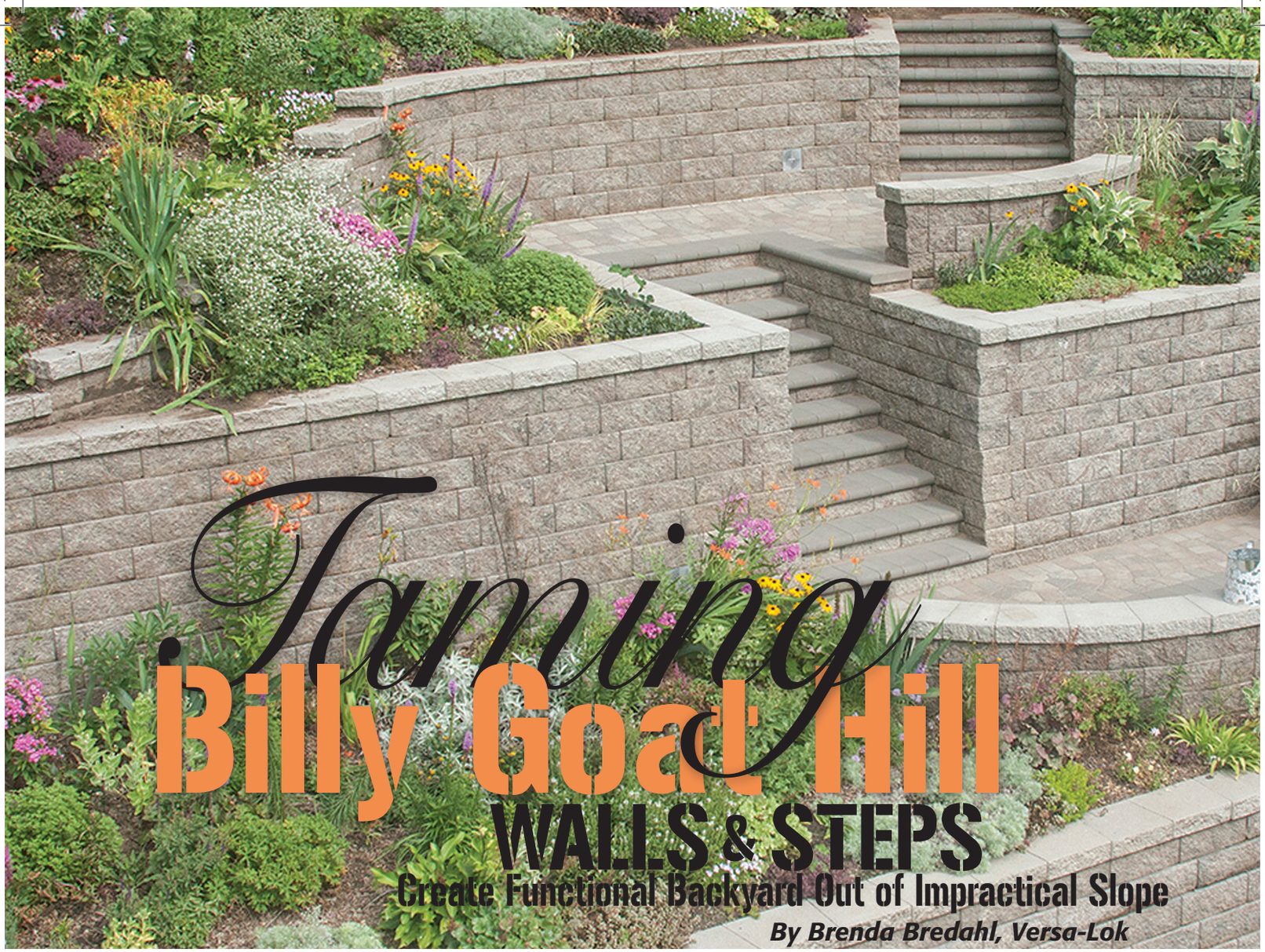

Taming Billy Goat Hill

WALLS & STEPS

Create Functional Backyard Out of Impractical Slope

By Brenda Bredahl, Versa-Lok

Above In Apple Valley, Minnesota, Devine Hardscapes transformed a backyard with a steep slope into a much more accessible, usable space with tiered walls constructed with VERSA-LOK® blocks. The goal of the project was not just to control the slope, that was more than 3-1, and hold the hill back, but also to correct the conditions that were causing water to seep through the home's foundation wall and flood the basement.

When a property backs up to a hill, outdoor options can be limited. You likely have no backyard, no safe way to the top of the hill, and a water problem in the basement. For a homeowner in Apple Valley, Minnesota, a landscape designer used VERSA-LOK® retaining wall systems to solve these problems.

LuAnn always wanted a backyard for her dog and needed a play space for her first grandchild. Her 85-year-old mother lived a few doors down, and LuAnn and her mother made daily climbs to the top of the hill to tend their gardens or use the fire pit.

"We called it Billy Goat Hill because it was too steep to mow," said LuAnn.

For Paul Devine, owner and principal of Devine Hardscape in Rosemount, Minnesota, the challenge was making a design fit into the landscape rather than installing a big wall with center steps.

"Her yard had a hill that sloped aggressively toward her home's foundation," he said. "The negative flow caused water damage, a leaky foundation and the accumulation of dirt that had been eroding down the slope for years. There was no flat usable area at the base of the hill, and she had never been able to grow grass because of constant erosion. The design created a positive flow away from her home's foundation, steps to the top of the hill, and a flat usable area for a backyard."

Devine created a tiered wall system with ample space for perennials and a staggered staircase with landings for rest, seat walls and potted plants. "We had planned to offset the footprint of the steps to improve safety and enhance aesthetics, but we also decided to change direction for the final set of steps to create the feel of a winding staircase."

"With these materials, I could use the same type of wall block to build the walls, steps and seat walls," Devine said.

His firm employed engineering to ensure proper drainage and for the placement of soil reinforcement for walls higher than four feet tall. "We were forced to direct water back to the lower tier to create flow away from the house, so we based the lower wall out with clear rock instead of Class 2 base rock to reduce the chance of wall movement in a potentially moisture-rich environment," said Devine.

An excavator prepared the site for the first wall, which was set back 14 feet to make room for a small backyard. The second tiered wall was set back another six feet as was the third tier, creating ample area for plants, stair landings, and seat walls. The erosion solution was timely because the area received heavier than normal rainfall in the spring.

"This system offers a pinned retaining wall system that provides a high ratio of weight per square foot of wall face plus flexibility in design," says Paul. "I don't believe that back-locking lip walls are as structurally sound as a pinned system, and hollow blocks do not provide the stability required for large tiered walls."

LuAnn chose coordinating concrete pavers for the landing areas, manufactured by Willow Creek Concrete Products.

"We were able to perfectly match the walls, steps, seat walls and paver landings to create a seamless transition between design elements," Devine said.

LuAnn says she is happy with Billy Goat Hill now that it's usable and safe. The project that totaled around 1,100 square feet took Devine and a crew of three about three and half weeks of work, spread out over more than a month due to rain, to finish. And that wasn't the only problem caused by the precipitation.

"I had a track machine get stuck on top of the hill," he recalls. "And I got my skid steer stuck trying to get it out so I had to bring the excavator back in to pull them both out." LC

Top Right On top of the base, each tier had about a foot of block buried. The flat part of the yard actually slopes towards the wall so that water runs away from the house. To facilitate this extra water, the landscape team installed, along the toe of the bottom tier, an additional tile drain, which runs out to the corner of the yard.

Bottom Right To create the positive slope away from the house, Devine estimates that they removed 130 cubic yards of dirt. The engineered wall used a substantial amount of geosynthetic material for reinforcement – 3 layers of 8.0 that go back 8 feet for the bottom tier, and additional layers of 4.0 on the upper two tiers. One of the challenges was getting the heavy machinery to the site, which required pulling out a side yard fence.