

Structural Drainage

Sprayed Concrete, Deckdrain, Wembley Rail Depot, London, UK



CASE STUDY

Project Description

The Chiltern Railways site near Wembley Stadium in London required remediation works, adding soil bank stabilisation and a new retaining structure to protect the rail network below. The existing top footpath also required reconstruction and stabilisation due to frequent traffic. Chiltern Railways approached TPS Carillion and Shotcrete Services to provide long term and reliable solutions for this site.

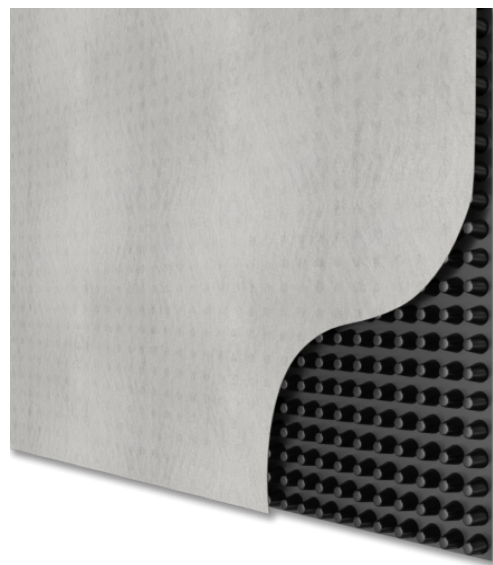
The Challenge

The requirement was to design a retaining structure that would enable fast installation and meet design requirements on this sensitive location. Network Rail safety of workforce measures favoured a sprayed concrete wall structure to reduce the number of operations and possession time. One of the main challenges of sprayed concrete was to produce a cost effective design to meet all the required standard, whilst providing adequate drainage and without having to use multiple geosynthetic layers or large quantities of drainage stone.

Therefore, it was essential to install an effective drainage system to alleviate hydrostatic pressure behind the structure, with weep holes set into the base of the concrete wall to allow the flow of water into the storm drain. The geosynthetic solution required a high performance geocomposite drainage and water barrier that was compatible with sprayed concrete.

Project Information

Client	Chiltern Railways
Contractor	Shotcrete Services
Products	Deckdrain 700S/ST170 & Abseal tape
Quantity	3,000m ²
Benefits	<ul style="list-style-type: none">• All-in-one drainage & barrier• High flow capacity• Excellent bonding with shotcrete• Fast and safe installation



ABG Deckdrain 700S/S170

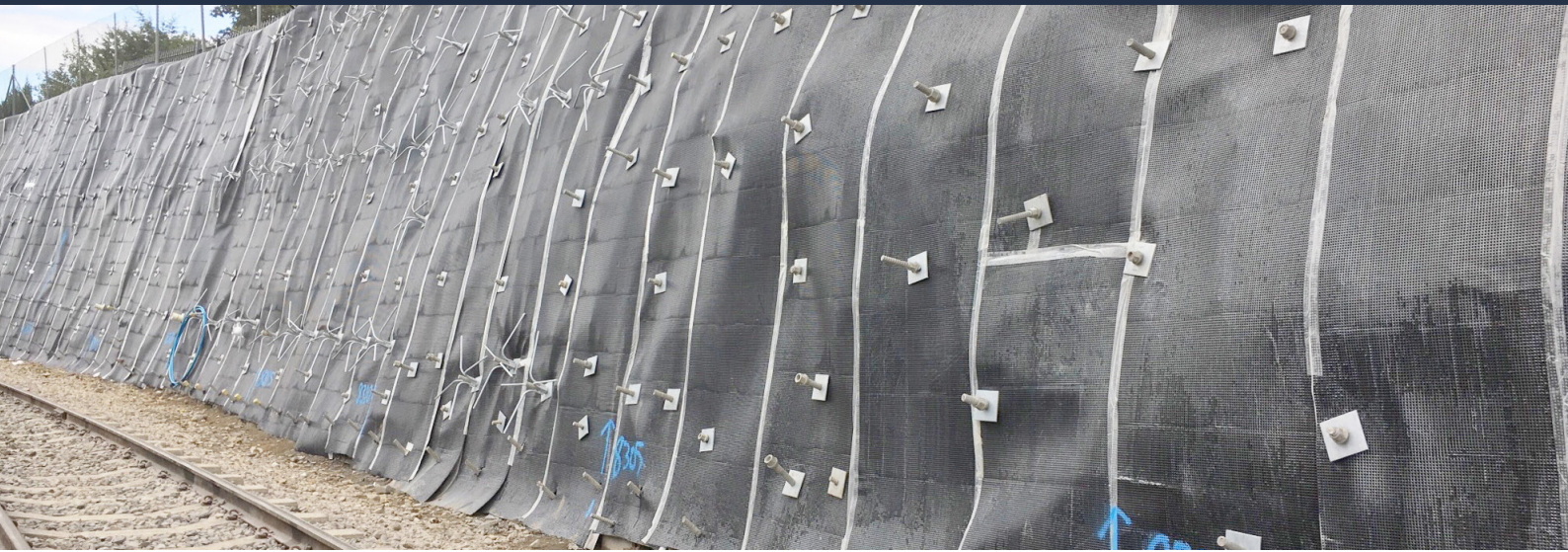
ABG LTD

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The Solution

The contractor Shotcrete Services worked with ABG to develop a geosynthetic solution that would meet requirements, whilst providing the required drainage flow capacity and effective barrier to ensure long term performance. Following a successful trial, the BBA HAPAS certified **ABG Deckdrain 700S/ST170** geocomposite drainage was approved. **Deckdrain** geocomposite, with its impermeable HDPE cusped drainage core, provided an excellent bond with shotcrete. The geocomposite was installed against the stabilised embankment, with spider fixings screwed onto soil nails. A393 mesh and 225mm thick C32/C40 steel fibre reinforced concrete wall was then sprayed to the bank. The **Deckdrain** sheets were sealed with **Abseal Butyl Tape 1S50** and the installation was completed on time. Drainage performance was reported to be adequate.

The ABG Service

ABG provided design assistance and technical support during the design, trial and installation on this project.



Installation trials demonstrated excellent adhesion of the sprayed concrete to Deckdrain



Finished retaining structure. The system using Deckdrain gained Network Rail engineer approval after trial



Deckdrain provides an impermeable skin for the drainage system, preventing ingress of concrete

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