

Port Everglades Southport Turning Notch Extension

Broward County, Florida

Port Everglades is Florida's leader for containerized cargo volume and an ideal entry and departure point for products shipped worldwide.



The project

The Southport Turning Notch Extension project is part of the port's \$437.5 million, multi-year expansion plan and will expand the existing deep-water turnaround from 900 ft to 2,400 ft and allow up to five new cargo berths. A significant portion (1,650-ft) of the new bulkhead construction for the Southport Turning Notch Expansion project included supporting protected Mangrove plantings. Therefore, alternative support of lateral bulkhead restraint to traditional bulkhead tie rods was required.

Subsurface conditions consisted of 23 ft of fine to medium sands with shell and limestone fragments over 7 ft of porous limestone with layers of sand. Beneath this was 30 ft of medium dense limestone.

The challenge

- Constructing the expansion while minimizing disruption to the operating port facility
- The project schedule was driven by environmental factors, requiring high attention to meeting target completion dates

• With little direct land-based access, the lateral restraint work had to be conducted from a barge. Tidal fluctuations added to this installation challenge.

The solution

Keller had previously completed several successful projects at Port Everglades, including 160 permanent soil anchors for a previous extension project. This experience under similar conditions was instrumental in being awarded the contract for the work. Keller's design team developed a value-engineered, permanent, drilled, and grouted soil anchor solution consisting of 250, 65-ft long anchors, with design loads ranging from 65 to 116 kips, bonded into a competent limestone layer at approximately 25 ft below grade. With little land-based access available in the sensitive environment, approximately 180 of the 250 anchors needed to be installed from a barge.

The anchors were installed at 30° from horizontal. All anchors were stress-tested to 133% of the design loads. Of the total number of anchors installed, extended creep tests were performed on 5% while 10% were performance tested.

Keller's fully designed, value-engineered soil anchor solution resulted in a 22% reduction in costs and almost 2-month savings in time compared to the original plans.

Project facts

Owner(s) Broward County/Port Everglades

Keller business unit(s) Keller

Main contractor(s) Moss/Kiewit Orion Marine Solutions Ground improvement

Markets Infrastructure Ports and harbors

Techniques Anchors

Email address

info@keller-na.com

Phone number 1 (800) 456-6548