



DEPARTMENT OF CIVIL ENGINEERING

SEMINAR

**Some experiences from tunnelling through erratic 'soft rock'**

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Date: June 20, 2019 (Thursday)

Time: 11:00 a.m. - 12:00 noon

Venue: Room 6-12B, Haking Wong Building, The University of Hong Kong

**Abstract**

With the acceleration of urbanisation, densely populated cities have become increasingly packed with buildings, roads, utilities, and anthropogenic activities. Such socioeconomic environments have taken a particular toll on buried infrastructure, since new water and sewer pipelines will need to be constructed to meet the growing population, while existing pipelines need to be rehabilitated or replaced. The challenge of constructing buried pipelines can be particularly complex, due to the scarcity of land and round-the-clock hustle and bustle of cosmopolitan cities. Conventional open trenching can be particularly disruptive, creating traffic diversions, potentially damaging nearby buildings and utilities, which can result in complaints or potentially lawsuits from residents and tenants. Therefore, trenchless technologies have become the preferred method for the construction and rehabilitation of buried infrastructure.

This seminar aims to introduce some trenchless technologies, and to highlight the case of the Kuching Centralised Wastewater Management System Phase 1, where microtunnelling by pipe-jacking was the preferred delivery method in the construction of 7.7 km of main trunk sewer lines, at depths of up to 35 m below the busy central business district of Kuching City. One of the challenges associated with this pioneering trenchless technology in Sarawak was the lack of an understanding of the estimated jacking forces developed during pipe-jacking in our unique Kuching geology. Through a collaboration involving the project proponent, consultant, and academia, insight into the effects of geology on jacking forces and various construction activities was attempted. Some of the ongoing research efforts will be presented, involving numerical modelling and in-situ testing of the unique Kuching geology to estimate the required jacking forces of these trenchless methods.

**About the Speaker**

Dr. Choo Chung Siung is the Discipline Leader for the Civil Engineering undergraduate program at Swinburne University of Technology, Sarawak Campus. He obtained his BEng (Honours) (Civil) with First Class Honours, and PhD from his doctorate research on trenchless technology, particularly in pipe-jacking through highly fractured lithologies. His doctoral work was realised from collaboration between industry and academia, and has since produced technical articles in top-tier Q1 geotechnical engineering journals. His research interests lie in the fields of soil-structure interaction, trenchless technologies, and numerical modelling of complex geotechnical challenges. Dr Choo is also actively involved in specialised geotechnical consultancy works, including tunnelling, deep excavations, and slope engineering. He also currently serves on the committees for the Malaysian Society for Tunnelling and Trenchless Technology (MSTTT) and the Malaysian Geotechnical Society (MGS) Youth Wing.

- ALL ARE WELCOME -