



Technical Visit to Pavilion Damansara Underground Construction Site

by Ir. Alexis Pong Vui Wei

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The Tunnelling and Underground Space Technical Division (TUSTD), Institution of Engineers Malaysia (IEM) had successfully organised a technical site visit to the ongoing Pavilion Damansara underground construction site at Pusat Bandar Damansara, Kuala Lumpur on 20 July 2019. The technical visit aims to allow the participants to have an eye-opening and better understanding on the massive underground space development being implemented on a brownfield site involving deep excavation down to 8-storey basements with integration of large diameter foundation elements and earth retaining structures. Great challenges in both the design and construction works became apparent when dealing with the vast demolition works, whilst maintaining the more than 30 years old existing counterfort wall, reinforced earth (RE) wall and monsoon drain.

These were in addition to the removal of over 5,000 points of the widely spread existing foundation piles, which were in the way of newly proposed foundation system. This development also needs to comply with the regulatory requirements of Mass Rapid Transit Corporation (MRTC) due to its close proximity to an existing MRT line in conformance to Railways (Railway Protection Zone) Regulation 1998.

Twenty-six (26) participants of various member grades from IEM attended this technical site visit. Upon arrival, a safety briefing was conducted by safety officer, Mr. Velu. Following which, both project overview and technical presentations were delivered by C & S and Geotechnical Consultant, Dr YG Tan Jurutera Perunding Sdn Bhd Senior Associate, Ir. Alexis Pong; Management Contractor, Domain Resources Sdn Bhd Senior Project Manager, Mr. Lim; and Work Package Contractor, Econpile (M) Sdn Bhd Projector Director, Mr. Choo.



***Mr. Lim briefing on substructure works
and site progress***

The participants were briefed on the scope of works for the substructure package, which includes:

- i) Demolition of existing buildings;
- ii) Removal of existing foundation comprising of I-beams and bored piles;
- iii) Construction of basement retaining wall system using contiguous bored piles (CBP);
- iv) Bored piles foundation and plunge in columns (PICs);
- v) Comprehensive pile testing regime;
- vi) Basement structural works; and
- vii) Instrumentation and monitoring (I&M) works.

Apart from the above physical works, both site progress reporting and compliance submissions for working within MRT reserves are very much integral parts of the package.

The deep excavation was carried out using both top-down and semi top-down construction methods. Challenges faced in both the 30m deep excavation adjacent to an existing counterfort wall retaining a road platform and a further excavation of 10m below the lowest basement slab level for the tower lift pits were highlighted. Extensive strutting and bracing of PICs were carried out to enhance the robustness of the temporary support system.

After the technical briefing, a site walk was conducted led by a safety officer from basement 3 all the way down to the lowest basements 7 and 8. This was to view a temporary slab opening for excavated earth removal, lift pit excavation work, top-down construction of columns with couplers for rebar connections, massive temporary steel ramp to facilitate material deliveries as well as trucks and heavy machinery moving in and out the site. The participants had also accessed to ground floor of SSU block to view the monitoring instruments installed at MRT piers, viaducts and surroundings where an on-site briefing was also conducted. At the end of the site walk, a group photo was taken.



Group photo at ground floor of SSU block

The participants were then led back to site meeting room for a Q & A session. Amongst the questions raised were on method of installing couplers for top-down and bottom-up column constructions; deep excavation and earth removal through slab openings; instrumentation and monitoring of adjacent buildings and MRT piers; dewatering and water ingress issues related to basement excavation; and others. All these questions were well addressed by the project team.

As a finale to the site visit, a few videos on demolition of the existing buildings were presented which ended at 11.45am and so was the site visit.