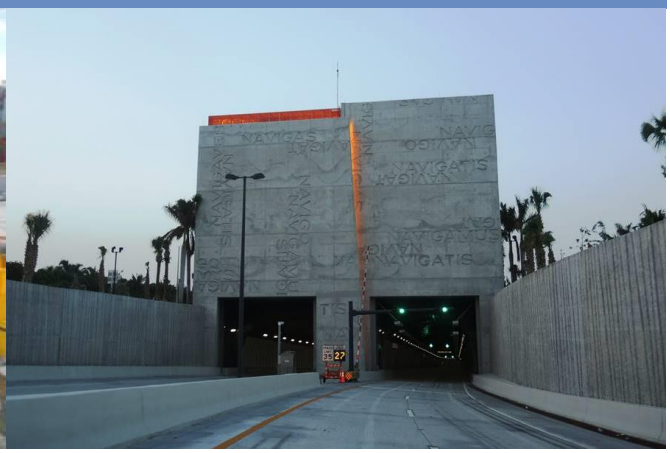
FDOT Transportation Innovation Initiative:

FRP – Design Innovation



Fast Facts:

Basalt Fiber Reinforced Polymer

Project Location:	FDOT District Six Miami-Dade County Miami, Florida
Agency:	Florida Department of Transportation
URL:	http://www.fdot.gov/structures/innovation/FRP.shtm
Project Name:	Port of Miami Tunnel FPID: 251156-3
Project Description:	Retaining Wall Demonstration Site for Basalt Fiber Reinforced Polymer
Project Purpose & Need:	As a demonstration project, basalt rebar (BFRP) was used in concrete retaining walls to evaluate performance under service and environmental conditions, identify and quantify the interface between BFRP bars and concrete, and evaluate thermal and physical properties of BFRP. Assessment program identifies cores are to be taken at 5, 10, and 20 years.

What was unique about this project? Bouygues Civil Works Florida, the contractor on the project, proposed an alternative reinforcement system for two retaining walls on the project.

"Basalt is one quarter the weight of steel but has more than three times the tensile strength of steel. It is acid and alkali resistant and will not corrode, which makes reinforced concrete structures extremely durable, a major benefit in the highly aggressive environments frequently encountered in Florida. Basalt rebar is very cost effective as reinforced concrete structures would require one-third the reinforcing area. Concrete Structures could be designed with reduced concrete thickness and cover."

Bouygues Civil Works Florida

Overall Budget/Cost Estimate: $668.5 Million (Design and Construction)

Financial Information Source: http://www.portofmiamitunnel.com/project-overview/project-overview-1/

Describe Traditional Approach: Steel is commonly used as concrete reinforcement.

Describe New Approach: Basalt replaced steel as retaining wall reinforcement in Retaining Walls 5 and 6. Bars of 8 mm and 12 mm diameter basalt rebar with 3 inch clear cover used. Wall thickness and shape remain per conventional design.

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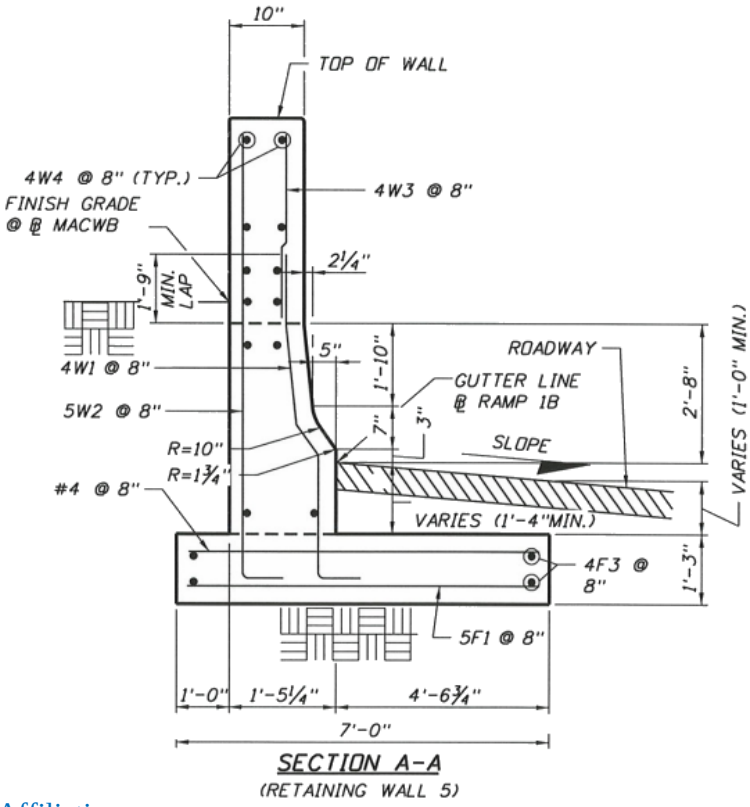
Top Innovations Employed: Use of BFRP in service conditions.

Primary Benefits Realized/Expected: Assessment data on BFRP reinforcement.

Project Start Date/Substantial Completion Date: Construction and installation of the retaining walls reinforced with basalt bars started at end of January 2014.



Affiliations:

Concessionaire:	MAT Concessionaire, LLC
Construction Contractor:	Bouygues Civil Works Florida Miami, Florida
FRP Supplier:	ASA.TEC (Austria)
Engineer of Record:	Frank P. Guyamier, P.E. Project Engineer Port of Miami Tunnel Project
Testing Program By:	Dr. Brahim Benmokrane Brahim.Benmokrane@USherbrooke.ca University of Sherbrooke Sherbrooke, Quebec, Canada

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