

## Physical Model Method for Seismic Study of Concrete Dams

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**Abstract text:**

The study of the dynamic behaviour of concrete dams by means of the physical model method is very useful to understand the failure mechanism of these structures to action of the strong earthquakes. Physical model method consists in two main processes. Firstly, a study model must be designed by a physical modeling process using the dynamic modeling theory. The result is a equations system of dimensioning the physical model. After the construction and instrumentation of the scale physical model a structural analysis based on experimental means is performed. The experimental results are gathered and are available to be analysed.

Depending on the aim of the research may be designed an elastic or a failure physical model. The requirements for the elastic model construction are easier to accomplish in contrast with those required for a failure model, but the obtained results provide narrow information. In order to study the behaviour of concrete dams to strong seismic action is required the employment of failure physical models able to simulate accurately the possible opening of joint, sliding between concrete blocks and the cracking of concrete. The design relations for both elastic and failure physical models are based on dimensional analysis and consist of similitude relations among the physical quantities involved in the phenomenon. The using of physical models of great or medium dimensions as well as its instrumentation creates great advantages, but this operation involves a large amount of financial, logistic and time resources.

**Key Words:**

Concrete Dam; Physical Model; Earthquake; Shaking table.

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