

1. Record Nr.	UNINA9910634036703321
Titolo	Ground improvement techniques . Volume 3 Proceedings of the Indian geotechnical conference 2021 / / editors : Kasinathan Muthukumaran [and three others]
Pubbl/distr/stampa	Singapore : , : Springer, , [2023] ©2023
ISBN	981-19-6727-X
Descrizione fisica	1 online resource (389 pages)
Collana	Lecture notes in civil engineering ; ; Volume 297
Disciplina	624.151
Soggetti	Geotechnical engineering Soil stabilization
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Nota di bibliografia	Includes bibliographical references.
Nota di contenuto	Intro -- Preface -- Contents -- About the Editors -- 1 Enhancement of Soil Properties by Using Red Mud and Lime -- Introduction -- Materials and Research Methodology -- Soil -- Red Mud -- Lime -- Sample Preparation -- Results and Discussion -- Compaction Characteristics -- Uniaxial Compression Test -- California Bearing Ratio (CBR) -- Shear Strength Parameters -- Analysis of EDS -- Conclusion -- References -- 2 Ground Improvement for Open Foundation on Soft Clays Using Stone Columns and PVD Drains for Retaining Walls and Approaches of a Cable Stayed ROB -- Introduction -- Sub-Soil Characteristics -- Recommendations Within Soil Investigation Report -- Safe Bearing Capacity of Ground -- Expected Loading and Expected Pressure on the Ground -- Ground Improvement Techniques -- Design of Ground Improvement Using Stone Columns for Retaining Walls -- Design of Ground Improvement Using PVDS -- Conclusion -- References -- 3 State of the Art on the Extent of Smear Zone and Variation of Permeability During the Installation of Drain in Clayey Soil -- Introduction -- Smear Effect -- Theoretical Studies on the Extent of Smear Zone and Permeability Ratio -- Experimental Studies on the Extent of Smear Zone and Permeability Ratio -- Analytical and Numerical Studies on the Extent of Smear Zone and Permeability Ratio -- Field Studies

on the Extent of Smear Zone and Permeability Ratio -- Conclusion -- References -- 4 State-Of-The-Art Review on Improvement of Strength Characteristics of Soil Using Nano Silica -- Introduction -- Plasticity Characteristics of Composite Materials -- Compaction Characteristics of Composite Materials -- Strength Characteristics of Composite Materials -- Hydraulic Conductivity of Composite Materials -- Interaction Mechanism of Nano Silica in Soil -- Conclusions -- References.

5 Influence of Aquaculture Sludge on Volume Change Behavior of Expansive Clays -- Introduction -- Materials and Experimental Procedure -- Results and Discussion -- Effect of Aquaculture Waste Sludge on Swell-Shrink Behavior of Clays -- Effect of Aquaculture Waste Sludge on Clay Structure -- Conclusions -- References -- 6 Densification of Fly Ash Deposits Equipped with Rammed Stone Column-A Case Study -- Introduction -- Geotechnical Conditions -- Foundation Consideration Based upon Field Test Results -- Field Load Test on 900-mm Stone Column for Open Foundation -- Field Load Test on 600-mm-dia. Stone Column for Pile Foundation -- Conclusion -- 7 Application of Prefabricated Vertical Drains (PVDs) for Improvement of Soft Clays-A Case Study -- Introduction -- Project Details -- Soil Investigation -- Ground Improvement Features -- Selection of Technique -- Component of Ground Improvement -- Design Parameters -- Analysis Steps -- Consolidation Time Calculation -- Surcharge Height Calculation -- Increase in Cohesion Value -- Combined Degree of Consolidation -- Settlement Computations -- Execution of PVD and Surcharge -- Results and Observations -- Conclusions -- References -- 8 Performance Evaluation of Earthen Embankment Underlain by Marine Clay Deposit with Ground Improvement Techniques-A Case Study of Mangaluru Region, Karnataka -- Introduction -- Background -- Brief History -- Statement of Problem -- Scope of Study -- Objectives -- Literature Review -- Methodology -- Basal Reinforcement Layer -- Sand Columns -- Stone Columns -- Conclusion -- References -- 9 An Experimental Study on Development of the Bearing Capacity of Soft Clay Soil Using Stone Column with Bamboo Sheet Plate -- Introduction -- Materials Used -- Study Materials -- Experimental Investigation -- Preparation of Clayey Soil Bed and Construction of Stone Columns -- Experimental Modeling. Test Results and Discussions -- Load Test Results -- Interpretation of Test Results -- Conclusion -- References -- 10 Evaluation of Heave Behavior by Numerical Modeling of Granular Pile Anchor in Expansive Soil -- Introduction -- Mechanism Involved -- Numerical Modeling -- Boundary Conditions -- Heave Calculations -- Results and Discussions -- Numerical Analysis of Granular Pile Anchor (GPA) -- Comparison of PLAXIS Model of Plain GPA with Literature [13] -- Effect of Roughness Coefficient on Geogrid-Encased GPA -- Conclusions -- References -- 11 A Study of Load Distribution Between Soil and Stone Columns -- Introduction -- Methodology -- Parametric Study -- Effect of Area Ratio (Ar) -- Effect of Relative Stiffness (E_{gp}/E_s) -- Stress Intensity (q_{total}) -- Conclusions -- References -- 12 An Experimental Study to Determine the Best Aggregate Mix for Stone Columns -- Introduction -- Material Used -- Clay -- Sand -- Stone Aggregate -- Test Setup -- Preparation of Clay Bed -- Construction of Stone Column -- Test Procedure -- Method to Obtain Deformed Shape of Stone Column -- Finite Element Analysis -- Modeling and Analysis of Stone Column -- Results and Discussion -- Conclusions -- References -- 13 Static and Dynamic Study on the Performance of Modified Stone Column in Ahmedabad Soil -- Introduction -- Material and Methodology -- Site Selection -- Material Properties

and Constitutive Model -- Geometry and Boundary Condition -- Result and Discussion -- Effect of Modified Stone Columns -- Effect of Pseudo-static Load -- Horizontal Displacement -- Post-earthquake Behavior -- Conclusion -- References -- 14 Subgrade Strength Prediction Modeling On Fiber-Reinforced Expansive Soil Treated With Alkali Activated Binder -- Introduction -- Material and Method -- Soil -- Jute Fiber (JF) -- Alkaline Active Binder (AAB) -- Sample Preparation -- Results and Discussion.

Fourier Transform Infrared Spectroscopy (FTIR) -- X-Ray Photoelectron Spectroscopy (XPS) -- Modulus of Rupture (Flexural Strength: Sf) -- California Bearing Ratio (CBR) -- Tensile Strength (Indirect) (ITS) -- Regression Analysis -- Case Study -- Conclusions -- References -- 15 Behavior of Jute Fiber-Reinforced Sand Using Direct Shear Test for Ground Engineering Application -- Introduction -- Materials, Methodology, and Investigating Parameters -- Sand -- Jute Fiber -- Jute Fiber-Sand Mixture -- Testing Methodology -- Investigating Parameters -- Results and Discussion -- Effect of Normal Stress on Dry Sand -- Effect of Relative Density on Dry Sand -- Effect of Water Content on Shearing Response of Sand -- Effect of Fiber with Water Content on the Behavior of Jute-Sand Mixes -- Conclusions -- References -- 16 Numerical Studies on Effects of Embankment Layer Construction Period on Consolidation Settlements of Underlain Soft Soil -- Introduction -- Modified Cam-Clay Model -- Details of the Soil Profile and the Embankment -- Numerical Modeling -- Properties, Mesh, and Boundary Condition -- Analysis Step -- Results and Discussion -- Effects on Settlement of Underlain Soft Soil -- Effects on Settlement of Embankment -- Effects on Pore Pressure Dissipation -- Effects on Lateral Movement of Embankment Fills -- Conclusions -- References -- 17 Improvement of Soft Ground by Employing Granular Piles Below Raft -- Introduction -- Numerical Modeling -- Finite Element Model -- Study of Model Configuration -- Material Characteristics and Property -- Mesh Pattern and Boundary Condition -- Results and Discussion -- Effect of Load-Settlement Behavior with Number of Piles -- Effect of Load-Settlement Behavior with Variation of Thickness of Cushion Layer -- Effect of Thickness of Raft -- Conclusion -- References.

18 Multivariate Regression Model to Predict Geotechnical Properties of Fly Ash-Stabilized Clayey Soil -- Introduction -- Materials and Methodology -- Materials Used -- Methodology Adopted -- Results and Discussions -- Modified Proctor Test -- California Bearing Ratio Test -- Direct Shear Test -- Regression Analysis -- Conclusion -- Modified Proctor Test -- CBR Test -- Direct Shear Test -- Regression Analysis -- References -- 19 A Study on the Strength Aspects of Alkali-Activated Red Mud-Crusher Dust-Blended Geopolymer -- Introduction -- Materials Used and Methodology -- Results and Discussion -- Basic Geotechnical Properties -- Grain Size Analysis and Specific Gravity -- Compaction Characteristics -- Microstructure Analysis -- Unified Compressive Strength -- Conclusions -- References -- 20 A State-of-the-Art Review on Electro-osmotic Treatment for Stabilization of Soft Soils -- Introduction -- Fundamental Principle -- Factors Affecting the Efficiency -- Observations on Modification of Soil Properties -- Moisture Content -- Undrained Shear Strength -- Consolidation and Dewatering Characteristics -- Practical Applicability -- Conclusion -- References -- 21 Study on Time-Viscosity Characteristics of Microfine Slag Grout with Hydrated Lime Activator -- Introduction -- Methodology -- Materials -- Time Viscosity Properties of Grout -- Fluidity Test -- Viscosity Test -- Results and Discussions -- References -- 22 Influence of Intensity and Position of Surcharge

on the Performance of Soil Nail System -- Introduction -- Methodology
-- Conventional Design Procedure -- Numerical Simulations -- Results
and Discussion -- Horizontal Displacement at Wall Face -- Vertical
Settlement of Footing -- Axial Force in Nails -- Factors of Safety --
Concluding Remarks -- References.
23 Effect of Biopolymer Inclusion and Curing Conditions on the Failure
Strain and Elastic Modulus of Cohesive Soil.
