



KIMBERLING CITY CENTER

PICP Update to Aging Parking Lot Protects Ozarks' Lake and Improves Retail Center

LOCATION:

Kimberling City, Missouri

PRODUCTS:

Aqualine™ L-Stone and
Holland Stone

COLORS:

Gascony Tan and Red

INSTALLED AREA:

133,000 sq. ft.

INSTALLERS:

Aqua-Paving Construction

DESIGN FIRM:

Gresham, Smith and Partners

CONSTRUCTION MANAGER:

Table Rock Lake Water Quality, Inc.

GENERAL CONTRACTOR:

Miller-Blevins Construction Co.

ENGINEER:

Stalzer Engineering



Background

Table Rock Lake is located in the Ozarks primarily in Missouri but stretches over the border south into Arkansas as well. The lake's 856 miles of shoreline provides residents countless hours of recreation and ensures area businesses revenue through the tourists that visit the lakeside towns each year. Kimberling City, Missouri, is one of the busy towns situated on Table Rock Lake offering beautiful scenery and amenities across the entire community. The Kimberling City Center parking lot required resurfacing and property

and business owners needed to determine the best solution for the three-acre, 30-year-old parking lot, which serves the community's post office as well as a hotel, church, condominiums and various retailers and restaurants.

The Challenge

Gopala Borchelt, Executive Director for the nonprofit water quality organization Table Rock Lake Water Quality, Inc., was one of the leaders on the project.

She had performed considerable research, including traveling to different sites around the region to review comparable projects. "Water quality is a very important issue," Borchelt said. "People live here, visit here, and move here for the White River Valley. We didn't want to just talk about it. We wanted to do something that would protect the lake better than it had been in the past." She looked at a variety of alternate surfaces. "We didn't want to use porous asphalt or pervious pavement because of the labor and equipment needed for installation, and both are high maintenance," said Borchelt.

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The Solution

Borchelt brought together the ownership group and the experts at Belgard® Hardscapes, who suggested a permeable interlocking concrete pavement (PICP) solution. Belgard representatives met with the owners, explaining PICP as a system of pavers over layers of aggregate that filters stormwater running off the parking lot down between the pavers and through varying sized stone. The aggregate cleans the water, which can be stored temporarily in an underground storage basin before being released to natural aquifers—or as in the case with Table Rock Lake—directly back into the lake. In addition, materials like porous asphalt or pervious pavement require repair or replacement every four years, whereas Belgard Hardscapes PICP promotes a 50-year pavement design.

Borchelt and the group learned that based on studies of similar types of paver systems, the PICP at Kimberling City Center was estimated to capture roughly eight pounds of nitrogen, 1.5 pounds of phosphorus, four pounds of metal (iron, copper, lead) and 125 pounds of soil and minerals per year, which otherwise would compromise the lake’s water quality.

“A permeable paver system ensures less contaminants enter the water than when water washes off an asphalt parking lot, plus the water enters the lake at a cooler temperature,” said Dave Farrero, Field Superintendent with Aqua-Paving, the project’s installer. Stormwater runoff from asphalt enters streams and lakes at elevated temperatures, which can be harmful to aquatic life. In the late 1990s, Table Rock Lake suffered an algae bloom in the James River arm of the lake, and experts say stormwater runoff contributed to the problem—one that hasn’t been forgotten. In fact, a recent public survey by Ozarks Water Watch of residents in the Upper White River Basin indicated the largest concern to the public in the Table Rock Lake area is stormwater from development. By using a PICP system that accepts runoff down into the stormwater system and discharges it into the lake at a reduced temperature, Kimberling City Center’s owners took action to ensure the lake retains its pristine appearance.

“Needless to say, we were impressed with permeable pavers and said ‘yes’ unanimously on the spot,” said Layne Morrill, Kimberling City Center Co-Owner. “Anything that we can do that will improve water quality, fix the parking lot, and showcase our property is a winning solution.”

Another added bonus of using PICP was that the City Center was able to keep the parking lot accessible during installation so the tenants could keep their businesses open. Permeable interlocking concrete pavers can be installed by a machine, and installer Aqua-Paving Construction was able to lay more than 1,000 square feet of pavers per hour at Kimberling City Center. Aqua-Paving compacted the paver surface with a 7,000-pound plate compactor and swept chips into the openings between the pavers that will allow the water into the system. The aggregate system includes three-inch stone under four inches of three-quarter stone that has been washed and cleaned; the washed rock helps water pass through the aggregate, removes contaminants and returns the clean water to the groundwater. Aqua-Paving Construction then laid a two inch setting bed of 3/8-inch paved chips and then laid the pavers. The paver design included Belgard Hardscapes’ Aqualine L-Stone in both Gascony Tan and Red complemented by Belgard’s Holland in the same shades in the crosswalks and soldier course around curbs, islands and bioswales.

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Kimberling City Center Co-Owner

The Result

“We used this highly visible location to not only help protect water quality and improve the overall appearance of the community center, but also as a demonstration site for other local businesses and municipalities to learn from,” said Borchelt. “So developers have the option of replacing old, worn-out pavement areas or creating new areas in a way that reduces the negative impacts on surrounding hydrology and water quality.” The plans to retrofit an existing infrastructure with newer, best management practices for stormwater management helped the Kimberling City Center project qualify for an EPA 319 Grant from the Missouri State Department of Natural Resources, making the project more cost effective for the owners. The owners also gained the benefit of a parking lot that is as beautiful as it is functional.

“I knew I had seen permeable pavers before, but had no idea what they did until we sat down to talk about renovating our parking lot,” said Morrill. “It’s just gorgeous! One of the best things about the new parking lot is the mental attitude—how proud we are to have done something that no one else around here has done.”

About Belgard Commercial®

Belgard Commercial, part of Oldcastle® APG, offers a complete collection of paver and wall products for plazas, terraces, parking areas, roadways, rooftops and retaining walls. Available in a range of styles, premium Belgard Commercial products have been found in the nation’s finest developments and award-winning commercial and retail properties since 1995.

Oldcastle APG is part of CRH’s Building Products division. As the largest building materials company in North America, CRH provides a single-source solution for commercial construction projects with a full portfolio that also includes structural masonry, masonry veneers, dry mix products, hardscape jointing sands and sealants, stormwater management systems, concrete infrastructure, architectural glass, lawn & garden products, and composite decking.

