CONCRETE CANVAS DITCH LINING

Case Study

PROJECT DETAILS

Project Name	CDOT I-25 South Gap Side Drainage
Location	Larkspur, Colorado
Date of Installation	July 2022
Contractor | Owner	Kraemer North America | Colorado Department of Transportation
Salesperson	Ryan Anderson
Application/Solutions	Concrete Canvas used to provide erosion control to flow drainage located on the side of a highway.

THE CHALLENGE

During periods of rainfall, rainwater runoff from the I-25 highway was causing the slope to erode. Flow drains that were originally designed to discharge rainwater runoff from the highway and down the slope were being eroded, creating costly maintenance repairs. CDOT needed a long-term solution to mitigate the issues.

THE SOLUTION

Concrete Canvas® (CC) was used to provide erosion control to a ditch used to divert water runoff from the highway.

Two solutions were originally considered to stop the slope from eroding further. Embankment Protector Type 3 (pipe) and Embankment Protector Type 5 (paved ditch). However, Type 3 would have required regular maintenance to prevent the pipe from clogging, and Type 5 would have required pre-cast concrete forms and poured concrete to create a solid foundation. Both of these solutions would have also resulted in lane closures on the highway, as the limited access would have made delivery of the materials difficult.

Concrete Canvas was chosen as the alternative solution due to the speed at which it can be installed, and also because of its minimal need for maintenance. As the location has limited access, having the material in batched roll format eliminated the need to close any lanes on the highway during installation, minimizing disruption.

Completed Installation

Location of Ditch Next to I-25 Highway

PRODUCTS USED

Concrete Canvas® GCCM
(Geosynthetic Cementitious Composite Mat)

– 600 ft^2 of Concrete Canvas Batched Rolls

THE INSTALLATION

Prior to the Concrete Canvas installation, vegetation and protrusions were removed, and the channel was regraded to create a solid and uniform surface. Anchor trenches were also excavated at the crests of the drainage ditch. To slow the flow of water coming from the highway, bags filled with aggregate were placed every 5' to create check dams, and a small dissipation pond was installed at the end of the drainage ditch.

Batched Rolls of Concrete Canvas were brought on-site and laid by hand transversely across the ditch and the installed check dams. The material was then secured within anchor trenches using anchor pegs and later backfilled with excavated substrate. Each layer was overlapped by 4" in the directional flow of water. Stainless steel screws set at 4" spacings and 2" away from the overlapping edge were used to secure the CC material down. A sealant was used between layers, providing waterproof protection. After securing the Concrete Canvas material, it was hydrated using a small water tank and hose.

Concrete Canvas Laid Transversely Across the Channel

Overlapped CC Layers Secured Using Stainless Steel Screws

Concrete Canvas Secured with Anchor Trenches

Check Dams & Dissipation Pond Covered in Concrete Canvas

THE RESULTS

A total of 600ft² of Concrete Canvas was installed during an 8-hour shift by a team of six. The owner and contractor were impressed with both the speed and ease with which CC was installed and were satisfied with the overall results of the project. Because of the results of this project, Concrete Canvas has since been installed at several other projects carried out by CDOT.

Completed Installation

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