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EXPERIMENTAL STUDY OF WAVE FLOWS AROUND THE FINITE LENGTH VERTICAL WALL

Construction of breakwater structures of modern seaports requires computational models describing interaction of waves with structural elements of ports. The model should be based on numerical hydrodynamic models that contemplate all constituents of interaction between waves and structures, including those at various stages of construction. The above model makes it possible to have construction works performed in accordance with the pre-developed plan. Experimental research of the behaviour of breakwater structures is to be conducted in laboratories. A scaled natural model is to be used for the above purpose to verify the model behaviour. The authors consider the methodology and results of experiments involving models of wave loads produced on vertical breakwater structures at various stages of their construction.

On the basis of the experiments conducted by the authors, it is discovered that the value of the total wave force, that the vertical wall is exposed to, increases along with the wall length in the event of a constant wave mode, which is natural. However, the per-meter value of the wave force increases along with the increase in the length of the wall until it reaches the value of the length of a transverse obstacle divided by the length of waves equal to 0.28; thereafter, the wave force goes down. The authors assume that this phenomenon is caused by the change in the nature of interaction between waves and an obstacle and a transition from a diffraction-free flow to a diffraction flow. The authors believe that further researches are necessary to explore the phenomenon.

Key words: breakwater structures, deep pile protective port wall, wave load, experimental study, diffraction of waves, flow.

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