عنوان مقاله:

Seismic failure analysis of concrete gravity dams considering the interaction of dam-foundation-reservoir, case study : Kowsar dam, Iran

محل انتشار:

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خلاصه مقاله:

High-rise concrete dams are widely used in most countries today. Predicting the response of these types of dams under severe earthquakes is more important than in the past due to the importance of safety and economic issues. Due to the low tensile strength of concrete, tensile cracks are formed in concrete dams even under operating loads, and these cracks are mostly superficial. However, under critical conditions and as a result of increased loads on the surface such as earthquakes, these surface cracks join together and cause the safety of the dam to decrease. Due to the dependence of the results of the nonlinear analysis on factors such as the shape of the dam, the properties of the materials, the boundary conditions modeling method, and the height of the water in the tank, it is not possible to get accurate and appropriate seismic behavior of dams without using nonlinear analysis. In this article, the Kowsar gravity concrete dam, which is known as a strategic dam in the southwest of Iran and provides drinking water to more than ۲.۵ million people, was selected as a case study, and its seismic failure analysis was carried out using non-linear models available in ABAQUS finite element software were performed under selected accelerogram according to the region. In this study, the interaction of the dam, foundation, and reservoir was influenced in the analysis to reach a more realistic answer. To validate the results of this study, the gravity concrete dam of koyna was used and the results were compared with the available laboratory data for this dam. The analysis results of this research predict the place of crack initiation and the path of crack propagation in Kowsar .Dam so that there is a close agreement between the results of koyna Dam and Kowsar Dam

کلمات کلیدی:

concrete gravity dam, seismic analysis, dam-foundation-reservoir interaction, Kowsar Dam