INVESTIGATIONS ON STATICALLY STABLE, SLOPING, RUBBLE MOUND COASTAL STRUCTURES

by

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ABSTRACT

The ability to predict the level of reflection, transmission, run-up and run-down for various types of coastal structures plays an important role in the assessment of their hydraulic performance. These parameters together with the hydraulic, geotechnical and structural stability of the individual components and of the structure as a whole determine the overall performance of the structure. The porosity and permeability of the structure too has a significant influence on the hydraulic performance and the economics of construction. This study has done a literature review and presents the results from a study of the hydraulic performance of a wide range of structures used in harbour and coastal engineering. The results of two detailed hydraulic model investigations of trapezoidal layered breakwaters at scale 1:20 (tested at LHI). The results are compared with a model investigation done on a homogeneous breakwater at scale 1:40 (tested at Imperial College, London). The investigations were designed to obtain a full profile of the energy dissipation characteristics of the structures tested, including the damping of waves as they propagate through the structure. The results are discussed in the context of the importance of porosity and permeability of wave absorbing structures, their application in practice and further research.

Key words *Breakwaters, Reflection, Transmission, Dissipation, Porosity, Permeability, Scale Effects*

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Declaration

This thesis is a report of research carried out in the Department of Civil Engineering, University of Moratuwa, between March 1999 and September 2000. Except where references are made to other work, the contents of this thesis are original and have been carried out by the undersigned. The work has not been submitted in part or whole to any other university. This thesis contains 90 pages.

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