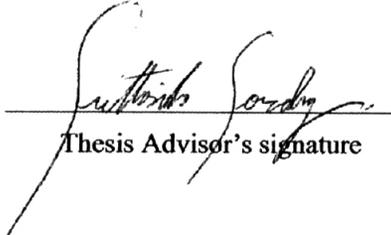


Kriengkrai Tansupo 2008: Dam Safety Analyses of Earth and Rockfill Dams Induced by Earthquakes Using Dynamic Response Analysis Method: Case Study of Srinagarind Dam. Master of Engineering (Civil Engineering), Major Field: Civil Engineering, Department of Civil Engineering. Thesis Advisor: Assistant Professor Suttisak Sorulump, Ph.D. 164 pages.

Srinagarind dam is located in the seismic risk area which can affect the dam. In the past, the stability of Srinagarind dam was designed with 0.10g seismic coefficient (k_h) by Pseudostatic method. Nowadays, the dam has to be analyzed by dynamic response analysis method to be more realistic of dynamic behavior of dam materials. Due to inadequate of acceleration time history data, 213 recorded from 35 earthquakes events at rock site were selected for analyses. The largest peak ground acceleration (PGA) used in this analysis is 1.17g. The predominant period mostly between 0.1 – 0.4 second and all records are within 400 kilometers form epicenter. The natural periods of dam are 0.6 - 0.9 second, therefore the resonance cannot occur.

The dynamic response behaviors of dam are different in each of dam zone. The displacement and acceleration in the horizontal direction of dam significantly increases with dam height above elevation of +180 m.MSL. The permanent slope displacement from seismic force found that it depends on geometry, material properties, reservoir water level, and ground motion parameters. In the case of reservoir water level effect, the slope displacement decreases when the reservoir water level decreases. According to the results, the permanent slope displacement calculated by Swaisgood (1998) method is closed to Newmark's deformation method (1965). The seismic slope displacement in the upstream slope at normal high water level is a maximum value of 6.82 m. (3.86 m. settlement). The results show that Srinagarind dam can be withstanding with the earthquakes since the freeboard of the dam is 5 m. However, the dam and some instruments in the dam crest can be damaged by dam crest seismic deformation.


Student's signature


Thesis Advisor's signature

16 / May / 2008