

Secutex®

Cycle path on a former railway line

Project name

Heideradweg from Turnow to Weichensdorf, Germany

Construction company (Lot 1)

Eurovia Verkehrsbau Union, Cottbus, Germany
(via Raab Karcher, Cottbus, Germany)

Design/Construction supervision

WTU Ingenieurgesellschaft GmbH, Bad Liebenwerda,
Germany

Client/Builder

Landkreis Spree-Neiße, Amt Lieberose, Germany

Product

Secutex® 301 GRK 5 C



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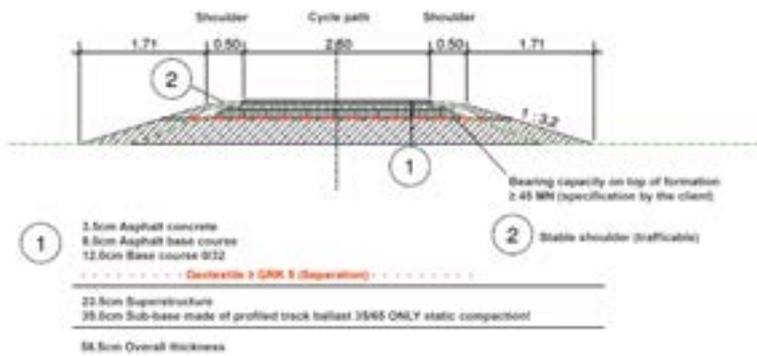


Fig. 1: Cross-section of the planned cycle path



Fig. 2: Test field - Installation of ballast layer 0/32 and compaction (above the nonwoven)

With the construction of the Heideradweg, the district of Spree-Neiße is supporting nature-based and sustainable tourism in the region. The cycle path is a project of the International Nature Exhibition Lieberoser Heide. It is intended in particular to link adjacent projects of the International Nature Exhibition in terms of content. The total length, including roads that have already been upgraded, is approximately 23.6 kilometres. Most of the cycle path runs along the former Cottbus-Frankfurt (Oder) railway line - Lot 1. In the south, it borders on various long-distance cycle paths, and in Oelsen it is to be connected to the existing long-distance cycle path network in the future.

Challenge

It was planned to install a nonwoven with geotextile robustness class (GRK) 4 ($\geq 250\text{g/m}^2$) directly on the statically compacted old railway ballast (35/65). Above the nonwoven, a 12cm thick gravel base layer was planned as a compensation layer or basis for the further asphalt structure (8.0cm asphalt base course + 3.5cm asphalt concrete) (Fig. 1).

However, the use of a GRK 4 nonwoven material - considering the current Code of Practice on the Use of Geosynthetics in Earthworks in Road Construction (M Geok E, 2016 edition) - appeared to be too risky.

Solution

A nonwoven material with a higher geotextile robustness class (GRK) was recommended to the responsible planning office and the client. Thus, a GRK 5 material with a minimum grammage of $\geq 300\text{g/m}^2$ and a puncture force of 3,890N could be used. Due to the significantly higher robustness (approx. 40%) of the GRK 5 nonwoven (compared to the GRK 4 nonwoven an approx. 1,100N higher puncture force), the risk of the nonwoven being damaged by the sharp-edged ballast substrate during the installation and compaction phase and thus losing its permanent separation and filtering function is reduced.

Before including this high-quality filter and separation nonwoven in the tender, the practical suitability of both products was to be proven in a 1:1 trial field (Fig. 2). For this purpose, the Lower Road Construction Authority of the Spree-Neiße district, as the client of the Heideradweg, received two test pieces each of a GRK 4 and GRK 5 nonwoven (dimensions: 3.0m x 6.0m).

Both nonwovens showed no visible damage after the practical test. However, as a not to be underestimated construction site traffic consisting of caterpillars, excavators, lorries, etc. is to be expected on the only 12cm thick gravel base layer until the asphalt base layer is installed, a GRK 5 nonwoven in a roll width of 4.00m was finally included in the tender for safety reasons.

The installation work on the route began at the beginning of 2022. The nonwoven rolls (each with a total weight of approximately 140kg and a rolled-out length of 100 running metres), initially distributed at appropriate intervals on the track, were then rolled out on the compacted track ballast with the help of a wheel loader (Fig. 3).

By end tipping, the contractor applied the ballast base layer directly onto the nonwoven, distributing and compacting it to the required layer thickness using caterpillar technology (Fig. 4).

After installing the asphalt base and surface course with a total thickness of just under 12cm, a black, smooth band runs through apparently untouched nature - already visible today in some areas (see cover sheet).

In future, this unique cycle path will not only attract residents from the immediate vicinity. With the help of a well thought-out tourism concept, cycling enthusiasts from all over Germany will be brought closer to the beautiful region between the Spreewald, the Schlaubetal and the Lusatian Lake District, and the former railway line will be brought back to life.

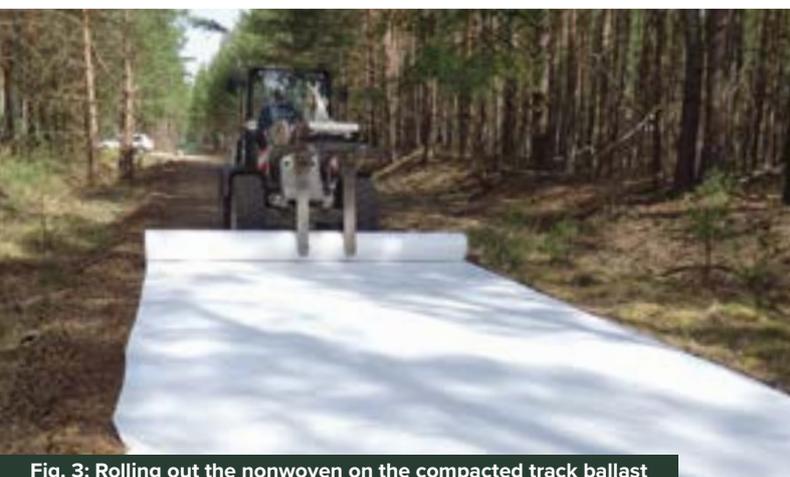


Fig. 3: Rolling out the nonwoven on the compacted track ballast



Fig. 4: Backfilling the gravel base layer