UNIVERSITY OF MACAU

FACULTY OF SCIENCE AND TECHNOLOGY

DEPARTMENT of

CIVIL AND ENVIRONMENTAL ENGINEERING

"Green Geotechnics: Vegetation for Slope Stabilization"

by

Dr. Ankit GARG

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Venue: **E11 - 1006**

Abstract

The use of vegetation as root reinforcement for man- made slope stabilization has received considerable attention in past decades. However, its another aspect of root water uptake induced soil suction and root induced changes in soil properties (i.e., soil water characteristic curve) is generally overlooked. Soil suction is important as it increases shear strength of unsaturated soil and also reduces permeability. Experiments have been performed in both laboratory (atmospheric
controlled) and natural (field condition) to understand the influence of root water uptake on soil suction. A new Embankment was constructed with silty sand and vegetated with two different types of species i.e., Bermuda grass (Cynodon dactylon) and Ivy tree (Schefflera heptaphylla). Their effects on soil suction is compared and discussed under both controlled and natural condition. In addition, vegetation root characteristics (root area index) and shoot characteristics (leaf area index) was measured to discuss any variability in measured suction among tree and grass species. The effect of increase in soil density on root water uptake induced suction is also investigated using series of numerical parametric study. Through, combination of laboratory, field and numerical study, an understanding of soil-root-water interaction was improved.

Biography

Dr. Ankit Garg is currently Assistant Professor in Department of Civil Engineering at Indian Institute of Technology (IIT), Guwahati, India. His research expertise is on Bio-engineered embankment, where he is looking into effects of vegetation on soil properties. He received his PhD degree from Hong Kong University of Science and Technology (HKUST) in Civil and Environmental Engineering and undergraduate degree in Civil Engineering from IIT Guwahati, India. He was awarded the prestigious Hong Kong PhD Fellowship (HKPF) for pursing PhD at HKUST and DAAD fellowship for pursing research project at Karlsruhe Institute of Technology, Germany. His publications include 14 international SCI journals (including one journal given below in collaboration with Prof Hannah Zhou) and 4 international conferences. He has also been reviewer of 3 International Journals (European Journal of Soil Science, Canadian Geotechnical Journal and Engineering Computations).

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