World Academy of Science, Engineering and Technology
International Journal of Civil and Architectural Engineering
Vol:11, No:03, 2017

Experimental Investigation to Produce an Optimum Mix Ratio of Micro-Concrete

Authors : Shofiq Ahmed, Rakibul Hassan, Raquib Ahsan

Abstract : Concrete is one of the basic elements of RCC structure and also the most crucial one. In recent years, a lot of researches have been conducted to develop special types of concrete for special purposes. Micro-concrete is one of them which has high compressive strength and is mainly used for retrofitting. Micro-concrete is a cementitious based composition formulated for use in repairs of areas where the concrete is damaged & the area is confined in movement making the placement of conventional concrete difficult. According to recent statistics, a large number of structures in the major cities of Bangladesh are vulnerable to collapse. Retrofitting may thus be required for a sustainable solution, and for this purpose, the utilization of micro-concrete can be considered as the most effective solution. For that reason, the aim of this study was to produce micro-concrete using indigenous materials in low cost. Following this aim, the experimental data were observed for five mix ratios with varied amount of cement, fine aggregate, coarse aggregate, water, and admixture. The investigation criteria were a compressive strength, tensile strength, slump and the cost of different mix ratios. Finally, for a mix ratio of 1:1:1.5, the compressive strength was achieved as 7820 psi indicating highest strength among all the samples with the reasonable tensile strength of 1215 psi. The slump of 6.9 inches was also found for this specimen indicating it's high flowability and making it's convenient to use as micro-concrete. Moreover, comparing with the cost of foreign products of micro-concrete, it was observed that foreign products were almost four to five times costlier than this local product.

Keywords : indigenous, micro-concrete, retrofitting, vulnerable
Conference Title : ICBMCE 2017 : International Conference on Building Materials and Civil Engineering
Conference Location : Singapore, Singapore
Conference Dates : March 29-30, 2017