

Structural Drainage

Reservoir Roof, Deckdrain G, Cross Hill, Barnston, Wirral, UK



Project Description

Cross Hill storage reservoir in the Wirral, is a unique hexagonal cellular concrete structure originally built nearly 100 years ago and holds 150M litres of potable water. As part of a programme of upgrading to ageing reservoirs United Utilities are either replacing or improving the water proofing protection and drainage to and from the roof. Following a survey of the Cross Hill structure United Utilities elected to utilise the advanced technology of a permanent leak detection system. It was considered that to continually monitor the integrity of the roof would enable speedy identification/location and repair of any faults in the concrete roof.

The Challenge

Traditional refurbishment would involve removing the cover material and the existing protection and then installing a new membrane, replacing the top cover with either the screened original or new materials. A structural survey of the reservoir concluded that, whilst structurally sound, it would not be able to withstand heavy construction loading. An alternative was sought that would allow for the installation of new protection but require only the removal of a part of the top soil cover material, thereby leaving the original membrane undisturbed and removing the risk of unnecessary damage to the concrete roof. The challenge was to find a quickly installed reliable and impermeable sealing system, which can be drained and protected to avoid ponding on a large flat roof without the use of heavy earth moving equipment.

Project Information

Client United Utilities

Contractor Eric Wright

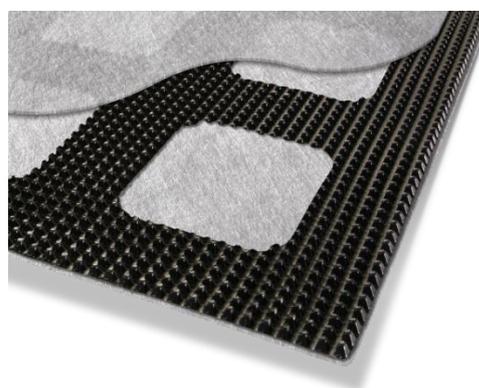
Consultant Jacobs

Products Deckdrain G7SD

Quantity 20,000m²

Benefits

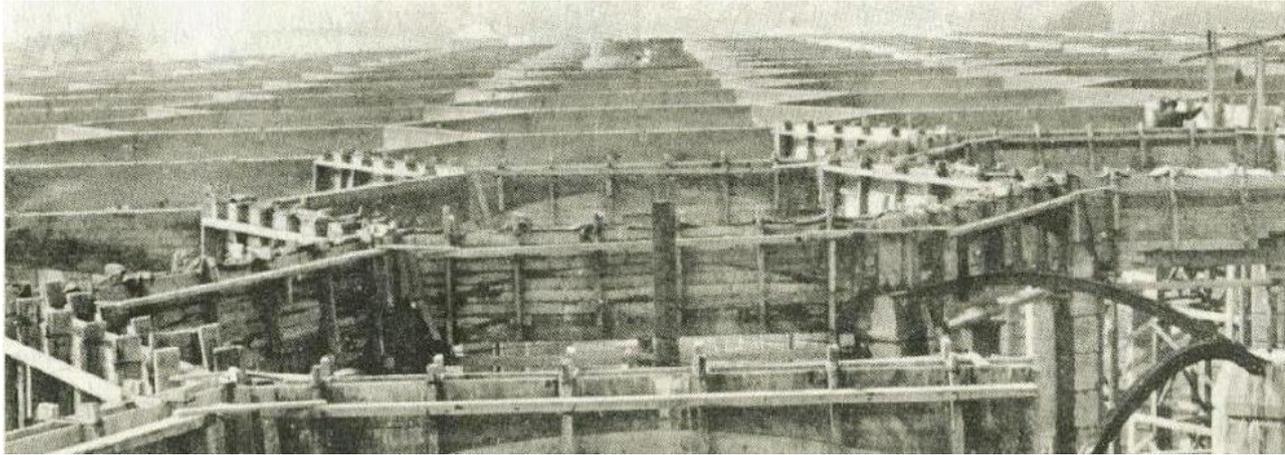
- High in-plane flows and equal drainage capacity in multiple directions
- Lightweight easily and quickly installed, replaces heavy expensive stone
- Protection for sensitive "intelligent" membrane



ABG Deckdrain G7SD

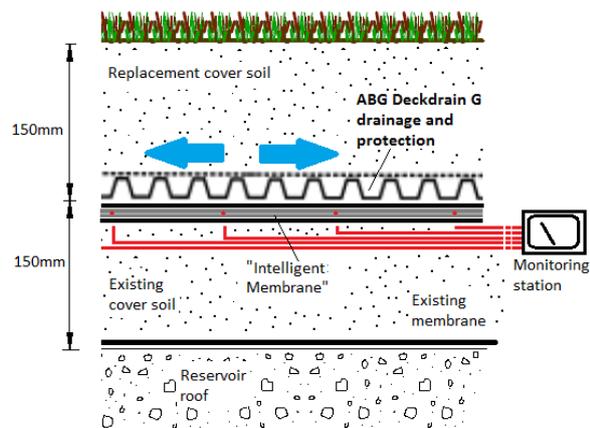
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The Solution

Firstly only 150mm of the 300mm depth of cover soil was removed by hand and the remaining soil was levelled reducing the time taken and avoiding damaging the existing reservoir roof surface. A new Sensor Detection System ("Intelligent Membrane") was placed and protected by **ABG Deckdrain G** multiple direction drainage geocomposite. This replaces the costly and commonly used drainage stone. The old structure needs careful monitoring and the new aerial leak detection system constantly monitors for potential leaks allowing rapid localised remedial action should a leak occur. To reduce the chance of ponding, the lightweight, high flow, **Deckdrain G** overlays the membrane and drains standing water away whilst protecting the membrane from the cover soil and light trafficking. **Deckdrain G** geocomposite is fully compatible with the "Intelligent Membrane" and this ensured rapid installation on this very restricted site.



High flow ABG Deckdrain protects and prevents ponding complementing the "Intelligent Membrane" system

The ABG Service

ABG Provided full product and design support to aid the approval process.



Installing Deckdrain over membrane



Backfill by hand prior to seeding and completion

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