



▶ Hutchinson Island FDOT | Hutchinson Island, FL | May 2014

Project Partners:

Contractor: Zep Construction

Engineer: Reynolds, Smith and Hills Inc. (RS&H)

Owner: Florida Department of Transportation (FDOT)

Max Depth:
17 ft 5.2 m

Length:
6 ft 1.8 m

Products:
ShoreGuard® SG-950
PileClaw®



Background

Florida DOT needed a long-term solution to stabilize and remediate shoreline erosion on the 1.1-mile stretch of State Route A1A/Ocean Drive on Hutchinson Island, Florida. Years of hurricane damage had compromised access to St. Lucie Nuclear Power Plant and nearby homes.

Marine Structures



Why CMI

Reynolds, Smith and Hills, Inc. considered walls made from steel sheet pile, concrete, and deep soil mixing (DSM). However, all of these materials are highly vulnerable to the extremely corrosive effects of saltwater. ShoreGuard® strength, stiffness, corrosive resistance, cost effectiveness and minimal maintenance features proved vinyl to be the right solution for this project. CMI's PileClaw® Mandrel was chosen due to the project's harsh driving conditions, 60+ blow count soils.



Performance

Neither the engineers nor FDOT had used vinyl sheet piling on this scale before. Prior to construction the FDOT's Construction Engineering Inspection (CEI) contractor visited a site using SG-950 to better understand its installation process and material properties. They specified a 20 LF test wall be installed on-site, and then removed so the sheets could be fully inspected for damage and integrity. RS&H engineered the wall to go in-between the road's edge and the shore. The entire 17 ft tall wall would be below grade. The top one-foot would be embedded in a 2 x 2 foot concrete cap, with the top of the concrete at grade. To meet "storm hardening" specifications, the wall needed to withstand being exposed by a hurricane to the depth of 6 feet.



Installation

The site has cemented sand layers and soil blow counts in the high 60's. CMI provided on-site consultation for every step of the project with prior experience of dealing with difficult driving conditions. First, with two weeks' notice, CMI supplied the PileClaw® Mandrel especially designed for the large SG-950 profile. Second, CMI arranged to have two back-up PC-950 mandrels ready as needed. Zep Construction was able to achieve and install an average of 240 LF per day.