

## Technical Visit to MTR XRL Contract 822 – Tse Uk Tsuen to Shek Yam Tunnels

By Herman Lai

On 27 October 2012, the Association of Geotechnical & Geo-environmental Specialists (Hong Kong), AGS(HK) for short, organized a technical visit to construction site of Express Rail Link (XRL) Contract 822 – a 7.65-kilometre underground Tunnel between Tse Uk Tsuen and Shek Yam, one of the eight work contracts awarded in Mar 2010. The total construction period is expected to be 69 months, with scheduled completion in 2015.

The visit commenced with a brief introduction on the project background and on-going construction works by Mr. Henry Chan (Engineering Manager) from Leighton Contractors (Asia) Limited (LCAL) at the site office in Kwai Fong, followed by a safety workshop before the participants reached the actual site at Shek Yam. As for the scope of work, LCAL adopts the traditional drill-and-blast method to excavate and construct tunnels, a 120m deep 16 diameter ventilation and EAP shaft at Shing Mun, a 700m long Shek Yam Construction Adit, etc. In view of drained tunneling approach, the inflow of groundwater into tunnel through the rock is the most critical issue to the entire process of work. A waterproof membrane together with a layer of geotextile is embedded in between the permanent tunnel lining and the excavated tunnel profile.

What inspired me most is the huge crusher plant at Shek Yam Crusher Adit for the process of rock crushing. The grading sample collected for laboratory tests will determine the drainage layer, a 300mm well-graded surface at the bottom of the tunnel invert slab in our case, through which the groundwater around the permanent tunnel lining is effectively driven and carried away along the alignment of railway. Added to that, the site staff from LCAL even highlighted the entire sequences and construction practices for drill-and-blast approach and the method of controlling groundwater inflow. It is somehow the coolest part I have ever enjoyed as this not only instantly refreshed my mind with further details during the construction stages but brought a handful of thought provoking questions that motivated me to think out-of-the-box based on my own understanding.

Without much site experience, this makes me feel that it is definitely worth more exposure to sites in future for better understanding about the actual site constraints as well as much more insights that I have never gained from work experience in consulting firms. That is why I strongly encourage all young engineers like me to seize every single opportunity, to get exposed to hands-on practices and to ask whatever you are not sure about so that we all stay technically competent for the upcoming challenges. Lastly, I deeply appreciate AGS(HK) and LCAL so much for such a remarkable site visit.



**David Sein of AGS(HK) presenting souvenirs to Patrick Catling (Project Director) of Leighton**



**Group photo taken at the Shek Yam Site**