

# WIDENING OF JULIANA CANAL

The Juliana Canal is a very important navigation route in the Netherlands, and one of the most important waterways in the industrial areas of Benelux. It is a 36 km long canal, providing connection between the Rhine delta and southern Belgium. Due to increasing demand for water transportation in Europe, this canal had to be enlarged for bigger ships and barges.



## PROJECT

Widening of the Juliana Canal

Area: 250,000 m<sup>2</sup>

Contractor: DEME

## LOCATION

Netherlands

## PRODUCTS

BENTOMAT® 4000 GCL

## CHALLENGE:

This was a large challenge, because a lot of the canal is located well above built-up areas. Additionally, all construction works had to be done whilst regular shipping continued, and continuous monitoring of the permeability of the canal had to be provided.

## SOLUTION:

An innovative and effective technique was designed, to seal and reinforce the canal bed. A special combination of gravel, rock layers and bentonite mattresses, consisting of double-layered geotextile filled with bentonite, was applied. The new canal bed was constructed by using three special types of pontoon, which carried out specific parts of the building process. The first pontoon was responsible for dredging the surplus ground to the required depth. Then it used a special gravel/bentonite mixture to provide watertight joints. The second pontoon, called the 'Matador', was then responsible for laying the bentonite mattress. This pontoon was built specifically for this kind of work, and was equipped with two cranes. The first crane lifted a roll of the bentonite mattress, which was attached to the guiding frame. This frame and crane unrolled and laid the Bentomat on the canal bed. For the protection of the bentonite mattress on the canal bed, the second crane dumped two layers of gravel on it. This work was done by a special chute moving from side-to-side to lay gravel on an even level. The third and last pontoon was responsible for applying a layer of rock on top of the gravel. These layers of gravel and rock on top of the Bentomat, were applied to protect the canal bed from turbulent water movement.

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### RESULT:

The widening of the canal will take until 2017. On completion of the project, bigger vessels, up to 190m in length, 11,4m wide and 3,5m deep will be able to navigate through the enlarged canal.

