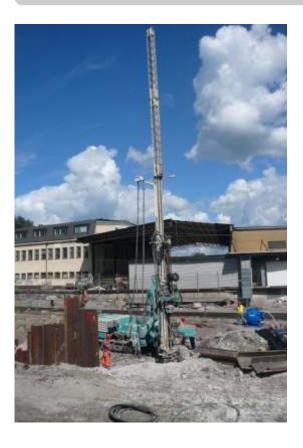
Vertical Jet Grouting



PROJECT

NORRA LÄNKEN LOT 51 SWEDEN TUNNEL VÄRTAN JET GROUTING



PROJECT NAME

Norra Länken Stockholm Tunnel Värtan water tightening of moraine soil against base rock by means of Jet Grouting

CLIENT

VÄGVERKET SWEDEN

ENGINEER

VÄGVERKET

GENERAL CONTRACTOR

HOT Joint Venture Hochtief AG HODEN AB

SPECIALIST CONTRACTOR

RODIO Geotechnik AG

CONTRACT VALUE

EURO 1.20 Mio. CHF 1.92 Mio.

BEGINNING OF WORKS

June 2008

END OF WORKS

October 2008

■ JOB DESCRIPTION

The Värtan tunnel, as a part of the new northern road bypass of Stockholm (The Norra Länken) it's an open pit, partly crossing soft soils, between two rock tunnels. The performance of Rodio includes the execution of Jet Grouting vertical columns (1.60 m) for the water tightening of the soil (moraine) between the foot of the sheet pile wall and the sheet rock (hard granite). Before starting with Jet grouting, every second sheet pile, a steel pipe (140 mm) had been welded to the sheet pile and rammed together just before the top of rock. The soil is generally made by soft to half compact clay, the so called Lera. The last 2-3 meters above the base rock are made of high permeable sandy gravels (friction moraine). The bottom of excavations lies on some extent a few meters under the foot of the sheet piles. The purpose of the Jet Grouting is not only water tightening but also the strengthening of the loose soil up to the rock. To achieve the required column diameter of 1.60 m, here the DUPLEX Jet Grouting method (RODINJET 2®) was chosen. Following this method, the high-pressure cement grout jet that cuts the soil, is coated by an air jet to increase its action radius.

■ WORK QUANTITIES

A total of 2.000 Meter of vertical jet grouting columns Ø 1.60m



RODIO GmbH Spezialtiefbau Siemensstraße 2a D-86356 Neusäß T +49 821 450 428 0 F +49 821 450 428 20 E-M admin@rodio.de www.rodio.de



RODIO Geotechnik AG In der Luberzen 17 P.O. Box CH-8902 Urdorf ZH T +41 43 500 09 30 F +41 43 500 09 31 E-M admin@rodio.ch www.rodio.ch





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■ MAIN EQUIPMENT

- 1 Drill rig Casagrande C8 Super
- 1 full automatic mixing plant type MA 004
- 1 high pressure pump type Techniwell TW 400
- 1 Air compressor Atlas Copco XAHS 365

Full automatic recording of drilling and jet grouting parameters by means of LT3 LUTZ System.



Casagrande C8 Super drill rig at work



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