Landfill Drainage

Capping, Pozidrain, Lamby Way Landfill, Cardiff, UK

CASE STUDY

Project Information

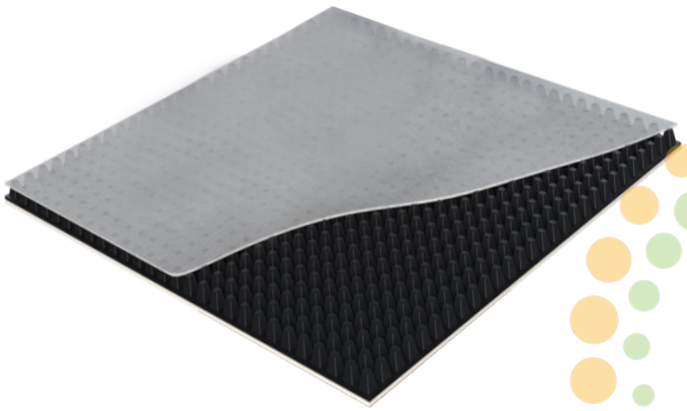
Client	Cardiff Council
Contractor	Walters UK/Ascot/VHE
Products	Pozidrain 4S250D/NW8
Quantity	1,200,000m²
Benefits	• High flow capacity in both directions • Geomembrane protection • Superior frictional performance to ensure slope stability • Rapid installation • Replaced 250,000m³ of drainage stone, increasing available void space

Project Description

Cardiff Council's Lamby Way landfill site is located on the land bordering the mouth of the Rhymney River, and the Severn Estuary foreshore, in the southeast of the city. For more than three decades Lamby Way was the main landfill site for the Cardiff area, not only for the Authority's residential and business waste, but also external commercial and industrial waste, including more than 35 local companies that utilised the landfill site for disposal of waste. The Authority approached Parsons Brinckerhoff to design a final capping system for this environmentally sensitive location.

The Challenge

Over a period of 20 years each completed landfill cell required capping with a permanent geosynthetic capping system and 1m of soil cover. The first capping phase was completed in 1997 and the site needed to be permanently capped and closed by October 2017. The requirement was to minimise or eliminate the use of expensive drainage stone and design a capping solution that would enable fast installation over the large area that is exposed to strong winds. The geosynthetic capping system comprised a geocomposite drainage and protection layer, an impermeable geomembrane and a protection geotextile. A large proportion of each capping phase was required to be constructed on steep slopes where it was necessary to ensure slope stability during construction.



ABG Pozidrain Geocomposite

ABG LTD

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The Solution

The designer worked with ABG to develop a geosynthetic capping solution that would provide effective drainage and frictional performance to ensure slope stability. **Pozidrain 4S250D/NW8** geocomposite drainage layer was specified and installed on top of the 1mm LLDPE textured geomembrane with 1m of soil cover on all capping phases. The Environment Agency approved the design following a successful Pozidrain protection efficiency site trial on the first capping phase in 1997, where the geomembrane was excavated and inspected. Pozidrain samples were taken from the first capping phase to review the long term performance, and the test results on Pozidrain buried for 15 years showed no reduction in performance on any of the properties.

Wide-width rolls enabled rapid installation

The ABG Service

ABG provided technical advice and design assistance on all capping phases. This included shear box testing, slope stability and flow capacity calculations.

Pozidrain installed on top of 1mm LLDPE textured liner

Superior interface friction ensured slope stability

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