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.
“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.