

عنوان مقاله:

A New Method for Estimating Deformability Modulus of Plastic Concrete- Gotvand Dam Experience, Southwest Iran

محل انتشار:

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خلاصه مقاله:

We present a new technique for estimation of the elastic modulus of plastic concrete. A mixture of typical concrete with clay and bentonite, plastic concrete has been widely used in recent years for developing diaphragm cut-off walls in many dam projects throughout the world. It is important to properly estimate the elastic modulus of plastic concrete for dam safety because it should be close to the elastic modulus of surrounding soil to withstand the imposed deformations without breaking up. Nowadays, with increasing the number of dams equipped with plastic-concrete cut-off walls, the proper estimation of the elastic modulus of plastic concrete is a matter of concern for many dam projects all over the world. The problem would be of great importance and complexity since this material neither behaves like an ordinary concrete nor like a natural soil. A review of the literature showed that the existing methods for elastic modulus calculation are not so efficient and the obtained data are scattered. After several experiments, we noticed that the main problem associated with the error in modulus estimation is the way that the strain is being measured during the test. Therefore, we proposed a new technique for strain measurement. To resolve the problem, we changed the strain gauge arrangement and shortened the distance used for strain measurement. The strain gauge was directly connected to the sample. Using the new technique, the stress-strain curve of plastic concrete was significantly improved and showed more stable and reliable behavior. A reasonably good time trend was observed for age-elastic modulus relationship of specimens using the new method. We recommend the application of this technique for estimation of the deformability modulus of plastic concrete in dam projects.

کلمات کلیدی:

Dam engineering, Plastic-concrete- cut-off wall, Deformability modulus, Gotvand storage dam

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