

Abstract

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Shoreline Response for Long Wide and Deep Submerged Breakwater of Alexandria City, Egypt

In order to stabilize the eroded beach, along the eastern part of Alexandria shore line, a submerged breakwater was constructed. The breakwater system consists of one main parallel part and two overlapping parts approximately 150 to 300 meters offshore. Total length of the breakwaters is about 3000 meters while depth ranges from 2.5 to 8.5 meter. Width of the breakwater crest ranges from 36 to 46 meters with crest level 0.5 meter less than the low sea water level. The construction of the breakwater has been completed in July 2007. The response of that system is unusually amazing. The beach width varied from 50 to 150 meter compared to 0.0 to 20 meter before installation with stable sediment leeward of the breakwater under storm conditions for nearly two years. The breakwater system showed tremendous efficiency concerning wave transmission and shore protection at storm times. This paper documents the rubble mound submerged breakwater effects with relation to its nature and configuration. Details about the design procedures is presented in attached with a monitoring program which has been applied for the last two years to measure the performance of the submerged breakwater. The paper also included the research work which is under progress now to study using of the same techniques to solve erosion problems in other areas of Alexandria coastline. Also the research work will be extent to study using of other user friendly alternatives such us the submerged artificial reefs. Finally a conclusion of the paper will be summarized and presented.