



The Corporation of the Town of Milton

Report To: Council

From: M. Paul Cripps, P. Eng., Commissioner, Engineering Services

Date: June 24, 2019

Report No: ENG-018-19

Subject: State of the Roads Infrastructure

Recommendation: THAT Report ENG-018-19 be received for information and the results be carried forward for consideration into the 2020 Budget and Asset Management Plan.

EXECUTIVE SUMMARY

The Town of Milton has completed an update of the State of the Infrastructure and Management Strategy for our road assets.

The report provides:

- an up-to-date inventory of physical assets
- current needs analysis
- provision of maintenance and rehabilitation programs for the next ten years

This study supports the Town's development of an asset management system in keeping with the legislated requirements of Ontario Regulation 588/17 and utilizes pavement management strategies that result in optimized capital expenditures.

The Province of Ontario requires annual reporting on the percentage of roads rated as good to very good. The Town of Milton's road system based on this update is 84.6%.

For a large, lower-tier urban and rural road system the overall condition of the roads is adequate and provides a high level of service to the community. For further information, please see Appendix I.

REPORT

Background

The Town of Milton's road system is a core Town asset and supports the local economy and growth as transportation is critical to a modern community. The road system



services citizens and commercial needs daily. As shown in the table below, the Town currently owns over 1,200 lane km of roadway and the replacement cost of the road system is approaching \$1.1 billion.

Road Class	Replacement Cost (\$ million)	Lane km
Rural	\$ 332.26	497.0
Semi Urban	36.0	75.7
Urban	726.0	670.7
Total	\$ 1,094.28	1,243.4

During the summer of 2018, the Town of Milton performed a major update to the pavement management inventory and needs assessment for its roads assets.

The study was conducted and written by 4Roads Management Services Inc.

On March 26, 2019 we received the final report entitled “2018 State of the Infrastructure and Management Strategy for Roads” (SOTRI).

The study updated our inventory of roads and collected data pertinent to the condition of the roads assets. The previous study was conducted in 2013 and formed a basis for decision making for program expenditures since then.

The SOTRI report is a component of, compatible with, and supports the Town’s objective to satisfy the requirements of Ontario Regulation 588/17.

Roads are considered a core asset under the legislation. Core assets are considered to be essential to a functioning community and its economy and include water, wastewater, roads and bridges.

Discussion

The study is essentially a road needs analysis. The study collects data on the physical attributes of each individual road such as length, width, and surface type (asphalt, concrete, etc.) to produce a complete inventory of roads assets.

As part of this study, roads were divided and re-numbered with a unique ID that represents logical sections consistent with rehabilitation strategies.

Roads are inspected for distress to form a database of needs. The needs are categorized into various rehabilitation and maintenance processes and form the basis for a ten-year work program plan. The inspections are based on the Ministry of

Transportation Manual for Municipal Roads. Each road is analyzed based on its structural adequacy and then categorized by time of need.

Methodology

The Town's SOTRI analysis is based on the Ministry of Transportation's Manual for Municipal Roads.

As roads deteriorate they do not follow straight line depreciation as would be typical in the accounting world. Road structures deteriorate by following a complex and exponential decay curve, where very little deterioration is evident during the early years and as the road ages deterioration accelerates. This is because water has a negative impact on road structures and cracking allows water to infiltrate and deteriorate the road base.

The effect of accelerated deterioration makes the timing of rehabilitation critical to the optimization of managing the asset. This is illustrated in Figure 1. As Figure 1 shows, money spent at the optimum time is cost effective and will result in the best return on investment or most benefit for the least cost.

Roads Decay Curve

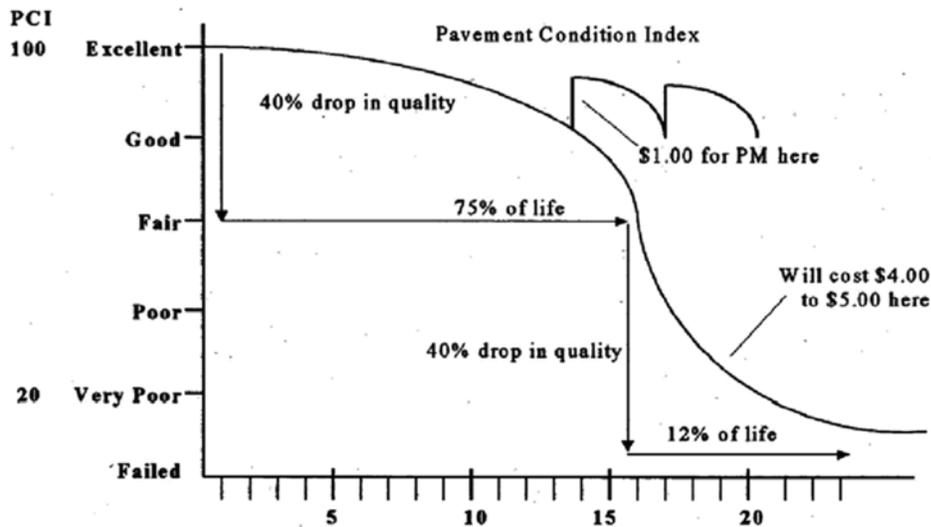


Figure 1

As there is a direct relationship between the amount of water entering the road base and the condition of the road, cracking is the most important surface indicator and control need. The resulting programs to address road deterioration revolve around keeping the water out, which leads to work programs that address surface distress early in the life cycle of the road. Put another way, to optimize the utilization of funding

requires working on good roads to keep them good, the essence of preventive maintenance.

Results and Recommendations

The results of the study indicate that the current system adequacy measure is 91.2% by centre line kilometers. The remaining 8.8% of the road system requires improvements and is classified as a 'now' need. System adequacy includes very good, good and fair categories of roads.

The SOTRI report suggests work plans for various categories of surface distress:

- Sealants that provide ultraviolet protection to keep asphalt pliable and prevent brittle cracking
- Crack filling that seals the surface cracks and prevents water entry
- Asphalt overlays that renew the surface of the road

A series of ten-year work programs have been recommended with the intention of maximizing the return on investment in our road system.

Annual Preservation Programs

The report suggests annual funding of \$10.2 million made up of the following programs:

- \$8,000,000 for asphalt resurfacing
- \$1,450,000 for sealing
- \$ 180,000 for crack sealing
- \$ 500,000 for surface treatment (chip and tar)
- \$ 51,000 for gravel roads

It is important to note that funding levels need to be updated annually to reflect new roads being added to the network, and to account for inflation.

Road Reconstruction Program

Based on condition assessment, the estimated total cost of road improvements for 'now' needs is \$49.3 million. A further \$55.8 million was identified as road work required in the 'one to ten' year time period. However, with the planned treatment programs the expectation is that some of the roads identified in the 'one to ten' year period will not deteriorate to the point of full reconstruction.

Lifecycle Funding Programs

To sustain the Town's existing roads over the course of their 75-year life cycle, a \$21.9 million annual funding requirement has been identified in the SOTRI report. This average annual amount provides for the aforementioned preservation program as well as the anticipated reconstructions, and will need to be adjusted in the future for



inflationary cost pressures. As the annual amount of reconstruction investment can vary, financing tools such as reserves or debt will be necessary to manage any fluctuations.

The average annual investment will also need to be increased in recognition of new roads that are being constructed or assumed by the Town. The Town currently utilizes the cost of the asset along with the anticipated lifespan in order to arrive at the incremental investment required. This approach will be further assessed using the results of the SOTRI in combination with broader organization-wide inputs as part of the Town's 2020 Asset Management Plan update.

Financial Impact

Annual Preservation and Road Reconstruction Programs

The recommended funding level for annual preservation programs is \$10.2 million, or \$102 million over the next 10 years (excluding inflation and growth). A further \$49.3 million in roads are identified as 'now' needs. The report also references \$55.8 million as needs in the 'one to ten' year time period. However, with the planned treatment programs, the expectation is that some of these roads may not deteriorate to the point of requiring full reconstruction.

The ten-year capital forecast as presented through the 2019 capital budget provided for approximately \$145 million in road redevelopment activity (urban & rural). Annual funding of \$284,000 is also provided for in the operating budget for crack sealing activity. A direct comparison of these totals to the needs identified in the SOTRI report is not perfect as the road redevelopment program does include some road improvement costs beyond the scope of the SOTRI report (such as addition of turning lanes, intersection upgrades, etc.), and similarly there are some elements of redevelopment within the Town's road growth program (such as when a road is widened). Nonetheless, the amounts above do provide a reasonable order of magnitude that suggests that some pressure can be expected through the 2020 budget process as the results of the SOTRI report are introduced.

Lifecycle Funding Program

The SOTRI report identified that the Town should be providing \$21.9 million in annual funding for the maintenance and replacement programs associated with the existing road network. As referenced in the Town's 2017 Asset Management Plan, and implemented with the 2018 budget, an annual incremental contribution of \$1 million is being made to the Town's infrastructure renewal reserve to support long-term renewal of the Town's existing assets. The incremental \$1 million strategy has been built into the forecasted funding for infrastructure renewal and the continuation of the strategy will be integral to being able to provide for the recommendations as outlined in the SOTRI. The adequacy of the \$1 million funding strategy relative to the needs identified



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through this and other ongoing Town condition assessment studies will be further assessed through the next asset management planning study.

In accordance with Financial Principles Policy No 110, a capital lifecycle contribution for future rehabilitation and replacement will also be budgeted for all new roads being built or assumed.

Respectfully submitted,

M. Paul Cripps, P. Eng.
Commissioner, Engineering Services

For questions, please
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Attachments
Appendix I – Executive Summary from SOTRI Report

CAO Approval
Andrew M. Siltala
Acting Chief Administrative Officer

Town of Milton, 2018 SotI and Management Strategy for Roads
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Executive Summary

Asset Management Planning – Historical and Current Context

Road Needs Studies (RNS) were implemented by the Ministry of Transportation Ontario (MTO) in the 1960's, and evolved into the current format by the late 1970's. The most current version of the Inventory Manual is dated 1991, and is the methodology used for this report.

The process was originally created by the MTO as a means to distribute conditional funding, on an equitable basis, between municipalities. The practice was discontinued by a number of municipalities, when conditional funding for roads was eliminated in the mid 1990's. The RNS process is a sound, consistent asset management practice that still works well today, and in view of the increasing demands on efficiency and asset management, represents a business practice that is beneficial to continue.

To put the Road Needs Study in a more current context, the State of the Infrastructure (SotI) is essentially a Road Needs Study.

In August 2012, the Province of Ontario, introduced a requirement for an Asset Management Plan (AMP) as a prerequisite for municipalities seeking funding assistance for capital projects from the province; effectively creating a conditional grant. To qualify for future infrastructure grants, an AMP had to be developed and approved by a municipal council by December 2013. On April 26, 2013 the province announced that it had created a \$100 million Infrastructure Fund for small, rural and northern municipalities.

Subsequently, the province has introduced further initiatives for infrastructure funding: Ontario Community Infrastructure Fund (OCIF) and the Small Communities Fund (SCF). An Asset Management Plan (AMP) approved by Council is required as part of the submission for OCIF Applications. Asset Management Plans were to be reviewed for comprehensiveness.

On December 27, 2017, the Province filed Regulation 588/17, Asset Management Planning for Municipal Infrastructure. The regulation identifies provincial requirements and timelines for development and implementation of asset management plans. Initially, AMP's will have to include the 'core' assets; water and waste water linear and treatment, roads, bridge and culvert structures, and storm water linear and treatment. Regulation 588/17 is attached as Appendix D of this report and provides further information.

The Town of Milton (ToM or the Town) is currently evolving the AMP for the various asset groups, roads being one of them. A key component of the AMP is a 'State of the Infrastructure' (SotI) review of the asset or asset group. This report provides the SotI review of the Town of Milton road system and also provides recommendations for budgets and road asset programming. This information has to be integrated with the plan for the other assets that the Town of Milton manages.

As an asset management practice, the Town updates the condition information for the road system on a five (5) year cycle.

Project Scope

The scope of this report is to prepare a State of the Infrastructure and Asset Management Plan for Roads report that includes:

- Review and condition rating on the road assets within the Town of Milton road system
- Add or change and re-number road sections to better reflect the constitution of the road system and better facilitate future programming.

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- Develop current replacement costs for each road asset.
- Develop/review recommendations for improvement and associated costing on deficient assets
- Develop recommendations for annual budgets based on current costs for amortization/capital depreciation and major program areas based on updated unit costs provided by the Town.
- Develop analysis on the effect of current and recommended budgets on overall system performance.
- Develop a 10 year work plan
- Provide Asset Management Strategy recommendations
 - Provide the answers to the basic asset management questions;
 - What you have
 - Where its located
 - What condition is it in?
 - What is it worth?
 - What will it cost to replace it?
 - Useful remaining life?
 - What service level will be required over the service life?

The 2018 SotI Report summarizes the road system condition survey conducted during the summer of 2018. The survey identifies the condition of each road asset by its time of need and recommended maintenance, rehabilitation or reconstruction treatment.

Further, the report provides an overview of the physical and financial needs of the road system in its entirety as well as by road section. Both information sources are used to develop programming and budgets. However, once a road section reaches the project design stage, further detailed review, investigation, and design will be required to address the specific requirements of each project.

This report should not be confused with a road safety audit. A road safety audit is the formal safety performance examination of an existing or future road or intersection, which qualitatively estimates and reports on potential road safety issue and identifies opportunities for improvements for all road users. Typically, and more predominantly in a lower tier, rural municipality on lower volume road sections, the road system has some deficiencies with the existing horizontal and vertical alignment. Road sections with potentially substandard horizontal and vertical alignments are listed in Appendix F.

The Town of Milton provided updated information with respect to their database/network, which included sections that had been added or removed from the system, and other segment data.

Report Methodology Overview

Regulation 588/17 Asset Management Planning for Municipal Infrastructure requires;

'v. a description of the municipality's approach to assessing the condition of the assets in the category, based on recognized and generally accepted good engineering practices where appropriate.'

Field data collection and road ratings were completed generally in accordance with the Ministry of Transportation Ontario (MTO) *Inventory Manual for Municipal Roads* from 1991 (*Inventory Manual or IM*). Road conditions are evaluated during a field inspection. The ratings are either a standalone value or

incorporated into calculations performed by the software. The ratings or calculations then classify the road section as a 'NOW', '1 to 5', or '6 to 10' year need for maintenance, rehabilitation or reconstruction in six critical areas.

The *Inventory Manual* offers a holistic review of each road section, developing a Time of Need (TON), or an Adequate rating, in six areas that are critical to municipal decision making:

- Geometrics
- Surface Type
- Surface Width
- Capacity
- Structural Adequacy
- Drainage

The Time of Need is a prediction of the time until the road requires reconstruction, **not the time frame until action is required.** Generally, the closer the timeline to reconstruction, the greater the deterioration of the road is. For example, a road may be categorized as a '6 to 10' year need with a resurfacing recommendation. This road should be resurfaced as soon as possible to further defer the need to reconstruct.

Reporting and analysis is on an individual road asset (or road section) basis. Road sections should be reasonably consistent throughout their length, according to roadside environment, surface type, condition, cross section, speed limit, traffic count or a combination of these factors. For example, new sections should be created as surface type, surface condition, cross-section, or speed limit changes.

Improvement recommendations are made at the time of preparation of the report based on the defects observed and other information available in the database, such as traffic and the percentage of trucks,. Once a road asset reaches the project level, the municipality may have selected another alternative based on additional information, asset management strategy, development considerations or available funding.

Accurate and current traffic counts are critical in managing a road system and their importance cannot be emphasized enough, particularly truck traffic. Traffic counts establish road maintenance classifications for Minimum Maintenance Standards purposes, as per Ontario Regulation 239/02 (*Minimum Maintenance Standards for Municipal Roads, revised May 3, 2018*), functional classifications as per Regulation 588/17 classification (*Asset Management Planning for Municipal Infrastructure*), as well as determining appropriate geometry, structure, and cross-section when the road is rehabilitated or reconstructed. The Town provided updated traffic information for 2018 where available which utilized in the preparation of this report. The Town of Milton continues to experience increased traffic in some areas of the Town. Traffic counts, including truck counts, should continue to be updated on a regular cycle, as a risk management exercise.

Road conditions are evaluated during a field inspection. The ratings are either as a standalone value or incorporated into calculations performed by the software, that then classify the road section as a 'Now', '1 to 5', or '6 to 10' year need for maintenance, rehabilitation or reconstruction into the six critical areas noted above.

Recommendations are made based on the defects observed and other information available in the database at the time of preparation of the report. Once a road asset reaches the project level, the

municipality may have selected another alternative based on additional information, asset management strategy, development considerations or available funding.

'**NOW**' needs represent road sections that require reconstruction or major rehabilitation. 'NOW' needs are the backlog of work required on the road system; however, 'NOW' needs may not necessarily be the priority, depending on funding levels. Preservation and resurfacing treatments typically offer a better Return on Investment (ROI) than major rehabilitation or reconstruction. Construction improvements identified within this time period are representative of roads that have little or no service life left and are in poor condition or have a significant drainage or capacity need. Resurfacing treatments are never 'NOW' need, with the following exceptions;

- RW (Resurface and Widen)
- PR1 or PR2 (Pulverize and resurface 1 or 2 lifts of asphalt)
- When the surface type is inadequate for the traffic volume (gravel road over 400AADT)
- When the surface is gravel and the roadside environment is Urban or Semi-Urban

'**1 to 5**' identifies road sections where reconstruction is anticipated within the next five years, based upon a review of their current condition. These roads can be good candidates for resurfacing treatments that would extend the life of the road (depending on any other deficiencies), deferring the need to reconstruct. These roads would be considered to be in fair condition.

'**6 to 10**' identifies road sections where reconstruction improvements are anticipated within six to ten years, based upon a review of their current condition. These roads can be good candidates for resurfacing treatments that would extend the life of the road (depending on any other deficiencies), thus deferring the need to reconstruct. These roads would be considered to be in good condition.

'**ADEQ**' identifies road sections that do not have reconstruction or resurfacing needs, although minor maintenance such as crack sealing, other preservation treatments or spot drainage may be required. These roads would be considered to be in good to excellent condition.

This report summarizes the needs identified through a number of tabular appendices.

When the *Inventory Manual* was originally developed, the Province provided funding for municipal road systems; the road systems were measured by their system adequacy. The system adequacy is the percentage of the road system that is not a "NOW" need.

The *Inventory Manual* provides direction that roads with a traffic volume of less than 50 vehicles per day are deemed to be adequate, even if they have structural, geometric, or drainage deficiencies that would otherwise be identified as being in a Time of Need and were to be corrected within the maintenance budget. This factor has very little effect on the system adequacy calculation for Town of Milton road system.

Observations from Field Review and Data Analysis

During the field review, and in reviewing the data and the needs for the road network, there were several unique aspects of the network that came to light:

- Current Level of Service measures are as follows;
 - System Adequacy measure for the Town of Milton road system is 91.2%. System Adequacy has decreased marginally since the last review; 91.3% in 2013 vs the current

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91.2% based on CL-km. This would indicate that 8.8% of the road system is in poor condition, as measured by CL-km. (Further discussion in section 8 of the report.)

- The system adequacy remains at a very high level, however, considering that since there are an additional 16.789km of new roads (and 39.52 additional lane kilometres) since the 2013 study, project selection may not be optimal.
- Weighted Average Pavement Condition is 81.21. This measure was 82.75 in the 2013 report. 4 Roads recommends a minimum of 70. (Further discussion in Section 8 of the report.)
- Good to Very Good roads for the entire system is 83.7% (All metrics considered in the six critical areas, by CL-km.) to 85.8% (Structural Adequacy Only, by CL-km.)
- System adequacy and overall condition has decreased marginally. Contributing factors may include;
 - Premature asphalt aging. Over a period of time -circa 2008 to 2014-, Ontario municipalities identified what appeared to be many instances of pavements that were performing poorly. Municipalities worked with industry to develop improved asphalt cement standards which are now in use. This may also be having an effect on the overall condition rating of the road system. (Examples may include Thompson Road, Boston Church Road, the area bounded by Steeles, Thompson, Ontario and Main.
 - Insufficient funding is typically an issue with municipalities. In this instance, the system has increased by 16.8km (2.7%) which are at condition 100, yet there was a marginal decrease in the system condition by two measures. However, from the information provided by the Town, funding appears to be at a level that should sustain the system.
 - Programming may not be recognizing treatments that offer a better Return on Investment (ROI).
- The report provides recommendations for annualized funding levels that will sustain the condition of the road system, however, in the 1 to 10 year horizon, in order to maintain the condition of the system and minimize lifecycle spending, the expenditures will have to be higher than the recommended funding levels.
- A Resurfacing or Rehabilitation treatment is required on 76.959 CL-km. Of that amount, 10.14 km are NOW needs. All hard surface types are included.
- It is anticipated that there will be Resurfacing needs, additional to the report, on approximately 92.22 CL-km in the next 1 to 3 year period (14.85% of the network).
- There are also road sections that potentially have a capacity need (require additional lanes); 6.7km appear to be at Level of Service E in terms of Capacity and should be further studied.
- It does not appear that the Town of Milton utilizes a comprehensive database for all the asset groups.
 - For example, traffic information was not linked to an asset ID
 - Unit cost information does not appear to be correlated regularly

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- There were a number of newer road sections where significant settlements were observed. This may be the result of poor construction practice and/or insufficient quality control/quality assurance protocols.
- Some sections have deteriorated more rapidly than would normally be anticipated
- Overall the system condition appears to be in an acceptable range for a large urban and rural lower tier road system.

Funding Recommendations

Based on the current review of the road system, the current system adequacy measure is **91.2%** by Centre Line Kilometres meaning that, **8.8%** of the road system respectively, is deficient in the 'NOW' time period and in poor condition.

Based on the current unit costs being experienced, the estimated total cost of recommended improvements is **\$105,144,087**. The improvement costs include **\$49,317,371** for those roads identified as NOW needs and **\$55,826,716** is for road work required in the '1 to 10' year time period or for maintenance. Included in those amounts is **\$605,580** for work on road sections that are adequate (Maintenance or Preservation).

Based on the composition of the road system, budget recommendations have been developed for annual capital and maintenance programs as follows:

- **\$21,885,600** for the roads depreciation, based upon a 50-year life cycle. (This would be similar to the PSAB 3150 amortization value using current replacement cost.) The annualized depreciation would be \$21,204,800 for a 75 year life cycle based on replacement each element of the road section –except the asphalt- on a 75 year cycle, plus the annualized maintenance/operational costs as noted below. The estimated replacement cost of the road system is \$1,094,281,400, based on current unit costs. The current value of the road system is estimated to be \$921,228,800.

The typical design life for a road structure has typically been considered to be 50 years before reconstruction/replacement. However, in an urban setting in particular, with the underground utilities typically having an expected life in the 75 year range, it would seem more pragmatic to match the lifecycles of the road and utility assets. Road assets can be designed to last 75 years with only resurfacing required. Rural cross sections should be treated similarly.

- **\$8,007,800** for average annual hot mix resurfacing, based upon a 16 (16.45) year cycle. (This would approximate an average of 25.8 Cl-km per year)
- **\$1,451,300** for average annual Reclamite application based on once every 6 years
- **\$180,900** for average annual crack sealing, based on .5m/m/lane once every 5 years
- **\$499,400** for average annual single surface treatment, based on once every 7 years
- **\$51,300** for average annual gravel road resurfacing, based on adding 75mm every 3 years

For modeling purposes, 4 Roads has created a funding level described as the 'Preservation Budget'. The Preservation Budget is the total of the recommended funding levels for hot mix resurfacing, single surface treatment, gravel road resurfacing and crack sealing: **\$10,190,600**. The premise being that if the

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preservation and resurfacing programs are adequately funded then the system should be sustained. The performance modeling is discussed in Section 9 of this report.

To clarify, the preservation funding level is the required funding level to sustain or improve the road system; it is *not* the total of all of the above recommendations. Sustainable funding has to be between the Preservation Funding Level and the Capital Depreciation. The preservation budget and performance model thereof, are computer derived. Intangible values and decisions and the effects of other external forces cannot be incorporated into the model. As such the preservation model is the minimum required to maintain the system- in theory. From a more pragmatic perspective and to deal with the real life realities of maintaining a road system, it should be greater.

The preservation funding level will sustain the system over shorter time frames if the programming is followed explicitly. To sustain the road system over a 75 year life cycle, the average annual funding would be \$21,885,600.

Municipal pavement management strategies (PMS) are critical to managing the performance of the road system, more so, if funding is limited. Funding constraints should push the strategy toward those programs that extend the life cycle of the road by providing the correct treatment at the optimum time. Resurfacing, rehabilitation, and preservation projects should be a higher priority than reconstruction projects. The objective is to "keep the good roads good".

As the municipality advances the development of their Asset Management Plan (AMP), a paradigm shift will be required in the way that we approach management of assets. Traditionally, municipalities have spent a fixed amount on capital and maintenance each year. As evidenced by Table ES 13, programs are not at a consistent funding level on an annual basis. The annual budget overall is met, however, the distribution of costs between traditional capital and maintenance activities varies. That variance is being driven by the demands of the road system based on condition and project selection is based on condition and best Return on Investment. This concept should be applied to all assets.

The prime goal of any pavement management strategy should be to maintain overall system adequacy. The funding level for road-related programming should be set at a sufficient level so as to ensure that overall system adequacy does not decrease over time.

In addition to the budgetary recommendations, the following recommendations are provided for the management of the road inventory.

1. The information and budget recommendations included in this report be used to further develop the corporate Asset Management Planning.
2. Corporate asset management software should be implemented and utilized by all departments.
3. The funding level should be adjusted annually to address inflationary increases.
4. The funding level should be adjusted annually to address additional assets being added to the system.
5. Asset data should reside in one location, be accessible by all, but editable by a restricted number of staff.
6. The cycle for review of the road system should be more frequent in order to monitor the system more frequently and to ensure regulatory compliance.
7. Traffic information should be identified with an asset ID.

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8. Traffic counts should continue to be updated and repeated on a regular basis. The counting should include the percentage of truck traffic.
9. A traffic capacity study should be undertaken on those road sections that appear to have a capacity need.
10. Ensure that the preservation and resurfacing programs are optimized. This is particularly critical for those sections that are not going to be affected by upgrade due to development demands
11. A quality assurance policy or protocol should be developed and implemented if one does not exist.
12. The Level of Service for System Adequacy should be a Minimum of 70%.
13. The Level of Service for Average Physical Condition should be a minimum of 70.
14. The Level of Service for Good to Very Good Roads should be a minimum of 60%