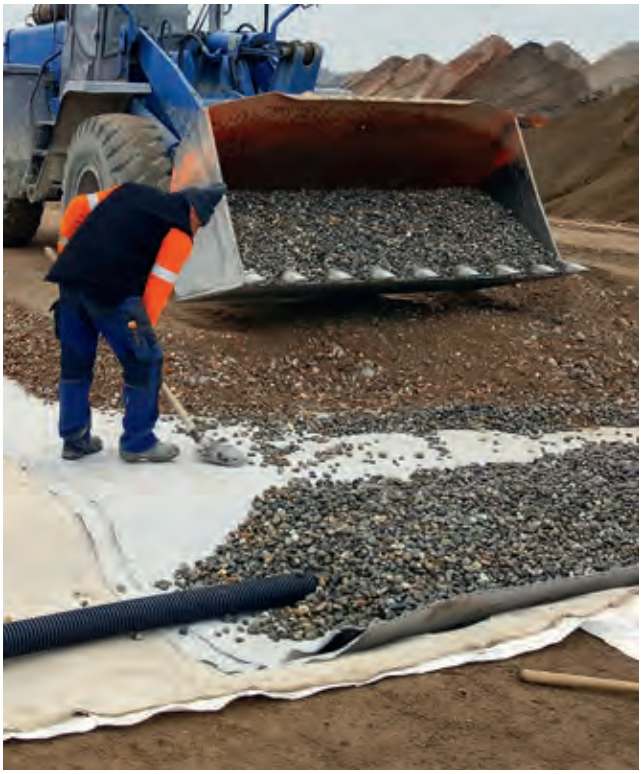
APPLICATION
in practice

Constructing a sealed area for rubble storage

Construction period:	September 2016
Site location:	Kieswerk Hardt GmbH & Co. KG
System:	BEGRID TG 30 30 S, BETEX TP 50, BENTOMAT LAGA, Fabrinet ZB-E B300Z
Quantity:	Approx. 3,000 m^2
Note:	Geosynthetics as a cost-effective alternative to concrete slab
Contractor:	Hildebrand OHG, 78351 Bodman-Ludwigshafen

Top: A completed section of the storage area.
Bottom left: BENTOMAT LAGA geosynthetic clay liner laid as a sealing layer.
Bottom right: Covering the sealing layer with fill.



Construction of a sealed storage area for the temporary storage of concrete rubble and building rubble.

Advantages of BENTOMAT:

- Evens out any settlement
- Reliable long-term sealing
- No costly and extensive concreting necessary
- Very safe and proven construction method
- High design reliability for the project participants
- Inexpensive and economical system solution
- Ecologically sustainable construction method

BBO (Bodenseekreis Bauschuttaufbereitung GmbH & Co. KG) operates a collection point on the premises of the Hardt GmbH & Co. KG gravel plant. The mineral rubble that is stored here temporarily is used to produce recycled construction materials. The storage and operating area needed to be constructed in such a way that surface water could be discharged and soaked away in a controlled manner.
The original design envisaged the construction of a waterproof concrete slab.

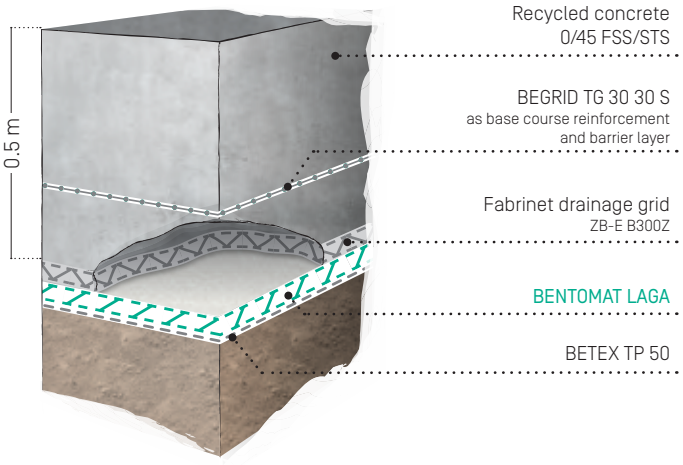
The requirements

The area was originally a gravel extraction site, which was later filled with excavated earth. The soil investigation for the proposed slab construction indicated a fill layer thickness of approximately 7 m and showed that the soil mechanics properties of the fill material vary locally. This meant that the proposed concrete slab would require a sub-base layer that would even out these differences.
Thus, in addition to the considerable costs for the slab itself, there would have been additional costs for excavation, for the removal of the excavated soil, and for the installation of the sub-base material.

The solution

Since the proposed slab was a very high-cost solution, BECO BERMÜLLER worked with geologist Tobias Hoelz, of Geoteam A2 GmbH, Argenbühl, to develop a new proposal that would significantly minimise the amount of excavation and provide a technically equivalent solution using geosynthetics.

The following structure was proposed and presented to the approval authority:



The authorities accepted the proposed pavement design.

The result

As a result of the chosen configuration and layer structure, in addition to the effective prevention of uncontrolled surface water seepage into the subsoil, further disadvantages of a concrete slab were avoided.

The geosynthetics based layer structure can absorb settlement of the subsoil without incurring any damage. With a concrete slab, on the other hand, differences in the settlement of the subsoil could result in cracks forming on the surface of the slab. Water could then penetrate through these cracks or even permeate the entire slab. The water in the cracks would destroy the slab in the long term due to freeze/thaw cycles and, in combination with mechanical stress, would cause it to become permeable.

By using geosynthetics as reinforcing and sealing elements, the construction costs of the project were significantly reduced. And if the structure ever needs to be dismantled in the future, this will involve considerably less effort than the removal of a concrete slab.