

Impact of Locally Available Recycled Concrete Aggregate (RCA) on Concrete's Mechanical and Durability Properties

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Abstract : The construction industry generates a large amount of waste, which poses a challenge for disposal and often requires significant areas for landfill. Therefore, recycling construction waste has become imperative. This study focuses on investigating the use of locally available recycled concrete as a substitute for traditional aggregates and analyzing the impact of this change on the mechanical and durability properties of concrete. The research begins with the crushing of locally available waste concrete, followed by sieving and sorting the aggregate into different fractions. Four concrete mix designs were created, with one serving as a reference mixture without recycled aggregate, while the remaining three mixes included recycled aggregate in varying proportions. The experimental part includes testing the key properties of concrete in both fresh and hardened states, including slump and flow tests, compressive strength, static modulus of elasticity and shrinkage of the concrete, with the aim of assessing the impact of locally available recycled aggregate on concrete properties. By using experimental testing methods, the results were compared with conventional concrete, providing deeper insights into the potential advantages and disadvantages of using locally available recycled concrete in various construction projects.

Keywords : concrete, durability, recycled aggregate, sustainability

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