TENCATE
Mirafi


Separation


Filtration


Soil Reinforcement

Case Study

application	Temporary Wire Wall
location	Key Largo, FL
product	Mirafi® HP570 and Mirafi®8XT
job owner	FDOT
engineer	Jacobs Civil
contractor	Granite Construction

TenCate develops and produces materials that function to increase performance, reduce costs and deliver measurable results by working with our customers to provide advanced solutions.

THE CHALLENGE

Due to the occurance of hurricanes becoming more prevalent in the area of the Florida Keys, a stretch of US 1 from Key Largo through the upper keys is being widened to accommodate evacuation traffic during hurricanes. The existing road was very narrow and hard to traverse, especially during Hurricane evacuation periods. Temporary Retaining walls were needed to accommodate for lane shifts and road widening. The construction conditions and space were extremely limited due to the narrow road bed and the fact that these temporary walls had to be constructed under water – all while still allowing traffic to move in and out of the Florida Keys. Granite Construction's website has this to say about the project: "Design-Build roadway and bridge project involving reconstruction of approximately 4.5 miles of US1 at the north end of the Florida Keys. The scope of the project includes construction of a new 7,500-foot high level bridge, reconstruction of US1 and installation of barrier wall between the northbound and southbound traffic. Additionally, the northbound shoulder of the new two-lane roadway will be constructed to accommodate traffic in the event of a hurricane evacuation and eight box culverts will be installed to serve as crocodile crossings under US1. Work will also include the construction of retaining walls, all associated drainage, fencing, signing, roadway striping and removal of the existing bridges. Design work is scheduled to begin immediately with construction commencing in the first quarter of 2005. The project is estimated for completion in early 2009."

THE DESIGN

The temporary MSE wall designs had several concerns. Originally, the project was designed only utilizing Mirafi® HP570, but due to concerns over wave action and tidal surges, the Miragrid® 8XT was chosen for the face wrap and reinforcement at and below the water level. Since the bottom lifts of the wall were to be constructed underwater, a gravel in-fill was used in lieu of soil. The Miragrid® 8XT combined with the gravel in-fill would resist the erosive forces, expected with the rise and fall of the tides as well as wave action. FDOT required a signed and sealed design, which was provided by SRDI, Inc.


Trench dredging for platform of temporary retaining wall.


Gravel in-fill within temporary retaining wall along US 1.

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THE CONSTRUCTION

Installation of the wall went very smoothly since the wall was constructed during the summer with little or no storms to slow down progress. The installation of the MSE wall below water level created a few logistical challenges, but once construction was above the water level, it was greatly simplified. Once the MSE wall was completed, traffic re-routing took place and helped in accelerating the road widening process.

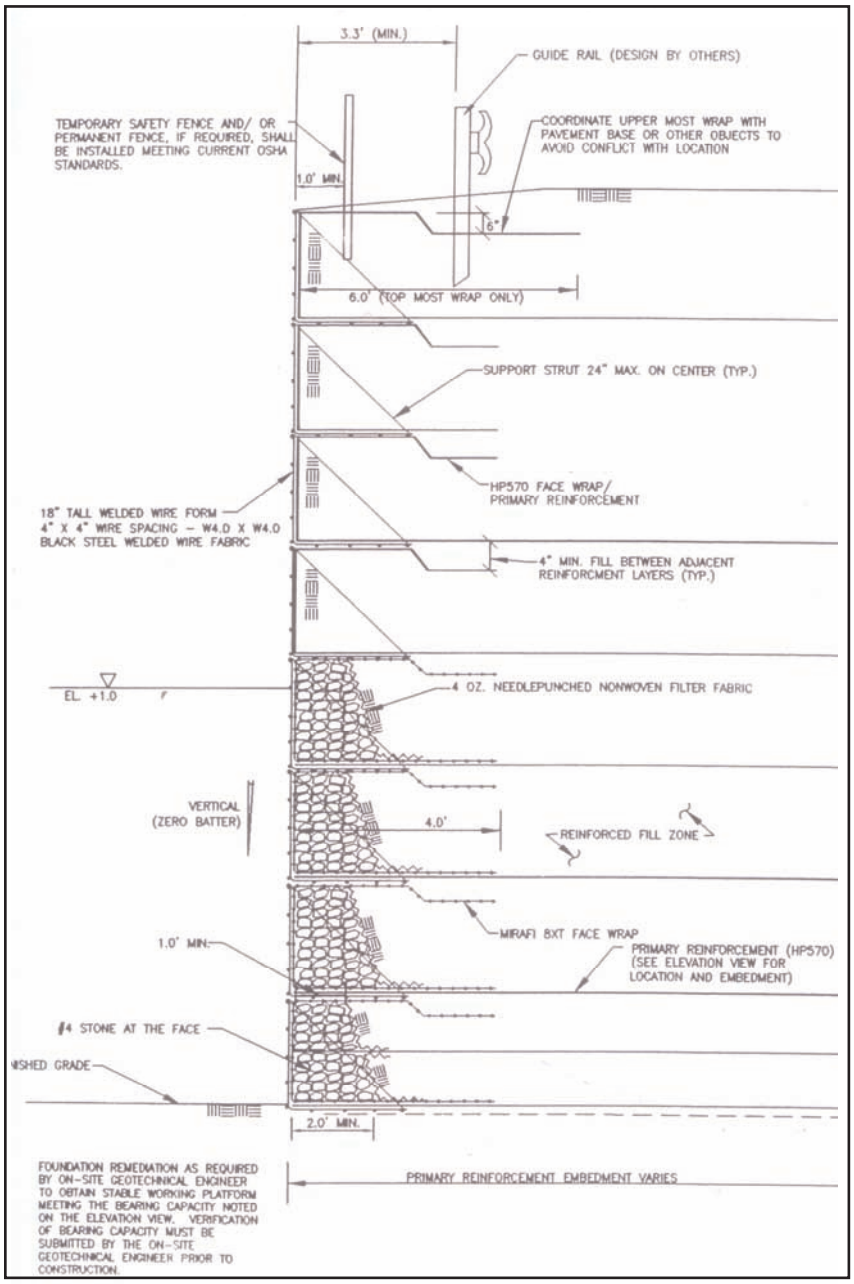
THE PERFORMANCE

Utilization of Mirafi® products helped to save time and money on this project. The temporary MSE wall helped to re-route traffic, thereby speeding up the road widening process without stopping traffic flow to the Florida Keys. Also, instead of having to use alternatives more costly and cumbersome, such as concrete, the temporary wall provided just the engineering solution to this project to help minimize cost, while maximizing efficiency and time.

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Cross section drawing of temporary retaining wall.

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