

6. Study on Measurement of Quantity of Water Per Unit Volume in Fresh Concrete

Masanori Kono, Takashi Uenishi, Takanori Okihashi

This study attempted to improve measurement accuracy of water content by the microwave heat-dry method. The factor that causes measurement error was examined in the laboratory experiment, and the formula to lead water content was estimated from the result. Applicability and measurement accuracy of the estimated formula were confirmed in the ready-mixed concrete plant experiment, and the possibility of the practical application was verified. The laboratory experiment proved that the change of the proportion of the aggregate amount in each wet-screened mortar sample could be approximately shown by the function with planned water content as a variable. Based on this, the estimated formula of water content considering the effect by the wet screening and the quantity in which the aggregate decreases in the microwave oven was proposed. The estimation of water content and water-cement ratio was possible at the higher accuracy in this proposed equation. In the ready-mixed concrete plant experiment, water content in fresh concrete was accurately estimated in proposed equation. It was confirmed that this water content estimation method was applicable in construction.

Key words : water content, microwave oven, wet screening, water-cement ratio, fresh concrete