

Comparison of Wave Modeling and Measurement Data – Case Study: Hendijan Fishery Port

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Introduction

Calculating and finding of correct wave quantities in marine projects, has a substantial importance. In most cases, accessing to long-term local measurements is not possible. So in order to have a good basic design data, two different approaches are selected. The first method is based on wind data of desired region. Using these data and by means of transferring methods, useful wave data will be obtained and design wave height will be in hand.

Although this method has been widely used in recent years, it has its own imperfectness and objection. But today, because of development in software and basic engineering studies, mathematical methods and computational modeling, as the second method, are used more widely. Meanwhile, having short-term measurements data, makes the modeling calibration easier.

However, regarding the difference between natural realities in each region, methods of the second group could not be used generally and sometimes they would only find an estimate of the actual wave.

Case Study Presentation

Hendijan Fisheries Port [1], is located in the south-eastern of the Khozestan province and adjacent to the Bushehr province border. Designation of this port is leading by Iranian Fisheries organization-Department of Study and Construction of Fishery Port as the client. This project has some particular specifications which need extra considerations. One of these characteristics is the very mild slope of the ocean bed, which results difficulties to reach the appropriate depth for safe navigation and need further reflection. The other important point is that, in a big area around project's structures, the ocean bed consists of very loose and cohesive mud materials in about a 7 to 8 meter layer thickness. In this situation it is not possible to have surface loading on the sea bed and more notably that just because of the vast coverage of these loose materials, dredging and removing of mud are also impossible at all.

Another one of resultants of these muddy bed, is its influence on the system of generation and transportation of the water waves. It means that height of the incident wave, while propagating to the shore, changes due to impact of the cohesive materials of the sea bed.

Unfortunately most of the available (commercial) software, could not model the phenomenon of wave propagation over muddy sea bed and the resulting outcomes, differ significantly with existing reality. Therefore some professionals try to find new methods for deriving special formulas for wave propagation over muddy sea bed. In the meantime, studies of the Dr. Mohsen Soltanpour, has an appropriate generality [2][3][4].

Data Collection by Means of Field Measurement

Regarding to abovementioned difficulties about analytical software and also existing methods, and considering the lack of the available data, the client has decided to collect a series of oceanographic data by means of a measuring campaign in the project region. Throughout this