

New Year Greetings

T. Miyagawa

Chair of JSCE Concrete Committee



T. Miyagawa

Warm greetings and best wishes for the New Year to all the readers of JSCE newsletter. Let me begin by commenting on the recent situation of civil structures, especially concrete structures.

Generally, civil structures are expected to endure for a long time. They should be planned, designed, fabricated, and maintained properly to be “tough, beautiful, and durable”, which also leads to “tough, beautiful, and durable” society. We engineers are proud of the fact that further development of our society cannot be attained unless civil structures support our society.

In the case of steel structures, painting is the basic maintenance in general. As for concrete structures, they have been thought to have extreme durability without any maintenance. In fact, some embankments and bridges of concrete built in during the Meiji Period have been used for more than 100 years. Lately, concrete structures received a lot of publicity in the media about their premature deterioration due to chloride corrosion alkaline silicate reaction or the combined attack of chloride and carbonation. The people realized that they misunderstood concrete structures and that the structures should be maintained properly. I think the people have paid much for this misunderstanding. The gap between the expectation and reality may lead to extreme loss of the reliability of concrete structures. Surely concrete structures, which have been thought to have very high durability, have deteriorated early in some cases, especially without proper maintenance. But, on the other hand, proper maintenance will extend the service life of structures semi-permanently. Unfortunately, the people may not think in this way.

Recently, for human beings, it has been said often that lifetime design is important in our aging society. Like human beings, civil structures also need lifetime design to accomplish their task from the birth to the end. By showing the lifetime design to the people, the people may understand the expected behavior, ability, and task of the structures and the transition of service quality to the people according to their stage of life. For lifetime design, first, we engineers should have a vision of whole life of the structures, that is, “life time scenario of structures.” To build the scenario, engineers should design the structures not only to have required abilities, but also determine the proper frequency of inspection and criterion of repair and dismantlement after construction. Without this perspective, the people may not understand the importance or cost and risk of structures.

Engineers, in general, are required to inspect, fabricate, research, and repair the structures. These requirements are just a tool to bring the designated life to the structures. Now is the time to rebuild the system of these tools on the basis of the concept of scenario design.

I greatly expect all the readers to share the vision or the perspective of civil structures to make them tough, beautiful, and durable.