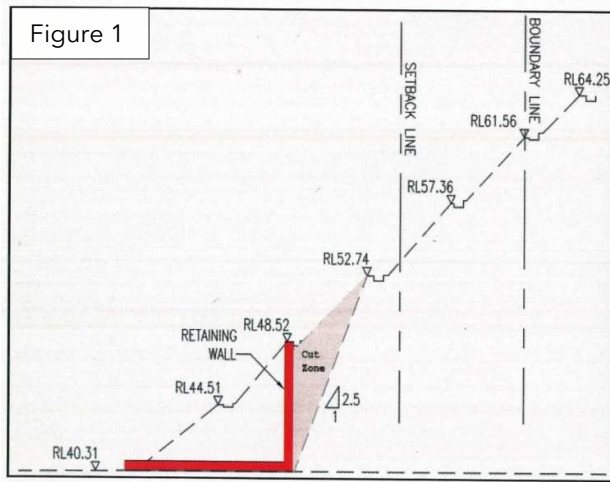


Garden Plaza @Cyberjaya

The Proposed Design and Build Retaining System on Existing Cut Slope

(by Jeremy Lim Wei, Assistant Project Manager) (2012 Jan-Mar)

I would like to extend my deepest gratitude to editorial board for giving me an opportunity to contribute a brief write up on the project, namely Garden Plaza which I have involved in past six months. Basically, this project is a mixed development which consists of three blocks of 23-31 storey located in Cyberjaya.



The toughest yet challenging part of this job is the northern side of basement wall boundary situated along the second berm of existing cut slope (i.e. Done by others as Photos 1). In order to facilitate the construction of the basement wall and foundation pile along the slope (refers Figure 1), a temporary retaining system is required to stabilize this temporary cut slope. A few options of the temporary retaining system have been considered, such as contiguous bored pile wall, soldier pile wall or soil nail with shotcrete option. As

such, additional subsurface investigation (SI) is sunk at this area for better understanding of soil strength and groundwater regime before any means of retaining system is opted. The SI reveals the groundwater level is 1-2m below the lowest basement level and the soil materials consists of medium stiff to hard materials (i.e. SPT $N > 50$).

In considering of high cohesive hard soil material and coupled with low groundwater table, the final option being adopted is by forming temporary open cut slope of 2.5V:1.0H to facilitate the construction of 7.6m height basement wall. Overall slope stability for the cut slope was checked and analysed, the factor of safety was able to attain more than 1.2 for temporary slope requirement. However, the critical slip cycle was detected on the shallow slip of slope surface. In order to arrest this concern and improve the stability, a thin layer of 50mm shotcrete was immediately sprayed on freshly cut slope face and reinforced with a layer of BRC (Photo 2). The main purpose is to maintain the soil suction developed after cutting and preventing it from dissipated due to long exposure to surface runoff, thus it improves the temporary stability of shallow slip surface on the exposed slope. During the cutting of the



slope, the exposed cut surface was noticeably remains dry and consists of medium to stiff soil and highly weathered sandstone, with no groundwater was encountered.



As a prudent approach, a well-planned monitoring scheme by having two inclinometers at top of slope is implemented to monitor/detect any creep slope movement. Phew! Over past six months, the inclinometers results (i.e. Axis away from slope) show negligible movements (Figure 2 & 3). With this option, the basement wall could be constructed in most cost-effective manner and eventually giving cost and time saving to the client as well. Thanks to the team members for sheer hard work and determination to make this project a success.

