

Japan Society of Civil Engineers Awards 2019

Category	Name / Title
Achievement Award*	Dr. Kyuichi Maruyama Emeritus professor, Nagaoka University of Technology
Technical Award	Railway viaduct construction method using ASR suppression technology
	Construction Project of Gokayama Dam
Incentive Award	“Studies on the cathodic protection characteristics in seabed soil and the cathodic protection design of the port steel structures in consideration of the soil resistivity” https://www.jstage.jst.go.jp/article/jscejmcs/73/2/73_220/_article/-char/en
	“Shear resistance mechanism and shear capacity of RC T-beams with various shear span ratio and shear reinforcement ratio” https://www.jstage.jst.go.jp/article/jscejmcs/73/3/73_337/_article/-char/en/
Yoshida Award: Research Accomplishment*	“Study on volume change of concrete at early age” Dr. Hidetaka Umehara, Nagoya Institute of Technology
	“Study on earthquake resistance of concrete bridge and development of new bridge” Dr. Hiroshi Mutsuyoshi, Saitama University
Yoshida Award: Research Paper	“Study on ultimate shear strength of pre-stressed high-strength concrete pile under tensile or low compression axial force” https://www.jstage.jst.go.jp/article/jscejseee/73/1/73_259/_article/-char/en/
Tanaka Award: Research Paper	“Study on load carrying capacity and analytical performance evaluation method of beams having damaged prestressing tendons” https://www.jstage.jst.go.jp/article/jscejmcs/74/4/74_218/_article/-char/en
Innovative Technique Award	Development of sulfate-resistant concrete with 10 times higher resistance to sulfuric acid than ordinary concrete

* Detailed explanations of these awards are given in the following pages.

Achievement Award

Dr. Kyuichi Maruyama
Emeritus professor, Nagaoka University of Technology



Reason for the Award

Kyuichi Maruyama has systematically undertaken testing of the seismic performance of reinforced concrete column members, and contributed to the development of seismic design and seismic retrofit of concrete structures in Japan. Also, from an early stage he conducted research into the application of continuous fiber reinforcement materials such as carbon fiber to concrete structures, and as chairperson of the Committee produced the "Guidelines for Repair and Strengthening of Concrete Structures Using Continuous Fiber Sheets", which was a world's first and which has been widely used for reference in Europe and the USA.

At the Japan Society of Civil Engineers (JSCE) he has contributed to amendments to the Standard Specifications for Concrete Structures, and to the adoption of guidelines on various concrete materials, structures, and construction methods. From 2003 to 2006 he played a guiding role in civil engineering concrete technology and academia in Japan as the chairperson of the Concrete Committee. Also, from 2010 to 2011 as Director of JSCE he was responsible for Research & Studies Division and contributed to the site survey activities for the Great East Japan earthquake.

For the above reasons he was recognized as being an appropriate recipient of the Outstanding Civil Engineering Achievement Award.

Yoshida Award: Research Accomplishment

“Study on volume change of concrete at early age”
Dr. Hidetaka Umehara, Nagoya Institute of Technology



Reason for the Award

The recipient has undertaken research in all fields of concrete technology for many years, and in particular has produced outstanding achievements in research into volumetric changes of concrete due to temperature and drying shrinkage.

Temperature stresses are greatly affected by creep when a concrete member is young, and if creep cannot be accurately predicted then it is not possible to predict stresses with good accuracy. Creep in a member at an early age is affected by the temperature history due to hydration reactions, and the stresses produced change from compression to tension, so the behavior is extremely complex. The recipient developed a compression creep testing machine and a tension creep testing machine that incorporates a constant temperature tank in which the temperature and humidity can be varied, and conducted concrete creep tests on members with a young age varying the materials and blends. He found that the effect of creep was greater in compression than in tension, and that it was necessary to reduce the effective Young's modulus used in calculating temperature stresses by 70% for ages up to 3 days, thereby quantitatively determining the effect of creep. These research results were incorporated into the JSCE Standard Specifications for Concrete Structures. In addition, he conducted research into the effect of coarse aggregates on drying shrinkage of concrete, and steadily accumulated results, such as determining the shrinkage mechanism of coarse aggregates due to loss of water content at low member ages.

As described above, the recipient has been recognized as making significant achievements in the progress and development of technologies in concrete engineering, so he has been recognized as worthy of receiving the Yoshida Award for Outstanding Research Achievement.

Yoshida Award: Research Accomplishment

“Study on earthquake resistance of concrete bridge and development of new bridge”

Dr. Hiroshi Mutsuyoshi, Saitama University



Reason for the Award

The research by the recipient can be broadly divided into the seismic resistance of concrete bridges and the development of prestressed concrete (hereafter, PC) bridges. In his work on seismic resistance, he undertook research that contributed to improving the technology of seismic resistance of concrete bridges, such as the dynamic response mechanisms of reinforced concrete (hereafter, RC) columns incorporating the stress-strain relationship of concrete and reinforcement and the effect of strain rate, proposed methods of calculating the ductility factor of RC bridge piers, and subsequent research that forms the basis of seismic design methods. In addition he developed and applied hybrid test methods, undertook research into reducing the residual displacement after an earthquake by introducing prestress, and improving the ductility of RC columns by controlling the bond of the reinforcement. In his research into the development of PC bridges, he proposed a method of evaluating the load resistance of extradosed PC girders, clarified the bending properties and developed methods of improving the ductility of extradosed PC girders using precast segments, application of continuous fiber reinforcement as an emergency strengthening material for PC girders, development of large eccentricity extradosed PC bridges, etc. These results have been incorporated not only into the Standard Specifications, but have also been applied to actual bridges.

Accordingly the recipient has greatly contributed to progress in the design and construction of concrete structures and in particular concrete bridges through his research conducted over more than 30 years, and this achievement has been highly evaluated. As a result of these achievements he has been recognized as worthy of receiving the Yoshida Award for Outstanding Research Achievement.

About the Yoshida Award

The Yoshida Award was founded to honor the outstanding professional achievements and contributions of Dr. Tokujiro Yoshida to the establishment of concrete technology in Japan. Dr. Tokujiro Yoshida Commemorative Foundation was established by about 300 friends, colleagues, and students of Dr. Yoshida under the leadership of Dr. Masatane Kokubu (Professor, The University of Tokyo) in 1960, and raised over 20 million Japanese yen from thousands of individuals, groups and family gifts. This award is generally supported by the Foundation.

The Yoshida Award is conferred on those who have made remarkable accomplishments and outstanding contributions to the advancement of concrete engineering, either in research, planning, design, or construction, with these accomplishments and contributions being made in the form of a paper and other written presentations, or through practice. In addition, Yoshida Award has a research grant for young civil engineers to encourage them to develop their creative and innovative thinking skills and to pursue research interests in concrete engineering.

The award is made in two categories.

Outstanding Research Achievement: This award recognizes outstanding achievements and contributions to the advancement of concrete engineering in research.

Best Research Paper: This award recognizes the author(s) of a paper or research report, published in a JSCE journal or magazine, which provides a valuable contribution to the development of concrete engineering.



Dr. Tokujiro Yoshida and his hammer