

# Memorandum

Date: Tuesday, May 21, 2019

To: Members of Council

From: Steven Dollmaier, Superintendent, Roads & Fleet, Finance & Infrastructure Services

Subject: Update on Surface Treatment Pilot on Boston Mills

Surface Treatment, also known as a seal coat or chip and tar, is a thin protective wearing surface that is applied to a pavement or base course. After surface treatment, a gravel road will have characteristics of a hard-surface road. This is a lower-cost alternative to the asphalt paving/reconstruction of low volume gravel roads. Surface Treatment creates a new wearing course, as well as a waterproof covering for the existing pavement. It also makes it more difficult for water to enter the base material, and it prevents freeze thaw damage for those locations with below freezing temperatures.

The Town has surface treated gravel roads in the past (approximately 10 years ago). Based on anecdotal information, the surface treatment program stopped after complaints that the surface treated roads did not weather the Caledon winters well. Due to improvements in surface treatment materials, technology, and processes, Town staff implemented a double surface treatment pilot program on Boston Mills Road between Mississauga Road and Creditview Road in 2018. This section of Boston Mills Road was pulverized and base stabilized in the Fall of 2017. Town staff had completed the drainage works that were required to address ponding water concerns, failing culverts and soft spots along the road section before the surface treatment pilot.

At the May 29, 2018 General Committee meeting, staff were directed to report back on the Boston Mills Surface Treatment pilot project following the winter season. Also, included in the 2019 budget is \$850,000 of surface treatment capital program (for Capital Project 19-003) which are contingent upon the results of the Boston Mills Surface Treatment pilot project.

Based on the results of the Boston Mills pilot program, staff will be proceeding with capital project 19-003 to implement surface treatment for the following roads in 2019:

- Duffy's Lane (from Patterson Side Road to Northern pavement change);
- Humber Station (from Hwy 9 to Patterson Side Road); and
- Torbram Road (from King Street to Mayfield Road).

Further, staff will develop a long-term plan to implement a surface treatment program for low-volume (e.g. less than 5,000 vehicles per day) gravel roads across the Town for Council consideration in the 2020 and future budgets.

## Background

Double Surface Treatment of gravel roads and currently low-volume paved roads in poor condition, is a cost effective alternative to paving low-volume gravel roads and full rehabilitation of a low-volume paved road. Double Surface Treatment is generally constructed on a fresh, compacted granular surface and consists of the following:

- Spraying a uniformed application of asphalt emulsion with a computerized distributor truck;
- Followed by a layer of cover aggregate applied with a computerized chip spreader;
- Immediately followed by a minimum of two pneumatic rubber tired rollers (or one rubber tire roller and one steel drum roller on multiple surface treatment applications), which seats the aggregate properly into place.
- Following the first lift, above, the same process is repeated using an aggregate not less than ½ the size of the first application.
- The surface treatment is completed with a non-vibrating, steel drum roller.

In 2018, a number of residents with properties fronting gravel roads requested that their road be paved due to the state of the gravel roads after multiple freeze/thaw cycles over the winter. Further, in 2018 the Town Council received a petition, on 21-May-2018, from 61 residents living in the area of Humber Station Road and Finnerty Side Road requesting for the paving of these roads. To date, at least one resident has expressed concern about paving gravel roads stating speeding, higher traffic volumes and loss of rural character as prime reasons why Caledon roads should remain as gravel roads.

Advantages of Surface Treatment of gravel roads include:

- Waterproof barrier for underlying materials;
- Skid-resistant surface;
- Provides new life to a dry, weathered surface;
- Provides cover for a new base course;
- Delineate shoulders from traffic lanes;
- Surface Treatments can extend a road's life for 6 to 10 years;
- Consistent winter maintenance service and equipment – surface treated roads may be winter maintained by the Town's snow plows/sanders/salters. Salt is not effective on gravel roads and gravel roads require re-grading using a grader in the winter.
- Cost effective alternative for low-volume roads (e.g. less than 5,000 vehicles per day) – Approximately one-third of the cost of a full-depth rehabilitation of a road;
- May be used as a stop-gap measure prior to reconstruction or upgrading.

## **Results of the Surface Treatment Pilot on Boston Mills (from Mississauga Road to Creditview Road)**

Throughout the 2018/2019 winter season, there have been many winter events, freeze/thaw cycles on this section of road selected for the surface treatment pilot. The condition of the road has been monitored throughout the winter with no concerns. On April 2, 2019 there was a 20 meter hair line crack noted in the surface treated road near Mississauga Road. When the temperatures warmed up in the mid-April the hair line crack healed itself and there are no other deficiencies found on this 1.5 kilometer section of road.

The results noted above for the Boston Mills surface treatment pilot is consistent with the results from other municipalities in the area that use surface treatment.

Based on the success of the Boston Mills surface treatment pilot, staff will surface treat the three roads (sections of Duffy's Lane, Humber Station, and Torbram Roads) approved in the 2019 capital budget, project #19-003, starting in July 2019.