

Post Tensioning Renewal To Four Reservoirs, Northern Ireland



Four tanks were renewed at the Conlig site



Strand cutting was carefully controlled



The live tanks needed temporary tendons



Checking jack extension during stressing



A completed band of tendons

Post tensioning to live reservoir tanks successfully renewed in operation requiring strictly controlled working methods to ensure safety.

Principal Contractor	Graham Structural Repairs
Consulting Engineer	Hyder
Client	Water Service NI
Post Tensioning Specialist	Balvac
Subcontract Value	£300,000
Programme	Aug to Dec 2004

In May 2004 Balvac were awarded the subcontract to renew the post tensioning system at four service reservoirs at Conlig, near Bangor, Northern Ireland. The reservoirs were originally built with bands of post tensioning wires protected by sprayed concrete. In some locations the wires had become badly corroded. The scheme developed by Hyder comprised de-tensioning and removing the existing wires and then replacing them with 15.7 mm diameter plastic coated strands, stressed with Balvac MK4 MUT type anchors. The new strands bear directly on the wall with the wire free to move within the low friction coating during stressing. Depending on the tank water level, it was sometimes necessary to install extra temporary tendons to sustain ring tension during the replacement process.

Developing a system of de-tensioning that was both safe and controlled was of paramount importance. Balvac's method used restraints fixed to the scaffold access bearing against the existing wire band at regular intervals. The old wires were progressively cut at selected positions until the pre-stress was sufficiently lost for the sprayed concrete and the wires to be broken out safely. The resulting recess was made smooth and the new tendons placed in one or more layers then stressed. The new strands have three layers of corrosion protection, the factory applied grease and plastic coating, followed by site applied spray concrete once installation was complete.

Balvac has wide experience in the post tensioning of circular silos and tanks, both new-build and strengthening older structures. Both bonded and unbonded tendons systems are available to suit a full range of applications. This project is a good example of the use of tendon replacement to extend the working lives of old, corroded concrete reservoirs.

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