CCX
Innovation on a Roll

CANAL LINING

Project Info

12 / 04 / 23

CCX-MAT® (CCX-M®)
Bulk Rolls

15,000m²

Transverse layers

Saint-Julien, France

Client: Société du Canal De Provence (SCP)
Consultant: Canal De Provence
Contractor: Terélian –
Subcontractor: Galopin

CCX-M™ GCCM Used to line and provide erosion control to a canal

Completed section of canal

In April 2023, Concrete Canvas Ltds CCX-MAT® (CCX-M®) GCCM* was used to line and provide erosion control to a canal, as part of the old Canal du Verdon in Saint-Julien, France.

Designed as part of a vast network, the Canal de Provence supplies water to more than two million people in 110 towns and villages, 6,000 farms with a total of 45,000 irrigated hectares, and 500 factories large and small. To maintain a continuous supply of water to the Canal de Provence infrastructure, the rehabilitaion of part of the canal du verdon - which was abondoned after the construction of the Canal de Provence canal - was needed as part of works on the Maurras gallery.

The section of Canal du Verdon was initially designed out of soil substrate; however, inactive use had caused the structure to deteriorate due to erosion from rain-fall and damage from vegetation growth. As the canal went through the Regional Parc du Verdon, client Société du Canal De Provence (SCP) chose CCX-M® for the project due to the materials low impact - needing very little machinery to install - being easier and faster to install in comparison to other standard solutions.

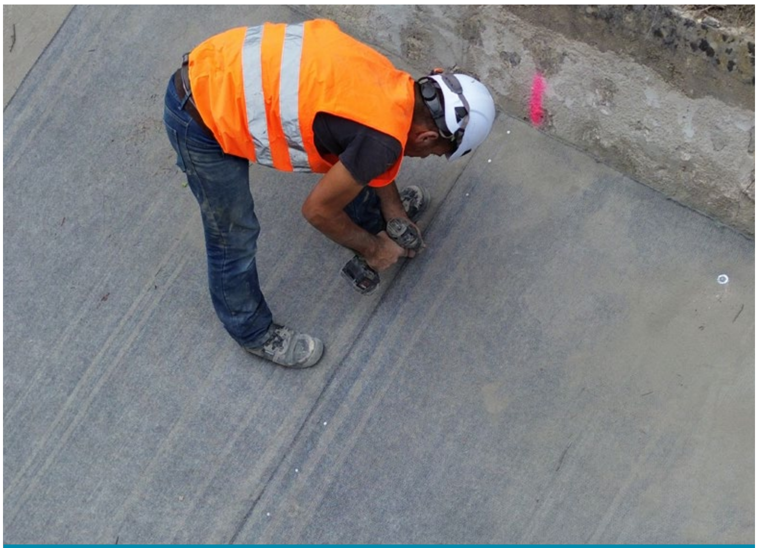
CCX-M® is a Type II GCCM as defined in ASTM D8364 - Standard Specification for GCCMs. CCX-M® is suitable for lining hydraulic structures with both soil and solid subgrades and was chosen for this project to suit the abrasion and loading requirements.

*Geosynthetic Cementitious Composite Mat


Canal re-profiled

CCX-M® deployed by excavator

CCX-M® laid transversely and overlapped by 100mm


Overlaps secured using stainless steel screws


Material edges covered with excavated substrate


CCX-M® hydrated using water hose and bowser

Completed section

Prior to CCX-M® being installed, the canal du Verdon had to be prepared. Any vegetation growth within the canal was removed and the structure was re-profiled to create a uniform surface. Once re-profiled, around 500mm of clay was placed to reduce permeability.

Bulk Rolls of CCX-M® were brought onto site and lifted into place using an excavator with a spreader beam attachment. The material was laid transverse across the channel in the directional flow of water with each layer cut to length and overlapped by 100mm. To reduce permeability between the overlaps, sealant was used between each joint, which were then secured using stainless steel screws placed at 100m intervals along the fixing marker lines. To prevent wind-uplift and water ingress, the edges of the CCX-M® were pegged down using galvanised pegs at the sholders of the canal and covered with excavated substrate.

300/400m^2 of CCX-M® was installed during a typical 8-hour shift. After each shift the CCX-M™ material was hydrated using a water bowser and hose, and re-hydrated to prevent premature curing due to the hot weather conditions.

A total of 15,000m^2 of CCX-M® was installed by a team of 6 from Galopin who were subcontracted by Terélian. Even though there were delays with the installation – with the area experiencing adverse weather conditions and flooding – client SCP were extremely pleased with how quickly and easily CCX® could be installed and were very appreciative of Concrete Canvas Ltd's support during onsite visits.

Canal still operating 18months later

CCX-M® blending into the surroundings 18 months later after installation

CCX-M® overlap joints 18 months later

Water flowing through the canal