

# CENTRAL STATION, HK

## SINGLE BORE MULTIPLE ANCHORS



**MENARD BACHY**



**Client:** Mass Transit Railway Corporation    **Contractor:** Aoki Corporation    **Anchoring Design:** Keller Colcrete Ltd  
**Consultant:** Robert Benaim & Associates    **Specialist Contractor:** Menard Bachy Pty Ltd

### THE PROJECT

The Hong Kong Central Station forms the terminus of the airport express line linking Hong Kong Island and Kowloon to the new Chep Lap Lok airport. Built in reclaimed land off the old harbour front of Hong Kong Island, the 15m deep excavation was to have been braced, but a temporary anchoring solution offered improved working space and was economically viable. Work commenced in August 1996 with completion of stressing in January 1997. Anchors were removed during the next 6 months in co-ordination with the permanent construction.

### MENARD BACHY'S ROLE

In advance of the main works the JV demonstrated that loads up to 3000 kN were achievable in difficult ground conditions. The contract also required that all anchor strands be removed from the excavation.

Under a licence agreement in conjunction with the owner of the patented SBMA anchoring system, the JV designed, installed and tested to prove that RMA removable anchors were technically and economically viable.

The main works involved the design, drilling, installation, stressing and removal of 460no. SBMA type anchors up to 67m long. Five rows of anchors were used: the top two rows were founded in medium dense marine sands with working loads up to 1400 kN, with the lower three rows having their 2000kN working loads distributed into completely decomposed granite (CDG) when installed under a head of 18m of water. Up to five drill rigs using duplex drilling techniques produced the average 39m long hole for installation of the multiple-strand anchors which were stressed using specially developed twin strand multi jack stressing heads.

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