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Mobile District

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U.S. Army Corps of Engineers dedicates Walter F. George Cut-off Wall

Mobile, Ala. -- It is not everyday that the U.S. Army Corps of Engineers invites Congressional representatives, state dignitaries and city fathers to a ribbon cutting ceremony to dedicate an invisible structure.

This submerged project repaired a leaky dam and became a Corps of Engineer first when the work was completed in water up to 100 feet deep. The successful submerged secant or cut-off wall will be dedicated June 14 at 9 a.m. (CDT) atop the Walter F. George powerhouse even if the participants and guest cannot see the actual structure.

The statistics that go with this project would make a business proud, especially the Corps Resident Engineer Don Simpson and the joint contractors, Treviicos/Rodio, JV.

- It was under budget.
- It was finished 257 days ahead of schedule. The crews worked 6 days per week, 24 hours per day. All the work was schedule so it would not interfere with power generation, spillage through the dam during high water and to allow vessels to use the locks.
- More than 525,000 man hours were worked with zero lost time accidents and no fatalities. This incredible safety record netted annual safety awards for the prime contractor and two subcontractors.
- Divers made 120 decompression or deep water dives and 68 shallow water dives without incident. This is equal to 6-8 years of dives for Mobile District.

The Walter F. George structure on the Chattahoochee River experienced seepage since it was completed in 1964. The limestone foundation beneath the levees, lock, spillway, powerhouse and non overflow structure deteriorated from erosion and solutioning.

Mobile District monitored and treated the problem. A concrete cut-off wall built in the earthen embankments in the 1980s stopped seepage in that area, but it did not address the seepage under the concrete structure.

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To eliminate this seepage, a concrete secant wall consisting of 469 interconnecting shafts were drilled to from 1,232 feet of the cut-off wall. Massive drill rigs mounted on barges drilled 52-inch shafts into the lake bed in front of the dam on the lakeside. The shafts were filled with concrete to create a narrow honey-comb shaped secant wall.

The underwater project consisted of a two-foot minimum thick concrete cut-off wall from the bottom of the lake down 100 feet. This structure is 1,831 long. A concrete cap on top of the new wall tied into the existing concrete monoliths to seal the seepage from the top.

The project placed 65,000 cubic yards of concrete or the equivalent of making a 4-inch thick, 4-foot wide sidewalk from Birmingham to Mobile, Al. The concrete trucks involved in the project backs over 3,000 miles; envision a concrete truck backing from New York City to Los Angeles.

This was a five-phase project.

1) A trench was excavated immediately upstream of the structures.

2) The trench was filled with flowable fill concrete material.

3) The secant wall area was drilled and filled with concrete. A series of about 500 34-ton, 54-inch diameter casing were lowered to the bottom of the lake and place on top of the trench material. The tip of the casing was set into the earth limestone about 15 feet below the work service. A reverse rotating hammer platform drill was place on top of the casings. The platform fed the cutter head and drill stem through the water and layers of limestone to an elevation of -5 msl. The cutter head and drill stem were pulled out and the concrete was poured into the drilled hole.

Primary casings were set, then secondary casing were put in place creating the honey comb effect bulkhead.

4) The flowable concrete material was excavated.

5) A concrete cap was placed over the new wall to tie the existing concrete monoliths of the Walter F. George structure to seal seepage from the top.

“Partnering has proven successful and played in important part in this contract,” said Simpson.

The public was relieved to find that work did not affect the lake levels.

The construction project did not come with out surprises. The cut-off wall must be continuous. This meant cutting through or going around obstructions such as the coffer cell used in the original construction of the powerhouse. It had to be removed; everyone was hoping that this could be done as one piece. Removal of the cell proved to be the most hazardous part of the operation. Divers used an electric torch to cut the material; then prepare it to be moved and lifted out piece-by-piece.

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This project is unique to the Corps of Engineers as it will be accomplished in water as deep as 100 feet, and thus making it the first of its kind. The secant wall will be a permanent fix to address the seepage problem and improve the overall safety of this earthen and concrete structures..

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