

The Japanese Ministry of Land, Infrastructure,
Transport and Tourism
Technical Criteria for River Works: Practical Guide
for
Planning

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Introduction

With the severe economic climate coupled with a background of serious concern over rapid aging and low birthrates, demands for administrative services are changing, and more effective and efficient development and improvement of social infrastructure are now called for. Technological development has often contributed to the solution of these social problems, and the mission of socially supportive technologies will never decline in importance.

As part of the 1997 revision of the River Law, river improvement and conservation were added as objectives, and this necessitated the creation of a basic policy for river improvement and river improvement plans. In addition, the same year saw the enactment of the Environmental Impact Assessment Law, and in 1999 the River Council released a report on amendments to the Coast Act, construction of a healthy hydrologic cycle, and comprehensive sediment management.

In 2005, 7 years after the initial revision, the technical issues needed to properly address these new social demands for river administration were documented as the revised "Technical Criteria for River Works: Planning". To facilitate smooth application of the criteria, this practical guide has been published to provide descriptions of related concepts and case examples.

The major revisions include the following:

- (1) Documentation of the concept of environmental improvement and conservation and issues for investigation
- (2) Documentation of harmonious improvement and management of disaster prevention, utilization, and the environment
- (3) Specification of policies on the "sharing of information and cooperation among river basins" and "monitoring" for the more adequate improvement and management of rivers as natural and public objects
- (4) Specification of the role of the basic policy for river improvement and river improvement plans
- (5) Separation of the basic considerations of individual plans from facility rearrangement plans to form a Basic Planning section

These technical criteria and descriptions, if used as a matter of form, could impede the development of new technologies. This guide is merely a compilation of the ideas that are deemed appropriate at the present point. Technologies should be continuously replaced with more useful ones; therefore, any efforts aimed at developing new and original ideas and technologies while at the same time taking advantage of the policy criteria but not resolutely sticking to the criteria should be valued.

It is expected that this guide will be kept at hand by many river engineers; that the meanings of the technical requirements described here will be fully understood; and that the guide will be used in a wide range of fields and will prove to be a foundation for further technological development.

Finally, I express my deepest appreciation to all those who were involved in the revision work.

Masato Seiji
Director General, River Bureau
Ministry of Land, Infrastructure and Transport

July 2005

About this Revision of the “Technical Criteria for River Works: Planning”

By River Information Office, River Planning Division, River Bureau, Ministry of Land, Infrastructure and Transport

The River Bureau of the Japanese Ministry of Land, Infrastructure and Transport has revised the Planning volume of "Technical Criteria for River Works" (hereinafter referred to as "the Criteria"), which has been used as a guideline for the technical aspects of river administration. Notification of the revision was sent from the Director-General, River Bureau, to Regional Development Bureaus and prefectures on 30 March 2004.

Whereas the last revision, which was carried out 7 years ago in 1997, involved mainly minor changes in connection with the shift to the International System of Units, the revision of the Planning volume of the Criteria, this time with major changes in its content, was the first substantial revision since 1976—an interval of 28 years. The revised edition supports the changes in statutory plans in connection with the revision of the River Law and the Seacoast Law, and it introduces new concepts such as "construction of a healthy hydrological cycle system" and "comprehensive sediment management", which were presented at the Council for Social Infrastructure. Also, this edition contains full descriptions of environmental improvement and conservation and the implementation of proper monitoring, the importance of which has been pointed out in recent years.

The order of the contents in the Planning volume has been extensively rearranged to form two major parts: a Basic Planning part and a Facility Arrangement Planning part.

About the Criteria

The purpose of the Criteria, which were established in 1958, is to compile technical knowledge in the areas of river, erosion, and sediment control and the management of landslides, steep areas, avalanches, and seacoasts (hereinafter referred to as "rivers, etc."); systematize this knowledge; and clarify the current technical standards, thereby constructing a foundation for future development. In addition to the revised Planning volume, the Criteria, which were released by Director-General of the River Bureau, include an Investigation volume and a Design volume, as well as the Maintenance volume, which is currently being experimentally reviewed.

It should be noted that the Criteria are general standards for technical issues related to rivers, etc. In cases where there is a more appropriate method to achieve the intended goal by the implementation of an actual measure, the existence of the Criteria should in no way discourage the adoption of such a method.

About the revision of the Planning volume of the “Technical Criteria for River Works”

(1) Background of the revision

In preparation for the revision of the Planning volume of the Criteria, a review aimed at an across-the-board revision was started immediately after the last revision in 1997, and a revision draft was prepared mainly by the River Bureau of the Ministry of Land, Infrastructure and Transport. Since the Criteria cover a wide range of areas and include highly technical elements, in the preparation of the original draft not only a review by related sections of the River Bureau but also a detailed review from both the engineering and administrative points of view was conducted. These reviews were also based on the opinions of staff of Regional Development Bureaus and on knowledge supplied by the National Institute for Land and Infrastructure Management.

In addition, to collect extensive opinions from people with knowledge and experience and to ensure that the revision would reflect these, the Study Committee on Technical Criteria for River and Coastal Works (see below) was organized in 2002, and it has provided active discussion and valuable opinions.

Study Committee on Technical Criteria for River and Coastal Works: Member List

Chairperson: Shoji Fukuoka Professor, Graduate School, Hiroshima University

Masahiko Isobe, Professor, Graduate School, University of Tokyo

Takehiko Ota, Professor, Tokyo University of Agriculture

Tetsuya Kusuda, Professor, Graduate School, Kyushu University

Shinji Sato, Professor, Graduate School, University of Tokyo

Kaoru Takara, Disaster Prevention Research Institute, Kyoto University

Kazumi Tanida, Professor, Osaka Prefecture University

Tetsuro Tsujimoto, Professor, Graduate School, Nagoya University

Hiroyuki Nakamura, Professor, Graduate School, Tokyo University of Agriculture and Technology

Futoshi Nakamura, Professor, Graduate School, Hokkaido University

Takahisa Mizuyama, Professor, Graduate School, Kyoto University

Kazuo Murata, Japan Civil Engineering Consultants Association

(2) Change in organization

To allow users to quickly access an item, the items were rearranged so that the Planning volume, which used to be in one part, now has two parts: Basic Planning and Planning for Facility Arrangement, etc.

The Basic Planning part includes descriptions of statutory plans associated with projects operated by river administrators, such as river improvement plans and the basic doctrine necessary for systematic water and sediment management.

The Facility Arrangement part includes descriptions of river channel plans as well as plans associated with the actual arrangement of facilities. Both parts are divided into chapters based on the areas of river, erosion, and sediment control, and seacoast an independent chapter, which includes items commonly associated with these areas, provides topics such as information sharing, cooperation with the river basin, and the importance of monitoring, thus contributing to the integration of doctrine throughout all areas.

Descriptions of legal stipulations, such as the Cabinet Order Concerning Structural Standards for River Management Facilities, etc., have been excluded from these Criteria.

(3) Points of revision

Please refer to "Points of Revision" at the end of the book.

Changes in organization

Old edition of the Volume of Planning	Related areas
Chapter 1 Comprehensive River Planning Chapter 2 Basic Planning for Flood Prevention Chapter 3 Basic Planning for Low Water Chapter 4 Basic Planning for Erosion and Sediment Control Chapter 5 Basic Planning for Environmental Conservation Chapter 6 Coastal Basic Planning Chapter 7 Basic Planning for Landslide Prevention Chapter 8 Basic Planning for Steep Slope Failure Prevention Chapter 9 Basic Planning for Avalanche Control Chapter 10 River Channel and River Structure Planning Chapter 11 Multipurpose Facility Planning Chapter 12 Dam Facility Planning Chapter 13 Erosion Control Facility Planning Chapter 14 Landslide Prevention Facility Planning Chapter 15 Steep Slope Failure Prevention Facility Planning Chapter 16 Avalanche Control Facility Planning	<p>The diagram shows vertical bars of varying heights and positions corresponding to the chapters. 'River' is represented by a tall bar on the left for chapters 1, 10, and 11. 'Sabon' is represented by a medium bar for chapters 2, 7, 8, and 13. 'General' is represented by a short bar for chapters 4, 5, and 15. 'Coast' is represented by a short bar for chapter 6.</p>



New edition of the Volume of Planning	Related areas
[Basic Planning] Chapter 1 Basic Policy Chapter 2 River Planning Chapter 3 Erosion and Sediment Control Planning (Countermeasures for Sediment Disasters, etc.) Chapter 4 Seacoast Preservation Planning Chapter 5 Information Sharing and Cooperation with the River Basin Chapter 6 Monitoring	<p>The diagram shows vertical bars for 'River', 'Sabon', 'General', and 'Coast'. 'River' has a bar for chapter 2. 'Sabon' has a bar for chapter 3. 'General' has bars for chapters 1 and 5. 'Coast' has a bar for chapter 4.</p>
[Planning for Facility Arrangement, etc] Chapter 1 Improvement and Conservation of the River Environment, etc., and Comprehensive Sediment Management Chapter 2 Planning the Arrangement of River Facilities Chapter 3 Planning the Arrangement of Erosion and Sediment Control Facilities, etc. Chapter 4 Planning Seacoast Preservation Facilities Chapter 5 Planning the Arrangement of Information Facilities	<p>The diagram shows vertical bars for 'River', 'Sabon', 'Coast', and 'General'. 'River' has a bar for chapter 2. 'Sabon' has a bar for chapter 3. 'Coast' has a bar for chapter 4. 'General' has bars for chapters 1 and 5.</p>

In response to economic and social trends and the progress and maturation of technological development, the technologies that need to be applied as standards are changing from day to day. Since the establishment of any technical criteria in ways that impede the introduction of new technologies may hamper future technological development, the Criteria are basically descriptions of the technical items and standards that should be complied with. Further social changes and fast-evolving technological innovation call for new criteria, so constant review will be indispensable to keeping them useful. In the future, we intend to follow up the utilization of the Criteria and undertake a revision of the Research and Design volumes that will reflect the purpose of the revision of the Planning volume.

Although the word "Proposal" was appended to the title of the Criteria in the old editions, because many years have passed since the establishment of the original Criteria we decided not to append "Proposal" to the title from this revised edition onward.

Finally, we express our deepest gratitude to all parties concerned who participated in the preparation of this edition, and to the Japan Institute of Construction Engineering for its cooperation in the coordination work.