

Numerical Modelling and Experimental Analysis of the Seismic Damage Mechanisms in Rammed Earth Wall Systems



Bilge Işık¹, Özlem Balık², Sedat Kömürcü³

^{1,3}Istanbul Technical University,

²Yıldız Technical University,

isik.bilge@gmail.com

ABSTRACT

This study presents an experimental and numerical investigation of the seismic performance of the rammed earth walls. Shaking table tests are carried out to evaluate the dynamic properties and structural responses of the rammed earth walls under earthquake loading. In parallel, two finite element models incorporating different damage criteria are developed to simulate the seismic behavior of the walls. The numerical models accurately reproduced the measured dynamic properties and captured the onset and progression of observed damage, demonstrating their ability to predict the seismic response of the rammed earth structures. Experimental and numerical results show that despite having limited deformation capacity, the rammed earth walls exhibit stable structural performance and maintain structural integrity throughout seismic loading.

KEY WORDS: Experimental analysis, Finite element model, Numerical analysis, Rammed earth, Seismic behavior

The submitted form should exceed one page by using the defined font types and sizes. The final version of the abstracts will be included in a booklet distributed to the Conference attendees and these will supposed to be the only readable support in the oral presentations.