

Technical Approach to support the Strategic Maintenance of River Structures

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1. River Structure Management Research Task Force

River management should be conducted according to the characteristics of infrastructure such as river channels, levees, dams, water gates and drainage pump stations. River channels and levees have different characteristics according to sections and locations, and are managed based on experience, while other infrastructure consists of civil engineering works with concrete structure, etc., machinery and equipment, telecommunication infrastructure, etc. and are subject to a series of management protocols, including inspections and repairs, according to the type of infrastructure. In addition, since the safety of individual pieces of infrastructure is correlated with river channels in similar sections, researchers in many fields are needed to study the management of river structures. In order to organize a group of researchers to follow structure management technology suitable for rivers, the River Structure Management Research Task Force (River Structure TF) was established in April 2012, consisting of researchers from the NILIM, the Public Works Research Institute (PWRI), etc.

The River Structure TF is conducting activities with a comprehensive objective, i.e., to further upgrade river maintenance in terms of both technology and management (development), and introduce and establish the most advanced technologies for effective and efficient river maintenance (introduction and establishment).



Figure: Sheet-Pile Revetment Deterioration Survey by River Structure TF

2. Activities in 2013

In order to achieve this objective, three points were established for 2013 as challenging issues for the present, i.e., (i) technical study of deterioration prediction, etc. for various structures, (ii) study of medium-to-long term management technologies for river structures, and (iii) advice for practical activities and administration.

For (i), the River Structure TF proceeded with a study to improve the efficiency of present visual inspections by grasping the status of levee maintenance and repair, and provided technical support to verification work in order to increase efficiency and labor-savings in inspection. This included reviewing inspection manuals and utilizing new technologies such as MMS. In addition, the PWRI undertook the development and study of nondestructive testing techniques for pinpointing cavities in levees near sluices or other structures, deterioration in concrete members and sheet-pile revetment, etc. For (ii), the River Structure TF took basic steps to review management methods, by collecting cases of social capital management overseas. For (iii), the River Structure TF posted a technical consultation form on their website to facilitate the process of accepting technical consultation requests from a wide range of sources including local governments, and received requests from 6 prefectures and cities in 2013. In March, the River Structure TF held a river structure management seminar to exchange advanced information on maintenance as a collaboration of industry, academia and government.

3. Future development

The River Structure TF will continue to conduct constructive activities to technically support the promotion of strategic maintenance for river structures in close collaboration with the MLIT and Regional Development Bureaus. This will include the promotion of R&D of new technologies, technical consultation for local governments, and providing opportunities for industry, academia and government to exchange a broad range of information.