This study was tried to put forward importance of the combination Seismic Ultrasonic P and S wave velocities in determination of the concrete strength. For this purpose, cubic samples of 9 different concrete designs were prepared. 150x150x150 mm sizes 3 cubic samples were prepared for each design. Water cure was applied by grouping prepared samples. Seismic ultrasonic P and S wave velocities measurements were taken from two opposed surfaces of samples in specific time periods for 90 days. Also, strength of the samples was determined by uniaxial compression test in 7th, 28th, and 90th days. Multi-parameter relationship was established between obtained strength results and seismic velocities. In addition, as a result of P and S waves measured at specific time intervals, concrete strength changes in different design depending on the time were tried to put forward.