

Comparative Study of Strength Characteristics of Concrete by Two-Stage Mixing Approach and Normal Mixing Approach

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Abstract: Construction and demolition waste constitute one of the major components of waste generated worldwide. Very large quantities of aggregates are used in construction. When the useful life of the structure is over it will be demolished and all the demolished wastes just find their way to landfills. Finding large areas for landfills is becoming very difficult. A new concrete mixing method, that is the two-stage mixing approach (TSMA), was recommended to improve the quality of RA concrete (RAC) by splitting the mixing process into two. This can allow to the porous nature of RA and the premixing process that fills up some of its pores and cracks, resulting in a denser aggregate and concrete. As the inferior quality of recycled aggregate (RA) has restricted its use to low-grade applications such as roadwork sub-base and pavements, while its adoption for higher-grade concrete is rare because of the lower compressive strength and higher variability in mechanical performance of RA. The current paper describes the variation of compressive strength by experimental analysis involving the modified mixing method with some alteration to the two-stage mixing approach by proportioning ingredients with the percentage of recycled coarse aggregates (RCA), Waste Foundry Sand and Fly ash. Based on experimental works and results, improvements in strength to RAC were achieved with TSMA.

Keywords: Concrete, Fly Ash, Recycled Aggregate, Waste Foundry Sand Two-Stage Mixing Approach (TSMA), Normal Mixing Approach (NMA).

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