



## SIERRA NEVADA BREWING COMPANY

Belgard® Permeable Interlocking Concrete Pavers (PICP) Create a Brewery Permeable Pavement System to Protect Purity of Local Water Supply

### LOCATION:

Mills River, North Carolina

### PRODUCTS:

Aqua Roc™ II

### COLORS:

Ardennes, Slate,  
Westerwood Blend, Limestone

### INSTALLED AREA:

147,000 sq. ft.

### LANDSCAPE ARCHITECT:

Drake Fowler, Design Workshop

### ENGINEER:

WGLA Engineering, PLLC

### CONTRACTOR:

Rivertop Contracting, Inc.



## Background

Named after the favorite hiking grounds of founder Ken Grossman, the Sierra Nevada Brewing Company has had a commitment to the environment since day one. With a firmly held belief that the best beer is born of the purest ingredients, their environmentally conscious business model holds utmost respect for the purity of mountain water, since it is their principal water source and makes up more than 90% of their beer products.

When planning their second location that sits above the French Broad River in the Appalachian Mountains, the Grossman family insisted that the facility take the utmost care in protecting the neighboring water supply, both during and after construction.

## The Challenge

Sierra Nevada wanted to make the new hardscape and landscape areas surrounding buildings at their second location look as though their brewery had always existed as

a part of the surrounding natural landscape. The hardscape portion of the project included installation of a LEED (Leadership in Energy and Environmental Design) certified permeable pavement system that would withstand heavy vehicular traffic, provide a low possibility of heat island and meet ADA compliance, while protecting the neighboring water supply. In addition, the beauty of the surrounding viewshed was to be maintained, while the hardscapes and landscapes areas for the brewery were being added.

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Since the primary goal was to create a landscape design that already looked mature and natural, the hardscape and landscaping phases were pushed to an earlier part of the construction schedule.

"We were putting driveways in while they were still framing the buildings," said landscape contractor Rob Atema of Rivertop Contracting. "It was a logistical challenge, but we got it done."

### The Solution

In planning the hardscapes area for a Sierra Nevada Brewing Company brewery near Asheville, N.C., Drake Fowler, from Design Workshop, knew that the only solution for meeting the environmental and aesthetic needs of this conscientious, highstandards company was to use Belgard Permeable Interlocking Concrete Pavers (PICP). The chosen blend of Aqua Roc II pavers satisfied all the construction goals with the ability to withstand heavy vehicular traffic, reduce stormwater runoff, meet ADA requirements for foot traffic, and offer long-lasting solar reflectance index, SRI.

According to Rob Atema, the heavy construction traffic would have caused unsightly and costly damage to traditional pavement, but because the Belgard system was constructed of individual pavers that distribute weight differently than traditional pavement and can be easily replaced if individually damaged, construction traffic was not an issue.

Current hardscape applications on the property include driveways, parking lots, crosswalks, and a plaza. For a majority of the project, the Limestone paver color was selected due to its SRI index and ability to reduce the possibility of creating a heat island effect, which could otherwise increase

the temperature of runoff and potentially harm the ecosystem.

The parking lot design incorporated a herringbone pattern that called for the use of half-sized pavers for the parking stalls and lines.

"When you cut PICP, it's hard to keep a consistent joint, so using those half pavers here was good," Fowler said. The team used the leftover half-sized pavers to create a beer bottle-shaped design in the employee break area.

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*Drake Fowler  
Designer, Design Workshop*

### The Result

With a porous pavement system installed, natural drainage was maintained, and a beautiful hardscape and landscape was installed to meet the goals set forth by Sierra Nevada.

"We worked to set up not just a porous pavement system, but something that linked the pavers to the rain garden that linked to the underground system," described designer Drake Fowler. "By using these different systems, the same natural drainage that existed before they were here is maintained, and even water from the rooftop feeds into the system so that most stormwater gets reused, like for irrigation or flushing toilets."

The PICP system was only the first part of a coordinated stormwater management system that incorporated rain gardens, a cistern, and an overflow dry stream bed with a series of 20 checked dams, all designed to filter water to make sure no sediments or pollutants get to the river.

"It's an amazing system. Surface water is not an issue. With Belgard PICP, you can shoot a fire hose at it, and it permeates. But if the cistern overflows due to heavy rain, we want to treat that water and control its route to the river," Fowler said.

In conclusion, Belgard Permeable Interlocking Concrete Pavers (PICP) are an excellent choice for projects like this that need to meet environmental requirements, ADA requirements and provide beautiful aesthetics. In this example, a blend of Aqua Roc II pavers satisfied all the construction goals and made this project a success.

#### 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.

