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(57) Abstract :
The present invention discloses the quality of recycled aggregate concrete (RAC) produced from building detritus. A target strength of (20 MPa to 30 MPa) with a variable water-to-cement ratio was considered. Strength, Micro-structural analysis & Non-Destructive test properties of recycled coarse aggregate were investigated using two types of recycled materials (Fine & Coarse aggregate) i.e. M-Sand as 100% replacement to River sand as a fine aggregate and recycled aggregate as 0%, 40% replacement to natural aggregate and PPC cement. Mechanical parameters, such as Compressive, Split Tensile, and Flexural strength, are examined at 3.7 and 28 days. After 28 days of curing, bond strength (Pull-out) tests are also done on concrete specimens. For all concrete samples, microstructural analyses such as scanning electron microscopy and X-ray diffraction were performed. Non-Destructive testing, including Rebound Hammer and Ultra Sonic Pulse Velocity, were also investigated. In the present experimental investigation, 40% recycled aggregate concrete demonstrated superior compressive strength at 3 and 7 days when compared to concrete containing no recycled aggregate. In terms of Modulus of Rupture, recycled aggregate has demonstrated favourable performance. Through destructive testing, both concretes are deemed to be of high grade. M-sand demonstrated a positive effect in both conventional and recycled aggregate concrete.

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