

# **TECHNICAL AND ECONOMIC FEASIBILITY OF THE STRUCTURAL USE OF RECYCLED AGGREGATE FOR THE CITY OF SASKATOON**

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## **Abstract**



Our current manner of building roads with virgin aggregates is unsustainable as sources for the aggregates are becoming depleted. As well, there is little understanding as to the impacts on roadway design with the poorer quality material. To move forward in roadway design we need a better understanding of mechanistic structural design as well as finding a sustainable source of aggregates to build roadways.

The primary objective of my research is to develop a mandate to have an aggregate neutral policy within the City of Saskatoon. Specific objectives to perform this will include analyzing various recycled materials for their structural capacity, determining the quantity and quality of various recycled aggregate sources, and evaluating these aggregates in field conditions. Various test sections will be constructed with different recycled aggregates and evaluated to determine their structural quality.

The research will primarily study the use of recycled portland cement concrete aggregates and recycled asphalt cement aggregates within the structural layers of the roadway. These materials will be mechanistically lab tested and field tested to ensure that they are quality replacements for virgin aggregates. Research will be done on how to incorporate the mechanistic testing and design into City of Saskatoon Design and Materials Selection Specifications and Processes.

The research will also focus on the asset management of recycled materials so that when the technical benefits are developed, there is a specific mandate to further the use of clear path for the use of these materials within the City of Saskatoon as well as other jurisdictions. A holistic evaluation including economic, social and environmental benefits will be completed to ensure these systems meet the definition of sustainability.

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