

Study on Compressive Strength and Setting Time of Fly Ash Concrete after Slump Recovery Using Superplasticizer

Authors : Chaiyakrit Raoupatham, Ram Hari Dhakal, Chalermchai Wanichlamlert

Abstract : Fresh concrete that is on bound to be rejected due to belated use either from delay construction process or unflavored traffic cause delay on concrete delivering can recover the slump and use once again by introduce second dose of superplasticizer(naphthalene based type F) into system. By adding superplasticizer as solution for recover unusable slump loss concrete may affects other concrete properties. Therefore, this paper was observed setting time and compressive strength of concrete after being re-dose with chemical admixture type F (superplasticizer, naphthalene based) for slump recovery. The concrete used in this study was fly ash concrete with fly ash replacement of 0%, 30% and 50% respectively. Concrete mix designed for test specimen was prepared with paste content (ratio of volume of cement to volume of void in the aggregate) of 1.2 and 1.3, water-to-binder ratio (w/b) range of 0.3 to 0.58, initial dose of superplasticizer (SP) range from 0.5 to 1.6%. The setting time of concrete were tested both before and after re-dosed with different amount of second dose and time of dosing. The research was concluded that addition of second dose of superplasticizer would increase both initial and final setting times accordingly to dosage of addition. As for fly ash concrete, the prolongation effect was higher as the replacement of fly ash is increase. The prolongation effect can reach up to maximum about 4 hours. In case of compressive strength, the re-dosed concrete has strength fluctuation within acceptable range of $\pm 10\%$.

Keywords : compressive strength, fly ash concrete, second dose of superplasticizer, setting times

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