

**The JSCE's 2007 Standard Specifications for Concrete Structures (English Version)  
will be published in the Autumn of 2009**

Concrete Committee of Japan Society of Civil Engineers (JSCE) has been playing a leading role in concrete-related activities in Japan, such as site investigation, research, technology promotion and education.

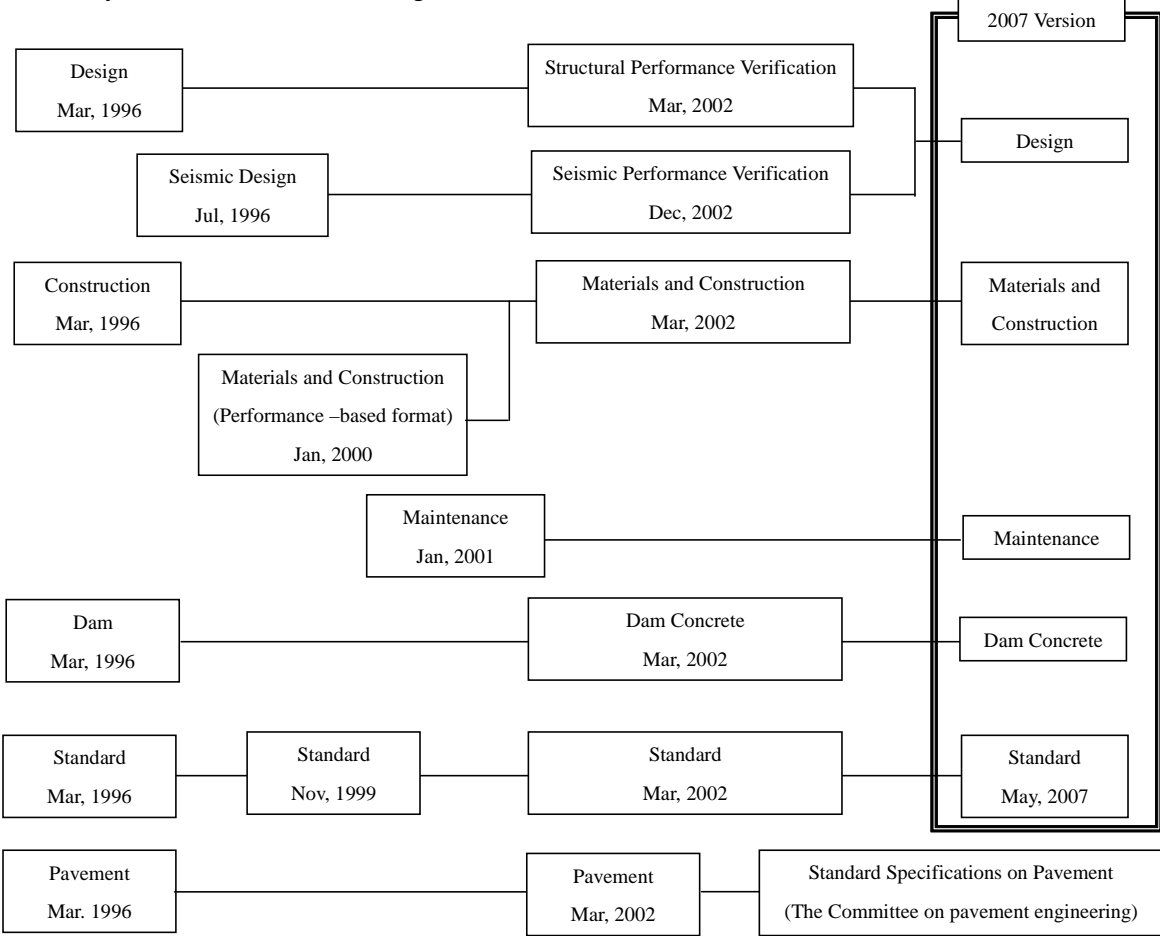
Among those wide-range activities, publishing Standard Specifications for Concrete Structures are of greatest importance.

The Standard Specifications for Concrete Structures has been accepted with a great reputation from users in various fields of design, construction and maintenance of concrete structures since the publication of the very first version in 1931. As codes that define the ways planning, design, construction and maintenance of concrete structure should be, it has been contributing remarkably to the development of concrete technology in Japan.

Taking into account recent developments in concrete technology not only in Japan but also in the world, by the year 2002, the JSCE Concrete Committee had modified all of the following parts from *specification-based* to *performance-based* standards.

- Structural Performance Verification
- Seismic Performance Verification
- Materials and Construction
- Maintenance
- Dam Concrete
- Pavement

The process of drafting and revising different versions of Standard Specification for Concrete Structures in recent 10 years is summarized in the Figure shown below.



**Fig. Revisions of Standard Specifications for Concrete Structure over the past decade**

This time, the revision was carried out after a thorough consideration of the above continuous processes, having in mind the least requirements for

- Upgrading the developments in concrete technology since the year 2002, and
- Optimizing the current performance-based specifications

The main tasks of this revision are:

- Making the specifications convenient to practicing engineers
- Synchronizing all constituent parts so as to create a perfect connection between different parts
- Clarifying the responsibility and roles of engineers, and
- Creating a basement for the engineer certification system of JSCE

The above-mentioned tasks for this revision are based on the recognition that: Standard Specifications for Concrete Structures have been expected and created to provide detailed specifications on design and construction of general concrete structures. This approach somehow satisfied the need from practical users, but it also made the Specifications more difficult to use. Besides, the requirements on the role engineers in creating highly reliable concrete structures are gradually increasing.

Specifically, in “Design,” “Materials and Construction”, and “Dam Concrete” parts, while the General part stipulates the required performances, Manual part introduces simple methods to achieve that required performances in different given conditions... In addition, in all parts including the Maintenance part, the usage of each part (General and Manual ) and the mutual relation among different parts are clarified at all stages of planning, design, construction and maintenance

It is believed that this revision is a fine integration between the rationality based on performance verification concept and the practical applicability.

In this revision, the new set of the standard specifications consists of 5 parts, “Design”, “Materials and Construction”, “Maintenance”, “Dam Concrete”, and, “Standards for test methods and material quality”. The previous Seismic Performance Verification and Structural Performance Verification parts are integrated into a new Design part.

The 2007 version of “Standards for test methods and material quality” edition has been published in May, 2007. The revision of the Pavement part has been completed and published in 2007 with the title: The Standard Specification for Pavements by the JSCE Committee on Pavement Engineering.

The main points in the revisions of 4 parts are summarized as bellow.

## **Design**

Considering the actual design work, the Seismic Performance Verification and Structural Performance Verification part of 2002 version are combined into this new “Design” part. In addition, Verifications of Durability at design stage and Thermal Crack at construction stage in “Materials and Construction” part of previous version are moved into this new “Design” part. It is also stipulated that the construction conditions shall be clearly stated in design documents for verification purpose.

Besides, Chapter 3 (Structural Planning) on selection of structure type, materials, etc., is added in this revision

“Design” part is composed of 4 parts: General, Performance Verification, Standard and References. Manual part introduces standard methods to achieve the required performance stipulated in General part in a given condition. References part provides particular examples for clarifying contents of General part.

With the above contents, this part is named “Design “(see the Figure). Though the “Design” part does not cover plain concrete, it is applicable for determining design values of concrete material.

## **Materials and Construction**

“Materials and Construction” part inherits the structure of the Performance Verification-based 2002 version with 4 parts, including General, Manuals for Construction (on materials and construction methods), Manuals for Inspection (on inspection methods), and Particular Concretes

In General part of “Materials and Construction”, by stipulating the required performance (not mix proportion) the quality of concrete structure will always be ensured even in cases of new materials, new construction methods

or particular construction conditions. Manuals for Materials and Construction part provides detailed information on common materials as well as fundamental construction practices.

Here, the introduction of Manuals is more practical and rational for ordinary construction procedures than conforming to verification methods.

In addition, since most of the items stipulated in “Inspection” chapter in previous versions are aimed at the owners, a separate Inspection Manual is created for the ease of user.

Above-mentioned matters apply for normal concretes, Particular Concretes part is separately drafted for particular types of concrete.

By dividing the Specification into two parts, General and Manuals, it is believed that the Standard Specification for Concrete Structure has become more user-friendly or easier to use.

## **Maintenance**

“Maintenance” part is composed of two parts: Part 1: General and Part 2: Detailed maintenance plan. Part 1 introduces a complete process from inspection to evaluation and judgment (including deterioration prediction) for concrete structure diagnosis, as well as matters related to the establishment of a maintenance plan. In Part 2, besides the updates of recent development related to each deterioration cause, specifications are also provided for not only the maintenance of deteriorated structure, but also for prevention of the deterioration. In addition, to take into account the revision of seismic design edition, fundamental introduction on the maintenance related to seismic strengthening of concrete structures is also provided.

## **Dam Concrete**

Similar to the 2002 version, “Dam Concrete” part is composed of two parts: Performance Verification and Manual parts. Besides new contents added into Structural Design, Inspection and Maintenance, it also covers the general work schedule for dam concrete.

In addition, taking into account the increasing use of CSG (Cemented Sand and Gravel) method for dam construction, the characteristics, design and construction methods of trapezoid CSG dam are briefly described in this part.