Concerto North Kiara @Mont Kiara

The Proposed Jack-in Square Pile to Speed Up the Work Progress

(by Ir. Oh Chin Wah, Executive Director) (2012 Oct-Dec)

This development consists of 3 block high rise condominium of 30 to 32 stories with 4 level of car park and 1 level of basement floor for M&E services. The project is awarded as a contractor design and build contract for foundation package which comprises various sizes of bored pile ranging from 500mm to 1350mm diameter with higher concrete grade of G40 N/mm^2. Total number of bored piles is 389 and the construction duration for this project is 7 months. The entire site is divided into 4 zones in according to the estimated pile length based on the SI borehole results.

Construction Site

As revealed by the original SI carried out by the consultant, none of the borehole results showed the present of bedrock level up to 39.0 m from existing ground level. There is no trace of the existence of granite boulders in this area too. Subsequently, the additional boreholes were sunk down up to 40.0 m and managed to map out the bedrock level at certain area of the site. Still, there is no trace of fresh granite boulders near to the ground level and there is only one borehole detected the highly weathered granite layered with the completely weathered granite residual soil at the depth near to the bedrock level.

However, a great surprise was encountered during the earthwork excavation at zone 1 area. A group of fresh granite boulders (site people named it as " dinosaur eggs")with size ranges from less than 1m up to even 3m was unearthed and the level is well above the final piling platform level. Eventually, it took us nearly 2 months to break this group of boulders into

pieces that able to transport out from the site. Nevertheless, this was just the beginning of the nightmare for boredpiler when they first encountered this boulder problem at site.

Construction Site

At the initial stage of zone 3, there was only a few number of pile location encountered fresh boulder at different depth. Therefore, a lot of effort has been spent in order to core through the suspected boulder layer, sometime encountered at multilevel too. Furthermore, those boulders are fresh in appearance but extremely hard in strength which was tested with point load test index of more than 5 Mpa. In such situation, most of the boring time was spent on hard coring through the boulder which had seriously affected the work progress at site. In view of the urgency to catch up the overall delay at site, therefore the jack-in square pile was proposed to replace the original bored pile at the podium area which expect to have less boulder's problem in order to speed up the overall work progress. Subsequently, the bigger capacity of jack-in square pile was also proposed to replace some bored piles at the tower area which did not encountered boulder in order to speed up the piling installation work concurrently. In cases where the boulders were unavoidable, a guideline to downgrade the

capacity of the square pile with additional pile was developed for those jack-in pile encounter boulder at shallower depth or some of the pile may revert back to original bored pile if the embedded pile length is too short to be accepted.

After struggling through the 7 months with the boulder's problem, fortunately the piling work is near completion with slight delay from the original plan. A lesson learned from this project is never relied totally on the SI borehole results but the records of past projects near the vicinity may give a better and accurate picture of the existing ground condition.