GEOSYNTHETICS

CASE STUDY Repair of a cracked road surface using TenCate's NEW PGM-B / Nijverdal, NL

Successful test installation of TenCate Polyfelt® PGM-B in Nijverdal

Challenge
Asphalt interlayer systems have to fulfil the functions of stress relief, barrier and reinforcement. Different raw materials have been used for asphalt reinforcement. It is more and more acknowledged that e.g. PET yarns have certain limitations in asphalt reinforcement due to their relatively low modulus. In many cases glass fibres have been used, now a new and innovative material has proven its suitability: TenCate Polyfelt® PGM-B using high modulus basalt fibres.

Solution
An effective way to avoid cracks is to take up stress by using extremely stiff components. The degree of success is mainly determined by proper bonding and sufficient stiffness. Basalt is an innovative mineral material providing high tensile stiffness and perfect bonding to bitumen, and therefore optimum reinforcing properties. Thus, the multi-layered asphalt system can be reinforced by adequate interlayers if it succeeds in transferring the required forces from the asphaltic matrix to the interlayer and vice-versa.

Benefit
TenCate Polyfelt® PGM-B provides a higher quality surface, longer maintenance intervals and a more-cost-effective way of road maintenance than conventional methods.

Project Data

Application: Road Surface Repair

Location: Nijverdal / NL

Products: TenCate Polyfelt® PGM-B 100/200

Quantity: 2.000 m^2

Owner: Municipality of Hellendorn, Nijverdal

Installer: Esha

Date: September 2016

Protective Fabrics
Outdoor Fabrics
Advanced Composites
Advanced Armour

Geosynthetics
Grass

TENCATE

Road Repair in Nijverdal, NL

Succesful test installation of TenCate's new PGM-B

Installation of TenCate Polyfelt® PGM-B high modulus asphalt interlayer system

Preparatory Works
As usual the first step is cleaning of the milled road surface and the cracks from grains, debris and dust. Poor joints, excessively uneven or badly rutted areas are planed, cracks are filled or regulated using suitable coated materials.

Spraying of Emulsion
Our partner ESHA installed the product in a perfect way using their installation equipment and a polymer-modified bitumen emulsion, C 67 BP Eshalite EM. A special advantage of the basaltfibre turned out to be the optimum adhesion of the bitumen to the reinforcing yarns.

Placing asphalt surface layer and Compaction
A 5 cm thick asphalt surface layer was installed above PGM-B without any problems. Due to the fact that the reinforcing yarns are embedded in the cured emulsion which is softened by the hot asphalt, the bitumen matrix surrounds the yarns and provides intimate contact and a perfect composite behaviour.
The new basaltic fibre has proven its efficiency and easy handling on site.

Advantages at a glance
- High tensile strength / higher stiffness
- Better affinity to bitumen
- 3 functions in one product

On-site adhesion testing
The easy and effective installation has carefully been checked by on site adhesion test according to RSTA code of practice for geosynthetics. In this test a hook of a spring balance (fish scale) is inserted under the centre of the installed Geosynthetic sample. The spring balance is pulled up until the sample just starts to pull loose and the gauge reading is recorded. In the event that 9 kg or more of force is required to pull the sample up from the road surface, sufficient adhesion has taken place and the paving operation may begin. Tests with PGM-B have shown 25 kg which proved the perfect bonding of the layers.

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