



Effective Replacement of Cement for Establishing Sustainable Concrete using Fly Ash, Glass Powder and Brick Powder

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The Disposal of waste by-products is a major problem in today's world due to limited landfill space as well as its escalating prices for disposal. In order to satisfy the engineering properties of those materials used in concrete we find some alternatives those are: fly ash, glass powder (GP), brick powder used in this project. Concrete in its hardened state with fly ash showed similar performance in 7 days strength. Using GP in concrete is an interesting possibility for economy on waste disposal sites and conservation of natural resources. Natural sand was partially replaced with GP (10% of its cement weight) to evaluate the properties of concrete mix. The object of this project is to compare the relative strength of concrete with fly ash as well as glass powder and brick powder also. For the aggregates, specific gravity, water absorption test and fineness modulus are conducted for suitable material selection. For the fly ash, glass powder and brick powder, specific gravity was conducted. Normal concrete mix is prepared to cast concrete cubes and cylinders to find out the compressive strength and tensile strength. After that these cubes and cylinders allowed to curing for 7 days and 28 days. Then these are tested for compressive strength and tensile strength by Universal Testing Machine (UTM). The relative strength of cubes and cylinders of different materials for 7 days and 28 days have been compared with one another.

Keywords: Sustainable concrete, Fly ash, Glass powder, Brick powder, Relative strength, Replacement of Cement.