



Rehabilitating the Nation's Dams and Levees

... leader in the foundation engineering field





full service geotechnical & foundation

Operating since 1997, TREVIICOS Corporation, is the North American subsidiary of the Trevi Group of Italy.

Through acquisition of Icos Boston, a long-established company in the U.S., in the late 1990s TREVIICOS took part in building the complex system of foundations for the megaproject to sink Boston's Central Artery, better known as the Big Dig. With that experience chalked up, TREVIICOS started extending its reach deeper into the country, becoming involved in major projects with resonance well beyond the U.S.

Key to securing future contracts for Dam Rehabilitation projects was the cutoff wall construction for the Walter F. George Dam on the Chattahoochee River in Alabama, a project instrumental in earning TREVIICOS the attention of the U.S. Army Corps of Engineers (USACE).

The outstanding work by TREVIICOS at the Walter F. George Dam in Alabama in 2003 laid the ground for the contractor to bid on other contracts to place three dams in conditions of safety.



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engineering field



n contractor



slurry walls
cutoff wall
secant piles
caissons
jet grouting
deep mixing
soil improvement
auger cast piles

We are a service company. Our success is based on exceeding our clients' expectations. To that end, we demand professionalism and integrity from our people, while giving them the means to implement their competencies.

We can only be as effective, authoritative and resourceful as our team is. Our pledge is to create a work environment where all individuals can achieve their maximum potential.

Our goal is to offer the best services in the underground construction field, which we claim as our own.



The Walter F. George Lock and Dam was constructed on the Chattahoochee River between 1955 and 1963 with the dual function of improving navigation and generating power. Its 82 ft. by 450 ft. lock can accommodate large barge traffic, while its four generating units with a plant capacity of 150 MW have an average energy output of 453,000 MWH.

From 1962 to 1985 a series of remedial works was performed using several techniques, but seepage continued under the dam, jeopardizing its power generation and potentially undermining its stability.

In 2001 TREVICOS/Rodio JV was awarded the project for the installation of a 24-inch thick plastic concrete cutoff wall upstream of the concrete portion of the dam and within sections of both embankments to stop the seepage.

Walter F. George Dam Alabama



The plastic cutoff wall was successfully designed and executed by implementing innovative engineering solutions in demonstration of the technological leadership of the companies making up the JV. The wall in front of the dam was constructed from the 100-ft deep lake bed into various rock formations with UCS up to 19,000 psi down to a depth averaging 110 ft by Secant Pile wall, drilled by using a reverse-circulation rig, while on both dam embankments it was excavated using hydromill equipment down to a depth exceeding 200 ft.

The piezometer readings taken downstream and upstream of the dam after installation of the cutoff wall showed a significant decrease in seepage, indicating the cutoff wall's success. The project accumulated over 500,000 man hours with no lost time accidents.

Tuttle Creek Dam was constructed by the U.S. Army Corps of Engineers on the Big Blue River in Northeast Kansas. The dam is located in an area of moderate seismicity which required the safety of the dam to be reevaluated.

In September 2005, TREVICOS was awarded the baseline contract for the Foundation Modification Project. The baseline contract comprised constructing a cutoff wall on the upstream toe of the dam and providing preconstruction services to support developing the final design of soil stabilization, which would reinforce the potentially liquefiable foundation soils and prevent large displacements of the dam from occurring as a result of an earthquake.



Tuttle Creek Dam Kansas

The baseline contract included four options to be negotiated during the construction of the cutoff wall. One of the options awarded was the execution of a large field test, where Jet Grouting (double and triple fluid), Deep Mixing and slurry wall technologies were tested. From the outcome of this field test and the preconstruction services provided by TREVICOS, the Army Corps of Engineers redesigned the downstream stabilization concept, selecting slurry wall technology to build 350 self hardening cement bentonite walls, 45 ft long, 4 ft wide and 70 ft deep, perpendicular to the axis of the dam.

The downstream soil stabilization, (Main Construction), was awarded to TREVICOS as a "Construction Manager at Risk" type contract, which included the cement bentonite walls, in addition to the construction of a working platform, the restoration of the downstream embankment and the overlay of riprap on part of the upstream face of the dam. The total project duration was approx. 5 years, with an early project completion expected for September 2010. This marked a very successful project for both the U.S Army Corps of Engineers and TREVICOS, since the partnering effort led to a reduction in the overall project cost and halved completion time with respect to original government estimates.





Mormon Island Auxiliary Dam California



Mormon Island Auxiliary Dam (MIAD) is located near Sacramento, California. MIAD is an earth fill dam and component of the Folsom Dam, which impounds the American River to form Folsom Lake. In the 1990s, the Mormon Island Auxiliary Dam foundation was modified upstream and downstream to limit seismic deformations. Additional seismic strengthening of the MIAD foundation soils in the downstream toe area is still required. In order to treat the potentially liquefiable weak foundation soils, the U.S. Bureau of Reclamation anticipated the possibility to utilize a seismic retrofit downstream of the Dam. To establish the feasibility of the technique for the project, a full-scale field trial was designed on a small portion of the dam, using different operational parameters. TREVICOS was awarded the ten-month project in 2007. Several state-of-the-art applications were implemented and tested during two different phases. The project was performed to high safety and quality standards. For the first time, grout density was recorded in real time and spoil quantities were tracked and recorded. Drilling operations were digitally tracked and recorded in real time. Verticality checks were conducted on every column and core hole completed.



Wolf Creek Dam Kentucky



Wolf Creek Dam is on the Cumberland River, near Jamestown, Kentucky. The dam was built in the 1940's for flood damage mitigation and for hydropower production. Lake Cumberland was created by the dam and is the largest man-made reservoir east of the Mississippi River.

In 1962, the U.S. Army Corps of Engineers (Nashville District) started repair work due to seepage through and /or under the cutoff trench. After numerous remediation attempts, the District conducted an extensive rehabilitation evaluation study and concluded that the best remedy would be to construct a new concrete cutoff wall. In July 2008, the Corps of Engineers awarded the contract to the JV of TREVICOS and Soletanche on the basis of a Best Value selection.

The concrete barrier wall is approximately 980,000 sq. ft. in area and is the primary element of the Rehabilitation Project. The wall will be a combination of secant piles and rectangular panels installed through the embankment to a depth of about 275 ft. into the underlying karst rock formation. It will effectively cut off seepage through the limestone. The works started in October 2008 and are currently in progress.



The Herbert Hoover Dike (HHD) surrounds Lake Okeechobee in South Florida, which is the second largest freshwater lake in the United States. Lake Okeechobee provides drinking water for communities around the lake and to millions of people living along the lower East coast. Lake Okeechobee is also a vital source of irrigation for the agricultural industry in the South Florida region. HHD is owned and operated by the U.S. Army Corps of Engineers - Jacksonville District (USACE).



Herbert Hoover Dike Florida



The original levee system around Lake Okeechobee was constructed in the early 1900's to provide flood protection to the surrounding communities and for controlled irrigation. The levee was largely constructed of mud, muck, sand and shell fragments over the porous limestone bedrock. In recent years HHD has experienced a high degree of seepage under and through the levee, which could allow for a failure of the system to contain the lake waters, resulting in the loss of life, property and natural resources.

In 2007, the Army Corps of Engineers placed the HHD on the Top 6 list of dams in the nation needing repair and has prioritized and budgeted more funding for HHD than any other dam safety construction project in the nation. The repair of HHD is known as the HHD Rehabilitation Project. One of the main components of the HHD Rehabilitation Project is construction of a cutoff wall within the levee that will eliminate the existing seepage through the levee foundation and limestone layers below.

In 2007, TREVICOS was selected as one of three contractors to bid on Task Orders within Reach 1 of the HHD Rehabilitation Project. The award of each Task Order was based on the "best value" proposal method. In 2008, TREVICOS was awarded Task Order #3, which is located in Belle Glade, FL and includes construction of a 500-ft demonstration section with options of four additional sections totaling 3.2 miles of cutoff wall. The cutoff wall is being constructed from the top of the levee to a maximum depth of 80-ft by the slurry wall panel method. The soil and rock along the alignment was replaced by self-hardening slurry, which has controlled strength and permeability properties. Cutoff wall construction was successfully completed in 2010.

In 2010, TREVICOS was awarded Task Order #7, which is located in Pahokee, FL and includes a base option plus two additional options totaling 3.4 miles of cutoff wall. TREVICOS will utilize the same cutoff wall installation means and methods as used on Task Order #3. This project is estimated for completion in 2012.





New Orleans LPV 111 Louisiana

Deep Mixing (DMM) for the LPV-111 Levee in New Orleans (elimina virgola) presented many Quality Control and logistical challenges. The project consisted of over 18,000 elements. Eight deep mixing rigs were utilized: three double axis SOILMEC SR-90s, one each single axis SR-70 and SR-80, and 3 CI-CMC rigs. Eight batch plants were used to prepare the grout using over 460,000 tons of slag/cement binder.



The work was accomplished within the aggressive schedule by working 24 hours per day, 5.5 days a week. The U.S. Army Corps of Engineers (USACE), using the early contractor involvement (ECI) process, developed together with TREVICOS (elimina virgola) a stringent set of specifications in order to ensure a quality product was installed.

The drill rigs were equipped with innovative electronic control and logging devices in order to record all pertinent parameters of each element, as well as to perform many other different functions. Quality Control of the installation process was continually monitored by examining these records, with control of the grout produced at each batch plant and coring of over 34,000 linear feet of the 3" and 4" diameter core.

THE USACE implemented an extensive Quality Assurance program to monitor the entire deep mixing process, which included independent testing to confirm the Quality Control test results.





Mormon Island

Tuttle Creek Dam

Wolf Creek Dam

W.F. George Dam

Herbert Hoover Dike

New Orleans
LPV-111



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