



Utilization of Waste Marble as Partial Replacement of Cement, a Case Study of Khuzdar, Balochistan, Pakistan

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Abstract—To achieve sustainability, the trend of recycling and re-use of waste products are the most current processes in engineering like a recycling of concrete, a recycling of bottle. The marble Industry also produces waste in large quantity, on the other hand the cement industry producing CO₂ in enormous quantity, this root a stern problem in the environment, Moreover, the cost of cement is also increasing day by day due to rapid urbanization and industrialization. In this research work, the author emphasized the problem of waste marble powder produced in large quantity in the vicinities of district Khuzdar. This research targeted to investigate the effects of auxiliary effects of cement by marble waste by 0%, 3%, 6%, 9%, 12% and 15% in that order. For experiential works, 24 cylinders (6" diameter and 12" height) and 12 beams of (6'x6'x20') were cast and cured for 28 days. For the experimental investigation, the cylinders of 1:2:4 and 1:1.5:3 mix ratios were cast respectively with different water-cement ratios. The cylinders were subjected to compressive test, flexural test and split tensile test. The results of the tests has been discussed for describing utilization of waste marble as partial replacement of cement.

Keywords—concrete, waste marble, sustainability, cement