

GEOWEB®

CHANNEL PROTECTION SYSTEM

FLEXIBLE ALTERNATIVE FOR IRRIGATION CANAL LININGS

PROJECT TEAM:

PROJECT OWNER

Mancos Water Conservancy
District of Colorado

PROJECT ENGINEERS

US Bureau of Reclamation
Buckhorn Geotech
Presto Geosystems

FIELD REPRESENTATIVES & MATERIAL SUPPLIERS

Bowman Construction Supply
Kaul Corporation



Finishing the concrete surface

CONCRETE SYSTEM OFFERS LINER PROTECTION, ADVANTAGES

PROJECT BACKGROUND

"Different materials to protect canal liners had been tried in irrigation canals across the West over the past 15 or 20 years. One typical method uses a low cost earthen material like clay. Over time, however, these systems begin to crack and start to leak. It's not a very efficient way to convey water," notes Joe Kaul, Kaul Corporation, Presto Geosystems' Western States representative and geosynthetics supplier.

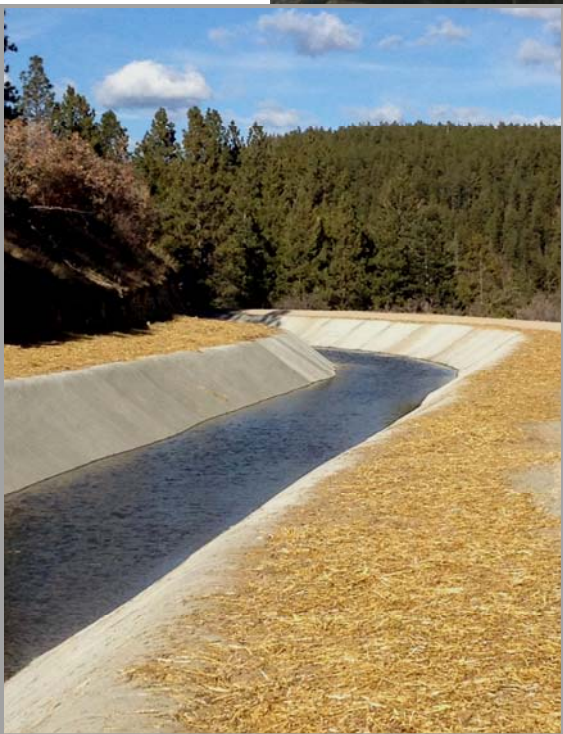
USBOR TESTING PERFORMANCE

A 10-year canal lining study by the US Bureau of Reclamation (USBOR) tested four canal types for a multitude of factors including construction and maintenance costs, durability, and effectiveness against seepage reduction. One of the tested categories, "geomembranes with a concrete cover" offered the highest long-term performance results.

THE GEOWEB® SOLUTION

Kaul introduced the concrete-filled 3D GEOWEB system to the USBOR as an effective geomembrane cover solution. With over 30 years of proven success protecting geomembranes, Kaul was confident they could design and construct a better long-term solution with the GEOWEB system.

Gary Kennedy, Superintendent with the Mancos Water Conservancy District in Colorado noted that the region had been rehabilitating their canal systems for a number of years. Regular lining material with a shotcrete cover was considered as well as individual concrete tiles for several sites. **Ultimately, the concrete-filled GEOWEB solution was chosen as it would offer the best protection from expansion and contraction issues caused by freeze-thaw cycles and reduce long-term maintenance costs.**



Completed GEOWEB concrete-lined irrigation canal.

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A pump truck is used to install concrete in the GEOWEB sections on the canal slopes. The 3D geocell structure allows a higher slump concrete to be used, facilitating quicker placement by a pump truck, and significantly improving installation time.

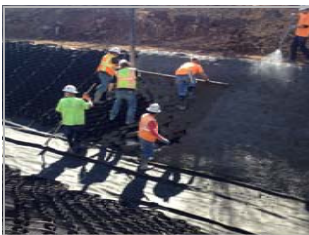
THE FLEXIBLE MAT SOLUTION

Unlike typical reinforced concrete where whole sections can crack and uplift, the flexible nature of the GEOWEB system allows it to flex and conform to minor subgrade movement. Concrete cracks are controlled along the line of the GEOWEB cell walls.

With the proven success of the GEOWEB system as part of a "geosynthetics" solution (*geotextile, geomembrane, GEOWEB geocells*), the USBOR and Bureau of Land Management (BLM) see opportunities to incorporate this solution in more of their irrigation canals.

ADVANTAGES OF THE GEOWEB® SOLUTION

- Geocell system controls concrete shrinkage cracks, allowing flexing and some movement.
- Cellular structure eliminates the need for steel reinforcement and expansion joints.
- Cells allow for a consistent concrete infill depth and use of a higher slump concrete, facilitating faster concrete placement.



4 PHOTO GROUP ABOVE:

Top left: A geotextile separation layer is placed on the prepared subgrade, followed by an impermeable liner and another layer of geotextile. The tensioned GEOWEB sections are placed over the second geotextile.

Top right: GEOWEB sections are secured in a crest anchor trench prior to infilling with concrete.

Bottom left: A pump truck places concrete infill in the GEOWEB sections.

Bottom right: Completed concrete GEOWEB canal surface.



Call 800-548-3424 for more information.
www.prestogeo.com

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