



BARANGAROO SOUTH STAGE 1A

Diaphragm Wall & Rock Anchors

AUSTRALIA



Owner

Lendlease Developments

Engineer

Coffey Geotechnics

General contractor

Lendlease Project Management

Period of works

January 2012-December 2012

Main figures

Diaphragm walls

117# panels

4m to 6.8m in width

3m to 33m in depth

11,000 m² of 1,000mm wall



Safe lifting of the reinforcement cages



Project description

Barangaroo Stage 1A is the development of Sydney's former container terminal on the western side of Sydney's CBD. It consists of the construction of three commercial towers, which will house more than 15,000 employees. The towers will be constructed upon a three storey basement structure, which will be used primarily for car and cycle parking. The precinct will also feature apartments, cultural facilities, shops, restaurants, a hotel and a public realm.

Ground conditions

Located along the shore of Sydney harbor, the history of the site is rich: it was used as a timber piled wharf at the beginning of the century and later on as an old Gasworks coupled with the known presence of buried asbestos which introduced some significant geotechnical & environmental challenges.

Solution

Menard Oceania (MO) was contracted by Lend Lease for the \$43.5M Design & Construct of the Perimeter Retention Wall using Diaphragm Wall technique retained by some 500 anchors up to 80 meters long. The retention would form the basement of the commercial towers. The Diaphragm Wall consisted of 117 panels ranging between 4m to 6.8m in length and 3m to 33m in depth.

MO used a combination of four conventional grabs and a Hydrofraise cutter to achieve the excavation of the Diaphragm Wall ahead of schedule.

An added complication to the scheme was the construction of the diaphragm wall over and around the future Sydney Metro Corridor, in which no steel reinforcement could be used. To solve this, MO designed & constructed "soft eyes" to substitute the steel reinforcement with fiberglass reinforcement and a number of removable SBMA® anchors to ensure removal of all tendons within the future alignment of the Sydney Metro.

A section of the D-Wall was also constructed through the existing caisson units, part of the historical quay wall. The caisson units had to be cored out using a 2m diameter core barrel mounted on a BG piling rig, creating a corridor through the caisson.

Sustainable development

All the 50MPa readymix tremmie concrete supplied to site met the Green 5 Star specifications by use of carefully designed and tested combinations of recycled waste fly ash and furnace slag.