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کارگاه آنلاین آشنایی با پایگاه های اطلاعات علمی بین المللی و ترکیه های جستجو



مرکز ملی پژوهش‌ها و نوآوری دریایی

سازمان بنادر و دریانوردی به عنوان تنها مرجع حاکمیتی کشور در امور بندری، دریایی و کشتی‌رانی بازرگانی به منظور ایفای نقش مرجعیت دانشی خود و در راستای تحقق راهبردهای کلان نقشه جامع علمی کشور مبنی بر "حمایت از توسعه شبکه‌های تحقیقاتی و تسهیل انتقال و انتشار دانش و سامان‌دهی علمی" از طریق "استانداردسازی و اصلاح فرایندهای تولید، ثبت، داوری و سنجش و ایجاد بانک‌های اطلاعاتی یکپارچه برای نشریات، اختراعات و اکتشافات پژوهشگران"، اقدام به ارایه این اثر در سایت SID می‌نماید.



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INTRODUCTION TO THE IRANIAN MANUAL ON THE USE OF ROCK IN BREAKWATERS AND SHORE PROTECTION STRUCTURES

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INTRODUCTION

Rock is a commonly used construction material in the marine environment. Rubble mound structures consisting of interior graded layers of stone and an outer armor layer of stone are usually employed in the coastal area as breakwaters and coastal protection structures such as jetties, groins, and shoreline revetments. Even though rock is quarried to produce armourstone and filling material to be used in coastal structures and other civil engineering works, however, standard solutions do not generally exist in this field of engineering. Efforts to produce guidance documents for application of rock in coastal structures have been important in the 90's. The first version of the Manual on the use of rock in coastal and shoreline engineering was produced in 1991, resulting from collaboration between CIRIA, UK and CUR, Holland [1]. This manual covered the conception, design and materials used in construction of marine and coastal works in rock. An enlarged edition was published by CUR in 1995 and 2000 [2] and Rock Manual published by CIRIA in 2007 [3].

MOTIVATION

As there was no a national standard on the use of rock in coastal structures in Iran, designers and engineers had to use standards of other countries in many projects in the past. Since criteria given in these standards are not often appropriate for local conditions, using them in some projects results in refusing locally available quarries, while experiments have shown that such rocks have good performance in coastal environment. This indicates that it is needed to have national standard for the use of rock in maritime structures by taking into considerations of local available quarries in the coastal region of the country and environmental conditions. This was motivation of a comprehensive research program for performance of available quarry stones and producing a national Manual for application of them in coastal environment. This manual focuses on using rock materials for breakwater and other coastal protection structures in the northern and southern coast of Iran.

OBJECTIVES AND METHODOLOGY

The main considerations for a rock project are its scale and the availability, quality and handling of materials. The availability and quality of materials should be established at an early stage, as material production and transportation costs can be an important consideration when selecting a design solution.

The main objectives of present project are representing criteria for usage of stone in marine structures for proper and optimum use of rock quarries in coastal zones, increasing the efficiency and durability of these structures, decreasing the costs of rubble mound structures by using local available rocks and providing a national manual for assessment and application of rocks in breakwaters and other protection structures.

In this project, the performance of rocks in breakwaters and other protection structures has been assessed by studying the status of these structures built in the country's coasts and statistical analyzing the results of physical, mechanical and chemical tests on samples of these breakwaters and their quarries as well as considering results of other studies and researches. After considering international standards and comparing the conditions of stones used in breakwaters and their quarries with international standards, appropriate criteria for using rocks in marine structures are represented. Results and conclusions of the work are presented in the Manual.

The criteria for selecting and application of rock in coastal and offshore structures in this manual are three multi-purpose and generalized look-up table of intrinsic properties for three different stone types of three categories separately; Igneous rocks, Sedimentary rocks, and Organic limestones.

STRUCTURE OF THE MANUAL

The manual is structured to follow the design process. The manual consists of five principal chapters. Following introductory chapter one, the second chapter deals with required data collection and considerations for design of rubble mound breakwaters. The third gives general aspects of rubble mound breakwaters and coastal protection structures. The fourth deals with physical, mechanical and chemical properties of rock materials and their durability in marine environmental conditions. Also required tests for assessment of quarried rocks are described in this chapter. Guidance and recommendations for using rocks in marine works are given in chapter 5.

CONCLUSIONS

This paper introduce the Iranian manual for usage of rock in coastal structures and describes given recommendations. This manual reflects local experience in application of quarried rock materials in rubble mound breakwaters and coastal protection structures in Iran and gives relevant guidance and recommendations for using rock in coastal structures.

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آشنایی با پایگاه های اطلاعات علمی بین المللی و ترند های جستجو

دوره آموزشی

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