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(57) Abstract :
6. ABSTRACT The main goal of the invention is to reduce the amount of construction waste and industrial waste needed to produce concrete while increasing its durability. Demand and production for concrete are rising rapidly as a result of population growth, which has an impact on the environment. A solution has been found to combat this effect by using waste generated from old structures being demolished and construction debris. The quality of the concrete and its durability were investigated using debris patially. The M20 & M25 grades of concrete, which have been in use for many years, were divided into four pairs. Materials derived from debris include recycled aggregate of 20mm in place of crushed aggregate and manufactured sand in place of river sand. Two different w/c ratios, coarse aggregate replacement ratios were selected, including M20 with normal crushed aggregate and M20 with 40% recycled aggregate, and M25 with normal crushed aggregate and M25 with 40% recycled aggregate. The M-sand was completely replaced with river sand, and PPC cement was used. Compressive, flexure, and rupture modulus of concrete at ages of 3, 7, and 28 days were studied in order to achieve the desired strength. Water permeability, water absorption, void ratio, water sorptivity, rapid chloride penetration, modulus of elasticity, and chloride attack (0.1% and 0.3% sulfuric acid) were studied briefly as durability properties. In the present experimental work, zero percent of recycled aggregate concrete exhibited satisfactory mechanical properties. In comparison to crushed aggregate, 40% replacement of recycled aggregate in concrete exhibited superior mechanical and durability properties. During the concrete casting process, the workability of recycled aggregate concrete appears to be good. M-sand demonstrated a significant impact on both normal aggregate concrete (NAC) and recycled aggregate concrete (RAC).

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