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Partial Replacement of Cement in Plain Cement Concrete with Bentonite Clay and Quarry Dust

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Construction industry is constantly faced with a challenge to meet the everyday increasing demand of construction materials, with a growing concern in mind not to harm the environment. Cement is mostly costly material in concrete. Environmental pollution problems can be solved up to some extent using waste material in concrete The option of use of supplementary cementitious materials which are either byproduct of construction industry or some other production process has been explored in past which has resulted in discovery of many very useful materials in concrete industry. The present study focus on suitability of using quarry dust and bentonite clay as a partial replacement of cement in concrete. Quarry dust and bentonite clay contents were progressively increased from 0% (control sample) to 20% with increments of 5%. Both these materials were used simultaneously as cement replacement. Optimum contents were established using many concrete tests. Higher compressive strength is achieved at 10% replacement of cement with quarry dust and bentonite clay. Workability of mixes tends to decrease by increasing content of bentonite clay and quarry dust. Mixes prepared with bentonite clay and quarry dust shows resistance to acid attacks. The average weight loss due to acid attacks tends to decrease. Bentonite clay and quarry dust can be effectively used in concrete.

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