

HILTON HOTEL SURFERS PARADISE

DIAPHRAGM WALL AND BARRETTE FOUNDATIONS



Client: Rapticvic
Designer: Hyder Consulting

Specialist Contractor: Soletanche Bachy Menard
Joint Venture

THE PROJECT

The Gold Coast is rapidly developing into one of the world's top tourist destinations which have just added the Hilton name to its range of world class accommodation facilities. Currently under construction, the Raptic Group is redeveloping what was known as the Dolphin Arcade into a twin story building featuring hotel suites and residential apartments. The towers will be 32 and 57 levels tall overlooking Orchid Avenue to one side and Surfers Paradise Boulevard on the other. The \$700 million Surfers Paradise Hilton is expected to open in 2010.

SOLETANCHE BACHY MENARD JOINT VENTURE ROLE

The basement car parking space is being constructed using diaphragm wall and the innovative top-down construction method. The technique will achieve a fully water-tight basement and create better quality foundations for the towers. The other significant advantage of this method is that substructure and superstructure work can be carried out at the same time, decreasing the construction time of each of the towers by almost six months. The construction technique was last used in Surfers Paradise in the construction of the transit centre in 1993 and the 50 Cavill Avenue office tower in 1991. The basement, the deepest on the Gold Coast, will be 18 metres in depth and the foundations will reach to a depth of 43 metres. Raptic Group has employed specialists Solétanche Bachy and Menard Bachy to undertake the construction of the diaphragm walls, as the support walls of the basement.

The specialist geotechnical works include :

- Preparation works, including boundary stabilisation and pile extraction.
- Installation of 378 linear metres of diaphragm wall up to 43m deep, with a total area of 15,300m² of wall 600mm & 800mm thick. A waterstop joint is being installed full length of excavation.
- Installation of 129^{no} 600mm, 800mm & 1500mm barrette foundations with precast or steel plunge columns, with a total area of 16,300m².

The diaphragm walls are constructed in discreet panel lengths ranging typically between 2.7m and 7.0m using purpose built grabs. Excavation is carried out using 3^{no} suspended mechanical and 1 no hydraulically operated grabs. Standard grabs range in weight from 8-20 tonnes. The grabs are mounted on 80-120 tonne hydraulic base crane. Excavation for the diaphragm walls and barrettes is proceeding through sand, peat, clay and argillite with a maximum rock socket of 1.1m. As the peat contains some woods pieces, an airlift pump has been used to remove suspended material from the slurry.

The Boulevard Tower is due for completion early 2009, followed by the Orchid Tower in early 2010.

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