



The Corporation of the Township of Huron-Kinloss

Staff Report

Report Title: Transportation April 2022

Prepared By: John Yungblut, C.E.T., Director of Public Works

Department: Public Works

Date: Apr. 4, 2022

Report Number: PW-2022-04-30

**File Number: T06 SOU 20
D21 RIP 20**

Attachments: South Kinloss Ave Maps, Submitted Photo, Photo 1, Photo 2, Photo 3, Photo 4 and Terrafix Photo

Recommendation:

THAT the Township of Huron-Kinloss Committee of the Whole hereby receives for information, Report Number PW-2022-04-30, prepared by John Yungblut, Director of Public Works.

Background:

South Kinloss Spring Road Conditions

In early spring, some of the gravel roads in the southern area of the former Kinloss Township are susceptible to deep rutting from vehicular traffic. This is typically the result of a rapid thaw of the surface layer of the road before the deeper portion of the road is able to thaw and allow the saturated road base to drain properly. This situation is made even worse in roads that are located in wetlands and already have drainage issues.

Ripley Industrial Park

On Nov. 15, 2021, the tender for the construction of the industrial park in Ripley was awarded to Birnam Excavating.

Discussion:

South Kinloss Spring Road Conditions

Up until March 16, 2022, the Township experienced a fairly gradual spring thaw with air temperatures that were no higher than 7°C. On March 17th, the air temperatures

climbed to 16°C very quickly on a sunny day which rapidly accelerated the thawing of our roads. Although temperatures quickly dropped down to a high of 6°C the following day, we received rainfall for the following two days which led to a soft road surface on most of our gravel roads, but it was much more impactful to certain portions of South Kinloss Ave and Paradise Lake St. Maps that highlight the areas of greatest concern are attached to this report. The submitted photo attached to this report shows the condition of South Kinloss Ave between Langside St. and Paradise Lake St. during the thaw period.

All these areas experience similar issues in March 2021 as well, however, the spring thaw in 2019 and 2020 did not result in the same severity of issues. This was most likely due to either a more gradual thaw period or the frost did not penetrate as deep into the road base.

After observing the deteriorating of the South Kinloss Ave and Paradise Lake St., Township staff decided to fill in the deep ruts with drainage stone to help provide some more stability for traffic, which seemed to work well. Staff elected to close a portion of Paradise Lake St. at that time because it become dangerous for travel, and it appeared no remedial action would be adequate.

Four photos were taken on March 22nd, the day after the ruts were filled in and are attached to this report. Photos 1 and 2 were taken on South Kinloss Ave between Paradise Lake St. and Langside St. where drainage stone was applied. Photo 3 was taken on South Kinloss Ave, east of Langside St. where no action was necessary. Photo 4 was taken on South Kinloss Ave, east of Whitechurch St. where drainage stone was applied.

In some of these photos, the water level of the lands adjacent to the roadway is visible and in some areas the water level is within 500mm (20") of the road surface elevation. This is the reason that installing drainage tile would not be an effective solution in some areas.

In the opinion of Township staff, the only viable solution to prevent this issue from reoccurring would be to install a geotextile membrane below the road base, but at an elevation that won't be submerged in the spring. The attached Terrafix Photo shows a project where this system was used (courtesy of Terrafix Geosynthetics Inc.). The reason for taking this approach is to eliminate the contamination of the gravel road base with the saturated silty and clayey material from below. Essentially, the gravel base will "float" on the poorer subbase material, which should allow it to dry much quicker.

The current capital plan includes paving South Kinloss Ave from the end of the existing asphalt (east of Torrence St.) to Whitechurch St. in 2024 and the intention was to improve the road base in 2023 so it is ready for paving. After investigating possible solutions, staff are considering installing this membrane on a 200m section of South Kinloss Ave this summer as a trial and observe how it responds in the spring of 2023. This information will help to determine what would be required in 2023 to provide a suitable base for asphalt. If we aren't satisfied that we have solved

the road base stability issues, then paving South Kinloss Ave east of Paradise Lake St. would not be recommended.

If the trial proves successful, the same approach could be used in the section of South Kinloss Ave east of Whitechurch St., although there are currently no plans to pave that section of roadway.

The Director of Public Works has experience using this type of system in other Township capital projects and in previous positions and the results have always been positive. In some projects the asphalt surface has been in place for over ten years with no signs of accelerated deterioration.

In geotechnical investigation that was undertaken in 2020 included 25 borehole samples on South Kinloss Ave and the majority of the samples indicated there is at 1 metre depth of gravel and no samples indicated less than 0.5m of gravel base. This indicates that the road should be able to support an asphalt surface if it is able to drain effectively.

Ripley Industrial Park

Construction is still progressing despite the weather. The storm sewers, sanitary sewers, forcemains and watermains have been installed, but they have not been commissioned yet. The stormwater management pond is currently 50% complete and the removal of excess material and construction of ditches are underway. The contractor is still expecting to be complete in June.

Financial Impacts:

Improvements to South Kinloss Ave will be funded by the 2022 Operating Budget, however, any improvements in 2023 will likely need to be brought forward in the during 2023 Capital Budget deliberations.

The Ripley Industrial Park is included in the 2022 Capital Budget.

Strategic Alignment / Link:

Upgrades to South Kinloss Ave will be a necessary step towards Action Item A4.2: Pave Concessions.

Action Item P4.1: Ripley Industrial Park

Respectfully Submitted By:

John Yungblut, Director of Public Works

Approved By:

Mary Rose Walden, Chief Administrative Officer