

Efficiency of Sprayed Bentonite for Sealing of Fishpond Dams - Experimental Testing

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Abstract - In this paper, the research focused on the efficiency evaluation of sprayed bentonite as a sealing layer of fishpond dams. The technology of sprayed bentonite was tested on a real scale model of an earthfill dam which was built as a 3 m wide section. The dam model was built with homogeneous earth material relatively permeable and equipped with an internal drain to monitor seepage flow. This was collected in a container equipped with an ultrasonic sensor for water level measurement purposes. The facility was also equipped with sensors for water level measurements in the reservoir upstream the dam. First, the seepage through the dam was measured without the sprayed bentonite-sealing layer. Then, the bentonite layer was sprayed on the upstream face of the dam by using a spraying technology based on the one used for dry process of sprayed concrete. This technology included a special nozzle and it was developed at Czech Technical University in Prague within the recent research. After the application of the sealing layer, the seepage through the dam was measured again and compared to the corresponding seepage without this sealing layer. The results indicate that the sealing bentonite layer lowers the seepage flow about four times compared to the solution without this sealing layer. Hence, this technology revealed efficiency with regard to the seepage flow reduction whereby will be further investigated.

Keywords: Earthfill dam; sprayed technology; bentonite; sealing, seepage.