Preparation of the Technical Standards and Commentaries for Shore Protection Facilities

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1. Introduction

For the interpretation and proper administration of Article 14 of the Seacoast Law and related ministerial ordinances, the Technical Standards and Commentaries for Shore Protection Facilities were prepared and published in June 2004. This document was based on deliberations of the Shore Protection Facility Technology Research Committee. The committee members consisted of researchers on coastal engineering from the Coast Division and Coastal Disaster Prevention Division of NILIM and other concerned research institutes and officials in charge of shore protection works from Ministry of Land, Infrastructure and Transport and Ministry of Agriculture, Forestry and Fisheries. The document was written by River Department, Coastal and Marine Department, Port and Harbor Department of NILIM, and other coastal research institutes.

2. Preparation process

In response to people's needs for superior coastal environments typified by white sand beach with green pines and seacoasts that provide space for various public uses, the improvement and conservation of coastal environment and promotion of proper use of the coast by public were appended to the objectives of the Seacoast Law in 1999. The amended law requires harmony between shore protection, environmental conservation and public utilization.

Because the coastal protection technologies are extremely complex, for example, it is necessary to consider wave, littoral drift and other phenomena, standards for planning and design of shore protection facilities should be revised in accordance with the progress of technologies therefore the amendment of the Sea Coast Law in 1999 included the change of "the design standards for shore protection facilities" to "the technical standards for shore protection facilities" based in Article 14 of this law. These technical standards are stipulated as the Ministerial Ordinance Setting Technical Standards for Shore Protection Facilities based on Article 14 paragraph 3 of the Seacoast Law.

3. Outline

(1) Characteristics of the standards

In order to layout shore protection facilities more efficiently and effectively, it is necessary to apply the technical standards in order to utilize new knowledge and construction methods, and we need to ensure more unrestricted design. Therefore the standards were set as the minimum essential requirements. And in order to secure the accountability for the layout and design of facilities, reduce costs by using new technology, and achieve international conformity of technical standards, the standards establish purposes, functions, and performance, concretely stipulate the performance necessary to ensure structural safety and the purposes of the facilities, and specify that design be done with the best verification methods.

(2) Basic concepts and contents of the commentaries

The commentaries stipulate that the shapes, structures, and locations of shore protection facilities be planned by appropriately considering the diversity of the functions of seacoasts that includes utilization and environment functions in addition to their disaster protection function. It also stipulates that considerations of conservations of environment, harmony with surrounding landscape, economic impacts, workability, use by public, assurance of the safety and convenience of users and other related factors should be comprehensively taken into account. Table 1 presents an outline of the Technical Standards and Commentaries for Shore Protection Facilities.

Table 1

Chapter	Category	Item	Content of commentary
Chap. 1	General principles	Characteristics, basic design concepts, application range of technical standards for shore protection facilities	Description of basic items and design concepts according to the ideals and purposes of the Seacoast Law
Chap. 2	Design conditions	General principles, sea level, waves, tsunami, flow, littoral drift, and wind-blown sand, coastal topography, ground, earth pressure and water pressure, earthquakes, environment and uses of beaches, and other conditions that should be considered.	Introduction of the concepts of performance-oriented design based on the enforcement of the technical ministerial ordinances Supplementation by specific cases and explanatory figures considering ease of use.
Chap. 3	Design	General principles, dikes, revetments, parapets, groins, detached breakwaters, submerged breakwaters, artificial reefs, breakwaters, tsunami breakwaters, sandy beaches, supplemental facilities, etc.	Complete report on sandy beaches defined as shore protection facilities in the revised law. And newly added items related to the environment and the safety of users and enhancement of explanations for harmonization with the ideals of the Seacoast Law
Remarks		Tidal flats and seaweed beds / seagrass beds Surveying, Monitoring, Numerical calculation, Model experiments	Explanation of the newest information about survey methods and numerical calculations.

4. Future efforts

This document was prepared and published to contribute to the implementation of shore protection works from the viewpoint of the people. But many challenges in conservation of coast remain unsolved, such as how to mitigate the hazards due to the suspected large scale earthquakes and tsunamis and how to promote residents' participation in planning and implementation stage of coastal conservation. NILIM intends to work cooperatively with other organizations to overcome these challenges.