

Additional 1200ft (366m) lock development at the Kentucky Dam



CASE STUDY

The Kentucky Lock and Dam is located on the Tennessee River near Grand Rivers, Kentucky.

The 184-mile reservoir is the largest in the Eastern United States and spans across parts of Kentucky and Tennessee. Its existing navigation lock is 600ft (183m) long and the addition of a new landward navigation lock of 1,200ft (366m) increases the economic capabilities to commercially use the river for transport and commerce.

The United States Army Corps of Engineers has commissioned [Robertson Geo](#) customer Coastal Drilling as the geotechnical subcontractor tasked with acquiring borehole data of subsurface rock consistency and structure for the installation of rock anchors, and the investigation of foundation grouting along the existing lock chamber.



On site in Kentucky: the Robertson Geo mini winch is flexible and highly mobile for deployment of wireline subsurface borehole probes for data collection, real time data is viewable through Robertson Geo-CAD® acquisition software.

Coastal Drilling has deployed the [High Resolution Optical Televiewer \(Hi-OPTV\)](#) geophysical probe to map out subsurface features. The primary evaluation is the structural integrity for the bonding materials used for over one hundred high capacity rock anchors and a grout curtain to stabilize the rock of the existing lock, essential for the excavation phase for the new lock chamber.

Robertson Geo's High Resolution Optical Televiewer probe was the preferred tool for investigation for its capability to collect 360 degrees of high resolution full colour borehole imagery, oriented to magnetic north. The Hi-OPTV collects real-time data that is viewable during the survey and can be presented and interpreted as a strip log if decisions are needed to be made on site using the data acquisition software - Robertson Geo-CAD®.

Geo-CAD® offers fracture analysis, rose diagrams, and stereonet derived from the image in post processing. The user has the ability to populate sinusoids over selected features based on their dip and direction with the image and fractures oriented to magnetic north which aids when determining their dip angle or azimuth.

The deployment and evaluation of the site characterisation data from Robertson Geo's Hi-OPTV is being used in a critical role for the geophysical evaluation for the planning and construction of the new 1,200ft (366m) lock addition at the Kentucky Dam.



Construction work in progress at the Kentucky Dam.



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