

Accelerating the Use of Recycled Asphalt Pavement Across Canada

WHAT'S THE ISSUE?

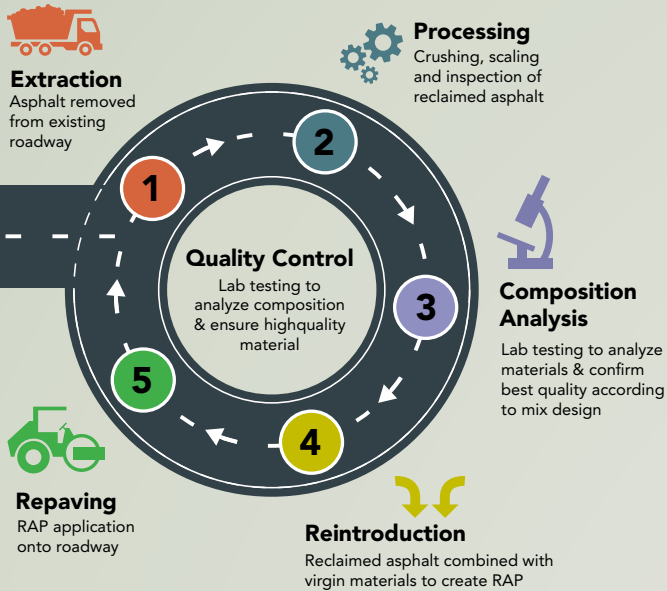
All asphalt roads across Canada must be replaced regularly. This process creates hundreds of thousands of tonnes of asphalt rubble meaning that asphalt is a major contributor to construction and demolition waste across Canada.

However, that rubble is still a valuable resource and can be retained through the creation of Recycled Asphalt Pavement (RAP). RAP is removed and/or processed materials containing asphalt and aggregate. When

properly crushed, and screened, RAP consists of high-quality, well-graded aggregates coated by asphalt cement, which is an alternative to virgin aggregate.

While RAP offers a low-emissions and low-waste alternative to conventional asphalt, it is poorly utilized across Canada. The general perception is that recycled asphalt is of poorer quality or isn't as durable as asphalt made of virgin material.

How is Recycled Asphalt Pavement Made?



HOW DOES RAP WORK IN OTHER PARTS OF THE WORLD?

Recycling asphalt pavement is a common practice. This includes the Netherlands, Belgium, Germany, Norway, Denmark, Japan, Brazil and the United States - some have more than 30 years of experience in producing and using RAP.

For example, in Japan, the percent of RAP in asphalt pavements is **47% on average**. In the U.S., the practice of using RAP is less developed but growing. In recent surveys, the National Asphalt Pavement Association reports that the average level of RAP content in new asphalt mixes across the U.S. has steadily increased; the national average of RAP content is now **slightly more than 20%**. This is been accomplished both by better collaboration among industry stakeholders and the success of experiences that prove that the durability of asphalt pavement is not compromised by the increasing amount of RAP.



"1 tonne of CO₂e is reduced for every 10 tonnes of RAP that is used in asphalt each year."

WHAT'S THE OPPORTUNITY?

Increasing RAP content in roads presents significant benefits such as:

- diverting waste material from landfills,
- reducing transportation-related greenhouse gas emissions from transfer of RAP to landfill,
- preserving natural resources at local quarries,
- meeting municipal sustainability and environmental targets,
- encouraging a circular economy in construction.

In 2016, Lafarge estimated in a greenhouse gas emissions study that every 10 tonnes of RAP used in asphalt leads to the reduction in 1 tonne of carbon dioxide equivalents (CO₂e) each year. These greenhouse gas savings come from decreased emissions associated with transporting rubble to landfills, and from reduced material movement to asphalt plants.

For instance, if a 5,000-tonne municipal paving project approves the use of 40% RAP, a savings of approximately 200-tonnes of CO₂ would be realized. These GHG savings are equivalent to the emissions of approximately 66 cars per year.

Focusing on solutions to asphalt waste, the City of Richmond **initiated a pilot in collaboration** with the National Zero Waste Council and Lafarge Canada to test the performance of RAP and a commitment to document its performance throughout the life cycle. In November 2020, a busy 800-meter of road in Richmond was paved with asphalt containing 40% RAP. The pilot has seen great success to date and performance will be evaluated annually.

A key goal of the pilot is to encourage expanded use of RAP as well as increase the percentage of RAP in asphalt pavement. We believe this can be done if awareness and confidence in RAP, across the supply chain, can be increased. It also focuses on determining how procurement can be leveraged to reduce the amount of construction and demolition waste being generated from the built environment. The RAP Toolkit provides details of the pilot and resources for all orders of governments and asphalt producers interested in pursuing RAP projects.

WHO NEEDS TO BE AT THE TABLE?

Government Stakeholders

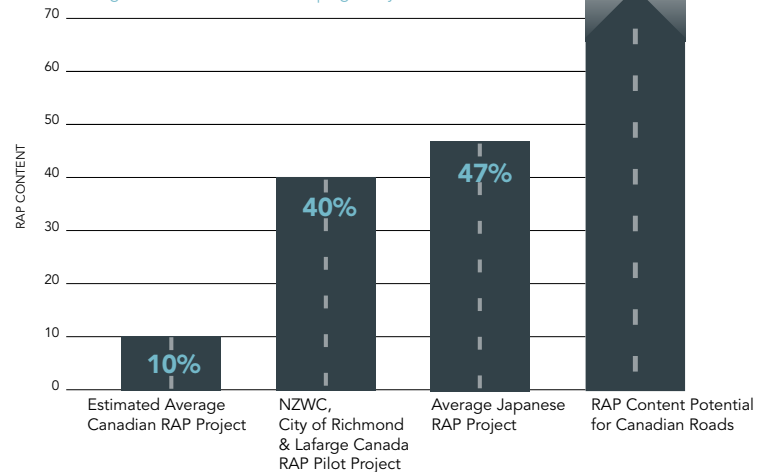
- Engineers, procurement officers, and sustainability practitioners

Industry Suppliers

- Consultants, contractors and asphalt producers

Approximate RAP Content Usage

Data gathered from RAP Pilot Scoping Study



WHAT NEEDS TO HAPPEN?

- Raise awareness of the high quality of RAP across Canada
- Initiate more pilot projects across Canada in varying environments and climates
- Convene stakeholders to scale up utilization and demand for RAP

FOR INFORMATION

www.nzwc.ca/rap-toolkit