

## STRENGTH DEVELOPMENT OF HIGH STRENGTH CONCRETE MADE WITH RECLAIMED AGGREGATE

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### *Abstract*

This paper aims to evaluate the performance of concrete using the reclaimed aggregate in fresh properties and compressive strength compared to normal concrete using natural aggregate. Reclaimed aggregate was collected from the concrete waste obtained from ready mixed concrete at the construction site, Mahidol University, Kanchanaburi campus. The production process of the reclaimed aggregate was followed by two steps – crushing and screening process. The concrete mixes were designed to have equivalent strengths of 40 MPa, 50 MPa, and 60 MPa grade using Portland cement only and Portland cement replaced with 10% silica fume. The natural aggregates were replaced with different percentages of reclaimed aggregate such as 0%, 25%, 50%, 75%, and 100%. Wet aggregate pretreatment of reclaimed aggregate was initially conducted to minimize unstable slump property with respect to time. The results were found that no significant difference in slump loss of concrete using reclaimed aggregate and natural aggregate was observed. Concrete mixes using different percentages of reclaimed aggregate could exhibit strength development similar to those corresponding mixes using natural aggregate. No significant difference in the strength development of silica fume concrete mixes made with reclaimed aggregate and natural aggregate was also found. The results of this study will pave the way towards the better practice of using reclaimed aggregate in the concrete mix.

**Keywords:** *Reclaimed Aggregate, Natural Coarse Aggregate, Recycled Concrete Aggregate, High Strength Concrete, Compressive Strength.*