Yoshida Award for Research Accomplishment

PREDICTION OF LONG-TERM DEFORMATION OF CONCRETE AND ENVIRONMENTAL LOAD-REDUCING TECHNOLOGIES FOR CONCRETE

Dr. Kenji SAKATA
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Dr. Sakata has been involved in research into the prediction of creep and drying shrinkage of concrete as well as the development of concrete materials using industrial by-products. His research into the creep and drying shrinkage of concrete, in which he has collected long-term data on a tremendous number of specimens, led him to propose a prediction model that takes into account domestic Japanese materials and weather conditions and can estimate creep and drying shrinkage with high accuracy. This model replaced the CEB model, which had been the recommendation prior to 1996, when it was adopted in the 1996 revision of the Standard Specifications for Concrete. The model has been applied to large-scale structures and has enhanced design techniques through its consideration of time-dependent variations.

In other work, Dr. Sakata has clarified that durable concrete of steel-making slag concrete can be produced without any natural resources using industrial by-products such as iron and steel slag. During the research, it was found that drying shrinkage could be reduced through a suitable application of steam. This finding, which is also applicable to standard concrete, has been proven in practical use.