عنوان مقاله:

Evaluating Finn-Byrne Model in Liquefaction Analysis of Quay Wall and Cantilevered Retaining Wall Models

محل انتشار:

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خلاصه مقاله:

Two centrifuge tests on a quay wall and a cantilevered retaining wall with saturated granular backfills were simulated using Finn-Byrne model. Capabilities of Finn-Byrne model in liquefaction analysis of the quay wall and the cantilevered retaining wall were evaluated. The quay wall model subjected to a horizontal acceleration time history and the cantilevered retaining wall model subjected to a horizontal and a vertical time history. The constitutive model is a linear elastic – perfectly plastic model. Hooke's elasticity and Mohr-coulomb criterion for the yield surface were assumed for the backfill material behavior. The excess porewater pressure generation, acceleration, wall lateral displacement, lateral earth pressures, deformation pattern, and backfill settlements were monitored and compared with centrifuge tests' results. The results showed that the adopted model is suitable for stability and displacement analyses of the quay walls and cantilevered retaining walls. However, a care should be taken when assessing the backfill settlements and dynamic earth pressure behind the wall stem. The rest of the results showed a good agreement with the centrifuge tests' results.

کلمات کلیدی:

Finn-Byrne model, Liquefaction, Numerical modeling, Quay wall, Cantilevered retaining wall