

The past, the present and future of potholes in Edmonton

As the City of Edmonton's roadway crews fill potholes, researchers are studying the impact of freeze/thaw cycles on asphalt and looking for ways to make paving materials more resilient to widely-varying temperatures.

"We filled 26,200 potholes in January and February, many of which appeared following the very early arrival of spring-like temperatures in Edmonton," says Bob Dunford, Director of Roadway Maintenance. "That's up slightly from the first few months last year, but it's still early to say whether this will be a particularly challenging season or if they're just showing up earlier than usual because of the warm weather. We have had approximately 30 freeze/thaw cycles since the year began, and that definitely contributed to what drivers are seeing on the roads right now."



City crews filled 485,000 potholes in 2014 and 750,000 potholes in 2013. The City is investing \$55 million per year on arterial road rehabilitation over the next four years, which should mean fewer potholes in the future. However, it will take a number of years of sustained investment to address the infrastructure deficit.

While repair and rehabilitation are essential to improving the overall condition of Edmonton roadways, the City is also conducting research at the Engineering Services Quality Assurance Laboratory to determine the resilience of asphalt mixes to freeze/thaw cycles.

"Our study includes putting asphalt mix samples through multiple freeze/thaw cycles, then performing tests to see exactly how many cycles the samples can withstand before starting to deteriorate," says Hugh Donovan, Construction Services Engineer. "It's our hope that continued research into asphalt mixes in northern climates will lead to the development of materials that will prolong the life cycle of roads in this extreme northern climate."

In northern cities such as Edmonton, dramatic drops in temperature cause the ground beneath roads to heave and the asphalt to crack. When temperatures rise and snow melts the water fills the cracks in a road's surface; when temperatures drop again the water expands as it freezes, further breaking down the asphalt. Potholes are formed as vehicles ride over top of the damaged areas and further loosen material.

"The issues that Edmonton is facing with its roads, potholes in particular, are not unique," adds Donovan. "There is the potential that the research being done by Engineering Services will not only help Edmonton find materials that are right for its transportation network, but may also assist other municipalities determine what works best for them."

In the meantime, the City greatly appreciates the assistance of citizens in identifying problem areas. "Crews in each district search out and repair potholes during the course of their day, but we can't find them all," says Dunford. "Edmontonians can call 311, use the 311 Smartphone app or go online to www.edmonton.ca/potholes to report locations that are causing issues for motorists, and we will address them on a priority basis, with severe damage in high traffic areas receiving attention from crews first."

The budget for pothole repair is \$5.9 million for 2015, and \$55 million has been allotted under the Arterial Rehabilitation Program.

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