

Herbert Hoover Dike Rehabilitation Gap Closure Project

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Herbert Hoover Dike (HHD) is a 143-mile earthen dam that surrounds Lake Okeechobee in Florida. Its construction started in 1930, with material dredged and piled up along the lake, in response to the hurricane tides that occurred between 1926 and 1928 that devastated the surrounding area. Over time, whenever the lake water level rose, seepage and piping were observed in multiple sections of the levee, making them more susceptible to failure. The USACE created a program for its rehabilitation, dividing the lake in areas called “Reach” and numbered in order of risk. Between 2007 and 2013, over 22 miles of cutoff wall (COW) was built in Reach 1. The COW was interrupted in proximity of the existing structures and concrete culverts thus leaving gaps in the wall. Completing the continuous COW throughout the Reach 1 became essential in order to put the dike back in normal operating conditions with the consequent benefits to the adjacent communities. The “HHD Gap Closure” project was awarded to TREVIICOS South, Inc. in May 2016 to install several sections of cutoff wall that tie between the existing COW and into four existing structures and across a public road with regular traffic. It was divided into seven work areas distributed throughout three different locations, i.e.: South Bay, Canal Point and Port Mayaca. In order to achieve this result, conventional COW techniques and jet grouting methods were used to build difference section of the COW. Where the logistics allow, the COW was completed by utilizing panels excavated with clamshell and Hydromill in a primary-secondary sequence; however, when the space did not allow for the use of cranes, the contact with the structure was assured by installing jet grouting elements. What makes this project unique is that the panels were excavated under a self-hardening slurry and the jet grouting elements had to comply with all requirements, including dimensions in sandy and clayey soils but even in the intermediate peat and limestone layers and in the bottom sandstone layer. The logistics between the different areas of work and a very tight schedule required an extremely efficient coordination of crews, subcontractors and close collaboration between Treviicos and the United States Army Corps of Engineers (USACE). This paper presents the main characteristics of the work and lists the unique challenges faced as well that the solutions implemented.