

PROJECT PROFILE

PRIME OUTLETS SHOPPING MALL

Atlantis Raintank and Pervious Concrete

WILLIAMSBURG, VA

PROJECT BACKGROUND

One of the greatest challenges around economic expansion is reducing the impact of a development on its environment and preventing it from becoming a problematic contributor to a sensitive watershed. Such was the case when Prime Outlets needed to expand the existing Williamsburg, Virginia Prime Outlet shopping center to provide more rentable space for its tenants. The end result of the 115,000 square foot, \$55-million expansion is the largest pervious concrete project in the US, with over 7 acres of pervious concrete, providing storm water quality and contributing to the LEED® certification that the project will earn.

THE BUSINESS CASE

Landmark Design Group worked closely with Prime Outlet and the ready-mixed concrete industry to design a system that would be approved by the James City County Planning Commission. The team designed a plan to retrofit the existing pond that included a combination of pervious concrete, conventional concrete, and Atlantis Raintank underground detention and water harvesting systems. The entire area below the 11 acre parking lot is utilized to meet the site's stormwater detention requirements, allowing the developer to add more than 40% more retail rental space. Also, by using low-maintenance concrete for the paving elements, Prime Retail can expect to save up to 45% in total ownership costs over the 20-year design period, – a solution that the developer said was a “no-brainer”.

DESIGN COMPONENTS

The key components of this design come in the forms of recycled plastic, Atlantis Raintank, and pervious concrete. Atlantis Raintank is a modular rainwater detention that can also be used as a water harvesting system. When wrapped in a rubber liner, rainwater can be reused for irrigation, non-potable, and potable uses. Pervious concrete is a system recognized by the United States EPA as a stormwater pollution prevention best management practice. This type of pavement provides a flow rate of about 3 to 5 gallons per minute, per square foot. The benefit of combining these two concepts is that the pervious pavement acts as a filter that stormwater passes through before it is stored in the underground Raintank, where it can be managed and not become a hindrance on the watershed and environment.



Owner: Prime Retail
Architect: Guernsey Tingle Architects
Engineer: Landmark Design Group
General Contractor: Henderson Inc.
Pervious Concrete Contractor: Magruder Construction
Combined Volume: 350,000 CF

About Raintank

The Atlantis Raintank System is a modular storage system that can be used for detention, rainwater harvesting, or ground water recharge. The Raintank's modular design and compact footprint makes it ideal and cost effective for all types of applications.



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Relevant Credits

- SS Credit 5.1: Site Development: Protect or Restore Habitat
- SS Credit 5.2: Site Development: Maximize Open Space
- SS Credit 6.1: Storm Water Design: Quantity Control
- SS Credit 6.2: Storm Water Design: Quality Control
- SS Credit 7.1: Heat Island Effect: Non-Roof
- SS Credit 7.2: Heat Island Effect: Roof
- WE Credit 1.1: Water Efficient Landscaping: 50% Reduction
- WE Credit 1.2: Water Efficient Landscaping: 100% Reduction
- MR Credit 4.1: Recycled Content: 10%
- MR Credit 4.2: Recycled Content: 20%

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Atlantis Raintank & Pervious Concrete

5715 Richmond Rd
Williamsburg, VA 23188

40% Increased Rental Space

90% TSS Removal Rate

100% Recycled Content

PROJECT TEAM

Design Team

Architect

Guernsey Tingle Architects

Civil Engineer

Landmark Design Group

Construction Team

General Contractor

Henderson Inc.

Pervious Concrete Contractor

Magruder Construction



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