

Experimental Investigation for the Overtopping Wave Force of the Vertical Breakwater

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Abstract : There is a large deviation between the measured wave power at the vertical breast wall and the calculated one according to current specification in the case of overtopping. In order to investigate the reasons for the deviation, the wave forces of vertical breast wall under overtopping conditions have been measured through physical model experiment and compared with the calculated results. The effect of water depth, period and the wave height on the wave forces of the vertical breast wall have been also investigated. The distribution of wave pressure under different wave actions was tested based on the force sensor which is installed in the vertical breakwater. By comparing and analyzing the measured values and norms calculated values, the applicability of the existing norms recommended method were discussed and a reference for the design of vertical breakwater was provided. Experiment results show that with the decrease of the water depth, the gap is growing between the actual wave forces and the specification values, and there are no obvious regulations between these two values with the variation of period while wave force greatly reduces with the overtopping reducing. The amount of water depth and wave overtopping has a significant impact on the wave force of overtopping section while the period has no obvious influence on the wave force. Finally, some favorable recommendations for the overtopping wave force design of the vertical breakwater according to the model experiment results are provided.

Keywords : overtopping wave, physical model experiment, vertical breakwater, wave forces

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