

GROUT CURTAIN INSTALLATION BEAR CREEK DAM

Franklin County, Alabama

Owner: Tennessee Valley Authority
Geo-Con

Engineer: Paul C. Rizzo Associates Inc.

Description of Work:

Armstrong Drilling was contracted by Geo-Con under the direction of the Tennessee Valley Authority (TVA), to install a grout curtain in the rock foundation as a portion of a dam restoration project at Bear Creek Lake in Franklin County, Alabama.

Armstrong Drilling installed borings in a variety of manners dependent on their location along the dam alignment. Borings within the spillway were installed in three phases:

1. Coring through spillway concrete slab with a concrete core machine.
2. Drilling through the overburden material and advancing a 4" PVC casing into the bedrock layer.
3. Coring through the rock foundation.

Two grout curtain lines were installed (upstream and downstream). The borings were installed at 15-degree angles and in a split-spaced pattern. Borings were drilled up to 90-feet below the surface of the dam.

Primary borings and subsequent higher order borings were drilled with a rotary percussion rig utilizing a destructive diamond bit with water-only flush.

Water pressure tests were conducted in 20-foot ascending stages to assess the permeability of the rock.

Grouting of the bedrock progressed in 20-foot ascending stages. Stages were isolated with a grout packer apparatus that consisted of a single pneumatic packer attached to the bottom of an aluminum pipe. Grout flow rates, apparent lugeon, pressure, and total gallons of grout pumped were recorded and displayed by a real-time monitoring system.

Geo-Con and Rizzo Associates established a very stringent grouting program to achieve sufficient refusal/closure of fractures while maintaining a limited grouting reach in each boring.

Start Date: February 2008
Completion: October 2008

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