabilization.

A Comparative Evaluation of Various Additives Used in the Stabilization of Expansive Soils New Age International

This book consists of select peer-reviewed papers from the International Conference on Sustainable Environmental Engineering and Science (SEES) 2019. The main focus of the book is to propose sustainable technologies to address the growing environmental challenges. The contents cover several topics of relevance such as air pollution, solid waste management, wastewater treatment, industrial pollution, and suggests eco-friendly and cost-effective techniques to tackle them. Given the range of topics covered, the book will be useful to researchers and professionals working in the multidisciplinary area of sustainability.