CASE STUDY

Irrigation Canal Remediation with CCX-M®

LOCATION: Alberta, Canada

PROJECT TYPE: Product Supply

PRODUCT USED: Concrete Canvas® CCX-M®

TITAN
BUILD YOUR LEGEND

PROJECT:

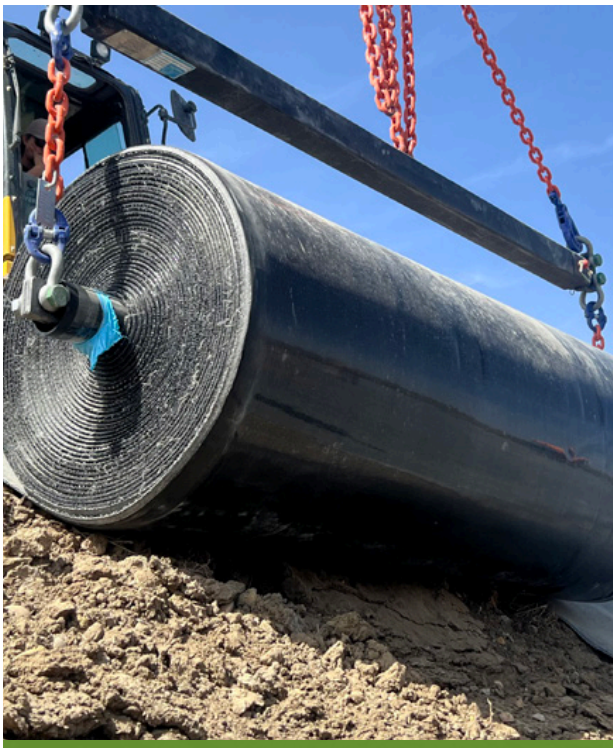
The St. Mary River Irrigation District (SMRID) needed a fast, durable fix for 400 metres of deteriorating canal lining in southern Alberta. Decades of wear had led to major seepage, threatening the water supply across a network that supports over 2,300 farms. With irrigation season approaching, minimizing disruption was critical.

CHALLENGES:

Aging Infrastructure: The 400-metre section of canal, originally lined in the 1970s, had deteriorated significantly due to decades of freeze–thaw cycles.

Water Loss from Seepage: Cracks in the concrete lining were causing substantial water loss, putting strain on the irrigation system.

Tight Timeline: With irrigation season fast approaching, SMRID needed a fast, durable, and low-disruption solution to maintain water delivery to over 2,300 farms.



CCX-M® deployed using a spreader beam.

Titan Environmental Containment | Titan Environmental USA
Toll free: 1-866-327-1957 | info@titanenviro.com

TitanEnviro.com

CASE STUDY

Irrigation Canal Remediation with CCX-M®

SOLUTION:

This canal lining project marked the second phase of SMRID's broader effort to address aging infrastructure using innovative materials. In 2017, SMRID trialled Concrete Canvas® (CC) 5mm at a site in Grassy Lake, Alberta, to rehabilitate a section of failing poured concrete. Following the success of that pilot installation, the district selected CCX-MAT® for this latest section, building on the positive outcomes of the original test.

Several rehabilitation options were evaluated for this phase of the canal lining project. With parts of SMRID's network already transitioned to underground piping, that approach was considered, as was the use of shotcrete. However, both options presented higher costs and more complex installation requirements.

Ultimately, CCX-M®, a Type II Geosynthetic Cementitious Composite Mat (GCCM) as defined by ASTM D8364, was selected as the most cost-effective and practical solution.

CCX-M® being cut with an angle grinder

CCX-MAT® was specified for its speed and ease of installation, which allowed SMRID crews to self-perform the work without relying on external contractors. Its low permeability—proven to reduce seepage by up to 96%—made it an ideal solution for minimizing water loss. The material's flexible handling characteristics enabled the team to complete the installation before the irrigation season began. Additionally, the improved durability of CCX-M® offers greater resistance to animal damage, reducing the need for ongoing maintenance and providing long-term value for the district.

CASE STUDY

Irrigation Canal Remediation with CCX-M®

INSTALLATION

SMRID removed the deteriorated concrete lining and re-cut the canal to the proper hydraulic profile before installing CCX-M® using bulk rolls deployed with an excavator-mounted spreader beam. The 7.1m-wide canal was lined from downstream to upstream, with overlapping layers sealed with Soudalseal and fastened with stainless steel screws. Edges were anchored in trenches, and hydration was completed using a 2,000-gallon water truck. A 14-person team executed the work efficiently with basic tools, installing over 3,300m² in less than three days, setting a global CCX-M® record and outperforming traditional concrete methods in speed, cost, and logistics.

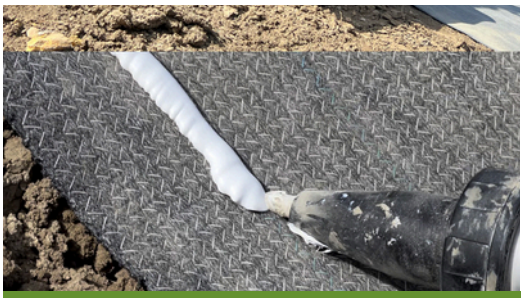
CCX-M® being cut with an angle grinder

ACHIEVEMENT

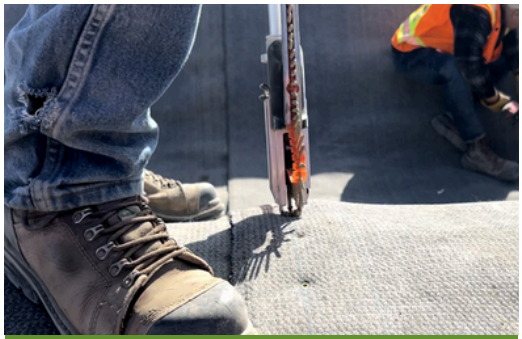
The project was a resounding success—a world record 18 rolls of CCX-M® were installed in a single day, with a total of 30 rolls deployed throughout the project. Titan provided onsite installation support to SMRID's in-house crew, enabling efficient and confident execution.

Thanks to the simplicity and speed of the CCX-M® system, the installation was completed well ahead of the irrigation season. The material's minimum operational design life of over 50 years ensures long-term performance with minimal maintenance. Compared to traditional concrete, CCX-M® was installed at less than half the cost and twice the speed, all while significantly reducing carbon emissions.

Based on the success of this installation, SMRID is now actively planning to line additional sections of the North Brudett canal network in the future with CCX-M®.



Applying an 8mm bead of adhesive sealant



Jointing with an auto-feed screwdriver

Titan Environmental Containment | Titan Environmental USA
Toll free: 1-866-327-1957 | info@titanenviro.com