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ANURAK SRIARIYAWAT: MATHEMATICAL MODEL OF AN EQUILIBRIUM SHORELINE BETWEEN DETACHED BREAKWATERS. THESIS ADVISOR: ASSOC. PROF. CHAIPANT RUKVICHAI, Ph.D. 266 pp. ISBN 974-03-1646-8

In coastal protection, detached breakwaters are usually used to protect a shoreline from erosion. This thesis aimed at findings the equilibrium shoreline between detached breakwaters by development of a model of shoreline change between detached breakwaters (SCB model) and the application of the GENESIS model, developed by Coastal Engineering Research Center (CERC), US Army Corps of Engineers. The results from both models were compared with the findings by Arthitaya (1997) in the study of Design Criteria of Detached Breakwater for Shoreline Protection.

The SCB model was developed in 5 versions, the first version was computed in 1D scheme and the others were computed in 2D scheme. The SCB model had 4 submodels namely wave model, current model, sediment transport model and shoreline change model. It was found that the diffraction coefficient (K_d), obtained from the table given by Weigel (1962), had some errors which made much variation of wave height at the edge of shadow area. Consequently, the GENSIS model was tried.

The applications of GENESIS to the detached breakwaters were computed in 3 cases namely; model case, prototype case and sample study case. The calibrated sediment parameters were K1 = 0.2 and K2 = 0.13. The results of GENESIS showed that shoreline shapes were well fitted with the results obtained from hydraulic model in all cases. The sag distances in the model case were closed to that of the hydraulic model. But they were quite different for the prototype and sample study cases. This might be due to the fact that Arthitaya's hydraulic models were applied to the cases with the presence of tombolo connected to the detached breakwaters which was inapplicable by GENESIS.