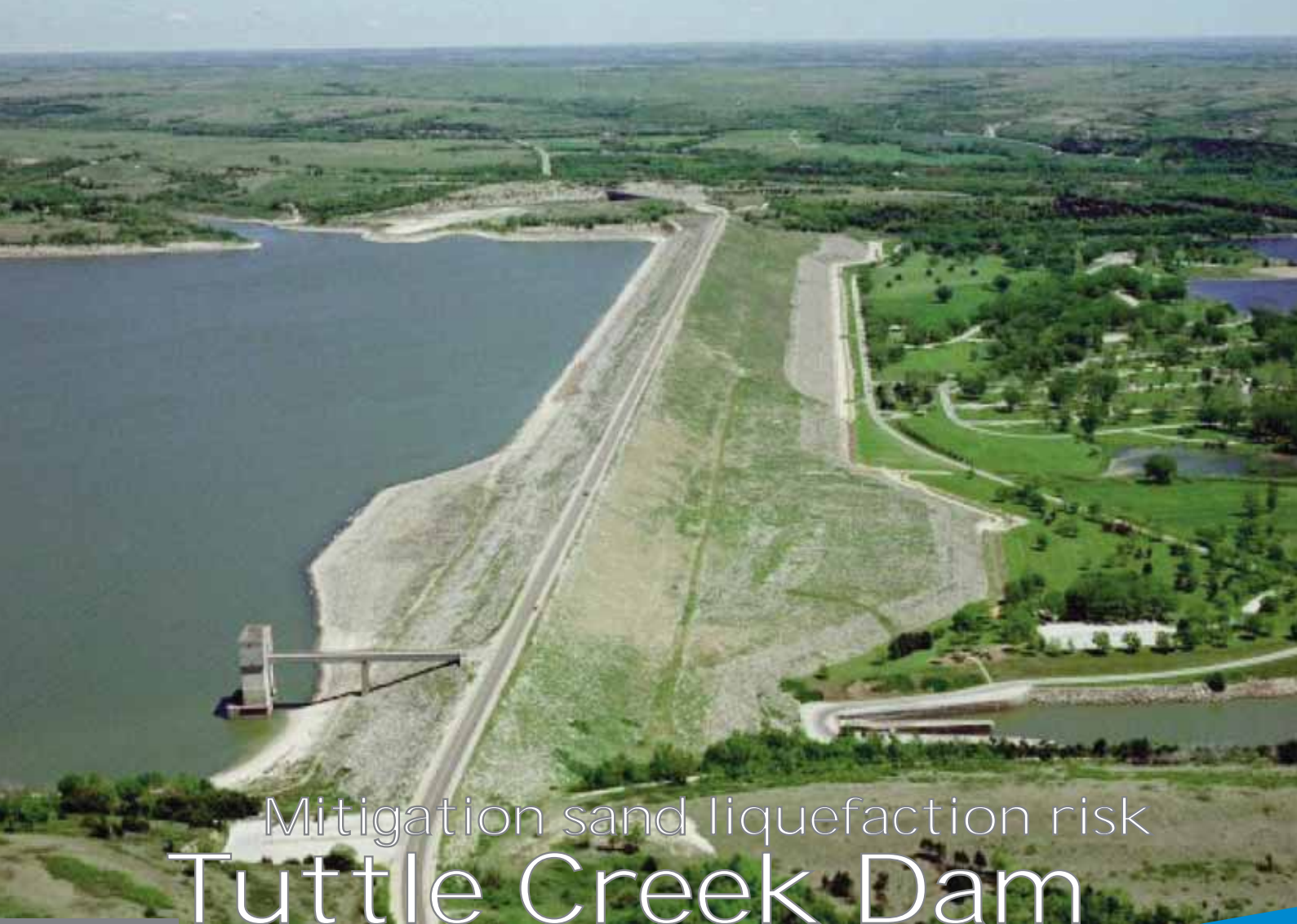


worldwide leader in the foundation engineering field



REFERENZA TECNICA - TECHNICAL REFERENCE



Mitigation sand liquefaction risk Tuttle Creek Dam

Manhattan, KS - U.S.A.

Diaphragm walls



Ciente : <i>Owner</i>	US Army Corps of Engineers
Contrattista principale : <i>Main Contractor</i>	TREVIICOS
Durata dei lavori : <i>Duration of work</i>	2008 - 2009

Introduction

Tuttle Creek Dam was constructed by the U.S. Army Corps of Engineers ("USACE") 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 extensively studied by the USACE. In September of 2005, Treviicos South was awarded the baseline contract for the Foundation Modification Project.

Main features

The baseline contract, approximately 50 Million dollars, comprised constructing a jet grouting cutoff wall on the upstream toe of the dam and providing pre-construction services to support developing the final design of the soil stabilization, which will reinforce the potentially liquefiable foundation soils and prevent large displacements of the dam from occurring as a result of an earthquake.

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 (Test Program Option), approximately 4 Million dollars in value, where Jet Grouting, double and triple fluid, Soil Mixing and slurry wall technologies were tested.



From the outcome of this field test and the preconstruction services provided by Treviicos South, the USACE completely re-designed the downstream stabilization selecting the use of the slurry wall technology to build some 350 self hardening cement bentonite walls, 45 ft long, 4 ft wide and 70 ft deep, that were installed perpendicular to the axis of the dam.

The downstream soil stabilization, known as Main Construction, was awarded to Safety First Treviicos South as a Construction Manager at Risk type contract, which includes More than 370,000 without loss time apart from the cement bentonite walls, the construction of a working platform, the accidents restoration of the downstream embankment and the overlay of riprap on part of the upstream face of the dam. The contract amount is \$ 125 Million dollars and the total project duration around 5 years, with an early project completion expected for September 2010.

This has been a very successful project for both the USACE and Trevicos South, because as a result of the partnering effort carried out it was possible to reduce the overall project cost and completion time in half of the original Government's estimations.

The project has run four years without any time accident, some 370,000 hours, obtaining the USACE Large Constructor Safety Saves Award two years in a row.



Slurry Wall Technology

No. of Walls:	351
Average depth:	70 ft
Surface Treated:	1.200.000 sqft
Volume Treated:	200.000 CY

Safety first

More than 370.000 without loss time accidents.



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