

GEOWEB®

CHANNEL PROTECTION SYSTEM

PROJECT TEAM

PROJECT OWNER

Billings Logan International Airport,
Billings, MT

PROJECT ENGINEERS

Morrison Maierle Inc., Billings, MT

MATERIAL SUPPLIER

TrueNorth Steel, Billings MT

FIELD REPRESENTATIVE

Kaul Corporation, Golden, CO



BILLINGS LOGAN INTERNATIONAL AIRPORT

Billings, Montana



Infilling GEOWEB sections with aggregate for storm water detention pond perimeter protection.

EROSION PROTECTION Open Channels & Storm Water Ponds



GEOWEB Erosion Solution Employed for Airport Storm Water Improvement Plan

PROJECT BACKGROUND

The Billings Logan International airport was built on sandstone rock with little to no topsoil. Even when vegetation is growing at this site, high velocity runoff areas caused erosion issues that needed to be addressed.

THE GEOWEB® SOLUTION

Because of its flexibility and ability to provide erosion protection with various infill materials, the Presto GEOWEB confinement system was chosen to provide erosion protection to the open channels and the embankments of stormwater detention ponds.

PERMEABLE EROSION CONTROL

The GEOWEB system with aggregate infill was designed to protect the open channel from erosion during a 50-100 year storm event. The open-graded gravel would also allow storm water to infiltrate during low flows into the existing ground.

Two detention ponds were built to control the stormwater runoff that flows from the channel. The GEOWEB system was installed over a Bentomat CL geosynthetic clay liner to protect the banks of the ponds against any wave action and to provide erosion resistance.

GEOWEB®

CHANNEL PROTECTION SYSTEM



The GEOWEB system is placed over a geosynthetic clay liner on the detention pond embankments.



Staking the GEOWEB sections on the open channels.



GEOWEB filled with concrete provided 'flexible' hard-armor protection for the weir.

"The detention ponds were designed to hold water for a short time to provide controlled discharge," notes Richard Welch, Senior Resident Project Representative Airport Group, Morrison Maierle.

PROJECT CHALLENGES

The airport is sloped at 2% with a large storm water pipe system. The slope and 48 inch pipes produce high velocities of storm water during storm events. The challenge was lining the open channels and high flow channels with a pervious material that would not create ponding, but provide erosion control. The GEOWEB system with clear stone fill was a good design fit to provide the desired infiltration.

OVERFLOW PROTECTION

The weir for the pond structure was constructed from the GEOWEB system filled with concrete instead of a concrete structure. This was used for channel protection against the high overflow velocities occurring when the structure is used. The GEOWEB system allows for ease of placing concrete on a slope, controls the cracking of the concrete, and allows some flexibility in the finished surface to accommodate minor ground settling.

Completed GEOWEB Channel & Pond Embankment Stabilization



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