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The Influence of High Temperatures on HVFA Concrete Columns by NDT Methods

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Abstract : Quality assurance of the structures subjected to high temperatures is now enforcing measure for the Structural Engineers. The existing relations between strength and nondestructive measurements have been established under normal conditions are not suitable to concretes that have been exposed to high temperatures. The scope of the work is to investigate the influence of high temperatures of short durations on the residual properties of reinforced HVFA concrete columns that affect the strength by non-destructive tests (NDT). Fly ash concrete is increasingly used in the design of normal strength, high strength and high performance concretes. In this paper, the authors revealed the influence of high temperatures on HVFA concrete columns. These columns are heated from 100oC to 800oC with increments of 100oC and allowed to cool to room temperature by two methods one is air cooling method and the other immediate water quenching method. All the specimens were tested identically, before heating and after heating for compressive strength and material integrity by rebound hammer and ultrasonic pulse velocity (UPV) meter respectively. HVFA concrete retained more residual strength by water quenching method than air-cooling method.

Keywords : HVFA concrete, NDT methods, residual strength, non-destructive tests
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