Youth Wing of Malaysian Geotechnical Society (YMGS)

WEBINAR TALK ON

EFFECTS OF TUNNELING UNDER AN EXISTING TUNNEL IN CLAY: FROM CENTRIFUGE TO FIELD VALIDATION – A M.S.D. APPROACH

BEM Approved CPD Hours: Applying (Estimated 2 CPD hours)

28th July 2021 (Wednesday), 5.00 pm – 7.00 pm

SPEAKER'S PROFILE

Dr. Gue Chang Ye obtained his doctoral degree from the University of Cambridge, UK. Specialising in tunnelling, specifically on the effects of tunnelling under an existing tunnel in clay, he has expertise in both experimental research and field instrumentation. Pushing the limits of centrifuge experimental methods, he was awarded the Philip Turner prize in 2015 by the Head of Division, Prof. Lord Robert Mair for his outstanding works in geotechnical centrifuge testing. As part of the pioneering team in Cambridge's Centre for Smart Infrastructure (CSIC), his fieldwork in distributed fibre optic strain sensing of the 100-year-old Royal Mail tunnel during excavation of London Crossrail platform tunnels won the prestigious Ground Investigation and Monitoring Award in 2014, presented by the International Tunnelling Association.

Upon returning to Malaysia, he secured a position at G&P Geotechnics Sdn. Bhd. and has since been actively involved in multiple high-profile mega projects including the Klang Valley Mass Rapid Transit Line 2 and the Malaysian-Singapore High Speed Rail project. He is now the senior geotechnical manager and the lead for the R&D Tunnelling Branch within the firm.

SYNOPSIS

In the urban environment, concerns arising from tunnelling below an existing tunnel are a common recurring problem. While there is consensus that tunnelling in close proximity to an existing tunnel would undoubtedly induce an impact, it is often difficult to quantify it. Conventional methods, on one end of the spectrum, would rely on either a conservative simplification of the problem as analysed via existing closed form solutions or alternatively, depend on sophisticated computer modelling utilising complex soil models. Each of these would have its own merits and drawbacks. The former method is simple to use but generally forces the tunnel lining to deform in accordance to greenfield soil movements and as a result, tends to be overly conservative. The latter is exceptionally good for parametric studies but involves more soil parameters and demands significant computational resources. In cases where the deformation mechanism is uncertain, its accuracy cannot be determined with confidence. Therefore, in spite of its sophistication, a factor of safety is ultimately employed.

This presentation discusses a deformation mechanism that is founded on cavity contraction theory as observed and validated through geotechnical centrifuge testing and field instrumentations. A mobilised strength design approach was subsequently developed to predict the cross-sectional bending moments of the existing tunnel. This method allows for a simple and quick assessment that requires minimal input parameters while yielding realistic results.

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Registration Fees

MGS / IEM / GeoSS Members: FOC
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For non members, please make the payment to the following:

Payee: **Pertubuhan Geoteknikal Malaysia**
Bank Account No.: **281-00-01231-6**
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Dr. Choo Chung Siung
Chairman
Youth Wing of Malaysian Geotechnical Society

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