



WINTER PARK LIBRARY

Winter Park Library Reduces Stormwater Runoff by 100%
Using Belgard® Eco-Holland® Permeable Pavers

LOCATION:

Winter Park, Florida

MANUFACTURED BY:

Oldcastle® APG, Inc., Coastal

PRODUCTS:

Eco-Holland® Permeable Pavers

COLORS:

Napoli

INSTALLED AREA:

100,000 sq. ft.

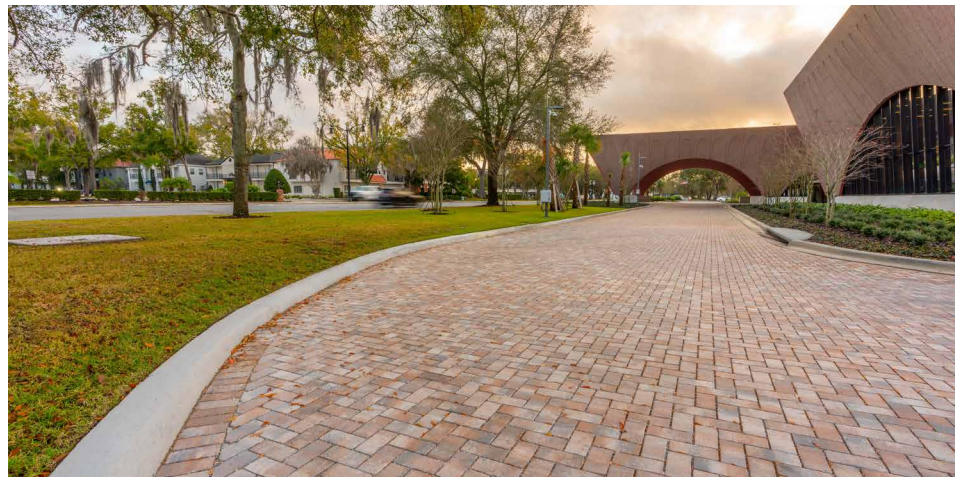
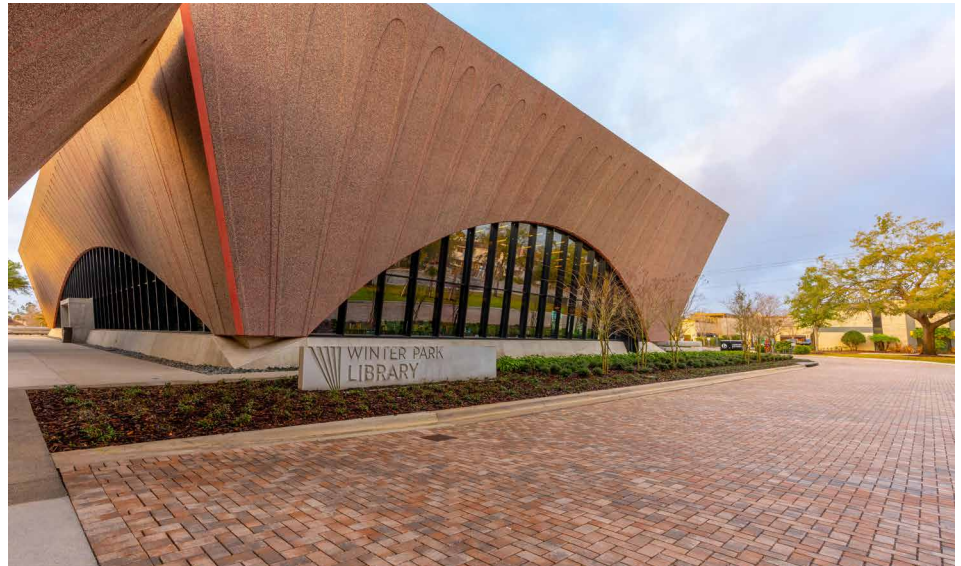
DESIGNERS:

Sir David Adjaye

HuntonBrady

CONTRACTOR:

PaverScape



Background

The Winter Park Library in Winter Park, Florida, traces its origins to 1885, when nine women formed a lending library with books stored on one of their porches. More than 130 years later, in December 2021, the Winter Park Library celebrated the opening of a 21st century, world-class campus designed by renowned architect Sir David Adjaye, partnering with local firm HuntonBrady.

The Challenge

The site chosen for the new Winter Park Library was home to the Winter Park Civic center with parking adjacent to Mendsen Lake, which constrained the new library development to the east. In order for the project to work, the design team needed to find ways to make the site development more efficient, especially for stormwater management. Lake Mendsen did not

have the additional storage capacity the library development would require, so site designers had to find innovative ways to meet the stormwater requirements while reducing the library footprint. The design team decided that a permeable paver system would be the perfect solution to meet both the stormwater storage and water quality requirements all within the footprint of the proposed parking areas.

WINTER PARK LIBRARY**The Solution**

To manage stormwater and protect the quality of Lake Mendsen, engineers designed a stormwater infiltration system that included roughly 100,000 square feet of Belgard's Eco-Holland Permeable pavers. The design team reached out to Belgard for assistance to ensure that the sandy soils onsite could infiltrate the design storms. Designers provided site information including a soil report showing the onsite soils had a calculated infiltration rate of 13.7 feet/day (6.75 in/hr.), which proved to be more than adequate for the design storms. Paul Cureton, P.E., with Belgard's commercial engineering team, provided design and technical assistance throughout the project including responses to comments from the St. Johns River Water Management District. "The goal was to isolate the retention of the water as much as possible to the system, so it wouldn't flow into the lake," said Cureton. "Whatever water does get into Mendsen will have been filtered by the system prior, maintaining quality."

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*Paul Cureton,
P.E., Belgard Commercial Engineering*

The Result

The Belgard permeable paver system, featuring Eco-Holland pavers, was designed to meet the stormwater quality and storage requirements of the St. Johns River Water Management District, the regulatory agency reviewing the project stormwater, while providing a robust, long-lasting, and easy to maintain driving surface. The system's ingenuity starts as water infiltrates the paver surface and the required water treatment begins as it filters through

the aggregate between the pavers. Storage is then provided through infiltration into the native soils and the void space in the open-graded aggregate layers. The infiltration into the soil, the void space between the individual rocks, and the thickness of the stone layer is the key to providing sufficient storage and keeping all the stormwater onsite and out of Lake Mendsen.

The designers chose Eco-Holland permeable pavers because they were inexpensive for the city, regionally made, and offered a good color selection. The Napoli color was chosen because it fit the warm tones used throughout the campus. The landscape architect liked the marbling of Napoli and the fact that it was not a solid color, and used salt and pepper granite as the joint material between the pavers to complete the aesthetic.

PaverScape, a specialty contractor, installed the system and made recommendations based on their own experience with pavers, retaining walls and permeable applications. Jeff Wayner, project manager with PaverScape, recommended using a 90-degree herringbone pattern instead of the running bond originally considered for the project. "With such a large space that has so much vehicle traffic, the movement of tires will naturally shift the pavers some in time—particularly in a very linear pattern such as a running bond," he explains. "The 90-degree herringbone gives the area a better locking mechanism and will also hide slight shifts as they happen."

Belgard performed surface infiltration testing in accordance with ASTM C1781 Standard Test Method for Surface Infiltration Rate of Permeable Unit Pavement Systems 3 months after the installation and found the infiltration rate to be 520 in/hr. Surface infiltration rate testing is used to determine if the permeable paver system is functioning properly upon installation, and can be performed annually to monitor the system function. When the surface infiltration rate has been reduced to 10 in/hr., then restorative maintenance is required. The results are being used to support adding Belgard permeable pavers to BMP Trains,

as an accepted water quality BMP. The BMP Trains model was developed by the University of Central Florida, and approved and used by the Florida DOT, as well as all 5 Stormwater Management Districts in Florida, to model nutrient loading and nutrient reduction effectiveness of various stormwater BMPs.

The library held a community open house on December 11, 2021, including a ceremonial book transfer from the old library location to the new one and began regular library operations two days later.

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.

