

## **Numerical Study on the Seismic Response of Waterfront Retaining Wall Reinforced with Cushion**

**Amizatulhani Abdullah<sup>a</sup>, Hemanta Hazarika<sup>b</sup>, Noriyuki Yasufuku<sup>b</sup>, Ryohei Ishikura<sup>b</sup>**

<sup>a</sup>Universiti Malaysia Pahang

<sup>b</sup>Kyushu University

### **ABSTRACT**

This paper describes the findings on the effectiveness of waterfront retaining structure reinforced with cushion made of tire chips, which has been analyzed using commercial software, PLAXIS 2D. The numerical model was subjected to the real earthquake recorded during the 1995 Hyogo-ken Nanbu earthquake. The results of the numerical analysis were presented in term of the deformation of the mesh, the displacement of the quay wall horizontally and vertically, and the settlement of the soil behind the quay wall. In general, the utilization of tire chip as a cushion behind a waterfront retaining wall was able to improve the behavior of the wall against an earthquake loading.

**KEYWORDS:** Quay wall; Seismic response; Numerical analysis

**DOI: 10.1007/978-4-431-56205-4 50**