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Department of Earth Sciences
The University of Hong Kong

Rock Joint Characterisation and Shear Strength

Presented by Prof. Steve Hencher

Emeritus Professor in Engineering Geology at The University of Leeds
Honorary Professor at The University of Hong Kong

Date:	1 September 2017 (Friday)
Time:	6.30 pm to 7:30 pm
Venue:	Room 104, James Lee Building, The University of Hong Kong
Fee:	Free of charge
Registration:	Prior registration is not required.
	For enquiry, please contact Miss Trudy Kwong at tkwong@bmintelligence.com or
	Prof. Andrew Malone at awmalone@hku.hk

Synopsis:

Rock discontinuity frameworks usually control the geotechnical nature of rock masses, including weak and weathered rock, close to the surface of the Earth. One problem for characterisation is that most discontinuities are only partially developed at early geological stage say from cooling, burial, uplift or tectonics.

When we see them in exposures they appear as traces of partially propagated and weathered features of unknown extent within the rock mass and of unknown strength. The common approach is to assume that all visible traces are open (say in face mapping) but this is usually, but not always, a very conservative thing to do. There is also a major conflict in that RQD is defined (should be) for open fractures and sound rock only, which conflicts with common usage (especially in Europe) and its adoption in rock mass classifications. This is partially addressed in a recent paper RQD: Rest in Peace co-authored with Philip and Steven Pells and Dick Bieniawski and is downloadable with several other papers and presentations relevant to this talk at www.hencherassociates.com.

Recent advances on field measurement such as laser scanning do little to help with the fundamental problems of characterisation, and there is much research to be done. Two paths are identified. Firstly it is advocated that discontinuities, where seen, should be described as “open”, or “weak, moderate or strong” in terms of their tensile strength relative to the parent rock, where incipient, either in core or exposure.

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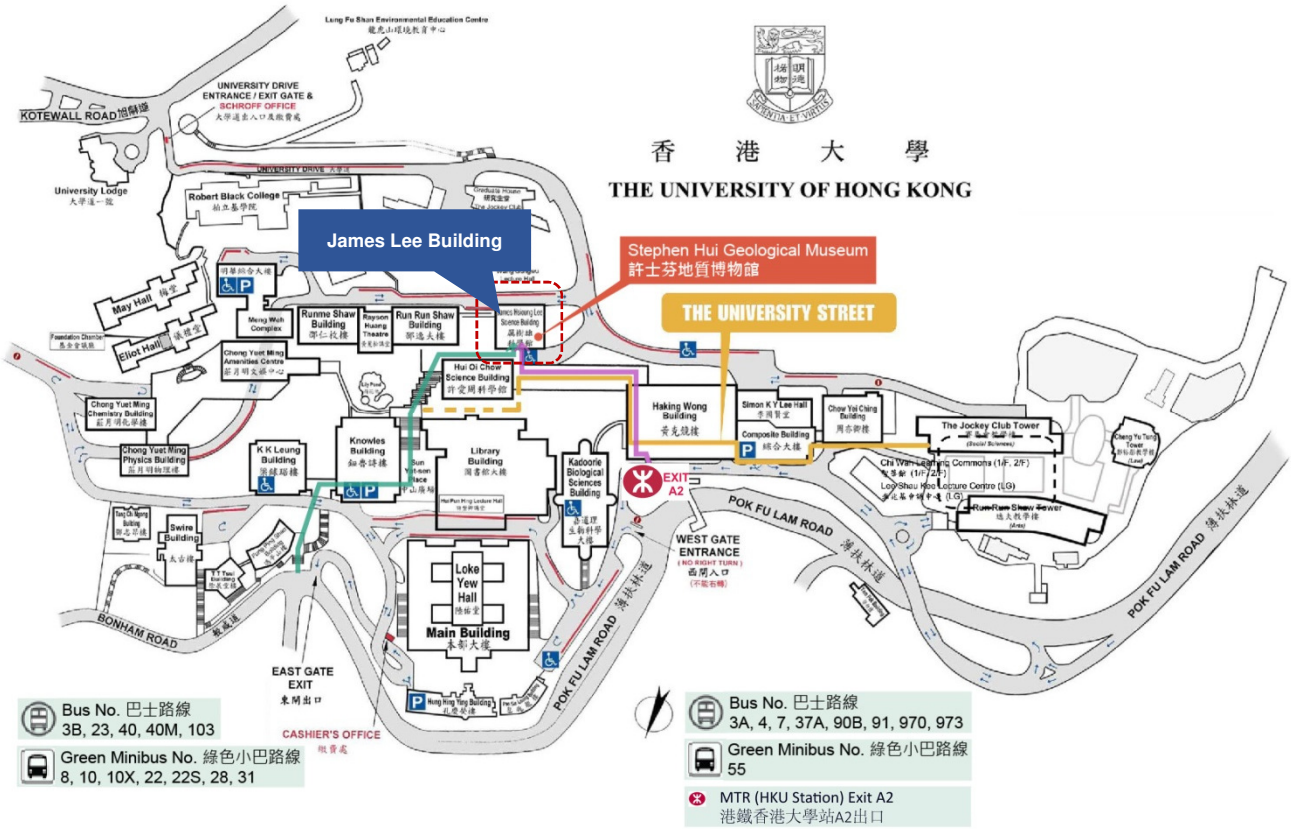
Secondly, a method of "Forensic Excavation" is advocated whereby discontinuities are opened up by mechanical means to characterise their persistence and the nature of rock bridges and these observations linked to geological and environmental factors. This new approach will be illustrated with reference to recent research of Dr Junlong Shang at the University of Leeds; again several papers can be downloaded at the above website.

One of the important parameters of discontinuities is shear strength and ways to measure and estimate shear strength will be addressed here. In particular the role of laboratory testing will be discussed and illustrated with reference to early rock slope case studies in Hong Kong and recent work in India.

About the Speaker:

Steve Hencher is Emeritus Professor of Engineering Geology at the University of Leeds and Honorary Professor at Hong Kong University. He spent 15 years working in Hong Kong; five with the Geotechnical Control Office and ten as Head of Geotechnics in Halcrow and was the Chairman of the newly formed HK Regional Group of the Geological Society of London. He has also worked for Bechtel in Korea and for Atkins in early years. He is the author of two textbooks: Practical Engineering Geology and Practical Rock Mechanics, both published by Taylor and Francis.



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