

Evaluation of methods for the maintenance and repair of concrete dams

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Abstract

Due to the reduction of water resources and frequent droughts and the proper storage and proper use of water resources, the design and implementation of large concrete dams has increased dramatically. Construction is one of the most engineering structures in man-made agriculture, which also in the design stages and in the process of implementation, special attention is required. Most large and high dams are constructed concrete (weighted, arched and arched). The concrete structures of concrete dams and their dimensions over time Due to various atmospheric and environmental degradation factors, such as hydrostatic and hydrodynamic loads, temperature variations and freezing, they are eroded and disrupted. Due to the great cost of constructing dams, concrete dams construct maintenance and rehabilitation methods are of great importance. Nowadays, using sensors and fiber optics, using precision instruments and Exploration wells can be used to find damaged parts of the dam that have undergone necessary repair and rehabilitation measures. In this article, the methods of restoration and reinforcement of concrete dams in different conditions are discussed and solutions to Design and implementation of more durable structures is proposed.

Key words: maintenance, post-stress, concrete injection, retrofitting.

1. Introduction

Although concrete made with Portland cement is essentially durable, but some concrete dams may still need to be repaired due to defects in design and implementation or environmental factors. Old walls can be due to a set of impacts Various types of vulnerabilities. Typical problems such as alkali reactions of gravel stones, melting and freezing, scouring, sulfate-damaging effects, etc., are common problems with these dams. Also, moving light water 1 at high speed and under pressure can also be very harmful. In cases where the structure leaves, water can move freely within the Turks and affect Washing and melting and freezing cycles. Repairs in some projects by removing undesirable concrete surfaces upstream, deploying metal molds or prefabricated concrete panels to create the original geometric shape and fill Concrete intervals have been performed. In many projects, continuous maintenance is required, due to the facilitation of some structural modifications, to reduce the level of the reservoir. Damaging is one of the most important factors for providing its reinforcement facilities [1]. Among other vulnerable factors on earthquake concrete dams, the earthquake is the most destructive natural phenomenon, usually more than a few It does not last long and at the same time