

Monitoring Shoring Works & Basement Excavation, Dubai, U.A.E.



Project nature: Monitoring of Shoring and Excavation Works
Project: (3B+G+14) Building for Mohammed Sultan Bin Markhan, Al Barsha, Dubai, U.A.E.
Client: Dutch Foundations LLC (Contractor)
Fugro company: Fugro Middle East (United Arab Emirates)
Period: January to December 2007
Project value: € 80,000

A multi-storey residential building under development in Dubai required the construction of perimeter shoring, excavation of three basement levels and extensive dewatering. Fugro Middle East was sub contracted by the shoring contractor (Messrs Dutch Foundations LLC), for installation and monitoring throughout the works program.

Fugro's role was to install a variety of instrumentation and monitor for changes in water level, pore water pressure, settlement, movement and tilt within and behind the retaining wall which was constructed by contiguous cast in-situ bored piling.

The scope of instrumentation works included;

- 8 No. Vibrating Wire Piezometers
- 8 No. Water Standpipes
- 12 No. Inclinerometers
- 20 No. Ground Settlement Markers
- 8 No. Anchor Load Cells
- 2 No. Tilt Plates

Fugro performed all drilling works and installation of instruments. Monitoring was performed manually at weekly intervals over a period of several months.

Inclinometer casing was installed within the contiguous piles to monitor deflection and movement of the shoring works as excavation progressed. Ground anchors were instrumented with centre-hole load cells to evaluate the efficiency of the anchor system and confirm stability of the retaining wall.

Behind the retaining wall a series of boreholes were drilled below the final excavation level to monitor water level and changes in pore water pressure, to assess the stability of the excavation and effectiveness of the dewatering system. Standard monitoring wells and vibrating wire piezometers were installed for this purpose.

Around the excavation ground settlement markers were installed to measure potential settlement using optical survey methods. Tiltplates were installed to monitor tilt of an adjacent structure.



Inclinometer Reading Prior to Excavation



Final Excavation Level