

Unsaturated Soils Guidelines – Volume 1

Soil Water Characteristic Curves for Materials Classified According to the Unified Soil Classification System



These new ACG guidelines will detail the key aspects and behaviour of unsaturated soils. The authors are Dr Ken Mercer, Professor Harianto Rahardjo, and Dr Alfrendo Satyanaga.

Readership

The publication aims to provide industry personnel with the information that will assist them in managing these work areas and to relate to and brief their design consultants. It is expected that the guidelines will be of significant value to those involved in mining operations, as well as civil engineering, consulting, research and teaching bodies throughout the world.

Authors



Dr Ken Mercer
3rd Rock Consulting, Australia



Professor Harianto Rahardjo
School of Civil & Environmental Engineering
Nanyang Technological University, Singapore



Dr Alfrendo Satyanaga
School of Civil & Environmental Engineering
Nanyang Technological University, Singapore

Guidelines content

Soil-water characteristic curve (SWCC) defines the relationship between water content and suction (negative pore-water pressure) of the soil. SWCC is used for modelling water flow through saturated-unsaturated system and for estimating the engineering properties of unsaturated soil, such as the permeability and shear strength of unsaturated soil.

The objective of the guidelines is to correlate and present the SWCC statistics categorised according to the ASTM D2487-11 American Standard, the basis of which is the Unified Soil Classification System (USCS).

Unsaturated Soil Guidelines

- 1) Introduction to the guidelines.
- 2) An overview of the UCSC classification system and summary of the theory of soil grading, Atterberg Limits and SWCC.
- 3) Presentation of the maximum, minimum and typical GSD of each of the classified soil groups together with Atterberg Limit ranges.
- 4) SWCC data and interpretations collected for the different soil classifications providing best-fit equation parameters for unimodal curves.
- 5) SWCC data and interpretations collected for the different soil classifications providing best-fit equation parameters for bimodal curves.
- 6) Guidelines for undertaking laboratory testing and interpretation of results.

With a foreword given by Professor Delwyn G. Fredlund, the leading authority on unsaturated soil mechanics:

“The guideline forms a seamless means of embracing the saturated and unsaturated zones of the soil profile into a single analysis.”



Expression of Interest

Please contact me when the publication is available for purchase.

Name:.....

Position:.....

Organisation:.....

Address:.....

.....

.....

Country:.....

Phone:.....

Mobile:.....

Fax:.....

Email:.....

Please submit your expression of interest to:

Australian Centre for Geomechanics
The University of Western Australia
35 Stirling Highway (M600)

CRAWLEY WA, AUSTRALIA, 6009
Phone: +61 8 6488 3300 Fax: +61 8 6488 1130
josephine.ruddle@uwa.edu.au
www.acg.uwa.edu.au

2020 International Symposium on Slope Stability in Open Pit Mining and Civil Engineering

12-14 May 2020 | Perth, Western Australia

Slope Stability 2020 will provide a forum for open pit mining and civil engineering practitioners, consultants, researchers and suppliers worldwide to exchange views on best practice and state-of-the-art slope technologies.



Best practice with respect to pit slope investigations, design, implementation and performance monitoring will be discussed during the symposium.

The ACG is delighted to host this event in Perth again. It has been more than a decade since it was last held in Western Australia.

www.slopestability2020.com

Online Repository of Conference Proceedings



Accessing geomechanical excellence

The ACG Online Repository aims to provide the mining geomechanics fraternity with open access to peer-reviewed conference papers that may assist readers to maintain and develop their skills, knowledge and capabilities.

This highly interactive and searchable repository provides importable citation information in various formats, links to the paper authors' profiles on ORCID, ResearchGate and LinkedIn, as well as the ability to share papers on social media. Setting a benchmark for technology transfer and accessibility, this valuable online resource will continue to develop and grow with each new ACG event.

View the current offering at papers.acg.uwa.edu.au