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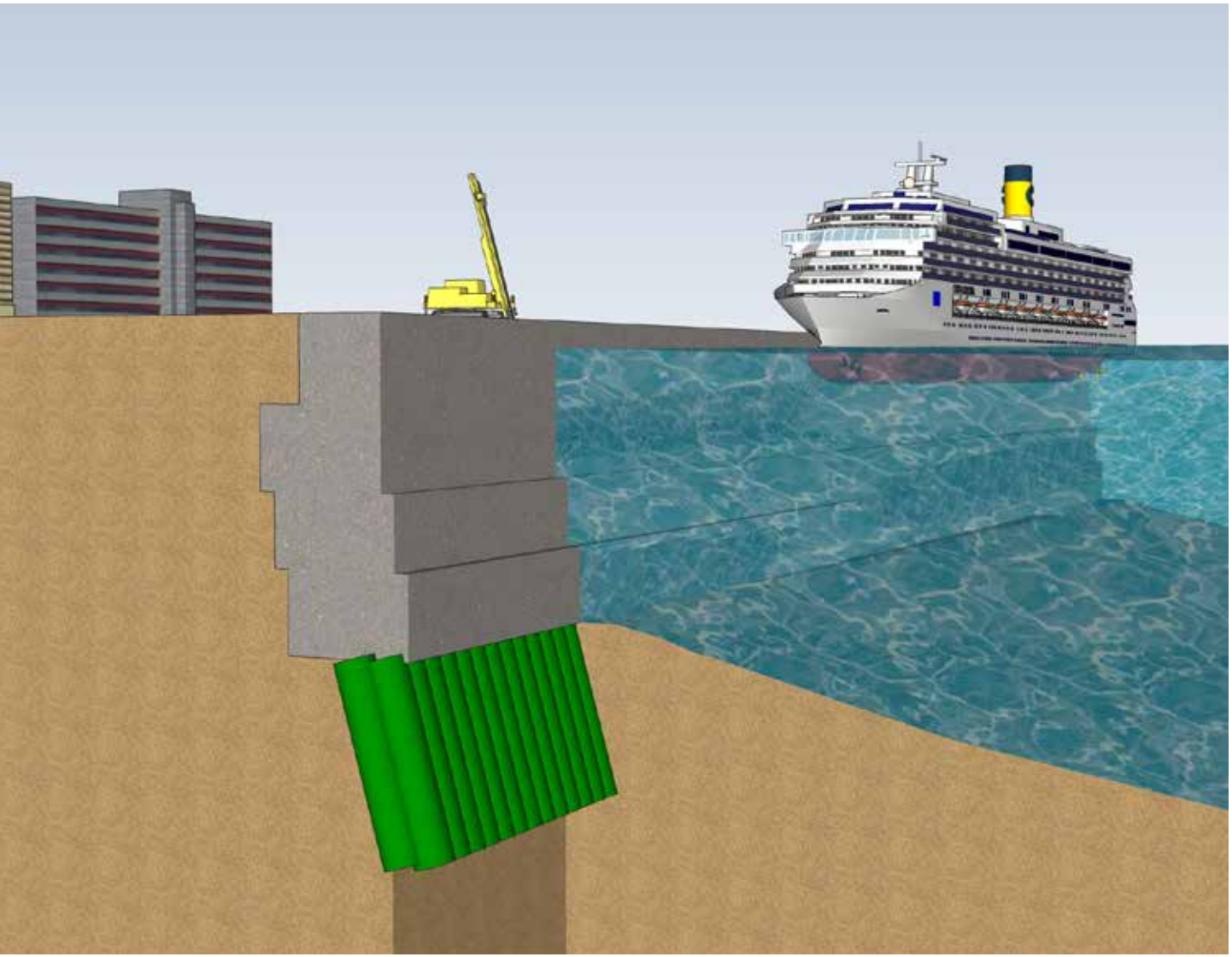
ROCK - SOIL TECHNOLOGY AND EQUIPMENTS

PACCHIOSI DRILL

CONSOLIDATIONS



MAHON HARBOUR (MINORCA - SPAIN)

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PROJECT:

Consolidation of foundation soil in the dock area of Mahon harbour (Minorca) with Jet Grouting technology.

PERIOD OF EXECUTION:

November – December 2000

CLIENT:

Ferrovial-Agroman

Fig. 1. P 1500 EC drill rig on the wharf.

Stratigraphic profile of the wharf.

The stratigraphic sequence involved by the work consists of:

- a road paving: from 0 to 0.2 m;
- a coarse buildup material: from 0.1 to 1.2 m;
- a concrete blocks: from 1.2 to 9.2 m;
- a masses of limestone rock immersed in a sandy-silty matrix: starting from 9.2 m.

Purpose of the work, difficulties and solutions applied.

The Port Authority of Mahon (Minorca, Spain) undertook works to dredge the sea bottom near the wharf area of the port, so that large tonnage vessels could dock. The bottom had to be deepened by about 1 meter (from –9 to –10 m from ground level) in two different sections, respectively 40 and 45 meters long. It then became necessary to consolidate the bottom between the depths of –11.70 and –8.20 m, setting the columns 1 meter within the wharf structure.

Description of works.

The method used for the works of consolidation was **Jet Grouting Pacchiosi System 1 (PS1).**

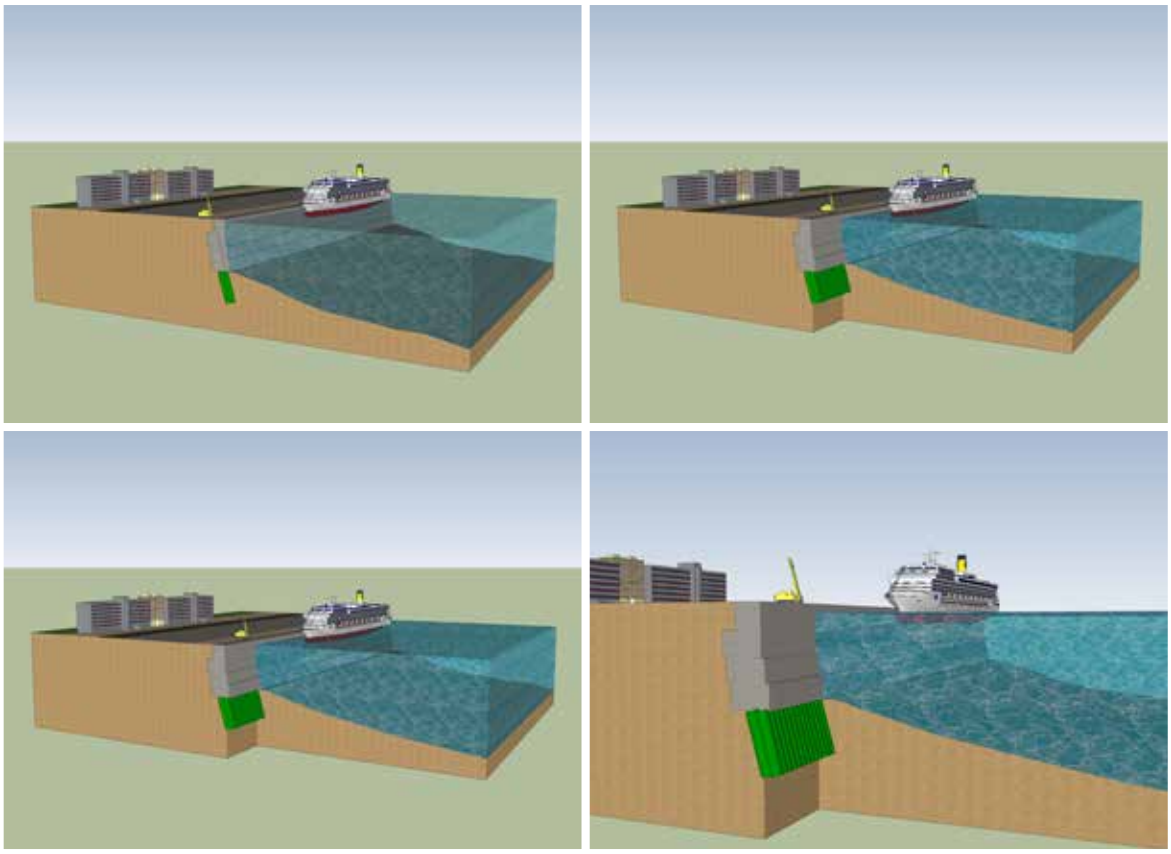

Fig. 2. Sketches of the intervention.

The treatment was performed with two rows of Jet Grouting quincunx columns, parallel to the line of the dock; the holes in the outer row had to intercept the foot of the wharf structure at a maximum distance of 30-40 cm from its outer row.

Technical features of the works:

- a space between the two rows of columns: 0.5 m
- a angle: 15° – 18 °
- a spacing: 0.6 m
- a minimum diameter: 0.7 m

Fig. 3. P 1500 EC drill rig during Jet Grouting.

Two different batteries of rods and drilling tools were used, one for drilling the holes and the other for the injections. The perforation was done with a down-the-hole hammer with air circulation, equipped with a 220 mm bit to facilitate subsequent laying of the injection battery and circulation of the injection fluids. The injection was made using a battery of rods for the PS1 system of Jet Grouting PS1, equipped with a triple blade measuring 101 mm diameter (Fig. 3).

Fig. 4. View of the worksite.

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