PROJECT: CASE STUDY

CCX Innovation on a Roll

CHANNEL LINING | DRAMMEN, NORWAY

Providing long-term erosion protection for channel lining



Completed installation

© Concrete Canvas Ltd.

OVERVIEW

855m^2 of CCX-MAT® GCCM* CCX-M® was used to provide long-term erosion control and reduce maintenance to a previously unlined channel in Drammen, Norway

APPLICATION
Channel Lining

SECTOR
Road

PRODUCT
CCX-M®

REGION
Norway



Prior to works commencing



Gravel laid to create a smooth surface



CCX-M® In a transverse layup



Overlapped CCX-M® thermal bonded

Background

In October 2025, CCX-MAT® GCCM* (CCX-M®) was used to provide long-term erosion control and reduce maintenance to a previously unlined channel in Drammen, Norway. The channel ran along-side a service road located within a landfill site, capturing and diverting water away. Each year the area would experience heavy rainfall and fast water flows. This would result in the channel being eroded, risking rock falls and damaging the adjacent service road.

*Geosynthetic Cementitious Composite Mat

CONCRETE CANVAS®

© Concrete Canvas Ltd.



CCX-M® hydrated

Solution

Clients Lindum AS initially looked at lining the channel with shotcrete. However the location of the channel would have made it logistically difficult for specialist eqwuipment to get to the site. Linging the channel with a HDPE liner was also looked at but was deemed more vulnerable over time, particularly in the event of rockfall or washout.

CCX-M® was chosen for the project as it can be installed without specialist equipemtn making it suitable for projects in remote/difficult to access areas. As the material is flexible, it can conform to any shape, allowing it to be installed directly to the terrain and installed continuosly without extensive site set-up. Another benefit is CCX-M requires very little maintenance and can be easily cleaned for dirt and debris.

Why Concrete Canvas

GCCMs are flexible, concrete filled geosynthetics that harden on hydration to form a thin, durable and waterproof concrete layer. They are unrolled, secured in place and hydrated. GCCMs cure in 24 hours to provide hard armour surface erosion protection. GCCMs are typically up to 5-12mm thick, replacing up to 150mm of poured concrete which provides logistical, financial and carbon savings. CCX-M® is a Type II GCCM as defined in **ASTM D8364**, and was chosen for this project to suit the abrasion, wear and loading requirements.

Design & Installation

Before the CCX-M® could be installed the channel was prepared, with vegetation removed and gravel laid to create a smooth surface. When all preparation work was completed, Bulk Rolls of CCX-M® were brought to site and deployed across the channel in a transverse layup using an excavator and spreader beam. Once laid, the material was cut to length and overlapped to the blue overlap line in the direction of water flow.

To provide a low permeable joint, the overlapped CCX-M® was thermally bonded using a Leister Triac. The leading edge of CCX-M® that was laid next to the service road was secured using glavanised J-pegs, with the pegs inserted through each overlap. To ensure that all CCX-M® material that met the natural rock was properly secured, pilot holes were drilled through the blue jointing line before masonry bolts were inserted and secured, with shotcrete then sprayed ontop to create a seamless connection with the rock wall.

Once all the CCX-M® was installed it was hydrated using a portable water tank with pump and hose, with the anchor trecnhes backfilled.

This document is provided subject to our General Disclaimer a copy of which can be found at https://cclink.co.uk/CCdisclaimer. All warranties, representations and other terms, express or implied, that may apply to this document or any information within it including warranties of merchantability, fitness for any particular purpose, and non-infringement of third party patents are excluded, and we accept no liability with respect to or arising from use of information or any product discussed in it. Patent and Trade Mark information can be found here: https://www.concretecanvas.com/patent-trademark-info/

CONCRETE CANVAS®



Completed channel with shotcrete layer - 6 months later

Conclusion

The project was completed in 4 working days with a team of 2 fom Sustinera / Borg Radonsikring preparing the channel and installing 855m^2 of CCX-M®. The client was extremely pleased with project, and after an inspection 6 months later, they are looking to use CCX for further projects.

We are very satisfied with the results so far, and the works have performed well overall. The solution was selected because the area had limited accessibility and was exposed to erosion from surface water, potential washout of ditch slopes, and infiltration toward the adjacent landfill.

We therefore wanted a method that could be installed quickly with minimal earthworks and material handling. Concrete Canvas appeared to be the most suitable solution, both technically and practically. The installation went smoothly and was less extensive than traditional rock armouring with sprayed concrete, where there is often a risk of settlement and cracking that can lead to surface water infiltration. A clear advantage was that the material could be shaped directly to the terrain and installed continuously without the need for extensive site setup. This provided good control over both progress and quality.

We definitely see potential applications for Concrete Canvas in other locations, particularly where erosion control and slope stabilisation are required, or where a durable, low-maintenance solution is desired. The experience gained from this project, together with the planned continuation in Phase 2 next spring, provides a solid basis for evaluating the product for future projects as well.

PROJECT LEADER I LINDUM AS

CONCRETE CANVAS®

© Concrete Canvas Ltd.