

WALSH BAY REDEVELOPMENT

SYDNEY HARBOUR, AUSTRALIA
FREYSSIMIX JET GROUTING AND MINIPILES



Client: Walsh Bay Finance (Mirvac / Transfield Joint Venture)
Design Consultant: Ove Arup Partners

Specialist Contractor: Menard Bachy Pty Ltd

THE PROJECT

The Walsh Bay Redevelopment is situated on Sydney Harbour adjacent to one of the world's most recognised structures the Sydney Harbour Bridge. Walsh Bay was first developed in the early 1900's with a series of piers being constructed to handle shipping cargo, and will now be the site for spectacular residential apartments constructed on a new wharf and renovated adjacent foreshore buildings.

MENARD BACHY'S ROLE

Menard Bachy were awarded a multi-faceted geotechnical sub-contract for permanent and temporary works that included the modification, remediation and retention of ground and foundation structures directly beneath the shoreside façade.

Work commenced in July 2000. Piling through existing street pavements with restricted access, difficult ground conditions and environmental considerations of adjacent Sydney Harbour made for a challenging phase of work.

Menard Bachy instigated various design modifications to replace post-tensioned 600mm and 1200mm dia. bored piles needed for a temporary steel facade support structure. Minipiles and soil-mixed columns of up to 800mm diameter were installed, saving weeks on the construction program.

Freyssimix columns also provided permanent underpinning of the entire 240 metre long façade supporting the brickwork structure. The soil ranging between 2 and 15 metres deep was treated with cement grout to provide a minimum of 5 Mpa insitu strength with strengths upwards of 10MPa being regularly achieved in the marine sediments

This Freyssimix jet grouting process involved the formation of a continuous wall of grout columns under the existing footing using pressures of up to 500 bar. The existing timber piles are encapsulated within the grouted soil mass. The contiguous grout columns will also create a hydraulic cut-off whilst facilitating excavation in loose ground during stages of basement construction

Versatility of this system over conventional piling techniques was demonstrated on this restricted site with remote batching and pumping facilities 200m from the soil-mixing operations.

60^{No} temporary 45 tonne rock anchors were drilled through the façade footing at 45^o and retain the lower section of the wall during excavation of the new shoreside basement. These anchors range in length between 10 and 30 metres penetrating a number of difficult drilling layers before finishing with a 5 metre bond zone into sandstone.

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