

Railway Drainage

Sprayed Concrete, Deckdrain, Network Rail, Werrington, UK



CASE STUDY



Project Description

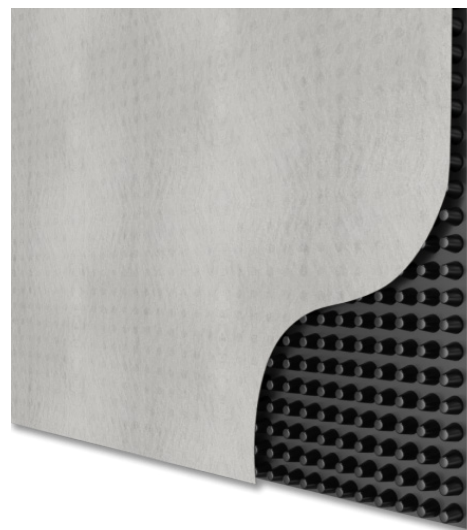
As part of a study into increasing capacity and reducing journey times on the East Coast Main Line (ECML) for long distance, high speed passenger services, Network Rail identified that a new grade separated junction at Werrington would be required. Through option selection process it was determined that dive-under would allow slow moving freight traffic to pass below the ECML. The site is situated at Werrington Junction, 5km to the northwest of the city centre of Peterborough. The existing land was primarily agricultural with a relatively high water table. Network Rail appointed Morgan Sindall to undertake detailed design development and implementation of the scheme who then approached Mott MacDonald and Tony Gee as design partners to undertake the detailed design.

The Challenge

As the new tracks will pass below the ECML at circa 8m below existing ground level, ramps of a suitable gradient (1-in-110) are required to bring the tracks back to the level to connect to the existing railway. The ramps required a solution that considered a number of factors such as construction cost, minimising land take and construction duration. The chosen solution for a section of one ramp was a 60° soil nailed slope with concrete facing to ensure long term stability of the clay naturally present. The challenge was to design a retaining structure that would reduce required excavations, enable fast installation, reduce transport cost, enable substantial carbon savings and meet design requirements on this sensitive location..

Project Information

Client	Network Rail
Contractor	Morgan Sindall / BAM Ritchies
Product	Deckdrain 700S/ST170
Quantity	45,000m ²
Benefits	<ul style="list-style-type: none">• All-in-one drainage & barrier• High flow capacity• Excellent bonding with shotcrete• Fast installation• Significant 55% carbon saving



ABG Deckdrain 700S/ST170
Geocomposite

ABG LTD

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The Solution

The designer worked with ABG to develop a geosynthetic solution that would provide the required drainage flow capacity and effective barrier to ensure long term performance. The BBA certified ABG Deckdrain 700S/ST170 geocomposite drainage was specified for this application. Deckdrain geocomposite with impermeable back HDPE cusped drainage core provided excellent bond with shotcrete, reduced excavation and significant 696t carbon savings. The geocomposite was installed against the embankment and 10m long soil anchors drilled and grouted to achieve required stability. Then two layers of reinforcement mesh were installed and following this a 250mm thick shotcrete wall was sprayed to the bank.

The ABG Service

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



Deckdrain geocomposite, reinforcement and soil anchors Installation



Completed retaining structure



Shotcrete spraying on Deckdrain geocomposite

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