An experimental verification on the equivalent-linear dynamic analysis of slopes using the dynamic scale modeling

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ABSTRACT

The nuclear regulatory standard of Korea provides that the dynamic analyses must account for the effect of cyclic motion of the earthquake on soil strength properties (KINS, 2015). The pseudo-static analysis method has been widely used to determine the dynamic slope stability in Korea. However, the dynamic stress-strain relation is not properly considered in pseudo-static analysis method, and 'seismic coefficients' used in pseudo-static analysis are highly controversial. Therefore, the dynamic numerical analysis method, which is based on the dynamic stress-strain relation of soil, could be an alternative method to determine the dynamic slope stability. Kim et al. (2020) performed geotechnical shaking table test on slope scale models. The slope scale model was built using the soil sample recovered from the nuclear power plant site in Korea, and various input ground-motions including the design response spectrum of the nuclear power plant were used for seismic excitations. In this study, seismic response of the slope scale model was simulated using the equivalent-linear dynamic analysis methods. Then, the amplification characteristics of the test and simulation results were comparative analyzed.

REFERENCES

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