

Secumat®

Erosion Control in a Drainage Channel

Project name
Heidlandgraben, Heykenauweg, Hamburg, Germany

Products
Secumat® 601 G4
Secutex® 301 GRK 5 C



 Naue



Fig. 1: Cutting of Secumat® on site



Fig. 2: „Interlocking“ of the topsoil with the artificial root network of Secumat® on the slope

Challenge

While expanding the surface drainage of an industrial area in Hamburg-Harburg, the Heidlandgraben was expanded. The cross-section of the drainage channel had to be given a larger volume in the confined space between the plots of land and thus be able to hold more capacity. For this reason, it was necessary to make the slopes relatively steep. The subgrade formed a sandy subsoil, on which the topsoil for the greening required additional support against surface-parallel erosion phenomena.

In spring, northern Germany often experiences heavy rainfall, which also in Hamburg repeatedly leads to severe erosion phenomena (e.g. groove or surface erosion) on newly formed slopes. As the construction of the new cross-section of the Heidlandgraben took place directly after the high-risk winter period, more frequent erosion damage was to be expected.

Solution

To protect the Heidlandgraben against erosion damage, the client decided to use the Naue erosion control system. A permanent erosion control mat with an extruded polypropylene monofilament core from the Secumat® product group was used.

The erosion control mat was cut to size on site to the appropriate length for the slope (plus anchor trench). Due to its low weight, the material was installed by hand. The backfilling was carried out using a long arm

excavator from the accessible side of the channel. Armourstones were placed in the bottom of the channel. To effectively prevent the sandy subsoil from being washed out through the coarse backfill even in the event of a substantial rise in the water level, a Secutex® separation and filter nonwoven was installed on the subgrade in advance.

The artificial, UV-stabilised root network of Secumat® products provided better support for the topsoil on the steeply formed slope flanks of the trench – especially during the construction phase, but also permanently after greening had taken place.

The positive effect of Secumat® was already evident during the construction phase. During heavy rainfall events, the difference between embankment areas already finished with Secumat® and topsoil and the areas not yet worked on became clear. On the slopes that had already been profiled but not yet covered with Secumat® and new topsoil, deep erosion grooves formed in some cases due to surface water collecting and running off, while the areas newly constructed with Secumat® did not show any significant erosion.

After completing the construction measure in 2007, the vegetation was able to establish itself on the embankments within a very short time. Even today, the slope flanks of the Heidlandgraben are very well protected by the installed Secumat® product and show no erosion damage.



Fig. 3: Erosion-protected Heidlandgraben after completion with Secumat®