

**EFFECTS OF HIGH-LIME FLY ASH CONTENT ON WATER DEMAND,
WORKABILITY, TIME OF SET AND COMPRESSIVE STRENGTH OF
CONCRETE**

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ABSTRACT

This research was carried out to evaluate the effects of fly ash on water demand, workability, time of set, and compressive strength of concrete. Fly ash concrete mixtures were proportioned to have 28-day strengths of 3000, 4000, and 5000 psi. A ratio of fly ash to cement replaced was kept at 1.25. Six different levels of cement replacement (0, 20, 30, 40, 50, and 60%) with fly ash were used. The three strength levels were obtained by varying water to cement ratio. The results revealed that: (1) increase in fly content improved workability of concrete mixtures; (2) for the same workability, water to cementitious materials ratio decreased substantially as the fly ash content was increased for cement replacement from 0 to 60%; (3) the initial and final times of setting were unaffected when fly content was increased for cement replacement up to 55% for the three strength levels tested; and, (4) the fly ash can be used for manufacture of structure grade concrete up to at least 40% replacement.