

1. Pavement Marking Program Enhancements

Améliorations à apporter au Programme de marquage de la chaussée

COMMITTEE RECOMMENDATIONS

That Council:

- 1. Approve the enhancements to the annual Pavement Marking Program as described in this report;**
- 2. Approve the transfer of \$1.1 million of the City-Wide funding from the Capital Projects listed in Document 4 to a new capital project for the purchase of a longitudinal pavement marking truck, as described in this report; and,**
- 3. Return to source, Development Charge revenues of \$139,960 from the Capital projects listed in Document 4.**

RECOMMANDATIONS DU COMITÉ

Que le Conseil :

- 1. Approuve les améliorations à apporter au Programme annuel de marquage de la chaussée décrites dans le présent rapport;**
- 2. Approuve le transfert de 1,1 million de dollars de financement à l'échelle de la Ville des projets d'immobilisations énumérés dans le document 4 vers un nouveau projet d'immobilisation visant à acquérir un camion traceur pour un marquage longitudinal, tel que décrit dans le présent rapport; et**
- 3. Verse à la source 139 960 \$ de redevances d'aménagement issues des projets d'immobilisations énumérés dans le document 4.**

DOCUMENTATION / DOCUMENTATION

1. Director's report, Traffic Services, Transportation Services Department, dated 27 May 2019 (ACS2019-TSD-TRF-0007)

Rapport du Directeur, Services de la circulation, Direction générale des transports, daté le 27 mai 2019 (ACS2019-TSD-TRF-0007)

2. Extract of Draft Minute, Transportation Committee, 5 June 2019.

Extrait de l'ébauche du procès-verbal de la Comité des transports, le 5 juin 2019.

Report to
Rapport au :

Transportation Committee
Comité des transports
5 June 2019 / le 5 juin 2019

and Council
et au Conseil
12 June 2019 / le 12 juin 2019

Submitted on May 27, 2019
Soumis le 27 mai 2019

Submitted by
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Ward: CITY WIDE / À L'ÉCHELLE DE LA File Number: ACS2019-TSD-TRF-0007
VILLE

SUBJECT: Pavement Marking Program Enhancements

OBJET: Améliorations à apporter au Programme de marquage de la
chaussée

REPORT RECOMMENDATIONS

That the Transportation Committee recommend that Council:

- 1. Approve the enhancements to the annual Pavement Marking Program as described in this report;**
- 2. Approve the transfer of \$1.1 million of the City-Wide funding from the Capital Projects listed in Document 4 to a new capital project for the purchase of a longitudinal pavement marking truck, as described in this report; and,**
- 3. Return to source, Development Charge revenues of \$139,960 from the Capital projects listed in Document 4.**

RECOMMANDATIONS DU RAPPORT

Que le Comité des transports recommande au Conseil :

- 1. D'approuver les améliorations à apporter au Programme annuel de marquage de la chaussée décrites dans le présent rapport;**
- 2. D'approuver le transfert de 1,1 million de dollars de financement à l'échelle de la Ville des projets d'immobilisations énumérés dans le document 4 vers un nouveau projet d'immobilisation visant à acquérir un camion traceur pour un marquage longitudinal, tel que décrit dans le présent rapport; et**
- 3. De verser à la source 139 960 \$ de redevances d'aménagement issues des projets d'immobilisations énumérés dans le document 4.**

BACKGROUND

The [Pavement Marking Program Enhancements Report \(ACS2019-TSD-TRF-0004\)](#) was originally scheduled for the cancelled May 1, 2019, Transportation Committee (TRC) meeting. As part of the June 5, 2019, TRC meeting, the report has been replaced with a new version of the Pavement Marking Program Enhancements Report, identified as ACS2019-TSD-TRF-0007. The changes to the report include the following:

- 1. Revision to Report Recommendation Section: Any adjustments related to increased or decreased capital project costs, in addition to the creation of separate capital projects to facilitate project tracking require Council approval. The recommendations have been adjusted to seek Transportation Committee and Council approval for**

Pavement Marking Program enhancements as listed in the report, and to approve the transfer of \$1.1 million in City-Wide funding from specific Transportation Services capital projects to allow staff to initiate the purchase of a pavement marking truck, as described in the report;

2. Addition of a supporting document: Document 4 – Capital Projects - Transfer of Funds, which lists all capital projects and corresponding funding equivalent to \$1.1 million of City-Wide funds that is to be transferred to the new capital project to allow staff to initiate the purchase of a pavement marking truck as soon as possible;
3. Revision to Discussion Section: The last paragraph under the Durability of Pavement Markings sub-section has been revised to clarify the need to transfer City-Wide funds from the capital projects listed in Document 4 to a new 2019 New Longitudinal Pavement Marking Truck capital project; and,
4. Revision to Supporting Documentation Section: The bullet list has been revised to include Document 4 - Capital Projects - Transfer of Funds.

Through the annual Pavement Marking Program, Traffic Services is responsible for restriping over 5,500 kilometres of roadway and 6,500 intersections in the City of Ottawa every year. As the City and its road network continues to grow, the program sees increasing pressure on its resources and ability to complete the annual workplan. Other contributing factors include inclement weather and changes to legislation mandating specific road marking paints.

Please see Document 1: Inquiry TRC 03-18 – Pavement Markings on Roadways and Document 2: Memorandum - Directions to Traffic Services Relating to the 2019 Budget for recent communications to Mayor and Council Members on the topic of the Pavement Marking Program.

As indicated in Documents 1 and 2, this report lays out a strategy to achieve enhanced pavement markings on City streets. It identifies additional Capital and Operating funding, as well as Full Time Equivalent (FTE) positions, which would be put forward in future budget submissions, to allow for the completion of the program each and every year, along with improving the quality of the pavement markings being applied on the City's arterial and major collector roadways.

DISCUSSION

The City's Pavement Marking Program runs from mid-April to mid-November, weather dependent, each year. The application of markings usually starts around the beginning of May, and ends in early November, for a total of approximately 26 weeks. The current policy sets the re-application frequency for all pavement markings at once per year. The only exceptions are stop bar and crosswalk markings at signalized intersections, which are completed two times per year.

Currently, the City owns and operates only one line-painting truck used to restripe all longitudinal markings city-wide, which includes centerlines, lane lines and edge lines. On occasions where this vehicle requires maintenance, staff's ability to complete pavement marking work is compromised. Furthermore, relying on one truck does not always allow staff to adequately catch up on needed work where pavement marking shifts are lost due to rain events. The delivery of the 2017 Pavement Marking Program, for example, saw the loss of 25 out of 70 work shifts due to rain events, compromising staff's ability to fully complete the yearly program. Traffic Services staff have moved to an electronic work management system to schedule work to better manage available resources. These changes have provided some additional capacity, however, the ability to meet the frequency of yearly pavement marking maintenance continues to be at risk.

In addition to the pressures listed above, the Federal Government's 2012 Legislation, mandating road marking paints be formulated with less volatile organic compounds (VOC), has resulted in compromised durability of pavement markings. Since starting to use the legislated and affordable paint in 2012, pavement marking complaints have increased. Ottawa's winter climate and accompanying roadway maintenance activities have been shown to reduce the paint's durability to less than a year, especially on arterial roads with heavy vehicle use. Other more durable pavement marking products providing a longer service life are available, but they come at a significantly higher cost and cannot be accommodated within the existing operating budget.

Given the increasing pressures experienced by the Pavement Markings Program, including growth of the City's road network, increasing inclement weather events, and challenges related to the durability of the current pavement marking paint, investments in the Pavement Marking Program are required to meet Council-approved service levels and to address existing program pressures as a result of both growth and new

corporate initiatives. Further details on each required investment, as listed further in the report, can be found in Document 3 – Pavement Marking Program Investments.

Durability of Pavement Markings

The preferred option to help address the on-going issue of pavement marking durability includes a combined use of current pavement marking paints and more durable pavement marking products. This option is further outlined in Document 2. Using more durable pavement marking products such as a Spray Epoxy, Spray Methyl Methacrylate (MMA), or a similar longer lasting alternative, would ensure that markings perform better, are more visible year-round and can better endure Ottawa's harsh winter climate. This option is in line with many government agencies across North America, including Montreal and Calgary, who are increasing their use of more durable markings.

Since the introduction of the Federal environmental legislation in 2012, the required low volatile organic compounds (VOC) paints have proven to be less durable than the higher VOC paints used previously. While paint manufacturers have made some incremental improvements to low VOC paints, most government agencies continue to experience issues with the durability of pavement markings.

Using a more durable pavement marking product for all markings universally is unnecessary as some markings wear at a slower rate based on their location. Staff are recommending to:

- Replace the existing paint product used with a more durable pavement marking product for the application/re-application of longitudinal markings on arterial and major collector roads, such as centerline and lane line type markings;
- Continue to use the existing paint for longitudinal markings on minor collector and local roads and for all other types of pavement markings. The ability to apply a better performing pavement marking product only where it is needed most offers staff a measured approach to improving pavement markings in the city; and,
- Continue to apply pavement markings as per the Council-approved application frequency; apply all markings once per year, with exception of stop bar and crosswalk markings at signalized intersections which are completed two times per year.

Staff estimate that the following investments would be required in support of incorporating the use of more durable pavement markings within the program:

- Approximately \$3.30 million in operating budget to cover the costs of materials, fleet operating costs and salaries/wages where applicable;
- Approximately \$1.145 million in Capital to purchase a large paint truck equipped to apply the new longer lasting markings (\$1.1 million) in addition to a ¾ ton pick-up truck to support accompanying operations (\$45,000); and,
- An additional 5.22 full-time equivalent positions (FTEs) to operate the two new vehicles and support the program enhancements.

The process of purchasing a large paint truck is complex and requires a significant length of time. According to consulted vendors, it can take at least 18 months from placing the order with a vendor to actually receiving the vehicle. As such, Transportation Services will look to initiate the process of purchasing the pavement marking truck as soon as possible in 2019.

Project funding of \$1.1 million required in support of the new pavement marking truck is available through city-wide funding from existing Transportation Services' Capital Projects as listed in Document 4 – Capital Projects - Transfer of Funds. The transfer of \$1.1 million to a new capital project (2019 New Longitudinal Pavement Marking Truck) will allow staff to initiate the purchase of the pavement marking truck in 2019.

Corporate Initiatives

The overall Pavement Marking Program has expanded over the last eight years due to various Council-approved initiatives. Additional investments in the program are required to maintain the pavement marking program without adversely affecting related maintenance programs.

Thermoplastic Markings

The use of pre-formed thermoplastic pavement markings on the Laurier Avenue segregated bicycle lane in 2011 proved so successful that these are now being applied city-wide. Their use is growing in various road safety related projects as thermoplastic applications are used to highlight the presence of cyclists sharing the road network.

To address growth requirements related to Thermoplastic markings, the following investments are required:

- Approximately \$232,000 in operating to cover costs of materials, fleet operating costs and salaries/wages where applicable. It is estimated that \$110,000 will be required for materials and fleet;
- Approximately \$45,000 in Capital to purchase a ¾ ton pick-up truck to support operations; and,
- An investment of 1.74 FTE to operate the new vehicle and support the program enhancements.

Traffic Stencils/Symbols

The use of traffic stencils/symbols on our roads has grown significantly over the past number of years because of:

- Increased use of bicycle symbols/markings;
- Specialized road marking symbols used in our Temporary Traffic Calming Program (TTCMP);
- Increased number of roundabouts and traffic circles; and,
- Overall growth in road network (lane km).

With the increase use of these symbols, Traffic Services requires an additional specialized pavement marking truck and pavement marking crew to maintain them on an annual basis.

The following investments are required:

- \$157,000 in operating to cover materials, fleet operating costs and salaries/wages where applicable;
- \$185,000 in Capital to purchase a specialized pavement marking truck (\$140,000) and a ¾ ton pick-up truck (\$45,000); and,
- An investment of 1.74 FTEs to operate the two new vehicles and support the program enhancements.

Pavement Marking Eradication Equipment

Given the increased use of bicycle related pavement markings since 2011, and the assumption that the demand for these pavement markings will continue to grow, the purchase of a water blasting pavement marking eradication unit is required. In order to install many of these new markings, the pre-existing markings must be eradicated to permit their relocation,

The unit will not only help manage the increasing pavement marking removal work, but will also provide a faster, quieter and cleaner option to better eradicate pavement markings. The Capital cost to purchase this piece of equipment is \$200,000 with an annual operating cost of \$35,000. These investments are required to help manage the increasing pavement marking removal work associated to Bicycle Pavement Markings.

Other

Applying pavement markings requires dry pavement and, as such, wet or damp weather results in non-productive time. A new technology exists that can dry the road surface using turbine technology to allow for the application of smaller scale pavement marking (such as stop bars or small turning lanes) applications during inclement weather. Purchasing such a device is recommended as it would allow for a more effective and efficient delivery of the Pavement Marking Program. The investment required associated to the Pavement Marking Dryer includes \$80,000 in capital to purchase this piece of equipment with \$25,000 in annual operating.

Review of Application of Longitudinal Markings City-Wide

This past winter, Traffic Services staff reviewed the prioritization of the application of longitudinal markings city-wide. In the past, the application of longitudinal markings was completed by geographical area and these were applied one geographical area at a time. The practice led to certain major arterial roads not receiving the re-application of longitudinal markings until much later in the operational season based on the scheduling timeline of their geographical area.

As of this year, the longitudinal marking applications will be separated into two programs; arterial and non-arterial. The priority will be given to completing the application of longitudinal markings on arterial roads which have higher traffic volumes prior to completing non-arterial road markings. During the 2019 pavement marking season, the goal is to have all arterial roads restriped within 17 weeks from the start date of the program, and to reapply these markings on major arterial roads again in the fall. This change in service delivery should enhance the appearance of longitudinal markings on these high-volume roads over the winter months and should last longer in comparison to previous seasons.

Conclusion

The City of Ottawa's Pavement Marking Program ensures that roadways, roundabouts, traffic calming measures, cycling tracks, multi-use pathways (MUPs), crosswalks and stop bars are clearly marked to ensure the safety of pedestrians, cyclists and vehicle drivers. The Program is also important for persons with disabilities as pavement markings clearly identify pedestrian crossings and intersections with crosswalks.

As the City grows, roadways continue to expand, additional cycling tracks are added to the network, and MUPs are built in new communities. Investments in the program will provide long-term resources to ensure that the City's roads, pathways and cycling facilities are maintained to appropriate standards.

RURAL IMPLICATIONS

The Pavement Marking Program is applicable within the rural wards, as well as in the urban and suburban wards.

CONSULTATION

No public notification or consultation was undertaken for this report.

LEGAL IMPLICATIONS

There are no legal impediments to implementing the recommendation in this report.

However, it is important to note that there have been recent cases considering the issue of non-repair of a highway due to perceived lack of sufficient pavement marking of stop signs concerning two separate motor vehicle accidents in the City of Hamilton.

On September 19, 2018, two decisions released by different panels of the Ontario Court of Appeal considered similar fact situations involving allegations of highway disrepair and intersections with faded or partially removed stop lines. The motor vehicle accidents in both *Chiocchio v. Hamilton (City)* and *Smith v. Safranyos* (also involving the City of Hamilton) occurred when a motor vehicle stopped at a stop sign, but then did not stop closer to the intersection with a clear view of oncoming traffic, only to collide with an oncoming motor vehicle. Both actions involved issues of a driver's obligations under s. 136(1) of the *Highway Traffic Act* (HTA) to stop their motor vehicle "immediately before

entering the intersection” and a road authority’s responsibility to maintain pavement markings.

Both panels held that a road authority may be found liable for highway non-repair for failing to paint or maintain a stop line, even where a driver negligently fails to comply with the HTA obligation to stop before entering the intersection. However, in one case the court absolved the road authority due to the negligence of the driver while, in the other, the finding of partial liability against the City was upheld, notwithstanding the driver’s own negligence. Despite these seemingly inconsistent results, the Supreme Court of Canada on April 4, 2019, declined the opportunity to provide some further guidance when it dismissed the applications for leave to appeal in both cases.

In light of these decisions, some uncertainty remains in the state of the law in Ontario regarding a road authority’s potential liability for road repair and installation and maintenance of road markings. However, enhancements to maintenance standards may serve to help mitigate the road authority’s legal liability, recognizing the fact-specific nature of these types of cases, as well as other factors influencing findings of liability.

Legal Services will continue to monitor any further developments in this area of highway disrepair.

RISK MANAGEMENT IMPLICATIONS

If the Pavement Marking Program Report recommendations are not approved, the program will continue to be managed and operated status quo. It will continue to be a challenge for Traffic Service to be able to deliver additional pavement marking related services, outside of the required maintenance activities.

FINANCIAL IMPLICATIONS

Enhancements outlined in this report will be considered during the development of the annual budget over the remaining term of Council.

ACCESSIBILITY IMPACTS

The City of Ottawa’s Pavement Marking Program ensures that roadways, roundabouts, traffic calming measures, cycling tracks, multi-use pathways (MUPs), crosswalks and stop bars are clearly marked to ensure the safety of pedestrians, cyclists and vehicle

drivers. The Program is important for persons with disabilities as pavement markings clearly identify pedestrian crossings, intersections with crosswalks and access aisles.

ENVIRONMENTAL IMPLICATIONS

There are no environmental implications to this report. Pavement Marking products applied by Transportation Services staff will meet requirements as set out by the Federal Government environmental legislation, introduced in September 2012, that mandates that road marking paints be formulated with low volatile organic compounds (VOC), and be applied from May 1 to October 15 annually.

TERM OF COUNCIL PRIORITIES

This report aligns with the Transportation and Mobility Priority in the City of Ottawa 2015-2018 City Strategic Plan.

SUPPORTING DOCUMENTATION *(Held on file with the City Clerk)*

- Document 1 - Inquiry TRC 03-18 – Pavement Markings on Roadways;
- Document 2 - Memorandum - Directions to Traffic Services Relating to the 2019 Budget;
- Document 3 - Pavement Marking Program Investments; and,
- Document 4 - Capital Projects - Transfer of Funds.

DISPOSITION

The Transportation Services Department will deliver the Pavement Marking Program as approved by Council.