wassara

STRAIGHT FORWARD DRILLING

WASSARA'S NEW GROUND ENGINEERING HAMMER - TESTED IN SÖDERTÄLJE CANAL

Wassara´s new hammer developed specifically for Ground Engineering was tested in a casing advancement application during dredging works for widening of the Södertälje canal in co-operation with Züblin Scandinavia AB.

Challenge/Solution

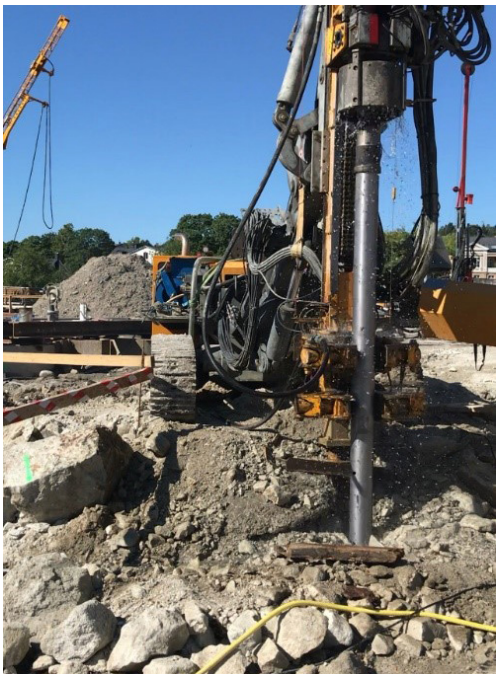
The expansion of the existing canal lock chamber in Södertälje includes the construction of two new lock-gates. Such work typically entails ground stabilization activities such as anchoring and jet-grouting.

Ground conditions present were typical for Swedish esker with highly variable conditions and layers of singular grain sizes and boulders. In addition, in some areas there were residual materials left during the construction of the existing lock. This meant that any boreholes couldn't be left open without any kind of wall reinforcement. The solution was to advance casing to the required depth until time came for the next stage of either jet-grouting or anchoring.

The Wassara approach was the preferred method used due to the formation being water drenched and consisting of high permeability layers.

Drilling conditions

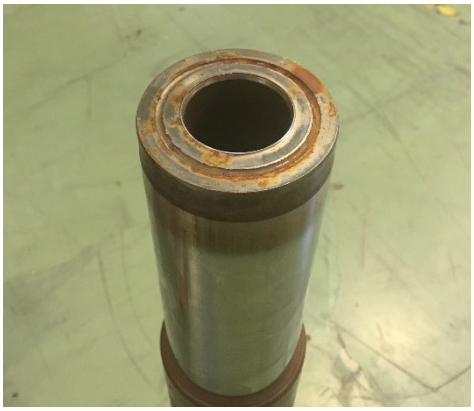
The overburden consisted of typical Swedish esker with silt, sand, gravel, boulders and horizontal layers of singular grained material. Boulders of up to 1.5 m diameter were encountered.



Wassara's W120.G3 hammer in place and ready

Project Size and Construction Program

The so-called 'Mälarprojektet – del Södertälje Kanal och Sluss' is a large infrastructure project aimed at increasing the existing canal capacity both by enlarging the lock chamber and widening of the sailable segment. LKAB Wassara were involved in the project works between April and September 2018.



Piston after 2 500 meters of drilling

Results

The new W120.G3 hammer performance was approved by the drilling personnel on site. After 2 500m of drilling, the hammer was refitted with new seals while most other moving parts were still in great condition.

The larger piston did not show any signs of impact deformation which was otherwise present on the standard W120 due to air-DTH bits (adapted for Wassara drilling) being used.

Furthermore, the hammer had an increased water flow which was a positive aspect from the drillers point of view as cuttings were removed more efficiently.

Equipment used	
Hammer	Wassara W120.G3
Casing system	Maxbit Mitsubishi
Pump	Hammelman HDP 122-326
Rig	Liebherr
Casing	168.3 OD mm
Drill rods	114 mm
Bore hole length	~30 m
Scope of drilling	2 500 m
Formation	Esker, stratified sands, gravel and large stones (up to 1.5m in diameter), solid rock.
Project time	April 2018 – September 2018