



City of  
**Peterborough**

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**To:** Members of the Finance Committee

**From:** Cynthia Fletcher  
Commissioner of Infrastructure and Planning Services

**Meeting Date:** December 9, 2019

**Subject:** Report IPSENG19-042  
Pilot Roads Program for 2020

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## **Purpose**

A report to outline the City of Peterborough's Road Rehabilitation Programs and update Council on the allocation of a portion of one-time Federal Gas Tax Funding for 2020.

## **Recommendation**

That Council approves the recommendation outlined in Report IPSENG19-042, dated December 9, 2019, of the Commissioner of Infrastructure and Planning Services, as follows:

That the report be received for information.

## **Budget and Financial Implications**

There are no budget implications in Council receiving this report. The roads program funding levels will be confirmed as part of the 2020 Budget.

## Background

Ontario Regulation 239/02 of the **Municipal Act** sets out maintenance standards for Municipal highways and roads. The regulation outlines classification categories for roads, requirements and frequency of inspection, rehabilitation methods and seasonal maintenance standards. While there is some flexibility within the road rehabilitation programs, regulatory requirements must be met.

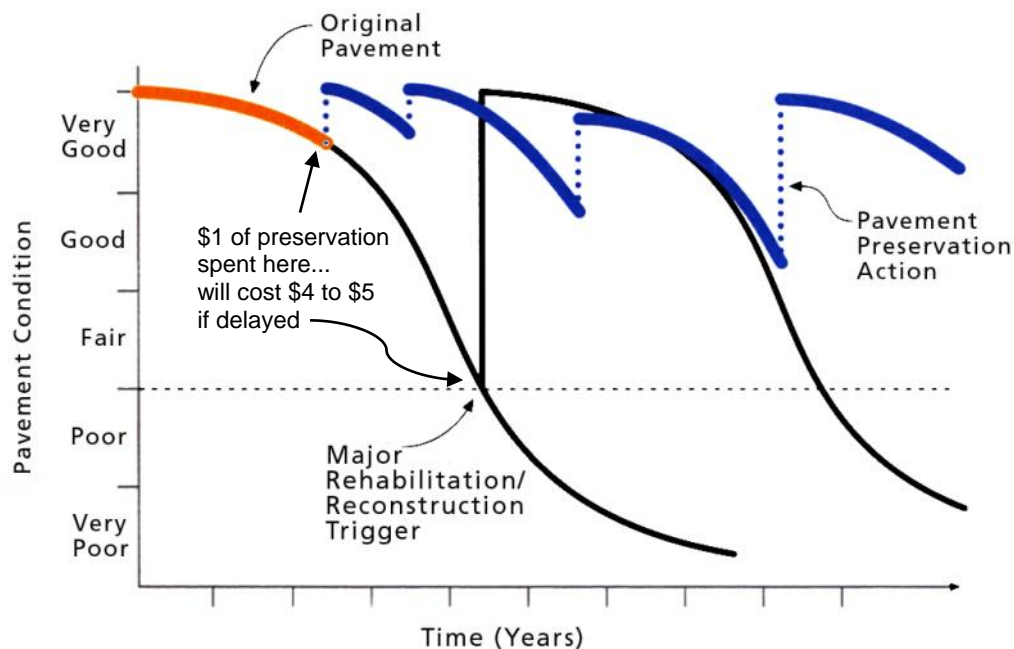
Industry standard for developing a roads rehabilitation program involves a thorough assessment of the condition of the road network. The condition assessment involves a complex matrix of criteria, such as; classification, regulatory requirements, bus routes, traffic loads, urbanized/non-urbanized, sub-surface infrastructure, surface material, surface infrastructure etc.

A standard road rehabilitation and maintenance program uses the assessment criteria to develop a Pavement Condition Index (PCI):

- Roads with PCI under 25 are intended to be re-constructed
- Roads with PCI under 40 are intended for re-design and then re-construction
- Roads with PCI above 40 are intended to be captured in a regular maintenance program.

In 2014, the City completed a comprehensive Road Needs Study (Report USEC14-005) to evaluate the condition of the municipal road network. This task also included work plans to optimize the Roads Program capital budgets. This study produced a pavement condition index (PCI) ranking for each road or segment of road. This industry standard method helped the City establish a consistent framework for prioritizing roads and described the concept of pavement preservation. The intention is pavement preservation allocates funding throughout the life of the road to extend the pavement lifespan on a prioritized basis, thereby saving money in the long term. Subsequent to the Roads Needs Study, Council endorsed pavement preservation and a funding structure that has since been implemented for the preservation of City roads.

The 2014 Road Needs Study also provided valuable insight into the overall condition of the road network. There was evidence that “worst first” was not the most cost-effective way to preserve roads if the City wanted to extend the useful life of the overall road system. In other words, the roads in most need should be rebuilt not preserved. If some funds are used for preservation of those roads in better shape, it extends their lifespan so they don’t need to be rebuilt as soon.



Since the 2014 study, some roads requiring reconstruction have been included in draft budget documents, however competing budget priorities result in many road reconstructions being deferred. The ongoing deferral of these projects creates a backlog throughout the entire road asset management program.

In 2016, staff presented Report USEC 16-015 which focused on the rehabilitation of roads with PCI under 25. Council requested that staff develop a program to further prioritize the roads in most need and to recommend funding level and sources of funding.

In 2017, a new Capital Budget of \$650,000 was established through the budget process, for the rehabilitation of roads with PCI under 25. The process re-allocated funds from the existing Pavement Preservation program (formerly Various Roads Resurfacing) for one year. The intention was for funding to be approved as part of the budget review process for subsequent years.

Competing budget priorities has resulted in this funding being reduced in subsequent years and the remaining funding has been focused on arterial and collector roads. The backlog of local roads, arterial and collectors far exceeds the funding available.

## Discussion

Feedback from the 2019 public engagement for the City's budget clearly indicated road improvements are a high priority for a majority of citizens. The community sentiment is frustration with degraded and/or non-urbanized roads, coupled with the length of time for resolution. The City's road programs are outlined below. Costs outlined are unit costs and do not include full project financial impacts (fees, contingencies, disbursements, etc.)

## Roads Programs

### 1) Pavement Preservation (Formerly Various Road Resurfacing: 5.10.02 in the Capital Budget):

- Typically for roads with a PCI above 40.
- Roads where the sub surface components are in good condition.

This program extends the life of the pavement and associated surface features. Some methods are outlined below:

- a) Road Resurfacing (including structure adjustments, curb and gutter improvement)  
Average Cost per Square Meter \$55-65/m<sup>2</sup>  
Average Anticipated Lifecycle is 13-15 years
- b) Micro-surfacing  
Average Cost per Square Meter \$25/m<sup>2</sup>  
Average Anticipated Lifecycle is 4-8 years

\*Note for a) and b): The current program is focused on high capacity arterials/collectors.

- c) Crack Sealing  
Ideally performed 3-7 years after reconstruction and again at five year cycles.  
Average Cost per Square Meter \$2.36/m<sup>2</sup>  
Average Anticipated Lifecycle is 3-7 years

Inventory: 2,788,110 sq. m

### 2) Road Surface Repairs (formerly PCI under 25):

- Typically for roads with a PCI of under 40. Theoretically, roads with PCI under 25 should be re-constructed.
- In a perfect world, planning/design work would be underway for road re-construction when the road PCI is between 26-40.

The benefit of large investment at this stage is not recouped.

Average Cost per Square Meter \$35-55/m<sup>2</sup>  
Average Anticipated Lifecycle is 5-7 years

Backlog: 247,941 sq. m of roads with PCI 26-40

### 3) Re-Construction:

- Typically for roads with a PCI of below 25.
- Critical infrastructure (storm, sanitary, water components, configurations etc) needs to be replaced.
- Road is to be urbanized (the new installation of critical infrastructure).

Ideally, planning/design work commences when the road PCI is between 26-40. The reconstruction work occurs when the PCI is below 25. This planning cycle allows for full benefit of investment throughout the life of the road assembly. The surface pavement replacement is coordinated with the sub surface work. These roads are reflected as individual projects in the Capital Budget.

- Average Cost per Square Meter \$275 - 485/m<sup>2</sup>.
- Average Anticipated Lifecycle is 25-30 years without Pavement Preservation Program.
- Cost depends on classification of road (# of lanes, load and corresponding pavement requirements, complexity etc).

Newly reconstructed roads are, theoretically, to be captured in the pavement preservation program starting 5-10 years following the upgrades and conducted on a prescribed cycle throughout the road's lifespan. The preservation program could result in a 50-60+ life expectancy rather than the original 25-30 year reconstruction lifecycle.

Note: For every roadway reconstructed, the pavement preservation budget should be increased exponentially from year to year in order to perform the pro-active preventative maintenance measures. Lack of funding of the pavement preservation program will create a shortfall in this approach and result in significant increased costs for reconstruction in the future, in addition to more rapid deterioration of the road network.

Backlog: 212,094 sq. m of roads with PCI under 25

#### **4) Pothole Repairs**

Criteria:

- Typically for roads with low PCI.
- Roadways are in a state that requires reconstruction.
- These roads are the focus of a pothole filling program.

Industry prioritization models would not recommend resurfacing since the return on investment would be very low.

Given the backlog in each roads program, it will be increasingly difficult to get ahead without additional funding. To move funds between programs will simply result in an increased backlog in the one with reduced funding and put the City at risk of failing to meet regulatory requirements.

#### **Proposed Pilot Program for 2020**

The City does not have sufficient funding to move roads through the industry rehabilitation model in a reasonable timeframe. As an alternative, the City must manage road deterioration with temporary solutions.

The previously established PCI under 25 funding has been focused mainly on roads closer to the rating of 25. The plan to re-construct roads with PCI under 25 has not moved forward in keeping with the industry standard program and timeframes. Consequently, the community is experiencing challenges with roads which should be re-constructed.

During budget discussions staff will present the roads program recommendations and Council will determine funding levels. For 2020, the City is receiving a one-time increase in Federal Gas Tax funding of which \$1,000,000 has been allocated as additional Road Surface Repairs funding to address one “road in most need” for each ward, except for Monaghan Ward 2. The “road in most need” in Ward 2 is Moorecraig Road, which is currently scheduled for re-construction in 2020, based on PCI of less than 5 and stormwater management requirements.

Staff intends to “pilot” a few different methods for temporarily repairing/resurfacing the four roads. Methods may include ditching to improve drainage, tar and chip surfacing or grind and overlay surfacing.

The roads for the Pilot Road Surface Repairs Program have been selected based on several criteria:

- PCI is less the 5
- Applicability for one of the test applications
- Usage: traffic volumes, bus route etc.

For 2020, the following roads will comprise the pilot program:

Otonabee Ward 1: St. Catherine Street (Braidwood-Hamilton)

Town Ward 3: Simcoe Street (George-Aylmer)

Ashburnham Ward 4: McFarlane Street (Television-Naish)

Northcrest Ward 5: Amundsen Avenue (Cumberland-Cartier)

While this one-time influx of funding will provide short term improvements, the work will not address the long-term needs of these roads in need of re-construction. Past practice has demonstrated these approaches will buy some time, but these roads will require further attention within a ten year period.

Additional Road Surface Repairs money is only available for 2020.

## Summary

The City of Peterborough uses an industry standard method to create a pavement condition index and prioritize roads for re-construction, pavement preservation or re-surfacing and repairs. Current funding levels do not support the movement of “roads in most need” through the re-construction program in a timely manner. Consequently, Council and staff heard the community’s frustration with the state of the road infrastructure through the spring 2019 budget engagement sessions, in advance of the 2020 budget preparation.

For 2020, the City is receiving a one-time increase in Federal Gas Tax allocation. As part of the 2020 budget deliberations, staff will propose to allocate \$1,000,000 of the one-time Federal Gas Tax increase to pilot short term repairs for some “roads in most need”. This pilot program will cease after one year without ongoing sustained funding.

Submitted by,

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