



Malaysian Geotechnical Society

Webinar – Talk on “The Tuen Mun – Chek Lap Kok Link Project, Hong Kong”

3rd August 2021 (Tuesday), 5.00 pm – 7.00 pm
BEM Approved CPD hours: 2 Ref. No.: IEM21/PP/041/T(w)



SPEAKER 1

Dr. Alan Kwong
Senior Resident Engineer, Tung Chung East Reclamation, AECOM
Adjunct Professor, The University of Hong Kong

Dr. Alan Kwong was the Associate Director of Golder Associates Hong Kong Ltd. between 1995 and 1999. From 1999 to 2002, Alan was the Principal Geotechnical Engineer of Montgomery Watson Harza responsible for engineering the remediation of the HATS Stage I tunnel excavation that involved appraisal of geotechnical and geological conditions of the ground during tunnelling as well as assessing different options of ground support, stabilization measures and methods of pre-grouting to reduce inflow. From 2002 to 2009, Alan worked as a Senior Teaching Consultant at the University of Hong Kong, teaching MSc. Courses in Foundation Engineering, Underground Excavation, Tunnelling, Ground Investigation, Soil Testing and Rock Mechanics. From 2009 to 2015, Alan was the Senior Geotechnical Engineer at the Mass Transit Railway Corporation Limited, working on the Kowloon Tong Extension Project (KTE) and Shatin Central Link Project (SCL) tunnel projects that involve significant geotechnical and underground excavation design and drill-and-blast construction controls. From 2015 to 2019, Alan was the Senior Resident Engineer (TBM) working for AECOM supervising the Tuen Mun Chek Lap Kok Link project where the 2 tunnel boring machines have excavated below sub-sea of about 4.3-kilometer from the northern landfall at Tuen Mun to the Hong Kong Boundary Crossing facilities at Chek Lap Kok. From 2019 to present, Alan is currently working as the Senior Resident Engineer (Civil) working for AECOM supervising the Tung Chung East Reclamation project.



SPEAKER 2

Fred Ng
Executive Director, AECOM

Mr. Fred Ng is the Executive Director of AECOM with over 40 years of relevant experience. In recent years, he has been involved in leading a few major prominent projects covering tunnel, reclamation and cavern studies for AECOM in Hong Kong. He had established the business and operation of AECOM in India, and also managed the transportation/infrastructure business of AECOM in Asia before. Fred's major works for AECOM in the past decades cover major underground works for AECOM in HK and worldwide including underground metros and drainage tunnels; Shatin/Ma On Shan New Town, Tseung Kwan O New Town reclamations to the recent Tung Chung New Town Extension (East) reclamation; and also the tunnel works for the Tuen Mun-Chek Lap Kok Link-Northern Connection. In addition, he has also managed the Pilot Study on Underground Space Development in Selected Strategic Urban Areas and overseeing the Technical Study on Potential Caverns in Hong Kong.

SYNOPSIS

This talk focuses on the construction of the Tuen Mun – Chek Lap Kok Link (TM-CLKL) project which comprises a 9 km long dual two-lane roadway between Tuen Mun and the North Lantau, Hong Kong.

A 17.6 m boring diameter slurry TBM (TBM S880) was used to construct the 3-lane northbound tunnel at the Northern Landfall, while a 14.0 m boring diameter slurry TBM (TBM S882) was used to construct the 2-lane southbound between the Northern Landfall and the Southern Landfall. Construction of the sub-sea tunnel across has been carried out by two 14.0 m diameter Tunnel Boring Machines (TBMs). The adoption of TBM completely avoided the impact on the busy harbor during construction and minimized the impacts to the marine habitat of the Chinese White Dolphin, within and near the works site of the project. There were 57 cross passages constructed at 100m intervals between the 2 main road tunnels. The pipe-jacking method using a mini tunnel boring machine (MTBM) was adopted for the construction of 46 cross passages out of the total of 57 cross passages.

On the eastern edge of the reclaimed Hong Kong Boundary Crossing Facilities site (HKBCF), the construction of the tunnels was based on a hybrid scheme consisting of both Cut and Cover (C&C) tunnel and tunnel constructed by the TBM. The C&C tunnel construction was undertaken to employ a 15-cells caterpillar-shaped cofferdam consisted of 15 numbers of truncated circular cells ranging from 25 m to 37 m long and from 44 m to 57 m wide for each of the cell connecting together.

The TM-CLKL project demonstrated the success of large TBMs tunneling through newly reclaimed land and sub-sea.

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