

Investigation of the Effect of Random Waves Period On the Structural Response of Seawalls with Different Geometrical Shapes by Numerical Method

Vafaeipour Sorkhabi, Ramin^{1*}; Lotfollahi-Yaghin, Mohammad Ali²;
Aminfar, Mohammad H.³

1- Faculty of Civil Engineering, Tabriz University, Tabriz, Iran. Email: r_yafaei@tabrizu.ac.ir

2-Associate Professor, Faculty of Civil Engineering, Tabriz University, Tabriz, Iran. Email: lotfollahi@tabrizu.ac.ir

3-Assistant Professor, Faculty of Civil Engineering, Tabriz University, Tabriz, Iran. Email: aminfar@tabrizu.ac.ir

Received Date: March 06, 2011

**Corresponding Author*

Accepted Date: December 18, 2011

© 2011 Oceanography All rights reserved.

Abstract

The wave induced internal forces in the body of a seawall have a random temporal change. Since the incident waves have various periods, studying the behavior of a seawall under the variable wave periods can be considered to be of major importance. In order to investigate the effect of wave period on the produced internal forces, three seawalls have been modeled and analyzed subjected to sea waves. The first model is a vertical seawall, while the second and third ones are inclined seawalls with uniform and dual slopes, respectively. The water depth and wave height have been considered to be fixed during the performed analyses, while different values have been assigned to the wave period, ranging from 0.1 to 3 sec, with the increments of 0.05 sec. In each analyzed model, the maximum values of base shearing force and flexural moment have been extracted from the corresponding time histories of internal forces. A modal analysis has also been performed on each model from which the natural period of the wall's oscillation has been obtained. The results show that when the wave period is shorter than the structure's natural period of oscillation, increase of the wave period leads to increase of the base shearing force and flexural moment; while under the waves having peak periods longer than the structure's natural period of oscillation, increase of the period results in the decrease of base internal forces.

Keywords: Seawall, Random waves, Wave response, Wave period
