CHAPTER 1 GENERAL

1.1 Scope

This Recommendation (draft) provides general principles concerning consideration of environmentality when conducting design, construction, use, maintenance/management, dismantling, disposal and reuse after dismantling of a concrete structure.

【Commentary】 It is provided in the current Standard Specifications for Concrete Structures – "Materials and Construction" that controlling environmental impacts is one of the requirements of construction and that construction plans must be developed to satisfy it. Its commentary also states that environmental impacts must be considered comprehensively during development of construction plans, including input from the viewpoint of solving global environmental problems. It, however, only demands observing environment-related laws, regulations and criteria related to construction and, in cases where there are no applicable criteria, it only requires the development of construction plans that sufficiently consider how to minimize environmental impacts. At present, efforts to reduce environmental impacts are being made in various industries, and the construction field is no exception. Being accountable in terms of environmental consciousness is also necessary in public works projects, in addition to conventional requirements, such as safety, serviceability and economic efficiency. It is becoming essential for us to take active measures to reduce environmental impacts when implementing such projects. It is therefore no doubt that the introduction of effective systems for reducing environmental impacts is extremely important in design, construction, use, maintenance/management, dismantling, disposal and reuse after dismantling of a concrete structure.

Since consideration of environmental aspects is not an immediate purpose of the construction of concrete structures, in the same way as in many other business activities and products, certain motivation is necessary to facilitate adopting environmental measures that require large expenses. Such motivation can be divided roughly into regulative methods using laws and regulations and inductive methods, in which active evaluations are made in consideration of the environmental aspects. Preparing recommendations is one of the inductive methods due to academic societies and intellectuals. If design concepts that deliberately take environmental aspects into account are introduced in the specifications, it can be considered that restrictive aspects are also included. Preparing recommendations also plays a role in the clarification of active environmental measures for the construction field to society, while also clarifying environmental performance that used to be vague and promoting environmental consciousness.

Environmental aspects covered in this Recommendation (draft) are roughly divided into those related to the global environment, regional environments and working environments at construction sites. Although some environments in relation to structures, such as living environments, may become very important factors when considering environmental problems, environmental aspects that rarely play the major role in civil engineering structures are not dealt with. Aspects concerning the global environment are ones that require global and international efforts to deal with, including global warming, resource consumption and energy consumption. Concerning the global environment, this Recommendation (draft) does not cover the influence on ecosystems. Aspects concerning regional environments are those related directly to surrounding environments, which are generally known as pollution, and those related to waste and recycling. Aspects concerning working environments at construction sites are those mainly related to the health of construction workers, such as noise and vibrations.

1.2 Design of concrete structures and positioning of this Recommendation (draft)

(1) In general, a concrete structure shall be designed so that it can satisfy requirements regarding serviceability, safety, durability and environmentality of the structure throughout its design service life.

(2) Of these, this Recommendation (draft) shall provide general principles of basic consideration procedures concerning environmentality.

(3) Serviceability, safety and durability of structures that are not indicated in this Recommendation (draft) shall be in accordance with the Standard Specifications for Concrete Structures, and structures shall be designed to satisfy the requirements, including the above and environmentality, comprehensively and in a well-balanced manner.

【Commentary】 In terms of the importance of environmental consciousness in today's society, it is naturally impossible to ignore environmentality when designing concrete structures. As mentioned in the previous section, environmental consciousness is not clearly established in the Standard

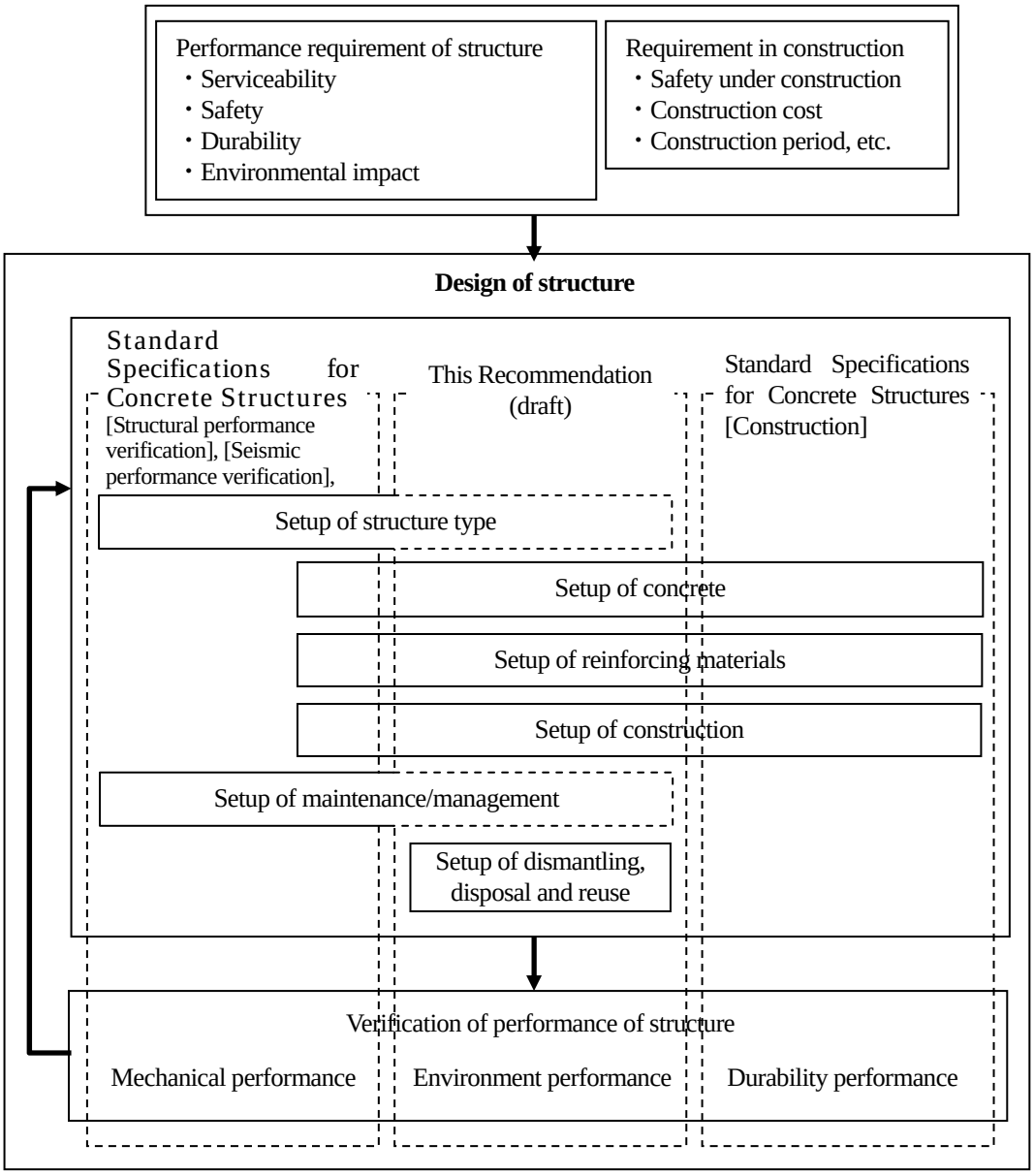

Fig. 1.2.1 Design of concrete structures and positioning of this Recommendation (draft)

Specifications for Concrete Structures, although it does mention considering environmental impacts. In this Recommendation (draft), consideration of environmentality in the design of structures is clearly regarded as a performance requirement of a structure (Fig. 1.2.1), to provide general principles regarding basic consideration procedures of environmentality. It is, however, irrational to consider environmentality as a single performance requirement of structures. Structures must be designed to satisfy the requirements for serviceability, safety, durability and environmental performance comprehensively and in a well-balanced manner. While it is essentially necessary, in this sense, to have a system that finds the best solution while maintaining the balance of mechanical performance, durability and environmental performance, the reasonably mature design systems for non-environmental performances have already been presented in the existing specifications, and it may not necessarily be preferable to make drastic reforms that would change the system established by the Specification at this point. It was therefore decided to refer to the Specifications concerning the aspects of mechanical performance and durability performance in design, and to focus on the aspects related to environmental performance here.