



ANNOUNCEMENT

AGS (HK) Technical Seminar

Modelling mechanical reinforcement of vegetation to wall stability: A case study of a short retaining wall in Hong Kong

by

Ricky Y S Choi

Date : 11th November 2021

Time : 18:30 – 19:30 (Hong Kong Time)

Venue : The webinar will be conducted through Zoom.

Successful applicants will be provided a link to the seminar. Participants should arrange for their own device with a stable network environment to join the webinar.

Enquiry : Haydn Chan (email: haydn.chan@arup.com)

Fee : Free of charge

Registration : <https://forms.gle/Heu23PsnhVij6cQt6>

Please register by 8th November 2021. Successful applicants will receive webinar details on 9th November 2021. CPD certificate will be sent to the attendees after the webinar.

Book Prize : Book prize is open to youth professionals under 35 years old for the submission of a quality report (max. 500 words) on this event. Please refer to the AGS HK website for “The AGS Book Prize Reports – Assessment Framework” for details. The Book Prize reward comprises a book "Geology of Site Investigation Boreholes in Hong Kong" by Chris Fletcher and book coupons worth HK\$300 from Eslite Bookstore (誠品書店). Please send your report to haydn.chan@arup.com.



Synopsis:

Old stone retaining walls with vegetation are unique features in Hong Kong. Though they are of high preservation value, many of them are substandard as they were built in the old days and often situated in areas with many site constraints. Technical guidelines on slope mitigation often go with structural works for reinforcement as conventional practice, in which their properties are more controllable, and the slope is more robust in return. However, the urge for more environmentally friendly solutions is raising. There have been extensive research and engineering in providing a multitude of examples and protocols for representing and calculating the stabilizing effects of tree roots in slope stability models. Vegetative crib walls have been put into practice as a bio-engineering measure to improve the stability of a soil slope. The presence of plants, living components, changes the soil conditions and even serve as structural members when they are well established. Better recognition and limitation of root-soil interactions shall enable engineers to choose the best additions for stability.

In Hong Kong, studies on stabilization and restoration with vegetation have been launched on natural terrain landslide sites in 2006 while the use of bioengineering is mainly related to landscaping in man-made slopes. Effect of wall trees on stability of masonry walls was examined in GEO Report No. 257 but the contribution of root reinforcement is neglected in the analysis due to the difficulty in quantifying the effect of roots. There is currently little information or specific case studies that can provide guidance on how to numerically assess the stabilizing effect of the roots behind the wall permeating the backfill.

In this talk, Mr. Choi will make reference to a case study of a 3m high masonry wall to present the results of numerical investigation of the mechanical reinforcement of vegetation. Field data are collected for root reinforcement modelling and cross-reference with literatures. Conventional geotechnical assessments on sliding and overturning of retaining wall are performed. Parametric studies are carried out to evaluate the sensitivity of wall stability to the variation of vegetation effect. He will discuss the application of root reinforcement to wall stability which could be explored as part of the design and assessment process on wall less than 3m.

About the Speaker:

Ricky obtained his BEng in Civil Engineering from The Hong Kong University of Science and Technology. He has 4 years of experiences in the areas of geotechnical design.