

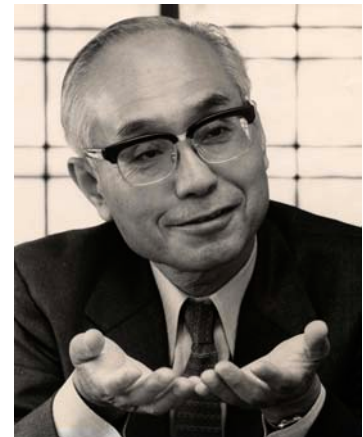
OBITUARY

Toshio Aboshi (1925-2011)

By Kenji Ishihara

Professor T. Aboshi passed away on January 20th in 2011 at the age of 86 a few days after tumbling down the stairs at his home. His death has deprived the geotechnical community of the distinguished scholar and engineer who was well known for his life-long dedication to the soft soil engineering particularly associated with large-scale construction of man-made islands for airports.

Professor Aboshi graduated from the University of Tokyo, Department of Aeronautical Engineering, in 1945. That was the year of social confusion and disaster in Japan after the end of the World War II. It was the hardest time to find a job opportunity particularly for the young elites who specialized the aeronautical engineering. After graduating from the university, he spent some period of time in the soil mechanics laboratory at the Civil Engineering Department, University of Tokyo, under the guidance of Professor Takeo Mogami.



Professor Aboshi changed the expertise of his pursuit to civil engineering and embarked on his illustrious career at the Hiroshima University, western part of Japan Mainland. During the period of recovery from the war-wrecked era and extensive development in industries along the coastal area, he was actively involved in the studies of settlements and stability of soft soil ground created by reclamation. In 1950, the Japan's first ground improvement by sand drain method was carried out in the highway construction project in Okayama prefecture. Professor Aboshi measured the horizontal coefficient of consolidation c_h , using a special consolidation test apparatus which he developed. The result that $c_h=(6-8)c_v$ for natural undisturbed clays were published in the 1st Asian Regional Conference on Soil Mechanics and Foundation Engineering in 1960. In 1962, he supervised two ground improvement works of reclaimed lands in Hiroshima Prefecture, which were the first cases in the world regarding application of prefabricated vertical drain method. He developed the band drain made of papers, which was named "paper drain" at that time. The machine for the installation of the drain and the method of observation and control were developed by Professor Aboshi. His works triggered the prevalent use of various types of vertical drain methods in the coastal development projects in 1960s-1980s.

The focus of Professor Aboshi's interest was directed to examine the H^2 rule of Terzaghi's consolidation theory. To this aim, he carried out the long term consolidation test of clay samples with different thicknesses. The outcome of the study contributed greatly to the discussion on how to apply Terzaghi's theory to the consolidation problem of actual clay layers, that is, so-called A, B and C hypothesis. The prolonged settlements due to the secondary consolidation were the subject of his extensive studies as well and substantial progress was made by his coherent efforts. These studies were always advanced by means of series of laboratory tests which were coupled with field observation of settlements at numerous sites of reclamation along the long stretches of coastal line in the inland sea.

The efforts as above in the formative period of his career culminated in his heavy involvement in the design and construction of the island of Kansai airport in Osaka. In an early period of 1970's, Professor Aboshi was nominated as a member of the Technical Committee, and later on assigned chairman of the Task Force for detailed soil investigations on old Pleistocene clay deposits prevailing over the Osaka Bay area. This was necessitated to identify causes of settlements as much as 14m which was by far in excess of the settlements predicted by the conventional method of consolidation analysis. As a result of more comprehensive investigations led by Professor Aboshi, multiple layers of old Pleistocene clays sandwiched by sands were found to have produced a substantial amount of settlements due to its relatively high compressibility which is manifested when subjected to highest-ever overburden pressure. It is to be noticed that, through his efforts, the substantially compressible nature of old clays was unearthed as a result of the hugest ever field experimentation in a form of marine filling as thick as 40m. Throughout the

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decades of tremendous endeavor leading to this important cutting-edge finding, Professor Aboshi was always at the forefront of the investigations and played pivotal roles. He was the driving force behind comprehensive studies on settlements of land reclamation for the Kansai International Airport in Osaka.

In 2004, the long-time waited project got off a start for constructing a large-scale man-made fills for the 4th runway at Haneda International Airport in Tokyo. Concerned about a risk of long-term settlements of the sea-bed clay deposits which were to undergo the highest-ever overburden pressure in the area of Tokyo Bay, Professor Aboshi was kind enough to give of himself unstintingly a sage advice and precious comments regarding evaluation of consolidation characteristics of the old Pleistocene clays.

On December 14-15, 2010, International Symposium on Recent and Future Technologies in Coastal Development was held in Yokohama in commemoration of the completion of the Tokyo Haneda Airport extension work. Professor Aboshi volunteered to attend it, travelling from Hiroshima as far as to Yokohama. Everybody in attendance was very pleased to see him and cherished conversations with him. It has become unfortunately the last occasion that we could see him in a public arena.

Throughout his 42-year career at Hiroshima University, Professor Aboshi was dedicated to the highest standards of engineering education. As the dean of engineering faculty, he greatly enhanced the quality of engineering as a whole. Under his leadership, the faculty gained national statute and recognition. He was an outstanding technical leader, administrator, and recognized authority in his field of expertise. He nurtured many students who have gone on to make significant contributions in the field of civil engineering. He will be remembered as a dedicated teacher, distinguished engineer and respectable mentor over many years in future.