Bypass Benefits from Hydro-Brake® Drop Technology

Project Profile

Objective

To effectively control surface water flows through a 4-metre drop as part of a major by-pass development and avoid unacceptable environmental damage.

Solution

Hydro-Brake® Drop provided a simple and non-disruptive solution which avoided the need for much greater expense.

Product Profile

- Self-activating system with no moving parts
- Space-saving design
- Avoids noise and vibration that could damage network infrastructure

Find out more at: **www.hydro-int.com**

An unconventional solution to providing vital, low-impact surface water control on one of Britain's largest local authority road schemes was achieved using Hydro-Brake® Drop flow control technology.

A new 7 km bypass was built by Costain at Church Village for Rhondda Cynon Taff Council to reduce traffic disruption on the A473, between Pontypridd and Talbot Green.

The challenges in managing surface water both from natural and developed features were considerable, including run-off from the surrounding hilly countryside, existing drainage from several disused railway installations and groundwater from disused mineshafts. If this had not been carefully diverted around the new road, it could have ponded, and created unplanned standing water or even undermined structures.

"One important problem with a new road like a bypass is the potential disruption to surface water flow in the area," comments Costain's Project Manager, John Lee. "The building of structures which block natural surface water flow lines across the landscape, or flow from existing constructions like roads, has to be carefully planned.

"I had not used the Hydro-Brake® Drop before, but it seems a simple and non-disruptive solution which avoided much greater expense."

"Cutting into old rail ground structures can create all sorts of trouble as no-one knows what is in there, all the records had disappeared. It was much simpler to install the Hydro-Brake® Drop, and with less visual impact too."

John Lee, Project Manager - Costain

Simon Edwards, Principal Engineer, Water and Environment, for Atkins Limited, the consultant on the project adds: "We decided to divert the ground water under the new bypass along a culvert built over an old rail track bed. From there, the water had to descend around four metres to a small local stream bed and then into the River Taff. Uncontrolled, this drop of water would have scoured away the stream bed, and caused unacceptable environmental damage.

"The maximum design flow was 1 m^3/sec through a 600 mm pipe reducing to 450 mm. By inducing a vortex at the lower end of the drop, the Hydro-Brake® Drop provides the energy dissipation which prevents excess flow force at the discharge."

An alternative solution to the Hydro-Brake® Drop had been to build a cascade to take the flow down over successive weirs.

"This would have involved considerable and expensive earthworks through the rail embankment," pointed out John Lee. "Additionally, cutting into old rail ground structures can create all sorts of trouble as no-one knows what is in there, all the records had disappeared. It was much simpler to install the Hydro-Brake® Drop and with less visual impact too."

Hydro-Brake® Drop

In addition to the supply of new equipment, Hydro International's expert service teams provide plant condition assessment and planned maintenance programmes for our wide range of water and wastewater treatment equipment through tailored Service Agreements to meet the needs of each site.

Hydro International maintains a comprehensive and well-managed store of spares for all its equipment. Hydro International's customers can be assured of speedy delivery of plant, helping to reduce the time our customers need to spend sourcing replacement parts.

To enable wastewater and water treatment operators to avoid interruption to their processes during planned downtime, Hydro International offers a full equipment hire service for a wide range of primary, secondary and tertiary treatment plant, which can be operated on a stand-alone basis or integrated with existing equipment.

Hydro International. Prickwillow Road, Ely Cambridgeshire, CB7 4TX
Tel: +44 (0)1353 645700 Fax: +44 (0)1353 645702
Email: **enquiries@hydro-int.com** Web: **www.hydro-int.com**