

Unsaturated Soils: A fundamental interpretation of soil behaviour

By E. J. Murray, V. Sivakumar



Unsaturated Soils: A fundamental interpretation of soil behaviour By E. J. Murray, V. Sivakumar

🖶 Get Print Book

An understanding of the mechanical properties of unsaturated soils is crucial for geotechnical engineers worldwide, as well as to those concerned with the interaction of structures with the ground. This book deals principally with fine-grained clays and silts, or soils containing coarser sand and gravel particles but with a significant percentage of fines.

The study of unsaturated soil is a practical subject, linking fundamental science to nature. Soils in general are inherently variable and their behaviour is not easy to analyse or predict, and unsaturated soils raise the complexity to a higher level. Even amongst practicing engineers, there is often lack of awareness of the intricacies of the subject. This book offers a perspective of unsaturated soils based on recent research and demonstrates how this dovetails with the general discipline of soil mechanics.

Following an introduction to the basic soil variables, the phases, the phase interactions and the relevance of soil structure, an up-to-date review of laboratory testing techniques is presented. This includes suction measurement and control techniques in triaxial cell testing. This is followed by an introduction to stress state variables, critical state and theoretical models in unsaturated soils.

A detailed description of the thermodynamic principles as applied to multi-phase materials under equilibrium conditions follows. These principles are then used to explore and develop a fundamental theoretical basis for analysing unsaturated soils. Soil structure is broken down into its component parts to develop equations describing the dual stress regime. The critical state strength and compression characteristics of unsaturated soils are examined and it is shown how the behaviour may be viewed as a three-dimensional model in dimensionless stress-volume space. The analysis is then extended to the work input into unsaturated soils and the development of conjugate stress, volumetric and strain-increment variables. These are used to examine the micromechanical behaviour of kaolin specimens subjected to triaxial shear strength tests and lead to observations not detectable by other means.

Unsaturated Soils: A fundamental interpretation of soil behaviour covers a rapidly advancing area of study, research and engineering practice and offers a deeper appreciation of the key characteristics of unsaturated soil. It provides students and researchers with a framework for understanding soil behaviour and demonstrates how to interpret experimental strength and compression data.

- provides engineers with a deeper appreciation of key characteristics of unsaturated soils
- covers a rapidly advancing area of study, research and engineering practice
- provides students and researchers a framework for understanding soil behaviour
- shows how to interpret experimental data on strength and compression
- the limited number of books on the subject are all out of date

<u>Download</u> Unsaturated Soils: A fundamental interpretation of ...pdf

Read Online Unsaturated Soils: A fundamental interpretation ...pdf

Unsaturated Soils: A fundamental interpretation of soil behaviour

By E. J. Murray, V. Sivakumar

Unsaturated Soils: A fundamental interpretation of soil behaviour By E. J. Murray, V. Sivakumar

An understanding of the mechanical properties of unsaturated soils is crucial for geotechnical engineers worldwide, as well as to those concerned with the interaction of structures with the ground. This book deals principally with fine-grained clays and silts, or soils containing coarser sand and gravel particles but with a significant percentage of fines.

The study of unsaturated soil is a practical subject, linking fundamental science to nature. Soils in general are inherently variable and their behaviour is not easy to analyse or predict, and unsaturated soils raise the complexity to a higher level. Even amongst practicing engineers, there is often lack of awareness of the intricacies of the subject. This book offers a perspective of unsaturated soils based on recent research and demonstrates how this dovetails with the general discipline of soil mechanics.

Following an introduction to the basic soil variables, the phases, the phase interactions and the relevance of soil structure, an up-to-date review of laboratory testing techniques is presented. This includes suction measurement and control techniques in triaxial cell testing. This is followed by an introduction to stress state variables, critical state and theoretical models in unsaturated soils.

A detailed description of the thermodynamic principles as applied to multi-phase materials under equilibrium conditions follows. These principles are then used to explore and develop a fundamental theoretical basis for analysing unsaturated soils. Soil structure is broken down into its component parts to develop equations describing the dual stress regime. The critical state strength and compression characteristics of unsaturated soils are examined and it is shown how the behaviour may be viewed as a three-dimensional model in dimensionless stress-volume space. The analysis is then extended to the work input into unsaturated soils and the development of conjugate stress, volumetric and strain-increment variables. These are used to examine the micromechanical behaviour of kaolin specimens subjected to triaxial shear strength tests and lead to observations not detectable by other means.

Unsaturated Soils: A fundamental interpretation of soil behaviour covers a rapidly advancing area of study, research and engineering practice and offers a deeper appreciation of the key characteristics of unsaturated soil. It provides students and researchers with a framework for understanding soil behaviour and demonstrates how to interpret experimental strength and compression data.

- provides engineers with a deeper appreciation of key characteristics of unsaturated soils
- covers a rapidly advancing area of study, research and engineering practice
- provides students and researchers a framework for understanding soil behaviour
- shows how to interpret experimental data on strength and compression
- the limited number of books on the subject are all out of date

Unsaturated Soils: A fundamental interpretation of soil behaviour By E. J. Murray, V. Sivakumar Bibliography

- Sales Rank: #3450472 in Books
- Published on: 2010-08-23
- Original language: English
- Number of items: 1
- Dimensions: 9.70" h x .62" w x 6.80" l, 1.45 pounds
- Binding: Paperback
- 304 pages

<u>Download</u> Unsaturated Soils: A fundamental interpretation of ...pdf

Read Online Unsaturated Soils: A fundamental interpretation ...pdf

Download and Read Free Online Unsaturated Soils: A fundamental interpretation of soil behaviour By E. J. Murray, V. Sivakumar

Editorial Review

Review

"In a release, Research and Markets noted that report highlights include: An understanding of the mechanical properties of unsaturated soils is crucial for geotechnical engineers worldwide, as well as to those concerned with the interaction of structures with the ground." (TMCnet.com, 15 February 2011)

"This book offers a perspective of unsaturated soils based on recent research and demonstrates how this dovetails with the general discipline of soil mechanics." (AllVoices, 9 February 2011)

From the Back Cover

An understanding of the mechanical properties of unsaturated soils is crucial for geotechnical engineers worldwide, as well as to those concerned with the interaction of structures with the ground. This book deals principally with fine-grained clays and silts, or soils containing coarser sand and gravel particles but with a significant percentage of fines.

The study of unsaturated soil is a practical subject, linking fundamental science to nature. Soils in general are inherently variable and their behaviour is not easy to analyse or predict, and unsaturated soils raise the complexity to a higher level. Even amongst practicing engineers, there is often lack of awareness of the intricacies of the subject. This book offers a perspective of unsaturated soils based on recent research and demonstrates how this dovetails with the general discipline of soil mechanics.

Following an introduction to the basic soil variables, the phases, the phase interactions and the relevance of soil structure, an up-to-date review of laboratory testing techniques is presented. This includes suction measurement and control techniques in triaxial cell testing. This is followed by an introduction to stress state variables, critical state and theoretical models in unsaturated soils.

A detailed description of the thermodynamic principles as applied to multi-phase materials under equilibrium conditions follows. These principles are then used to explore and develop a fundamental theoretical basis for analysing unsaturated soils. Soil structure is broken down into its component parts to develop equations describing the dual stress regime. The critical state strength and compression characteristics of unsaturated soils are examined and it is shown how the behaviour may be viewed as a three-dimensional model in dimensionless stress-volume space. The analysis is then extended to the work input into unsaturated soils and the development of conjugate stress, volumetric and strain-increment variables. These are used to examine the micromechanical behaviour of kaolin specimens subjected to triaxial shear strength tests and lead to observations not detectable by other means.

Unsaturated Soils: a fundamental interpretation of soil behaviour covers a rapidly advancing area of study, research and engineering practice and offers a deeper appreciation of the key characteristics of unsaturated soil. It provides students and researchers with a framework for understanding soil behaviour and demonstrates how to interpret experimental strength and compression data.

About the Author

Edward J. Murray is Director of Murray Rix Geotechnical, UK

Vinayagamoothy Sivakumar is Senior Lecturer at Queen's University Belfast, UK

Users Review

From reader reviews:

Stacey Thompson:

As people who live in often the modest era should be revise about what going on or data even knowledge to make all of them keep up with the era which can be always change and make progress. Some of you maybe will update themselves by examining books. It is a good choice in your case but the problems coming to a person is you don't know which one you should start with. This Unsaturated Soils: A fundamental interpretation of soil behaviour is our recommendation to make you keep up with the world. Why, since this book serves what you want and need in this era.

Jason Serrano:

The event that you get from Unsaturated Soils: A fundamental interpretation of soil behaviour is a more deep you digging the information that hide in the words the more you get thinking about reading it. It doesn't mean that this book is hard to know but Unsaturated Soils: A fundamental interpretation of soil behaviour giving you joy feeling of reading. The writer conveys their point in selected way that can be understood through anyone who read the item because the author of this guide is well-known enough. This book also makes your vocabulary increase well. So it is easy to understand then can go with you, both in printed or e-book style are available. We advise you for having that Unsaturated Soils: A fundamental interpretation of soil behaviour instantly.

Willie Briggs:

Hey guys, do you wants to finds a new book to read? May be the book with the title Unsaturated Soils: A fundamental interpretation of soil behaviour suitable to you? The book was written by renowned writer in this era. The particular book untitled Unsaturated Soils: A fundamental interpretation of soil behaviouris the main of several books that everyone read now. This book was inspired many people in the world. When you read this guide you will enter the new age that you ever know just before. The author explained their thought in the simple way, thus all of people can easily to be aware of the core of this book. This book will give you a wide range of information about this world now. To help you to see the represented of the world on this book.

William Evans:

You could spend your free time to see this book this reserve. This Unsaturated Soils: A fundamental interpretation of soil behaviour is simple bringing you can read it in the playground, in the beach, train as well as soon. If you did not get much space to bring the particular printed book, you can buy typically the e-book. It is make you simpler to read it. You can save the particular book in your smart phone. Thus there are

a lot of benefits that you will get when one buys this book.

Download and Read Online Unsaturated Soils: A fundamental interpretation of soil behaviour By E. J. Murray, V. Sivakumar #U4TGJOE2PKR

Read Unsaturated Soils: A fundamental interpretation of soil behaviour By E. J. Murray, V. Sivakumar for online ebook

Unsaturated Soils: A fundamental interpretation of soil behaviour By E. J. Murray, V. Sivakumar Free PDF d0wnl0ad, audio books, books to read, good books to read, cheap books, good books, online books, books online, book reviews epub, read books online, books to read online, online library, greatbooks to read, PDF best books to read, top books to read Unsaturated Soils: A fundamental interpretation of soil behaviour By E. J. Murray, V. Sivakumar books to read online.

Online Unsaturated Soils: A fundamental interpretation of soil behaviour By E. J. Murray, V. Sivakumar ebook PDF download

Unsaturated Soils: A fundamental interpretation of soil behaviour By E. J. Murray, V. Sivakumar Doc

Unsaturated Soils: A fundamental interpretation of soil behaviour By E. J. Murray, V. Sivakumar Mobipocket

Unsaturated Soils: A fundamental interpretation of soil behaviour By E. J. Murray, V. Sivakumar EPub