عنوان مقاله:

genetic algorithm in optimum design of stepped spillway and its downstream energy dissipators

محل انتشار:

سمپوزیوم برآورد عدم قطعیت در مهندسی سد (سال: 1384)

تعداد صفحات اصل مقاله: 8

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خلاصه مقاله:

In the past years considerable research was done on stepped spillways. Investigations were conducted to understand the hydraulics on the stepped face of Roller Compacted Concrete (RCC) dams and overlays for embankment dams. Also a number of embankments were designed with concrete overtopping protection shaped in a stepped fashion. During large overflows on stepped chutes, there is no skin friction between mainstream and steps, and flow resistance is basically form drag. Significant energy losses occur along the stepped chute so that the energy dissipation structure, e.g. the stilling basin, becomes smaller and more economic. In addition, in design conditions when discharge, slope of the normal ground and the height of spillway are available, there are so many combinations of width and the number of steps, which leads to different head losses. In each feasible case the remained head should be dissipate by the energy dissipaters in down stream, which are much cost consuming. So the cost of project which is consist of spillway and it’s down stream dissipaters should be minimized. In this study, the Genetic Algorithm has been applied to find the best combination of design variables to minimizing the total cost of both structures. The results show the efficiency of GA in this field of application. Furthermore, GA has a very rapid convergence to feasible .and sufficient optimum

کلمات کلیدی:

Genetic algorithm, Stepped spillways, Optimum design

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