

# Maritime work

Piles - Vibroflotation - Vertical drains - Jet grouting - Sheet piles - Civil engineering

## CUENCA DEL PLATA TERMINAL

MONTEVIDEO - URUGUAY



### Constructing an extension to the Cuenca del Plata port terminal as a general contractor



*On the left, the first few metres of the quay are operational while work continues on the rest of the structure, without any disruptions to traffic in the port*

**S**oletanche Bachy, in a JV with Saceem, was awarded the turnkey contract for the construction of the extension to the Cuenca del Plata container terminal at the port of Montevideo. The extension to the existing quay comprised a new Danish quay 350m long, 35m wide, with a draught of 14.5m, as well as an 85,000m<sup>2</sup> container storage area.

CLIENT:	TERMINAL CUENCA DEL PLATA S.A.
OWNER:	KATOEN NATIE/ANP (NATIONAL PORT ADMINISTRATION)
CONTRACTORS:	SOLETANCHE BACHY (MAIN CONTRACTOR)/SACEEM
WORKS TIMEFRAME:	JANUARY 2007 - SEPTEMBER 2009

#### MAIN QUANTITIES:

- 350m of Danish quay
- 85,000m<sup>2</sup> of container area
- 244 driven metal piles (Ø 1,000 and 1,100mm)
- 1,000,000m<sup>3</sup> of vibroflotation
- 80 jet grouting columns (depth 26m, Ø 800mm)
- 32 x 12m sheet piles and 6 x 6m sheet piles
- 5,500 vertical drains (depth 32m)
- 6 inclinometers measuring 20 to 40m in length

### Reinforcement of the existing quay

Initially, jet grouting columns were installed in order to reinforce the foundations of the existing quay, which was built almost 100 years ago. A curtain of sheet piles was also constructed at the end of the quay to avoid any risk of undermining during the dredging phases.

### Storage area

The storage area was reclaimed from the sea using 1 million m<sup>3</sup> of shell sand dredged from the River Plate and then improved by vibroflotation. In addition, 120,000 metres of drains were installed in order to complete consolidation of the clay bank along the length of the existing works as it could not be dredged.

### Extension to the quay

The Danish quay principle, i.e. constructing concrete slabs on piles, was chosen for the extension to the quay due to its non-invasive geometry and its easy interface with the existing quay. The new quay features 4 lines of 60 driven metal piles measuring 1,000 and 1,100mm in diameter.

### An adapted method

The construction method chosen enabled disruptions to the port operations to be minimised. All the construction phases were carried out from a mobile platform, laid out along the line of the quay's piles. A special platform was designed that featured neither bolts nor fastenings; it was laid on the piles and could be moved in less than 3 hours. Initially, the piles were driven in using a vibrating hammer and were then driven to refusal using a 10-tonne



*Vibroflotation in order to consolidate the reclaimed area*

hydraulic hammer. Once the piles had been set to the correct level, the platform could be moved along the line. The quay's framework generally consisted of prefabricated slabs and beams. The last stage involved the civil engineering teams, who cast the final quay prior to installing the various apparatuses and handing the quay over to the operator.



*Constructing the quay's framework with prefabricated slabs and beams*

*Driving in the piles from the mobile work platform using a vibrating hammer*