

Project Info



02 / 05 / 17



CC8™ Batched Rolls



2,250m²



Longitudinal layers



İkizdere, Rize, Turkey



Arsan Yapi Ltd.Sti.



CC8™ was used to line and protect the interior of a damaged water diversion pipe at a hydroelectric plant in Turkey.



A completed section of the water diversion pipe at the İkizdere hydroelectric plant in Turkey

In May 2017, Concrete Canvas® GCCM* (CC) was used to line and protect the interior of a damaged diverting pipe in a remote area in the town of İkizdere, in the Turkish province of Rize.

The pipe functions as a water diversion pipeline from the İkizdere hydroelectric plant, owned by Zorlu Energy Group, which operates in Turkey, the Middle East and Asia. The pipeline, originally constructed using concrete, had badly deteriorated and were in need of remediation.

The main issue for the works was the inaccessibility of the site, making traditional solutions virtually impossible to adopt. Instead, CC was specified for the project; specifically, batched rolls of CC8™, to enable easier manual handling on-site, and smoother transportation to site. CC would also provide better abrasive strength and resistance compared to conventional repair mortars, meaning the useful life of the product, along with the life of the pipeline itself, would be greater. Due to the restricted site access, the rolls of CC had to be brought to site using an improvised cable car system.

The works were carried out by Arsan Yapi Ltd.Sti. for Zorlu Energy.

To prepare the pipeline for the installation of the CC material, the surface of the concrete was cleaned and any vegetation that had grown through or on the concrete was removed. Some cracks had formed, and there were large holes in places, leading to waterloss; these were repaired using high performance mortar.

*Geosynthetic Cementitious Composite Mat





The outside of the pipeline was overgrown with vegetation



The site backed onto steep cliffs on either side



The batched rolls had to be winched to the site on a makeshift cable car



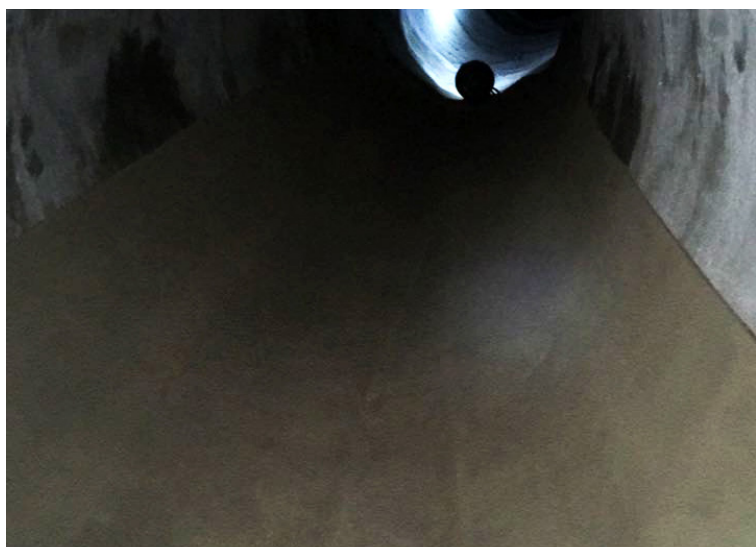
The inside of the pipe had to be cleared of rocks and debris prior to works



The only access was through access holes at the top of the pipe



Repair works were carried out with mortar prior to installation



The CC was laid longitudinally and fixed with screws



Mortar and sealant was used to prevent ingress at the edges of the CC

The CC batched rolls were transported to the site via the cable car system, and the material unrolled and passed into the pipelines in manageable sections. The installation team had limited space and clearance in which to work within the pipeline, with its circumference measuring just 900mm, and its total length measures 1,970m.

The installation team accessed the pipeline through access holes found at intervals along the top of the pipe. The material was also fed in this way and the team unrolled and laid the CC material longitudinally along the pipe. The CC was fixed to the pipe using screws at 200mm intervals, and along the overlaps of material lengths. At the edges, where the material meets the concrete pipeline wall, CT1 sealant and grout mortar was used to create a water-tight seal and prevent water ingress. This was completed along the entire length of the pipeline. Once the installation was complete, a hose was fed into the pipeline access points and the CC material was hydrated.

A total of 2,250m² of CC8™ were installed in 90 days by a team of 7 people, in very cramped, challenging conditions, and on a site with very limited access, making the delivery of material difficult. Environmental conditions during the installation period was varied, with inclement weather and temperatures ranging between 5°C to 20°C. An average of around 100-150m² was laid each day once the preparatory works were complete.