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(57) Abstract :
The invention discloses the findings on the influence of colloidal silica on concrete, including workability and strength characteristics. Two forms of colloidal silica (SYCOL-TX and SYCOL-FX) are used in concrete by varying quantities of cement by weight. The investigation is done by varying the nano colloidal silica fraction and a super plasticizer. The optimal dosage is determined based on the strength values obtained by replacing cement with varying percentages of colloidal silica, ranging from x% to y% in increments of 0.5%. Both forms of silica enhanced the strength of concrete by decreasing voids and increasing density. The optimal dosage of colloidal silica for cement is found to be a% by weight. The optimal dosage level is determined, and then the specimens are cast and tested to determine their strength properties. Based on the various curing phases, compression, split tensile and flexure are considered when evaluating the material's strength. In addition to the strength qualities, micro structural tests, such as SEM and XRD, are conducted to determine the effect of nano particles in colloidal silica on concrete

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