

Project Info



November 2018



CC8™ Batched Rolls



1325m²



Transverse layers



Alexandroupolis, Thrace,
Greece



SPIECAPAG / AKTOR



CC used to line a
formalised natural
drainage channel on a
Trans Adriatic Pipeline
(TAP) project site



Completed section of CC channel lining installation

In November 2018, Concrete Canvas® (CC) GCCM* was specified for use as a channel lining solution in Alexandroupolis, Thrace in Greece. The channel in question was lined as part of the Trans Adriatic Pipeline (TAP) project.

TAP involved the construction of a pipeline to transport natural gas, starting from the border of Turkey and Greece, crossing the entire territory of Northern Greece and crossing the Adriatic Sea via Albania to tie into Italy's gas transportation network in the South.

As part of TAP, a 20m wide area of slope along the pipeline's path was excavated and cleared. Dykes and various other structures were then created to direct the waterflow into the existing natural ditch. Additional measures to protect the channel were put in place, including the plantation of grasses in combination with a biodegradable erosion mat to retain the seeds and restore the vegetation of the forest area that had been harvested. However, these initial works changed the terrain; that combined with the large volume of rainwater and the steep gradient of the slope resulted in soil erosion along the slopes and the adjacent ditch.

A solution was required to line the naturally formed ditch in order to prevent further erosion and direct water through the channel in order to protect the slope.

*Geosynthetic Cementitious Composite Mat



A number of options were considered for this project. Initially, a biodegradable erosion mat attached to stones taken from the excavation work was installed to retain the fine-grained soil until vegetation re-established itself on the site. Larger stones were placed in the lower part of the channel to dissipate the velocity of water flow. Overtime, however, the net began to break up and efforts to hold the fine substrate failed. As a result, the stability of the slope was compromised.

Shotcrete was then considered, but due to the heavy forestation within the area, local authorities banned the use of conventional concrete forms.

Another solution was to use sandbags containing sand and cement to create the final channel, with the hope that the sandbags would reduce the water flow. When the creation of the channel was underway, the construction team noticed the fabric containing the sand-cement mixture was not reliable in changeable weather conditions. As a result, a further solution was sought to prolong the life of this channel design.

As a result of the various solutions considered and tested, a waterproof, durable lining was needed. The fast and easy installation, low permeability, durability and the fact that it is an environmentally friendly alternative to conventional concrete has made Concrete Canvas® the ideal solution for this project.



Site



Biodegradable net installed on harvested slope



Excavating the channel



Laying sandbags



Sandbags jointed and fixed to substrate using anchors



First section of CC installed



Sealing overlaps



Hydration of CC

Works were carried out by the official contractor for the TAP project within Northern Greece, SPIECAPAG, and subcontractor AKTOR, with consulting and design services provided by Perendes Technologies Cyprus.

In preparation for the installation, the existing, naturally formed channel was excavated to create a uniform channel profile and a geomembrane laid. Sandbags were then laid within the channel to ensure a uniform and stable structure, along with creating a stepped design to dissipate water energy. Steel anchors were inserted through the sandbags to join them, while galvanised steel anchors were used to secure them to the substrate.

The CC batched rolls were then transported to the channel and unrolled transversely across the channel with an overlap of 100mm between layers, shingled in the direction of water flow. This process was followed along the full length of the channel, while the edges of the CC were fixed to the substrate with steel ground pegs inserted through overlaps within anchor trenches along the shoulders. These anchor trenches were later backfilled to prevent ingress. Prior to jointing of overlaps, the material below the overlaps were hydrated then sealed using Soudaseal 250XF adhesive sealant, and jointed using 25mm screws inserted at 200mm intervals. Following each day's work, the CC was hydrated in accordance with Concrete Canvas Ltd's Hydration Guide.



Completed section of CC installation

A total of 1325m² were installed within 20 days by a team of 8 on a site with very restricted access and limitations as to the materials that could be used.

The team from SPIECAPAG-AKTOR trusted that CC would not only protect the channel but also improve the site's water drainage system. They were impressed by the fast and easy installation of the material on the initially section planned, and having ensured the reduced permeability and increased durability they were looking for, they continued to use CC to line the full length of the channel. They have also stated that CC would be an ideal solution for similar, future projects.