



VILLAGE OF LAKEWOOD

Beautiful Aqualine™ Permeable Pavers Create an Environmental Streetscape – the First of its Kind in New York

LOCATION:

Lakewood, New York

PRODUCTS:

Aqualine™ 4½" x 9"
Permeable Pavers

COLORS:

Amaretto, Bella, Sable and Silex

INSTALLED AREA:

13,500 sq. ft.

LANDSCAPE ARCHITECT:

Barton & Loguidice (B & L)

CONTRACTORS:

Kingsview Enterprises and
RMS Services of WNY, Inc



Background

The Village of Lakewood, New York, located at the southern end of Chautauqua Lake, is a tourist destination with old-world charm. The village offers a public beach, park, playground, boat launch and the hustle and bustle of downtown boutiques, Amish crafts, artisan dining, antiques and wine shops. As part of a stormwater management engineering study of the nearby lake and watershed completed in 2018, a recommendation was proposed to include permeable pavers as a solution to minimize street flooding and runoff to the lake.

The Chautauqua Avenue streetscape revitalization project, which included permeable pavers as a key component, was part of a consolidated funding application for the New York State Green Innovation Grant Program, approved in November 2019. According to Randall Perry, Executive Director of the Chautauqua Lake and Watershed Management Alliance, funding was provided by the New York State Environmental Facilities Corporation Green Innovation Grant Program (Grant 1597) and locally from the village, County of Chautauqua, and the Alliance via grants from The Lenna Foundation, the Chautauqua Region Community Foundation, and the Holmberg Foundation.

The Chautauqua Avenue Green Steet Project was completed in 2021. This included replacing asphalt pavement with permeable pavers in three main intersections along with curb areas. Barton & Loguidice (B & L), a multidisciplinary engineering firm, called for a unique design using Belgard® Aqualine™ permeable pavers, which are produced nationwide.

The Challenge

With a need for pedestrian accessibility, safety and keeping Chautauqua Lake clean, the village initiated the green stormwater infrastructure retrofit of the

VILLAGE OF LAKEWOOD

main intersections and pedestrian areas – all while keeping the aesthetic charm of the village. It was also important to allow the flow of pedestrian and street traffic at the intersections and to educate the public about the retrofit. Lakewood Village was determined to keep businesses open, with clear signage to pedestrian access during the project.

The Solution

The unique use of permeable pavers for the Green Street Project's roadway is believed to be the first of its kind in New York State, along a route with regular, heavy vehicular traffic.

The landscape architects selected Belgard Aqualine permeable pavers in colors of Amaretto, Bella, Sable and Silex to provide a unique color pattern that accents the important intersections. The pavers provided significant environmental benefits with stormwater mitigation and matched the look and feel of Lakewood Village center. B & L's Nicole Cleary, Managing Landscape Architect, specializing in streetscapes and stormwater management projects, said, "This paver system provides a beautiful streetscape while also caring for the lake water, creating an environmentally and aesthetically friendly final product for the village."

The interlocking Aqualine pavers included double-running bond patterns to delineate crosswalks and 90° herringbone in the main areas. The smooth-surface paver field consists of joints filled with ASTM No. 89 over a 1-inch ASTM No. 8 bedding layer on a 6-inch choker course confined by geocell for additional stiffening. A 16-inch sub-base of larger aggregates functioned as a reservoir, and an elevated underdrain allows water to

infiltrate the ground, while excess water can flow into the existing stormwater system.

The project also demonstrates the successful use of concrete pavers in high-load applications with special design features that improve the system's performance. In addition to managing stormwater with the permeable pavers, Cleary and her team utilized stormwater tree trenches, flexible porous pavement and planted landscape areas. For the permeable paver portion of the project, the Belgard Commercial national support team provided design and construction input to the project landscape architect.

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*Nicole Cleary
Managing Landscape Architect, B & L*

The Result

According to Cleary, some stormwater runoff is now captured, treated, and cooled prior to entering the groundwater or Chautauqua Lake. Underdrains in the permeable pavement intersections are connected to the existing storm sewer system to collect excess water from very large rain events.

The Belgard team has been involved with the project from the design phase through post-construction and has shared surface Infiltration monitoring results with the entire

project team to show the effectiveness of the permeable pavement system. Post-installation average surface infiltration rate for the site was determined to be 643 in/hr., tested in accordance with ASTM C1781. APG New England and the Belgard Commercial National support team have been conducting continued annual infiltration testing, and results remain above 100 in/hr.

A 2022 Hardscape North America Award Winner, the Lakewood Village project achieved its goals of adding to the aesthetic charm of the village, while improving the water quality and managing stormwater events.

"Everyone seems pleased with how nice it looks," said Cleary. "Pavers are unique for roadway intersections, but the aesthetic value and water management benefits are working very well for the village and maintenance guides were provided to the Village. We would definitely use the Belgard Aqualine pavers again." Learn more at BelgardCommercial.com

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.

