



Studies on Strength Properties of High Strength Concrete with Ground Granulated Blast Furnace Slag

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Abstract : Low cost concrete production by replacement of cement by ground granulated blast furnace slag (GGBS) and sand by waste foundry sand (WFS) is a new trend and reduces the disposal problem and decreases the environmental pollution. Ground blast furnace slag is the byproduct of steel and iron making process. It is obtained by quenching molten iron slag from a blast furnace in water or steam, to produce glassy. Waste foundry sand is the byproduct of ferrous and nonferrous metal casting industry. The ground granulated blast furnace slag and Waste foundry sand was partially replaced with cement and fine aggregate with 10%, 20%, 30%, 40%,50% replacement and results compared with referral mix. The grade of concrete is M40. The concrete works were conducted and testing was done for compressive strength, split tensile strength and sorptivity of concrete. The tests were conducted for 7days, 28 days, 56 days and 90 days, compressive strength and split tensile strength was evaluated. The compressive and spilt tensile strength is increased up to 20% replacement of Ground blast furnace slag and Waste foundry sand, after optimum dosage the compressive strength and split tensile strength decreased with increasing percentage. Sorptivity of concrete is maximum for 10% replacement. The workability of concrete increased with increasing percentage of replacement.

Key words : Ground granulated blast furnace slag(GGBS), Waste foundry sand(WFS), Compressive strength, Split tensile strength, Workability, sorptivity.

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