

Westside One @Desa Parkcity

Caisson Pile and Footing Foundation Solution on Rock Formation

(by Mr. Lai Chee Yong, Project Manager) (2010 Oct-Dec)

First and foremost, a big thank you to the editorial board for allowing me to contribute my two cents in the latest edition of the Geohan Newsletter. Allow me to share with you this current on-going project in Desa Parkcity.



This project consists of a 40 storey height luxury condominium and a multi-storey car park facility located at an ex-quarry site where the entire area is of granite formation. Upon possession of the site, we knew immediately that this is no sweet job for us due to the presence of much rock boulders from either past quarrying activities or dump or backfilling, as well as the prestige neighborhoods in the surrounding of the well-known Desa Parkcity and Sunway SPK - many complaints are bound to be overcome.

The original design for the tower block was mainly on bored pile foundation. However, we took a bold step of alternative design approach and changed them to caisson pile foundation of various diameter from 1200mm to as large as 3000mm. Changes are necessary primarily due to the constraint of 4 months completion time and will be very

demanding if we were to remain. With the alternative, we have the advantages of reducing the socket length as well as the numbers of piles, which are both crucial to our production rate.

During the construction stage, we discovered that the rock level is actually higher and the granite is of better grade despite the natural fissure of the rock. Thus, we took a step further of changing partial of the remaining foundation to footing.

This combination of footing and caisson pile foundation system possessed concern to the consulting engineer in view of the differential settlement due to the different bearing stress level of the 2 types of foundation. After sessions of discussion and validation from the plate bearing test carried out, we eventually got the green light for sunken footings and some deeper caisson piles to limit the bearing stress to 1500 kN/m².



We are greatly relieved with the decision because the actual duration of our 1st cycle caisson pile excavation had been significantly prolonged. Grade I coarse grained granite were encountered above cut off level at some locations that had cost us over 1 week for 1m deep excavation. After all technical issues resolved, we eagerly employed additional rock breaking machineries to expedite the excavation work for footings. Even with the additional workman hours, excavation of the 90m³ lift pit at Tower

Block had been the most critical which kept us occupied for one month plus.

With the exceptional ideas from the design department and tangible planning from our site personnel, we manage to comply and cope up thus far. At times of writing, we are just 2 weeks from the completion date of the car park block and we strongly believe that we will be able to nail the milestone on the dot. Kudos!!