



The Corporation of the City of Temiskaming Shores

Special Meeting of Council

Thursday, February 27, 2020

6:00 P.M.

City Hall – Council Chambers – 325 Farr Drive

Agenda

1. Call to Order

2. Roll Call

3. Approval of Agenda

Draft Motion

Be it resolved that City Council approves the agenda as amended / printed.

4. Declaration of Special Council Meeting

Draft Motion

Be it resolved that the Council of the City of Temiskaming Shores declares this meeting a “Special Meeting of Council” in accordance to Section 7 of Procedural By-law No. 2008-160.

5. Disclosure of Pecuniary Interest and General Nature

6. New Business

a) Regional Funding

Draft Motion

Whereas the City of Temiskaming Shores is one of twenty-three (23) organized municipalities in the District of Timiskaming;

And whereas the City of Temiskaming Shores participates financially in many regional based services;

And whereas the City of Temiskaming Shores also provides many services that are funded directly by the waiving of yearly taxation, the provision of services at no cost during construction and ongoing contributions of various sorts;

And whereas these contributions are carried by the residents of the City of Temiskaming Shores yet enjoyed and used regularly by the regional population;

And whereas these services include, but are not limited to social programs, health programming, healthy kids initiatives and housing for seniors;

And whereas the Temiskaming Shores Public Library was until recently funded by various partnerships;

And whereas some of the funding partners have backed out of supporting this regionally beneficial services;

Therefore be it resolved that Council for the City of Temiskaming Shores hereby directs staff to reduce the yearly allocation to the Earlton-Timiskaming Regional Airport in the amount of \$20,000 and that these funds be directed to the Temiskaming Shores Library operating budget and the Age Friendly programming and other regionally based programs as remaining funds allow.

b) Presentation – 2020 Municipal Budget

7. Adjournment

Draft Motion

Be it resolved that City Council adjourns at _____ p.m.

Mayor – Carman Kidd

Clerk – David B. Treen

TEMISKAMING SHORES ROADS PROGRAM – 2020 AND BEYOND



WHERE HAVE WE BEEN?

- **2012 – 2019 – Rehabilitated a number of road sections, varied funding at \$600K to \$1.1M over the past 8 years**
- **Focus was on higher traffic volume, poor driving surface sections**
- **Primarily former Provincial Highway (Connecting Link) roadways**
- **Consistent funding for operations at \$150 - \$200K for patching and repairs.**

WHERE ARE WE AT?

- **Discussions regarding a “multi-year roads program” at PW Committee**
- **Discussions with Contractor regarding potential Multi-year Agreement**
- **Presentation of Multi-year concept and funding proposal in 2020 Draft Capital Budget (\$16M work in 4 years - 8 year payment term)**
- **Council’s request for additional information**

WHAT DO WE KNOW? - HARD SURFACED ROADS

- **Assessed in 2017 by Streetscan using FCM Asset Management Grant to attain PCI**
- **Current Asset - 110.9 centerline Kms (219 lane Kms)**
- **Residual Value \$9.43M - Renewal Cost \$35.34M (Surface only)**
- **Investment of \$44.77M required to attain PCI of 75+**

WHAT DO WE KNOW? - GRAVEL SURFACED ROADS

- **Assessed in 2018 by Staff**
- **Current Asset - 100.9 centerline Kms (202 lane Kms)**
- **Residual Value \$1.07M - Renewal Cost \$3.80M (Gravel only)**

WHAT DO WE KNOW? - GRAVEL SURFACED ROADS

- Conversion Costs
- Granular lift + DST – 14 metre width - \$82,390 per km
- Ditching - \$8,000 per km
- Base Stabilization - \$59,500 per km* * If required
- Savings of \$1,180 per km per year upon conversion

- DST \$500K / yr = 16.8 years
 \$750K / yr = 11.2 years
 \$ 1M / yr = 8.4 years

THINGS TO CONSIDER

- Paved roadways are deteriorating faster that we can rehabilitate
- Costs are steadily on the rise
- If we perform that right maintenance at the right time = Extended life
- Increase in efficiency = lower cost = more maintenance performed / \$ spent
- First line of defense – crack sealing & pothole repairs
- Solution – More efficient repair methods

MAINTENANCE METHODS

Input	Throw & Go	Throw & Roll	Semi-Permanent	Trailer SP	Truck SP
Crew Size	3	3	4	4	1.5*
Wages / Day	\$780	\$780	\$1040	\$1040	\$390
Equipment Cost / Day	\$490	\$490	\$540	\$1300	\$1175
Material Cost / Day	\$660	\$660	\$800	\$530	\$530
Total Cost / Day	\$1930	\$1930	\$2380	\$2870	\$2095
Repair Life - Mths	3	6	12	21	21
	\$21.45	\$10.72	\$6.52	\$4.52	\$3.30

BUSINESS CASE – TRUCK MOUNTED SPRAY PATCHER

- **Based on 2019 totals – 253.4 tonnes of patching material - Average 4 tonne per day = 63.3 days**
- **Truck Mounted vs Current Trailer Mounted = \$775 savings per day**
- **Payback of 6.85 years for \$336,000 , One Person Operated Equipment**
- **Increased productivity, lower labor costs, reduced Health & Safety concerns.**

REVISITING THE 2020 CAPITAL BUDGET

- **First Draft**
- **- Proposed Roads Program \$16M of combined Rehab & Conversion completed in 4 years**
- **- Payment of \$2M per year for 8 years**
- **- 2020 Operations - \$200K for patching and repairs (does not include Utility repairs)**
- **Total Budget Impact in 2020 = \$2.2M – and on a go forward basis**
- **Suggested 5% Capital levy throughout program**

REVISITING THE 2020 CAPITAL BUDGET

Council Consideration

- Proposed Roads Program \$1.2M consisting of combined Rehab & Conversion in 2020
- 2020 Operations - \$200K for patching and repairs (does not include Utility repairs)
- Purchase of Truck Mounted Spray Patcher - \$336K
- Re-scan of paved roadway (\$9K to be used from Operations Budget in each of next three years)
- Total Budget Impact in 2020 = \$1.736M
- Finalize Asset Management Software acquisition recommendation and report back to Council with 5 year roads program for 2021 Budget deliberations

QUESTIONS

THANK YOU

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Spray Injection Pothole Filling

Business Case

Public Works Department – 2020

Truck mounted – single operator machine

Table of Contents

1	Executive Summary	3
2	Introduction	3
3	Background	5
4	Evaluation	7
	4.1 Labor Rates	
	4.2 Material Rates	
	4.3 Equipment Rates	
	4.4 Cost Comparison	
	4.5 Payback Period	
5	Business Case Approvals	9

1. Executive Summary

This business case will provide an outline for consideration by the City Manager and Council for the purchase of a Truck Mounted Spray Injection Pothole Filling Machine.

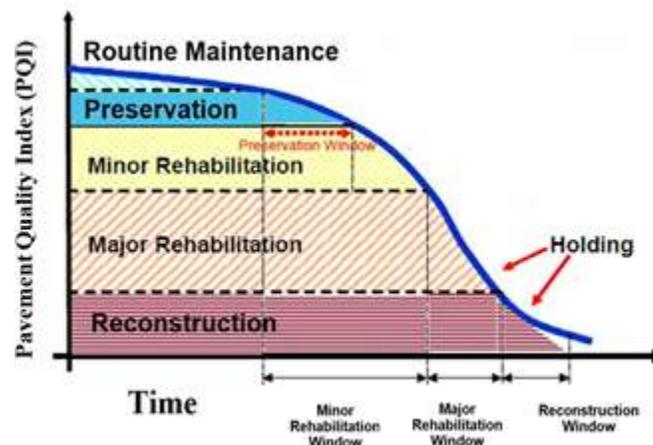
The machine would be an addition to the City's fleet as a Capital Equipment purchase and replace the trailer mounted device purchased in 2013.

The main purpose for the acquisition is to increase safety, increase productivity, increase the durability of the repairs and save money.

2. Introduction

The key to long term, cost effective pavement performance is the use of appropriate routine maintenance, preservation and rehabilitation options at the right time during the service life of the pavement, in conjunction with coordination between both sections of the Public Works Department within the City. The benefits of timely and appropriate application of these options are realized in the form of lower costs, longer serviceability and less disruption to the travelling public. An important component of the pavement rehabilitation process is estimating the remaining life of the in-service pavements. Remaining life should be defined in terms of both structural capacity and functional serviceability. Figure 1 is a graphical illustration of the typical loss in pavement serviceability over time along with the various pavement rehabilitation, preservation and routine maintenance strategies that are available to the City.

Figure 1: Loss in Pavement Condition Index (PCI) Over Time and Role of Pavement Maintenance and Rehabilitation



As illustrated in Figure 1, a wide range of intervention types are available for road preservation and maintenance. To maximize return on investment, the interventions need to be timely and appropriate. Extensive research over the past 30 years has

demonstrated that the timely application of relatively low-cost routine maintenance and preservation treatments are six times more cost effective than waiting until the PCI has deteriorated so that only costly major rehabilitation or reconstruction will restore serviceability.

At present, routine maintenance activities including critical interim repairs are carried out on an annual basis by the Transportation Services division staff. In making the determination of which repairs are the most critical and the procedures to be used to make the repairs, one should not lose sight of the fact that the distress is often only the visual effect of the problem and not the cause of it.

Some of the routine pavement maintenance and preservation activities used by Transportation Services and contracted services are as follows:

- Pothole repair
- Patch repairs
- Deep patching
- Crack sealing

Pothole Repair

Potholes are created when water penetrates the top layer of HMA through cracks in the road. When temperatures drop the moisture freezes and expands, sections of the pavement are pushed up. The weight of vehicles passing over this section of road breaks the pavement and the HMA pieces are forced out. Potholes are more frequent in the spring, after the freeze/thaw action during winter. Repairing potholes is an affordable way to maintain the road network. The City's crews routinely monitor road conditions and identify areas that need repairs. Road users and business owners can help by reporting potholes through ratepayer comment forms or by calling (705) 647-6220. Crews place Cold-mix or HMA and rake it into the pothole. Then they tamp down the asphalt and smooth it out until the road surface is improved.

Patch Repairs

The patch repair maintenance activity is generally used to complete final repair to utility cut restorations or to address surface deflections in previous patches. Patch repairs can be completed by either milling the HMA surface or replacing it with new HMA, or by using equipment such as the Patch Master to reheat and rework the existing HMA. Patch repairs may also be used to address other surface defects such as depressions and settlements, wide cracks and severe ravelling.

Deep Patching

The deep patching maintenance activity is only used to address pavement failure areas.

Deep patch repairs are completed by saw-cutting around the affected area, removing the concrete or granular base and subbase materials and then reinstating the pavement. Deep patching is used to address severe pavement distress such as alligator cracking.

Routing and Sealing of Cracks

The purpose of crack sealing is to prevent moisture from penetrating the base and subgrade thereby weakening the roadway structure. It also prevents material spalling from the edges of cracks. Pavement cracks on City roads should be routed to a required reservoir, blown clean with hot compressed air and sealed using a hot-poured rubberized asphaltic crack sealant.

Dealing with the development and repairs of potholes is perhaps the most difficult and labor intensive for internal staff to deal with.

3. Background

Currently, the Public Works Department utilizes several differing techniques for pothole repairs.

The “**Throw and Go**” method is perhaps the most widely used for filling potholes in higher traffic areas. It is the simplest, and requires very little effort or equipment. A mixture of bituminous material is placed into a pothole which may or may not be filled with water and debris. Hand tools, such as a shovel, is used to fill the hole and then compaction effort is provided by the passing traffic. This method is a very temporary solution and quite often lasts a very short length of time due to the lack of effort in preparing the pothole for repair, the quality of the material used and the lack of or significant volume of traffic used for compaction.

The “**Throw and Roll**” is becoming the traditional method of filling, it is simple, and again, less specialized material and equipment is required. A similar mixture of bituminous material is placed into the pothole which again may or may not be filled with water and debris. Hand tools, such as a shovel, is used to fill the hole. Workers fill the pothole so that there is a crown in the center and once filled, they then compact the material by rolling over it several times with truck tires. Some crews have found it useful to cover the patch with sand before rolling a truck over the patch to prevent material from sticking to the tires. After rolling, workers check the level of the patch to make sure the center of the patch is $\frac{1}{4}$ ” to $\frac{1}{2}$ ” above the pavement surface. If the patch is low, more material is added and the compaction effort is repeated.

One issue with any compaction method is the concern that overfilling and compacting potholes can “mushroom”. As the material is compacted, the material is forced underneath the road surface, causing a mushroom effect that can lead to a speedbump like replacement of the pothole.

Semi-Permanent repairs are similar to the “Throw and Roll” method, however, more attention is paid to the cleaning and shaping of the pothole prior too filling. Although is was believed to be superior to “Throw and Roll” for longevity, studies have indicated that the material choice itself plays a far bigger role. A study conducted by the U.S. Department of Transportation found that the “throw and roll” technique proved to be just as effective as the “semi-permanent” procedure for those materials for which the two procedures were compared directly. Since the semi-permanent technique is more labor and material intensive, the throw and roll technique generally proven to be more cost effective if quality materials are used.

Spray Injection methods use direct high-pressure air to clean the damaged area of water and debris. Emulsion and aggregate are mixed in the nozzle and pressure blown into the pothole itself, followed by a dry coat of aggregate, which is added so the traffic can travel on it immediately with fear of tracking. This is generally believed to produce a neater and smoother repair that blends in better with the surrounding asphalt surface. The spray injection method may utilize a trailer mounted or truck mounted device.

The trailer mounted sprayer requires towing equipment capable of feeding the aggregate into the patcher, an operator on the applicator as well as traffic control persons and other support staff while the truck mounted device is a one-person operation from the safety of the cab, with traffic control person(s) as required. Spray injection avoids the mushroom problem and the material is compacted, as the pothole is filled, to approximately 95% compaction.

4. Evaluation

A cost comparison was completed to determine if the Truck-mounted Spray Injection method would be more cost effective on a per tonne basis and would yield a reasonable return on the capital investment going forward. The length of time of the repair process is based on research performed by several sources in the U.S., and material and labor costs were taken from current costs in Temiskaming Shores.

4.1 Labor Rates

The labor rates are taken from the current Collective Agreement with CUPE Local 5014 for 2020. Typically, a 25% to 30% overhead rate is applied to the hourly labor rate resulting in the following;

Equipment Operator: \$32.48 per hour.

4.2 Material rates

The material rates are taken from invoicing received from suppliers during the 2019 construction season and are as follows and include non-refundable HST;

Cold Mix Asphalt: \$164.85 / tonne

Hot Mix Asphalt: \$200.00 / tonne
Aggregate: \$14.70 / tonne
Emulsion: \$0.92 / litre

4.3 Equipment Rates

The equipment rates are taken from industry standard rates as provided by the Ministry of Transportation OPSS 127 for approved equipment rental / charge out costs.

Pick-up Truck: \$30.65 / hour
Single Axle: \$60.20 / hour
Trailer Mounted SP: \$71.95 / hour
Truck Mounted SP: \$132.15 / hour

4.4 Cost Comparison

The following comparison is based on an eight (8) hour work day with the equivalent of 4 tonne of material placed in a shift.

Input	Throw & Go	Throw & Roll	Semi-Permanent	Trailer SP	Truck SP
Crew Size	3	3	4	4	1.5*
Wages / Day	\$780	\$780	\$1040	\$1040	\$390
Equipment Cost / Day	\$490	\$490	\$540	\$1300	\$1175
Material Cost / Day	\$660	\$660	\$800	\$530	\$530
Total Cost / Day	\$1930	\$1930	\$2380	\$2870	\$2095
Repair Life - Mths	3	6	12	21	21
	\$21.45	\$10.72	\$6.52	\$4.52	\$3.30

*Part-time Traffic Control

4.5 Payback period

Based on the total materials consumed in 2019 (253.4 tonnes) divided by an average of 4 tonnes per day, that would equate to 63.3 days of operations using a spray injection method. At a savings of \$775 per day (trailer vs truck mounted equipment) that would equate to \$49,000 savings per year.

Payback on the purchase of a 2020 P5 Durapatcher, One Operator, machine at a cost of \$336,000 would be 6.85 years. It should be noted that increased productivity as well and reduced health and safety concerns have not been included as factors in the Cost Comparison.

5. Business Case Approval

The undersigned acknowledge that they have reviewed the Acquisition of a Truck Mounted Spray Patcher Business Case and agree with the information presented within this document. Changes to this Business Case will be coordinated with, and approved by, the undersigned, or their designated representatives.

Prepared by:

Reviewed and Submitted for
Council's Consideration by:

G. Douglas Walsh, CET
Director of Public Works

Christopher W. Oslund
City Manager