



RHODE ISLAND DOT BRIDGE PROJECT

Belgard's® New Bridge Construction Solution Means Big Cost and Time Savings for Rhode Island DOT

LOCATION:

East Providence, Rhode Island

PRODUCTS:

Vertica Pro® Block
8" x 18" x 21"

INSTALLED AREA:

11,000 sq. ft.

WALL DESIGNER:

SRG Engineering, Inc.

WALL CONTRACTOR:

Manafort Brothers, Inc.



BEFORE



AFTER

Background

In late 2014, a CBS News 60 Minutes report, "Falling Apart: America's Neglected Infrastructure," found that 70,000 bridges in America—that's one out of every nine—are considered to be structurally deficient, meaning they need to be replaced or repaired as soon as possible. Today, little has changed in our country's over 600,000 bridges. Many of these local structures are out of service

waiting for repair funding, while others have been fixed with a "band aid" approach or remain untouched mostly due to the escalating cost of transportation projects.

The Challenge

Like many states, Rhode Island continues to make its way through a backlog of transportation projects in order of the most pressing. In late 2015, two interstate highway

bridges (East Shore Expressway bridge #475 and McCormick Quarry bridge #476) were at a major failing point and replacement was paramount. The Rhode Island Department of Transportation (RIDOT) decided to use a new innovative bridge design—Geosynthetic Reinforced Soil-Integrated Bridge System, better known as GRS-IBS—to replace the failing bridge abutments. This new method was recently promoted by the Federal Highway Administration (FHWA) and would

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be the first of its kind in Rhode Island, making it a high-profile project for the state.

The Solution

GRS-IBS requires installing segmental retaining wall (SRW) blocks with layers of specified aggregates and geosynthetic reinforcement to build the bridge abutment retaining walls, eliminating the need for construction of bridge piles. The design and specifications may vary state-to-state but are strictly adhered to. The GRS-IBS system is proving to outperform traditional single-span bridges throughout the U.S. In addition, using the GRS-IBS system not only significantly reduces all construction costs relative to a traditional bridge replacement, but minimizes the impact on daily traffic, the number of detours and total construction time. In short, this technology represented huge cost savings and multiple benefits to the entire state of Rhode Island.

This RIDOT project was built underneath the overpasses without detouring traffic the entire time of construction for both bridges. The only inconvenience to the general public was the actual transition time from a Friday morning to the following Monday. In a time span of merely 80 hours, the roadways were closed, the old bridge supports underneath were demolished, and

the new bridge structures were lifted into place and opened for traffic. A traditional bridge replacement project would have required that the interstate roadways be closed with detours for a month or longer.

The Result

This Rhode Island GRS-IBS project is estimated to be one of the largest of its kind east of the Mississippi River. "While Anchor Wall Systems has had success in designing multiple GRS-IBS structures around the country, this was the first project built on a major thoroughfare," said Jon Huyck, PE with Anchor Wall Engineering, LLC (AWE), who provided design support for the project.

It was a high-profile, high-pressure project with job-site cameras and RIDOT staff on-site monitoring the whole process. Our team came through, and the project has been a huge success.

*Jon Huyck
PE with Anchor Wall Engineering*

Going forward, Belgard® Commercial and Oldcastle's Anchor Wall Systems® plan to partner with more state transportation departments looking to save money, time and

labor, and still deliver a high-quality product that meets all specifications. "The Rhode Island project was an achievement, but we also learned quite a bit that can be applied to improve future projects," stated Huyck. "As a partner, we can be a significant resource during planning and design on projects where DOTs plan to implement GRSIBS technology." Belgard Commercial possesses the technical resources to support this type of DOT project and maintains world-class manufacturing facilities throughout the country.

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.

