

## Project Info



August 2019



CC8™ Bulk Rolls



1,000m<sup>2</sup>



Transverse layers



Povazsky Hrad,  
Kanal Hricov, Slovakia



SVP SK



CC8™ was used to  
remediate the side walls  
of an existing concrete  
channel which makes up  
part of a hydroelectric  
network in Slovakia



SLOVENSKÝ  
VODOHOSPODÁRSKY  
PODNIK, štátny podnik



Completed CC concrete remediation installation in Slovakia

In August 2019, Concrete Canvas® (CC) GCCM\* was specified as a remediation solution to repair a concrete derivation channel which is part of the Váh river network in Povazska Bystrica, Slovakia. After years of operation, the concrete structure was showing signs of severe damage in several areas.

A left tributary of the Danube river, the Váh is 406 kilometres long, starting in the Vysoké Tatry (High Tatra) and Nízke Tatry (Low Tatra) mountains. It flows over northern and western Slovakia and finally feeds into the Danube near Komárno. The Váh river network includes canals, artificial dams and 16 hydropower stations, whose construction started in the 1930s and increased after World War II.

When the network of Hydropower stations are put into tandem operation, there is a dynamic movement of water in the derivation channel. As a result, the flow of water rapidly changes according to the needs of the plants for electricity production. These flow rates can vary between 150 and 300m<sup>3</sup>/s.

The resulting increase in flow velocity, harsh weather conditions and freeze-thaw weathering experienced in the region have led to the damage of the channels' concrete structure.

\*Geosynthetic Cementitious Composite Mat





Bitumen and shotcrete were both considered as remediation solutions for the channel, but ultimately CC was chosen to repair the channel slopes as it reduced the length of line possession needed.

The works were carried out by SVP SK for SVP, with consultation services provided by Center for Energy Systems (CESys).

Prior to installation, vegetation was removed from the concrete channel slopes and any damage was repaired; large structural failures were filled with a special malt and bitumen mix.

Bulk rolls of the specified CC8™ material were delivered to the project site where they were suspended from a spreader beam positioned at the shoulder of the channel. The material was deployed vertically down the channel slopes and cut to length in order to eliminate waste.



*Canal prior to works*



*Large crack in section of concrete channel wall*



*Collapsed section of concrete wall*



*Damage was repaired prior to installation of CC*





*Deployment of the CC bulk rolls*



*The CC was laid vertically down the slopes of the canal*



*Ground pegs used to secure CC to ground*



*Overlapping layers joined with adhesive sealant and screws*



*Bead of adhesive sealant applied below overlap*



*CC to Concrete termination: steel clamping bars and masonry nails*





CC canal remediation installation revisited one year after completion

The batched lengths of CC were then transported to the channel and deployed; the leading edge of the material was captured within a pre-dug anchor trench on the shoulder of the concrete structure and secured using ground pegs.

Subsequent layers of CC were overlapped by 100mm and the material below the overlap was hydrated. A bead of adhesive sealant was applied to the overlap and reinforced using stainless steel screws which were inserted at 200mm intervals. Where the CC terminated at the bottom of the channel slope, steel clamping bars and masonry anchors were used to secure the material to the concrete itself and in turn prevent ingress.

Following installation, the CC was hydrated using a 2000 Litre bowser and hose. Once the material had set, the anchor trenches were backfilled to prevent water and wind ingress beneath the material.

A total of 1000m<sup>2</sup> of CC8™ were installed by a team of ten in just 6 days. Almost a year on, the client has reported no failures and is pleased with the performance of CC thus far.

*“Technology Concrete Canvas is very rapid technology for remediation of water concrete structures. Installation was very simple and we consider after successful pilot test to include CC to our standard technologies for maintaining our water ways.”*

Dusan Fejer  
**Head of Branch Operations**  
SVP