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The Survey and Prevention of Bridges and Culverts Flood Hazard in the Eastern Mountainous Areas of Jilin Province

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The Survey and Prevention of Bridges and Culverts Flood Hazard in the Eastern Mountainous Areas of Jilin Province

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Abstract. The catastrophic floods in Jilin province on July 28th 2010 led to the serious multiple bridges and culverts flood hazards in the roads in eastern mountainous area, and brought about the inestimable economic losses. In order to effectively strengthen prevention and set up the reasonable measures of management bridges and culverts flood hazard, on the basis of the survey of bridges and culverts flood hazard along the road, we analysed the reason of it. After that we put forward the measures of the prevention and cure, which including the measures of the design, construction, management, maintenance etc. Based on the above survey of the bridges and culverts flood hazard, we found that its prevention and cure should find the main reason of causing bridges and culverts flood hazard, make the prevention coming first, pay various attention to bridges and culverts flood hazard, its occurrence can get effective control.

Introduction

Bridges and culverts flood hazard is the most serious problem of highway flood hazards. The catastrophic flood on 28 July 2010 has caused serious damage by flood of many highway sections in eastern mountainous areas of Jilin province, which brought about immense economic losses. The highway sections refer to the roads of Wuchang to Huadian, Changchun to Tianchi, Hegang to Dalian and Antu to Erdao Baihe. This time we have a post-disaster investigation of bridges and culverts flood hazard in the above four provincial arteries. We find that there are 65 culverts flood hazard and 75 bridges flood hazard. This survey has the vital significance for us to understand the causes of causing the damages of areas bridge culvert flood [1,2] hazard in the eastern mountainous areas of Jilin Province, the further prevention of highway flood hazard, at the same time for us to set up the reasonable measures of management bridges and culverts flood hazard in eastern mountainous areas of Jilin province.

Flood characteristics in mountainous areas

Mountain flood is the fast and powerful flood which usually happens in the valleys of the mountains. Its characteristics are fast speed, large quantity water [3,4] flow, strong impact, serious destructiveness, sudden and instability, short time, and often occurs at night.

The survey and analysis reasons of bridges and culverts flood hazard

According to the field investigation, we can find the main reasons for bridges and culverts flood hazard. Then we will have a specific analysis of all kinds of main reasons which influence bridges and culverts flood hazard, combining with the situations in this investigation.

Bridge flood hazard.

The bridge flood hazard is the bridge damage that caused by flood and the disasters. Its main performances are bridge washed out, the bridge [5,6] conical slope or subgrade washed out and diversion structure damages.

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