Slope and riverbed protection with Incomat® Flex

*Installation and filling of **Incomat**® Flex*

Situation

Changes of discharge and flow conditions are expected in the river Meuse between Belgium and the Netherlands due to a widening of the riverbed. The new hydraulic situation, as well as the common interplay of flood and low water, have significant influence on the continuously varying shape of the channel. Possible erosion and sedimentation zones had been determined by numerical analysis. The river section between km 38.1 and km 38.9 near Berg aan de Maas was considered to be at risk from erosion. Measures had to be taken to avoid a destabilizing of the steep river banks and the subsequent endangering of the nearby residences.

Solution

A technical solution to limit the scour depths was required. The slope protection should be able to withstand occurring scours and stop progressive erosion of the riverbanks. For logistical reasons, conventional methods such as armor stone revetment would have been too expensive. Hence an innovative solution, comprising the use of the geosynthetic concrete mattress **Incomat®** was developed by a close cooperation of Van den Herik Sliedrecht and HUESKER Synthetic. The concrete mattress was **Incomat® Flex 20.115** used in combination with the polypropylene woven **HaTe® PP 105/105 DW**. This mattress has an average thickness of 15.5 cm and is water permeable due to regularly arranged filter-points. Thinner webs characterize the pillow-like cross-sectional geometry. Predetermined breaking zones give the system a slight flexibility, which allows adaption to possible future settlements of the subsoil to a certain degree. A polypropylene woven geotextile was fabricated and attached to the bottom of the mattress to support the anchorage and to ensure long term tensile support even in the case that the

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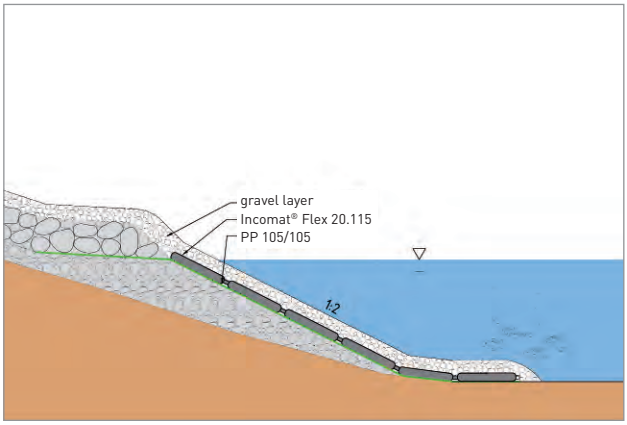
Revetments

Hydraulic Engineering – Rivers and Lakes



Schematic cross section


***Incomat®** Flex upon completion*


Factory prefabrication of panels


Installation and filling

upper woven layer of the concrete mattress becomes damaged, e.g. due to abrasion.
To save time during construction of the 800 m long river section, 16 large-scale, prefabricated panels were delivered to site. The panels, with a length between 45 m and 65 m were laid out, anchored and filled with flowable concrete via a temporary construction road in the riverbed.

Advantages

A conventional riprap with rocks of a weight up to 3 tons could be replaced by a coherent revetment with **Incomat® Flex 20.115**, which is more economic and offers an equal degree of resistance against hydraulic loads. Filling of the geosynthetic concrete mattress with flowable, fine grained mortar could be executed without problems, even in sections below the remaining water level.

Project:	Slope and riverbed protection
Location:	Berg aan de Maas, NL
Client:	Rijkswaterstaat
Construction:	Comb. Liebregts BV, Van den Herik BV
Construction period:	June/July 2012
HUESKER Products:	**Incomat® Flex 20.115** **HaTe® PP 105/105 DW** **HaTe® nonwoven E 650**

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DAP-PL-3226.00
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