

公田岭水库大坝除险加固工程设计

目录

摘要

本设计主要是有关公田岭水库大坝除险加固设计，公田岭水库位于陵水县西部地区的英州河支流上游的英州镇公田岭村，工程为小（一）型四等工程，主要建筑物为4级，次要建筑物和临时建筑物的等级为5级，原水库枢纽工程主要由土坝、输水洞及溢洪道组成。枢纽的主要任务以防洪、灌溉为主。

公田岭水库现状存在的问题如下：

(1)坝顶高程偏低，不满足现行防洪标准要求；坝体填筑不密实，坝体坝基渗漏严重；

(2)坝后坡草皮护坡及坝坡排水系统损坏严重；

(3)排水棱体损坏严重且已失效；

(4)输水洞为浆砌石涵洞，浆砌石老化、脱浆、漏水严重；

(5)溢洪道年久失修，已不能再正常使用。

本文主要进行了下列工作:回顾总结了我国土石坝发展的基本概况及运行现状，对土石坝病害的种类及评判方法进行归纳;综述了土石坝加固技术及方法，对各种除险加固措施进行了分析比较，并对公田岭水库大坝除险加固进行了系统的分析，对坝顶高程进行复核，结合坝体蓄水后不同水位条件下坝体浸润线的变化，分析模拟水位的变化对坝体稳定性和变形等方面的影响以及对泄洪灌溉洞的设计。从大坝病害勘察、分析，到除险加固设计直至工程施工处理均进行了较为全面的讨论。

关键词：土石坝；除险加固；浸润线；渗流稳定分析

Abstract

This design is mainly concerned with the reinforcement design of Jiaohe Ling Dongyishe Reservoir. Jiaohe Ling Dongyishe Reservoir is located in Dongcun Lingdong Yishe Reservoir of Tianbei Town, Jiaohe City. The project is a small (2) type fifth-class project. The main building is grade five. The original reservoir pivot project is mainly composed of earth dam, water conveyance tunnel and spillway. The main tasks of the hub are flood control and irrigation.

The existing problems of Jiaohe Ling Dongyishe Reservoir are as follows:

(1) There is no slope protection in the upstream and downstream of the dam body, especially in the upstream dam slope, where the water level varies more steeply and the ability of resisting wind and wave is poor.

(2) There is no seepage in the dam body. When the dam foundation is running at high water level, the soil in the old channel is slightly wet and there is a slight seepage problem.

(3) The water conveyance tunnel is a concrete pipe structure, which is disjointed and dislocated, and the gate is damaged, so it can not be used normally.

(4) Spillway is an earth channel excavated temporarily, without any protective measures, it can not meet the requirements of flood discharge.

This paper mainly carries out the following work: reviewing and summarizing the basic situation of the development and operation of earth-rock dams in China, summarizing the types of diseases and evaluation methods of earth-rock dams, summarizing the reinforcement technology and methods of earth-rock dams, analyzing and comparing various reinforcement measures, and carrying out the reinforcement of Jiaohe Ling Dongyishe Reservoir. Systematic analysis is carried out to check the dam crest elevation. Combined with the changes of dam saturation line under different water levels after dam impoundment, the effects of simulated water level changes on dam stability and deformation and the design of flood discharge irrigation tunnel are analyzed. From the investigation and analysis of dam diseases, to the design of danger removal and reinforcement, to the treatment of Engineering construction, a more comprehensive discussion has been carried out

Key words: Earth-rock dam; danger removal and reinforcement; saturation line; seepage stability analysis

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