

Case Study

application	DOT Bridges & Water Application
location	Sarasota, FL
product	Miragrid® 5XT & 8XT

job owner	Florida DOT
engineer	Anchor Wall System
contractor	Associated Construction Products, Inc.
date of installation	November 2012

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

Located in Sarasota, FL the North Cattleman Road Extension improvement project evaluated both precast panels and TenCate Miragrid® XT/Landmark retaining wall systems for various grade separation needs. A variety of applications needed to be addressed: The Cooper Creek Box Culvert Crossing, Island Bridges, Cattleman Road Mainline, and Cattleman Road Mainline Bridge Crossing. The main scope of the project included the construction of a 96' bridge on Cattleman Road to Center Island, which is situated on a 400 acre lake, the excavation and redesign of a 50 acre lake, and two additional bridges. Concurrently, near Cattleman Road, an extensive recreational boating and rowing competition center was under construction at the Nathan Benderson Park. The federal funding for the project was administered through the Florida Department of Transportation (FDOT) on behalf of Sarasota County, FL.

As with most projects, engineering soundness,

constructability, economics, and aesthetics played key and deciding roles. In reviewing the suitability of different grade separation systems, the configuration of the bridge pilings in relation to the retaining structures presented a unique challenge. Specifically, the close spacing of the bridge support pilings would be in conflict with the continuous steel strapping reinforcement used with traditional MSE panels. Additionally, the ability of the grade separation system to drain water through the face of the structure would be important to quickly allow the release of potential hydrostatic pressure. Several of the walls were used in water applications, meaning the face of the structures would frequently be in contact with rising and falling water levels.

THE DESIGN

Shortly after construction started the Miragrid® XT/Landmark system was suggested as an alternate grade separation solution. With input from the design/builder, the block producer, the block licensor, and the senior project engineer from Prince Contracting Company the segmental retaining wall system was evaluated. Coincidentally, FDOT was in the process of adding the Miragrid® XT/Landmark system to their innovative design list. Ultimately it was deter-

mined that the Miragrid® XT/Landmark system was the best choice to solve the unique challenges of the project.

First, the use of Miragrid® XT geogrid allowed the designer and installers the flexibility to quickly and easily install geosynthetic reinforcement around tightly spacing pilings, conduits, and other obstructions in the reinforced zone. The use of the Miragrid® XT/Landmark system offered the ability to drain quickly when faced with rapidly rising or falling water levels, as in water applications. Since this project was a water application, it was also determined that the steel strapping typically used with panel systems would likely corrode in the presence of water, offering Miragrid® XT geogrids another advantage.



Miragrid® XT geogrid installed around bridge pilings.



Construction of Cattleman Road abutment/water application.



Cattleman Road finished project

Protective & Outdoor Fabrics
Aerospace Composites
Armour Composites

Geosynthetics
Industrial Fabrics
Synthetic Grass

The use of the Miragrid® XT/Landmark system also provided a significant cost savings to the owner since onsite fill material could be used. The available onsite material could not meet the stringent electrochemical requirements to be used with steel/metallic reinforcement.

Finally, the Landmark blocks, manufactured by Coastal, An Oldcastle Company, are a “through-color” product, meaning that pigment is blended through the block. Since the color is blended through the block additional painting and maintenance is not needed as with traditional precast panels.

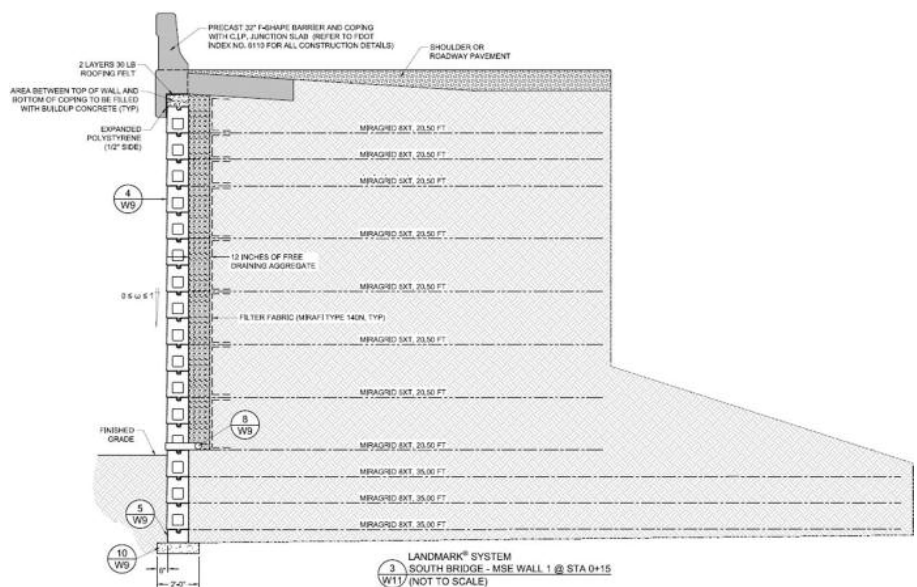
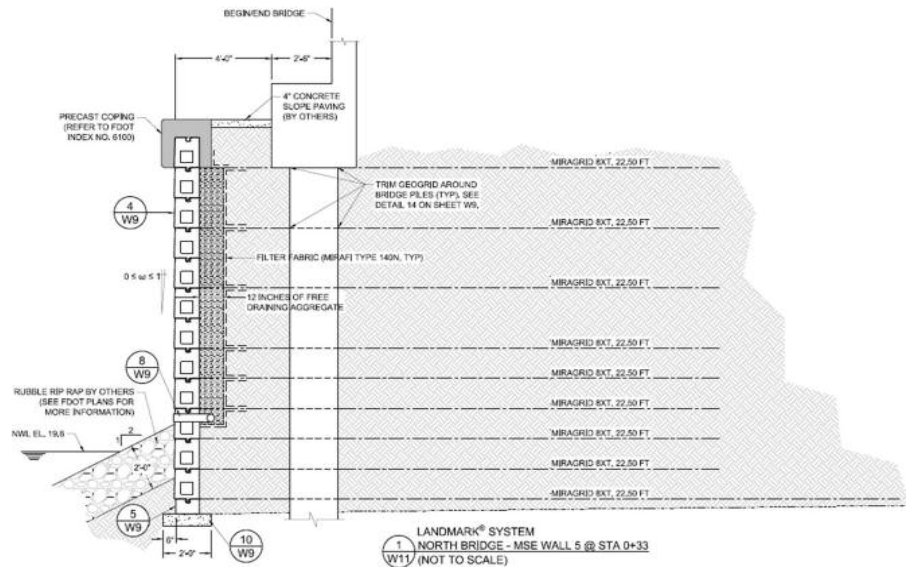
THE CONSTRUCTION

The project consisted of approximately 50,000 SF of Landmark blocks used in the Cooper Creek Box Culvert Crossing, Island Bridges, Cattleman Road Mainline, and Cattleman Road Mainline Bridge Crossing.

Associated Construction Products, Inc. reported that construction went smoothly and especially noted the ease with which Miragrid® XT geogrids can be installed. Miragrid® XT geogrids are flexible and can be easily cut to meet field conditions. The contractor also reported that the Miragrid® XT/Landmark system was installed in half the time allotted for the construction of traditional precast panels.

THE PERFORMANCE

The 2.75 mile roadway improvement project opened in June 2013. Alex Bourdreau, civil engineer and project manager for Sarasota County Public Works Division said: “All in all, the Cattleman Road Extension project was a success. It moves cars through the area smoothly, relieves congestion on I75, and is beautiful to look at.”



Miragrid® XT and Landmark project design cross sections.

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