SIKA AT WORK

CHAPEL HOUSE IMPOUNDING RESERVOIR, ULDALE

CONCRETE: Micro-fine cement

BUILDING TRUST

CHAPELHOUSE IMPOUNDING RESERVOIR, ULDALE

View looking along the reservoir

Project Description
Chapel House Impounding Reservoir, which is situated near Uldale in Cumbria, is owned by United Utilities and serves the town of Wigton, a few miles to the north.

Following its 10-year inspection, it was discovered that remedial work was required to ensure the future integrity of the reservoir's dam. All large raised reservoirs in excess of 25,000 cubic metres require an annual inspection by a Supervising Engineer and a more thorough 10-year inspection by a Qualified Civil Engineer. These Panel engineers submit reports to the reservoir's owners detailing any repairs or maintenance work required.

Project Requirements
The cohesive made ground that forms the embankment of the Chapelhouse dam sits on a gravel and broken rock base, and it was the interface between the two that was causing concern. To reduce the permeability and prevent any future seepage, it was decided to construct a 102-metre long slurry wall in combination with a micro cement grout curtain, up to 23 metres deep within the dam, treating the whole dam and not just the interface.

Sika Solution
Ground engineering experts Keller Geotechnique were the Principal Contractor as well as carrying out the ground treatment. They injected Spinor A32 Micro-fine cement from Sika Limited to form the cement grout curtain, using the Tube-a-Manchette (TAM) system.

Spinor A32 Micro-fine cement has excellent injectability and durability, with resistance to aggressive ground conditions. It was pumped into the dam's interior via the TAM system in which plastic tubes were inserted into 110 holes bored at 1.2 metre centres along the top of the dam and across the central spillway. The Spinor A32 penetrated into the grout zone through holes drilled around the circumference of the tubes at pre-determined intervals to form a protective cement curtain within the dam.

Completion of this £1.4 million remedial project has also involved associated civils work including a new road and wave wall, together with repairs to the existing masonry spillway.

Project Participants

Owner:	United Utilities
Main Contractor:	Keller Geotechnique

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