

## YTL Bangalow @Bukit Tunku

### Proposed Design & Build Soil Nailed Caisson Wall.

2 Storey Bangalow with 5 Levels Basement at Jalan Cerunan Tungku, Bukit Tungku.

(by Ir. Oh Chin Wah, Executive Director) (2010 Jul-Sep)

#### Project Brief:



the proposed bungalow site is located at steep gradient of natural slope. Three sides of the boundary are surrounded by existing bungalow and the proposed entrance is fronting the existing paved road. The existing road level is at RL 62.50 and sloping at approximate gradient of 45 degree towards the back of the site at the toe level of RL 39.50. the difference between the highest and lowest level is 23m which posed a huge challenge in term of construction and technical design.

#### Construction challenge:

Due to the steep gradient and involve deep excavation to form the final platform level the original design of contiguous bored pile wall with ground anchor tied back was being replaced by caisson wall with soil nail tied back. The stages of platform excavation were planned and carried out in tandem with the caisson wall construction, as well as the installation of soil nail in every layer.



**Technical challenge:**



In order to form the final platform level at RL41.50 against the existing road level at RL62.50 with the difference height of 21m, 2 tier caisson walls were introduced at 10m and 11m cantilever height each. The first row of caisson is designed to the size of 1500mm in diameter and spaced at 2.0m c/c with 10m cantilever height and embedded to the ground in 14.5m depth. Whereas, the second row of caisson is designed to the size of 1200mm in diameter and spaced at 1.8m c/c with 11m cantilever height and embedded to the ground in 11.5m. in order to minimize the

displacement of caisson wall at second row, 5 layers of 12m length of soil nails were installed at the spacing of 1.8m c/c in between the caisson piles.

**Achievement:**

The construction of the multi-tier caisson wall and excavation to the final platform level was completed within the stipulated time successfully. The displacement of the caisson wall and the ground settlement behind the caisson wall was being monitored regularly and no sign of distress and only insignificant wall displacement being register. There were no complaints from neighbors during construction activities



and the disturbance has been successfully reduced to the minimum. We can concur that hand-dug caisson is an ideal solution when come to the hill slope development.