EXECUTIVE SUMMARY

The Municipality of West Nipissing has undertaken the development of an Asset Management Plan in response to the Ontario Government's provincial capital funding requirements. The purpose of this Asset Management Plan is to assist with prioritizing needs over wants to ensure that infrastructure funding, whether generated through local or senior levels of government, be applied to projects with a greater priority. This Asset Management Plan has been structured to adhere to the requirement described in the Ontario Ministry of Infrastructure's Infrastructure for Jobs and Prosperity Act – Asset Management Planning for Municipal Infrastructure (O. Reg 588/17).

As the following Asset Management Plan will outline, the Municipality's existing infrastructure is aging and deteriorating while demand grows for better infrastructure facilities. This demand is in response to higher standards of safety, accessibility, health, environmental protection, and regulations. The solution to this issue is to examine the way the Municipality plans, designs and manages infrastructure to meet changing demands. This Asset Management Plan is expected to assist:

- Council in making service level and investment decisions;
- Staff with the planning and management of the assets;
- Taxpayers by sustaining value for the services provided;

The total replacement cost of the Municipality's assets was calculated to be approximately $560 million, for assets providing transportation, administration, tourism, and recreation. The Municipality is not required to budget for the full replacement value of all these assets simultaneously, as portions of assets only require an initial investment followed by further re-investment to maintain acceptable levels of service.

With that in mind, it was calculated that the annual reinvestment should be an average of $16.6 million into municipally owned assets as they reach their maximum potential useful lives, in order to sustain existing services at an appropriate level of service. The actual investment value will vary from year to year depending on the scope and size of the planned capital works. Projects will need to be shuffled from year to year based on the availability of funding.

The Asset Management Plan is expected to be a living document that is updated regularly as priority's shift or as work is completed. In addition, improvements to the methodologies of data collection for developing more accurate inventory information and evaluation will only serve to bolster the content of the plan.

INTRODUCTION

This Asset Management Plan (AMP) was prepared by the Municipality of West Nipissing (Municipality) to meet the requirements of a Municipal Asset Management Plan as presented by the Ontario Ministry of Infrastructure in their publication "Infrastructure for Jobs and Prosperity Act – Asset Management Planning for Municipal Infrastructure (O. Reg 588/17)."

The intention of the AMP is to provide answers and guidelines to the following questions.

1. What do you have and where is it?
2. What is it worth? (Current and Estimated Replacement Costs)
3. What is its condition and expected remaining service life?
4. What is the level of service expectation?
5. How do you ensure long-term affordability?

Asset management planning is meant to aid municipalities is making cost effective decisions with regards to operating, maintaining, renewing, replacing and disposing of their infrastructure assets. The decisions and directions laid out in the asset management planning process are intended to ensure that the Municipality will be capable of providing the levels of service needed to meet their desired plans, goals and objectives.

The assets considered within this AMP are the following municipal assets:

- Roads;
- Bridges;
- Water Distribution & Treatment;
- Wastewater Collection & Treatment;
- Storm Sewers;
- Facilities
- Fleet
- Equipment

This Asset Management Plan is a tool to help ensure that measures are taken to maintain an acceptable performance level for years to come. The quality and condition of infrastructure assets are of great importance as they help to support economic activity and improve general quality of life. This plan is not intended to change the municipalities existing processes and procedures with regards to their infrastructure assets but rather improve the decision-making process by using long range vision to dictate resource allocation and use performance-based analyses to determine if desired goals and objectives are being met. A key aspect of this plan is the ongoing evaluation of asset performance and value that will be required in future years

STATE OF LOCAL INFRASTRUCTURE

This Section of the report outlines the quantity and quality of assets owned and managed by the Municipality. In addition, the current age, condition, financial valuation and replacement cost valuation of the assets included is presented.

Replacement Costs

There are a range of methods to determine the replacement cost of an asset, and some are more accurate and reliable than others. This AMP relies on two methodologies:

• **User-Defined Cost and Cost/Unit**: Based on costs provided by municipal staff which could include average costs from recent contracts; data from engineering reports and assessments; staff estimates based on knowledge and experience

• **Cost Inflation/CPI Tables:** Historical cost of the asset is inflated based on Consumer Price Index or Non-Residential Building Construction Price Index

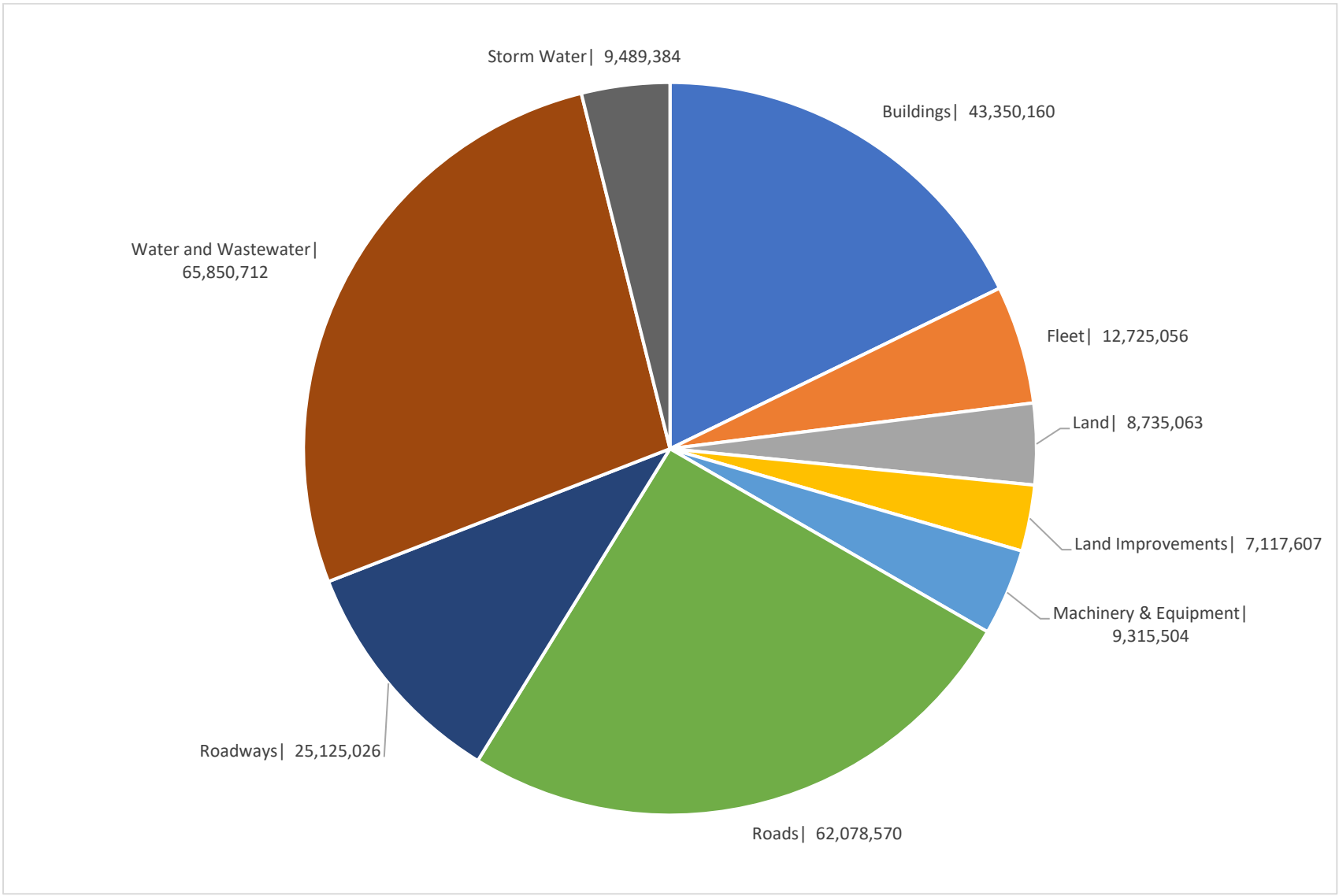
User-defined costs based on reliable sources are a reasonably accurate and reliable way to determine asset replacement costs. Cost inflation is typically used in the absence of reliable replacement cost data. It is a reliable method for recently purchased and/or constructed assets where the total cost is reflective of the actual costs incurred. As assets age and new products and technologies become available, cost inflation becomes a less reliable method.

Estimated Useful Life

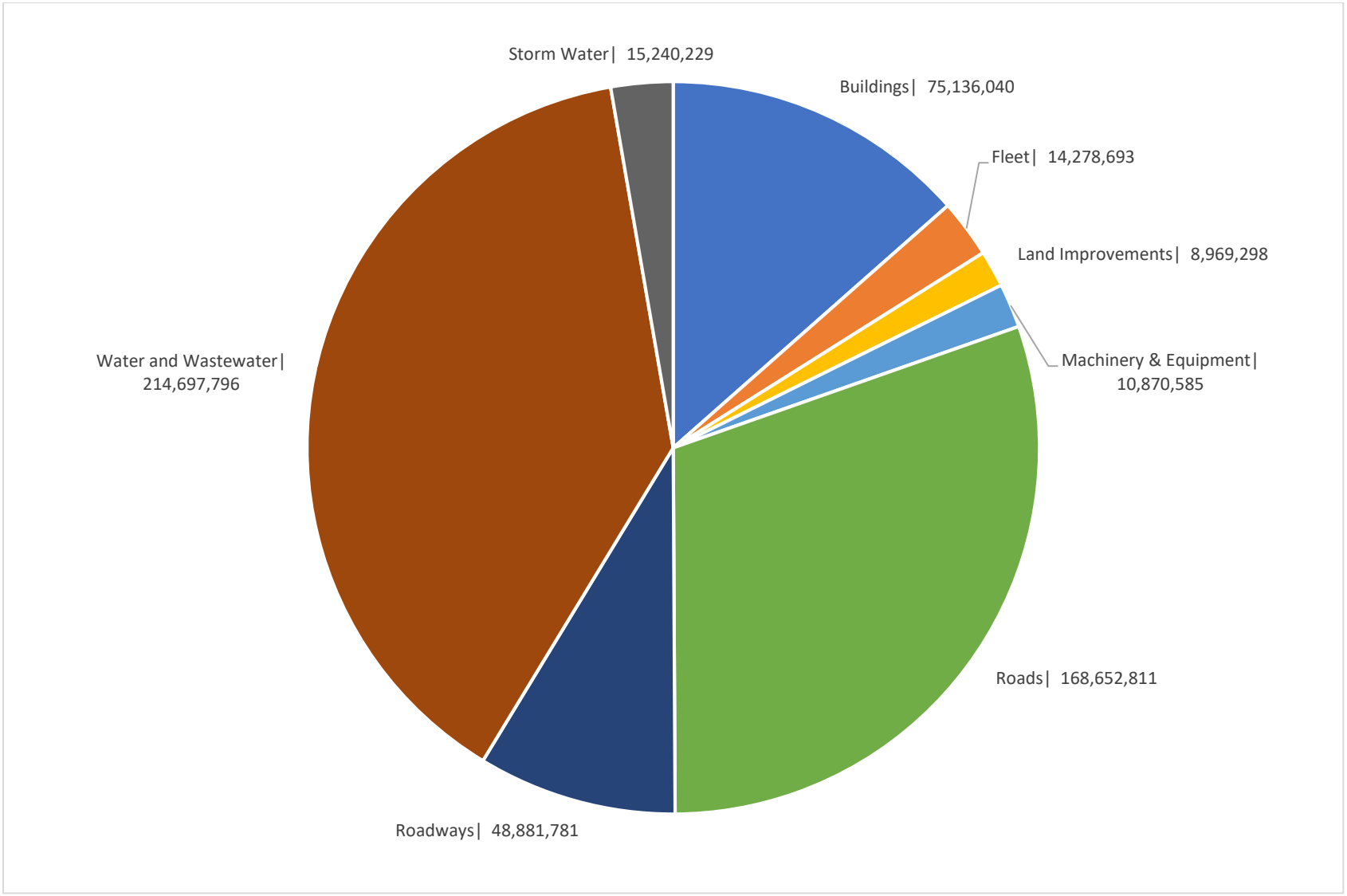
The estimated useful life (EUL) of an asset is the period over which the City expects the asset to be available for use and remain in service before requiring replacement or disposal. The EUL for each asset in this AMP was assigned according to the knowledge and expertise of municipal staff and supplemented by existing industry standards when necessary.

The two following figures provide a comparison of the Municipality's capital assets based on historical values and current replacement values. The PSAB values are based on currently accepted historical costs and depreciation values, which were provided by the Municipality. The current replacement values were generated based on the assets physical characteristics and benchmark costs established from recent construction projects for roads, and purchase values adjusted for CPI inflation for the remaining core assets.

Historical costs



Current Replacement Values



LEVELS OF SERVICE

Levels of Service (LOS) define how well services like road quality, stormwater management, and public facility accessibility are performing, and the expectations that residents can have regarding the reliability, safety, and availability of these services.

Levels of service may include any of the following parameters: safety, customer satisfaction, quality, quantity, capacity, reliability, responsiveness, environmental acceptability, cost, and availability. Levels of service may also be legislated. The defined levels of service may be any combination of the above parameters deemed important by the Municipality.

Levels of Service include Community Levels of Service, which are plain-language descriptions of what residents' experience, and Technical Levels of Service, which are quantitative metrics like the percentage of roads in good condition or the rate of service interruptions. These measures ensure that services are maintained to the standards the community expects.

Managing LOS requires the Municipality to carefully balance three key factors:

- Cost: The financial investment needed to maintain or improve a particular service.
- Performance: How well the service meets community and technical standards.
- Risk: The potential consequences if a service fails or deteriorates, such as increased accidents or reduced safety.

ROADS

Inventory and condition assessment

Inventory, age, and method of condition assessment are included in the attached Roads Needs Study, completed by DM Willis in 2023.

Technical levels of service

Service Attribute	Technical Metric	Current LOS
Scope	Lane-km of collector roads (MMS class 3 & 4) per land area	52.11
	Lane-km of local roads (MMS class 5 & 6) per land area	1,045.25
Quality	Average pavement condition index for paved roads in the Municipality	
	Average surface condition for unpaved roads in the Municipality (i.e. excellent, good, fair, poor)	
Performance	Percentage of road network in poor/very poor condition	
	Average risk rating associated to road network	
	Annual capital reinvestment rate	

Lifecycle activities

Roads require regular roadside maintenance activities such as ditching and brushing to ensure adequate drainage of the road subgrade. Poor subgrade drainage will lead to premature deterioration of the road base which will directly impact the deterioration of the surface. Detailed lifecycle activities are included in the Roads Needs Study, completed by DM Willis.

The following maintenance practices should be employed on a regular basis to help prolong the lifespan of roadway assets. The quantities provided are intended to be used as guideline:

- Asphalt patching;
- Right-of-way brushing;
- Ditch Cleanout;
- Culvert cleanout/flushing;

Integrated infrastructure planning was considered, as reflected in the prioritizing of projects shown in the later sections of this report. The condition of the infrastructure beneath the road surface (sewers and water mains) was reviewed to ensure that a road was not resurfaced, without prior completion of any required improvements to the corresponding subsurface infrastructure.

BRIDGES AND STRUCTURES

Inventory

The Municipality's structure inventory currently consists of 30 bridges, and 9 structural culverts. The structure inventory and condition ratings are based on the Ontario Structure Inspection Manual (OSIM) inspections completed biennially. The chart below provides a breakdown of the total replacement cost of bridge and culvert infrastructure. The replacement costs were used from the OSIM reports where available as this information is most current and reliable, and for those that were not included in an OSIM the calculated replacement was used based on initial cost and CPI inflation.

	Historical	NBV	Replacement Cost	Annual Requirement
Bridges	18,050,487	4,246,783	38,064,588	996,539
Culverts	1,339,559	283,782	2,126,469	42,529
Total	**19,390,046**	**4,530,565**	**40,191,057**	**1,039,068**

Condition Evaluation

Appraisal of the Municipality's structures is carried out biennially, in accordance with procedures outlined in the Ontario Structure Inspection Manual. In general, the structures were divided into the primary structural elements with the dimensions and general condition of each component

identified. For components in need of improvement, the needs and associated timing were also reported.

Bridge structures were estimated to have a lifespan of 75 years, and culvert structures were estimated to have a lifespan of 50 years with an average condition rating assigned based on age as follows:

Rating	Age
• Excellent	Less than 5 years old
• Good	Between 5 years old and 50% of its life expectancy
• Fair	Between 50% and 75% of its life expectancy
• Poor	Between 75% and 100% of its life expectancy
• Replace	Beyond its life expectancy

Technical levels of service

Service Attribute	**Technical Metric**	**Current LOS**
Scope	% of bridges in the Municipality with loading or dimensional restrictions	28%
Quality	Average bridge condition index value for bridges in the Municipality	63
	Average bridge condition index value for structural culverts in the Municipality	72
Performance	Percentage of bridges and culverts in poor/very poor condition	
	Average risk rating associated to bridges and culverts	
	Annual capital reinvestment rate	

Lifecycle activities

As with all assets, bridges and structural culverts require regular maintenance activities such as sweeping and pressure washing to clear winter sand buildup, painting, as well as debris removal to ensure proper flow hydraulics to minimize erosion and scouring potential.

Renewal and rehabilitation activities of bridge and structural culverts are carried out in accordance with the OSIM Inspections Forms, completed by or under the direction of a Professional Engineer on a biennial basis. These activities are typically evaluated by the Professional Engineer at the time to ensure the costs are economical.

Replacement activities are generally considered once maintenance, renewal and rehabilitation activities are no longer feasible or economical to undertake. When replacement is considered, the replacement asset does not need to be identical to the existing asset, such as replacing a single lane

concrete bridge with a double lane structural culvert. An increase in level of service should always be considered at the time of replacement.

WASTEWATER COLLECTION AND TREATMENT

Inventory

The Municipality provides sanitary sewer collection and treatment services to Sturgeon Falls, Cache Bay, Verner, and Field through a combined gravity and force main system discharging to a wastewater treatment plant and sewage lagoons. The system consists of approximately 70km of sewer mains, 26 pump stations, 2 treatment plants, and a lagoon. The sanitary sewage collection system is managed and maintained by Municipal Staff. The chart below provides a breakdown of the total book value and replacement cost of the Municipality's wastewater infrastructure. The replacement cost was pulled from the municipal inventory system and calculated based on cost per unit factor extracted from 2023 capital construction projects.

	Historical	NBV	Replacement Cost	Annual Requirement
Lagoons	1,024,795	-	5,301,472	176,716
Pumping/Lift Stations	3,210,876	1,417,371	7,849,772	205,751
Sewer Lines	20,739,595	15,062,058	59,826,092	598,278
Sewer Plants	6,772,301	1,622,141	37,664,705	758,330
Total	**31,747,567**	**18,101,570**	**110,642,041**	**1,739,074**

Condition Evaluation

For the purpose of forecasting, each sewer asset was given a subjective rating of Excellent, Good, Fair or Poor, based on the current overall condition of the asset. A condition rating greater than Poor is considered acceptable and is expected to require continued maintenance. A condition rating less than Poor is considered unacceptable and an improvement or replacement is to be evaluated for cost. Sewer assets assigned life expectancy based on construction material. Pump stations and treatment facilities were assigned a life expectance of 40 years and 50 years respectively. An estimated condition rating assigned to all assets based on age as follows:

Rating	Age
• Excellent	Less than 5 years old
• Good	Between 5 years old and 50% of its life expectancy
• Fair	Between 50% and 75% of its life expectancy
• Poor	Between 75% and 100% of its life expectancy

- Replace Beyond its life expectancy

Technical levels of service

Service Attribute	Technical Metric	Current LOS
Scope	% of properties connected to the municipal wastewater system	34.2%
Reliability	The number of events per year where combined sewer flow in the municipal wastewater system exceeds system capacity compared to the total number of properties connected to the municipal wastewater system.	
	The number of connection-days per year due to wastewater backups compared to the total number of properties connected to the municipal wastewater system	
	The number of effluent violations per year due to wastewater discharge compared to the total number of properties connected to the municipal wastewater system	0
Performance	Percentage of wastewater collection network in poor/very poor condition	
	Average risk rating associated to wastewater collection network	
	Annual capital reinvestment rate	

Lifecycle activities

Sanitary sewers require regular maintenance activities such as frequent flushing to ensure unimpeded flows, reducing the likelihood of backups and failures. Rehabilitation options for sanitary sewers are limited to relining. On occasion, sewer rehabilitation can be more cost effective than a full replacement however this strategy must be reviewed on a case by case basis. The strategy employed in this plan considers the full cost of replacement.

In addition, the following maintenance practices should be employed on a regular basis to help prolong the lifespan of buried assets.

- Annual flushing of sanitary sewer mains;
- Suggested annual camera inspection of sanitary sewer mains;

Camera inspection of the sewers would assist in accurately detailing the condition of the asset and subsequent schedule for replacement. Integrated infrastructure planning was also considered, as reflected in the Capital Asset Summary with the subsurface assets being scheduled for replacement prior to road resurfacing. Completing the sewer replacement concurrently with the storm sewer, water main, and road resurfacing would result in overall costs being less than replacing separately.

WATER TREATMENT AND DISTRIBUTION

Inventory

The Municipality provides drinking water treatment and distribution services to Sturgeon Falls and Verner. The system consists of two treatment facilities, two water storage towers and a water main network approximately 76km in length. The water treatment and distribution network are managed and maintained by Municipal Staff and Ontario Clean Water Agency (OCWA). The chart below provides a breakdown of the total replacement cost of the Municipality's water supply infrastructure.

	Historical	NBV	Replacement Cost	Annual Requirement
Tanks	2,238,822	1,472,749	4,090,992	81,820
Water Fire Hydrants	783,782	430,376	4,576,000	91,520
Water Treatment Plants	12,037,375	3,693,906	29,606,961	592,139
Watermains	19,015,813	13,394,598	65,746,432	670,430
Well	27,353	19,941	35,369	707
Total	**34,103,145**	**19,011,569**	**104,055,754**	**1,436,616**

Condition Evaluation

The water distribution and treatment system were evaluated based on the inventory and information provided by the Municipality. The system was divided into 217 water main sections with each section being assigned an identification number, and then its location, length, diameter and year of construction were noted.

For the purpose of forecasting, each water main segment was given a subjective rating of Excellent, Good, Fair or Poor, based on the current condition of the asset. A condition rating less than Poor is considered unacceptable and an improvement or replacement is to be evaluated for cost. Water main assets were assigned life expectancy based on construction material. Water towers and treatment facilities were all assigned a life expectance of 50 years. An estimated condition rating assigned to all assets based on age as follows:

Rating	Age
• Excellent	Less than 5 years old
• Good	Between 5 years old and 50% of its life expectancy
• Fair	Between 50% and 75% of its life expectancy
• Poor	Between 75% and 100% of its life expectancy
• Replace	Beyond its life expectancy

Technical levels of service

Service Attribute	Technical Metric	Current LOS
Scope	% of properties connected to the municipal water system.	34.2%
	% of properties where fire flow is available	34.2%

Reliability	The number of connection-days per year where a boil water advisory notice is in place compared to the total number of properties connected to the municipal water system.	0
	The number of connection-days per year due to water main breaks compared to the total number of properties connected to the municipal water system.	0
Performance	Percentage of water distribution network in poor/very poor condition	
	Average risk rating associated to water distribution network	
	Annual capital reinvestment rate	

Lifecycle activities

Water mains require regular maintenance activities to limit the likelihood of breaks and failures. Rehabilitation options for water mains are limited to relining. On occasion, water main rehabilitation can be more cost effective than a full replacement however this strategy must be reviewed on a case by case basis. The strategy employed in this plan considers the full cost of replacement.

In addition, the following maintenance practices should be employed on a regular basis to help prolong the lifespan of buried assets.

- Flushing of hydrants;
- Operation testing of valves;

Integrated infrastructure planning was also considered, as reflected in the Capital Asset Summary with the subsurface assets being scheduled for replacement prior to road resurfacing. Completing the water main replacement concurrently with the sanitary sewer and road resurfacing would result in overall costs being less than replacing separately.

STORM SEWERS

Inventory

The Municipality provides storm sewer collection services through a subsurface gravity sewer system, roadside catch basins, as well as surface flow management through open ditches and cross culverts. The system is managed and maintained by Municipal Staff. The chart below provides a breakdown of the total replacement cost of the Municipality's storm sewer infrastructure.

	Historical	NBV	Replacement Cost	Annual Requirement
Storm Sewer System	9,489,384	6,912,940	15,240,229	204,739
Total	**9,489,384**	**6,912,940**	**15,240,229**	**204,739**

Condition Evaluation

The storm sewer collection and conveyance system were evaluated based on the inventory and information provided by the Municipality. The system was divided into 114 gravity storm sewer sections with each section being assigned an identification number, and then its location, length, diameter and year of construction were noted.

For the purpose of forecasting, each storm sewer asset was given a subjective rating of Excellent, Good, Fair or Poor, based on the current condition of the asset. A condition rating greater than Poor is considered acceptable and is expected to require continued maintenance. A condition rating less than Poor is considered unacceptable and an improvement or replacement is to be evaluated for cost. Sewer assets were assigned life expectancy based on construction material, with life expectancies of 70 years for corrugated steel pipe (CSP) and 75 years for concrete. An estimated condition rating assigned to all assets based on age as follows:

Rating	Age
• Excellent	Less than 5 years old
• Good	Between 5 years old and 50% of its life expectancy
• Fair	Between 50% and 75% of its life expectancy
• Poor	Between 75% and 100% of its life expectancy
• Replace	Beyond its life expectancy

Technical levels of service

Service Attribute	Technical Metric	Current LOS
Scope	Percentage of properties in municipality resilient to a 100-year storm	
	Percentage of the municipal stormwater management system resilient to a 5-year storm	
Performance	Percentage of storm sewer network in poor/very poor condition	
	Average risk rating associated to storm sewer network	
	Annual capital reinvestment rate	

Lifecycle activities

Storm sewers, like sanitary sewers require regular maintenance activities such as frequent flushing to ensure unimpeded flows, reducing the likelihood of backups and failures. Rehabilitation options for storm sewers are limited to relining. On occasion, sewer rehabilitation can be more cost effective than a full replacement however this strategy must be reviewed on a case by case basis. The strategy employed in this plan considers the full cost of replacement.

In addition, the following maintenance practices should be employed on a regular basis to help prolong the lifespan of buried assets.

- Suggested annual flushing of storm sewer mains and leads;
- Suggested annual cleaning of associated storm sewer structures, catch basins, ditch inlets, and manholes;
- Suggested annual camera inspection of storm sewer mains and leads;

Camera inspection of the storm sewers would assist in accurately detailing the condition of the asset and subsequent schedule for replacement. Integrated infrastructure planning was also considered, as reflected in the Capital Asset Summary with the subsurface assets being scheduled for replacement prior to road resurfacing. Completing the storm sewer replacement concurrently with the sanitary sewer and road resurfacing would result in overall costs being less than replacing separately.

BUILDINGS

Inventory and condition assessment

The Municipality of West Nipissing owns and maintains numerous facilities and recreation centres that provide key services to the community. These include

- Administrative office
- Fire halls
- Public Works garages
- Arenas
- Recreation Complex with pool
- Community Centres
- Museum
- Tenanted properties

The attached Facility Condition Assessment provides a summary of the key facilities, maintenance requirements, and risk assessment. Additionally, Fire Service buildings were assessed through the Fire Master Plan. The table below summaries the current state of all facilities.

	Historical	NBV	Replacement Cost	Annual Requirement
Community Services	20,498,507	11,665,884	32,057,189	677,056
Fire	1,866,960	940,011	2,809,452	57,030
General Government	8,015,284	8,006,703	8,016,880	7,977,376
Museum	1,603,070	816,439	2,310,608	52,458
Police	9,464,010	9,022,747	11,606,870	232,137
Public Works	1,902,328	1,308,123	2,268,075	45,362
Total	**43,350,160**	**27,415,533**	**75,136,040**	**1,547,210**

Technical Levels of Service

Service Attribute	Technical Metric	Current LOS
Accessible & Reliable	% of assets where their age is greater than their useful life	
Safe & Regulatory	# of health & safety inspections per building	
	% of buildings in good/very good condition	
	% of buildings in poor/very poor condition	
	% of buildings having a building condition assessment over the last 5 years	
	Average risk rating associated to buildings	
	Annual capital reinvestment rate	

Lifecycle activities

Lifecycle activities are frequently captured within maintenance and rehabilitation. Total replacement of facilities is not typical; however, replacement of component parts is an expected step in lifecycle activities. Regular maintenance includes such items as

- Maintenance on roof systems, wall systems, and structural elements
- Interior finishes
- Repairs, rehabilitation, or replacement of mechanical/electrical systems

Municipal buildings are subject to routine health and safety inspections on a monthly, yearly, and seasonal basis.

FLEET

Inventory

Vehicles allow staff to deliver municipal services and personnel. Municipal fleet is categorized as light vehicles (including trailers), heavy vehicles, and emergency vehicles. The chart below summaries the replacement cost of the Municipality's fleet.

	Historical	NBV	Replacement Cost	Annual Requirement
Community Services	336,559	170,908	407,948	48,283
Fire & Emergency	5,128,085	1,041,492	5,206,227	431,223
Public Works	6,770,978	2,694,459	8,294,494	732,297
Water & Wastewater	489,435	154,787	370,024	72,030
FLEET Total	**12,725,056**	**4,061,645**	**14,278,693**	**1,283,834**

Condition Evaluation

For the purpose of forecasting, each asset was given a subjective rating of Excellent, Good, Fair or Poor, based on the current condition of the asset. Fleet assets are assigned life expectancy based on type of fleet, with life expectancies of

- Vehicles – Licensed/Light = 5 years
- Vehicles – Medium = 12 years
- Vehicles – Heavy =15 years
- Vehicles – Fire – Large = 15 years
- Vehicles – Fire – Light = 12 years

An estimated condition rating assigned to all assets based on age as follows:

Rating	Age
• Excellent	Less than 3 years old
• Good	Between 3 years old and 50% of its life expectancy
• Fair	Between 50% and 75% of its life expectancy
• Poor	Between 75% and 100% of its life expectancy
• Replace	Beyond its life expectancy

Technical Levels of Service

Service Attribute	Technical Metric	Current LOS
Accessible & Reliable	% of assets where their age is greater than their useful life	
Safe & Regulatory	# of fleet involved in collision per year	
	% of fleet in good/very good condition	36%

	% of fleet in poor/very poor condition	64%
	Average risk rating associated to fleet	
	Annual capital reinvestment rate	

Lifecycle activities

To ensure the Municipality's fleet continues to provide an acceptable level of service, the Municipality monitors the average condition of assets. If average condition declines, lifecycle management activities are reviewed to determine what combination of maintenance, rehabilitation, and replacement activities are required.

Each asset's estimated useful life should be reviewed periodically to determine whether adjustments need to be made to better align with the observed length of service life for each asset type.

EQUIPMENT

Inventory

The Municipality maintains and deploys various types of equipment. This includes

- Equipment for maintenance of outdoor spaces
- Machinery and equipment to maintain and repair core infrastructure
- Equipment to maintain recreational facilities
- Equipment for public use within recreation centres
- Computers and other hardware
- Fire and emergency services equipment to support the delivery of emergency services

The table below summaries replacement cost for equipment, based on operational segment. Replacement costs are determined through a combination of CPI and unit cost replacement.

	Historical	NBV	Replacement Cost	Annual Requirement
Community Services & Development	4,476,117	1,641,009	6,012,752	417,762
Fire & Emergency	1,513,779	208,968	2,087,388	248,802
Police	173,489	151,758	190,026	9,501
General Government	680,031	209,419	792,871	155,610
Public Works	1,472,042	1,033,149	2,581,472	196,405
Water & Wastewater	1,000,046	248,444	1,184,683	173,079
Total	**9,315,504**	**3,492,747**	**12,661,049**	**1,191,846**

Condition Evaluation

Currently, there is not a formal condition assessment process for all equipment. However, internal and external inspections of equipment are completed as needed to ensure they are in an adequate state of repair. Estimated useful life and average age of equipment is monitored, in addition to average condition of all assets. For the purpose of forecasting, each asset was given a subjective rating of Excellent, Good, Fair or Poor, based on the current condition of the asset. Fleet assets are assigned life expectancy based on type of fleet, with life expectancies of

- Maintenance equipment = 10 years
- Treatment systems = 30 years
- Outdoor equipment (for public use) = 10-20 years
- Computer hardware = 3-5 years
- Recreation equipment = 10 years
- Fire and emergency services equipment = 10 years

An estimated condition rating assigned to all assets based on age as follows:

Rating	Age
Excellent	Less than 5 years old
Good	Between 5 years old and 50% of its life expectancy
Fair	Between 50% and 75% of its life expectancy
Poor	Between 75% and 100% of its life expectancy
Replace	Beyond its life expectancy

Technical Levels of Service

Service Attribute	**Technical Metric**	**Current LOS**
Accessible & Reliable	% of assets where their age is greater than their useful life	
Safe & Regulatory	# of workplace injuries due to equipment failure	
	% of equipment in good/very good condition	
	% of equipment in poor/very poor condition	
	Average risk rating associated to equipment	
	Annual capital reinvestment rate	

Lifecycle activities

To ensure the Municipality's equipment continues to provide an acceptable level of service, the Municipality monitors the average condition of assets. If average condition declines, lifecycle management activities are reviewed to determine what combination of maintenance, rehabilitation, and replacement activities are required.

Each asset's estimated useful life should be reviewed periodically to determine whether adjustments need to be made to better align with the observed length of service life for each asset type.

EFFECT OF FUTURE MUNICIPAL GROWTH

The combination of lifecycle analysis and financial sustainability principles will be the driver in the design and selection of community development or redevelopment that requires new assets, or existing asset enhancements, to take place. The asset management plan will reflect how the community is projected to change with respect to development. Methods, assumptions, and data used in the selection of projected changes should be documented to support the recommendations in the Asset Management Plan.

Cross-referencing the Municipality's Official Plan and the Asset Management Plan will ensure that development occurs within the Municipality`s means through an understanding of current and future asset needs.

FURTHER STEPS

Asset management is an ongoing effort to continuously improve the information available for decision making purposes to reduce the long-term expense of purchasing and maintaining the Municipalities inventory. As such, policies and procedures should be in place to help standardize the gathering, updating, and accuracy of the data related to the assets in the plan. Below are recommendations related to further improving these areas for this asset management plan.

Data & Asset Information

- Develop a data governance strategy, including condition assessment protocol, to ensure condition information and vital attribute information is collected and updated consistently into Citywide.
- Continue to review, validate, and upload inventory data, assessed condition data, and replacement costs for all bridges and structural culverts upon the completion of OSIM inspections
- Further segmentation is required of the database to allow condition review and work conducted to be updated on an intersection to intersection basis. This will allow for increased data accuracy and decision making.
- Consider instituting a rolling CCTV inspection plan to review the condition of the networks to have a comparable to the assets age

Lifecycle Management

- Continue to evaluate the efficacy of the Municipality's current lifecycle management strategies at regular intervals to determine the impact on cost, condition, and risk.

Risk Management Strategies

- Review risk models on a regular basis and adjust according to an evolving understanding of the probability and consequences of asset failure.

Levels of Service

- Continue to measure current levels of service in accordance with the metrics identified in O. Re. 588/17 and those metrics the Municipality believes to provide meaningful and reliable inputs into asset management planning.
- Work towards identifying proposed levels of service as per O.Reg. 588/17 and identify the strategies that are required to close any gaps between current and proposed levels of service.

West Nipissing Ouest

Municipality of West Nipissing

Road Needs Study Report – 2023

D.M. Wills Project No. 22-4839

D.M. Wills Associates Limited
Partners in Engineering, Planning and
Environmental Services
Peterborough

October 2023

Prepared for:
The Municipality of West Nipissing

WILLS

Executive Summary

The Corporation of the Municipality of West Nipissing (Municipality) retained the services of D.M. Wills Associates (Wills) to undertake a review of the Municipality's existing road network, and assess its physical condition as well as confirm various road attributes. Data collected during the field review was used to develop a prioritized listing of the road network needs, the results of which are documented in this report.

The Municipality's road infrastructure system spans a total of 547 km primarily within a rural setting, with small areas of urban and semi-urban development. The road network includes surfaces ranging from gravel to hot mix paved (asphalt). The Municipality has approximately 429 km of gravel roads, 45 km of surface treated roads (low class bituminous (LCB)), and 73 km of hot mix asphalt paved roads (high class bituminous (HCB)).

Two primary indicators of the relative health of a road are the structural adequacy and surface condition ratings. The current average structural adequacy rating for the Municipality's road network is 13.8/20. The current average surface condition rating for the Municipality's road network is 7.0/10.

2% (12.1 km) of the road network has a Structural "NOW" need, 4% (24.5 km) has a Structural "1-5" year need, and 6% (34.0 km) of the road network has a Structural "6-10" year need.

It should be noted that a structural "NOW" need does not explicitly mean that work must be undertaken on the road immediately (although this may be so in some cases). A structural "NOW" need means that a significant portion of the road is showing distress of the road bed and requires significant intervention i.e. reconstruction or major rehabilitation to renew it service life. A structural "1–5" year need is expected to become a "NOW" need in the next five years, and a "6–10" year need is expected to become a "NOW" need in the next 10 years.

Note that many "6-10" year reconstruction needs may be deferred by timely resurfacing, extending their service lives. As highlighted above, the Municipality has a notable portion of their roads (6%) with a" 6–10" Year Structural Need.

Resurfacing and Preservation Management

In addition to addressing currently deficient roads (i.e. capital reconstruction), a dedicated preservation management approach is required, **and perhaps even more important**, to "keep the good roads good"; the fundamental principle being that it costs much less to maintain a good road than it does to let it fail and then reconstruct it, from a life cycle cost perspective. Ultimately, the goal of preservation management is to extend the useful life of a road and road network, maximizing the Municipality's investment over the road life-cycle.

Road resurfacing is an effective way of extending the overall life of the pavement structure and therefore a road resurfacing program is highly recommended. Roads with a structural adequacy of 12/20 or greater are included as candidates for potential resurfacing. Preliminary recommendations and prioritization for road resurfacing are based on condition rating and traffic demands on each road section, as per the Inventory Manual. A road with higher traffic volumes and fair structural adequacy is given priority over a road with moderate traffic and good structural adequacy score, in an attempt to intervene and extend the life of the road before it deteriorates to a level that can no longer be resurfaced (i.e. more expensive reconstruction is required). Specific resurfacing treatment recommendations must be assessed through further field investigation and detail design effort, prior to selecting and implementing the resurfacing strategy.

Based on typical degradation rates for gravel roads, surface treatment, and hot mix, a resurfacing program and related budget is recommended as follows:

Hot Mix Paved Roads:

- 73.4 km of paved roads (HCB).
- Degradation rate 0.25 / year (rating drops from 10 to 5, over a 20-year period).
- Annual resurfacing 3.7 km / year.
- **Annual budget $1,546,600**: (3.7 km / year x $209,000 / ln **RMP1** x 2 lanes).

Surface Treated Roads:

- 45.0 km of surface treated roads (LCB).
- Degradation rate 0.625 / year (rating drops from 10 to 5, over a 7-year period).
- Annual resurfacing 6.4 km / year.
- **Annual budget $268,800** (6.4km / year x $42,000 / km **ST1**).

Gravel roads require regular maintenance. Maintenance includes regular grading and reapplication of new gravel. Typically, gravel roads should be resurfaced on a 3 - 5 year cycle.

Gravel Roads:

- 428.5 km of earth / gravel roads.
- 100 mm gravel every 5 years.
- Annual gravelling of 85.7 km.
- Granular A ($31,000 / km).
- **Annual budget $2,656,700 (85.7 km / year x $31,000 G)** **.

** *Cost based on supply of Gravel only with application of gravel by internal forces.*

Based on typical degradation rates for gravel roads, surface treatment, and hot mix, a total resurfacing program, (hot mix, surface treatment and gravel) is estimated at $4,472,100 per year.

Further to the recommendations above with respect to resurfacing, it is also recommended that regular maintenance in the form of roadside ditch cleanout and brush clearing be undertaken as a critical component to preservation management in order to extend the useful service life of the existing roads.

Capital Improvements

Preliminary recommendations and prioritization for planned capital improvements i.e. reconstruction, have been developed based on the condition rating and traffic demands on each road section, as per the Inventory Manual. Those roads identified as having a "NOW", 1 – 5, or 6 - 10 year need have been included in the capital improvement plan for reconstruction.

A total length of 70.6 km of roads were identified as having structural needs in the "NOW", 1 – 5 or 6-10 year periods. The estimated cost to improve these roads is approximately $18.2 M.

It is important to highlight the network's average structural adequacy score of 13.8/20, as noted previously. A significant portion of the Municipality's roads are approaching a condition that will require reconstruction, as opposed to less costly resurfacing.

A fully funded 10 year plan following the recommendations in this report includes $4.5 M/year for resurfacing needs and $1.8 M/year for the capital needs over ten years.

Given that a majority of the Municipality's Road network have a structural need of 6-10 years or no structural need, Wills recommends that priority should be given to resurfacing and preservation over capital needs should funding fall short of ideal levels.

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1.0 Purpose, Background and Study Method

1.1 Purpose

The purpose of the 2023 Road Needs Study Report is to update the current road inventory and road condition assessments within the Municipality of West Nipissing (Municipality). Using this information, a prioritized listing of the road network needs is developed. The information derived from the study and documented in this report will provide assistance to the Municipality for developing and executing a planned road maintenance and improvement program.

The Municipality retained the services of D.M. Wills Associates (Wills) to undertake a review of the existing road network, and assess its physical condition as well as confirm various attributes. Data collected as a result of the field review is used to develop a prioritized listing of the road network needs, the results of which are documented in this report.

1.2 Background

The Municipality of West Nipissing is located in Northeastern Ontario on Lake Nipissing. The geography is dominated by the Canadian Shield and provides many pristine lakes and vistas for the Municipality's 14,500 residents.

In 2023, the Municipality retained Wills to undertake a road condition assessment for the Municipality's road network. This study utilizes both the Inventory Manual for Municipal Roads inspection methodology, and the PCI methodology.

1.3 Study Objectives

Based on discussion with Municipality staff, the following study objectives were identified:

- Provide a current inventory and value of the Municipality's roads, assess road conditions and needs, and develop a priority listing for construction needs and improvements.
- Provide a prioritized list of capital projects for the Municipality to invest in.
- Provide an inventory and full condition assessment of Municipally owned guide rail sections.

To ensure compliance with the latest Ministry of Transportation (MTO) guidelines, the inventories were completed in accordance with the most current edition of the Inventory Manual for Municipal Roads.

1.4 Study Methodology

The procedure utilized to complete the study was in accordance with the Ministry of Transportation's Inventory Manual for Municipal Roads (February 1991).

Additionally, field reviews for the purpose of Pavement Condition Index (PCI) were undertaken in accordance with:

- MTO Manual for Condition Rating of Flexible Pavements, SP-024.
- MTO Manual for Condition Rating of Surface-Treated Roads, SP-021.

There are two key observations when using PCI methods: the Ride Condition Rating (RCR), and the Distress Manifestation Index (DMI). RCR is a subjective measurement of how smooth a travelled surface is, rated from 0 to 10, with 10 representing excellent, new surfaces, and 0 representing an extremely rough, impassible road. DMI aggregates various forms of visible pavement distress into a rating from 0 to 10, with 10 representing a new surface and 0 representing a destroyed surface.

RCR and DMI are rated strictly independently. A rough road may have relatively few visible distresses while a fairly smooth road may display many distresses. In general, rough roads display associated visible distresses.

The combined approach facilitates comparing all the Municipality's roads, as the Inventory Manual prescribes the same rating system regardless of surface type, while also providing detailed descriptions of the types of distress encountered on surfaces as per the PCI ratings. This approach is compliant with O. Reg. 588/17. Wills undertook the field study in April and May of 2023.

During the field study, a visual assessment of the following road characteristics was documented to assess the current adequacy of the road:

- Platform Width (overall width of road).
- Surface Width (width of pavement surface).
- Shoulder Width.
- Surface Type (gravel, low class bituminous, or high class bituminous).
- Drainage Type (open ditches vs. storm sewers etc.).
- Surface Condition (assigned based on Ride Condition Rating for this Study).
- Maintenance Demand.
- Roadside Environment.
- Capacity.
- Alignment.

1.4.1 Critical Deficiencies

Critical deficiencies represent road characteristics that result in increased maintenance costs or lead to an inadequate level of service. Road sections may be assessed as critically deficient if any one of the following characteristics fall below the minimum tolerable standards defined in the MTO Inventory Manual:

- Surface type - Insufficient surface type for traffic volumes.
- Surface width - Insufficient width of the road surface excluding the shoulders.
- Capacity - Inability of the road to accommodate traffic volumes at peak periods.
- Structural Adequacy - Inability of the road base to support vehicular traffic.
- Drainage - Increased frequency of flooding or excessive maintenance effort required to prevent flooding.

Critically deficient roads have generally reached the end of their service life and /or require major work to improve e.g. widening or new surface type. As such, reconstruction is generally required.

Surface Type

The following parameters were used to assess the adequacy of the road surface type. Road sections with traffic volumes (AADT) in excess of the minimum tolerable values for Earth and Gravel in **Table 1**, were noted as critically deficient triggering a "NOW" surface type need as per the Inventory Manual Method.

Table 1 - Surface Type by Annual Average Daily Traffic (AADT)

Surface Type	AADT		
	Inventory Manual		MTO Pavement Design and Rehabilitation Manual[1]
	Tolerable Range	Design Standard	
Earth (E)	<50	-	-
Gravel (G)	<400	0-199	0 - 199
Low Class Bituminous (LCB) / Surface Treatment	-	200-399	200 - 1500
High Class Bituminous (HCB) / Hot Mix	-	400+	>1500

Table 1 provides further guidance with respect to surface type from both the Inventory Manual as well as the MTO Pavement Design and Rehabilitation Manual.

[1] Ministry of Transportation. Pavement Design and Rehabilitation Manual, Second Edition, 2013, Table 3.3.3 Structural Design Guidelines for Flexible Pavement – Secondary Highways

As detailed in **Table 1**, Gravel surfaces are generally considered acceptable for AADT of less than 200 vehicles but may be tolerable up to 400 AADT. Transition to Surface Treatment should be considered above 200 AADT. Gravel road maintenance costs (resurfacing, grading, dust suppression, etc.) versus surface treatment costs are key considerations.

Low Class Bituminous (LCB) i.e. Surface Treatment may be acceptable for traffic volumes between 200 and 1500 AADT. A transition to a Hot Mix or High Class Bituminous surface from Surface Treatment must be considered on a case by case basis. The following factors require consideration:

- Surface Treatment Maintenance Costs.
- Commercial Vehicle Loading.
- Roadside Environment (Urban, Semi-urban, vs. Rural).
- On-street Parking.
- Adjacent Drainage Infrastructure i.e. curb and gutter, catch basins etc.
- Asphalt Availability / Cost.
- Surface / Platform Width.
- Traffic Volume Growth.
- Sub-base Quality.
- Roadbed Frost Susceptibility.
- Future Resurfacing / Rehabilitation Costs.

Vehicle loading is one of the key considerations for pavement design and ultimately the decision between Hot Mix and Surface Treatment. Roads with high levels of commercial traffic require a more substantial pavement structure. The values noted in Table 1, for the "MTO Method" are generally reflective of a highway with 10% commercial vehicles. Roads with AADT in excess of 400 vehicles with a good sub-base and commercial vehicles up to 10% may still perform very well with a Surface Treatment. Existing/past performance of a Surface Treatment can be an excellent indicator when considering the upgrade to Hot Mix.

Surface Width

Surface widths that fall below minimum tolerable standards, as detailed in the MTO Inventory Manual are noted as critically deficient triggering a "NOW" need.

The Default Minimum Surface Widths for Rural roads are included in **Table 2**:

Table 2 – Rural Road Surface Width by Annual Average Daily Traffic (AADT)

	AADT							
	1-49	40-199	200-399	400-999	1000-1999	2000-2999	3000-3999	4000+
Road Width (m)	5.0	5.5	5.5	6.0	6.0	6.0	6.5	6.5

Capacity

An in-depth traffic capacity analysis was not completed as part of the scope of this Road Needs Study. Decisions with respect to expansion of roads should be made within the context of a Transportation Master Plan or Official Plan for the Municipality.

However, from a general perspective, a two-lane road can typically provide adequate service up to an AADT of approximately 12,000 vehicles. The functionality of a road from a capacity standpoint is of course dependent upon other factors in combination with volume. Adjacent land uses, number of access points i.e. entrances and side roads etc. also have a significant impact on how the road functions.

A rural road with limited entrances and side roads will have a much greater capacity to flow traffic versus an urban street with many entrances and side road intersections. The AADT of 12,000 can be used as a 'rule of thumb' to trigger further analysis on the road capacity and operation. For the purposes of this study, a detailed capacity analysis was not undertaken as part of the scope of work. All roads were assigned to be adequate from a capacity perspective noting that no road section had an AADT greater than 6,000.

Structural Adequacy

In cases where road base or structure is showing distress over more than 20% of the length of the road section, a score between 1 and 7 (out of 20) is assessed and the road section is assigned a "NOW" need and considered Critically Deficient per the Inventory Manual. The structural adequacy rating is often the best indicator of the overall road section's health.

It should be noted that a structural "NOW" need does not explicitly mean that work must be undertaken on the road immediately (although this may be so in some cases). A structural "NOW" need means that a significant portion of the road is showing distress of the road bed and requires significant intervention i.e. reconstruction or major rehabilitation to renew it service life. A structural "1 – 5" year need is expected to become a "NOW" need in the next five years, and a "6 – 10" year need is expected to become a "NOW" need in the next 10 years.

Drainage

A road section is assessed as a "NOW" need for drainage generally when a road becomes impassible due to water one or more times a year. This information is not readily accessible from inspection. Characteristics such as ditching, water ponding on or around the road, and evidence of past washouts were used to assess road drainage. As such, a road was given a "NOW" need for drainage if there were evident drainage problems that would likely lead to an impassable road during a heavy rain or a rapid snow melt.

2.0 The Road System

2.1 Inventory and Classification

All roads in the municipal road system were inventoried according to the methods outlined in the Inventory Manual for Municipal Roads.

The inventory procedure requires that each road in the system be studied as a separate unit. Initially, the road system was divided into sections so that each conformed, as close as possible, to the following requirements:

- Uniform traffic volume.
- Uniform terrain.
- Uniform physical conditions.
- Uniform adjacent land.

Depending on location with respect to the built up areas, roads were classified in a manner generally descriptive of the type of construction as follows:

- Urban - Roads with curb and gutter and storm sewer drainage.
- Semi-Urban - Roads in built up areas (development exceeds 50% of the frontage) without curb and gutter or curb and gutter on one side only.
- Rural - Roads with development on less than 50% of the frontage.

Rural roads were further evaluated based on estimated traffic volumes; such as 0 to 50 vehicles per day, 51 to 200, and 201 to 400 etc. For the purpose of this study, 19 counts were completed in May 2023. Where gaps existed in the data, traffic volumes were estimated using the 2023 traffic count data and/or using local characteristics for each road section.

Table 3 summarizes the total road length in kilometres by surface type and road environment as of May 2023.

The existing road system consists of 547 km of roadway, 429 km of gravel roads, 45 km of surface treated roads (LCB) and 73 km of HCB (asphalt paved) roads; with all calculations being approximate and rounded to the nearest kilometre.

Table 3 - Road System Inventory

Municipality of West Nipissing		
Road System in Kilometres		
(As of May 2023)		
A.	**Surface Type**	**Totals***
	Earth	0
	Gravel (Loose Top Gravel)	428.5
	Surface Treatment (LCB & ICB)	45.0
	Hot Mix Asphalt (HCB)	73.4
	Total A	**546.9 km**
B.	**Roadside Environment**	
(i)	**Rural**	
	Earth	0
	Gravel (loose Top Gravel)	420.1
	Surface Treatment (LCB & ICB)	36.0
	Hot Mix Asphalt (HCB)	10.2
	Total Rural	**466.3 km**
(ii)	**Semi-Urban**	
	Gravel (loose Top Gravel)	8.4
	Surface Treatment (LCB)	9.0
	Hot Mix Asphalt (HCB)	58.3
	Total Semi-Urban	**75.7 km**
(iii)	**Urban**	
	Gravel (loose Top Gravel)	0
	Surface Treatment (LCB)	0
	Hot Mix Asphalt (HCB)	4.9
	Total Urban	**4.9 km**
	Total B	**546.9 km**
**Estimated to the nearest centreline kilometre.*		

3.0 Road Needs

The primary purpose of the study is to develop a list of all roads within the Municipality ranked according to priority with respect to road needs.

The method of evaluating road needs in terms of type, cost and timing of improvements is identified in the Inventory Manual for Municipal Roads.

It is important to note that budgetary restrictions will often influence the level of upgrades to the road system and therefore it is imperative to maximize the improvements based on availability of funds and needs priority.

3.1 Critical Deficiencies

The inventory of the road system revealed that certain road sections are now deficient or will become deficient during the study period.

As noted previously, critical deficiencies include road characteristics which result in increased maintenance costs and which inevitably lead to an inadequate level of service. A road section is critically deficient if any one of the following characteristics fall below the minimum tolerable standards defined in the Inventory Manual.

- Surface type - Incorrect surface type to suit traffic volumes on the roadway.
- Surface width - Insufficient width of the road surface excluding the shoulders.
- Capacity - Inability of the road to accommodate traffic volumes at peak periods.
- Structural Adequacy - Inability of the road base to support vehicular traffic.
- Drainage - Increased frequency of flooding or excessive maintenance effort required to prevent flooding.

Of the 547 km of roads inventoried, a total of 70.9 km were found to be critically deficient in one or more areas. Of the 70.9 km, approximately 37.1 km represents roads with AADT of less than 50 vehicles. Regardless of condition, roads with AADT of 50 or less are typically assigned as "Adequate" (as per the Ministry protocol) for the purpose of the system adequacy calculation.

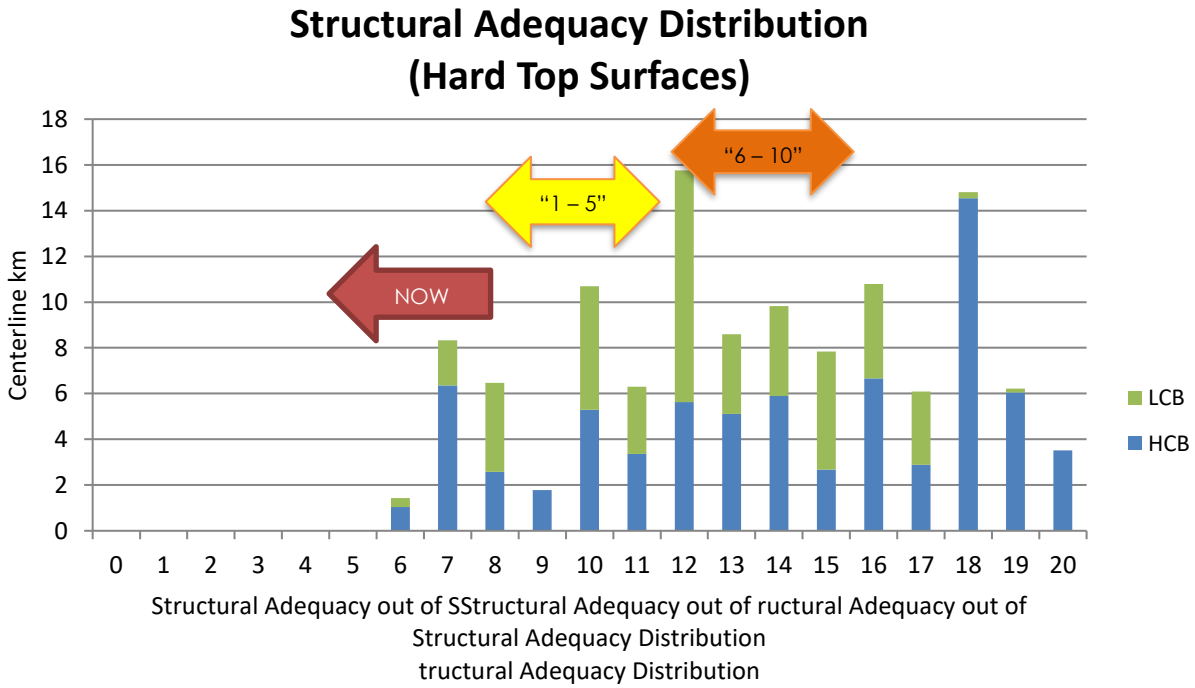
The overall system adequacy for the Municipality's road network, which is based upon the total road kilometres less the identified critically deficient ("NOW" needs) roads, is as follows:

$$\textbf{2023 System Adequacy} = \frac{\textbf{547 - (70.9 - 37.1)}}{\textbf{547}} \textbf{ x 100\% = 94\%}$$

The average surface condition rating of all roads is 7.0/10 while the average structural adequacy rating is 13.8/20. This suggests that the typical road has a fair to good riding quality, but just at the point where significant rehabilitation or reconstruction is required.

A review of the structural adequacy distribution of the Municipality's hard top roads identifies a group of roads, 49.2 km, that are in very good condition (structural adequacy of 15 and over), and with regular resurfacing and preservative maintenance, should not require reconstruction in the next 10 years. Another cohort of roads, approximately 34.0 km, are in average condition (Structural Adequacy from 12 to 14). Some of these roads may continue to perform well, but without timely resurfacing and preventative maintenance, many of them are expected to become NOW or 1 – 5 year needs. The remaining 35.2 km of hard top road network is well distributed over the very poor to poor range (structural adequacy from 1 to 11). Most of these roads will require reconstruction over the next 5 years to fully repair them.

It is therefore recommended that, while the Municipality endeavors to repair these poor roads as part of its 10-year capital plan, every reasonable effort is made, through preservation management, to prevent the current cohort of fair to very good roads (49.2 km) from becoming capital reconstruction needs themselves.



3.2 Pavement Condition Index (PCI)

Pavement Condition Index (PCI) was calculated based on the same MTO PCI methodologies, using the following empirical formula:

$$\mathbf{PCI} = \mathbf{10} \times \sqrt{\frac{\mathbf{RCR}}{\mathbf{10}}} \times \mathbf{DMI} \times \mathbf{w_c}$$

Where DMI is the Distress Manifestation Index (0 to 10), calculated based on distress severity and density, RCR is the assigned Ride Condition Rating out of 10, $\boldsymbol{w_c}$ is the weighting constant to adjust for pavement bias (1.088 for HCB and 0.962 for LCB and gravel surfaces).

The overall weighted PCI for the Municipality's road network is as follows:

$$\mathbf{Overall\ Weighted\ Condition} = \frac{\sum \mathbf{length} \times \mathbf{PCI}}{\sum \mathbf{length}} = \mathbf{74.8}$$

3.3 Priority Ratings of Roads

A mathematical empirical formula was used to calculate the priority rating for each road section. The priority rating is a weighted calculation which takes into account the existing traffic volume and overall condition rating of the road.

This priority analysis is an impartial procedure to place the deficiencies in order of relative need. **A higher Priority Rating number indicates a relatively greater need for improvement.**

The formula takes into account the current traffic volume (AADT), whether it is from actual road counts or estimated road counts and the Condition Rating (CR) of the road at the time of this Road Needs Study Report. The formula is as follows:

$$\textbf{Priority Rating} = 0.2 \times (100 - CR) \times (AADT + 40)^{0.25}$$

In utilizing the above equation Wills identified a priority listing for review with Municipality staff. It is important to emphasize that the priority rating calculation considers only CR and traffic volumes.

When developing the recommended capital expenditure plan consideration may be given to the remaining useful service life of a road / roadbed with a view to coordinating major reconstruction efforts at / near the end of the road's life. Furthermore, while a priority rating will give a general idea of which roads should be improved before others, it does not prescribe an exact order for road improvements nor does it determine the timing of preservation and rehabilitation work. For example, it may be wise to defer the full reconstruction of a high priority road ("let the bad roads fail") in favour of resurfacing work on a medium priority road ("keep the good roads good").

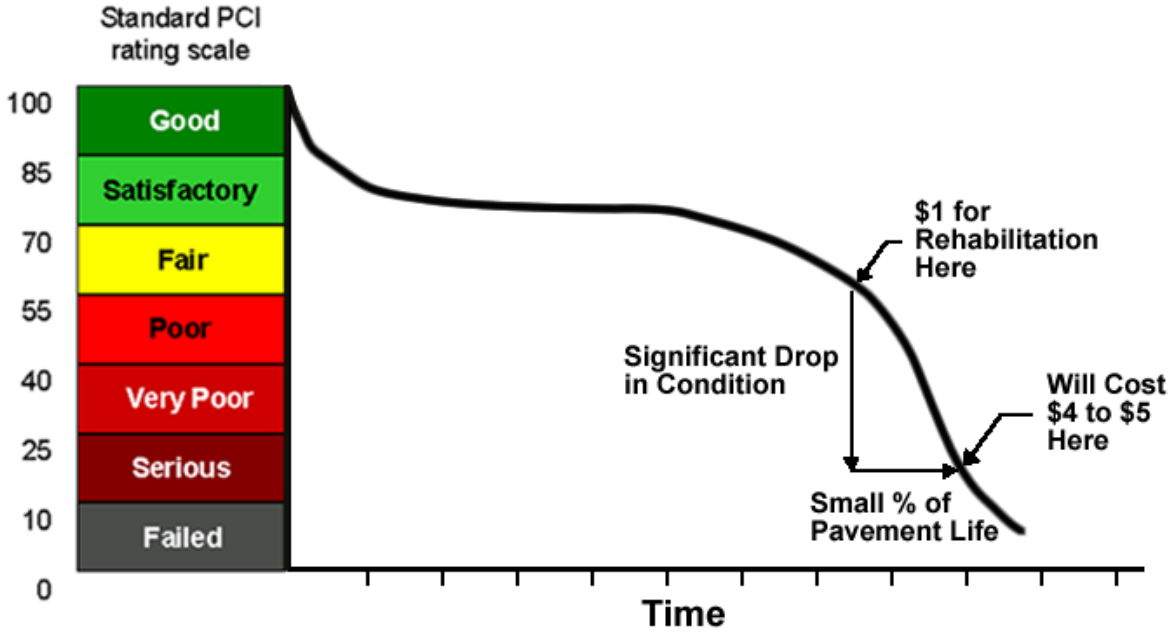
4.0 Roads Best Management Practices

The key to managing a pavement / road network is the timing of maintenance and rehabilitation activities. This idea evolves from the fact that a pavement's structural integrity does not fall constantly with time. A pavement generally provides a constant, acceptable condition for the first part of its service life and then begins to deteriorate very rapidly. In many cases, maintenance and rehabilitation measures are not taken until structural failure or noticeable changes in ride quality become apparent. This is the "fix it once it is already broken" approach.

The unfortunate consequence of this decision is that maintenance and rehabilitation becomes exponentially more expensive over the life of the pavement and is often overlooked until the pavement condition reaches a severe state of distress. There is opportunity for substantial cost savings when intervention is made *before* the pavement becomes severely compromised; i.e. "fix it before it breaks". **Figure 1** illustrates the underlying principle in support of a preservation management approach to pavement infrastructure. The principle also has application to each of the classes of roads maintained by the Municipality. Significant cost savings will result from proactive intervention rather than simply waiting as long as possible before performing maintenance.

Examples of approach to roads management with their associated cost implications over the lifecycle of a road are set out below in **Section 4.1** and are provided as an illustration of the benefit of a "preservation management approach".

Figure 1 - Typical Service Life of an Asphalt Pavement



4.1 Example Life Cycle Cost Analysis

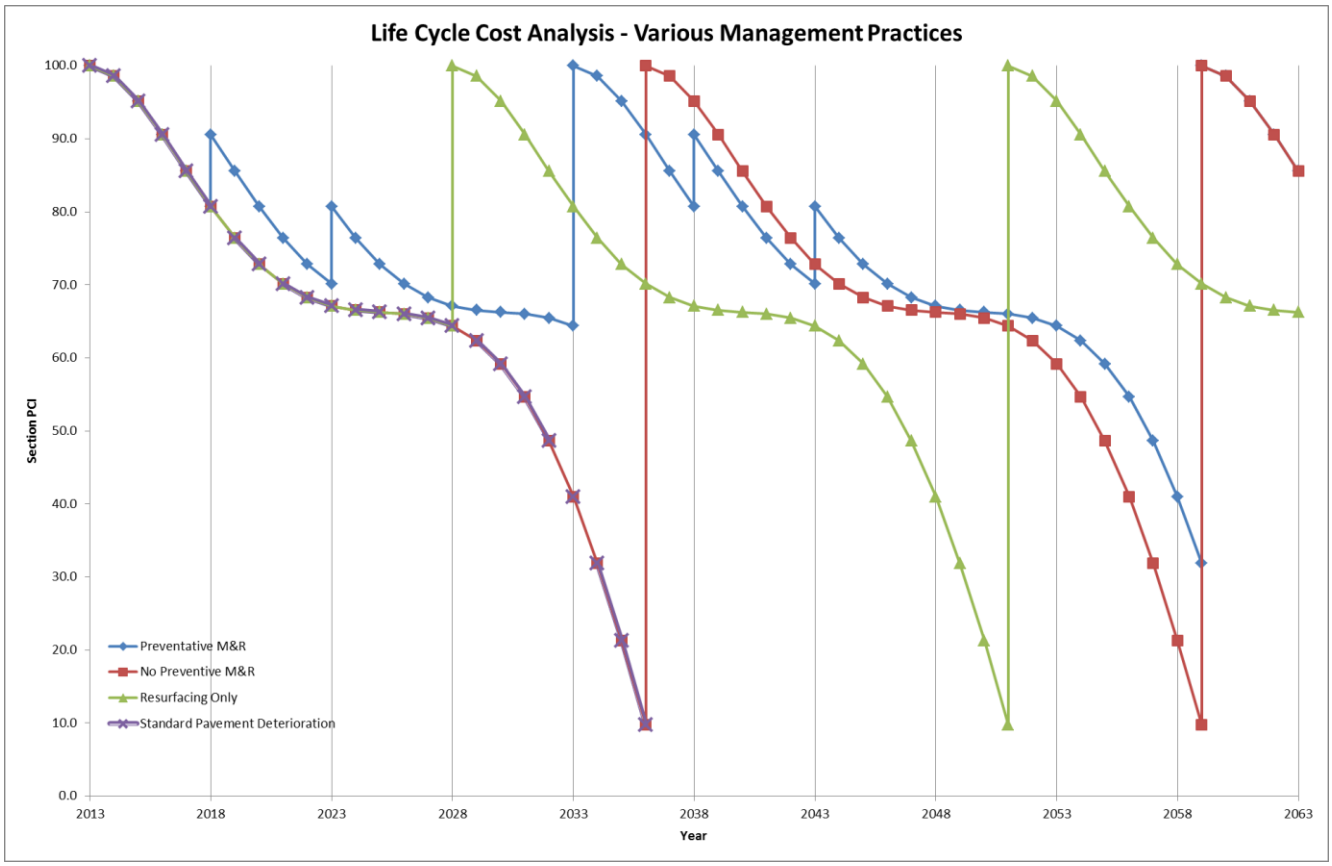
The following life cycle costs analysis compares three (3) different municipalities Municipality 1, Municipality 2 and Municipality 3; each with three (3) distinct approaches to pavement management. For this analysis we will assume each of the three (3) municipalities has 7000 m^2 of pavement, i.e. 1 km of asphalt paved road that is 7 m wide. In each scenario, the road is assumed to have been constructed in 2013 and will operate under normal traffic loading.

The Life Cycle Cost Analysis (LCCA) assumes no user costs. The LCCA uses a discount rate of 2.5% / year.

The LCCA shows the three (3) different municipalities and tracks their pavement management decisions and related condition over the specified time period. Municipality 1 represents decisions made based on strategic preventive maintenance and rehabilitation (M&R), Municipality 2 represents decisions based on no preventive M&R and Municipality 3 represents decisions based on resurfacing only.

Figure 2 below illustrates a time- pavement condition plot for each Municipality.

Figure 2 - Time-Condition Plot for 3 Municipalities



The costs associated with the corresponding maintenance and rehabilitation decisions are outlined in the following three (3) charts:

Preventive M&R									
Year	**Age**	**Treatment**	**Δ PCI**	**PCI_q**	**Quantity**	**Unit**	**Unit Cost**	**Total Cost**	**Present Worth**
		-- Annual Ditching/Clearing --							
2018	**5**	**Localized Preventive - Rout and Seal**	81-90	Satisfactory-Good	1000	m	$1.50	$1,500.00	**$1,325.78**
2023	**10**	**Global Preventive - Slurry Seal**	70-81	Satisfactory-Good	7000	m^2	$6.50	$45,500.00	**$35,544.53**
2033	**20**	**Surface Course**	64-100	Poor-Good					
		Mill and Dispose of Surface Course			7000	m^2	$12.00	$84,000.00	
		50mm Surface Course			892.5	t	$135.00	$120,487.50	
								$204,487.50	**$124,792.78**
2038	**25**	**Localized Preventive - Rout and Seal**	81-88	Satisfactory-Good	4500	m	$1.50	$6,750.00	**$3,640.89**
2043	**30**	**Global Preventive - Slurry Seal**	68-78	Satisfactory-Good	7000	m^2	$6.50	$45,500.00	**$21,691.79**
2048	**35**	**Safety/Stopgap Maintenance - AC Patching/Leveling**	N/A	N/A	5%	m^2	$30.00	$10,500.00	**$4,424.40**
2053	**40**	**Safety/Stopgap Maintenance - AC Patching/Leveling**	N/A	N/A	10%	m^2	$30.00	$21,000.00	**$7,821.04**
2058	**45**	**Full Reconstruction**	32-100	Serious-Good					
		Remove Asphalt Full Depth			7000	m^2	$15.00	$105,000.00	
		Add and Compact Corrective Aggregate/Correct Crossfall (25mm avg.)			420	t	$35.00	$14,700.00	
		40mm Base Course			686	t	$125.00	$85,750.00	
		50mm Surface Course			892.5	t	$135.00	$120,487.50	
								$325,937.50	**$107,290.28**
2063	**5**	**Localized Preventive - Rout and Seal**	81-90	Satisfactory-Good	1000	m	$1.50	$1,500.00	**$436.41**
		Final PCI in 2063:	**90**	**Good**				**Net:**	**$306,967.90**
								Residual Value:	**$85,346.08**
								Total Cost:	**$221,621.82**

The policy of Municipality 1 is to strategically intervene with preventative maintenance measures over the course of the pavement's service life. Two (2) significant maintenance measures are performed on the pavement at various times and ultimately extend the service life of the pavement, prorating the total cost of the pavement over a longer period of time. Eventually, a full reconstruction is required and this cycle repeats. The total life cycle costs are substantially less when compared to Municipality 2 and 3, at a total of $221,622 over 50 years.

No Preventive M&R									
Year	Age	Treatment	Δ PCI	PCI_q	Quantity	Unit	Unit Cost	Total Cost	Present Worth
2023	**10**	**Safety/Stopgap Maintenance - AC Patching/Leveling**	N/A	N/A	5%	m^2	$30.00	$10,500.00	**$8,202.58**
2028	**15**	**Safety/Stopgap Maintenance - AC Patching/Leveling**	N/A	N/A	10%	m^2	$30.00	$21,000.00	**$14,499.78**
2030	**17**	**Safety/Stopgap Maintenance - AC Patching/Leveling**	N/A	N/A	20%	m^2	$30.00	$42,000.00	**$27,602.19**
2036	**23**	**Full Reconstruction**	10-100	Poor-Good					
		Remove Asphalt Full Depth			7000	m^2	$15.00	$105,000.00	
		Add and Compact Corrective Aggregate/Correct Crossfall (25mm avg.)			420	t	$35.00	$14,700.00	
		40mm Base Course			686	t	$125.00	$85,750.00	
		50mm Surface Course			892.5	t	$135.00	$120,487.50	
								$325,937.50	**$184,707.88**
2043	**7**	**Safety/Stopgap Maintenance - AC Patching/Leveling**	N/A	N/A	5%	m^2	$30.00	$10,500.00	**$5,005.80**
2048	**12**	**Safety/Stopgap Maintenance - AC Patching/Leveling**	N/A	N/A	10%	m^2	$30.00	$21,000.00	**$8,848.79**
2053	**17**	**Safety/Stopgap Maintenance - AC Patching/Leveling**	N/A	N/A	20%	m^2	$30.00	$42,000.00	**$15,642.09**
2059	**23**	**Full Reconstruction**	10-100	Poor-Good					
		Remove Asphalt Full Depth			7000	m^2	$15.00	$105,000.00	
		Add and Compact Corrective Aggregate/Correct Crossfall (25mm avg.)			420	t	$35.00	$14,700.00	
		40mm Base Course			686	t	$125.00	$85,750.00	
		50mm Surface Course			892.5	t	$135.00	$120,487.50	
								$325,937.50	**$104,673.45**
		Final PCI in 2063:	**86**	**Good**				**Net:**	**$369,182.56**
								Residiual Value:	**$81,552.92**
								Total Cost:	**$287,629.64**

The policy of Municipality 2 is to simply construct the pavement and wait until serious deficiencies begin to appear before acting. This approach unfortunately remains common still today. Over the last period of the pavement's life, maintenance is required to ensure safety and operation until the pavement becomes completely destroyed. Once the pavement has failed, a complete reconstruction is carried out restoring the pavement to new condition. This cycle repeats again until a second reconstruction is required. The total costs are substantial and total $287,630 over 50 years.

The policy of Municipality 3 is periodic resurfacing. The pavement is constructed and time passes until early signs of serious distress are observed. This occurs after the time when preventive maintenance is neither appropriate nor possible, but before the pavement becomes completely destroyed. Resurfacing is performed and restores the pavement to almost new condition. The pavement then deteriorates for the remainder of its life, requiring significant maintenance in the last years before it becomes completely destroyed. A full reconstruction is then carried out and the cycle continues. The total costs are in between that of Municipality 1 and 2 at $260,038 over 50 years.

Resurfacing Only									
Year	**Age**	**Treatment**	**Δ PCI**	**PCI_q**	**Quantity**	**Unit**	**Unit Cost**	**Total Cost**	**Present Worth**
2028	**15**	**Surface Course**	64-100	Poor-Good					
		Mill and Dispose of Surface Course			7000	m^2	$12.00	$84,000.00	
		50mm Surface Course			892.5	t	$135.00	$120,487.50	
								$204,487.50	**$141,191.58**
2051	**23**	**Full Reconstruction**	10-100	Serious-Good					
		Remove Asphalt Full Depth			7000	m^2	$15.00	$105,000.00	
		Add and Compact Corrective Aggregate/Correct Crossfall (25mm avg.)			420	t	$35.00	$14,700.00	
		40mm Base Course			686	t	$125.00	$85,750.00	
		50mm Surface Course			892.5	t	$135.00	$120,487.50	
								$325,937.50	**$127,534.43**
2067	**15**	**Surface Course**	64-100	Poor-Good					
		Mill and Dispose of Surface Course			7000	m^2	$12.00	$84,000.00	
		50mm Surface Course			892.5	t	$135.00	$120,487.50	
								$204,487.50	**$53,898.67**
		Final PCI in 2063:	**66**	**Good**				**Net:**	**$322,624.67**
								Residiual Value:	**$62,587.12**
								Total Cost:	**$260,037.55**

It may be easy to see upfront cost savings by understanding that as long as any costs associated with maintaining the pavement are deferred as long as possible, money will be saved. The reality is that extending a pavements service life prorates the total cost of the pavement over a longer period of time and ultimately becomes more economical in the long run. If preventive maintenance measures are strategically planned and carried out then the service life of the pavement can be maximized and substantial reconstruction costs can be deferred for longer periods of time. In a time when economy and efficiency are becoming more and more important, this type of proactive management is essential in the management of infrastructure.
Preservation Management Approach

4.1.1 Gravel Roads

The Municipality currently maintains approximately 430 km of gravel road. The proposed preservation management approach for this class of road is outlined in the following **Table 4** and **Table 5.**

Table 4 - Preservation Management Approach- Gravel Surface

Action	Frequency
Regrade surfaces to maintain smooth / safe driving surface and proper crossfall.	As needed, generally 2-3 times per year for higher volume gravel, or more frequently as necessary; 1-2 for lower volume.
Add calcium to tighten surface, retain aggregate and reduce dust.	Each spring on all roads of higher volume and as needed during summer months.
Ditching and brushing of right-of-ways to improve roadbed drainage and safety.	Complete road network every 10 years.

Table 5 - Capital Activities – Gravel Roads

Action	Frequency
Add layer (100 mm) of granular material to road surface.	Every 3-5 years for gravel roads.
Base and sub-base improvements.	As needed or as dictated by traffic volumes.
Reconstruct / convert to hard top.	As dictated by traffic volumes.

4.1.2 Surface Treated Roads

Surface treated roads have a hard wearing surface that must be preserved in order to be effective. The Municipality currently maintains 45 km of surface treated roads. Unlike gravel roads, a significant investment has been made in the surface and consequently these roads must be managed properly to obtain the longest possible service life from the surface.

Table 6 - Preservation Management Approach – Surface Treated Roads

Activity	Age (Years)	Ride Condition Rating	Estimated Service Life Extension (Years)
Slurry Seal	3	8	4
Single Surface Treatment	6	7	3
Double Surface Treatment	10	6	5
Pulverize and DST	14	<4	8

In addition to the noted preservation approach in **Table 6**, the following best management practices may be employed to preserve the surface, extend the service life and reduce life cycle costs of surface treated roads:

1. Surface treatment shall be applied to the entire road platform, from "grass to grass", including any shoulders. This will eliminate grading on surface treated roads, which has a tendency to damage the edge of the surface treatment and cause premature failure of the surface.
2. Suitable new technologies will be utilized where they can be demonstrated to reduce life cycle costs, such as fibre-reinforced surface treatment. This technology can be used to mitigate reflective cracking (if cracks are narrow and inactive) when a single or double surface treatment is applied over an aging surface. It can eliminate the need for pulverizing the underlying surface in certain situations and can reduce overall costs.
3. Assess drainage and culvert needs prior to any significant renewal or rehabilitation strategy and complete any improvements concurrently. This will eliminate the need to cut / excavate a relatively new surface to replace a culvert.
4. Ditching and clearing (brushing) of the right-of-ways (ROW) to improve roadbed drainage and safety.

4.1.3 Asphalt Roads

Asphalt surfaces are the smoothest and most durable hard top surface used by the Municipality; however, they are also the most expensive. The Municipality currently maintains 73 km of asphalt surface roads. Asphalt provides a constant, acceptable condition for the initial portion of its service life but then begins to deteriorate rapidly as it ages. Surface defects such as cracking and raveling are the first signs of the deterioration. If left untreated, the pavement will rapidly deteriorate to the point where reconstruction is the only option. A preservation management strategy can mitigate this by applying renewal treatments earlier in the pavements life before the conditions begin to deteriorate too far. **Table 7** below summarizes preservation management activities to be considered for asphalt roads:

Table 7 - Preservation Management Approach – Rural Asphalt Roads

Activity	Age (Years)	Ride Condition Rating	Estimated Service Life Extension (years)
Crack seal	2-6	9	2
Slurry Seal / Microsurface	4-8	8	4-6
Overlay	12-15	6-7	10
Pulverize and Pave	20-25	< 5	20
Reconstruct	30	< 4	30

Note: Slurry seal can be used on lower volume paved roads (less than 1000 vehicles per day). For roads with volumes in excess of 1000 AADT, microsurfacing should be considered.

In addition to the above noted preservation approach, the following best management practices may be employed to extend the service life and reduce life cycle costs of asphalt roads:

1. Review the condition of other infrastructure, particularly underground infrastructure prior to implementing any major renewal or rehabilitation of the pavement. Any repairs or capital upgrades to other infrastructure should be coordinated. This should reduce utility cuts in newer asphalt.
2. Repair potholes in the surface in a timely fashion to prevent saturation and weakening of road base.
3. Undertake regular shouldering program of rural paved roads to promote proper drainage. Poorly maintained shoulders allow surface water to pond and saturate the road base, which weakens the base and leads to cracking at the edge of pavements.
4. Undertake a ditching program to ensure there is adequate drainage for road base on rural roads. This will reduce the likelihood of structural distresses caused by softening of the road base due to poor drainage.
5. Specify the appropriate type of performance graded asphalt cement for the location.
6. Undertake a brush clearing program to reduce shading of the roadbed and remove roots / vegetation from the road base.

4.2 Application of Preservation Management Approach

The preservation management activities detailed in each of the tables above are not necessarily intended or required to be completed on each and every road. Road deterioration rates and the type of deterioration will dictate when action should be taken and what kind of treatment is most appropriate. The intention of the above is to outline the series of techniques to be considered in an effort to realize and extend the useful service life of the road asset for the lowest overall lifecycle cost while maintaining the highest overall condition. As detailed in the life cycle costs analysis presented above, the preservation management approach to roads is proven to yield the lowest overall life-cycle costs.

Each of the preservation management activities for gravel, surface treatment and asphalt roads identified above (including route and seal, slurry seal, resurfacing etc.), shall be considered as part of the regular Road Needs Study Report every five (5) years. Recommendations on the specific treatments required shall be documented and prioritized in this Report.

5.0 Road Needs Study Summary Table

5.1 Types of Improvements

All roads were examined to appraise the extent and type of improvement necessary.

"Order of Magnitude" construction costs were developed for each of the below options on a per kilometre basis. An estimated cost for isolated frost heave repairs was also considered.

The below alternative rehabilitation strategies are considered preliminary in nature and are intended to assist in providing an order of magnitude cost estimate to rehabilitate the road. Further field investigations and engineering design is required to confirm and develop the rehabilitation strategies for each road.

5.1.1 Asphalt

High Class Bituminous roads (HCB) or hot mix asphalt roads have rehabilitation alternatives ranging from a simple overlay to complete reconstruction. The following is a listing of standard road rehabilitation techniques that were considered for HCB or hot mix asphalt roads.

RO1 Resurfacing, Single-Lift Overlay.

RO2 Resurfacing, Double-Lift Overlay.

RMP1 Resurfacing, Mill and Pave 1-Lift.

RMP2 Resurfacing, Mill and Pave 2-Lifts.

PP1 Pulverize and Pave 1-Lift.

PP2 Pulverize and Pave 2-Lifts.

Recon 1R Excavate and Reconstruct Road and Pave 1-Lift – Rural.

Recon 1S Excavate and Reconstruct Road and Pave 1-Lift – Semi-Urban.

Recon 2S Excavate and Reconstruct Road and Pave 2-Lifts – Semi-Urban.

Recon 2U Excavate and Reconstruct Urban Road and Pave 2-Lifts – Urban.

SS Slurry Seal (Preventative Maintenance).

MS Microsurfacing (Preventative Maintenance).

RS Route and Seal (Preventative Maintenance).

5.1.2 Surface Treatment

Surface treated roads are generally able to be rehabilitated with either a single or double Low Class Bituminous (LCB) overlay treatment. They may also be upgraded to HCB pavement or downgraded to gravel. In some cases, previous resurfacing of LCB roads has occurred or the LCB surface or road structure has deteriorated to a state where a simple overlay surface treatment is not feasible. In these cases consideration can be given to removal or pulverizing of the existing surface treatment and placement of a new application. In some cases, where it is necessary to improve the overall roadbed structure, the addition of Granular A to build up the road and the reapplication of a surface treatment is recommended. The following is a listing of standard road rehabilitation techniques that were considered for LCB (surface treated) roads:

ST1 Single Surface Treatment.

ST2 Double Surface Treatment.

ST2R Double Surface Treatment, with Removal of Existing.

ST2A Double Surface Treatment, over New Granular A.

ST2PA Double Surface Treatment, over Pulverized Existing and New Granular A.

ST2PAW Double Surface Treatment, over Pulverized Existing and New Granular A with 1 m Widening.

SS Slurry Seal (Preventative Maintenance).

5.1.3 Gravel

Gravel roads can likewise be upgraded with the reapplication of Gravel (G) or surface treatments (ST1).

5.2 Benchmark Construction Costs

The Unit Price Form found in **Appendix A** is based on average prices for the local area. The unit prices were used to prepare an array of benchmark construction costs.

The design standards in **Table 8** were utilized for development of the benchmark cost estimates for reconstruction. It should be noted that these are suggested standards and therefore should not necessarily be used as standards for detail design of roadway improvements.

Table 8 - Design Standards for Construction Cost Estimates

Functional Classification	Surface Width (m)	Shoulder Width (m)	Granular A Depth (mm)	Granular B Depth (mm)	Hot Mix Depth (mm)*
Rural R200 (50 to 199 vpd)	6.0	1.5	150	450	-
Rural R300 (200 to 399 vpd)	6.0	1.5	150	450	16*
Rural R400 (400 to 999 vpd)	6.5	1.5	150	450	50
Semi - Urban Local Residential	6.0	1.5	150	450	50
Semi - Urban Local Industrial	6.5	1.5	150	450	50
Urban Local Residential	8.5	-	150	600	100
Urban Local Industrial	9.0	-	150	600	100

**Note - Prime and Double Surface Treatment is based on 16 mm of Hot Mix.*

6.0 Improvement Plan

In the following tables you will find three columns being used to describe the condition of the road; Surface Condition, Structural Adequacy, and Condition Rating. To better understand the prioritization of the lists, descriptions of these ratings can be found below.

Surface Condition: Surface conditions relate to driving ease, comfort and safety. Inadequacies for paved surface include excessive or uneven crowns, washboarding, raveling and bumpiness because of cracking, sealing, and rough patching. Inadequacies on loose top surfaces do not include situations that can be readily corrected by maintenance blading. They do include unconsolidated surfaces due to poorly graded or clean aggregate and permanent roughness due to insufficient depth of aggregate or weak subgrade. The effects of surface inadequacies in ascending order of seriousness are noise, vibration, sway, excessive steering effort and reduced speed. *Rated on a scale of 1 to 10*.

Structural Adequacy: The Structural Adequacy point rating relates to the capability of the surface and base courses to support a load and to resist deformation or rupture. Soft spots and frost boils are structural adequacy distress signs for loose top roads. For paved surfaces, distress signs may be cracking, rutting, heaving, pot-holing, roughness, alligatoring, dishing, breakup, distortion, frost boils, etc. *Rated on a scale of 1 to 20*.

Condition Rating: A holistic rating that sums point ratings from alignment, surface condition, surface width, level of service, structural adequacy, drainage and maintenance demands. The condition rating is one of the major factors used to calculate the Priority Rating. *Rated on a scale of 1 to 100*.

6.1 Road Needs

The Municipality of West Nipissing's Capital Improvement Plan is included on the next page, **Table 9.** This table notes the recommended capital improvements based on priorities throughout the Municipality. AADT is based on traffic counts provided by the Municipality**. All costs are based on 2023 dollars and should be adjusted for inflation based on program year, for budgeting purposes.** The capital improvements are listed in descending priority based on traffic volumes and Condition Rating, as described previously.

Table 9 – Municipality of West Nipissing Capital Improvement Plan

Sect. No.	Road Name	From	To	Length (km)	AADT	Preliminary Improvement Type Recommendation	Cost (x1000)	Surface Condition	Structural Adequacy	Condition Rating
NOW Needs										
372	JOHN ST	249M EAST OF CLARK ST	COURSOL RD	0.06	2000	*Recon 1S - Full Reconstruction + 1 Lift*	*$40*	5	6	65
373	JOHN ST	CLARK ST	249M EAST OF CLARK ST	0.25	2000	*Recon 1S - Full Reconstruction + 1 Lift*	*$167*	5	6	65
249	ETHEL ST	MICHAUD ST	COURSOL RD	0.50	1529	*Recon 1S - Full Reconstruction + 1 Lift*	*$338*	5	7	66
246	ETHEL ST	NIPISSING ST	CHURCH ST	0.10	1000	*Recon 1S - Full Reconstruction + 1 Lift*	*$68*	5	7	66
247	ETHEL ST	MAIN ST	205 M EAST OF MAIN ST	0.21	1000	*Recon 1S - Full Reconstruction + 1 Lift*	*$138*	5	7	66
248	ETHEL ST	205 M EAST OF MAIN ST	NIPISSING ST	0.06	1000	*Recon 1S - Full Reconstruction + 1 Lift*	*$41*	5	7	66
250	ETHEL ST	KING ST	MAIN ST	0.09	400	*Recon 1S - Full Reconstruction + 1 Lift*	*$60*	5	7	66
496	MACKIE ST	CHURCH ST	ARTHUR ST	0.10	800	*Recon 1S - Full Reconstruction + 1 Lift*	*$68*	5	7	66
754	RUSSELL ST	HOLDITCH ST	KING ST	0.10	800	*Recon 1S - Full Reconstruction + 1 Lift*	*$69*	5	7	66
127	CHRETIEN RD	MILLRAND RD	MICHEL RD	1.40	49	*Recon G - Full Reconstruction 6m Gravel Road*	*$281*	4	7	47
26	ARTHUR ST	NORTH ST	ETHEL ST	0.14	400	*Recon 1S - Full Reconstruction + 1 Lift*	*$95*	5	7	66
262	FIRST ST	MAIN ST	LEVESQUE ST	0.10	400	*Recon 1S - Full Reconstruction + 1 Lift*	*$66*	5	7	66
30	ARTHUR ST	SALTER ST	SOUTH END	0.10	200	*Recon 1S - Full Reconstruction + 1 Lift*	*$68*	4	6	62
645	PARKER ST	SALTER ST	FIRST ST	0.12	200	*Recon 1S - Full Reconstruction + 1 Lift*	*$81*	4	6	62
222	DUFFERIN ST	TORONTO RD	SIMCOE ST	0.08	200	*ST2A - Double Surface Treatment with Granular A*	*$8*	5	7	63
82	BOURGAULT ST	RIVERVIEW CT	EAST END	0.09	200	*Recon 1S - Full Reconstruction + 1 Lift*	*$61*	4	6	63

Sect. No.	Road Name	From	To	Length (km)	AADT	Preliminary Improvement Type Recommendation	Cost (x1000)	Surface Condition	Structural Adequacy	Condition Rating
83	BOURGAULT ST	MICHAUD ST	RIVERVIEW CT	0.09	200	*Recon 1S - Full Reconstruction + 1 Lift*	*$57*	4	6	63
225	DUFFERIN ST	SIMCOE ST	CACHE BAY RD	0.10	200	*ST2A - Double Surface Treatment with Granular A*	*$10*	5	7	63
671	PRINCIPAL ST E	SYLVESTRE ST	DES ERABLES ST	0.10	400	*Recon 1S - Full Reconstruction + 1 Lift*	*$64*	5	7	70
676	PRINCIPAL ST E	DUBEAU ST	SYLVESTRE ST	0.10	400	*Recon 1S - Full Reconstruction + 1 Lift*	*$68*	5	7	70
679	PRINCIPAL ST E	DES ERABLES ST	HERITAGE CR	0.30	400	*Recon 1S - Full Reconstruction + 1 Lift*	*$199*	5	7	70
37	AUBREY ST	LEVESQUE ST	NIPISSING ST	0.17	150	*Recon 1S - Full Reconstruction + 1 Lift*	*$112*	4	7	63
779	SANDHILL RD	SABOURIN RD	CACHE BAY RD	0.14	123	*ST2A - Double Surface Treatment with Granular A*	*$15*	4	7	62
126	CHOLETTE AV	THIRD ST	SOUTH END	0.09	100	*ST2A - Double Surface Treatment with Granular A*	*$10*	4	6	61
202	DOMINA CR	DOVERCOURT RD	EAST END	0.10	100	*Recon 1S - Full Reconstruction + 1 Lift*	*$66*	4	7	61
604	NORTH ST	ARTHUR ST	MICHAUD ST	0.10	200	*Recon 1S - Full Reconstruction + 1 Lift*	*$67*	5	7	66
255	EUGENE RD	RAINVILLE RD	POIRIER RD	1.53	200	*ST2A - Double Surface Treatment with Granular A*	*$156*	5	7	66
605	NORTH ST	CHURCH ST	ARTHUR ST	0.10	200	*Recon 1S - Full Reconstruction + 1 Lift*	*$68*	5	7	66
727	RITCHIE RD	LEVAC RD	WATERFRONT DR	0.67	200	*Recon 1S - Full Reconstruction + 1 Lift*	*$450*	5	7	66
515	MARGARET ST	BOOTH ST	CACHE ST	0.14	100	*Recon 1S - Full Reconstruction + 1 Lift*	*$96*	4	6	63
628	OUELLETTE CR	FOURTH ST	NORTH END	0.09	100	*Recon 1S - Full Reconstruction + 1 Lift*	*$57*	4	6	63
834	SYLVESTRE ST	PRINCIPAL ST E	GINGRAS AV	0.15	100	*ST2A - Double Surface Treatment with Granular A*	*$15*	4	6	64

Sect. No.	Road Name	From	To	Length (km)	AADT	Preliminary Improvement Type Recommendation	Cost (x1000)	Surface Condition	Structural Adequacy	Condition Rating
20	ANDERSON ST	CACHE S	MARTIN ST	0.09	100	*Recon 1S - Full Reconstruction + 1 Lift*	*$60*	4	7	64
219	DUBEAU ST	PRINCIPAL ST E	GINGRAS AV	0.12	100	*ST2A - Double Surface Treatment with Granular A*	*$12*	4	7	65
44	BAIN AV	MILL ST	JESSUP ST	0.14	100	*Recon 1S - Full Reconstruction + 1 Lift*	*$95*	5	7	65
552	MILL ST	HAY ST	BAIN AV	0.10	100	*Recon 1S - Full Reconstruction + 1 Lift*	*$69*	5	7	65
46	BAIN AV	JESSUP ST	YOUNG ST	0.14	100	*Recon 1S - Full Reconstruction + 1 Lift*	*$93*	5	7	65
553	MILL ST	BAIN AV	WATERFRONT DR	0.11	100	*Recon 1S - Full Reconstruction + 1 Lift*	*$71*	5	7	65
554	MILL ST	ANDERSON ST	HAY ST	0.10	100	*Recon 1S - Full Reconstruction + 1 Lift*	*$65*	5	7	65
722	RAMSAY ST	SPRING ST	NORTH END	0.05	49	*Recon 1S - Full Reconstruction + 1 Lift*	*$30*	4	6	62
562	MONTREAL ST	ABITIBI ST	NORTH END	0.16	49	*ST2A - Double Surface Treatment with Granular A*	*$16*	4	6	62
884	WATERFRONT DR	DOCK RD	JESSUP ST	0.09	100	*Recon 1S - Full Reconstruction + 1 Lift*	*$57*	5	7	66
903	YOUNG ST	HAY ST	BAIN AV	0.10	100	*Recon 1S - Full Reconstruction + 1 Lift*	*$69*	5	7	66
342	HERITAGE CR	PRINCIPAL ST E	PRINCIPAL ST E	0.25	100	*Recon 1S - Full Reconstruction + 1 Lift*	*$169*	5	7	66
885	WATERFRONT DR	MILL ST	DOCK RD	0.06	100	*Recon 1S - Full Reconstruction + 1 Lift*	*$37*	5	7	66
886	WATERFRONT DR	GORDON ST	BOOTH ST	0.10	100	*Recon 1S - Full Reconstruction + 1 Lift*	*$66*	5	7	66
336	HAY ST	BOOTH ST	CACHE ST	0.10	100	*Recon 1S - Full Reconstruction + 1 Lift*	*$70*	5	7	66
887	WATERFRONT DR	BOOTH ST	CACHE ST	0.10	100	*Recon 1S - Full Reconstruction + 1 Lift*	*$68*	5	7	66
74	BOOTH ST	LEVAC RD	MARGARET ST	0.23	100	*Recon 1S - Full Reconstruction + 1 Lift*	*$153*	5	7	66

Sect. No.	Road Name	From	To	Length (km)	AADT	Preliminary Improvement Type Recommendation	Cost (x1000)	Surface Condition	Structural Adequacy	Condition Rating
76	BOOTH ST	ANDERSON ST	HAY ST	0.11	100	*Recon 1S - Full Reconstruction + 1 Lift*	*$76*	5	7	66
530	MARY ST	EDWARD ST	BOOTH ST	0.14	100	*Recon 1S - Full Reconstruction + 1 Lift*	*$97*	5	7	66
362	JESSUP ST	BAIN AV	WATERFRONT DR	0.10	100	*Recon 1S - Full Reconstruction + 1 Lift*	*$69*	5	7	66
888	WATERFRONT DR	RITCHIE RD	MILL ST	0.14	100	*Recon 1S - Full Reconstruction + 1 Lift*	*$95*	5	7	66
889	WATERFRONT DR	YOUNG ST	GORDON ST	0.10	100	*Recon 1S - Full Reconstruction + 1 Lift*	*$70*	5	7	66
337	HAY ST	MILL ST	JESSUP ST	0.14	100	*Recon 1S - Full Reconstruction + 1 Lift*	*$95*	5	7	66
363	JESSUP ST	ANDERSON ST	HAY ST	0.04	100	*Recon 1S - Full Reconstruction + 1 Lift*	*$26*	5	7	66
531	MARY ST	BOOTH ST	CACHE ST	0.14	100	*Recon 1S - Full Reconstruction + 1 Lift*	*$94*	5	7	66
1	ABITIBI ST	MONTREAL ST	OTTAWA ST	0.10	100	*Recon 1S - Full Reconstruction + 1 Lift*	*$68*	5	7	66
77	BOOTH ST	MARGARET ST	MARY ST	0.18	100	*Recon 1S - Full Reconstruction + 1 Lift*	*$124*	5	7	66
904	YOUNG ST	BAIN AV	WATERFRONT DR	0.10	100	*Recon 1S - Full Reconstruction + 1 Lift*	*$67*	5	7	66
339	HAY ST	JESSUP ST	YOUNG ST	0.14	100	*Recon 1S - Full Reconstruction + 1 Lift*	*$94*	5	7	66
890	WATERFRONT DR	CACHE ST	EAST END	0.10	100	*Recon 1S - Full Reconstruction + 1 Lift*	*$70*	5	7	66
891	WATERFRONT DR	JESSUP ST	YOUNG ST	0.14	100	*Recon 1S - Full Reconstruction + 1 Lift*	*$95*	5	7	66
78	BOOTH ST	BAIN AV	WATERFRONT DR	0.10	100	*Recon 1S - Full Reconstruction + 1 Lift*	*$68*	5	7	66
240	EDWARD ST	MARY ST	ANDERSON ST	0.27	100	*Recon 1S - Full Reconstruction + 1 Lift*	*$181*	5	7	66
905	YOUNG ST	ANDERSON ST	HAY ST	0.11	100	*Recon 1S - Full Reconstruction + 1 Lift*	*$76*	5	7	66
241	EDWARD ST	LEVAC RD	MARY ST	0.33	100	*Recon 1S - Full Reconstruction + 1 Lift*	*$219*	5	7	66

Sect. No.	Road Name	From	To	Length (km)	AADT	Preliminary Improvement Type Recommendation	Cost (x1000)	Surface Condition	Structural Adequacy	Condition Rating
733	RIVERVIEW CT	BOURGAULT ST	SOUTH END	0.06	49	*Recon 1S - Full Reconstruction + 1 Lift*	*$38*	4	6	63
705	RACETTE ST	PRINCIPAL ST E	GRINGAS AVE	0.07	100	*Recon 2U - Full Reconstruction + 2 Lifts*	*$105*	5	7	72
1 - 5 Year Needs										
581	NIPISSING ST	QUEEN ST	HIGHWAY 17	0.13	2000	*PP1 - Pulverize and Pave 1 Lift*	*$30*	5	10	69
588	NIPISSING ST	WILLIAM ST	QUEEN ST	0.12	2000	*PP1 - Pulverize and Pave 1 Lift*	*$28*	5	10	69
364	JOHN ST	CARRIE ST	CLARK ST	0.10	2000	*PP1 - Pulverize and Pave 1 Lift*	*$23*	5	9	69
366	JOHN ST	ARTHUR ST	MICHAUD ST	0.10	2000	*PP1 - Pulverize and Pave 1 Lift*	*$23*	5	9	69
368	JOHN ST	MICHAUD ST	CARRIE ST	0.10	2000	*PP1 - Pulverize and Pave 1 Lift*	*$24*	5	9	69
365	JOHN ST	CHURCH ST	ARTHUR ST	0.10	2000	*PP1 - Pulverize and Pave 1 Lift*	*$24*	5	9	69
367	JOHN ST	NIPISSING ST	CHURCH ST	0.10	2000	*PP1 - Pulverize and Pave 1 Lift*	*$24*	5	9	69
587	NIPISSING ST	JOHN ST	WILLIAM ST	0.12	2000	*PP1 - Pulverize and Pave 1 Lift*	*$28*	6	11	72
128	CHURCH ST	ETHEL ST	MACKIE ST	0.14	800	*PP1 - Pulverize and Pave 1 Lift*	*$33*	5	8	67
130	CHURCH ST	MACKIE ST	MARKET ST	0.14	800	*PP1 - Pulverize and Pave 1 Lift*	*$34*	5	8	67
501	MAIN ST	ETHEL ST	MARKET ST	0.28	800	*PP1 - Pulverize and Pave 1 Lift*	*$66*	5	10	69
591	NIPISSING ST	RUSSELL ST	JOHN ST	0.13	1200	*PP1 - Pulverize and Pave 1 Lift*	*$30*	6	11	72
244	ETHEL ST	CHURCH ST	ARTHUR ST	0.10	1000	*PP1 - Pulverize and Pave 1 Lift*	*$23*	6	11	71
245	ETHEL ST	ARTHUR ST	MICHAUD ST	0.10	1000	*PP1 - Pulverize and Pave 1 Lift*	*$23*	6	11	71
518	MARKET ST	NIPISSING ST	CHURCH ST	0.10	800	*PP1 - Pulverize and Pave 1 Lift*	*$24*	6	9	70
522	MARKET ST	CHURCH ST	ARTHUR ST	0.10	800	*PP1 - Pulverize and Pave 1 Lift*	*$23*	6	9	70

Sect. No.	Road Name	From	To	Length (km)	AADT	Preliminary Improvement Type Recommendation	Cost (x1000)	Surface Condition	Structural Adequacy	Condition Rating
524	MARKET ST	PARKER ST	NIPISSING ST	0.06	800	*PP1 - Pulverize and Pave 1 Lift*	*$14*	6	9	70
595	NIPISSING ST	MARKET ST	RUSSELL ST	0.10	1000	*PP1 - Pulverize and Pave 1 Lift*	*$23*	6	11	72
596	NIPISSING ST	MACKIE ST	MARKET ST	0.14	1000	*PP1 - Pulverize and Pave 1 Lift*	*$33*	6	11	72
758	RUSSELL ST	CLARK ST	COURSOL RD	0.31	800	*PP1 - Pulverize and Pave 1 Lift*	*$72*	6	10	71
443	LAURIER ST	PAQUETTE ST	EAST END	0.11	49	*ST2A - Double Surface Treatment with Granular A*	*$11*	5	8	50
766	SALTER ST	LEVESQUE ST	MAIN ST	0.10	600	*PP1 - Pulverize and Pave 1 Lift*	*$24*	6	10	70
132	CHURCH ST	MARKET ST	RUSSELL ST	0.10	400	*PP1 - Pulverize and Pave 1 Lift*	*$23*	5	8	67
133	CHURCH ST	RUSSELL ST	JOHN ST	0.13	400	*PP1 - Pulverize and Pave 1 Lift*	*$30*	5	8	67
583	NIPISSING ST	ETHEL ST	MACKIE ST	0.14	800	*PP1 - Pulverize and Pave 1 Lift*	*$34*	6	11	72
371	JOHN ST	RIVER ST	HOLDITCH ST	0.14	4251	*PP2 - Pulverize and Pave 2 Lifts*	*$56*	6	11	82
209	DRIVE IN RD	SABOURIN RD	LARONDE RD	0.21	800	*PP1 - Pulverize and Pave 1 Lift*	*$50*	6	11	73
370	JOHN ST	KING ST	MAIN ST	0.10	4000	*PP2 - Pulverize and Pave 2 Lifts*	*$40*	6	11	82
374	JOHN ST	LEVESQUE ST	PARKER ST	0.10	4000	*PP2 - Pulverize and Pave 2 Lifts*	*$41*	6	11	82
375	JOHN ST	MAIN ST	LEVESQUE ST	0.10	4000	*PP2 - Pulverize and Pave 2 Lifts*	*$39*	6	11	82
376	JOHN ST	HOLDITCH ST	KING ST	0.10	4000	*PP2 - Pulverize and Pave 2 Lifts*	*$40*	6	11	82
208	DRIVE IN RD	HIGHWAY 17	VACHON RD	0.54	706	*PP1 - Pulverize and Pave 1 Lift*	*$128*	6	11	73
114	CARTIER ST	HIGHWAY 17	PIETTE RD	0.06	400	*PP1 - Pulverize and Pave 1 Lift*	*$14*	5	8	70
116	CARTIER ST	PIETTE RD	PRINCIPAL ST W	0.09	400	*PP1 - Pulverize and Pave 1 Lift*	*$21*	5	8	70

Sect. No.	Road Name	From	To	Length (km)	AADT	Preliminary Improvement Type Recommendation	Cost (x1000)	Surface Condition	Structural Adequacy	Condition Rating
369	JOHN ST	PARKER ST	NIPISSING ST	0.06	3000	*PP2 - Pulverize and Pave 2 Lifts*	*$24*	6	11	82
728	RIVER ST	JOHN ST	WILLIAM ST	0.12	400	*PP1 - Pulverize and Pave 1 Lift*	*$28*	6	10	71
452	LECLAIR RD	LAPLAGE RD	BEAUDRY RD	1.66	400	*ST2A - Double Surface Treatment with Granular A*	*$170*	5	8	71
453	LECLAIR RD	ROBERGE RD	LAPLAGE RD	1.60	400	*ST2A - Double Surface Treatment with Granular A*	*$164*	5	8	71
730	RIVER ST	WILLIAM ST	QUEEN ST	0.12	400	*PP1 - Pulverize and Pave 1 Lift*	*$29*	6	10	71
454	LECLAIR RD	ANDRE-LYNE RD	ROBERGE RD	0.51	400	*ST2A - Double Surface Treatment with Granular A*	*$52*	5	8	71
129	CHURCH ST	NORTH ST	ETHEL ST	0.14	400	*PP1 - Pulverize and Pave 1 Lift*	*$33*	6	11	72
131	CHURCH ST	BOURGAULT ST	NORTH ST	0.09	400	*PP1 - Pulverize and Pave 1 Lift*	*$20*	6	11	72
798	SIMCOE ST	DUFFERIN ST	TORONTO ST	0.08	150	*PP1 - Pulverize and Pave 1 Lift*	*$19*	5	9	66
799	SIMCOE ST	LISGAR ST	DUFFERIN ST	0.12	150	*PP1 - Pulverize and Pave 1 Lift*	*$29*	5	9	66
620	OTTAWA ST	DUFFERIN ST	IMPERIAL ST	0.08	200	*PP1 - Pulverize and Pave 1 Lift*	*$19*	5	10	68
625	OTTAWA ST	LISGAR ST	DUFFERIN ST	0.12	200	*PP1 - Pulverize and Pave 1 Lift*	*$29*	5	10	68
641	PARKER ST	RAILWAY ST	SALTER ST	0.10	200	*PP1 - Pulverize and Pave 1 Lift*	*$23*	5	9	69
734	RIVET ST	COURSOL RD	LACHANCE DR	0.44	150	*PP1 - Pulverize and Pave 1 Lift*	*$103*	5	10	67
223	DUFFERIN ST	CACHE BAY RD	OTTAWA ST	0.10	200	*ST2A - Double Surface Treatment with Granular A*	*$11*	6	11	69
273	FOURTH ST	MCKEE ST	NIPISSING ST	0.07	200	*PP1 - Pulverize and Pave 1 Lift*	*$17*	6	8	69
143	COCKBURN RD	GERALD CRES	STEVENS RD	0.14	200	*PP1 - Pulverize and Pave 1 Lift*	*$33*	5	10	69

Sect. No.	Road Name	From	To	Length (km)	AADT	Preliminary Improvement Type Recommendation	Cost (x1000)	Surface Condition	Structural Adequacy	Condition Rating
274	FOURTH ST	OUELLETTE CT	LEVESQUE ST	0.10	200	*PP1 - Pulverize and Pave 1 Lift*	*$23*	6	8	69
144	COCKBURN RD	GARDEN VILLAGE RD	GERALD CRES	0.79	200	*PP1 - Pulverize and Pave 1 Lift*	*$186*	5	10	69
275	FOURTH ST	LEVESQUE ST	MCKEE ST	0.09	200	*PP1 - Pulverize and Pave 1 Lift*	*$20*	6	8	69
276	FOURTH ST	KING ST	OUELLETTE CT	0.11	200	*PP1 - Pulverize and Pave 1 Lift*	*$25*	6	8	69
349	HOLDITCH ST	FOURTH ST	SOUTH END	0.24	200	*PP1 - Pulverize and Pave 1 Lift*	*$57*	6	10	70
358	JANEN ST	KING ST	LEVESQUE ST	0.20	100	*PP1 - Pulverize and Pave 1 Lift*	*$47*	5	8	66
760	SABOURIN RD	HIGHWAY 64	SANDHILL RD	0.98	150	*ST2A - Double Surface Treatment with Granular A*	*$100*	5	10	69
451	LECLAIR RD	HIGHWAY 64	SAVIGNAC RD	1.50	400	*ST2A - Double Surface Treatment with Granular A*	*$153*	6	10	75
456	LECLAIR RD	SAVIGNAC RD	ANDRE-LYNE RD	1.05	400	*ST2A - Double Surface Treatment with Granular A*	*$107*	6	10	75
621	OTTAWA ST	PINE ST	LORNE ST	0.12	200	*PP1 - Pulverize and Pave 1 Lift*	*$27*	6	11	71
751	ROY ST	THIRD ST	MAGEAU ST	0.36	200	*PP1 - Pulverize and Pave 1 Lift*	*$85*	5	11	71
624	OTTAWA ST	LORNE ST	LISGAR ST	0.12	200	*PP1 - Pulverize and Pave 1 Lift*	*$29*	6	11	71
487	LILLIE ST	SALTER ST	SOUTH END	0.13	100	*PP1 - Pulverize and Pave 1 Lift*	*$31*	5	9	67
17	ANDERSON ST	YOUNG ST	EDWARD ST	0.06	100	*PP1 - Pulverize and Pave 1 Lift*	*$15*	5	8	67
569	MORRISON CRT	KING ST	EAST END	0.11	100	*PP1 - Pulverize and Pave 1 Lift*	*$26*	5	9	67
18	ANDERSON ST	MILL ST	JESSUP ST	0.14	100	*PP1 - Pulverize and Pave 1 Lift*	*$32*	5	8	67
19	ANDERSON ST	JESSUP ST	YOUNG ST	0.14	100	*PP1 - Pulverize and Pave 1 Lift*	*$32*	5	8	67

Sect. No.	Road Name	From	To	Length (km)	AADT	Preliminary Improvement Type Recommendation	Cost (x1000)	Surface Condition	Structural Adequacy	Condition Rating
560	MONTREAL ST	ABITIBI ST	BRIDGE ST	0.15	150	*ST2A - Double Surface Treatment with Granular A*	*$15*	6	10	70
254	EUGENE RD	ALOUETE RD	ARBOUR RD	1.16	200	*ST2A - Double Surface Treatment with Granular A*	*$119*	6	11	72
446	LEBLANC RD	HIGHWAY 17	DRIVE IN RD	0.88	100	*ST2A - Double Surface Treatment with Granular A*	*$90*	5	10	68
633	PAQUETTE ST	HIGHWAY 17	LAURIER ST	0.06	200	*PP1 - Pulverize and Pave 1 Lift*	*$13*	6	11	73
732	RIVERSIDE ST	ROY ST	EAST END	0.06	49	*PP1 - Pulverize and Pave 1 Lift*	*$14*	5	8	65
43	BAIN AV	BOOTH ST	CACHE ST	0.10	100	*PP1 - Pulverize and Pave 1 Lift*	*$24*	6	9	69
47	BAIN AV	CACHE ST	MARTIN ST	0.10	100	*PP1 - Pulverize and Pave 1 Lift*	*$24*	6	9	69
61	BEAUDIN ST	HIGHWAY 17	ST LAURENT ST	0.10	100	*PP1 - Pulverize and Pave 1 Lift*	*$22*	5	10	69
48	BAIN AV	MARTIN ST	EAST END	0.27	100	*PP1 - Pulverize and Pave 1 Lift*	*$63*	6	9	69
770	SALTER ST	MAIN ST	WEST END	0.06	100	*PP1 - Pulverize and Pave 1 Lift*	*$15*	6	10	70
631	PAQUETTE ST	LAURIER ST	ST LAURANT ST	0.06	200	*PP1 - Pulverize and Pave 1 Lift*	*$14*	6	11	74
632	PAQUETTE ST	ST LAURANT ST	PRINCIPAL ST W	0.10	200	*PP1 - Pulverize and Pave 1 Lift*	*$23*	6	11	74
761	SABOURIN RD	SANDHILL RD	DRIVE IN RD	0.48	150	*ST2A - Double Surface Treatment with Granular A*	*$49*	6	11	72
42	BAIN AV	GORDON ST	BOOTH ST	0.10	100	*PP1 - Pulverize and Pave 1 Lift*	*$23*	6	10	70
45	BAIN AV	YOUNG ST	GORDON ST	0.11	100	*PP1 - Pulverize and Pave 1 Lift*	*$25*	6	10	70
309	GINGRAS AV	TELESPHORE ST	HIGHWAY 17	1.16	200	*Recon 1R - Full Reconstruction + 1 Lift*	*$781*	6	10	74

Sect. No.	Road Name	From	To	Length (km)	AADT	Preliminary Improvement Type Recommendation	Cost (x1000)	Surface Condition	Structural Adequacy	Condition Rating
60	BEAUDIN ST	ST LAURENT ST	PRINCIPAL ST W	0.10	100	*PP1 - Pulverize and Pave 1 Lift*	*$23*	5	10	71
325	GORDON ST	BAIN AV	WATERFRONT DR	0.10	100	*PP1 - Pulverize and Pave 1 Lift*	*$24*	6	10	71
750	ROY ST	RIVERSIDE ST	THIRD ST	0.14	100	*PP1 - Pulverize and Pave 1 Lift*	*$33*	5	11	71
15	ANDERSON ST	EDWARD ST	BOOTH ST	0.15	100	*PP1 - Pulverize and Pave 1 Lift*	*$34*	6	10	71
16	ANDERSON ST	BOOTH ST	CACHE ST	0.14	100	*PP1 - Pulverize and Pave 1 Lift*	*$33*	6	10	71
529	MARTIN ST	CACHE ST	BAIN AV	0.18	100	*PP1 - Pulverize and Pave 1 Lift*	*$43*	6	10	71
326	GORDON ST	HAY ST	BAIN AV	0.10	100	*PP1 - Pulverize and Pave 1 Lift*	*$23*	6	10	71
75	BOOTH ST	HAY ST	BAIN AV	0.11	100	*PP1 - Pulverize and Pave 1 Lift*	*$25*	6	11	72
329	GRAND ALLEE	GRAND ALLEE	DES EPINETTES RD	0.04	100	*ST2A - Double Surface Treatment with Granular A*	*$4*	6	11	72
333	GRANDE ALLEE	HIGHWAY 64	DES CEDRES RD	0.10	100	*ST2A - Double Surface Treatment with Granular A*	*$10*	6	11	72
331	GRAND ALLEE	MAPLE ST	GRAND ALLEE	0.26	100	*ST2A - Double Surface Treatment with Granular A*	*$26*	6	11	72
332	GRAND ALLEE	DES EPINETTES RD	GRAND ALLEE	0.79	100	*ST2A - Double Surface Treatment with Granular A*	*$81*	6	11	72
405	LAC CLAIR RD	MAPLE ST	HIGHWAY 64	0.14	100	*ST2A - Double Surface Treatment with Granular A*	*$14*	6	10	73
809	SPRUCE CT	DUMOUCHEL ST	EAST END	0.09	100	*PP1 - Pulverize and Pave 1 Lift*	*$21*	7	11	73
438	LAROCQUE ST	ROBIDAS ST	PATENAUDE RD	0.72	100	*ST2A - Double Surface Treatment with Granular A*	*$73*	6	10	73

Sect. No.	Road Name	From	To	Length (km)	AADT	Preliminary Improvement Type Recommendation	Cost (x1000)	Surface Condition	Structural Adequacy	Condition Rating
6 - 10 Year Needs										
465	LEVAC RD	HIGHWAY 17	THIBEAULT RD	0.40	2888	*PP2 - Pulverize and Pave 2 Lifts*	*$158*	6	12	75
462	LEVAC RD	THIBEAULT RD	CACHE ST	0.14	2800	*PP2 - Pulverize and Pave 2 Lifts*	*$55*	6	12	75
383	KING ST	RUSSELL ST	JOHN ST	0.12	2000	*PP1 - Pulverize and Pave 1 Lift*	*$29*	6	12	73
385	KING ST	MARKET ST	RUSSELL ST	0.10	2000	*PP1 - Pulverize and Pave 1 Lift*	*$23*	6	12	73
763	SALTER ST	ARTHUR ST	LILLIE ST	0.10	1000	*PP1 - Pulverize and Pave 1 Lift*	*$23*	6	12	72
767	SALTER ST	MICHAUD ST	ARTHUR ST	0.10	1000	*PP1 - Pulverize and Pave 1 Lift*	*$24*	6	12	72
768	SALTER ST	COURSOL RD	PARK ST	0.12	1000	*PP1 - Pulverize and Pave 1 Lift*	*$29*	6	12	72
769	SALTER ST	PARK ST	DESGROSEILIERS ST	0.17	1000	*PP1 - Pulverize and Pave 1 Lift*	*$41*	6	12	72
774	SALTER ST	BELANGER ST	MICHAUD ST	0.03	1000	*PP1 - Pulverize and Pave 1 Lift*	*$7*	6	12	72
776	SALTER ST	DESGROSEILIERS ST	BELANGER ST	0.18	1000	*PP1 - Pulverize and Pave 1 Lift*	*$43*	6	12	72
463	LEVAC RD	CACHE ST	BOOTH ST	0.17	1500	*ST2A - Double Surface Treatment with Granular A*	*$17*	6	12	75
765	SALTER ST	LILLIE ST	NIPISSING ST	0.10	1000	*PP1 - Pulverize and Pave 1 Lift*	*$24*	6	12	73
380	KING ST	FOURTH ST	JANEN ST	0.08	2000	*RMP1 - Mill & Pave, 1 Lift*	*$32*	7	13	77
377	KING ST	ETHEL ST	MACKIE ST	0.14	1000	*PP1 - Pulverize and Pave 1 Lift*	*$32*	6	12	73
389	KING ST	MACKIE ST	MARKET ST	0.14	1000	*PP1 - Pulverize and Pave 1 Lift*	*$33*	6	12	73
752	RUSSELL ST	PARKER ST	NIPISSING ST	0.06	800	*PP1 - Pulverize and Pave 1 Lift*	*$14*	6	12	73
753	RUSSELL ST	NIPISSING ST	CHURCH ST	0.10	800	*PP1 - Pulverize and Pave 1 Lift*	*$24*	6	12	73
755	RUSSELL ST	CHURCH ST	ARTHUR ST	0.10	800	*PP1 - Pulverize and Pave 1 Lift*	*$23*	6	12	73

Sect. No.	Road Name	From	To	Length (km)	AADT	Preliminary Improvement Type Recommendation	Cost (x1000)	Surface Condition	Structural Adequacy	Condition Rating
757	RUSSELL ST	ARTHUR ST	MICHAUD ST	0.10	800	*PP1 - Pulverize and Pave 1 Lift*	*$23*	6	12	73
598	NIPISSING ST	AUBREY ST	QUESNEL RD	0.72	800	*PP1 - Pulverize and Pave 1 Lift*	*$168*	6	12	73
869	TORONTO ST	DUFFERIN ST	SIMCOE ST	0.10	1200	*RMP1 - Mill & Pave, 1 Lift*	*$42*	7	14	77
870	TORONTO ST	DOVERCOURT RD	LISGAR ST	0.12	1200	*RMP1 - Mill & Pave, 1 Lift*	*$51*	7	14	77
157	COURSOL RD	LEGAULT RD	RUSSELL ST	0.14	1200	*RMP1 - Mill & Pave, 1 Lift*	*$57*	7	13	77
871	TORONTO ST	LISGAR ST	DUFFERIN ST	0.07	1200	*RMP1 - Mill & Pave, 1 Lift*	*$28*	7	14	77
159	COURSOL RD	ETHEL ST	LEGAULT RD	0.27	1200	*RMP1 - Mill & Pave, 1 Lift*	*$113*	7	13	77
872	TORONTO ST	SIMCOE ST	CACHE BAY RD	0.13	1200	*RMP1 - Mill & Pave, 1 Lift*	*$55*	7	14	77
204	DOVERCOURT RD	ST JACQUES CT	DOMINA CR	0.11	1200	*RMP1 - Mill & Pave, 1 Lift*	*$47*	7	14	78
205	DOVERCOURT RD	DOMINA CR	TORONTO ST	0.31	1200	*RMP1 - Mill & Pave, 1 Lift*	*$128*	7	14	78
207	DOVERCOURT RD	SABOURIN RD	ST JACQUES CT	0.10	1200	*RMP1 - Mill & Pave, 1 Lift*	*$44*	7	14	78
212	DRIVE IN RD	LEBLANC RD	SABOURIN RD	0.81	800	*RMP1 - Mill & Pave, 1 Lift*	*$338*	7	13	76
764	SALTER ST	PARKER ST	LEVEQUE ST	0.10	600	*RMP1 - Mill & Pave, 1 Lift*	*$42*	7	13	75
775	SALTER ST	NIPISSING ST	PARKER ST	0.06	600	*RMP1 - Mill & Pave, 1 Lift*	*$26*	7	13	75
704	QUESNEL RD	CHAMPAGNE RD	WEST END	3.64	500	*ST2A - Double Surface Treatment with Granular A*	*$372*	7	12	74
851	THIRD ST	MAIN ST	LEVESQUE ST	0.10	800	*RMP1 - Mill & Pave, 1 Lift*	*$43*	7	13	77
852	THIRD ST	KING ST	MAIN ST	0.10	800	*RMP1 - Mill & Pave, 1 Lift*	*$42*	7	13	77
498	MACKIE ST	NIPISSING ST	CHURCH ST	0.10	800	*RMP1 - Mill & Pave, 1 Lift*	*$43*	7	14	77

Sect. No.	Road Name	From	To	Length (km)	AADT	Preliminary Improvement Type Recommendation	Cost (x1000)	Surface Condition	Structural Adequacy	Condition Rating
756	RUSSELL ST	MAIN ST	LEVESQUE ST	0.10	800	*RMP1 - Mill & Pave, 1 Lift*	*$41*	7	14	77
759	RUSSELL ST	KING ST	MAIN ST	0.10	800	*RMP1 - Mill & Pave, 1 Lift*	*$42*	7	14	77
211	DRIVE IN RD	VACHON RD	LEBLANC RD	0.33	800	*RMP1 - Mill & Pave, 1 Lift*	*$138*	7	13	77
858	THIRD ST	LEVESQUE ST	NIPISSING ST	0.16	800	*RMP1 - Mill & Pave, 1 Lift*	*$68*	7	13	77
856	THIRD ST	NIPISSING ST	DUMOUCHEL ST	0.30	800	*RMP1 - Mill & Pave, 1 Lift*	*$125*	7	14	78
896	WILLIAM ST	CARRIE ST	CLARK ST	0.10	1200	*RMP1 - Mill & Pave, 1 Lift*	*$42*	8	14	80
902	WILLIAM ST	MICHAUD ST	CARRIE ST	0.10	1000	*RMP1 - Mill & Pave, 1 Lift*	*$43*	8	14	80
492	LISGAR ST	TORONTO ST	SIMCOE ST	0.16	200	*PP1 - Pulverize and Pave 1 Lift*	*$38*	6	12	72
64	BEAUDRY RD	LEVAC RD	LECLAIR RD	0.09	400	*ST2A - Double Surface Treatment with Granular A*	*$9*	6	12	76
263	FIRST ST	LEVESQUE ST	PARKER ST	0.10	400	*RMP1 - Mill & Pave, 1 Lift*	*$42*	7	13	76
264	FIRST ST	PARKER ST	NIPISSING ST	0.06	400	*RMP1 - Mill & Pave, 1 Lift*	*$26*	7	13	76
638	PARK ST	SPRINGER ST	SOUTHVIEW CR	0.10	200	*PP1 - Pulverize and Pave 1 Lift*	*$23*	7	12	73
639	PARK ST	SALTER ST	SPRINGER ST	0.10	200	*PP1 - Pulverize and Pave 1 Lift*	*$23*	7	12	73
611	O'HARA ST	HIGHWAY 17	NORTH END	0.15	200	*PP1 - Pulverize and Pave 1 Lift*	*$36*	6	12	73
702	QUESNEL RD	NIPISSING ST	ROY ST	0.80	579	*ST1 - Single Surface Treatment*	*$34*	7	14	79
700	QUESNEL RD	ROY ST	CHAMPAGNE RD	1.33	550	*ST1 - Single Surface Treatment*	*$56*	7	14	79
184	DEMERS ST	THIRD ST	RIVERFRONT DR	0.16	200	*PP1 - Pulverize and Pave 1 Lift*	*$38*	6	12	74
185	DEMERS ST	RIVERFRONT DR	RIVERFRONT DR	0.82	200	*PP1 - Pulverize and Pave 1 Lift*	*$194*	6	12	74

Sect. No.	Road Name	From	To	Length (km)	AADT	Preliminary Improvement Type Recommendation	Cost (x1000)	Surface Condition	Structural Adequacy	Condition Rating
138	CLARK ST	RUSSELL ST	JOHN ST	0.10	400	*RMP1 - Mill & Pave, 1 Lift*	*$42*	7	14	78
197	DESGROSEILLIERS ST	SPRINGER ST	SOUTH END	0.10	100	*PP1 - Pulverize and Pave 1 Lift*	*$24*	6	12	71
488	LILLIE ST	RAILWAY ST	SALTER ST	0.10	100	*PP1 - Pulverize and Pave 1 Lift*	*$23*	6	12	71
589	NIPISSING ST	QUESNEL RD	MARLEAU RD	1.34	800	*RMP1 - Mill & Pave, 1 Lift*	*$562*	7	13	82
217	DUBEAU ST	VERCHERES ST	ST JEAN BAPTISTE ST	0.08	200	*PP1 - Pulverize and Pave 1 Lift*	*$19*	6	12	76
218	DUBEAU ST	HIGHWAY 17	VERCHERES ST	0.05	200	*PP1 - Pulverize and Pave 1 Lift*	*$11*	6	12	76
359	JARBEAU RD	LAROCQUE ST	WEST END	0.24	100	*ST2A - Double Surface Treatment with Granular A*	*$25*	6	12	72
883	VILLENEUVE CT	BAY ST	SOUTH END	0.45	100	*PP1 - Pulverize and Pave 1 Lift*	*$107*	6	12	72
490	LISGAR ST	OTTAWA ST	MONTREAL ST	0.10	200	*RMP1 - Mill & Pave, 1 Lift*	*$44*	7	14	76
491	LISGAR ST	CACHE BAY RD	OTTAWA ST	0.10	200	*RMP1 - Mill & Pave, 1 Lift*	*$43*	7	14	76
493	LISGAR ST	MONTREAL ST	SOUTH END	0.17	200	*RMP1 - Mill & Pave, 1 Lift*	*$70*	7	14	76
464	LEVAC RD	EDWARD ST	RITCHIE RD	1.06	900	*ST2A - Double Surface Treatment with Granular A*	*$109*	6	12	83
629	PAIEMENT CRT	LEVESQUE ST	WEST END	0.11	100	*PP1 - Pulverize and Pave 1 Lift*	*$25*	6	12	73
729	RIVER ST	SECOND ST	THIRD ST	0.12	100	*PP1 - Pulverize and Pave 1 Lift*	*$27*	6	12	73
461	LEVAC RD	RITCHIE RD	ARCAND RD	0.06	800	*ST2A - Double Surface Treatment with Granular A*	*$6*	6	12	83
467	LEVAC RD	ARCAND RD	BEAUDRY RD	3.15	800	*ST2A - Double Surface Treatment with Granular A*	*$322*	6	12	83
661	PINE ST	OTTAWA ST	MONTREAL ST	0.14	200	*RMP1 - Mill & Pave, 1 Lift*	*$57*	7	14	77

Sect. No.	Road Name	From	To	Length (km)	AADT	Preliminary Improvement Type Recommendation	Cost (x1000)	Surface Condition	Structural Adequacy	Condition Rating
848	THIRD ST	DUMOUCHEL ST	BELANGER AV	0.03	200	*RMP1 - Mill & Pave, 1 Lift*	*$13*	7	14	77
227	DUMOUCHEL ST	OAK CT	SPRUCE CT	0.14	200	*RMP1 - Mill & Pave, 1 Lift*	*$58*	7	14	77
228	DUMOUCHEL ST	THIRD ST	OAK CT	0.08	200	*RMP1 - Mill & Pave, 1 Lift*	*$33*	7	14	77
224	DUFFERIN ST	OTTAWA ST	MONTREAL ST	0.10	200	*ST1 - Single Surface Treatment*	*$4*	7	14	77
384	KING ST	JANEN ST	CAMERON CT	0.21	200	*RMP1 - Mill & Pave, 1 Lift*	*$89*	7	13	77
277	FOURTH ST	HOLDITCH ST	KING ST	0.11	200	*RMP1 - Mill & Pave, 1 Lift*	*$48*	7	14	77
390	KING ST	MORRISON CT	FOURTH ST	0.19	200	*RMP1 - Mill & Pave, 1 Lift*	*$77*	7	13	77
84	BOURGAULT ST	CHURCH ST	MICHAUD ST	0.21	200	*RMP1 - Mill & Pave, 1 Lift*	*$86*	7	14	77
563	MONTREAL ST	LISGAR ST	DUFFERIN ST	0.12	200	*ST1 - Single Surface Treatment*	*$5*	7	14	77
226	DUMOCHEL ST	SPRUCE CT	BIRCH CT	0.10	200	*RMP1 - Mill & Pave, 1 Lift*	*$40*	7	14	77
731	RIVERFRONT DR	DEMERS ST	DEMERS ST	0.60	200	*RMP1 - Mill & Pave, 1 Lift*	*$252*	7	14	77
803	SOUTHVIEW CR	PARK ST	EAST END	0.08	100	*RMP1 - Mill & Pave, 1 Lift*	*$35*	7	13	74
619	OLIVIER RD	HIGHWAY 64	EAST END	1.73	100	*ST2A - Double Surface Treatment with Granular A*	*$177*	7	12	74
681	PRINCIPAL ST W	AURELE ST	CARTIER ST	0.12	400	*RMP1 - Mill & Pave, 1 Lift*	*$48*	7	14	81
682	PRINCIPAL ST W	COTE ST	AURELE ST	0.25	400	*RMP1 - Mill & Pave, 1 Lift*	*$102*	7	14	81
684	PRINCIPAL ST W	BEAUDIN ST	COTE ST	0.10	400	*RMP1 - Mill & Pave, 1 Lift*	*$43*	7	14	81
486	LEVIS ST	NIPISSING ST	LEVESQUE ST	0.17	150	*RMP1 - Mill & Pave, 1 Lift*	*$69*	7	13	76
36	AUBIN ST	THIRD ST	NORTH END	0.18	150	*RMP1 - Mill & Pave, 1 Lift*	*$74*	7	13	76

Sect. No.	Road Name	From	To	Length (km)	AADT	Preliminary Improvement Type Recommendation	Cost (x1000)	Surface Condition	Structural Adequacy	Condition Rating
873	TOULOUSE CR	HIGHWAY 17	SOUTH END	0.37	150	*RMP1 - Mill & Pave, 1 Lift*	*$154*	7	13	76
149	COTE ST	ST LAURENT ST	PRINCIPAL ST W	0.08	200	*RMP1 - Mill & Pave, 1 Lift*	*$33*	7	14	78
150	COTE ST	HIGHWAY 17	PIETTE ST	0.07	200	*RMP1 - Mill & Pave, 1 Lift*	*$29*	7	14	78
151	COTE ST	PIETTE ST	ST LAURENT ST	0.04	200	*RMP1 - Mill & Pave, 1 Lift*	*$18*	7	14	78
310	GINGRAS AV	SYLVESTRE ST	DES IRABLES ST	0.10	200	*RMP1 - Mill & Pave, 1 Lift*	*$41*	7	14	78
773	SALTER ST	DUTRISAC RD	COURSOL RD	0.81	200	*ST1 - Single Surface Treatment*	*$34*	7	14	78
311	GINGRAS AV	DEBEAU ST	SYLVESTRE ST	0.10	200	*RMP1 - Mill & Pave, 1 Lift*	*$43*	7	14	78
312	GINGRAS AV	DES IRABLES ST	TELESPHORE ST	0.42	200	*RMP1 - Mill & Pave, 1 Lift*	*$174*	7	14	78
188	DES CEDRES ST	MAPLE ST	GRAND ALLEE	0.13	100	*ST1 - Single Surface Treatment*	*$5*	7	13	75
119	CEDAR GROVE DR	PINE ST	TAMERACK AV	0.20	100	*RMP1 - Mill & Pave, 1 Lift*	*$85*	7	14	75
607	OAK CT	DUMOUCHEL ST	EAST END	0.10	100	*RMP1 - Mill & Pave, 1 Lift*	*$40*	7	14	75
575	MUSKOSUNG LAKE RD	HIGHWAY 575	FILION RD	2.32	100	*ST1 - Single Surface Treatment*	*$97*	7	13	75
512	MAPLE ST	DES CEDRES RD	GRAND ALLEE	0.33	150	*ST1 - Single Surface Treatment*	*$14*	7	13	77
54	BAY ST	VILLENEUVE CT	SPRING ST	0.41	150	*RMP1 - Mill & Pave, 1 Lift*	*$173*	7	14	77
355	JACQUES ST	DUPRAS ST	DENIS ST	0.12	100	*ST1 - Single Surface Treatment*	*$5*	7	13	76
356	JACQUES ST	DENIS ST	NORTH END	0.07	100	*ST1 - Single Surface Treatment*	*$3*	7	13	76
338	HAY ST	YOUNG ST	GORDON ST	0.11	100	*RMP1 - Mill & Pave, 1 Lift*	*$45*	7	13	76

Sect. No.	Road Name	From	To	Length (km)	AADT	Preliminary Improvement Type Recommendation	Cost (x1000)	Surface Condition	Structural Adequacy	Condition Rating
340	HAY ST	GORDON ST	BOOTH ST	0.10	100	*RMP1 - Mill & Pave, 1 Lift*	*$40*	7	13	76
357	JACQUES ST	ROSE ST	DUPRAS ST	0.11	100	*ST1 - Single Surface Treatment*	*$5*	7	13	76
215	DUBEAU ST	ST JEAN BAPTISTE ST	PRINCIPAL ST E	0.08	200	*RMP1 - Mill & Pave, 1 Lift*	*$35*	7	14	80
122	CHAMPLAIN ST	PRINCIPAL ST E	SOUTH END	0.06	100	*RMP1 - Mill & Pave, 1 Lift*	*$25*	7	13	77
330	GRAND ALLEE	DES CEDRES RD	MAPLE ST	0.38	100	*ST1 - Single Surface Treatment*	*$16*	7	14	77
810	ST LAURENT ST	BEAUDIN ST	PAQUETTE ST	0.14	100	*ST1 - Single Surface Treatment*	*$6*	8	14	78
812	ST LAURENT ST	COTE ST	BEAUDIN ST	0.14	100	*ST1 - Single Surface Treatment*	*$6*	8	14	78
361	JESSUP ST	HAY ST	BAIN AV	0.10	49	*RMP1 - Mill & Pave, 1 Lift*	*$41*	7	14	75
573	MUSKOSUNG LAKE RD	FILLION RD	ST. MARY'S RD	0.04	49	*ST1 - Single Surface Treatment*	*$2*	7	13	75
118	CEDAR GROVE DR	TAMERACK AV	WEST END	0.02	49	*RMP1 - Mill & Pave, 1 Lift*	*$10*	7	14	75
574	MUSKOSUNG LAKE RD	ST. MARY'S RD	SOUTH END	0.37	49	*ST1 - Single Surface Treatment*	*$15*	7	13	75
72	BIRCH CT	DUMOUCHEL ST	EAST END	0.09	100	*RMP1 - Mill & Pave, 1 Lift*	*$37*	8	14	79
194	DES PINS ST	MAPLE ST	NORTH END	0.10	49	*ST1 - Single Surface Treatment*	*$4*	7	14	77

Notes:

1. *Rehabilitation strategy to be confirmed by geotechnical investigations at detail design.*

2. *Timing of storm sewer/culvert work should be considered in conjunction with road reconstruction and vice versa, where applicable.*

6.2 Annual Resurfacing Program

Based on typical degradation rates for gravel roads, surface treatment, and hot mix, a resurfacing program / budget is recommended, in addition to the noted capital construction works, as follows:

Hot Mix Paved Roads:

- 73.4 km of paved roads (HCB).
- Degradation rate 0.25 / year (rating drops from 10 to 5, over a 20-year period).
- Annual resurfacing 3.7 km / year.
- **Annual budget $1,546,600**: (3.7 km / year x $209,000 / ln **RMP1** x 2 lanes).

- 45.0 km of surface treated roads (LCB).
- Degradation rate 0.625 / year (rating drops from 10 to 5, over a 7-year period).
- Annual resurfacing 6.4 km / year.
- **Annual budget $268,800** (6.4km / year x $42,000 / km **ST1**).

Gravel roads require regular maintenance. Maintenance includes regular grading and reapplication of new gravel. Typically, gravel roads should be resurfaced on a 3 - 5 year cycle.

Gravel Roads:

- 428.5 km of earth / gravel roads.
- 100 mm gravel every 5 years.
- Annual gravelling of 85.7 km.
- Granular A ($31,000 / km).
- **Annual budget $2,656,700 (85.7 km / year x $31,000 G)** **.

** *Cost based on supply of Gravel only with application of gravel by internal forces.*

The total resurfacing program, (hot mix, surface treatment and gravel) is estimated at $4,472,100per year.

Relative road preservation / resurfacing priorities for all roads not included in the previous Capital Improvement Plan are listed below in **Table 10,** Municipality of West Nipissing Resurfacing Plan. Roads are listed in order of descending preservation priority.

Table 10 – Municipality of West Nipissing Resurfacing Plan

Sect. No.	Road Name	From	To	Length (km)	AADT	Preliminary Improvement Type Recommendation	Cost (x1000)	Surface Condition	Structural Adequacy	Condition Rating
433	LAPOINTE RD	TOMIKO ROAD	WEST END	1.96	49	*G - Gravel (100mm)*	*$60*	4	8	46
606	NORTHSHORE RD	LAC CLAIR RD	WEST END	2.24	100	*G - Gravel (100mm)*	*$69*	7	14	53
187	DENNONVILLE RD	SAINT JOSEPH RD	EAST END	0.45	49	*G - Gravel (100mm)*	*$14*	4	8	48
354	ISLAND RD	KIPLING WEST RD	SOUTH END	0.40	49	*G - Gravel (100mm)*	*$12*	5	8	49
659	PINE POULTRY RD	DEER LAKE RD	BOUNDARY	6.49	49	*G - Gravel (100mm)*	*$200*	6	12	50
578	NATURE'S TRAIL RD	HIGHWAY 528	EAST END	1.95	75	*G - Gravel (100mm)*	*$60*	6	11	56
874	TRAILS END RD	DOKIS RESERVE RD	EAST END	0.70	49	*G - Gravel (100mm)*	*$22*	6	12	54
416	LAFOND RD	LAC CLAIR RD	WEST END	0.86	49	*G - Gravel (100mm)*	*$27*	6	10	54
875	TROTTIER RD	TROTTIER RD	HIGHWAY 64	0.50	75	*G - Gravel (100mm)*	*$15*	6	12	57
877	TROTTIER RD	HIGHWAY 64	TROTTIER RD	0.27	75	*G - Gravel (100mm)*	*$8*	6	12	57
297	GAGNE ST	LAROCQUE ST	SOUTH END	0.10	49	*G - Gravel (100mm)*	*$3*	6	12	55
421	LAKEVIEW RD	BEAR LAKE RD	NORTH END	0.61	49	*G - Gravel (100mm)*	*$19*	6	12	55
303	GERALD ST	LAROCQUE ST	SOUTH END	0.06	49	*G - Gravel (100mm)*	*$2*	6	12	55
833	SUNNYRIDGE RD	KIPLING WEST RD	NORTH END	0.82	49	*G - Gravel (100mm)*	*$25*	7	14	55
516	MARIER RD	MUNROE RD	NORTH END	1.60	49	*G - Gravel (100mm)*	*$49*	5	10	55
725	RICHER RD	TOMIKO ROAD	WEST END	1.85	49	*G - Gravel (100mm)*	*$57*	6	10	55
880	VAILLANCOURT RD	HIGHWAY 64	EAST END	1.32	49	*G - Gravel (100mm)*	*$41*	6	10	55
109	CARON RD	HIGHWAY 64	EGLISE RD	0.12	189	*G - Gravel (100mm)*	*$4*	8	16	65
305	GIDEON RD	HIGHWAY 64	SHUSWAP RD	0.46	49	*G - Gravel (100mm)*	*$14*	6	12	56
549	MICHEL RD	CLAUDE RD	WEST END	2.58	49	*G - Gravel (100mm)*	*$80*	6	12	56

Sect. No.	Road Name	From	To	Length (km)	AADT	Preliminary Improvement Type Recommendation	Cost (x1000)	Surface Condition	Structural Adequacy	Condition Rating
153	COURCHESNE RD	HIGHWAY 64	LAFRENIERE RD	3.23	49	*G - Gravel (100mm)*	*$99*	6	12	56
239	ECOLE ST	HIGHWAY 64	SOUTH END	0.09	49	*G - Gravel (100mm)*	*$3*	6	12	56
660	PINE RIDGE RD	CHEBOGAN RD	EAST END	0.94	49	*G - Gravel (100mm)*	*$29*	6	12	56
802	SOUTHSHORE RD	LAC CLAIR RD	WEST END	1.37	49	*G - Gravel (100mm)*	*$42*	7	14	56
568	MORLEY DR	EAST RD	SOUTH END	0.10	49	*G - Gravel (100mm)*	*$3*	6	12	57
876	TROTTIER RD	TROTTIER RD	SOUTH END	2.92	49	*G - Gravel (100mm)*	*$90*	6	12	57
566	MOOSE POINT RD	SANDY POINT RD	WEST END	0.71	49	*G - Gravel (100mm)*	*$22*	6	12	57
743	ROBIDAS ST	LAROCQUE ST	LAROCQUE ST	0.09	49	*G - Gravel (100mm)*	*$3*	6	12	57
23	ARBOUR RD	BROUILLETTE RD	EAST END	0.27	49	*G - Gravel (100mm)*	*$8*	6	12	57
782	SANDY POINT RD	MOOSE POINT RD	EAST END	0.98	49	*G - Gravel (100mm)*	*$30*	6	12	57
278	FRASER RD	HIGHWAY 539	NORTH END	1.90	49	*G - Gravel (100mm)*	*$59*	7	14	57
608	O'BRIEN RD	ST-AMAND RD	WEST END	0.31	75	*G - Gravel (100mm)*	*$10*	7	14	60
609	O'BRIEN RD	RIDDLE RD	ST-AMAND RD	0.13	75	*G - Gravel (100mm)*	*$4*	7	14	60
190	DES EPINETTES RD	GRAND ALLEE	SOUTH END	0.41	100	*G - Gravel (100mm)*	*$13*	7	14	62
70	BELLEFEUILLE RD	GIROUX-VEZINA RD	SOUTH END	0.50	49	*G - Gravel (100mm)*	*$15*	6	12	58
91	BURNT LAKE RD	HIGHWAY 64	WEST END	2.47	49	*G - Gravel (100mm)*	*$76*	6	12	58
238	EAST RD	PERCH LAKE RD	EAST END	4.47	49	*G - Gravel (100mm)*	*$138*	6	12	58
818	STEVENS RD	COCKBURN RD	MAURICE RD	0.32	100	*G - Gravel (100mm)*	*$10*	7	14	63
304	GERARD RD	COMEAU RD	SOUTH END	0.09	49	*G - Gravel (100mm)*	*$3*	7	14	59
816	ST-AMAND RD	O'BRIEN RD	NORTH END	0.35	49	*G - Gravel (100mm)*	*$11*	7	14	59

Sect. No.	Road Name	From	To	Length (km)	AADT	Preliminary Improvement Type Recommendation	Cost (x1000)	Surface Condition	Structural Adequacy	Condition Rating
536	MCDONALD RD	NORTH & SOUTH RD	BOUNDARY	4.24	49	*G - Gravel (100mm)*	*$131*	7	14	59
92	CACHE BAY RD	SAND HILL RD	PINE ST	0.35	1800	*RO1 - Hot Mix Overlay, 1 Lift*	*$77*	8	15	81
422	LAKEWOOD RD	HIGHWAY 64	EAST END	0.56	49	*G - Gravel (100mm)*	*$17*	7	14	60
564	MOOSE POINT RD	TOMIKO RD	ROBITAILLE RD	1.01	49	*G - Gravel (100mm)*	*$31*	4	8	63
158	COURSOL RD	JOHN ST	HIGHWAY 17	0.38	2000	*Preventative Maintenance*	-	8	16	82
110	CARON RD	EGLISE RD	WEST END	2.90	100	*G - Gravel (100mm)*	*$89*	8	16	65
89	BROUILLETTE RD	ARBOUR RD	SOUTH END	0.64	49	*G - Gravel (100mm)*	*$20*	7	14	61
842	TEAL RD	INTERSECTION WITH LAKE ACCESS	117M WEST OF INTERSECTION	0.12	49	*G - Gravel (100mm)*	*$4*	7	14	61
534	MAURICE RD	COCKBURN RD	STEVENS RD	0.33	49	*G - Gravel (100mm)*	*$10*	7	14	61
843	TEAL RD	117M WEST OF INTERSECTION	PARK ENTRANCE	0.24	49	*G - Gravel (100mm)*	*$7*	7	14	61
298	GAGNON RD	ALOUETTE RD	SOUTH END	0.72	49	*G - Gravel (100mm)*	*$22*	7	14	61
120	CEMETERY RD	HIGHWAY 64	SOUTH END	0.52	49	*G - Gravel (100mm)*	*$16*	7	14	61
612	OLD AUBIN RD	HIGHWAY 64	HILLMAN RD	0.48	49	*G - Gravel (100mm)*	*$15*	7	14	62
162	COUTU RD	HIGHWAY 64	EAST END	0.65	49	*G - Gravel (100mm)*	*$20*	7	14	62
163	COYOTE RIDGE RD	SHORELINE RD	SOUTH END	0.75	49	*G - Gravel (100mm)*	*$23*	7	14	62
214	DU ROCHER RD	ALFRED RD	SOUTH END	0.11	49	*G - Gravel (100mm)*	*$3*	7	14	62
425	LANDFILL SITE RD	HIGHWAY 17	NORTH END	2.12	100	*G - Gravel (100mm)*	*$65*	5	10	66
687	PROM DU LAC	DUTRISAC RD	EAST END	1.18	100	*G - Gravel (100mm)*	*$36*	8	16	66

Sect. No.	Road Name	From	To	Length (km)	AADT	Preliminary Improvement Type Recommendation	Cost (x1000)	Surface Condition	Structural Adequacy	Condition Rating
413	LAC DEUX MILLES RD	MARLEAU RD	WEST END	0.74	75	*G - Gravel (100mm)*	*$23*	8	16	65
690	QUEEN ST	CHURCH ST	ARTHUR ST	0.10	1600	*Preventative Maintenance*	-	8	16	82
691	QUEEN ST	ARTHUR ST	MICHAUD ST	0.10	1600	*Preventative Maintenance*	-	8	16	82
694	QUEEN ST	NIPISSING ST	CHURCH ST	0.10	1600	*Preventative Maintenance*	-	8	16	82
898	WILLIAM ST	LEVESQUE ST	PARKER ST	0.10	1600	*Preventative Maintenance*	-	8	16	82
901	WILLIAM ST	PARKER ST	NIPISSING ST	0.06	1600	*Preventative Maintenance*	-	8	16	82
865	TOMIKO RD	CHEBOGAN RD	MOOSE POINT RD	3.98	200	*G - Gravel (100mm)*	*$122*	6	12	71
866	TOMIKO RD	MOOSE POINT RD	TOMIKO RD	4.00	200	*G - Gravel (100mm)*	*$123*	6	12	71
867	TOMIKO RD	TOMIKO RD	CHARLES BAY RD	2.41	200	*G - Gravel (100mm)*	*$74*	6	12	71
868	TOMIKO RD	CHARLES BAY RD	MARIGOLD LN	0.14	200	*G - Gravel (100mm)*	*$4*	6	12	71
142	COCKBURN RD	STEVENS RD	MAURICE RD	0.09	49	*G - Gravel (100mm)*	*$3*	7	14	63
533	MAURICE RD	STEVENS RD	WEST END	0.09	49	*G - Gravel (100mm)*	*$3*	7	14	63
152	COTE ST	HIGHWAY 17	NORTH END	0.06	49	*G - Gravel (100mm)*	*$2*	7	14	63
640	PARKER ST	QUEEN ST	HIGHWAY 17	0.13	1000	*RO1 - Hot Mix Overlay, 1 Lift*	*$28*	8	15	80
510	MAIN ST	FIRST ST	SECOND ST	0.14	800	*RO1 - Hot Mix Overlay, 1 Lift*	*$30*	8	15	79
670	PRIEUR ST	HIGHWAY 64	SOUTH END	0.19	49	*G - Gravel (100mm)*	*$6*	8	16	64
195	DESAULNIERS RD	HIGHWAY 539	WEST END	0.27	49	*G - Gravel (100mm)*	*$8*	8	16	64
408	LAC CLAIR RD	HIGHWAY 17	STEWART RD	0.48	200	*G - Gravel (100mm)*	*$15*	8	16	72
179	DEER LAKE RD	BEAR LAKE RD	PINE POULTRY RD	2.13	100	*G - Gravel (100mm)*	*$66*	6	12	68

Sect. No.	Road Name	From	To	Length (km)	AADT	Preliminary Improvement Type Recommendation	Cost (x1000)	Surface Condition	Structural Adequacy	Condition Rating
720	RAINVILLE RD	HIGHWAY 64	EUGENE RD	3.37	100	*G - Gravel (100mm)*	*$104*	6	12	68
832	SUNNYRIDGE RD	BEAR LAKE RD	NORLAND RD	1.67	100	*G - Gravel (100mm)*	*$52*	6	12	68
103	CACHE ST	LEVAC RD	MARGARET ST	0.31	1339	*Preventative Maintenance*	-	8	16	82
565	MOOSE POINT RD	ROBITAILLE RD	SANDY POINT RD	0.50	49	*G - Gravel (100mm)*	*$15*	5	10	67
470	LEVESQUE ST	QUEEN ST	HIGHWAY 17	0.12	1000	*Preventative Maintenance*	-	8	16	81
476	LEVESQUE ST	WILLIAM ST	QUEEN ST	0.12	1000	*Preventative Maintenance*	-	8	16	81
642	PARKER ST	JOHN ST	WILLIAM ST	0.12	800	*RO1 - Hot Mix Overlay, 1 Lift*	*$27*	8	15	80
647	PARKER ST	WILLIAM ST	QUEEN ST	0.12	800	*RO1 - Hot Mix Overlay, 1 Lift*	*$26*	8	15	80
154	COURSOL RD	LACHANCE RD	ETHEL ST	0.08	1200	*Preventative Maintenance*	-	8	16	82
155	COURSOL RD	RUSSELL ST	JOHN ST	0.11	1200	*Preventative Maintenance*	-	8	16	82
895	WILLIAM ST	CHURCH ST	ARTHUR ST	0.10	1200	*Preventative Maintenance*	-	8	16	82
104	CACHE ST	MARGARET ST	MARY ST	0.20	1200	*Preventative Maintenance*	-	8	16	82
897	WILLIAM ST	NIPISSING ST	CHURCH ST	0.10	1200	*Preventative Maintenance*	-	8	16	82
695	QUEEN ST	CARRIE ST	CLARK ST	0.10	1200	*Preventative Maintenance*	-	8	16	82
698	QUEEN ST	MICHAUD ST	CARRIE ST	0.10	1200	*Preventative Maintenance*	-	8	16	82
106	CACHE ST	MARY ST	ANDERSON ST	0.20	1200	*Preventative Maintenance*	-	8	16	82
58	BEAR LAKE RD	DEER LAKE RD	LAKEVIEW RD	1.34	100	*G - Gravel (100mm)*	*$41*	6	12	69
180	DEER LAKE RD	HIGHWAY 17	BEAR LAKE RD	3.55	100	*G - Gravel (100mm)*	*$109*	6	12	69

Sect. No.	Road Name	From	To	Length (km)	AADT	Preliminary Improvement Type Recommendation	Cost (x1000)	Surface Condition	Structural Adequacy	Condition Rating
540	MERCER LAKE RD	DOKIS RESERVE RD	EAST END	1.15	49	*G - Gravel (100mm)*	*$35*	5	10	68
62	BEAUDRY RD	HIGHWAY 17	GAUTHIER RD	1.49	49	*G - Gravel (100mm)*	*$46*	5	10	66
177	DE L'ETANG RD	SABOURIN RD	LEVERT RD	1.36	49	*G - Gravel (100mm)*	*$42*	6	10	66
828	ST-JOSEPH RD	DENNONVILLE RD	1.1 KM EAST OF DENNONVILLE RD	1.05	49	*G - Gravel (100mm)*	*$32*	5	10	66
237	EAST RD	HIGHWAY 64	FRYER'S RD	3.22	150	*G - Gravel (100mm)*	*$99*	6	12	72
593	NIPISSING ST	SALTER ST	FIRST ST	0.12	3000	*Preventative Maintenance*	-	9	18	86
466	LEVAC RD	BOOTH ST	EDWARD ST	0.16	1200	*ST1 - Single Surface Treatment*	*$7*	8	16	83
397	KIPLING WEST RD	POINT RD	OLD NORTH RD	0.45	100	*G - Gravel (100mm)*	*$14*	8	16	70
242	EGLISE RD	HIGHWAY 64	CARON RD	0.21	100	*G - Gravel (100mm)*	*$6*	6	12	70
231	DUTRISAC RD	HIGHWAY 17	SALTER ST	0.20	2835	*Preventative Maintenance*	-	9	18	86
519	MARKET ST	MAIN ST	LEVESQUE ST	0.10	800	*Preventative Maintenance*	-	8	16	81
710	RAILWAY ST	NIPISSING ST	LILLIE ST	0.10	800	*ST1 - Single Surface Treatment*	*$4*	8	15	81
29	ARTHUR ST	WILLIAM ST	QUEEN ST	0.12	800	*RO1 - Hot Mix Overlay, 1 Lift*	*$26*	8	15	81
646	PARKER ST	RUSSELL ST	JOHN ST	0.12	800	*Preventative Maintenance*	-	8	16	81
134	CHURCH ST	WILLIAM ST	QUEEN ST	0.12	800	*Preventative Maintenance*	-	8	16	81
521	MARKET ST	LEVESQUE ST	PARKER ST	0.10	800	*Preventative Maintenance*	-	8	16	81
483	LEVESQUE ST	RUSSELL ST	JOHN ST	0.13	800	*Preventative Maintenance*	-	8	16	81
135	CHURCH ST	JOHN ST	WILLIAM ST	0.12	800	*Preventative Maintenance*	-	8	16	81
34	ARTHUR ST	JOHN ST	WILLIAM ST	0.12	800	*RO1 - Hot Mix Overlay, 1 Lift*	*$26*	8	15	81

Sect. No.	Road Name	From	To	Length (km)	AADT	Preliminary Improvement Type Recommendation	Cost (x1000)	Surface Condition	Structural Adequacy	Condition Rating
485	LEVESQUE ST	JOHN ST	WILLIAM ST	0.12	800	*Preventative Maintenance*	-	8	16	81
136	CHURCH ST	QUEEN ST	HIGHWAY 17	0.13	800	*Preventative Maintenance*	-	8	16	81
855	THIRD ST	CHOLETTE AV	ALAIN CT	0.04	800	*Preventative Maintenance*	-	8	16	81
861	THIRD ST	ALAIN CT	PARK ST	0.10	800	*Preventative Maintenance*	-	8	16	81
899	WILLIAM ST	ARTHUR ST	MICHAUD ST	0.10	1000	*Preventative Maintenance*	-	8	16	82
160	COURSOL RD	GOULARD RD	RIVET ST	0.27	1000	*Preventative Maintenance*	-	8	16	82
161	COURSOL RD	RIVET ST	LACHANCE RD	0.13	1000	*Preventative Maintenance*	-	8	16	82
63	BEAUDRY RD	GAUTHIER RD	LEVAC RD	1.61	49	*G - Gravel (100mm)*	*$50*	5	10	67
141	CLAUDE RD	MILLRAND RD	MICHEL RD	1.23	49	*G - Gravel (100mm)*	*$38*	6	12	67
744	ROBITAILLE RD	MOOSE POINT RD	WEST END	1.72	49	*G - Gravel (100mm)*	*$53*	5	10	67
334	GUENETTE RD	LABROSSE RD	NORTH END	0.57	49	*G - Gravel (100mm)*	*$17*	7	14	67
618	OLD NORTH RD	KIPLING WEST RD	NORTH END	2.20	49	*G - Gravel (100mm)*	*$68*	8	16	67
182	DELORME RD	LEBLANC RD	SMILIE RD	1.02	150	*G - Gravel (100mm)*	*$31*	8	16	73
668	POIRIER RD	HIGHWAY 64	AVENUE DU LAC	0.72	150	*G - Gravel (100mm)*	*$22*	8	16	73
739	ROBERTS RD	NICHOLSON RD	EAST END	1.19	49	*G - Gravel (100mm)*	*$37*	6	12	71
740	ROBERTS RD	HIGHWAY 539	NICHOLSON RD	0.75	49	*G - Gravel (100mm)*	*$23*	6	12	71
404	LAC CACHE RD	HIGHWAY 575	EAST END	0.99	100	*G - Gravel (100mm)*	*$31*	8	13	71
93	CACHE BAY RD	IMPERIAL ST	TORONTO ST	0.06	2500	*Preventative Maintenance*	-	9	18	86

Sect. No.	Road Name	From	To	Length (km)	AADT	Preliminary Improvement Type Recommendation	Cost (x1000)	Surface Condition	Structural Adequacy	Condition Rating
701	QUESNEL RD	DUTRISAC RD	NIPISSING ST	1.64	700	*G - Gravel (100mm)*	*$50*	8	16	81
741	ROBICHAUD RD	PERRIN RD	EAST END	0.10	49	*G - Gravel (100mm)*	*$3*	8	16	68
455	LECLAIR RD	HIGHWAY 64	WEST END	2.28	49	*G - Gravel (100mm)*	*$70*	6	12	68
417	LAFRAMBOISE RD	DANIS RD	NORTH END	0.62	49	*G - Gravel (100mm)*	*$19*	8	16	68
829	ST-JOSEPH RD	1.1 KM EAST OF DENNONVILLE RD	EAST END	2.21	49	*G - Gravel (100mm)*	*$68*	5	10	68
505	MAIN ST	SECOND ST	THIRD ST	0.13	800	*Preventative Maintenance*	-	8	16	82
771	SALTER ST	1.25 KM WEST OF GOLF COURSE RD	DUTRISAC RD	0.28	800	*G - Gravel (100mm)*	*$9*	8	16	82
772	SALTER ST	GOLF COURSE RD	1.25 KM WEST OF GOLF COURSE RD	1.25	800	*G - Gravel (100mm)*	*$39*	8	16	82
95	CACHE BAY RD	DUFFERIN ST	IMPERIAL ST	0.07	2225	*Preventative Maintenance*	-	9	18	86
827	ST-JOSEPH RD	DU MOULIN RD	DENNONVILLE RD	1.21	100	*G - Gravel (100mm)*	*$37*	7	14	72
406	LAC CLAIR RD	NORTHSHORE RD	FIELD LANDFILL SITE	0.55	100	*G - Gravel (100mm)*	*$17*	7	14	72
783	SAVIGNAC RD	LECLAIR RD	1.6 KM SOUTH OF LECLAIR RD	1.60	100	*G - Gravel (100mm)*	*$49*	6	12	72
401	LABROSSE RD	GUENETTE RD	FILLITRAULT RD	0.43	100	*G - Gravel (100mm)*	*$13*	8	16	72
784	SAVIGNAC RD	1.6 KM SOUTH OF LECLAIR RD	RAINVILLE RD	1.66	100	*G - Gravel (100mm)*	*$51*	6	12	72
403	LABROSSE RD	HIGHWAY 575	GUENETTE RD	2.15	100	*G - Gravel (100mm)*	*$66*	6	12	72
392	KIPLING EAST RD	SUNNY RIDGE RD	PARADIS RD	1.81	100	*G - Gravel (100mm)*	*$56*	8	16	72

Sect. No.	Road Name	From	To	Length (km)	AADT	Preliminary Improvement Type Recommendation	Cost (x1000)	Surface Condition	Structural Adequacy	Condition Rating
171	DALCOURT RD	NORTH & SOUTH RD	WEST END	1.01	49	*G - Gravel (100mm)*	*$31*	6	11	69
35	ASHBURTON RD	LACROQUE ST	SOUTH END	1.82	49	*G - Gravel (100mm)*	*$56*	6	10	69
686	PROM DU LAC	DUTRISAC RD	WEST END	0.20	49	*Preventative Maintenance*	-	9	18	69
335	GUILLEMETTE RD	HIGHWAY 539	WEST END	3.00	49	*G - Gravel (100mm)*	*$92*	6	12	69
220	DUBUC RD	CRYSTAL FALLS RD	EAST END	9.38	49	*G - Gravel (100mm)*	*$289*	6	10	69
169	CRYSTAL FALLS RD	HIGHWAY 64	SHORELINE RD	2.10	200	*G - Gravel (100mm)*	*$65*	7	14	76
94	CACHE BAY RD	LISGAR ST	DUFFERIN ST	0.13	2000	*Preventative Maintenance*	-	9	18	86
97	CACHE BAY RD	LORNE ST	LISGAR ST	0.12	2000	*Preventative Maintenance*	-	9	18	86
232	DUTRISAC RD	SALTER ST	QUESNEL RD	1.55	2000	*Preventative Maintenance*	-	9	18	86
586	NIPISSING ST	HIGHWAY 17	RAILWAY ST	0.15	5133	*Preventative Maintenance*	-	10	19	89
826	ST-JOSEPH RD	HIGHWAY 539A	DU MOULIN RD	1.62	100	*G - Gravel (100mm)*	*$50*	7	14	73
407	LAC CLAIR RD	FIELD LANDFILL SITE	MAPLE ST	2.15	100	*G - Gravel (100mm)*	*$66*	7	14	73
396	KIPLING WEST RD	ISLAND RD	SUNNY RIDGE RD	1.61	100	*G - Gravel (100mm)*	*$50*	8	16	73
457	LEDUC RD	HIGHWAY 539	HIGHWAY 575	4.00	100	*G - Gravel (100mm)*	*$123*	7	14	73
667	POIRIER RD	AVENUE DU LAC	EUGENE RD	3.14	150	*G - Gravel (100mm)*	*$97*	8	16	75
200	DOKIS RESERVE RD	TRAILS END RD	EAST END	13.56	150	*G - Gravel (100mm)*	*$418*	7	14	75
780	SANDY FALLS RD	HIGHWAY 17	1.4 KM NORTH OF HIGHWAY 17	1.39	49	*G - Gravel (100mm)*	*$43*	6	11	70

Sect. No.	Road Name	From	To	Length (km)	AADT	Preliminary Improvement Type Recommendation	Cost (x1000)	Surface Condition	Structural Adequacy	Condition Rating
550	MICHEL RD	CHRETIEN RD	CLAUDE RD	2.94	49	*G - Gravel (100mm)*	*$91*	6	12	70
781	SANDY FALLS RD	1.4 KM NORTH OF HIGHWAY 17	NORTH END	1.24	49	*G - Gravel (100mm)*	*$38*	6	11	70
178	DEER LAKE RD	KIPLING WEST RD	NORTH END	1.29	49	*G - Gravel (100mm)*	*$40*	6	12	70
21	ANDRE-LYNE RD	LECLAIR RD	NORTH END	0.59	49	*G - Gravel (100mm)*	*$18*	6	12	70
341	HECTOR RD	HIGHWAY 539A	NORTH END	0.11	49	*G - Gravel (100mm)*	*$3*	6	12	70
96	CACHE BAY RD	PINE ST	CRAIG ST	0.06	1800	*Preventative Maintenance*	-	9	18	86
508	MAIN ST	ETHEL ST	NORTH END	0.07	400	*G - Gravel (100mm)*	*$2*	8	16	80
423	LALANDE RD	DELORME RD	FORT RD	1.76	400	*ST1 - Single Surface Treatment*	*$74*	8	15	80
830	SUNNYRIDGE RD	NORLAND RD	KIPLING EAST RD	0.48	100	*G - Gravel (100mm)*	*$15*	8	16	74
410	LAC CLAIR RD	STEWART RD	LAFOND RD	3.57	100	*G - Gravel (100mm)*	*$110*	7	14	74
411	LAC CLAIR RD	LAFOND RD	1.8KM NORTH OF LAFOND RD	1.83	100	*G - Gravel (100mm)*	*$56*	7	14	74
124	CHEBOGAN RD	TOMIKO RD	PINE RIDGE RD	0.69	49	*G - Gravel (100mm)*	*$21*	6	12	71
649	PATENAUDE RD	LAROCQUE ST	NORTH END	0.17	49	*G - Gravel (100mm)*	*$5*	8	16	71
558	MILLRAND RD	CLAUDE RD	WEST END	1.60	49	*G - Gravel (100mm)*	*$49*	6	12	71
724	REMILLARD RD	HIGHWAY 539	WEST END	1.01	49	*G - Gravel (100mm)*	*$31*	6	12	71
24	ARCAND RD	HIGHWAY 17	LEVAC RD	1.15	49	*G - Gravel (100mm)*	*$35*	6	12	71
125	CHEBOGAN RD	PINE RIDGE RD	WEST END	0.53	49	*G - Gravel (100mm)*	*$16*	6	12	71
166	CRYSTAL FALLS RD	LAPOINTE RD	RICHER RD	0.51	150	*G - Gravel (100mm)*	*$16*	7	14	76
820	STEWART RD	HIGHWAY 17	LAC CLAIR RD	0.68	150	*G - Gravel (100mm)*	*$21*	7	14	76

Sect. No.	Road Name	From	To	Length (km)	AADT	Preliminary Improvement Type Recommendation	Cost (x1000)	Surface Condition	Structural Adequacy	Condition Rating
167	CRYSTAL FALLS RD	SHORELINE RD	LAPOINTE RD	1.19	150	*G - Gravel (100mm)*	*$37*	7	14	76
168	CRYSTAL FALLS RD	RICHER RD	TOMIKO RD	0.36	150	*G - Gravel (100mm)*	*$11*	7	14	76
900	WILLIAM ST	MAIN ST	LEVESQUE ST	0.10	1600	*Preventative Maintenance*	-	9	18	86
420	LAFRENIERE RD	DUCK CREEK RD	COURCHESNE RD	0.86	75	*G - Gravel (100mm)*	*$27*	8	16	73
594	NIPISSING ST	RAILWAY ST	SALTER ST	0.10	4000	*Preventative Maintenance*	-	10	19	89
786	SECOND ST	KING ST	MAIN ST	0.10	400	*Preventative Maintenance*	-	8	16	81
474	LEVESQUE ST	FOURTH ST	JANEN ST	0.09	400	*RO1 - Hot Mix Overlay, 1 Lift*	*$19*	8	15	81
713	RAILWAY ST	ARTHUR ST	MICHAUD ST	0.10	400	*ST1 - Single Surface Treatment*	*$4*	8	15	81
644	PARKER ST	MARKET ST	RUSSELL ST	0.10	400	*Preventative Maintenance*	-	8	16	81
480	LEVESQUE ST	MARKET ST	RUSSELL ST	0.10	400	*Preventative Maintenance*	-	8	16	81
714	RAILWAY ST	LILLIE ST	ARTHUR ST	0.10	400	*ST1 - Single Surface Treatment*	*$4*	8	15	81
481	LEVESQUE ST	MARKET ST	NORTH END	0.21	400	*Preventative Maintenance*	-	8	16	81
637	PARK ST	SOUTHVIEW CR	THIRD ST	0.18	200	*RO1 - Hot Mix Overlay, 1 Lift*	*$39*	8	15	78
22	ARBOUR RD	EUGENE RD	BROUILLETTE RD	0.54	49	*G - Gravel (100mm)*	*$17*	6	12	72
535	MCDONALD RD	OLD HIGHWAY 17	WEST END	3.21	49	*G - Gravel (100mm)*	*$99*	6	12	72
747	ROY RD	347 M SOUTH OF MAGEAU ST	QUESNEL RD	0.48	100	*G - Gravel (100mm)*	*$15*	7	14	75
748	ROY RD	186 M SOUTH OF MAGEAU ST	347 M SOUTH OF MAGEAU ST	0.16	100	*G - Gravel (100mm)*	*$5*	7	14	75

Sect. No.	Road Name	From	To	Length (km)	AADT	Preliminary Improvement Type Recommendation	Cost (x1000)	Surface Condition	Structural Adequacy	Condition Rating
749	ROY ST	MAGEAU ST	186 M SOUTH OF MAGEAU ST	0.19	100	*G - Gravel (100mm)*	*$6*	7	14	75
831	SUNNYRIDGE RD	KIPLING EAST RD	KIPLING WEST RD	1.14	100	*G - Gravel (100mm)*	*$35*	8	16	75
412	LAC CLAIR RD	1.8KM NORTH OF LAFOND RD	SOUTHSHORE RD	3.63	100	*G - Gravel (100mm)*	*$112*	7	14	75
428	LAPLAGE RD	RIVIERE VEUVE RD	RAINVILLE RD	0.15	150	*G - Gravel (100mm)*	*$5*	7	14	77
430	LAPLAGE RD	RAINVILLE RD	PAKE RD	1.66	150	*G - Gravel (100mm)*	*$51*	7	14	77
201	DOKIS RESERVE RD	BOUNDARY	TRAILS END RD	5.40	150	*G - Gravel (100mm)*	*$166*	7	14	77
319	GLENROCK RD	MARLEAU RD	SOUTH END	0.72	75	*G - Gravel (100mm)*	*$22*	7	14	74
511	MALETTE RD	MARLEAU RD	SOUTH END	0.76	75	*G - Gravel (100mm)*	*$24*	7	14	74
813	ST MARY'S RD	MUSKOSUNG LAKE RD	EAST END	1.35	49	*G - Gravel (100mm)*	*$42*	7	14	74
665	PLANTE RD	HIGHWAY 64	WEST END	2.50	75	*G - Gravel (100mm)*	*$77*	7	14	74
440	LAROCQUE ST	PATENAUDE RD	CAYOUETTE RD	1.75	75	*G - Gravel (100mm)*	*$54*	8	16	74
253	EUGENE RD	HIGHWAY 64	164M SOUTH OF HIGHWAY 64	0.16	350	*G - Gravel (100mm)*	*$5*	8	16	81
256	EUGENE RD	164M SOUTH OF HIGHWAY 64	RAINVILLE RD	1.66	350	*G - Gravel (100mm)*	*$51*	8	16	81
98	CACHE BAY RD	DOVERCOURT RD	RIVER ST	0.28	2000	*Preventative Maintenance*	-	9	18	88
99	CACHE BAY RD	TORONTO ST	DOVERCOURT RD	0.13	2000	*Preventative Maintenance*	-	9	18	88
601	NORTH & SOUTH RD	OLD HIGHWAY 17	MCDONALD RD	0.87	49	*G - Gravel (100mm)*	*$27*	8	16	73
653	PERCH LAKE RD	DAOUST RD	WEST END	1.03	49	*G - Gravel (100mm)*	*$32*	7	14	73
313	GIROUX RD	HIGHWAY 17	NORTH END	0.54	49	*G - Gravel (100mm)*	*$17*	6	12	73

Sect. No.	Road Name	From	To	Length (km)	AADT	Preliminary Improvement Type Recommendation	Cost (x1000)	Surface Condition	Structural Adequacy	Condition Rating
847	THIBEAULT RD	HIGHWAY 17	STEWART RD	1.41	49	*G - Gravel (100mm)*	*$44*	6	12	73
551	MICHEL RD	HIGHWAY 64	CHRETIEN RD	5.60	49	*G - Gravel (100mm)*	*$172*	7	14	73
386	KING ST	QUEEN ST	FRONT ST	0.12	3215	*RO1 - Hot Mix Overlay, 1 Lift*	*$27*	8	15	89
706	RAILWAY ST	MICHAUD ST	118 M EAST OF MICHAUD ST	0.12	200	*ST1 - Single Surface Treatment*	*$5*	8	15	79
426	LAPLAGE RD	O'BRIEN RD	BOUFFARD RD	0.39	100	*G - Gravel (100mm)*	*$12*	7	14	76
427	LAPLAGE RD	GABRIEL RD	ALFRED RD	0.11	100	*G - Gravel (100mm)*	*$3*	7	14	76
235	EAST RD	2.6 KM EAST OF FRYER'S RD	PERCH LAKE RD	0.68	100	*G - Gravel (100mm)*	*$21*	7	14	76
236	EAST RD	FRYER'S RD	2.6 KM EAST OF FRYER'S RD	2.66	100	*G - Gravel (100mm)*	*$82*	7	14	76
322	GOLF COURSE RD	HIGHWAY 17	VETERANS RD	0.06	100	*G - Gravel (100mm)*	*$2*	7	14	76
409	LAC CLAIR RD	SOUTHSHORE RD	NORTHSHORE RD	2.81	100	*G - Gravel (100mm)*	*$86*	7	14	76
323	GOLF COURSE RD	VETERANS RD	SALTER ST	0.14	100	*G - Gravel (100mm)*	*$4*	7	14	76
431	LAPLAGE RD	PAKE RD	O'BRIEN RD	0.85	100	*G - Gravel (100mm)*	*$26*	7	14	76
432	LAPLAGE RD	BOUFFARD RD	GABRIEL RD	0.91	100	*G - Gravel (100mm)*	*$28*	7	14	76
111	CARRIE ST	JOHN ST	WILLIAM ST	0.12	400	*Preventative Maintenance*	-	8	16	82
378	KING ST	RAILWAY ST	SOUTH END	0.18	400	*Preventative Maintenance*	-	8	16	82
112	CARRIE ST	QUEEN ST	HIGHWAY 17	0.13	400	*Preventative Maintenance*	-	8	16	82
113	CARRIE ST	WILLAIM ST	QUEEN ST	0.12	400	*Preventative Maintenance*	-	8	16	82
100	CACHE BAY RD	CRAIG ST	LORNE ST	0.12	1800	*Preventative Maintenance*	-	9	18	88
379	KING ST	JOHN ST	WILLIAM ST	0.12	3000	*RO1 - Hot Mix Overlay, 1 Lift*	*$27*	8	15	89
382	KING ST	WILLIAM ST	QUEEN ST	0.12	3000	*RO1 - Hot Mix Overlay, 1 Lift*	*$26*	8	15	89

Sect. No.	Road Name	From	To	Length (km)	AADT	Preliminary Improvement Type Recommendation	Cost (x1000)	Surface Condition	Structural Adequacy	Condition Rating
821	STEWART RD	LEBLANC RD	HIGHWAY 64	1.64	150	*G - Gravel (100mm)*	*$50*	8	16	78
328	GOULARD RD	COURSOL RD	EVANSVILLE DR	1.30	1089	*Preventative Maintenance*	-	9	18	86
137	CLARK ST	JOHN ST	WILLIAM ST	0.13	800	*Preventative Maintenance*	-	9	17	85
520	MARKET ST	HOLDITCH ST	KING ST	0.10	800	*Preventative Maintenance*	-	9	18	85
523	MARKET ST	KING ST	MAIN ST	0.10	800	*Preventative Maintenance*	-	9	18	85
859	THIRD ST	BELANGER AV	AUBIN ST	0.06	800	*Preventative Maintenance*	-	9	18	85
860	THIRD ST	AUBIN ST	CHOLETTE AV	0.16	800	*Preventative Maintenance*	-	9	18	85
73	BLAKE RD	ALOUETTE RD	SOUTH END	0.90	49	*G - Gravel (100mm)*	*$28*	7	14	74
664	PIQUETTE RD	HIGHWAY 64	NORTH & SOUTH RD	9.73	49	*G - Gravel (100mm)*	*$300*	7	14	74
117	CAYOUETTE RD	LAROCQUE ST	EAST END	2.91	49	*G - Gravel (100mm)*	*$90*	7	14	74
539	MEMQUISIT RD	BOUNDARY	MODESTO RD	0.52	49	*G - Gravel (100mm)*	*$16*	8	16	74
101	CACHE ST	HAY ST	BAIN AV	0.10	1000	*Preventative Maintenance*	-	9	18	86
102	CACHE ST	BAIN AV	WATERFRONT DR	0.10	1000	*Preventative Maintenance*	-	9	18	86
105	CACHE ST	ANDERSON ST	HAY ST	0.12	1000	*Preventative Maintenance*	-	9	18	86
321	GOLF COURSE RD	LABELLE RD	GOULARD RD	0.51	100	*G - Gravel (100mm)*	*$16*	7	14	77
314	GIROUX-VEZINA RD	HIGHWAY 64	LABOND RD	0.58	100	*G - Gravel (100mm)*	*$18*	7	14	77
57	BEAR LAKE RD	LAKEVIEW RD	SUNNY RIDGE RD	2.36	100	*G - Gravel (100mm)*	*$73*	7	14	77
10	ALOUETTE RD	EUGENE RD	GAGNON RD	1.14	100	*G - Gravel (100mm)*	*$35*	7	14	77

Sect. No.	Road Name	From	To	Length (km)	AADT	Preliminary Improvement Type Recommendation	Cost (x1000)	Surface Condition	Structural Adequacy	Condition Rating
121	CHAMPAGNE RD	QUESNEL RD	NORTH END	0.90	100	*G - Gravel (100mm)*	*$28*	7	14	77
315	GIROUX-VEZINA RD	NEEDS RD	HIGHWAY 539	0.19	100	*G - Gravel (100mm)*	*$6*	7	14	77
324	GOLF COURSE RD	HIGHWAY 17	LABELLE RD	0.94	100	*G - Gravel (100mm)*	*$29*	7	14	77
655	PIERRE RD	DUTRISAC RD	WEST END	0.94	100	*G - Gravel (100mm)*	*$29*	7	14	77
449	LEBLANC RD	DRIVE IN RD	STEWART RD	1.63	100	*G - Gravel (100mm)*	*$50*	7	14	77
879	VACHON RD	DRIVE IN RD	STEWART RD	1.63	100	*G - Gravel (100mm)*	*$50*	7	14	77
11	ALOUETTE RD	GAGNON RD	ST. JEAN RD	0.46	100	*G - Gravel (100mm)*	*$14*	7	14	77
71	BETTY RD	HIGHWAY 64	WEST END	3.97	100	*G - Gravel (100mm)*	*$122*	7	14	77
316	GIROUX-VEZINA RD	LABLOND RD	GIBBONS RD	1.71	100	*G - Gravel (100mm)*	*$53*	7	14	77
317	GIROUX-VEZINA RD	GIBBONS RD	BELLEFEUILLE RD	1.51	100	*G - Gravel (100mm)*	*$46*	7	14	77
318	GIROUX-VEZINA RD	BELLEFEUILLE RD	NEEDS RD	1.62	100	*G - Gravel (100mm)*	*$50*	7	14	77
393	KIPLING EAST RD	PARADIS RD	HIGHWAY 575	3.39	100	*G - Gravel (100mm)*	*$104*	7	14	77
302	GAUTHIER RD	HIGHWAY 17	BEAUDRY RD	2.51	100	*G - Gravel (100mm)*	*$77*	7	14	77
707	RAILWAY ST	118 M EAST OF MICHAUD ST	EAST END	0.20	200	*G - Gravel (100mm)*	*$6*	8	16	80
308	GINGRAS AV	HIGHWAY 64	DEBEAU ST	0.15	200	*RO1 - Hot Mix Overlay, 1 Lift*	*$33*	8	15	80
419	LAFRENIERE RD	COURCHESNE RD	HIGHWAY 64	1.64	75	*G - Gravel (100mm)*	*$50*	8	16	76
610	O'BRIEN RD	LAPLAGE RD	RIDDLE RD	0.64	75	*G - Gravel (100mm)*	*$20*	7	14	76
221	DUCK CREEK RD	LAFRENIERE RD	SOUTH END	5.90	75	*G - Gravel (100mm)*	*$182*	7	14	76
797	SHUSWAP RD	GIDEON RD	LEMIEUX RD	0.18	150	*G - Gravel (100mm)*	*$5*	8	16	79

Sect. No.	Road Name	From	To	Length (km)	AADT	Preliminary Improvement Type Recommendation	Cost (x1000)	Surface Condition	Structural Adequacy	Condition Rating
506	MAIN ST	RUSSELL ST	JOHN ST	0.13	1200	*Preventative Maintenance*	-	9	18	87
509	MAIN ST	MARKET ST	RUSSELL ST	0.10	1200	*Preventative Maintenance*	-	9	18	87
145	COMEAU RD	EUGENE RD	GERARD RD	0.10	49	*G - Gravel (100mm)*	*$3*	7	14	75
260	FILLIATRAULT RD	LABROSSE RD	LIONEL RD	0.24	49	*G - Gravel (100mm)*	*$7*	7	14	75
837	TEAL RD	PARK RD	78M SOUTH OF PARK RD	0.08	49	*G - Gravel (100mm)*	*$2*	7	14	75
838	TEAL RD	283M SOUTH OF PARK RD	SOUTH END	0.21	49	*G - Gravel (100mm)*	*$6*	7	14	75
839	TEAL RD	78M SOUTH OF PARK RD	INTERSECTION WITH LAKE ACCESS	0.14	49	*G - Gravel (100mm)*	*$4*	7	14	75
635	PARK RD	TEAL RD	TEAL RD	0.06	49	*G - Gravel (100mm)*	*$2*	7	14	75
108	CARMEN RD	NORTH & SOUTH RD	EAST END	0.55	49	*G - Gravel (100mm)*	*$17*	7	14	75
840	TEAL RD	148M SOUTH OF PARK RD	283M SOUTH OF PARK RD	0.14	49	*G - Gravel (100mm)*	*$4*	7	14	75
841	TEAL RD	PARK RD	148M SOUTH OF PARK RD	0.15	49	*G - Gravel (100mm)*	*$5*	7	14	75
636	PARK RD	WATERFRONT DR	TEAL RD	0.05	49	*G - Gravel (100mm)*	*$1*	7	14	75
80	BOULAY RD	HIGHWAY 17	NORTH END	0.39	49	*G - Gravel (100mm)*	*$12*	7	14	75
146	COMEAU RD	GERARD RD	EAST END	0.85	49	*G - Gravel (100mm)*	*$26*	7	14	75
261	FILLIATRAULT RD	LIONEL RD	NORTH END	0.60	49	*G - Gravel (100mm)*	*$19*	7	14	75
300	GAREAU RD	PRESQU'ILE RD	EAST END	0.97	100	*G - Gravel (100mm)*	*$30*	8	16	78
320	GOEGAN RD	RAINVILLE RD	NORTH END	0.26	100	*G - Gravel (100mm)*	*$8*	8	16	78
398	KIPLING WEST RD	HIGHWAY 539	DEER LAKE RD	3.54	100	*G - Gravel (100mm)*	*$109*	8	16	78

Sect. No.	Road Name	From	To	Length (km)	AADT	Preliminary Improvement Type Recommendation	Cost (x1000)	Surface Condition	Structural Adequacy	Condition Rating
301	GAREAU RD	HIGHWAY 575	PRESQU'ILE RD	0.87	100	*G - Gravel (100mm)*	*$27*	8	16	78
27	ARTHUR ST	QUEEN ST	HIGHWAY 17	0.13	800	*Preventative Maintenance*	-	9	18	86
850	THIRD ST	ROY ST	VICTORIA ST	0.08	800	*Preventative Maintenance*	-	9	18	86
210	DRIVE IN RD	LARONDE RD	SANDHILL RD	0.29	800	*Preventative Maintenance*	-	9	18	86
854	THIRD ST	MAGEAU ST	ROY ST	0.10	800	*Preventative Maintenance*	-	9	18	86
327	GOULARD RD	EVANSVILLE DR	GOLF COURSE RD	1.00	800	*Preventative Maintenance*	-	9	18	86
418	LAFRENIERE RD	HIGHWAY 64	DUCK CREEK RD	4.16	75	*G - Gravel (100mm)*	*$128*	8	16	77
12	ALOUETTE RD	ST. JEAN RD	PELLERIN RD	0.43	75	*G - Gravel (100mm)*	*$13*	7	14	77
13	ALOUETTE RD	PELLERIN RD	ARGO RD	1.43	75	*G - Gravel (100mm)*	*$44*	7	14	77
14	ALPHONSE RD	HIGHWAY 539A	WEST END	1.40	75	*G - Gravel (100mm)*	*$43*	7	14	77
251	EUGENE RD	POIRIER RD	ALOUETTE RD	0.04	200	*ST1 - Single Surface Treatment*	*$2*	8	16	81
559	MONTREAL ST	PINE ST	LISGAR ST	0.14	200	*ST1 - Single Surface Treatment*	*$6*	8	16	81
662	PINE ST	CACHE BAY RD	OTTAWA ST	0.14	200	*Preventative Maintenance*	-	8	16	81
663	PINE ST	MONTREAL ST	CEDAR GROVE DR	0.07	200	*Preventative Maintenance*	-	8	16	81
643	PARKER ST	MARKET ST	NORTH END	0.11	200	*Preventative Maintenance*	-	8	16	81
863	TOMIKO RD	DANIS RD	CHEBOGAN RD	0.38	200	*G - Gravel (100mm)*	*$12*	8	16	81
864	TOMIKO RD	CRYSTAL FALLS RD	DANIS RD	2.09	200	*G - Gravel (100mm)*	*$64*	8	16	81
85	BRIDGE ST	MONTREAL ST	OTTAWA ST	0.10	150	*RO1 - Hot Mix Overlay, 1 Lift*	*$22*	8	15	80

Sect. No.	Road Name	From	To	Length (km)	AADT	Preliminary Improvement Type Recommendation	Cost (x1000)	Surface Condition	Structural Adequacy	Condition Rating
270	FORT RD	LALANDE RD	SOUTH END	1.57	150	*ST1 - Single Surface Treatment*	*$66*	8	15	80
590	NIPISSING ST	FIRST ST	SECOND ST	0.14	2000	*Preventative Maintenance*	-	10	19	89
652	PERCH LAKE RD	EAST RD	DAOUST RD	0.29	49	*G - Gravel (100mm)*	*$9*	7	14	76
572	MUNROE RD	MARIER RD	WEST END	1.01	49	*G - Gravel (100mm)*	*$31*	7	14	76
576	MUSKY ISLAND RD	HIGHWAY 64	BOUNDARY	0.92	49	*G - Gravel (100mm)*	*$28*	7	14	76
882	VICTORIA ST	THIRD ST	SOUTH END	0.04	49	*G - Gravel (100mm)*	*$1*	7	14	76
825	ST-JEAN BAPTISTE ST	DUBEAU ST	WEST END	0.06	49	*G - Gravel (100mm)*	*$2*	7	14	76
447	LEBLANC RD	STEWART RD	NORTH END	0.82	49	*G - Gravel (100mm)*	*$25*	7	14	76
571	MUNROE RD	HIGHWAY 539	MARIER RD	0.13	49	*G - Gravel (100mm)*	*$4*	7	14	76
203	DOUGLAS RD	HIGHWAY 64	EAST END	1.02	49	*G - Gravel (100mm)*	*$31*	7	14	76
296	GABRIEL RD	LAPLAGE RD	WEST END	0.20	49	*G - Gravel (100mm)*	*$6*	7	14	76
344	HILLMAN RD	OLD AUBIN RD	EAST END	1.65	49	*G - Gravel (100mm)*	*$51*	7	14	76
471	LEVESQUE ST	LEVIS ST	PAIEMENT CT	0.07	400	*Preventative Maintenance*	-	9	17	84
472	LEVESQUE ST	AUBREY ST	SOUTH END	0.02	400	*Preventative Maintenance*	-	9	17	84
475	LEVESQUE ST	JANEN ST	LEVIS ST	0.03	400	*Preventative Maintenance*	-	9	17	84
477	LEVESQUE ST	PAIEMENT CT	AUBREY ST	0.02	400	*Preventative Maintenance*	-	9	17	84
777	SANDHILL RD	TAMERACK AV	WEST END	0.19	45	*G - Gravel (100mm)*	*$6*	7	14	76
394	KIPLING WEST RD	DEER LAKE RD	POINT RD	0.72	100	*G - Gravel (100mm)*	*$22*	8	16	79
164	CRAIG ST	CACHE BAY RD	NORTH END	0.07	100	*G - Gravel (100mm)*	*$2*	8	16	79
181	DEER LAKE RD	PINE POULTRY RD	KIPLING WEST RD	3.26	100	*G - Gravel (100mm)*	*$100*	8	16	79

Sect. No.	Road Name	From	To	Length (km)	AADT	Preliminary Improvement Type Recommendation	Cost (x1000)	Surface Condition	Structural Adequacy	Condition Rating
736	RIVIERE VEUVE RD	LAPLAGE RD	WEST END	0.98	75	*G - Gravel (100mm)*	*$30*	8	16	78
737	RIVIERE VEUVE RD	LAPLAGE RD	EAST END	1.29	75	*G - Gravel (100mm)*	*$40*	8	16	78
672	PRINCIPAL ST E	HIGHWAY 64	DUBEAU ST	0.15	400	*Preventative Maintenance*	-	8	16	85
807	SPRINGER ST	JB ALAIN ST	PARK ST	0.08	200	*Preventative Maintenance*	-	8	16	82
808	SPRINGER ST	PARK ST	DESGROSEILLIERS ST	0.10	200	*Preventative Maintenance*	-	8	16	82
878	VACHON RD	STEWART RD	NORTH END	0.54	49	*G - Gravel (100mm)*	*$17*	7	14	77
41	AYOTTE RD	HIGHWAY 539A	EAST END	0.23	49	*G - Gravel (100mm)*	*$7*	7	14	77
81	BOURBONNAIS RD	HIGHWAY 539	SOUTH END	0.55	49	*G - Gravel (100mm)*	*$17*	7	14	77
845	THIBEAULT RD	STEWART RD	NORTH END	0.32	49	*G - Gravel (100mm)*	*$10*	7	14	77
265	FLORAL ST	BRIDGE ST	NORTH END	0.15	49	*G - Gravel (100mm)*	*$4*	7	14	77
399	KIRKPATRICK RD	HIGHWAY 17	OLD HIGHWAY 17	0.05	49	*G - Gravel (100mm)*	*$2*	7	14	77
271	FORTIER ST	HIGHWAY 64	SOUTH END	0.12	49	*G - Gravel (100mm)*	*$4*	7	14	77
213	DU MOULIN RD	ST. JOSEPH RD	SOUTH END	1.00	49	*G - Gravel (100mm)*	*$31*	7	14	77
846	THIBEAULT RD	LEVAC RD	HIGHWAY 17	0.18	49	*G - Gravel (100mm)*	*$5*	7	14	77
59	BEAR LAKE RD	SUNNY RIDGE RD	WEST END	1.05	49	*G - Gravel (100mm)*	*$32*	7	14	77
79	BOUFFARD RD	LAPLAGE RD	EAST END	0.97	49	*G - Gravel (100mm)*	*$30*	7	14	77
148	CORBETT RD	HIGHWAY 539	EAST END	0.86	49	*G - Gravel (100mm)*	*$26*	8	16	77
538	MEMQUISIT RD	MODESTO RD	EAST END	2.76	49	*G - Gravel (100mm)*	*$85*	8	16	77
634	PARADIS RD	KIPLING EAST RD	NORTH END	2.11	49	*G - Gravel (100mm)*	*$65*	8	16	77

Sect. No.	Road Name	From	To	Length (km)	AADT	Preliminary Improvement Type Recommendation	Cost (x1000)	Surface Condition	Structural Adequacy	Condition Rating
819	STEWART RD	VACHON RD	LEBLANC RD	0.80	150	*G - Gravel (100mm)*	*$25*	8	16	81
822	STEWART RD	THIBEAULT RD	VACHON RD	0.83	150	*G - Gravel (100mm)*	*$26*	8	16	81
823	STEWART RD	LAC CLAIR RD	THIBEAULT RD	1.63	150	*G - Gravel (100mm)*	*$50*	8	16	81
567	MOREAU ST	HIGHWAY 64	EAST END	0.37	100	*G - Gravel (100mm)*	*$11*	8	16	80
537	MCKEE CRES	FOURTH ST	NORTH END	0.04	100	*RO1 - Hot Mix Overlay, 1 Lift*	*$10*	8	15	80
56	BAYVIEW CT	SECOND ST	NORTH END	0.11	100	*RO1 - Hot Mix Overlay, 1 Lift*	*$23*	8	15	80
40	AVENUE DU LAC	POIRIER RD	SOUTH END	3.27	100	*G - Gravel (100mm)*	*$101*	8	16	80
785	SECOND ST	PARKER ST	NIPISSING ST	0.06	400	*Preventative Maintenance*	-	9	18	85
787	SECOND ST	LEVESQUE ST	PARKER ST	0.10	400	*Preventative Maintenance*	-	9	18	85
478	LEVESQUE ST	THIRD ST	FOURTH ST	0.26	400	*Preventative Maintenance*	-	9	17	85
479	LEVESQUE ST	RAILWAY ST	SALTER ST	0.10	400	*Preventative Maintenance*	-	9	17	85
788	SECOND ST	MAIN ST	LEVESQUE ST	0.10	400	*Preventative Maintenance*	-	9	18	85
650	PEMBROKE ST	SPRING ST	BAY ST	0.11	400	*Preventative Maintenance*	-	9	18	85
651	PEMBROKE ST	HIGHWAY 17	SPRING ST	0.18	400	*Preventative Maintenance*	-	9	18	85
139	CLARK ST	WILLIAM ST	QUEEN ST	0.11	400	*Preventative Maintenance*	-	9	17	85
482	LEVESQUE ST	FIRST ST	SOUTH END	0.08	400	*Preventative Maintenance*	-	9	17	85
789	SECOND ST	RIVER ST	KING ST	0.22	400	*Preventative Maintenance*	-	9	18	85
140	CLARK ST	QUEEN ST	HIGHWAY 17	0.14	400	*Preventative Maintenance*	-	9	17	85
448	LEBLANC RD	BAY ST	HIGHWAY 17	0.69	727	*Preventative Maintenance*	-	9	17	87
307	GINGRAS AV	HIGHWAY 64	RACETTE RD	0.14	49	*RO1 - Hot Mix Overlay, 1 Lift*	*$31*	8	15	78

Sect. No.	Road Name	From	To	Length (km)	AADT	Preliminary Improvement Type Recommendation	Cost (x1000)	Surface Condition	Structural Adequacy	Condition Rating
441	LAROCQUE ST	CAYOUETTE RD	EAST END	1.64	49	*G - Gravel (100mm)*	*$51*	8	16	78
460	LEMIEUX RD	PRANG'S LN	EAST END	0.76	49	*G - Gravel (100mm)*	*$23*	8	16	78
402	LABROSSE RD	FILLITRAULT RD	EAST END	2.14	49	*G - Gravel (100mm)*	*$66*	8	16	78
688	PUTNAM RD	HIGHWAY 539	SOUTH END	1.88	49	*G - Gravel (100mm)*	*$58*	8	16	78
602	NORTH & SOUTH RD	MCDONALD RD	PIQUETTE RD	3.18	49	*G - Gravel (100mm)*	*$98*	8	16	78
445	LEBLANC RD	DELORME RD	BAY ST	1.40	650	*Preventative Maintenance*	-	9	17	87
793	SHUSWAP RD	LEMIEUX RD	SOLID ROCK RD	0.51	75	*G - Gravel (100mm)*	*$16*	8	16	80
165	CROSBY RD	RAINVILLE RD	NORTH END	0.70	75	*G - Gravel (100mm)*	*$22*	8	16	80
172	DANIS RD	LAFRAMBOISE RD	CEDAR LANE	0.77	49	*G - Gravel (100mm)*	*$24*	8	16	80
794	SHUSWAP RD	SOLID ROCK RD	TIMBER LN	0.66	75	*G - Gravel (100mm)*	*$20*	8	16	80
795	SHUSWAP RD	TIMBER LN	AUSTDAL RD	0.17	75	*G - Gravel (100mm)*	*$5*	8	16	80
796	SHUSWAP RD	AUSTDAL RD	NORTH END	0.13	75	*G - Gravel (100mm)*	*$4*	8	16	80
557	MILLRAND RD	HIGHWAY 64	CHRETIEN RD	5.49	75	*G - Gravel (100mm)*	*$169*	8	16	80
170	CRYSTAL FALLS RD	TOMIKO RD	DUBUC RD	1.54	75	*G - Gravel (100mm)*	*$47*	8	16	80
173	DANIS RD	CEDAR LANE	NORTH END	2.22	49	*G - Gravel (100mm)*	*$68*	8	16	80
174	DANIS RD	TOMIKO RD	LAFRAMBOISE RD	2.03	49	*G - Gravel (100mm)*	*$63*	8	16	80
746	ROSE ST	JACQUES ST	FORGET AVE	0.22	100	*ST1 - Single Surface Treatment*	*$9*	8	16	81
458	LEGAULT RD	COURSOL RD	EAST END	0.39	100	*G - Gravel (100mm)*	*$12*	8	16	81
570	MOUSTIK RD	HIGHWAY 17	OLD HIGHWAY 17	0.24	100	*G - Gravel (100mm)*	*$7*	8	16	81

Sect. No.	Road Name	From	To	Length (km)	AADT	Preliminary Improvement Type Recommendation	Cost (x1000)	Surface Condition	Structural Adequacy	Condition Rating
715	RAINVILLE RD	CROSBY RD	CROSBY RD	0.47	100	*G - Gravel (100mm)*	*$14*	8	16	81
716	RAINVILLE RD	CROSBY RD	LAPLAGE RD	0.26	100	*G - Gravel (100mm)*	*$8*	8	16	81
526	MARLEAU RD	GLENROCK RD	MALETTE RD	0.37	100	*G - Gravel (100mm)*	*$11*	8	16	81
495	LORNE ST	CACHE BAY RD	OTTAWA ST	0.10	100	*Preventative Maintenance*	-	8	16	81
395	KIPLING WEST RD	OLD NORTH RD	ISLAND RD	0.83	100	*G - Gravel (100mm)*	*$26*	8	16	81
717	RAINVILLE RD	GEOGON RD	CROSBY RD	0.62	100	*G - Gravel (100mm)*	*$19*	8	16	81
719	RAINVILLE RD	EUGENE RD	SAVIGNAC RD	1.50	100	*G - Gravel (100mm)*	*$46*	8	16	81
186	DENIS ST	DUPRAS ST	JACQUES ST	0.33	100	*ST1 - Single Surface Treatment*	*$14*	8	16	81
527	MARLEAU RD	NIPISSING ST	GLENROCK RD	0.93	100	*G - Gravel (100mm)*	*$29*	8	16	81
721	RAINVILLE RD	SAVIGNAC RD	GEOGON RD	1.97	100	*G - Gravel (100mm)*	*$61*	8	16	81
817	ST-AMOUR RD	CARTIER ST	OLD HIGHWAY 17	0.80	100	*G - Gravel (100mm)*	*$24*	8	16	81
597	NIPISSING ST	SECOND ST	THIRD ST	0.13	1200	*Preventative Maintenance*	-	10	19	89
252	EUGENE RD	ARBOUR RD	SOUTH END	0.09	49	*G - Gravel (100mm)*	*$3*	8	16	79
815	ST. JEAN RD	ALOUETTE RD	SOUTH END	1.02	49	*G - Gravel (100mm)*	*$31*	8	16	79
459	LEMIEUX RD	SHUSWAP RD	PRANG'S LN	2.08	49	*G - Gravel (100mm)*	*$64*	8	16	79
603	NORTH & SOUTH RD	PIQUETTE RD	DALCOURT RD	2.34	49	*G - Gravel (100mm)*	*$72*	8	16	79
762	SABOURIN RD	HIGHWAY 64	DE L'ETANG RD	1.43	150	*ST1 - Single Surface Treatment*	*$60*	8	15	83
434	LAROCQUE ST	GAGNE ST	GERALD ST	0.04	200	*Preventative Maintenance*	-	9	18	84
435	LAROCQUE ST	ROBIDAS ST	ROBIDAS ST	0.05	200	*Preventative Maintenance*	-	9	18	84

Sect. No.	Road Name	From	To	Length (km)	AADT	Preliminary Improvement Type Recommendation	Cost (x1000)	Surface Condition	Structural Adequacy	Condition Rating
68	BELISLE ST	BELANGER ST	DESGROSEILLIERS ST	0.15	200	*Preventative Maintenance*	-	9	17	84
69	BELISLE ST	DESGROSEILLIERS ST	DESGROSEILLIERS ST	0.04	200	*Preventative Maintenance*	-	9	17	84
436	LAROCQUE ST	GERALD ST	ROBIDAS ST	0.12	200	*Preventative Maintenance*	-	9	18	84
437	LAROCQUE ST	JARBEAU RD	GAGNE ST	0.17	200	*Preventative Maintenance*	-	9	18	84
439	LAROCQUE ST	HIGHWAY 64	JARBEAU RD	0.20	200	*Preventative Maintenance*	-	9	18	84
156	COURSOL RD	HIGHWAY 17	SALTER RD	0.25	1000	*Preventative Maintenance*	-	10	19	89
525	MARLEAU RD	MALETTE RD	LAC DEUX MILLES RD	1.66	75	*G - Gravel (100mm)*	*$51*	8	16	81
790	SHORELINE RD	TOMIKO RD	COYOTE BAY RD	0.12	49	*G - Gravel (100mm)*	*$4*	8	16	81
555	MILLRAND RD	CHRETIEN RD	NORTH & SOUTH RD	1.22	75	*G - Gravel (100mm)*	*$38*	8	16	81
556	MILLRAND RD	NORTH & SOUTH RD	CLAUDE RD	1.67	75	*G - Gravel (100mm)*	*$51*	8	16	81
528	MARLEAU RD	NIPISSING ST	EAST END	0.80	75	*G - Gravel (100mm)*	*$25*	8	16	81
2	ADELARD ST	HIGHWAY 539A	WEST END	0.47	75	*G - Gravel (100mm)*	*$14*	8	16	81
791	SHORELINE RD	COYOTE BAY RD	HYDRO DAM RD	1.49	49	*G - Gravel (100mm)*	*$46*	8	16	81
800	SMILIE RD	BAY ST	DELMORE RD	0.60	100	*G - Gravel (100mm)*	*$19*	8	16	82
613	OLD HWY 17 RD	MCDONALD RD	KIRKPATRICK RD	0.16	100	*G - Gravel (100mm)*	*$5*	8	16	82
86	BRIDGE ST	BRIDGE ST (BEND)	FLORAL ST	0.08	100	*G - Gravel (100mm)*	*$2*	8	16	82
87	BRIDGE ST	FLORAL ST	MONTREAL ST	0.10	100	*G - Gravel (100mm)*	*$3*	8	16	82
742	ROBICHAUD RD	COUSOL RD	PERRIN RD	0.05	100	*G - Gravel (100mm)*	*$2*	8	16	82

Sect. No.	Road Name	From	To	Length (km)	AADT	Preliminary Improvement Type Recommendation	Cost (x1000)	Surface Condition	Structural Adequacy	Condition Rating
614	OLD HWY 17 RD	ST-AMOUR RD	MCDONALD RD	5.19	100	*G - Gravel (100mm)*	*$160*	8	16	82
88	BRIDGE ST	HIGHWAY 17	BRIDGE ST (BEND)	0.16	100	*G - Gravel (100mm)*	*$5*	8	16	82
857	THIRD ST	RIVER ST	KING ST	0.22	800	*Preventative Maintenance*	-	10	20	89
306	GIGNAC RD	HIGHWAY 539	SOUTH END	0.83	49	*G - Gravel (100mm)*	*$25*	8	16	80
600	NORTH & SOUTH RD	DALCOURT RD	MILLRAND RD	1.70	49	*G - Gravel (100mm)*	*$52*	8	16	80
198	DOCK RD	93M SOUTH OF WATERFRONT DR	SOUTH END	0.25	49	*G - Gravel (100mm)*	*$8*	8	16	80
199	DOCK RD	WATERFRONT DR	93M SOUTH OF WATERFRONT DR	0.09	49	*G - Gravel (100mm)*	*$3*	8	16	80
183	DELORME RD	SMILIE RD	EAST END	0.37	49	*G - Gravel (100mm)*	*$11*	8	16	80
489	LIONEL RD	FILLITRAULT RD	NORTH END	0.50	49	*G - Gravel (100mm)*	*$15*	8	16	80
718	RAINVILLE RD	LAPLAGE RD	EAST END	1.41	49	*G - Gravel (100mm)*	*$43*	8	16	80
343	HILLMAN RD	HIGHWAY 64	OLD AUBIN RD	0.25	49	*G - Gravel (100mm)*	*$8*	8	16	80
468	LEVERT DR	HIGHWAY 64	DE L'ETANG DR	1.59	49	*G - Gravel (100mm)*	*$49*	8	16	80
259	FILION RD	MUSKOSUNG LAKE RD	WEST END	0.96	49	*G - Gravel (100mm)*	*$30*	8	16	80
657	PIKE LAKE RD	HIGHWAY 64	EAST END	3.30	49	*G - Gravel (100mm)*	*$102*	8	16	80
745	ROCHON RD	HIGHWAY 539	WEST END	2.40	49	*G - Gravel (100mm)*	*$74*	8	16	80
444	LAURIN RD	HIGHWAY 575	EAST END	1.35	49	*G - Gravel (100mm)*	*$42*	8	16	80
469	LEVERT DR	DE L'ETANG DR	EAST END	2.22	49	*G - Gravel (100mm)*	*$68*	8	16	80
811	ST LAURENT ST	PAQUETTE ST	EAST END	0.09	49	*ST1 - Single Surface Treatment*	*$4*	8	16	81

Sect. No.	Road Name	From	To	Length (km)	AADT	Preliminary Improvement Type Recommendation	Cost (x1000)	Surface Condition	Structural Adequacy	Condition Rating
266	FORGET AV	DUPRAS ST	ROSE ST	0.12	150	*Preventative Maintenance*	-	9	17	84
267	FORGET AV	ROSE ST	NADEAU ST	0.16	150	*Preventative Maintenance*	-	9	17	84
268	FORGET AV	NADEAU ST	HIGHWAY 539A	0.05	150	*Preventative Maintenance*	-	9	17	84
52	BAY ST	LEBLANC RD	SMILIE RD	0.53	150	*Preventative Maintenance*	-	9	17	84
53	BAY ST	SMILIE RD	VILLENEUVE CT	0.41	150	*Preventative Maintenance*	-	9	17	84
269	FORGET AV	HIGHWAY 539A	DUPRAS ST	0.50	150	*Preventative Maintenance*	-	9	17	84
500	MAIN ST	RAILWAY ST	SALTER ST	0.09	1200	*Preventative Maintenance*	-	10	19	90
582	NIPISSING ST	FOURTH ST	LEVIS ST	0.12	800	*Preventative Maintenance*	-	10	19	89
584	NIPISSING ST	LEVIS ST	AUBREY ST	0.09	800	*Preventative Maintenance*	-	10	19	89
585	NIPISSING ST	THIRD ST	FOURTH ST	0.26	800	*Preventative Maintenance*	-	10	19	89
708	RAILWAY ST	PARKER ST	NIPISSING ST	0.06	800	*Preventative Maintenance*	-	10	19	89
711	RAILWAY ST	MAIN ST	LEVESQUE ST	0.10	800	*Preventative Maintenance*	-	10	19	89
592	NIPISSING ST	ETHEL ST	NORTH END	0.13	200	*Preventative Maintenance*	-	9	17	85
778	SANDHILL RD	CACHE BAY RD	TAMERACK AV	0.06	200	*Preventative Maintenance*	-	9	18	85
484	LEVESQUE ST	SALTER ST	FIRST ST	0.12	200	*Preventative Maintenance*	-	9	17	85
387	KING ST	THIRD ST	MORRISON CT	0.09	200	*Preventative Maintenance*	-	9	17	85
400	LABELLE RD	GOLF COURSE RD	EAST END	0.78	75	*G - Gravel (100mm)*	*$24*	8	16	82
577	NADEAU ST	FORGET AVE	NORTH END	0.19	49	*ST1 - Single Surface Treatment*	*$8*	8	16	81

Sect. No.	Road Name	From	To	Length (km)	AADT	Preliminary Improvement Type Recommendation	Cost (x1000)	Surface Condition	Structural Adequacy	Condition Rating
176	DE LA MONTEE RD	HIGHWAY 575	SOUTH END	1.35	49	*G - Gravel (100mm)*	*$42*	8	16	81
579	NEEDS RD	GIROUX-VEZINA RD	NORTH END	0.28	49	*G - Gravel (100mm)*	*$9*	8	16	81
599	NORLAND RD	SUNNY RIDGE RD	WEST END	2.02	49	*G - Gravel (100mm)*	*$62*	8	16	81
792	SHORELINE RD	HYDRO DAM RD	EAST END	1.56	49	*G - Gravel (100mm)*	*$48*	8	16	81
55	BAY ST	LEBLANC RD	WEST END	1.09	49	*G - Gravel (100mm)*	*$34*	8	16	81
703	QUESNEL RD	DUTRISAC RD	EAST END	1.53	45	*G - Gravel (100mm)*	*$47*	8	16	81
689	QUEEN ST	PARKER ST	NIPISSING ST	0.06	1600	*Preventative Maintenance*	-	8	16	91
692	QUEEN ST	LEVESQUE ST	PARKER ST	0.10	1600	*Preventative Maintenance*	-	8	16	91
622	OTTAWA ST	IMPERIAL ST	ABITIBI ST	0.22	1600	*Preventative Maintenance*	-	8	16	91
623	OTTAWA ST	BRIDGE ST	HIGHWAY 17	0.16	1600	*Preventative Maintenance*	-	8	16	91
353	IMPERIAL ST	CACHE BAY RD	OTTAWA ST	0.10	1600	*Preventative Maintenance*	-	8	16	91
626	OTTAWA ST	ABITIBI ST	BRIDGE ST	0.15	1600	*Preventative Maintenance*	-	8	16	91
712	RAILWAY ST	KING ST	MAIN ST	0.10	1000	*Preventative Maintenance*	-	10	19	90
31	ARTHUR ST	MACKIE ST	MARKET ST	0.13	800	*Preventative Maintenance*	-	10	20	90
32	ARTHUR ST	RUSSELL ST	JOHN ST	0.13	800	*Preventative Maintenance*	-	10	20	90
33	ARTHUR ST	MARKET ST	RUSSELL ST	0.10	800	*Preventative Maintenance*	-	10	20	90
257	EVANSVILLE DR	EGANSVILLE DR	EGANSVILLE DR	1.52	150	*ST1 - Single Surface Treatment*	*$64*	8	16	85
429	LAPLAGE RD	LECLAIR RD	RIVIERE VEUVE RD	3.08	150	*G - Gravel (100mm)*	*$95*	9	18	85
258	EVANSVILLE DR	GOULARD RD	EGANSVILLE DR	1.43	150	*ST1 - Single Surface Treatment*	*$60*	8	16	85

Sect. No.	Road Name	From	To	Length (km)	AADT	Preliminary Improvement Type Recommendation	Cost (x1000)	Surface Condition	Structural Adequacy	Condition Rating
442	LARONDE RD	CACHE BAY RD	SOUTH END	0.22	49	*G - Gravel (100mm)*	*$7*	8	16	82
654	PERRIN RD	ROBICHAUD RD	SOUTH END	0.11	49	*G - Gravel (100mm)*	*$3*	8	16	82
814	ST. JACQUES CRT	DOVERCOURT RD	WEST END	0.13	49	*G - Gravel (100mm)*	*$4*	8	16	82
147	CONCORD RD	FORT RD	EAST END	0.35	49	*G - Gravel (100mm)*	*$11*	8	16	82
680	PRINCIPAL ST E	HIGHWAY 64	RACETTE RD	0.10	1372	*RO1 - Hot Mix Overlay, 1 Lift*	*$23*	8	15	91
28	ARTHUR ST	RAILWAY ST	SALTER ST	0.10	200	*Preventative Maintenance*	-	9	18	86
835	TAMERACK AV	SANDHILL RD	BALSAM CT	0.09	200	*Preventative Maintenance*	-	9	18	86
836	TAMERACK AV	BALSAM CT	CEDAR GROVE RD	0.53	200	*Preventative Maintenance*	-	9	18	86
229	DUPRAS ST	DENIS ST	JACQUES ST	0.22	100	*Preventative Maintenance*	-	9	17	84
230	DUPRAS ST	FORGET AVE	DENIS ST	0.07	100	*Preventative Maintenance*	-	9	17	84
502	MAIN ST	SALTER ST	FIRST ST	0.13	800	*Preventative Maintenance*	-	10	19	90
849	THIRD ST	DEMERS ST	MAGEAU ST	0.10	800	*Preventative Maintenance*	-	10	20	90
853	THIRD ST	VICTORIA ST	RIVER ST	0.12	800	*Preventative Maintenance*	-	10	20	90
678	PRINCIPAL ST E	RACETTE RD	CHAMPLAIN ST	0.13	1200	*RO1 - Hot Mix Overlay, 1 Lift*	*$28*	8	15	91
473	LEVESQUE ST	SECOND ST	THIRD ST	0.12	400	*Preventative Maintenance*	-	10	19	89
513	MAPLE ST	LAC CLAIR RD	DES PINS RD	0.15	150	*Preventative Maintenance*	-	9	18	86
514	MAPLE ST	DES PINS RD	DES CEDRES RD	0.11	150	*Preventative Maintenance*	-	9	18	86
414	LACHANCE RD	COURSOL RD	RIVET ST	0.32	150	*Preventative Maintenance*	-	9	18	86

Sect. No.	Road Name	From	To	Length (km)	AADT	Preliminary Improvement Type Recommendation	Cost (x1000)	Surface Condition	Structural Adequacy	Condition Rating
415	LACHANCE RD	RIVET ST	EAST END	0.09	150	*Preventative Maintenance*	-	9	18	86
806	SPRINGER ST	PARK ST	EAST END	0.12	100	*Preventative Maintenance*	-	9	17	85
824	ST-JEAN BAPTISTE ST	DUBEAU ST	DES ERABLES ST	0.20	100	*Preventative Maintenance*	-	9	18	85
3	ALAIN CT	THIRD ST	NORTH END	0.13	100	*Preventative Maintenance*	-	9	18	85
656	PIETTE ST	CARTIER ST	COTE ST	0.35	100	*Preventative Maintenance*	-	9	17	85
673	PRINCIPAL ST E	CHAMPLAIN ST	PAQUETTE RD	0.04	1000	*RO1 - Hot Mix Overlay, 1 Lift*	*$10*	8	15	91
709	RAILWAY ST	LEVESQUE ST	PARKER ST	0.10	400	*Preventative Maintenance*	-	10	19	89
191	DES ERABLES ST	ST JEAN BAPTISTE RD	NORTH END	0.04	100	*Preventative Maintenance*	-	9	18	86
192	DES ERABLES ST	ST JEAN BAPTISTE RD	PRINCIPAL ST E	0.08	100	*Preventative Maintenance*	-	9	18	86
193	DES ERABLES ST	PRINCIPAL ST E	GINGRAS AV	0.16	100	*Preventative Maintenance*	-	9	18	86
243	ERANA MINE RD	HIGHWAY 539A	EAST END	1.13	49	*G - Gravel (100mm)*	*$35*	9	18	84
115	CARTIER ST	PRINCIPAL ST W	ST ARMOUR RD	0.14	200	*Preventative Maintenance*	-	9	18	88
580	NICHOLSON RD	ROBERTS RD	NORTH END	0.61	75	*G - Gravel (100mm)*	*$19*	9	18	85
234	DUTRISAC RD	QUESNEL RD	GARDEN VILLAGE RD	1.69	1000	*Preventative Maintenance*	-	9	18	91
685	PRINCIPAL ST W	PAQUETTE RD	PILON ST	0.03	800	*RO1 - Hot Mix Overlay, 1 Lift*	*$6*	8	15	91
196	DESGROSEILLIERS ST	SALTER ST	SPRINGER ST	0.17	100	*Preventative Maintenance*	-	10	19	86
615	OLD HWY 17 RD	KIRKPATRICK RD	NORTH & SOUTH RD	2.34	100	*G - Gravel (100mm)*	*$72*	9	18	86

Sect. No.	Road Name	From	To	Length (km)	AADT	Preliminary Improvement Type Recommendation	Cost (x1000)	Surface Condition	Structural Adequacy	Condition Rating
616	OLD HWY 17 RD	NORTH & SOUTH RD	MOUSTIK RD	0.81	100	*G - Gravel (100mm)*	*$25*	9	18	86
674	PRINCIPAL ST E	HERITAGE CR	TELESPHORES ST	0.03	200	*Preventative Maintenance*	-	10	19	88
675	PRINCIPAL ST E	HERITAGE CR	HERITAGE CR	0.10	200	*Preventative Maintenance*	-	10	19	88
677	PRINCIPAL ST E	TELESPHORES ST	EAST END	0.02	200	*Preventative Maintenance*	-	10	19	88
494	LISGAR ST	SIMCOE ST	CACHE BAY RD	0.10	200	*Preventative Maintenance*	-	10	19	88
90	BURNHAM RD	HIGHWAY 539A	EAST END	0.09	49	*G - Gravel (100mm)*	*$3*	9	18	85
735	RIVIERE ST	HIGHWAY 64	WEST END	0.28	75	*G - Gravel (100mm)*	*$9*	10	19	86
544	MICHAUD ST	BOURGAULT ST	NORTH ST	0.11	400	*Preventative Maintenance*	-	10	20	90
546	MICHAUD ST	NORTH ST	ETHEL ST	0.14	400	*Preventative Maintenance*	-	10	20	90
683	PRINCIPAL ST W	PILON ST	BEAUDIN ST	0.11	600	*RO1 - Hot Mix Overlay, 1 Lift*	*$25*	8	15	91
561	MONTREAL ST	BRIDGE ST	SOUTH END	0.16	100	*Preventative Maintenance*	-	10	19	87
299	GARDEN VILLAGE RD	DUTRISAC RD	COCKBURN RD	1.48	200	*Preventative Maintenance*	-	9	18	89
545	MICHAUD ST	RAILWAY ST	SALTER ST	0.11	200	*Preventative Maintenance*	-	10	19	89
206	DOVERCOURT RD	CACHE BAY RD	NORTH END	0.47	200	*Preventative Maintenance*	-	10	19	89
123	CHATEAU TR	RUSSELL ST	WEST END	0.10	200	*Preventative Maintenance*	-	10	20	89
738	ROBERGE RD	LECLAIR RD	SOUTH END	2.82	49	*G - Gravel (100mm)*	*$87*	9	18	86
617	OLD HWY 17 RD	MOUSTIK RD	WEST END	1.74	49	*G - Gravel (100mm)*	*$54*	9	18	86

Sect. No.	Road Name	From	To	Length (km)	AADT	Preliminary Improvement Type Recommendation	Cost (x1000)	Surface Condition	Structural Adequacy	Condition Rating
658	PILON ST	PRINCIPAL ST W	SOUTH END	0.07	100	*Preventative Maintenance*	-	10	19	88
388	KING ST	SECOND ST	THIRD ST	0.12	200	*Preventative Maintenance*	-	10	19	90
381	KING ST	HIGHWAY 17	RAILWAY ST	0.15	400	*Preventative Maintenance*	-	10	19	91
66	BELANGER ST	BELISLE ST	THIRD ST	0.27	200	*Preventative Maintenance*	-	10	20	90
67	BELANGER ST	SALTER RD	BELISLE ST	0.11	200	*Preventative Maintenance*	-	10	20	90
499	MAGEAU ST	THIRD ST	ROY ST	0.45	200	*Preventative Maintenance*	-	10	20	90
627	OTTAWA ST	SPRING ST	BAY ST	0.11	200	*Preventative Maintenance*	-	10	20	90
805	SPRING ST	OTTAWA ST	PEMBROKE ST	0.10	200	*Preventative Maintenance*	-	10	20	90
391	KING ST	CAMERON CT	ALEXE ST	0.24	200	*Preventative Maintenance*	-	10	20	90
4	ALEXE ST	KING ST	MATHIEU ST	0.26	200	*Preventative Maintenance*	-	10	20	90
5	ALEXE ST	MATHIEU ST	SOUTH END	0.15	200	*Preventative Maintenance*	-	10	20	90
532	MATHIEU ST	ALEXE ST	NIPISSING ST	0.21	200	*Preventative Maintenance*	-	10	20	90
844	TELESPHORE ST	PRINCIPAL ST E	GINGRAS AV	0.12	100	*Preventative Maintenance*	-	10	19	89
216	DUBEAU ST	HIGHWAY 17	NORTH END	0.16	100	*Preventative Maintenance*	-	10	19	89
49	BALSAM CT	TAMERACK AV	SOUTH END	0.24	100	*Preventative Maintenance*	-	10	19	89
881	VERCHERES ST	HIGHWAY 64	DUBEAU ST	0.14	200	*Preventative Maintenance*	-	10	19	91
233	DUTRISAC RD	GARDEN VILLAGE RD	PROMENADE DU LAC	0.26	400	*Preventative Maintenance*	-	10	19	92
804	SPRING ST	PEMBROKE ST	RAMSAY ST	0.09	100	*Preventative Maintenance*	-	10	20	90

Sect. No.	Road Name	From	To	Length (km)	AADT	Preliminary Improvement Type Recommendation	Cost (x1000)	Surface Condition	Structural Adequacy	Condition Rating
723	RAMSAY ST	SPRING ST	SOUTH END	0.08	49	*Preventative Maintenance*	-	10	20	89
648	PARKER ST	SECOND ST	NORTH END	0.08	49	*Preventative Maintenance*	-	10	19	89
892	WILLIAM ST	RIVER ST	HOLDITCH ST	0.14	49	*Preventative Maintenance*	-	10	19	90
547	MICHAUD ST	QUEEN ST	HIGHWAY 17	0.13	1187	*Preventative Maintenance*	-	9	18	95
38	AURELE ST	PRINCIPAL ST W	SOUTH END	0.11	49	*Preventative Maintenance*	-	10	19	91
542	MICHAUD ST	WILLIAM ST	QUEEN ST	0.12	1000	*Preventative Maintenance*	-	9	18	95
543	MICHAUD ST	JOHN ST	WILLIAM ST	0.12	1000	*Preventative Maintenance*	-	9	18	95
50	BAY ST	OTTAWA ST	PEMBROKE ST	0.10	150	*Preventative Maintenance*	-	10	20	93
51	BAY ST	PEMBROKE ST	EAST END	0.10	150	*Preventative Maintenance*	-	10	20	93
504	MAIN ST	QUEEN ST	HIGHWAY 17	0.13	1284	*Preventative Maintenance*	-	9	18	96
345	HOLDITCH ST	MACKIE ST	MARKET ST	0.13	1200	*Preventative Maintenance*	-	9	18	96
503	MAIN ST	WILLIAM ST	QUEEN ST	0.11	1200	*Preventative Maintenance*	-	9	18	96
347	HOLDITCH ST	RUSSELL ST	JOHN ST	0.12	1200	*Preventative Maintenance*	-	9	18	96
507	MAIN ST	JOHN ST	WILLIAM ST	0.12	1200	*Preventative Maintenance*	-	9	18	96
351	HOLDITCH ST	MARKET ST	RUSSELL ST	0.10	1200	*Preventative Maintenance*	-	9	18	96
693	QUEEN ST	HOLDITCH ST	KING ST	0.10	2000	*Preventative Maintenance*	-	10	19	99
346	HOLDITCH ST	QUEEN ST	HIGHWAY 17	0.12	2000	*Preventative Maintenance*	-	10	19	99
696	QUEEN ST	MAIN ST	LEVESQUE ST	0.10	2000	*Preventative Maintenance*	-	10	19	99

Sect. No.	Road Name	From	To	Length (km)	AADT	Preliminary Improvement Type Recommendation	Cost (x1000)	Surface Condition	Structural Adequacy	Condition Rating
350	HOLDITCH ST	WILLIAM ST	QUEEN ST	0.12	2000	*Preventative Maintenance*	-	10	19	99
893	WILLIAM ST	KING ST	MAIN ST	0.10	1600	*Preventative Maintenance*	-	10	19	99
894	WILLIAM ST	HOLDITCH ST	KING ST	0.10	1600	*Preventative Maintenance*	-	10	19	99
697	QUEEN ST	RIVER ST	HOLDITCH ST	0.13	1600	*Preventative Maintenance*	-	10	19	99
348	HOLDITCH ST	JOHN ST	WILLIAM ST	0.12	1200	*Preventative Maintenance*	-	10	19	99
699	QUEEN ST	KING ST	MAIN ST	0.10	1200	*Preventative Maintenance*	-	10	19	99
541	MICHAUD ST	RUSSELL ST	JOHN ST	0.13	1000	*Preventative Maintenance*	-	10	19	99
548	MICHAUD ST	ETHEL ST	RUSSELL ST	0.38	1000	*Preventative Maintenance*	-	10	19	99
497	MACKIE ST	HODITCH ST	KING ST	0.10	800	*Preventative Maintenance*	-	10	20	100

Notes:
1. *Priorities in descending order. The higher the priority rating the greater the need.*
2. *Rehabilitation strategy to be confirmed by geotechnical investigations at detail design.*

6.3 Preservation Management

Preservation techniques seal the surface as to prevent water infiltration into the granular base. Route and Seal is used on HCB pavements to seal individual cracks. Slurry Seal / Microsurfacing is used on LCB and HCB pavements to seal large areas, although wide / active cracks will reflect through the treatment. An annual preservation management budget has been estimated as follows:

Slurry Seal / Microsurfacing

- 73.4 km of paved roads (HCB).
- 45.0 km of surface treated roads (LCB).
- Assume that slurry seal / microsurfacing will be applied, on average, once per resurfacing cycle.
- 10.1 km of road to preserve per year (3.7 km HCB and 6.4 km of LCB).
- **Annual budget $222,705** (25.8 km x $22,000 / km **Slurry Sealing / Microsurfacing**).

6.4 Road Maintenance

Preventative road and roadside maintenance is critical to prolonging the useful service life of a road and maximizing the capital investment. A continuous road and roadside maintenance program is recommended to reduce the road degradation rates. Ditch cleanout and clearing of vegetation from the right-of-way should be carried out on a regular basis. This can either be accomplished through dedicated internal Municipality forces or sub-contracting to private contractors. Consideration may be given to a dedicated capital program of ditch cleanout and clearing, to ensure resources are dedicated to these important activities.

7.0 O. Reg. 588/17 Reporting Requirements

This study meets the reporting requirements under Table 4 of O. Reg. 588/17. For convenience, all items required under Table 4 are presented below, with the exception of mapping.

Table 11 – Road Class Density

Class	Lane-kilometres	Lane-kilometres / Municipal Area*
Arterial	0.00	0.00
Collector Roads	52.11	0.03
Local Roads	1045.25	0.53
All	1097.36	0.56

**Municipal area taken as 1956.27 km²*

The average PCI for hard top surfaces in the Municipality is 74.8.

The average surface condition of unpaved roads is 7.1 as per the inventory Manual. This would broadly translate into a road with "good" rating.

Descriptions that illustrate the different levels of road pavement condition are presented in the tables below:

Table 12 - Qualitative Descriptions of PCI for HCB Roads[2]

PCI Range	Qualitative Description
90 - 100	Pavement is in excellent condition with few cracks. The Ride Condition Rating is excellent with few areas of very slight to slight distortion.
75 - 90	The pavement is in good condition with frequent very slight or slight cracking. The Ride Condition Rating is good with a few slightly rough and uneven sections.
65 - 75	The pavement is in fairly good condition with slight cracking, slight or very slight distortion and a few areas of slight alligatoring. The Ride Condition Rating is fairly good with intermittent rough and uneven sections.
50 - 65	The pavement is in fair condition with intermittent moderate and frequent slight cracking, and with intermittent slight or moderate alligatoring and distortion. The Ride Condition Rating is fair and the surface is slightly rough and uneven.
40 - 50	The pavement is in poor to fair condition with frequent moderate cracking and distortion, and intermittent moderate alligatoring. The Ride Condition Rating is poor to fair and the surface is moderately rough and uneven.
30 - 40	The pavement is in poor to fair condition with frequent moderate alligatoring and extensive moderate cracking and distortion. The Ride Condition Rating is poor to fair and the surface is moderately rough and uneven.
20 - 30	The pavement is in poor condition with moderate alligatoring and extensive severe cracking and distortion. The Ride Condition Rating is poor and the surface is very rough and uneven.
0 - 20	The pavement is in poor to very poor condition with extensive severe cracking, alligatoring and distortion. The Ride Condition Rating is very poor and the surface is very rough and uneven.

[2] Adapted from Table B-1 of the MTO's Manual for Condition Rating of Flexible Pavements, SP-024.

Table 13 - Qualitative Descriptions of PCI for LCB Roads[3]

PCI Range	Qualitative Description
80 - 100	Pavement is in excellent condition with just a few bumps or depressions from slight surface deformation. No surface defects such as streaking, potholes or cracking distresses. The Ride Condition Rating is very good.
60 - 79	Pavement is in good condition with just a few bumps or depressions from slight to moderate surface deformation. Intermittent slight to moderate surface defects and/or cracking distresses. The Ride Condition Rating is good.
40 - 59	Pavement is in fair condition with intermittent to frequent bumps or depressions from slight to moderate surface deformation. Intermittent to frequent moderate surface defects and/or cracking distresses. The Ride Condition Rating is fair.
20 - 39	Pavement is in poor condition with frequent bumps or depressions from moderate surface deformation. Frequent moderate to severe surface defects and/or cracking distresses. Localized slight to moderate alligatoring may be present indicating pavement structural failure. The Ride Condition Rating is poor.
0 - 19	Pavement is in very poor condition with extensive bumps or depressions from moderate to sever surface deformation. Extensive to severe surface defects and/or cracking distresses. Frequent slight to moderate alligatoring may be present, indicating pavement structural failure. The Ride Condition Rating is very poor.

Table 14 - Qualitative Descriptions of Surface Condition for Gravel Roads[4]

Surface Condition	Qualitative Description
10	If the section affords a fully adequate standard of service, with no annoyance or discomfort. Gravel roads rarely score a "10" rating due to their inherent roughness.
7 - 9	If it is possible to maintain the lesser of the Minimum Tolerable Average Operating Speed or the legal Speed Limit with only a noticeable amount of annoyance to the driver due to sway, vibration or steering effort, but with no noticeable feeling of hazard.

[3] Adapted from Table B-1 of the MTO's Manual for Condition Rating of Surface-Treated Roads, SP-021.
[4] Adapted from Item 83 from the MTO's Ministry of Transportation's Inventory Manual for Municipal Roads (February 1991).

4 - 6	If maintaining even the lesser of the Minimum Tolerable Average Speed or the legal Speed Limit results in either a "tug-of-war" with a too-steep crown, or a feeling that the car is taking undue punishment.
1 - 3	If the surface irregularities are so severe that a driver will tend to reduce speed considerably, possibly even steering an irregular course, or if the crown is so steep as to be hazardous in winter.

7.1 Replacement Cost

In conjunction with this Road Needs Study Report, a replacement cost for the road asset was calculated based strictly on roadbed materials i.e. sub-base, base and surface. Road design standards noted in **Table 8** were used to estimate the existing depth of road bed materials for the purpose of the replacement cost calculation.

The total replacement cost for the Municipality's road infrastructure is approximately $160.5 M.

Note this cost represents the theoretical road bed materials costs only and does not include items such as removal of the existing road bed, installation of signs, pavement markings, lighting, drainage infrastructure, property etc.

8.0 Summary

D.M. Wills Associates (Wills) undertook a review of the Municipality of West Nipissing (Municipality) existing road network to assess its physical condition and confirm various road attributes. Data collected as a result of the field review was used to develop a prioritized listing of the road network needs based primarily on condition and traffic volumes.

Wills undertook the field study in April and May of 2023. A visual assessment of each road within the Municipality was undertaken to assess the current condition of the road.

Two primary indicators of the relative health of a road are the structural adequacy and surface condition ratings. The current average structural adequacy rating for the Municipality's road network is 13.8/20. The current average surface condition rating for the Municipality's road network is 7.0/10.

2% (12.1 km) of the road network has a Structural "NOW" need, 4% (24.5 km) has a Structural "1-5" year need, and 6% (34.0 km) of the road network has a Structural "6-10" year need.

Preservation Management

In addition to addressing currently deficient roads (i.e. capital reconstruction), a dedicated preservation management approach is required, **and perhaps even more importantly**, to "keep the good roads good"; the fundamental principle being that it costs much less to maintain a good road than it does to let it fail and then reconstruct it,

from a life cycle cost perspective. Ultimately, the goal of preservation management is to extend the useful life of a road and road network, maximizing the Municipality's investment over the road life-cycle.

Road resurfacing is an effective way of extending the overall life of the pavement structure and therefore a road resurfacing program is highly recommended. Roads with a structural adequacy of 12/20 or greater are included as candidates for potential resurfacing. Preliminary recommendations and prioritization for road resurfacing are based on condition rating and traffic demands on each road section, as per the Inventory Manual. A road with higher traffic volumes and fair structural adequacy is given priority over a road with moderate traffic and good structural adequacy score, in an attempt to intervene and extend the life of the road before it deteriorates to a level that can no longer be resurfaced (i.e. more expensive reconstruction is required). Specific resurfacing treatment recommendations must be assessed through further field investigation and detail design effort, prior to selecting and implementing the resurfacing strategy.

Based on typical degradation rates for gravel roads, surface treatment, and hot mix, a total resurfacing program, (hot mix, surface treatment and gravel) is estimated at $4,472,100 per year.

Further to the recommendations above with respect to resurfacing, it is also recommended that regular maintenance in the form of roadside ditch cleanout and clearing be undertaken as a critical component to preservation management in order to extend the useful service life of the existing roads.

Capital Improvements

Preliminary recommendations and prioritization for planned capital improvements i.e. reconstruction, have been developed based on the condition rating and traffic demands on each road section, as per the Inventory Manual. Those roads identified as having a "NOW", 1 – 5 year, or 6 – 10 year need have been included in the capital improvement plan for reconstruction.

A total length of 70.6 km of roads were identified as having structural needs in the "NOW", 1 – 5 or 6-10 year periods. The estimated cost to improve these roads is approximately $18.2 M.

A fully funded 10 year plan following the recommendations in this report includes $4.5 M/year for resurfacing needs and $1.8 M/year for the capital needs over ten years.

An additional length of approximately 62 km of road is identified as having inadequate surface widths. Generally, provided no operational or safety concerns are identified, roads with surface width deficiencies are typically addressed / considered at the next full reconstruction cycle.

The time of inspection plays a significant role in assessing a road's condition. The field work for this study was carried out in April and May of 2023.

We trust the above and attached information will be of benefit to the Municipality and appreciate the opportunity to assist the Municipality in developing its road improvement plan.

Respectfully submitted,

Eric St. Pierre, P.Eng
Transportation Engineer

Turner Kuhlmeyer, E.I.T.
Transportation Engineering Intern

Statement of Limitations

This report has been prepared by D.M. Wills Associates on behalf of the Municipality of West Nipissing. The conclusions and recommendations in this report are based on available background documentation and discussions with applicable Municipality staff at the time of preparation.

The report is intended to document the 2023 Roads Needs Study Report findings and assist the Municipality in developing budgetary plans for investment into their road network.

Any use which a third party makes of this report, other than as a Road Needs Study Report is the responsibility of such third parties. D.M. Wills Associates Limited accepts no responsibility for damages, if any, suffered by a third party as a result of decisions made or action taken based on using this report for purposes other than as a summary of the 2023 Road Needs Study Report findings.

Appendix A

Unit Price Form

ROAD IMPROVEMENT COSTS
West Nipissing [NOT UPDATED]

Unit Costs	Units	Unit Cost
Granular A	t	$25.00
Granular B	t	$20.00
Hot Mix	t	$250.00
Earth Excavation	m3	$20.00
Asphalt Removal	m2	$8.00
Asphalt Removal - Partial Depth	m2	$4.00
Removal of Concrete Curb & Gutter	m	$30.00
Concrete Curb & Gutter	m	$175.00
In-Place Full Depth Reclamation	m2	$2.50
Surface Treatment - Single	m2	$5.00
Surface Treatment - Double	m2	$8.00
Granular A Conversion	2.2	t/m3
Granular B Conversion	2	t/m3
Hot Mix Conversion	2.45	t/m3

Gravel (100mm)

Item	*Width - m*	*Depth - mm*	*Conversion Factor*	*Unit*		*Quantity*	*Unit Cost*	*Cost/km (x 1000)*
Granular A	7.0	100	2.2	t		1540	$25.00	$ 39
							G	**39**

Frost Heave Treatment

Item	*Width - m*	*Depth - mm*	*Conversion Factor*	*Unit*		*Quantity*	*Unit Cost*	*Cost/50m Digout (x 1000)*
Earth Excavation	8.0	800		m3		320	$20.00	$ 6
Granular A	7.0	150	2.2	t		115.5	$25.00	$ 3
Granular B	8.0	650	2	t		520	$20.00	$ 10
							FT	**20**

Surface Treatment - Rural/Semi Urban - Single [ST1]

Item	*Width - m*	*Depth - mm*	*Conversion Factor*	*Unit*		*Quantity*	*Unit Cost*	*Cost/km (x 1000)*
Surface Treatment - Single (Overlay)	7.0			m2		7000	$5.00	$ 35
							ST1	**35**

Surface Treatment - Rural/Semi Urban - Double [ST2]

Item	*Width - m*	*Depth - mm*	*Conversion Factor*	*Unit*		*Quantity*	*Unit Cost*	*Cost/km (x 1000)*
Surface Treatment - Double (Overlay)	7.0			m2		7000	$8.00	$ 56
							ST2	**56**

Surface Treatment - Rural/Semi Urban - Double with Removal of Existing [ST2R]

Item	*Width - m*	*Depth - mm*	*Conversion Factor*	*Unit*	*Crossfall Correction*	*Quantity*	*Unit Cost*	*Cost/km (x 1000)*
Surface Treatment - Double	7.0			m2		7000	$8.00	$ 56
Removal Asphalt Pavement	7.0	16		m2		7000	$8.00	$ 56
							ST2R	**112**

Surface Treatment - Rural/Semi Urban - Double with Granular Base [ST2A]

Item	*Width - m*	*Depth - mm*	*Conversion Factor*	*Unit*	*Crossfall Correction*	*Quantity*	*Unit Cost*	*Cost/km (x 1000)*
Surface Treatment - Double	7.0			m2		7000	$8.00	$ 56
Granular A	7.0	150	2.2	t		2310	$25.00	$ 58
							ST2A	**114**

Surface Treatment - Rural/Semi Urban - Double with Pulverization and Granular Base [ST2PA]								
Item	*Width - m*	*Depth - mm*	*Conversion Factor*	*Unit*	*Crossfall Correction*	*Quantity*	*Unit Cost*	*Cost/km (x 1000)*
Surface Treatment - Double	7.0			m2		7000	$8.00	$ 56
Granular A	7.0	150	2.2	t		2310	$25.00	$ 58
Pulverizing	7.0			m2		7000.0	$2.50	$ 18
Minor Items @ 25%								$ 4
							ST2PA	**136**

Surface Treatment - Rural/Semi Urban - Widening and Double with Pulverization and Granular Base [ST2PAW]								
Item	*Width - m*	*Depth - mm*	*Conversion Factor*	*Unit*	*Crossfall Correction*	*Quantity*	*Unit Cost*	*Cost/km (x 1000)*
Surface Treatment - Double	7.0			m2		7000	$8.00	$ 56
Granular A	7.0	150	2.2	t		2310	$25.00	$ 58
Pulverizing	7.0			m2		7000.0	$2.50	$ 18
Earth Excavation	2	450		m3		900	$20.00	$ 18
Granular B	1	450	2	t		900	$20.00	$ 18
Minor Items @ 25%								$ 13
							ST2PAW	**181**

Resurfacing - Rural/Semi Urban Single Lift Overlay [RO1]								
Item	*Width - m*	*Depth - mm*	*Conversion Factor*	*Unit*	*Crossfall Correction ** *	*Quantity*	*Unit Cost*	*Cost/km (x 1000)*
Hot Mix	3	50	2.45	t	74	441	$250.00	$ 110
Granular A	1.5	50	2.2	t		165	$25.00	$ 4
Minor Items @ 15%								$ 17
							RO1	**132**

Resurfacing - Rural/Semi Urban - Double Lift Overlay [RO2]								
Item	*Width - m*	*Depth - mm*	*Conversion Factor*	*Unit*	*Crossfall Correction ** *	*Quantity*	*Unit Cost*	*Cost/km (x 1000)*
Hot Mix	3	90	2.45	t	66	728	$250.00	$ 182
Granular A	1.5	90	2.2	t		297	$25.00	$ 7
Minor Items @ 15%								$ 28
							RO2	**218**

Resurfacing - Urban - Single Lift Mill and Pave [RMP1]								
Item	*Width - m*	*Depth - mm*	*Conversion Factor*	*Unit*	*Crossfall Correction*	*Quantity*	*Unit Cost*	*Cost/km (x 1000)*
Hot Mix	4.25	50	2.45	t		521	$250.00	$ 130
Remove Curb and Gutter				m		200	$30.00	$ 6.00
Curb and Gutter - 20%				m		200	$175.00	$ 35.00
Milling	4.25			m2		4250	$4.00	$ 17.00
Minor Items @ 25%								$ 47
							RMP1	**235**

Resurfacing - Urban - Double Lift Mill and Pave [RMP2]								
Item	*Width - m*	*Depth - mm*	*Conversion Factor*	*Unit*	*Crossfall Correction*	*Quantity*	*Unit Cost*	*Cost/km (x 1000)*
Hot Mix	4.25	90	2.45	t		937	$250.00	$ 234
Remove Curb and Gutter				m		200	$30.00	$ 6.00
Curb and Gutter - 20%				m		200	$175.00	$ 35.00
Milling	4.25			m2		4250	$4.00	$ 17.00
Minor Items @ 25%								$ 73
							RMP2	**365**

Pulverize and Pave One Lift [PP1] Rural/Semi-Urban								
Item	*Width - m*	*Depth - mm*	*Conversion Factor*	*Unit*	*Crossfall Correction*	*Quantity*	*Unit Cost*	*Cost/km (x 1000)*
Hot Mix	3	50	2.45	t		367.5	$250.00	$ 92
Granular A	1.5	50	2.2	t		165	$25.00	$ 4
Pulverize	3			m2		3000	$2.50	$ 7.50
Minor Items @ 25%								$ 26
							PP1	**129**

Pulverize and Pave Two Lifts [PP2] Rural/Semi-Urban								
Item	*Width - m*	*Depth - mm*	*Conversion Factor*	*Unit*	*Crossfall Correction*	*Quantity*	*Unit Cost*	*Cost/km (x 1000)*
Hot Mix	3	90	2.45	t		661.5	$250.00	$ 165
Granular A	1.5	90	2.2	t		297	$25.00	$ 7
Pulverize	3			m2		3000	$2.50	$ 8
Minor Items @ 25%								$ 45
							PP2	**225**

Semi-Urban: Resurfacing and Widening - Residential (Single Lift Widening)								
Item	*Width - m*	*Depth - mm*	*Conversion Factor*	*Unit*	*Crossfall Correction* **	*Quantity*	*Unit Cost*	*Cost/km (x 1000)*
Earth Excavation	2	600		m3		1200	$20.00	$ 24
Granular A	5	150	2.2	t		1650	$25.00	$ 41
Granular B	5	450	2	t		4500	$20.00	$ 90
Hot Mix	8	50	2.45	t	196	1176	$250.00	$ 294
Milling	4			m2		4000	$4.00	$ 16
Minor Items @ 25%								$ 116
							RW1	**582**

Commercial and Industrial (Double Lift Widening)								
Item	*Width - m*	*Depth - mm*	*Conversion Factor*	*Unit*	*Crossfall Correction*	*Quantity*	*Unit Cost*	*Cost/km (x 1000)*
Earth Excavation	2	600		m3		1200	$20.00	$ 24
Granular A	5	150	2.2	t		1650	$25.00	$ 41
Granular B	5	450	2	t		4500	$20.00	$ 90
Hot Mix	8	90	2.45	t	353	2117	$250.00	$ 529
Milling	4			m2		4000	$4.00	$ 16
Minor Items @ 25%								$ 175
							RW2	**876**

Gravel Road Widening

Item	*Width - m*	*Depth - mm*	*Conversion Factor*	*Unit*	*Crossfall Correction*	*Quantity*	*Unit Cost*	*Cost/km (x 1000)*
Earth Excavation	2	600		m3		1200	$20.00	$ 24
Granular A	1	150	2.2	t		330	$25.00	$ 8
Granular B	1	450	2	t		900	$20.00	$ 18
Minor Items @ 25%								$ 13
							GW	**63**

Rural: Full Excavation and Reconstruction - Gravel (6 m surface width)

Item	*Width - m*	*Depth - mm*	*Conversion Factor*	*Unit*	*Crossfall Correction*	*Quantity*	*Unit Cost*	*Cost/km (x 1000)*
Earth Excavation	5	600		m3		3000	$20.00	$ 60
Granular A	3	150	2.2	t		990	$25.00	$ 25
Granular B	5	450	2	t		4500	$20.00	$ 90
Minor Items @ 25%								$ 44
							Recon G	**218**

Rural: Full Excavation and Reconstruction - 1 Lift

Item	*Width - m*	*Depth - mm*	*Conversion Factor*	*Unit*	*Crossfall Correction*	*Quantity*	*Unit Cost*	*Cost/km (x 1000)*
Asphalt Removal - Full Depth	3			m2		3000	$8.00	$ 24
Earth Excavation	5	600		m3		3000	$20.00	$ 60
Granular A	4	150	2.2	t		1320	$25.00	$ 33
Granular B	5	450	2	t		4500	$20.00	$ 90
Hot Mix	3	50	2.45	t		368	$250.00	$ 92
Minor Items @ 25%								$ 75
							Recon 1R	**374**

Semi-Urban: Full Excavation and Reconstruction - 1 Lift

Item	*Width - m*	*Depth - mm*	*Conversion Factor*	*Unit*	*Crossfall Correction*	*Quantity*	*Unit Cost*	*Cost/km (x 1000)*
Asphalt Removal - Full Depth	3			m2		3000	$8.00	$ 24
Earth Excavation	5	600		m3		3000	$20.00	$ 60
Granular A	4	150	2.2	t		1320	$25.00	$ 33
Granular B	5	450	2	t		4500	$20.00	$ 90
Hot Mix	3	50	2.45	t		368	$250.00	$ 92
Minor Items @ 25%								$ 75
							Recon 1S	**374**

Semi-Urban: Full Excavation and Reconstruction - 2 Lift

Item	*Width - m*	*Depth - mm*	*Conversion Factor*	*Unit*	*Crossfall Correction*	*Quantity*	*Unit Cost*	*Cost/km (x 1000)*
Asphalt Removal - Full Depth	3			m2		3000	$8.00	$ 24
Earth Excavation	5	600		m3		3000	$20.00	$ 60
Granular A	4	150	2.2	t		1320	$25.00	$ 33
Granular B	5	450	2	t		4500	$20.00	$ 90
Hot Mix	3	90	2.45	t		662	$250.00	$ 165
Minor Items @ 25%								$ 93
							Recon 2S	**465**

Urban: Full Excavation and Reconstruction - 2 Lift								
Item	***Width - m***	***Depth - mm***	***Conversion Factor***	***Unit***	***Crossfall Correction***	***Quantity***	***Unit Cost***	***Cost/km (x 1000)***
Asphalt Removal - Full Depth	4.25			m2		4250	$8.00	$ 34
Earth Excavation	5.5	750		m3		4125	$20.00	$ 83
Granular A	4.5	150	2.2	t		1485	$25.00	$ 37
Granular B	5.5	600	2	t		6600	$20.00	$ 132
Hot Mix	4.25	90	2.45	t		937	$250.00	$ 234
Remove Curb and Gutter				m		1000	$30.00	$ 30.00
Curb and Gutter				m		1000	$175.00	$ 175.00
Minor Items @ 25%								$ 130
							Recon 2U	**855**

Rout and Seal								
Item				***Unit***		***Quantity***	***Unit Cost***	***Cost/km (x 1000)***
Rout and Seal				m		1000	$4.00	$ 4
							RS	**4**

Slurry Seal								
Item	***Width - m***			***Unit***		***Quantity***	***Unit Cost***	***Cost/km (x 1000)***
Slurry Seal	7			m2		7000	$3.15	$ 22
							SS	**22**

Microsurfacing								
Item	***Width - m***			***Unit***		***Quantity***	***Unit Cost***	***Cost/km (x 1000)***
Microsurfacing	7			m2		7000	$6.00	$ 42
							MS	**42**

Appendix B

Guiderail Memo

Memo

To:	Municipality of West Nipissing
From:	Eric St. Pierre, P.Eng.
Date:	November 13, 2023
Project Name:	2023 Road Needs Study
Project Number:	22-4839
Subject:	Guiderail Inventory

1.0 Purpose

As an add-on to the general Road Needs Study, Wills inventoried West Nipissing's freestanding guiderail systems. Guiderail systems attached to structures were not included as they are covered under West Nipissing's OSIM reporting.

Specifically, the inventory process captured the following items:

- Mapping as captured by a handheld GPS and presented in a shapefile compatible with West Nipissing's GIS,
- Length, as measured by a measuring wheel,
- Guiderail properties such as type, post and offset block material, end treatments, offset and recovery zone width, and mounting height,
- General condition of the rail / cable and posts, and
- General hazard identification (i.e. hazards were not delineated or analysed beyond identification).

2.0 Summary Table

The summary table included in the next page summarizes the free-standing guiderail inventory within West Nipissing.

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Guiderail Summary Table

ID and Street Name	Length (m)	System Condition	End Treatment (Start - End)	Mounting Height (mm)	Offset (m)	Recovery (m)	Hazard	Comments
GR1 Lalande Road	70	SBGR Steel Posts - Good Plastic Offset Blocks Rail - Good	Fish Tail - Fish Tail	773	1.2	0	Water	Some minor collision/snow plow damage
GR2 Bay St	8	SBGR Wood Posts - Good Wood Offset Blocks Rail - Good	Fish Tail - Fish Tail	503	1	0.3	Electrical Box	Missing o/s block
GR3 Second St	19.8	SBGR Steel Posts - Poor No Offset Blocks Rail - Poor	Fish Tail - Fish Tail	527	1.2	0	Steep Grade / Embankment	Very poor condition
GR4 Quesnel Road	119.5	SBGR Wood Posts - Good Wood Offset Blocks Rail - Good	Turndown - Fish Tail	635	1.5	0	Water	75% of length is new, rest has low mounting heigh & poor condition.
GR5 Goulard Rd	52.8	SBGR Wood Posts - Good Wood Offset Blocks Rail - Good	Fish Tail - Fish Tail	743	1.8	0	Water	
GR6 Cache Bay Rd	46	SBGR Wood Posts - Poor No Offset Blocks Rail - Poor	Fish Tail - Fish Tail	743	1.1	0.5	Retaining Wall / Vertical Drop	

ID and Street Name	Length (m)	System Condition	End Treatment (Start - End)	Mounting Height (mm)	Offset (m)	Recovery (m)	Hazard	Comments
GR7 Cache St	6.8	SBGR Wood Posts - Poor No Offset Blocks Rail - Poor	None	793	1.7	1	Utility Pole / Electrical Box	
GR8 Des Erables St	4.1	SBGR Wood Posts - Poor No Offset Blocks Rail - Poor	None	700	1.5	0	No Hazard	Guiderail does not protect a hazard – it prevents access to Highway 17.
GR9 Labrosse Road	131	3CGR Wood Posts - Good Cable - Good	Turndown - Turndown	623	1.2	0.5	Water	1 broken post, loose cables
GR10 Adelard St	28.7	SBGRWood Posts - PoorWood Offset BlocksRail - Fair	Fish Tail - Fish Tail	493	1.6	0	Water	rotted posts, twisted o/s blocks, section is protecting cul-de-sac from water.
GR11 Millrand Rd	34.5	SBGR Wood Posts - Poor Wood Offset Blocks Rail - Poor	Turndown - Turndown	317	0.5	0	Water	several broken/felled posts, very low mounting height
GR12 Old Aubin Rd	81	SBGR Steel Posts - Good Wood Offset Blocks Rail - Good	Turndown - Turndown	757	1.2	1	Fill Slope / Highway 64	
GR13 King St	58.2	SBGR Steel Posts - Good No Offset Blocks Rail - Good	Fish Tail - Fish Tail	723	0	0	Steep Grade / Embankment	

ID and Street Name	Length (m)	System Condition	End Treatment (Start - End)	Mounting Height (mm)	Offset (m)	Recovery (m)	Hazard	Comments
GR14 King St	16.2	SBGR Wood Posts - Good No Offset Blocks Rail - Good	Fish Tail - Fish Tail	720	0	2	Water	
GR15 King St	8.5	SBGR Wood Posts - Good No Offset Blocks Rail - Good	Fish Tail - Fish Tail	667	0	2	Water	

SBGR: Steel Beam Guide Rail

3CGR: 3-Cable Guide Rail

14 systems are steel beam guiderail, built to a pre-type M standard. End treatments are either not present, or obsolete (i.e. the turndown and fishtail end treatments. Mounting Heights are inconsistent, and generally low.

One system, GR8 on Des Erables St, does not protect a hazard and instead functions as a fence preventing access to Highway 11 from the local street.

1 system is 3 cable guiderail. Although used for decades in Ontario, 3-cable guiderail is no longer specified by the MTO. Furthermore, 3-cable guiderail requires a wide recoverable zone behind the guiderail to take advantage of its inherent flexibility. As only 0.5m is available behind the existing cable guiderail, Wills recommends that it is eventually replaced by a Steel Beam Guiderail.

Of 685 m of free-standing guiderail in West Nipissing, 140 m are in poor condition.

3.0 Recommendations

Given the absence of standard end treatments, variable mounting heights and age of the systems, it is recommended that all existing systems and their hazards are reviewed in detail to:

- Confirm that the severity of the hazard is greater than the severity of the guide rail system, as per an accepted engineering methodology, such as the Roadside Design Manual,
- Identify if the hazard can be removed (through slope flattening, utility pole relocation, etc), and
- If a new system is installed, determine the length of need.

Respectfully submitted,

Eric St. Pierre, P.Eng

Transportation Engineer

Turner Kuhlmeyer, E.I.T.

Transportation E.I.T.

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West Nipissing Ouest

Community Services
2022-2031 Asset Management Plan
Summary

To: Stephan Poulin
Director of Economic Development and Community Services
From: Jonny Belanger,
Project Manager of Community Services

1.0 Summary

The Community Services asset management plan was developed to help understand the extent of the maintenance requirements for all facilities operated by the Community Services Department. Over a period of three years consultant firms were awarded contracts to perform Facilities Lifecycle Assessments in order to develop a 10-year asset management plan. The investigations by these consultants were conducted in general accordance with the American Society for Testing and Materials (ASTM) “Standard Guide for Property Condition Assessments: Baseline Property Condition Process E 2018-15”.

In order to complete a full department plan, a 10-year cost of equipment and maintenance requirement review for a variety of structures within the Municipality was undertaken in conjunction with the Facilities Lifecycle Assessment.

The Asset Management Plan includes details for the following three major components:

Facilities
The Community Services Department is responsible for operating and maintaining facilities for a variety of uses such as, offices, storage, services and recreation. In total, the department is responsible for overseeing 24 of these facilities, and within these facilities, it can be found that 5 are less than 20 years old, that 11 are between 20-40 years old, and that 8 are over 40 years old.

Community Space
The Community Services Department is responsible for maintaining all community spaces comprised of a large variety of green spaces and infrastructure including baseball fields, boat launches, docks, trails, a trailer park, and others. In total, the department is responsible for overseeing more than 45 sites, which contain over 100 items that require routine maintenance and management.

Fleet
The Community Services Department requires specialized equipment and vehicles for the daily ongoing operation and maintenance of all facilities and community spaces. Within the fleet, it can be found that 3 are less than 10 years old, that 11 are between 10-20 years old and that 2 are over 25 years old.

As part of the Asset Management Plan the following information has been included: a list of assets studied within the plan, a Facility Condition Index demonstrating the outcome of different funding scenarios, summaries of capital and maintenance expenditures by major groups, and a 10 Year Capital and Maintenance budget schedule.

2.0 Tables

Facilities	Age	SQFT
Lavigne Rink Change Room	5	1,000
Minnehaha Bay Rest and Marina	10	6,700
Ambulance Station	11	3,993
Front Street Storage Garage	15	651
Tourist Centre	15	6,467
Sturgeon Falls River House Museum	23	13,978
North Monetville Community Centre	28	6,903
Verner First Response Building	30	1,400
Field Rink Change Room	30	1,800
Richelieu Field House	32	492
Leblanc Road Storage Garage	33	790
Sturgeon Falls Recreational Centre	34	43,692
River Valley Rink Change Room	36	625
Cache Bay Rink Change Room	36	864
Sturgeon Falls Town Hall	38	57,452
Verner Arena Storage Garage	39	2,560
Community Services Storage and Staff Building	40	2,211
Goulard Park Field House	41	336
Verner Arena	45	26,842
Community Services Storage Building	46	1,400
Field Library and Fire Station	47	5,077
Sturgeon Falls Arena	58	24,027
Cache Bay Community Centre	65	18,123
Verner Municipal Building	69	11,060

Fleet by Group	Age
VEHICLES	
2008 Ford (Blue 2x4)	14
2009 Ford (Blue 2x4) VIN# 1FTRW12899FB24468	13
2010 Ford (Blue 2x4) VIN# 1FTEW1C85AFC87264	12
2013 Ford (Interceptor) 1FM5K8AR3DGB40838	9
2015 Chevy Blue 4x4 VIN# 3GCUKPEC1FG40591	7
2022 Silverado 2500	1
ICE RESURFACERS	
2022-Zamboni 446 (Sturgeon Falls)	1
2006 Zamboni 440-8492 (Sturgeon Falls)	16
2009 Zamboni 445-8981 (Verner)	13
1992 Zamboni 440 (Spare)	30
1993 Zamboni 440 (Spare)	29
COMMERCIAL LAWN MOWERS	
2022 Kubota F2690 Add New lawnmower	1
2006 Kubota F2880 Mower ROP 10445	16
2009 Kubota F3080 Mower ROPS 1802	13
2007 JD 1445 Mower	15
COMPACT TRACTORS	
2001 JD 420 Tractor WOO420X017509	21
2011 JD 2720 Tractor 1P0H130XLGX019956	11
TRAILERS	
2003 Utility Trailer VIN#2A921324331116439	19
2008 Flat Bed VIN#2CPUSE2C18A010152	14
2017 Canadian Hauler (Cargo trailer) VIN#593200G24H1055717	5
2017 Canadian Hauler (Cargo Trailer)	5

Fleet by Age	Age
2017 Canadian Hauler (Cargo trailer) VIN#593200G24H1055717	5
2015 Chevy Blue 4x4 VIN# 3GCUKPEC1FG40591	7
2013 Ford (Interceptor) 1FM5K8AR3DGB40838	9
2011 JD 2720 Tractor 1P0H130XLGX019956	11
2010 Ford (Blue 2x4) VIN# 1FTEW1C85AFC87264	12
2009 Ford (Blue 2x4) VIN# 1FTRW12899FB24468	13
2009 Kubota F3080 Mower ROPS 1802	13
2009 Zamboni 445-8981 (Verner)	13
2008 Ford (Blue 2x4)	14
2008 Flat Bed VIN#2CPUSE2C18A010152	14
2007 JD 1445 Mower	15
2006 Kubota F2880 Mower ROP 10445	16
2006 Zamboni 440-8492 (Sturgeon Falls)	16
2003 Utility Trailer VIN#2A921324331116439	19
2001 JD 420 Tractor WOO420X017509	21
1992 Zamboni 440 (Spare)	30
1993 Zamboni 440 (Spare)	29

Community Space
Playgrounds, Janen St, King St, Richelieu, Leblanc Rd, Marie St, Grande Alle, Christ-Roi, Principal, Piette St, Caron Rd.
Trees, SF Downtown, Playgrounds, Minnehaha bay, Outside Rinks, Cache Bay Trailer Park.
Boat Launches, Minnehaha Bay, Museum, Holditch, Chebogan, HWY 64 Field, Muskosung, Cache Bay #1,#2, Lavigne, St-Jean.
Wharf, Minnehaha Bay
Permanent and Floating docks Muskosung, Sturgeon River HWY 64 Lavigne, Cache Bay #1,#2, Museum, St-Jean, Chebogan.
Baseball Fields. Richelieu, Leblanc, Goulard#1 and #2, Field, Cache Bay.
Soccer Fields, Richelieu, Riverfront East-West, Lavigne.
Outside Rinks, Sturgeon, Cache Bay, field, Lavigne, River Valley, Verner.
Splash Parks, Sturgeon Falls, Cache Bay, Verner.
Tennis Courts, Sturgeon Falls, Field.
Volley Ball Court, Sturgeon Falls.
Beaches, Sturgeon Falls, Clear Lake, St-Jean.
Lookout and trails, Minnehaha Bay, Museum, Lookout Sturgeon Falls.
Amphitheater, Sturgeon Falls.
Flag Poles, Minnehaha Bay, Field, Recreation Centre, Hwy 539, Hwy 64, Museum, Cache Bay, Crystal Falls, Lavigne, Monetville.
Gas Pump, Minnehaha Bay
Boat Sewage Pump, Minnehaha Bay
Fountain, Sturgeon Falls
Sprinkler Systems, Fountain, Band Shell Goulard Park, Jacques Cartier, Verner Canon, Cache bay Splash Park, Info Centre, Verner Clock
Bleachers, Richelieu, Leblanc, Goulard Park, Riverfront, Cache Bay, Lavigne, Field, Verner
Welcome Signs, HWY 64 North/south, HWY 17 East/West
Canopies, River Valley, Field, Verner, Clear Lake

3.0 Facility Condition Index

As part of the investigation, consultants provided data used to develop a Facility Condition Index (FCI) rating for each of the 24 buildings. The FCI rating provides a professional method of measurement to determine the relative condition index of a single building, group of buildings, or if desired, a total portfolio. As FCI increases, the assets will experience:

- Increased risk of component failure.
- Increased facility maintenance and operating costs.
- Greater negative impacts to staff and residents.

Good	<5%
Fair	5-10%
Poor	10-30%
Critical	>30%

FCI Summary Reports 100% funding from year 1-5.

Facility	FCI 5 Years	FCI 10 Years
Goulard Park Field House	84.26%	0.00%
River Valley Rink Change Room	77.45%	1.93%
Field Library and Fire Station	39.80%	10.43%
Cache Bay Rink Change Room	27.05%	2.25%
Lavigne Rink Change Room	25.56%	1.67%
Verner Municipal Building	25.11%	3.00%
Tourist Centre	24.96%	12.75%
Verner Arena Storage Garage	22.93%	0.00%
Field Rink Change Room	22.28%	1.98%
Verner First Response Building	21.18%	4.16%
Richelieu Park Filed House	20.22%	1.47%
Community Services Storage - Staff	17.11%	0.00%
Cache Bay Community Centre	16.07%	4.56%
Sturgeon Falls Town Hall	13.71%	6.67%
Sturgeon Falls River House Museum	13.11%	1.40%
Ambluance Station	11.42%	6.00%
Verner Arena	10.99%	3.30%
North Monetville Community Centre	10.64%	5.62%
Community Services Storage Building	9.44%	2.42%
Minehaha Bay Rest and Marina	7.83%	9.19%
Sturgeon Falls Arena	7.66%	4.39%
Sturgeon Falls Recreational Centre	6.99%	2.03%
Front Street Storage Garage	3.03%	0.00%
Leblanc Road Storage Garage	3.33%	4.52%
AVERAGE FCI	**21.75%**	**3.74%**

FCI Summary Reports 0% funding from year 1-5.

Facility	FCI 5 Years	FCI 10 Years
Goulard Park Field House	84.26%	84.26%
River Valley Rink Change Room	77.45%	79.38%
Field Library and Fire Station	39.80%	50.23%
Cache Bay Rink Change Room	27.05%	29.29%
Lavigne Rink Change Room	25.56%	27.22%
Verner Municipal Building	25.11%	28.11%
Tourist Centre	24.96%	37.71%
Verner Arena Storage Garage	22.93%	22.93%
Field Rink Change Room	22.28%	24.25%
Verner First Response Building	21.18%	25.34%
Richelieu Park Filed House	20.22%	21.69%
Community Services Storage - Staff	17.11%	17.11%
Cache Bay Community Centre	16.07%	20.63%
Sturgeon Falls Town Hall	13.71%	20.38%
Sturgeon Falls River House Museum	13.11%	14.51%
Ambulance Station	11.42%	17.42%
Verner Arena	10.99%	14.29%
North Monetville Community Centre	10.64%	16.26%
Community Services Storage Building	9.44%	11.86%
Minnehaha Bay Rest and Marina	7.83%	17.03%
Sturgeon Falls Arena	7.66%	12.05%
Sturgeon Falls Recreational Centre	6.99%	9.02%
Front Street Storage Garage	3.03%	3.03%
Leblanc Road Storage Garage	3.33%	7.86%
AVERAGE FCI	**21.75%**	**25.49%**

4.0 Opinions of Probable Costs Facilities

The following tables summarize the option of budgets for capital expenditures above the threshold value of $1,000 over the 10-year evaluation period for all 24 buildings.

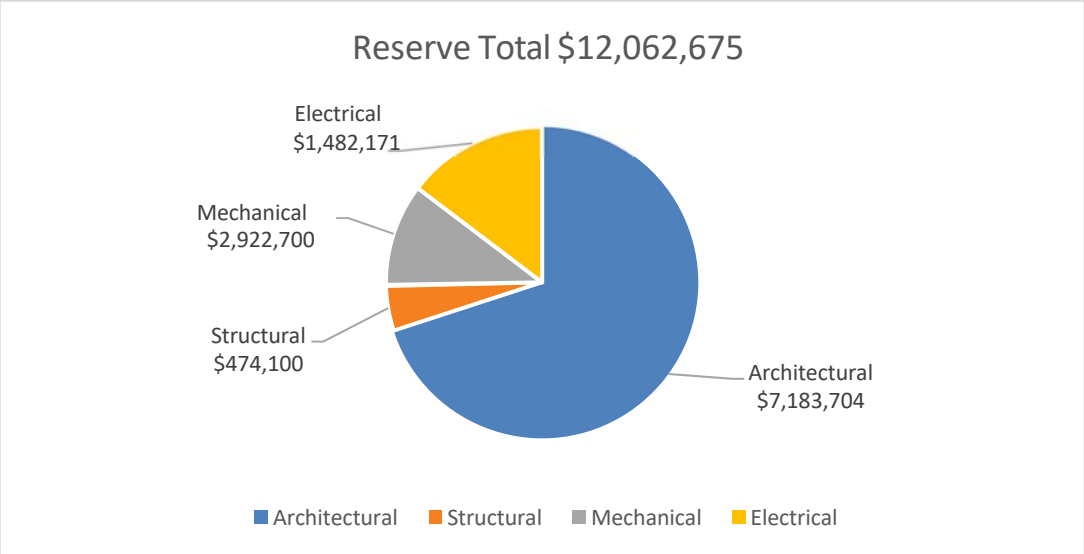
SUMMARY OF CAPITAL AND MAINTENANCE EXPENDITURES (FACILITES, AODA EXCLUDED)

Section	Description	Immediate	Reserve Years 1 to 5 (2022 - 2026)	Reserve Years 6 to 10 (2027 - 2031)	10-Year Reserve Total
3.0	Architectural	$36,700	$5,581,804	$1,601,900	$7,183,704
4.0	Structural	$3,000	$348,100	$126,000	$474,100
5.0	Mechanical	$57,105	$1,540,800	$1,381,900	$2,922,700
6.0	Electrical	$10,150	$777,336	$704,835	$1,482,171
TOTALS		**$106,955**	**$8,248,040**	**$3,814,635**	**$12,062,675**

Note: Immediate (2022) expenditures are not included in the Capital Reserve totals.
Uninflated data.

Year 1	Year 2	Year 3	Year 4	Year 5
$1,762,460	**$2,192,460**	**$1,338,712**	**$904,900**	**$2,049,508**

Year 6	Year 7	Year 8	Year 9	Year 10
$595,800	**$1,033,500**	**$697,700**	**$563,100**	**$924,535**



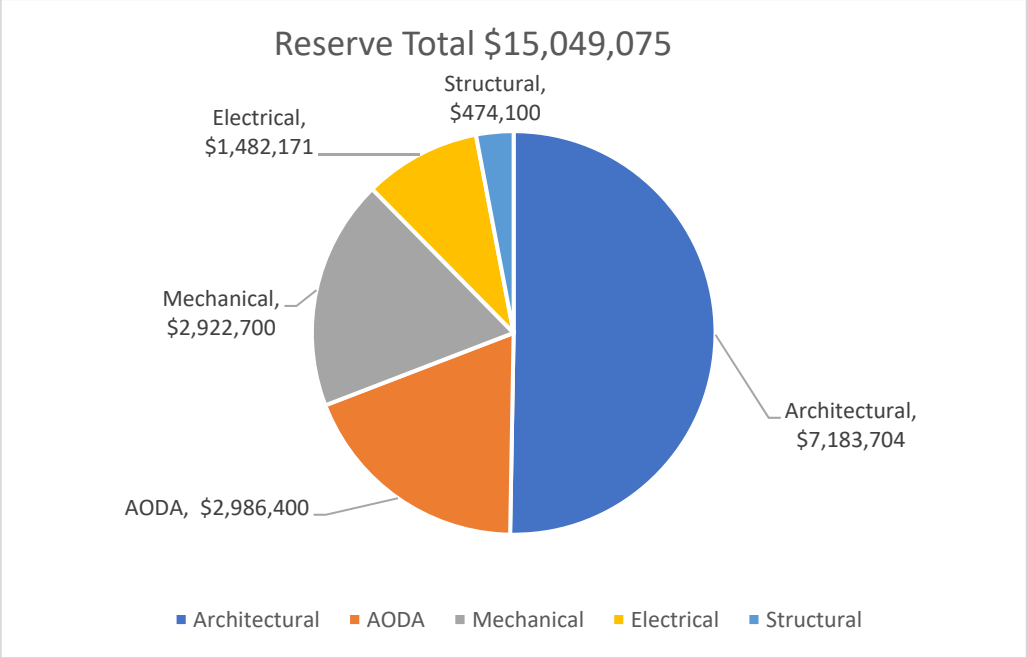
SUMMARY OF CAPITAL AND MAINTENANCE EXPENDITURES (FACILITES, AODA INCLUDED)

Section	Description	Immediate	Reserve Years 1 to 5 (2022 - 2026)	Reserve Years 6 to 10 (2027 - 2031)	10-Year Reserve Total
1.0	AODA		$2,986,400		$2,986,400
2.0	Architectural	$36,700	$5,581,804	$1,601,900	$7,183,704
3.0	Structural	$3,000	$348,100	$126,000	$474,100
4.0	Mechanical	$57,105	$1,540,800	$1,381,900	$2,922,700
5.0	Electrical	$10,150	$777,336	$704,835	$1,482,171
TOTALS		**$106,955**	**$11,270,440**	**$3,814,635**	**$15,049,075**

Note: Immediate (2022) expenditures are not included in the Capital Reserve totals.
Uninflated data

Year 1	Year 2	Year 3	Year 4	Year 5
$2,151,460	**$3,582,860**	**$1,887,712**	**$1,002,900**	**$2,609,508**

Year 6	Year 7	Year 8	Year 9	Year 10
$595,800	**$1,033,500**	**$697,700**	**$563,100**	**$924,535**



SUMMARY OF CAPITAL EXPENDITURES (FLEET)

Section	Description	Reserve Years 1 to 5 (2022 - 2026)	Reserve Years 6 to 10 (2027 - 2031)	10-Year Reserve Total
1.0	Vehicles	$110,000	$55,000	$165,000
2.0	Zambonis	$200,000	$0	$200,000
3.0	Trailers	$6,000	$10,000	$16,000
4.0	Commercial Lawn Mowers	$60,000	$0	$60,000
5.0	Tractors	$0	$0	$0
TOTALS		**$376,000**	**$65,000**	**$441,000**

Note: Uninflated data.

Year 1	Year 2	Year 3	Year 4	Year 5
$155,000	**$36,000**	**$130,000**	**$55,000**	**$0**

Year 6	Year 7	Year 8	Year 9	Year 10
$55,000	**$10,000**	**$0**	**$0**	**$0**

SUMMARY OF CAPITAL AND MAINTENANCE EXPENDITURES (COMMUNITY SPACE)

Section	Description	Reserve Years 1 to 5 (2022 - 2026)	Reserve Years 6 to 10 (2027 - 2031)	10-Year Reserve Total
1.0	Playgrounds	$18,800	$19,300	$38,100
2.0	Trees	$24,000	$27,000	$51,000
3.0	Boat Launches	$82,750	$33,750	$116,500
4.0	Wharf, fixed and floating docks	$120,150	$777,450	$897,600
5.0	Baseball Fields**	$110,000	$44,500	$154,500
6.0	Soccer Fields	$0	$0	$0
7.0	Outside Rinks	$125,900	$3,400	$129,300
8.0	Splash Parks	$2,250	$1,500	$3,750
9.0	Tennis Courts	$68,000	$0	$68,000
10.0	Volley Ball Court	$600	$600	$1,200
11.0	Beaches	$12,000	$7,000	$19,000
12.0	West Nipissing Welcome	$11,500	$23,500	$35,000
13.0	Lookout and Trails	$10,000	$11,000	$21,000
14.0	Boat Sewage Pump	$0	$0	$0
15.0	Amphitheater	$1,000	$2,500	$3,500
16.0	Flag Pole	$50,000	$0	$50,000
17.0	Gas Pump	$7,500	$7,500	$15,000
18.0	Fountain	$1,000	$500	$1,500
19.0	Sprinkler System	$7,600	$7,000	$14,600
20.0	Bleachers	$23,750	$17,000	$40,750
21.0	Canopies	$15,000	$1,000	$16,000
TOTALS		**$691,800**	**$984,500**	**$1,676,300**

Note: Uninflated data.

** Item 5.0, Capital and maintenance does not include the Cache Bay and Field Baseball Field since that they are no longer in service.

Year 1	Year 2	Year 3	Year 4	Year 5
$110,900	**$290,350**	**$134,450**	**$83,600**	**$72,500**

Year 6	Year 7	Year 8	Year 9	Year 10
$114,550	**$686,500**	**$33,300**	**$23,500**	**$126,650**

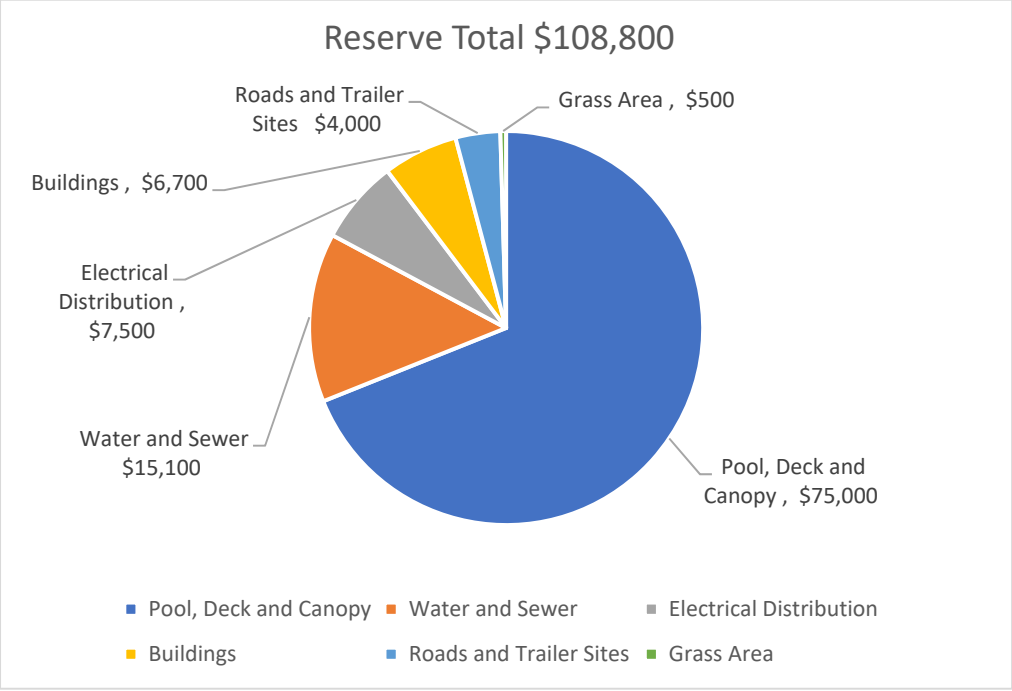
SUMMARY OF CAPITAL AND MAINTENANCE EXPENDITURES (TRAILER PARK)

Section	Description	Reserve Years 1 to 5 (2022 - 2026)	Reserve Years 6 to 10 (2027 - 2031)	10-Year Reserve Total
1.0	Buildings	$6,700	$0	$6,700
2.0	Water and Sewer	$7,800	$7,300	$15,100
3.0	Roads and Trailer Sites	$3,500	$500	$4,000
4.0	Pool, Deck and Canopy	$75,000	$0	$75,000
5.0	Grass area	$500	$0	$500
6.0	Electrical Distribution	$2,500	$5,000	$7,500
TOTALS		**$96,000**	**$12,800**	**$108,800**

Note: Uninflated data.

Year 1	Year 2	Year 3	Year 4	Year 5
$83,200	**$1,200**	**$3,700**	**$1,700**	**$6,200**

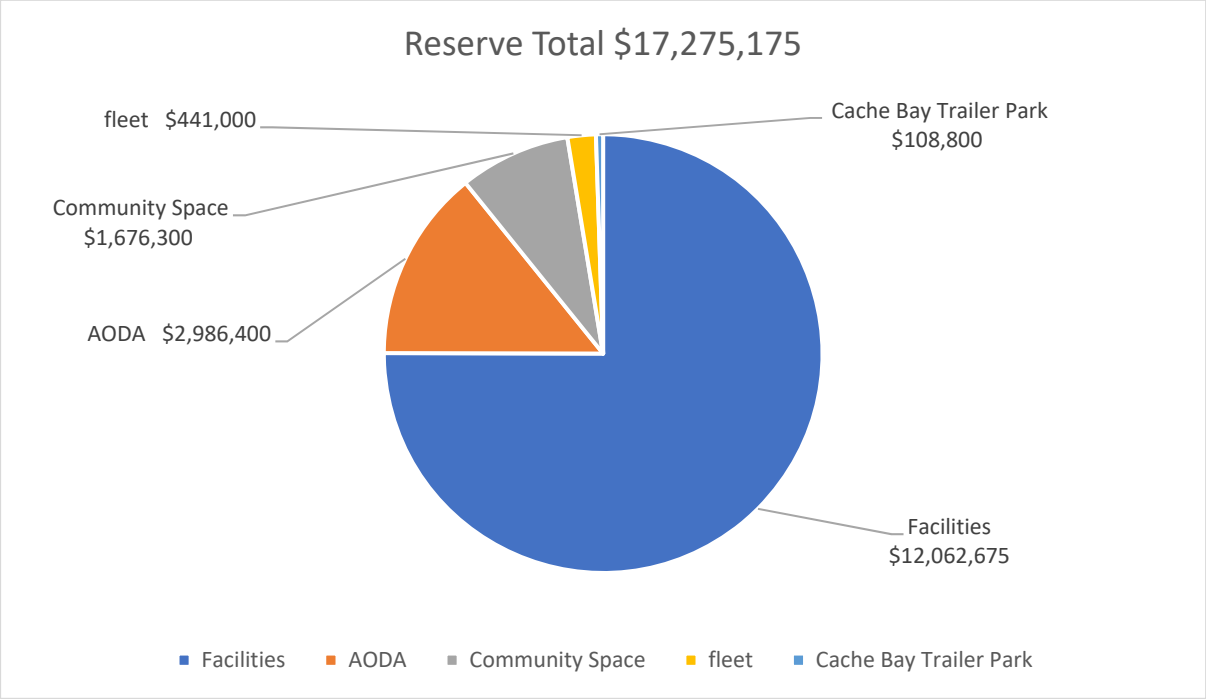
Year 6	Year 7	Year 8	Year 9	Year 10
$200	**$200**	**$6,200**	**$200**	**$6,000**



SUMMARY OF CAPITAL EXPENDITURES & MAINTENANCE
(FACILITIES, FLEET, COMMUNITY SPACE AND TRAILER PARK)

Year 1	Year 2	Year 3	Year 4	Year 5
$2,500,560	$3,910,410	$2,155,862	$1,143,200	$2,688,208

Year 6	Year 7	Year 8	Year 9	Year 10
$765,550	$1,730,200	$737,200	$586,800	$1,057,185



5.0 Capital and Maintenance Expenditures Strategies

While the Capital and Maintenance Expenditures tables included in this plan can provide guidance on strategic long-term budget planning, a more detailed approach can help to better understand the budget requirements of individual capital and maintenance projects.

The following tables will demonstrate the different budget needs between the Capital and Maintenance expenditures included in this plan. It's important to note that not all projects presented in these tables will be recommended as part of annual budgets. Components included in each project are reviewed on a yearly basis and a determination is made as to whether or not replacement is critical for that year. For example: architectural finishes such as painting, flooring and ceilings are assessed yearly.

Projects can also be deferred due to unexpected urgencies superseding less urgent projects, workload limitation on staff, and budget restraints.

10 Year Recommended Capital Projects											
Name	2022 1 yr Cost	2023 2 yr Cost	2024 3 yr Cost	2025 4 yr Cost	2026 5 yr Cost	2027 6 yr Cost	2028 7 yr Cost	2029 8 yr Cost	2030 9 yr Cost	2031 10 yr Cost	1 - 10 Year Total
FACILITIES											
Sturgeon Falls Town Hall				$ 1,968,900.00		$ 145,000.00		$ 320,500.00			$ 2,434,400.00
Verner Arena				$ 728,000.00			$ 235,000.00				$ 963,000.00
Sturgeon Falls River House Museum			$ 587,260.00								$ 587,260.00
Cache Bay Community Centre			$ 792,200.00			$ 187,300.00					$ 979,500.00
Sturgeon Falls Arena		$ 547,200.00			$ 285,000.00						$ 832,200.00
Sturgeon Falls Recreational Centre			$ 1,508,000.00			$ 252,000.00					$ 1,760,000.00
Tourist Centre					$ 562,700.00					$ 167,000.00	$ 729,700.00
Minehaha Bay Rest and Marina				$ 195,750.00						$ 193,000.00	$ 388,750.00
Community Services Storage - Staff		$ 43,500.00									$ 43,500.00
Goulard Park Field House		$ 47,820.00									$ 47,820.00
Ambluance Station				$ 97,750.00					$ 22,300.00		$ 120,050.00
Cache Bay Rink Change Room				$ 100,000.00							$ 100,000.00
Verner First Response Building					$ 71,400.00						$ 71,400.00
Verner Municipal Building		$ 730,508.00					$ 217,712.00				$ 948,220.00
River Valley Rink Change Room				$ 120,500.00							$ 120,500.00
North Monetville Community Centre					$ 466,000.00						$ 466,000.00
Field Rink Change Room				$ 106,300.00							$ 106,300.00
Field Library and Fire Station				$ 99,800.00							$ 99,800.00
Lavigne Rink Change Room			$ 270,400.00				$ 375,750.00				$ 646,150.00
TOTAL	**$ -**	**$ 1,369,028**	**$ 3,157,860**	**$ 3,417,000**	**$ 1,385,100**	**$ 584,300**	**$ 828,462**	**$ 320,500**	**$ 22,300**	**$ 360,000**	**$ 11,444,550**

** Capital Project Cost does not include consultants fee, final budget is subject to changes based on final scope of work and consultant team.

CAPITAL

10 Year Recommended Capital Projects											
Name	2022 1 yr Cost	2023 2 yr Cost	2024 3 yr Cost	2025 4 yr Cost	2026 5 yr Cost	2027 6 yr Cost	2028 7 yr Cost	2029 8 yr Cost	2030 9 yr Cost	2031 10 yr Cost	1 - 10 Year Total
FLEET											
Vehicules	$ 55,000.00			$ 55,000.00		$ 55,000.00					$ 165,000.00
Zambonies	$ 100,000.00		$ 100,000.00								$ 200,000.00
TOTAL	**$ 155,000**	**$ -**	**$ 100,000**	**$ 55,000**	**$ -**	**$ 55,000**	**$ -**	**$ -**	**$ -**	**$ -**	**$ 365,000**
COMMUNITY SPACE											
Wharf, Docks and Floating Docks							$ 700,000.00				$ 700,000.00
Ouside Rinks		$ 120,000.00									$ 120,000.00
Tennis Courts		$ 48,000.00									$ 48,000.00
Flag Poles		$ 50,000.00									$ 50,000.00
TRAILER PARK											
Cache Bay	$ 75,000.00										$ 75,000.00
TOTAL	**$ 75,000**	**$ 218,000**	**$ -**	**$ -**	**$ -**	**$ -**	**$ 700,000**	**$ -**	**$ -**	**$ -**	**$ 993,000**

10 Year Recommended Capital Budget											
Name	2022 1 yr Cost	2023 2 yr Cost	2024 3 yr Cost	2025 4 yr Cost	2026 5 yr Cost	2027 6 yr Cost	2028 7 yr Cost	2029 8 yr Cost	2030 9 yr Cost	2031 10 yr Cost	1 - 10 Year Total
TOTAL CAPITAL	**$ 230,000**	**$ 1,587,028**	**$ 3,257,860**	**$ 3,472,000**	**$ 1,385,100**	**$ 639,300**	**$ 1,528,462**	**$ 320,500**	**$ 22,300**	**$ 360,000**	**$ 12,802,550**

Maintenance

10 Year Recommended Maintenance Budget											
Name	2022 1 yr Cost	2023 2 yr Cost	2024 3 yr Cost	2025 4 yr Cost	2026 5 yr Cost	2027 6 yr Cost	2028 7 yr Cost	2029 8 yr Cost	2030 9 yr Cost	2031 10 yr Cost	1 - 10 Year Total
FACILITIES											
Sturgeon Falls Town Hall	$ 22,800.00	$ 350,000.00	$ 60,000.00	$ 30,000.00	$ 35,000.00	$ 24,900.00	$ 60,000.00	$ 50,100.00	$ 20,000.00	$ 15,000.00	$ 667,800.00
Verner Arena	$ 28,500.00	$ 253,500.00	$ 42,000.00	$ 16,000.00	$ 9,000.00	$ 13,000.00	$ 36,000.00	$ 6,000.00	$ 27,500.00	$ 6,000.00	$ 437,500.00
Sturgeon Falls River House Museum	$ 14,500.00	$ 22,000.00	$ 22,500.00	$ 22,500.00	$ 29,000.00	$ 15,000.00	$ 18,000.00	$ 15,000.00	$ 5,000.00	$ 5,000.00	$ 168,500.00
Cache Bay Community Centre	$ 46,840.00	$ 139,600.00	$ 10,000.00	$ 15,000.00	$ 15,000.00	$ 10,000.00	$ 2,000.00	$ 12,000.00	$ 29,000.00	$ 10,000.00	$ 289,440.00
Sturgeon Falls Arena	$ 30,170.00	$ 100,500.00	$ 20,000.00	$ 12,500.00	$ 25,000.00	$ 32,500.00	$ 25,000.00	$ 22,500.00	$ 7,000.00	$ 15,000.00	$ 290,170.00
Sturgeon Falls Recreational Centre	$ 63,500.00	$ 28,700.00	$ 30,000.00	$ 10,000.00	$ 89,000.00	$ 25,000.00	$ 30,000.00	$ 18,000.00	$ 35,000.00	$ -	$ 329,200.00
Tourist Centre	$ 41,300.00	$ 10,000.00	$ 18,400.00	$ 2,400.00	$ 30,400.00	$ -	$ 3,000.00	$ 5,000.00	$ -	$ 88,700.00	$ 199,200.00
Minehaha Bay Rest and Marina	$ 42,000.00	$ -	$ 1,500.00	$ -	$ 8,000.00	$ 1,500.00	$ 8,000.00	$ -	$ 1,500.00	$ 21,000.00	$ 83,500.00
Community Services Storage - Staff	$ 1,500.00	$ -	$ 2,500.00	$ 32,900.00	$ 49,900.00	$ -	$ -	$ -	$ -	$ -	$ 86,800.00
Richelieu Park Filed House	$ 24,480.00	$ 11,500.00	$ 1,000.00	$ -	$ 4,200.00	$ -	$ -	$ 3,000.00	$ -	$ -	$ 44,180.00
Ambulance Station	$ 23,800.00	$ -	$ -	$ 27,800.00	$ 13,000.00	$ -	$ -	$ -	$ 46,700.00	$ 16,300.00	$ 127,600.00
Cache Bay Rink Change Room	$ 9,300.00	$ 1,000.00	$ 4,700.00	$ 11,700.00	$ 1,000.00	$ 1,000.00	$ 3,500.00	$ 1,000.00	$ 1,000.00	$ 4,100.00	$ 38,300.00
Verner Arena Storage Garage	$ 66,100.00	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 66,100.00
Verner First Response Building	$ 13,400.00	$ 1,000.00	$ 1,000.00	$ 1,000.00	$ 10,400.00	$ 1,000.00	$ 1,000.00	$ 1,000.00	$ 1,000.00	$ 15,300.00	$ 46,100.00
Verner Municipal Building	$ -	$ -	$ 3,000.00	$ -	$ 23,450.00	$ -	$ -	$ 62,000.00	$ 5,500.00	$ 3,000.00	$ 96,950.00
River Valley Rink Change Room	$ 28,000.00	$ 29,300.00	$ 5,300.00	$ 2,600.00	$ 14,700.00	$ 1,000.00	$ 1,000.00	$ 1,000.00	$ 1,000.00	$ 1,000.00	$ 84,900.00
North Monetville Community Centre	$ -	$ 8,000.00	$ 41,000.00	$ -	$ 39,600.00	$ -	$ 27,100.00	$ -	$ 12,800.00	$ 10,000.00	$ 138,500.00
Field Rink Change Room	$ 28,610.00	$ 8,800.00	$ 11,000.00	$ 2,600.00	$ 25,300.00	$ 6,500.00	$ 1,000.00	$ 1,000.00	$ 1,000.00	$ 6,700.00	$ 92,510.00
Front Street Storage Garage	$ 4,000.00	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 4,000.00
Leblanc Storage Garage	$ 12,600.00	$ -	$ -	$ -	$ -	$ -	$ 17,100.00	$ -	$ -	$ -	$ 29,700.00
Field Library and Fire Station	$ 3,000.00	$ 6,000.00	$ 18,900.00	$ 3,200.00	$ 154,300.00	$ -	$ -	$ -	$ 13,100.00	$ -	$ 198,500.00
Community Services Storage Building	$ 41,140.00	$ 1,400.00	$ 1,800.00	$ 5,100.00	$ 8,000.00	$ -	$ -	$ -	$ 8,200.00	$ 6,535.00	$ 72,175.00
Lavigne Rink Change Room	$ 2,000.00	$ 1,000.00	$ 1,000.00	$ 1,000.00	$ 1,000.00	$ 1,000.00	$ 1,000.00	$ 1,000.00	$ 1,000.00	$ 2,900.00	$ 12,900.00
TOTAL	**$ 547,540**	**$ 972,300**	**$ 295,600**	**$ 196,300**	**$ 585,250**	**$ 132,400**	**$ 233,700**	**$ 198,600**	**$ 216,300**	**$ 226,535**	**$ 3,604,525**

Maintenance

10 Year Recommended Maintenance Budget											
Name	2022 1 yr Cost	2023 2 yr Cost	2024 3 yr Cost	2025 4 yr Cost	2026 5 yr Cost	2027 6 yr Cost	2028 7 yr Cost	2029 8 yr Cost	2030 9 yr Cost	2031 10 yr Cost	1 - 10 Year Total
FLEET											
Trailers	$ -	$ 6,000.00	$ -	$ -	$ -	$ -	$ 10,000.00	$ -	$ -	$ -	$ 16,000.00
Commercial Lawn Mowers	$ -	$ 30,000.00	$ 30,000.00	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 60,000.00
Tractors	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
TOTAL	**$ -**	**$ 36,000**	**$ 30,000**	**$ -**	**$ -**	**$ -**	**$ 10,000**	**$ -**	**$ -**	**$ -**	**$ 76,000**
COMMUNITY SPACE											
Playgrounds	$ 2,900.00	$ 4,400.00	$ 3,800.00	$ 900.00	$ 6,800.00	$ 5,400.00	$ 3,800.00	$ 2,400.00	$ 5,300.00	$ 2,400.00	$ 38,100.00
Trees	$ 7,000.00	$ -	$ 2,000.00	$ 8,000.00	$ 7,000.00	$ 10,000.00	$ 7,000.00	$ -	$ 2,000.00	$ 8,000.00	$ 51,000.00
Boat Launches	$ 1,000.00	$ 4,000.00	$ 67,250.00	$ 8,500.00	$ 2,000.00	$ 5,000.00	$ 3,000.00	$ 12,250.00	$ 4,000.00	$ 9,500.00	$ 116,500.00
Wharf, Docks and Floating Docks	$ 77,550.00	$ 10,350.00	$ 7,350.00	$ 7,350.00	$ 17,550.00	$ 2,850.00	$ 2,350.00	$ 2,350.00	$ 2,550.00	$ 67,350.00	$ 197,600.00
Baseball Fields	$ 10,500.00	$ 29,000.00	$ 34,000.00	$ 35,000.00	$ 1,500.00	$ 16,000.00	$ 4,500.00	$ 4,500.00	$ 500.00	$ 19,000.00	$ 154,500.00
Soccer Fields	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Ouside Rinks	$ 400.00	$ 3,500.00	$ -	$ 1,000.00	$ 1,000.00	$ -	$ 400.00	$ 1,000.00	$ -	$ 2,000.00	$ 9,300.00
Splash Parks	$ 750.00	$ -	$ 750.00	$ -	$ 750.00	$ -	$ 750.00	$ -	$ 750.00	$ -	$ 3,750.00
Tennis Courts	$ -	$ -	$ -	$ -	$ 20,000.00	$ -	$ -	$ -	$ -	$ -	$ 20,000.00
Volleyball Courts	$ 300.00	$ -	$ -	$ 300.00	$ -	$ -	$ 300.00	$ -	$ -	$ 300.00	$ 1,200.00
Beaches	$ 1,000.00	$ -	$ -	$ 11,000.00	$ -	$ 5,000.00	$ 1,000.00	$ -	$ -	$ 1,000.00	$ 19,000.00
West Nipissing Welcome signs	$ -	$ -	$ 6,500.00	$ -	$ 5,000.00	$ 5,000.00	$ 8,500.00	$ -	$ 5,000.00	$ 5,000.00	$ 35,000.00
Lookout and Trails	$ -	$ 1,500.00	$ 500.00	$ 6,500.00	$ 1,500.00	$ -	$ 1,500.00	$ 3,500.00	$ 1,000.00	$ 5,000.00	$ 21,000.00
Boat sewage pump	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Amphitheater	$ -	$ 1,000.00	$ -	$ -	$ -	$ 1,500.00	$ 1,000.00	$ -	$ -	$ -	$ 3,500.00
Flag Poles	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Gas Pump	$ 1,500.00	$ 1,500.00	$ 1,500.00	$ 1,500.00	$ 1,500.00	$ 1,500.00	$ 1,500.00	$ 1,500.00	$ 1,500.00	$ 1,500.00	$ 15,000.00
Fountain	$ -	$ 500.00	$ -	$ -	$ 500.00	$ -	$ -	$ 500.00	$ -	$ -	$ 1,500.00
Sprinkler System	$ 3,500.00	$ 600.00	$ 800.00	$ 300.00	$ 2,400.00	$ 2,300.00	$ 400.00	$ 300.00	$ 400.00	$ 3,600.00	$ 14,600.00
Bleachers	$ -	$ 6,000.00	$ 10,000.00	$ 2,750.00	$ 5,000.00	$ 10,000.00	$ -	$ 5,000.00	$ 500.00	$ 1,500.00	$ 40,750.00
Canopies	$ 4,500.00	$ 10,000.00	$ -	$ 500.00	$ -	$ -	$ 500.00	$ -	$ -	$ 500.00	$ 16,000.00
TRAILER PARK											
Cache Bay	$ 8,200.00	$ 1,200.00	$ 3,700.00	$ 1,700.00	$ 6,200.00	$ 200.00	$ 200.00	$ 6,200.00	$ 200.00	$ 6,000.00	$ 33,800.00
TOTAL	**$ 119,100**	**$ 73,550**	**$ 138,150**	**$ 85,300**	**$ 78,700**	**$ 64,750**	**$ 36,700**	**$ 39,500**	**$ 23,700**	**$ 132,650**	**$ 792,100**

10 Year Recommended Maintenance Budget											
Name	2022 1 yr Cost	2023 2 yr Cost	2024 3 yr Cost	2025 4 yr Cost	2026 5 yr Cost	2027 6 yr Cost	2028 7 yr Cost	2029 8 yr Cost	2030 9 yr Cost	2031 10 yr Cost	1 - 10 Year Total
TOTAL MAINTENANCE	**$ 666,640**	**$ 1,081,850**	**$ 463,750**	**$ 281,600**	**$ 663,950**	**$ 197,150**	**$ 280,400**	**$ 238,100**	**$ 240,000**	**$ 359,185**	**$ 4,472,625**

6.0 Conclusion

The 10-year asset management plan provides a useful tool to help understand the overall condition and future expenditures of all assets included in the plan. Municipal Staff and the Community Services Director are able to utilize this document to recommend future capital expenditures based on professional recommendations by consultants. This management plan will serve as a tool to keep all Municipal facilities, Fleet, Community Spaces and the Trailer Park above a fair condition rating, while also outlining the short-term and long-term goals of each asset.

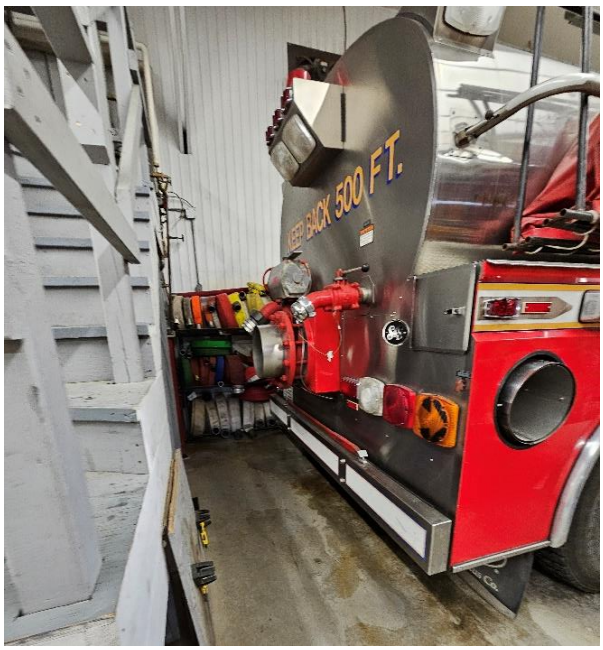
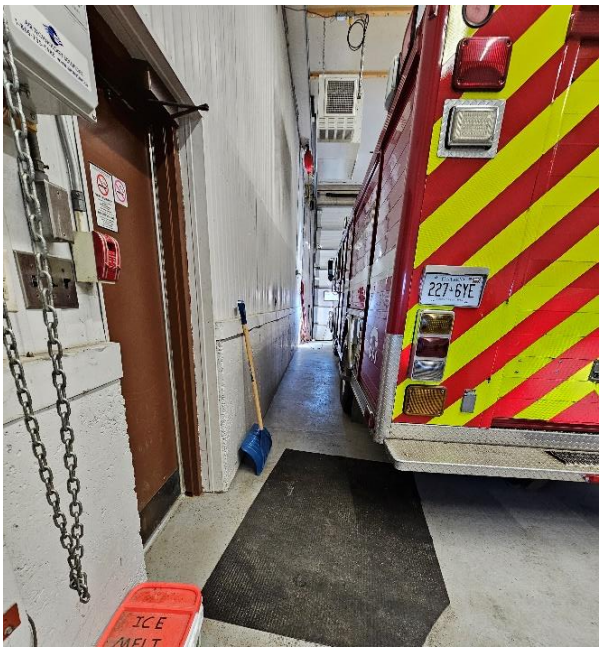
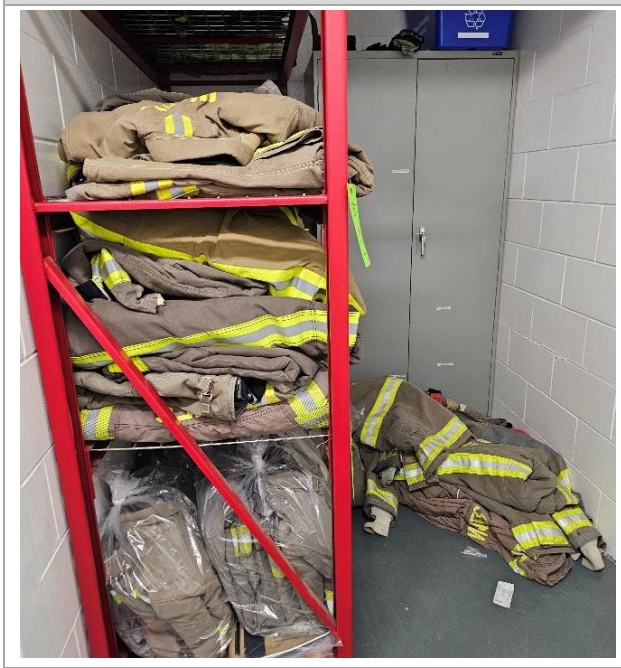
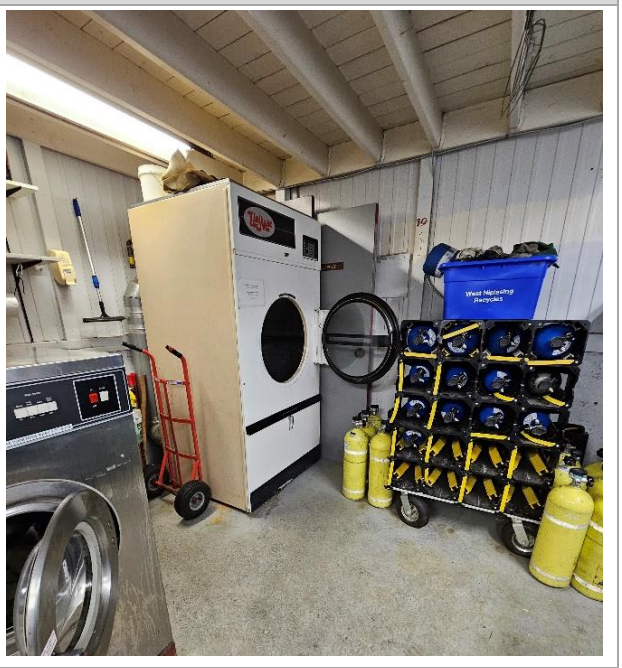
It is recommended by the consultants that all buildings be reviewed on a 5-year rotation so that the condition and needs of a particular building remain within a short-term outlook. The 5-year rotation assessment will also confirm if the plan is moving on an upward trend as opposed to not addressing critical items as identified in this plan.

In response to staff request to Stephenson Engineering, they have provided their interpretation of our current facilities portfolio condition:

> "We found the overall MWN portfolio condition to be of concern due to high FCI scores, particularly for the smaller assets. The buildings will continue to require significant capital investment in order to lower the FCI scores and operate at industry acceptable levels. Capital investment is critical for the buildings to meet the status quo needs and continue to serve the growing community as well as possible. Some building should be replaced in the near future, as they are no longer viable due to deferred maintenance and can become a safety liability for MWN. Since most of the facilities were developed prior to the creation of MWN out of several individual towns and hamlets. Serious consideration should be made to consolidate and dispose of redundant facilities or ones that are underutilized. We found several buildings on the roster that had low utilization or had space not well aligned with current functionality. Sustainability considerations should always be a major factor in your portfolio health, but new replacement facilities cannot always be the answer. The effort of this portfolio study is only a first step. The buildings should be reviewed at least every 5 years to make sure condition levels do not deteriorate significantly and will help MWN to continually develop capital spending priorities over time- as weather and sudden element failures are ever changing. Continual portfolio reviews are also very critical to understand where the short-term needs are most glaring, and what can be deferred to a midterm time lines without taking on any undue operational risk. Long term needs help track life cycle replacements and gauge where renovations/expansions and replacements may need to be of consideration. As buildings age they need to be evaluated on many levels- and shifting population demands, budgets and other factors all contribute to a healthy civic portfolio. MWN has a wide range of types and ages of facilities. Some are not holding up well over time- and some have stood the test of time. All buildings can be made better, and all can likely remain functional for the next 5 years with varying degrees of success provided they are properly funded and cared for. It is clear some buildings should be considered for replacement and or decommissioned from the current portfolio in the longer term- years 6-10."

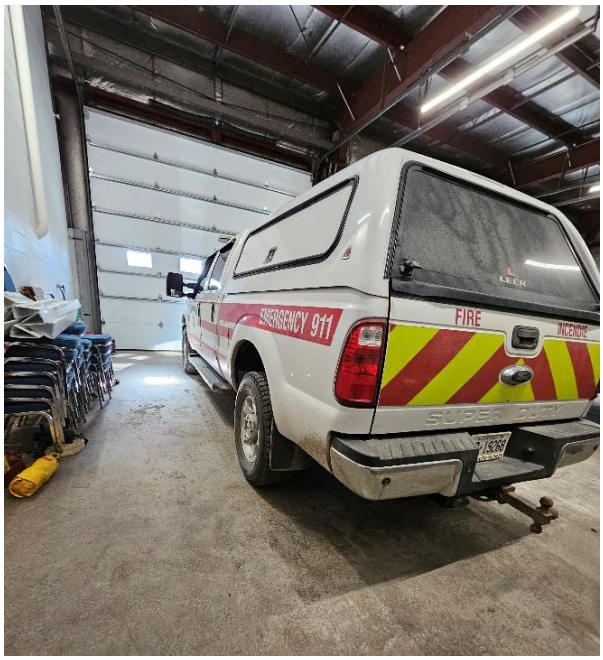
(Stephenson Engineering Portfolio Summary Report 2022 Conclusion)

Station Name:	**Sturgeon Falls**		
			
In-Service Date:	1993		
Description:	Located in Sturgeon Falls, this is the main station for West Nipissing Fire and Emergency Services. This station houses the WNFES management and operational equipment and personnel. The structure is constructed of brick over concrete blocks. The station is equipped with fire suppression systems, smoke detectors, and an integrated alarm system. Security is provided via combination-type door locks, though there is no intrusion alarm. Vehicle exhaust removal systems are installed, and the building complies with current fire and life safety codes.		
Bays:	3 back-in bays, 1 drive-thru	Apparatus and Light-Duty Vehicles:	1 Rescue, 1 Tanker, 1 Pumper, 1 Ladder, 3 Command Vehicles
Comments:	The structure is part of a multi-use facility. Although the structure is sound, the facility does not safely and effectively accommodate the size and technology of newer more modern apparatus. There is no room for expansion to accommodate additional apparatus or operational space. Over the years, the facility has been re-purposed, resulting in poor overall flow. This facility is at capacity.		

Apparatus Bay	
	
Bunker Gear Storage	Laundry and Storage
	

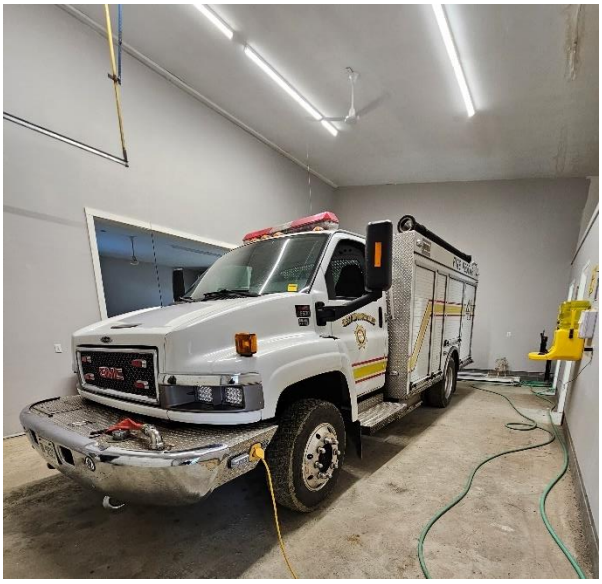
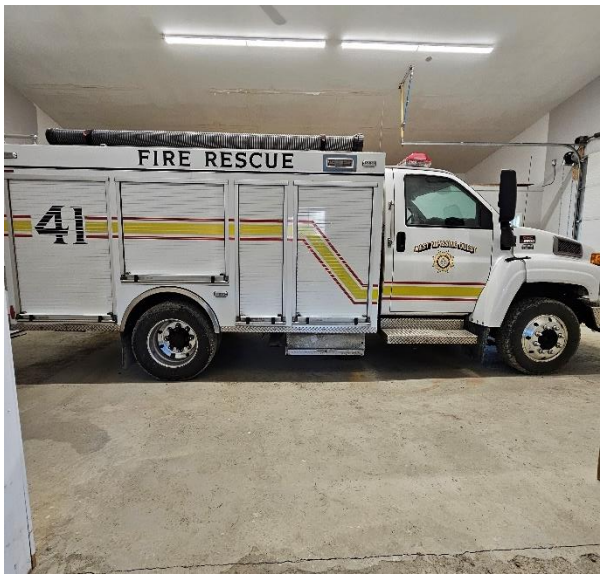
Item	Description	Yes	No	Comments
1	Site security	✓		
2	Adequate parking for staff and visitors	✓		
3	Internet and intranet connectivity	✓		
4	Adequate space for training – training props, hydrant		✓	Hands-on training props located at Station 1B
5	Back-up power supply	✓		
6	Fire Chiefs' office	✓		
7	Deputy's Chief's offices	✓		
8	Emergency management office	✓		
9	Administrative support office/space	✓		
10	Training room / meeting room	✓		Training room located at 1B
11	Office security	✓		
12	Dorm rooms		✓	
13	Day use area	✓		
14	Kitchen	✓		Limited kitchen
15	Fitness / wellness area		✓	Fitness equipment located at Station 1 B
16	Firefighter Men's and ladies' bathrooms and showers	✓		
17	Space to safely garage and do minor maintenance on vehicles	✓		
18	Hose drying area	✓		
19	Small equipment storage and maintenance room	✓		
20	Air filling station room complete with proper ventilation	✓		
21	Industrial washer and dryer room	✓		
22	Bunker gear storage room complete with proper drying and ventilation	✓		
23	Consumables storage room	✓		
24	Sufficient workstations	✓		
25	Sufficient supervisor workspace	✓		
26	Breakout or quiet room		✓	
27	Public and Staff Washrooms		✓	
28	Locker room		✓	
29	Proper interior Lighting	✓		

Station Name:	**Sturgeon Falls 1B**		
			
In-Service Date:	Built 1987-1988 in service as a Fire Hall 2006		
Description:	Located in Sturgeon Falls, this facility is used primarily for training and storage of light-duty equipment. The structure is constructed of metal over wood.		
Bays:	4 back-in bays	Apparatus and Light-Duty Vehicles:	2 ATVs, 2 Snowmobiles 2, 1 Airboat, 1 Fire Boat, 1 Boat, 1 Utility Trailer
Comments:	The facility was re-purposed after the City acquired it from Weyerhaeuser approximately 15 years ago. There is room outside of the facility to conducted training including vehicle extrication. The building is sound and is serving its current purpose well.		

Apparatus and Equipment Bay	
	
Bunker Gear Storage	Laundry and Storage
	

Item	Description	Yes	No	Comments
1	Site security	✓		Door lock only
2	Adequate parking for staff and visitors	✓		
3	Internet and intranet connectivity	✓		Limited
4	Adequate space for training – training props, hydrant	✓		
5	Back-up power supply	✓		
6	Fire Chiefs' office		✓	
7	Deputy's Chief's offices		✓	
8	Emergency management office		✓	
9	Administrative support office/space		✓	
10	Training room / meeting room	✓		
11	Office security		✓	
12	Dorm rooms		✓	
13	Day use area		✓	
14	Kitchen		✓	
15	Fitness / wellness area	✓		
16	Firefighter Men's and ladies' bathrooms and showers	✓		
17	Space to safely garage and do minor maintenance on vehicles	✓		
18	Hose drying area		✓	
19	Small equipment storage and maintenance room	✓		
20	Air filling station room complete with proper ventilation		✓	
21	Industrial washer and dryer room		✓	
22	Bunker gear storage room complete with proper drying and ventilation		✓	
23	Consumables storage room	✓		
24	Sufficient workstations		✓	
25	Sufficient supervisor workspace		✓	
26	Breakout or quiet room		✓	
27	Public and Staff Washrooms		✓	
28	Locker room		✓	
29	Proper interior Lighting	✓		

Station Name:	**Station 2 Crystal Falls**		
			
In-Service Date:	Built 1995 Acquired in Amalgamation 1999		
Description:	This facility is used to stage and deploy apparatus for the Crystal Falls response area.		
Bays:	2 back-in bays	Apparatus and Light-Duty Vehicles:	1 Mini Pumper
Comments:	There is room inside and outside of the facility to conduct some hands-on training, but there is no classroom. This facility is serving its current purpose well.		

Apparatus Bay	
	

Item	Description	Yes	No	Comments
1	Site security	✓		Door lock only
2	Adequate parking for staff and visitors	✓		
3	Internet and intranet connectivity	✓		Limited
4	Adequate space for training – training props, hydrant		✓	Hands-on training props located at Station 1B
5	Back-up power supply		✓	
6	Fire Chiefs' office		✓	
7	Deputy's Chief's offices		✓	
8	Emergency management office		✓	
9	Administrative support office/space		✓	
10	Training room / meeting room	✓		Training room located at 1B
11	Office security		✓	
12	Dorm rooms		✓	
13	Day use area		✓	
14	Kitchen		✓	
15	Fitness / wellness area		✓	
16	Firefighter Men's and ladies' bathrooms and showers		✓	
17	Space to safely garage and do minor maintenance on vehicles	✓		
18	Hose drying area		✓	
19	Small equipment storage and maintenance room			
20	Air filling station room complete with proper ventilation		✓	
21	Industrial washer and dryer room		✓	
22	Bunker gear storage room complete with proper drying and ventilation		✓	
23	Consumables storage room		✓	
24	Sufficient workstations		✓	
25	Sufficient supervisor workspace		✓	
26	Breakout or quiet room		✓	
27	Public and Staff Washrooms		✓	
28	Locker room		✓	
29	Proper interior Lighting	✓		

Station Name:	**Station 3 Tomiko Lake**		
			
In-Service Date:	2000		
Description:	This facility is used to stage and deploy apparatus for the Tomiko Lake response area. The structure is of wood construction.		
Bays:	1 back-in bay	Apparatus and Light-Duty Vehicles:	1 Crew Cab Support Vehicle with Portable Pump
Comments:	There is room outside of the facility to conduct some hands-on training, but there is no classroom or storage inside the building. This facility is serving its current purpose well. ***Note:*** *Currently, this facility is under review.*		

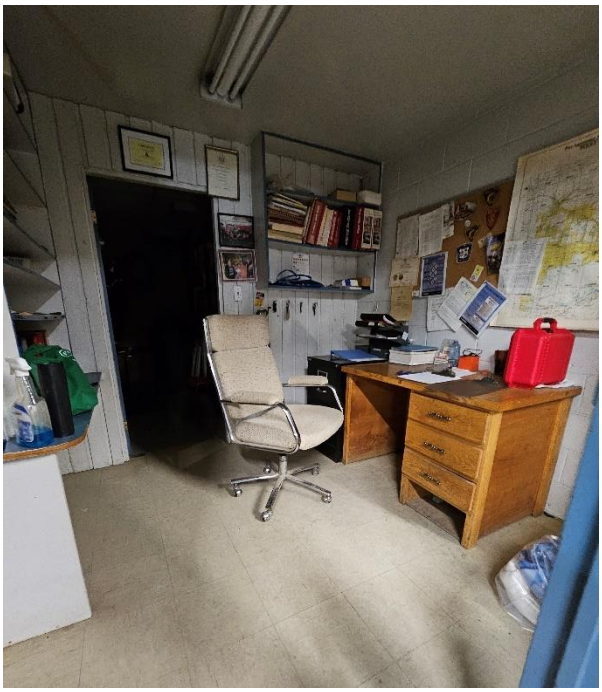
Apparatus Bay	
	

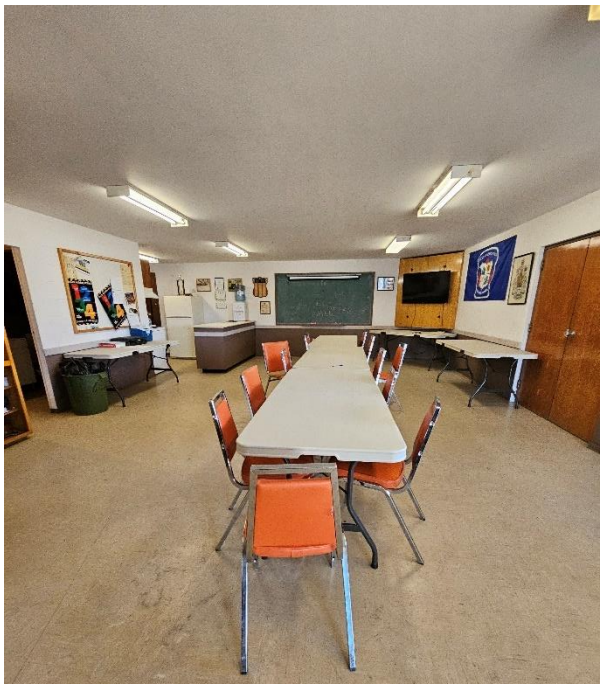
Item	Description	Yes	No	Comments
1	Site security	✓		Door lock only
2	Adequate parking for staff and visitors	✓		
3	Internet and intranet connectivity		✓	
4	Adequate space for training – training props, hydrant		✓	Hands-on training props located at Station 1B
5	Back-up power supply		✓	
6	Fire Chiefs' office		✓	
7	Deputy's Chief's offices		✓	
8	Emergency management office		✓	
9	Administrative support office/space		✓	
10	Training room / meeting room	✓		Training room located at 1B
11	Office security		✓	
12	Dorm rooms		✓	
13	Day use area		✓	
14	Kitchen		✓	
15	Fitness / wellness area		✓	
16	Firefighter Men's and ladies' bathrooms and showers		✓	
17	Space to safely garage and do minor maintenance on vehicles	✓		
18	Hose drying area		✓	
19	Small equipment storage and maintenance room			
20	Air filling station room complete with proper ventilation		✓	
21	Industrial washer and dryer room		✓	
22	Bunker gear storage room complete with proper drying and ventilation		✓	
23	Consumables storage room		✓	
24	Sufficient workstations		✓	
25	Sufficient supervisor workspace		✓	
26	Breakout or quiet room		✓	
27	Public and Staff Washrooms		✓	
28	Locker room		✓	
29	Proper interior Lighting	✓		

Station Name:	**Station 4 Field**		
			
In-Service Date:	Built 1969 Acquired in Amalgamation 1999		
Description:	This facility is used to stage and deploy apparatus and equipment for the Field response area. This facility is part of a multi-use facility and is constructed of brick and concrete.		
Bays:	2 back-in bays	Apparatus and Light-Duty Vehicles:	1 Pumper, 1 Tanker
Comments:	There is room inside and outside of the facility to conduct some hands-on training. This facility is equipped with a SCBA refilling station, classroom, office, and storage area. There is ample room to safely maneuver equipment and resources. Currently, this facility is serving its purpose and the area well.		

Apparatus Bay

Apparatus Bay

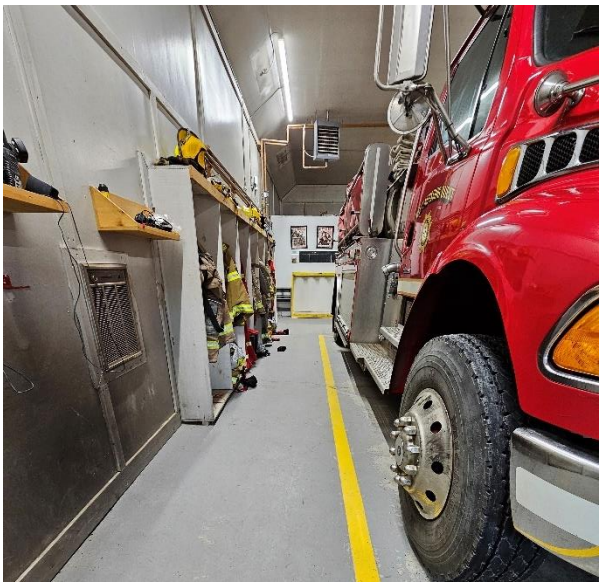




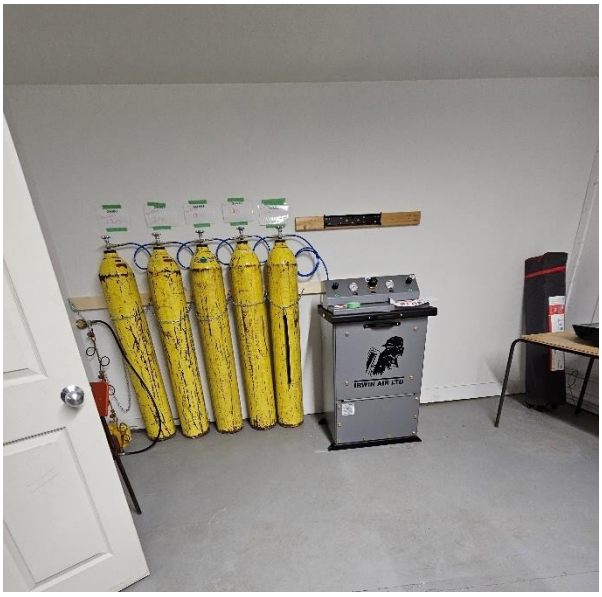
Item	Description	Yes	No	Comments
1	Site security	✓		Door lock only
2	Adequate parking for staff and visitors	✓		
3	Internet and intranet connectivity		✓	
4	Adequate space for training – training props, hydrant		✓	Hands-on training props located at Station 1B
5	Back-up power supply		✓	
6	Fire Chiefs' office		✓	
7	Deputy's Chief's offices		✓	
8	Emergency management office		✓	
9	Administrative support office/space		✓	
10	Training room / meeting room	✓		Training room located at 1B
11	Office security		✓	
12	Dorm rooms		✓	
13	Day use area		✓	
14	Kitchen		✓	
15	Fitness / wellness area		✓	
16	Firefighter Men's and ladies' bathrooms and showers		✓	
17	Space to safely garage and do minor maintenance on vehicles	✓		
18	Hose drying area	✓		Hose tower
19	Small equipment storage and maintenance room			
20	Air filling station room complete with proper ventilation		✓	
21	Industrial washer and dryer room		✓	
22	Bunker gear storage room complete with proper drying and ventilation		✓	
23	Consumables storage room		✓	
24	Sufficient workstations		✓	
25	Sufficient supervisor workspace		✓	
26	Breakout or quiet room		✓	
27	Public and Staff Washrooms		✓	
28	Locker room		✓	
29	Proper interior Lighting	✓		

Station Name:	**Station 5 River Valley**		
			
In-Service Date:	Built 1980 Acquired in Amalgamation 1999		
Description:	This facility is used to stage and deploy equipment and apparatus for the River Valley area. This facility is equipped with a SCBA refilling station, classroom, kitchen, and storage area.		
Bays:	2 back-in bays	Apparatus and Light-Duty Vehicles:	1 Mini Pumper, 1 Tanker
Comments:	There is room inside and outside of the facility to conduct some hands-on training. Currently, this facility is serving its purpose and the area well. There is ample room to safely maneuver equipment and resources. At present, this facility is at capacity.		

Apparatus Bay

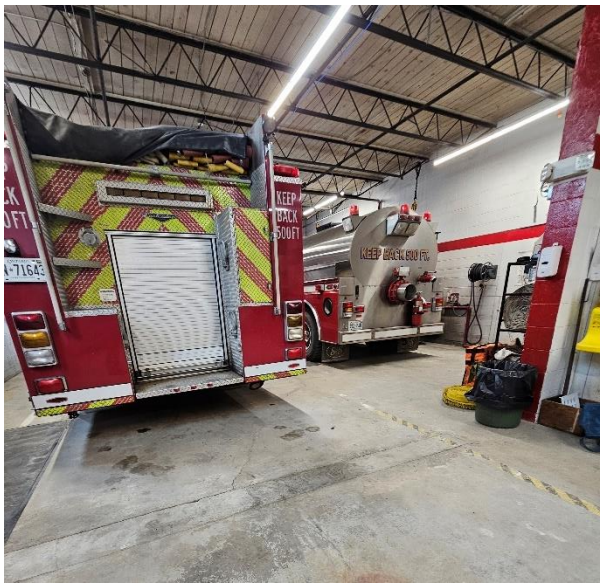
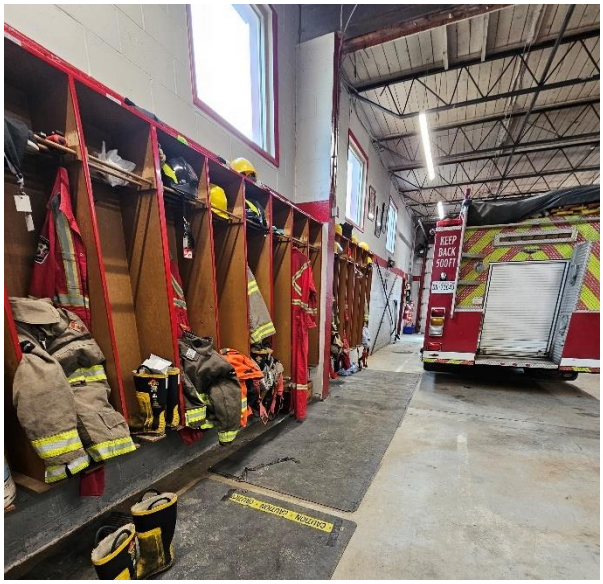
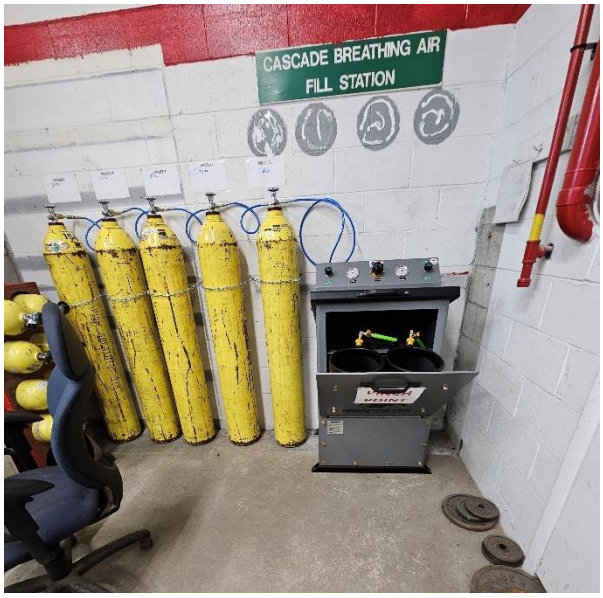
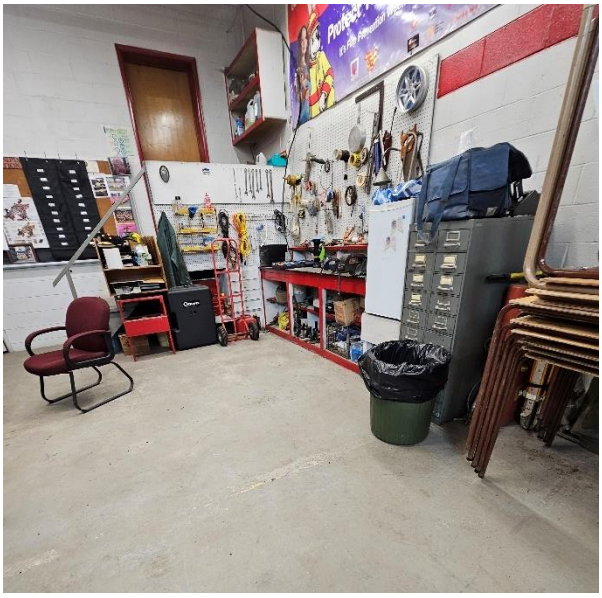


Apparatus Bay



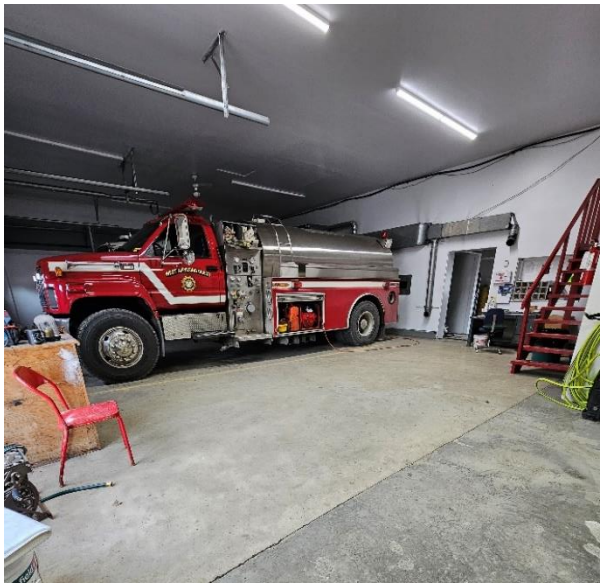
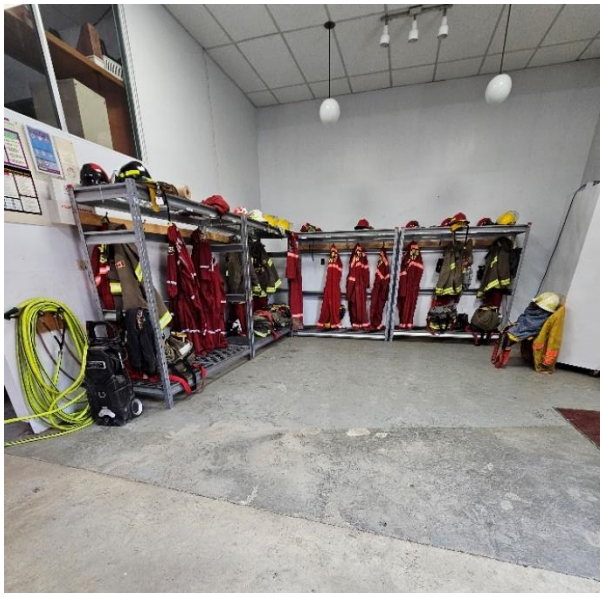
Item	Description	Yes	No	Comments
1	Site security	✓		Door lock only
2	Adequate parking for staff and visitors	✓		
3	Internet and intranet connectivity		✓	
4	Adequate space for training – training props, hydrant	✓	✓	Hands-on training props located at Station 1B
5	Back-up power supply		✓	
6	Fire Chiefs' office	✓		
7	Deputy's Chief's offices		✓	
8	Emergency management office		✓	
9	Administrative support office/space		✓	
10	Training room / meeting room	✓		
11	Office security		✓	
12	Dorm rooms		✓	
13	Day use area		✓	
14	Kitchen		✓	
15	Fitness / wellness area	✓		
16	Firefighter Men's and ladies' bathrooms and showers		✓	
17	Space to safely garage and do minor maintenance on vehicles	✓		
18	Hose drying area		✓	
19	Small equipment storage and maintenance room			
20	Air filling station room complete with proper ventilation	✓		
21	Industrial washer and dryer room		✓	
22	Bunker gear storage room complete with proper drying and ventilation	✓		
23	Consumables storage room	✓		
24	Sufficient workstations	✓		
25	Sufficient supervisor workspace	✓		
26	Breakout or quiet room		✓	
27	Public and Staff Washrooms	✓		
28	Locker room		✓	
29	Proper interior Lighting	✓		

Station Name:	**Station 6 Verner**		
			
In-Service Date:	Built 1963 Acquired in Amalgamation 1999		
Description:	This facility is used to stage and deploy equipment and apparatus for the Verner response area. This facility is equipped with a SCBA refilling station, office, and storage area. There is ample room to safely maneuver equipment and resources.		
Bays:	2 back-in bays	Apparatus and Light-Duty Vehicles:	1 Mini Pumper, 1 Tanker
Comments:	There is room inside and outside of the facility to conduct some hands-on training. Currently, this facility is serving its purpose and the area well. At present, this facility is at capacity. ***Note:*** *Currently, this facility is under review.*		

Apparatus Bay	
	
	

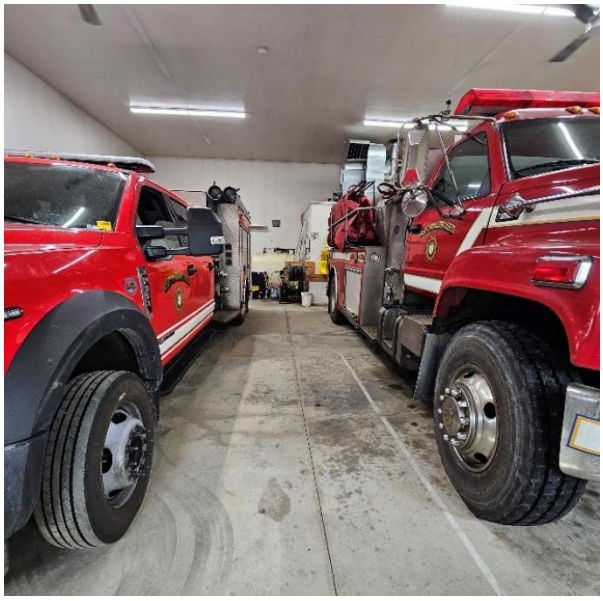
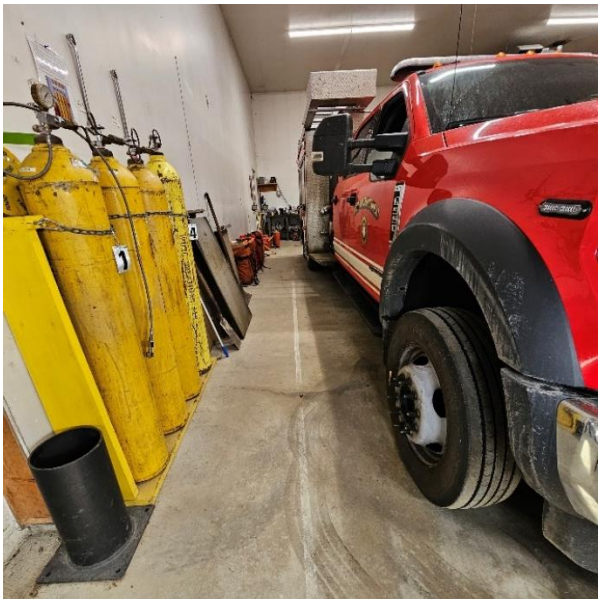
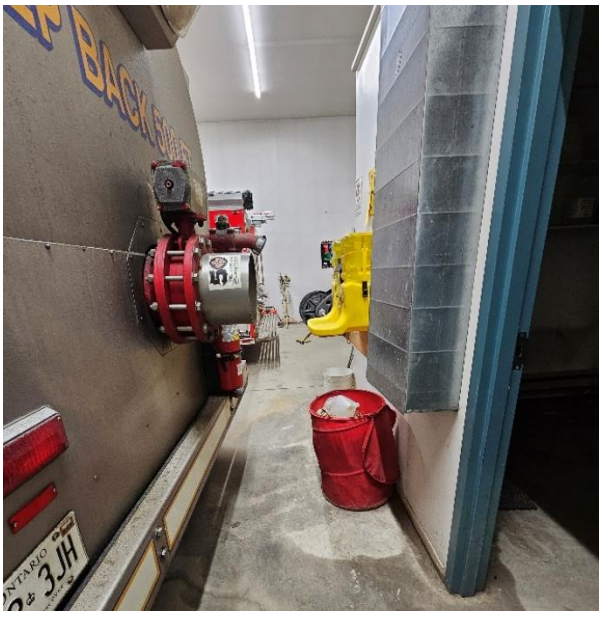
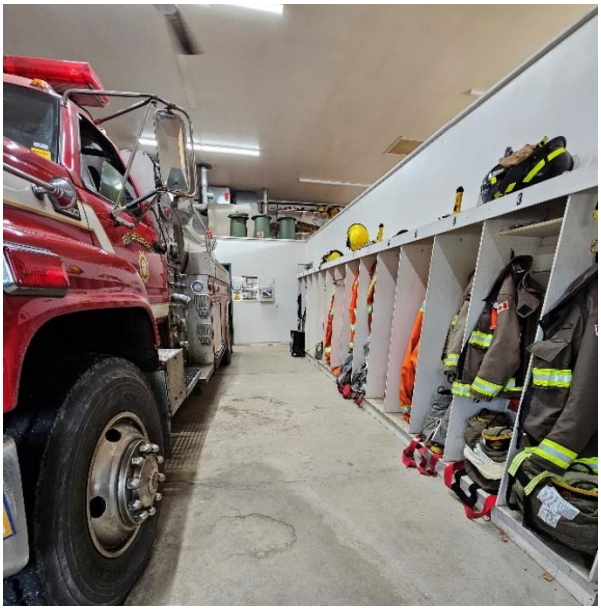
Item	Description	Yes	No	Comments
1	Site security	✓		Door lock only
2	Adequate parking for staff and visitors	✓		
3	Internet and intranet connectivity		✓	
4	Adequate space for training – training props, hydrant	✓	✓	Hands-on training props located at Station 1B
5	Back-up power supply		✓	
6	Fire Chiefs' office		✓	
7	Deputy's Chief's offices		✓	
8	Emergency management office		✓	
9	Administrative support office/space		✓	
10	Training room / meeting room	✓		
11	Office security		✓	
12	Dorm rooms		✓	
13	Day use area		✓	
14	Kitchen	✓		
15	Fitness / wellness area	✓		
16	Firefighter Men's and ladies' bathrooms and showers		✓	
17	Space to safely garage and do minor maintenance on vehicles	✓		
18	Hose drying area	✓		Hose drying rack
19	Small equipment storage and maintenance room	✓		
20	Air filling station room complete with proper ventilation	✓		
21	Industrial washer and dryer room		✓	
22	Bunker gear storage room complete with proper drying and ventilation	✓		
23	Consumables storage room	✓		
24	Sufficient workstations	✓		
25	Sufficient supervisor workspace		✓	
26	Breakout or quiet room		✓	
27	Public and Staff Washrooms	✓		
28	Locker room		✓	
29	Proper interior Lighting	✓		

Station Name:	**Station 7 Lavigne**		
			
In-Service Date:	Built 1974 Acquired in Amalgamation 1999		
Description:	This facility is used to stage and deploy equipment and apparatus for the Lavinge response area. There is room inside and outside of the facility to conduct some limited hands-on training. This facility is equipped with a SCBA refilling station, office, and storage area.		
Bays:	3 back-in bays	Apparatus and Light-Duty Vehicles:	1 Tanker, 1 Pumper
Comments:	There is ample room inside to safely maneuver equipment and resources, however access in front of the building requires extreme care and attention due to its location on a sharp bend in the road. There is room outside the facility to conduct limited hands-on training. At present, this facility is at capacity. ***Note:*** *Currently, this facility is under review.*		

Apparatus Bay	
	
Storage	SCBA Refill Station
	

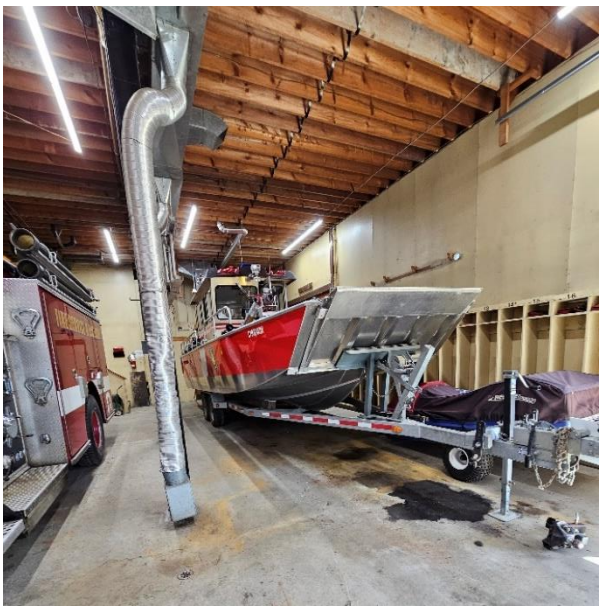
Item	Description	Yes	No	Comments
1	Site security	✓		Security cameras
2	Adequate parking for staff and visitors	✓		
3	Internet and intranet connectivity		✓	
4	Adequate space for training – training props, hydrant	✓	✓	Hands-on training props located at Station 1B
5	Back-up power supply		✓	
6	Fire Chiefs' office		✓	
7	Deputy's Chief's offices		✓	
8	Emergency management office		✓	
9	Administrative support office/space		✓	
10	Training room / meeting room	✓		
11	Office security	✓		Secure office upstairs
12	Dorm rooms		✓	
13	Day use area		✓	
14	Kitchen		✓	
15	Fitness / wellness area		✓	
16	Firefighter Men's and ladies' bathrooms and showers		✓	
17	Space to safely garage and do minor maintenance on vehicles	✓		
18	Hose drying area		✓	
19	Small equipment storage and maintenance room	✓		
20	Air filling station room complete with proper ventilation	✓		
21	Industrial washer and dryer room		✓	
22	Bunker gear storage room complete with proper drying and ventilation	✓		
23	Consumables storage room	✓		
24	Sufficient workstations		✓	
25	Sufficient supervisor workspace		✓	
26	Breakout or quiet room		✓	
27	Public and Staff Washrooms	✓		
28	Locker room		✓	
29	Proper interior Lighting	✓		

Station Name:	**Station 8 North Monetville**		
			
In-Service Date:	Built 1993 Acquired in Amalgamation 1999		
Description:	This facility is used to stage and deploy equipment and apparatus for the North Monetville response area. This facility is equipped with a SCBA refilling station, office, and storage area.		
Bays:	2 back-in bays	Apparatus and Light-Duty Vehicles:	1 Mini Pumper, 1 Tanker
Comments:	Currently, this facility is serving its purpose and the area well. There is room outside of the facility to conduct some hands-on training. There is, however, limited room to safely maneuver equipment and resources. At present, this facility is at capacity. ***Note:*** *Currently, this facility is under review.*		

Apparatus Bay	
	
	

Item	Description	Yes	No	Comments
1	Site security	✓		Door lock only
2	Adequate parking for staff and visitors	✓		
3	Internet and intranet connectivity		✓	
4	Adequate space for training – training props, hydrant	✓	✓	Hands-on training props located at Station 1B
5	Back-up power supply		✓	
6	Fire Chiefs' office		✓	
7	Deputy's Chief's offices		✓	
8	Emergency management office		✓	
9	Administrative support office/space		✓	
10	Training room / meeting room	✓		
11	Office security		✓	
12	Dorm rooms		✓	
13	Day use area		✓	
14	Kitchen		✓	
15	Fitness / wellness area		✓	
16	Firefighter Men's and ladies' bathrooms and showers		✓	
17	Space to safely garage and do minor maintenance on vehicles	✓		
18	Hose drying area		✓	
19	Small equipment storage and maintenance room	✓		
20	Air filling station room complete with proper ventilation		✓	
21	Industrial washer and dryer room		✓	
22	Bunker gear storage room complete with proper drying and ventilation	✓		
23	Consumables storage room	✓		
24	Sufficient workstations		✓	
25	Sufficient supervisor workspace		✓	
26	Breakout or quiet room		✓	
27	Public and Staff Washrooms	✓		
28	Locker room		✓	
29	Proper interior Lighting	✓		

Station Name:	**Station 9 Cache Bay**		
			
In-Service Date:	Built 1977 Acquired in Amalgamation 1999		
Description:	This facility is used to stage and deploy equipment and apparatus for the Cache Bay response area. This facility is equipped with a SCBA refilling station, office, and storage area.		
Bays:	2 back-in bays	Apparatus and Light-Duty Vehicles:	1 Pumper
Comments:	There is room outside of the facility to conduct some hands-on training. There is ample room to safely maneuver equipment and resources. This facility is equipped with a classroom and lounge area. At present, this facility is at capacity. ***Note:*** *Currently, this facility is under review.*		

Apparatus Bay	
	
	

Item	Description	Yes	No	Comments
1	Site security	✓		Door lock only
2	Adequate parking for staff and visitors	✓		
3	Internet and intranet connectivity		✓	
4	Adequate space for training – training props, hydrant	✓	✓	Hands-on training props located at Station 1B
5	Back-up power supply		✓	
6	Fire Chiefs' office	✓		Office located upstairs
7	Deputy's Chief's offices		✓	
8	Emergency management office		✓	
9	Administrative support office/space		✓	
10	Training room / meeting room	✓		
11	Office security		✓	
12	Dorm rooms		✓	
13	Day use area		✓	
14	Kitchen	✓		
15	Fitness / wellness area		✓	
16	Firefighter Men's and ladies' bathrooms and showers		✓	
17	Space to safely garage and do minor maintenance on vehicles	✓		
18	Hose drying area		✓	
19	Small equipment storage and maintenance room	✓		
20	Air filling station room complete with proper ventilation		✓	
21	Industrial washer and dryer room		✓	
22	Bunker gear storage room complete with proper drying and ventilation		✓	
23	Consumables storage room		✓	
24	Sufficient workstations		✓	
25	Sufficient supervisor workspace		✓	
26	Breakout or quiet room		✓	
27	Public and Staff Washrooms		✓	
28	Locker room		✓	
29	Proper interior Lighting	✓		

Observation #15

The on-site tour provided observations of declining conditions of various fire stations. During interviews with staff, concern about the deteriorating conditions was expressed. These declining conditions include leaking roofs, exterior deterioration, system maintenance, flooring and paint, lack of storage, training area. The municipality has identified the Community Services Department to oversee the municipal owned or operated buildings and are working with the Fire Chief to assist in repairs to the fire stations. The Community Services Department has begun a building envelop study and identified the needed repairs, replacements, and upgrades for the city buildings. The fire stations have not been included in the study and repairs are being conducted on a need-by-need basis.

Recommendation #15: The fire stations are included in building envelope study and develop a proactive plan for the maintenance, and repair of fire stations. These deficiencies are addressed through the municipalities capital budget process based on the formal building envelope study.

Suggested completion: *12-60 months*

Cost: *Staff time for the building envelope study, Capital cost depending on the findings and planning of the of the building envelope study.*

Resource: *WNFES staff time, corporate staff, Capital budget, Operating budget*

Rationale: *Fire stations are required to maintain a level of readiness to meet operational needs and ensure health and safety requirements. Ensuring proper maintenance is maintained and appropriate life cycle planning will ensure the readiness is at the required levels. The coordination at a municipal level should ensure prioritization within the municipal asset management program and the corresponding capital budget forecasting.*

3.8.2 Apparatus and Emergency Vehicles

Fire apparatus and emergency vehicles are typically the largest asset expenditures for any fire department. Purchasing and managing these assets requires strong fiscal responsibility to endure public and local government scrutiny. Currently, WNFES has considerable monies invested in vehicles and equipment. The lifespan of apparatus varies depending on its type and use, along with regular maintenance and testing standards. Fire services typically designate a lifecycle to each piece of apparatus and other emergency vehicles and contribute to a capital reserve fund to ensure enough funds are available when the replacement is needed.

3.8.2.1 NFPA Standards for Fire Apparatus

NFPA has developed standards to assist a fire service with the design, maintenance, inspection, testing, life cycling, and dispersal for their fire apparatus. Fire departments may choose to adopt these standards or utilize them as a reference in their own standards and practices.

NFPA 1901: Standard for Automotive Fire Apparatus

The NFPA 1901 standard defines the requirements for new automotive fire apparatus and trailers designed to be used under emergency conditions to transport personnel and equipment and to support the suppression of fires and mitigation of hazardous conditions. This standard recommends that fire apparatus should respond to first alarms for the first 15 years of service, with the expectation that they perform as designed 95% of the time. For the next five years, it should be held in reserve for use at large fires or used as a temporary replacement for out of service first line apparatus.

NFPA 1911: Standard for the Inspection, Maintenance, Testing and Retirement of In-Service Emergency Vehicles

The NFPA 1911 standard defines the minimum requirements for establishing an inspection, maintenance, and testing program. Also included are guidelines for emergency vehicle refurbishment and retirement.

The Underwriters Laboratory of Canada utilizes many of the provisions within these NFPA standards which are referenced by Fire Underwriters Survey (FUS) for determining fire insurance ratings for a community. For example, it follows the life cycle program with the exception that it may award full credit for a fire apparatus older than 15 years, but not more than 20 years, in remote locations only if the piece of equipment is deemed in excellent condition and all necessary upgrades are done. The value of the additional credit in this case, which is only a portion of the total grading for a final FUS rating may well be overshadowed by the cost of maintaining an older unit. In addition, the NFPA 1901: Standard for Automotive Fire Apparatus recommends the following:

D.1 General

To maximize firefighter capabilities and minimize risk of injuries, it is important that fire apparatuses be equipped with the latest safety features and operating capabilities.

In the last 10 to 15 years, much progress has been made in upgrading functional capabilities and improving the safety features of fire apparatus. Apparatuses more than 15 years old might include only a few of the safety upgrades required by the recent editions of the NFPA fire department apparatus standards or the equivalent Underwriters Laboratories of Canada (ULC) standards. Because the changes, upgrades, and fine-tuning to NFPA 1901 have been truly significant, especially in safety, fire departments should seriously consider the value (or risk) to firefighters of keeping fire apparatus more than 15 years old in first line service. It is recommended that apparatus more than 15 years old that have been properly maintained and that are still in serviceable condition be placed in reserve status; be upgraded in accordance with NFPA 1912; and incorporate as many features as possible of the current fire apparatus standard (See Section D3 of Standard). This will ensure that, while the apparatus might not totally comply with the current editions of the automotive fire apparatus standards, many of the improvements and upgrades required by the current editions of the standards are available to the firefighters who use the apparatus. Apparatuses that were not manufactured to the applicable NFPA fire apparatus standards or that are over 25 years old should be replaced.

Underwriters Laboratories of Canada

Current Underwriters Laboratories of Canada (ULC[10]) and NFPA 1901: Standard for Automobile Firefighting Apparatus Standards recommend using apparatus on the front line for up to 15 years, then as a backup for another four to five years. Of course, this timeline is dependent on the frequency of use, scheduled maintenance, and budgets. As indicated in Table 17, some emergency vehicles life cycles can be extended due to low usage or serviceable condition. A leading practice is to have a complete condition survey conducted to determine if there is usable life cycle remaining. This condition survey must consider the NPFA and FUS standards along with the maintenance and cost records of the respective vehicle.

[10] *Underwriters Laboratories of Canada (ULC) is an independent product safety testing, certification, and inspection organization. www.canada.ul.com*

Table 17: Fire Apparatus Service Schedule (Fire Insurance Grading)

Apparatus Age (Yrs.)	Major Cities [3]	Medium Sized Cities [4]	Small Communities[5] and Rural Centres
0 – 15	First Line Duty	First Line Duty	First Line Duty
16-20	Reserve	2nd Line Duty	First Line Duty
20-25[1]	No Credit in Grading	No Credit in Grading or Reserve[2]	No Credit in Grading or 2nd Line Duty[2]
26-29[1]	No Credit in Grading	No Credit in Grading or Reserve[2]	No Credit in Grading or Reserve[2]
30+	No Credit in Grading	No Credit in Grading	No Credit in Grading

[1]All listed fire apparatus 20 years of age and older are required to be service tested by recognized testing agency on an annual basis to be eligible for grading recognition (NFPA 1071).

[2]Exceptions to age status may be considered in a small to medium sized communities and rural centres conditionally, when apparatus condition is acceptable, and apparatus successfully passes required testing.

[3]Major Cities are defined as an incorporated or unincorporated community that has:

- *a populated area (or multiple areas) with a density of at least 400 people per square kilometer; AND*
- *a total population of 100,000 or greater.*

[4]Medium Communities are defined as an incorporated or unincorporated community that has:

- *a populated area (or multiple areas) with a density of at least 200 people per square kilometer; and/or*
- *a total population of 1,000 or greater.*

[5]Small Communities are defined as an incorporated or unincorporated community that has:

- *no populated areas with densities that exceed 200 people per square kilometer; AND*
- *does not have a total population more than 1,000.*

3.8.2.2 Fire Apparatus Design and Procurement

Fire apparatus is designed and tendered based on the unique requirements of the fire service and the community needs that it serves. With the design, tender and procurement processes typically taking two to three years or longer as well as with the expected life cycles of these apparatus of 20 years or more, it is important that the initial decisions accurately reflect the immediate needs and those in the future.

WNFES design and procurement is in line with the municipal capital budget planning and provided through the Fire Chief with input from staff.

3.8.2.3 Fire Apparatus Maintenance and Repair

In Ontario, all fire apparatus with a gross weight, registered gross weight, or manufacturers gross vehicle weight rating exceeding 4500 kilograms must be inspected on an annual basis in accordance with regulations made under the Highway Traffic Act. These vehicles are required to display an inspection sticker as evidence of compliance with this requirement.

Daily driver inspections for commercial vehicles are a requirement under the Act. Fire vehicles are not included in this requirement, however most fire departments in Ontario mandate daily inspections either at the beginning of a shift, or post-trip at a minimum.

A sound and reliable preventative maintenance program is a vital component of the overall fleet management process ensuring each piece operates reliably in the way it was intended safely and effectively while assisting in making it to the anticipated life cycle. Poor maintenance scheduling or neglect of required checks and repairs can lead to accidents, breakdowns, and life safety issues. A fire apparatus pre-maintenance program should consist of the flowing components:

- Trip inspections (daily, pre-trip, post trip)
- Regular preventative maintenance scheduling
- Annual preventative maintenance comprehensive check

The maintenance, repair, testing and certification of all WNFES heavy and light emergency vehicles is skillfully provided by internal and/or third-party vendors based on the nature of the repair, testing or certification requirements.

Daily inspection sheets and post trip inspections are reviewed to ensure any necessary repairs are made as soon as possible. Recommended service schedules, testing and certifications are coordinated with WNFES administration to ensure compliance with as little disruption to service as possible. Through interviews and surveys as well as a review of records, the maintenance and upkeep of all fire vehicles are maintained to a very high standard. The importance of conducting basic care, regular inspections and reporting deficiencies from operators cannot be understated, for the safety of staff and citizens, as well as reliability of apparatus when needed.

3.8.2.4 Fire Apparatus Replacement and Dispersal

The Municipality of West Nipissing utilizes a 10-year Capital forecast to identify the needs for vehicle and large equipment replacement. Each year WNFES updates the needs and seeks approval through the budget cycle. A list of all WNFES apparatus and light vehicles with their anticipated replacement dates has been developed and updated as necessary. WNFES apparatus have a target of 15 -20 years for frontline apparatus service and may be placed in reserve if functionally feasible. Light emergency vehicles have an anticipated replacement time frame of 7-10 years. There are several PFS apparatus, and light vehicles approved for replacement in the 2023 Capital budget.

There are several assumptions that should form the criteria for fire apparatus replacement. This process for determining the appropriate dollar value required to be placed in a reserve fund to ensure sufficient monies are available at the time of replacement is based on the identified life cycle, forecasted inflation, depreciation, and salvage value of current assets. Calculating the yearly contributions is based on the number of years of expected life in the fleet inventory. Although both NFPA and FUS have criteria on re-classifying or retiring apparatus, modifications or upgrades may be required based on age or heavy usage.

For example:

- Engines: 16-20 years frontline (FUS & NFPA), but can be reduced due to high usage
- Rescue Truck: 15 years frontline (NFPA) but can be reduced due to high usage.

When reviewing current apparatus, a study of the original purchase price minus market depreciation is compared to the anticipated replacement cost, taking into consideration the trend in inflationary increases. The salvage or trade-in value of the original apparatus can be estimated based on industry trends.

This value is subject to several considerations, including:

- Age of the vehicle
- Kilometers
- General condition
- Certifications
- Annual test results

Through careful analysis the optimal replacement year can be determined. The table below shows an example of an apparatus purchased in 2014 with a 20–21-year replacement timeline. Assumptions need to be determined for a particular piece of apparatus to consider the type of factors above, as well as requirements for the replacement apparatus to meet the needs for the next 20 plus years. Annual reserve contributions should be made to ensure sufficient funds are available at the time of anticipated replacement.

Table 18: Fire Apparatus Life Cycle Cost Projection Example

Period	Year	Replacement cost	Based on %	Original vs replacement	Depreciated value
0	2014	$375,415.05		$0.00	$375,415.05
1	2015	$386,677.50	3.0%	$11,262.45	$300,332.04
2	2016	$398,277.83	3.0%	$22,862.78	$240,265.63
3	2017	$410,226.16	3.0%	$34,811.11	$192,212.51
4	2018	$422,532.95	3.0%	$47,117.90	$153,770.00
5	2019	$485,912.89	15.0%	$110,497.84	$123,016.00
6	2020	$558,799.82	15.0%	$183,384.77	$98,412.80
7	2021	$642,619.79	15.0%	$267,204.74	$78,730.24
8	2022	$684,390.08	6.5%	$308,975.03	$62,984.19
9	2023	$728,875.44	6.5%	$353,460.39	$50,387.36
10	2024	$776,252.34	6.5%	$400,837.29	$40,309.88
11	2025	$826,708.74	6.5%	$451,293.69	$32,247.91
12	2026	$880,444.81	6.5%	$505,029.76	$25,798.33
13	2027	$937,673.72	6.5%	$562,258.67	$20,638.66
14	2028	$998,622.51	6.5%	$623,207.46	$16,510.93
15	2029	$1,063,532.98	6.5%	$688,117.93	$13,208.74
16	2030	$1,132,662.62	6.5%	$757,247.57	$10,566.99
17	2031	$1,206,285.69	6.5%	$830,870.64	$10,000.00
18	2032	$1,284,694.26	6.5%	$909,279.21	$10,000.00
19	2033	$1,368,199.39	6.5%	$992,784.34	$10,000.00
20	2034	$1,457,132.35	6.5%	$1,081,717.30	$10,000.00

Figure 8: Fire Apparatus Life Cycle Cost Projection Example

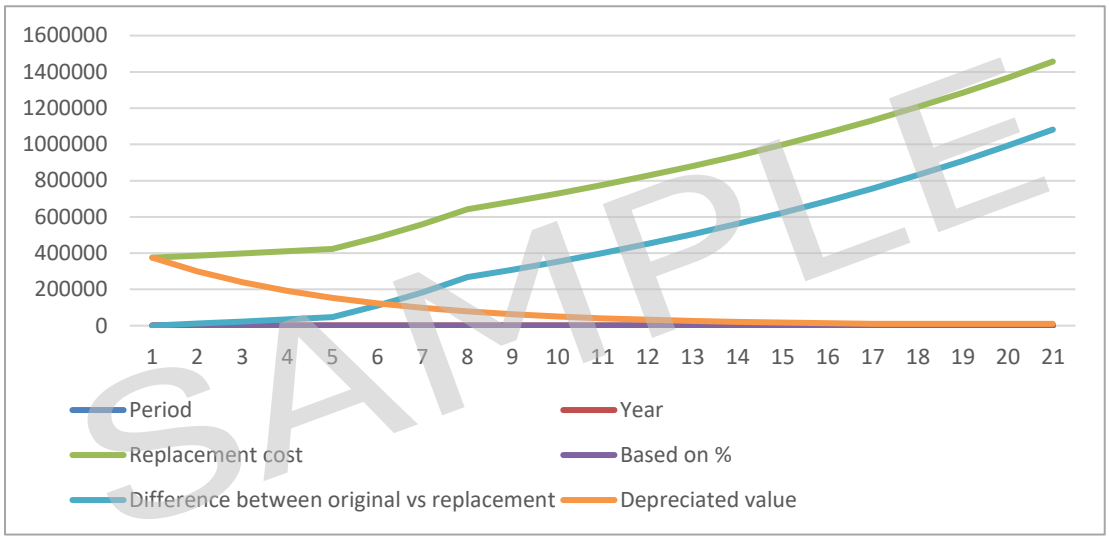


Table 18 and Figure 8 show that the monies put into the replacement reserve fund is close to the projected replacement cost in year 15 and requires additional contributions to extend past. Note the following key points:

- Five-year increase to replacement cost from 15-20 years = $393,599.37
- Five-year decrease in depreciation value from 15-20 years = $3,208.74
- Total increased costs to retain apparatus for additional 5 years (15-20) = $396,808.11
- Additional contributions to reserve fund $79,361.62
- Difference between 20 and 15 years is $1,447,132. 35 - $1,050,324.24 = $396,808.11 or an additional $2,335.00of contribution per year

A fire service that utilizes a similar process as above, taking into consideration local conditions to determine the optimal replacement time for each major piece of apparatus will be able to accurately ensure sufficient funds are available when required.

3.8.2.5 Apparatus and Emergency Vehicle Fleet Inventory

WNFES, through the Municipality of West Nipissing, owns and maintains 15 heavy apparatus (8 pumpers, 6 tankers, 1 rescue, and 1 ladder) and 17 light emergency vehicles that are housed throughout their 9 fire stations. Each piece of apparatus is assigned to a fire station has specific roles in anticipation of the risks in their response zone. WNFES inventory of apparatus, light, and specialty vehicles along with associated equipment is modern and well maintained. Table 19 provides details of the current fleet.

Table 19: WNFES Apparatus and Vehicle with Planned Life Cycle

Location	Unit Number	Year	Make / Model	Life Expectancy	Est. Replacement Year
Station 1	Rescue 1	2001	Hackney Heavy Rescue	23 years	2024
Station 1	Tanker 1	1999	Freightliner Water Tanker	25 years	2024
Station 1	Command 2	2016	Ford Truck	12 years	2028
Station 1	Command 1	2019	Ford F150	11 years	2030
Station 1	Ladder 1	2011	Engine Model ISM	20 years	2031
Station 1	Pumper 1	2012	Custom Stock Pumper	25 years	2037
Station 1	Command 3	2014	Ford Crew Cab 4 X 4	11 years	2025
Station 1 B	6-Wheeler	2001	Polaris ATV	N/A	N/A
Station 1 B	Trailer	2001	Trailer for Polaris ATV	N/A	N/A
Station 1 B	UTV	2018	Honda SM5	N/A	N/A
Station 1 B	Trailer	2014	Miska Trailer for Honda SMA	N/A	N/A
Station 1 B	Snowmobile	2015	Ski-Doo Expedition Sport 550	N/A	N/A
Station 1 B	Snowmobile	2015	Ski-Doo Expedition Sport 550	N/A	N/A
Station 1 B	Trailer	2018	Trailer for 2 Ski-Doo's	N/A	N/A
Station 1 B	Air Boat	2005	Airboat	26 years	2031
Station 1 B	Fire Boat	2011	Fire Boat	N/A	N/A
Station 1 B	Trailer	2011	Tandem Trailer for Air Boat	N/A	N/A
Station 1 B	Boat	2022	Bayview 16' Boat	N/A	N/A
Station 1 B	Trailer	2022	Enclosed Continental 7x14 V Nose	N/A	N/A
Station 2	Mini Pumper 2	2008	Chevrolet C5500 Fire Truck	20 years	2028
Station 3	Tomiko 3	2009	Chevrolet Silverado	20	2029
Station 4	Tanker 4	1999	Int 2100 Gallon Water Tanker	27 years	2026
Station 4	Pumper 4	2006	International 4400 Fire Truck	22 years	2028

Location	Unit Number	Year	Make / Model	Life Expectancy	Est. Replacement Year
Station 5	Tanker 6	2000	Chevrolet Tanker	26 years	2026
Station 5	Mini Pumper 5	2017	Ford F550 4x4 s/c Chas Cab DRW	20 years	2037
Station 6	Tanker 5	2004	Sterling Tanker	23 years	2027
Station 6	Pumper 6	2009	Kenworth/Pierce Pumper	20 years	2029
Station 7	Tanker 7	2000	Chevrolet Tanker	25 years	2025
Station 7	Pumper 7	2007	Kenworth Pumper	20 years	2027
Station 8	Tanker 8	2000	Chevrolet Tanker	25 years	2025
Station 8	Mini Pumper 8	2019	Ford F5500	20 years	2039
Station 9	Pumper 9	2001	Kenworth	25 years	2026

3.8.3 Ancillary Equipment

Equipment needed for field response operations such as vehicle extrication tools, hand tools and blowers, etc. are current and appropriate for the needs of WNFES. The ancillary equipment is designed and maintained to meet the department's current core service, goals, and objectives. WNFES equipment has anticipated replacement cycles of 5 years. As the response needs change or grow, additional equipment to match the service must be considered.

3.8.4 Personal Protective Equipment

PFS personnel are supplied with NFPA, NIOSH and CSA approved personal protective equipment (PPE) including turnout (bunker gear), gloves, helmets, boots and any specialized gear for specific rescue and EMS operations. WNFES has installed commercial washer/extractors and driers for PPE and has been following a cleaning and maintenance program in compliance with NFPA 1971: Standard on Selection, Care, and Maintenance of Protective Ensembles for Structural Fire Fighting and Proximity Fire Fighting for the health and safety of their firefighters in cooperation with a certified provider located in North Bay.

The PPE provided is current, appropriate, and designed to meet the department's safety goals and objectives.

3.8.5 Specialized Operations Equipment

Effective and efficient response to an incident requires equipment designed for a specific purpose. PFS responds with specialized equipment to incidents involving motor vehicles, Hazmat/DG incidents, technical rope rescue, ice rescue, water rescue and wildland interface fires. This equipment is typically kept in each fire station and/or on the apparatus in anticipation of the known risks in each response zone.