Structural Drainage

ABG Deckdrain, SSTC Phase 3 Soil Nail Retaining Wall, Sunderland, UK

abg creative geosynthetic engineering

Case Study

The Project

The Sunderland Strategic Transport Corridor (SSTC) is a large infrastructure project to create a new section of dual carriageway between the A19 and Sunderland city centre. The £40M investment from Sunderland City Council serves to improve connectivity, reduce congestion and open up the area for regeneration.

Aarsleff Ground Engineering worked with civil engineers Esh Group to value engineer and redesign a retaining structure and slope stabilisation system for a section of the highway passing between the existing Pallion shipyard and the A1231 that runs above the site and over the adjacent Tyne & Wear Metro line.

The Challenge

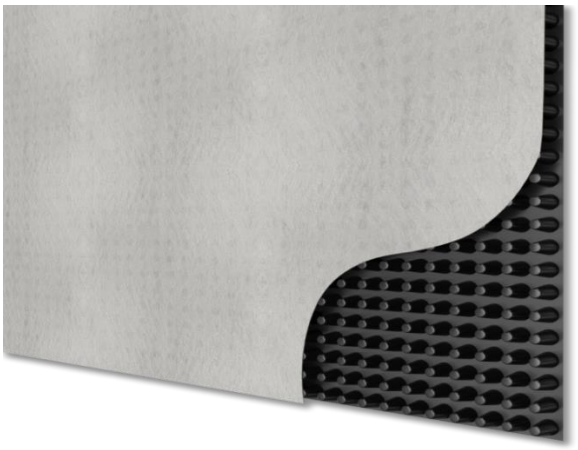
Covering a total surface area of 2,000m², the Pallion soil nail retaining wall construction is one of the largest earth retaining structures in the UK. It is formed at a 70° angle, rising up to 12m high and stretching a length of 250m. The face required an aesthetically pleasing rock/gabion style finish and a solution to prevent rainwater penetrating the stone front, whilst still allowing groundwater to drain away and preventing erosion down the soil slope.

The Solution

Working from the top down, the slope was cut to profile (typically in 1.5m high benches) to enable the soil nails to be installed. Before placing a structural facing of galvanised steel mesh, a single cuspated and impermeable **ABG Deckdrain** geocomposite layer was placed against the slope. The open side of the cuspated drain faces inwards to receive groundwater, and the geotextile thermally bonded to the top of the cuspates prevents washout, blocking larger soil particles

Project Information

Client	Esh Group & Sunderland City Council
Contractor	Aarsleff Ground Engineering
Products	**ABG Deckdrain** 400S/NW8
Quantity	2,000m^2
Benefits	• Essential drainage functions as part of innovative value engineered retaining wall • Separates clean rainwater from groundwater, protecting appearance of wall's front face • Flexible with good surface contact preventing erosion on the soil face • Light-weight and thin profile, quick to install



ABG Deckdrain drainage geocomposite

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from entering and clogging the drain. This allows water to filter freely into the void and down to a collector pipe at the base of the wall.

The impermeable outer face prevents penetration of rainwater onto the steep soil slope and is drained separately down to the toe drain. This provides a barrier against clean rainwater entering the front of the wall and coming into contact with muddy groundwater that would result in staining to the ornamental stone facing.

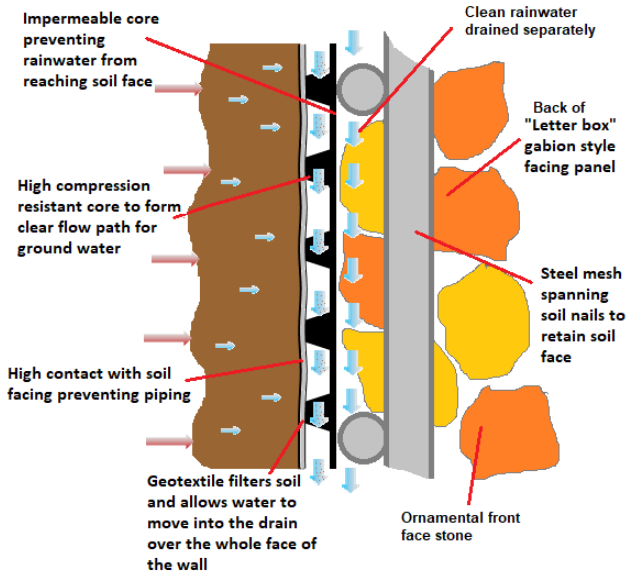
The **ABG Deckdrain 700S geocomposite** has proven compression strength (BBA approved) in order to maintain in-plane flow and withstand the earth pressure at the base of the wall. The flexibility of the **ABG Deckdrain** geocomposite also ensures close contact with the soil over the whole slope, preventing erosion of fines and providing a highly efficient channel for the dispersion of groundwater.

The light-weight **ABG Deckdrain** rolls are easy to install, and were simply unrolled into position from the top of the slope onto the bench below. The structural steel mesh is placed over the geocomposite layer and bolted to the soil nails using large square washers, ensuring the composite is pressed into close contact against the underlying soil.

The remainder of the roll was pinned out of the way and dropped down to the next bench. In this way, the drainage core provided cover against erosion during construction, separating groundwater and rainwater from weakening the soils as each new tier was created.

The ABG Service

ABG Deckdrain is commonly used in Highways construction behind concrete retaining walls and is BBA approved. In this instance, further product functions were realised with the assistance of the ABG technical design service.



Three in one functionality: Deckdrain geocomposite provides drainage, erosion control and a barrier to rain water ingress at the front of the wall

The finished SSTC rock/gabion style faced walls protected and drained with ABG Deckdrain.

Contact ABG today to discuss your project specific requirements and discover how ABG past experience and innovative products can help on your project.

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