

عنوان مقاله:

Considering the Geometry Effect on the Seismic Behavior of Block Type Gravity Quay Walls

محل انتشار:

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خلاصه مقاله:

Quay walls have frequently experienced large movements during past earthquakes, leading to extensive damages to the facilities and infrastructures built on their backfill. Blockwork gravity quay walls are the simplest and the most common ones which include a column of pre-cast concrete blocks resting on top of each other and placed on the seabed soil. In these walls, the required stability against the applied loads is provided by the wall weight. In this paper, the seismic performance of block type gravity quay walls with three different section geometries are numerically investigated. First, the walls with vertical, stair and broken -back sections are analyzed via force-based pseudo -static approach and controlled by the available performance criteria. Afterwards, the seismic behavior of the selected walls are evaluated and compared using the non-linear time history dynamic analysis. The results demonstrate that the movement mechanism changes with the back-face geometry of the wall. It is shown that the cross section of a block work quay wall has an important role in the wall stability. In this respect, the seismic performance of broken-back section is significantly improved in comparison with the other two types. Correspondingly, the seismic displacements are minimum in broken-back block quay wall.

کلمات کلیدی:

.Harbors, Broken-back wall, Block quay wall, Seismic displacement, Failure mechanism, Non-linear dynamic Analysis

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