

Characterization of reclaimed asphalt concrete pavement for Saskatoon road construction

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Abstract



Characterizing the City of Saskatoon's recycled material systems based on mechanistic material constitutive properties as a function of Saskatoon's field state conditions is the first step towards demonstrating the projected high economic, environmental, and social benefits of utilizing recycled materials for transportation infrastructure. The benefits of recycling pavement systems in other jurisdictions and across the nation will be easier with a defensible scientific analysis framework.

The development of a mechanistic framework is needed due to limited empirical evidence with regards to recycled asphalt pavement system; in addition, there are no standard protocols or material specifications for recycled asphalt pavement structures (due to the variability in recycled material). Historic studies conducted are often dependent on location; thus reinforcing the need for the City of Saskatoon to characterize the behaviour of their recycled asphalt pavement for use in its transportation systems.

The goal of this research project is to evaluate the technological uses for offsite reclaimed and recycled asphalt pavement materials in urban recycled asphalt pavement structure and to quantify the potential economic benefits. The primary objective of this research is to evaluate the laboratory mechanistic constitutive relations of various asphalt recycled materials (generated by the City of Saskatoon) including varying amounts of cement and emulsion stabilization systems. The second objective of this research is to determine the engineering feasibility of using recycled asphalt pavement materials within an engineered road structural system as an engineered base course structural layer in typical urban street infrastructure rehabilitation applications.