

VIRTUAL 2 HALF-DAY SEMINAR ON ROCK ENGINEERING

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SPEAKERS:

Mr. Tan Boon Kong
Dr. Chiu Sing Lok
Dr. Boon Chia Weng
Ir. Liew Shaw Shong
Ir. Dr. Rini Asnida Abdullah

**TUESDAY & WEDNESDAY
7 & 8 DECEMBER 2021
9AM - 1PM**

Online Registration at www.myiem.org.my or email to sitiaisyah@iem.org.my

COMMITMENT FEES (SUBJECT TO 6% SST & NON REFUNDABLE)		
	ONLINE	NORMAL
IEM Student Member	RM80.00	RM120.00
IEM Graduate Member	RM150.00	RM180.00
IEM Corporate Member	RM 200.00	RM250.00
Non-IEM Member	RM 400.00	RM 450.00



SPEAKERS' PROFILE & SYNOPSIS

Mr. Tan Boon Kong



Title : Engineering Geology of Rock Slopes – Some Case Studies

SYNOPSIS

Rock slopes feature in many construction projects, such as highways, housing developments, dams, etc. The investigation of rock slopes is a major activity of the Engineering Geologist. The fundamental properties of the rock slope to be investigated include lithology, structure and grade of weathering. This paper presents some case studies of rock slopes covering various lithologies (granite, sandstone/shale, schist, quartzite/phyllite, and limestone). The construction projects concerned include highways, dam, housing developments, and a water theme park..

SPEAKER'S PROFILE

Mr. Tan was formerly Associate Professor of Engineering Geology at Universiti Kebangsaan Malaysia, Bangi, where he had served for 33 years. He retired from the university in October 2006. While at the University, in addition to teaching and research, Mr. Tan was also engaged occasionally on an ad-hoc or project basis in consultancy practices in Engineering Geology with the private sectors, mostly with the Geotechnical and Civil Engineering consulting companies or contractors. He now continues his practice as an independent freelance Consultant Engineering Geologist. He has published widely on Engineering Geology and Rock Mechanics in local and international conferences and Technical Journals (see List of Publications, 1980-2006). Mr. Tan has also been actively involved in professional bodies such as the Geological Society of Malaysia (GSM), the Institute of Geology Malaysia (IGM) and the Institution of Engineers

Dr. Chiu Sing Lok



Title : Application of UAV for rock joint mapping; A case review

SYNOPSIS

In the past decade, significant advances in Unmanned Aerial Vehicles (UAVs) have created many opportunities for a significant transformation in the application of this technology across geotechnical engineering practice. Unmanned aerial vehicle (also known as drones), are now widely available for both commercial and private applications. In this talk, the presenter will describe how UAVs can be used to enable rock joints to be mapped digitally. The Digital Rock Mapping (DRM) process is described by way of a case study from a site formation works at an abandoned rock quarry (ARQ) in Hong Kong. The process entails the creation and analysis of a detailed photogrammetry model; the result is then compared with that of a blind trial, namely the digital process against manual mapping of the same area.

SPEAKER'S PROFILE

Dr. Chiu was formerly the Technical Director of Aurecon Hong Kong Limited, having 40 years experiences in design and management of engineering projects with clients in private and government sectors in Hong Kong, Mainland China, Taiwan and Southeast Asia. Currently, he has took up retirement and resides in Sydney, Australia. Dr. Chiu is also an active participant in various affairs and activities of the society of engineers in Hong Kong and the region. He has also been an invited speaker and paper presenter at seminars and conferences in Hong Kong, China, Taiwan and Malaysia over the past decade. Individually, and co-authoring with others, Dr. Chiu has published more than 20 papers on foundation design and construction, deep basement excavation and slope engineering, as well as building and infrastructure development projects in Hong Kong, China, Taiwan and overseas.

Dr. Boon Chia Weng



Title : The distinct element method in rock engineering applications

SYNOPSIS

The use of the distinct element method is increasingly becoming more widespread in civil engineering projects. The theory and algorithms of the distinct element method are explained in the first half of the presentation. Subsequently, the use of distinct element method (DEM) for jointed rock analysis is being demonstrated. The presentation places emphasis on capturing the key geological structure of the rock, so that the failure mechanisms can be reflected correctly in the models. Examples are drawn from underground openings and slopes. The presentation includes a discussion of the circumstances for which the geological structure could influence the rock bolt forces and reinforcement mechanisms around underground openings. Similarly, for slopes, the presentation will showcase how the joint orientation, joint shear strength and boundary conditions of a slope can influence its kinematics..

SPEAKER'S PROFILE

Dr. Boon Chia Weng is a Chartered Engineer (CEng MICE). He obtained his D.Phil. at Oxford University in 2013, and B. Eng. at Nanyang Technological University in 2009. He was awarded the Rocha Medal in 2016 by the International Society for Rock Mechanics and Rock Engineering (ISRM). He was a past recipient of the Lee Kuan Yew Gold Medal, Professional Engineers Board Gold Medal (Singapore) and the Yang di-Pertuan Agong Scholarship (Malaysia). He is working with Gamuda Engineering Sdn Bhd, and seconded to the turnkey contractor joint venture, MMC-Gamuda KVMRT (T) Sdn Bhd, at which he contributed to the construction of underground tunnels and stations in the 1st and 2nd Line of the underground mass rapid transit project in Kuala Lumpur. He is a committee member of the Tunnelling Underground Space Technical Division of the Institution of Engineers Malaysia, and was inducted as a Future Leader Member of the American Rock Mechanics Association (ARMA) in 2017 in San Francisco. He was awarded the Tan Sri Zainal Prize from the Institution of Engineers Malaysia (IEM) in 2019, and was elected as the Malaysian Representative for the International Tunnelling Association Young Member Group (ITAYM). He is a member of TC103 Numerical Methods in Geomechanics of the International Society for Soil Mechanics and Geotechnical Engineering (ISSMGE).

Ir. Liew Shaw Shong



Title : Challenges of Fundamental Mechanical Principles in Rock Engineering and Problems of Practical Applications encountered in Real Engineering Cases related to Rocks

SYNOPSIS

This talk aims to provide a brief reveal of fundamental mechanical principles and geological processes associated in the rock formation and its subsequent alteration, which form bulk of the exposed earth crust materials in the engineering projects. There have been many challenges in understanding the response behaviours of rock mass at ground surface and, also at depth with human intervenes in these materials during project implementation. Rock mass is either a cemented particulate material or solid mass with possible varying orientated discontinuity planes (joints, cleavage or beddings) forming detachable rigid blocks/wedges and allowing failure kinematic movement or deformation for instability. Comparing to more homogenous soil materials, the uncontrolled oriented discontinuities lead to high degree of uncertainty in characterisation of the mass strength behaviours, in which more dominant structure-controlled instability usually governs the stability. Instead of acquiring the engineering parameters from conventional site exploration programme and laboratory testing, it appears that semi-empirical approaches have gained milestone in developing practical engineering analytical solution to the rock mass problems. Some case studies will be presented to share the experiences in rock engineering for foundation, tunnel stability, rock slopes, rippability of rock. Common disputes and ambiguities arise from either the intermediate weathered hard materials lying in between soils and rocks, or the relict joints in the weathered materials from the parent rocks.

SPEAKER'S PROFILE

Ir. Liew Shaw Shong obtained his Bachelor of Science Degree in Civil Engineering with First Class Honours from National Taiwan University at Taipei in 1991 and worked as a geotechnical engineer in Sino Geotechnology Inc. at Taipei for a year. In 1992, he continued his post-graduate study in University of New South Wales in Sydney, Australia and obtained his Master of Engineering Science in 1993. He then returned to Malaysia to work as geotechnical engineer in a multi-discipline engineering consultant firm. During the six years of working, he has exposed himself to numbers of major infrastructure projects, likes Lebuhraya Damansara Puchong, Tanjung Pelepas Port, Kuala Lumpur International Airport, etc. In 1999, he jointly established a geotechnical specialist consulting firm with another two partners to continue the consultancy practice till now. He is now the senior director and founder of G&P Geotechnics Sdn Bhd. In the past twenty-nine years of his professional career, he has involved in numbers of forensic investigations of landslide problems at mountainous roads and is one of the project team members in the National Slope Master Plan Study commissioned by JKR. He also conducted numbers of short courses and delivered lectures on subjects covering subsurface investigation, instrumentation, dam engineering, slope engineering, soft ground engineering, pile and retaining wall designs, geotechnical case histories and forensic engineering.

Ir. Dr. Rini Asnida Abdullah



Title : Selection and modelling issue in rock slope stability analysis

SYNOPSIS

This talk will cover some key elements in rocks slope stability analysis, particularly the selection, and modeling issues. It will systematically present and discuss the importance of the rock strengths and properties, the effect of geological discontinuities on a rock slope, and the appropriate selection of modeling techniques. Finally, it will draw few case studies from rock slope in Wales, United Kingdom, and rock slope in Malaysia.

SPEAKER'S PROFILE

Ir. Dr. Rini Asnida Abdullah is an associate professor at the School of Engineering, Faculty of Engineering, Universiti Teknologi Malaysia (UTM), and also a professional engineer in practice. She obtained her Bachelor degree in Civil Engineering and Master degree in Geotechnics, both from UTM, and she received her Ph.D degree in Rock Mechanics from University of Leeds, United Kingdom. Before joining the UTM as the academic staff in 2003, she has three years of working experience with the Minconsult Sdn. Bhd. and Public Work Department, Malaysia. Working as an academician in UTM, she also involves the consultation work. Recent project involvements are the permanent stabilization for rock slope at Bukit Lanjan and Jelapang, and principle inspection for Meru-Menora tunnel lining, both for PLUS and Special Study on Landslide at Bukit Antarabangsa, for MPAJ. Her research interests include rock mass classification, rock slope modeling, rock fractures and fragmentation, underground excavation, and blasting. She also served as the Secretary-General of the ISRM Malaysia National Group and Technical Committee of Tunneling and Underground Space Technical Division (TUSTD) of the Institute of Engineers Malaysia (IEM).

TENTATIVE AGENDA	
<i>Day 1 Session – 7th December 2021</i>	
09:00 – 09:05	Welcoming remarks
9:05 – 10.15	Engineering Geology of Rock Slopes – Some Case Studies - By Mr. Tan Boon Kong
10.15– 11:30	Application of UAV for rock joint mapping; A case review - by Dr. Chiu Song Lok
11:30– 12:30	The distinct element method in rock engineering applications - by Dr. Boon Chia Weng
12:30– 13:00	Question and Answer
<i>Day 2 Session – 8th December 2021</i>	
09:00 – 09:05	Welcoming remarks
9:05 – 10.45	Challenges of Fundamental Mechanical Principles in Rock Engineering and Problems of Practical Applications encountered in Real Engineering Cases related to Rocks - by <u>Jr Liew Shaw Shong</u>
10.45– 12:15	Selection and modelling issue in rock slope stability analysis - by Ir. Dr <u>Rini Asnida Abdullah</u>
12:15– 13:00	Question and Answer
	<i>End</i>