

2014

ASSET MANAGEMENTPLAN





Preface

This Asset Management Plan is intended to describe the infrastructure owned, operated, and maintained by the City of Clarence-Rockland to support its core services. It is a compilation of many documents that describe the evolution of the Asset Management implementation in Clarence-Rockland over the past few years aligned to the content and format described in the Province of Ontario's Guide for Municipal Asset Management Plans.

This Plan was developed in consultation with City staff and a joint effort of the following consultants and partners of WSCS Consulting Incorporated:

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- Water, Wastewater and Storm Sewers: Tamer El-Diraby, P.Eng. Smart Management & Technology, Associate Professor: Department of Civil Engineering, University of Toronto
- Equipment and Vehicles: Lorry Sheldon, Sellingworx Plus Inc.
- Buildings and Parks: Pierre Jolicoeur and Jim Barrett "A Preliminary Asset Management Plan for Parks and Buildings: City of Clarence-Rockland" See Appendix

This document identifies what has been achieved, what is being done and what needs to be done to ensure core services provided to citizens, business, and institutions attain sustainability.

This document provides information regarding the implementation of Asset Management in Clarence-Rockland, current state of the infrastructure along with current and future activities. While this document contains some detail, many external documents contain additional levels of detail and are referenced at the end of this document.

Table of Contents

1	EXECUTIVE SUMMARY	4
2	INTRODUCTION AND BACKGROUND	10
3	CORPORATE ASSET MANAGEMENT POLICY	. 11
4	STATE OF INFRASTRUCTURE	. 11
5	LEVEL OF SERVICE	. 92
6	ASSET MANAGEMENT STRATEGY	. 97
7	FINANCIAL STRATEGY AND PLAN	104
9	RECOMMENDATIONS	114
10	FINANCEING STRATEGY ALL ASSETS	120
APPE	ENDIX A – Inventory Manual Methodology Overview	124
APPE	ENDIX B – Pavement Structure and Defects	137
APPE	ENDIX C – Gravel Road Conversion	144
APPE	ENDIX D: Sample Section Data	147
APPE	ENDIX E: Deterioration Curve Detail	149
APPE	ENDIX F: Critical Deficiencies by Asset ID	160
APPE	ENDIX G: Roads Needs by Improvement Type	175
APPE Mr. P	ENDIX H : "A Preliminary Asset Management Plan for Parks and Buildings: City of Clarence-Rockland" Pierre Jolicoeur and Mr. James Barrett	by 184
APPE	ENDIX I: Buildings and Parks: Needs Sorted By Time of Need and Improvement Category	372
APPE	ENDIX J: Asset Management Policy	386

1 EXECUTIVE SUMMARY

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

This Asset Management Plan document has been prepared for all the major asset categories that the City of Clarence-Rockland utilize to provide services to its citizens. Although many municipalities focused only on infrastructure assets, the City needed to understand the condition and replacement costs for all of its asset. Therefore, the asset management plan includes roads, structures, water, wastewater, storm sewers, buildings, park assets, equipment and vehicles. The Plan is intended to provide a comprehensive reference for renewing, operating, maintaining, building, replacing and disposing of the City's assets. The plan is based on the guidelines "Building Together Guide for Municipal Asset Management Plans" provided in the Province of Ontario Ministry of Infrastructure's.

This Plan reflects on the current and desired system condition, level of service, optimal asset management and financial strategies based on currently available data and information on major infrastructure/assets of the City.

The City's data collection programs and data updating processes are ongoing and the plan will be updated over time as more data in terms of condition, capacity, expansion and risks is available through data collection, modeling, and master planning programs.

The total replacement cost, current needs, and rehabilitation needs based on windows of opportunity for the infrastructure assets of the City are summarized as follows:

Asset Type	Length/quantity	Replacement Cost
Roads	250.80	\$148,563,975
Structures	2,246.00	\$14,048,820
Water Distribution System	132.20	\$72,791,220
Sanitary Sewers	59,427.56	\$50,607,898
Storm Sewers	72,837.82	\$54,760,895
Facilities & Parks	50	\$53,710,069
Vehicles & Equipment	56	\$7,635,364
Total		\$401,479,265

Table 1 Replacement costs



Figure 1 % age of Replacement Costs

This represents over \$43,643 per household as shown below.



Figure 2: Replacement costs per household

In terms of current needs based upon condition and remaining service life analysis, the City needs to invest \$41.2 million "now" to replace key infrastructure. Since the annual capital budget in 2014 was a total of \$8.7 million for existing infrastructure, an infrastructure deficit exists.

Asset Type	Current need	%age of Current Need	%age of Need over total needs
Roads	\$ 36,279,982	88%	9%
Bridges	\$ 1,628,000	4%	0%
Water Distribution System		0%	0%
Sanitary Sewers	\$ 363,561	1%	0%
Storm Sewers	\$ 562,937	1%	0%
Facilities & Parks	\$ 236,000	1%	0%
Vehicles & Equipment	\$ 2,183,700	5%	1%
Total Needs	\$ 41,254,180	100%	10%

Table 2: Current Needs

However, additional work is required in order to further assess the condition of some assets. On a positive note, the needs over the next 10 years are reducing and therefore, there is an opportunity to reduce that infrastructure deficit.

Asset Type	Current need		1-5 years	6-10 years	Over 10 years		
Roads	\$ 36,279,982	\$\$	9,693,458	\$ 3,723,427	\$	98,228,133	
Bridges	\$ 1,628,000	\$	2,048,000		\$	10,372,820	
Water Distribution System		\$	790,605		\$	72,000,615	
Sanitary Sewers	\$ 363,561	\$	812,486	\$ 78,393	\$	49,353,458	
Storm Sewers	\$ 562,937	\$	812,937	\$ 2,234,896	\$	51,150,125	
Facilities & Parks	\$ 236,000	\$	4,554,000	\$ 2,809,000	\$	3,847,000	
Vehicles & Equipment	\$ 2,183,700	\$	950,384	\$ 1,302,705	\$	3,198,575	
Total Needs	\$ 41,254,180	\$	19,661,871	\$ 10,148,421	\$	288,150,725	

Table 3: Replacement Costs by Time of Need

In assessing the municipality's state of the infrastructure, we examined, and graded, both the current condition and remaining service lives of the asset categories as well as the municipality's financial capacity to fund the asset's average annual requirement for sustainability (Funding vs. Need). The City's infrastructure ranges in condition by asset type in terms of time of need as shown in the chart below. Note: these numbers are based on condition assessments that have been completed and age. Updated condition assessments, particularly for water, sanitary and storm, may result in additional requirements. The recommended approach includes a combination of time of need and replacement planning (See Table



Figure 3: Condition based on Time of Need by Asset Type

While the underground infrastructure is relatively new and in good condition, the roads network has a 61% adequacy rating with over \$36 million of "Now" needs based upon its adequacy rating. Similarly, structures (bridges and culverts) were found to have an adequacy index of 56% and significant "Now" needs of \$1.6 million. As well, investments of over \$2 million are required in the next 5 years. Therefore, this is a high priority area for the City in order to maintain or improve the state of its roads/structures infrastructure.

In terms of underground, it is relatively new and the City has developed an inspection program for sanitary and sewer networks which revealed that its pipes are generally in good condition. A similar program was not yet put in place for water distribution. Therefore, a high priority should be to establish a condition assessment program for this asset class and others—to reconcile field data with age based data. This chart is a reflection of the table above. It shows that they have since the water network has not been assessed, that the replacement costs should be substituted when condition assessments are available. In particular, the inspections for sewer system showed more gentle/flatter condition curve than the above. The conditions of a good deal of the network are not known. There was no technical analysis of water network conditions and therefore, this should be updated when known.

In order for an AMP to be effectively put into action, it must be integrated with financial planning and long-term budgeting. We have developed scenarios that would enable the City to achieve full funding within 5 years or 10

years for the following: tax funded assets, including road network (paved roads), storm/sewer network, and; rate funded assets such as the water network.

The average annual investment requirement for roads, bridges, sanitary, storm network, water, equipment and buildings is \$7 to \$8 million if "Now" needs and needs over the next 10 years are normalized to keep the current level of service. Capital Investment in existing assets was \$4.5 million in 2014 leaving an annual infrastructure deficit of \$2.6 million. As shown in the report, however, a strategy has been developed particularly for Roads and structures:

- a) allocate \$2.2 million to roads to maintain current adequacy rating
- b) allocate additional funding to allow for maintenance to ensure assets realize their full service life
- c) review level of service to determine appropriate adequacy rating
- d) allocate \$1.6 million in current or upcoming year to address structures issues.
- e) increasing existing and future infrastructure budgets by the applicable inflation index on an annual basis in addition to the deficit phase-in.
- f) Provide for increased funding to meet the growing infrastructure deficit.

Table 4 outlines the recommended capital investments by asset type. One will note that this address the current and future needs but provides for earlier replacement cost funding in order to smooth out investments over time.

	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	TOTAL
Roads	5,099,600	5,099,600	5,099,600	5,099,600	5,099,600	5,099,600	5,099,600	5,099,600	5,099,600	5,099,600	5,099,600	5,099,600	5,099,600	5,099,600	5,099,600	5,099,600	5,099,600	5,099,600	5,099,600	5,099,600	101,992,000
Bridges	1,628,000	435,500	435,500	435,500	435,500	435,500	544,541	544,541	544,541	544,541	544,541	544,541	544,541	544,541	544,541	544,541	544,541	544,541	544,541	544,541	11,429,074
Water Distribution System	158,121	158,121	158,121	158,121	158,121	123,655	123,655	123,655	123,655	123,655	123,655	123,655	123,655	123,655	123,655	127,001	127,001	127,001	127,001	127,001	2,662,160
Sanitary Sewers	540,770	540,770	540,770	540,770	540,770	540,770	540,770	540,770	540,770	540,770	540,770	540,770	540,770	540,770	540,770	540,770	540,770	540,770	540,770	540,770	10,815,401
Storm Sewers	513,255	513,255	513,255	513,255	513,255	513,255	513,255	513,255	513,255	513,255	513,255	513,255	513,255	513,255	513,255	513,255	513,255	513,255	513,255	513,255	10,265,107
Facilities & Parks	445,000	964,000	557,000	651,000	407,000	1,530,000	270,000	628,000	254,000	291,000	1,366,000	391,000	597,000	416,000	171,000	936,000	87,000	179,000	228,000	842,000	11,210,000
Vehicles & Equipment	472,200	482,000	625,000	420,700	538,300	515,400	603,189	530,000	394,300	636,275	669,500	698,500	525,000	525,000	525,000	525,000	525,000	525,000	525,000	525,000	10,785,364
Total	8,856,946	8,193,246	7,929,246	7,818,946	7,692,546	8,758,180	7,695,010	7,979,821	7,470,121	7,749,096	8,857,321	7,911,321	7,943,821	7,762,821	7,517,821	8,286,168	7,437,168	7,529,168	7,578,168	8,192,168	159,159,105
Current Level of Budget	4,500,000	4,500,000	4,500,000	4,500,000	4,500,000	4,500,000	4,500,000	4,500,000	4,500,000	4,500,000	4,500,000	4,500,000	4,500,000	4,500,000	4,500,000	4,500,000	4,500,000	4,500,000	4,500,000	4,500,000	90,000,000
Infrastructure Deficit	-4,356,946	-3,693,246	-3,429,246	-3,318,946	-3,192,546	-4,258,180	-3,195,010	-3,479,821	-2,970,121	-3,249,096	-4,357,321	-3,411,321	-3,443,821	-3,262,821	-3,017,821	-3,786,168	-2,937,168	-3,029,168	-3,078,168	-3,692,168	-69,159,105

Table 4: Recommended Capital Investments – 20 Years



Figure 4: Funding Vs. Need.

2 INTRODUCTION AND BACKGROUND

2.1 Goals of Asset Management

The overall objectives of the plan are as follows:

i. To provide a comprehensive reference for council, managers and City staff for renewing, operating, maintaining, building, replacing and disposing of the City's assets; and

- ii. To reflect the current and desired system conditions, levels of service and safety; and
- iii. To recommend optimal asset management and financial strategies; and
- iv. To set strategic priorities to optimize decisions; and

v. Maximize benefits, manage risks and provide satisfactory levels of service.

2.2 Development of the AMP

The asset management plan was developed through consultations and the culmination of work completed by the City over the last year. As the City became aware of the need to undertake a comprehensive approach to asset management planning, it engaged consultants to assist in collecting data, performing condition assessments, and developing this strategy.

2.3 AMP - Relationship to other Plans

An asset management plan is a key component of the municipality's planning process linking with multiple other corporate plans and documents. For example:

- **Strategic Plan** The strategic plan should guide the AMP in terms of service levels, policies, processes, and budgets defined in the AMP
- Rate Studies
- **The Official Plan** The AMP should utilize and influence the land use policy directions for long-term growth and development as provided through the Official Plan.
- Long Term Financial Plan The AMP should both utilize and conversely influence the financial forecasts within the long term financial plan. The City does not currently have a long term financial plan but has moved to longer term capital planning.
- **Capital Budget** The decision framework and infrastructure needs identified in the AMP form the basis on which future capital budgets are prepared.
- **By-Laws**₄ **standards**₄ **and policies** The AMP will influence and utilize policies and by-laws related to infrastructure management practices and standards.
- **Regulations** The AMP must recognize and abide by industry and senior government regulations.

2.4 Refinement of the AMP

The AMP is a living document that should be updated on a regular basis as new information becomes available and as the City changes and grows. This plan provides a horizon of the life of the assets but focuses on the next 10 years. Ideally, the plan should be updated every 5 years once it is complete. This particular plan still requires updating in order to add condition information for some assets such as the water network. Therefore, once that information becomes available in the near future, the plan should reflect related changes.

3 CORPORATE ASSET MANAGEMENT POLICY

The City adopted an Asset Management Policy in 2010 under By-Law 2010-199. Once the levels of service have been determined, this policy should be updated. The policy can be found at Appendix J to this report.

4 STATE OF INFRASTRUCTURE

4.1 Objective and Scope

Objective: To identify the state of the City's infrastructure today, identify priorities for the near and long term and provide for a financing strategy based upon current funding sources as well as recommendations for change. As well, the report is intended to highlight the current levels of service and a plan to develop the desired levels of service based upon community needs.

Scope: Within this State of the Infrastructure and Assets section, the following asset categories are included:

- 1. Road Network
- 2. Structures
- 3. Water, Wastewater and Storm Sewer Network
- Vehicles and Equipment
- 5. Buildings and Park Equipment

Although the provincial AMP requirements only cover items 1-3 above, the City felt that it was imperative to have a more robust asset management plan and understanding of all its capital requirements. Hence, this plan includes a high level view and approach to vehicles, equipment, buildings and park equipment. The table indicates the components included in the assets included in this report. However, since information was available for hydrants and manholes, we included the details about the condition and the replacement costs of these items separately. The costs have not been added to the replacement cost budget because the costing for the underground infrastructure includes such components.

Asset Category	Where is it located?	Included Components
Water		Valves
Distribution	Underground	Hydrants
Infrastructure	Infrastructure	Chambers
		Meters
Sanitary	Underground	Manholes
Collection	Infrastructure	Services
		Manholes
Storm Sowor	Underground	Catch basins
	Infractructure	Pipes
Initastructure	IIIIIdstructure	Inlets and Outlets
		Services
		Manholes
Combined Sewer	Underground	Catch basins
Infrastructure	Infrastructure	Pipes
		Inlets and Outlets
		Sidewalks
		Curbs
		Signs and Supports
		Lighting
Road Natwork	Aboveground	Walkways
ROBUINELWOIK	Roads	Traffic Signals
		Level Railroad
		Shoulders
		Guard Rails
		Ditches
Treatment	Wate	er
Facilities	Wastev	vater
	Bridges	
	Buildings	
	Equipment	

4.2 Approach

The report is based on the seven key questions of asset management as outlined within the National Guide for Sustainable Municipal Infrastructure:

- What does the City own? (inventory)
- What is the replacement cost?
- What is the condition / remaining service life of the asset(s)?
- What needs to be done and when? (maintain, rehabilitate, replace)
- How much will it cost?
- What should be done in the future to improve asset management and ensure sustainability?

4.3 Data

The base data for the City of Clarence-Rockland assets came from various sources with the view to capture the most up-to-date information as follows:

- 1. PSAB 3150 Tangible Capital Asset information
- 2. Municipal Data Works data
- 3. Condition Assessment of the Road Network from Qualitas
- 4. GIS information from AquaData for water, wastewater and storm network
- 5. Condition assessment information from AquaData, where available, for wastewater and storm network.
- 6. Vehicle and equipment information provided by the City
- 7. Building and Parks inventory and condition assessment undertaken by consultants, where available.

In reviewing the base data, it became evident that the PSAB data was not complete and we were unable to reconcile between PSAB data, MDW and updated information from Qualitas and AquaData. This was particularly true with respect to roads, water, wastewater and storm network data.

4.4 Asset Condition Assessment Methodology - General

In assessing the municipality's state of the infrastructure, we utilized condition information provided by consultants and the City. In other situations, such as water, no condition assessment has been undertaken recently. Therefore, age has been utilized to assess condition. For vehicles and equipment, age as well as use has been utilized to determine the replacement and funding requirements. Generally, condition has been determined in terms of adequacy and time of need for replacement.

4.5 Roads

This section summarizes the road system survey conducted during the fall of 2011, the spring of 2012 by Qualitas. The survey identified the condition of each road asset either by a Performance Condition Index (PCI) for Hard Top roads or a Good/Fair/Poor Rating system for Gravel Roads. The condition data from this report was adapted to the Inventory Manual for Municipal Roads, 1991 (Ministry of Transportation, Ontario) methodology. The report is essentially a desktop analysis. As such, some data fields in the Inventory Manual, such as substandard horizontal and vertical alignment, were not populated.

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

This report should not be confused with a road safety audit. A road safety audit is the formal safety performance examination of an existing or future road or intersection, which qualitatively estimates and reports on potential road safety issues, and identifies opportunities for improvements for all road users Typically, and more predominantly in a lower tier, rural municipality on lower volume road sections, the road system has some deficiencies with the existing horizontal and vertical alignment. The report is essentially a desktop analysis. As such, some data fields in the Inventory Manual, such as substandard horizontal and vertical alignment, were not populated.

Traffic information was also taken from the Qualitas report. The original traffic data was from a traffic survey conducted in 2000. Accurate and current traffic counts are critical in managing a road system and their importance cannot be emphasized enough. Accurate traffic and truck counts are critical to decision making. Traffic counts establish road maintenance classifications for Minimum Maintenance Standards purposes, as per Ontario Regulation 239/02 (*Minimum Maintenance Standards for Municipal Roads*), as well as determining appropriate geometry, structure, and cross-section when the road is rehabilitated or reconstructed. The Microsoft has experienced significant growth since the 2000 traffic study and the increased traffic, including truck counts, should be identified and updated on a regular cycle, as a risk management exercise.

Roads sections in the database appear to be segmented on an intersection to intersection basis. Road sections should be reasonably consistent throughout their length, according to roadside environment, surface type, condition, cross section, speed limit, traffic count or a combination of these factors. For example, new sections should be created as surface type, surface condition, cross-section, or speed limit changes.

Data assumptions were developed based on our experience with State of the Infrastructure reports and the Ministry of Transportation Ontario (MTO) *Inventory Manual for Municipal Roads* from 1991 (*Inventory Manual or IM*).

Road conditions are evaluated during a field inspection. The ratings are either as a standalone value or incorporated into calculations performed by the software, that then classify the road section as a 'Now', '1 to 5', or '6 to 10' year need for maintenance, rehabilitation or reconstruction in six critical areas. The Time of Need is a prediction of the time until the road requires reconstruction, *not the time frame until action is required*. Generally, the closer the timeline to reconstruction, the greater the deterioration of the road is. For example, a road may be categorized as a '6 to 10' year need with a resurfacing recommendation. This road should be resurfaced as soon as possible to further defer the need to reconstruct.

4.5.1 Roads Inventory – What does the City own?

This section provides a review and analysis of the road system from a number of perspectives: functional classification, roadside environment, replacement cost and Regulation 239/02 classification.

	Roadside Environment												
Rural			Semi-	Urban	Urban		То	tal	% of Total				
Surface Type	Cl-km	Lane- km	Cl-km	Lane- km	Cl-km	Lane- km	Cl-km	Lane- km					
Gravel, Stone, Other Loosetop	111.58	223.16	0.37	0.74			111.95	223.89	44.64%	44.50%			
High Class Bitasphalt	44.37	88.74	55.69	111.38	38.79	79.13	138.85	279.25	55.36%	55.50%			
Total	155.95	311.90	56.06	112.11	38.79	79.13	250.80	503.14					

% of Total	62.18%	61.99%	22.35%	22.28%	15.47%	15.73%				

Table 5: Roadside Environment and Surface Typ

	Roadside Environment												
	Ru	ural	Semi-	Urban	Ur	ban	Т	otal	% of	Total			
Road Classification	Cl-km Lane- km		Cl-km	Lane- km	Cl-km	Lane- km	Cl-km	Lane- km	Cl-km	Lane- km			
100	7.41	14.82					7.41	14.82	2.95%	2.95%			
200	63.60	127.20					63.60	127.20	25.36%	25.28%			
300	55.29	110.57					55.29	110.57	22.04%	21.98%			
400	19.23	38.47					19.23	38.47	7.67%	7.65%			
500	6.35	12.70					6.35	12.70	2.53%	2.52%			
700	0.17	0.33					0.17	0.33	0.07%	0.07%			
C/R			6.80	13.59	6.36	13.84	13.15	27.43	5.24%	5.45%			
CCI					0.08	0.17	0.08	0.17	0.03%	0.03%			
L/R	3.90	7.80	49.08	98.15	31.44	63.30	84.42	169.25	33.66%	33.64%			
LCI			0.18	0.37	0.91	1.83	1.10	2.19	0.44%	0.44%			
Total	155.95	311.90	56.06	112.11	38.79	79.13	250.80	503.14					
% of Total	62.18%	61.99%	22.35%	22.28%	15.47%	15.73%							

Table 6: Roadside Environment and Functional Class

	Roadside Environment													
Rural			Semi	-Urban	Ur	ban	Т	otal	% of Total					
Lanes	Cl-km Lane- km		Cl-km	Lane-km	Cl-km	Lane- km	Cl-km	Lane- km	Cl-km	Lane- km				
2	155.95	311.9	56.06	112.11	37.63	75.26	249.63	499.27	99.54%	99.23%				
3	0	0	0	0	0.78	2.33	0.78	2.33	0.31%	0.46%				
4	0	0	0	0	0.39	1.55	0.39	1.55	0.15%	0.31%				
Total	155.95	311.9	56.06	112.11	38.79	79.13	250.8	503.14						
% of Total	62.18%	61.99%	22.35%	22.28%	15.47%	15.73%								

Table 7 Roadside Environment and Lanes

MMS C	MMS Class		2		3		4		5	6		6 TOTAL		% OF TOTAL			
Lanes	Roadside	CI-km	Lane- km	ane- Lane- km Cl-km km		Lane- Cl-km km		Cl-km	Lane- km	Cl-km	Lane- Cl-km km		Lane- I-km km C		Lane- km	Cl-km	Lane- km
2	R	0	0	5.14	10.28	136.49	272.98	6.9	13.81	7.41	14.82	155.95	311.9	62.18%	61.99%		
2	S	0	0	0	0	16.65	33.3	37.03	74.06	2.38	4.76	56.06	112.11	22.35%	22.28%		
2	U	0.09	0.19	1.97	3.93	10.1	20.21	24.59	49.19	0.87	1.74	37.63	75.26	15.00%	14.96%		
3	U	0	0	0.33	0.98	0.27	0.81	0.18	0.53	0	0	0.78	2.33	0.31%	0.46%		
4	U	0	0	0.29	1.18	0	0	0.09	0.38	0	0	0.39	1.55	0.15%	0.31%		
TOTAL		0.09	0.19	7.73	16.37	163.52	327.3	68.8	137.95	10.66	21.33	250.8	503.14				
9	6 OF TOTAL	0.04%	0.04%	3.08%	3.25%	65.20%	65.05%	27.43%	27.42%	4.25%	4.24%						

Table 8: MMS Class by Lanes and Roadside Environment

4.5.1.1 Road System Inventory and Classification

Road sections within road systems may be classified in a number of ways, to illustrate their roadside environment, surface type, functional classification, and so forth. The classifications provide assistance in developing further information, with respect to the road system, such as replacement costs and performance expectations.

4.5.1.2 Surface Types and Roadside Environment

Roadside environment and surface type criteria of a road section are useful in characterization of the road section, and in determining costs for replacement, reconstruction and rehabilitation treatments.

The *Inventory Manual* classifies the roadside environment as Rural, Semi-Urban or Urban. The classification is determined by length, servicing, and adjacent land use.

- *Rural Roads* within areas of sparse development, or where development is less than 50% of the frontage, including developed areas extending less than 300 m on one side or 200 m on both sides, with no curbs and gutters.
- Semi-Urban Roads within areas where development exceeds 50% of the frontage for a minimum of 300 m on one side, or 200 m on both sides, with no curbs and gutters, with or without storm/combination sewers, or for subdivisions where the lot frontages are 30 m or greater.
- Urban Roads within areas where there are curbs and gutters on both sides, served with storm or combination sewers, or curb and gutter on one side, served with storm or combination sewers, or reversed paved shoulders with, or served by, storm or combination sewers, or for subdivisions with frontages less than 30 m.

	Roadside Environment									
	Ru	ural	Semi-	Urban	Ur	ban	То	tal	% of	Total
Surface Type	Cl-km	Lane-km	Cl-km	Lane- km	Cl-km	Lane- km	Cl-km	Lane- km	Cl-km	Lane- km
Gravel, Stone, Other Loosetop	111.58	223.16	0.37	0.74			111.95	223.89	44.64%	44.50%
High Class Bitasphalt	44.37	88.74	55.69	111.38	38.79	79.13	138.85	279.25	55.36%	55.50%
Total	155.95	311.90	56.06	112.11	38.79	79.13	250.80	503.14		
% of Total	62.18%	61.99%	22.35%	22.28%	15.47%	15.73%				

Table 9: Surface Type and Roadside Environment Distribution

4.5.1.3 MMS Classification

In November 2002, Regulation 239/02, *Minimum Maintenance Standards for Municipal Highways (MMS)* came into effect. Essentially, if a Town met the standard and documented it, they would not be negligent per Section 44(3)c of the Municipal Act noted above. Regulation 239/02 provided for a review five years after its original implementation. A process to revise Regulation 239/02, chaired by the Ontario Good Roads Association (OGRA), culminated in a revised regulation, Regulation 23/10, coming into effect in February 2010.

In the late fall of 2011, a court decision (Giuliani) was rendered that effectively created case law that negated the protection that the MMS afforded, and in particular, Tables 4 and 5 of the regulation (Tables 4 and 5 address Snow Accumulation and Icy Roads). Essentially, the decision created a new standard that went beyond the

MMS. The effect on a Town is that a higher standard of weather monitoring and documentation and response to monitoring is required.

OGRA re-called the MMS committee to further amend the regulation, to address the outcome of the Giuliani decision. As a result of the committee meetings and discussions with the province, Regulation 47/13 came into effect, amending Regulations 239/02 and 23/10, on January 25 2013.

The Minimum Maintenance Standards do not have to be adopted by a municipal council per se. The regulation is provincial, applies to all municipalities, and is available for municipalities to use as a defense if they have met the standard and documented it. The more important issue would be to ensure that a Town has the appropriate Standard Operating Procedures (SOP's) in place, and that they are followed and documented, rather than trying to reword or parallel the language of the regulation into a document that is Town-specific.

Traffic counts are important for a number of decision making purposes, with respect to the road system. Accurate, defensible traffic counts, in conjunction with the posted speed limits, are used in determining the MMS class of the respective road sections. Roads are divided into six service classes by posted speed and traffic count, with Class 1 being the highest service level and Class 6 being the lowest. There are no service standards for Class 6 roads which have less than 50 vehicles per day. Table 10 shows the Regulation 23-10's traffic/speed/ classification matrix.

Annual Average Daily Traffic (number of motor vehicles per day)	Posted or Statutory Speed Limit (kilometres per hour)						
	100	90	80	70	60	50	40
15, 000 or more	1	1	1	2	2	2	2
12, 000 - 14, 999	1	1	1	2	2	3	3
10, 000 - 11, 999	1	1	2	2	3	3	3
8, 000 - 9, 999	1	1	2	3	3	3	3
6, 000 - 7, 999	1	2	2	3	3	3	3
5, 000 - 5, 999	1	2	2	3	3	3	3
4, 000 - 4, 999	1	2	3	3	3	3	4
3, 000 - 3, 999	1	2	3	3	3	4	4
2, 000 - 2,999	1	2	3	3	4	4	4
1,000 - 1,999	1	3	3	3	4	4	5
500 - 999	1	3	4	4	4	4	5
200 - 499	1	3	4	4	5	5	5
50 - 199	1	3	4	5	5	5	5
0 - 49	1	3	6	6	6	6	6

Table 10: Regulation 23/10 Minimum Maintenance Standard Road Classification

As per the Regulation, different road classifications require different response times. For example, the response time that is required to remove snow accumulation is 12 hours for a Class 3 road, and 16 hours for a Class 4.

Response time is the time from when the City becomes aware that a condition exists, until the time that the condition is corrected or brought within the limits specified in the regulation. This may have a significant impact with respect to the equipment and staffing that may be required to meet the standard, particularly in the case of winter control. The implications are that this increased service level may require the Town to increase the inspection frequency, staff, and machinery to deliver the service beyond the service delivery hours that may currently exist.

The distribution of the MMS Classes across the road system is detailed in Table 11.

			MMS Class				
Roadside	2	3	4	5	6	TOTAL	% OF TOTAL
R		5.14	136.49	6.9	7.41	155.95	62.18%
S			16.65	37.03	2.38	56.06	22.35%
U	0.09	2.59	10.38	24.86	0.87	38.79	15.47%
TOTAL	0.09	7.73	163.52	68.8	10.66	250.8	
% OF TOTAL	0.04%	3.08%	65.20%	27.43%	4.25%		

Table 11: Minimum Maintenance Standards Class Distribution

Traffic information for this report was obtained from the 2012 Qualitas report. That information was from a traffic study from 2000, author unknown.

4.5.1.4 Functional / Existing / Design Classifications

Roads are further classified within the database by classes such as Local, Collector, or Arterial and Residential or Industrial. Items 33 and 105 in the *Inventory Manual* provide further direction on determination of the Existing or Design Classes of road. Generally, the classifications are predicated on the existing use, roadside environment, and anticipated growth over either the ten- or twenty-year planning horizon.

The road sections are classified by the rater, at the time of the field review. Table 12 identifies the Functional Road Class Distribution.

		105												
		R	oadside Er	vironment										
	R	ural	Semi-	Urban	Ur	ban	Т	otal	% of	Total				
Road Classification	Cl-km	Lane- km	Cl-km	Lane- km	Cl-km	Lane- km	Cl-km	Lane- km	Cl-km	Lane- km				
100	7.41	14.82					7.41	14.82	2.95%	2.95%				
200	63.60	127.20					63.60	127.20	25.36%	25.28%				
300	55.29	110.57					55.29	110.57	22.04%	21.98%				
400	19.23	38.47					19.23	38.47	7.67%	7.65%				
500	6.35	12.70					6.35	12.70	2.53%	2.52%				
700	0.17	0.33					0.17	0.33	0.07%	0.07%				
C/R			6.80	13.59	6.36	13.84	13.15	27.43	5.24%	5.45%				
CCI					0.08	0.17	0.08	0.17	0.03%	0.03%				
L/R	3.90	7.80	49.08	98.15	31.44	63.30	84.42	169.25	33.66%	33.64%				
LCI			0.18	0.37	0.91	1.83	1.10	2.19	0.44%	0.44%				
Total	155.95	311.90	56.06	112.11	38.79	79.13	250.80	503.14						
% of Total	62.18%	61.99%	22.35%	22.28%	15.47%	15.73%								

Table 12: Functional Road Class Distribution

4.5.1.5 Horizontal and Vertical Alignment

The changes in direction and elevation of the road are referred to as the horizontal and vertical alignment. The changes in direction should be designed and constructed such that the posted speed limit of the road section

may be safely maintained throughout the section. If maintaining the posted speed in safety cannot be achieved, then the horizontal or vertical curve would be identified as substandard.

Lower volume roads that have not been reconstructed, tend to closely follow (or avoid) the existing contours of the land. In southern Ontario, which is relatively flat, there was a greater tendency to follow the alignments of the original municipal surveys. However, where these roads were adjacent to larger streams and rivers, there was still a tendency to follow the topography. The result was/is a road alignment that tends to change vertical and horizontal direction frequently; at times without much notice.

When a new road is designed, one of the considerations is the Safe Stopping Distance (SSD). The calculation of the distance to stop safely from any given speed is based upon several factors, such as posted speed limit, reaction times, and friction. When road sections are evaluated for a road needs study, the number of vertical and horizontal curves that appear to be deficient are identified. The identification is based on whether there is sufficient SSD for the posted speed limit. The following table is an excerpt from the Geometric Design Standards for Ontario Highways, and indicates the SSD's required for various design speeds.

Spe	eed v	Perceptio Rea	Perception and Brake Reaction		Braking	S-Min. S sight di	topping istance
Design	Assumed condition	dition Time Distance of friction wet pav't	distance on level	caiculated	rounded		
km/h	km/h	s	m	t	m	m	m
40	40	2.5	28	0.380	17	45	45
50	50	2.5	35	0.358	27	62	65
60	60	2.5	42	0.337	42	84	85
70	70	2.5	49	0.323	60	109	110
80	79	2.5	55	0.312	79	134	135
90	87	2.5	60	0.304	98	158	160
100	95	2.5	66	0.296	120	186	185
110	102	2.5	71	0.290	141	212	215
120	109	2.5	76	0.283	165	241	245
130*	116	2.5	81	0.279	190	271	275
140*	122	2.5	85	0.277	211	296	300
150*	127	2.5	88	0.273	232	320	320
160*	131	2.5	91	0.269	251	342	345

Figure 5: Minimum Maintenance Standards Class Distribution

On rural roads, one of the effects of substandard alignments is a decrease in the Average Operating Speed through the road section. An Average Operating Speed that is significantly lower than the posted speed will result in a Geometric Need for the road section. The following table from the Inventory Manual identifies the limits that will trigger a geometric need for typical posted speed limits.

Table 13: Posted Speed vs. Minimum Tolerable Operating Speed

Item			Spe	ed		
Legal Speed Limit	40	50	60	70	80	90

Minimum Tolerable Operating Speed	35	45	50	60	65	75

The following pictures were not taken in the City of Clarence-Rockland, but provide examples of potentially substandard alignments.



Figure 6: Potentially Substandard Vertical and Horizontal Alignment

A field audit of the road system should be conducted to identify potentially substandard alignments.

4.5.1.6 Drainage

Adequate drainage is critical to the performance of a road to maximize its' life expectancy. Roads are designed, constructed, and maintained in order to minimize the amount of water that may enter, or flow over, the road structure.

In the case of water flowing over the road, assessment must be made of the circumstances on a site-specific basis. Factors that should be considered include the traffic volumes of the road section, economic impacts to the loss of the use of the road, upgrade costs, and risks.

Water in a road base can cause different reactions at different times of the year. In non-freezing conditions, the granular road base can become saturated. Too much water displaces the granular material; it removes the material's ability to support the loads for which it was designed. Too much water in the granular material actually acts like a lubricant, and facilitates the displacement of the material under load. In freezing conditions,

water in the road structure can cause frost heave, potholes, and pavement break-up as the water freezes and expands. Generally, a saturated granular road base results in structural failure of the road.

Figure 7 provides an example of a rural road, illustrating what the relationship between the gravel road base and the drainage should be. The relationship is the same in an urban system, although not as obvious. Rural road drainage is typically achieved through roadside ditches. Rural road ditches should be a minimum of 500 mm below the granular road base, to ensure that the road base remains free from moisture and maintains its ability to carry loads.

Urban roads typically have a storm sewer pipe network that carries the minor storm event. The roadway itself is often part of the overland flow route for the major event. The drainage of the granular road base is accomplished through sub-drains installed below the curb and gutter, lower than the lowest elevation of the granular base. This satisfies the same purpose as the ditch in a rural cross-section, by providing an outlet to ensure that the granular base remains dry



Figure 7: OPSS 200.10

Evaluations of the

drainage scores were in part predicated upon the structural score. For example where a road section had virtually no ditch, or very minimal ditching but the road structure did not show any signs of failure typically observed when there is inadequate drainage, then generally a rating was between 12 and 14 and an 'SD- (Spot drainage) improvement noted. Where it was obvious that the inadequate ditch was exacerbating the distress on the road or there was occasional flooding, the score was be further reduced and the improvement type would be some type of major rehabilitation or reconstruction dependent upon the traffic volumes.

Maintenance of the drainage system(s) is critical to the long-term performance of a road system. Low volume rural roads tend to have a winter maintenance program that includes the application of sand to improve traction. Over time, that sand builds up on the edge of the pavement, to a point where it effectively blocks runoff from getting to the ditch. The runoff is trapped at the edge of pavement, where it saturates that area of the road bed, contributing to the early failure of the edge of the pavement. This element of the road cross-section is not scored as part of the overall evaluation.

Presence or absence of roadside berms is not evaluated during a road review. This is a maintenance issue, however, if roadside berms are not removed, the effect on the overall pavement is similar to not having a ditch. Water cannot drain from the road and it enters into the granular base potentially saturating it. The saturated base cannot support load.



Figure 8: Roadside Berm Impeding Drainage

4.5.1.7 DRAINAGE OUTLET AND MASTER PLANNING

Correcting drainage issues is not quite as simple as digging a ditch or installing a storm sewer. In Ontario, Common law for drainage is such that water cannot simply be collected and directed. It has to be directed to a legal, adequate outlet. There are two primary methodologies to achieve the legal outlet; a Class Environmental Assessment Process or a petition for a Municipal Drain under the Drainage Act. The 'adequate' component is an engineering function.

As the City of Clarence Rockland reconstructs/rehabilitates sections of the road network in the urban and semi urban areas, a Master Drainage Plan should be developed as part of a Class Environmental Assessment process prior to the reconstruction process occurring, in order that both minor and major storm events are dealt with appropriately.

4.5.1.8 Boundary Roads

Boundary roads, are roads that a municipality would have in common with the abutting municipality. In order to manage the joint responsibilities, a Boundary Road Agreement that identifies the responsibilities of both agencies is created. The agreements are usually in writing; however, some are informal.

The Boundary Road Agreement should identify costs sharing and responsibility arrangements for maintenance or capital works on the road section. From a risk management perspective, the agreement reduces the risk for one of the parties in the event of a claim, depending upon the content of the agreement.

Boundary road reporting can be dealt with in one of two ways: the length can be split to provide a more accurate depiction of the road system that is actually maintained by the agency, or they may not be adjusted. When MTO was providing subsidy, the roads were adjusted for reporting and accounting purposes. For the purposes of this report adjustment has been made to the road system sizes to account for the 50% sharing of the length of the boundary roads.

When a boundary is reconstructed on a day labour basis by the adjacent municipalities, the project should be treated no differently than if the work were being tendered. The exposure to risk for the municipality is no different. The assignment of the various aspects of the work should be clear and the timing for completion of the tasks clearly identified and adhered to.

The current database does not include data related to boundary road designations. Boundary Roads should be confirmed and reviewed to ensure appropriate agreements are in place.

4.5.2 Roads Valuation/Replacement Costs - What is it worth?

The total historical cost for roads surface and base as at 2012 in accordance with PSAB is shown on the financial statements as follows:

		Net Book	Average of Remaining Useful
Asset Category 🕶	Historical Cost	Value	Life
Road surface	\$26,486,290.00	\$10,523,833.00	3
Roadbase	\$26,952,046.00	\$16,112,496.00	16
Grand Total	\$53,438,336.00	\$26,636,329.00	10

Table 14: Roads Historical Cost – 2012 Financial Statements

As shown above, the City owns 250.8 kms of road with a replacement cost of \$148,563,975.

SUMS	2	3	4	5	6	TOTAL	% OF TOTAL
R		3,728,819	49,776,446	3,137,787	1,948,154	58,591,206	39.44%
S			7,540,197	15,615,372	987,686	24,143,255	16.25%
U	173,251	4,835,486	17,746,591	41,616,803	1,457,383	65,829,514	44.31%
TOTAL	173,251	8,564,305	75,063,234	60,369,962	4,393,223	148,563,975	
% OF TOTAI	0.12%	5.76%	50.53%	40.64%	2.96%		

Table 15: Roads Replacement Costs by Class

4.5.3 Roads – What is the condition/remaining service life?

The provincial requirements for AMP's include asset condition assessment in accordance with standard engineering practices.

Condition data was from the 2012 Qualitas report entitled AUSCULTATION DU RÉSEAU ROUTIER ET IMPLANTATION DU SYSTÈME DEGESTION DES CHAUSSÉES. The PCI methodology used in the Qualitas report follows AASHTO PP44 -01 (Standard Practice Quantifying Cracks in Asphalt Pavement Surface). 4 Roads preference is to evaluate a road system based on the Inventory Manual Methodology as 4 Roads believes that this provides a more holistic review of the road system and the treatment selections. Both methodologies would represent standard engineering practices. 4 Roads met with staff from Qualitas regarding the condition data in the report in order to establish a correlation between Qualitas rating and the Inventory Manual Structural Adequacy rating (distress).

Index	Surface Condition
80 - 100	Very Good
60 - 79	Good
40 - 59	Passable
20 - 39	Poor
1 - 19	Very Poor

Table 16: PCI vs Surface Condition (Excerpted from Qualitas Report)

Structural Adequacy (Score range 1 to 20)	Physical Condition (Structural Adequacy times 5)	Surface Condition	Description
15 to 20	71 to 100	Adequate – Maintenance and Preservation	Very Good
11 to 14	55 to 70	6 to 10 year Needs – R1 Resurfacing	Good
8 to 11	36 to 54	1 to 5 year Needs – R2 /more extensive rehabilitation	Fair/Passable
1 to 7	<35	Now Needs –Reconstruction or Major Rehabilitation	Poor

Table 17: Inventory Manual Structural Adequacy

Table 16, from the Qualitas report, indicates the range of Pavement Condition Indices vs Condition. Table 17 indicates the range of Structural Adequacy, Physical Condition (a calculated field developed by 4 Roads) vs condition. The two rating systems appear to compare reasonable well. The PCI data from the Qualitas database was migrated to WorkTech Asset Manager Foundation as the Physical Condition field for hard top roads. For the gravel road surface a similar, but simpler data migration and correlation was used. From the information in Appendix 3 of the Qualitas report, 4 Roads used the general ratings provided in the column that represented the observations made during the spring thaw evaluation and translated that into numerical scores as shown in Table 17.

Migrating the condition data into WorkTech Asset Manager Foundation allowed 4 Roads to make assumptions that would lead to the development of a database that may provide a greater cross-section of analysis and reporting of the road system. Assumptions are discussed further in this report.

The road section analysis follows the methodology of the Ministry of Transportation Inventory Manual for Municipal Roads, 1991.

4.5.3.1 Inventory Manual History

From the 1960's until the mid-1990's, the Ministry of Transportation (MTO) required Town to regularly update the condition ratings of their road systems in a number of key areas. The process was originally created by the MTO, as a means to distribute conditional funding, on an equitable basis, between municipalities. The reports were referred to as a 'Road Needs Study' (RNS) and were required in order to receive a conditional grant to subsidize the municipal road programs. After the introduction in the 1960's by the MTO, the methodology evolved into the current format by the late 1970's. The most current version of the Inventory Manual is dated 1991, and is the methodology used for this report. The practice was discontinued by a number of municipalities, when conditional funding for roads was eliminated in the mid 1990's.

4.5.3.2 Inventory Manual Overview

The Inventory Manual Methodology is a sound, consistent, asset management practice that still works well today, and in view of the increasing demands on efficiency and asset management, represents a sound asset management practice that should be repeated on a cyclical basis. The road section review identifies the condition of each road asset by its time of need and recommended rehabilitation strategy.

The Sotl Report provides an overview of the overall condition of the road system by road section, including such factors as structural adequacy, drainage, and surface condition. The study also provides an indication of apparent deficiencies in horizontal and vertical alignment elements, as per the Ministry of Transportation's manual, "Geometric Design Standards for Ontario Highways".

The report provides an overview of the physical and financial needs of the road system, which may be used for programming and budgeting. However, once a road section reaches the project design stage, further detailed review, investigation, and design will be required to address the specific requirements of the project.

Asset Management by its' very nature is holistic. Managing a road network based solely on pavement condition would be critically deficient in scope in terms of the information required to make an informed decision as to the improvements required on a road section.

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

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

Evaluations of each road section were completed generally in accordance with the MTO's *Inventory Manual for Municipal Roads* (1991). Data collected was entered directly into WorkTech's Asset Foundation software. Condition ratings, Time of Need, Priority Ratings, and associated costs were then calculated by the software, in accordance with the *Inventory Manual*. Unit costs for construction were provided by Microsoft staff.



Road sections should be reasonably consistent throughout their length, according to roadside environment, surface type, condition, cross section, speed limit, or a combination of these factors. As an example, section changes should occur as surface type, surface condition, cross-section, or speed limit changes.

The Condition Ratings, developed through the scoring in the *Inventory Manual*, classify roads as 'NOW', '1 to 5', or '6 to 10' year needs for reconstruction. The Time of Need is a prediction of the time until the road requires reconstruction, <u>not the time frame until action is required</u>. For example, a road may be categorized as a '6 to 10' year need with a resurfacing recommendation. This road should be resurfaced as soon as possible, to further defer the need to reconstruct.

Field data is obtained through a visual examination of the road system and includes: structural adequacy, level of service, maintenance demand, horizontal and vertical alignment, surface and shoulder width, surface condition, and drainage. The Condition Rating is calculated based upon a combination of other calculations and data.

To best utilize the database information and modern asset management concepts, it has to be understood that the Time of Need (TON) ratings are the estimated time before the road would require reconstruction. NOW needs are still roads that require reconstruction; however, it is not intended that '1 to 5' and '6 to 10' year needs are to be acted on in that timeframe. The '1 to 5' and '6 to 10' year needs are current candidates for resurfacing treatments that will elevate their structural status to 'ADEQ', and offer the greatest return on investment for a road authority (notwithstanding a drainage or capacity need, etc.).

The Time of Need ratings from the Structural Adequacy perspective are described more fully in Appendix A.

Road System Condition - What needs to be done and when?

The Inventory Manual methodology results in overall rating of road sections by Time of Need (TON); NOW, 1 to 5, 6 to 10, or Adeq (Adequate). Table 19 below provides a breakdown of the road system by time of Need and MMS Class.

4.5.3.3 Types of Improvements

This report identifies ratings that are resultant from identification of deficiencies on each road section that equate to a TON in one or more of the six critical areas: Geometry, Surface Type, Surface Width, Capacity, Structural Adequacy, or Drainage. Based on the ratings and the deficiencies noted an improvement type recommendation is also provided.

The key factor in providing an improvement type recommendation is the visual survey. During the visual survey, a determination is made as to whether the appearance and performance of a road relates to an underlying structural problem, or simply to aged surface materials. A road's structural or drainage problem would tend to result in a reconstruction/ replacement treatment recommendation, whereas aged surface materials would result in a resurfacing/rehabilitation treatment recommendation. A determination of the root cause of the problem or the condition is critical; reconstructing a road that should have had some type of resurfacing treatment would be an ineffective use of available resources.

For the purposes of this report, the standard improvement types and associated costing formulae identified in the Inventory Manual have been used.

The table below provides a list of road improvements.

Table 18: Road Improvement Types

Code	Description
R1	Basic Resurfacing
R2	Basic Resurfacing – Double Lift
RM	Major Resurfacing
PR1	Pulverizing and Resurfacing
PR2	Pulverizing and Resurfacing – Double Lift
BS	Tolerable standard for lower volume roads – Rural and Semi-Urban Cross sections only
RW	Resurface and Widen
REC	Reconstruction
RNS	Reconstruction Nominal Storm Sewers (Urban: no new sewer, adjust manholes, catch basins, add sub-drain, remove and replace curb and gutter, granular, and hot mix)
RSS	Reconstruction including Installation of Storm Sewers (New storm sewers and manholes in addition to the above)
NC	Proposed Road Construction
SRR	Storm Sewer Installation and Road Reinstatement

Appendix B of this report includes a discussion of Pavement Structure and defects.

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

NOW needs represent road sections that require reconstruction or major rehabilitation. *NOW* needs are the backlog of work required on the road system; however, *NOW* needs may not necessarily be the priority, depending on funding levels. Construction improvements identified within this time period are representative of roads that have little or no service life left and are in poor condition. Resurfacing treatments are never *NOW* need, with the following exceptions;

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

• When the surface is gravel and the roadside environment is Urban or Semi-Urban

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

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

'ADEQ' identifies road sections that do not have reconstruction or resurfacing needs, although minor maintenance such as crack sealing or spot drainage may be required.

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

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

The *Inventory Manual* provides direction that roads with a traffic volume of less than 50 vehicles per day <u>are</u> <u>deemed to be adequate</u>, even if they have structural, geometric, or drainage deficiencies that would otherwise be identified as being in a Time of Need and were to be corrected within the maintenance budget. This approach is directly parallel to Regulation 239/02, *Minimum Maintenance Standards for Municipal Roads*, which states that roads with less than 50 vehicles per day, and a speed limit of less than 80 km/hr., are classified as Class 6 with no standard for repair. This factor does have an effect on the system adequacy calculation for the City of Clarence Rockland.

However, for the purposes of this report, road sections with a traffic count of less than 50 vehicles per day have been provided with recommended treatment and associated improvement cost in order to provide a more accurate assessment of the total needs of the City. (The calculations will rate them as adequate due to the traffic count) The road system currently includes 10.66 km of road sections that had an actual or estimated traffic count of less than 50 vehicles per day. This represents approximately 4.25% of the road system.

The provincial requirements for AMP's include asset condition assessment in accordance with standard engineering practices. The road section reviews follow the methodology of the Ministry of Transportation Inventory Manual for Municipal Roads, 1991.

4.5.3.4 Road System Adequacy

The system adequacy is a measure of the ratio of the 'NOW' needs to the total system, and includes needs from the six critical areas described earlier in the report. The overall TON is the most severe or earliest identified need. For example a road section may appear to be in good condition, but is identified as a NOW need for capacity, indicating that it requires additional lanes.

Equation 1: System Adequacy Calculation System Adequacy = <u>Total System (km) – NOW Deficiencies (km)</u> X 100 Total System (km)

The Microsoft currently has a road system adequacy measure of 61%. The road system currently measures 250.8 centreline-kilometres (unadjusted for boundary roads), with 97.73kilometres rated as deficient in the 'NOW' time period.

		2	:	3	Total 4 5 6								
		Lane-	Lane-		Lane-		Lane-		Lane-			Lane-	
Time of Need	Cl-km	km	Cl-km	km	Cl-km	km	Cl-km	km	Cl-km	km	Cl-km	km	
NOW	0.09	0.19	2.06	4.11	78.38	156.76	17.09	34.18			97.63	195.24	
1-5			2.45	5.06	9.54	19.07	10.54	21.07			22.52	45.21	
6-10			0.42	1.43	5.18	10.63	4.52	9.05			10.12	21.10	
ADEQ			2.80	5.77	70.42	140.85	36.54	73.43	10.66	21.33	120.53	241.59	
Total	0.09	0.19	7.73	16.37	163.52	327.30	68.80	137.95	10.66	21.33	250.80	503.14	
% of Total	0.04%	0.04%	3.08%	3.25%	65.20%	65.05%	27.43%	27.42%	4.25%	4.24%			
System													
Adequacy %	0	0.0	73.4	74.9	52.1	52.1	75.1	75.2	100.0	100.0	61.0	61.2	
Good to Very													
Good %	0	0.0	41.7	44.0	46.2	46.3	59.8	59.9	100.0	100.0	52.1	52.2	

Table 19: Roads System by Time of Need and MMS Class

The estimates provided in this report are in accordance with the formulae in the *Inventory Manual*, and utilize the unit costs as identified in Table 20. These costs include adjustment factors as per the *Inventory Manual*, such as Basic Construction, Terrain, Contingency Roadside Environment, and Engineering.

	11-24	2013 Costs
item	Unit	\$
Excavation	m ³	8.00
Hot Mix Asphalt	t	120.
Single Surface Treatment	m²	8.00
Granular A	t	14.00
Granular B	t	12.00
Conc- Curb and Gutter-place	linear m	60.00
Conc- Curb and Gutter-removal	linear m	16.00
Subdrains	linear m	16.00
Storm Sewer-525mm	linear m	360.00
Manholes	ea	3600.00
- manhole removed	ea	320.00
- manholes-Adjust	ea	600.00
Catch Basins	ea	2600

Table 20: Unit Costs

Catch-Basins- removed	ea	300
Catch Basin Leads	Linear m	160.00
Catch Basins - adjust	ea	300.00
Asphalt Planing	m²	3.6
Asphalt Pulverizing	m²	3.00
Crack Sealing	m	2.00

The traditional target adequacy for upper-tier road systems (Regions and Counties) was 75%, while a lower-tier's target adequacy was 60%. Based on these former MTO targets, which were in effect when the municipal grant system was in place, the target adequacy for the Microsoft should be 60%, as a minimum. The minimum target adequacies were established by MTO, to reflect the nature and purpose of the road system.

4.5.3.5 Physical Condition

The Physical Condition is an alternate method of describing the condition of a road section or the average condition of the road system. The value is the structural adequacy converted to be expressed as a value out of 100, instead of 20. This methodology lends itself to modeling and comparators that may be more easily understood. There isn't a 1:1 relationship between the weighted average physical condition and the system adequacy.

The Average Physical Condition of the road system is currently 53.2.

4.5.3.6 Good to Very Good Roads

One of the requirements of the annual FIR reporting is the percentage of the roads that are good to very good. 4 Roads uses a calculation similar to the system adequacy calculation to determine the good to very good roads as follows;

Equation 1: Good to Very Good Equation

Good to Very Good = <u>Total System (km) – (NOW + 1 to 5 (km)</u> X 100 Total System (km)

The percentage of good to very food roads in Clarence –Rockland is 52.1%

4.5.3.7 Remaining Service Life

As indicated previously, the Time of Need is really a prediction model in terms of an estimate based on current condition to the time for reconstruction. The TON then also provides an estimate of the remaining life in the road system/section. The following figure summarizes the structural adequacy ratings of the road system and illustrates the estimated remaining service life of the road system.



Figure 9: Roads Remaining Service Life

4.5.3.8 Record of Assumptions – TON, Improvement and Replacement Costs

The methodology of this report is such that a number of the Inventory Manual itself forms the basis of a large number of assumptions in terms of;

- Dimensional requirements for the development of improvement and replacement costs
- Structural requirements based on road classification
- Time of needs based on the ratings and subsequent calculations
- The methodology to equate the PCI condition data to Structural Adequacy is a is identified in Section 2 of this report
- Terrain was assumed to be NF- Non Rocky and Flat
- Horizontal and vertical alignments were assumed to be adequate
- Sections were categorized as Urban that had curb and gutter on both sides and were served by storm sewers with a speed limit of 50 km/hr
- Sections with development on either side but without curb and gutter were categorized as Semi-Urban with a speed limit of 50 km/hr
- Section with little or no development were categorized as Rural with a speed limit of 80km/hr.
- Semi-Urban and Urban Sections with less than 1000 AADT were generally Categorized as L/R, Local Residential
- Semi-urban and Urban Sections with greater than 1000 AADT were generally categorized as Collector
- Local residential roads were assumed to have a width of 8.5m
- Semi-Urban roads were assumed to have a platform width of 9m and a surface width of 6.5m
- Hard topped rural roads were assumed to have a platform width of 9m and a surface width of 6.5m
- Gravel surface platform were as provided by Qualitas from their review of the gravel road sections

- Surface width on gravel surfaces were assumed to be the platform width less 1m if the platform was 7m of less
- Surface widths on gravel sections were assumed to be 6m where platform widths were greater than 7m
- Traffic Flow was assumed to be 2-Way on all roads
- All Collector roads were assumed to have no spring load restriction
- All Local roads, semi urban and rural roads were assumed to have a spring load restriction
- Drainage ratings were assumed to be 15/15 for sections where there was no evidence to indicate otherwise.
- Drainage ratings for semi-urban sections with no ditching were assumed to be 12/15
- Maintenance demand was assumed to be 6/10 on section with a PCI of less than 90; 8 for sections with a PCI greater than 90
- Surface Condition was assumed to be 9 for sections with a PCI greater than 90; 8 for section with a PCI between 70 and 90; 7 for section with a PCI from 36 to 69 and 6 for sections with a PCI of 35 or less.
- Based on the above noted assumption, assumptions were made for improvement type.

4.5.3.9 Condition Assessment Cycle Recommendation

This report identifies the overall condition of the system. A regular review of the condition of the road system allow the municipality to gauge the effectiveness of the strategies, programs and funding levels over time; in effect benching marking against yourself. Regular reviews and analysis provide the opportunity to review and adjust any of the service delivery elements. 4 Roads would recommend a two to four year cycle for review and update of the road system database.

4.5.4 Roads – How much will it cost?

											То	tal
	2		3		4		5		6			
Time of Need	Cl-km	Lane- km	Cl-km	Lane-km	Cl-km	Lane-km	Cl-km	Lane-km	Cl-km	Lane-km	Cl-km	Lane-km
NOW	0.09	0.19	2.06	4.11	78.38	156.76	17.09	34.18			97.63	195.24
1-5			2.45	5.06	9.54	19.07	10.54	21.07			22.52	45.21
6-10			0.42	1.43	5.18	10.63	4.52	9.05			10.12	21.10
ADEQ			2.80	5.77	70.42	140.85	36.54	73.43	10.66	21.33	120.53	241.59
Total	0.09	0.19	7.73	16.37	163.52	327.30	68.80	137.95	10.66	21.33	250.80	503.14
% of Total	0.04%	0.04%	3.08%	3.25%	65.20%	65.05%	27.43%	27.42%	4.25%	4.24%		
System Adequacy %	0	0.0	73.4	74.9	52.1	52.1	75.1	75.2	100.0	100.0	61.0	61.2
Good to Very Good %	0	0.0	41.7	44.0	46.2	46.3	59.8	59.9	100.0	100.0	52.1	52.2

Table 21: Time of Need by Length and MMS Class

		1 to 5		6 to 10		ADEQ		N	IOW	TOTAL		
Improvement Class	Imp. ID	CL-KM	Imp. Cost	CL-KM	Imp. Cost	CL-KM	Imp. Cost	CL-KM	Imp. Cost	CL-KM	Imp. Cost	
Const	BS	0.15	44,278	0.24	71,687	1.27	278,662	29.78	6,136,459	31.43	6,531,086	
Const	NONE	0.09	0			37.86	0			37.95	0	
Const	REC	2.48	1,370,282			7.52	1,993,796	40.90	15,300,018	50.91	18,664,095	
Const	RNS	0.28	148,189	0.32	171,814			4.09	3,651,756	4.68	3,971,729	
Const	RSS	2.01	3,271,472	0.78	1,282,452			6.64	10,774,575	9.44	15,328,499	
Maintenance	CRK					20.55	41,462			20.55	41,462	
Maintenance	GRR					23.91	443,048	4.82	74,060	28.73	517,107	
Maintenance	GRR2					28.28	1,022,485			28.28	1,022,485	
Maintenance	SD			0.32	0					0.32	0	
Rehab	PR2	0.91	232,736			0.14	2,906	11.09	223,195	12.13	244.650	
Rehab	R1	4.35	904,660	8.38	2,161,006	1.01	124,697	0.09	39,021	13.84	3,229,385	
Rehab	R2	12.26	3,936,028	0.08	36,467			0.22	80,928	12.56	4,053,423	
TOTAL		22.52	9,693,458	10.12	3,723,427	120.53	3,907,055	97.62	36,279,982	250.80	53,603,922	
% of Total		8.98%	18.08%	4.04%	6.95%	48.06%	7.29%	38.92%	67.68%			

Table 22: Road System Needs Summary

Year												
Improvement	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	Grand Total	
BS		8,434		221,180	14,759		1,065,412		693 <i>,</i> 038	244,576	2,247,399	
CRK	32,544	12,742	3,952	55,427	4,354	8,602	13,366	10,184	19,820	11,906	172,897	
GRR		2,201	2,713		7,651				3,686	10,085	26,336	
GRR2	398,020	495,476	694,682	138,410	774,315	633,537	17,940	525,503	92,088	740,870	4,510,841	
MICRO				1,224		1,248	3,984	3,648			10,104	
PR2	382,288	52,627	870,823	618,860	310,687	24,378	189,611		559,617	22,121	3,031,012	
R1	712,208	916,418	436,042	159,908		788,573	443,172	1,692,928	398,614	1,203,220	6,751,083	
R2	707,638	744,793	132,768	42,523					465,094		2,092,816	
RNS			91,992	994,801	1,121,211	776,014	499,316				3,483,334	
Grand Total	2,232,698	2,232,691	2,232,972	2,232,333	2,232,977	2,232,352	2,232,801	2,232,263	2,231,957	2,232,778	22,325,822	

 Table 23: 10 Year Program -Performance Model Output (Preservation Funding Level)

4.5.5 Recommendations – Long term sustainability

During the analysis of the condition data and the assumptions made there were several unique aspects of the network that came to light:

- Traffic counts are dated 2000. With the growth that has occurred, it is assumed that the counts are not accurate particularly for those roads that serve a collector function.
- Traffic counts are inconsistent along a given road. For example within 3 sections on Giroux Street the traffic counts vary from 912, to 2147, to 100. Another example is a section of Patricia with a count of 32.
- A number of section have no identifiers other than an asset ID. It was assumed that these were new roads and that Roadside Environment Classification was correct.
- Section numbering/ Asset ID's are not sequential along a road. This adds a degree of difficulty to reporting.
- The designation of roadside environment appeared to be inconsistent between urban, semiurban and rural using the Inventory Manual definitions. For example some sections were designated as urban and there did not appear to be curb and gutter or storm sewers.
- Approximately 10.5% (26.4 km) of the road system appears to require resurfacing. If not addressed, the resurfacing needs will become major rehabilitation or reconstruction needs at significantly greater cost.
- Approximately 14% (34.99 km) of the road system has a structural adequacy score of 15 or 16, indicating that those roads would be an additional resurfacing need in the next 1 to 3 year period. (all surface types are included)

Based on the current review of the road system, the current system adequacy measure is 61 % meaning that, 39% of the road system is deficient in the 'NOW' time period (Poor condition). The current system adequacy is at the minimum target level that was previously established by MTO when conditional grant funding was provided.

Based on the current unit costs being experienced, the estimated total cost of recommended improvements is **\$53,603,922**. The improvement costs include **\$36,279,982** for those roads identified as NOW needs and **\$17,323,940** is for road work required in the '1 to 10' year time period or for maintenance. Included in those amounts is **\$3,907,055** is for work on road sections with a traffic count of less than 50 vehicles per day or are adequate and only require maintenance work

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

• **\$2,958,500** for the roads capital/depreciation, excluding resurfacing, based upon a 50-year life cycle. (this would be similar to the PSAB 3150 amortization value using current replacement costs)

- **\$1,447,300** for average annual hot mix resurfacing, based upon an 19(19.17)-year cycle.(This would approximate an average of 7.25 km per year)
- **\$638,000** annually, for resurfacing gravel roads on a three-year cycle (this does not include any additional gravel road conversion costs; nor ditching, re-grading, dust control, etc.).
- \$55,800 annually for crack sealing

For modeling purposes, 4 Roads has created a funding level described as the 'Preservation Budget'. The Preservation Budget is the total of the recommended funding levels for hot mix resurfacing, single surface treatment and crack sealing: \$2,141,100. The premise being that if the preservation and resurfacing programs are adequately funded then the system should be sustained. The performance modeling is discussed in Section 9 of this report. To clarify, the required funding level to sustain or improve the road system; it is <u>not</u> the total of all of the above recommendations. Sustainable funding has to be between the Preservation Budget and the Capital Depreciation. The preservation budget and performance model thereof are computer derived. Intangible values and decisions and the effects of other external forces cannot be incorporated into the model. As such the preservation model is the minimum required to maintain the system- in theory. From a more pragmatic perspective and to deal with the real life realities of maintaining a road system, it should be greater.

4.6 Structures

The provincial requirements for AMP's include asset condition assessment in accordance with standard engineering practices.

Provincial legislation requires that all structures with a span of 3 metres or greater be inspected under the supervision of a structural engineer every two years, in accordance with the Ontario Structure Inspection Manual (OSIM) or equivalent. (4 Roads understands that the Municipal Bridge Appraisal Data Entry System (OSIM) has been identified as an equivalent.) The CoCR reporting conforms to the OSIM format.

Structural inspections shall be in accordance with the following regulations:

- 104/97, 472/10 Standards for Bridges
- Regulation 103/97 Standard to determine Allowable Gross Weight for bridges and 160/02, 278/06 and 472/10 (Amending 104/97)

The condition of the structures inventory is further mandated by Provincial Legislation by the following:

- Municipal Act 2001, Section 44 (1). The municipality that has jurisdiction over a highway or bridge shall keep it in a state of repair that is reasonable in the circumstances, including the character and location of the highway or bridge. 2001, c. 25, s. 44 (1).
- Regulation 239/02 Minimum Maintenance Standards for Municipal Highways is a result of Section 44

Bridge and Culvert structures are rated as deficient in the 'NOW', 1 to 5 or 6 to 10 timelines due to:

- Insufficient width of structure (six metre minimum, MBADES methodology))
- Vertical clearance
- Level of Service (cannot accommodate peak hour traffic/capacity)
- Structural Capacity.
- Safety Treatments

The Condition Ratings, developed through the scoring in OSIM, classify structures as 'NOW', '1 to 5', or '6 to 10' year needs for reconstruction or rehabilitation. From and asset management perspective and similar to roads, structures with rehabilitation treatments offer the best return on investment, to further defer the need to reconstruct and maximize the value and life cycle of the asset. Safety defects are the priority.

Field data is obtained through a visual examination of each structure. Overall ratings and Time of Need are calculated based upon the condition ratings and a combination of other calculations and data.

Further detail on the OSIM methodology may be found in the HP Engineering 2013 Bridge Management Study Report.

4.6.1.1 Scope / Asset Type(s)

This section of the report addresses structure assets with a span of 3 metres or greater only. This includes structures defined as bridges and culverts. The content will provide review and analysis of the structures inventory from a number of perspectives including condition rating, functional classification, roadside environment, replacement cost. Information for this section of the report is drawn from the 2011 Bridge Management Report prepared by HP Engineering.

Bridges and culverts are defined as follows:

Bridge -, In general, transfers all live loads through a superstructure to a substructure and foundations. (From the OSIM Manual)

Culvert - In general, transfers all live loads through fill.

4.6.2 Structure Inventory and Classification – What Does the City Own?

Bridges

Bridge No	Name	Туре	Year Built (Age)	Number of Spans	Total Length (Parallel to Roadway) (m)	Width (Perpendicular to roadway) (m)	Roadway Width (m)	Existing Surface Area (m2)
01	McDougal Bridge	Steel Pony Truss	1928	1	16.8	5.2	4.60	87
02	Larose Bridge	Precast Concrete Girders	1988	1	25.2	8.9	8.70	224
03	Cheney Bridge	Steel Pony Truss	1921	1	28.0	5	4.60	140
04	Bear Brook Bridge	Steel Girder	1930	3	28.5	6	5.60	171
05	North Indian Creek Bridge	Concrete Rigid Frame	1970	1	7.6	7.8	6.80	59
06	Boileau Road Bridge	Steel Pony Truss	1920	1	18.0	5	5.00	90
07	Tucker Road Bridge	Concrete Rigid Frame	1996	1	8.0	9.5	7.60	76
08	Cobbs Lake Bridge	Precast Voided Girders	1980	1	16.0	9.8	7.60	157
10	Bear Brook Overflow Bridge	Double Cell Box Culvert	1960	2	9.4	9.4	7.80	88

Table 24: Bridge Inventory

Culwert No.	Name	Туре	Year Built (Age)	Number of Barrels	Width of Individual Span (m)	Total Length of Culvert (m)	Roadway Width (m)	Existing Surface Area (m ²)
11	Montee Outaouais Culvert	Concrete Box Culvert	2012	1	1.8	16	7.40	29
12	Lemay Circle Site #1	Horizontal Ellipse CSP	1996	2	3.9	45	9.60	351
13	Lemay Circle Site #2	Horizontal Ellipse CSP	1996	2	3.9	32	8.70	250
14	Laurier Street Culvert	Horizontal Ellipse CSP Arch	1990	1	7	22	6.50	154
15	Baseline Road Culvert	Circular CSP	-	1	1.5	56.4	5.90	85
16	Lacasse Culvert	Concrete Box/ Circular CSP	-	1	1.8	25.5	8.60	46
17	Charlebois Road Culvert	Circular CSP	-	1	0.9	25.8	6.80	23
18	Old Highway 17 Culvert					24.1	6.10	

<u>Culverts</u>

Table 25: Culvert Inventory

Load Restrictions

It should be noted that a deficient bridge may have a load posting/restriction. The Highway Traffic Act (HTA) provides for municipalities to pass by-laws to restrict loads on a structure. Generally load restricted structures are identified by the following signage, where a triple posting exists.

Figure 10: Triple Load Posting Sign



L3 postings govern single unit vehicles; L2 postings govern two unit vehicles; and L1 postings govern vehicle trains. Section 13 of Bill 92 amends Section 123 of the Highway Traffic Act dealing with the load limit bylaws. Municipalities retain the authority to pass load limit by-laws, but approval of the Minister of Transportation is no longer required. Two engineer's stamps for all load limit by-law recommendations, including load posting and duration, generally 2 years, are now required. The CoCR currently has four structures with a Load limit restriction. Table 26 identifies the structures which have a load restriction. Structure 9 is identified as having an urgent need to be replaced, however, it does not have a load restriction.

Table 26: Load	Restricted	Structures
----------------	------------	------------

Structure #	Name	Restriction (t)	
1	McDougal Bridge	2t	
3	Cheney Bridge	5t	
4	Bear Brook bridge	14,26,35 t	
6	Boileau Bridge	11,17,26 t	

Load limited structures can impose significant constraints on service delivery both public and private. A fully loaded tandem truck with plough blade attached could easily reach 25 tonnes. A Fire Department tanker truck could weigh more than that. Load restrictions can pose a significant restriction to effective and efficient service delivery.

The 2t restriction on Structure 1 and the 5t restriction on Structure 3 are a significant risks. Most full size pickup trucks have a tare weight (empty truck) of over 2t; fully loaded potentially over 6t. The option of closure should be reviewed with the City's Structural Engineer.

Structure Types

Bridge structures are classified through a number of data fields; Sub-Type, Articulation, Material Types, Substructure, Superstructure, Wearing Surface etc. Table 27 summarizes the composition of the CoCR Bridge Structures Inventory by Sub Type and Deck Area. Culvert Structures may also be classified by similar parameters as the bridge structures.

Superstructure	Asphalt	Wearing Surfac Exposed Concrete	e Exposed Timber	Closed Concrete Abutment	Totals
Concrete Rigid frame	223.7			223.7	223.7
Precast concrete slabs	156.8			156.8	156.8
Pre-stressed concrete girders	222.5			222.5	222.5
Steel girders			171	171	171
Steel Pony Truss		58.8	317.4	376.2	376.2
Grand Total	603	58.8	488.4	1150.2	1150.2

Table 27: Bridge Structure Summary by Bridge Type, Foundation Type Sub-Type and Deck Area

*From HP ENGINEERING 2013 Bridge Management Report

Culvert Material	Footprint (m2)
Cast-in-Place Concrete Box / Corrugated Steel Pipe	45.9
Corrugated Steel Pipe	107.82
Corrugated Steel Pipe Arch	154
Precast Concrete Box	101.1
Twin Corrugated Steel Elliptical Pipes	686.6
Grand Total	1095.42

Table 28: Culvert Structure Summary by Culvert Type, and Footprint (m²)

*From HP Engineering 2013 Bridge Management Report

4.7 Structures – What is the Replacement Cost?

The historical costs on the financial statements for 2012 for bridges and culverts was as follows:

Asset Category 🕶	Historical Cost	Net Book Value	Remaining Useful Life
Bridge	\$2,167,388	\$1,287,638	24
Culvert	\$316,252	\$235,095	7
Culvert - Large	\$232,006	\$186,280	12
Grand Total	\$2,715,646	\$1,709,013	11

Table 29: Structures – 2012 PSAB Values

It is important to note that these include all culverts as the information on PSAB list was not easily determinable to be only large culverts as at 2012.

Program funding recommendations are a function of the dimensional information, surface type, roadside environment, and functional class of the individual assets. Recommended funding for the structure assets should include sufficient capital expenditures that would allow the replacement of infrastructure as the end of design life is approached, in addition to sufficient funding for maintenance, to ensure that that full life expectancy may be realized.

Budgetary recommendations in this report do not include items related to development and growth. The City should consider those items as additional to the recommendations in this report. Generally, that type of improvement or expansion to the system would be funded from a different source, such as Development Charges.

The budget recommendations bear a direct relationship to the value of the structures inventory. 4 Roads estimates the cost to replace the bridge and culvert inventory, at **\$14,048,820**. This estimate is based on the replacement costs of \$6,500 and \$6,000 per square metre respectively for bridges and culverts. These benchmark costs can vary considerably once specific project requirements are realized.

The provincial requirements for AMP's include asset condition assessment in accordance with standard engineering practices. Provincial legislation requires that all structures with a span of 3 metres or greater be inspected under the supervision of a structural engineer every two years, in accordance with the Ontario Structure Inspection Manual (OSIM) or equivalent. The Municipal Bridge Appraisal Data Entry

System (MBADES) has been identified as an equivalent. From the Bridge Management Study CoCR inspections conforms to the OSIM format.

Asset Category 🕶	Deck Area (m2)	Cost per m2	R	eplacement Cost
Bridge	1150.20	\$ 6,500	\$	7,476,300
Culvert - Large	1095.42	\$ 6,000	\$	6,572,520
Grand Total	2246		\$	14,048,820

Table 30: Structures: Replacement Costs

4.7.1 Structure Condition and Remaining Service Life

The provincial requirements for AMP's include asset condition assessment in accordance with standard engineering practices. Provincial legislation requires that all structures with a span of 3 metres or greater be inspected under the supervision of a structural engineer every two years, in accordance with the Ontario Structure Inspection Manual (OSIM) or equivalent. The Municipal Bridge Appraisal Data Entry System (MBADES) has been identified as an equivalent. From the Bridge Management Study CoCR inspections conforms to the OSIM format.

As indicated previously, the Time of Need is really a prediction model in terms of an estimate based on current condition to the time for reconstruction. The TON then also provides an estimate of the remaining life in the structure. The following figures summarize two different perspectives on bridge life expectancy – design life and service life. This difference has a significant impact on development of the financial plan. Whereas structure constructed prior to 2000 had a 50 year design life, they typically had a service life in the 75 year range. Since 2000 the design life has been 75 years. To simplify the presentation the service life of 75 years has been used for both.



Figure 11: Remaining Design Life – Bridge Structures (50 yr. Design Life)



Figure 12: Anticipated Remaining Service Life – Bridge Structures (75 yr. Service life)



Figure 13: Remaining Design Life and Service Life – Culvert Structures

The condition reviews are just that; the physical condition of the structures. When other issues are considered, the time of need could change dramatically. Typically when the roads are assed a Time of Need for Drainage is developed based on visual observation, other reports, or anecdotal information. This isn't the case for structures. It is important then, that when a structure is replaced that the size of the opening be confirmed through appropriate hydraulic modeling.

4.7.1.1 Structure Inventory Overall Condition

Relating the overall condition of the structure inventory is more complex than the road section as the bridge structure evaluations will produce a 'NOW' need for a structure due to the absence of end treatments at the corners of a structure, or the end of the guide rail on a culvert structure. To gain a sense of the condition of the overall bridge structures inventory, the current estimated replacement cost has been compared to the estimated cost of the current needs that have been identified. The following equation describes the ratio of the replacement cost to the needs costs.

Equation 2: Bridge Structure Replacement to Improvement Ratio

Adequacy Index = <u>Total Replacement Cost – Total Needs Cost</u> Total Replacement Cost

Using Equation 2, the Adequacy Index for the CoCR Bridge Structures Inventory is **56 %** using a replacement cost of \$6,500 per square metre and the estimated improvement costs from the Bridge Management Study.

Applying the same calculation to the culvert structures inventory produces and Adequacy Index of **94%** using a replacement cost of \$6,000 per square metre and the standardized improvement costs from the Bridge Management Study.

Single measurements of Level of Service or condition will not provide a complete picture. Whereas the overall condition of the culvert inventory may appear to be quite good, 81% of the inventory (by footprint) is only in fair condition. Therefore it should be anticipated that there will be a significant change in this measure over the next 5 to 10 year period and deterioration accelerates with the age of the structure.

4.7.1.2 Structures Inventory by Time of Need

The OSIM Manual methodology results in overall rating of Bridge and Culvert Structures by Time of Need (TON); NOW, 1 to 5, 6 to 10, or Adeq (Adequate). **Table 31** provides a breakdown of the Bridge Inventory and Culvert Structure Inventories system by Time of Need.

	Time of Need					
Improvement Class	NOW < 1 Year	1-5 years	6-10 years	Normal Maintenance/ Engineering Investigation	Total	
Bridges	1,499,000	1,758,500		114,500	3,372,000	
Culverts	129,000	289,500		15,000	\$433,500	
Grand Total	\$1,628,000	\$2,048,000		\$129,500	\$3,805,500	

Table 31: Bridge and Culvert Structures Inventory by Time of Need (thousands of dollars)

*From HP Engineering 2013 Bridge Management Report

4.7.1.3 Record of Assumptions – TON, Improvement and Replacement Costs - Structures

The methodology of this report is such that the OSIM Manual itself forms the basis of a large number of assumptions in terms of;

- Dimensional requirements for the development of improvement and replacement costs
- Structural requirements based on field ratings of elements
- Time of needs based on the ratings and subsequent calculations

4.7.1.4 Condition Assessment Cycle Recommendation - Structures

The City of Clarence-Rockland's practice has been to update the condition of the structures inventory in accordance with the legislated requirements. The bridge and culvert structures with a span greater than 3 metres should continue to be reviewed on a two year cycle, as required by regulation.

4.8 Water and Wastewater and Storm Sewers

The assessment of water and wastewater infrastructure performance is a complex task. The national water and wastewater benchmarking initiative was founded to model and answer four important questions that are commonly posed to managers of water, wastewater and stormwater (NWWBI, 2012):

- 1. How well are we doing?
- 2. How do we compare with similar organizations?
- 3. Are we getting value for money? and
- 4. How can we get better at what we do?

The NWWBI's Utility Management Model defines a framework to achieve high level performance goals. The performance goals are as follows:

- 1. Provide reliable and sustainable infrastructure;
- 2. Ensure adequate capacity;
- 3. Meet service requirements with economic efficiency;
- 4. Protect public health and safety;
- 5. Provide a safe and productive workplace;
- 6. Have satisfied and informed customers; and
- 7. Protect the environment.

The standardized "Utility Management Model" (see Figure below) can be used for the selection and definition of performance measures for these goals. It shows the relationship between these goals and performance measures that can be used to quantify the conditions of the water and wastewater system.

Condition ratings for the storm and sewer network can be based on objective CCTV inspections or subjective scales. About 73% of storm and sewer network in Clarence-Rockland has been inspected by CCTV. The rest has not been rated yet. For the water network, the city will conduct a study for a full hydraulic model of the network.



Figure 14: Performance Model of the National Water and Wastewater Benchmarking Initiative

The most basic information needed is the condition of the water and wastewater pipes from a structural, dimensions, and operational & maintenance (O&M) perspective. The overall reliability of the system is, of course, dependent on structural condition of the system. Defects, cracks and construction features are critical factors in system performance. Accurately defining structural condition and identifying construction features is most commonly collected data.



Reliable sewer condition assessment can be obtained by trained CCTV Operators/inspectors using visual interpretation. Other methods such as laser profile proofing, corrosion measurement, fracture/hole depth measurement, sonar can be used to identify amount of deposition below water level, gyroscope for line, level and bend radius, and atmospheric testing provide measurable data. These are more expensive. CCTV is the most commonly used and least

expensive method of infrastructure condition assessment, and an invaluable tool in condition assessment





NASSCO (the National Association of Sewer Service Companies) is a non-for-profit organization serving all facets of the sewer service industry. They developed a standard system for assessing sewer pipe conditions using CCTV. The Pipeline Assessment Certification Program (PACP) is the North American standard for sewer defect identification and assessment. PACP provides means for transferring CCTV data into usable measures—see Table below.

	Condition Rating					
Internal-Condition Grade	Structural Condition Description	O& M Condition Description				
1	Excellent (Acceptable structural condition)	Excellent (Minor defects)				
2	Good (Minimal collapse likelihood in short term but potential for further deterioration)	Good (Defects hat have not begun to deteriorate)				
3	Fair (Collapse unlikely in near future but further deterioration likely)	Fair (Moderate defects that continue to deteriorate)				
4	Poor (Collapse likely in foreseeable future)	Poor (Severe defects that become a 5 in the near future)				
5	Immediate Attention (Collapsed or collapse imminent)	Immediate Attention (Defects requiring immediate attention)				

Table 32: Condition Rating for Water, Wastewater and Storm Sewers

The Manhole Assessment Certification Program (MACP) is a national system and a training and certification program for the identification of manhole defects based on the common language format developed for PACP. Finally, Lateral Assessment Certification Program (LACP) is an extension of PACP specific to Lateral Sewers.

Data reliability for Water, Wastewater and Storm Network

While Clarence-Rockland has a well-established culture and awareness related to the importance and ingredients of asset management as well near-suitable staffing, the main area of lag (hence, a top priority for action) is the reliability of data regarding asset inventory and conditions. There is a need to reconcile mismatches, create interoperability (between different sources) and collect further data to fill gaps and resolve conflicts.

The following table shows our assessment of data quality/reliability and sufficiency

Asset Category	Data sufficiency	Data reliability/ confidence
Water Network	Very Low	Good
Wastewater network	Low (year missing)	Good
Water facilities	Fair	Fair
Wastewater facilities	Fair	Fair
Stormwater facilities	Fair	Fair

	High Confidence	Moderate Confidence	Low Confidence
Factor	(100%)	(50%)	(0%)
When was the data	Data is suitably up	There may be minor	There may be major
collected or last	to date.	changes to the data	changes to the data
updated		since it was collected.	since it was collected.
Is the data complete	The data is fully	The data is partially	The data is known to
for its intended use,	complete and	complete and present	be incomplete.
suitably uniform?	present for the	for the majority of the	
	dataset.	area e.g. data from	
		surveys / sampling or	
		collated from multiple	
		but not comprehensive	
		sources.	
Is the data from an	Created from	Created from	Created by unofficial
authoritative source?	official and/or peer-	unofficial	unpublished sources –
	reviewed sources.	"published" sources –	fieldwork, personal
		reports, internet etc.	accounts etc.
Any indication of	No indication of errors.	Some errors evident	Significant number of
errors?		 missing / incorrect 	errors – obviously
		/ additional areas	missing or incorrect
		etc.	data.
Is the data verified by a	The data has been	The data has	The data has not
relevant stakeholder	fully verified.	been partially	been verified.
(the staff member		verified.	
directly responsible for			
the assets)?			

The C-SCOPE (2012) approach in assessing confidence was used (see Table below).

Table 33: Data Confidence

4.8.1 Water distribution Inventory – What does the City own?

The city has a network of more than 130km of water lines according to AquaData information provided in GIS format. It is important to note that the PSAB data provided did not include up-to-date length of pipe. The initial PSAB data collected in 2010 only included 94 kms of pipe and the PSAB data updated to 2012 did not include the length of pipe. Therefore, for the purposes of this report, the AquaData has been utilized for the detailed data supplemented by the 2012 PSAB information for costing.

Tables 33 and 34 below show the distribution of the pipes by type and year of construction and by type and diameter respectively. The predominant material used is PVC. Over 80% of the City's pipes were built after 1984 with only 1.7% of pipe which was installed around 1960 (about 54 years ago). Therefore, the City's network is relatively new and therefore, the "now" needs are low. However, a condition assessment, particularly of the pipe installed prior to 1964 would be recommended.

Sum of LENGTH	year range				
MATERIAL	Before 1964	1964-1984	After 1984	Grand Total	%age of Network
Asbestos cement		2,892.71	323.77	3,216.48	2.4%
Cast iron	2,108.39	2,190.13	706.85	5,005.37	3.8%
Ductile iron	63.14	284.21		347.35	0.3%
Galvanize			1.72	1.72	0.0%
High density poly			1,493.98	1,493.98	1.1%
Polyethylene			26,139.20	26,139.20	19.8%
PVC	41.41	18,574.15	77,335.07	95,950.63	72.6%
Grand Total	2,212.94	23,941.20	106,000.59	132,154.73	100.0%
%age of Total	1.7%	18.1%	80.2%	100.0%	

Table 34: Water distribution Inventory by Material and age

Sum of LENGTH	MATERIAL								
DIAMETER	Asbestos cement Cast iron		Ductile iron Galvanize		High density poly	Polyethylene	PVC	Grand Total	
50							45.29	45.29	
51							59.12	59.12	
75						242.01		242.01	
100	787.83	33.12					261.43	1,082.38	
150	632.90	2,409.38	347.35	1.72		4,483.15	35,161.21	43,035.71	
200	1,795.75	552.58			198.17	2,421.86	30,743.10	35,711.46	
250		1,520.81			1,295.81	8,505.30	6,130.49	17,452.41	
300		489.48				10,486.88	21,936.65	32,913.01	
400							1,613.34	1,613.34	
Grand Total	3,216.48	5,005.37	347.35	1.72	1,493.98	26,139.20	95,950.63	132,154.73	

Table 35: Water distribution Inventory by Material and Diameter

4.8.2 Water Distribution Network - What is the Replacement Cost?

The following replacement unit costs were utilized:

Asset Component	Diameter (mm)	Unit Replacement Cost (m)
Watermain	25	\$461.82
Watermain	38	\$461.82
Watermain	50	\$461.82
Watermain	75	\$461.82
Watermain	100	\$461.82
Watermain	150	\$461.82
Watermain	200	\$525.03
Watermain	250	\$595.98
Watermain	300	\$666.93
Watermain	350	\$711.89
Watermain	400	\$715.95
Watermain	450	\$795.93
Watermain	500	\$907.24
Watermain	600	\$1,091.34
Watermain	750	\$1,232.82
Watermain	900	\$1,428.18
Watermain	1050	\$1,623.53

 Table 36: Watermain Replacement costs per metre

Water Main By Diameter 💌	Inventory (m)	Current Replacement Value
50	104.41	\$48,219
75	242.01	\$111,765
100	1,082.38	\$499,865
150	43,035.71	\$19,874,752
200	35,711.46	\$18,749,588
250	17,452.41	\$10,401,287
300	32,913.01	\$21,950,674
400	1,613.34	\$1,155,071
Grand Total	132,154.73	\$72,791,220

4.8.3 What condition are the Watermains in and the expected remaining service life?

Assumptions for asset useful life are based on assessment of theoretical expected useful lives based on expert judgment and published work. Values for asset useful life are shown below. It is important to note that Clarence-Rockland has generally utilized 55 year useful life for its watermains and, therefore, the PSAB values may have been high and will likely result in lower Net Book Values than is actually experienced. The historical cost and net book-value at the end of 2012 for watermains as per PSAB based on a 55 year useful life is as follows:

Asset Category	Historical Cost	Net Book Value	Average of Remaining Useful Life
Waterline	31,795,718.00	\$26,080,949	34

Table 38: Waterline Historical Costs: 2012 PSAB Financial Statements

Asset Type	Asset Component	Useful Life (years)				
Linear	Mains- Trunk	Rehabilitated	30			
	Mains - Local	Existing	75			
		New	100			
	Appurtenances	Included with mains				
	Meters	Industrial	5			
		Residential	18			

Table 39: Water Distribution Network – Estimated Useful Life

Table 40 and Figure 15 below shows the average age and distribution of diameter size and material of the water network. This indicates that the network is relatively new and in good condition. However, no condition assessment has been undertaken to date to confirm that assumption.

Water Main By Diameter 💌	Inventory (m)	Average of age
50	104.41	9
75	242.01	10
100	1,082.38	22
150	43,035.71	20
200	35,711.46	15
250	17,452.41	23
300	32,913.01	20
400	1,613.34	8
Grand Total	132,154.73	19

Table 40: Water distribution Network – Average age



Figure 15: Water distribution network by age and material



Figure 16: Water Network by age

The majority of the water mains are new and very little needs to be done in the immediate future. However, it is important that an inspection system be put in place to assess the condition of the water distribution network. The average age of the system is 19 years with 1.67% over 50 years. Therefore, the system is relatively new and requires regular maintenance.

4.8.4 What needs to be done to the City's Watermains and when?

Activity	Definition	Asset Age			
Minor Maintenance	Routine Activities such as visual flushing and cleaning of mains, routine monitoring, hydrant flushing and pressure tests. Inspections should be undertaken on a regular basis.	0-25% lifespan			
Major Repairs	Unplanned main breaks usually results from a main break in the system, repairing values, or replacing individual pipe sections as required. The City should include a contingency in its annual budget or build a reserve.	25-100% lifespan			
Rehabilitation	Rehabilitation events for water mains extend the lifespan of the system so that it is able to provide service for an additional period of time than its original lifespan. Rehabilitation for water mains includes lining of the pipes.				
Replacement	Eventually a section of water main will need to be fully replaced when it has reached the 75% or greater time of its original lifespan.	75-100% lifespan			

As discussed above, assessing when an asset's useful life has either come to its end or requires a re-evaluation (by way of minor or major maintenance) is dependent on looking at the typical useful life of that particular asset and how it relates to other assets in its environment, and evaluating which maintenance strategy will be the most appropriate in terms of a monetary value. The useful life of an asset is not only based on the infrastructure itself, but also from the local climate, material used, soil conditions, and more.

For assessing the timeframe for major rehabilitation or replacement, the most important component is the year of construction, which was provided by the City, and any times since then where the asset has had any repair work completed. Ongoing maintenance activities are taken

place. As can be seen by the Table above, the City's network is relatively new with only 1.67% over 50 years. Therefore, regular maintenance will allow for the system to function over its intended useful life. This analysis was based on a full replacement of the water main, without any form of rehabilitation. However, the City could extend a components useful life, rehabilitation techniques such as pipe lining, may be completed.

4.8.5 Water Distribution Network - How much will it cost?

Years to replacement	Pipe Length(m)	Total Replacement Cost
1-5 Years	1380.41	\$790,605
10-20 Years	3735.5	\$1,871,555
Greater than 20 years	127038.82	\$70,129,060
Grand Total	132154.73	\$72,791,220

Table 41: Water Distribution Network: Replacement Costs

In order to "smooth out" the costs, it is recommended that the replacements be phased in either in terms of actual replacement of funding reserves as follows:

2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	TOTAL
158,121	158,121	158,121	158,121	158,121	123,655	123,655	123,655	123,655	123,655	123,655	123,655	123,655	123,655	123,655	127,001	127,001	127,001	127,001	127,001	2,662,160

Table 42: Water Distribution - Recommended Funding





Figure 18: Water Distribution – Recommended Funding by Year

4.8.6 Recommendations

- Undertake a condition assessment for the watermains starting with the oldest and update on a yearly basis.
- Review budgetary allocation information and develop a plan for allocating funds for high need replacement mains.
- Investigate areas of replacement that can be combined with water mains (as in sanitary lines to be replaced in the same time span). Organize and develop future replacement plans for coinciding work.
- Update the State of the Infrastructure Report on a 5-10 year basis.
- Ensure that the minimum maintenance standards are adhered to
- Ensure that replacement of the watermains is included in the long term capital budget.

4.8.7 Hydrants – Inventory – What does the City Own?

The city has 695 fire hydrants with an inventory of 743 including 48 private hydrants; 890 stop valves; 10 control elements (boosters and downstream reducers); 4 water reservoirs; and 6 water pumps. Pump stations is maintained using Supervisory Control and Data Acquisition (SCADA) systems monitor asset performance. All water facilities are covered in the buildings section of this report.

4.8.8 Hydrants - What is the Replacement Costs?

Total replacement cost of the inventory, assuming a unit cost of \$2,700 is approximately \$1.87 million. Note that, although we have provided these replacement costs, they have not been added to the replacement recommendation as

4.8.9 What condition are the Hydrants in and the expected remaining service life?

An assessment was conducted by AquaData in the Fall of 2013 and shows that the overwhelming majority of these are in good or excellent conditions. Figure 19 shows the condition Ratings for Fire Hydrants.



Figure 19: Hydrant Condition Assessment by AquaData

4.8.10 What needs to be done to the City's Hydrants and when?

Maintenance activities for hydrants should be undertaken similar to watermain maintenance including flushing and inspections. Restoration as outlined in the chart above includes full or partial items of restoration. With respect to PSAB information, hydrant information was not specifically included and therefore, the historical cost and useful lives have not been included. These were likely included in the cost for the watermain.

ASSET MANAGEMENTPLAN

	Data		
Rating for Replacement	Count of FID	Sum of ID	Sum of Replacement Cost
Now	27	3.80%	\$72,900
Within 1 year	18	1.87%	\$48,600
1-5 Years	33	3.63%	\$89,100
5-10 Years	498	68.91%	\$1,344,600
Over 10 years	117	21.38%	\$315,900
Unknown	2	0.42%	\$5,400
Grand Total	695	100.00%	\$1,876,500

Table 43: Hydrants: Replacement Costs by Time of Need



Figure 20: Hydrants – Replacement units by Time of Need



Table 44: Hydrants – Replacement Costs based on Time of Need

4.8.11 Storm and Sanitary Sewer Network – Inventory – What does the City Own?

The city has a network of more than 130km of storm and sanitary sewer lines. The figure below shows the distribution of the pipes by type, diameter and year of construction. The majority of the pipes are made of Polyvinyl Chloride (38%) or of reinforced concrete (32%). Other used materials include corrugated metal pipes (3%) and asbestos cement (3%). Cast Iron, ductile iron and Polyethylene are used in a limited number of lines. The material type of about 21% of the pipes has not been identified as of the date of this report.

Sum of LENGTH	SEWER_TYPE				
		Considered	C to m	Grand	%age of
MATERIAL	Force Main	Sanitary	Stormwater	l otal	Network
Asbestos Cement	1,252.9	3,255.2	69.7	4,577.8	3.5%
Cast Iron			38.6	38.6	0.0%
Corrugated Metal Pipe			3,711.6	3,711.6	2.8%
Ductile Iron Pipe	389.9			389.9	0.3%
Not Known	3,234.9	5,387.6	19,680.9	28,303.4	21.4%
Polyethylene		104.2	1,742.9	1,847.1	1.4%
Polyvinyl Chloride	485.6	35,898.9	14,705.3	51,089.8	38.6%
Reinforced Concrete					
Pipe		9,418.4	32,888.8	42,307.2	32.0%
Grand Total	5,363.3	54,064.2	72,837.8	132,265.4	100.0%

Table 45: Sanitary and Storm Sewer Inventory by Material and type

Pipe diameters range from 200mm to over 1650mm. However, over 18% of the network pipe diameter is unknown.

The sewer network data was built in major part through field reconnaissance and GPS (as-built were used for new areas such as Morris Village). Therefore pipe material and installation year are not available for sewers in certain areas. It is assumed that for sewers in the Rockland area, the installation year can be determined by correlating with the water network installation year but that will not be the case outside of Rockland area since the water network was changed in the late 2000's and the sewer network was not modified. Of the data provided, 60% of the sanitary pipes had construction dates and no information was available for the stormwater and force mains. However, it is likely that the sanitary/storm network would be of similar age as the water network.

Sum of LENGTH		%age of
MEAS_DIAM1 🔽	Total	Network
25	41.7	0.0%
50	48.6	0.0%
60	622.9	0.5%
150	160.4	0.1%
200	30,665.1	23.2%
250	15,075.7	11.4%
300	18,244.1	13.8%
350	222.8	0.2%
375	10,663.8	8.1%
400	12.4	0.0%
450	12,624.1	9.5%
525	5,145.2	3.9%
600	3,424.8	2.6%
675	1,602.3	1.2%
750	1,823.6	1.4%
825	995.5	0.8%
900	2,556.3	1.9%
999	1,479.0	1.1%
1050	731.8	0.6%
1200	150.1	0.1%
1375	480.3	0.4%
1650	480.6	0.4%
99999	2,145.4	1.6%
0	22,868.9	17.3%
Grand Total	132,265.4	100.0%

Table 46: Sanitary and Storm



Sum of LENGTH	SEWER_TYPE 💌				
Age range	Force Main	Sanitary	Stormwater	Grand Total	%age of Network
Before 1964		3,562.56		3,562.56	2.7%
1964-1984		13,667.07		13,667.07	10.3%
After 1984		15,326.00		15,326.00	11.6%
Unknown	5,363.32	21,508.61	72,837.82	99,709.75	75.4%
Grand Total	5,363.32	54,064.24	72,837.82	132,265.38	100.0%

Table 47: Sanitary and Storm Sewer Inventory by type and age

Of more importance, the City engaged AquaData to undertake a diagnosis of the condition of the wastewater collection and storm sewer system in the fall of 2013. The following table outlines the scope of the project:

Type of the collection system	Sanitary and Stormwater	
Number of manholes inspected	1486	
Total number of manholes not inspected	64	
Total number of sections inspected	1736	
Number of sections inspected (2 views)	1317	
Number of sections inspected (1 view)	419	
Number of sections not inspected	103	
Month / Year of Survey	September to October 2013	

This study will assist in the determination of the replacement and maintenance requirements for stormwater and sanitary system.

The city has 2,286 manholes and 1,374 catch basins in the sanitary and storm water networks as shown in the chart below. As part of the inspection program, AquaData undertook an inspection of 42% of the manholes listed in the GIS system in order to assess the condition. The study covered the following:

ASSET MANAGEMENTPLAN

ТҮРЕ	On inspection?	Total
Catch Basin	Not Inspected	1367
	Inspected	7
Catch Basin Total		1374
Manhole	Not Inspected	743
	Inspected	1543
Manhole Total		2286
Grand Total		3660

Table 48: Inspected Manholes



Figure 22: Inventory of Manholes and Catch basins

4.8.12 Sanitary and Storm - What is the Replacement Cost?

As per PSAB, the following information is contained on the 2012 financial statements and shows a remaining average useful life of 32 years.

Asset Category 🗸	Historical Cost	Net Book Value	Average of Remaining Useful Life
Sanitary	\$6,055,941.48	\$3,459,731.16	28
Storm	\$12,196,436.00	\$9,042,079.00	36
Grand Total	\$18,252,377.48	\$12,501,810.16	32

Table 49: Sanitary and Storm Network- 2012 Historical Costs PSAB

ASSET MANAGEMENTPLAN

			•		
Asset Type	Diameter (mm)	Unit	Asset Type	(mm)	Unit
Sanitary	50	\$778.19	Stormwater	50	\$657.90
Sanitary	100	\$778.19	Stormwater	100	\$657.90
Sanitary	120	\$778.19	Stormwater	150	\$657.90
Sanitary	150	\$778.19	Stormwater	200	\$657.90
Sanitary	200	\$778.19	Stormwater	250	\$657.90
Sanitary	250	\$829.79	Stormwater	300	\$657.90
Sanitary	300	\$932.99	Stormwater	350	\$679.40
Sanitary	350	\$938.50	Stormwater	375	\$690.15
Sanitary	375	\$958.79	Stormwater	400	\$700.90
Sanitary	400	\$980.29	Stormwater	450	\$722.40
Sanitary	450	\$1,023.29	Stormwater	500	\$739.60
Sanitary	480	\$1,030.74	Stormwater	525	\$754.65
Sanitary	500	\$1,062.13	Stormwater	600	\$761.10
Sanitary	525	\$997.49	Stormwater	675	\$886.23
Sanitary	600	\$1,029.74	Stormwater	750	\$976.53
Sanitary	675	\$1,251.62	Stormwater	825	\$1,041.03
Sanitary	750	\$1,309.67	Stormwater	900	\$1,105.53
Sanitary	800	\$1,309.67	Stormwater	975	\$1,237.11
Sanitary	825	\$1,341.92	Stormwater	1000	\$1,260.33
Sanitary	900	\$1,374.17	Stormwater	1050	\$1,327.41
Sanitary	975	\$1,628.30	Stormwater	1200	\$1,456.41
Sanitary	1050	\$1,886.30	Stormwater	1350	\$1,649.91
Sanitary	1145	\$1,886.30	Stormwater	1450	\$1,768.16
Sanitary	1200	\$2,389.40	Stormwater	1500	\$1,875.66
Sanitary	1350	\$2,582.90	Stormwater	1575	\$1,913.29
Sanitary	1400	\$2,677.33	Stormwater	1650	\$1,972.41
Sanitary	1450	\$2,791.76	Stormwater	1800	\$2,359.41
Sanitary	1500	\$2,840.90	Stormwater	1900	\$2,746.41
Sanitary	1525	\$2,840.90	Stormwater	1950	\$3,004.41
Sanitary	1575	\$2,840.90	Stormwater	2025	\$3,176.41
Sanitary	1650	\$2,840.90	Stormwater	2100	\$3,391.41
Sanitary	1800	\$2,840.90	Stormwater	2250	\$3,999.55
			Stormwater	2400	\$4,552.41

Unit Costs for sanitary and storm network utilized for replacement cost are as follows:

Table 50: Sanitary and Storm Network Replacement Unit costs

Based on these unit costs, the replacement costs of the system is as follows:

	Data	
SEWER_TYPE	Sum of LENGTH	Total Replacement Costs
Force Main	5,363.32	\$5,473,192
Sanitary	54,064.24	\$45,134,705
Stormwater	72,837.82	\$54,760,895
Grand Total	132,265.38	\$105,368,793

Table 51: Sanitary and Storm Network Replacement Costs

Based upon the information provided regarding age of assets, it would be difficult to determine the time of need. However, with the assumption that the age of the network is similar to water, replacement based upon age would exceed 20 years. However, in the next section, the replacement costs are provided based upon the condition of the network and the manholes.

		Data	
Age of Replacement	SEWER_TYPE	Sum of LENGTH	Total Replacement Costs
■ Greater than 20 years	Sanitary	32,555.63	\$27,089,453
🗏 Unknown	Force Main	5,363.32	\$5,473,192
	Sanitary	21,508.61	\$18,045,252
	Stormwater	72,837.82	\$54,760,895
Grand Total		132,265.38	\$105,368,793
Tab	la E2: Banlacomant C	acts by Time of No.	ad

Fable 52: Replacement	Costs by	Time of	Need
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Replacement costs by size of pipe is also provided below:

Total Replacement Costs	SEWER_TYPE			
Diameter (assumed)	Force Main	Sanitary	Stormwater	Grand Total
25		\$32,427		\$32,427
50		\$37,797		\$37,797
60	\$377,897	\$106,853		\$484,750
150		\$124,829		\$124,829
200	\$307,868	\$21,545,116	\$1,727,915	\$23,580,899
250		\$10,757,804	\$1,388,972	\$12,146,776
300	\$2,900,871	\$7,475,778	\$19,740,730	\$30,117,380
350			\$151,343	\$151,343
375		\$1,179,714	\$6,510,440	\$7,690,155
400			\$8,698	\$8,698
450		\$2,081,290	\$7,650,375	\$9,731,665
525		\$1,614,577	\$2,661,319	\$4,275,896
600			\$2,606,631	\$2,606,631
675			\$1,420,024	\$1,420,024
750			\$1,780,781	\$1,780,781
825			\$1,036,314	\$1,036,314
900	\$1,886,557	\$178,518	\$4,778,532	\$6,843,607
975			\$368,387	\$368,387
1050			\$971,452	\$971,452
1200			\$218,651	\$218,651
1375			\$792,452	\$792,452
1650			\$947,881	\$947,881
Grand Total	\$5,473,192	\$45,134,705	\$54,760,895	\$105,368,793

Table 53: Replacement Costs by Diameter

4.8.13 What condition are the Sewer lines in and the expected remaining service life?

Assumptions for asset useful life are based on assessment of theoretical expected useful lives based on expert judgment and published work. Values for asset useful life are shown below.

Asset Type	Asset Component		Useful Life (years)	
Linear Interce and loc	Interceptors, trunks,	Lined sewers ¹	50	
	and local sewers	Unlined Sewers	100	
Appurtenances		Included with sewers		

Table 54: Useful Life for Wastewater Assets

The results of AquaData's condition assessment for pipes is as follows: Clarence-Rockland is 40 years old or less. This is attributed to the rapid growth in city population and size in the last few decade. Age data is not available for about 70% of wastewater lines. The city utilized a CCTV scan to assess the conditions of its sewer and storm water systems. The assessment covered over 60% of all sewer and storm water pipes. Figure 23 shows the condition grade of the pipe and O&M as the operation and maintenance grade of the pipe as per PACP (Pipeline Assessment and Certification Program) of the Association of Sewer Service Companies (NASSCO). A score of 1-5 has been used. The numbers represent the range of conditions from "like new" to "collapsed" or "collapse imminent." Of the inspected pipes, the overwhelming majority achieved ratings between 1 and 3. Only 3% of the pipes were rated at the 4 or 5 levels in terms of conditions.

The inspection also reveals that the O&M ratings trail those of condition grade. This means that the city has to work on revising its O&M program to make sure that such ratings can be enhanced and prolong the life and serviceability of its network.

The AquaData report provides for the following grading system:

O&M ratings are as follows:

Grade	Meaning					
5	Most significant defect grade					
4	Significant					
3	Moderate defect grade					

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2	Minor to moderate
1	Minor defect grade
0	Undefined grade (for pipes only)

From the O&M perspective, AquaData found that the collection systems is in good condition with some exceptions as shown below.

Manholes								
O&M grade	5	4	3	2	1	Total		
Number of manholes	60	66	371	641	348	146		
%	4.1%	4.4%	25.0%	3.1%	23.4%	100%		

Table 55: Manholes – O&M Grade

Pipe sections									
O&M grade	5	4	3	2	1	0	Total		
Number of sections	56	95	241	678	659	7	1736		
	3.2%	5.5%	13.9%	39.0%	38.0%	0.4%	100%		

Table 56: Pipe O&M grade

With respect to physical condition, the grade rating methodology was as follows:

For manholes :

Grade	Meaning
5	Manhole (or part of manhole) is in very bad condition
4	Manhole (or part of manhole) is in bad condition
3	Manhole is in medium condition
2	Manhole is in good condition
1	Manhole is in very good condition

For pipe sections :

Grade Meaning

5	Collapsed or collapse is imminent
4	Collapse is likely to occur in foreseeable future
3	Collapse is unlikely to occur in near future but further deterioration likely
2	Minimal collapse risk in short term but potential for further deterioration
1	Acceptable structural condition
0	Undefined grade

A grade of 0 is given when a zoom inspection was compromised and did not allow an appropriate view to determine the structural condition of the pipes.

From a structural standpoint, the inspected part of the network was found to be in excellent condition. The inspection findings indicated that 64 pipe sections (3.7%) have a high structural condition grade and 96 manholes (6.4%) have a high physical condition grade (which only affects a part of the manhole). In average (based on our experience), 10% of pipes sections inspected are structurally grade 4 or 5.

A breakdown of the percentage of manholes and pipe sections falling under each of the five (5) physical and structural grade categories is provided in tables 57,58 (from Tables 3, 4 of the AquaData report.

Physical Condition Grade	5	4	3	2	1	Total
Number of manholes	9	87	438	402	550	1486
%	0.6%	5.8%	29.5%	27.1%	37.0%	100%

For Manholes

Table 57: Manholes – Physical Condition Grade

For pipes

Structural condition grade	5	4	3	2	1	0	Total
Number of sections	27	37	61	115	1475	21	1736
%	1.6%	2.1%	3.5%	0.6%	85.0%	1.2%	100%

Table 58: Pipes – Structural Condition Grade







Figure 24 and 25 show the condition ratings of pipe both in terms of structural grade and O&M Grade. The charts indicate that there are only



Figure 25: Stormwater Pipe Grade – Nulmer or meters

The city has about 2,300 manholes in the sanitary and storm water networks. There are also about 1,300 catch basins for the storm water system. CCTV inspection was implemented on 65% of all manholes. Again, most of the manholes (60%) achieved a rating index of 1-3 in both the condition grades and the O&M conditions (with O&M slightly trailing condition grade index). Only about 5% of manholes were scored at the 4 or 5 levels.



Figure 26: Sanitary Manhole Grade



Figure 27: Stormwater Manhole Grade

Being younger city with substantial growth in the latter decades, the state of water and wastewater networks is much better than the typical established Ontario municipality—where pipes of 80 or more years can be found. **Based on existing data**, the city may not need immediate substantial investments in rehabilitation. However, within 20 years, a substantial percentage of its water and wastewater assets will reach critical stages and may need substantial investments. It is therefore important to focus on enhancing the O&M practices to make sure that the levels of service and life expectancy of these pipes are optimized. In addition, financial policies should be prepared for the inevitable large sums of money needed to rehabilitate the systems in the next 15-20 years. <u>However, more objective data is being sought to determine if there are any immediate short-term concerns</u>

4.8.14 Sanitary and Stormwater Network - What needs to be done and when?

The report from AquaData dated March 2014 outlines the requirements for the sanitary and storm sewer pipes and manholes in great detail and this report should be referred to in terms of the detailed cleaning and replacement requirements.

Based upon the physical condition assessment of the pipes and manholes, it is assumed that a grade of 5 is a "NOW" need, a grade of 4 needs replacement between 1-5 years, a grade of 3 requires replacement in 6-10 years and a grade of 1-2 is considered ADEQ or adequate. Note that only 81% of the sanitary lines were inspected and 68% of the storm sewers were inspected. Therefore, the remaining 2,001.66 (3.3%) meters or sanitary sewers and 321.52 (0.4%) of storm sewers that were inspected received a grade of 0 which was due to a zoom inspection being compromised. On this basis the "Now" needs total 1212.58 metres of pipe with a replacement cost of \$926,498 as per the following table:

			Total Total			
			Replacement			
	metres		Cost	Total metres	Cost	
Time of Need 💌	Sanitary	Stormwater	Sanitary	Stormwater		
Now	439.00	773.59	\$363,561	\$562,937	1,212.58	\$926,498
1-5 Years	978.21	1,054.98	\$812,486	\$812,937	2,033.19	\$1,625,424
6-10 Years	85.82	2,991.31	\$78,393	\$2,234,896	3,077.13	\$2,313,289
ADEQ	44,861.89	44,717.64	\$36,959,710	\$34,603,666	89,579.53	\$71,563,376
Grade 0	2,001.66	321.52	\$2,343,603	\$279,714	2,323.17	\$2,623,316
Grand Total	48,366.57	49,859.03	\$40,557,752	\$38,494,150	98,225.60	\$79,051,903
Not Inspected	11,060.43	22,978.79				
Total Length	59,427.00	72837.82				
%age inspected	81%	68%				
%age Grade 0	3%	0%				

Table 59: Replacement costs by Time of Need


Figure 28: Replacement Costs by Time of Need

It is noted that replacement costs based on time of need could result in large fluctuations after 20 years.

	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	TOTAL
Sanitary Sewers		363,561	\$162,497	\$162,497	\$162,497	\$162,497	\$162,497	\$15,679	\$15,679	\$15,679	\$15,679	\$15,679	786,066	786,066	786,066	786,066	786,066	786,066	786,066	786,066	786,066	8,329,036
Storm Sewers		562,937	\$162,587	\$162,587	\$162,587	\$162,587	\$162,587	\$446.979	\$446.979	\$446.979	\$446.979	\$446,979	697,668	697.668	697,668	697.668	697.668	697,668	697,668	697.668	697,668	9,889,779

Table 60: Replacement costs based on Time of Need

Therefore an alternative approach would be to "smooth out the costs over the 20 years at a higher rate and build a reserve as follows:

	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	TOTAL
Sanitary Sewers		540,770	540,770	540,770	540,770	540,770	540,770	540,770	540,770	540,770	540,770	540,770	540,770	540,770	540,770	540,770	540,770	540,770	540,770	540,770	540,770	10,815,401
Storm Sewers		513,255	513,255	513,255	513,255	513,255	513,255	513,255	513,255	513,255	513,255	513,255	513,255	513,255	513,255	513,255	513,255	513,255	513,255	513,255	513,255	10,265,107

Table 61: Replacement costs based upon annual investment

It is important to note that this does not include the costs of replacement or time of need for the sanitary and storm sewers not inspected. The remaining replacement costs of these assets totals an additional \$26.3 million as shown in the chart below:

			Repla	acement Costs-		Repla	acement Costs -	Tota Rep	al Ilacement
SEWER_TYPE	Total Network	Inspected	Inspe	ected	Not Inspected	Not I	nspected	Cos	ts
Sanitary	59,427.56	48,366.57	\$	40,557,752	11,060.99	\$	10,050,145	\$	50,607,898
Stormwater	72,837.82	49,859.03	\$	38,494,150	22,978.79	\$	16,266,745	\$	54,760,895
Grand Total	132,265.38	98,225.60	\$	79,051,903	34,039.78	\$	26,316,890	\$	105,368,793

Table 62: Replacement Costs based upon Inspected Pipes

Manholes:

Based upon the physical condition assessment of the manholes, it is assumed that a grade of 5 is a "NOW" need, a grade of 4 needs replacement between 1-5 years, a grade of 3 requires replacement in 6-10 years and a grade of 1-2 is considered ADEQ or adequate. Note that only 1550 of the 3660 manholes/catch basins were inspected which is 42% of the inventory. Therefore, the time of need of those not inspected is unknown. There are only 9 manholes needed replacement "Now" as show below:

		Data		
On inspection?	Time of need 💌	Number of Manholes	%age of inventory	Sum of Replacement Cost
Inspected	Now	9	0.25%	\$23,800
	1-5 Years	87	2.38%	\$247,400
	6-10 Years	438	11.97%	\$1,265,200
	ADEQ	952	26.01%	\$2,740,000
	Grade 0	64	1.75%	\$160,000
Not Inspected	Grade 0	2110	57.65%	\$4,897,200
Grand Total		3660	100.00%	\$9,333,600

Table 63: Manholes – Replacement costs based on Time of Need

Sanitary and Storm Sewer – Life Cycle Phases

Activity	Definition	Asset Age
Minor	Routine Activities such as visual and CCTV camera inspections,	0-25%
Maintenance	flushing and cleaning of sewer mains, routine monitoring, etc.	lifespan
Major	Unplanned breaks in sanitary and usually results from needing to	25-100%
Repair	replace individual pipe sections as required or repairing manholes. The City should anticipate costs for major maintenance by adding additional funds into the City's annual operating budgets.	lifespan

Rehabilitation	Rehabilitation events for sanitary and storm sewer pipes extend	50-75%
	the lifespan of the system so that it is able to provide service for an	lifespan
	additional period of time than its original lifespan. Rehabilitation	
	for sanitary sewer pipes includes lining of the pipes and more.	
Replacement	Eventually a section of sanitary or storm sewer will need to be	75-100%
	fully replaced when it has reached the 75% or greater time of	lifespan
	its original useful life. Routine CCTV inspections of the	
	sewer lines, replacement of sections can be anticipated and	
	budgeted accordingly.	

4.9 Equipment and Vehicles

The City provided the list of equipment and vehicles in its fleet. We also requested operating expenses in order to determine the life cycle cost of each piece. However, this information was only available at a very high level. As well we noted that the City does not charge out a rate for the utilization of its equipment to jobs and therefore, there is no data to determine if the equipment is used in an effective and efficient manner.

4.9.1 Equipment and Vehicles Inventory- What does the City own?

Below is a chart containing the inventory of vehicles and equipment as provided and updated by the City. The inventory totals 22 pieces of equipment and 34 vehicles with the average age of 13 and 10 years respectively. We noted that the City utilizes straight line depreciation for financial reporting/PSAB purposes. As most vehicles, particularly light trucks, depreciate more at the beginning of its life, a declining balance depreciation method is likely more in line with how vehicles depreciate. Therefore, the net book values on the financial statements may be high in comparison to actuals.

Туре 🔽	Number	Sum of Historical Cost	Sum of Net Book Value
🗏 Equipment	22	\$1,960,251	\$1,212,429
ATV	1	\$10,172	\$5,086
BL70	1	\$103,651	\$70,919
Bomag	1	\$522,546	\$418,037
Flusher	1	\$21,298	\$0
Grader	2	\$524,264	\$325,215
Line Painter	1	\$9,072	\$6,350
Loader	2	\$403,460	\$188,313
Salt Box	1	\$54,134	\$32,481
Sidewalk	1	\$62,074	\$55,867
Tow	1	\$21,374	\$19,335
Tractor	2	\$54,326	\$21,467
Trailer	6	\$46,378	\$33,423
Zamboni	2	\$127,502	\$35,936
Vehicle	34	\$4,062,191	\$2,180,282
Aerial	1	\$495,000	\$346,500
Fire Truck	1	\$197,898	\$98,949
Plough	1	\$172,328	\$0
Pumper	4	\$1,077,383	\$771,022
SUV	1	\$28,422	\$28,422
Tandem	1	\$239,090	\$191,272
Tandem/Plow	1	\$267,403	\$133,702
Tanker	1	\$210,120	\$84,048
Truck	20	\$976,244	\$526,368
Truck/Plow	2	\$398,304	\$0
Van	1		\$0
Grand Total	56	\$6,022,442	\$3,392,711

Table 64: Equipment and Vehicles Inventory

🗏 Equipment	22	\$2,470,714
ATV	1	\$12,200
BL70	1	\$144,300
Bomag	1	\$669,500
Flusher	1	\$88,000
Grader	2	\$607,700
Line Painter	1	\$20,600
Loader	2	\$494,400
Salt Box	1	\$54,134
Sidewalk	1	\$71,000
Tow	1	\$20,000
Tractor	2	\$46,505
Trailer	6	\$46,675
Zamboni	2	\$195,700
Vehicle	34	\$5,164,650
Aerial	1	\$650,000
Fire Truck	1	\$250,000
Plough	1	\$225,000
Pumper	4	\$1,650,000
SUV	1	\$28,350
Tandem	1	\$280,000
Tandem/Plow	1	\$225,000
Tanker	1	\$250,000
Truck	20	\$1,151,300
Truck/Plow	2	\$450,000
Van	1	\$5,000
Grand Total	56	\$7,635,364

4.9.2 Equipment and Vehicles – What is its Replacement cost?

Table 65: Equipment and Vehicles Replacement Cost

4.9.3 Equipment and Vehicles - What is the condition / remaining service life?

The condition of the vehicles is assumed by its age and use. In terms of vehicles, the number of kilometers at 2013 was available for some vehicles but the number of hours for equipment was unavailable. Therefore, in order to determine the remaining service life, we will utilize the useful life in most cases to determine the condition and time of need. We also noted that the City utilizes straight line depreciation for financial reporting/PSAB purposes. As most vehicles, particularly light trucks, depreciate more at the beginning of its life, a declining balance depreciation method is likely more in line with how vehicles depreciate. Therefore, the net book values on the financial statements may be high in comparison to actuals.

Remaining Service 💌	Equipment	Vehicle	Grand Total
0	7	15	22
1		1	1
2		1	1
3	1	2	3
4	3	3	6
5	1	1	2
6	1	5	6
8		2	2
9	1	1	2
10	1		1
12	3	1	4
14	2		2
15		1	1
16	2		2
17		1	1
Grand Total	22	34	56

Table 66: Equipment and Vehicles: Remaining Service Life



Figure 29: Equipment and Vehicles – Remaining Service Life

4.9.4 Equipment and Vehicles - What needs to be done and when?

Assessing when an asset's useful life has either come to its end or requires a reevaluation (by way of minor or major maintenance) is dependent on looking at the typical useful life of that particular asset and how it relates to other assets in its environment, and evaluating which maintenance strategy will be the most appropriate in terms of a monetary value. In the case of vehicles and equipment, the City uses the following useful life estimates:

Asset Class	Useful Life Estimate
Fire Vehicles	20 Years
Vehicles - Light	7 Years
Vehicles – Heavy	10 Years
Heavy Machinery	20 Years
Equipment	10 years

It is important to note that there are 7 pieces of equipment will no remaining service life based upon the useful life. However, these include trailers, flusher, loaders and tractors. Since the number of hours and condition are not known, there is likely not an immediate need for replacement. These pieces of equipment should be evaluated to determine the remaining service life and timing of replacement. This should be included in the assessment.

Veh/Eqi _→ †	Year 👻	Category 🔻	Description	-	Km 2013 斗	Age 🔻	Useful Lif 🔻	Remainin 🔻	Km/UL 🔻	Replacen 🚽	Replacement Cos 💌
Equipment	1976	Flusher	Flusher (Myers) - High Velocity Sewer Cleaner			38	20	0	0	Now	88,000.00
Equipment	1993	Loader	Loader - Plow, fork, blower			21	20	0	0	Now	247,200.00
Equipment	1994	Tractor	Kubota			20	20	0	0	Now	5,150.00
Equipment	1980	Trailer	Trailer Tri-Axle - TRG01			34	20	0	0	Now	10,000.00
Equipment	1990	Trailer	Trailer single Axle - TRG03			24	20	0	0	Now	3,000.00
Equipment	1990	Trailer	Trailer - Double Axle - TRL01			24	20	0	0	Now	4,500.00
Equipment	1999	Zamboni	Zamboni			15	15	0	0	Now	97,850.00
Equipment	2007	ATV	ATV 500 Artic Cat 4x4			7	10	3	3	1-5 Years	12,200.00
Equipment	1998	Grader	Champion Grader - with Plow, spreader, Blower,			16	20	4	4	1-5 Years	288,400.00
Equipment	2008	Salt Box	Salt Box			6	10	4	4	1-5 Years	54,134.00
Equipment	2003	Zamboni	Zamboni 520			11	15	4	4	1-5 Years	97,850.00
Equipment	2010	Sidewalk	Sidewalk Tractor - 2003 Bombardier sidewalk			4	10	6	6	6-10 Years	71,000.00
Equipment	2003	Tractor	Massey Ferguson - 4x4, 38 H.P.			11	20	9	9	6-10 Years	41,355.00
Equipment	2009	BL70	Backhoe - Volvo BL70			5	10	5	5	10-20 Years	144,300.00
Equipment	2009	Loader	John Deere 624K Loader			5	15	10	10	10-20 Years	247,200.00
Equipment	2006	Line Painter	Powerline Line Painter			8	20	12	12	10-20 Years	20,600.00
Equipment	2006	Trailer	Trailer - TRB01			8	20	12	12	10-20 Years	15,000.00
Equipment	2006	Trailer	Trailer Dumping - TRL02			8	20	12	12	10-20 Years	6,575.00
Equipment	2008	Bomag	2008 Bomag BC672RB ID no. 101570591021			6	20	14	14	10-20 Years	669,500.00
Equipment	2008	Trailer	Covered Trailer - TRL03			6	20	14	14	10-20 Years	7,600.00
Equipment	2010	Tow	Trailer Work N Tow			4	20	16	16	10-20 Years	20,000.00
Equipment	2010	Grader	Grader - John Deere Model 870GP			4	20	16	16	10-20 Years	319,300.00

Table 67: Equipment Replacement based on Time of Need

In terms of vehicles, however, age and number of kilometers are a good indicators of remaining service life. However, operating costs should also be included in the analysis. Below is the recommended "now" needs list for vehicles.

Veh/Equit	Year 👻	Category -	Description 🗸	Km 2013 斗	Age 🔻	Useful Lif 🔻	Remainin 🔻	Km/UL	Replacen 🗐	Replacement Cos 🕶
Vehicle	1999	Plough	Sterling with Plough/Spreader	361,845	15	10	0	36184	5 Now	225,000.00
Vehicle	2002	Truck/Plow	Mack Truck with Salter & Plough	308,752	12	10	0	30875	2 Now	225,000.00
Vehicle	2004	Truck	Ford Ranger	304,147	10	7	0	43449.57	1 Now	32,000.00
Vehicle	2002	Truck/Plow	Mack Truck with Salter & Plough	286,462	12	10	0	28646	2 Now	225,000.00
Vehicle	2004	Truck	Ford F350	177,995	10	7	0	25427.85	7 Now	25,000.00
Vehicle	2005	Truck	Ford F350	145,364	9	7	0	20766.28	6 Now	32,000.00
Vehicle	2005	Truck	Ford F450	144,041	9	7	0	20577.28	6 Now	52,000.00
Vehicle	2007	Truck	Ford F150	121,375	7	7	0	17339.28	6 Now	30,000.00
Vehicle	2004	Truck	Ford Ranger (Guy)	119,044	10	7	0		0 Now	32,000.00
Vehicle	2004	Truck	Ford Cube Van	111.081	10	7	0	15868.71	4 Now	60,000.00
Vehicle	2001	Truck	Ford F250		13	7	0		0 Now	35,000.00
Vehicle	1992	Pumper	International Crew Cab Pumper		22	20	0		0 Now	300,000.00
Vehicle	1992	Pumper	International Crew Cab Pumper		22	20	0		0 Now	300,000.00
Vehicle	1986	Truck	Ford E350 Rescue		28	7	0		0 Now	150,000.00
Vehicle	2005	Van	Leased in 2010 Dodge Caravan (2 years)		9	7	0		0 Now	5,000.00
Vehicle	2008	Truck	Ford Ranger (Const)	277.039	6	7	1	3957	7 1-5 Years	24,900.00
Vehicle	2009	Truck	Ford Ranger	200,154	5	7	2	28593.42	9 1-5 Years	24,700.00
Vehicle	2008	Tandem/Plow	International Tandem Plow & Spreader	124,514	6	10	4	12451	4 1-5 Years	225,000.00
Vehicle	2010	Truck	Ford F150 (Richard)	104,770	4	7	3	14967.14	3 1-5 Years	32,000.00
Vehicle	2008	Truck	GMC 5500 4 X 4 / TC5C044 with plow	62,042	6	10	4	6204	2 1-5 Years	134,500.00
Vehicle	2010	Truck	Ford Ranger (Const)	60,859	4	7	3	8694.142	9 1-5 Years	24,700.00
Vehicle	2011	Truck	Ford F-150 Super cab 4X4	56,836	3	7	4	8119.428	6 1-5 Years	32,000.00
Vehicle	2012	Truck	Ford Truck F350 with plow & salt box	29,177	2	10	8	2917	7 6-10 Years	52,000.00
Vehicle	2013	SUV	Ford escape 4X4 SE	12,423	1	7	6	1774.714	3 6-10 Years	28,350.00
Vehicle	2013	Truck	Dodge Ram 1500 4X4	11,492	1	7	6	1641.714	3 6-10 Years	26,000.00
Vehicle	2013	Truck	Dodge 1500	8,820	1	7	6	126	0 6-10 Years	28,000.00
Vehicle	2013	Truck	Mack Truck	2,500	1	10	9	25	0 6-10 Years	276,000.00
Vehicle	2000	Tanker	GMC 3000 Gallon Tanker		14	20	6		0 6-10 Years	250,000.00
Vehicle	2010	Tandem	Tandem - International 760 2011		4	10	6		6 6-10 Years	280,000.00
Vehicle	2002	Fire Truck	Freightliner Fire Truck		12	20	8		0 6-10 Years	250,000.00
Vehicle	2012	Truck	Ford F250 Crew cab Pick up		2	7	5		0 10-20 Years	48,500.00
Vehicle	2006	Aerial	Rosenbauer Firestar 75' Aerial		8	20	12		0 10-20 Years	650,000.00
Vehicle	2009	Pumper	Pumper - Crew Cab Pumper		5	20	15		0 10-20 Years	525,000.00
Vehicle	2011	Pumper	Pumper Truck		3	20	17		0 10-20 Years	525,000.00

Table 68: Vehicles Replacement based on Time of Need

4.9.5 How much will it cost?

					Total Count of	Total Sum of
	Equipment		Vehicle		Category	Replacement Cost
Туре 🔽	Count of Category	Sum of Replacement Cost	Count of Category	Sum of Replacement Cost		
Now	7	\$455,700	15	\$1,728,000	22	\$2,183,700
1-5 Years	4	\$452,584	7	\$497,800	11	\$950,384
6-10 Years	2	\$112,355	8	\$1,190,350	10	\$1,302,705
10-20 Years	9	\$1,450,075	4	\$1,748,500	13	\$3,198,575
Grand Total	22	\$2,470,714	34	\$5,164,650	56	\$7,635,364

Table 69: Equipment and Vehicles Replacement Cost based on Time of Need



Figure 30: Equipment and Vehicles Replacement Units based on Time of Need



Figure 31: Equipment and Vehicles Replacement Costs based on Time of Need



Figure 32: Equipment and Vehicles Replacement Units based on Remaining Service Life

4.9.6 How to ensure sustainability with a long-term financial plan

As mentioned above, equipment and vehicles costs including salaries and wages, operating (fuel, oil) and maintenance costs should all be tracked for each unit. The City recently implemented a fuel management system in 2013 which will allow for such tracking of costs over the life cycle of the unit. However, at the time of the report, the information was not complete or reliable. Therefore, we were unable to determine the full life cycle cost of the equipment and vehicles. In order to ensure sustainability over the long term, equipment rates for equipment and vehicles that is utilized on jobs and activities should be determined and these rates should be charged to the job. The offset should be made to a reserve account in order to fund future equipment and vehicle replacements.

In order to provide for a replacement plan, the following priorities have been provided based upon a combination of age, use and costs. Note that the operating costs are only a guide as all costs were not provided by unit (ie. Fuel, oil etc.). Further analysis of this information may change this priority list as well as a detailed assessment of the condition by City mechanics.

Veh/Equip	Year	Category	Description	Km 2013	Replacement Time of Need	Replacement Cost	Operating costs 2012	Recommended Priorities	Replacement Year
Equipment	1993	Loader	Loader - Plow, fork, blower		Now	247,200.00	14,141.00	1	2015
Vehicle	1999	Plough	Sterling with Plough/Spreader	361,845	Now	225,000.00	39,727.00	2	2015
Vehicle	2002	Truck/Plow	Mack Truck with Salter & Plough	308,752	Now	225,000.00	28,208.00	3	2016
Vehicle	2004	Truck	Ford Ranger	304,147	Now	32,000.00	1,043.00	4	2016
Vehicle	2002	Truck/Plow	Mack Truck with Salter & Plough	286,462	Now	225,000.00	25,125.00	5	2016
Vehicle	2004	Truck	Ford F350	177,995	Now	25,000.00	4,380.00	6	2017
Vehicle	1992	Pumper	International Crew Cab Pumper		Now	300,000.00	7,959.00	7	2017
Vehicle	1992	Pumper	International Crew Cab Pumper		Now	300,000.00	3,717.00	8	2017
Vehicle	2005	Truck	Ford F350	145,364	Now	32,000.00	1,187.00	9	2018
Vehicle	2005	Truck	Ford F450	144,041	Now	52,000.00	3,653.00	10	2018
Vehicle	2005	Van	Leased in 2010 Dodge Caravan (2 years)		Now	5,000.00	2,680.00	11	2018
			Comunity Vehicule 110,000 km						
Vehicle	2004	Truck	Ford Cube Van	111,081	Now	60,000.00	4,716.00	12	2018
Vehicle	2007	Truck	Ford F150	121,375	Now	30,000.00	1,553.00	13	2018
Vehicle	2004	Truck	Ford Ranger (Guy)	119,044	Now	32,000.00	2,831.00	14	2018
Vehicle	2001	Truck	Ford F250		Now	35,000.00	5,350.00	15	2018
Vehicle	1986	Truck	Ford E350 Rescue		Now	150,000.00	4,168.00	16	2018
Vehicle	2009	Truck	Ford Ranger	200,154	1-5 Years	24,700.00	6,187.00	17	2018
Vehicle	2008	Tandem/Plow	International Tandem Plow & Spreader	124,514	1-5 Years	225,000.00	22,749.00	18	2019
Vehicle	2008	Truck	Ford Ranger (Const)	277,039	1-5 Years	24,900.00	764.00	19	2019
Equipment	1998	Grader	Champion Grader - with Plow, spreader, Blower, Mower, Flail, broom		1-5 Years	288,400.00	27,974.00	20	2019
Vehicle	2010	Truck	Ford F150 (Richard)	104.770	1-5 Years	32.000.00	4.020.00	21	2020
Vehicle	2008	Truck	GMC 5500 4 X 4 / TC5C044 with plow	62.042	1-5 Years	134,500,00	29.353.00	22	2020
Vehicle	2010	Truck	Ford Ranger (Const)	60,859	1-5 Years	24,700,00	900.00	23	2020
Vehicle	2011	Truck	Ford F-150 Super cab 4X4	56,836	1-5 Years	32,000,00	3,190,00	24	2020
Vehicle	2012	Truck	Ford Truck F350 with plow & salt box	29,177	6-10 Years	52,000.00	855.00	25	2020
Equipment	1976	Flusher	Flusher (Myers) - High Velocity Sewer Cleaner		Now	88,000,00	-	26	2020
Equipment	1999	Zamboni	Zamboni		Now	97,850,00	101.00	27	2020
Vehicle	2013	SUV	Ford escape 4X4 SE	12.423	6-10 Years	28.350.00	-	27	2020
Vehicle	2013	Truck	Dodge Ram 1500 4X4	11,492	6-10 Years	26.000.00	-	28	2020
Equipment	2007	ATV	ATV 500 Artic Cat 4x4		1-5 Years	12,200,00	690.00	29	2021
Vehicle	2013	Truck	Dodge 1500	8.820	6-10 Years	28.000.00	-	30	2021
Equipment	1994	Tractor	Kubota		Now	5,150.00	747.00	31	2021
Equipment	1980	Trailer	Trailer Tri-Axle - TRG01		Now	10.000.00	822.00	32	2021
Equipment	1990	Trailer	Trailer single Axle - TRG03		Now	3,000,00	413.00	33	2021
Equipment	1990	Trailer	Trailer - Double Axle - TRL01		Now	4,500,00	1,912,00	34	2021
Equipment	2008	Salt Box	Salt Box		1-5 Years	54,134,00	809.00	35	2021
Equipment	2003	Zamboni	Zamboni 520		1-5 Years	97,850,00	2.651.00	36	2021
Fauinment	2010	Sidewalk	Sidewalk Tractor - 2003 Bombardier sidewalk		6-10 Years	71,000.00	1,262.00	37	2021
Equipment	2002	Tractor			6 10 Vooro	41 2EE 00	1 097 00	20	2021
Vehicle	2003	Truck	Mack Truck	2 500	6-10 Vears	41,305.00	1,007.00	30	2021
Vehicle	2013	Topkor	CMC 2000 Collon Tonkor	2,300	6 10 Vooro	270,000.00	14 956 00	39	2021
Vehicle	2000	Tondom	Tandom International 760 2011		6 10 Years	230,000.00	14,000.00	40	2022
Vehicle	2010	Fire Truck	Freightlinger Fire Truck		6 10 Vooro	260,000.00	8 090 00	41	2022
Fauinment	2002		Preightimer File Huck		10 20 Veere	230,000.00	0,900.00	42	2023
Equipment	2009	BL/0	John Deero 624K Londer		10-20 Tears	247,200,00	2,370.00	43	2023
Equipment	2009	Line Bainter	Downerling Ling Reinter		10-20 Tears	247,200.00	5,640.00	44	2024
Equipment	2000	Troilor			10-20 Tears	20,000.00	15.00	40	2024
Equipment	2000	Trailer	Trailer Dumping - TPL02	ł	10-20 TealS	6 575 00	2 652 00	40	2024
Equipment	2000	Trailor	Covered Trailer - TRL03		10-20 TealS	7,600,00	2,002.00	47	2024
Equipment	2000	Tow	Trailer Work N Tow	ł	10-20 TealS	20,000,00	002.00	40	2024
Equipment	2010	Bomog	2009 Pomog PC672PP ID po 101570504024	ł	10-20 TealS	20,000.00	332.00	49	2024
Equipment	2000	Grader	Grader - John Deere Model 270CP		10-20 TealS	310 200 00	3,925.00	51	2025
Vobiolo	2010	Truck	Ford E250 Crow och Dick up	ł	10-20 TealS	49 500.00	1 000 00	50	2024
Vehicle	2012	Aerial	Posonbauer Firestar 75' Aerial		10-20 rears	40,000.00	5,000.00	52	2026
Vehicle	2000	Dumpor	Pumper - Crew Cab Pumper		10-20 TealS	525,000.00	0,003.00	53	2020
Vehicle	2009	Pumper	Pumper Truck		10-20 TealS	525,000.00	4 018 00	54	2027
V CITICIC	2011	i uniper	n angos muon		1.0 20 10010	020,000.00	4,010.00		2020

Table 70: Equipment and Vehicles Replacement Units and Cost based on Recommended Priorities

However, this has yet to be done and therefore, the following investments should be made over the next 12 years to address the overall replacement requirements of the fleet:

Туре	•	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	Grand Total
Equipment		\$247,200				\$288,400	\$185,850	\$299,189		\$144,300	\$636,275	\$669,500				\$2,470,714
Vehicle		\$225,000	\$482,000	\$625,000	\$420,700	\$249,900	\$329,550	\$304,000	\$530,000	\$250,000			\$698,500	\$525,000	\$525,000	\$5,164,650
Grand Total		\$472,200	\$482,000	\$625,000	\$420,700	\$538,300	\$515,400	\$603,189	\$530,000	\$394,300	\$636,275	\$669,500	\$698,500	\$525,000	\$525,000	\$7,635,364
	Table 71	: Equi	pmen	t and	Vehi	cles Re	eplace	ement	t Cost	base	d on R	lecom	nmend	latior	ns	



Figure 33: Equipment and Vehicles Replacement Costs based on Recommendations

4.10 Buildings and Parks

4.10.1 Building and Parks Inventory – What does the City own and where is it?

The condition review and submission of a 20-year life cycle renewal plan for city parks and buildings were undertaken as a separate assignment by the City of Clarence-Rockland. This assignment was executed by Mr. Pierre Jolicoeur and Mr. James Barrett who have a combined 60+ years of experience in building operations, strategic asset management and life cycle renewal planning for parks and buildings. Their report – "A Preliminary Asset Management Plan for Parks and Buildings: City of Clarence-Rockland" is presented in its entirety under Appendix ______ of this document. The 20-year life cycle forecast summary sheets for parks and buildings have been included under section ______ of this report and presented separately from continuous network infrastructure assets such as roads and sewers. This approach is in keeping with City Council's expressed wishes to have an integrated, comprehensive document relating to life cycle renewal and long-term capital requirements for its entire inventory of municipal assets.

The parks covered by the report includes:

- Parc Laviolette
- Parc Cathy Cain
- Parc Hammond (Centre Communautaire Hammond)
- Parc Cheney
- Parc Bourget (Centre Communautaire Bourget)
- Parc Bernard Valiquette
- Parc Clarence Creek (Aréna de Clarence Creek)
- Parc Dalrymple
- Parc Simon
- Parc Patricia Charron
- Parc Richelieu Grande Rivière
- Parc Dutrisac
- Parc Du Moulin
- Parc Bellevue
- Parc Jules Saumure

Although the following list is not exhaustive, the following items were considered during the condition review of the municipal parks in the report:

- Fencing
- Lighting systems
- Play structures
- Parking facilities
- Pathways
- Courts and sport surfaces
- Outdoor water play facilities
- Sun shelters
- Docks and wharfs
- Park bridges
- Curbing
- Bleachers
- Skateboard park structures
- Park identification sign
- Non-removable outdoor rink boards

Buildings

Base Building Assets

- Building superstructure: columns, slabs, shafts, stairwells, joists, foundation elements, etc.
- Exterior closure: wall cladding, stairs, doors, windows, etc.
- Roofing: ventilation, skylights, eavestroughing, roofing systems
- Interior Finishes: wall systems, flooring, ceiling, doors, stairs, millwork

- Mechanical: plumbing systems, HVAC, sprinkler, etc.
- Electrical: distribution systems, lighting, fire and life safety, generator, EMCS, etc.
- Vertical Transportation: elevators, fixed hoists, etc.
- Utilities: wells, septic systems, buried tanks, etc.
- Arena: refrigeration system, boards and protective glass, dehumidification, scoreboard, PA system
- Pool: filtration system, diving facilities, chemical feed system, PA system, etc.

Building Summaries

The City building portfolio and the subsequent building summaries have been divided into one of several responsibility areas. This division recognizes that the responsibility for the maintenance, operation and capital renewal of the building portfolio is apportioned to a number of municipal departments within the organizational structure of the City of Clarence-Rockland. The division of responsibility areas is presented as follows:

- 1. Environmental Services
- 2. Parks and Recreation Services
- 3. Fire Services
- 4. General Government, Library, Daycare and Public Works & Services

Environmental Services

A general condition review of the following buildings and sites was conducted on November 15th, 2013:

- Water Treatment Plant
- Low Lift Station
- Pumping Station No.1
- Pumping Station No.2
- Pumping Station No.3
- Pumping Station No.4
- Pumping Station No.5
- Pumping Station No.6
- Pumping Station No.7
- Booster Station
- Waste Water Treatment Plant
- Landfill Site

Parks and Recreation Services

A general condition review of the following buildings and sites was conducted:

- Rockland Arena
- Clarence Creek Arena
- Sports and Cultural Centre
- Hammond Community Centre
- St-Pascal Community Centre

- Bourget Community Centre
- Chamberland Centre
- Band Shell
- Arts and Cultural Centre
- Recreation Garage
- Park Service Buildings
- Museum

Fire Services

A general condition review of the following buildings and sites was conducted on November 25th, 2013:

- Rockland Fire Hall
- Fire Administration
- Bourget Fire Hall
- Clarence Creek Fire Hall

General Government, Library, Daycare and Public Works & Services

A general condition review of the following buildings and sites was conducted over an extended period of time:

- City Archives
- City Hall
- Clarence Creek Town Hall
- Daycare
- Main Library
- Public Works Garage

The chart below shows the 2012 PSAB values as well as the average remaining life of these assets.

Asset Category 🗸	Historical Cost	Net Book Value	Remaining Useful Life
Building	\$46,981,394	\$40,552,894	14
Other Equipment	\$5,666,967	\$3,501,614	7
Grand Total	\$52,648,361	\$44,054,508	11

Table 72: Buildings and Parks – 2012 Historical Costs PSAB

	Average
PARK SITE	Remaining Life
BELLEVUE PARK	4
BOURGET/VALIQUETTE PARK	8
CATHY CAIN PARK	8
CHENEY PARK	5
CLARENCE CREEK PARK	6
DALRYMPLE PARK	5
DUMOULIN PARK	15
DUTRISAC PARK	14
EUGENE LAVIOLETTE PARK	15
HAMMOND PARK	8
JULES-SAUMURE PARK	15
PATRICIA CHARRON PARK	
RICHELIEU GANDE-RIVIERE PARK	9
SIMON PARK	15
ST- PASCAL PARK	
Grand Total	9

Table 73: Parks Inventory and Remaining Life

	Average
	Remaining
BUILDING NAME	Life
Archives	30
Bandshell	2
Bourget Fire Hall	11
Bourget Recreation Centre	12
Bourget Recreation Centre-Pavillion	12
Centre Chamberland	4
Centre des Arts (Maison des Jeunes)	7
Clarence Creek Arena	10
Clarence Creek Fire Hall	13
Clarence Creek Town Hall	15
Clarence Rockland City Hall	14
Daycare Facilities	10
Daycare Facility (Le Carrousel)	15
Fire Administration	
Hammond Recreation Centre	10
Landfill Site	22
Low Lift Pumping Station	0
Park Service Buildings	11
Public Works Garage	13
Pumping Station #1	0
Pumping Station #2	0
Pumping Station #3	
Pumping Station #4	0
Pumping Station #5	0
Pumping Station #6	0
Pumping Station #7	
Recreation Garage	24
Recreational & Cultural Complex	
Rockland (Johnny Lalonde) Arena	13
Rockland Fire Hall	10
Rockland Museum (La Famille)	13
Sanitary Sewer Plant	4
St-Pascal Recreation Centre	12
Water Pumping Booster Station	11
Water Treatment Plant	7
Grand Total	11

Table 74: Building Inventory and Remaining Life

4.10.2 What are the Buildings and Parks worth?

The replacement costs are provided as per the PSAB listing. The consultants did not undertake to develop the complete replacement costs of the buildings and parks but rather focus on the improvements required. It is also important to note that the park assets analyzed by the consultants were more detailed than provided for PSAB. Therefore, these replacement costs should be viewed as general information only and not to be relied upon for the needs. This is addressed in the next section.

Parks		Building s	
Sum of REPLACEMENT COST		ASSET	J Total
ASSET	Total	Sanitary Sewer Plant	\$10,246,810
Parking Lots	\$465.274	Water Treatment Plant - Addition	\$8,119,877
Soccer Fields	\$389 907	Arena Clarence	\$4,988,300
Boat Ramp	\$133,000	Arena Rockland	\$4,926,500
DuMoulin Park - Banks	\$122,250	Water Treatment Plant	\$3,380,123
Multi functional Playing Surface	¢117 /10	Sewer Pump #1	\$2,556,666
Interleak Sidewalka	\$117,419 \$117,419	Water Tower	\$2,065,000
	\$111,454	Sewer Pump #2	\$1,966,666
Grand Total	\$1,339,313	Sewer Pump #4	\$1,770,000
Table 76: Parks Replacement Co	osts based on	Sewer Pump #5	\$1,770,000
PSAB		Sewer Pump #6	\$1,573,333
		Water Pumping Station	\$1,205,000
		Sewer Pump #3	\$1,180,000
		Clarence Creek Town Hall	\$1,127,800
		Bourget Recreation Centre	\$1,076,200
		Municipal Garage	\$883,800
		Cultural Center La Ste-Famille	\$656,000
		St-Pascal Recreation Centre	\$590,700
		Rockland Fire Hall	\$499,800
		Hammond Recreation Centre	\$297,700
		Archives - St-Pascal	\$252,647
		Clarence Creek Fire Hall	\$249,600
		Bourget Fire Hall	\$232,400
		Centre Chamberland	\$194,600
		Tennis Club House, Maison des Jeunes	\$164,900
		Bourget Recreation Centre - Pavilion	\$97,400
		Band Stand	\$69,900
		C.C. old waterplant	\$44,134
		St-Pascal Recreation Centre Pavillion	\$40,100
		Dalrymple Park Pavilion	\$26,300
		Cheney Park Pavilion	\$26,300
		Forest Hill Pavilion	\$26,300
		Storage Laviolette Park	\$18,300
		Octagon Grande Riviere Pavilion	\$17,800
		Octagon Laviolette Park Pavilion	\$17,800
		Landfill Site Office	\$12,000
		Grand Total	\$52,370,756

Table 75: Buildings Replacement Costs based on PSAB

4.10.3 Buildings and Parks - What condition are they in?

According to the report, a site review of each municipal building and park and the collection of assetspecific information as well as a general determination of condition was conducted

The condition assessment conducted by the consultants revealed that 53% of the park equipment and 45% of the buildings are in good to very good condition. The remaining are fair to poor or unknown.



Figure 35: Parks Condition Rating

Figure 34: Building Condition Rating

4.10.4 What needs to be done and when? How much will it cost?

The report *A Preliminary Asset Management Plan for Parks and Buildings: City of Clarence-Rockland*" contains a comprehensive evaluation of each park and building in the study including maintenance requirements. This report should be read with this report.

Based upon the current condition and the condition assessment undertaken by the consultants, the needs over the next 20 years of the existing infrastructure is as follows:

Sum of BUDGET	Column Labels 💌		
Row Labels	BUILDINGS	PARKS	Grand Total
Now	\$236,000		\$236,000
1-5 Years	\$3,641,000	\$913,000	\$4,554,000
6-10 Years	\$1,861,000	\$948,000	\$2,809,000
10-20 Years	\$3,079,000	\$768,000	\$3,847,000
Grand Total	\$8,817,000	\$2,629,000	\$11,446,000

 Table 77: Buildings and Parks: Replacement Costs based on Time of Need



Figure 36: Table 78: Buildings and Parks: Replacement Costs based on Time of Need

5 LEVEL OF SERVICE

In order to determine the "right" level of funding and what customers are willing to pay for, the City needs to establish levels of service. Without this, the City is operating and making decisions based on a belief that they are satisfied with the services and are not willing to pay for additional infrastructure. Some key factors to consider are: community expectations, legislative requirement such as bridge studies, expected asset performance, long term goals and financial viability. Those municipalities that are in growth, such as Clarence-Rockland, need to balance new needs with existing infrastructure requirements.

Currently, the City does not have an established system for collecting data regarding levels of services beyond the physical conditions. One of our main goals in the next few years is to establish a full system for the collection of levels of services and customer complaints. At the strategic level, the goals of this system are listed in the Table below.

Objective	Scope
Affordability	Costs are minimized and distributed such that access to service does
	not cause undue hardship to customers and businesses.
Accommodating growth	Development is not hampered by the availability of capacity.
Adequacy	Services are delivered to acceptable quality and quantity.
Reliability	Service is reliable with minimal interruption.
Safety	Meet safety requirements, as regulated by legislation.

Compliance	Assure environmental compliance, as regulated by legislation and/or
	operating licenses or agreements.
Customer services	Customer issues are captured and acted upon in an efficient and timely
	manner.

Traditional views of performance management focused on collecting data about physical conditions of facilities and developing an engineering rehabilitation and/or maintenance plan (what to fix, what to replace). However, the performance of assets (facilities) is not limited to its physical or engineering conditions only. Equally important is the level of service (LOS) of the facility. In other words, how adequate are the facility conditions and operational status in meeting its intended functions?

Understanding the balance between physical and service conditions is crucial for the success of facility operations. Both are essential to manage and promote the socio-economic activities of the users. At the same time, they both are needed to protect public health and safety.

There is, however, little agreement about the definition or elements of LOS. This stems from the discrepancy between expected LOS and actual LOS; user desired LOS versus the needs to minimize the life cycle costs of assets and their impacts on the environment; and visual perception of service quality versus and the actual/underlying status of the asset itself.

There are several factors that influence LOS. It is important to understand/track these factors to assure that the system is proactive.

Factor	Impact
Climate	Examples include 1) extended winter months and more severe temperatures; 2)
Change	severe rainfall events and their associated impact on the effectiveness of the Storm
	water system; and 3) flooding of roads and challenges in meeting winter control
	requirements
Social Trends	Societal influences will continue to shape the City's strategy and priorities.
	Examples of such expectations include aspects like enhanced environmental
	stewardship and more cost-effective delivery of services.
Aging	The City is relatively younger than many Ontario municipalities. This provides an
Infrastructure	opportunity for our city to benefit from the wealth of experiences developed in
	the last two decades in the area of infrastructure rehabilitation. Older parts of
	the network continue to deteriorate and will require increasing levels of funding
	to ensure that they continue to offer safe and reliable services.
Growth	According to analysis of the latest data, the City has higher than average population
Forecasts	growth. However, uncertainty remains if this will continue in the next two decades
	given the changing economic situation in Ottawa. Uncertainty is not entirely within

	the City's control and will continue to impact several financial and operational performance indicators.
Consumption	Ongoing conservation efforts have led to declines in average household water
rates	consumption. This has an impact on revenue generation from rates. Economic
	uncertainty and its impact on large ICI customers is another concern as loss of any
	of the top ICI customers may have larger impacts.
Funding	Traditionally, the City has relied heavily on Federal and Provincial funding. Changes
Mechanisms	in grant programs have made it difficult to maintain service, forcing it to juggle
	priorities, and target where and how it invests. Continued vigilance in asset
	management has allowed the City to extend asset life and reduce the total cost of
	ownership. However, current spending is insufficient to maintain service at current
	levels over the long-term.

5.1 Roads

Level of Service has a different meaning for different interests. For instance, the cost per unit may not have an impact to a ratepayer whose chief concern may be service delivery. Similarly, cost or expenditure per unit may not illustrate the condition of the asset to the end user. Further, municipalities are required to report on various Municipal Performance Measures (MPMP)

4 Roads believes that multiple service measures may be required to adequately relate the condition of an asset to the various user groups; condition, operating costs, and end user. The following sections identify various measurements of service of the road system

Current Level of Service Measurement

System Adequacy

As described earlier in the report, the system adequacy is the ration of the "NOW' need roads to the total system. This is a holistic measure as, using the Inventory Manual Methodology, needs are identified in six critical areas, not just the distress on the road surface. The current system adequacy is 61%.

Physical Condition

Physical condition is the Structural Adequacy rating multiplied by five to produce a rating of between 5 and 100. This is a measure of the amount of distress on the road however the scale is not linear. The current weighted average Physical Condition of the road system is 53.2.

MPMP Good to Very Good

The province requires annual reporting on the percentage of roads that are rated as good to very good. It has been assumed that the 6-10 and adequate roads are good to very good and this has been expressed as a percentage of the system. Good to very good roads represent 52.1 % of the road system.

5.2 Structures

4 Roads believes that multiple service measures may be required to adequately relate the condition of an asset to the various user groups; condition, operating costs, and end user. The following sections identify various measurements of service of the structures inventory.

Current Level of Service Measurement- Structures

5.2.1.1 Adequacy Index

4 Roads examined the database provided and believed that one means of expressing the condition of the bridge and culvert structures inventory would be a measure of the ratio of the current improvement needs to the current replacement cost. The bridge structures Adequacy Index is **56** meaning that the remaining value of the inventory is 56% of its replacement cost.

The culvert structures Adequacy Index is either **94%** of its replacement cost.

5.2.1.2 NOW Needs Structures Requiring Replacement

The current bridge structures database indicates that there are no bridge structures that require replacement at this time.

The current culvert structures database indicates that there are 4 culverts that require replacement. This represents **40%** by number of structures and **41%** of the culvert inventory by deck area.

5.3 Water and Wastewater and Storm Sewers

Using the Ontario Municipal Benchmarking Initiative framework and relevant technical measures, the following items will be of initial interest in relation to the development of LOS in water and wastewater systems. The City is working to further develop and refine this framework, based on input from internal and external stakeholders, for use in guiding future plans and initiatives.

Strategic Indicators	 Percentage of total reinvestment compared to asset replacement value Completion of strategic plan objectives (related water / waste water / storm)
Cost Indicators	 Annual revenues compared to annual expenditures Revenue required to maintain annual network growth Lost revenue from leakage and unaccounted for water

System Quality	Percentage of water / waste water / storm network rehabilitated /					
	reconstructed					
	Overall network condition index					
	 Percentage of mains where the condition is rated poor or critical for 					
	each network					
	Replacement value spent on operations and maintenance					
Operational	 Percentage of water / waste water / storm network inspected 					
Efficiency	Operating costs for the collection of wastewater per kilometre of main					
	 Number of wastewater main backups per 100 kilometres of main 					
	• Operating costs for storm water management (collection, treatment,					
	and disposal) per kilometre of drainage system.					
	Operating costs for the distribution/ transmission of drinking water per					
	kilometre of water distribution pipe.					
	Number of water main breaks per 100 kilometres of water distribution					
	pipe in a year.					
	Number of customer requests received annually per water / waste water					
	/ storm networks					
	• Percentage of customer requests responded to within 24 hours per					
	water / waste water / storm network					
	Volume of inflow and infiltration in sanitary sewer system					

5.4 Equipment and Vehicles

Levels of service indicators for equipment and vehicles could include the following

,						
Strategic Indicators	Percentage of total reinvestment compared to asset replacement value					
Cost Indicators	Revenue required to maintain equipment					
	Fuel usage against benchmarks					
	Rates for chargeout					
	Number of hours worked on unit					
Quality	Percentage of uptime					
	Percentage of time in service					

Operational Efficiency	 Percentage of Operating costs per kilometer or hour. 	

5.5 Buildings and Parks

Levels of services for buildings and parks are a combination feedback from customers and staff as well as best practice.

Strategic Indicators	Percentage of total reinvestment compared to asset replacement value					
Cost Indicators	 Revenue required to maintain equipment Fuel usage against benchmarks Rates for chargeout Number of hours worked on unit 					
Quality	 Customer complaints Percentage of uptime Percentage of time utilized Debris, cleanliness, weeds 					
Operational Efficiency	 Operating costs per square foot, per usage 					

6 ASSET MANAGEMENT STRATEGY

Asset management has as almost as many definitions as there are agencies that manage assets. The American Association of State Highway and Transportation Officials (AASHTO) defines asset management as

"... a strategic approach to managing transportation infrastructure. It focuses on business processes for resource allocation and utilization with the objective of better decision-making based upon quality information and well-defined objectives."

The document entitled *Managing Public Infrastructure Assets, 2001*, prepared by AMSA, AMWA, WEF, and AWWA, defines asset management as;

'managing infrastructure assets to minimize the total cost of owning and operating them, while continuously delivering the service levels customers desire, at an acceptable level of risk.'

The Province of Ontario's document 'Building Together- Guide for Municipal Asset Management Plans' indicates

'The asset management strategy is the set of actions that, taken together, has the lowest total cost- not the set of actions that each has the lowest cost individually'

Regardless of the source of the definition, the key themes that keep being repeated are;

- Managing
- Strategic
- Effective
- Efficient
- \$\$\$\$\$!!
- Service
- Optimizing asset life cycle
- Risk Management

As an absolute minimum, the objective of any asset management plan, or strategy, should be to ensure that the overall condition of an asset group does not does not diminish over time. The asset management strategy of an agency is heavily predicated, and inextricably linked to the available funding.

- Focus should be on a bridge management strategy that utilizes available funding on maintain public safety as a priority and preservation and resurfacing/rehabilitation programs as a second priority. Preservation and resurfacing opportunities that are missed will escalate in cost by several hundred percent depending on site specifics.
- Develop the financial plan in order that there is sufficient funding to maintain the condition of the asset group.
- Adjust / confirm the plan and funding requirements annually.

6.1 Roads

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

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

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

1. The information and budget recommendations included in this report to further develop the corporate Asset Management Plan.

- 2. The cycle for review of the road system should be continued reviewing the entire system on a two to four year cycle.
- 3. Programming should be reviewed to ensure that resurfacing and preservation programs are optimized.
- 4. Traffic counts should be updated and repeated on a regular basis. The counting should include the percentage of truck traffic.
- 5. Further analysis should be undertaken on the Gravel Road system, with respect to the potential for conversion to a hardtop surface.
- 6. A field audit of the road system should be conducted to confirm attribute data and identify potentially substandard alignments.
- 7. The gravel road sections should be reviewed for opportunities for conversion to hard top.
- 8. Boundary Roads should be confirmed and reviewed to ensure appropriate agreements are in place.
- 9. The asset management strategy, for the foreseeable future, is included in this report.

Priority Rating vs. Condition Rating

Information in a database may be sorted and analyzed in numerous ways. Understanding what information a data field represents, is key to the analysis. OSIM has many rated and calculated data fields and thus provides for many ways to sort data.

From a more current asset management perspective, project selection should be predicated by public safety and then condition Figure 37 is taken from a document that describes pavement management principles however, the concepts may be applied to other assets such as structures to optimize available funding. Figure 36clearly illustrates the financial advantages of managing an asset by performing the right treatment at the right time of the asset life cycle. If appropriate strategies are not undertaken at the correct time, there is a less effective usage of the available funding. For example bridge deck waterproofing and repaving and minor deck rehabilitations performed at the appropriate condition will optimize funding and utilize the full service life of the asset.



Figure 37: Treatment Cost vs. Deterioration

If an agency's budget is fully funded, the programming will include reconstruction, resurfacing, and preservation programs. Prioritization within the different programs will vary as demands are different.

For structures, resurfacing and bridge deck waterproofing and rehabilitations offer a very good return on investment. When bridge structures are rehabilitated the opportunity to convert the structure to an integral or semi-integral structure will improve performance of over the longer term.

6.2 Roads Recommendations

In addition to the budgetary recommendations, the following recommendations are provided for the management of the road and structures inventories;

- 1. The cycle for review of the structures inventory should be continued, reviewing the entire inventory on a two year cycle.
- 2. The average annual contribution for the structures should be increased to \$294,500 based on a 50 year design life.
- 3. Capital reserves and an annual contribution should be established for the structure assets.
- 4. Structures posted with a load restriction should be reviewed for further action and operational impediments.
- 5. Programming for the structures inventory should be reviewed to ensure that preservation and other service life extension treatments are optimized.

6.3 Structures

The budget recommendations bear a direct relationship to the value of the structures inventory. 4 Roads estimates the cost to replace the structures inventory at **\$\$14,048,820**. The budget recommendations provided in this report are based on the constitution of the structures inventory. This represents an opportunity to develop a financial plan in concert with the asset management plan, for a phased implementation.

The estimated replacement/depreciation value of the CoCR Bridge and Culvert structures Inventory the current standard is **\$\$14,048,820**. The estimated capital depreciation is **\$280,976** based on a 50 year design life or **\$187,300** per year based on a 75 year service life. The annual capital depreciation is estimated based on replacement cost and the design life or service life, and would best be described as an 'Accountaneering' number. This estimate is strictly for structures over 3m span does not include any appurtenances. The typical design life for a bridge or culvert structure is 50 years if constructed prior to 2000.

The estimated replacement/depreciation is based upon the replacement value of the structures inventory over a 50-or 75 year life cycle. However, the life cycle can only be a reality if maintenance and preservation treatments such as waterproofing and resurfacing and minor rehabilitations delivered at the appropriate time. Inadequate maintenance and preservation will result in premature failure and increased life cycle costs.

Bridge Deck and Superstructure Lifecycle Maintenance

After construction of a new bridge, some initial maintenance/rehabilitation efforts will have to be undertaken within 12 to 25 years to maintain the lifecycle of the structure. Generally, the pavement and bridge deck waterproofing should be replaced in the 12 to 20 year timeframe, with a deck rehabilitation being undertaken in the 25 to 35 year timeframe. Failure to follow a preventive and proactive maintenance schedule of timely repairs and rehabilitations will result in higher than expected repair costs, or worse, missing the optimum rehabilitation window completely.

The following graph is from the Transportation Association of Canada's (TAC) Bridge Management Guide and illustrates what is referred to as a deterioration curve.





Similar to roads, structures (mostly bridge structures require major maintenance throughout the life cycle, in order to optimize and maximize the asset life span. Bridges require resurfacing, waterproofing and rehabilitation at the appropriate interval, dependent upon construction type and wearing surface. Different agencies categorize the expense differently, usually dependent upon the dollar value; however, bridge lifecycle minor and major rehabilitations are essentially a maintenance activity.

Given the aforementioned, and the information with respect to structure type, the funding for the annual rehabilitation program should be approximately **\$13,500** per year on average, in order to maximize life expectancy from the bridge and culvert inventory this amount would be in addition to the annualized value for capital depreciation/service life.

6.4 Water and Wastewater and Storm Sewers

This asset management plan serves as a strategic roadmap to assure sound asset management practices, while recognizes resource limitations and the desire for meeting levels of service at an acceptable level of risk. It has been developed in accordance to the Building Together: Guide for Municipal Asset Management Plans document. At the highest level, the goals of this plan are:

• Safe and efficient infrastructure.

- Optimal use of existing infrastructure.
- Protection of natural features.
- Sustained financing to support rehabilitation and growth needs.

Key responsibilities include:

- The development of strategic infrastructure programs;
- City-wide condition assessment of assets;
- Monitoring life cycle trends and deterioration models;
- Identifying and monitoring the operational, economic, risk and financial impacts of various
- program methodologies.
- Forecasting and scheduling of rehabilitation and reconstruction activities;
- Developing an integrated 3 year detailed budget;
- Developing a 10 20 year long range projected budget;
- Coordinating capital budget submissions from all other divisions of Public Works;
- Developing strategic reporting and communication of infrastructure issues through the State of the Infrastructure reports and the Asset Report Card.

While the city has established a system for collecting data and assessing conditions for its systems, there is a need for a coherent asset management system. The main parts of this system include better staffing (recruiting additional staff to handle asset management); acquisition of an adequate computerized system for managing asset data, work planning, operational data and maintenance activities; and conducting a set of studies to assess the conditions of the assets as the basis for making decisions about priority projects. The City's approach to managing assets should emphasis clear definition and sustained analysis of Levels of Service. This is not limited to the physical conditions and their linkage to the identification of the optimal life cycle interventions, but also the service levels and reliability. This includes a suitable system to track service interruption, communicate with local community to report service levels. Without a fully documented LOS measures, there could be discrepancies between expectation of the (higher levels of) service and what is actually being delivered or can be afforded. Levels of Service can be used:

- To inform customers of the proposed type and LOS of service to be offered;
- To identify the costs and benefits of the services offered;
- To assess suitability, affordability and equity of the services offered;
- As a measure of the effectiveness of the asset management plan

The city should also use/implement prioritization techniques, including deterioration modeling and risk analysis should be used to guide decision making. Of great importance is to train staff on the collection of data in consistent, continuous and reliable manner.

Data related to the water and wastewater networks are managed and maintained in a GIS-based system. A CCTV program is in place to obtain objective condition data-mainly for the wastewater. However due to funding challenges to date, only a fraction of the networks has been inspected. While formal condition ratings do not exist for all of the facilities, preventative and reactive maintenance have been carried out.

The strategic objectives for the water and wastewater sector include the following items:

- <u>Rolling out the city's water and wastewater facilities asset management program</u>: over the next few years will standardize practices related to data management, asset condition rating, performance management and investment planning for the City's water and wastewater infrastructure.
- <u>Improve alignment between amp and financial plans</u>: continuous improvement is sought to enable the asset management planning process to better inform the City's budget preparation process and facilitate an evidence-based discussion around service levels, funding and affordability of service.
- <u>Collect user input regarding LOS</u>: As the City establishes its desired LOS, it needs to review the key factors involved in the delivery of that service, and the interactions between those factors. In addition, it is important to utilize a number of key performance metrics and track them to gain a better understanding of the current LOS supplied.
- <u>Update and integrate the data and software management systems</u>: The city needs to acquire an
 asset management software system. The city needs to adopt consistent standards in data
 representation and create interoperability between its existing datasets. The city needs to adopt
 a consistent model for condition rating and use this to upgrade its datasets.

7 FINANCIAL STRATEGY AND PLAN

7.1 Roads

Program funding recommendations are a function of the dimensional information, surface type, roadside environment, functional class of the individual assets and current unit costing. Recommended funding for the road system should include sufficient capital expenditures that would allow the replacement of infrastructure as the end of design life is approached, in addition to sufficient funding for maintenance, to ensure that that full life expectancy may be realized.

Budgetary recommendations in this report do not include items related to development and growth; those should be considered as additional. Generally, that type of improvement or expansion to the system would be funded from a different source, such as Development Charges.

The budget recommendations bear a direct relationship to the value of the road system. 4 Roads estimates the cost to replace the road system, to its current standard, at **\$147,923,500**. The budget recommendations provided in this report are based on the constitution of the road system. This represents an opportunity to develop a financial plan in concert with the asset management plan, for a phased implementation.

The estimated replacement/depreciation value of the Town road system to the current standard is **\$147,923,500**. This equates to an annual capital depreciation of **\$2,958,500**. The annual capital depreciation is strictly a function of the replacement cost and the design life, and would best be described as an '*Accountaneering*' number. This estimate does not include bridges, culverts, cross culverts less than 3 m, sidewalks, or street lighting. The typical design life for a road structure is 50 years before reconstruction/replacement. If the life span is 50 years, then 2% of the replacement cost should be the annual contribution to the capital reserve, to ensure that it can be reconstructed in that time frame.

The estimated replacement/depreciation is based upon the replacement value of the road system over a 50-year life cycle. However, the 50-year life cycle can only be a reality if maintenance and preservation treatments such as crack sealing and hot mix asphalt overlays are delivered at the appropriate time. Inadequate maintenance and preservation will result in premature failure and increased life cycle costs.

Analogies to houses and cars sometimes make road maintenance easier to understand. If a house does not have the roof renewed within the correct time frame, there will be damage to the structure, below the roof, and if this is not dealt with, it will result in a rapid deterioration of the house. Similarly, roads require crack sealing and resurfacing at the appropriate time, during the life cycle, in order to maximize the life expectancy of the asset. Preservation and maintenance extend the useful life of the pavement, reducing life cycle costs.

Hot Mix Resurfacing

Roads require major maintenance throughout the life cycle, in order to optimize and maximize the asset life span. Roads require resurfacing at the appropriate interval, for the respective class of road. Different agencies categorize the expense differently, usually dependent upon the dollar value; however, resurfacing is essentially a maintenance activity.

Resurfacing schedules are dependent upon traffic loading and the percentage of commercial traffic. Higher traffic volumes and percentages of commercial traffic shorten the interval between resurfacings. Optimal resurfacing intervals will vary from ten to twenty years (or more), depending upon the road function, classification, and quality of design and construction.

The Hot Mix Asphalt Resurfacing recommendation in this report is based upon the distribution of the Town's hot mix asphalt inventory. As such, the optimal budget calculation will focus on the 19-year interval (18.98), for hot mix roads.

Given the aforementioned, and the information with respect to surface type contained in funding recommendations, the funding for the annual resurfacing program should be **\$1,447,300** per year on average, in order to maintain the system at its current adequacy level. This estimate is for the major resurfacing work only, and does not include any estimated costs for other pavement preservation activities or programs. Table 79 identifies the distribution of hot asphalt roads by asset class and the basis for the recommendation for the annual program budget recommendation.

Asset		Average	Asset	Weighted
Class	L.C. Yrs	Annual Cost	Qty.	Average
A/C-R	20	0	0	0
A/C-S	20	0	0	0
A/C-U	20	0	0	0
HCB1-R	10	0	0	0
HCB1-S	10	0	0	0
HCB1-U	10	3902.14	0.09	0.006474
HCB2-R	12	0	0	0
HCB2-S	12	0	0	0
HCB2-U	12	18603.83	0.54	0.046612
HCB3-R	15	69076.74	7.48	0.807078
HCB3-S	15	72209.39	7.3	0.787656
HCB3-U	15	174448.6	7.31	0.788735
HCB4-R	20	242457.6	35.05	5.04244
HCB4-S	20	366326.7	50.24	7.227737
HCB4-U	20	500243.1	31.01	4.461229
TOTALS		1,447,268	139.02	19.16796

Table 79: Hot Mix Asphalt Roads by Asset Class and Life Cycle

Gravel Road Resurfacing

When MTO was providing maintenance subsidy, the standard practice for gravel road maintenance was to place approximately 75 mm of gravel on each gravel road section, every three years. Since the conditional grant system was discontinued, a large number of municipalities have reduced the amount of gravel that has been placed on gravel roads, to the point where the gravel roads in the system are a major maintenance problem, particularly in the latter part of the winter and early spring. If the granular base is not replenished, the road structure will disappear through normal usage, and the remaining gravel typically becomes contaminated by other materials, such as the native soil and winter sand.

Municipality has 111.95 km of gravel surfaced roads. Using the City's benchmark costing, the annual gravel resurfacing program size should be **\$638,000** per year, based on adding 75 mm of gravel every three years. This estimate does not include costs for re-grading, dust control, or gravel road conversion.

Crack Sealing

Crack sealing is a preservation activity that extends the life of a hot mix asphalt surface. A program estimate is provided based on crack sealing one metre per two lane metre of pavement every 5 years at the unit cost provided by the Town. Based on that premise, the recommended budget for crack sealing is **\$55,900**.

Performance Modeling- Budget Effect on System Performance

Asset Management Plan and Strategy Analysis

The asset management plan is a function of the strategy and available financing. The development process for all elements is iterative, concurrent and holistic on a number of levels. It is complex. The provincial guidelines for the preparation of an AMP indicate that the following must be considered;

- Options must be compared on Lifecycle cost- the total cost of constructing, maintaining, renewing and operating an infrastructure asset throughout its service life. Future costs must be discounted and inflation must be incorporated.
- Assessment of all other relevant direct and indirect costs and benefits associated with each option.
 - Direct benefits and Costs
 - Efficiencies and network effects
 - Investment scheduling to appropriately time expansion in asset lifecycles
 - Safety
 - Environmental
 - Vulnerability to climate change
 - Indirect Benefits and Costs
 - Municipal wellbeing and costs
 - Amenity values
 - Value of culturally or historically significant sites
 - Municipal image
- Assessment of Risks associated with all potential options. Each option must be evaluated based on its potential risk, using an approach that allows for comparative analysis. Risks associated with each option can be scored based on quantitative measures when reasonable estimates can be made of the probability of the risk event happening and the cost associated with the risk event. Qualitative measures can be used when reasonable estimates of probability and cost associated with the risk event cannot be made.

Significant effort (and expense) will be required to meet all of these requirements.

Performance Model Overview

A properly developed performance model will satisfy the majority of the requirements identified in the foregoing. Key elements of a Performance Model will include;

- Deterioration Curves identifying anticipated deterioration of an appropriately constructed asset over the life cycle of the asset
- 'Trigger' points throughout the deterioration curve identifying appropriate treatments at condition ranges
- Current costing for all treatments identified

To capture the essence of the provincial requirements, development and use of a Performance Model is recommended. Through modeling and the resultant outputs the following may be addressed;

- Review of options and lifecycle effects based on a Return on Investment Analysis
- Efficiencies and network effects

• Budget requirements to achieve LOS goals

It is respectfully suggested that a 10 year AMP can be developed through a Performance model, however, 4 Roads is of the opinion a number of other requirements that the province has identified should not be addressed until they reach the project stage. Further, a number of those requirements would be addressed through a Class Environmental Assessment process.

Through performance modeling appropriate budget levels, programming and associated costs can be determined, delivering key elements of any plan that can be refined or revisited as circumstances change. Once a model is developed, then the effect of any alternatives may also be measured.

System Performance at Various Budget Levels

This report includes budget recommendations for various aspects of the programming that are typical to road departments. System performance can be predicted based on the level of funding. 4 Roads has prepared four different 50-year performance models for the road system. The models have been prepared with the following parameters:

- Zero budget demonstrates the effect of no work being performed on the road system and how quickly it will deteriorate
- Existing budget –?????
- Maintenance Budget This model selects treatments in any given year that will provide the best Return on Investment and maintain the system at its' current condition level. The result is a significant variance in annual funding levels.
- Preservation budget This includes the total dollar value of the budget recommendations for Hot Mix Asphalt resurfacing, surface treatment, crack sealing, and gravel road resurfacing
- Capital Depreciation / Amortization budget- full replacement cost of the road system annualized

The Weighted Average Physical Condition of the road system is currently 53.2. The performance model calculations all begin with the current Physical Condition and for purposes of the graphing, the year-end Physical Condition is displayed based on the effects that the improvements have had on the overall condition of the road system.


Figure 39: Performance Modeling at Various Budget Levels

In reviewing the results of the performance models, it should be understood that, with the methodology being used, the trigger for a resurfacing activity is a Physical condition of 70. The existing system has an average Physical Condition of 53.2. At appropriate funding levels the system condition improves over time. However, the improvement in terms of the Physical Condition will only increase to approximately the mid 80's.

The deterioration curves that have been used consider an average/typical performance for the various road classes. When used in the model at a reasonable funding level the overall average system condition will remain at a similar level as the model will treat the pavements as perpetual. This concept is illustrated in Table 80 using City of Clarence-Rockland Section 1284, BASELINE, chemin, ST-JEAN, rue-to-LACASSE, chemin

Section 1284, BASELINE, chemin, ST-JEAN, rue-to-LACASSE, chemin										
			Start	End		Start				
Year	Improvement	Cost	Cond	Cond	Yrs Hold	Value	End Value	ROI		
2014	PR2	352748	30	100		580369	1934562	3.87		
2019	CRK	2842	97	97	2	1876525	1876525	7.76		
2035	R1	196980	69.47	97		1343940	1876525	2.96		
2036	CRK	2842	97	97	2	1876525	1876525	7.76		
2050	MICRO	73892	74.48	74.48	3	1440862	1440862	0.65		
2055	R1	196980	69.47	97		1343940	1876525	2.96		
2056	CRK	2842	97	97	2	1876525	1876525	7.76		

Table 80	D: Section	1284 Sample	Section	Life Cy	cle
		•			



Figure 40: Graphical Representation of a Typical Life Cycle

For the purposes of a short to mid-term plan considering the pavement as performing as a perpetual pavement does not pose a problem. The aggregate road base will deteriorate over time however, the time frame where that may be contributory to the road decline would be beyond 50 years. Condition data is collected regularly and monitoring and analysis would alert the municipality to changes that are occurring.



Figure 41: 2 Annual Expenditures Budget to Maintain:

Figure 42 illustrates the typical effect on budget requirements by holding the condition of the system at a specified level. If the orange line represented the average annual expense, the budget years above that line would require debt financing or funding from reserves. Conversely, in those years where the funding requirement is less than the annual average then the unspent funds would accumulate in a reserve.

Deterioration curves developed by 4 Roads have been utilized for development of funding and prediction models, and based on our experience with a large cross-section of municipalities and resultant feedback, we believe that those deterioration profiles are representative. The models indicate that the overall condition of the road system will continue to increase over time to a point where the average physical condition will be in the mid 70's range. A physical condition beyond that level may be indicating an over-expenditure/inefficiency in the programming. An average physical condition above 70 would indicate that the average road only requires maintenance.

In a number of the models created for this project, all of the funding will not be spent each year once the average rises above 70. The deterioration curves that have been used consider an average/typical performance for the various road classes.

Record of Assumptions -Performance Modeling

Pavement Classification for Modeling

In order to develop budget recommendations, 4 Roads adds an additional classification of roads differentiated by surface type, roadside environment and traffic volume. It is anticipated that each road classification will deteriorate at a different rate. Differentiation by roadside environment within a classification permits calculation of the different replacement costs to reflect the servicing and feature differences.

Accet Class	Subture	Material	Roadside	AADTLow	
Asset Class	Subtype	Waterial	EIIVU	AADILOW	AADT HIgh
A/C	All	A/C	R	1	100,000
CM1	All	C/M	R	1	3,000
CON	All	CON	R	1	100,000
GST1	All	G/S	R	1	10,000
HCB1	All	НСВ	R	20,000	100,000
HCB2	All	НСВ	R	10,000	20,000
НСВ3	All	НСВ	R	1,000	10,000
HCB4	All	НСВ	R	1	1,000
ICB	All	ICB	S	1	3,000
LCB1	All	LCB	R	1	5,000

Table 81: Road Asset Classes

Figure 43 illustrates treatment selection by time and asset classes for hot mix roads. Typical treatments and/or improvements have been superimposed over the deterioration curves, to illustrate the general timelines for implementing the treatments. Other road asset classes have been treated similarly. An important concept to remember is that as a road deteriorates the cost of rehabilitation increases. The deterioration curves, improvement types, current unit costs and current condition ratings are essentially the assumptions used to develop budget and programming recommendations in this report. Appendix E provides detail on the deterioration curves for all road asset classes.



Figure 42; Treatment Selection vs. Condition

10 Year Program

Table 82 includes the results of a 10 Year program based on the ROI Performance model at the Preservation Budget level of \$2.23m per year.

The resultant project selection from the model may vary from the current program and forecast as the model will select projects based on best ROI initially and then expend remaining funds on other projects. The model can be a starting point for program development but has to be metered with decisions than cannot be easily introduced into a model.

The resultant project selection from the model may vary from the municipality's current program and forecast as the model will select projects based on best ROI initially and then expend remaining funds on other projects. The model can be a starting point for program development but has to be metered with decisions than cannot be easily introduced into a model such as cross asset integration.

Year											
Improvement	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	Grand Total
BS		8,434		221,180	14,759		1,065,412		693,038	244,576	2,247,399
CRK	32,544	12,742	3,952	55,427	4,354	8,602	13,366	10,184	19,820	11,906	172,897
GRR		2,201	2,713		7,651				3,686	10,085	26,336
GRR2	398,020	495,476	694,682	138,410	774,315	633,537	17,940	525,503	92,088	740,870	4,510,841
MICRO				1,224		1,248	3,984	3,648			10,104
PR2	382,288	52,627	870,823	618,860	310,687	24,378	189,611		559,617	22,121	3,031,012
R1	712,208	916,418	436,042	159,908		788,573	443,172	1,692,928	398,614	1,203,220	6,751,083
R2	707,638	744,793	132,768	42,523					465,094		2,092,816
RNS			91,992	994,801	1,121,211	776,014	499,316				3,483,334
Grand Total	2,232,698	2,232,691	2,232,972	2,232,333	2,232,977	2,232,352	2,232,801	2,232,263	2,231,957	2,232,778	22,325,822

Table 82: Performance Model Summary - Ten Year Program

9 RECOMMENDATIONS

9.1 Roads Recommendations

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

- 1. The information and budget recommendations included in this report to further develop the corporate Asset Management Plan.
- 2. The cycle for review of the road system should be continued reviewing the entire system on a two to four year cycle.
- 3. Programming should be reviewed to ensure that resurfacing and preservation programs are optimized.
- 4. Traffic counts should be updated and repeated on a regular basis. The counting should include the percentage of truck traffic.
- 5. Further analysis should be undertaken on the Gravel Road system, with respect to the potential for conversion to a hardtop surface.
- 6. A field audit of the road system should be conducted to confirm attribute data and identify potentially substandard alignments.
- 7. The gravel road sections should be reviewed for opportunities for conversion to hard top.
- 8. Boundary Roads should be confirmed and reviewed to ensure appropriate agreements are in place.
- 9. The asset management strategy, for the foreseeable future, should be developed along the as per the Funding recommendations for all assets.

9.2 Structures Recommendations

In addition to the budgetary recommendations, the following recommendations are provided for the management of the road and structures inventories;

- 1. The cycle for review of the structures inventory should be continued, reviewing the entire inventory on a two year cycle.
- 2. The average annual contribution for the structures should be increased to \$294,500 based on a 50 year design life.
- 3. Capital reserves and an annual contribution should be established for the structure assets.
- 4. Structures posted with a load restriction should be reviewed for further action and operational impediments.
- 5. Programming for the structures inventory should be reviewed to ensure that preservation and other service life extension treatments are optimized.

9.3 Water. Wastewater and Storm Sewer Recommendations

The City provides drinking water to over 6000 customers. Expected growth rate is 2% (DFA 2011). The City recovers its costs from customers through annual fixed charges and a consumption rate that is applied to the metered volume of water consumed. The City has retained (under contract) the Ontario Clean Water Agency (OCWA) to operate and maintain the Rockland Water Treatment Plant and Distribution System. Expected operations costs for WTP is \$1,624,499 with an annual inflation rate of 3% (DFA 2011)

It should be noted that the City does not have a current Water Rate Study from which future rates and other relevant information could be obtained. Therefore, a high level assessment was undertaken for the sole purposes of preparing trends and general projections. These rate projections do not consider all factors that may need to be fully assessed in a comprehensive study. Accordingly, it is recommended that the City undertake a water rate study to fully assess and develop the future rates and charges that consider the full cost of managing the water system.

<u>Growth requirements</u>: Clarence-Rockland experienced 11.5% growth between 2006-2011, while the province only grew by 5.7% (Statistics Canada census 2011). The boom in Ottawa may have influenced this. However, this is not slated to continue. The city growth forecast study recommends that "the residential growth forecast be an addition of 175 new units per year for the next 25 years. The 10-year historic building activity is producing on average 208 units annually. That amount has been reduced to 175, which reflect the economic downturn of approximately 15%. There is confidence that the 175 can be attained for the next 12.5 years

since 2,454 units have been submitted into the building permit process to date...A recommendation that the non-residential growth forecast be 35,000 square feet of activity. The forecast is lower than the previous development charges study however reflective of the historic development trend. The forecast is supported by the growth that is in the planning process at early stages."

While the city will continue to experience growth in the foreseeable future, growth rates do not automatically transfer to equal increase in consumption and, consequently, "new" water and sewer lines/capacity. This is mainly due to three reasons:

- 1. Consumption rates: recycling and public awareness have caused the overall water consumption rates fall steadily in Ontario over the last 5-10 years. As such not much extra capacity is needed at the treatment plants (at least).
- 2. Housing styles: newer developments in Ontario suburbia tend to be more dense.
- 3. Urban renewal, as many cities age, many of the new housing units are built within the city limits (over brown fields) that do not need new services.

However, growth has costs that are not necessarily related to increase in consumption. For example, in 2014 the city allocated \$1.2 million for a wastewater plant screen, a \$200,000 for storm water master plan, and \$760,000 for new storm water systems—all to accommodate new growth.

<u>System replacement</u>: typically, this is estimated that a municipality will replace between 0.5% and 1.0 %. This depends on the conditions of the pipes and the policy for asset management. Costs of replacement, expansion and growth are different. Replacement involves opening (assuming that trenchless technology is not used) the opening of existing surface infrastructures such as roads and sidewalks and their replacement as would the expansion of existing systems. A comprehensive comparative study (Allouche, 2002) found that "Canadian municipalities spend approximately \$19.2 per capita per annum on the replacement and rehabilitation of existing municipal sewer networks, an amount slightly higher than that reported for the 1996-97 construction season of \$18.21 per capita." Considering inflation, this can now account for \$20.5. Smaller municipalities can spend more given the typical lower density. The report found that in 2002, the rate fluctuated between as low as \$2.6 and \$54 per capita for municipalities with less than 100,000 inhabitants.

<u>Regular & Emergency Maintenance Costs</u>: In 2014, the water repairs budget in 2014 was \$540,000. Sanitary sewer repair budget was only \$73,000. The five year capital forecast estimates a capital budget for maintenance for the Water treatment plant, booster station and towers at

\$115,000 /year. However, in 2011, the plant underwent major repairs (mainly to the tower) that cost about \$1.4 million. Typical life cycle of a tank is 20 years.

The emergency repair of a pipeline could cost up to 50% more than the same repair under normal circumstances. The need for emergency repairs of buried pipes can be significantly reduced if critical sections could be identified and repaired before a catastrophic failure occurs. Thus, the utilization of funds can be optimized to dramatically reduce the overall cost of maintenance.

<u>Operations costs</u>: this covers the typical costs of equipment, materials, and staff needed to run the system. Additionally, investments in software and data collection hardware and personnel are now a major part of the operations costs. Energy is also a major cost in the operations given the steady increase in energy prices. Further, with the increasing rate of leakage, municipalities have to increase pressure to avoid contamination. The Ontario Municipal Benchmarking Initiative (OMBI) traces the operation costs of water and wastewater facilities across Ontario. It reported an average of about \$16,000/km for operations of water distribution system. Similar values are reported for sewer collection systems. Municipalities providing service over a broad geographic area generally have higher operating costs due to the number and type of water treatment facilities operated and the distance between the individual systems. This has an impact on the daily operating costs for both the treatment and distribution of drinking water.



Figure 43: Estimated Water Infrastructure Expenditures



Figure 44: Estimated Wastewater Infrastructure Expenditures

9.4 Buildings and Parks

With the completion of the preliminary asset management plan, the City of Clarence-Rockland may wish to consider the continuation of the comprehensive asset management process by engaging in the following activities.

- 1. Assign the responsibility for the *corporate wide real property asset inventory* to the group currently responsible for the majority of real property assets within the City (Parks and Recreation Department).
- 2. Further to the current CN Watson PSAB 3150 Compliance Report (2010), consider developing and <u>maintaining</u> a broader comprehensive inventory of all real property assets grouped according to the following levels;
 - a. A detailed listing of all SITES on which the City has, or could construct, future real property assets.
 - b. A detailed listing of all FACILITY TYPES currently (or proposed to be) located on City Sites.
 - c. A detailed listing of "nameplate" data on all FACILITIES currently established on City Sites (this would include age, area (SqFt.), site acreage, ownership and other details).
 - d. A detailed listing of all anticipated capital asset renewal (life-cycle) EVENTS for City facilities <u>beyond</u> those identified in the 20 year forecast and presented herein as part of a "preliminary asset management plan".

- 3. Design and implement a validation and prioritization process to be applied to all existing and future capital life-cycle renewal events for City real properties.
- 4. Direct City Staff to <u>maintain</u> the 20 year forecast list of life-cycle renewal events, including the following process steps;
 - a. On an annual basis and prior to the submission of the budget, revisit the events forecast for the next calendar year and confirm the continuing need for same and the accuracy of the cost estimate for each item. (Validation)
 - b. Add any new events which may be required and not identified in the forecast. Delete or move any events that are not required or can be restated to a later year.
 - c. Prioritize each event in the forecast on the basis of the risk and opportunity criteria provided herein.
 - d. Submit the list of validated and prioritized events for Management and Council consideration (likely in the consolidated asset plan document for the next budget year).
 - e. Depending on funding availability modify the list of events, moving those that "did not make the cut" into future years on the event table.
- 5. Develop and implement a preventive maintenance program that addresses the inspection and servicing requirements for heating, ventilation, air-conditioning and specialized equipment in City buildings.
- 6. Develop a document outlining and seeking Council approval for real property asset management <u>policies</u> to be implemented as early as 2014.
- 7. Develop a method to establish the contemporary reproduction and effective replacement values of each facility (structure or property element) located on every City site.
- 8. Develop an FCI Index for all Buildings identified in this report. In particular, the proper definition of an FCI (Facility Condition Index) requires that each facility have the following data points established;
 - a. The **gross area** of each building, typically expressed in gross square feet (Gsf).
 - b. The standard **facility type** for each building, which does not necessarily align with the given name pf the building. (For example, the "Hammond Recreation Centre" is a Community Building (facility type) even though its name suggests otherwise.
 - c. A clear understanding of the value of actual backlogged Capital Life Cycle Renewal Works for each building.
 - d. The estimated **Replacement Value** (in contemporary dollars) for each building in the inventory.

The standard definition of the Facility Condition Index is as follows;

FCI = (summary of all backlogged maintenance work) divided by (the current replacement value of the building)

At present there is insufficient data available to determine the actual value of backlogged capital *LCR* work, and the accurate replacement values for all the facilities in the inventory.

10 FINANCEING STRATEGY ALL ASSETS

Based upon all of the details of this report and the findings in terms of asset condition and needs, the following provides a summary of all assets and a recommended long term financial plan.

Asset Type	Length/quantity	Replacement Cost	Cost Per household
Roads	250.80	\$148,563,975	\$16,890
Structures	2,246.00	\$14,048,820	\$1,597
Water Distribution System	132.20	\$72,791,220	\$8,275
Sanitary Sewers	59,427.56	\$50,607,898	\$5,754
Storm Sewers	72,837.82	\$54,760,895	\$6,226
Facilities & Parks	50	\$53,710,069	\$6,106
Vehicles & Equipment	56	\$7,635,364	\$868
Total		\$401,479,265	\$45,643

Table 83L Replacement Costs of all Assets

Asset Type	Current need	1-5 years		6-10 years		Over 10 years	
Roads	\$ 36,279,982	\$	9,693,458	\$	3,723,427	\$	98,867,108
Bridges	\$ 1,628,000	\$	2,048,000			\$	10,372,820
Water Distribution System		\$	790,605			\$	72,000,615
Sanitary Sewers	\$ 363,561	\$	812,486	\$	78,393	\$	49,353,458
Storm Sewers	\$ 562,937	\$	812,937	\$	2,234,896	\$	51,150,125
Facilities & Parks	\$ 236,000	\$	4,554,000	\$	2,809,000	\$	3,847,000
Vehicles & Equipment	\$ 2,183,700	\$	950,384	\$	1,302,705	\$	3,198,575
Total Needs	\$ 41,254,180	\$	19,661,871	\$	10,148,421	\$	288,789,700

Table 84: Replacement based on Time of Need

ASSET MANAGEMENTPLAN

Asset Type	Current need	1-5 years	6-10 years	Over 10 years
Roads	24%	7%	3%	67%
Bridges	12%	15%	0%	74%
Water Distribution System	0%	1%	0%	99%
Sanitary Sewers	1%	2%	0%	98%
Storm Sewers	1%	1%	4%	93%
Facilities & Parks	2%	40%	25%	34%
Vehicles & Equipment	29%	12%	17%	42%
Total Needs	11%	5%	3%	80%

Table 85: Replacement - %age of Need based on Time frame

Tables 83 to 85 show a significant need "Now" that clearly the City cannot address in one year. The following chart provides for a recommended approach which allows for some preservation of current level of service and reserves for future replacement. It is noted that the current level of funding is inadequate at \$4.5 million per year. Therefore, the City needs to review these needs and ascertain the best option

	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	TOTAL
Roads	5,099,600	5,099,600	5,099,600	5,099,600	5,099,600	5,099,600	5,099,600	5,099,600	5,099,600	5,099,600	5,099,600	5,099,600	5,099,600	5,099,600	5,099,600	5,099,600	5,099,600	5,099,600	5,099,600	5,099,600	101,992,000
Bridges	1,628,000	435,500	435,500	435,500	435,500	435,500	544,541	544,541	544,541	544,541	544,541	544,541	544,541	544,541	544,541	544,541	544,541	544,541	544,541	544,541	11,429,074
Water Distribution System	158,121	158,121	158,121	158,121	158,121	123,655	123,655	123,655	123,655	123,655	123,655	123,655	123,655	123,655	123,655	127,001	127,001	127,001	127,001	127,001	2,662,160
Sanitary Sewers	540,770	540,770	540,770	540,770	540,770	540,770	540,770	540,770	540,770	540,770	540,770	540,770	540,770	540,770	540,770	540,770	540,770	540,770	540,770	540,770	10,815,401
Storm Sewers	513,255	513,255	513,255	513,255	513,255	513,255	513,255	513,255	513,255	513,255	513,255	513,255	513,255	513,255	513,255	513,255	513,255	513,255	513,255	513,255	10,265,107
Facilities & Parks	445,000	964,000	557,000	651,000	407,000	1,530,000	270,000	628,000	254,000	291,000	1,366,000	391,000	597,000	416,000	171,000	936,000	87,000	179,000	228,000	842,000	11,210,000
Vehicles & Equipment	472,200	482,000	625,000	420,700	538,300	515,400	603,189	530,000	394,300	636,275	669,500	698,500	525,000	525,000	525,000	525,000	525,000	525,000	525,000	525,000	10,785,364
Total	8,856,946	8,193,246	7,929,246	7,818,946	7,692,546	8,758,180	7,695,010	7,979,821	7,470,121	7,749,096	8,857,321	7,911,321	7,943,821	7,762,821	7,517,821	8,286,168	7,437,168	7,529,168	7,578,168	8,192,168	159,159,105
Current Level of Budget	4,500,000	4,500,000	4,500,000	4,500,000	4,500,000	4,500,000	4,500,000	4,500,000	4,500,000	4,500,000	4,500,000	4,500,000	4,500,000	4,500,000	4,500,000	4,500,000	4,500,000	4,500,000	4,500,000	4,500,000	90,000,000
Infrastructure Deficit	-4,356,946	-3,693,246	-3,429,246	-3,318,946	-3,192,546	-4,258,180	-3,195,010	-3,479,821	-2,970,121	-3,249,096	-4,357,321	-3,411,321	-3,443,821	-3,262,821	-3,017,821	-3,786,168	-2,937,168	-3,029,168	-3,078,168	-3,692,168	-69,159,105

 Table 86: Recommended Long term financial plan



Figure 45: Funding vs. Need

APPENDIX A – Inventory Manual Methodology Overview

Asset Condition Rating Methodology

The provincial requirements for AMP's include asset condition assessment in accordance with standard engineering practices. The road section reviews follow the methodology of the Ministry of Transportation Inventory Manual for Municipal Roads, 1991.

Inventory Manual History

From the 1960's until the mid-1990's, the Ministry of Transportation (MTO) required municipalities to regularly update the condition ratings of their road systems in a number of key areas. The process was originally created by the MTO, as a means to distribute conditional funding, on an equitable basis, between municipalities. The reports were referred to as a 'Road Need Study' (RNS) and were required in order to receive a conditional grant to subsidize the municipal road programs. After the introduction in the 1960's by the MTO the methodology evolved into the current format by the late 1970's. The most current version of the Inventory Manual is dated 1991, and is the methodology used for this report. The practice was discontinued by a number of municipalities, when conditional funding for roads was eliminated in the mid 1990's.

Inventory Manual Overview

The Inventory Manual Methodology is a sound, consistent, asset management practice that still works well today, and in view of the increasing demands on efficiency and asset management, represents a sound asset management that should be repeated on a cyclical basis. The road section review identifies the condition of each road asset by its time of need and recommended rehabilitation strategy.

The State of the Infrastructure Report summarizes the road system survey conducted or provided and provides an overview of the overall condition of the road system by road section, including such factors as structural adequacy, drainage, and surface condition. The study also provides an indication of apparent deficiencies in horizontal and vertical alignment elements, as per the Ministry of Transportation's manual, "Geometric Design Standards for Ontario Highways".

The report provides an overview of the physical and financial needs of the road system, which may be used for programming and budgeting. However, once a road section reaches the project design stage, further detailed review, investigation, and design will be required to address the specific requirements of the project.



Asset Management by its' very nature is holistic. Managing a road network based solely on pavement condition would be critically deficient in scope in terms of the information required to make an informed decision as to the improvements required on a road section.

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

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

Evaluations of each road section were completed generally in accordance with the MTO's *Inventory Manual for Municipal Roads* (1991). Data collected was entered directly into WorkTech's Asset Foundation software. Condition ratings, Time of Need, Priority Ratings, and associated costs were then calculated by the software, in accordance with the *Inventory Manual*. Unit costs for construction are typically provided by municipal staff.

Road sections should be reasonably consistent throughout their length, according to roadside environment, surface type, condition, cross section, speed limit, or a combination of these factors. As an example, section changes should occur as surface type, surface condition, cross-section, or speed limit changes.

The Condition Ratings, developed through the scoring in the *Inventory Manual*, classify roads as 'NOW', '1 to 5', or '6 to 10' year needs for reconstruction. The Time of Need is a prediction of the time until the road requires reconstruction, <u>not the time frame until action is required</u>. For example, a road may be categorized as a '6 to 10' year need with a resurfacing recommendation. This road should be resurfaced as soon as possible, to further defer the need to reconstruct.

Field data is obtained through a visual examination of the road system and includes: structural adequacy, level of service, maintenance demand, horizontal and vertical alignment, surface and shoulder width, surface condition, and drainage. The Condition Rating is calculated based upon a combination of other calculations and data.

To best utilize the database information and modern asset management concepts, it has to be understood that the Time of Need (TON) ratings are the estimated time before the road would require reconstruction. NOW needs are still roads that require reconstruction; however, it is not intended that '1 to 5' and '6 to 10' year needs are to be acted on in that timeframe. The '1 to 5' and '6 to 10' year needs are current candidates for resurfacing treatments that will elevate their structural status to 'ADEQ', and offer the greatest return on investment for a road authority(notwithstanding a drainage or capacity need, etc.).

ASSET MANAGEMEN TPLAN 'NOW' Needs

'NOW' needs represent the backlog of work required on the road system. A 'NOW' need is no necessarily the highest priority from asset management or return on investment perspectives. Construction improvements identified within this time period are representative of roads that have little or no service life left and are in poor condition. F Theoretically a resurfacing strategy is never a 'NOW' need, with the exceptions of a PR1 or PR2 treatment recommendation (Pulverize and resurface one or two lifts of asphalt) and where the surface type is inadequate for the traffic volume.

If a road with an improvement recommendation "resurface" deteriorates too far, it becomes a 'NOW' construction need. A 'NOW' need rating may be triggered by substandard ratings in any o the Structural Adequacy, Surface Type, Surface Width, Capacity, Drainage, or Geometrics data fields.

'1 to 5' Year Needs

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





'6 to 10' Year Needs

'6 to 10' Identifies road sections where reconstruction

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



'ADEQ'

An **'ADEQ'** rating encompasses a wide range of conditions that include the following:

- Roads with a traffic volume of less than 50 vehicles per day will be deemed adequate, and deficiencies on those roads are to be corrected with the maintenance budgets
- Gravel Roads with a structural adequacy rating that is not a 'NOW' need (more than 25% distress) is adequate; there is no further differentiation by time period
- Roads that do not require improvement other than maintenance



INVENTORY MANUAL TREATMENTS

Code	Description
R1	Basic Resurfacing
R2	Basic Resurfacing – Double Lift
RM	Major Resurfacing
PR1	Pulverizing and Resurfacing
PR2	Pulverizing and Resurfacing – Double Lift
BS	Tolerable standard for lower volume roads – Rural and Semi-Urban Cross sections only
RW	Resurface and Widen
REC	Reconstruction
RNS	Reconstruction Nominal Storm Sewers (Urban: no new sewer, adjust manholes, catch basins, add sub-drain, remove and replace curb and gutter, granular, and hot mix)
RSS	Reconstruction including Installation of Storm Sewers (New storm sewers and manholes in addition to the above)
NC	Proposed Road Construction
SRR	Storm Sewer Installation and Road Reinstatement
Micro*	Microsurfacing (Preservation Activity)
SST*	Application of a Single Surface Treatment
SSTplus*	Single Surface Treatment, Geometric Padding/Correction, Ditch improvements
DST*	Double Surface Treatment

*Additional Improvement Types not included in the Inventory Manual

Types of Improvements

For each Type of Improvement (Item 104), there are a number of specific road improvements that are included in the total cost relative to the Roadside Environment (Item 32) and the Design Class (Item 105). The computer will check a number of Items on the appraisal sheet in order to select the appropriate factors and cross section standards and then calculate the Bench Mark Cost. For example, a Resurfacing and Widening improvement coded under Item 104 is a significantly different road cross section and cost when applied to a rural road vs. an urban arterial. The computer will make all of the necessary checks to arrive at the recommended improvement cost.

Described in the following pages are the road improvements and associated construction activities costed for each Type of Improvement listed under Item 104. Please note, that the Codes **(CO)** – Carry

Over, (SR) – Spot Road, (SI) – Spot Intersection and (SD) – Spot Drainage are direct cost inputs and **are not** included in the Bench Mark Cost system.

(R1) - BASIC RESURFACING

(Single Lift of Hot Mix – 50 mm)

Rural and Semi-Urban Roads (Cross Section A)

- (a) Hot mix padding for 20% of area to be resurfaced
- (b) Single life of hot mix (50 mm)
- (c) Granular material to raise shoulders to new surface grade

Urban Roads – Granular Base (Cross Section B-1)

- Concrete Base (Cross Section C-1)

- (a) Minor base repairs for 10% of area to be resurfaced
- (b) Hot mix padding for 20% of area to be resurfaced
- (c) Curb removal and replacement on both sides for 50% of section length
- (d) Planning 1.0m of existing pavement along both curbs
- (e) Adjust manholes and catch basins to new surface grade
- (f) Single lift of hot mix (50 mm)

(R2) - BASIC RESURFACING

(Double Lift of Hot Mix – 100 mm)

Rural and Semi-Urban Roads (Cross Section A)

- (a) Hot mix padding for 20% of area to be resurfaced
- (b) Double lift of hot mix (100 mm)
- (c) Granular materials to raise shoulder to new surface grade

Urban Roads – Granular Base (Cross Section B-1)

– Concrete Base (Cross Section C-1)

- (a) Minor base repairs for 10% of area to be resurfaced
- (b) Hot mix padding for 20% of area to be resurfaced
- (c) Curb removal and replacement on both sides for 50% of section length
- (d) Planning 1.0 m of existing pavement along both curbs
- (e) Adjust manholes and catch basins to new surface grade
- (f) Double lift of hot mix (100 mm)

(RM) - MAJOR RESURFACING

(Double Lift of Hot Mix – 100 mm)

Urban Roads (Arterials and Collectors) – Granular Base (Cross Section B-1)

- Concrete Base (Cross Section C-1)

- (a) Base repairs for 50% of area to be resurfaced
- (b) Planning for 50% of area to be resurfaced
- (c) Curb removal and replacement on both sides for 50% of section length
- (d) Adjust manholes and catch basins to new surface grade
- (e) Double lift of hot mix (100 mm)

(PR1) - PULVERIZING AND RESURFACING

(Single lift of Hot Mix - 50 mm)

Rural Roads (Cross Section A)

- (a) Pulverize existing hard top surface
- (b) Single lift of hot mix (50 mm)
- (c) Granular material to raise shoulders to new surface grade

(PR2) - PULVERIZING AND RESURFACING (Double Lift of Hot Mix – 100 mm) Rural Roads (Cross

Section A)

- (a) Pulverize existing hard top surface
- (b) Double lift of hot mix (100 mm)
- (c) Granular material to raise shoulders to new surface grade

(BS) - BASE AND SURFACE

Rural Roads – Tolerable Standard (50 to 100 AADT) (Cross Section D)

- (a) Granular material for base
- (b) Granular material for loose top surface
- (c) Minimal shoulder widening
- (d) Minor Ditching

Rural Roads – Design Standard (200 to 399 AADT) (Cross Section D)

- (a) Placing granular material
- (b) Minimal shoulder widening
- (c) Double surface treatment
- (d) Minor ditching

Rural Roads – Design Standard (400 plus AADT) (Cross Section D) and

Semi-Urban Roads – Design Standard (Cross Section D)

- (a) Placing granular material
- (b) Minimal shoulder widening
- (c) Hot mix (50/100 mm, see table F-1)
- (d) Minor ditching

(RW) - RESURFACE AND WIDEN

Rural Roads - Tolerable Standard (50 to 199 AADT) (Cross Section E)

- (a) Excavating for widening
- (b) Ditching and side culvert replacement
- (c) Granular material for widening base
- (d) Granular material for loose top surface

Rural Roads – Design Standard (200 to 399 AADT) (Cross Section E)

- (a) Excavating for widening
- (b) Ditching and side culvert replacement
- (c) Granular material for widening base

(d) Double surface treatment

Rural Road – Design Standard (400 plus AADT) (Cross Section E) And Semi-Urban Roads – Design Standard (Cross Section E)

- (a) Excavating for widening
- (b) Ditching and side culvert replacement
- (c) Granular material for widening base
- (d) Base Course of hot mix for widening
- (e) Hot mix Padding for 20% of existing surface area
- (f) Single life of hot mix (50 mm)

Urban Roads – Design Standard – Granular Base (Cross Section F)

- (a) Excavating for widening
- (b) Curb and Gutter removal
- (c) Catch Basin removal
- (d) Base repair 10% of existing surface area
- (e) Granular material for widening
- (f) Place catch basins and leads
- (g) New curb and gutter
- (h) New sub-drains
- (i) Base course of hot mix for widening
- (j) Hot mix padding for 20% of existing surface area
- (k) Adjust manholes to new surface grade
- (I) Single lift of hot mix (50 mm) curb to curb Urban Roads Design Standard Concrete Base

(Cross section G)

- (a) Excavating for widening
- (b) Curb and gutter removal
- (c) Catch basin removal
- (d) Base repair for 10% of existing surface area
- (e) Place new catch basins and leads
- (f) Granular material for widening
- (g) Concrete base for widening
- (h) New curb and gutter
- (i) New subdrains
- (j) Base course of hot mix for widening
- (k) Hot mix padding for 20% of existing surface area
- (I) Adjust manholes to new surface grade
- (m) Single lift of hot mix (50 mm) curb to curb

(REC) - RECONSTRUCTION (RURAL and SEMI-URBAN) Rural Roads – Design Standard (200

to 399 AADT) (Cross Section H)

- (a) Excavate base material
- (b) Ditching and side culvert replacement
- (c) Grading
- (d) Granular material
- (e) Double surface treatment

Rural Roads – Design Standard (400 plus AADT) Cross Section H)

and

Semi-Urban Roads – Design Standard (Cross Section H)

- (a) Excavate base material
- (b) Ditching and side culvert replacement
- (c) Grading
- (d) Granular material
- (e) Hot mix (50/100 mm, see Table F-1)

Rural and Semi-Urban Roads – Design Standard (Concrete Surface) (Cross Section P)

- (a) Excavate base material
- (b) Ditching and side culvert replacement
- (c) Grading
- (d) Granular Material
- (e) Concrete base and surface

(RNS) - RECONSTRUCTION NOMINAL STORM SEWERS (URBAN) Urban Roads – Design Standard –

Granular Base (Cross Section I)

- (a) Excavate base material
- (b) Curb and gutter removal
- (c) Granular base
- (d) New curb and gutter
- (e) New sub-drains
- (f) Adjust manholes and catch basins
- (g) Hot mix (50/100 mm, see Table F-1)

Urban Roads – Design Standard – Concrete Base (Cross Section J)

- (a) Excavate base material
- (b) Curb and gutter removal
- (c) Granular base
- (d) Concrete base
- (e) New curb and gutter
- (f) New sub-drains
- (g) Adjust manholes and catch basins
- (h) Hot mix (50/100 mm, see Table H-5)

Urban Roads - Design Standard - Concrete Surface (Cross Section O)

- (a) Excavate base material
- (b) Curb and gutter removal
- (c) Granular base
- (d) Concrete base and surface
- (e) New curb and gutter
- (f) New sub-drains
- (g) Adjust manholes and catch basins

(RSS) - RECONSTRUCTION INCLUDING INSTALLATION OF STORM SEWERS Urban Roads – Design Standard –

Granular Base (Cross Section K)

- (a) Excavate base material
- (b) Curb and gutter removal
- (c) Storm sewer removal
- (d) Manhole and Catch Basin removal including leads
- (e) New storm sewers
- (f) New manhole and catch basins including leads
- (g) New curb and gutter
- (h) New sub-drains
- (i) Granular base
- (j) Hot mix (100/150 mm, see Table F-1

Urban Roads – Design Standard – Concrete Base (Cross Section L)

- (a) Excavate base material
- (b) Curb and gutter removal
- (c) Storm sewer removal
- (d) Manhole and Catch Basin removal including leads
- (e) New storm sewers
- (f) New manhole and catch basins including leads
- (g) New curb and gutter
- (h) New sub-drains
- (i) Granular base
- (j) Concrete base
- (k) Hot mix (50/100 mm, see Table F-1)

Urban Roads – Design Standard – Concrete Surface (Cross Section Q)

- (a) Excavate base material
- (b) Curb and gutter removal
- (c) Storm sewer removal
- (d) Manhole and Catch Basin removal including leads
- (e) New storm sewers
- (f) New manhole and catch basins including leads
- (g) New curb and gutter
- (h) New sub-drains
- (i) Granular base

(j) Concrete base and surface

(NC) - PROPOSED ROAD CONSTRUCTION

Rural Roads - Design Standard (200 - 399 AADT) (Cross Section H)

- (a) Grading
- (b) Ditching and cross culverts
- (c) Granular base
- (d) Double surface treatment

Rural Roads – Design Standard (400 plus AADT) (Cross Section H)

- (a) Grading
- (b) Ditching and cross culverts
- (c) Granular base
- (d) Hot mix (50.100 mm, see Table F-1)

Semi-Urban Roads

New Construction does not apply to semi-urban roads as there is no existing frontage development.

Urban Roads - Design Standard - Granular Base (Cross Section K)

- (a) Grading
- (b) Storm Sewers
- (c) Manholes and catch basins including leads
- (d) Curb and gutter
- (e) Sub-drains
- (f) Granular base
- (g) Hot mix (100 mm/150 mm, see Table F-1)

Urban Roads – Design Standard – Concrete Base (Cross Section L)

- (a) Grading
- (b) Storm Sewers
- (c) Manholes and catch basins including leads
- (d) Curb and gutter
- (e) Sub-drains
- (f) Granular base
- (g) Concrete base
- (h) Hot mix (50 mm/100 mm, see Table F-1)

(SRR) - STORM SEWER INSTALLATION AND ROAD REINSTATEMENT (URBAN AND SEMI-URBAN) Urban and

Semi-Urban Roads - Granular Base (Cross Section M)

- (a) Trenching and removal of existing storm sewers
- (b) New manholes and adjust catch basin leads
- (c) New storm sewer including bedding
- (d) Granular materials in trench
- (e) Hot mix to restore surface grade (100/150 mm, see Table F-1)

Urban and Semi-Urban Roads – Concrete Base (Cross Section N)

- (a) Trenching and removal of existing storm sewers
- (b) New manholes and adjust catch basin leads
- (c) New storm sewers including bedding
- (d) Granular material in trench

- (e) Concrete base for trenched area
- (f) Hot mix to restore surface grade (50/100 mm, See Table F-1)

Urban and Semi-Urban Roads – Concrete Surface (Cross Section R)

- (a) Trenching and removal of existing storm sewers
- (b) New manholes and adjust catch basin leads
- (c) New storm sewers including bedding
- (d) Granular material in trench
- (e) Concrete base and surface for trenched area

(MICRO) SINGLE LIFT OF MICROSURFACING

Urban, Semi-Urban and Rural Roads with a HCB (High Class Bituminous) surface type (a) Unit cost per square metre of Microsurfacing

(SST) SINGLE LIFT OF SURFACE TREATMENT

Urban, Semi-Urban and Rural Roads with a LCB (Low Class Bituminous) surface type (a) Unit cost per square metre of Single Surface Treatment

(SSTplus) SINGLE LIFT OF SURFACE TREATMENT, GEOMETRIC CORRECTION DITCHING IMPROVEMENTS

Semi-Urban and Rural Roads with a LCB (Low Class Bituminous) surface type

- (a) Unit cost per square metre of Single Surface Treatment
- (b) 20% Surface area padding to 50mm to correct geometric deficiencies
- (c) Earth Excavation allowance to provide for minor ditch improvements and berm removal

(DST) DOUBLE LIFT OF SURFACE TREATMENT

Urban, Semi-Urban and Rural Roads with a LCB (Low Class Bituminous) surface type (a) Unit cost per square metre of Double Surface Treatment

APPENDIX B – Pavement Structure and Defects

Pavement Structure

To assist in understanding the content and methodology of the report, the following sections provide an overview of how flexible and rigid pavement structures are designed and function. The majority of municipal roads would be described as having a flexible pavement structure. Hot mix asphalt, surface treatment, and gravel road surfaces are typical flexible pavement road structures. Other pavement structure types include rigid and composite, and are more typically found on 400 series highways, or on arterial roads of larger urban centres.

Flexible Pavement Road Structure

Load is applied to the pavement structure, and ultimately to the native sub-grade, via wheel loads of vehicles. The pavement structure between the native sub-grade and the load application point has to be designed such that the load that is transmitted to the sub-grade is not greater than the sub-grade's ability to support the load. The figure below shows a typical flexible pavement structure and how applied load dissipates.



Load Distribution through Pavement Structure

Depth Below Surface	Stress (psi)	Stress (Kpa)
At Surface	90	620.50
8" (200 mm) Below	11	75.84
11" (275 mm) Below	7	48.26
16" (400 mm) Below	4	27.58

Surface materials experience the highest loading at the point of contact with the vehicle's tire. Radial truck tires, running inflated from 110 psi to 120 psi, can have an impact 20 times higher at the surface, than at the compacted sub-grade. The loading actually occurs in three dimensions, in a conical fashion, dissipating both vertically and horizontally as it passes through the pavement structure. Loading

decreases exponentially as it passes through the road structure. Therefore, materials of lesser strength or lesser quality can be used deeper in the road structure.

The closer the road building materials are placed to the surface of the road, the higher the quality required. Similarly, the poorer the sub-grade or native material, the deeper/stronger the road structure has to be to carry the same loads.

Traffic counts, and the percentage of trucks, are critical to structural design of the pavement. Depending upon the source, the effect of a single truck on the pavement structure can be equivalent to 2,000 to 8,000 passenger cars. The effect of farm machinery would be very similar to that of heavy trucks. However, the Highway Traffic does permit certain types of farm machinery and equipment to use the roads even during half load season, so this is an additional consideration when designing rural roads.

Pavement evaluation involves a review of each road section and an assessment of the type and extent of the distress(es) observed. Treatment recommendations are predicated by whether the cause of the major distress(es) is structural or non-structural.

Flexible pavements will have age-related distresses and wearing such as thermal cracking and oxidation. These distresses are non-structural; however, once a crack develops and water enters the pavement structure, deterioration will accelerate. Poor construction practices, quality control, or materials may produce other non-structural surface defects, such as segregation and raveling, which will also result in a reduced life expectancy of the surface asphalt.

Fatigue cracking indicates structural failure and can manifest itself in many forms, such as wheel path, alligator, and edge cracking. It can be localized or throughout a road section. When roads that have exhibited fatigue cracking are rehabilitated, there should be particular attention paid to the

rehabilitation treatment, to ensure that the upgraded facility has sufficient structure.

Wheelpath Fatigue Cracking



Flexible Pavement Road Structure Design

There are a number of flexible pavement structural design methodologies and associated software. The simplest way to describe structural design may be the Granular Base Equivalency (GBE) Methodology. This GBE methodology is still used in Ontario, by a number of agencies, and is frequently used as a cross-check where more sophisticated analysis has been undertaken.

The measurement is unit-less and relates to the structural value of one millimetre of Granular 'A' material. The relationship of the typical road building materials is expressed in either of the two following ways:

- 1 mm of HMA = 2 mm of Granular A = 3 mm of Granular B
- Or
- HMA = 2, Granular A = 1, Granular B = 0.67

To gain some perspective on what this means in terms of typical construction activities, the following table indicates a typical subdivision road construction as expressed in GBE.

Example 1 Material Depth		Granular Base Equivalency	Example 2 Depth	Granular Base Equivalency
Hot Mix Asphalt (HMA)	100	200	150	300
Granular A	150	150	300	300
Granular B	300	200	0	0
TOTAL	550	550	450	600

Granular Base Equivalency

When reconstruction and rehabilitation projects are undertaken, and use of alternate materials and/or road structure is contemplated, the GBE concept is important to bear in mind, as different treatments such as Expanded Asphalt and Cold in Place recycling also have a structural value. For design purposes, it may be prudent to use a conservative equivalency of 1.5 for these products (although, some sources indicate GBE's of up to 1.8).

As an example, if a 200 mm pavement is replaced with 150 mm of Expanded Asphalt or Cold in Place Recycling, with a 50 mm overlay of Hot Mix asphalt, a pavement structure with a GBE of 400 is replaced by a pavement structure with a GBE of 325; a significant difference. Premature failure will be the result of an under-designed pavement structure, wasting resources and available funding.

The purpose of this example is to illustrate the different structural values that products have. Expanded Asphalt and Cold in Place recycling are both excellent products to rehabilitate pavement structures.

The MTO's *Pavement Design and Rehabilitation Manual* is an excellent resource for use in pavement structure design and rehabilitation, and is available from the online MTO Catalog.

Thin Lift Pavements

Hot mix asphalt mixes are designed in Ontario either by the Marshall Method or the Superpave Method. Through time, this has resulted in a number of commonly used mixes that are typically sorted by size. One of the parameters used to describe that sizing is the Nominal Maximum Aggregate Size (NMAS).

In the Marshall Mix Method, typical mix designations are HL1, HL2, HL3, HL4, and HL8. In the Superpave mix design methodology, mixes are designated by the NMAS.

The following table identifies the NMAS for the more commonly used mixes, and indicates recommended minimum lift thicknesses for them.

Mix Type	NMAS (mm)	Lift Thickness Range (mm)
SP 9.5	9.5	30 to 40
SP 12.5	12.5	40 to 50
SP 19	19.0	60 to 80
HL3	13.2	40 to 55
HL4	16.0	50 to 65
HL8	19.0	60 to 80

Recommended Minimum Lift Thicknesses

Thin Lift Pavement



Rigid Pavement Structure

Rigid Pavements are constructed of concrete, or concrete with an asphalt wearing surface. The fundamental difference between a flexible pavement and a rigid pavement is the method in which the load is transferred. Whereas the flexible pavement disperses load through the pavement structure in a conical fashion, with a higher point load directly beneath the loading point, the rigid pavement structure distributes that load in a beam-like fashion, more evenly across the pavement structure. Rigid pavements may have an exposed concrete wearing surface, or they may be covered with an asphaltic concrete wearing surface.

The resulting rigid pavement structure is usually thinner overall, when compared to a flexible pavement, designed to accommodate the same traffic loading. This does not necessarily translate into a reduced cost of construction. Any comparison of costs between flexible and rigid pavements should be on a life cycle basis, for the most accurate assessment.

Older concrete pavements were prone to failure at joints, as load transfer caused a slight movement in the concrete slab, and with the intrusion of water, a structural failure. Newer concrete pavements are designed with improved load transfer technology.

Pavement Distresses and Treatment Selection

Treatment recommendation is dependent upon the condition of the road section at the time of the review.

Treatment Selection – Critical Area Analysis

When using the Inventory Manual methodology all of the 'holistic' needs are considered in the recommendation. For example, a road may appear to require only a resurfacing, however, when the other critical areas are reviewed, there may be a capacity problem which would then result in a recommendation to resurface and widen (RW) that would address both the pavement condition and the need for additional lanes. Another example would be where the pavement is exhibiting some type of distress but there is also poor drainage. The recommendation would then be to reconstruct (REC if rural, RSS if urban).

Treatment Selection for Non-Structural Rehabilitation

Resurfacing recommendations are predicated upon the type and extent of distress noted. For example, all pavements will develop thermal/transverse cracking as they age. As the age of the pavement increases, the frequency of the cracking increases. If the spacing of he cracks is still greater than 10m, then the R1 – resurface with one lift of asphalt – treatment will typically be sufficient to restore the road as the treatment provides for overlay and base asphalt repair. However, if the frequency of transverse cracking , which may have become transverse alligator cracking if left unattended too long, then the recommendation will be more extensive, such as a PR2- Pulverize and resurface with 2 lifts of asphalt. The following illustrates transverse cracking.

Transverse /Thermal cracking

Treatment Selection for Structural Rehabilitation

Road sections exhibiting structural failure such as fatigue cracking require a more extensive rehabilitation to restore the performance of the road section. In simple terms, placing a single lift of asphalt over structurally failed asphalt will guarantee the same failure in a very short time period. Unless the single lift overlay is placed knowingly as a holding strategy, it should be avoided on structurally deficient pavements. For pavements that have failed structurally or have too much transverse cracking, the recommendation is typically PR2 as a minimum provided the drainage is adequate or requires only minor improvement.

Reflective Cracking

Paving over an active crack(s) will result in a crack(s) in the same location with 2 to 3 years. As a rule of thumb, the crack will migrate through at approximately 25mm per year. Therefore it would be anticipated that if a 50mm overlay is placed, then the cracking would reappear in approximately 2 years. This is not an efficient usage of available funding.



Structurally Failed Pavement

The above figure illustrates a pavement that has failed both structurally and has very frequent severe transverse cracks. Placement of a 50mm overlay over this type of pavement condition will result in rapid failure is not recommended. The figure below illustrates a newer pavement that already have very frequent transverse cracks appearing likely the result of paving over a failed pavement. The first transverse crack generally occurs in approximately 4 to 5 years and the cracks are 40m to 50m or more apart.



Reflective Transverse Cracking on Newer Pavement

APPENDIX C – Gravel Road Conversion

Gravel Road Conversion

Gravel Road Maintenance Overview

Gravel roads form a component of the road asset group for the municipality and should be managed as any other asset. Gravel roads tend to be the 'forgotten' asset.

One of the difficulties in determining the deterioration of a gravel road is that the wearing surface and the granular layers are one and the same, so the extent of deterioration may not be as obvious until the deterioration is significant. Appropriate gravel road maintenance can be deceptively expensive and frequently, budget analysis proves that the per-kilometre cost of gravel road maintenance is greater than the per-kilometre cost for hard top maintenance. This is further exacerbated as traffic volume on a gravel road increases.

Like other road assets, gravel roads have lifecycle maintenance and rehabilitation costs that should be addressed as part of any asset management plan. Life cycle costs include regular addition of gravel, dust control, grading and labour. Grading will typically include equipment costs for a motor grader. A Net Present Value (NPV) assessment comparing life cycle of a gravel surface vs. hard top surface would be a key element in determining the merit of converting a gravel road to hard top.

NPV Analysis Components

Process

Given the above noted, a Net Present Value (NPV) assessment of the gravel road, in comparison with a surface treated road section or other hard top surface, should be undertaken as it may be more cost-effective to convert/upgrade the gravel road to a surface treated road.

Road agencies in both Canada and the United States, have conducted studies that have generally indicated that, dependent upon local unit costs, gravel road conversion to hardtop, can be a cost-effective strategy. One source indicates that this may be effective management for roads with traffic volumes as low as 100 AADT.

It is preferable to address the cost comparisons over a period of time where the life cycles may conclude concurrently. For instance, if the gravel maintenance is on a three year basis and the surface treatment is seven, then the cycles coincide at 21 years. Total life cycle cost over that time period should be considered.

Gravel

This report provides an annual cost for maintenance costs for 75mm of additional gravel to be added every three years and does not included regular grading or dust control. This was a typical standard that was used in the past by many municipalities. Due to the natural life cycle wear and tear, maintenance and winter control activities, gravel roads require additional gravel on a regular basis to ensure continuing performance.

Equipment
As part of a holistic review of service delivery, consideration should be given to the equipment hourly rates and replacement. Accurate hourly rates are required to provide a true assessment. Equipment rates should include capital depreciation and operating costs.

One of the factors driving the overall cost is the equipment that is required to properly maintain a gravel road system- particularly graders. Part of the gravel road conversion analysis should include:

- Has the hourly rate for the equipment been calculated properly to include capital depreciation and maintenance costs?
 A new grader will cost \$250,000 to \$300,000. At a 20-year life span, there is \$12,500 to \$15,000 in capital depreciation, alone, on the grader. What is the current rate for the grader? If there is not full cost recovery on the grader hourly rate, then the cost for gravel road maintenance is not accurate either.
- Is the grader used for any other purpose/activities?
- What is the length of the gravel road system? A commonly used length of gravel roads used to justify a grader is 75 kilometres.
- How many hours per year is the grader operated?
- Are there other pieces of equipment that could be used or rented to maintain the gravel roads?

Surface Treatment or other hard top

Whatever other surface type is being compared with the gravel road surface should include the same factors as for gravel so there is a 1:1 comparison.

Additional Factors and Considerations

If the argument for conversion may be made from a financial perspective, then there are additional factors that should be considered from physical and risk perspectives. Other factors for consideration include:

- Platform width
- Drainage
- Structural Adequacy
- Traffic Volume and Type

The figure below provides a graphical illustration of the different factors and decision flow that may be considered in developing a case to convert a gravel road to hard top.



Benefits to converting a gravel road include:

- Customer satisfaction
- Reduced maintenance costs for routine maintenance
- Reduced maintenance costs for winter maintenance
- Reduced complaints

APPENDIX D: Sample Section Data

MUNICIPAL ROAD APPRAISAL

Page: 1 Run: MAY 8,2014 5:24PM

A. IDENTIFICA	TION -									
Road Name: From:	FRANÇ NOTRE	OISE, rue -DAME, rue						Road Section I	No.: 1035 gth: 0.12	km:
To:	NICOL	E, rue						Old Section I	No.:	
Owner:	67101		Road V	alue:	194,439			MunicA		
Shared?			Special	Designation:				Patrol:		
Shared With:								MunicB		
Owner Share:	100.0	0	Desian	ation 2				Maniob		
Adjacent Road S	Section N	lo.:	3					Year Assumed:		
B. EXISTING C	ONDITIO	ons —								
Horizontal Alig	Inment									
Substandard (Curves:			Roadside Env.:	U			Curb/Gutter		
Substandard S	S.S.D.:			Existing Class:	L/R			Right		
Vertical Alignm	nent			Number of Lanes	2.00			rugire.		
Substandard (Grades:			Surface Type:	HCB			Sidewalk Width	n Left:	Right:
Substandard S	S.S.D.:			Platform Width:		m		Boulevard Wid	th Left:	Right
Right of Way W	Vidth			Surface Width:	8.500	m		Parking:		
Existing:		0	m	Median Width:						
Desirable:		0	m	Shoulder Type:	GST			Existing Surfac	e Depth:	
Terrain:		NF - Non R		Shoulder Width:				Existing Gran "	A" Depth:	
Drainage:		SS - Storm S	Sewer					Existing Gran "	B" Depth:	
C. TRAFFIC DA	АТА —	12			Traffic Coupl	+		10 Year Traffic	Forecast	
Legal Speed Lin	nit:	50	Year	-	A-2	000-C		Year	2010	
Avg. Operating !	Speed:	0	AAD	T:	~~	367		AADT	385	
Fraffic Operation	n:	2W	DHV	Factor:		12.0	%	DHV Factor:	12.0	%
Route Designati	ons	-	DHV			44	vph	DHV:	46	vph
Bus	Tr	uck Route	Truck	(S)		3.00	%	Trucks	3.0	%
School	Bi	cycle	Peak	Directional Split:			%	Capacity:	1,474	vph
						4 05			100 100 10	10.000 C

Municipality: City of Clarence Rockland

Road Section No.: 1035

MUNICIPAL ROAD APPRAISAL

Page: 2 Run: MAY 8,2014 5:24PM

E. ROAD NEEDS Field	Max Points	Rating		Comments	
Drainage	15.0	12			
Level Of Service	20.0	20			
Maint. Demand	10.0	6			
Structural Adequacy	20.0	9			
Surface Condition	10.0	7			
Surface Width	25.0	25			
F. FUNCTIONAL NEEDS					
Field	Existing	Min Tolerable	Time of	f Need Comments	
Capacity	A	E	ADEQ		
Drainage	12	8	6-10		
Geometrics	N/A	N/A	ADEQ		
Structural Adequacy	9	8	1-5		
Surface Type	HCB	Hardtop	ADEQ		
Surface Width	8.5	5.5	ADEQ		
Impr.Class Improvement Description			Override	Time of e? Percent Need Year	Base/ Const Cost
Const RSS Reconstruction with	Storm Sewers		Ov	rerride 100.00 1-5	194,438.70
			2	Const Subtotal:	194,438.70
G. ENGINEERING RECOMMENDATIONS Year (Re)Constructed: Design Class: L/R Design Width: 6.00 m	Ratings Priority Rating Guide Numbe \$/Vehicle km:]: 91.	18 0 0.59	H. IMPROVEMENT COSTS — Total Base/Construction:	194,438.70
Improvement Length: 0.117 km	<u>.</u>				194 438 70
Set Values Manually?				Owners Share:	194,438.70
Time of Need: 1-5					ana di mandi 19
Improvement Type: RSS Reconstruct	ion with Storm S	ewers			

Municipality: City of Clarence Rockland

APPENDIX E: Deterioration Curve Detail

WorkTech Asset Classes and Deterioration Curves

Asset Classes

In order to utilize the Best Practice and Performance Modeling modules of WorkTech Asset Manager Foundation (WT), assets must be defined by an asset class. Table 1 identifies the road asset classes that have been developed for use in WT by 4 Roads Management Services Inc.

Asset Class	Subtype	Material	RDSE Envt	AADT Low	AADT High
A/C-R	All	A/C	R	1	100,000
A/C-S	All	A/C	S	1	100,000
A/C-U	All	A/C	U	1	100,000
CM1-R	All	C/M	R	1	3,000
CM1-S	All	C/M	S	1	3,000
CM1-U	All	C/M	U	1	3,000
CON-R	All	CON	R	1	100,000
CON-S	All	CON	S	1	100,000
CON-U	All	CON	U	1	100,000
GST1-R	All	G/S	R	1	10,000
GST1-S	All	G/S	S	1	10,000
HCB1-R	ART	НСВ	R	20,000	100,000
HCB1-S	ART	НСВ	S	20,000	100,000
HCB1-U	ART	НСВ	U	20,000	100,000
HCB2-R	ART	НСВ	R	10,000	20,000
HCB2-S	ART	НСВ	S	10,000	20,000
HCB2-U	ART	НСВ	U	10,000	20,000
HCB3-R	All	НСВ	R	1,000	10,000
HCB3-S	All	НСВ	S	1,000	10,000
HCB3-U	All	НСВ	U	1,000	10,000
HCB4-R	All	НСВ	R	1	1,000
HCB4-S	All	НСВ	S	1	1,000
HCB4-U	All	НСВ	U	1	1,000
ICB-S	All	ICB	S	1	3,000
ICB-U	All	ICB	U	1	3,000
ICB1-R	All	ICB	R	1	3,000
LCB1-R	All	LCB	R	1	2,000
LCB1-S	All	LCB	S	1	2,000
LCB1-U	All	LCB	U	1	2,000

Table 1: Road Asset Classes

Conventional wisdom has been to define road assets by their functional classes such as Arterial, Collector or Local and then further differentiate by usage, such as residential or commercial. From a performance modeling perspective, using the functional classification will only work to a point, as the traffic on a functional class will vary between agencies.

4 Roads believes that the performance/deterioration of a road section is more predictable based on surface type and traffic volume rather than by functional class. Based on that philosophy, Table 1 was created identifying Road Asset Classification by Surface Type, Traffic Volume and Roadside Environment. Roadside Environment has been added to permit the calculation of different replacement costs between rural and urban cross-sections.

Deterioration Curves

When using the Inventory Manual (IM) methodology, Structural Adequacy is a measurement of the percentage of the surface of the road that is exhibiting distress. The rater will consider the type of distress as well as the other critical areas (surface width, capacity, geometry, drainage and surface width) in order to provide a recommendation for an improvement. In the IM, any, or multiple of the critical areas, may produce a Time of Need (TON). The overall TON of the road section is the worst of all of the TON's. For example, if five of the TON's are ADEQ, and one is NOW, the section is a NOW need.

It would be possible, but very difficult, to develop performance models around all of the critical areas. So for the purposes of the performance modeling, Structural Adequacy (distress) has been selected to be the driver in the decisions with respect to the model.

In the early years of the model, if a project is selected that has an identified improvement type, that improvement will be used for the project in the year that it is selected. In the later years, presumably after all current deficiencies have been corrected the model will revert to the assigned asset class for deterioration and project selection based on estimated condition.

All deterioration curves relate to the 'Physical Condition' data field in WorkTech. Physical Condition is the Structural Adequacy multiplied by 5 to produce a score from 5 to 100. The Physical Condition deterioration curve is specific to the Inventory Manual and therefore the trigger points and definition of the curve will be different than other methodologies. It should be noted that different evaluation methodologies will produce varying deterioration curves and trigger points. Familiarity with the rating system being utilized is essential.

The deterioration curves are the same for each asset class regardless of roadside environment. For urban sections, the improvement is RSS- Reconstruction with Storm Sewers, rather than REC-Reconstruction Rural.





Where the MTO PCI / Inventory Manual Condition Rating format is being used, the PCI data is entered to produce a PCI score from different formulas that represent the defects and weightings by surface type. The PCI score is then used to approximate a Structural Adequacy score (and a Physical Condition). Table 2 identifies the approximations to convert PCI to Structural Adequacy and a Time of Need.

Time of Need	PCI	Structural	Formula
		Adequacy	PCI to SA
NOW	1 to 55	1 to 7	IF PCI <=55 then, PCI / 8 = SA
1 to 5	56 to 75	8 to 11	IF PCI >55<=75 then, PCI / 7 =SA
6 to 10	76 to 85	12 to 14	IF PCI >75<=85 then, PCI / 6 =SA
ADEQ	86 to 100	15 to 20	If PCI >85 then, PCI /5.4 =SA

Table 2: PCI to Structural Adequacy Conversion

Once a Structural Adequacy Score has been determined, the TON is also calculated. What this achieves is the detail of PCI data collection and the strength of the holistic evaluation of the Inventory Manual.

Improvement Types- Effect on the Asset

Appendix A of this report includes a summary of the improvement types that are included in the inventory Manual. In WorkTech there is no restriction on what may be developed as an improvement type for a road agency. However, regardless of the improvement types that are used the effect that the improvement has on the asset has to be understood in order to use performance modeling.

The following table identifies a number of improvement types and further identifies the effect that they have on a road asset. A similar approach may be taken with other assets.

Code	Description	Effect on the Asset
R1	Basic Resurfacing – Single Lift	Increase Physical Condition to 97
R2	Basic Resurfacing – Double Lift	Increase Physical Condition to 100
RM	Major Resurfacing	Increase Physical Condition to 100
PR1	Pulverizing and Resurfacing – Single Lift	Increase Physical Condition to 95
PR2	Pulverizing and Resurfacing – Double Lift	Increase Physical Condition to 100
BS	Base and Surface Tolerable – Tolerable standard for lower volume roads – Rural and Semi-Urban Cross sections only	Increase Physical Condition to 95
RW	Resurface and Widen	Increase Physical Condition to 97
REC	Reconstruction	Increase Physical Condition to 100
RNS	Reconstruction Nominal Storm Sewers (Urban: no new sewer, adjust manholes, catch basins, add sub-drain, remove and replace curb and gutter, granular, and hot mix)	Increase Physical Condition to 100
RSS	Reconstruction including Installation of Storm Sewers (New storm sewers and manholes in addition to the above)	Increase Physical Condition to 100
NC	Proposed Road Construction	Increase Physical Condition to 100
SRR	Storm Sewer Installation and Road Reinstatement	No effect
CRK	Crack Sealing	Hold Physical Condition for 2 Years
MICRO	Microsurfacing	Hold Physical Condition for 3 years
GRR	Gravel Road Resurfacing – add 75mm	Hold Physical Condition for 3 years
GRR2	Gravel Road Resurfacing - Add 150mm	Increase Physical Condition by 20

The effect that a treatment has on an asset is critical to the analysis. Inaccurate determination of the effect of a treatment on an asset will produce an inaccurate – and indefensible- result. The following chart is a comparison of the deterioration of a road section without any treatment applied versus a road section that has appropriate treatment at the optimal condition, producing a more cost effective life cycle.

Figure 2, shown below, illustrates several different aspects of performance model output including the effect of a treatment on an asset and the effect of multiple treatments undertaken at the optimal asset condition to produce a cost effective management strategy.



Figure 2: Performance Model – Effect of Treatment on Asset

Deterioration Curves by Surface Type and Traffic Volume

The following pages includes tables and graphs indicating the anticipated performance of an appropriately constructed road asset and the condition triggers for treatments. The deterioration curves by asset class used in concert with the table indicating the treatment effect on the asset, and the agency's unit costs, will produce a performance model that demonstrates the effect on the system at various budget levels and produce a program based on input parameters.

Gravel Roads- All Roadsides, all AADT

Year	Condition	Improvement	Description
1	100	NONE	No Improvement Required
2	92.45	NONE	No Improvement Required
3	86.21	GRR	75mm of Granular A
4	80.43	GRR	75mm of Granular A
5	75.11	GRR	75mm of Granular A
6	70.21	GRR	75mm of Granular A
7	65.7	GRR2	150mm of additional Gravel
8	61.55	GRR2	150mm of additional Gravel
9	57.75	GRR2	150mm of additional Gravel
10	54.27	GRR2	150mm of additional Gravel
11	51.07	GRR2	150mm of additional Gravel
12	48.15	GRR2	150mm of additional Gravel
13	45.48	GRR2	150mm of additional Gravel
14	43.04	GRR2	150mm of additional Gravel
15	40.81	GRR2	150mm of additional Gravel
16	38.77	GRR2	150mm of additional Gravel
17	36.9	GRR2	150mm of additional Gravel
18	35.2	GRR2	150mm of additional Gravel
19	33.63	REC	Reconstruction - Rural
20	32.19	REC	Reconstruction - Rural
21	30.86	REC	Reconstruction - Rural
22	29.64	REC	Reconstruction - Rural
23	28.51	REC	Reconstruction - Rural
24	27.45	REC	Reconstruction - Rural
25	26.47	REC	Reconstruction - Rural
30	22.28	REC	Reconstruction - Rural
35	18.88	REC	Reconstruction - Rural
40	20	REC	Reconstruction - Rural
45	20	REC	Reconstruction - Rural
50	20	REC	Reconstruction - Rural



HCB1 All Roadsides- AADT > 20,000, assumes 10% Commercial

>Year	Condition	Improvement	Description
1	100	NONE	No Improvement Required
2	98.61	NONE	No Improvement Required
3	94.19	NONE	No Improvement Required
4	89.83	CRK	Crack Sealing
5	85.55	CRK	Crack Sealing
6	81.36	CRK	Crack Sealing
7	77.26	MICRO	Microsurfacing -Pavement Preservation
8	73.28	MICRO	Microsurfacing -Pavement Preservation
9	69.4	R1	Basic Resurfacing 1 - 50mm
10	65.65	R1	Basic Resurfacing 1 - 50mm
11	62.02	R1	Basic Resurfacing 1 - 50mm
12	58.54	R1	Basic Resurfacing 1 - 50mm
13	55.19	R2	Basic Resurfacing 2 - 100mm
14	52	R2	Basic Resurfacing 2 - 100mm
15	48.96	R2	Basic Resurfacing 2 - 100mm
16	46.08	R2	Basic Resurfacing 2 - 100mm
17	43.36	R2	Basic Resurfacing 2 - 100mm
18	40.81	R2	Basic Resurfacing 2 - 100mm
19	38.41	R2	Basic Resurfacing 2 - 100mm
20	36.19	REC	Reconstruction - Rural
22	32.24	REC	Reconstruction - Rural
23	30.51	REC	Reconstruction - Rural
24	28.95	REC	Reconstruction - Rural
25	27.55	REC	Reconstruction - Rural
26	26.3	REC	Reconstruction - Rural
27	25.21	REC	Reconstruction - Rural
28	24.27	REC	Reconstruction - Rural
29	23.47	REC	Reconstruction - Rural
30	22.82	REC	Reconstruction - Rural
35	21.31	REC	Reconstruction - Rural
40	20	REC	Reconstruction - Rural
50	20	REC	Reconstruction - Rural



HCB 2 All Roadsides- AADT >10,000 <20,000, Assumes 10% Commercial

>Year	Condition	Improvement	Description
1	100	NONE	No Improvement Required
2	98.79	NONE	No Improvement Required
3	94.85	NONE	No Improvement Required
4	91.01	CRK	Crack Sealing
5	87.29	CRK	Crack Sealing
6	83.68	CRK	Crack Sealing
7	80.18	CRK2	Crack Sealing
8	76.79	MICRO	Microsurfacing -Pavement Preservation
9	73.51	MICRO2	Microsurfacing -Pavement Preservation
10	70.33	R1	Basic Resurfacing 1 - 50mm
11	67.26	R1	Basic Resurfacing 1 - 50mm
12	64.28	R1	Basic Resurfacing 1 - 50mm
13	61.41	R1	Basic Resurfacing 1 - 50mm
14	58.63	R1	Basic Resurfacing 1 - 50mm
15	55.95	R2	Basic Resurfacing 2 - 100mm
16	53.38	R2	Basic Resurfacing 2 - 100mm
17	50.89	R2	Basic Resurfacing 2 - 100mm
18	48.5	R2	Basic Resurfacing 2 - 100mm
19	46.2	R2	Basic Resurfacing 2 - 100mm
20	43.99	R2	Basic Resurfacing 2 - 100mm
21	41.87	R2	Basic Resurfacing 2 - 100mm
22	39.84	R2	Basic Resurfacing 2 - 100mm
23	37.89	R2	Basic Resurfacing 2 - 100mm
24	36.03	R2	Basic Resurfacing 2 - 100mm
25	34.26	REC	Reconstruction - Rural
26	32.56	REC	Reconstruction - Rural
27	30.95	REC	Reconstruction - Rural
28	29.42	REC	Reconstruction - Rural
29	27.97	REC	Reconstruction - Rural
30	26.59	REC	Reconstruction - Rural
35	20.86	REC	Reconstruction - Rural
40	20	REC	Reconstruction - Rural
50	20	REC	Reconstruction - Rural



HCB 3 All Roadsides – AADT 1,000 < 10,000, Assumes 10% Commercial

>Year	Condition	Improvement	Description
1	100	NONE	No Improvement Required
2	99.44	NONE	No Improvement Required
3	97.46	NONE	No Improvement Required
4	95.29	NONE	No Improvement Required
5	92.95	CRK	Crack Sealing
6	90.48	CRK	Crack Sealing
7	87.88	CRK2	Crack Sealing
8	85.18	CRK2	Crack Sealing
9	82.4	CRK2	Crack Sealing
10	79.56	MICRO	Microsurfacing -Pavement Preservation
11	76.67	MICRO	Microsurfacing -Pavement Preservation
12	73.76	MICRO2	Microsurfacing -Pavement Preservation
13	70.83	R1	Basic Resurfacing 1 - 50mm
14	67.91	R1	Basic Resurfacing 1 - 50mm
15	65.01	R1	Basic Resurfacing 1 - 50mm
16	62.14	R1	Basic Resurfacing 1 - 50mm
17	59.31	R1	Basic Resurfacing 1 - 50mm
18	56.54	R1	Basic Resurfacing 1 - 50mm
19	53.83	R2	Basic Resurfacing 2 - 100mm
20	51.19	R2	Basic Resurfacing 2 - 100mm
21	48.63	R2	Basic Resurfacing 2 - 100mm
22	46.17	R2	Basic Resurfacing 2 - 100mm
23	43.8	R2	Basic Resurfacing 2 - 100mm
24	41.53	R2	Basic Resurfacing 2 - 100mm
25	39.37	R2	Basic Resurfacing 2 - 100mm
26	37.31	R2	Basic Resurfacing 2 - 100mm
27	35.37	R2	Basic Resurfacing 2 - 100mm
28	33.54	REC	Reconstruction - Rural
29	31.82	REC	Reconstruction - Rural
30	30.22	REC	Reconstruction - Rural
35	23.83	REC	Reconstruction - Rural
40	20	REC	Reconstruction - Rural
45	20	REC	Reconstruction - Rural
50	20	REC	Reconstruction - Rural



HCB 4 All Roadsides- AADT <1,000, Assumes 5% Commercial

>Year	Condition	Improvement	Description
1	100	NONE	No Improvement Required
2	99.44	NONE	No Improvement Required
3	97.46	NONE	No Improvement Required
4	95.29	NONE	No Improvement Required
5	92.95	CRK	Crack Sealing
6	90.48	CRK	Crack Sealing
7	87.88	CRK2	Crack Sealing
8	85.18	CRK2	Crack Sealing
9	82.4	CRK2	Crack Sealing
10	79.56	MICRO	Microsurfacing -Pavement Preservation
11	76.67	MICRO	Microsurfacing -Pavement Preservation
12	73.76	MICRO2	Microsurfacing -Pavement Preservation
13	70.83	R1	Basic Resurfacing 1 - 50mm
14	67.91	R1	Basic Resurfacing 1 - 50mm
15	65.01	R1	Basic Resurfacing 1 - 50mm
16	62.14	R1	Basic Resurfacing 1 - 50mm
17	59.31	R1	Basic Resurfacing 1 - 50mm
18	56.54	R1	Basic Resurfacing 1 - 50mm
19	53.83	R2	Basic Resurfacing 2 - 100mm
20	51.19	R2	Basic Resurfacing 2 - 100mm
21	48.63	R2	Basic Resurfacing 2 - 100mm
22	46.17	R2	Basic Resurfacing 2 - 100mm
23	43.8	R2	Basic Resurfacing 2 - 100mm
24	41.53	R2	Basic Resurfacing 2 - 100mm
25	39.37	R2	Basic Resurfacing 2 - 100mm
26	37.31	R2	Basic Resurfacing 2 - 100mm
27	35.37	R2	Basic Resurfacing 2 - 100mm
28	33.54	REC	Reconstruction - Rural
29	31.82	REC	Reconstruction - Rural
30	30.22	REC	Reconstruction - Rural
40	20	REC	Reconstruction - Rural
45	20	REC	Reconstruction - Rural
50	20	REC	Reconstruction - Rural



LCB All roadsides – All AADT's

Year	Condition	Improvement	Description
1	100	NONE	No Improvement Required
2	98.61	NONE	No Improvement Required
3	94.19	NONE	No Improvement Required
4	89.84	NONE	No Improvement Required
5	85.56	NONE	No Improvement Required
6	81.36	NONE	No Improvement Required
7	77.26	SST	Single Surface Treatment
8	73.28	SST	Single Surface Treatment
9	69.4	SST	Single Surface Treatment
10	65.65	SST	Single Surface Treatment
11	62.02	SST	Single Surface Treatment
12	58.54	SST	Single Surface Treatment
13	55.19	SST	Single Surface Treatment
14	52	SSTplus	SST plus Padding / geometric correction
15	48.96	SSTplus	SST plus Padding / geometric correction
16	46.08	SSTplus	SST plus Padding / geometric correction
17	43.36	SSTplus	SST plus Padding / geometric correction
18	40.81	SSTplus	SST plus Padding / geometric correction
19	38.41	SSTplus	SST plus Padding / geometric correction
20	36.19	REC	Reconstruction - Rural
21	34.13	REC	Reconstruction - Rural
22	32.24	REC	Reconstruction - Rural
23	30.51	REC	Reconstruction - Rural
24	28.95	REC	Reconstruction - Rural
25	27.55	REC	Reconstruction - Rural
30	22.82	REC	Reconstruction - Rural
35	21.31	REC	Reconstruction - Rural
40	21.92	REC	Reconstruction - Rural
45	20	REC	Reconstruction - Rural
50	20	REC	Reconstruction - Rural



APPENDIX F: Critical Deficiencies by Asset ID

Critical Deficiencies

Current Inspection Batch

ID	Street Name	From Description	To Description	Length	AADT	Cap.	Drain	Geo	SA	Width	Туре	Imp	Overall TON
1001	LAPORTE, rue	VALÉRIE, place	YVETTE, rue	0.107	728	ADEQ	ADEQ	ADEQ	6-10	ADEQ	ADEQ	R1	6-10
1002	ROGER, rue	Fin	PIGEON, rue	0.050	64	ADEQ	6-10	ADEQ	1-5	ADEQ	ADEQ	REC	1-5
1003	VAUDREUIL, rue	OLD HWY 17	MARQUETTE, rue	0.065	448	ADEQ	6-10	ADEQ	NOW	ADEQ	ADEQ	REC	NOW
1004	COOPER, rue	YOUNG, rue	CARRIÈRE, rue	0.090	144	ADEQ	6-10	ADEQ	ADEQ	ADEQ	ADEQ	SD	6-10
1005	VALÉRIE, place	Fin	LAPORTE, rue	0.111	416	ADEQ	ADEQ	ADEQ	6-10	ADEQ	ADEQ	R1	6-10
1006	ST-JOSEPH, rue	ST-LAURENT, rue	CHÉNÉ, rue	0.079	2,234	ADEQ	ADEQ	ADEQ	6-10	ADEQ	ADEQ	R2	6-10
1007	ST-JOSEPH, rue	CHÉNÉ, rue	MARTIN, rue	0.082	2,347	ADEQ	ADEQ	ADEQ	NOW	ADEQ	ADEQ	RNS	NOW
1008	OAKWOOD, promenade	DES ÉPINETTES, rue	McDERMITT, promenade	0.084	623	ADEQ	6-10	ADEQ	1-5	ADEQ	ADEQ	PR2	1-5
1009	CÉLINE, rue	JOSÉE, rue	LABONTÉ, rue	0.284	100	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	CRK	ADEQ
1010	MONTCALM, rue	CENTRE, rue	LAVAL, rue	0.083	381	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	NONE	ADEQ
1011	BALSAM, rue	OAKWOOD, promenade	Fin	0.062	68	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	CRK	ADEQ
1012	LAVIGNE, chemin	LONGTIN, rue	LÉVIS, rue	0.079	492	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	NONE	ADEQ
1013	FRANÇOISE, rue	GILLES, rue	CARON, rue	0.114	422	ADEQ	ADEQ	ADEQ	NOW	ADEQ	ADEQ	RNS	NOW
1014	LAVIOLETTE, rue	MARION, rue	LAURIER, rue	0.090	1,759	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	CRK	ADEQ
1015	RICHELIEU, rue	CARMEN BERGERON, rue	POUPART, montée	0.176	100	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	CRK	ADEQ
1016	LAURIER, rue	LAWRENCE, rue	HENRIE, chemin	0.086	8,735	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	NONE	ADEQ
1017	BLUE JAY, promenade	CARDINAL, rue	Fin	0.079	34	ADEQ	6-10	ADEQ	1-5	ADEQ	ADEQ	REC	ADEQ
1018	PINS, avenue des	MORRIS, rue	NOTRE-DAME, rue	0.075	1,324	ADEQ	ADEQ	ADEQ	6-10	ADEQ	ADEQ	R1	6-10
1019	ST-JACQUES, rue	STE-ANNE, rue	PATRICIA, rue	0.082	999	ADEQ	6-10	ADEQ	NOW	ADEQ	ADEQ	RSS	NOW
1020	DES CÈDRES, avenue	CARON, rue	BELVEDERE	0.074	148	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	NONE	ADEQ
1021	LAURIER, rue	ST-JACQUES, rue	ST-JEAN, rue	0.085	8,872	ADEQ	1-5	ADEQ	ADEQ	ADEQ	ADEQ	NONE	1-5
1022	CARRIÈRE, rue	LACROIX, chemin	COOPER, rue	0.065	229	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	NONE	ADEQ
1023	LAURIER, rue	HENRIE, chemin	LAWRENCE, rue	0.092	8,735	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	NONE	ADEQ
1024	LAWRENCE, rue	CHARETTE, rue	MORRIS, rue	0.088	1,622	ADEQ	ADEQ	ADEQ	1-5	ADEQ	ADEQ	R1	1-5
1025	LAURIER, rue	ST-LOUIS, rue	ST-JACQUES, rue	0.092	9,028	ADEQ	ADEQ	ADEQ	6-10	ADEQ	ADEQ	R1	6-10
1026	CLUB HOUSE, promenade	DAVID, chemin (CLAR)	FAIRWAY, promenade	0.076	64	ADEQ	6-10	ADEQ	6-10	ADEQ	ADEQ	R1	6-10
1027	LAVIOLETTE, rue	ST-DENIS, rue	STE-ANNE, rue	0.085	1,235	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	NONE	ADEQ
1028	NOTRE-DAME, rue	LAURIER, rue	CHAPMAN, rue	0.089	597	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	NONE	ADEQ
1029	CHARETTE, rue	Fin	NOTRE-DAME, rue	0.071	103	ADEQ	ADEQ	ADEQ	6-10	ADEQ	ADEQ	R1	6-10
1030	ALBERT, rue	ST-JACQUES, rue	ST-JEAN, rue	0.092	800	ADEQ	1-5	ADEQ	NOW	ADEQ	ADEQ	RSS	NOW
1031	RAYMOND, rue	ST-JACQUES, rue	ST-JEAN, rue	0.086	1,316	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	NONE	ADEQ
1032	BÉLISLE, rue	LAVICTOIRE, rue	ROCHON, rue	0.088	128	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	NONE	ADEQ
1033	MARTIN, rue	Fin	ST-JOSEPH, rue	0.061	132	ADEQ	6-10	ADEQ	NOW	ADEQ	ADEQ	RSS	NOW
1034	ALBERT, rue	ST-LOUIS, rue	ST-JACQUES, rue	0.088	965	ADEQ	1-5	ADEQ	NOW	ADEQ	ADEQ	RSS	NOW
1035	FRANÇOISE, rue	NOTRE-DAME, rue	NICOLE, rue	0.117	367	ADEQ	6-10	ADEQ	1-5	ADEQ	ADEQ	RSS	1-5
1036	LAURIER, rue	LALONDE, rue	LAVIOLETTE, rue	0.094	20,222	NOW	ADEQ	ADEQ	6-10	ADEQ	ADEQ	R1	NOW
1037	CARON, rue	FRANÇOISE, rue	BELVEDERE	0.105	3,019	ADEQ	6-10	ADEQ	NOW	ADEQ	ADEQ	RSS	NOW
1038	ST-JACQUES, rue	MARION, rue	LAURIER, rue	0.100	1,513	ADEQ	6-10	ADEQ	NOW	ADEQ	ADEQ	RSS	NOW
1039	NOTRE-DAME, rue	ALMA, rue	LAURIER, rue	0.092	1,595	ADEQ	1-5	ADEQ	1-5	ADEQ	ADEQ	RSS	1-5
1040	LAURIER, rue	POWERS, rue	GAREAU, rue	0.101	9,014	ADEQ	ADEQ	ADEQ	1-5	ADEQ	ADEQ	R2	1-5
1041	LAWRENCE, rue	ALMA, rue	LAURIER, rue	0.073	2,068	ADEQ	1-5	ADEQ	1-5	ADEQ	ADEQ	RSS	1-5

Critical Deficiencies

Current Inspection Batch

ID	Street Name	From Description	To Description	Length	AADT	Cap.	Drain	Geo	SA	Width	Туре	Imp	Overall TON
1042	DROUIN, chemin	ÉMILIA, rue	BELVEDERE	2.005	1,041	ADEQ	ADEQ	ADEQ	NOW	ADEQ	ADEQ	REC	NOW
1043	ALBERT, rue	EDWARDS, rue	Fin	0.091	615	ADEQ	6-10	ADEQ	1-5	ADEQ	ADEQ	RSS	1-5
1044	BELVEDERE	CARON, rue	BELVEDERE	0.085	100	ADEQ	ADEQ	ADEQ	6-10	ADEQ	ADEQ	R1	6-10
1045	TUCKER, chemin	DU RUISSEAU, chemin	LANDRY, rue/chemin	0.120	938	ADEQ	ADEQ	ADEQ	NOW	ADEQ	ADEQ	PR2	NOW
1046	DES ÉPINETTES, rue	OAKWOOD, promenade	Fin	0.100	128	ADEQ	6-10	ADEQ	6-10	ADEQ	ADEQ	BS	6-10
1047	HENRI-MÉNARD, cour	Fin	DU GOLF, chemin	0.079	44	ADEQ	6-10	ADEQ	1-5	ADEQ	ADEQ	BS	ADEQ
1048	YVETTE, rue	LEMAY, rue	LAPORTE, rue	0.079	3,386	ADEQ	6-10	ADEQ	6-10	ADEQ	ADEQ	RSS	6-10
1049	DUQUETTE, chemin	CHAMPLAIN, rue/chemin	BRAZEAU, chemin	0.076	1,004	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	CRK	ADEQ
1050	OAKWOOD, promenade	CANAAN, chemin	HEMLOCK, rue	0.086	774	ADEQ	ADEQ	ADEQ	NOW	ADEQ	ADEQ	PR2	NOW
1051	CAR TIER, rue	DOLLARD, chemin	LAPOINTE, rue	0.083	358	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	NONE	ADEQ
1052	CLAUDE, rue	JOSÉE, rue	LANDRY, rue/chemin	0.113	304	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	NONE	ADEQ
1053	LORRAINE, rue	Fin	ADRIEN, rue	0.077	36	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	NONE	ADEQ
1054	CLUB HOUSE,	FAIRWAY, promenade	EAGLE, rue	0.101	58	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	NONE	ADEQ
4055	promenade	OÉLINE au	DECOÔTEC and	0.000	100				1050			NONE	
1000	RICHELIEU, TUE	CELINE, TUP	ADDIEN av	0.062	100	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	NUNE	ADEQ
1000	CALITUED RIG		ADRIEN, IUE	0.241	00	ADEQ	ADEQ				ADEQ	NONE	
1057	GAUTHER, IUE	PAUL, promenade	KINGSLET, IUC	0.224	288		ADEQ	ADEQ		ADEQ	ADEQ	NONE	
1000		PAUL, promenaue	CANDDA emission	0.240	300		ADEQ				ADEQ		
1009	CANDDA project	DEALMONT and	SANDRA, COISSAIL	0.071	100	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	CRK	ADEQ
1060	SANDRA, COISSant	DEAUMONT, TUE	LOUISE and	0.070	100	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	CRK	ADEQ
1001	SANDRA, UUISSant	OUD UMAVIOTA, IUC	ADDIEN NO	0.200	200		ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	CRK	
1062	SUPHIE, IUE	OLD HWT I7	ADRIEN, IUC	1 499	40	ADEQ	ADEQ 6.40	ADEQ	ADEQ	ADEQ	ADEQ		NOW
1003	DED HWT 17	RULLIN, Glennin	EIII DUSSELL Daad	1.402	400		1.5	ADEQ	1.5	ADEQ	ADEQ	DEC	1.5
1004	CÉUNE no		IOSÉE no	0.404	100	ADEQ		ADEQ		ADEQ	ADEQ	CDK	
1000		LANDE, IUU		0.101	422	ADEQ	ADEQ 6.40	ADEQ	ADEQ	ADEQ	ADEQ		
1000	ALEXANDER, IUE		AGATHE, TUE	0.070	432		0-10		NOW			REG	NOW
1067	WOODS no	CUÂTEAU avenue du		0.103	110	ADEQ	0-10	ADEQ	NOW	ADEQ	ADEQ	REG	NOW
1000	WOODS, ILLE	CHATEAU, avenue du	EDWARDS, TUE	0.009	010	ADEQ		ADEQ	NOW	ADEQ	ADEQ	RSS	NOW
1009	DING gropus des	DAVED no	EDWARDS, IUE	0.100	9,04Z	ADEQ	ADEQ	ADEQ	C 10		ADEQ	RNS D1	NOW 6.40
1070	PINO, avenue des	PATER, IUC	MORRIS, Ide	0.100	307	ADEQ	ADEQ 6.40	ADEQ	0-10 NOW	ADEQ	ADEQ		0-10 ADEO
1071	CIBOUX me	RUGER, IUE		0.100	40 550	ADEQ	0-10 ADEO	ADEQ	ADEO	ADEQ	ADEQ	NONE	ADEQ
1072	DICEON no	ST-LAURENT, IUU	DOCED min	0.102	709		ADEQ 6.40	ADEQ	ADEQ 4 E	ADEQ	ADEQ		ADEQ.
1073	PIGEON, IUE	DOUNTT ROAD 17, CIEIIIII	ROGER, IUE	0.147	100		0-10 ADEO	ADEQ		ADEQ	ADEQ	NONE	
1074	ST IOSEDU DO	DARC avonuo du		0.377	9749		ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	CDK	ADEQ
1075	I EEED//PE mo	FAILO, decline un		0.113	2,740		ADEQ	ADEQ		ADEQ	ADEQ	CINK	
1070	DELVEDEDE		DEALIMONT no	0.119	120		ADEQ	ADEQ	ADEQ 1.5	ADEQ	ADEQ		ADEQ 1.5
1077		PUTVIN, avenue	DATDICK no	0.100	102	ADEQ	ADEQ				ADEQ		
1070	CHADLEDOR mo	ACATHE mo	CLAUDETTE RIG	0.129	349	ADEQ	ADEQ	ADEQ	ADEQ 6 10	ADEQ	ADEQ	DE	ADEQ 6.40
1079	CHARLEBUIS, IUC	AGATHE, TUE	ALDEDT mo	0.130	440				0-10 MOM	ADEQ		DNC	0-10 NOW
1000	ST-LUUIS, IUC	LAURIER, IUE	ALDER I, IUE	0.100	544				NUW 6 10			RNS D4	NUW 6 10
1001	NUKKIS, IUE	LAWRENCE, IUE	CAMPEAU, arriggent	0.206	213	ADEQ	ADEQ C 40	ADEQ	0-10	ADEQ	ADEQ	K1 DCC	0-10 NOW
1002	ST-JACQUES, rue	DENU	CAMPEAU, CROISSANT	0.298	100	ADEQ	0-10	ADEQ	NOAA	ADEQ	ADEQ	K55	NOW

Critical Deficiencies

Current Inspection Batch

ID	Street Name	From Description	To Description	Length	AADT	Cap.	Drain	Geo	SA	Width	Туре	Imp	Overall TON
1083	LILIANE, rue	ST-JACQUES, rue	PATRICIA, rue	0.270	288	ADEQ	ADEQ	ADEQ	1-5	ADEQ	ADEQ	R2	1-5
1084	LAPORTE, rue	COUNTY ROAD 17, chemin	LAURIER, rue	0.137	10,176	ADEQ	ADEQ	ADEQ	1-5	ADEQ	ADEQ	R1	1-5
1085	CHAMBERLAND, rue	LAPORTE, rue	COUNTY ROAD 17, chemin	0.753	100	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	CRK	ADEQ
1086	BASELINE, chemin	CANAAN, chemin	JOANISSE, chemin	2.093	1,009	ADEQ	6-10	ADEQ	NOW	ADEQ	ADEQ	REC	NOW
1088	SCHARF, rue	McDERMITT, promenade	DES ORMES, rue	0.150	921	ADEQ	ADEQ	ADEQ	1-5	ADEQ	ADEQ	R2	1-5
1089	LALONDE, rue	LAURIER, rue	ALBERT, rue	0.169	100	ADEQ	ADEQ	ADEQ	NOW	ADEQ	ADEQ	RNS	NOW
1090	LEPAGE, rue	LAVAL, rue	MAISONNEUVE, rue	0.102	102	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	NONE	ADEQ
1091	BELVEDERE	DES CÈDRES, avenue	BELVEDERE	0.204	100	ADEQ	ADEQ	ADEQ	6-10	ADEQ	ADEQ	R1	6-10
1092	CLAUDETTE, rue	PATRICK, rue	DANIEL, crescent	0.127	246	ADEQ	6-10	ADEQ	1-5	ADEQ	ADEQ	R1	1-5
1093	BEAUMONT, rue	BELVEDERE	SANDRA, croissant	0.064	100	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	CRK	ADEQ
1094	BEAUMONT, rue	SANDRA, croissant	LOUISE, rue	0.081	100	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	CRK	ADEQ
1095	SIMONEAU, rue	ALMA, rue	LAURIER, rue	0.081	100	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	NONE	ADEQ
1096	McDERMITT, promenade	DES ÉRABLES, rue	DES POMMIERS, rue	0.101	413	ADEQ	6-10	ADEQ	NOW	ADEQ	ADEQ	REC	NOW
1097	VICTOR, rue	LAURIER, rue	Fin	0.093	208	ADEQ	1-5	ADEQ	NOW	ADEQ	ADEQ	RSS	NOW
1098	CLAUDETTE, rue	DANIEL, crescent	DANIEL, crescent	0.150	51	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	NONE	ADEQ
1099	LAPORTE, rue	LAURIER, rue	LÉONARD, rue	0.110	4,760	ADEQ	ADEQ	ADEQ	1-5	ADEQ	ADEQ	R2	1-5
1100	CARON, rue	BELVEDERE	HÉLENE, rue	0.100	3,269	ADEQ	6-10	ADEQ	6-10	ADEQ	ADEQ	RSS	6-10
1101	HENRIE, chemin	HENRIE, chemin	HENRIE, chemin	0.162	167	ADEQ	ADEQ	ADEQ	NOW	ADEQ	ADEQ	RNS	NOW
1102	MAISONNEUVE, rue	LEPAGE, rue	ST-PIERRE, rue	0.110	236	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	NONE	ADEQ
1103	LAVICTOIRE, rue	ROCHON, rue	BÉLISLE, rue	0.108	187	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	NONE	ADEQ
1104	BLUE JAY, promenade	CANAAN, chemin	CARDINAL, rue	0.093	297	ADEQ	ADEQ	ADEQ	NOW	ADEQ	ADEQ	PR2	NOW
1105	LAVIOLETTE, rue	ST-DENIS, rue	ST-JACQUES, rue	0.090	861	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	NONE	ADEQ
1106	LEMAY, rue	LABONTÉ, rue	BEAUCHAMP, rue	0.286	312	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	CRK	ADEQ
1107	CARRIÈRE, rue	COOPER, rue	DONALD, rue	0.174	204	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	NONE	ADEQ
1108	MONTCALM, rue	POTVIN, avenue	SICARD, rue	0.069	126	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	NONE	ADEQ
1109	LAPORTE, rue	LÉONARD, rue	SYLVAIN, rue	0.098	298	ADEQ	ADEQ	ADEQ	1-5	ADEQ	ADEQ	R2	1-5
1110	LAURIER, rue	BONAVISTA, rue	MONTÉE OUTAOUAIS	0.061	3,711	ADEQ	6-10	ADEQ	NOW	ADEQ	ADEQ	REC	NOW
1111	RICHELIEU, rue	ÉLIE, croissant	CÉLINE, rue	0.085	200	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	CRK	ADEQ
1112	LEMAY, rue	GERMAIN, rue	YVETTE, rue	0.300	1,548	ADEQ	ADEQ	ADEQ	6-10	ADEQ	ADEQ	R1	6-10
1113	YVES, rue	ROBERT, rue	LAURIER, rue	0.375	48	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	NONE	ADEQ
1114	ÉLIE, croissant	RICHELIEU, rue	RICHELIEU, rue	0.298	444	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	CRK	ADEQ
1115	SYLVAIN, rue	LAPORTE, rue	RAYMOND, rue	0.294	64	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	CRK	ADEQ
1116	ADR IEN, rue	SOPHIE, rue	Fin	0.141	48	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	CRK	ADEQ
1117	ADR IEN, rue	LORRAINE, rue	SOPHIE, rue	0.269	180	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	CRK	ADEQ
1118	TUCKER, chemin	DAVID, chemin (CLAR)	HUNTERS HOLLOW,	0.398	935	ADEQ	6-10	ADEQ	NOW	ADEQ	ADEQ	REC	NOW
	10/50	WATUE	promenade	0.400	004	1050	1050	1050	Novu	1050	IDEO	DUG	NOW
1119	YVES, rue	KATHIE, rue	RUBERT, rue	0.169	224	ADEQ	ADEQ	ADEQ	NOW	ADEQ	ADEQ	RNS	NOW
1120	MONTEE OUTAOUAIS	DAVID, Chemin (CLAR)	LAURIER, rue	0.943	1,940	ADEQ	6-10	ADEQ	1-5	ADEQ	ADEQ	REC	1-5
1121	HELENE, rue	GILLES, rue	CARON, RIE	0.117	4/1	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	NONE	ADEQ
1122	LALONDE, rue	ROLLIN, chemin	BOUDREAU, chemin	1.158	121	ADEQ	6-10	ADEQ	NOW	ADEQ	ADEQ	REC	NOW
1123	CHARLEBOIS, rue	CLARENCE, court	ALEXANDER, rue	0.136	8/8	ADEQ	ADEQ	ADEQ	1-5	ADEQ	ADEQ	R2	1-5
11:24	FAIRWAY, promenade	EAGLE, rue	CLUB HOUSE, promenade	0.139	204	ADEQ	ADEQ	ADEQ	1-5	ADEQ	ADEQ	R2	1-5

Critical Deficiencies

Current Inspection Batch

ID	Street Name	From Description	To Description	Length	AADT	Cap.	Drain	Geo	SA	Width	Туре	Imp	Overall TON
1125	LONGTIN, rue	Fin	LAVIGNE, chemin	0.125	94	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	NONE	ADEQ
1126	BASELINE, chemin	CARON, rue	BOUVIER, chemin	0.882	1,497	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	CRK	ADEQ
1127	LAURIER, rue	MICHEL, rue	BONAVISTA, rue	0.485	3,746	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	CRK	ADEQ
1128	NOTRE-DAME, rue	CHAPMAN, rue	Fin	0.144	174	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	CRK	ADEQ
1129	VAUDREUIL, rue	MARQUETTE, rue	LASALLE, rue	0.150	144	ADEQ	6-10	ADEQ	NOW	ADEQ	ADEQ	REC	NO₩
1130	CARON, rue	HÉLENE, rue	LAURIER, rue	0.132	3,773	ADEQ	6-10	ADEQ	1-5	ADEQ	ADEQ	RSS	1-5
1131	MAISONNEUVE, rue	DU LAC, chemin	MAISONNEUVE, rue	0.151	100	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	NONE	ADEQ
1132	CHARLEBOIS, rue	ALEXANDER, rue	AGATHE, rue	0.141	641	ADEQ	ADEQ	ADEQ	NOW	ADEQ	ADEQ	REC	NOW
1133	LASALLE, rue	VAUDREUIL, rue	LOUIS-HÉBERT, rue	0.147	137	ADEQ	ADEQ	ADEQ	NOW	ADEQ	ADEQ	REC	NOW
1134	OUELLETTE, rue	Fin	ST-PASCAL, chemin	0.134	111	ADEQ	ADEQ	ADEQ	NOW	ADEQ	ADEQ	RNS	NOW
1135	DALRYMPLE, promenade	DIANNE, avenue	THÉRÈSE, avenue	0.155	507	ADEQ	ADEQ	ADEQ	NOW	ADEQ	ADEQ	RNS	NOW
1136	CHÉNÉ, rue	POWERS, rue	ST-JOSEPH, rue	0.134	673	ADEQ	6-10	ADEQ	NOW	ADEQ	ADEQ	RSS	NOW
1138	CARON, rue	DES CÈDRES, avenue	DALRYMPLE, promenade	0.034	2,911	ADEQ	1-5	ADEQ	NOW	ADEQ	ADEQ	RSS	NOW
1139	RAYMOND, rue	LAVIOLETTE, rue	ST-JACQUES, rue	0.161	551	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	NONE	ADEQ
1140	IBERVILLE, rue	LAVIOLETTE, rue	ST-JACQUES, rue	0.141	551	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	NONE	ADEQ
1141	POTVIN, avenue	CHAMPLAIN, rue/chemin	MONTCALM, rue	0.157	224	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	NONE	ADEQ
1142	HEMLOCK, rue	Fin	OAKWOOD, promenade	0.099	128	ADEQ	ADEQ	ADEQ	NOW	ADEQ	ADEQ	PR2	NOW
1143	JULIETTE, rue	LAVIOLETTE, rue	ST-JACQUES, rue	0.140	155	ADEQ	6-10	ADEQ	1-5	ADEQ	ADEQ	REC	1-5
1144	ALBERT, rue	LALONDE, rue	ST-LOUIS, rue	0.163	100	ADEQ	6-10	ADEQ	NOW	ADEQ	ADEQ	RSS	NO₩
1145	OAKWOOD, promenade	BALSAM, rue	DES ÉPINETTES, rue	0.181	782	ADEQ	ADEQ	ADEQ	NOW	ADEQ	ADEQ	PR2	NOW
1146	MARION, rue	LAVIOLETTE, rue	ST-JACQUES, rue	0.147	161	ADEQ	6-10	ADEQ	NOW	ADEQ	ADEQ	RSS	NOW
1147	McCALL, rue	EDWARDS, rue	GAREAU, rue	0.156	88	ADEQ	1-5	ADEQ	1-5	ADEQ	ADEQ	RSS	1-5
1148	RICHER, rue	BÉLISLE, rue	LANDRY, rue/chemin	0.149	273	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	NONE	ADEQ
1149	CHARRON, rue	PATRICIA, rue	RAYMOND, rue	0.165	182	ADEQ	6-10	ADEQ	NOW	ADEQ	ADEQ	RSS	NOW
1150	PATRICIA, rue	LAVIOLETTE, rue	ST-JACQUES, rue	0.173	524	ADEQ	6-10	ADEQ	1-5	ADEQ	ADEQ	RSS	1-5
1151	ST-JEAN, rue	LAURIER, rue	VICTORIA, rue	0.158	521	ADEQ	ADEQ	ADEQ	NOW	ADEQ	ADEQ	RNS	NOW
1152	THÉRÈSE, avenue	PAUL, promenade	DALRYMPLE, promenade	0.150	208	ADEQ	ADEQ	ADEQ	NOW	ADEQ	ADEQ	RNS	NOW
1153	EDWARDS, rue	ALBERT, rue	COUNTY ROAD 17, chemin	0.163	5,411	ADEQ	ADEQ	ADEQ	1-5	ADEQ	ADEQ	R1	1-5
1154	DOLLARD, chemin	CHAMPLAIN, rue/chemin	CARTIER, rue	0.145	786	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	NONE	ADEQ
1155	CÔTÉ, rue	ASSALY GARDEN	DIANNE, avenue	0.144	240	ADEQ	ADEQ	ADEQ	NOW	ADEQ	ADEQ	RNS	NOW
1156	AGATHE, rue	WOLFE, croissant	WOLFE, croissant	0.171	400	ADEQ	6-10	ADEQ	NOW	ADEQ	ADEQ	REC	NOW
1157	KINGSLEY, rue	MARCIL, chemin	PAUL, promenade	0.171	342	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	NONE	ADEQ
1158	SICARD, rue	CHAMPLAIN, rue/chemin	MONTCALM, rue	0.150	147	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	NONE	ADEQ
1159	INDUSTRIELLE, rue	COUNTY ROAD 17, chemin	Fin	0.425	100	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	CRK	ADEQ
1160	CANAAN, chemin	BLUE JAY, promenade	OAKWOOD, promenade	0.440	359	ADEQ	ADEQ	ADEQ	1-5	ADEQ	ADEQ	PR2	1-5
1161	CHARRON, rue	ST-DENIS, rue	PATRICIA, rue	0.171	234	ADEQ	6-10	ADEQ	1-5	ADEQ	ADEQ	RSS	1-5
1162	LACROIX, chemin	GENDRON, chemin	CARRIÈRE, rue	0.170	100	ADEQ	ADEQ	ADEQ	NOW	ADEQ	ADEQ	RNS	NOW
1163	EDWARDS, rue	CATHERINE, rue	WOODS, rue	0.162	2,348	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	CRK	ADEQ
1164	SCHARF, rue	DES CERISIERS, rue	JOANISSE, chemin	0.090	598	ADEQ	ADEQ	ADEQ	1-5	ADEQ	ADEQ	R1	1-5
1165	ANDRÉ, rue	ST-DENIS, rue	PATRICIA, rue	0.152	188	ADEQ	6-10	ADEQ	NOW	ADEQ	ADEQ	RSS	NOW
1166	DESCÔTES, cercle	RICHELIEU, rue	LEMAY, rue	0.166	782	ADEQ	ADEQ	ADEQ	NOW	ADEQ	ADEQ	RNS	NO₩
1167	STE-ANNE, rue	LAVIOLETTE, rue	ST-JACQUES, rue	0.157	174	ADEQ	6-10	ADEQ	1-5	ADEQ	ADEQ	RSS	1-5

Current Inspection Batch

ID	Street Name	From Description	To Description	Length	AADT	Cap.	Drain	Geo	SA	Width	Туре	Imp	Overall TON
1168	GIROUX, rue	HUDON, rue	LAURIER, rue	0.175	912	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	CRK	ADEQ
1169	ST-DENIS, rue	ST-JACQUES, rue	TWEEDIE, rue	0.179	253	ADEQ	6-10	ADEQ	1-5	ADEQ	ADEQ	RSS	1-5
1170	ROGER, rue	PIGEON, rue	Fin	0.187	192	ADEQ	6-10	ADEQ	6-10	ADEQ	ADEQ	R1	6-10
1171	HUDON, rue	ST-JEAN, rue	GIROUX, rue	0.157	1,151	ADEQ	6-10	ADEQ	NOW	ADEQ	ADEQ	RSS	NOW
1172	YOUNG, rue	COOPER, rue	DONALD, rue	0.156	157	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	NONE	ADEQ
1173	GAGNÉ, chemin	COOPER, rue	DONALD, rue	0.179	408	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	NONE	ADEQ
1174	LAURIER, rue	MONTÉE OUTAOUAIS	COUNTY ROAD 17, chemin	0.166	3,428	ADEQ	ADEQ	ADEQ	1-5	ADEQ	ADEQ	R2	1-5
1175	ST-LAURENT, rue	GIROUX, rue	ST-JOSEPH, rue	0.170	331	ADEQ	6-10	ADEQ	NOW	ADEQ	ADEQ	RSS	NOW
1176	POULIOTTE, rue	LAURIER, rue	WALLACE, rue	0.179	1,799	ADEQ	ADEQ	ADEQ	NOW	ADEQ	ADEQ	RSS	NOW
1177	GAREAU, rue	LAURIER, rue	McCALL, rue	0.046	872	ADEQ	6-10	ADEQ	1-5	ADEQ	ADEQ	RSS	1-5
1178	LEMAY, rue	DESCÔTES, cercle	DESCÔTES, cercle	0.274	830	ADEQ	ADEQ	ADEQ	1-5	ADEQ	ADEQ	R1	1-5
1179	CHARLEBOIS, rue	LANDRY, rue/chemin	CLARENCE, court	0.091	112	ADEQ	ADEQ	ADEQ	NOW	ADEQ	ADEQ	PR2	NOW
1180	LOUIS-HÉBERT, rue	OLD HWY 17	LASALLE, rue	0.171	316	ADEQ	6-10	ADEQ	NOW	ADEQ	ADEQ	BS	NOW
1181	McDERMITT, promenade	DES POMMIERS, rue	DE LA FORÊT, rue	0.188	873	ADEQ	ADEQ	ADEQ	NOW	ADEQ	ADEQ	PR2	NOW
1182	DES POMMIERS, rue	Fin	McDERMITT, promenade	0.171	224	ADEQ	ADEQ	ADEQ	1-5	ADEQ	ADEQ	R1	1-5
1183	CLARENCE, court	Fin	CHARLEBOIS, rue	0.186	144	ADEQ	ADEQ	ADEQ	6-10	ADEQ	ADEQ	R1	6-10
1184	McDERMITT, promenade	OAKWOOD, promenade	DES ÉRABLES, rue	0.161	768	ADEQ	ADEQ	ADEQ	NOW	ADEQ	ADEQ	PR2	NOW
1185	DES CERISIERS, rue	SCHARF, rue	Fin	0.173	192	ADEQ	ADEQ	ADEQ	1-5	ADEQ	ADEQ	R1	1-5
1186	DANIEL, crescent	CLAUDETTE, rue	PATRICK, rue	0.163	112	ADEQ	ADEQ	ADEQ	6-10	ADEQ	ADEQ	R1	6-10
1187	TWEEDIE, rue	ST-DENIS, rue	PATRICIA, rue	0.183	192	ADEQ	6-10	ADEQ	NOW	ADEQ	ADEQ	RSS	NOW
1188	LACROIX, chemin	CARRIÈRE, rue	BUTLER, chemin	0.218	373	ADEQ	ADEQ	ADEQ	1-5	ADEQ	ADEQ	R2	1-5
1189	WALLACE, rue	EDWARDS, rue	GAREAU, rue	0.184	907	ADEQ	6-10	ADEQ	NOW	ADEQ	ADEQ	RSS	NOW
1190	DES ORMES, rue	SCHARF, rue	Fin	0.178	192	ADEQ	ADEQ	ADEQ	1-5	ADEQ	ADEQ	R2	1-5
1191	DE LA FORÊT, rue	Fin	McDERMITT, promenade	0.198	162	ADEQ	ADEQ	ADEQ	NOW	ADEQ	ADEQ	PR2	NOW
1192	SYCAMORE, rue	Fin	OAKWOOD, promenade	0.172	121	ADEQ	ADEQ	ADEQ	NOW	ADEQ	ADEQ	PR2	NOW
1193	MAISONNEUVE, rue	ST-PIERRE, rue	LAVAL, rue	0.195	219	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	NONE	ADEQ
1194	ST-JACQUES, rue	LAURIER, rue	ALBERT, rue	0.213	711	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	CRK	ADEQ
1195	LAPOINTE, rue	CARTIER, rue	Fin	0.204	79	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	NONE	ADEQ
1196	ST-JACQUES, rue	LAVIOLETTE, rue	STE-ANNE, rue	0.219	894	ADEQ	6-10	ADEQ	NOW	ADEQ	ADEQ	RSS	NOW
1197	McTEER, chemin	CANAAN, chemin	COUNTY ROAD 17, chemin	0.341	44	ADEQ	ADEQ	ADEQ	NOW	ADEQ	ADEQ	BS	ADEQ
1198	MORRIS, rue	LAWRENCE, rue	TANIA, rue	0.119	442	ADEQ	ADEQ	ADEQ	NOW	ADEQ	ADEQ	R2	NOW
1199	GILLES, rue	FRANÇOISE, rue	HÉLENE, rue	0.221	392	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	CRK	ADEQ
1200	LÉVIS, rue	MARCIL, chemin	LAVIGNE, chemin	0.912	262	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	NONE	ADEQ
1201	OAKWOOD, promenade	SYCAMORE, rue	HICKORY, rue	0.223	772	ADEQ	ADEQ	ADEQ	NOW	ADEQ	ADEQ	REC	NOW
1202	CLAUDE, rue	CÉLINE, rue	JOSÉE, rue	0.217	272	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	NONE	ADEQ
1203	LEMAY, rue	DESCÔTES, cercle	FONTAINE, rue	0.230	1,147	ADEQ	ADEQ	ADEQ	NOW	ADEQ	ADEQ	RNS	NOW
1204	JULIE, rue	ST-JACQUES, rue	PATRICIA, rue	0.201	169	ADEQ	ADEQ	ADEQ	1-5	ADEQ	ADEQ	R2	1-5
1205	NICOLE, rue	FRANÇOISE, rue	HÉLENE, rue	0.218	192	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	CRK	ADEQ
1206	LAURIER, rue	CARON, rue	MICHEL, rue	0.232	4,193	ADEQ	ADEQ	ADEQ	1-5	ADEQ	ADEQ	R2	1-5
1207	ALBERT, rue	ST-JEAN, rue	EDWARDS, rue	0.234	723	ADEQ	6-10	ADEQ	NOW	ADEQ	ADEQ	RNS	NOW
1208	LAVIGNE, chemin	KINGSLEY, rue	LONGTIN, rue	0.241	427	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	NONE	ADEQ
1209	POWERS, rue	CHÉNÉ, rue	LAURIER, rue	0.228	123	ADEQ	6-10	ADEQ	ADEQ	ADEQ	ADEQ	SD	6-10
Run: MAY 8,2	014 5:29PM Page:	5											

Critical Deficiencies

Current Inspection Batch

ID	Street Name	From Description	To Description	Length	AADT	Cap.	Drain	Geo	SA	Width	Туре	Imp	Overall TON
1210	HICKORY, rue	Fin	OAKWOOD, promenade	0.200	192	ADEQ	ADEQ	ADEQ	NOW	ADEQ	ADEQ	PR2	NOW
1211	VICTORIA, rue	ST-JACQUES, rue	EDWARDS, rue	0.235	100	ADEQ	6-10	ADEQ	NOW	ADEQ	ADEQ	RSS	NOW
1212	AGATHE, rue	CHARLEBOIS, rue	WOLFE, croissant	0.238	426	ADEQ	ADEQ	ADEQ	1-5	ADEQ	ADEQ	PR2	1-5
1213	JOSÉE, rue	CÉLINE, rue	CLAUDE, rue	0.223	16	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	CRK	ADEQ
1214	CHARETTE, rue	LAWRENCE, rue	MORRIS, rue	0.108	100	ADEQ	ADEQ	ADEQ	6-10	ADEQ	ADEQ	R1	6-10
1215	OAKWOOD, promenade	HEMLOCK, rue	SYCAMORE, rue	0.257	842	ADEQ	ADEQ	ADEQ	NOW	ADEQ	ADEQ	PR2	NOW
1216	DOLLARD, chemin	CARTIER, rue	Fin	0.266	96	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	NONE	ADEQ
1217	CAR TIER, rue	LAPOINTE, rue	Fin	0.270	336	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	NONE	ADEQ
1218	NOTRE-DAME, rue	CHARETTE, rue	ALMA, rue	0.166	1,132	ADEQ	6-10	ADEQ	6-10	ADEQ	ADEQ	RSS	6-10
1219	BEAUCHAMP, rue	LANDRY, rue/chemin	LEMAY, rue	0.251	279	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	NONE	ADEQ
1221	AGATHE, rue	ALEXANDER, rue	WOLFE, croissant	0.271	408	ADEQ	ADEQ	ADEQ	1-5	ADEQ	ADEQ	R2	1-5
1222	ALMA, rue	LAWRENCE, rue	NOTRE-DAME, rue	0.287	1,188	ADEQ	ADEQ	ADEQ	6-10	ADEQ	ADEQ	R1	6-10
1224	LAWRENCE, rue	MORRIS, rue	CHARETTE, rue	0.256	1,862	ADEQ	ADEQ	ADEQ	6-10	ADEQ	ADEQ	R1	6-10
1225	WOODS, rue	CHÂTEAU, avenue du	TERRACE RIVIERA	0.285	100	ADEQ	6-10	ADEQ	NO₩	ADEQ	ADEQ	RSS	NOW
1226	LANDRY, rue/chemin	CLAUDE, rue	LABONTÉ, rue	0.304	697	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	NONE	ADEQ
1227	PINS, avenue des	Fin	PAYER, rue	0.317	256	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	CRK	ADEQ
1229	ALEXANDER, rue	CHARLEBOIS, rue	AGATHE, rue	0.315	238	ADEQ	ADEQ	ADEQ	NOW	ADEQ	ADEQ	REC	NOW
1230	ROCHON, rue	LAVICTOIRE, rue	BÉLISLE, rue	0.297	228	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	NONE	ADEQ
1231	DALRYMPLE, promenade	DIANNE, avenue	PINS, avenue des	0.216	478	ADEQ	ADEQ	ADEQ	1-5	ADEQ	ADEQ	R2	1-5
1232	LÉONARD, rue	LAPORTE, rue	LAPORTE, rue	0.320	360	ADEQ	6-10	ADEQ	6-10	ADEQ	ADEQ	RNS	6-10
1234	EDWARDS, rue	WOODS, rue	Fin	0.378	1,670	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	CRK	ADEQ
1236	KINGSLEY, rue	GAUTHIER, rue	LAVIGNE, chemin	0.340	288	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	NONE	ADEQ
1237	CATHERINE, rue	CHAMBERLAND, rue	CHÂTEAU, avenue du	0.186	100	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	CRK	ADEQ
1239	PATRICK, rue	CLAUDETTE, rue	DANIEL, crescent	0.326	174	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	CRK	ADEQ
1240	PAUL, promenade	GAUTHIER, rue	LAVIGNE, chemin	0.356	405	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	NONE	ADEQ
1242	KINGSLEY, rue	PAUL, promenade	GAUTHIER, rue	0.353	238	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	NONE	ADEQ
1243	WOODS, rue	Fin	CHÂTEAU, avenue du	0.533	388	ADEQ	ADEQ	ADEQ	NOW	ADEQ	ADEQ	RSS	NOW
1244	OLD HWY 17	DALLAIRE, chemin	RAMAGE, chemin	0.388	662	ADEQ	ADEQ	ADEQ	NOW	ADEQ	ADEQ	PR2	NOW
1245	LÉVIS, rue	LAVIGNE, chemin	CHAMPLAIN, rue/chemin	0.384	289	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	NONE	ADEQ
1246	MARQUETTE, rue	VAUDREUIL, rue	VAUDREUIL, rue	0.379	256	ADEQ	ADEQ	ADEQ	NOW	ADEQ	ADEQ	REC	NOW
1247	LAURIER, rue	POULIOTTE, rue	SIMONEAU, rue	0.509	100	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	CRK	ADEQ
1248	MARCIL, chemin	LAVAL, rue	KINGSLEY, rue	0.414	692	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	NONE	ADEQ
1249	MICHEL, rue	LAURIER, rue	ROBERT, rue	0.098	894	ADEQ	ADEQ	ADEQ	1-5	ADEQ	ADEQ	R2	1-5
1250	WOLFE, croissant	AGATHE, rue	AGATHE, rue	0.408	256	ADEQ	ADEQ	ADEQ	6-10	ADEQ	ADEQ	R1	6-10
1251	CARON, rue	DAVID, chemin (CLAR)	FAIRWAY, promenade	0.125	2,726	ADEQ	ADEQ	ADEQ	1-5	ADEQ	ADEQ	R2	1-5
1252	DANIEL, crescent	CLAUDETTE, rue	PATRICK, rue	0.453	64	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	CRK	ADEQ
1253	BLUE JAY, promenade	CARDINAL, rue	CARDINAL, rue	0.492	218	ADEQ	ADEQ	ADEQ	1-5	ADEQ	ADEQ	R2	1-5
1254	BASELINE, chemin	LACASSE, chemin	CARON, rue	0.494	809	ADEQ	ADEQ	ADEQ	NOW	ADEQ	ADEQ	PR2	NOW
1255	CENTRE, rue	MONTCALM, rue	Fin	0.247	192	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	NONE	ADEQ
1256	PAYER, rue	PINS, avenue des	LAWRENCE, rue	0.500	509	ADEQ	ADEQ	ADEQ	6-10	ADEQ	ADEQ	R1	6-10
1257	CAMPEAU, croissant	ST-JACQUES, rue	ST-JACQUES, rue	0.486	458	ADEQ	6-10	ADEQ	NOW	ADEQ	ADEQ	RSS	NO₩
1258	PARC, avenue du	ST-JOSEPH, rue	SIMONEAU, rue	0.516	1,000	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	CRK	ADEQ

Critical Deficiencies

Current Inspection Batch

ID	Street Name	From Description	To Description	Length	AADT	Cap.	Drain	Geo	SA	Width	Туре	Imp	Overall TON
1259	BELVEDERE	BELVEDERE	Fin	0.019	100	ADEQ	ADEQ	ADEQ	6-10	ADEQ	ADEQ	R1	6-10
1260	BÉLISLE, rue	LAVICTOIRE, rue	LANDRY, rue/chemin	0.121	146	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	CRK	ADEQ
1261	PAUL, promenade	KINGSLEY, rue	GAUTHIER, rue	0.544	526	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	NONE	ADEQ
1262	ST-PIERRE, rue	LAVAL, rue	MAISONNEUVE, rue	0.095	128	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	NONE	ADEQ
1263	MARCIL, chemin	KINGSLEY, rue	LÉVIS, rue	0.589	493	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	NONE	ADEQ
1264	LAVICTOIRE, rue	LABONTÉ, rue	ROCHON, rue	0.064	243	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	CRK	ADEQ
1265	DE LA BAIE, chemin	Fin	RICHELIEU, rue	0.304	100	ADEQ	6-10	ADEQ	1-5	ADEQ	ADEQ	R1	1-5
1267	PATRICIA, rue	GIROUX, rue	ST-JOSEPH, rue	0.163	100	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	NONE	ADEQ
1268	LAPORTE, rue	COUNTY ROAD 17, chemin	CHAMBERLAND, rue	0.111	7,894	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	NONE	ADEQ
1269	CANAAN, chemin	OAKWOOD, promenade	BASELINE, chemin	1.075	905	ADEQ	ADEQ	ADEQ	NOW	ADEQ	ADEQ	PR2	NOW
1270	DU LAC, chemin	MAISONNEUVE, rue	ST-PASCAL, chemin	1.074	413	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	NONE	ADEQ
1271	LACROIX, chemin	BUTLER, chemin	GUINDON, chemin	1.104	582	ADEQ	ADEQ	ADEQ	6-10	ADEQ	ADEQ	R1	6-10
1272	OAKWOOD, promenade	McDERMITT, promenade	Fin	0.113	107	ADEQ	ADEQ	ADEQ	1-5	ADEQ	ADEQ	R1	1-5
1273	MAISONNEUVE, rue	MAISONNEUVE, rue	ROLLIN, chemin	1.179	100	ADEQ	ADEQ	ADEQ	1-5	ADEQ	ADEQ	R2	1-5
1275	DU LAC, chemin	HENRIE, chemin	DUQUETTE, chemin	1.220	372	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	NONE	ADEQ
1276	LABONTÉ, rue	BOUVIER, chemin	CÉLINE, rue	1.067	819	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	NONE	ADEQ
1277	LALONDE, rue	CHAMPLAIN, rue/chemin	2000 - 20	0.903	100	ADEQ	ADEQ	ADEQ	6-10	ADEQ	ADEQ	R1	6-10
1278	DUQUETTE, chemin	PILON, chemin	DU LAC, chemin	1.354	789	ADEQ	ADEQ	ADEQ	NOW	ADEQ	ADEQ	REC	NOW
1279	VINETTE, chemin	-	LACASSE, chemin	1.364	580	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	CRK	ADEQ
1280	VINETTE, chemin	JOANISSE, chemin	-	1.360	580	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	NONE	ADEQ
1281	BASELINE, chemin	BOUVIER, chemin	LANDRY, rue/chemin	1.360	1,235	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	NONE	ADEQ
1282	LAURIER, rue	HÉRITAGE, promenade	LALONDE, rue	0.401	10,000	ADEQ	ADEQ	ADEQ	1-5	ADEQ	ADEQ	R2	1-5
1283	DUQUETTE, chemin	BRAZEAU, chemin	PILON, chemin	1.402	879	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	NONE	ADEQ
1284	BASELINE, chemin	ST-JEAN, rue	LACASSE, chemin	1.421	777	ADEQ	ADEQ	ADEQ	NOW	ADEQ	ADEQ	PR2	NOW
1285	ST-JACQUES, rue	ST-DENIS, rue	-STUB w Mailboxes	0.124	711	ADEQ	6-10	ADEQ	NOW	ADEQ	ADEQ	RSS	NOW
1286	POTVIN, avenue	POTVIN, avenue	POTVIN, avenue	0.508	144	ADEQ	ADEQ	ADEQ	6-10	ADEQ	ADEQ	R1	6-10
1287	BOUDREAU, chemin	RUSSEL, chemin	LALONDE, rue	1.571	126	ADEQ	ADEQ	ADEQ	NOW	ADEQ	ADEQ	BS	NOW
1288	ST-FÉLIX, chemin	DROUIN, chemin	~	1.500	270	ADEQ	ADEQ	ADEQ	NOW	ADEQ	ADEQ	REC	NOW
1289	ROLLIN, chemin	LALONDE, rue	MAISONNEUVE, rue	1.800	329	ADEQ	ADEQ	ADEQ	NOW	ADEQ	ADEQ	BS	NOW
1290	DU LAC, chemin	ST-PASCAL, chemin	HENRIE, chemin	1.822	459	ADEQ	ADEQ	ADEQ	1-5	ADEQ	ADEQ	R1	1-5
1291	BOUVIER, chemin	RUSSELL, chemin	LAVIGNE, chemin	0.784	446	ADEQ	ADEQ	ADEQ	NO₩	ADEQ	ADEQ	BS	NOW
1292	LANDRY, rue/chemin	DU GOLF, chemin	HENRIE, chemin	1.823	567	ADEQ	ADEQ	ADEQ	NOW	ADEQ	ADEQ	REC	NOW
1293	CARON, rue	BASELINE, chemin	DAVID, chemin (CLAR)	1.956	1,261	ADEQ	ADEQ	ADEQ	NO₩	ADEQ	ADEQ	REC	NOW
1294	DU LAC, chemin	DUQUETTE, chemin	BASELINE, chemin	3.029	119	ADEQ	ADEQ	ADEQ	1-5	ADEQ	ADEQ	R2	1-5
1295	LABELLE, chemin	RUSSELL, chemin	100	1.340	256	ADEQ	ADEQ	ADEQ	NOW	ADEQ	ADEQ	REC	NOW
1296	BOUVIER, chemin	DU GOLF, chemin	LABONTÉ, rue	3.030	100	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	NONE	ADEQ
1297	OAKWOOD, promenade	HICKORY, rue	BALSAM, rue	0.059	721	ADEQ	ADEQ	ADEQ	NOW	ADEQ	ADEQ	REC	NOW
1298	LEMAY, rue	DESCÔTES, cercle	DESCÔTES, cerde	0.076	821	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	CRK	ADEQ
1299	ST-JACQUES, rue	RAYMOND, rue	JULIETTE, rue	0.073	1,357	ADEQ	6-10	ADEQ	1-5	ADEQ	ADEQ	RSS	1-5
1300	LAURIER, rue	ST-JEAN, rue	GIROUX, rue	0.154	9,146	ADEQ	ADEQ	ADEQ	1-5	ADEQ	ADEQ	R2	1-5
1301	OLD HWY 17	RAMAGE, chemin	3.1km East of RAMAGE ROAD	3.120	572	ADEQ	ADEQ	ADEQ	NOW	ADEQ	ADEQ	PR2	NOW
1302	DIANNE, avenue	CÔTÉ, rue	DALRYMPLE, promenade	0.142	383	ADEQ	ADEQ	ADEQ	6-10	ADEQ	ADEQ	R1	6-10

Current Inspection Batch

ID	Street Name	From Description	To Description	Length	AADT	Cap.	Drain	Geo	SA	Width	Туре	Imp	Overall TON
1303	LAURIER, rue	VICTOR, rue	NOTRE-DAME, rue	0.132	4,287	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	NONE	ADEQ
1304	DU RUISSEAU, chemin	DU PLATEAU, rue	TUCKER, chemin	0.488	61	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	NONE	ADEQ
1305	DU PLATEAU, rue	Fin	DU RUISSEAU, chemin	0.091	16	ADEQ	ADEQ	ADEQ	6-10	ADEQ	ADEQ	R1	ADEQ
1306	DU RUISSEAU, chemin	CLARK, chemin	DU PLATEAU, rue	0.126	119	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	NONE	ADEQ
1307	TUCKER, chemin	HUNTERS HOLLOW,	DU RUISSEAU, chemin	0.679	938	ADEQ	ADEQ	ADEQ	NOW	ADEQ	ADEQ	PR2	NOW
10.00		promenade				1050	1050	1050	NOR	1050	1050	884	1000
1308	CARDINAL, rue	BLUE JAY, promenade	BLUE JAY, promenade	0.808	328	ADEQ	ADEQ	ADEQ	NOW	ADEQ	ADEQ	PR2	NOW
1309	MORRIS, rue	TANIA, rue	CHARETTE, rue	0.101	397	ADEQ	ADEQ	ADEQ	1-5	ADEQ	ADEQ	R2	1-5
1310	NOTRE-DAME, fue	PINS, avenue des	FRANÇOISE, rue	0.138	622	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	CRK	ADEQ
1311	NOTRE-DAME, rue	TANIA, rue	CHARETTE, rue	180.0	854	ADEQ	6-10	ADEQ	NOW	ADEQ	ADEQ	RSS	NOW
1312	CHAPMAN, rue	NOTRE-DAME, rue	ST-PAUL, rue	0.276	312	ADEQ	6-10	ADEQ	1-5	ADEQ	ADEQ	RNS	1-5
1313	DALRYMPLE, promenade	PINS, avenue des	DIANNE, avenue	0.101	482	ADEQ	ADEQ	ADEQ	NOW	ADEQ	ADEQ	RNS	NOW
1314	TRILLIUM, place	Fin	PAUL, promenade	0.083	256	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	CRK	ADEQ
1315	PAUL, promenade	TRILLIUM, place	THERESE, avenue	0.086	384	ADEQ	ADEQ	ADEQ	1-5	ADEQ	ADEQ	R2	1-5
1318	CARON, rue	PAUL, promenade	DES CÉDRES, avenue	0.127	2,903	ADEQ	6-10	ADEQ	NOW	ADEQ	ADEQ	RSS	NOW
1319	FAIRWAY, promenade	CARON, rue	EAGLE, rue	0.168	280	ADEQ	ADEQ	ADEQ	NOW	ADEQ	ADEQ	BS	NOW
1320	EAGLE, rue	GREEN, rue	CLUB HOUSE, promenade	0.083	104	ADEQ	ADEQ	ADEQ	NOW	ADEQ	ADEQ	BS	NOW
1321	EAGLE, rue	CLUB HOUSE, promenade	Fin	0.028	31	ADEQ	ADEQ	ADEQ	NOW	ADEQ	ADEQ	BS	ADEQ
1322	DAVID, chemin (CLAR)	CARON, rue	CLUB HOUSE, promenade	0.313	100	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	CRK	ADEQ
1325	LABONTÉ, rue	CÉLINE, rue	LAVICTOIRE, rue	0.180	819	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	CRK	ADEQ
1326	LANDRY, rue/chemin	ROXANNE, rue	CLAUDE, rue	0.461	683	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	NONE	ADEQ
1327	LANDRY, rue/chemin	HENRIE, chemin	ROXANNE, Rue	0.440	683	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	NONE	ADEQ
1328	ÉTHIER, rue	Fin	CHAMPLAIN, rue/chemin	0.114	132	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	NONE	ADEQ
1330	OLD HWY 17	0.924km West of ROLLIN, Chemin	ROLLIN, chemin	0.924	572	ADEQ	ADEQ	ADEQ	NOW	ADEQ	ADEQ	PR2	NOW
1331	OLD HWY 17		100	0.212	572	ADEQ	ADEQ	ADEQ	NOW	ADEQ	ADEQ	PR2	NOW
1332	OLD HWY 17	670	25	0.119	572	ADEQ	ADEQ	ADEQ	NOW	ADEQ	ADEQ	PR2	NOW
1333	ST-JOSEPH, rue	Silver Lane	PATRICIA, rue	0.279	100	ADEQ	ADEQ	ADEQ	NOW	ADEQ	ADEQ	RNS	NOW
1334	LEMAY, rue	FONTAINE, rue	YVETTE, rue	0.288	1,624	ADEQ	6-10	ADEQ	1-5	ADEQ	ADEQ	RSS	1-5
1335	EDWARDS, rue	VICTORIA, rue	WALLACE, rue	0.023	3,844	ADEQ	ADEQ	ADEQ	1-5	ADEQ	ADEQ	R2	1-5
1336	LAURIER, rue	EDWARDS, rue	POWERS, rue	0.029	9,356	ADEQ	ADEQ	ADEQ	1-5	ADEQ	ADEQ	R2	1-5
1337	MAISONNEUVE, rue	Fin	LAVIGNE, chemin	0.034	32	ADEQ	6-10	ADEQ	NOW	ADEQ	ADEQ	REC	ADEQ
1338	HÉLENE, rue	West End CUL DE SAC	NICOLE, rue	0.032	56	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	CRK	ADEQ
1339	LAURIER, rue	ST-JOSEPH, rue	POULIOTTE, rue	0.034	9,243	ADEQ	ADEQ	ADEQ	6-10	ADEQ	ADEQ	R1	6-10
1340	LAURIER, rue	GAREAU, rue	ST-JOSEPH, rue	0.026	9,124	ADEQ	ADEQ	ADEQ	1-5	ADEQ	ADEQ	R2	1-5
1341	RAYMOND, rue	HÉRITAGE, promenade	ELIE, Cres	0.229	100	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	CRK	ADEQ
1342	GIROUX, rue	CHÊNE, rue	HUDON, rue	0.027	2,147	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	NONE	ADEQ
1343	MONTCALM, rue	SICARD, rue	CENTRE, rue	0.037	202	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	NONE	ADEQ
1344	MARCIL, chemin	COLETTE, rue	LEMERY, rue	0.116	100	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	NONE	ADEQ
1345	LEPAGE, rue	MAISONNEUVE, rue	Fin	0.024	16	ADEQ	6-10	ADEQ	ADEQ	ADEQ	ADEQ	CRK	ADEQ
1346	LAURIER, rue	LAPORTE, rue	HÉRITAGE, promenade	0.294	7,746	ADEQ	ADEQ	ADEQ	6-10	ADEQ	ADEQ	R1	6-10
1347	HENRIE, chemin	Fin	HENRIE, chemin	0.018	22	ADEQ	6-10	ADEQ	1-5	ADEQ	ADEQ	BS	ADEQ
1350	ASSALY GARDEN	JASPER, croissant	CÔTÉ, rue	0.083	341	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	NONE	ADEQ
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Current Inspection Batch

ID	Street Name	From Description	To Description	Length	AADT	Cap.	Drain	Geo	SA	Width	Туре	Imp	Overall TON
1351	CLARK, chemin	DU RUISSEAU, chemin	LANDRY, rue/chemin	0.097	121	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	CRK	ADEQ
1352	DIANNE, avenue	PAUL, promenade	LISE, croissant	0.080	348	ADEQ	ADEQ	ADEQ	NOW	ADEQ	ADEQ	RNS	NOW
1353	PATRICIA, rue	HÉRITAGE, promenade	JULIE, rue	0.115	1,822	ADEQ	ADEQ	ADEQ	6-10	ADEQ	ADEQ	R1	6-10
1354	EAGLE, rue	FAIRWAY, promenade	GREEN, rue	0.144	128	ADEQ	ADEQ	ADEQ	NOW	ADEQ	ADEQ	BS	NOW
1355	CARON, rue	CÔTÉ, rue	PAUL, promenade	0.108	2,889	ADEQ	1-5	ADEQ	1-5	ADEQ	ADEQ	RSS	1-5
1356	POUPART, montée	RICHELIEU, rue	LAURIER, rue	0.224	100	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	CRK	ADEQ
1357	ROBERT, rue	MICHEL, rue	ROBERT, rue	0.096	398	ADEQ	ADEQ	ADEQ	NOW	ADEQ	ADEQ	RNS	NOW
1359	GAREAU, rue	McCALL, rue	WALLACE, rue	0.117	417	ADEQ	6-10	ADEQ	NOW	ADEQ	ADEQ	RSS	NOW
1360	SCHARF, rue	DES ORMES, rue	DES CERISIERS, rue	0.163	598	ADEQ	ADEQ	ADEQ	6-10	ADEQ	ADEQ	R1	6-10
1361	EDWARDS, rue	McCALL, rue	VICTORIA, rue	0.033	3,722	ADEQ	ADEQ	ADEQ	6-10	ADEQ	ADEQ	R1	6-10
1362	LAURIER, rue	POUPART, montée	LAPORTE, rue	0.484	100	ADEQ	ADEQ	ADEQ	1-5	ADEQ	ADEQ	R2	1-5
1363	LABONTÉ, rue	LAVICTOIRE, rue	LANDRY, rue/chemin	0.126	1,316	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	NONE	ADEQ
1365	NOTRE-DAME, rue	FRANÇOISE, rue	TANIA, rue	0.067	881	ADEQ	ADEQ	ADEQ	6-10	ADEQ	ADEQ	R1	6-10
1366	CARON, rue	POTVIN, rue	CÔTÉ, rue	0.401	2,882	ADEQ	6-10	ADEQ	NO₩	ADEQ	ADEQ	RSS	NOW
1367	ST-JACQUES, rue	CAMPEAU, croissant	LAVIOLETTE, rue	0.084	855	ADEQ	6-10	ADEQ	NOW	ADEQ	ADEQ	RSS	NOW
1368	DE LA FORÊT, rue	McDERMITT, promenade	Fin	0.060	64	ADEQ	ADEQ	ADEQ	NOW	ADEQ	ADEQ	BS	NOW
1369	ST-JACQUES, rue	JULIE, rue	LILIANE, rue	0.078	451	ADEQ	ADEQ	ADEQ	1-5	ADEQ	ADEQ	R2	1-5
1370	ST-DENIS, rue	CHARRON, rue	LAVIOLETTE, rue	0.067	288	ADEQ	6-10	ADEQ	NOW	ADEQ	ADEQ	RSS	NOW
1371	ST-JACQUES, rue	LILIANE, rue	ST-DENIS, rue	0.083	584	ADEQ	ADEQ	ADEQ	1-5	ADEQ	ADEQ	R2	1-5
1372	ST-JOSEPH, rue	MARTIN, rue	PARC, avenue du	0.041	2,347	ADEQ	ADEQ	ADEQ	6-10	ADEQ	ADEQ	R1	6-10
1373	FON TAIRE, rue	Fin	LEMAY, rue	0.034	51	ADEQ	ADEQ	ADEQ	1-5	ADEQ	ADEQ	R1	1-5
1374	PATRICIA, rue	LILIANE, rue	TWEEDIE, rue	0.073	1,454	ADEQ	6-10	ADEQ	NOW	ADEQ	ADEQ	RSS	NOW
1375	VINETTE, chemin	LACASSE, chemin	BOUVIER, chemin	1.390	686	ADEQ	ADEQ	ADEQ	1-5	ADEQ	ADEQ	R2	1-5
1376	PAUL, promenade	THÉRÈSE, avenue	CARON, rue	0.028	505	ADEQ	ADEQ	ADEQ	6-10	ADEQ	ADEQ	R1	6-10
1377	PATRICIA, rue	JULIE, rue	LILIANE, rue	0.072	1,477	ADEQ	ADEQ	ADEQ	1-5	ADEQ	ADEQ	R1	1-5
1378	DALRYMPLE, promenade	THÉRÈSE, avenue	CARON, rue	0.028	543	ADEQ	ADEQ	ADEQ	NOW	ADEQ	ADEQ	RNS	NOW
1379	PINS, avenue des	NOTRE-DAME, rue	DALRYMPLE, promenade	0.035	469	ADEQ	ADEQ	ADEQ	6-10	ADEQ	ADEQ	R1	6-10
1380	CLAUDE, rue	Fin	CÉLINE, rue	0.039	33	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	NONE	ADEQ
1381	SYLVAIN, rue	Fin	LAPORTE, rue	0.134	192	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	CRK	ADEQ
1382	ROBERT, rue	KATHY, rue	MICHEL, rue	0.072	398	ADEQ	ADEQ	ADEQ	NOW	ADEQ	ADEQ	RNS	NOW
1383	CHÉNÉ, rue	GIROUX, rue	POWERS, rue	0.052	1,286	ADEQ	6-10	ADEQ	ADEQ	ADEQ	ADEQ	RSS	6-10
1384	ST-JEAN, rue	VICTORIA, rue	ALBERT, rue	0.046	497	ADEQ	ADEQ	ADEQ	NOW	ADEQ	ADEQ	RNS	NOW
1385	McDERMITT, promenade	SCHARF, rue	Fin	0.049	32	ADEQ	ADEQ	ADEQ	NOW	ADEQ	ADEQ	BS	ADEQ
1386	ST-DENIS, rue	TWEEDIE, rue	ANDRÉ, rue	0.059	202	ADEQ	6-10	ADEQ	NOW	ADEQ	ADEQ	RSS	NOW
1387	WALLACE, rue	GAREAU, rue	POULIOTTE, rue	0.064	498	ADEQ	6-10	ADEQ	NOW	ADEQ	ADEQ	RSS	NOW
1388	CLAUDETTE, rue	DANIEL, crescent	Fin	0.050	15	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	NONE	ADEQ
1389	EDWARDS, rue	WALLACE, rue	ALBERT, rue	0.056	3,949	ADEQ	ADEQ	ADEQ	1-5	ADEQ	ADEQ	R2	1-5
1390	DIANNE, avenue	DALRYMPLE, promenade	PAUL, promenade	0.047	354	ADEQ	ADEQ	ADEQ	NOW	ADEQ	ADEQ	RNS	NOW
1391	LAURIER, rue	HENRIE, chemin	VICTOR, rue	0.062	7,124	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	NONE	ADEQ
1392	DES ÉRABLES, rue	McDERMITT, promenade	Fin	0.046	96	ADEQ	ADEQ	ADEQ	1-5	ADEQ	ADEQ	R1	1-5
1393	ROBERT, rue	Fin	KATHIE, rue	0.059	79	ADEQ	ADEQ	ADEQ	NO₩	ADEQ	ADEQ	RNS	NOW
1394	HÉLENE, rue	NICOLE, rue	GILLES, rue	0.069	437	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	NONE	ADEQ
Run: MAY 8,2	014 5:29PM Page:	9											

Current Inspection Batch

ID	Street Name	From Description	To Description	Length	AADT	Cap.	Drain	Geo	SA	Width	Туре	Imp	Overall TON
1395	POTVIN, avenue	BELVEDERE	POTVIN, avenue	0.071	164	ADEQ	ADEQ	ADEQ	1-5	ADEQ	ADEQ	R2	1-5
1396	GILLES, rue	HÉLENE, rue	ALMA, rue	0.081	734	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	CRK	ADEQ
1397	FRANÇOISE, rue	NICOLE, rue	GILLES, rue	0.064	382	ADEQ	ADEQ	ADEQ	NOW	ADEQ	ADEQ	RNS	NOW
1398	ADOLPHUS, rue	CHARLEBOIS, rue	Fin	0.062	72	ADEQ	ADEQ	ADEQ	6-10	ADEQ	ADEQ	R1	6-10
1399	ST-JACQUES, rue	PATRICIA, rue	IBERVILLE, rue	0.061	1,171	ADEQ	6-10	ADEQ	NOW	ADEQ	ADEQ	RSS	NOW
1400	PARC, avenue du	SIMONEAU, rue	LAWRENCE, rue	0.069	100	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	NONE	ADEQ
1401	KATHY, rue	ROBERT, rue	YVES, rue	0.062	298	ADEQ	ADEQ	ADEQ	NOW	ADEQ	ADEQ	RNS	NOW
1402	CARON, rue	FAIRWAY, promenade	POTVIN, rue	0.683	2,793	ADEQ	ADEQ	ADEQ	NOW	ADEQ	ADEQ	REC	NOW
1403	GIROUX, rue	PATRICIA, rue	ST-LAURENT, rue	0.073	100	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	NONE	ADEQ
1404	DONALD, rue	YOUNG, rue	CARRIÈRE, rue	0.062	187	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	CRK	ADEQ
1405	EDWARDS, rue	COUNTY ROAD 17, chemin	CATHERINE, rue	0.066	3,203	ADEQ	ADEQ	ADEQ	6-10	ADEQ	ADEQ	R1	6-10
1406	DESCÔTES, cercle	LEMAY, rue	LEMAY, rue	0.312	374	ADEQ	ADEQ	ADEQ	1-5	ADEQ	ADEQ	R1	1-5
1407	LISE, croissant	DIANNE, avenue	Fin	0.066	96	ADEQ	ADEQ	ADEQ	NOW	ADEQ	ADEQ	RNS	NOW
1408	ROBERT, rue	ROBERT, rue	YVES, rue	0.055	100	ADEQ	ADEQ	ADEQ	NO₩	ADEQ	ADEQ	RNS	NOW
1409	ST-DENIS, rue	ANDRÉ, rue	CHARRON, rue	0.075	247	ADEQ	6-10	ADEQ	NOW	ADEQ	ADEQ	RSS	NOW
1410	BELVEDERE	BEAUMONT, rue	DES CÈDRES, avenue	0.060	100	ADEQ	ADEQ	ADEQ	6-10	ADEQ	ADEQ	R1	6-10
1411	LAURIER, rue	LAVIOLETTE, rue	ST-LOUIS, rue	0.068	8,641	ADEQ	ADEQ	ADEQ	1-5	ADEQ	ADEQ	R1	1-5
1412	McDERMITT, promenade	DES MERISIERS, rue	SCHARF, rue	0.079	1,124	ADEQ	ADEQ	ADEQ	1-5	ADEQ	ADEQ	R2	1-5
1413	CÔTÉ, rue	DIANNE, avenue	CARON, rue	0.292	650	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	CRK	ADEQ
1414	LAVIOLETTE, rue	IBERVILLE, rue	RAYMOND, rue	0.084	2,532	ADEQ	6-10	ADEQ	ADEQ	ADEQ	ADEQ	RSS	6-10
1415	LAVIOLETTE, rue	RAYMOND, rue	JULIETTE, rue	0.072	1,461	ADEQ	6-10	ADEQ	ADEQ	ADEQ	ADEQ	RSS	6-10
1416	TANIA, rue	MORRIS, rue	NOTRE-DAME, rue	0.106	362	ADEQ	ADEQ	ADEQ	1-5	ADEQ	ADEQ	R1	1-5
1417	DIANNE, avenue	LISE, croissant	DALRYMPLE, promenade	0.058	391	ADEQ	ADEQ	ADEQ	NOW	ADEQ	ADEQ	RNS	NOW
1418	MORRIS, rue	PINS, avenue des	LAWRENCE, rue	0.054	811	ADEQ	ADEQ	ADEQ	1-5	ADEQ	ADEQ	R1	1-5
1419	ST-JACQUES, rue	JULIETTE, rue	MARION, rue	0.076	1,407	ADEQ	6-10	ADEQ	NOW	ADEQ	ADEQ	RSS	NOW
1420	PATRICIA, rue	ANDRÉ, rue	CHARRON, rue	0.071	1,357	ADEQ	6-10	ADEQ	NOW	ADEQ	ADEQ	RSS	NOW
1421	GAGNÉ, chemin	LACROIX, chemin	COOPER, rue	0.058	948	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	CRK	ADEQ
1422	DONALD, rue	GAGNÉ, chemin	YOUNG, rue	0.080	208	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	NONE	ADEQ
1424	LAVIOLETTE, rue	STE-ANNE, rue	PATRICIA, rue	0.077	1,657	ADEQ	6-10	ADEQ	ADEQ	ADEQ	ADEQ	RSS	6-10
1425	DESCÔTES, cercle	RICHELIEU, rue	LEMAY, rue	0.410	221	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	NONE	ADEQ
1426	HENRIE, chemin	LAURIER, rue	HENRIE, chemin	0.069	244	ADEQ	ADEQ	ADEQ	NOW	ADEQ	ADEQ	RNS	NOW
1427	LAVIGNE, chemin	MAISONNEUVE, rue	PAUL, promenade	0.077	412	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	CRK	ADEQ
1428	CARON, rue	DALRYMPLE, promenade	FRANÇOISE, rue	0.074	3,004	ADEQ	6-10	ADEQ	NO₩	ADEQ	ADEQ	RSS	NOW
1429	PATRICIA, rue	TWEEDIE, rue	ANDRÉ, rue	0.074	1,092	ADEQ	NOW	ADEQ	NOW	ADEQ	ADEQ	RSS	NOW
1430	PATRICIA, rue	CHARRON, rue	LAVIOLETTE, rue	0.074	1,386	ADEQ	6-10	ADEQ	NOW	ADEQ	ADEQ	RSS	NOW
1431	RAYMOND, rue	CHARRON, rue	LAVIOLETTE, rue	0.075	228	ADEQ	6-10	ADEQ	1-5	ADEQ	ADEQ	RSS	1-5
1432	ST-JACQUES, rue	CAMPEAU, croissant	CAMPEAU, croissant	0.079	750	ADEQ	6-10	ADEQ	NOW	ADEQ	ADEQ	RSS	NOW
1433	LAPORTE, rue	YVETTE, rue	LÉONARD, rue	0.077	3,563	ADEQ	ADEQ	ADEQ	1-5	ADEQ	ADEQ	R2	1-5
1434	LAVIGNE, chemin	LAVAL, rue	MAISONNEUVE, rue	0.096	458	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	NONE	ADEQ
1435	COOPER, rue	GAGNÉ, chemin	YOUNG, rue	0.056	272	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	NONE	ADEQ
1436	INDIAN CREEK, chemin	RUSSELL, chemin	Fin	0.731	214	ADEQ	6-10	ADEQ	NOW	ADEQ	ADEQ	BS	NOW
1437	ST-JACQUES, rue	IBERVILLE, rue	RAYMOND, rue	0.080	1,251	ADEQ	6-10	ADEQ	NOW	ADEQ	ADEQ	RSS	NOW
Run: MAY 8,2	014 5:29PM Page:	10											

Critical Deficiencies

Current Inspection Batch

ID	Street Name	From Description	To Description	Length	AADT	Cap.	Drain	Geo	SA	Width	Туре	Imp	Overall TON
1438	LAWRENCE, rue	MORRIS, rue	ALMA, rue	0.096	2,268	ADEQ	ADEQ	ADEQ	1-5	ADEQ	ADEQ	R2	1-5
1439	LALONDE, rue	ALBERT, rue	Fin	0.072	100	ADEQ	ADEQ	ADEQ	NOW	ADEQ	ADEQ	RNS	NOW
1440	POTVIN, avenue	CARON, rue	BELVEDERE	0.065	280	ADEQ	ADEQ	ADEQ	6-10	ADEQ	ADEQ	R1	6-10
1441	MAISONNEUVE, rue	LAVIGNE, chemin	LEPAGE, rue	0.082	163	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	NONE	ADEQ
1442	LAVIOLETTE, rue	JULIETTE, rue	MARION, rue	0.073	1,957	ADEQ	6-10	ADEQ	ADEQ	ADEQ	ADEQ	RSS	6-10
1443	PAUL, promenade	DIANNE, avenue	TRILLIUM, place	0.066	347	ADEQ	ADEQ	ADEQ	NOW	ADEQ	ADEQ	RNS	NOW
1444	LAVIOLETTE, rue	PATRICIA, rue	IBERVILLE, rue	0.079	1,190	ADEQ	6-10	ADEQ	ADEQ	ADEQ	ADEQ	RSS	6-10
1445	McDERMITT, promenade	DE LA FORÊT, rue	DES MERISIERS, rue	0.320	1,061	ADEQ	ADEQ	ADEQ	1-5	ADEQ	ADEQ	R2	1-5
1446	DES MERISIERS, rue	McDERMITT, promenade	Fin	0.147	160	ADEQ	ADEQ	ADEQ	1-5	ADEQ	ADEQ	BS	1-5
1447	ROCHELANDAISE, avenue	POULIOTTE, rue	Fin	0.250	100	ADEQ	6-10	ADEQ	1-5	NOW	ADEQ	RSS	NOW
1448	LEMAY, rue	LEMAY, rue	GERMAIN, rue	0.231	849	ADEQ	ADEQ	ADEQ	6-10	ADEQ	ADEQ	R1	6-10
1449	EDWARDS, rue	MANON, rue	McCALL, rue	0.028	4,000	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	CRK	ADEQ
1450	EDWARDS, rue	LAURIER, rue	MANON, rue	0.051	4,000	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	NONE	ADEQ
1451	CHARBONNEAU, rue	COUNTY ROAD 17, chemin	Fin	0.493	112	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	CRK	ADEQ
1452	HÉRITAGE, promenade	RAYMOND, rue	LAURIER, rue	0.200	1,000	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	NONE	ADEQ
1453	HÉRITAGE, promenade	PATRICIA, rue	RAYMOND, rue	0.205	1,000	ADEQ	ADEQ	ADEQ	6-10	ADEQ	ADEQ	R1	6-10
1454	PATRICIA, rue	ST-JEAN, rue	GIROUX, rue	0.196		ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	NONE	ADEQ
1455	ST-JACQUES, rue	HÉRITAGE, promenade	SÉBASTIEN, croissant	0.041	100	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	CRK	ADEQ
1456	HÉRITAGE, promenade	ST-JACQUES, rue	PATRICIA, rue	0.128	100	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	NONE	ADEQ
1457	LOUISE, rue	BEAUMONT, rue	SANDRA, croissant	0.258	100	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	CRK	ADEQ
1458	ST-JACQUES, rue	SÉBASTIEN, croissant	JULIE, rue	0.065	100	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	NONE	ADEQ
1459	SÉBASTIEN, croissant	ST-JACQUES, rue	Fin	0.059	100	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	CRK	ADEQ
1461	ST-PAUL, rue	LAURIER, rue	CHAPMAN, rue	0.080	100	ADEQ	6-10	ADEQ	1-5	ADEQ	ADEQ	RSS	1-5
1462	SANDRA, croissant	BEAUMONT, rue	LOUISE, rue	0.418	100	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	CRK	ADEQ
1463	DUBOIS, rue	RAMAGE, chemin	RAMAGE, chemin	0.775	208	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	NONE	ADEQ
1464	CATHERINE, rue	CHÂTEAU, avenue du	EDWARDS, rue	0.377	855	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	CRK	ADEQ
1465	MANON, rue	Fin	EDWARDS, rue	0.103	100	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	CRK	ADEQ
1466	LAURIER, rue	NOTRE-DAME, rue	CARON, rue	0.297	100	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	NONE	ADEQ
1468	YVES, rue	Fin	KATHIE, rue	0.135	96	ADEQ	ADEQ	ADEQ	NOW	ADEQ	ADEQ	RNS	NOW
1469	BONAVISTA, rue	SANDRA, croissant	LAURIER, rue	0.384	926	ADEQ	ADEQ	ADEQ	6-10	ADEQ	ADEQ	R1	6-10
1470	DROUIN, chemin	RUSSELL, chemin	ÉMILIA, rue	1.040	1,170	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	NONE	ADEQ
1471	LEMERY, rue	MARCIL, chemin	COLETTE, rue	0.665	100	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	CRK	ADEQ
1472	LEMERY, rue	MOISE-GENDRON, rue	COLETTE, rue	0.210	100	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	CRK	ADEQ
1473	LEMERY, rue	COLETTE, rue	CHAMPLAIN, rue/chemin	0.282	100	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	NONE	ADEQ
1474	CHÂTEAU, avenue du	CATHERINE, rue	WOODS, rue	0.060	100	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	CRK	ADEQ
1475	CHAMBERLAND, rue	COUNTY ROAD 17, chemin	CATHERINE, rue	0.431	1,093	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	CRK	ADEQ
1476	CÔTÉ, rue	QUARTZ, avenue	JASPER, croissant	0.137	100	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	NONE	ADEQ
1477	CRYSTAL, cour	QUARTZ, avenue	JASPER, croissant	0.166	100	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	NONE	ADEQ
1478	CRYSTAL, cour	Fin	QUARTZ, avenue	0.102	100	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	CRK	ADEQ
1482	Silver Lane	ST-JOSEPH, rue	EMERALD, rue	0.159	100	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	NONE	ADEQ
1484	POULIOTTE, rue	WALLACE, rue	ROCHELANDAISE, avenue	0.096	2,364	ADEQ	ADEQ	ADEQ	NOW	ADEQ	ADEQ	R2	NOW

Critical Deficiencies

Current Inspection Batch

ID	Street Name	From Description	To Description	Length	AADT	Cap.	Drain	Geo	SA	Width	Туре	Imp	Overall TON
1487	ALMA, rue	NOTRE-DAME, rue	GILLES, rue	0.148	845	ADEQ	ADEQ	ADEQ	6-10	ADEQ	ADEQ	R1	6-10
1488	COLETTE, rue	LEMERY, rue	LEMERY, rue	0.503	100	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	CRK	ADEQ
1489	CURÉ-TALBOT, rue	Fin	COLETTE, rue	0.040	100	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	CRK	ADEQ
1490	COLETTE, rue	CURÉ-TALBOT, rue	LEMERY, rue	0.437	100	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	NONE	ADEQ
1491	COLETTE, rue	MOISE-GENDRON, rue	LEMERY, rue	0.090	100	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	CRK	ADEQ
1492	COLETTE, rue	MARCIL, chemin	CURÉ-TALBOT, rue	0.264	100	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	CRK	ADEQ
1493	MOISE-GENDRON, rue	LEMERY, rue	COLETTE, rue	0.454	100	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	CRK	ADEQ
1494	MOISE-GENDRON, rue	COLETTE, rue	Fin	0.128	100	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	NONE	ADEQ
1495	MARCIL, chemin	LÉVIS, rue	COLETTE, rue	0.100	100	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	CRK	ADEQ
1496	LEMERY, rue	COLETTE, rue	MOISE-GENDRON, rue	0.150	100	ADEQ	ADEQ	ADEQ	6-10	ADEQ	ADEQ	R1	6-10
1497	RICHELIEU, rue	RICHELIEU, rue	DE LA BAIE, chemin	0.057	100	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	CRK	ADEQ
1498	CARMEN BERGERON, rue	RICHELIEU, rue	COUNTY ROAD 17, chemin	0.094	100	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	CRK	ADEQ
1499	SCHNUPP, chemin	1.3km South of RUSSELL, chemin	RUSSELL, chemin	1.314	173	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	NONE	ADEQ
1568	GAGNÉ, chemin	DONALD, rue	1.3km North of DONALD, rue (Pit Entrance)	1.300	100	ADEQ	ADEQ	ADEQ	1-5	ADEQ	ADEQ	R2	1-5
1580	BUTLER, chemin	RECREATIL TRAIL	LACROIX, chemin	1.010	185	ADEQ	ADEQ	ADEQ	NOW	ADEQ	ADEQ	BS	NOW
1603	LACROIX, chemin	GUINDON, chemin	14	0.276	304	ADEQ	ADEQ	ADEQ	NOW	ADEQ	ADEQ	BS	NOW
1606	CANAAN, chemin	12	BLUE JAY, promenade	0.154	100	ADEQ	ADEQ	ADEQ	NOW	ADEQ	ADEQ	BS	NOW
1608	RAYMOND, rue	ELIOT, rue	CHARRON, rue	0.164	100	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	NONE	ADEQ
1609	2	RAYMOND, rue	Fin	0.199	100	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	CRK	ADEQ
1610	-	Fin	LAVIOLETTE, rue	0.140	100	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	CRK	ADEQ
1611	-	RAYMOND, rue	Fin	0.079	100	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	NONE	ADEQ
1612	PATRICIA, rue	ST-JACQUES, rue	ST-JEAN, rue	0.077	32	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	CRK	ADEQ
1613	DAVID, chemin (CLAR)	CLUB HOUSE, promenade	181	0.064	100	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	CRK	ADEQ
1614	-	Fin	CARON, rue	0.133	100	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	NONE	ADEQ
1615	-	141	141	0.176	100	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	NONE	ADEQ
1616	-	10	10	0.479	100	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	NONE	ADEQ
1617	JASPER, croissant	127	9 <u>2</u> 6	0.136	100	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	NONE	ADEQ
1618	JASPER, croissant	121	19 <u>1</u>	0.163	100	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	NONE	ADEQ
1619	JASPER, croissant	151	151	0.147	100	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	NONE	ADEQ
1620	JASPER, croissant	P R i	18	0.080	100	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	NONE	ADEQ
1621	JASPER, croissant	EMERALD, rue	CRYSTAL, cour	0.070	100	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	NONE	ADEQ
1622	JASPER, croissant	CRYSTAL, cour	ASSALY GARDEN	0.080	100	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	NONE	ADEQ
1623	JASPER, croissant	CÔTÉ, rue	QUARTZ, avenue	0.308	100	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	NONE	ADEQ
1624	JASPER, croissant	EMERALD, rue	QUARTZ, avenue	0.243	100	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	NONE	ADEQ
1625	EMERALD, rue	Silver Lane	JASPER, croissant	0.046	100	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	CRK	ADEQ
1626	EMERALD, rue	Silver Lane	12	0.219	100	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	NONE	ADEQ
1627	EMERALD, rue	QUARTZ, avenue	JASPER, croissant	0.214	100	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	NONE	ADEQ
1628	QUARTZ, avenue	CÔTÉ, rue	JASPER, croissant	0.097	100	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	NONE	ADEQ
1629	QUARTZ, avenue	CRYSTAL, cour	CÔTÉ, rue	0.081	100	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	NONE	ADEQ
1630	QUARTZ, avenue	- 	CRYSTAL, cour	0.078	100	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	NONE	ADEQ

Critical Deficiencies

Current Inspection Batch

ID	Street Name	From Description	To Description	Length	AADT	Cap.	Drain	Geo	SA	Width	Туре	Imp	Overall TON
1631	QUARTZ, avenue		(H)	0.216	100	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	NONE	ADEQ
1632	JADE, rue	19 C	-	0.128	100	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	NONE	ADEQ
1633	-	12	10	0.062	100	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	NONE	ADEQ
1634	MICA, crescent	12	12	0.268	100	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	NONE	ADEQ
1635	THIVIERGE, rue	12	820	0.083	100	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	NONE	ADEQ
1636	OPALE, rue		35	0.587	100	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	NONE	ADEQ
1637	MERCURY, rue	171	25	0.165	100	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	CRK	ADEQ
1638	MERCURY, rue	171	125	0.055	100	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	CRK	ADEQ
1639	TOPAZE, rue		10	0.044	100	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	CRK	ADEQ
1640	TOPAZE, rue		(8)	0.091	100	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	CRK	ADEQ
1641	TOPAZE, rue	12		0.194	100	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	NONE	ADEQ
1642	TOPAZE, rue	9	194 (M)	0.257	100	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	NONE	ADEQ
1643	TOPAZE, rue	12	20	0.069	100	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	NONE	ADEQ
1644	DOCTEUR CORBEIL, rue	121	10	0.139	100	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	NONE	ADEQ
1645	BÉLISLE, rue	ROCHON, rue	RICHER, rue	0.083	87	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	CRK	ADEQ
1646	MAISONNEUVE, rue	DU LAC, chemin	MAISONNEUVE, rue	0.120	100	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	NONE	ADEQ
1647	DU LAC, chemin	MAISONNEUVE, rue	MAISONNEUVE, rue	0.127	100	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	NONE	ADEQ
1648	GRAND TRONC, rue	RUSSELL, chemin	Fin	0.147	19	ADEQ	ADEQ	ADEQ	1-5	ADEQ	ADEQ	BS	ADEQ
1649	DANIKA, rue	-	20	0.111	100	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	NONE	ADEQ
1650	DANIKA, rue	~	·*:	0.218	100	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	NONE	ADEQ
1651	-	19	18	0.094	100	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	NONE	ADEQ
1652	NELLIE, rue	DANIK, rue	South end	0.066	100	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	NONE	ADEQ
1653	DANIKA, rue	₩	32	0.131	100	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	NONE	ADEQ
1654	ÉMILIA, rue	Fin	DROUIN, chemin	0.081	68	ADEQ	ADEQ	ADEQ	NOW	ADEQ	ADEQ	BS	NOW
1655	DROUIN, chemin	BELVEDERE	LACROIX, chemin	0.094	100	ADEQ	ADEQ	ADEQ	NOW	ADEQ	ADEQ	BS	NOW
1656	POUPART, montée	192m South of RICHELIEU	RICHELIEU, rue	0.192	195	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	NONE	ADEQ
1657	RICHELIEU, rue	POUPART, montée	ÉLIE, croissant	0.046	396	ADEQ	ADEQ	ADEQ	1-5	ADEQ	ADEQ	R1	1-5
1658	RICHELIEU, rue	RICHELIEU, rue	CARMEN BERGERON, rue	0.089	100	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	CRK	ADEQ
1659	DE LA BAIE, chemin	RICHELIEU, rue	CARMEN BERGERON, rue	0.050	100	ADEQ	ADEQ	ADEQ	NO₩	ADEQ	ADEQ	BS	NOW
1660	-	LAPORTE, rue	14	0.018	100	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	NONE	ADEQ
1661	RAMAGE, chemin	COUNTY ROAD 17, chemin	DUBOIS, rue	0.070	340	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	CRK	ADEQ
1662	RAMAGE, chemin	DUBOIS, rue	DUBOIS, rue	0.148	100	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	NONE	ADEQ
1663	RAMAGE, chemin	DUBOIS, rue	121	0.262	100	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	NONE	ADEQ
1664	ST-JOSEPH, rue	PATRICIA, rue	ST-LAURENT, rue	0.076	100	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	NONE	ADEQ
1665	GIROUX, rue	Fin	PATRICIA, rue	0.042	100	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	CRK	ADEQ
1666	HENRIE, chemin	LAURIER, rue	HENRIE, chemin	0.105	100	ADEQ	ADEQ	ADEQ	NOW	ADEQ	ADEQ	RNS	NOW
1667	HUNTERS HOLLOW,	TUCKER, chemin	Fin	0.482	16	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	CRK	ADEQ
5001	promenade W/II SON chomin	McINTVDE, allóa (Lana)	Fin	1 717	272		NOW/			NOW		DEC	NOW
5001	RODRIGUE me	Fin		0.000	100		6 10				NOW	RSS	NOW
5002	PAGO chemin	COUNTY ROAD 17 chemin	Fin	1.855	100	ADEQ				NOW		REC	NOW
5003	MelNTVDE, allée (Lanc)	WILSON chomin		0.107	80	ADEO	6 10	ADEO	ADEO	NOW	NOW	DEC	NOW
0004	woin TTRE, allee (Lane)	WILSON, CIEIIIII	OLD HWY IT	0.127	00	ADEQ	0-10	ADEQ	ADEQ	NOAA	NOAA	REC	NO44

Critical Deficiencies

Current Inspection Batch

ID	Street Name	From Description	To Description	Length	AADT	Cap.	Drain	Geo	SA	Width	Туре	Imp	Overall TON
5005	WILSON, chemin	McINTYRE, allée (Lane)	OLD HWY 17	0.149	256	ADEQ	6-10	ADEQ	ADEQ	ADEQ	NOW	REC	NOW
5006	POUPART, montée	SOuth Limit Paverment	ST-JEAN, rue	1.295	195	ADEQ	ADEQ	ADEQ	ADEQ	NOW	ADEQ	REC	NOW
5007	RAMAGE, chemin	600m South of OLD HWY 17	OLD HWY 17	0.605	100	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	BS	ADEQ
5010	RAMAGE, chemin	342m South of HWY 17	COUNTY ROAD 17, chemin	0.342	136	ADEQ	ADEQ	ADEQ	NOW	NOW	ADEQ	BS	NOW
5011	DAVID, chemin (CLAR)	CLUB HOUSE, promenade	TUCKER, chemin	0.916	100	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	R1	ADEQ
5013	CLARK, chemin	LANDRY, rue/chemin	Fin	2.351	390	ADEQ	ADEQ	ADEQ	ADEQ	NOW	ADEQ	REC	NOW
5014	ROLLIN, chemin	COUNTY ROAD 17, chemin	OLD HWY 17	0.195	182	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	NONE	ADEQ
5016	BOUVIER, chemin	LABONTÉ, rue	BASELINE, chemin	3.022	100	ADEQ	ADEQ	ADEQ	ADEQ	NOW	ADEQ	BS	NOW
5017	LACASSE, chemin	VINETTE, chemin	BASELINE, chemin	3.032	211	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	GRR2	ADEQ
5018	CANAAN, chemin	VINETTE, chemin	South of BLUE JAY DRIVE	1.369	100	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	GRR	ADEQ
5021	BASELINE, chemin	LANDRY, rue/chemin	BRAZEAU, chemin	1.303	498	ADEQ	ADEQ	NOW	ADEQ	NOW	NOW	REC	NOW
5023	VINETTE, chemin	CANAAN, chemin	NOLAN, chemin	0.662	137	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	GRR	ADEQ
5024	BASELINE, chemin	BRAZEAU, chemin	PILON, chemin	1.396	353	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	GRR	ADEQ
5025	VINETTE, chemin	NOLAN, chemin	JOANISSE, chemin	1.395	145	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	GRR	ADEQ
5026	BASELINE, chemin	PILON, chemin	DU LAC, chemin	1.351	312	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	GRR2	ADEQ
5027	ROLLIN, chemin	BASELINE, chemin	COUNTY ROAD 17, chemin	2.543	306	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	GRR	ADEQ
5028	PILON, chemin	DUQUETTE, chemin	BASELINE, chemin	3.048	177	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	GRR	ADEQ
5029	CANAAN, chemin	DU GOLF, chemin	VINETTE, chemin	3.041	277	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	GRR	ADEQ
5030	BRAZEAU, chemin	DUQUETTE, chemin	BASELINE, chemin	3.024	189	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	GRR2	ADEQ
5031	BASELINE, chemin	DU LAC, chemin	ROLLIN, chemin	1.383	209	ADEQ	ADEQ	ADEQ	NOW	ADEQ	ADEQ	BS	NOW
5032	BASELINE, chemin	ROLLIN, chemin	Fin	1.361	124	ADEQ	ADEQ	ADEQ	NOW	NOW	ADEQ	REC	NOW
5033	NOLAN, chemin	DU GOLF, chemin	VINETTE, chemin	3.031	249	ADEQ	ADEQ	ADEQ	ADEQ	NOW	ADEQ	GRR	NOW
5034	ROLLIN, chemin	DUQUETTE, chemin	BASELINE, chemin	3.039	240	ADEQ	ADEQ	ADEQ	NOM	ADEQ	ADEQ	BS	NOW
5035	HENRIE, chemin	LANDRY, rue/chemin	CHAMPLAIN, rue/chemin	1.260	204	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	GRR	ADEQ
5036	GAGNÉ, chemin	127	DU GOLF, chemin	1.482	100	ADEQ	ADEQ	ADEQ	NOW	ADEQ	ADEQ	BS	NOW
5037	DUQUETTE, chemin	DU LAC, chemin	ROLLIN, chemin	1.337	269	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	GRR2	ADEQ
5038	HENRIE, chemin	CHAMPLAIN, rue/chemin	PILON, chemin	1.378	92	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	GRR	ADEQ
5040	NOLAN, chemin	BELVEDERE	DU GOLF, chemin	3.044	191	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	GRR	ADEQ
5047	HENRIE, chemin	PILON, chemin	DU LAC, chemin	1.322	88	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	GRR2	ADEQ
5054	HENRIE, chemin	DU LAC, chemin	ROLLIN, chemin	1.332	73	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	GRR2	ADEQ
5056	ROLLIN, chemin	HENRIE, chemin	DUQUETTE, chemin	1.202	248	ADEQ	ADEQ	ADEQ	NOW	ADEQ	ADEQ	BS	NOW
5057	BELVEDERE	Fin	NOLAN, chemin	0.740	100	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	GRR2	ADEQ
5058	PILON, chemin	ST-PASCAL, chemin	HENRIE, chemin	1.784	94	ADEQ	ADEQ	ADEQ	ADEQ	NOW	ADEQ	GRR	NOW
5059	ROLLIN, chemin	HENRIE, chemin	ST-PASCAL, chemin	1.821	261	ADEQ	ADEQ	ADEQ	NOW	ADEQ	ADEQ	BS	NOW
5060	BELVEDERE	NOLAN, chemin	DROUIN, chemin	1.425	147	ADEQ	ADEQ	ADEQ	NOW	ADEQ	ADEQ	BS	NOW
5061	PILON, chemin	Fin	ST-PASCAL, chemin	0.395	144	ADEQ	ADEQ	ADEQ	ADEQ	NOW	ADEQ	REC	NOW
5062	GUINDON, chemin	LACROIX, chemin	DU GOLF, chemin	3.039	349	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	GRR2	ADEQ
5063	BOUVIER, chemin	LACROIX, chemin	DU GOLF, chemin	3.032	370	ADEQ	ADEQ	ADEQ	ADEQ	NOW	ADEQ	REC	NOW
5064	LACROIX, chemin	(m)	BOUVIER, chemin	1.244	304	ADEQ	ADEQ	ADEQ	NOW	ADEQ	ADEQ	BS	NOW
5075	ROLLIN, chemin	MAISONNEUVE, rue	ST-PASCAL, chemin	1.196	273	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	GRR2	ADEQ
5093	LEGAULT, chemin	BUTLER, chemin	LAVIGNE, chemin	0.085	214	ADEQ	ADEQ	ADEQ	ADEQ	NOW	ADEQ	REC	NOW
5095	MAISONNEUVE, rue	ROLLIN, chemin	Fin	1.238	236	ADEQ	ADEQ	ADEQ	ADEQ	NOW	ADEQ	REC	NOW

Critical Deficiencies

Current Inspection Batch

ID	Street Name	From Description	To Description	Length	AADT	Cap.	Drain	Geo	SA	Width	Туре	Imp	Overall TON
5097	BOUVIER, chemin	LAVIGNE, chemin	LACROIX, chemin	1.189	283	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	GRR2	ADEQ
5098	LALONDE, rue	Fin	CHAMPLAIN, rue/chemin	0.360	100	ADEQ	ADEQ	ADEQ	ADEQ	NOW	ADEQ	REC	NOW
5099	LAVIGNE, chemin	LEGAULT, chemin	BOUVIER, chemin	1.642	93	ADEQ	ADEQ	ADEQ	NOW	ADEQ	ADEQ	BS	NOW
5100	LEGAULT, chemin	RUSSELL, chemin	BUTLER, chemin	1.820	528	ADEQ	ADEQ	ADEQ	ADEQ	NOW	NOW	BS	NOW
5102	LAVIGNE, chemin	BOUVIER, rue	MARCIL, chemin	1.293	115	ADEQ	ADEQ	ADEQ	NOW	ADEQ	ADEQ	BS	NOW
5103	MARCIL, chemin	LAVIGNE, chemin	Fin	0.313	86	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	GRR2	ADEQ
5104	LALONDE, rue	LABELLE, chemin	DU LAC, chemin	1.295	94	ADEQ	ADEQ	ADEQ	ADEQ	NOW	ADEQ	REC	NOW
5105	DU LAC, chemin	LALONDE, rue	MAISONNEUVE, rue	1.798	47	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	REC	ADEQ
5106	LALONDE, rue	-	ROLLIN, chemin	1.279	100	ADEQ	ADEQ	ADEQ	ADEQ	NOW	ADEQ	REC	NOW
5107	MARCIL, chemin	LEMERY, rue	LAVIGNE, chemin	0.506	214	ADEQ	ADEQ	ADEQ	ADEQ	NOW	ADEQ	REC	NOW
5108	INDIAN CREEK, chemin	Fin	RUSSELL, chemin	2.047	335	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	GRR2	ADEQ
5109	ROLLIN, chemin	Fin	LALONDE, rue	1.214	32	ADEQ	ADEQ	ADEQ	ADEQ	NOW	ADEQ	REC	ADEQ
5110	DROUIN, chemin	Fin	ST-FÉLIX, chemin	0.959	15	ADEQ	ADEQ	ADEQ	ADEQ	NOW	ADEQ	REC	ADEQ
5111	BOUVIER, chemin	ST-FÉLIX, chemin	RUSSELL, chemin	1.182	282	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	GRR2	ADEQ
5112	MARCIL, chemin	Fin	LAVAL, rue	0.187	32	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	REC	ADEQ
5115	ST-FÉLIX, chemin		BOUVIER, chemin	3.127	270	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	GRR2	ADEQ
5116	ST-FÉLIX, chemin	BOUVIER, chemin	2000 - 20	0.629	127	ADEQ	ADEQ	ADEQ	NOW	NOW	ADEQ	REC	NOW
5117	ST-FÉLIX, chemin	-	CHAMPLAIN, rue/chemin	1.911	127	ADEQ	ADEQ	ADEQ	NOW	ADEQ	ADEQ	BS	NOW
5118	BOUVIER, chemin	Fin	ST-FÉLIX, chemin	1.483	64	ADEQ	ADEQ	ADEQ	ADEQ	NOW	ADEQ	REC	NOW
5140	BOILEAU, chemin	ETTYVILLE, chemin	RUSSELL, chemin	2.102	113	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	GRR	ADEQ
5165	JOHNSTON, chemin	ETTYVILLE, chemin	RUSSELL, chemin	2.416	20	ADEQ	ADEQ	ADEQ	NOW	NOW	ADEQ	REC	ADEQ
5192	BOILEAU, chemin	SCHNUPP, chemin	ETTYVILLE, chemin	0.071	62	ADEQ	ADEQ	ADEQ	NOW	NOW	ADEQ	REC	NOW
5196	ETTYVILLE, chemin	BOILEAU, chemin	JOHNSTON, chemin	1.372	62	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	GRR2	ADEQ
5197	BOILEAU, chemin	RONDEAU, chemin	SCHNUPP, chemin	0.846	91	ADEQ	ADEQ	ADEQ	ADEQ	NOW	ADEQ	REC	NOW
5198	ETTYVILLE, chemin	JOHNSTON, chemin	Fin	0.978	78	ADEQ	ADEQ	ADEQ	NOW	ADEQ	ADEQ	BS	NOW
5199	RONDEAU, chemin	BOILEAU, chemin	Fin	0.219	16	ADEQ	ADEQ	ADEQ	ADEQ	NOW	ADEQ	REC	ADEQ
5200	BOILEAU, chemin	Fin	RONDEAU, chemin	0.618	23	ADEQ	ADEQ	ADEQ	ADEQ	NOW	ADEQ	REC	ADEQ
5201	BOUVIER, chemin	1911) 1911	~	1.004	100	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	GRR2	ADEQ
5202	SCHNUPP, chemin	LABELLE, chemin	BOILEAU, chemin	1.670	173	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	GRR2	ADEQ
5203	DROUIN, chemin	141	RUSSELL, chemin	0.138	100	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	GRR	ADEQ
5204	LALONDE, rue	541 1	LABELLE, chemin	0.420	100	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	GRR	ADEQ
5205	DU LAC, chemin	BASELINE, chemin	Fin	0.656	112	ADEQ	ADEQ	ADEQ	NOW	NOW	ADEQ	REC	NOW
5206	LABELLE, chemin	123	LALONDE, rue	1.697	256	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	GRR	ADEQ
5207	BUTLER, chemin	121	LEGAULT, chemin	1.033	185	ADEQ	ADEQ	ADEQ	ADEQ	NOW	ADEQ	REC	NOW
5208	GOYER, rue	Fin	RUSSELL, chemin	0.306	105	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	GRR	ADEQ
5209	5	9 76 6	1121	0.034	100	ADEQ	ADEQ	ADEQ	ADEQ	NOW	ADEQ	REC	NOW
5210	CHÂTEAU, avenue du	WOODS, rue	WOODS, rue	0.112	100	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	GRR	ADEQ
5211	POULIOTTE, rue	-		0.020	100	ADEQ	ADEQ	ADEQ	NOW	NOW	ADEQ	REC	NOW
				250.796									

APPENDIX G: Roads Needs by Improvement Type

Total Needs Summary by Improvement Type

Current Inspection Batch -Needs Only

Priority #	Asset ID	Street Name	From	То	AADT	Length	TON	Imp. Class	Imp	Imp. Cost
RSS										
9.00	5002	RODRIGUE, rue	Fin	LALONDE, rue	100	0.092	NOW	Const	RSS	147,862.63
20.00	1211	VICTORIA, rue	ST-JACQUES, rue	EDWARDS, rue	100	0.235	NOW	Const	RSS	377,692.58
20.00	1243	WOODS, rue	Fin	CHÂTEAU, avenue du	388	0.533	NOW	Const	RSS	856,638.91
21.00	1187	TWEEDIE, rue	ST-DENIS, rue	PATRICIA, rue	192	0.183	NOW	Const	RSS	294,118.06
21.00	1146	MARION, rue	LAVIOLETTE, rue	ST-JACQUES, rue	161	0.147	NOW	Const	RSS	236,258.77
21.00	1149	CHARRON, rue	PATRICIA, rue	RAYMOND, rue	182	0.165	NOW	Const	RSS	265,188.41
21.00	1409	ST-DENIS, rue	ANDRÉ, rue	CHARRON, rue	247	0.075	NOW	Const	RSS	120,540.19
22.00	1386	ST-DENIS, rue	TWEEDIE, rue	ANDRÉ, rue	202	0.059	NOW	Const	RSS	94,824.95
22.00	1370	ST-DENIS, rue	CHARRON, rue	LAVIOLETTE, rue	288	0.067	NOW	Const	RSS	107,682.57
22.00	1144	ALBERT, rue	LALONDE, rue	ST-LOUIS, rue	100	0.163	NOW	Const	RSS	261,974.01
22.00	1165	ANDRÉ, rue	ST-DENIS, rue	PATRICIA, rue	188	0.152	NOW	Const	RSS	244,294.77
22.00	1033	MARTIN, rue	Fin	ST-JOSEPH, rue	132	0.061	NOW	Const	RSS	98,039.36
23.00	1175	ST-LAURENT, rue	GIROUX, rue	ST-JOSEPH, rue	331	0.170	NOW	Const	RSS	273,224.42
24.00	1225	WOODS, rue	CHÂTEAU, avenue du	TERRACE RIVIERA	100	0.285	NOW	Const	RSS	458,052.71
24.00	1082	ST-JACQUES, rue	BEND	CAMPEAU, croissant	100	0.298	NOW	Const	RSS	489,391.87
24.00	1447	ROCHELANDAISE, avenue	POULIOTTE, rue	Fin	100	0.250	NOW	Const	RSS	401,800.61
27.00	1387	WALLACE, rue	GAREAU, rue	POULIOTTE, rue	498	0.064	NOW	Const	RSS	102,860.96
28.00	1019	ST-JACQUES, rue	STE-ANNE, rue	PATRICIA, rue	999	0.082	NOW	Const	RSS	139,245.32
30.00	1171	HUDON, rue	ST-JEAN, rue	GIROUX, rue	1,151	0.157	NOW	Const	RSS	252,330.79
31.00	1176	POULIOTTE, rue	LAURIER, rue	WALLACE, rue	1,799	0.179	NOW	Const	RSS	287,689.25
31.00	1189	WALLACE, rue	EDWARDS, rue	GAREAU, rue	907	0.184	NOW	Const	RSS	295,725.25
32.00	1374	PATRICIA, rue	LILIANE, rue	TWEEDIE, rue	1,454	0.073	NOW	Const	RSS	123,962.29
33.00	1068	WOODS, rue	CHÂTEAU, avenue du	EDWARDS, rue	678	0.089	NOW	Const	RSS	143,041.03
35.00	1030	ALBERT, rue	ST-JACQUES, rue	ST-JEAN, rue	800	0.092	NOW	Const	RSS	152,891.97
35.00	1196	ST-JACQUES, rue	LAVIOLETTE, rue	STE-ANNE, rue	894	0.219	NOW	Const	RSS	359,653.76
36.00	1136	CHÉNÉ, rue	POWERS, rue	ST-JOSEPH, rue	673	0.134	NOW	Const	RSS	215,365.13
36.00	1285	ST-JACQUES, rue	ST-DENIS, rue	-STUB w Mailboxes	711	0.124	NOW	Const	RSS	203,639.57
38.00	1311	NOTRE-DAME, rue	TANIA, rue	CHARETTE, rue	854	0.087	NOW	Const	RSS	139,826.62
38.00	1367	ST-JACQUES, rue	CAMPEAU, croissant	LAVIOLETTE, rue	855	0.084	NOW	Const	RSS	137,949.39
38.00	1399	ST-JACQUES, rue	PATRICIA, rue	IBERVILLE, rue	1,171	0.061	NOW	Const	RSS	100,177.53
38.00	1432	ST-JACQUES, rue	CAMPEAU, croissant	CAMPEAU, croissant	750	0.079	NOW	Const	RSS	129,738.11
39.00	1034	ALBERT, rue	ST-LOUIS, rue	ST-JACQUES, rue	965	0.088	NOW	Const	RSS	141,433.82
40.00	1097	VICTOR, rue	LAURIER, rue	Fin	208	0.093	NOW	Const	RSS	149,469.84
40.00	1430	PATRICIA, rue	CHARRON, rue	LAVIOLETTE, rue	1,386	0.074	NOW	Const	RSS	121,526.84
40.00	1437	ST-JACQUES, rue	IBERVILLE, rue	RAYMOND, rue	1,251	0.080	NOW	Const	RSS	131,380.37
40.00	1257	CAMPEAU, croissant	ST-JACQUES, rue	ST-JACQUES, rue	458	0.486	NOW	Const	RSS	781,100.39
41.00	1037	CARON, rue	FRANÇOISE, rue	BELVEDERE	3,019	0.105	NOW	Const	RSS	178,301.93
41.00	1038	ST-JACQUES, rue	MARION, rue	LAURIER, rue	1,513	0.100	NOW	Const	RSS	164,225.46
43.00	1419	ST-JACQUES, rue	JULIETTE, rue	MARION, rue	1,407	0.076	NOW	Const	RSS	124,811.35
46.00	1359	GAREAU, rue	McCALL, rue	WALLACE, rue	417	0.117	NOW	Const	RSS	188,042.69
47.00	1420	PATRICIA, rue	ANDRÉ, rue	CHARRON, rue	1,357	0.071	NOW	Const	RSS	116,600.08
		Anna Anna 1999 - 1997 -	w.wm.wm.vn/100.00027/049300008	www.ven-statularisement/ven-stationents-so-class avera	20,827,9423					1999 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 -

Total Needs Summary by Improvement Type Current Inspection Batch -Needs Only

Priority #	Asset ID	Street Name	From	То	AADT	Length	TON	Imp. Class	Imp	Imp. Cost
47.00	1428	CARON, rue	DALRYMPLE, promenade	FRANÇOISE, rue	3,004	0.074	NOW	Const	RSS	121,526.84
49.00	1366	CARON, rue	POTVIN, rue	CÔTÉ, rue	2,882	0.401	NOW	Const	RSS	658,544.09
50.00	1138	CARON, rue	DES CÈDRES, avenue	DALRYMPLE, promenade	2,911	0.034	NOW	Const	RSS	55,836.66
54.00	1429	PATRICIA, rue	TWEEDIE, rue	ANDRÉ, rue	1,092	0.074	NOW	Const	RSS	121,526.84
54.00	1318	CARON, rue	PAUL, promenade	DES CÈDRES, avenue	2,903	0.127	NOW	Const	RSS	208,566.33
11.00	1424	LAVIOLETTE, rue	STE-ANNE, rue	PATRICIA, rue	1,657	0.077	6-10	Const	RSS	130,754.75
16.00	1444	LAVIOLETTE, rue	PATRICIA, rue	IBERVILLE, rue	1,190	0.079	6-10	Const	RSS	129,738.11
18.00	1442	LAVIOLETTE, rue	JULIETTE, rue	MARION, rue	1,957	0.073	6-10	Const	RSS	119,884.59
22.00	1414	LAVIOLETTE, rue	IBERVILLE, rue	RAYMOND, rue	2,532	0.084	6-10	Const	RSS	137,949.39
23.00	1218	NOTRE-DAME, rue	CHARETTE, rue	ALMA, rue	1,132	0.166	6-10	Const	RSS	266,795.61
26.00	1048	YVETTE, rue	LEMAY, rue	LAPORTE, rue	3,386	0.079	6-10	Const	RSS	131,287.67
26.00	1383	CHÉNÉ, rue	GIROUX, rue	POWERS, rue	1,286	0.052	6-10	Const	RSS	83,574.53
27.00	1415	LAVIOLETTE, rue	RAYMOND, rue	JULIETTE, rue	1,461	0.072	6-10	Const	RSS	118,242.33
39.00	1100	CARON, rue	BELVEDERE	HÉLENE, rue	3,269	0.100	6-10	Const	RSS	164,225.46
16.00	1167	STE-ANNE, rue	LAVIOLETTE, rue	ST-JACQUES, rue	174	0.157	1-5	Const	RSS	260,913.47
18.00	1035	FRANÇOISE, rue	NOTRE-DAME, rue	NICOLE, rue	367	0.117	1-5	Const	RSS	194,438.70
19.00	1161	CHARRON, rue	ST-DENIS, rue	PATRICIA, rue	234	0.171	1-5	Const	RSS	274,831.63
24.00	1431	RAYMOND, rue	CHARRON, rue	LAVIOLETTE, rue	228	0.075	1-5	Const	RSS	120,540.19
25.00	1169	ST-DENIS, rue	ST-JACQUES, rue	TWEEDIE, rue	253	0.179	1-5	Const	RSS	287,689.25
25.00	1043	ALBERT, rue	EDWARDS, rue	Fin	615	0.091	1-5	Const	RSS	146,255.43
26.00	1334	LEMAY, rue	FONTAINE, rue	YVETTE, rue	1,624	0.288	1-5	Const	RSS	462,874.31
29.00	1039	NOTRE-DAME, rue	ALMA, rue	LAURIER, rue	1,595	0.092	1-5	Const	RSS	147,862.63
29.00	1150	PATRICIA, rue	LAVIOLETTE, rue	ST-JACQUES, rue	524	0.173	1-5	Const	RSS	284,110.05
30.00	1147	McCALL, rue	EDWARDS, rue	GAREAU, rue	88	0.156	1-5	Const	RSS	250,723.58
30.00	1461	ST-PAUL, rue	LAURIER, rue	CHAPMAN, rue	100	0.080	1-5	Const	RSS	128,576.20
31.00	1299	ST-JACQUES, rue	RAYMOND, rue	JULIETTE, rue	1,357	0.073	1-5	Const	RSS	119,884.59
32.00	1041	LAWRENCE, rue	ALMA, rue	LAURIER, rue	2,068	0.073	1-5	Const	RSS	117,325.79
33.00	1130	CARON, rue	HÉLENE, rue	LAURIER, rue	3,773	0.132	1-5	Const	RSS	224,151.00
40.00	1177	GAREAU, rue	LAURIER, rue	McCALL, rue	872	0.046	1-5	Const	RSS	73,931.31
44.00	1355	CARON, rue	CÔTÉ, rue	PAUL, promenade	2,889	0.108	1-5	Const	RSS	177,363.50
						9.436				15,328,499.39
DNC										
14.00	1333	ST-IOSEPH me	Silver Lane	PATRICIA me	100	0 279	NOW	Const	RNS	254 117 22
14.00	1393	ROBERT THE	Fin	KATHE me	79	0.059	NOW	Const	RNS	53 738 05
15.00	1407	LISE croissant	DIANNE avenue	Fin	96	0.066	NOW	Const	RNS	60 113 75
15.00	1162	LACROIX chemin	GENDRON chemin	CARRIÈRE nie	100	0.170	NOW	Const	RNS	154 838 45
15.00	1089	LALONDE me	LAURIER nie	ALBERT DIE	100	0 169	NOW	Const	RNS	153 927 63
15.00	1666	HENRIE chemin	LAURIER, rue	HENRIE, chemin	100	0.105	NOW	Const	RNS	95 635 51
16.00	1152	THÉRÈSE avenue	PAUL promenade	DALRYMPLE promenade	208	0 150	NOW	Const	RNS	136 622 16
17.00	1408	ROBERT rue	ROBERT rue	YVES rue	100	0.055	NOW	Const	RNS	50 094 79
17.00	1468	YVES rue	Fin	KATHE rue	96	0.135	NOW	Const	RNS	122,959,94
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Total Needs Summary by Improvement Type

Current Inspection Batch -Needs Only Priority # Asset ID Street Name From То AADT Length TON Imp. Class Imp 17.00 1439 LALONDE, rue ALBERT, rue Fin 100 0.072 NOW RNS Const 18.00 1134 OUELLETTE, rue ST-PASCAL, chemin 111 0.134 NOW RNS 122,049.13 Fin Const 18.00 1101 HENRIE, chemin HENRIE, chemin HENRIE, chemin 167 0.162 NOW Const RNS 147,551.93 19.00 1119 YVES, rue KATHIE, rue ROBERT, rue 224 0.169 NOW RNS 153,927,63 Const GILLES, rue CARON, rue 422 19.00 1013 FRANÇOISE, rue 0.114 NOW Const RNS 103,832.84 19.00 1155 CÔTÉ, rue ASSALY GARDEN DIANNE, avenue 240 0.144 NOW Const RNS 131,157.27 19.00 1401 KATHY, rue ROBERT, rue YVES, rue 298 0.062 NOW Const RNS 19.00 1390 DIANNE, avenue DALRYMPLE, promenade PAUL, promenade 354 0.047 NOW Const RNS 0.080 NOW 19.00 1352 DIANNE, avenue PAUL, promenade LISE, croissant 348 Const RNS DALRYMPLE, promenade 0.058 NOW 20.00 1417 DIANNE, avenue LISE, croissant 391 Const RNS 20.00 1426 HENRIE, chemin LAURIER, rue HENRIE, chemin 244 0.069 NOW Const RNS 0.188 NOW ST-LOUIS, rue LAURIER, rue ALBERT, rue 344 RNS 171,233.11 20.00 1080 Const 21.00 1135 DALRYMPLE, promenade DIANNE, avenue THÉRÈSE, avenue 507 0.155 NOW Const RNS 141,176.23 21.00 1378 DALRYMPLE, promenade THÉRÈSE, avenue CARON, rue 543 0.028 NOW Const RNS 25,502.80 21.00 1443 PAUL, promenade DIANNE, avenue TRILLIUM, place 347 0.066 NOW Const RNS 21.00 1313 DALRYMPLE, promenade 482 0.101 NOW RNS PINS, avenue des DIANNE, avenue Const 22.00 1357 ROBERT, rue MICHEL, rue ROBERT, rue 398 0.096 NOW RNS Const ROBERT, rue KATHY, rue MICHEL, rue 0.072 NOW RNS 22.00 1382 398 Const 24.00 1166 DESCÔTES, cercle RICHELIEU, rue LEMAY, rue 782 0.166 NOW Const RNS 151,195.19 25.00 1151 ST-JEAN, rue LAURIER, rue VICTORIA, rue 521 0.158 NOW Const RNS 160,494.12 ST-JEAN, rue VICTORIA, rue ALBERT, rue 497 0.046 NOW RNS 41,897.46 25.00 1384 Const 382 0.064 NOW 28.00 1397 FRANÇOISE, rue NICOLE, rue GILLES, rue Const RNS 39,883,33 28.00 1203 LEMAY, rue DESCÔTES, cercle FONTAINE, rue 1,147 0.230 NOW Const RNS 209.487.31 29.00 1207 ALBERT, rue ST-JEAN, rue EDWARDS, rue 723 0.234 NOW Const RNS 125,638.70 39.00 1007 ST-JOSEPH, rue CHÉNÉ, rue MARTIN, rue 2.347 0.082 NOW Const RNS 77.555.99 1069 LAURIER, rue 9.042 0.100 NOW RNS 42.00 GIROUX, rue EDWARDS, rue Const 108,576.64 17.00 1232 LÉONARD, rue LAPORTE, rue LAPORTE, rue 360 0.320 6-10 Const RNS 171,813.60 19.00 1312 CHAPMAN, rue NOTRE-DAME, rue ST-PAUL rue 312 0.276 1-5 Const RNS 148.189.23 4.681 3,971,728.82 REC 17.00 5003 PAGO, chemin COUNTY ROAD 17, chemin Fin 101 1.855 NOW Const REC 487,630.23 19.00 1122 LALONDE, rue ROLLIN, chemin BOUDREAU, chemin 121 1.158 NOW Const REC 489,029.00 0.150 NOW REC 20.00 1129 VAUDREUIL, rue MARQUETTE, rue LASALLE, rue 144 Const 20.00 5006 POUPART, montée SOuth Limit Paverment ST-JEAN, rue 195 1.295 NOW Const REC 340,421.10 ST-FÉLIX, chemin 21.00 5118 BOUVIER, chemin Fin 64 1.483 NOW Const REC 389,841.31 21.00 1133 LASALLE, rue VAUDREUIL, rue LOUIS-HÉBERT, rue 137 0.147 NOW REC 61,589.55 Const 21.00 1229 ALEXANDER, rue CHARLEBOIS, rue AGATHE, rue 238 0.315 NOW Const REC 131,977.58 21.00 1067 LASALLE, rue LOUIS-HÉBERT, rue Fin 118 0.103 NOW Const REC 22.00 1288 ST-FÉLIX, chemin DROUIN, chemin 270 1.500 NOW Const REC 633,457.26 22.00 5106 LALONDE, rue ROLLIN, chemin 100 1.279 NOW Const REC 336,215,13 McINTYRE, allée (Lane) WILSON, chemin OLD HWY 17 0.127 NOW 22.00 5004 86 Const REC

Run: MAY 8,2014 5:32PM Page: 3 Imp. Cost

65,578.64

56,470.49

42,808.28

72.865.15

52,827.24

62,846.19

60,113.75

91,992.25

87,438.18

65,578.64

62,846.47

43,154.57

50,471.27

Total Needs Summary by Improvement Type Current Inspection Batch -Needs Only

Priority #	Asset ID	Street Name	From	То	AADT	Length	TON	Imp. Class	Imp	Imp. Cost
23.00	5207	BUTLER, chemin	5	LEGAULT, chemin	185	1.033	NO₩	Const	REC	271,548.26
23.00	5209		-	E	100	0.034	NOW	Const	REC	8,937.69
23.00	1295	LABELLE, chemin	RUSSELL, chemin	-	256	1.340	NO₩	Const	REC	565,888.49
23.00	1003	VAUDREUIL, rue	OLD HWY 17	MARQUETTE, rue	448	0.065	NO₩	Const	REC	27,233.47
23.00	1063	OLD HWY 17	ROLLIN, chemin	Fin	486	1.482	NO₩	Const	REC	620,923.12
23.00	1246	MARQUETTE, rue	VAUDREUIL, rue	VAUDREUIL, rue	256	0.379	NOW	Const	REC	158,792.08
24.00	1292	LANDRY, rue/chemin	DU GOLF, chemin	HENRIE, chemin	567	1.823	NO₩	Const	REC	935,598.67
24.00	5098	LALONDE, rue	Fin	CHAMPLAIN, rue/chemin	100	0.360	NO₩	Const	REC	94,634.44
25.00	1156	AGATHE, rue	WOLFE, croissant	WOLFE, croissant	400	0.171	NO₩	Const	REC	71,644.98
26.00	5061	PILON, chemin	Fin	ST-PASCAL, chemin	144	0.395	NO₩	Const	REC	103,835.01
26.00	5192	BOILEAU, chemin	SCHNUPP, chemin	ETTYVILLE, chemin	62	0.071	NO₩	Const	REC	18,664.02
26.00	5095	MAISONNEUVE, rue	ROLLIN, chemin	Fin	236	1.238	NO₩	Const	REC	325,437.31
26.00	5104	LALONDE, rue	LABELLE, chemin	DU LAC, chemin	94	1.295	NOW	Const	REC	340,421.10
27.00	5093	LEGAULT, chemin	BUTLER, chemin	LAVIGNE, chemin	214	0.085	NO₩	Const	REC	22,344.24
27.00	5013	CLARK, chemin	LANDRY, rue/chemin	Fin	390	2.351	NO₩	Const	REC	780,283.12
27.00	5032	BASELINE, chemin	ROLLIN, chemin	Fin	124	1.361	NOW	Const	REC	357,770.75
27.00	1066	ALEXANDER, rue	LANDRY, rue/chemin	AGATHE, rue	432	0.076	NOW	Const	REC	31,842.21
28.00	1201	OAKWOOD, promenade	SYCAMORE, rue	HICKORY, rue	772	0.223	NO₩	Const	REC	93,431.74
28.00	5021	BASELINE, chemin	LANDRY, rue/chemin	BRAZEAU, chemin	498	1.303	NO₩	Const	REC	668,724.66
28.00	5107	MARCIL, chemin	LEMERY, rue	LAVIGNE, chemin	214	0.506	NO₩	Const	REC	167,938.44
28.00	5116	ST-FÉLIX, chemin	BOUVIER, chemin		127	0.629	NOW	Const	REC	165,347.39
29.00	5197	BOILEAU, chemin	RONDEAU, chemin	SCHNUPP, chemin	91	0.846	NO₩	Const	REC	222,390.93
29.00	1096	McDERMITT, promenade	DES ÉRABLES, rue	DES POMMIERS, rue	413	0.101	NOW	Const	REC	42,316.63
29.00	1297	OAKWOOD, promenade	HICKORY, rue	BALSAM, rue	721	0.059	NOW	Const	REC	24,719.61
30.00	1132	CHARLEBOIS, rue	ALEXANDER, rue	AGATHE, rue	641	0.141	NOW	Const	REC	59,075.68
30.00	1118	TUCKER, chemin	DAVID, chemin (CLAR)	HUNTERS HOLLOW, promenade	935	0.398	NOW	Const	REC	166,752.63
30.00	1042	DROUIN, chemin	ÉMILIA, rue	BELVEDERE	1,041	2.005	NOW	Const	REC	840,047.80
30.00	5211	POULIOTTE, rue			100	0.020	NOW	Const	REC	5,257.47
31.00	5205	DU LAC, chemin	BASELINE, chemin	Fin	112	0.656	NOW	Const	REC	172,444.98
37.00	5063	BOUVIER, chemin	LACROIX, chemin	DU GOLF, chemin	370	3.032	NOW	Const	REC	1,006,303.04
38.00	5005	WILSON, chemin	McINTYRE, allée (Lane)	OLD HWY 17	256	0.149	NO₩		REC	59,214.32
42.00	1278	DUQUETTE, chemin	PILON, chemin	DU LAC, chemin	789	1.354	NO₩	Const	REC	694,898.85
45.00	1293	CARON, rue	BASELINE, chemin	DAVID, chemin (CLAR)	1,261	1.956	NO₩	Const	REC	1,065,184.48
46.00	1402	CARON, rue	FAIRWAY, promenade	POTVIN, rue	2,793	0.683	NOW	Const	REC	343,228.84
50.00	1110	LAURIER, rue	BONAVISTA, rue	MONTÉE OU TAOUAIS	3,711	0.061	NOW	Const	REC	30,654.41
50.00	1086	BASELINE, chemin	CANAAN, chemin	JOANISSE, chemin	1,009	2.093	NOW	Const	REC	1,139,790.95
68.00	5001	WILSON, chemin	McINTYRE, allée (Lane)	Fin	272	1.717	NOW	Const	REC	569,862.24
14.00	1002	ROGER, rue	Fin	PIGEON, rue	64	0.050	1-5	Const	REC	20,948.82
15.00	1064	DROUIN, chemin	ST-FÉLIX, chemin	RUSSELL Road	100	1.346	1-5	Const	REC	568,422.32
17.00	1143	JULIETTE, rue	LAVIOLETTE, rue	ST-JACQUES, rue	155	0.140	1-5	Const	REC	58,656,70

Total Needs Summary by Improvement Type

Current Inspection Batch -Needs Only

Priority #	Asset ID	Street Name	From	То	AADT	Length	TON	Imp. Class	Imp	Imp. Cost
50.00	1120	MONTÉE OUTAOUAIS	DAVID, chemin (CLAR)	LAURIER, rue	1,940	0.943	1-5	Const	REC	722,254.11
					-	43.382				16,670,299.47
NONE										
29.00	1021	LAURIER, rue	ST-JACQUES, rue	ST-JEAN, rue	8,872	0.085	1-5	Const	NONE	0.00
						0.085				0.00
BS		-2								
16.00	1368	DE LA FORÊT, rue	McDERMITT, promenade	Fin	64	0.060	NOW	Const	BS	18,072.45
16.00	1654	ÉMILIA, rue	Fin	DROUIN, chemin	68	0.081	NOW	Const	BS	24,397.82
16.00	1659	DE LA BAIE, chemin	RICHELIEU, rue	CARMEN BERGERON, rue	100	0.050	NOW	Const	BS	15,060.38
17.00	1655	DROUIN, chemin	BELVEDERE	LACROIX, chemin	100	0.094	NOW	Const	BS	26,518.99
17.00	1580	BUTLER, chemin	RECREATIL TRAIL	LACROIX, chemin	185	1.010	NOW	Const	BS	287,482.52
17.00	5031	BASELINE, chemin	DU LAC, chemin	ROLLIN, chemin	209	1.383	NOW	Const	BS	281,404.59
17.00	5036	GAGNÉ, chemin	25	DU GOLF, chemin	100	1.482	NOW	Const	BS	301,548.53
18.00	1606	CANAAN, chemin	-	BLUE JAY, promenade	100	0.154	NOW	Const	BS	46,385.96
18.00	1320	EAGLE, rue	GREEN, rue	CLUB HOUSE, promenade	104	0.083	NOW	Const	BS	25,000.22
19.00	1287	BOUDREAU, chemin	RUSSEL, chemin	LALONDE, rue	126	1.571	NOW	Const	BS	443,205.72
20.00	1354	EAGLE, rue	FAIRWAY, promenade	GREEN, rue	128	0.144	NOW	Const	BS	43,373.89
20.00	1603	LACROIX, chemin	GUINDON, chemin		304	0.276	NOW	Const	BS	83,133.29
20.00	5016	BOUVIER, chemin	LABONTÉ, rue	BASELINE, chemin	100	3.022	NOW	Const	BS	424,144.47
22.00	5060	BELVEDERE	NOLAN, chemin	DROUIN, chemin	147	1.425	NOW	Const	BS	200,001.94
22.00	5198	ETTYVILLE, chemin	JOHNSTON, chemin	Fin	78	0.978	NOW	Const	BS	137,264.49
22.00	5117	ST-FÉLIX, chemin	-	CHAMPLAIN, rue/chemin	127	1.911	NOW	Const	BS	268,213.13
22.00	1436	INDIAN CREEK, chemin	RUSSELL, chemin	Fin	214	0.731	NOW	Const	BS	220,182.73
22.00	1319	FAIRWAY, promenade	CARON, rue	EAGLE, rue	280	0.168	NOW	Const	BS	50,602.86
22.00	1180	LOUIS-HÉBERT, rue	OLD HWY 17	LASALLE, rue	316	0.171	NOW	Const	BS	51,506.50
23.00	5099	LAVIGNE, chemin	LEGAULT, chemin	BOUVIER, chemin	93	1.642	NOW	Const	BS	230,458.38
23.00	5034	ROLLIN, chemin	DUQUETTE, chemin	BASELINE, chemin	240	3.039	NOW	Const	BS	618,357.60
23.00	5102	LAVIGNE, chemin	BOUVIER, rue	MARCIL, chemin	115	1.293	NOW	Const	BS	181,475.44
24.00	5064	LACROIX, chemin	-	BOUVIER, chemin	304	1.244	NOW	Const	BS	253,121.70
24.00	1289	ROLLIN, chemin	LALONDE, rue	MAISONNEUVE, rue	329	1.800	NOW	Const	BS	507,810.49
25.00	5056	ROLLIN, chemin	HENRIE, chemin	DUQUETTE, chemin	248	1.202	NOW	Const	BS	244.575.80
26.00	5010	RAMAGE. chemin	342m South of HWY 17	COUNTY ROAD 17, chemin	136	0.342	NOW	Const	BS	48.000.47
26.00	5059	ROLLIN, chemin	HENRIE, chemin	ST-PASCAL, chemin	261	1.821	NOW	Const	BS	370.526.23
26.00	1291	BOUVIER chemin	RUSSELL chemin	LAVIGNE chemin	446	0 784	NOW	Const	BS	221 179 68
38.00	5100	LEGAULT, chemin	RUSSELL, chemin	BUTLER, chemin	528	1.820	NOW	Const	BS	513,452,83
13.00	1046	DES ÉPINETTES, rue	OAKWOOD, promenade	Fin	128	0.100	6-10	Const	BS	30,120,76
15.00	1079	CHARLEBOIS me	AGATHE me	CLAUDETTE nie	448	0 138	6-10	Const	BS	41 566 64
15.00	1446	DES MERISIERS IDE	McDERMITT promenade	Fin	160	0 147	1-5	Const	BS	44 277 52
10.00		SEO MERIOERO, 100	mederanni, promonduo	200		30.166	. 9	Conor	50	6.252.424.02

Total Needs Summary by Improvement Type Current Inspection Batch -Needs Only

Priority # As	sset ID	Street Name	From	То	AADT	Length	TON	Imp. Class	Imp	Imp. Cost
<u>SD</u>										
7.00 100)04	COOPER, rue	YOUNG, rue	CARRIÈRE, rue	144	0.090	6-10	Maintenance	SD	0.00
25.00 120	209	POWERS, rue	CHÉNÉ, rue	LAURIER, rue	123	0.228	6-10	Maintenance	SD	0.00
						0.318				0.00
GRR										
23.00 508	058	PILON, chemin	ST-PASCAL, chemin	HENRIE, chemin	94	1.784	NOW	Maintenance	GRR	25,175.81
24.00 503)33	NOLAN, chemin	DU GOLF, chemin	VINETTE, chemin	249	3.031	NOW	Maintenance	GRR	48,883.97
					_	4.815				74,059.78
<u>R2</u>										
19.00 119	198	MORRIS, rue	LAWRENCE, rue	TANIA, rue	442	0.119	NOW	Rehab	R2	54,930.88
39.00 148	184	POULIOTTE, rue	WALLACE, rue	ROCHELANDAISE, avenue	2,364	0.096	NOW	Rehab	R2	25,997.13
20.00 100	006	ST-JOSEPH, rue	ST-LAURENT, rue	CHÉNÉ, rue	2,234	0.079	6-10	Rehab	R2	36,466.72
13.00 110	109	LAPORTE, rue	LÉONARD, rue	SYLVAIN, rue	298	0.098	1-5	Rehab	R2	45,237.19
13.00 120	204	JULIE, rue	ST-JACQUES, rue	PATRICIA, rue	169	0.201	1-5	Rehab	R2	92,782.40
13.00 136	362	LAURIER, rue	POUPART, montée	LAPORTE, rue	100	0.484	1-5	Rehab	R2	131,068.85
14.00 129	294	DU LAC, chemin	DUQUETTE, chemin	BASELINE, chemin	119	3.029	1-5	Rehab	R2	773,199.20
14.00 127	273	MAISONNEUVE, rue	MAISONNEUVE, rue	ROLLIN, chemin	100	1.179	1-5	Rehab	R2	319,277.21
14.00 156	568	GAGNÉ, chemin	DONALD, rue	1.3km North of DONALD, rue (Pit Enfrance)	100	1.300	1-5	Rehab	R2	352,044.42
14.00 139	395	POTVIN, avenue	BELVEDERE	POTVIN, avenue	164	0.071	1-5	Rehab	R2	32,773.88
14.00 108	083	LILIANE, rue	ST-JACQUES, rue	PATRICIA, rue	288	0.270	1-5	Rehab	R2	124,633.08
15.00 112	124	FAIRWAY, promenade	EAGLE, rue	CLUB HOUSE, promenade	204	0.139	1-5	Rehab	R2	37,641.67
16.00 118	188	LACROIX, chemin	CARRIÈRE, rue	BUTLER, chemin	373	0.218	1-5	Rehab	R2	100,629.67
16.00 136	369	ST-JACQUES, rue	JULIE, rue	LILIANE, rue	451	0.078	1-5	Rehab	R2	36,005.11
16.00 125	253	BLUE JAY, promenade	CARDINAL, rue	CARDINAL, rue	218	0.492	1-5	Rehab	R2	133,235.27
16.00 130	309	MORRIS, rue	TANIA, rue	CHARETTE, rue	397	0.101	1-5	Rehab	R2	46,622.00
16.00 131	315	PAUL, promenade	TRILLIUM, place	THÉRÈSE, avenue	384	0.086	1-5	Rehab	R2	39,697.94
17.00 122	221	AGATHE, rue	ALEXANDER, rue	WOLFE, croissant	408	0.271	1-5	Rehab	R2	73,387.72
18.00 123	231	DALRYMPLE, promenade	DIANNE, avenue	PINS, avenue des	478	0.216	1-5	Rehab	R2	99,706.46
18.00 119	190	DES ORMES, rue	SCHARF, rue	Fin	192	0.178	1-5	Rehab	R2	48,203.01
18.00 137	371	ST-JACQUES, rue	LILIANE, rue	ST-DENIS, rue	584	0.083	1-5	Rehab	R2	38,313,13
19.00 137	375	VINETTE, chemin	LACASSE, chemin	BOUVIER, chemin	686	1.390	1-5	Rehab	R2	354,819,05
19.00 124	249	MICHEL, rue	LAURIER, rue	ROBERT, rue	894	0.098	1-5	Rehab	R2	45,237,19
20.00 112	123	CHARLEBOIS, rue	CLARENCE, court	ALEXANDER. rue	878	0.136	1-5	Rehab	R2	36.829.26
21.00 108	088	SCHARF, rue	McDERMITT, promenade	DES ORMES, rue	921	0.150	1-5	Rehab	R2	40.620.51
24.00 141	412	McDERMITT promenade	DES MERISIERS rue	SCHARF rue	1.124	0 079	1-5	Rehab	R2	21 393 47
26.00 143	133	LAPORTE, rue	YVETTE. rue	LÉONARD. rue	3,563	0.077	1-5	Rehab	R2	35.543 51
26.00 143	138	LAWRENCE, rue	MORRIS, rue	ALMA, rue	2,268	0.096	1-5	Rehab	R2	44,313 98
26.00 133	335	EDWARDS rue	VICTORIA nie	WALLACE rue	3 844	0.023	1-5	Rehab	R2	10 616 89
28.00 138	389	EDWARDS me	WALLACE me	ALBERT nie	3 949	0.056	1-5	Rehab	R2	25 849 82
30.00 120	206	LAURIER. rue	CARON. rue	MICHEL. rue	4,193	0.232	1-5	Rehab	R2	145.076 84
Total Needs Summary by Improvement Type Current Inspection Batch -Needs Only

Priority #	Asset ID	Street Name	From	То	AADT	Length	TON	Imp. Class	Imp	Imp. Cost
31.00	1099	LAPORTE, rue	LAURIER, rue	LÉONARD, rue	4,760	0.110	1-5	Rehab	R2	50,776.44
31.00	1445	McDERMITT, promenade	DE LA FORÊT, rue	DES MERISIERS, rue	1,061	0.320	1-5	Rehab	R2	86,657.09
33.00	1340	LAURIER, rue	GAREAU, rue	ST-JOSEPH, rue	9,124	0.026	1-5	Rehab	R2	12,001.70
33.00	1040	LAURIER, rue	POWERS, rue	GAREAU, rue	9,014	0.101	1-5	Rehab	R2	60,416.38
35.00	1300	LAURIER, rue	ST-JEAN, rue	GIROUX, rue	9,146	0.154	1-5	Rehab	R2	96,301.01
36.00	1251	CARON, rue	DAVID, chemin (CLAR)	FAIRWAY, promenade	2,726	0.125	1-5	Rehab	R2	33,850.43
37.00	1336	LAURIER, rue	EDWARDS, rue	POWERS, rue	9,356	0.029	1-5	Rehab	R2	18,134.61
38.00	1282	LAURIER, rue	HÉRITAGE, promenade	LALONDE, rue	10,000	0.401	1-5	Rehab	R2	250,757.81
59.00	1174	LAURIER, rue	MONTÉE OUTAOUAIS	COUNTY ROAD 17, chemin	3,428	0.166	1-5	Rehab	R2	42,374.07
					-	12.557				4,053,423.00
81.00	1036			LAVIOLETTE THE	20 222	0.094	NOW/	Rehah	R1	39 021 40
8.00	1029		Ein		103	0.004	6-10	Rehab	R1	22 507 81
8.00	1214	CHARETTE nie		MORRIS THE	100	0.001	6-10	Rehab	R1	34 374 13
8.00	1277		CHAMPLAIN, rue/chemin	-	100	0.100	6-10	Rehah	R1	124 002 85
8.00	1410	BELVEDERE	BEALMONT rue	DES CÈDRES avenue	100	0.060	6-10	Rehab	R1	19 096 74
9.00	1044	BELVEDERE	CARON DIE	BELVEDERE	100	0.000	6-10	Rehah	R1	27 053 72
9.00	1091	BELVEDERE	DES CÈDRES avenue	BELVEDERE	100	0.000	6-10	Rehah	R1	64 928 92
10.00	1186	DANIEL crescent			112	0.163	6-10	Rehab	R1	23 970 58
10.00	1398		CHARLEBOIS THE	Fin	72	0.163	6-10	Rehab	R1	9 117 65
10.00	1440	POTVIN avenue	CARON THE	BELVEDERE	280	0.002	6-10	Rehab	R1	20 688 14
10.00	1259	BELVEDERE	BELVEDERE	Fin	100	0.000	6-10	Rehab	R1	6 047 30
11.00	1286	POTVIN avenue	POTVIN avenue	POTVIN avenue	144	0.508	6-10	Rehah	R1	161 685 73
11.00	1496	LEMERY me	COLETTE nie	MOISE-GENDRON THE	100	0.150	6-10	Rehab	R1	22 058 82
11.00	1070	PINS avenue des	PAYER nie	MORRIS me	387	0.105	6-10	Rehah	R1	33 419 30
11.00	1026	CLUB HOUSE promenade	DAVID, chemin (CLAR)	FAIRWAY promenade	64	0.076	6-10	Rehab	R1	11 176 47
12.00	1005	VALÉRIE place	Fin		416	0.111	6-10	Rehah	R1	35 328 97
12.00	1183	CLARENCE court	Fin	CHARLEBOIS THE	144	0 186	6-10	Rehab	R1	27 352 94
12.00	1302	DIANNE avenue	CÔTÉ rue	DAI RYMPLE promenade	383	0 142	6-10	Rehab	R1	45 195 62
13.00	1376	PAUL, promenade	THÉRÈSE, avenue	CARON rue	505	0.028	6-10	Rehab	R1	8,911,81
13.00	1170	ROGER rue	PIGEON rue	Fin	192	0 187	6-10	Rehab	R1	27 500 00
13 00	1001	APORTE rue	VALÉRIE place	YVETTE rue	728	0 107	6-10	Rehab	R1	34 055 85
14.00	1081	MORRIS, rue	LAWRENCE, rue	CHARETTE, rue	513	0.206	6-10	Rehab	R1	65.565.47
14.00	1250	WOLFE, croissant	AGATHE. rue	AGATHE rue	256	0.408	6-10	Rehab	R1	59,999,99
14.00	1256	PAYER, rue	PINS, avenue des	LAWRENCE, rue	509	0.500	6-10	Rehab	R1	159,139,50
14.00	1487	ALMA. rue	NOTRE-DAME, rue	GILLES. rue	845	0.148	6-10	Rehab	R1	47,105,29
14.00	1453	HÉRITAGE, promenade	PATRICIA rue	RAYMOND. rue	1.000	0.205	6-10	Rehab	R1	85,099,85
14.00	1379	PINS, avenue des	NOTRE-DAME, rue	DALRYMPLE, promenade	469	0.035	6-10	Rehab	R1	11,139,77
15.00	1448	LEMAY, rue	LEMAY, rue	GERMAIN, rue	849	0.231	6-10	Rehab	R1	73,522 45
15.00	1469	BONAVISTA, rue	SANDRA, croissant	LAURIER, rue	926	0.384	6-10	Rehab	R1	122,219.14
15.00	1365	NOTRE-DAME, rue	FRANÇOISE, rue	TANIA, rue	881	0.067	6-10	Rehab	R1	21,324.69

Run: MAY 8,2014 5:32PM Page: 7

Total Needs Summary by Improvement Type Current Inspection Batch -Needs Only

Priority #	Asset ID	Street Name	From	То	AADT	Length	TON	Imp. Class	Imp	Imp. Cost
15.00	1018	PINS, avenue des	MORRIS, rue	NOTRE-DAME, rue	1,324	0.075	6-10	Rehab	R1	23,870.93
16.00	1271	LACROIX, chemin	BUTLER, chemin	GUINDON, chemin	582	1.104	6-10	Rehab	R1	162,352.92
17.00	1360	SCHARF, rue	DES ORMES, rue	DES CERISIERS, rue	598	0.163	6-10	Rehab	R1	23,970.58
17.00	1353	PATRICIA, rue	HÉRITAGE, promenade	JULIE, rue	1,822	0.115	6-10	Rehab	R1	36,602.09
17.00	1112	LEMAY, rue	GERMAIN, rue	YVETTE, rue	1,548	0.300	6-10	Rehab	R1	95,483.70
17.00	1222	ALMA, rue	LAWRENCE, rue	NOTRE-DAME, rue	1,188	0.287	6-10	Rehab	R1	91,346.07
19.00	1224	LAWRENCE, rue	MORRIS, rue	CHARETTE, rue	1,862	0.256	6-10	Rehab	R1	81,479.42
20.00	1372	ST-JOSEPH, rue	MARTIN, rue	PARC, avenue du	2,347	0.041	6-10	Rehab	R1	14,751.10
21.00	1361	EDWARDS, rue	McCALL, rue	VICTORIA, rue	3,722	0.033	6-10	Rehab	R1	10,503.21
22.00	1405	EDWARDS, rue	COUNTY ROAD 17, chemin	CATHERINE, rue	3,203	0.066	6-10	Rehab	R1	25,571.83
25.00	1339	LAURIER, rue	ST-JOSEPH, rue	POULIOTTE, rue	9,243	0.034	6-10	Rehab	R1	10,821.49
25.00	1025	LAURIER, rue	ST-LOUIS, rue	ST-JACQUES, rue	9,028	0.092	6-10	Rehab	R1	38,191.15
28.00	1346	LAURIER, rue	LAPORTE, rue	HÉRITAGE, promenade	7,746	0.294	6-10	Rehab	R1	142,382.50
9.00	1373	FONTAIRE, rue	Fin	LEMAY, rue	51	0.034	1-5	Rehab	R1	10,821.49
11.00	1077	BELVEDERE	POTVIN, avenue	BEAUMONT, rue	152	0.150	1-5	Rehab	R1	47,741.85
12.00	1272	OAKWOOD, promenade	McDERMITT, promenade	Fin	107	0.113	1-5	Rehab	R1	16,617.64
12.00	1392	DES ÉRABLES, rue	McDERMITT, promenade	Fin	96	0.046	1-5	Rehab	R1	6,764.70
14.00	1406	DESCÔTES, cercle	LEMAY, rue	LEMAY, rue	374	0.312	1-5	Rehab	R1	99,303.05
14.00	1416	TANIA, rue	MORRIS, rue	NOTRE-DAME, rue	362	0.106	1-5	Rehab	R1	33,737.57
14.00	1657	RICHELIEU, rue	POUPART, montée	ÉLIE, croissant	396	0.046	1-5	Rehab	R1	14,640.83
14.00	1185	DES CERISIERS, rue	SCHARF, rue	Fin	192	0.173	1-5	Rehab	R1	25,441.17
14.00	1182	DES POMMIERS, rue	Fin	McDERMITT, promenade	224	0.171	1-5	Rehab	R1	25,147.05
15.00	1265	DE LA BAIE, chemin	Fin	RICHELIEU, rue	100	0.304	1-5	Rehab	R1	47,665.50
16.00	1092	CLAUDETTE, rue	PATRICK, rue	DANIEL, crescent	246	0.127	1-5	Rehab	R1	18,676.47
17.00	1178	LEMAY, rue	DESCÔTES, cercle	DESCÔTES, cercle	830	0.274	1-5	Rehab	R1	87,208.45
17.00	1290	DU LAC, chemin	ST-PASCAL, chemin	HENRIE, chemin	459	1.822	1-5	Rehab	R1	252,567.46
17.00	1418	MORRIS, rue	PINS, avenue des	LAWRENCE, rue	811	0.054	1-5	Rehab	R1	17,187.07
18.00	1164	SCHARF, rue	DES CERISIERS, rue	JOANISSE, chemin	598	0.090	1-5	Rehab	R1	13,235.29
21.00	1024	LAWRENCE, rue	CHARETTE, rue	MORRIS, rue	1,622	0.088	1-5	Rehab	R1	28,008.55
21.00	1377	PATRICIA, rue	JULIE, rue	LILIANE, rue	1,477	0.072	1-5	Rehab	R1	22,916.09
27.00	1153	EDWARDS, rue	ALBERT, rue	COUNTY ROAD 17, chemin	5,411	0.163	1-5	Rehab	R1	51,879.48
30.00	1411	LAURIER, rue	LAVIOLETTE, rue	ST-LOUIS, rue	8,641	0.068	1-5	Rehab	R1	28,228.24
52.00	1084	LAPORTE, rue	COUNTY ROAD 17, chemin	LAURIER, rue	10,176	0.137	1-5	Rehab	R1	56,871.61
						12.828			_	3,104,687.45
DD2										
16.00	1142	HEMLOCK, rue	Fin	OAKWOOD, promenade	128	0.099	NOW	Rehab	PR2	1,961.76
16.00	1179	CHARLEBOIS, rue	LANDRY, rue/chemin	CLARENCE, court	112	0.091	NOW	Rehab	PR2	1,904.42
17.00	1191	DE LA FORÊT, rue	Fin	McDERMITT, promenade	162	0.198	NOW	Rehab	PR2	4,165.08
17.00	1192	SYCAMORE, rue	Fin	OAKWOOD, promenade	121	0.172	NOW	Rehab	PR2	3,599.00
18.00	1210	HICKORY, rue	Fin	OAKWOOD, promenade	192	0.200	NOW	Rehab	PR2	4,196.80
21.00	1104	BLUE JAY, promenade	CANAAN, chemin	CARDINAL, rue	297	0.093	NOW	Rehab	PR2	1,936.14

Run: MAY 8,2014 5:32PM Page: 8

Total Needs Summary by Improvement Type Current Inspection Batch -Needs Only

Priority #	Asset ID	Street Nam e	From	То	AADT	Length	TON	Imp. Class	Imp	Imp. Cost
21.00	1308	CARDINAL, rue	BLUE JAY, promenade	BLUE JAY, promenade	328	0.808	NOW	Rehab	PR2	16,965.32
24.00	1330	OLD HWY 17	0.924km West of ROLLIN, Chemin	ROLLIN, chemin	572	0.924	NOW	Rehab	PR2	18,257.40
24.00	1184	McDERMITT, promenade	OAKWOOD, promenade	DES ÉRABLES, rue	768	0.161	NOW	Rehab	PR2	3,373.30
25.00	1301	OLD HWY 17	RAMAGE, chemin	3.1km East of RAMAGE ROAD	572	3.120	NOW	Rehab	PR2	61,713.60
25.00	1269	CANAAN, chemin	OAKWOOD, promenade	BASELINE, chemin	905	1.075	NOW	Rehab	PR2	21,287.65
25.00	1254	BASELINE, chemin	LACASSE, chemin	CARON, rue	809	0.494	NOW	Rehab	PR2	9,752.00
26.00	1215	OAKWOOD, promenade	HEMLOCK, rue	SYCAMORE, rue	842	0.257	NOW	Rehab	PR2	5,408.26
26.00	1244	OLD HWY 17	DALLAIRE, chemin	RAMAGE, chemin	662	0.388	NOW	Rehab	PR2	7,684.30
26.00	1145	OAKWOOD, promenade	BALSAM, rue	DES ÉPINETTES, rue	782	0.181	NOW	Rehab	PR2	3,792.98
27.00	1181	McDERMITT, promenade	DES POMMIERS, rue	DE LA FORÊT, rue	873	0.188	NOW	Rehab	PR2	3,955.24
27.00	1045	TUCKER, chemin	DU RUISSEAU, chemin	LANDRY, rue/chemin	938	0.120	NOW	Rehab	PR2	2,518.08
27.00	1331	OLD HWY 17	-	-	572	0.212	NOW	Rehab	PR2	4,183.70
28.00	1050	OAKWOOD, promenade	CANAAN, chemin	HEMLOCK, rue	774	0.086	NOW	Rehab	PR2	1,825.12
33.00	1307	TUCKER, chemin	HUNTERS HOLLOW, promenade	DU RUISSEAU, chemin	938	0.679	NOW	Rehab	PR2	14,253.26
42.00	1332	OLD HWY 17	-	2	572	0.119	NOW	Rehab	PR2	2,358.65
44.00	1284	BASELINE, chemin	ST-JEAN, rue	LACASSE, chemin	777	1.421	NOW	Rehab	PR2	28,102.55
18.00	1160	CANAAN, chemin	BLUE JAY, promenade	OAKWOOD, promenade	359	0.440	1-5	Rehab	PR2	8,703.20
19.00	1212	AGATHE, rue	CHARLEBOIS, rue	WOLFE, croissant	426	0.238	1-5	Rehab	PR2	5,004.44
20.00	1073	PIGEON, rue	COUNTY ROAD 17, chemin	ROGER, rue	708	0.147	1-5	Rehab	PR2	3,100.02
21.00	1008	OAKWOOD, promenade	DES ÉPINETTES, rue	McDERMITT, promenade	623	0.084	1-5	Rehab	PR2	1,742.16
						11.995				241,744.43
					=	130.263				49,696,866.36

130.263

49,696,866.36

Run: MAY 8,2014 5:32PM Page: 9

APPENDIX H : "A Preliminary Asset Management Plan for Parks and Buildings: City of Clarence-Rockland" by Mr. Pierre Jolicoeur and Mr. James Barrett

A Preliminary Asset Management Plan For Parks and Buildings - City of Clarence-Rockland

January 2014 City of Clarence Rockland Pierre Jolicoeur & Jim Barrett



Table of Contents

Background
Assignment Objectives4
Limitations5
Municipal Asset Management
Municipal Parks Review
Key Definitions7
Base Park Asset
General Comments8
Relationship with Maintenance Work10
Capital Life Cycle Renewal Plan10
Municipal Buildings Review
General Comments
Relationship with Maintenance Work14
Capital Life Cycle Renewal Plan
Building Summaries
Budgeting for Life Cycle Renewal
Prioritization for the Life Cycle Renewal Program21
Prioritizing the Asset Management Plan (Events/Project) Lists
Next Steps
SECTION 2 Summary of Park Assets
All Parks
Cathy Cain Park
Cheney Park
Eugene Laviolette Park
Dutrisac Park
Hammond Park42
Du Moulin Park
Simon Park
Dalrymple Park

Bourget/Bernard Valiquette Park	60
Clarence Creek Park	63
Jules-Saumure Park	67
Richelieu Grand-Riviere Park	69
Bellevue Park	74
Patricia Charron Park	76
St-Pascal Park	78
SECTION 3 Summary of Building Assets	. 81
All Buildings	81
Corporate Buildings	85
City Hall	85
Archives Building	90
Clarence Creek Town Hall (Former)	92
Parks and Recreation Buildings	95
Hammond Recreation Centre	95
Rockland Museum (La Famille) Building	98
Centre Chamberland	. 101
Band Shell Enclosure	. 102
Recreation Garage	. 104
Clarence Creek Arena	. 107
Centre des Arts	. 114
Main Library	. 116
Park Service Buildings	. 118
Bourget Recreation Centre	. 119
Rockland Arena	. 122
Recreational and Cultural Complex (Centre Culturel-Sportif)	. 129
St-Pascal Recreation Centre	. 135
Fire Services Buildings	. 138
Bourget Fire Hall	. 138
Clarence Creek Fire Hall	. 141
Rockland Fire Hall	. 144

Fire Administration Building147
Environment Services Buildings
Low Lift (River Water) Pumping Station149
Clarence-Rockland Water Treatment Plant151
Pumping Station No. 1
Pumping Station No. 2156
Pumping Station No. 3
Pumping Station No. 4
Pumping Station No. 5
Pumping Station No. 6
Pumping Station No. 7
Booster Station
Sanitary Sewer Plant
Landfill Site
Public Works Buildings
Public Works Garage
Daycare Facilities
SECTION 4 TWENTY YEAR LIFE-CYCLE FORECAST SUMMARY SHEETS 187

SECTION 1 Introduction and General Notes

Background

The City of Clarence-Rockland has undertaken several key initiatives in order to comply with new provincial reporting requirements on the state of finances and assets. Clarence-Rockland has completed a review of its municipal assets in conformity with PSAB 3150 and has taken a proactive stance through the adoption of a bylaw establishing an asset management policy. The municipality has further identified a requirement to complete a condition review of its assets in order to substantiate its requests for provincial funding and to integrate this information within its long-term capital forecast. This particular assignment is focused on a condition review of the parks and building assets of the City of Clarence-Rockland and is considered to be one element of several assignments to develop an overall municipal asset plan.

Assignment Objectives

The following objectives were established for this assignment:

- Site review of each municipal building and park and the collection of asset-specific information as well as a general determination of condition.
- 2. Determination of anticipated life cycle renewal events per building and park based on input from City staff and general observations from site reviews.
- 3. Assembly of life cycle renewal information in a single binder containing the following information:
 - 3.1. 15-20 year life cycle renewal forecast for each building and park
 - 3.2. cost projections to include an inflation factor
 - 3.3. where possible, provide a Facility Condition Index (FCI) rating
 - 3.4. provide digital photographs and record of site reviews
- 4. Brief examination of current decision process in the preparation of the life cycle renewal capital budget and proffering recommendations to enhance the process.
- 5. Provide general commentary on rating life cycle renewal work and offering general comments on risk tolerance levels associated with Facility Condition Index data. Also, offer general comments related to service levels and delivery of life cycle renewal work.
- 6. Provide general information concerning the relationship between operating and maintenance budgets and life cycle renewal work and proffer comments surrounding strategic asset management and the buildings and parks portfolio.
- 7. Provide a list of regulations and legislation affecting life cycle renewal work.

Limitations

- The site reviews to be undertaken under this proposal are not intended to be a substitute for mechanical, electrical, plumbing and structural inspections by qualified inspectors in these fields. This non-intrusive review is intended for the exclusive purpose of developing a reasonable forecast of planned life cycle renewal for the subject municipal facilities.
- The information contained in the final submission is not a warranty as to the condition of the property or any other conditions of which the City of Clarence-Rockland has no actual knowledge.
- 3. The information contained in the final submission is collected from various sources and is subject to change without notice. Information in the final submission is not intended to constitute advice nor is it to be used as a substitute for specific advice from a licensed professional.
- 4. Since life cycle renewal work is closely aligned with preventive maintenance and operational plans, the life cycle renewal forecast presented in the final submission may undergo significant change pending the level of funding and activity performed by the City in maintaining building and park assets. No assessment of preventive maintenance and general maintenance service levels for buildings and parks will be undertaken under this proposal
- 5. The life cycle renewal forecast deliverable is predicated on obtaining pertinent building and park asset data and detailed historical repair and maintenance information in addition to adequate consultation with maintenance and operations staff.
- 6. Only base building and base park assets will be reflected in the life cycle renewal forecast. A base asset is a fundamental component of a building such as a roof or heating boiler, or a playstructure or parking lot for a park, which has sufficient dollar value to satisfy the capital budget eligibility threshold. An appliance, portable sound system or tables and chairs are not considered as base assets.
- The site review is not intended as a Code review and will not proffer any code or regulation compliance assessment since this is deemed to be an operational requirement.

Municipal Asset Management

The application of asset management in the municipal sector is of growing importance since municipalities continue to be faced with shrinking budgets while, at the same time, having to provide the most suitable assets in support of core service delivery requirements. The focus of asset management is to support local decision-making related to the acquisition, remediation or disposal of assets. The adoption of an asset management policy by the City of Clarence-Rockland is testimony to this municipality's commitment to municipal asset preservation and ensuring the effective and efficient deployment of municipal resources. This assignment is clearly aligned with the objectives of the City's asset management policy and is expected to guide the City in meeting its service level standards related to parks and buildings.

Within the mix of municipal infrastructure assets, parks and buildings are considered to be unique. Although all assets are created in support of a service or program need, the program that led initially to the creation of a park or building may likely change and evolve during the life of the asset. For *continuous network assets* such as roads and sewers, the demand for the asset will, for all intents and purposes, be everlasting. The likelihood of decommissioning a road or a sewer line is remote. These assets tend to remain in the City's inventory in perpetuity. The focus of the asset manager responsible for continuous network infrastructure is to meet maintenance standards and perform life cycle renewal work that satisfies the projected lifespan of the asset. At the end of the service life, the road or sewer undergoes a total re-build and may be enhanced in order to meet current standards. An example is the widening of a collector road to support bicycle lanes when the road is subject to a re-construction.

Parks and buildings are different from continuous network assets. Property exists solely in support of a program and the foundations of that program are likely to change during the lifespan of a property asset. For example, some municipalities have converted baseball and softball facilities into mini-soccer pitches or other facilities to meet the growing interest in soccer. Asset rationalization is a specific exercise to determine the best property solution in support of a program or need. Functional audits help to clarify the viability of the program and the deployment of property assets in support of that need. The decision to fund a significant remediation of a building has to be aligned with a confirmation of the long-term program commitment. In some cases, a program commitment may be insufficient to justify the on-going maintenance and operating costs as well as the impending life cycle renewal costs of an older building. For example, a fire service re-deployment plan may see the closing of older fire stations and the potential to apply the disposal value toward the construction of newer facilities. The intent is not to manufacture a program need in order to keep the property within the inventory, but rather to have a building and park portfolio that meets the needs of the community and is financially sustainable.

Municipal Parks Review

This section of the report pertains to the outcome of a review of parks that have undergone development within the City of Clarence-Rockland. The review excludes any vacant parkland since there are no basic park assets upon which a long-term capital re-investment plan can be determined. The following parks were reviewed as per the mandate of this assignment:

- Parc Laviolette
- Parc Cathy Cain
- Parc Hammond (Centre Communautaire Hammond)
- Parc Cheney
- Parc Bourget (Centre Communautaire Bourget)
- Parc Bernard Valiquette
- Parc Clarence Creek (Aréna de Clarence Creek)
- Parc Dalrymple
- Parc Simon
 Parc Patricia Charron
- Parc Richelieu Grande Rivière
- Parc Dutrisac
- Parc Du Moulin
- Parc Bellevue
- Parc Jules Saumure

Key Definitions

The condition review of the municipal parks is based on several key definitions, notably the following:

Base Park Asset: a base park asset is considered to be physical property that the City owns that is subject to maintenance, repair and replacement and which is an integral and fundamental component of the park. For the purpose of this review, a base park asset has a single replacement value that exceeds \$ 5,000.

Hard Landscaping: consists of hard construction elements within a park such as pavement areas, curbs, lighting, fencing, etc.

Soft Landscaping: consists of natural elements of a park including turf, trees, shrubs, flowers, ponds, etc.

General Maintenance: preserves the appearance of the base park asset and is completed at discrete intervals based on seasonal considerations, experience and other factors. Typical general maintenance activities include grass cutting, fertilization, aeration, parking lot sweeping, litter pick-up, etc.

Life Cycle Renewal: involves the planned replacement of a base park asset that has reached the end of its useful service or can no longer perform due to degradation of its components or has become obsolete and fails to perform to minimum design standards.

Repair Work: involves restoring to normal operation some component of a base park asset after it has failed. Typically, repairs do not result in a significant extension of the expected useful life of the base park asset. A *Capital Repair* is a periodic expenditure which corrects a defect with a cost exceeding \$ 10,000. It is expected that the capital repair will help extend the service life of the base park asset; however, it will not expand the park's capabilities.

Base Park Asset

Although the following list is not exhaustive, the following items were considered during the condition review of the municipal parks:

- Fencing
- Lighting systems
- Play structures
- Parking facilities
- Pathways
- Courts and sport surfaces
- Outdoor water play facilities
- Sun shelters
- Docks and wharfs
- Park bridges
- Curbing
- Bleachers
- Skateboard park structures
- Park identification sign
- Non-removable outdoor rink boards

General Comments

As noted earlier, a municipal park consists of a myriad of base park assets, each having a specific useful life and maintenance requirement. General comments are offered in regards to base park assets in an effort to delineate the potential impact on long-term capital plans.

<u>Fencing</u>: the fence inventory within the City's parks is largely chain link fencing. Depending on the wire used, height and diamond opening, a chain link fence should have a useful life of thirty (30) years. There are only a few applications of post and paddle wood fencing used, which typically has a life of 20 years. A key issue affecting park fencing concerns development agreements. It is not always clear whether the maintenance and replacement of fencing that divides private property from parkland is the responsibility of the property owner or the City. For example, at Richelieu Grande Rivière Park,

homeowners have gates at the rear of their property that open directly onto the park. The potential life cycle renewal obligations concerning this fencing may need to be clarified.

<u>Lighting:</u> most of the park lighting is mounted on wood poles. The service life of wood poles is 40-50 years, but this lifespan is influenced by many factors such as wood species, initial preservation treatments, climate, location and maintenance. The remaining poles are concrete and metal structures which have a lifespan of 40-50 years. The condition of the concrete base supporting posts is an important factor.

<u>Play structures:</u> the municipality has upgraded its play structure inventory and the vast majority of play structures are of recent vintage. Although the typical service life is considered by the manufacturers to be 15 years, depending on the amount of use, location and level of maintenance afforded, it can last 20+ years provided that the replacement of worn equipment, especially plastic components, is undertaken at regular intervals. Most likely, the shift in the ages of the population in the neighborhood will create a different set of demands and programming needs that can only be met by the replacement of the play structure or a major re-configuration of the playstructure.

<u>Hard landscaping</u>: concrete structures have a 25 to 50 year lifespan depending on the level of exposure to difficult external influences such as excessive moisture, freeze-thaw, etc. Asphalt surfaces typically last 15 to 20 years depending on the amount of use and the application of preventive maintenance measures such as crack sealing. A 40% drop in quality is noticeable after 15 years, while the remaining 60% of life is lost the following 5 years.

<u>Outdoor water play</u>: water play features are exposed to considerable humidity and must be properly winterized to avoid premature failure. A 15 year lifespan is normally attributed to this equipment under proper maintenance conditions.

<u>Sun shelter:</u> The structures tend to be quite robust since they are constantly exposed to all types of weather. The use of treated pressure lumber ensures a useful life of 35 years. Most sun shelters that were reviewed suffer from roof shingle failure due to the exposure to sun and wind.

<u>Docks and wharfs:</u> the City inventory consists of floating wharfs constructed in an aluminum frame. A 20 year lifespan is anticipated provided that the wood platform is maintained and repaired on a regular basis. The concrete piers and wharfs have an extended service life of 40+ years.

<u>Bleachers:</u> maintenance plays a critical role in achieving the lifespan of bleachers. The painting of exposed metal structural members with a rust inhibitor and the replacement of damaged wood planks ensure that the 20 year lifespan is met.

<u>Skateboard Park:</u> the structural elements are critical to the long-term performance of these assets and must be addressed as part of a regular maintenance program. The magnitude of use, the level of vandalism and exposure to weather affect the anticipated 20 year lifespan.

<u>Rink boards:</u> the rink board inventory consists mainly of wood boards and capping. The wood boards are exposed to water and weather as well as puck damage. The quality of the wood material used has a direct bearing on the length of service, which can be approximately 10 years, depending on the intensity of use and length of the ice season.

Relationship with Maintenance Work

The integral relationship between park maintenance and base park asset replacement is apparent. An appropriate investment in park maintenance will reduce the overall requirement for major repairs and premature life cycle renewal. Conversely, inadequate funding of park life cycle renewal will result in wholesale failure of park components, leading to excessive unplanned emergency repairs and an ineffective park maintenance program.

Although a review of maintenance budgets for parks exceeds the mandate of this assignment, it is staff's view that the level of funding needs to be augmented in order to fulfill the maintenance obligations associated with base park assets. As an example, a sportsfield can remain in the inventory for an extended period provided that the intensity of use of the field is carefully managed and that the appropriate levels of turf maintenance, such as fertilization, aeration, over-seeding and turf repairs are performed faithfully each year. Under these conditions, the City can avoid the costs of re-constructing a sportsfield at a cost of \$ 30,000 (seeding only) to \$ 90,000 for a complete re-construction and sodding.

A cursory review of the 2013 parks operating budget suggests that an increase of \$ 20,000 to \$ 30,000 to the base budget will address the type and frequency of repairs encountered in the parks portfolio. The elimination of the annual operating shortfall will ensure that funds earmarked for park life cycle renewal are directed predominantly toward the timely planned replacement of park assets.

Capital Life Cycle Renewal Plan

Sections 2 and 3 contain summary sheets of each park and building that has undergone a high-level condition review, including a detailed photographic record and Section 4 presents the estimated combined life cycle renewal forecast for the entire City portfolio for the next 20 years.

In discussions with parks staff, there is a requirement to undertake a more detailed investigation of the condition of the park and facility parking lot lighting systems. The focus of this investigation will be to examine the types of lighting systems, their condition and projected service life as well as changes needed to ensure durability, energy performance, congruity and ease of maintenance. The life cycle renewal forecast contains an event in 2015 to undertake this detailed investigation.

The capital forecast for parks life cycle renewal also includes an annual contingency. A contingency is recommended in light of the age of the parks and the potential for unforeseen major repairs due to

vandalism, weather, shift in use or unanticipated site conditions related to a planned life cycle renewal project that raise the costs of the project above the stated project budget. Any free balance remaining in the contingency can be carried forward to support life cycle renewal in the next capital budget.

As noted earlier in this report, the prioritization of life cycle renewal work related to parks should not be based singly on the prioritization tool described later in this report ("**Prioritizing the Asset Management Plan (Events/Project) Lists"**), but also on the programming need exhibited in the community. A confirmation of a recreation programming need must be achieved prior to undertaking the renewal of a park asset. For example, the replacement of outdoor rink boards should only proceed if there is an expressed demand for ice rink and boarded activities in that park.

The year of replacement suggested in the attached life cycle renewal forecast is a best estimate only as to when the park asset is to be replaced based on current condition. This date may be subject to change following future inspections or the premature failure of the park assets. The cost assumptions need to be reviewed and confirmed along with the proposed scope of work prior to the submission of a capital budget.

Municipal Buildings Review

This section of the report pertains to the outcome of a review of the municipal buildings inventory of the City of Clarence-Rockland. Several different departments within the organization assume the responsibility for the life cycle renewal of the municipal buildings under their jurisdiction. The estimated life cycle renewal forecast, therefore, has been segregated in order to reflect this division of roles and responsibilities.

It should be noted that the Clarence Rockland Arena complex is NOT included in this report, nor are any life-cycle renewal events carried in the forecast. The Parks and Recreation Department has commissioned a condition audit of this facility and it is expected that the life cycle renewal information from this audit will be added to and reflected in the 20 year life cycle renewal forecast.

Key Definitions

Base Building Asset: a base building asset is considered to be physical property that is an integral component of the fundamental building systems. Table 1, below, provides a detailed listing of these base building assets.

General Maintenance: preserves the appearance of a base building asset and is completed at discrete intervals based on seasonal considerations, accumulated experience or other factors. It is considered as routine maintenance and is normally funded by the operating budget. Typical general maintenance activities include stripping and waxing floors; re-painting walls; doing ice maintenance work; etc.

Preventive Maintenance: is performed to an operational device, equipment or base building asset so that it operates at optimum efficiency and without interruption. Preventive maintenance work is completed at regular intervals.

Repair Work: is done to restore the operation of a component of a building after it has failed. A *Capital Repair* is a periodic expenditure which corrects a defect with a cost exceeding \$ 10,000. It is expected that a Capital Repair will help extend the service life of the base building asset.

Life Cycle Renewal (Replacement): is performed when the building component has reached the end of its useful service life, when it can no longer perform due to degradation of its components and repair is no longer cost effective or due to obsolescence and a shortage of performance that meets minimum standards. It involves the substitution of one base building asset by another having the capacity to perform the same function.

Betterment/Modification: is an enduring increase to the service potential of an asset. It alters the building in order to accommodate a new function or corporate initiative.

<u> Table 1 – Base Building Assets</u>

- Building superstructure: columns, slabs, shafts, stairwells, joists, foundation elements, etc.
- Exterior closure: wall cladding, stairs, doors, windows, etc.

- Roofing: ventilation, skylights, eavestroughing, roofing systems
- Interior Finishes: wall systems, flooring, ceiling, doors, stairs, millwork
- Mechanical: plumbing systems, HVAC, sprinkler, etc.
- Electrical: distribution systems, lighting, fire and life safety, generator, EMCS, etc.
- Vertical Transportation: elevators, fixed hoists, etc.
- Utilities: wells, septic systems, buried tanks, etc.
- Arena: refrigeration system, boards and protective glass, dehumidification, scoreboard, PA system
- Pool: filtration system, diving facilities, chemical feed system, PA system, etc.

General Comments

General comments are offered in regards to base building assets in an effort to delineate the potential impact on long-term capital plans and planned life cycle renewal.

Building structure: although a structural inspection every 5 years of a wide span building such as an arena, is no longer mandated by the Province, it is considered prudent to commission these types of inspections nevertheless for safety and performance. A confirmation of the limits on loading, including allowable snow load, ensures that the appropriate reviews and maintenance steps are taken to address unforeseen situations that result in a temporary surpassing of the load limits. The LCR forecast presented in this asset management plan includes an estimate for structural inspections.

Roofing:_ as to be expected, different roofing systems have been applied throughout the municipality. Modified bitumen (25 year life), asphalt shingles (25 – 30 years) and metal roofing (30 years) predominate the current building inventory. Since roofing is a key element in the front line defense against weather infiltration in a building, it is considered prudent to have a regular program of roofing inspection in place. This inspection will identify maintenance and minor repair issues that can be done to prevent costly premature failure of the roofing system. The facility summaries presented in this report contain suggested maintenance interventions. The LCR forecast includes an allowance for roofing inspection.

Exterior wall assemblies: the municipality has used, where possible, wall assemblies that provide longterm performance. Metal cladding (35 year life) and brick (75 years) are used extensively in the inventory. Aluminum windows (50 years), steel doors (45 years) and wood components (20 years) are evident. It is critical that maintenance be performed in a timely and comprehensive manner to ensure that the expected useful life of the building component is achieved. An example is the cleaning and reapplication of a finish to metal wall cladding that is showing fading and the early onstage of surface corrosion.

Interior finishes: the lifespan of various interior building finishes is largely affected by the quality and frequency of custodial care as well as the intensity of use. Concrete, ceramic and drywall finish (75 years) offer excellent long-term performance. Acoustic lay-in tile ceilings (50 years) are used extensively in City buildings. Tendency is for floor finishes to undergo capital replacement at more frequent intervals: vinyl (18 years), wood (30-40 years) and carpeting (8 years). Carpet tile may have a higher

initial cost, but may prove to be more versatile during the replacement of rolled carpet, since a room's furnishings can be displaced within the space to accommodate the installation of carpet tile.

Plumbing: most plumbing components and equipment have satisfactory service life, including toilets (35 years), urinals (35 years), fiberglass shower (20 years), drinking fountain (10 years), piping (25-30 years), etc. Regular maintenance and early detection and completion of minor repairs will ensure service life on plumbing components. The fact that a number of facilities are served by well water systems and septic systems may impact the expected service life of plumbing components. The City would be prudent in commissioning an inspection and a condition assessment of the septic and waste handling systems that are presently in place for municipal buildings.

Mechanical / HVAC/ Electrical: these components have varying useful lives such as a water heater (15 years); sprinkler system (20 years); gas boiler (30 years); chiller and air conditioner (20 years); condenser and cooling tower (15 years); exhaust fan (20 years); HVAC unit (15 years); transformer (30 years); light fixture (20 years); fire panel (15 years); electric suspended heater (15 years) and generator (25 years). A preventive maintenance program plays an essential role in achieving the useful life target and in ensuring that the equipment meets performance expectations.

Relationship with Maintenance Work

As noted in the previous section, maintenance is an integral element of a successful and comprehensive life cycle renewal program for building assets. Best practice research on appropriate levels of investment for building maintenance and life cycle renewal suggests an annual contribution rate of 2% of the replacement value of the building portfolio toward maintenance and operations and a similar 2% earmarked for life cycle renewal. The industry refers to this investment approach as the 2 + 2 approach.

Preventive maintenance, which consists of pre-scheduled maintenance work on building components and service equipment, is important to the success of the capital renewal program. Through effective preventive maintenance measures, the need for unplanned emergency repairs is reduced, thus allowing the City buildings to provide uninterrupted services and activities. Preventive maintenance also allows the building components and systems to function as intended, ensuring that their replacement period is as originally specified, or, in some cases, extended. The amount of operational funding assigned by the City toward maintenance and minor repairs was not a research requirement of this general condition review. However, it would appear that no formal preventive maintenance program except for the reporting and compliance requirements associated with the drinking water and waste water systems appear to be in effect. The potential impact on the life cycle renewal program for City buildings is likely to result in the replacement of base building assets prior to the end of service life.

Capital Life Cycle Renewal Plan

Sections 2 and 3 contain summary sheets of each park and building that has undergone a high-level condition review, including a detailed photographic record and Section 4 presents the estimated combined life cycle renewal forecast for the entire City portfolio for the next 20 years.

The forecast recommends the adoption of a contingency fund to address unforeseen conditions and component failures incurred throughout the fiscal period. A contingency is recommended in light of the age of the building inventory and limited preventive maintenance afforded to the building stock. Should a free balance remain in the contingency at the end of the fiscal period, it could be carried forward to the next financial period or returned to source.

As noted earlier, the LCR forecast includes events that support structural adequacy reviews and roofing inspections of the building inventory. In addition to these reviews, the LCR forecast includes condition audits that need to be commissioned in order to confirm the physical status of a building and its systems. These audits will help to pinpoint the year, scope and upset cost for the renewal of base building assets.

The year of replacement suggested in the life cycle renewal forecast for City buildings and facilities is a best estimate only as to when the base building asset is to be replaced based on current condition and input from staff. This date may be subject to change following future inspections or the premature failure of the building asset. The cost assumptions need to be reviewed and confirmed along with the proposed scope of work prior to the submission of a capital *budget and are presumed to be no more accurate than* **Class** "D" precision (+/- 25%).

Building Summaries

The City building portfolio and the subsequent building summaries have been divided into one of several responsibility areas. This division recognizes that the responsibility for the maintenance, operation and capital renewal of the building portfolio is apportioned to a number of municipal departments within the organizational structure of the City of Clarence-Rockland. The division of responsibility areas is presented as follows:

- 1. Environmental Services
- 2. Parks and Recreation Services
- 3. Fire Services
- 4. General Government, Library, Daycare and Public Works & Services

Environmental Services

A general condition review of the following buildings and sites was conducted on November 15th, 2013:

- Water Treatment Plant
- Low Lift Station
- Pumping Station No.1
- Pumping Station No.2
- Pumping Station No.3
- Pumping Station No.4
- Pumping Station No.5
- Pumping Station No.6
- Pumping Station No.7
- Booster Station
- Waste Water Treatment Plant
- Landfill Site

The review was focused on base building and site assets, including the exterior building envelope, fencing and hard landscaping, building services and architectural elements. The process equipment such as pumps and treatment equipment is considered to be application-specific equipment whose life cycle renewal is managed exclusively by the environmental services department and which falls outside the scope of this general condition review.

The Ontario Clean Water Agency, on behalf of the City of Clarence-Rockland, operates and maintains the drinking water and waste water treatment facilities. The Agency notifies the City on an annual basis as to the major maintenance and capital requirements for these facilities during the next fiscal period and ensures that the operational standards for the safe and reliable operation of the water systems are adhered to. The municipality funds the life cycle renewal work from water and sewer charges.

Parks and Recreation Services

A general condition review of the following buildings and sites was conducted over an extended period:

- Rockland Arena
- Clarence Creek Arena
- Sports and Cultural Centre
- Hammond Community Centre
- St-Pascal Community Centre
- Bourget Community Centre
- Chamberland Centre

- Band Shell
- Arts and Cultural Centre
- Recreation Garage
- Park Service Buildings
- Museum

The review was focused on base building and site assets, including the exterior building envelope, fencing and hard landscaping, building services and architectural elements. Specific program and service assets including furniture, fitness equipment, portable audio devices, etc. are considered to be application-specific equipment whose life cycle renewal is outside the purview of this general condition review.

A review of the Clarence-Rockland Arena Complex was not undertaken as part of this assignment. The Parks & Recreation Department commissioned a condition audit of this facility in 2013 and the results from this audit are imminent. It is expected that the life cycle renewal forecast proposed under this audit will be incorporated into the long-term capital renewal budget forecast for municipal buildings in the first quarter of 2014.

In a similar vein, the Parks & Recreation Department has commissioned an engineering firm to perform a condition audit of the Clarence-Rockland Sports and Cultural Centre in 2014. Although a general condition review of this facility has been done as part of this assignment and a forecast of life cycle renewal events has been incorporated into this submission, it is expected that the results of the condition audit will supersede this information and will, therefore, populate the long-term capital renewal budget forecast for municipal buildings.

Of all municipal departments, Parks and Recreation has the largest portfolio of municipal buildings. This portfolio is diverse in terms of building attributes and uses. It is expected to maintain and operate as well as manage the life cycle renewal of multiple base building assets and consequently, has the most comprehensive understanding of building operations of any municipal department. Parks and Recreation staff is considered to be the centre of expertise relating to building operations.

Fire Services

A general condition review of the following buildings and sites was conducted on November 25th, 2013:

- Rockland Fire Hall
- Fire Administration
- Bourget Fire Hall
- Clarence Creek Fire Hall

The review was focused on base building and site assets, including the exterior building envelope, fencing and hard landscaping, building services and architectural elements. Firefighting equipment, supplies and vehicles as well as office equipment is considered to be application-specific equipment whose life cycle renewal and replacement is the exclusive purview of Fire Services and therefore, falls outside the scope of this general condition review.

Fire Services is responsible for developing the capital life cycle renewal budget submission on behalf of the fire halls. The maintenance and operation of the Fire Administration building is performed by Recreation & Parks and the capital renewal program is developed by this department with input from Fire Services.

General Government, Library, Daycare and Public Works & Services

A general condition review of the following buildings and sites was conducted over an extended period of time:

- City Archives
- City Hall
- Clarence Creek Town Hall
- Daycare
- Main Library
- Public Works Garage

The review was focused on base building and site assets, including the exterior building envelope, fencing and hard landscaping, building services and architectural elements. Certain pieces of equipment and assets such as furniture, book shelving, computers, portable hoists and fuel system, are considered to be application-specific equipment whose life cycle renewal and replacement is the exclusive purview of the department that owns this asset. As a result, this equipment falls outside the scope of this general condition review.

Budgeting for Life Cycle Renewal

The challenge in budgeting for life cycle renewal is not only to counter the rise in the level of deferred asset replacement work but to ensure that the projects of highest relative importance are funded and completed in a timely fashion. A shortage of capital funds to meet life cycle renewal obligations for municipal assets is an ever-present situation that all Canadian cities are facing. Therefore, it is considered prudent for the City of Clarence-Rockland to adopt a comprehensive and integrated approach in formulating its capital budget plan for its municipal buildings portfolio. With that in mind, it is suggested that the maintenance, repair and life cycle renewal of city buildings (except for the Environmental Services portfolio) fall under the responsibility of one department, notably the Parks & Recreation Department.

The adoption of this approach mirrors the one that the city currently applies toward its other tangible capital assets. The Public Works Department, for example, assumes the responsibility for maintenance, repair and life cycle renewal of public roads. Working with a responsible third party, the Environmental Services Department assumes the maintenance, operation, repair and life cycle renewal of water works assets. The Parks & Recreation Department currently handles the maintenance, repair, programming and life cycle renewal of parks.

This suggested approach recognizes that each type of municipal asset requires a level of expertise, experience and knowledge. Each department within the organizational structure of this City is considered to be a centre of expertise. Questions surrounding firefighting and fire prevention are best referred to Fire Services while questions about snow clearing are best answered by Public Works. This centre of expertise approach must also prevail in questions affecting municipal buildings. The centre of expertise concept endorses a strategic perspective by:

- Interpreting and adhering to rules and regulations affecting building operations
- Optimizing the deployment of City funds
- Developing and applying consistent policies and practices
- Protecting the integrity of the assets
- Maximizing the availability and use of building information

Having a single operating unit assume the life cycle renewal of city buildings will help achieve economies of scale and a comprehensive prioritization of asset replacement requirements. It will also ensure the proper integration and balancing of preventive maintenance, repair and life cycle renewal work. With a complete understanding of the operating situation, the responsible department is best able to determine if a reduction in maintenance is warranted based on planned life cycle renewal work. An example is the need to do minor repairs to a roof when a major roof replacement is planned shortly.

The department may wish to consider adopting the following practices in developing its annual life cycle renewal budget for municipal buildings:

- 1. Only base building assets which exceed \$ 5000 in value or capital repairs of \$ 10,000 or more and that have a useful life greater than one year will be addressed under the life cycle renewal program.
- 2. Life cycle renewal funding for buildings that are considered to be non-essential or of lower priority will be limited.
- 3. Life cycle renewal funding for buildings whose cost to address a backlog of major repairs exceeds 50 % of the replacement value of the building will be limited.
- 4. The responsibility for life cycle renewal costs related to lease properties will be assigned to the landlord.
- 5. Life cycle renewal funding for temporary structures should be limited since temporary structures are intended for use within a specified time period.
- 6. The use of modeled data as the primary source data for the life cycle renewal budget should be limited. Verified condition data through condition audits and detailed inspections must be the primary source of information.
- 7. All items presented in the annual life cycle renewal budget must be validated by staff.
- 8. Each item having a cost of more than \$ 10,000 should have a contingency factored in the budget submission in order to accommodate price inflation and scope creep.
- 9. The replacement of the base building asset under the life cycle renewal program is to be based on a replacement with equivalent capacity, service characteristics and compliance with applicable codes and regulations.
- 10. The Department must work to ensure that detailed design for projects having a value in excess of \$ 30,000 or of sufficient complexity, is completed a minimum of one budget year preceding the execution of the project.
- 11. Each LCR project is to undergo a standard project management method in order to ensure that the milestones and cost limits are met and all relevant information is captured for PSAB and inventory purposes.
- 12. The free balance of completed life cycle renewal projects should be returned to a reserve dedicated to buildings life cycle renewal.
- 13. Life cycle renewal funding must not be applied to the single, complete replacement of the building. It is up to affected city department to rationalize the replacement and construction of a new building and to obtain the capital funding for this initiative.

Prioritization for the Life Cycle Renewal Program

Over time, the Department will assemble a significant amount of information concerning base building asset replacement needs. Faced with this information, the Department will require a standard approach to score the individual items in a rational, consistent basis. Using the recommended prioritization tool described herein should allow each item to be ranked in terms of its priority for being included in the capital LCR budget submission. A hierarchical weighting structure is suggested. The top tier weighting is at the level of building type (e.g. fire station vs. community center). The second weighting is applied at the level of project types (e.g. roof replacement vs. carpet replacement).

The weights introduce a deliberate systemic consideration into the prioritization method, recognizing that certain asset classes and certain project types are inherently more critical. With the weighting set, the scoring of individual items within the project type is then performed. Of all the roofing jobs to complete, for example, which is the most critical to address. It should be noted that this suggested prioritization method can and should be applied toward the selection of park projects in the capital life cycle renewal program.

As stated earlier in this report, park and building assets are in support of a program and / or service need. Property exists solely in support of a municipal service. The role and future of each park and building asset in relation to the service department's program direction needs to be confirmed for an effective life cycle renewal program. The vocation of the building asset and its future direction need to be clarified so that any planned LCR investment can be justified. A rationalization of the sample limits of condition status in choosing the recommended list of life cycle renewal items.

Prioritizing the Asset Management Plan (Events/Project) Lists

Due Diligence Events

Asset Managers must first consider whether or not any pending "event" is responsive to one or more of the following mandatory due-diligence criteria;

- Critical directives and recommendations arising from facility inspections performed by qualified professionals.
- Electrical Safety Authority Directives
- Ministry of the Environment Orders
- Directives arising from Accreditation Inspection Reports
- Ministry of Labour Orders
- Technical Standards and Safety Authority Directives
- Directives arising from a Coroner Report
- Directives arising from the Ontario Fire Marshal or Designate
- Directives arising from other Regulatory Authorities having jurisdiction.

Any event meeting the above criteria is flagged as a "Critical Planned Event" (CPE) and automatically ranked at the maximum priority level (depending on the ranking system used). CPE events are typically

not subject to discretionary deferral and must be funded and completed in the year in which they are identified.

Depending on funding availability, the remaining events are subject to an Opportunity Assessment and a Deferral Risk Assessment as follows;

Opportunity Assessment

The event is examined, and ranked on the basis of the degree to which it presents an "opportunity" in response to the following five questions;

- 1. To what extent does the event increase the economic lifespan of the parent asset?
- 2. To what extent does the event provide for better delivery of current programs or services from the parent asset?
- 3. To what extent does the event present an opportunity for lower budget costs or improved revenue?
- 4. Is there a 'timing advantage' to executing the event in the year identified?
- 5. To what extent does the event provide an opportunity for new or improved programs or services not currently available?

The rankings provided by the users in responding to the above generate an overall "Opportunity Index" with a *maximum* value of 50.

Deferral Risk Assessment

The event is examined on the basis of the overall risk associated with deferral for a period of up to two years. The users consider and rank the likelihood and impact of deferral in each of the following five key risk areas (KRA's);

- 1. Risk of damage to the asset or property.
- 2. Risk of reduced safety for occupants and users.
- 3. Risk of interruption to programs or services.
- 4. Risk of reduced affordability of the property.
- 5. Risk of reputational damage or loss (City Staff, Executive, Elected Officials)

The rankings provided by the users generate an overall event Risk Index with a maximum value of 50.

The "Asset Damage", "Occupant Safety" and "Program Interruption" KRA's are typically weighted more heavily than the "Affordability" and "Reputational Loss" KRA's (Key Risk Areas). Absent of any weighting approach, the results from this basic prioritization exercise can be used to generate an event priority out of a maximum of 100 points.

Next Steps

With the completion of this preliminary asset management plan, the City of Clarence-Rockland may wish to consider the continuation of the comprehensive asset management process by engaging in the following activities.

- 1. Assign the responsibility for the *corporate wide real property asset inventory* to the group currently responsible for the majority of real property assets within the City (Parks and Recreation Department).
- Further to the current CN Watson PSAB 3150 Compliance Report (2010), consider developing and <u>maintaining</u> a broader comprehensive inventory of all real property assets grouped according to the following levels;
 - a. A detailed listing of all SITES on which the City has, or could construct, future real property assets.
 - b. A detailed listing of all FACILITY TYPES currently (or proposed to be) located on City Sites.
 - c. A detailed listing of "nameplate" data on all FACILITIES currently established on City Sites (this would include age, area (SqFt.), site acreage, ownership and other details).
 - d. A detailed listing of all anticipated capital asset renewal (life-cycle) EVENTS for City facilities <u>beyond</u> those identified in the 20 year forecast and presented herein as part of a "preliminary asset management plan".
- 3. Design and implement a validation and prioritization process to be applied to all existing and future capital life-cycle renewal events for City real properties.
- Direct City Staff to <u>maintain</u> the 20 year forecast list of life-cycle renewal events, including the following process steps;
 - On an annual basis and prior to the submission of the budget, revisit the events forecast for the next calendar year and confirm the continuing need for same and the accuracy of the cost estimate for each item. (Validation)
 - b. Add any new events which may be required and not identified in the forecast. Delete or move any events that are not required or can be restated to a later year.
 - c. Prioritize each event in the forecast on the basis of the risk and opportunity criteria provided herein.
 - d. Submit the list of validated and prioritized events for Management and Council consideration (likely in the consolidated asset plan document for the next budget year).
 - e. Depending on funding availability modify the list of events, moving those that "did not make the cut" into future years on the event table.
- 5. Develop and implement a preventive maintenance program that addresses the inspection and servicing requirements for heating, ventilation, air-conditioning and specialized equipment in City buildings.
- 6. Develop a document outlining and seeking Council approval for real property asset management <u>policies</u> to be implemented as early as 2014.

- 7. Develop a method to establish the contemporary reproduction and effective replacement values of each facility (structure or property element) located on every City site.
- 8. Develop an FCI Index for all Buildings identified in this report. In particular, the proper definition of an FCI (Facility Condition Index) requires that each facility have the following data points established;
 - a. The gross area of each building, typically expressed in gross square feet (Gsf).
 - b. The standard **facility type** for each building, which does not necessarily align with the given name pf the building. (For example, the "Hammond Recreation Centre" is a Community Building (facility type) even though its name suggests otherwise.
 - c. A clear understanding of the value of actual backlogged Capital Life Cycle Renewal Works for each building.
 - d. The estimated **Replacement Value** (in contemporary dollars) for each building in the inventory.

The standard definition of the Facility Condition Index is as follows;

FCI = (summary of all backlogged maintenance work) divided by (the current replacement value of the building)

At present there is insufficient data available to determine the actual value of backlogged capital LCR work, and the accurate replacement values for all the facilities in the inventory.



SECTION 2 Summary of Park Assets

All Parks

In preparing an asset management plan, it is usually prudent to identify minor funding allocations in each given year of the plan which are best described as "contingency amounts". These funding allocations are placed in the budget to provide a reasonable amount of capital life-cycle renewal monies in order to address the periodic requirement for <u>unplanned</u> replacement of assemblies within parks which fail to reach their projected useful life and which, for one reason or another, reach "end-of-life" prematurely.

Such contingency amounts are relatively <u>minor</u>, but they are placed into the asset management plan forecast to provide a "buffer" against premature rust-out as a consequence of a heavier than anticipated duty cycle, or a possible understated investment in preventive maintenance activity.

In developing this plan, the authors have recommended the allocation of a small contingency funding envelope in each budget year from 2015 through 2035 and have included an appropriate escalation factor to account for inflation throughout the period. It is expected that these funds, if not required, would be placed into an accumulating reserve to support periodic budgetary adjustments to the planned life cycle renewal program as estimated costs are refined to higher precision than the Class "D" estimates which make up the balance of the forecast.

FACILITY NAME	CATEGORY	REQUIREMENT	EVENT YEAR	BUDGET
ALL PARKS	INSPECTION AND	REVIEW PARKS	2015	\$21,000
	AUDIT	LIGHTING		
		SYSTEMS		
ALL PARKS	CONTINGENCY	PERIODIC	2015	\$6,000
		CONTINGENCY		
		FUNDING FOR		
		UNPLANNED LCR		
		RENEWAL		
ALL PARKS	CONTINGENCY	PERIODIC	2016	\$6,000
		CONTINGENCY		
		FUNDING FOR		
		UNPLANNED LCR		
		RENEWAL		
ALL PARKS	CONTINGENCY	PERIODIC	2017	\$6,000
		CONTINGENCY		
		FUNDING FOR		
		UNPLANNED LCR		
		RENEWAL		

LCR Forecast

FACILITY NAME	CATEGORY	REQUIREMENT	EVENT YEAR	BUDGET
ALL PARKS	CONTINGENCY	PERIODIC	2018	\$6,000
		CONTINGENCY		
		FUNDING FOR		
		UNPLANNED LCR		
		RENEWAL		
ALL PARKS	CONTINGENCY	PERIODIC	2019	\$6,000
		CONTINGENCY		
		FUNDING FOR		
		UNPLANNED LCR		
		RENEWAL		
ALL PARKS	CONTINGENCY	PERIODIC	2020	\$6,000
		CONTINGENCY		
		FUNDING FOR		
		UNPLANNED LCR		
		RENEWAL		makanan akabananan
ALL PARKS	CONTINGENCY	PERIODIC	2021	\$6,000
		CONTINGENCY		
		FUNDING FOR		
		UNPLANNED LCR		
		RENEWAL		
ALL PARKS	CONTINGENCY	PERIODIC	2022	\$6,000
		CONTINGENCY		
		FUNDING FOR		
		UNPLANNED LCR		
	CONTINCTION	RENEWAL	2022	67.000
ALL PARKS	CONTINGENCY	PERIODIC	2023	\$7,000
		CONTINGENCY		
		FUNDING FOR		
		UNPLANNED LCR		
	CONTINCENCY	RENEWAL	2024	ć7.000
ALL PARKS	CONTINGENCY	PERIODIC	2024	\$7,000
	CONTINGENCY		2025	\$7,000
ALLFARKS	CONTINGENCE	CONTINGENCY	2025	\$7,000
		RENEW/AL		
	CONTINGENCY	PERIODIC	2026	\$7.000
	CONTINUENCE	CONTINGENCY	2020	\$7,000
		FUNDING FOR		
		RENEWAL		
	1		1	

FACILITY NAME	CATEGORY	REQUIREMENT	EVENT YEAR	BUDGET
ALL PARKS	CONTINGENCY	PERIODIC	2027	\$7,000
		CONTINGENCY		~
		FUNDING FOR		
		UNPLANNED LCR		
		RENEWAL		
ALL PARKS	CONTINGENCY	PERIODIC	2028	\$7,000
		CONTINGENCY		
		FUNDING FOR		
		UNPLANNED LCR		
2		RENEWAL		
ALL PARKS	CONTINGENCY	PERIODIC	2029	\$7,000
		CONTINGENCY		10
		FUNDING FOR		
		UNPLANNED LCR		
		RENEWAL		
ALL PARKS	CONTINGENCY	PERIODIC	2030	\$8,000
		CONTINGENCY		
		FUNDING FOR		
		UNPLANNED LCR		
		RENEWAL		
ALL PARKS	CONTINGENCY	PERIODIC	2031	\$8,000
		CONTINGENCY		
		FUNDING FOR		
		UNPLANNED LCR		
		RENEWAL		
ALL PARKS	CONTINGENCY	PERIODIC	2032	\$8,000
		CONTINGENCY		
		FUNDING FOR		
		UNPLANNED LCR		
		RENEWAL		
ALL PARKS	CONTINGENCY	PERIODIC	2033	\$8,000
		CONTINGENCY		
		FUNDING FOR		
		UNPLANNED LCR		
		RENEWAL		
ALL PARKS	CONTINGENCY	PERIODIC	2034	\$8,000
		CONTINGENCY		
		FUNDING FOR		
		UNPLANNED LCR		
		RENEWAL		

Cathy Cain Park

Address:370 Chemin McDermott RoadSize:2.104 hectare (5.2 acres)

Site Review Notes

Date: October 29th, 2013

<u>Play equipment:</u> very good condition and wide assortment.

<u>Play surface</u>: asphalt in good condition. Basketball equipment is showing surface corrosion. Court lines need to be refreshed.

<u>Parking area</u>: asphalt in fair to good condition. Curbing in good condition. Surface has been treated with crack sealing.

Fencing: galvanized mesh in good condition. Minor repairs needed.

Lighting: in good condition.

Maintenance

\$ 1500/re-lining all surfaces; \$ 500 / fence repairs; \$ 500 / basketball equipment

LCR Forecast

FACILITY NAME	CATEGORY	REQUIREMENT	EVENT YEAR	BUDGET
PARC CATHY CAIN	SURFACES	REPLACE	2020	\$14,000
		BASKETBALL		
		COURT SURFACE		
PARC CATHY CAIN	SURFACES	REPLACE PARKING	2020	\$17,000
		LOT ASPHALT		
PARC CATHY CAIN	LIGHTING	REPLACE	2020	\$6,000
		WOODEN POLE		
		LIGHTS (2)		
PARC CATHY CAIN	FENCING	REPLACE CHAIN	2024	\$25,000
		LINK FENCING		
PARC CATHY CAIN	PLAY EQUIPMENT	REPLACE PLAY	2025	\$45,000
		EQUIPMENT		
		(LITTLE TYKES AND		
		JAMBETTE)		

Cathy Cain Park Photo Record (1)



Cathy Cain Park Photo Record (2)



Cathy Cain Park Photo Record (3)


Cheney Park

Address:chemin Grand Tronc RoadSize:3.278 hectare (8.1 acres)

Site Review Notes

Date: October 29th, 2013

Play equipment: in very good condition.

<u>Rink Boards</u>: in poor to fair condition. Supporting metal posts are rusting and boards need to be replaced.

<u>Play surface</u>: asphalt in fair condition. Vegetation growing through the asphalt.

Parking lot: asphalt in fair to good condition. Evidence of crack sealing work done in the past.

<u>Fencing</u>: perimeter fencing is extensive and in very good condition. Section of fencing at roadway needs to be re-built.

<u>Lighting</u>: in fair to very good condition. Eight lights serving this park. Soccer pitch has tall concrete posts which are of recent vintage.

Bleachers: in fair to good condition.

Maintenance

\$ 1000/fencing repairs; \$ 800 / bleachers; \$ 500/ boards

LCR Forecast

FACILITY NAME	CATEGORY	REQUIREMENT	EVENT YEAR	BUDGET
PARC CHENEY	FENCING	RECONSTRUCT/REMEDIATE	2015	\$9,000
		CHAIN LINK FENCING		
PARC CHENEY	RINK BOARDS	FABRICATE AND REPLACE	2016	\$12,000
		WOODEN RINK BOARDS		
		AND FRAMES		
PARC CHENEY	SURFACES	REPLACE RINK PLAYING	2016	\$16,000
		SURFACE		
PARC CHENEY	PLAY	REPLACE PLAY EQUIPMENT	2017	\$33,000
	EQUIPMENT			
PARC CHENEY	SURFACES	REPLACE PARKING LOT	2019	\$7,000

FACILITY NAME	CATEGORY	REQUIREMENT	EVENT YEAR	BUDGET
PARC CHENEY	LIGHTING	REPLACE WOODEN LIGHT	2020	\$18,000
		POLES AND FIXTURES		102
PARC CHENEY	SEATING	REPLACE SOCCER FIELD	2020	\$6,000
		PORTABLE BLEACHERS		

Cheney Park Photo Record (1)



Eugene Laviolette Park

Address:1031, rue Laviolette StreetSize:.404 hectare (1 acre)

Site Review Notes

Date: October 29th, 2013

<u>Play equipment</u>: in very good condition. Vandalism on small play structures (paint blemish on slide); swing set in good condition, but painting blemishes and rusty bolts evident

<u>Sun shelter</u>: Shingles starting to curl; wood posts need painting; need to apply rust inhibitor to braces; wood frame and concrete pad in good condition.

<u>*Rink Boards:*</u> plywood has holes and in poor condition; wood rot on bracing; boards need to be reinforced and straightened; some concerns about user safety.

<u>Play surface</u>: asphalt in fair condition; some depression and cracks; vegetation growing through surface.

Fencing: galvanized mesh. Fair to average condition.

Lighting: in fair condition. Wood posts in fair condition; one wood post is leaning.

Maintenance

\$ 1000/sun shelter; \$ 500 / play equipment; \$ 1500 / light posts

LCR Forecast

FACILITY NAME	CATEGORY	REQUIREMENT	EVENT YEAR	BUDGET
PARC EUGENE	SURFACES	REPLACE RINK	2015	\$16,000
LAVIOLETTE		PLAYING SURFACE		
PARC EUGENE	RINK BOARDS	FABRICATE AND	2015	\$12,000
LAVIOLETTE		REPLACE		
		WOODEN RINK		
		BOARDS AND		
9		FRAMES		
PARC EUGENE	LIGHTING	REPLACE	2015	\$16,000
LAVIOLETTE		WOODEN LIGHT		
		POLES AND		
		FIXTURES		

ASSET MANAGEMENTPLAN

FACILITY NAME	CATEGORY	REQUIREMENT	EVENT YEAR	BUDGET
PARC EUGENE	PLAY EQUIPMENT	REPLACE	2018	\$42,000
LAVIOLETTE		PLAYSTRUCTURE		
		(JAMBETTE)		
PARC EUGENE	ROOFING	REPLACE SHINGLE	2020	\$9,000
LAVIOLETTE		ROOFON		
		OCTAGON		
		GAZEBO		
PARC EUGENE	FENCING	REPLACE CHAIN	2020	\$23,000
LAVIOLETTE		LINK FENCING		
PARC EUGENE	PLAY EQUIPMENT	REPLACE	2038	\$30,000
LAVIOLETTE		OCTAGON		
		SHELTER		



Eugene Laviolette Park Photo Record (1)



Eugene Laviolette Park Photo Record (2)



Eugene Laviolette Park Photo Record (3)

Dutrisac Park

Address:between 201-205 rue Sandra StreetSize:1.821 hectares (4.5 acres)

Site Review Notes

Date: November 3rd, 2013

<u>Play equipment:</u> in very good condition.

Fencing: considerable amount of galvanized mesh fencing. Good condition.

<u>Lighting</u>: concrete posts (USI Utility Structures) in good condition. Several protective light shields broken due to vandalism.

Pathway: stone dust pathway in good condition. Several depressions.

Maintenance

\$800/lighting repairs; \$600 / pathway

LCR Forecast

FACILITY NAME	CATEGORY	REQUIREMENT	EVENT YEAR	BUDGET
PARC DUTRISAC	PLAY EQUIPMENT	REPLACE PLAY	2022	\$51,000
		EQUIPMENT AND		
		PLAYSTRUCTURE		
PARC DUTRISAC	LIGHTING	REPLACE	2030	\$30,000
		PATHWAY		
		LIGHTING		





Dutrisac Park Photo Record (2)



Hammond Park

Address:3150, rue Gendron StreetSize:1.545 hectares (3.82 acres)

Site Review Notes

Date: October 29th, 2013

Play equipment: in excellent condition.

<u>Sun shelter:</u> good condition. Minor roof repairs needed.

<u>Rink Boards</u>: fair to good condition but some boards need to be replaced and minor repairs done.

<u>Play surface</u>: asphalt in fair to good condition. Some vegetation growing on perimeter and some asphalt cracking is evident. Basketball equipment in fair to good condition. Tennis court surface in fair to good condition.

<u>Fencing</u>: extensive amount of galvanized wire mesh fencing and backstop at this park. Some repairs needed to backstop. Fencing is in fair to good condition.

<u>Lighting</u>: park is outfitted with many wood pole mounted lights to illuminate the rink, ball diamond, horseshoe pitches, tennis courts. One softball field light pole is leaning.

<u>Storage huts</u>: wood structure has interior and exterior graffiti. Softball storage unit is in very good condition.

<u>Bleachers:</u> in fair condition. Need rust inhibitor application to steel frame and replacement of several wood planks.

Parking lot: in fair to good condition. Crack sealing evident.

Maintenance

\$ 500 / sun shelter; \$ 1200 / bleachers; \$ 1500 / lighting; \$ 1500/rink boards; \$ 1000/fencing; \$ 500/storage hut

LCR Forecast

FACILITY NAME	CATEGORY	REQUIREMENT	EVENT YEAR	BUDGET
PARC HAMMOND	ROOFING	REPLACE SHINGLE	2019	\$8,000
		ROOF ON GAZEBO		
PARC HAMMOND	RINK BOARDS	FABRICATE AND	2022	\$14,000
		REPLACE		
		WOODEN RINK		
		BOARDS AND		
		FRAMES		
PARC HAMMOND	SURFACES	REPLACE RINK	2022	\$18,000
		PLAYING SURFACE		
PARC HAMMOND	LIGHTING	REPLACE	2022	\$72,000
		WOODEN POLE		
		LIGHTS		
		THROUGHOUT		
PARC HAMMOND	SURFACES	REPLACE PARKING	2023	\$26,000
		LOT ASPHALT		
PARC HAMMOND	SURFACES	REPLACE PLEXI-	2024	\$9,000
		PAVE SURFACE ON		
		TENNIS COURTS		
PARC HAMMOND	PLAY EQUIPMENT	REPLACE PLAY	2025	\$64,000
		EQUIPMENT AND		
		PLAYSTRUCTURES		
PARC HAMMOND	FENCING	REPLACE CHAIN	2025	\$102,000
		LINK FENCING		
		INCL BACKSTOPS		

Hammond Park Photo Record (1)



Hammond Park Photo Record (2)



Hammond Park Photo Record (3)

Du Moulin Park

Address:100 rue Edwards StreetSize:2.428 hectares (6 acres)

Site Review Notes

Date: November 3rd, 2013

<u>Play equipment:</u> in very good condition. Dynamo equipment.

<u>Boat ramp</u>: fair condition. Parking area is stone dust that has packed down. Rough state. Concrete ramp in good condition with some evidence of cracking.

<u>Banks</u>: fair to good condition. Concrete starting to delaminate with some of the wood supports rotting and reinforcing bars exposed. Different elevations may pose a hazard. Fair to good condition considering significant exposure to weather and water.

<u>Docks:</u> manufactured by Quai Bertrand. Aluminum frame with wood planking. Floats by Hendren. Good condition.

<u>Stone structures</u>: some repairs attempted. Additional reinforcement and concrete parging to be attempted.

<u>Lighting</u>: in fair condition. Aluminum posts on concrete bases. Bases are fair to good. Some fowling of lighting fixtures by birds.

<u>Maintenance</u>

\$ 1500/boat ramp; \$ 1500 /banks; \$ 1000 / lighting; \$ 1500 / stone structure

LCR Forecast

FACILITY NAME	CATEGORY	REQUIREMENT	EVENT YEAR	BUDGET
PARC DU MOULIN	LIGHTING	REPLACE METAL	2021	\$12,000
		POLES AND LIGHT		
		FIXTURES		
PARC DU MOULIN	PLAY EQUIPMENT	REPLACE PLAY	2025	\$172,000
		EQUIPMENT		
		(DYNAMO)		

ASSET MANAGEMENTPLAN

FACILITY NAME	CATEGORY	REQUIREMENT	EVENT YEAR	BUDGET
PARC DU MOULIN	BOAT RAMP	REMEDIATE BOAT	2026	\$39,000
		LAUNCH RAMP		
		AND EDGING		
PARC DU MOULIN	PIERS	REMEDIATE	2026	\$39,000
		CONCRETE BANKS		
PARC DU MOULIN	DOCKS	REPLACE	2030	\$78,000
		FLOATING DOCK		
		ASSEMBLIES (22		
		PIECES)		

Du Moulin Park Photo Record (1)



Du Moulin Park Photo Record (2)



Du Moulin Park Photo Record (3)





Du Moulin Park Photo Record (4)

Simon Park

Address:1450 Avenue du ParcSize:2.873 hectares (7.1 acres)

Site Review Notes

Date: October 29th, 2013

Play equipment: in good condition.

<u>Water play facilities:</u> current concrete pad, play equipment and storage shed appear to be in very good condition. Facilities were closed for the season and could not be inspected.

<u>Skateboard Park</u>: in very good condition. Controlled access to the Joel Gauthier skate park. Equipment not tagged or vandalized. Equipment is equipped with shroud/casing that prevents weather infiltration that would affect supporting structure. No investment evident within this capital forecast period.

Pathway: interlock stone pathway in good condition.

<u>Play surface</u>: tennis courts are in good condition with minor cracking and depressions. Basketball court adjacent to Chamberlain recreation facility is in poor to fair condition, showing numerous cracks and vegetation outgrowth.

Parking lot: comments and forecast included in Clarence Creek Arena summary.

Fencing: in good condition throughout park. Not expected to have replacement project in this forecast.

<u>Lighting</u>: pathway lights in very good condition and will not need replacement during this LCR forecast period. Lighting for tennis and ball diamond is fair to good. Eventual replacement will depend on results of lighting system condition review.

Bleachers: in good condition

Sun shelter: in very good condition

Maintenance

\$800/bleachers; \$1000/tennis courts

LCR Forecast

FACILITY NAME	CATEGORY	REQUIREMENT	EVENT YEAR	BUDGET
PARC SIMON	SURFACES	REPLACE	2016	\$16,000
	SUPEACES		2021	\$36,000
PARC SIMON	JUNIACES	COURTS (4)	2021	550,000
PARC SIMON	PLAY EQUIPMENT	REPLACE PLAY	2022	\$57,000
		EQUIPMENT AND		
		PLAYSTRUCTURES		
PARC SIMON	BLEACHERS	RELACE BASEBALL	2022	\$20,000
		DIAMOND		
		BLEACHERS		
PARC SIMON	PLAY EQUIPMENT	REPLACE WATER	2026	\$65,000
		PLAY EQUIPMENT		
		AND SPRAY PADS		
PARC SIMON	FENCING	REPLACE CHAIN	2030	\$50,000
		LINK FENCE FOR		
		TENNIS AND		
DADC CIMON	LICUTING	BASEBALL	2022	¢ 60.000
PARC SIMON	LIGHTING	REPLACE TENNIS	2033	\$60,000
		LIGHTING		
PARC SIMON	ΡΔΤΗ\λ/ΔΥς		2034	\$76,000
TAKE SIMON	TAIIWAIS		2034	\$70,000
		PATHWAY		
PARC SIMON	LIGHTING	REPLACE	2034	\$31,000
 We are a set of the set of the		PATHWAY		
		LIGHTING		

Simon Park Photo Record (1)



Simon Park Photo Record (2)



Dalrymple Park

Address:Avenue des PinsSize:1.821 hectare (4.5 acres)

Site Review Notes

Date: October 29th, 2013

<u>Play equipment</u>: in very good condition. Need to replace one broken play unit as well as plastic tops of posts that have cracked.

<u>Rink Boards:</u> in fair condition. Minor amount of repairs needed.

Play surface: asphalt in fair condition. Asphalt showing ponding and minor cracks.

Maintenance

\$800/play equipment; \$600/ boards

LCR Forecast

FACILITY NAME	CATEGORY	REQUIREMENT	EVENT YEAR	BUDGET
PARC DALRYMPLE	RINK BOARDS	FABRICATE AND	2017	\$12,000
		REPLACE		
		WOODEN RINK		
		BOARDS AND		
¢		FRAMES		
PARC DALRYMPLE	PLAY EQUIPMENT	REPLACE PLAY	2019	\$34,000
		EQUIPMENT AND		
		PLAYSTRUCTURE		
PARC DALRYMPLE	SURFACES	REPLACE RINK	2020	\$12,000
		PLAYING SURFACE		



Dalrymple Park Photo Record (1)

Dalrymple Park Photo Record (2)



Bourget/Bernard Valiquette Park

Address:rue Lavigne StreetSize:4.047 hectares (10 acres)

Note: this summary includes Valiquette Park

Site Review Notes

Date: October 29th, 2013

<u>*Play equipment:*</u> in very good condition. Minor amount of paint peeling and graffiti. Wood post for beach volleyball needs to be replaced.

<u>Skateboard equipment</u>: in good condition. Only minor surface rust showing. Application of rust inhibitor to under-carriage a good investment. Tagging of equipment is predominant. Safety issue at base of ramp.

<u>Wood bridge:</u> fair to good condition. Asphalt area needs to be replaced since it represents a trip hazard.

Play surface: basketball concrete pad and equipment at end of life. Total replacement required.

Parking lot: asphalt in fair condition. Several recent patches and crack sealing evident.

<u>Fencing</u>: repairs needed to the top rail and mesh for the ball diamond in Valiquette Park. Concrete posts for fencing are lifting.

<u>Lighting</u>: in fair to good condition for park lighting. Parking lot lighting showing surface corrosion. Condition of concrete pier is considered to be poor to fair.

Bleachers: in fair to good condition.

Maintenance

\$ 500/play equipment; \$2000 / Skateboard Park; \$ 700 / bridge area; \$ 2500/fencing; \$ 500/bleachers

LCR Forecast

FACILITY NAME	CATEGORY	REQUIREMENT	EVENT YEAR	BUDGET
PARC BOURGET	PLAY EQUIPMENT	REPLACE PLAY	2016	\$34,000
		EQUIPMENT AND		
		PLAYSTRUCTURE		

FACILITY NAME	CATEGORY	REQUIREMENT	EVENT YEAR	BUDGET
PARC BOURGET	SKATEBOARD	REPLACE	2026	\$26,000
	PARK	SKATEBOARD		
		PARK ELEMENTS		
PARC	SURFACES	REPLACE	2015	\$9,000
VALIQUETTE		BASKETBALL		
		COURT SURFACE		
PARC	SURFACES	REPLACE	2015	\$8,000
VALIQUETTE		CONCRETE		
		BASKETBALL		
		COURT		
PARC	LIGHTING	REPLACE	2019	\$29,000
VALIQUETTE		LIGHTING POLES		
		THROUGHOUT		
PARC	SURFACES	REPLACE PARKING	2019	\$98,000
VALIQUETTE		LOT		
PARC	ELECTRICAL	REPLACE PARK	2022	\$14,000
VALIQUETTE		LIGHTING		
		EQUIPMENT		
PARC	FENCING	REPLACE CHAIN	2025	\$23,000
VALIQUETTE		LINK FENCING		
		(PHASE 1)		
PARC	BLEACHERS	REPLACE	2031	\$18,000
VALIQUETTE		BLEACHER UNITS		

Bourget/Bernard Valiquette Park Photo Record (1)



Clarence Creek Park

Address:rue Lemay StreetSize:2.225 hectares (5.5 acres)

Site Review Notes

Date: October 29th, 2013

Play equipment: in good condition.

<u>*Play surface:*</u> basketball area in good condition. Re-painting of court lines needed. Fenced tennis court in poor to fair condition. Vegetation pushing through base of court. Court is delaminating and cracking.

Parking lot: comments and forecast included in Clarence Creek Arena summary.

<u>Fencing</u>: the top rail and wire mesh are pulling away, leaving potential safety hazard in ball diamond outfield. Protective cover is pulling away, leaving exposed wire mesh. Considerable volume of fencing (over 400 linear feet). Tennis fencing is good condition.

<u>Lighting</u>: in fair to good condition for park lighting. Eight (8) wood posts serve the ball diamond while four (4) posts serve the basketball and tennis courts.

Maintenance

\$1000/basketball

LCR Forecast

FACILITY NAME	CATEGORY	REQUIREMENT	EVENT YEAR	BUDGET
PARC CLARENCE	FENCING	REMEIDIATION OF	2015	\$21,000
CREEK		BASEBALL		
		DIAMOND CHAIN		
		LINK		
PARC CLARENCE	SURFACES	REPLACE TENNIS	2017	\$28,000
CREEK		AND BASKETBALL		
2		COURT SURFACES		
PARC CLARENCE	SURFACES	REPLACE ASPHALT	2017	\$55,000
CREEK		FOR PARKING LOT		
PARC CLARENCE	PLAY EQUIPMENT	REPLACE PLAY	2018	\$34,000
CREEK		EQUIPMENT AND		
		PLAYSTRUCTURE		

FACILITY NAME	CATEGORY	REQUIREMENT	EVENT YEAR	BUDGET
PARC CLARENCE	LIGHTING	REPLACE POLES	2025	\$77,000
CREEK		AND LIGHTING		~
		FIXTURES		
2		THROUGHOUT		
PARC CLARENCE	FENCING	REPLACE CHAIN	2030	\$71,000
CREEK		LINK FENCING		
		THROUGHOUT		

Clarence Creek Park Photo Record (1)



Clarence Creek Park Photo Record (2)



Clarence Creek Park Photo Record (3)

Jules-Saumure Park

Address: Size: rue Celine Street hectares (6.2 acres)

Site Review Notes

Date: November 3rd, 2013

<u>Play equipment:</u> Paris playground equipment in very good condition

<u>Parking lot:</u> gravel stone base. Parking lot is elevated above the park. Slope to playstructure area.

Maintenance

No maintenance work identified

LCR Forecast

FACILITY NAME	CATEGORY	REQUIREMENT	EVENT YEAR	BUDGET
PARC JULES	PLAY EQUIPMENT	REPLACE PLAY	2026	\$117,000
SAUMURE		EQUIPMENT AND		
		PLAY STRUCTURES		
Jules-Saumure Park Photo Record



Richelieu Grand-Riviere Park

Address:971 rue Laporte StreetSize:.687 hectare (1.7 acres)

Site Review Notes

Date: November 3rd, 2013

<u>*Play equipment:*</u> in good condition. Some fading of finish on west side of structure; tarnished and surface corrosion showing on swing set structural posts.

<u>Sun shelter:</u> fair to good condition. Shingles curling. Posts need painting. Concrete pad in excellent condition.

<u>Rink Boards</u>: fair to good condition but some boards need to be strengthened. Anchoring of boards to be addressed.

<u>*Play surface:*</u> asphalt in fair condition. Basketball posts are pitted and showing surface corrosion. Protective netting equipment in good condition.

<u>Pathway:</u> asphalt in fair condition. Shows cracking and vegetation pushing through surface. Some depressions evident. Surface coating appears fine. 17 concrete bollards control access to park at both ends. Bollards are in very good condition.

<u>Fencing</u>: fencing that divides private property from park has many access gates. Need to confirm who assumes life cycle renewal obligations for this fencing.

Lighting: in fair condition.

Maintenance

\$ 1000/play equipment; \$ 1500 / sun shelter; \$ 1500 / rink boards

LCR Forecast

FACILITY NAME	CATEGORY	REQUIREMENT	EVENT YEAR	BUDGET
PARC GRAND-	ROOFING	REPLACE SHINGLE	2016	\$7,000
RIVIEIRE		ROOF		
PARC GRAND-	RINK BOARDS	FABRICATE AND	2019	\$13,000
RIVIEIRE		REPLACE		
		WOODEN RINK		
		BOARDS AND		
		FRAMES		
PARC GRAND-	SURFACES	REPLACE ASPHALT	2019	\$17,000
RIVIEIRE		FOR RINK		
PARC GRAND-	PATHWAYS	REPLACE ASPHALT	2019	\$17,000
RIVIEIRE		PATHWAY		
PARC GRAND-	LIGHTING	REPLACE SPORTS	2019	\$10,000
RIVIEIRE		LIGHTING		
		THROUGHOUT		
PARC GRAND-	PLAY EQUIPMENT	REPLACE PLAY	2020	\$40,000
RIVIEIRE		EQUIPMENT		



Richelieu Grande Riviere Park Photo Record (1)

Richelieu Grande Riviere Park Photo Record (2)

Richelieu Grande-Riviere Park Photo Record (3)



Bellevue Park

Address:rue Agathe StreetSize:.651 hectare (1.61 acres)

Site Review Notes

Date: November 3rd, 2013

<u>*Play equipment:*</u> in very good condition.

<u>Play surface</u>: asphalt in good condition. Small amount of graffiti on basketball post.

Maintenance

\$ 300/basketball

LCR Forecast

FACILITY NAME	CATEGORY	REQUIREMENT	EVENT YEAR	BUDGET
PARC BELLEVUE	PLAY EQUIPMENT	REPLACE PLAY	2018	\$39,000
		EQUIPMENT		
PARC BELLEVUE	SURFACES	REPLACE	2021	\$22,000
		BASKETBALL		
		COURT SURFACE		

Bellevue Park Photo Record (1)



Patricia Charron Park

Address:2633 rue Raymond StreetSize:1.74 hectares (4.3 acres)

Site Review Notes

Date: November 3rd, 2013

Park has no identification sign. Park backs onto St-Patrick Catholic School and a chain link fence divides the school property from the park. Need to confirm who has LCR responsibility for the fence. The park consists of a soccer pitch, an open space component and a gravel parking lot. Therefore, no base park asset requires replacement within the forecast period.

Fencing: galvanized mesh in good condition.

Maintenance

No maintenance work identified

LCR Forecast

None identified at the time of Asset Management Preliminary Plan Development.

Patricia Charron Park Photo Record



St-Pascal Park

Address:

Size:

Site Review Notes

Date: November 22nd, 2013

This park is not a municipal park and therefore, part of the City park inventory. The park elements are located on school board property and the City is expected to maintain and renew these base park assets.

<u>Rink Boards</u>: in fair to average condition. Wood panels appear to be in useable condition for several years.

<u>Fencing</u>: perimeter fencing is extensive and in good condition. The baseball field fencing and backstop also appear to be in good condition.

<u>Lighting</u>: in fair to good condition. Wood posts are used in this park. Replacement forecast to be confirmed following proposed lighting system review.

Bleachers: in fair to good condition.

School Property

<u>Shelter</u>: small shelter used to support baseball activities. This structure will not form part of LCR forecast since it does not meet basic park asset definition requirement.

<u>Park Service Building</u>: LCR forecast for this structure is captured in the buildings section of this report.

Maintenance

No specific item of maintenance noted at this time

LCR Forecast

FACILITY NAME	CATEGORY	REQUIREMENT	EVENT YEAR	BUDGET
PARC ST PASCAL	RINK BOARDS	FABRICATE AND	2020	\$13,000
		REPLACE		
		WOODEN RINK		
		BOARDS AND		
		FRAMES		

ASSET MANAGEMENTPLAN

FACILITY NAME	CATEGORY	REQUIREMENT	EVENT YEAR	BUDGET
PARC ST PASCAL	LIGHTING	REPLACE PARK	2020	\$46,000
		LIGHTING		10-45
		EQUIPMENT		
PARC ST PASCAL	FENCING	REPLACE	2025	\$45,000
		BACKSTOP		
		ASSEMBLY AT		
		BALLPARK		
PARC ST PASCAL	BLEACHERS	REPLACE	2025	\$11,000
		BLEACHER UNITS		
		AT BALLPARK (2)		
PARC ST PASCAL	RINK BOARDS	FABRICATE AND	2020	\$13,000
		REPLACE		
		WOODEN RINK		
		BOARDS AND		
		FRAMES		

St Pascal Park Photo Record



SECTION 3 Summary of Building Assets

All Buildings

In preparing an asset management plan, it is usually prudent to identify minor funding allocations in each given year of the plan which are best described as "contingency amounts". These funding allocations are placed in the budget to provide a reasonable amount of capital life-cycle renewal monies in order to address the periodic requirement for <u>unplanned</u> replacement of assemblies within buildings which fail to reach their projected useful life and which for one reason or another, reach "end-of-life" prematurely.

Such contingency amounts are relatively <u>minor</u>, but they are placed into the asset management plan forecast to provide a "buffer" against premature rust-out as a consequence of a heavier than anticipated duty cycle, or a possible understated investment in preventive maintenance activity.

In developing this plan, the authors have recommended the allocation of a small contingency funding envelope in each budget year from 2015 through 2035 and have included an appropriate escalation factor to account for inflation throughout the period. It is expected that these funds, if not required, would be placed into an accumulating reserve to support periodic budgetary adjustments to the planned life cycle renewal program as estimated costs are refined to higher precision than the Class "D" estimates which make up the balance of the forecast.

FACILITY NAME	CATEGORY	REQUIREMENT	EVENT YEAR	BUDGET
ALL FACILITIES	INSPECTION AND	SEPTIC SYSTEM	2015	\$21,000
	AUDIT	EVALUATION AND		
		REVIEW #1		
ALL FACILITIES	INSPECTION AND	ROOFING	2015	\$11,000
	AUDIT	INSPECTION		~
		PROGRAM		
ALL FACILITIES	CONTINGENCY	UNPLANNED LIFE	2015	\$11,000
		CYCLE RENEWAL		
		EXPENDITURE		
0		PROGRAM		
ALL FACILITIES	INSPECTION AND	STRUCTURAL	2015	\$6,000
	AUDIT	ADEQUACY		10-
		REVIEW FOR		
		BUILDINGS		

CONTINGENCY LCR REQUIREMENTS

FACILITY NAME	CATEGORY	REQUIREMENT	EVENT YEAR	BUDGET
ALL FACILITIES	CONTINGENCY	UNPLANNED LIFE CYCLE RENEWAL EXPENDITURE PROGRAM	2025	\$13,000
ALL FACILITIES	INSPECTION AND AUDIT	SEPTIC SYSTEM EVALUATION AND REVIEW #2	2025	\$26,000
ALL FACILITIES	INSPECTION AND AUDIT	STRUCTURAL ADEQUACY REVIEW FOR BUILDINGS	2025	\$7,000
ALL FACILITIES	CONTINGENCY	UNPLANNED LIFE CYCLE RENEWAL EXPENDITURE PROGRAM	2026	\$13,000
ALL FACILITIES	CONTINGENCY	UNPLANNED LIFE CYCLE RENEWAL EXPENDITURE PROGRAM	2027	\$14,000
ALL FACILITIES	CONTINGENCY	UNPLANNED LIFE CYCLE RENEWAL EXPENDITURE PROGRAM	2028	\$14,000
ALL FACILITIES	CONTINGENCY	UNPLANNED LIFE CYCLE RENEWAL EXPENDITURE PROGRAM	2029	\$14,000
ALL FACILITIES	CONTINGENCY	UNPLANNED LIFE CYCLE RENEWAL EXPENDITURE PROGRAM	2030	\$15,000
ALL FACILITIES	AUDIT AND INSPECTION	STRUCTURAL ADEQUACY REVIEW FOR BUILDINGS	2030	\$8,000
ALL FACILITIES	CONTINGENCY	UNPLANNED LIFE CYCLE RENEWAL EXPENDITURE PROGRAM	2031	\$15,000
ALL FACILITIES	CONTINGENCY	UNPLANNED LIFE CYCLE RENEWAL EXPENDITURE PROGRAM	2032	\$15,000

ASSET MANAGEMENTPLAN

FACILITY NAME	CATEGORY	REQUIREMENT	EVENT YEAR	BUDGET
ALL FACILITIES	CONTINGENCY	UNPLANNED LIFE	2033	\$15,000
		CYCLE RENEWAL		~
		EXPENDITURE		
0		PROGRAM		
ALL FACILITIES	CONTINGENCY	UNPLANNED LIFE	2034	\$16,000
		CYCLE RENEWAL		
		EXPENDITURE		
		PROGRAM		

Corporate Buildings

City Hall

Address:

1560 Laurier Street

Site Review Notes

Date: November 8th, 2013

- The City Hall building is considered to be the only building within the current inventory that has <u>heritage</u> status. A newer addition to house administrative offices and the current Council Chambers is part of the overall facility and site.
- The City Hall is predominantly for administrative purposes since it houses the offices of the Mayor, senior management and most administrative departments. Typical accommodations are enclosed offices and meeting rooms as well as ancillary components such as filing areas and lunchroom. There is no elevator serving the upper floors. There is a lower level passage corridor that links the City Hall building to the adjacent Daycare.
- <u>Site components:</u> The site components consist of a paved parking area and roadway leading to a gravel staff parking lot. Concrete walkways located at the front of the building provide access to both the City Hall main entrance and the Daycare entrance. Interlock brick materials are used extensively for the fountain raised planting areas and the walkways for the new addition. The asphalt surface is showing depressions and delamination and its replacement should be coordinated with similar work in support of the adjacent fire station. The concrete walkways are in fair to good condition.
- Building envelope: the brick finish of the original structure appears to be in fair to good condition. There is one area affected by water damage and erosion. The front concrete steps have been damaged likely by salt treatments and the underlying supporting structure needs to undergo repairs within a short timeline. The steeple structure appears to be in good condition but its wood columns need to be re-painted along with the wood columns at the main entrance. It appears that the wood trim surrounding the brick cladding throughout the building needs to be rehabilitated. The roof cladding appears to be sound and staff does not report any current problems. The windows require weatherstripping repairs and new caulking. Metal exit stairwells should have a rust inhibitor application. The newer addition has a modified bitumen roof which shows some ponding. The parapet and other elements of the roof assembly appear to be in very good condition. The exterior wall panels and windows of the addition are of recent vintage and their replacement will not likely form part of this LR forecast. The exterior man doors appear to be in good working order.
- <u>Interior finishes:</u> there is considerable carpeting used throughout the building and it is suggested that carpet tile be used during the replacement of this floor finish in order to

enhance the replacement process. Drywall finishes are also used extensively as well as suspended tile ceilings. The facility interior appears to be reasonably well maintained which should limit the asset renewal requirements associated with this building. It is suggested that interior finish replacement be integrated into any planned office accommodation initiative planned for this building.

• <u>Mechanical</u>: the facility has a number of rooftop HVAC and condensing equipment units. Some of the equipment is approaching end of life. Replacement should be integrated and coordinated with planned renovations of the interior space. No major current problems indicated by staff. Lighting and electrical distribution systems appear to be in good working order. Due to the number of working stations, there may be a need to inspect and balance the air distribution system and this work should be undertaken as part of the overall office accommodations and renovation plan for this facility.

<u>Maintenance</u>

\$ 2000/ painting work; \$ 800/carpentry and wood trim repairs; \$ 700/caulking and weatherstripping; \$ 500/masonry repairs

LCR FORECAST

FACILITY NAME	CATEGORY	REQUIREMENT	EVENT YEAR	BUDGET
CLARENCE	INSPECTION AND	BUILDING	2016	\$11,000
ROCKLAND CITY	AUDIT	CONDITION AUDIT		
HALL BUILDING		(EXTERNAL)		
(1905)				
CLARENCE	INSPECTION AND	ELECTRICAL AUDIT	2016	\$8,000
ROCKLAND CITY	AUDIT	AND INFARED		
HALL BUILDING		SCAN		
(1905)				
CLARENCE	STAIRWAYS AND	REPLACE	2016	\$69,000
ROCKLAND CITY	RAMPS	(RECONSTRUCT)		
HALL BUILDING		FRONT ENTRANCE		
(1905)		STAIRS\MILLWORK		
CLARENCE	STAIRWAYS AND	REFINISH EXIT	2016	\$9,000
ROCKLAND CITY	RAMPS	STAIRCASES (REAR		
HALL BUILDING		OF BUILDING)		
(1905)				
CLARENCE	MECHANICAL	REPLACE	2017	\$55,000
ROCKLAND CITY		ROOFTOP HVAC		
HALL BUILDING		UNITS (2) ON		
(1905)		LOWER ROOF		
CLARENCE	SURFACES	REPLACE ASPHALT	2022	\$54,000
ROCKLAND CITY		DRIVEWAY AND		
HALL BUILDING		PARKING AREAS		
(1905)				

FACILITY NAME	CATEGORY	REQUIREMENT	EVENT YEAR	BUDGET
CLARENCE ROCKLAND CITY HALL BUILDING (1905)	FLOOR FINISHES	REPLACE CARPETING THROUGHOUT (PHASE 1) USING CARPET TILE	2022	\$48,000
CLARENCE ROCKLAND CITY HALL BUILDING (1905)	INSPECTION AND AUDIT	BUILDING CONDITION AUDIT (EXTERNAL)	2028	\$14,000
CLARENCE ROCKLAND CITY HALL BUILDING (1905)	FLOOR FINISHES	REPLACE CARPETING THROUGHOUT (PHASE 2) USING CARPET TILE	2028	\$54,000
CLARENCE ROCKLAND CITY HALL BUILDING (1905)	FOUNTAINS AND PONDS	REPLACE FOUNTAIN AND PIPING	2030	\$92,000
CLARENCE ROCKLAND CITY HALL BUILDING (1905)	FLOOR FINISHES	REPLACE CARPETING THROUGHOUT (PHASE 3) USING CARPET TILE	2032	\$59,000
CLARENCE ROCKLAND CITY HALL BUILDING (1905)	INSPECTION AND AUDIT	BUILDING CONDITION AUDIT (EXTERNAL)	2038	\$17,000

Clarence Rockland City Hall 1



Clarence Rockland City Hall 2



Archives Building

Address:

2475 St-Pascal Road

Site Review Notes

Date: November 29th, 2013

- This building was previously owned and operated by the regional municipality of Clarence-Russell.
- It is used to store City archival material and for storage by Parks and Recreation.
- <u>Site components</u>: There is a large lot supporting this facility. The galvanized wire mesh surrounding the site is in very good condition and is not expected to be replaced during the forecast period.
- <u>Building envelope</u>: the brick and metal cladding finishes are in very good condition. Unable to access the roof area but informed by staff that it is in good condition. The overhead door and access doors are in very good condition. There are no windows serving this property. There will not likely be any life cycle renewal events for building envelope components during the forecast period.
- <u>Interior finishes</u>: the floors are polished concrete and the walls are painted block walls. The ceiling is exposed painted metal decking. No expectation that there will be LCR events during the forecast period.
- <u>Mechanical</u>: the facility is serviced by split system units and a dehumidification unit. The electrical distribution system is virtually new and will not require LCR funding during the forecast period. Large lighting units (metal halide) support the building.

Maintenance

No specific items noted during this preliminary review.

LCR Forecast

No significant life cycle works are identified in the asset management plan period. The City may wish to consider the installation of <u>improved</u> fire detection apparatus with power backup and remote alarm/monitoring capability (estimated cost \$10,000) in the near future for the Archives side of the building at minimum. The site is remote, and any potential damage due to a fire would have catastrophic results for the stored archival materials. In addition, the City may wish to consider some form of protection against water damage or leakage originating with condensate drain lines from mechanical equipment in proximity to stored materials.

Municipal Archives Building



Clarence Creek Town Hall (Former)

Address:

415 Lemay Road

Site Review Notes

Date: November 29th, 2013

- According to the PSAB report, this facility was constructed in 1960.
- It is used by Public Works to provide administrative and support space and is located immediately adjacent to the municipally-run works garage. It is being considered to host City Council meetings that are held off-site from the main City Hall. The upper floor remains vacant while the lower portion is occupied by Public Works.
- <u>Site components</u>: The site components are limited and include concrete walkways and a
 granular parking lot. There is a concrete ramp that is showing some pitting. The metal
 handrail appears to be in good condition. No impact expected on the LCR capital
 forecast.
- <u>Building envelope</u>: the brick and wood cladding finishes are in good condition. The glazed units are extensive and appear to be in good condition. The shingled roof also appears to be in good order. The access doors are working well.
- Interior finishes: the upper floor area has carpeted surfaces and drywall finishes
 throughout with suspended tile ceilings. Pending a rise in use, the carpeted floor
 surfaces may have to be replaced. The lower area has carpeted floors inside the offices
 and vinyl tile in the lunchroom, locker room and meeting room. The washroom facilities
 on the upper floor have upgraded ceramic tile finishes on the floors and walls and are in
 very good condition. The lower washroom facilities also have ceramic finishes but are
 more aged. Suspended tile ceilings are in good condition.
- <u>Mechanical</u>: the facility has electric forced air furnaces and baseboard heaters to
 provide heating. Air conditioning is provided as well and most condensers are mounted
 on the roof. One condenser located at ground level has reached service life. Strip
 lighting is evident throughout the building.

Maintenance

\$ 700/ramp and railing work; \$ 900/condenser

LCR Forecast

FACILITY NAME	CATEGORY	REQUIREMENT	EVENT YEAR	BUDGET
FORMER	INSPECTION AND	BUILDING	2015	\$11,000
CLARENCE CREEK	AUDIT	CONDITION AUDIT		
TOWN HALL		(EXTERNAL)		
FORMER	INSPECTION AND	ELECTRICAL AUDIT	2015	\$8,000
CLARENCE CREEK	AUDIT	AND INFRARED		
TOWN HALL		SCAN		
FORMER	FLOOR FINISHES	REPLACE CARPET	2015	\$32,000
CLARENCE CREEK		WITH CARPET TILE		
TOWN HALL		(PHASE 1)		
FORMER	FLOOR FINISHES	REPLACE CARPET	2015	\$32,000
CLARENCE CREEK		WITH CARPET TILE		
TOWN HALL		(PHASE 2)		
FORMER	MECHANICAL	REPLACE PRIMARY	2016	\$43,000
CLARENCE CREEK		HVAC SYSTEM		
TOWN HALL		AND AIR		
		DISTRIBUTION		
a		EQUIP.		
FORMER	MECHANICAL	REPLACE	2020	\$29,000
CLARENCE CREEK		SECONDARY		
TOWN HALL		HEATING		
		EQUIPMENT		
		(BASEBOARD		
		UNITS)		
FORMER	INSPECTION AND	BUILDING	2026	\$13,000
CLARENCE CREEK	AUDIT	CONDITION AUDIT		
TOWN HALL		(EXTERNAL)	Variable courts	T de entre un abundadante
FORMER	ROOFING	REPLACE SHINGLE	2033	\$27,000
CLARENCE CREEK		ROOF		
TOWN HALL				



Former Clarence Creek Town Hall Building

Parks and Recreation Buildings

Hammond Recreation Centre

Address:

3154 Gendron Road

Site Review Notes

Date: November 22nd, 2013

- According to the PSAB report, the Hammond Recreation Centre was constructed in 1987.
- It is located immediately adjacent to other components of Hammond Park.
- <u>Site components</u>: The asphalt surface has been repaired and crack sealed. The surface appears to be in reasonable service condition.
- <u>Building envelope</u>: the building is constructed with split block and does not show any major vandalism or graffiti. The split block finish would benefit from tuck-pointing repairs. The exterior metal doors appear to be in good condition and only require repainting. The shingled roof is showing minor edge curling. The soffit and fascia are in good condition, with only minor damage showing. The windows are in good condition and will require maintenance to weatherstripping and caulking.
- Interior finishes: the washroom facilities at the centre are sufficiently robust for this type
 of facility and are in good condition. The metal partitions and the painted block walls are
 satisfactory. The kitchen counters have been replaced and the cabinetry is still in good
 operable condition. The tile floors throughout the building are also in fair to good
 condition. Vinyl tile flooring requires a regular treatment involving stripping and rewaxing in order to protect the surface. Depending on the extent of use, the floor may
 also require spray buffing and burnishing in order to protect the tile surface and ensure
 the look of the floor throughout its service life. It does not appear that the department
 has sufficient operating funds to perform this level of care. The drywall ceilings and
 painted block walls throughout the interior of the centre ensure an adequate service
 life. The kitchen has a sprinkler exhaust hood. The kitchen cooking equipment is small
 and its replacement would not meet the capital threshold for inclusion in a life cycle
 renewal forecast.
- <u>Mechanical</u>: the electrical lighting system appears to be in good condition. The
 individually hung units look in good shape. The electrical panel has a pony panel and
 well documented wiring. The exhaust hood located on the roof is rusty and will need to
 be replaced. Staff were unable to disclose whether the centre is equipped with air
 conditioning and the location of service equipment.

Maintenance

\$ 500/painting of doors; \$ 600/caulking; \$ 1500/tuck pointing of brick surface

LCR Forecast

FACILITY NAME	CATEGORY	REQUIREMENT	EVENT YEAR	BUDGET
HAMMOND		BUILDING		
RECREATION	INSPECTION AND	CONDITION AUDIT		
CENTRE BUILDING	AUDIT	(EXTERNAL)	2016	\$8,000
HAMMOND		ELECTRICAL AUDIT		
RECREATION	INSPECTION AND	AND INFARED		
CENTRE BUILDING	AUDIT	SCAN	2016	\$6,000
HAMMOND				
RECREATION		REPLACE SHINGLE		
CENTRE BUILDING	ROOFING	ROOF	2020	\$18,000
HAMMOND		REPLACE VINYL		
RECREATION		TILE FLOORS		
CENTRE BUILDING	FLOOR FINISHES	THROUGHOUT	2022	\$15,000
HAMMOND		REPLACE HEATING		
RECREATION		SYSTEM AND		
CENTRE BUILDING	MECHANICAL	DISTRIBUTION	2025	\$11,000

Hammond Recreation Centre



Rockland Museum (La Famille) Building

Address:

687 Laurier Avenue

Site Review Notes

Date: November 29th, 2013

- According to the PSAB report, this building was constructed in 1909. It has not yet been given any formal heritage status and is used to house and display a wide assortment of artifacts. It is operated uniquely by volunteers.
- The collection is eclectic and it is noteworthy that apart from stand-alone smoke detectors, the building is not equipped with a central fire monitoring and detection system that could hasten an emergency response.
- <u>Site components</u>: The asphalt surface is in fair condition only, showing some cracking and lifting in selected areas. There is a park and ride component at the rear lot that is immediately adjacent to the park.
- <u>Building envelope</u>: the building envelope is in good condition. The exterior concrete stairs are showing pitting and need to be re-coated. A revised and re-constructed front vestibule should be considered. The brick façade is in good condition and staff notes that the roof continues to perform well. The windows are of recent vintage.
- <u>Interior finishes:</u> the interior space is used extensively for displaying the artifacts and it would be difficult to undertake flooring replacement. Generally, the wood and tile flooring as well as the carpeted surfaces are performing well enough to support the use of the building. The wood stairs are fair to good. It may be necessary in the future to apply a protective wood finish.
- <u>Mechanical</u>: the electrical lighting system appears to be in good condition. The building furnace located in the crawlspace appears to be in satisfactory working order. Some tagging of electrical lines would be helpful.

Maintenance

\$ 600/resurfacing of exterior stairs

LCR Forecast

FACILITY NAME	CATEGORY	REQUIREMENT	EVENT YEAR	BUDGET
ROCKLAND	ELECTRICAL	ELECTRICAL AUDIT	2015	\$7,000
MUSEUM (LA		AND INFRARED		
FAMILLE)		SCAN		
BUILDING				
ROCKLAND	FIRE ALARM	REPLACE EXISTING	2016	\$6,000
MUSEUM (LA	SYSTEMS	FIRE DETECTION		
FAMILLE)		SYSTEM AND		
BUILDING		REMOTE ALARM		
		REPORTING		
ROCKLAND	ELECTRICAL	REWIRE/REROUTE	2017	\$33,000
MUSEUM (LA		SECONDARY		
FAMILLE)		ELECTRICAL		
BUILDING		DISTRIBUTION		
	anno compositore constant of	THROUGHOUT		
ROCKLAND	MECHANICAL	BUILDING	2019	\$7,000
MUSEUM (LA		CONDITION AUDIT		
FAMILLE)				
BUILDING				
ROCKLAND	MECHANICAL	REPLACE FURNACE	2020	\$11,000
		AND		
FAMILLE)		DISTRIBUTION		
BUILDING		DUCTWORK		
DOCKLAND	MECHANICAL		2022	¢22.000
	MECHANICAL		2022	\$22,000
		CANOPT		
BOILDING	DAMDS & STAIDS	REDIACE	2022	\$18,000
	NAMI 5 & STAIRS	EXTERIOR METAL	2022	\$10,000
FAMILLE)		FIRE ESCAPE		
BUILDING		STAIRS		
ROCKLAND	FLOOR FINISHES	REFINISH WOOD	2023	\$13,000
MUSEUM (LA		FLOORS		+/
FAMILLE)		THROUGHOUT		
BUILDING				
ROCKLAND	FLOOR FINISHES	REPLACE CARPET	2023	\$9,000
MUSEUM (LA		WITH CARPET TILE	77 - eesman955	in a press the unit of the test of tes
FAMILLE)		THROUGHOUT		
BUILDING				
ROCKLAND	SURFACES	REPLACE ASPHALT	2029	\$62,000
MUSEUM (LA		FOR EXTERIOR		XI
FAMILLE)		PARKING AREAS		
BUILDING		AT SITE		

Rockland (La Famille) Museum



Centre Chamberland

Address:

1517 Laurier Avenue

Site Review Notes

Date: November 8th, 2013

- According to the PSAB report, this facility was constructed in 1958.
- It is located immediately adjacent to Simon Park and has a basketball court just in front
 of the access doors.
- Part of the building is rented out and the occupants are expected to take care of their space.
- Site components: A small parking area and gravel roadway serve the building.
- <u>Building envelope</u>: asphalt shingle roof is in fair to good condition. The shingles are starting to show edge curling. The soffit and fascia are in fair to good condition. The exterior wood cladding is not showing signs of vandalism and is in good condition. The exterior doors are in good condition as well. Interlock pavers are used to construct the ramp and entrance stairs.
- Interior finishes: the floors are vinyl tile and are in good condition. Drywall ceilings and
 walls predominate and show good performance to date. The washrooms have new
 ceramic tiling and fixtures. A key component in ensuring the service life of vinyl tile
 flooring is performing timely maintenance such as stripping, waxing and spray buffing. It
 is not apparent whether the department has sufficient funding in place to undertake
 this level of maintenance and floor care.
- <u>Mechanical</u>: the facility is heated using a gas furnace of recent vintage (Heil). A rooftop
 condenser supports air conditioning. Staff note that the equipment appears to be
 working well.

Maintenance

No specific items noted during this preliminary review.

LCR Forecast

FACILITY NAME	CATEGORY	REQUIREMENT	EVENT YEAR	BUDGET
CHAMBERLAND	ROOFING	REPLACE SHINGLE	2024	\$13,000
BUILDING		ROOF		~
CHAMBERLAND	FLOOR FINISHES	REPLACE FLOOR	2026	\$8,000
BUILDING		FINISHES (PHASE		
		1)		
CHAMBERLAND	FLOOR FINISHES	REPLACE FLOOR	2029	\$9,000
BUILDING		FINISHES (PHASE		
		2)		

Band Shell Enclosure

Address:

1500 avenue Du Parc

Site Review Notes

Date: November 8th, 2013

- According to the PSAB report, the Band Shell was constructed in 1980.
- It is located immediately adjacent to other components of Simon Park.
- <u>Site components:</u> There are no site components uniquely attributed to the Band Shell.
- <u>Building envelope</u>: according to staff, the tile shingle roof was replaced several years ago and appears to be in excellent condition. Proper ventilation has been provided. The soffit and fascia require only minor maintenance. The painted wood cladding is in good condition. The exterior wood platform needs to be sanded and re-coated. The windows and doors appear to be in good condition.
- <u>Interior finishes</u>: the drywall finish throughout appears to be in good condition and will not likely require life cycle renewal during this review period. The carpet finish is satisfactory and will only need to be replaced based on the intensity of use of the facility.
- <u>Mechanical</u>: washroom fixtures are utilitarian and in good condition. Electric baseboard heating is in place. A small wall-mounted air conditioner serves the interior space. No mechanical replacement work is likely to meet the capital budget replacement threshold and will have to be funded through the annual operating budget.

Maintenance

\$ 700/refinish exterior wood deck

LCR Forecast

FACILITY NAME	CATEGORY	REQUIREMENT	EVENT YEAR	BUDGET
BANDSHELL	FLOOR FINISHES	REPLACE	2025	\$8,000
BUILDING		BANDSHELL		
		FLOOR		
BANDSHELL	ROOFING	REPLACE SHINGLE	2033	\$8,000
BUILDING		ROOF		

Simon Park Buildings Montage


Recreation Garage

Address:

2815 Chamberland Street

Site Review Notes

Date: November 22nd, 2013

- According to the PSAB report, this building was constructed in 2005.
- It is predominantly an office building that has a small garage component at the rear. The
 office area is currently used for the Rockland Thrift Store whose proceeds are used to
 support the Rockland Food Bank. Significant areas inside the former offices of the
 Prescott-Russell Community Development Corporation are used to display used
 clothing. The rear garage component is used by the Parks and Recreation Department to
 house equipment and perform carpentry and preparatory work.
- <u>Site components:</u> The asphalt surface is in fair condition only, showing numerous cracks and some ponding. The front and side walkways are constructed with interlock pavers. The walkways are in fair condition with vegetation starting to grow through the pavers and causing displacements. Galvanized mesh fencing separates the property from adjoining sites and is considered to be in fair condition. There is a section of railing needed to protect workers at the top of the concrete landing near the dome facility. The site is equipped with a MegaDome canvas storage structure that is considered to be of a temporary nature and not eligible for life cycle renewal funding. There are also several storage units on the site that are well constructed and of good quality. Due to size limitations, they are also not eligible for life cycle renewal funding.
- <u>Building envelope</u>: the building envelope is in very good condition. It consists of brick cladding as well as metal ribbed siding. The parapet is constructed with asphalt shingles and is in very good condition. So are the fascia and soffit. The metal windows and exterior doors are in good condition and are not likely to be replaced during this forecast period. One overhead door has been replaced and upgraded, leaving only one other overhead door to be replaced. The shingle roof is of recent vintage and in very good condition with a sufficient number of ventilation units present.
- <u>Interior finishes</u>: the spaces provided for used clothing have drop ceilings and drywall
 finishes and carpeting, which all appear to be in reasonable condition to support this
 activity. The spaces dedicated toward parks staff support are small and limited in
 capacity.
- <u>Mechanical</u>: the electrical lighting system appears to be in good condition. The building
 is heated by small electric furnaces and heat pumps which appear to be in good working
 order.

Maintenance

\$ 600/painting of metal railings

LCR Forecast

FACILITY NAME	CATEGORY	REQUIREMENT	EVENT YEAR	BUDGET
RECREATION	INSPECTION AND	ELECTRICAL AUDIT	2016	\$9,000
GARAGE AND	AUDIT	AND INFRARED		
WORKSHOP		SCAN		
RECREATION	INSPECTION AND	BUILDING	2017	\$11,000
GARAGE AND	AUDIT	CONDITION AUDIT		~
WORKSHOP		(EXTERNAL)		
RECREATION	EXTERIOR DOORS	REPLACE	2017	\$9,000
GARAGE AND		OVERHEAD		
WORKSHOP		DOORS AND		
		OPERATORS (2)		
RECREATION	SURFACES	RESURFACE	2021	\$17,000
GARAGE AND		ASPHALT AREAS		
WORKSHOP				
RECREATION	MECHANICAL	REPLACE ELECTRIC	2026	\$19,000
GARAGE AND		FURNACES		Pa da
WORKSHOP				

Recreation Garage Exterior View



Recreation Garage 2



Clarence Creek Arena

Address:

418 Lemay Street

Site Review Notes

Date: November 29th, 2013

- The Clarence Creek Arena was constructed in 1962 and is nearing or has surpassed its useful life. However, it has been the recipient of capital re-investment to ensure its safe and reliable operation.
- The Parks and Recreation Department commissioned in January, 2010, a Type II Condition Audit of this facility which was completed by the consulting engineering firm of Levac, Robichaud, and Leclerc. The life cycle renewal forecast tendered in this audit report was considered in the assembly of LCR information in the general condition review.
- The Clarence Creek Arena is used at this time to provide an artificial ice surface for approximately 8 months of the year.
- The facility houses an upper community hall and ancillary facilities which is used to host parties and social gatherings.
- <u>Site components:</u> the asphalt parking area is in fair to good condition. It is used to support a park and ride service. It is showing minor depressions, cracking and delamination. The line markings are fading. The arena is located immediately adjacent to Clarence Creek Park which has multiple park elements.
- <u>Building envelope</u>: the exterior ribbed metal cladding siding appears to be in average to
 good condition. It was not possible to view the roof areas, but staff indicates that it is
 not showing any major problems at this time. The metal doors and windows appear to
 be original units and may have surpassed service life. The exterior emergency stairwell
 appears to be in poor condition showing excessive corrosion. It is recommended that a
 wide span structural adequacy review be undertaken for this facility and that the exit
 stairwell be reviewed at the same time. The concrete steps and landings appear to be in
 satisfactory condition at this time.
- <u>Interior finishes:</u> considering the age of the arena, the interior finishes are in fair to good condition. A new elevator and washroom facilities were constructed in 2005. The upper hall wood strip flooring is in reasonable condition and could benefit from the application of a protective wood finish. The bar area and the kitchen are in sound condition. The kitchen has a gas-fired stove and exhaust system with an internal sprinkler. The upper washrooms have new counters and painted concrete floors which are satisfactory. The metal toilet partitions are in fair condition. The lower area has skate tiling and it is showing wear and tear. The dressing rooms are large; however, the finishes are showing their age. The arena lobby has a suspended ceiling and painted surfaces and are well maintained by staff. The public washrooms are also well

maintained. The arena interior reveals that the spectator stands need to be re-painted. The low-emissivity ceiling completely encapsulates the exposed structural steel thereby protecting it from excessive humidity and the onset of corrosion. The arena boards and protective glass appear sound. The arena interior doors are sound and in fair to good operable condition.

- <u>Mechanical:</u> most of the refrigeration equipment is original with a new chiller assembly in place. The compressors are original and serviced by a reputable company. The dehumidifiers appear to be working well and the gas –fired units heating the spectator areas seem to be also. The sound system and scoreboard are meeting operational requirements. A new direct-flow water heating system has been installed as well as a new fire annunciation panel. A rooftop HVAC serves the upper hall.
- <u>Structural:</u> While there is no longer a provincial mandate in effect governing the
 requirement for a wide-span structural adequacy review of these types of buildings, it is
 good practice to include such a review in the asset management plan for facilities of this
 vintage and use. While there are no apparent structural issues, there is evidence of
 deterioration in certain steel and concrete elements, (most notably the exterior steel
 staircase providing a fire exit from the second level of the building), and this suggests
 that a wide span structural adequacy review of this arena may be a valid forecast event
 in the next few years, if only to confirm that there are no further pending issues of a
 structural nature. This requirement is reflected as an "event" in the LCR forecast below.

Maintenance

\$ 1000/repairs to ceramic finishes in change rooms and repairs to Zamboni dividing wall; \$ 1000/ refinishing spectator areas.

LCR Forecast

FACILITY NAME	CATEGORY	REQUIREMENT	EVENT YEAR	BUDGET
CLARENCE CREEK	RAMPS & STAIRS	REPLACE SECOND	2014	\$204,000
ARENA		LEVEL FIRE EXIT		
		STAIRCASE (STEEL)		
CLARENCE CREEK	LIGHTING	REPLACE	2015	\$11,000
ARENA		EXTERIOR		
		LIGHTING		
CLARENCE CREEK	ELECTRICAL	REPLACE	2016	\$43,000
ARENA		ELECTRICAL		
		PANELS		
		THROUGHOUT		

FACILITY NAME	CATEGORY	REQUIREMENT	EVENT YEAR	BUDGET
CLARENCE CREEK	PLUMBING	REPLACE SEPTIC	2016	\$107,000
ARENA		SYSTEM		
CLARENCE CREEK	PLUMBING	REPLACE	2016	\$16,000
ARENA		ZAMBONI HOT		
		WATER TANKS (2)		
CLARENCE CREEK	ELECTRICAL	REPLACE ELECTRIC	2016	\$11,000
ARENA		HOT WATER		
		TANKS (3)		
CLARENCE CREEK	MECHANICAL	REPLACE	2017	\$33,000
ARENA		ROOFTOP HVAC		
		UNITS (4)		
CLARENCE CREEK	STRUCTURAL	WIDE SPAN	2017	\$28,000
ARENA		STRUCTURAL		
		ADEQUACY		
		REVIEW OF THE		
		ARENA		4
CLARENCE CREEK	MECHANICAL	REPLACE	2018	\$50,000
ARENA				
	MECHANICAL	HEATERS (5)	2010	¢22.000
	MECHANICAL	REPLACE KITCHEN	2018	\$23,000
ARENA	MECHANICAL	HOODS (2)	2010	¢10.000
	MECHANICAL	REPLACE	2018	\$10,000
AKENA		RUUFIUP		
	MECHANICAL		2010	ć10.000
	MECHANICAL		2018	\$10,000
ARENA				
		FANS (2)		
	REERIGERATION	REPLACE	2018	\$67,000
ARFNA	REINGENATION	REFRIGERATION	2010	\$07,000
, inclusion		COMPRESSORS (2)		
CLARENCE CREEK	REERIGERATION	REPLACE HEAT	2018	\$72,000
ARENA		EXCHANGER (1)		
CLARENCE CREEK	ELECTRICAL	REPLACE STEP	2020	\$21.000
ARENA		DOWN	10. 1993.0998.00	a factoria de la constancia
		TRANSFORMERS		
		(4)		
CLARENCE CREEK	FIRE ALARM	REPLACE	2020	\$7,000
ARENA	SYSTEMS	EMERGENCY		
		LIGHTING		
		THROUGHOUT		
CLARENCE CREEK	LIGHTING	REPLACE	2020	\$21,000
ARENA		FLUORESCENT		
		LIGHTS		
		THROUGHOUT		

ASSET MANAGEMENTPLAN

FACILITY NAME	CATEGORY	REQUIREMENT	EVENT YEAR	BUDGET
CLARENCE CREEK	MECHANICAL	REPLACE ARENA	2020	\$9,000
ARENA		WALL EXHAUST		204
		FANS (2)		
CLARENCE CREEK	PLUMBING	REPLACE WATER	2020	\$10,000
ARENA		CLOSETS (2)		
CLARENCE CREEK	PLUMBING	REPLACE HOT &	2020	\$44,000
ARENA		COLD WATER		
		PIPING		
		DISTRIBUTION		
CLARENCE CREEK	REFRIGERATION	REPLACE	2020	\$52,000
ARENA		CONTROL SYSTEM		
		(1)		
CLARENCE CREEK	REFRIGERATION	REPLACE	2020	\$21,000
ARENA		EVAPORATIVE		
		CONDENSER (1)		
CLARENCE CREEK	REFRIGERATION	REPLACE BRINE	2020	\$13,000
ARENA		PUMP (1)		
CLARENCE CREEK	LIGHTING	REPLACE HIGH	2021	\$36,000
ARENA		BAY (HID) LIGHTS		
CLARENCE CREEK	FIRE ALARM	REPLACE FIRE	2022	\$23,000
ARENA	SYSTEMS	ALARM PANEL (1)		
CLARENCE CREEK	REFRIGERATION	REPLACE RINK	2025	\$533,000
ARENA		FLOOR, PIPING		
		AND HEADERS (1)		

Clarence Creek Arena Montage 1



Clarence Creek Arena Montage 2



Clarence Creek Arena Montage 3



Centre des Arts

Address:

1500 avenue Du Parc

Site Review Notes

Date: November 8th, 2013

- According to the PSAB report, this facility was constructed in 1970.
- Staff refers to it as the Centre des Arts, but it is also referred to as La Maison des Jeunes and Tennis Club House. It is located immediately adjacent to other components of Simon Park.
- <u>Site components</u>: There are no site components uniquely attributed to the facility.
- <u>Building envelope</u>: according to staff, the tile shingle roof was replaced several years ago and appears to be in excellent condition. Proper ventilation has been provided. The soffit and fascia require only minor maintenance. The painted wood cladding is in fair to average condition. The exterior door and windows appear to be in good condition.
- <u>Interior finishes:</u> the drywall finish throughout appears to be in good condition and will
 not likely require life cycle renewal during this review period. The carpet finish is
 satisfactory. The tile finish in the upper area serving the tennis club is showing edge
 delamination and may need to be replaced depending on the intensity of use. The lower
 area is used by a service club and the interior finishes appear to be in good condition.
- <u>Mechanical</u>: washroom fixtures are utilitarian and in fair to good condition. Electric baseboard heating is in place. The electrical panel located in the basement appears to be a recent replacement/upgrade. Small wall-mounted air conditioners serve the interior space. No mechanical replacement work is likely to meet the capital budget replacement threshold and will have to be funded through the annual operating budget.

<u>Maintenance</u>

\$ 1500/refinish exterior wood panelling and replace boards that are showing rot.

LCR Forecast

FACILITY NAME	CATEGORY	REQUIREMENT	EVENT YEAR	BUDGET
ARTS-CULTURE	FLOOR FINISHES	REPLACE	2017	\$7,000
BUILDING		FLOORING PHASE		
		1		
ARTS-CULTURE	INSPECTION AND	BUILDING	2020	\$10,000
BUILDING	AUDIT	CONDITION AUDIT		
		(EXTERNAL)		

FACILITY NAME	CATEGORY	REQUIREMENT	EVENT YEAR	BUDGET
ARTS-CULTURE	CLADDING	BUILDING	2021	\$11,000
BUILDING		ENVELOPE		0.0445
		RENEWAL WORK		
ARTS-CULTURE	ROOFING	REPLACE SHINGLE	2034	\$13,000
BUILDING		ROOF		

Arts – Cultural Centre



Main Library

Address:

Du Parc Avenue

Site Review Notes

Date: November 8th, 2013

- The Main Library is located inside the Recreational & Cultural Complex and has been operating from this site since late 2008. It is a public and school library.
- The vast majority of assets owned by library services such as the books, shelving units, furniture and computers are not base building assets and therefore, are not factored into this LCR 20 year forecast.
- <u>Site components</u>: Do not apply to this facility since they are related to the Complex as a whole.
- <u>Building envelope</u>: Do not apply to the library since they are related to the Complex as a whole. However, a persistent roof leak inside the children's area is evident. There is also some leakage showing in the poured concrete wall in the main library area.
- Interior finishes: the library finishes are upscale with wood finishes on the walls and ceiling. Suspended tile ceilings and acoustic ceilings are of higher quality. Carpet tile has been used extensively and will perform well provided that a comprehensive carpet care program is actioned. Tile flooring is used in the offices and activity rooms while ceramic tile is used in the washrooms. There is evidence of the wood veneer delaminating on window edges. The cabinetry is in very good condition.
- <u>Mechanical</u>: the main library is served by the Complex rooftop unit(s). Special fire shutters are located inside the space. An energy management control system is evident.

Maintenance

\$ 400/replace wood veneer; \$ 900/roof leak

LCR Forecast

The Main Library is considered a part of the Centre Culturel-Sportif complex for the purposes of this asset management plan. Any significant LCR events (for example, the replacement of the Library Rooftop HVAC Unit) are identified in the detailed listing for the Centre Culturel-Sportif.



Main Library Centre Cultural-Sportif

Park Service Buildings

Address:

Site Review Notes

Date: November 22nd, 2013

- There are a number of small buildings located in parks throughout Clarence-Rockland that help provide community programming, especially for the outdoor rink program.
- These buildings are located at:
 - Cathy Cain Park
 - Cheney Park
 - Dalrymple Park
 - Laviolette Park
 - St-Pascal Park
- They consist mostly of wood clad buildings that have a hardened interior to support park programming.
- <u>Site components</u>: In general, these buildings are located in parks and therefore, do not have a specific site element assigned to them.
- <u>Building envelope</u>: asphalt shingle roofs are typically in place. The facilities at Cathy Cain, Laviolette and Dalrymple require re-roofing due to excessive curling of the asphalt shingles. Most of the units require a re-finishing of the exterior wood cladding; however, this poses a challenge to the department. Having a re-finished exterior surface may encourage new graffiti and vandalism. The doors have been reinforced and protected with a wire mesh secondary cover in order to prevent vandalism and unauthorized entry.
- <u>Interior finishes:</u> the interior finish largely reflects the nature of the building, having
 wood walls and skate matting. Some units have a bit more refined finish, but the focus
 remains on having a robust interior to withstand a certain amount of abuse.
- <u>Mechanical</u>: not all facilities are equipped with washrooms. Heating is largely through baseboard electric heaters. The service building at St-Pascal has a canteen area equipped with an exhaust fan and sprinkler system.

Maintenance

It is recommended that the Parks and Recreation operating budget be allocated sufficient contingency funding to address any unforeseen repairs and vandalism to these front-line buildings.

LCR Forecast

For the purposes of LCR financial planning, and in the event of qualifying contingency events an amount of \$8,000 per year has been added to the forecast to cover periodic capital renewal in the small park building stock.

Bourget Recreation Centre

Address:

19 Lavigne Road

Site Review Notes

Date: November 22nd, 2013

- According to the PSAB report, the Bourget Recreation Centre was constructed in 1987.
- It is located immediately adjacent to other components of Bourget Park.
- The Parks and Recreation Department commissioned the firm of CBRE in 2013 to do a "capital repair and replacement report" for this facility. The results of that report are reflected in this condition review.
- A small residential home is part of the inventory of buildings on this site. The home is currently being used to support the partial storage needs of Echo d'un Peuple. It is not expected that any life cycle renewal work will make the forecast period. The residential building appears to be in reasonably good condition. The shingle roof is in fair to average condition. The outside concrete stairs need repair, but the priority of this work is entirely dependent on the frequency of use of this home, which seems to be quite low. It is used for storage only. The suspended tile ceiling and wall finishes are good. The carpeting and tile surfaces are adequate to support the current use. The basement concrete floor needs to be re-painted but this work can wait until a change in use. The basement walls are insulated.
- The Bourget Recreation Centre is operated and maintained by the local community. Recent upgrades have been made to the centre by the community.
- <u>Site components</u>: The parking area serves as a park and ride area. The asphalt surface has been repaired and crack sealed. As noted in the Bourget park summary, the light standards and the concrete bases are showing excessive wear.
- <u>Building envelope</u>: the building has metal rib cladding which is considered to be in average to good condition. The exterior doors and glazed units also appear to be in good condition. No access to the roof was available but staff indicated no reported problems with the roofing system. The upper metal deck is insulated.
- Interior finishes: the washroom facilities at the centre have undergone a significant finish upgrade, including the installation of new toilet partitions, flooring, granite countertops and new fixtures. The main hall vinyl tile surface is in average to good condition while the suspended ceiling is in good condition. The kitchen area has ceramic flooring and is equipped with a fairly new gas stove. The exhaust hood is in fair to good condition with no reported problems. The kitchen cabinetry is also in good condition.
- <u>Mechanical</u>: the electrical lighting system appears to be in good condition. The hall is
 equipped with a lighting suspension system near the stage and dance floor area.
 Electrical panels are in fair condition. The bar cooler appears to be in good operating
 condition. The rooftop York HVAC unit was installed in 1999 and no failures were
 communicated.

<u>Maintenance</u>

No immediate work identified for this summary. Repairs to parking lot standards and bases were noted in the park summary for the adjoining park site.

LCR Forecast

FACILITY NAME	CATEGORY	REQUIREMENT	EVENT YEAR	BUDGET
BOURGET	SURFACES	REPLACE NORTH	2015	\$9,000
RECREATION		SIDEWALKS AND		
CENTRE BUILDING		ENTRANCE AREAS		
BOURGET	MECHANICAL	REPLACE PRIMARY	2016	\$32,000
RECREATION		ROOFTOP HVAC		
CENTRE BUILDING		UNIT		
BOURGET	ROOFING	REPLACE	2016	\$91,000
RECREATION		COMPLETE		
CENTRE BUILDING		ROOFING SYSTEM		
		WITH RIGID		
		INSULATION		
		SYSTEM		
BOURGET	LIGHTING	REPLACE PARKING	2016	\$23,000
RECREATION		LOT LIGHTING		
CENTRE BUILDING		POLES AND		
		FIXTURES		
BOURGET	MECHANICAL	REPLACE HVAC	2030	\$36,000
RECREATION		DISTRIBUTION		
CENTRE BUILDING		THROUGHOUT		

Bourget Recreation Center Montage



Rockland Arena

Address:

1450 Avenue Du Parc

Site Review Notes

Date: November 8th, 2013

- The Rockland Arena was constructed in 1972 and is nearing its useful life.
- The Parks and Recreation Department recently commissioned (2010) a Type II Condition Audit of this facility which was completed by the engineering firm of Levac, Robichaud and Leclerc (Rockland). The life cycle renewal forecast tendered in this audit report was considered in the assembly of LCR information in the general condition review.
- The Rockland Arena is not used at this time to provide an artificial ice surface. The City
 has elected to meet its ice time requirements through the Clarence Creek Arena and the
 newer twin-pad Clarence-Rockland Arena. As a result, the refrigeration system has been
 de-activated and has remained inoperative over the last few years. It is our
 understanding that the refrigeration was red-tagged and would have to undergo a recertification process in order to be re-activated.
- The Rockland Arena is principally used for arena floor events and activities. The nearby school uses the facility to support its physical education programming while other community use involves ball hockey, roller derby, cadet training and similar floor-based activities.
- The facility houses an upper community hall and ancillary facilities which is used to host parties and social gatherings.
- This general condition review is premised on the Rockland Arena operating as an 8month ice surface, pending the City's completion of an asset rationalization exercise to confirm the facility's long term role.
- <u>Site components</u>: the asphalt parking area is in fair to good condition. It is used to support a park and ride service. It is showing minor depressions, cracking and delamination. The line markings are fading. Exterior concrete stairs show salt damage and will need to be re-surfaced due to excessive pitting.
- <u>Building envelope</u>: the exterior split block cladding appears to be in good condition. It is our understanding that an EPDM (membrane) roof was installed about 17 years ago and no leakage is present. Unable to access roof area for this review but advised by staff that no problems evident at this time and roof appears to be in good condition. Exterior doors appear to be in fair to good condition.
- <u>Interior finishes:</u> considering the age of the arena, the interior finishes are in fair to average condition. The arena interior doors are sound and in fair to good operable condition. The specialty rubber flooring finish is not excessively worn but will need replacement within a 5 year timeline once the artificial ice functions is re-instated. The toilet partitions throughout the building should be replaced and converted to phenolic

core units. The upper hall flooring consists of ceramic and wood finishes. The wood finish on the parquet floor needs to be renewed. The suspended tile ceiling in the hall is in good condition. The washroom floors are terrazzo and in good condition. The kitchen counters and cupboards need immediate repairs. The application of a textured ceiling in the lower assembly area of the arena is unique and may present maintenance and cleaning challenges in the long term. The toilet areas have a durable painted concrete block wall finish while the floor presents a maintenance challenge with the use of rubber flooring. The arena boards are in good condition and the puckboard would have to be replaced initially. New arena boards would be required within a 5-7 year timeline. The arena stands will need to have new wood planking and painting done. It is expected that the exposed structural steel components of the arena will have to be painted with a rust inhibitor.

<u>Mechanical</u>: the refrigeration equipment is original and a new plant would have to be
installed should the facility revert to an artificial ice facility. The condenser appears to be
in good working condition. Arena exhaust fans and dehumidification units would also
have to be replaced within a short timeline. Certain repairs should be considered in the
short term to the mechanical room. The scoreboard appears to be in working order.
Consideration should be given to entering an agreement with a beverage supplier for
the exclusive pouring rights to the facility with scoreboard and ice resurfacer
maintenance and/or replacement factored into the agreement. The gas-fired spectator
heaters appear to be in good working order. It was not possible to view the equipment
serving the upper hall, but were informed that it is in satisfactory working order

Maintenance

\$ 2000/repairs to kitchen finishes and hall flooring; \$ 500/plant repairs; \$ 600/concrete steps

LCR Forecast

FACILITY NAME	CATEGORY	REQUIREMENT	EVENT YEAR	BUDGET
JEAN MARC	ELECTRICAL	REPLACE STEP	2014	\$13,000
LALONDE		DOWN		
(ROCKLAND)		TRANSFORMERS		
ARENA		(3)		
JEAN MARC	EXHAUST FAN	REPLACE ARENA	2014	\$8,000
LALONDE	UNITS	WALL EXHAUST		
(ROCKLAND)		FANS		
ARENA				
JEAN MARC	MECHANICAL	REPLACE HOT	2014	\$5,000
LALONDE		WATER FORCE		
(ROCKLAND)		FLOW HEATERS		
ARENA		THROUGHOUT		

FACILITY NAME	CATEGORY	REQUIREMENT	EVENT YEAR	BUDGET
JEAN MARC	MECHANICAL	REPLACE HEATING	2014	\$6,000
LALONDE		BOILER		
(ROCKLAND)		CIRCULATION		
ARENA		PUMPS (2)		
JEAN MARC	ELECTRICAL	REPLACE ELECTRIC	2015	\$9,000
LALONDE		FORCE FLOW		
(ROCKLAND)		HEATERS		
ARENA		THROUGHOUT	and the second	
JEAN MARC	MECHANICAL	REPLACE RINK	2015	\$53,000
LALONDE		INFRARED		
(ROCKLAND)		HEATERS		
ARENA	August and a construct of the second second second	THROUGHOUT	formality period	and the second sec
JEAN MARC	MECHANICAL	REPLACE KITCHEN	2015	\$21,000
LALONDE		HOOD		
(ROCKLAND)		VENTILATION (2)		
ARENA				4
JEAN MARC	MECHANICAL	REPLACE KITCHEN	2015	\$11,000
LALONDE		ROOFTOP		
(ROCKLAND)		EXHAUST FAN		
ARENA			2016	600 000
JEAN MARC			2016	\$20,000
	FIRE PROTECTION	ALARM PANEL (1)		
			2016	Ś7 000
			2010	\$7,000
	FIRE PROTECTION			
ARFNA		Lionnino		
JEAN MARC	LIFE SAFETY &	REPLACE EXIT	2016	\$6.000
LALONDE	FIRE PROTECTION	SIGNS		<i>vvvvvvvvvvvvv</i>
(ROCKLAND)				
ARENA				
JEAN MARC	MECHANICAL	REPLACE HEATING	2016	\$60,000
LALONDE		BOILER (1)	Ne. Indone. 1998	Contraction - Second Contraction
(ROCKLAND)		~~~		
ARENA				
JEAN MARC	MECHANICAL	REPLACE HEATING	2016	\$96,000
LALONDE		DISTRIBUTION		
(ROCKLAND)		PIPING		
ARENA				
JEAN MARC	MECHANICAL	REPLACE	2017	\$44,000
LALONDE		ROOFTOP HVAC		
(ROCKLAND)		UNITS (4)		
ARENA				

FACILITY NAME	CATEGORY	REQUIREMENT	EVENT YEAR	BUDGET
JEAN MARC	MECHANICAL	REPLACE	2017	\$33,000
LALONDE		CONVECTION		
(ROCKLAND)		HEATER		
ARENA		THROUGHOUT		4
JEAN MARC	ELECTRICAL	REPLACE MAIN	2018	\$5 <i>,</i> 000
LALONDE		DISCONNECT		
(ROCKLAND)		SWITCH (1)		
ARENA	FLECTRICAL		2010	<u> б</u> г.с. 0.00
JEAN MARC	ELECTRICAL	REPLACE	2018	\$56,000
			2019	\$47.000
			2018	347,000
	UNITS	(2)		
ARENA		(2)		
IFAN MARC	LIGHTING	REPLACE HIGH	2018	\$34,000
LALONDE	Lionnito	BAY (HID) LIGHTS	2010	<i>QU 1,000</i>
(ROCKLAND)				
ARENA				
JEAN MARC	LIGHTING	REPLACE	2018	\$20,000
LALONDE		FLUORESCENT		75 #1
(ROCKLAND)		LIGHTS		
ARENA		THROUGHOUT		
JEAN MARC	LIGHTING	REPLACE	2018	\$12,000
LALONDE		EXTERIOR		
(ROCKLAND)		LIGHTING		
ARENA				
JEAN MARC	LIGHTING	REPLACE	2018	\$9,000
LALONDE		EMERGENCY		
(ROCKLAND)		LIGHTING		
	DUUMDING	THROUGHOUT	2010	¢10.000
JEAN MARC	PLUMBING		2018	\$10,000
		FOR ZAIVIDONI (2)		
	MECHANICAL	ΒΕΡΙΔΟΕ ΗΕΔΤ	2018	\$8,000
IALONDE		RECOVERY	2010	\$0,000
(ROCKLAND)		SYSTEM (1)		
ARENA		and the state of t		
JEAN MARC	PLUMBING	REPLACE WATER	2020	\$10,000
LALONDE		CLOSETS		10 10
(ROCKLAND)				
ARENA				

FACILITY NAME	CATEGORY	REQUIREMENT	EVENT YEAR	BUDGET
JEAN MARC	PLUMBING	REPLACE URINALS	2020	\$35,000
LALONDE				
(ROCKLAND)				
ARENA				
JEAN MARC	PLUMBING	REPLACE HOT &	2020	\$44,000
LALONDE		COLD WATER		
(ROCKLAND)		PIPING		
ARENA		DISTRIBUTION		
JEAN MARC	REFRIGERATION	REPLACE	2020	\$69,000
LALONDE		COMPRESSORS (2)		
(ROCKLAND)				
ARENA			12121212	1 -1
JEAN MARC	REFRIGERATION	REPLACE	2020	\$21,000
LALONDE		EXTERIOR EVAP		
(ROCKLAND)		CONDENSER (1)		
ARENA			2222	640.000
JEAN MARC	REFRIGERATION	REPLACE BRINE	2020	\$13,000
(RUCKLAND)				
	DEEDICEDATION		2020	ÉE 2 000
	REFRIGERATION	CONTROLS (1)	2020	\$52,000
	ROOFING		2020	\$288,000
		MEMBRANE (1)	2020	\$200,000
(ROCKLAND)				
ARENA				
JEAN MARC	REFRIGERATION	REMOVE RINK	2020	\$115.000
LALONDE		BOARDS, REPAIR		**
(ROCKLAND)		SPALLING AND		
ARENA		CONCRETE		
		DAMAGE,		
		REPLACE		
JEAN MARC	REFRIGERATION	REPLACE	2027	\$555,000
LALONDE		DISTRIBUTION		
(ROCKLAND)		PIPING AND		
ARENA		HEADERS (1)		
JEAN MARC	PLUMBING	REPLACE INDIRECT	2028	\$11,000
LALONDE		HOT WATER		
(ROCKLAND)		TANKS (2)		
ARENA				
JEAN MARC	PLUMBING	REPLACE INDIRECT	2028	\$11,000
LALONDE		HOT WATER		
(ROCKLAND)		TANKS (2)		
ARENA				

FACILITY NAME	CATEGORY	REQUIREMENT	EVENT YEAR	BUDGET
JEAN MARC	MECHANICAL	REPLACE FAN COIL	2029	\$14,000
LALONDE		HEATER UNITS		
(ROCKLAND)		THROUGHOUT		
ARENA				

Rockland Arena 1



Rockland Arena 2



Recreational and Cultural Complex (Centre Culturel-Sportif)

Address: Du Parc Avenue

Site Review Notes

Date: November 8th, 2013

- The Recreational & Cultural Complex was opened in late 2008 and is a facility that is
 joined with a local high school. The municipality and school share the facilities. For
 example, the gym is used by the school during the day for physical education activities
 while the gym is used almost exclusively in the evening for community programming.
- The Parks and Recreation Department is planning to commission a Type II Condition Audit of this facility in 2014. The life cycle renewal forecast tendered in that audit report will enhance the capital renewal plan for City buildings.
- The programming, maintenance and operation of the Recreational & Cultural Complex are performed by the Ottawa YM-YWCA as part of an operating agreement with the City.
- The building houses an aquatic facility, activity rooms, a gym and fitness centre. The main library is also housed at this building (Note: the library portion is treated separately in this report).
- Site components: the asphalt parking area is in good condition. Yet, it has undergone some crack sealing despite its young age. There are approximately 271 parking stalls provided in the upper parking area. The asphalt for the roadway is also in good condition. There are 18 pathway and parking lot lights that are built with an integrated concrete circular base. Some damages have already appeared. There is an extensive amount of concrete walkways and stairs at this building. There is approximately 3500 sq.ft. of exterior concrete surfaces plus the concrete ramp and walkway at the front of the building. Some of the concrete is showing signs of spalling due to salt damage. It is important to monitor the use of de-icing materials and to apply products that are less prone to damage concrete surfaces, albeit at a cost premium. The City is responsible for the sportsfield facility immediately adjacent to the Complex. There is extensive galvanized wire mesh fencing, two small bleachers and six concrete poles with multiple light packs serving the sportsfield and granular track. It is not expected that any life cycle renewal events will appear in the 20 year forecast related to this sportsfield. Building envelope: the building envelope consists of extensive glazing and metal cladding. The roofing material is predominantly a modified bitumen application, with a small area dedicated to green roofing. Some water ponding and blocked drainage evident. The exterior glazing and doors are fairly new and early in their service life. There is an extensive amount of glazing applied in the pool area which may or may not affect energy performance and humidity control.
- <u>Interior finishes:</u> the interior finishes are upscale and should provide satisfactory performance, provided that an effective preventive housekeeping program is in place.

The public traffic areas are finished in ceramic tile flooring. The track and fitness gym provide superior comfort and non-slip qualities. The activity rooms have sheet flooring and attractive interior wall finishes and cabinetry. The suspended tile ceilings shall provide good overall performance. The pool area has an exposed painted roof ceiling deck that is starting to show the effects of excessive humidity. Other metal surfaces within the pool area including the sound system in the pool office are showing surface corrosion. There is a partially textured wall surface in the pool area that helps to limit noise reverberation and improve acoustical performance. Ceramic finishes abound in the pool area and dressing rooms which should help limit premature capital renewal, provided that grout cleaning and restoration are done at the proper intervals.

<u>Mechanical</u>: the facility has an extensive array of plant and building equipment. An
energy management and control system is in place. The pool has applied the latest sand
filtering applications. There is an extensive heating system for the pool and the building
as well as a pool dehumidification and heating system (Seresco). There is a wide
assortment of rooftop HVAC units (McQuaig) serving the building. The complexity and
inter-relationship of various operating systems makes it imperative that an effective and
comprehensive preventive maintenance program be in place and applied faithfully. It is
also of significant importance to have staff well-versed and experienced in maintaining
and operating heating and filtration equipment of this calibre. A detailed technical
operating manual would be of great benefit to this facility.

Maintenance

\$ 800/repairs to light standards; \$ 200/repairs to bleachers.

LCR Forecast

FACILITY NAME	CATEGORY	REQUIREMENT	EVENT YEAR	BUDGET
CENTRE	CONTINGENCY	PERIODIC	2020	\$14,000
CULTURAL-		CONTINGENCY		
SPORTIF (2008)		FUNDING FOR		
		UNPLANNED LCR		
		RENEWAL		
CENTRE	MECHANICAL	REPLACE RTU#6	2021	\$53,000
CULTURAL-		LIBRARY ROOFTOP		
SPORTIF (2008)		UNIT		

CENTRE CULTURAL- SPORTIF (2008)MECHANICAL AREA VENTILATION AREA VENTILATION DUCTWORK2022 2023\$72,000CENTRE CULTURAL- SPORTIF (2008)CONTROLS AUTOMATION EQUIPMENT THROUGHOUTREPLACE METASYS BUILDING AUTOMATION EQUIPMENT THROUGHOUT2023\$61,000CENTRE CULTURAL- SPORTIF (2008)MECHANICAL CONTINGENCY FUNDING FOR UNITSREPLACE ROOFTOP CONTINGENCY FUNDING FOR UNITS2025\$20,000CENTRE CULTURAL- SPORTIF (2008)CONTINGENCY FUNDING FOR UNITSPERIODIC CONTINGENCY FUNDING FOR UNPLANKED LCR RENEWAL2028\$16,000CENTRE CULTURAL- SPORTIF (2008)MECHANICAL MECHANICALREPLACE SERESCO FUNDING FOR UNPLANKED LCR RENEWAL2028\$135,000CENTRE CULTURAL- SPORTIF (2008)MECHANICAL FUERS FOR POOL FUERS FOR POOL FUENDS FOR BUILDING HEATING2028\$34,000CENTRE CULTURAL- SPORTIF (2008)SUEFACES FOR ROADWAYS A	FACILITY NAME	CATEGORY	REQUIREMENT	EVENT YEAR	BUDGET
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VENTRE IVIEURANICAL REPLACEMENTALA ZUSU ISTRUTUR	CENTRE	MECHANICAL	REPLACE RTIL#3.4	2030	\$169.000
CUITURAL- 5 ROOFTOP UNITS	CUITURAI-		5 ROOFTOP LINITS		\$105,000
SPORTIE (2008)					

FACILITY NAME	CATEGORY	REQUIREMENT	EVENT YEAR	BUDGET
CENTRE CULTURAL- SPORTIF (2008)	MECHANICAL	REPLACE MAIN POOL HEATING BOILERS	2030	\$71,000
CENTRE CULTURAL- SPORTIF (2008)	MECHANICAL	REPLACE DHW HEATING SYSTEM (TANKS AND PUMPS)	2030	\$12,000
CENTRE CULTURAL- SPORTIF (2008)	MECHANICAL	REPLACE POOL CIRCULATION PUMPS IN FILTER ROOM	2031	\$22,000
CENTRE CULTURAL- SPORTIF (2008)	LIGHTING	REPLACE LIGHTING SYSTEM IN GYMNASIUM	2032	\$22,000
CENTRE CULTURAL- SPORTIF (2008)	MECHANICAL	REPLACE POOL FILTRATION PUMPS (2)	2032	\$18,000
CENTRE CULTURAL- SPORTIF (2008)	ELECTRICAL	REPLACE EXTERNAL LIGHTING POLES AND LAMPS	2032	\$22,000
CENTRE CULTURAL- SPORTIF (2008)	ELECTRICAL	REPLACE ELECTRICAL PANELS AND DISTRIBUTION (MAIN ELECTRICAL ROOM)	2034	\$152,000
CENTRE CULTURAL- SPORTIF (2008)	MECHANICAL	REPLACE MAIN BOILERS (2) AND HOLDING TANKS FOR BUILDING HEATING	2034	\$107,000

Centre Culturel-Sportif Montage 1



Centre Culturel-Sportif Montage 2



St-Pascal Recreation Centre

Address:

2564 St-Pascal Road

Site Review Notes

Date: November 22nd, 2013

- According to the PSAB report, the St-Pascal Recreation Centre was constructed in 1987.
- It is located immediately adjacent to other components of St-Pascal Park.
- The centre is also referred to as the Ronald Lalonde Community Centre.
- <u>Site components</u>: The asphalt surface has been repaired and crack sealed. The surface appears to be in fair condition only. The concrete ramp and metal railing are in good condition.
- <u>Building envelope</u>: the building has a stucco finish and clapboard siding on the gable end. Both finishes are in fair to good condition. The metal doors and windows appear to be in good condition as well as the soffit and fascia. The shingle roof appears to be in good condition and is outfitted with numerous individual vents.
- Interior finishes: the washroom facilities at the centre are finished in vinyl flooring, drywall ceilings and metal partitions that are in good condition. The hall and meeting room have similar finishes. The bar counter and cabinetry are in fair condition. Vinyl tile flooring requires a regular treatment involving stripping and re-waxing in order to protect the surface. Depending on the extent of use, the floor may also require spray buffing and burnishing in order to protect the tile surface and ensure the look of the floor throughout its service life. It does not appear that the department has sufficient operating funds to perform this level of care.
- <u>Mechanical</u>: the electrical lighting system appears to be in good condition. The individually hung units look in good shape. The electrical panel has a major cluster of wiring that should be investigated and properly tagged. Staff was unable to disclose whether the centre is equipped with air conditioning and the location of service equipment.

Maintenance

No specific requirements identified during this preliminary site review.

LCR Forecast

FACILITY NAME	CATEGORY	REQUIREMENT	EVENT YEAR	BUDGET
ST PASCAL	MECHANICAL	PERIODIC	2015	\$11,000
RECREATION		CONTINGENCY		
CENTRE		FUNDING FOR		
		UNPLANNED LCR		
		RENEWAL		
ST PASCAL	INSPECTION AND	BUILDING	2016	\$11,000
RECREATION	AUDIT	CONDITION AUDIT		
CENTRE		(INCLUDING		
		ELECTRICAL)		
ST PASCAL	CLADDING	REFINISH	2020	\$23,000
RECREATION		EXTERIOR STUCCO		
CENTRE		AND PARGING		
ST PASCAL	SURFACES	REPLACE	2022	\$18,000
RECREATION		EXTERIOR		
CENTRE		ASPHALT SURFACE		
		(PARKING AREA)		
ST PASCAL	FLOOR FINISHES	REPLACE VCT	2024	\$15,000
RECREATION		FLOORING		
CENTRE		THROUGHOUT		
ST PASCAL	INTERIOR	REPLACE	2024	\$8,000
RECREATION	FINISHES	INTERIOR DOORS		
CENTRE		AND WORN		
		MILLWORK		
		THROUGHOUT		
ST PASCAL	ROOFING	REPLACE SHINGLE	2025	\$20,000
RECREATION		ROOFING AND		
CENTRE		VENTS		

St Pascal Recreation Centre



Fire Services Buildings

Bourget Fire Hall

Address:

2163 Laval Street

Site Review Notes

Date: November 25th, 2013

- The Bourget Fire Hall was constructed in 1975.
- Due to the population growth experienced in the City of Clarence-Rockland, Fire Services has indicated that it may need to undertake a fire hall re-deployment plan that would ensure that response times remain within acceptable standards. This fire hall responds using volunteer firefighters and therefore, is not equipped with the typical space amenities, such as living quarters, expanded lunchroom and shower facilities that a fully-manned fire hall would have. The volunteer firefighters do take pride in the facility and have taken the effort to upgrade some of the interior finishes in the fire hall such as the new ceramic finish inside the shower area. Fire Services management has changed recently and certain information was not available for this general condition review.
- <u>Site components</u>: the asphalt surface is in fair to good condition. It is showing minor delamination.
- <u>Building envelope</u>: a new modified bitumen roof was installed recently and the roof
 parapet is in very good condition. The shingle fascia is fair to good. The metal cladding
 shows various minor damages and its coating is fading noticeably. The cladding will need
 to be repaired, washed and re-coated to ensure its useful service life. Some of the 5
 fixed window units show seal failure. One overhead door has been replaced in the last
 few years while the other unit is original.
- <u>Interior finishes:</u> the truck bay consists of painted block walls and a polished concrete floor. The exposed metal structure is showing signs of corrosion and would benefit from the application of a rust inhibitor coating. As noted earlier, volunteer firefighters have upgraded the finishes inside the shower area. The office area is finished in drywall and tile flooring which is still in fair to good condition. The upper storage area is in satisfactory condition. The metal stair structure is in good condition.
- <u>Mechanical:</u> the mechanical equipment serving the building appears to be in good condition and should be able to last to expected useful life. The majority of lighting is suspended fluorescent strip lighting units. Some baseboard electric heating units show excessive corrosion of the housing. The truck bay is heated by gas using metal ducts within a metal shroud. No problems identified by staff.

Maintenance

\$ 600/replace baseboard heaters

LCR Forecast

FACILITY NAME	CATEGORY	REQUIREMENT	EVENT YEAR	BUDGET
BOURGET FIRE	INSPECTION AND	BUILDING	2016	\$10,000
HALL#1	AUDIT	CONDITION AUDIT		
		(EXTERNAL)		
BOURGET FIRE	PAINTING	REFINISH	2020	\$29,000
HALL #1		EXTERIOR		
		CLADDING		
		(REPAIR. WASH.		
		REFINISH)		
BOURGET FIRE	WINDOWS AND	REPLACE	2020	\$6,000
HALL #1	GLAZING	EXTERIOR		
		WINDOWS		
BOURGET FIRE	EXTERIOR DOORS	REPLACE	2020	\$6,000
HALL #1		APPARATUS BAY		
		OVERHEAD DOOR		
		AND OPERATOR		
BOURGET FIRE	PAINTING	REPAINT EXPOSED	2020	\$18,000
HALL #1		OVERHEAD METAL		
		STRUCTURE		
		(APPARATUS		
		BAYS)		
BOURGET FIRE	SURFACES	REPLACE ASPHALT	2024	\$23,000
HALL #1		APRON AT FRONT		
		OF BUILDING		
BOURGET FIRE	MECHANICAL	REPLACE	2025	\$13,000
HALL #1		APPARATUS BAY		
		INFRARED		
		HEATING SYSTEM		
~		(2)	-	
BOURGET FIRE	CLADDING	REPLACE FASCIA	2027	\$10,000
HALL #1		SHINGLES		
Fire Station #1



Clarence Creek Fire Hall

Address:

1484 Landry Street

Site Review Notes

Date: November 25th, 2013

- The Clarence Creek Fire Hall was constructed in 1985.
- Due to the population growth experienced in the City of Clarence-Rockland, Fire Services has indicated that it may need to undertake a fire hall re-deployment plan that would ensure that response times remain within acceptable standards. This fire hall responds using volunteer firefighters and therefore, is not equipped with the typical space amenities, such as living quarters, expanded lunchroom and shower facilities that a fully-manned fire hall would have. Fire Services management has changed recently and certain information was not available for this general condition review.
- <u>Site components:</u> there is no asphalt surface serving this fire hall. The driveway is crushed stone which does create certain maintenance problems inside the fire hall. Should this fire hall remain at its present location, the construction of a paved surface would be an acceptable betterment. The building's septic system is deemed to be in good working order.
- <u>Building envelope</u>: staff note that the metal roof is in good condition and that there are
 no evident leaks or other problems. The brick cladding is in very good condition as well
 as the overhead doors and steel doors. The metal cladding that surrounds the rest of
 the building and the hose tower is in very good condition.
- Interior finishes: the interior wall and ceiling finish consists of metal ribbed siding which appears to be in very good condition. The structural steel components in the truck bay are showing some surface corrosion and would benefit from the application of a rust inhibitor. The polished concrete floor is in good condition and would benefit from an anti-slip coating when it undergoes rehabilitation. The window units seem to be in satisfactory condition. The washroom facility floor could benefit from the installation of an epoxy non-slip finish.
- <u>Mechanical:</u> the mechanical equipment serving the building appears to be in good condition and should be able to last to expected useful life. The majority of lighting is suspended fluorescent strip lighting units. A direct-flow water heater has been installed (Rinnal unit). The facility electrical distribution panel is equipped with a manual transfer switch in order to accommodate a generator hook-up. The truck bay is heated by gas using metal ducts within a metal shroud. No problems identified by staff.

Maintenance

No immediate maintenance issues identified.

LCR Forecast

FACILITY NAME	CATEGORY	REQUIREMENT	EVENT YEAR	BUDGET
CLARENCE CREEK	INSPECTION AND	BUILDING	2015	\$6,000
FIRE HALL	AUDIT	CONDITION AUDIT		
		(EXTERNAL)		
CLARENCE CREEK	PAINTING	REPAINT EXPOSED	2020	\$18,000
FIRE HALL #2		OVERHEAD METAL		
		STRUCTURE		
		(APPARATUS		
		BAYS)	2020	¢22.000
	FLOOR FINISHES		2020	\$23,000
FIRE HALL #2		CONCRETE		
CLARENCE CREEK	SURFACES	INSTALL NEW	2022	\$18.000
FIRE HALL #2		PAVED ASPHALT		+
		APRON		
CLARENCE CREEK	MECHANICAL	REPLACE DIRECT	2026	\$8,000
FIRE HALL #2		FLOW HOTWATER		~
		HEATING SYSTEM		
		AND		
		DISTRIBUTION		
		PIPING		
CLARENCE CREEK	EXTERIOR DOORS	REPLACE	2029	\$14,000
FIRE HALL #2		APPARATUS BAY		
		(2)		
CLARENCE CREEK	MECHANICAL	REPLACE	2030	\$15.000
FIRE HALL #2		APPARATUS BAY	2000	\$10,000
		INFRARED		
		HEATING SYSTEM		
		(2)		

Fire Station #2



Rockland Fire Hall

Address:

1550 Laurier Street

Site Review Notes

Date: November 25th, 2013

- The Rockland Fire Hall was constructed in 1979.
- Discussions and plans are underway to construct a new facility on the site that would combine a larger fire hall with a new police station. It is expected that the continued growth of the City of Clarence-Rockland will require a larger fire services staff complement and subsequently, expanded facilities. This expansion plan would likely result in the demolition of the Rockland Fire Hall to accommodate the proposed expansion plan.
- Fire Services management has changed recently and certain information was not available for this general condition review.
- <u>Site components</u>: the asphalt surface is in fair to good condition. It is showing minor depressions, cracking and delamination. The line markings are fading. It would be considered prudent to integrate any proposed asphalt re-surfacing work for the fire hall with asphalt re-surfacing work for the adjoining City Hall property.
- <u>Building envelope</u>: the exterior brick cladding and roof parapet are in very good condition. Unable to access roof area for this review but advised by staff that no problems evident at this time and roof appears to be in good condition. It appears that the roof was replaced 5 to 6 years ago using a modified bitumen application. Some of the 8 operable window units show evidence of seal failure and moisture infiltration. Exterior metal doors are fair to good, but maintenance needed to concrete base. The overhead doors are extensively glazed units that are reaching end of service life.
- <u>Interior finishes:</u> interior finishes are fairly robust for use in a fire hall. The truck bay has
 a solid concrete floor that has been repaired recently. It may be slippery if an excessive
 amount of water is present and a non-slip application might be considered when the
 floor requires rehabilitation. Ceramic finishes are present in the washrooms and shower
 areas and are in good condition. Suspended tile ceilings are good as well as the vinyl tile
 in the office area. Considerable equipment is stored in the truck bay and the moisture
 that is accumulating in this space is beginning to corrode the open web steel structure.
 The application of a rust inhibitor should be considered.
- <u>Mechanical:</u> the mechanical equipment serving the building appears to be in good condition and should be able to last to expected useful life (Rheem Criterion equipment). The plumbing equipment is original to the date of construction. The truck bay is heated by gas using metal ducts within a metal shroud. No problems identified by staff.

<u>Maintenance</u>

\$ 600/repairs to concrete bases and weatherstripping for exterior door.

LCR Forecast

FACILITY NAME	CATEGORY	REQUIREMENT	EVENT YEAR	BUDGET
ROCKLAND FIRE	INSPECTION AND	BUILDING	2015	\$6,000
HALL	AUDIT	CONDITION AUDIT		
		(EXTERNAL)		
ROCKLAND FIRE	EXTERIOR DOORS	REPLACE	2016	\$11,000
HALL		APPARATUS BAY		
		OVERHEAD		
		DOORS AND		
		OPERATORS		
ROCKLAND FIRE	WINDOWS AND	REPLACE	2018	\$9 <i>,</i> 000
HALL	GLAZING	EXTERIOR		
		WINDOWS		
ROCKLAND FIRE	PAINTING	REPAINT EXPOSED	2020	\$18,000
HALL		OVERHEAD METAL		
		STRUCTURE		
		(APPARATUS		
		BAYS)		
ROCKLAND FIRE	FLOOR FINISHES	REFINISH	2020	\$23,000
HALL		APPARATUS BAY		
		CONCRETE		
		FLOORING (2) -		
		NON SLIP		
ROCKLAND FIRE	SURFACES	REPLACE ASPHALT	2022	\$18,000
HALL		PARKING APRON		
ROCKLAND FIRE	MECHANICAL	REPLACE GAS	2024	\$13,000
HALL		FIRED FURNACE		
		UNITS (2)		
ROCKLAND FIRE	ROOFING	REPLACE EPDM	2034	\$61,000
HALL		ROOF		

Rockland Fire Station



Fire Administration Building

Address:

1550 Laurier Street

Site Review Notes

Date: November 25th, 2013

- Fire Administration is housed in a former residential property (age unknown)
- The building is limited in size and space amenities to serve the long-term needs of fire
 administration and bylaw enforcement which may affect its priority for life cycle
 renewal funding.
- <u>Site components</u>: the asphalt surface is showing deterioration and depressions and is considered to be in fair condition. The concrete steps at the front and rear of the building show significant surface delamination due to salt damage.
- <u>Building envelope</u>: the shingle roof is in very good condition and appears to be of recent vintage. Most of the windows are original units and are wood framed units equipped with storm windows. Despite the use of storm windows, excessive moisture is present. Exterior doors are wood doors in fair condition. The stucco finish appears to be sound with only minor delamination. The wood ramp serving the building is in fair to good condition.
- <u>Interior finishes</u>: the interior wall and ceiling finish consists of drywall and suspended tile ceiling. The finishes are in fair to good condition. Commercial carpeting is in fair condition with the vinyl flooring in good condition.
- <u>Mechanical</u>: the mechanical equipment serving the building is of residential quality and appears to be in good condition and should be able to last to expected useful life. A split coil unit provides cooling. Staff notes that the building mechanical system is ill-equipped to provide effective cooling in all areas of the structure, especially due to indirect heat gains.

Maintenance

\$ 1000/concrete stair and stucco repairs

LCR Forecast

FACILITY NAME	CATEGORY	REQUIREMENT	EVENT YEAR	BUDGET
FIRE	WINDOWS AND	REPLACE	2017	\$6,000
ADMINISTRATION	GLAZING	EXTERIOR		
BUILDING		WINDOWS		
		(SELECTED)		
FIRE	FLOOR FINISHES	REPLACE INDOOR	2019	\$6,000
ADMINISTRATION		CARPETING		
BUILDING				

ASSET MANAGEMENTPLAN

FACILITY NAME	CATEGORY	REQUIREMENT	EVENT YEAR	BUDGET
FIRE	SURFACES	REPLACE ASPHALT	2020	\$18,000
ADMINISTRATION		WALKWAYS AND		52
BUILDING		REAR APRON		
FIRE	MECHANICAL	REPLACE SPLIT	2024	\$7,000
ADMINISTRATION		COIL AC SYSTEM		~~ W
BUILDING				
FIRE	ROOFING	REPLACE SHINGLE	2032	\$11,000
ADMINISTRATION		ROOF		
BUILDING				

Fire Administration Building



Environment Services Buildings

Low Lift (River Water) Pumping Station

Address:

Edwards Street- Du Moulin Park

Site Review Notes

Date: November 15th, 2013

- This facility is well-maintained and in good to very good condition. It is currently 20 years old (1993)
- <u>Site components</u>: the only site component is the asphalt pad at the front of the access doors. It is in fair to good condition.
- <u>Building envelope</u>: exterior brick cladding and roof parapet in very good condition. Unable to access roof area for this review but advised by staff that no problems evident at this time and roof appears to be in good condition. There is a skylight assembly in case the pump in the deep well must be removed from the building by crane. The steel exterior double doors are in good condition.
- <u>Interior finishes</u>: interior finishes are basic concrete and painted block walls. Some work to be undertaken to level the interior concrete floor. Metal roof deck shows no paint peeling or discoloration and is in very good condition.
- <u>Mechanical:</u> the mechanical equipment serving the building appears to be in very good condition (small suspended heater).

<u>Maintenance</u>

No specific maintenance requirements identified for this property. It is well maintained.

LCR Forecast

FACILITY NAME	CATEGORY	REQUIREMENT	EVENT YEAR	BUDGET
LOW LIFT WATER	ROOFING	REPLACE EPDM	2023	\$10,000
PUMPING		ROOF AND		
STATION		SKYLIGHT		
LOW LIFT WATER	EXTERIOR DOORS	REPLACE DOUBLE	2023	\$7,000
PUMPING		EXTERIOR DOORS		
STATION				



Low Lift Pump Station (du Moulin Park)

Clarence-Rockland Water Treatment Plant

Address:

125 Edwards Street

Site Review Notes

Date: November 15th, 2013

- Water treatment plant has undergone several major renovations and new construction in 1993 and 2004.
- This facility is well-maintained and in good to very good condition
- <u>Site components:</u> galvanized fence in good condition, but minor maintenance needed to re-secure posts and prevent unauthorized entry below wire mesh. Asphalt surface in fair to good condition with minor cracks and ponding evident. Concrete curbs in good condition.
- <u>Building envelope</u>: exterior metal cladding and roof parapet in very good condition. Unable to access roof area for this review but advised by staff that no problems evident at this time and roof appears to be in good condition. Brick façade is in good condition and the majority of outside doors and overhead doors are in good condition. Concrete landing and concrete stairs are in fair to good condition with only minor maintenance needed.
- <u>Interior finishes</u>: interior finishes are utilitarian and in very good condition. Ceramic tile floors and suspended tile ceilings are in very good condition. Metal roof deck in water treatment area shows no paint peeling or discoloration and is in very good condition. Minor blemishes showing on galvanized handrails.
- <u>Mechanical:</u> the mechanical equipment serving the building appears to be in very good condition (was not possible to get close to suspended equipment) and should be able to last to expected useful life.

Maintenance

\$ 1500/fencing; \$ 500/galvanized stairs and concrete steps

LCR Forecast

FACILITY NAME	CATEGORY	REQUIREMENT	EVENT YEAR	BUDGET
WATER	INSPECTION AND	BUILDING	2017	\$11,000
TREATMENT	AUDIT	CONDITION		
PLANT BUILDING		AUDIT		
WATER	MECHANICAL	REPLACE GAS	2022	\$12,000
TREATMENT		FIRED UNIT		54 ⁴
PLANT BUILDING		HEATERS		
		(CEILING		
		MOUNTED)		

ASSET MANAGEMENTPLAN

FACILITY NAME	CATEGORY	REQUIREMENT	EVENT YEAR	BUDGET
WATER	SURFACES	REPLACE	2025	\$39,000
TREATMENT		ASPHALT FOR		
PLANT BUILDING		EXTERIOR		
		PARKING AREAS		
		AT SITE		

Drinking Water Treatment Plant





Drinking Water Treatment Plant 2

Pumping Station No. 1

Address:

455 Paul Street

Site Review Notes Date: November 15th, 2013

- This facility is 20 years old (1993) and will be undergoing some "renovations" in 2014 to accommodate the development nearby.
- <u>Site components:</u> the fencing is in fair to good condition. A new access gate is planned for 2014 that aligns directly with the access roadway. Changes to the remaining portions of the galvanized fence are expected in 2014. At the same time, the asphalt surface in front of the pumping station will be re-built and extended to the new entry point. As a result of this work, there should be no impending life cycle renewal of site components in the near term.
- <u>Building envelope</u>: tuck-pointing work has been done to the brick cladding. Roof parapet in very good condition. Unable to access roof area for this review but advised by staff that no problems evident at this time and roof appears to be in good condition. The steel exterior double doors are in very good condition.
- Interior finishes: interior finishes are basic concrete and painted block walls.
- <u>Mechanical:</u> the mechanical equipment serving the building appears to be in very good condition (small suspended heater). The rooftop exhaust fans are planned to be replaced shortly due to extensive corrosion.

<u>Maintenance</u>

No specific maintenance requirements identified for this property since it is expected to undergo renovations to site components and replacement of exhaust fans within 6 months.

LCR Forecast

FACILITY NAME	CATEGORY	REQUIREMENT	EVENT YEAR	BUDGET
SEWAGE	ROOFING	REPLACE EPDM	2023	\$8,000
PUMPING		ROOF		
STATION #1				
SEWAGE	MECHANICAL	REPLACE	2024	\$10,000
PUMPING		ROOFTOP		
STATION #1		EXHAUST UNITS		

ASSET MANAGEMENTPLAN

Sewage Pump Station #1



Pumping Station No. 2

Address:

1191 St-Jacques Street

Site Review Notes

Date: November 15th, 2013

- This facility is 20 years old (1993). The building is located in a residential area and currently has no security fencing. Consequently, the building has been vandalized and subjected to graffiti. Consideration should be given to installing perimeter security fencing that is appealing to the neighbors, vandal-resistant and maintainable.
- <u>Site components:</u> there are no current site assets requiring life cycle renewal.
- <u>Building envelope</u>: the brick cladding has been subjected to extensive graffiti which should be removed after a new security fence has been installed. The extent of graffiti removal may damage the brick, requiring some repairs and tuck-pointing. Roof parapet has been vandalized and needs to be repaired. The exhaust shroud has also been vandalized and will need to be re-painted. Unable to access roof area for this review but advised by staff that no problems evident at this time. The steel exterior double doors are in good condition.
- Interior finishes: interior finishes are basic concrete and painted block walls.
- <u>Mechanical</u>: the mechanical equipment serving the building appears to be in good condition (small suspended heater).

Maintenance

\$ 2,000/graffiti removal and brick repairs; \$ 1,000/parapet and shroud repairs.

LCR Forecast

FACILITY NAME	CATEGORY	REQUIREMENT	EVENT YEAR	BUDGET
SEWAGE	FENCING	INSTALL	2015	\$16,000
PUMPING		PERIMETER		
STATION #2		SECURITY		
		FENCING AND		
		GATES (TBD)		
SEWAGE	ROOFING	REPLACE ROOF	2020	\$7,000
PUMPING		SYSTEM		
STATION #2				
SEWAGE	EXTERIOR DOORS	REPLACE DOUBLE	2023	\$7,000
PUMPING		EXTERIOR DOORS		
STATION #2				

Sewage Pump Station #2



Pumping Station No. 3

Address:

2780 Chamberland Street

Site Review Notes

Date: November 15th, 2013

- This facility is 20 years old (1993). There is no building component on this site. All process equipment has been placed inside metal enclosures and concrete bases.
- Site components: the fence is galvanized and in very good condition.
- Building envelope: no base building assets present on this site.
- Interior finishes: no base building assets present on this site.
- <u>Mechanical:</u> no base building assets present on this site.

Maintenance

No maintenance issues identified for this site

LCR Forecast

There are no base building assets on this site and therefore, no life cycle renewal requirements. The fencing is in very good condition and its replacement likely falls outside the 20-year capital forecast. The Plan Developers have included a "potential" one time replacement of fencing and gates as a 2034 event, as listed below.

FACILITY NAME	CATEGORY	REQUIREMENT	EVENT YEAR	BUDGET
SEWAGE	FENCING	REPLACE	2034	\$13,000
PUMPING		PERIMETER		16 BOLD
STATION #3		FENCING AND		
		GATES		

ASSET MANAGEMENTPLAN

Sewage Pump Station #3



Pumping Station No. 4

Address:

27 Albert Street

Site Review Notes

Date: November 15th, 2013

- This facility is 20 years old (1993).
- <u>Site components</u>: the fencing is in fair to good condition. Changes may need to be made to better segregate this property from the adjoining rear property. The fencing needs to have repairs made to the top rail and re-secure the barb wire that is sagging.
- <u>Building envelope</u>: Roof parapet in good condition, although water is flowing down the right front side of the brick wall. Unable to access roof area for this review but advised by staff that no problems evident at this time. The steel exterior double doors appear to be in good condition. The brick cladding appears to be in good condition.
- Interior finishes: interior finishes are basic concrete and painted block walls.
- <u>Mechanical</u>: the mechanical equipment serving the building appears to be in good condition (small suspended heater) based on input from staff. The exhaust shroud has been vandalized but is quite functional.

Maintenance

\$ 1000/fencing repairs

LCR Forecast

FACILITY NAME	CATEGORY	REQUIREMENT	EVENT YEAR	BUDGET
SEWAGE	ROOFING	REPLACE ROOF	2023	\$8,000
PUMPING		SYSTEM		
STATION #4				
SEWAGE	EXTERIOR DOORS	REPLACE DOUBLE	2023	\$7,000
PUMPING		EXTERIOR DOORS		
STATION #4				
SEWAGE	FENCING	REPLACE	2028	\$11,000
PUMPING		PERIMETER		
STATION #4		FENCING AND		
		GATES		

Sewage Pump Station #4



Pumping Station No. 5

Address:

210 Edwards Street

Site Review Notes

Date: November 15th, 2013

- This facility is 20 years old (1993).
- <u>Site components</u>: the fencing is in good condition. There is a bit of sagging of the barb wire mesh at the front and this should be checked in 2014 to ensure that no safety hazard exists.
- <u>Building envelope</u>: Roof parapet in good condition as well as the brick cladding. The steel exterior door appears to be in good condition. Could not access roof. Staff indicate no current problems with roofing system.
- <u>Interior finishes:</u> interior finishes are basic concrete and painted block walls. The ceiling is drywall.
- <u>Mechanical:</u> the mechanical equipment serving the building appears to be in good condition (small suspended heater) based on input from staff. The exhaust shroud has been vandalized but is quite functional. A re-painting of the shroud, when resources are available, is recommended.

Maintenance

No maintenance requirements of any significance are identified for this property

LCR Forecast

FACILITY NAME	CATEGORY	REQUIREMENT	EVENT YEAR	BUDGET
SEWAGE	ROOFING	REPLACE ROOF	2023	\$8,000
PUMPING		SYSTEM		
STATION #5				
SEWAGE	EXTERIOR DOORS	REPLACE DOUBLE	2023	\$7,000
PUMPING		EXTERIOR DOORS		
STATION #5				
SEWAGE	FENCING	REPLACE	2031	\$12,000
PUMPING		PERIMETER		
STATION #5		FENCING AND		
e.		GATES		

ASSET MANAGEMENTPLAN

Sewage Pump Station #5



Pumping Station No. 6

Address:

21 Montée Outaouais

Site Review Notes

Date: November 15th, 2013

- This facility is 20 years old (1993).
- <u>Site components:</u> the fencing is in very good condition.
- <u>Building envelope</u>: Roof parapet in good condition; however, there is water seeping down the right side of the front brick wall. There is the potential for freeze damage to the brick cladding. The roof area could not be inspected and staff indicate no problems encountered at present. The steel exterior door appears to be in good condition.
- <u>Interior finishes:</u> interior finishes are basic concrete and painted block walls. The ceiling is drywall.
- <u>Mechanical:</u> the mechanical equipment serving the building appears to be in good condition (small suspended heater) based on input from staff.

Maintenance

No maintenance requirements of any significance are identified for this property

LCR Forecast

FACILITY NAME	CATEGORY	REQUIREMENT	EVENT YEAR	BUDGET
SEWAGE	ROOFING	REPLACE ROOF	2023	\$8,000
PUMPING		SYSTEM		
STATION #6				
SEWAGE	EXTERIOR DOORS	REPLACE DOUBLE	2023	\$7,000
PUMPING		EXTERIOR DOORS		
STATION #6			6	
SEWAGE	FENCING	REPLACE	2032	\$12,000
PUMPING		PERIMETER		
STATION #6		FENCING AND		
		GATES		

Sewage Pump Station #6



Pumping Station No. 7

Address:

871 Sterling

Site Review Notes

Date: November 15th, 2013

- This facility is a recent addition to the portfolio. The building was constructed by the local land developer and is architecturally in keeping with the look of the neighborhood. The building is equipped with a back-up generator.
- <u>Site components</u>: the fencing is in very good condition with only minor damage to the entrance gate. The asphalt overlay is also of recent vintage and in very good condition.
- <u>Building envelope</u>: Roof is constructed with asphalt shingles with aluminum fascia and soffit. Brick cladding is virtually new and in pristine condition. The steel exterior door appears to be in very good condition.
- <u>Interior finishes:</u> was not able to access the interior of the building but anticipate no major life cycle renewal requirements over the next 20 year period.
- <u>Mechanical:</u> the mechanical equipment serving the building is, according to staff, in new condition.

Maintenance

No maintenance requirements of any significance are identified for this property

LCR Forecast

FACILITY NAME	CATEGORY	REQUIREMENT	EVENT YEAR	BUDGET
SEWAGE	ROOFING	REPLACE SHINGLE	2034	\$10,000
PUMPING		ROOF SYSTEM		
STATION #7				

Sewage Pump Station #7 Montage



Booster Station

Address:

Site Review Notes

1441 Caron

Date: November 15th, 2013

- This facility was constructed in 2004 and is in very good condition.
- <u>Site components</u>: the fencing is in very good condition. The asphalt surface is in good condition. The facility integrates well with the neighbor.
- <u>Building envelope</u>: Roof is constructed with asphalt shingles with aluminum fascia and soffit. Brick cladding is virtually new and in pristine condition. The steel exterior door appears to be in very good condition.
- <u>Interior finishes:</u> was not able to access the interior of the building but anticipate no major life cycle renewal requirements over the next 20 year period.
- <u>Mechanical:</u> the mechanical equipment serving the building is, according to staff, in new condition.

Maintenance

No maintenance requirements of any significance are identified for this property

LCR Forecast

There are no significant LCR Capital Renewal interventions anticipated within the current 20 year period of this asset management plan. However, the plan development team has included two (2) interventions for this site which it is believed could fall within the plan period (2014-2034).

FACILITY NAME	CATEGORY	REQUIREMENT	EVENT YEAR	BUDGET
DRINKING WATER	ROOFING	REPLACE SHINGLE	2028	\$7,000
BOOSTER		ROOF		
STATION		0	2	
DRINKING WATER	EXTERIOR DOORS	REPLACE	2033	\$8,000
BOOSTER		EXTERIOR		
STATION		GARAGE AND		
		PERSONNEL		
		DOORS		

Booster Pumping Station



Sanitary Sewer Plant

Address:

Site Review Notes

700 Industrial Road

Date: November 15th, 2013

- This facility was constructed in 1997. It is a Butler style building.
- This facility is well-maintained and in good to very good condition
- <u>Site components</u>: galvanized fence in good condition, but minor maintenance needed to re-secure barb wire mesh in selected areas. Asphalt surface in fair to good condition with minor cracks and ponding evident. Consideration should be given to perform crack sealing in the next 2 years to avoid premature failure.
- <u>Building envelope</u>: exterior metal cladding in very good condition. Unable to access roof area for this review but advised by staff that no problems evident at this time and metal roof appears to be in good condition. The majority of outside doors and overhead doors are in good condition.
- Interior finishes: interior finishes are utilitarian and in good condition. Ceramic tile floors and quality toilet partitions are in place in washrooms. Shower areas constructed with wall and floor ceramics. Suspended tile ceilings are in fair to good condition. Tile flooring is in fair to good condition. Some movement of the structure is apparent inside the hallway of the building, but only minor repairs are needed at this time. Metal stair structures are robust and in very good condition. Considerable amount of exposed concrete in processing areas which will not likely require significant life cycle renewal investment. However, there is a need to undertake a more detailed structural adequacy investigation of the facility following the use of an open area on the main upper floor for vehicle storage. Concrete spalling and delamination are evident as well as the deflection of steel attachment bars in the processing area.
- <u>Mechanical:</u> the mechanical equipment serving the building appears to be in very good condition (was not possible to get close to suspended equipment) and should be able to last to expected useful life.

Maintenance

\$ 1500/crack sealing; \$ 500/hallway repairs

LCR Forecast

FACILITY NAME	CATEGORY	REQUIREMENT	EVENT YEAR	BUDGET
SEWAGE	INSPECTION AND	COMPLETE	2015	\$11,000
TREATMENT	AUDIT	STRUCTURAL		
PLANT		REVIEW OF		
		FACILITY AND		
		UNSUPPORTED		
		FLOOR AREAS	-	
SEWAGE	INSPECTION AND	BUILDING	2015	\$7,000
TREATMENT	AUDIT	CONDITION AUDIT		
PLANT				
SEWAGE	MECHANICAL	REPLACE UNIT	2021	\$15,000
TREATMENT		HEATERS		
PLANT		THROUGHOUT		
		(PHASED		
		PROGRAM)		
SEWAGE	FENCING	PHASED	2023	\$19,000
TREATMENT		REPLACEMENT OF		
PLANT		PERIMETER		
		FENCING (PHASE		
		1)		
SEWAGE	SURFACES	REPLACE ASPHALT	2024	\$75,000
TREATMENT		AREA AT		
PLANT		BUILDING		
		EXTERIOR		
SEWAGE	EXTERIOR DOORS	REPLACE GARAGE	2028	\$30,000
TREATMENT		BAY DOORS (2)		
PLANT		AND DRIVE		
		SYSTEMS		

Sewage Treatment Plant



Landfill Site

Address:	2335 Lalonde Street	
Site Review Notes	Date:	November 15 th , 2013

The Landfill Site consists of several small structures that fall outside the scope of the building life cycle renewal forecast. One metal structure is a hardened bunker facility used to store hazardous and volatile waste. This type of facility is not subject to extensive life cycle renewal, but is rather de-commissioned at the end of its service life and replaced with a new bunker structure. The Department investigated the capacity requirements for the storage of hazardous material and an engineering assessment has concluded that an <u>expanded</u> compliant structure would need to be built in order to meet the growing volume of hazardous goods to the year 2040. The life cycle forecast identifies an event in 2016 to construct an expanded hazardous materials storage unit to replace the existing bunker. Although this event is listed in the life cycle renewal forecast, it is likely to be funded from the reserve established from waste pick-up and recycling fees and will not, therefore, impact the life-cycle renewal expenditure plan.

The second structure is an office trailer that is constructed as a temporary moveable structure. Temporary structures are not typically recipients of life cycle renewal funding since they are temporary structures who at end of service life would be replaced.

The office trailer is showing signs of excessive wear and roof leakage. It is also of very limited size and capacity based on the fact that custodial goods are stored in the pump and water heater room. It is our understanding that a plan to replace the temporary structure with a permanent facility is contemplated based on the growing use and role of the Landfill Site.

<u>Site components:</u> galvanized fence in the immediate entry area is in very good condition. However, the condition of the perimeter fence is fair to poor. The department has undertaken a multi-year replacement plan for the perimeter fence, but this program of replacement should be accelerated to ensure an effective and safe response to unauthorized entry to the Landfill Site. The asphalt surface and roadway appears to be in good condition.

Maintenance

\$800/trailer repairs

LCR Forecast

FACILITY NAME	CATEGORY	REQUIREMENT	EVENT YEAR	BUDGET
LANDFILL FACILITY	UTILITY STRUCTURE	REPLACE HAZAROUS MATERIALS BUNKER WITH A <u>NEW</u> BUNKER STRUCTURE	2016	\$202,709
LANDFILL FACILITY	UTILITY STRUCTURE	CONTRIBUTION FROM WASTE MANAGEMENT AND LCR RESERVE FOR NEW BUNKER	2016	-\$202,709
LANDFILL FACILITY	FENCING	REPLACE PERIMETER FENCING WITH CHAIN LINK PHASE 1	2016	\$64,000
LANDFILL FACILITY	FENCING	REPLACE PERIMETER FENCING WITH CHAIN LINK PHASE 2	2017	\$65,000
LANDFILL FACILITY	FENCING	REPLACE PERIMETER FENCING WITH CHAIN LINK PHASE 3	2018	\$67,000
LANDFILL FACILITY	UTILITY STRUCTURE	REPLACE GATEHOUSE TEMPORARY OFFICE TRAILER	2020	\$46,000
LANDFILL FACILITY	FENCING	REPLACE PERIMETER FENCING WITH CHAIN LINK PHASE 4	2020	\$69,000
LANDFILL FACILITY	SURFACES	REPLACE ASPHALT APRON AT MATERIAL CHECK IN AND DROP OFF AREA	2020	\$21,000

ASSET MANAGEMENTPLAN

Landfill Site and Buildings
Public Works Buildings

Public Works Garage

Address:

415 Lemay Road

Site Review Notes

Date: December 4th, 2013

- Staff indicated that this facility was constructed in 1973 while the adjoining canvas salt dome was opened in late fall 2009.
- The equipment garage is the only public works facility serving the entire City of Clarence-Rockland. All the equipment used in snow clearing and street maintenance is deployed out of this garage. To meet growing demand, the department converted the last two bays of the structure to house equipment. This space was previously used to store salt and sand. The new salt and sand storage facility was opened in late 2009 and cost \$ 300,000.
- All administrative staff for the department is housed at the Clarence Creek Town Hall located close by. The upper area of the works garage has limited storage and lunchroom space. There are no hoists in the truck bays.
- There are several storage units serving the site including space for a dog pound and storage of oils and lubricants. It is expected that any asset replacement for these storage units will be funded from operating funds.
- This general condition review focussed on base building assets only. Certain equipment such as the fueling station, air compressors, portable hoist and fleet maintenance equipment fall outside the scope of this review and are considered to be under the exclusive purview of the public works department.
- <u>Site components</u>. The site components are limited and include an asphalt strip in front
 of the overhead doors leading to the truck bays and fencing. Most of the travel surface
 consists of granular material. Fencing is only installed at the access to the property and
 does not surround the property. Approximately 300 linear feet of galvanized wire mesh
 fencing is noted for the property. A sliding gate secures entry to the property. The
 fencing appears to be in good condition and will likely not require replacement during
 this capital forecast period
- <u>Building envelope</u>: the garage exterior is ribbed metal cladding which remains in fair to
 good condition. The metal rib roof also appears to be in fair to good condition. Staff did
 not indicate any significant problems with the exterior components, although asbestos
 has been determined within the vermiculite insulation. There are very few window units
 and they are small and not likely eligible for funding under the LCR forecast. There are 7
 overhead doors serving the garage. Five doors appear to be original equipment while
 the last 2 doors are of more recent vintage. The door operators appear to be of more

recent vintage. The exterior man doors are in fair to good condition. With regards to the salt dome, the canvas material is of very recent vintage and therefore in good condition. There is some discoloration of the concrete on one side of the structure. The two overhead doors are fairly new and in good condition.

- Interior finishes: the upper floor area has a concrete floor finish and suspended tile ceiling. The area is small and replacement work would most likely be funded from operating funds. The metal stairs leading to the upper floor are in fair to good condition. The cement pads serving the truck bays appear to be at the end of their useful life. There is a requirement to install a new pad for the last 2 bays. The exposed metal deck will require cleaning and consideration should be given to painting this and the exposed structural members with a rust inhibitor. This work would help to increase the illumination levels inside the bays. The concrete block walls could also benefit from a cleaning and painting effort. The salt dome does not reveal any significant deterioration to warrant an immediate expenditure of capital funds.
- <u>Mechanical</u>: the garage bays use five Schwank gas-fired units to heat the space. Downdraft fans are used to aid circulation. The upper space is heated using baseboard electric heaters. Lighting is fluorescent strip lighting which appears to be inadequate to serve the purposes of the space. There is no exhaust extraction system provided in the bays. The salt dome has a small electrical panel and several mercury-vapor lights mounted at the peak of the structure.

Maintenance

\$ 600/ repairs to salt dome door frame

LCR Forecast

FACILITY NAME	CATEGORY	REQUIREMENT	EVENT YEAR	BUDGET
PUBLIC WORKS	INSPECTION AND	ELECTRICAL AUDIT	2015	\$8,000
GARAGE	AUDIT	AND INFRARED		
-		SCAN		
PUBLIC WORKS	INSPECTION AND	BUILDING	2016	\$11,000
GARAGE	AUDIT	CONDITION AUDIT		
		(EXTERNAL)	3	
PUBLIC WORKS	MECHANICAL	INSTALL EXHAUST	2016	\$41,000
GARAGE		EXTRACTION		
		SYSTEM (AND		
		TAILPIPE		
		SNORKEL)		
PUBLIC WORKS	FLOOR FINISHES	REMEDIATE AND	2017	\$55,000
GARAGE		REPLACE		
		CONCRETE BAY		
		FLOORING (2		
		BAYS) INCL		
		DRAINAGE		
PUBLIC WORKS	EXTERIOR DOORS	REPLACE	2017	\$13,000
GARAGE		EXTERIOR BAY		
		DOORS AND		
	is same. Merchanistration	OPERATORS	Materia publication	New York Concerning and Concerning
PUBLIC WORKS	LIGHTING	REPLACE	2019	\$57 <i>,</i> 000
GARAGE		OVERHEAD		
		LIGHTING WITH		
		HIDUNITS		
PUBLIC WORKS	PAINTING	CLEAN AND	2019	\$51,000
GARAGE		REPAINT		
	MECHANICAL		2022	\$36,000
GARAGE	MECHANICAL	INFRARED	2022	\$50,000
GRANGE		HEATING UNITS		
		(SCHWANK) AND		
		HEATING TUBES		
PUBLIC WORKS	SURFACES	REPLACE ASPHALT	2026	\$26,000
GARAGE		PARKING AREAS		
		AND APRONS		

FACILITY NAME	CATEGORY	REQUIREMENT	EVENT YEAR	BUDGET
PUBLIC WORKS	LIGHTING	REPLACE	2033	\$90,000
GARAGE		WORKBAY		(5.45)
		OVERHEAD		
		LIGHTING		
		SYSTEMS AND		
		CONTROLS		
PUBLIC WORKS	SALT STORAGE	REPLACE SALT	2034	\$342,000
GARAGE	SYSTEMS	DOME FRAME		
		AMD CANVAS		
		COVERING		

Public Works Garage Front View



Public Works Garage Interior and Additional Views

Daycare Facilities

Address:

1560 Laurier Avenue

Site Review Notes

Date: November 21rst, 2013

- The Daycare facility is located immediately adjacent to the City Hall which was renovated in 1991 according to information from the PSAB report.
- This is the only municipal site that supports the daycare program. All other daycares are located in school sites and the municipality is required to defray the costs for the eventual replacement of play structures. The LCR forecast includes this facility as well as play structure assets located at school sites.
- <u>Site components</u>: There is substantive fencing supporting this facility which is in fair to good condition. The exterior concrete steps and ramp are in fair to average condition. There is a need to apply a rust inhibitor finish to metal railings.
- <u>Building envelope</u>: the exterior brick cladding is in very good condition. The windows appear to be in good condition. The metal doors are fair with some corrosion showing on the metal frame. An exit door has a defective door closure. The metal rib roofing panels appear to be in good condition but there is missing snow barrier rod.
- <u>Interior finishes:</u> the daycare has various floor finishes but mostly vinyl tile. An effective floor care program is needed in order to ensure the service life of vinyl composite flooring. Unable to determine if stripping, waxing and spray buffing being done at this facility. Drywall finishes and suspended ceiling tile finishes appear to be in good condition. Most cabinetry is in good condition but some repairs needed. Interior stairs are in good condition.
- <u>Mechanical</u>: the electric heating equipment seems to be operating well. There is a split cooling system. The plumbing fixtures are in good condition and suitable sized for the children. Condensing units by Lennox appear to be in good condition. There is a small food elevator serving the building. Kitchen equipment appears to be in good condition including stove, ventilation unit and commercial fridge. Need to determine who has capital LCR responsibility for this equipment.

Maintenance

\$ 800/metal railing rust inhibitor/door frame repairs; \$ 600/metal roof repairs; \$ 300/exit door repairs; \$ 400/fencing repairs; \$ 200/cabinetry repair

LCR Forecast

FACILITY NAME	CATEGORY	REQUIREMENT	EVENT YEAR	BUDGET
ECOLE	PLAY EQUIPMENT	REPLACE	2021	\$8,000
CARREFOUR		JAMBETTE		
JEUNESSE		PLAYSTRUCTURE		
ECOLE SACRE-	PLAY EQUIPMENT	REPLACE	2025	\$64,000
COEUR		JAMBETTE		
		PLAYSTRUCTURE		
ECOLE STE-	PLAY EQUIPMENT	REPLACE LITTLE	2020	\$12,000
FELICITE		TYKES		
		PLAYSTRUCTURE		
ECOLE STE-	PLAY EQUIPMENT	REPLACE	2029	\$29,000
TRINITE		JAMBETTE		
		PLAYSTRUCTURE		
ECOLE ST-	PLAY EQUIPMENT	REPLACE	2024	\$44,000
MATHIEU		JAMBETTE		
		PLAYSTRUCTURE		
ECOLE ST-PATRICK	PLAY EQUIPMENT	REPLACE	2025	\$26,000
		JAMBETTE		
		PLAYSTRUCTURE		
GARDERIE LE	INSPECTION AND	BUILDING	2016	\$11,000
CARROUSEL (CITY	AUDIT	CONDITION AUDIT		
HALL)		AND COMPLIANCE		
		AUDIT		
GARDERIE LE	MECHANICAL	REVIEW	2016	\$13,000
CARROUSEL (CITY		DISTRIBUTION		
HALL)		SYSTEM AND		
		IMPROVE		
		CONTROL SYSTEM		
GARDERIE LE	PLAY EQUIPMENT	REPLACE	2019	\$25,000
CARROUSEL (CITY		JAMBETTE		
HALL)		PLAYSTRUCTURE		
GARDERIE LE	EXTERIOR DOORS	REPLACE	2020	\$10,000
CARROUSEL (CITY		EXTERIOR DOORS,		
HALL)		FRAMES AND		
		OPERATORS		
GARDERIE LE	INTERIOR	MILLWORK	2020	\$18,000
CARROUSEL (CITY	FINISHES	REFINISHING AND		
HALL)		REPLACEMENT		
GARDERIE LE	FLOOR FINISHES	REPLACE LOWER	2023	\$19,000
CARROUSEL (CITY		FLOORFINISHESS		
HALL)		THROUGHOUT		
		(PHASE 1)		

FACILITY NAME	CATEGORY	REQUIREMENT	EVENT YEAR	BUDGET
GARDERIE LE	FLOOR FINISHES	REPLACE UPPER	2024	\$19,000
CARROUSEL (CITY		FLOOR FINISHES		100
HALL)		THROUGHOUT		
		(PHASE 2)		
GARDERIE LE	FENCING	REPLACE	2030	\$29,000
CARROUSEL (CITY		PERIMETER		
HALL)		FENCING AROUND		
		SITE (CHAIN LINK)		
ROCKLAND	PLAY EQUIPMENT	REPLACE	2021	\$32,000
PUBLIC		JAMBETTE		
		PLAYSTRUCTURE		

La Garderie Day Care Center 1



La Garderie Day Care Centre 2



La Garderie Day Care Centre 3



APPENDIX I: Buildings and Parks: Needs Sorted By Time of Need and Improvement Category

FACILITY NAME	CATEGORY	REQUIREMENT	EVENT YEAR	BUDGET	TIME OF NEED
	RAMPS &	REPLACE SECOND LEVEL FIRE EXIT			
CLARENCE CREEK ARENA	STAIRS	STAIRCASE (STEEL)	2014	\$204,000	Now
JEAN MARC LALONDE (ROCKLAND)		REPLACE STEP DOWN TRANSFORMERS			
ARENA	ELECTRICAL	(3)	2014	\$13,000	Now
JEAN MARC LALONDE (ROCKLAND)	EXHAUST FAN				
ARENA	UNITS	REPLACE ARENA WALL EXHAUST FANS	2014	\$8,000	Now
JEAN MARC LALONDE (ROCKLAND) ARENA	MECHANICAL	REPLACE HOT WATER FORCE FLOW HEATERS THROUGHOUT	2014	\$5,000	Now
JEAN MARC LALONDE (ROCKLAND) ARENA	MECHANICAL	REPLACE HEATING BOILER CIRCULATION PUMPS (2)	2014	\$6,000	Now
ALL FACILITIES	CONTINGENCY	UNPLANNED LIFE CYCLE RENEWAL EXPENDITURE PROGRAM	2015	\$11,000	1-5 Years
ALL FACILITIES	INSPECTION AND AUDIT	SEPTIC SYSTEM EVALUATION AND REVIEW #1	2015	\$21.000	1-5 Years
	INSPECTION		_010	+ = = ,	
ALL FACILITIES	AND AUDIT	ROOFING INSPECTION PROGRAM	2015	\$11,000	1-5 Years
	INSPECTION	STRUCTURAL ADEOUACY REVIEW FOR			
ALL FACILITIES	AND AUDIT	BUILDINGS	2015	\$6,000	1-5 Years
BOURGET RECREATION CENTRE		REPLACE NORTH SIDEWALKS AND			
BUILDING	SURFACES	ENTRANCE AREAS	2015	\$9,000	1-5 Years
CLAPENCE CREEK ARENA			2015	\$11,000	1 E Voors
			2013	\$11,000	1-3 Teals
CLARENCE CREEK FIRE HALL #2	AND AUDIT	BUILDING CONDITION AUDIT (EXTERNAL)	2015	\$6,000	1-5 Years
FORMER CLARENCE CREEK TOWN		REPLACE CARPET WITH CARPET TILE			
HALL	FLOOR FINISHES	(PHASE 1)	2015	\$32,000	1-5 Years
FORMER CLARENCE CREEK TOWN		REPLACE CARPET WITH CARPET TILE			
HALL	FLOOR FINISHES	(PHASE 2)	2015	\$32,000	1-5 Years
FORMER CLARENCE CREEK TOWN	INSPECTION				
HALL	AND AUDIT	BUILDING CONDITION AUDIT (EXTERNAL)	2015	\$11,000	1-5 Years
FORMER CLARENCE CREEK TOWN	INSPECTION				
HALL	AND AUDIT	ELECTRICAL AUDIT AND INFRARED SCAN	2015	\$8,000	1-5 Years
JEAN MARC LALONDE (ROCKLAND)		REPLACE ELECTRIC FORCE FLOW			
ARENA	ELECTRICAL	HEATERS THROUGHOUT	2015	\$9,000	1-5 Years
JEAN MARC LALONDE (ROCKLAND)		REPLACE RINK INFRARED HEATERS		4	
ARENA	MECHANICAL	THROUGHOUT	2015	\$53,000	1-5 Years
JEAN MARC LALONDE (ROCKLAND)		REPLACE KITCHEN HOOD VENTILATION	2015	¢21.000	
	WIECHANICAL		2015	\$21,000	1-5 fears
JEAN MARC LALONDE (ROCKLAND)	NAFOUANUCAL	REPLACE KITCHEN ROOFTOP EXHAUST	2015	¢11.000	1 5 1/2 5 10
ARENA		FAN UNITS (2)	2015	\$11,000	1-5 Years
		FLECTRICAL ALIDIT AND INFRARED SCAN	2015	\$8,000	1-5 Vears
			2013		1 5 1 6 6 1 5
ROCKLAND FIRE HALL	AND AUDIT	BUILDING CONDITION AUDIT (EXTERNAL)	2015	\$6.000	1-5 Years
ROCKLAND MUSEUM (LA FAMILLE)		(+ - , 0	
BUILDING	ELECTRICAL	ELECTRICAL AUDIT AND INFRARED SCAN	2015	\$7,000	1-5 Years

		INSTALL PERIMETER SECURITY FENCING			
SEWAGE PUMPING STATION #2	FENCING	AND GATES (TBD)	2015	\$16,000	1-5 Years
		COMPLETE STRUCTURAL REVIEW OF			
SEW/AGE TREATMENT PLANT	INSPECTION	FACILITY AND UNSUPPORTED FLOOR	2015	\$11,000	1-5 Years
	INSPECTION		2015	<i></i> ,000	1 5 1 6 4 1 5
SEWAGE TREATMENT PLANT	AND AUDIT	BUILDING CONDITION AUDIT	2015	\$7,000	1-5 Years
		PERIODIC CONTINGENCY FUNDING FOR			
SMALL PARK BUILDINGS	CONTINGENCY	UNPLANNED LCR RENEWAL	2015	\$9,000	1-5 Years
		PERIODIC CONTINGENCY FUNDING FOR	2015	\$11,000	1 E Voars
ST PASCAL RECREATION CENTRE	IVIECHANICAL		2015	\$11,000	1-5 16912
ALL PARKS	CONTINGENCY	UNPLANNED LCR RENEWAL	2015	\$6,000	1-5 Years
	INSPECTION				
ALL PARKS	AND AUDIT	REVIEW PARKS LIGHTING SYSTEMS	2015	\$21,000	1-5 Years
	FENCING		2015	¢0,000	1 5 Veene
PARC CHENEY	FENCING		2015	\$9,000	1-5 Years
PARC CLARENCE CREEK	FENCING	CHAIN LINK	2015	\$21.000	1-5 Years
		REPLACE WOODEN LIGHT POLES AND		+/	
PARC EUGENE LAVIOLETTE	LIGHTING	FIXTURES	2015	\$16,000	1-5 Years
		FABRICATE AND REPLACE WOODEN RINK			
PARC EUGENE LAVIOLETTE	RINK BOARDS	BOARDS AND FRAMES	2015	\$12,000	1-5 Years
PARC EUGENE LAVIOLETTE	SURFACES	REPLACE RINK PLAYING SURFACE	2015	\$16,000	1-5 Years
PARC VALIQUETTE	SURFACES	REPLACE BASKETBALL COURT SURFACE	2015	\$9,000	1-5 Years
PARC VALIQUETTE	SURFACES	REPLACE CONCRETE BASKETBALL COURT	2015	\$8,000	1-5 Years
		UNPLANNED LIFE CYCLE RENEWAL			
ALL FACILITIES	CONTINGENCY	EXPENDITURE PROGRAM	2016	\$11,000	1-5 Years
BOURGET FIRE HALL #1	AND AUDIT	BUILDING CONDITION AUDIT (EXTERNAL)	2016	\$10.000	1-5 Years
BOURGET RECREATION CENTRE		REPLACE PARKING LOT LIGHTING POLES	2010	\$10,000	1 5 1 6 4 1 5
BUILDING	LIGHTING	AND FIXTURES	2016	\$23,000	1-5 Years
BOURGET RECREATION CENTRE					
BUILDING	MECHANICAL	REPLACE PRIMARY ROOFTOP HVAC UNIT	2016	\$32,000	1-5 Years
	ROOFING	REPLACE COMPLETE ROOFING SYSTEM	2016	\$91.000	1-5 Voars
	Kooring	REPLACE ELECTRICAL PANELS	2010	\$91,000	1-2 16013
CLARENCE CREEK ARENA	ELECTRICAL	THROUGHOUT	2016	\$43,000	1-5 Years
	FLECTRICAL	REPLACE ELECTRIC HOT WATER TANKS	2016	¢11.000	4 5 1/2
	ELECTRICAL		2016	\$11,000	1-5 Years
CLARENCE CREEK ARENA	PLUMBING	REPLACE SEPTIC SYSTEM	2016	\$107,000	1-5 Years
CLARENCE CREEK ARENA	PLUMBING	(2)	2016	\$16,000	1-5 Years
CLARENCE ROCKLAND CITY HALL	INSPECTION			. ,	
BUILDING (1905)	AND AUDIT	BUILDING CONDITION AUDIT (EXTERNAL)	2016	\$11,000	1-5 Years
CLARENCE ROCKLAND CITY HALL	INSPECTION	FLECTRICAL AUDIT AND INFARED SCAN	2016	\$8 በበበ	1-5 Years
CLARENCE ROCKLAND CITY HALL	STAIRWAYS	REPLACE (RECONSTRUCT) FRONT	2010	<i>40,000</i>	2 0 1 0010
BUILDING (1905)	AND RAMPS	ENTRANCE STAIRS\MILLWORK	2016	\$69,000	1-5 Years
CLARENCE ROCKLAND CITY HALL BUILDING (1905)	STAIRWAYS AND RAMPS	REFINISH EXIT STAIRCASES (REAR OF BUILDING)	2016	\$9.000	1-5 Years
FORMER CLARENCE CREEK TOWN		REPLACE PRIMARY HVAC SYSTEM AND		+ = ,000	
HALL	MECHANICAL	AIR DISTRIBUTION EQUIP.	2016	\$43,000	1-5 Years

GARDERIE LE CARROUSEL (CITY	INSPECTION	BUILDING CONDITION AUDIT AND			
HALL)	AND AUDIT	COMPLIANCE AUDIT	2016	\$11,000	1-5 Years
GARDERIE LE CARROUSEL (CITY		REVIEW DISTRIBUTION SYSTEM AND			
	MECHANICAL	IMPROVE CONTROL SYSTEM	2016	\$13,000	1-5 Years
BUILDING		BUILDING CONDITION AUDIT (EXTERNAL)	2016	\$8,000	1-5 Years
HAMMOND RECREATION CENTRE	INSPECTION		2010	\$0,000	1 5 1 6 4 1 5
BUILDING	AND AUDIT	ELECTRICAL AUDIT AND INFARED SCAN	2016	\$6,000	1-5 Years
	LIFE SAFETY &				
JEAN MARC LALONDE (ROCKLAND)		REPLACE FIRE ALARM PANEL (1) AND	2016	\$20,000	1-5 Vears
	LIFE SAFETY &		2010	\$20,000	1 5 1 6 4 1 5
JEAN MARC LALONDE (ROCKLAND)	FIRE				
ARENA	PROTECTION	REPLACE EMERGENCY LIGHTING	2016	\$7,000	1-5 Years
	LIFE SAFETY &				
ARENA	PROTECTION	REPLACE EXIT SIGNS	2016	\$6,000	1-5 Years
JEAN MARC LALONDE (ROCKLAND)				. ,	
ARENA	MECHANICAL	REPLACE HEATING BOILER (1)	2016	\$60,000	1-5 Years
JEAN MARC LALONDE (ROCKLAND)			2016	\$96,000	1 5 Voors
	WECHANICAL		2010	\$90,000	1-2 16912
LANDFILL FACILITY	FENCING	CHAIN LINK PHASE 1	2016	\$64.000	1-5 Years
	UTILITY	REPLACE HAZAROUS MATERIALS BUNKER		1 - /	
LANDFILL FACILITY	STRUCTURE	WITH NEW BUNKER	2016	\$203,000	1-5 Years
	UTILITY	RECOVERY FOR NEW BUNKER FROM			
LANDFILL FACILITY	STRUCTURE	WASTE MGMT AND RECYCLING RESERVE	2016	-\$203,000	1-5 Years
			2016	\$11,000	1 E Voars
PUBLIC WORKS GARAGE	AND AUDIT		2010	\$11,000	1-5 16015
PUBLIC WORKS GARAGE	MECHANICAL	(AND TAILPIPE SNORKEL)	2016	\$41.000	1-5 Years
RECREATION GARAGE AND	INSPECTION			, ,	
WORKSHOP	AND AUDIT	ELECTRICAL AUDIT AND INFRARED SCAN	2016	\$9,000	1-5 Years
	EXTERIOR	REPLACE APPARATUS BAY OVERHEAD			
ROCKLAND FIRE HALL	DOORS	DOORS AND OPERATORS	2016	\$11,000	1-5 Years
ROCKLAND MUSEUM (LA FAMILLE)	FIRE ALARM	SYSTEM AND REMOTE ALARM			
BUILDING	SYSTEMS	REPORTING	2016	\$6,000	1-5 Years
		PERIODIC CONTINGENCY FUNDING FOR			
SMALL PARK BUILDINGS	CONTINGENCY	UNPLANNED LCR RENEWAL	2016	\$9,000	1-5 Years
	INSPECTION	BUILDING CONDITION AUDIT (INCLUDING			
ST PASCAL RECREATION CENTRE	AND AUDIT	ELECTRICAL)	2016	\$11,000	1-5 Years
	CONTINCENCY	PERIODIC CONTINGENCY FUNDING FOR	2010	¢c 000	1 5 Veene
ALL PARKS			2016	\$6,000	1-5 rears
PARC BOURGET	FOUIPMENT	PLACE PLAY EQUIPMENT AND	2016	\$34,000	1-5 Years
		FABRICATE AND REPLACE WOODEN RINK	2010	<i>\$31,000</i>	1 5 1 6 4 1 5
PARC CHENEY	RINK BOARDS	BOARDS AND FRAMES	2016	\$12,000	1-5 Years
PARC CHENEY	SURFACES	REPLACE RINK PLAYING SURFACE	2016	\$16,000	1-5 Years
PARC GRAND-RIVIFIRF	ROOFING	REPLACE SHINGLE ROOF	2016	\$7,000	1-5 Years
PARC SIMON	SURFACES		2016	\$16,000	1-5 Years
	JUNIACES		2010	\$10,000	1 3 1 6 0 1 3
ALL FACILITIES	CONTINGENCY	EXPENDITURE PROGRAM	2017	\$11,000	1-5 Years
			2017	۲ ۵۵۵	1 E Voars

		1			
CLARENCE CREEK ARENA	MECHANICAL	REPLACE ROOFTOP HVAC UNITS (4)	2017	\$33,000	1-5 Years
CLARENCE CREEK ARENA	STRUCTURAL	WIDE SPAN STRUCTURAL ADEQUACY REVIEW OF THE ARENA	2017	\$28,000	1-5 Years
CLARENCE ROCKLAND CITY HALL	ΜΕCHANICAL	REPLACE ROOFTOP HVAC UNITS (2) ON	2017	\$55,000	1-5 Vears
	WINDOWS AND	REPLACE EXTERIOR WINDOWS	2017	\$33,000	1 5 1 6 1 5
FIRE ADMINISTRATION BUILDING	GLAZING	(SELECTED)	2017	\$6,000	1-5 Years
JEAN MARC LALONDE (ROCKLAND) ARENA	MECHANICAL	REPLACE ROOFTOP HVAC UNITS (4)	2017	\$44,000	1-5 Years
JEAN MARC LALONDE (ROCKLAND) ARENA	MECHANICAL	REPLACE CONVECTION HEATER THROUGHOUT	2017	\$33,000	1-5 Years
LANDFILL FACILITY	FENCING	REPLACE PERIMETER FENCING WITH CHAIN LINK PHASE 2	2017	\$65.000	1-5 Years
		REPLACE EXTERIOR BAY DOORS AND	-	1 /	
PUBLIC WORKS GARAGE	DOORS	OPERATORS	2017	\$13,000	1-5 Years
PUBLIC WORKS GARAGE	FLOOR FINISHES	REMEDIATE AND REPLACE CONCRETE BAY FLOORING (2 BAYS) INCL. DRAINAGE	2017	\$55,000	1-5 Years
RECREATION GARAGE AND WORKSHOP	EXTERIOR DOORS	REPLACE OVERHEAD DOORS AND OPERATORS (2)	2017	\$9,000	1-5 Years
RECREATION GARAGE AND	INSPECTION				
WORKSHOP	AND AUDIT	BUILDING CONDITION AUDIT (EXTERNAL)	2017	\$11,000	1-5 Years
ROCKLAND MUSEUM (LA FAMILLE)		ELECTRICAL DISTRIBUTION			
BUILDING	ELECTRICAL	THROUGHOUT	2017	\$33,000	1-5 Years
SMALL PARK BUILDINGS	CONTINGENCY	PERIODIC CONTINGENCY FUNDING FOR UNPLANNED LCR RENEWAL	2017	\$9,000	1-5 Years
WATER TREATMENT PLANT	INSPECTION			4	
BUILDING	AND AUDIT	BUILDING CONDITION AUDIT	2017	\$11,000	1-5 Years
ALL PARKS	CONTINGENCY	PERIODIC CONTINGENCY FUNDING FOR UNPLANNED LCR RENEWAL	2017	\$6,000	1-5 Years
PARC CHENEY	PLAY EQUIPMENT	REPLACE PLAY EQUIPMENT	2017	\$33,000	1-5 Years
PARC CLARENCE CREEK	SURFACES	REPLACE TENNIS AND BASKETBALL COURT SURFACES	2017	\$28,000	1-5 Years
PARC CLARENCE CREEK	SURFACES	REPLACE ASPHALT FOR PARKING LOT	2017	\$55,000	1-5 Years
PARC DALRYMPLE	RINK BOARDS	FABRICATE AND REPLACE WOODEN RINK BOARDS AND FRAMES	2017	\$12,000	1-5 Years
	CONTINICENCY	UNPLANNED LIFE CYCLE RENEWAL	2019	\$12.000	1 E Voors
			2018	\$12,000	1 E Voors
	MECHANICAL		2018	\$33,000	1-5 Years
			2018	\$25,000	1 E Voors
CLARENCE CREEK ARENA	IVIECHANICAL		2018	\$10,000	1-5 redis
CLARENCE CREEK ARENA	MECHANICAL	FANS (2)	2018	\$10,000	1-5 Years
CLARENCE CREEK ARENA	REFRIGERATION	REPLACE REFRIGERATION COMPRESSORS (2)	2018	\$67,000	1-5 Years
CLARENCE CREEK ARENA	REFRIGERATION	REPLACE HEAT EXCHANGER (1)	2018	\$72,000	1-5 Years
JEAN MARC LALONDE (ROCKLAND) ARENA	ELECTRICAL	REPLACE MAIN DISCONNECT SWITCH (1)	2018	\$5,000	1-5 Years
JEAN MARC LALONDE (ROCKLAND) ARENA		REPLACE ELECTRICAL PANELS			
	ELECTRICAL	THROUGHOUT	2018	\$56,000	1-5 Years
JEAN MARC LALONDE (ROCKLAND)	ELECTRICAL EXHAUST FAN		2018	\$56,000	1-5 Years

ASSET MANAGEMENTPLAN

JEAN MARC LALONDE (ROCKLAND)			2010	¢24.000	1.5.1/2010
	LIGHTING		2018	\$34,000	1-5 Years
ARENA	LIGHTING	THROUGHOUT	2018	\$20,000	1-5 Years
JEAN MARC LALONDE (ROCKLAND)					
	LIGHTING		2018	\$12 <i>,</i> 000	1-5 Years
JEAN MARC LALONDE (ROCKLAND) ARENA	LIGHTING	REPLACE EMERGENCY LIGHTING THROUGHOUT	2018	\$9.000	1-5 Years
JEAN MARC LALONDE (ROCKLAND)				+0,000	
ARENA	MECHANICAL	REPLACE HEAT RECOVERY SYSTEM (1)	2018	\$8,000	1-5 Years
JEAN MARC LALONDE (ROCKLAND) ARENA	PLUMBING	REPLACE HOT WATER TANKS FOR ZAMBONI (2)	2018	\$10,000	1-5 Years
LANDFILL FACILITY	FENCING	REPLACE PERIMETER FENCING WITH CHAIN LINK PHASE 3	2018	\$67,000	1-5 Years
	WINDOWS AND		2019	ć0.000	1.5.1/2010
ROCKLAND FIRE HALL	GLAZING		2018	\$9,000	1-5 Years
SMALL PARK BUILDINGS	CONTINGENCY	UNPLANNED LCR RENEWAL	2018	\$9,000	1-5 Years
		PERIODIC CONTINGENCY FUNDING FOR		. ,	
ALL PARKS	CONTINGENCY	UNPLANNED LCR RENEWAL	2018	\$6,000	1-5 Years
PARC BELLEVUE	PLAY EQUIPMENT	REPLACE PLAY EQUIPMENT	2018	\$39,000	1-5 Years
	PLAY	REPLACE PLAY EQUIPMENT AND			
PARC CLARENCE CREEK	EQUIPMENT	PLAYSTRUCTURE	2018	\$34,000	1-5 Years
PARC EUGENE LAVIOLETTE	PLAY EQUIPMENT	REPLACE PLAYSTRUCTURE (JAMBETTE)	2018	\$42,000	1-5 Years
ALL FACILITIES	CONTINGENCY	UNPLANNED LIFE CYCLE RENEWAL EXPENDITURE PROGRAM	2019	\$12,000	1-5 Years
FIRE ADMINISTRATION BUILDING	FLOOR FINISHES	REPLACE INDOOR CARPETING	2019	\$6,000	1-5 Years
GARDERIE LE CARROUSEL (CITY HALL)	PLAY EOUIPMENT	REPLACE JAMBETTE PLAYSTRUCTURE	2019	\$25.000	1-5 Years
		REPLACE OVERHEAD LIGHTING WITH HID		+/	
PUBLIC WORKS GARAGE	LIGHTING	UNITS	2019	\$57,000	1-5 Years
		CLEAN AND REPAINT OVERHEAD		Å= 4 000	
PUBLIC WORKS GARAGE	PAINTING	STRUCTURAL STEEL AND CEILING DECK	2019	\$51,000	1-5 Years
BUILDING	MECHANICAL	BUILDING CONDITION AUDIT	2019	\$7,000	1-5 Years
SMALL PARK BUILDINGS	CONTINGENCY	PERIODIC CONTINGENCY FUNDING FOR UNPLANNED LCR RENEWAL	2019	\$10,000	1-5 Years
	CONTINICENCY	PERIODIC CONTINGENCY FUNDING FOR	2010	¢6,000	1 E Voors
	CUNTINGENCY		2019	\$0,000 ¢7,000	1-5 Years
PARC CHENEY			2019	\$7,000	1-5 Years
PARC DALRYMPLE	EQUIPMENT	PLAYSTRUCTURE	2019	\$34,000	1-5 Years
PARC GRAND-RIVIEIRE	LIGHTING	REPLACE SPORTS LIGHTING THROUGHOUT	2019	\$10,000	1-5 Years
PARC GRAND-RIVIEIRE	PATHWAYS	REPLACE ASPHALT PATHWAY	2019	\$17,000	1-5 Years
PARC GRAND-RIVIEIRE	RINK BOARDS	FABRICATE AND REPLACE WOODEN RINK BOARDS AND FRAMES	2019	\$13,000	1-5 Years
PARC GRAND-RIVIEIRE	SURFACES	REPLACE ASPHALT FOR RINK	2019	\$17,000	1-5 Years
PARC HAMMOND	ROOFING	REPLACE SHINGLE ROOF ON GAZEBO	2019	\$8,000	1-5 Years
PARC VALIQUETTE	LIGHTING	REPLACE LIGHTING POLES THROUGHOUT	2019	\$29,000	1-5 Years
PARC VALIQUETTE	SURFACES	REPLACE PARKING LOT	2019	\$98,000	1-5 Years

		UNPLANNED LIFE CYCLE RENEWAL			
ALL FACILITIES	CONTINGENCY	EXPENDITURE PROGRAM	2020	\$12,000	1-5 Years
ALL FACILITIES	INSPECTION AND AUDIT	STRUCTURAL ADEQUACY REVIEW FOR BUILDINGS	2020	\$6,000	1-5 Years
ARTS-CULTURE BUILDING	INSPECTION AND AUDIT	BUILDING CONDITION AUDIT (EXTERNAL)	2020	\$10,000	1-5 Years
BOURGET FIRE HALL #1	EXTERIOR DOORS	REPLACE APPARATUS BAY OVERHEAD DOOR AND OPERATOR	2020	\$6.000	1-5 Years
BOURGET FIRE HALL #1	PAINTING	REFINISH EXTERIOR CLADDING (REPAIR.	2020	\$29,000	1-5 Vears
		REPAINT EXPOSED OVERHEAD METAL	2020	\$23,000	1 5 1 6 4 1 5
BOURGET FIRE HALL #1		STRUCTURE (APPARATUS BAYS)	2020	\$18,000	1-5 Years
BOURGET FIRE HALL #1	GLAZING	REPLACE EXTERIOR WINDOWS	2020	\$6,000	1-5 Years
CENTRE CULTURAL-SPORTIF (2008)	CONTINGENCY	PERIODIC CONTINGENCY FUNDING FOR UNPLANNED LCR RENEWAL	2020	\$14,000	1-5 Years
CLARENCE CREEK ARENA	ELECTRICAL	REPLACE STEP DOWN TRANSFORMERS (4)	2020	\$21,000	1-5 Years
CLARENCE CREEK ARENA	FIRE ALARM SYSTEMS	REPLACE EMERGENCY LIGHTING THROUGHOUT	2020	\$7,000	1-5 Years
		REPLACE FLUORESCENT LIGHTS		. ,	
CLARENCE CREEK ARENA	LIGHTING	THROUGHOUT	2020	\$21,000	1-5 Years
CLARENCE CREEK ARENA	MECHANICAL	REPLACE ARENA WALL EXHAUST FANS (2)	2020	\$9,000	1-5 Years
CLARENCE CREEK ARENA	PLUMBING	REPLACE WATER CLOSETS (2)	2020	\$10,000	1-5 Years
CLARENCE CREEK ARENA	PLUMBING	REPLACE HOT & COLD WATER PIPING DISTRIBUTION	2020	\$44.000	1-5 Years
CLARENCE CREEK ARENA	REFRIGERATION	REPLACE CONTROL SYSTEM (1)	2020	\$52,000	1-5 Years
CLARENCE CREEK ARENA	REFRIGERATION	REPLACE EVAPORATIVE CONDENSER (1)	2020	\$21,000	1-5 Years
CLARENCE CREEK ARENA	REFRIGERATION	REPLACE BRINE PUMP (1)	2020	\$13,000	1-5 Years
CLARENCE CREEK FIRE HALL #2		REFINISH APPARATUS BAY CONCRETE	2020	\$23,000	1-5 Vears
		REPAINT EXPOSED OVERHEAD METAL	2020	Ş23,000	1-5 16013
CLARENCE CREEK FIRE HALL #2	PAINTING	STRUCTURE (APPARATUS BAYS)	2020	\$18,000	1-5 Years
ECOLE STE-FELICITE	EQUIPMENT	REPLACE LITTLE TYKES PLAYSTRUCTURE	2020	\$12,000	1-5 Years
FIRE ADMINISTRATION BUILDING	SURFACES	REPLACE ASPHALT WALKWAYS AND REAR APRON	2020	\$18,000	1-5 Years
FORMER CLARENCE CREEK TOWN HALL	MECHANICAL	REPLACE SECONDARY HEATING EQUIPMENT (BASEBOARD UNITS)	2020	\$29,000	1-5 Years
GARDERIE LE CARROUSEL (CITY HALL)	EXTERIOR DOORS	REPLACE EXTERIOR DOORS, FRAMES AND OPERATORS	2020	\$10.000	1-5 Years
GARDERIE LE CARROUSEL (CITY	INTERIOR FINISHES	MILLWORK REFINISHING AND	2020	\$18,000	1-5 Years
HAMMOND RECREATION CENTRE	ROOFING		2020	\$18,000	1-5 Years
JEAN MARC LALONDE (ROCKLAND)			2020	\$10,000	1 5 Voors
JEAN MARC LALONDE (ROCKLAND)			2020	\$10,000	1-5 TEdIS
	PLUMBING		2020	\$35,000	1-5 Years
ARENA	PLUMBING	DISTRIBUTION	2020	\$44,000	1-5 Years
JEAN MARC LALONDE (ROCKLAND) ARENA	REFRIGERATION	REPLACE COMPRESSORS (2)	2020	\$69,000	1-5 Years

ASSET	MANA	GEMENT	PLAN

JEAN MARC LALONDE (ROCKLAND)					
	REFRIGERATION	REPLACE EXTERIOR EVAP CONDENSER (1)	2020	\$21,000	1-5 Years
ARENA	REFRIGERATION	REPLACE BRINE PUMP (1)	2020	\$13,000	1-5 Years
JEAN MARC LALONDE (ROCKLAND)					
ARENA	REFRIGERATION	REPLACE PLANT CONTROLS (1)	2020	\$52 <i>,</i> 000	1-5 Years
JEAN MARC LALONDE (ROCKLAND)		SPALLING AND CONCRETE DAMAGE,			
ARENA	REFRIGERATION	REPLACE	2020	\$115,000	1-5 Years
JEAN MARC LALONDE (ROCKLAND) ARENA	ROOFING	REPLACE EPDM MEMBRANE (1)	2020	\$288,000	1-5 Years
	FENCING	REPLACE PERIMETER FENCING WITH	2020	¢.co.000	1 5 1/2010
	FEINCING		2020	\$09,000	1-5 reals
LANDFILL FACILITY	SURFACES	CHECK IN AND DROP OFF AREA	2020	\$21,000	1-5 Years
	UTILITY	REPLACE GATEHOUSE TEMPORARY			
LANDFILL FACILITY	STRUCTURE	OFFICE TRAILER	2020	\$46,000	1-5 Years
ROCKLAND FIRE HALL		REFINISH APPARATUS BAY CONCRETE	2020	\$23,000	1-5 Vears
		REPAINT EXPOSED OVERHEAD METAI	2020	923,000	1 5 1 6 4 1 5
ROCKLAND FIRE HALL	PAINTING	STRUCTURE (APPARATUS BAYS)	2020	\$18,000	1-5 Years
ROCKLAND MUSEUM (LA FAMILLE)		REPLACE FURNACE AND DISTRIBUTION			
BUILDING	MECHANICAL	DUCTWORK ELEMENTS	2020	\$11,000	1-5 Years
SEWAGE PUMPING STATION #2	ROOFING	REPLACE ROOF SYSTEM	2020	\$7,000	1-5 Years
SMALL PARK BUILDINGS	CONTINGENCY	PERIODIC CONTINGENCY FUNDING FOR UNPLANNED LCR RENEWAL	2020	\$10,000	1-5 Years
ST DASCAL RECREATION CENTRE		REFINISH EXTERIOR STUCCO AND	2020	\$23,000	1-5 Vears
	CLADDING		2020	Ş23,000	1-2 16012
ALL PARKS	CONTINGENCY	UNPLANNED LCR RENEWAL	2020	\$6,000	1-5 Years
PARC CATHY CAIN	LIGHTING	REPLACE WOODEN POLE LIGHTS (2)	2020	\$6,000	1-5 Years
PARC CATHY CAIN	SURFACES	REPLACE BASKETBALL COURT SURFACE	2020	\$14,000	1-5 Years
PARC CATHY CAIN	SURFACES	REPLACE PARKING LOT ASPHALT	2020	\$17,000	1-5 Years
PARC CHENEY	LIGHTING	REPLACE WOODEN LIGHT POLES AND FIXTURES	2020	\$18,000	1-5 Years
		REPLACE SOCCER FIELD PORTABLE			
PARC CHENEY	SEATING	BLEACHERS	2020	\$6,000	1-5 Years
PARC DALRYMPLE	SURFACES	REPLACE RINK PLAYING SURFACE	2020	\$12,000	1-5 Years
PARC EUGENE LAVIOLETTE	FENCING	REPLACE CHAIN LINK FENCING	2020	\$23,000	1-5 Years
PARC EUGENE LAVIOLETTE	ROOFING	REPLACE SHINGLE ROOF ON OCTAGON GAZEBO	2020	\$9,000	1-5 Years
PARC GRAND-RIVIEIRE	PLAY EQUIPMENT	REPLACE PLAY EQUIPMENT	2020	\$40,000	1-5 Years
PARC ST PASCAL	LIGHTING	REPLACE PARK LIGHTING EQUIPMENT	2020	\$46,000	1-5 Years
PARC ST PASCAL	RINK BOARDS	FABRICATE AND REPLACE WOODEN RINK	2020	\$13,000	1-5 Years
			2020	\$10,000	C 10 Y
	CONTINGENCY		2021	\$12,000	6-10 Years
ARTS-CULTURE BUILDING	CLADDING	BUILDING ENVELOPE RENEWAL WORK	2021	\$11,000	6-10 Years
CENTRE CULTURAL-SPORTIF (2008)	MECHANICAL	REPLACE RTU#6 LIBRARY ROOFTOP UNIT	2021	\$53,000	6-10 Years
CLARENCE CREEK ARENA	LIGHTING	REPLACE HIGH BAY (HID) LIGHTS	2021	\$36,000	6-10 Years

	PLAY				
ECOLE CARREFOUR JEUNESSE	EQUIPMENT	REPLACE JAMBETTE PLAYSTRUCTURE	2021	\$8,000	6-10 Years
WORKSHOP	SURFACES	RESURFACE ASPHALT AREAS	2021	\$17,000	6-10 Years
	PLAY			400.000	
ROCKLAND PUBLIC	EQUIPMENT		2021	\$32,000	6-10 Years
SEWAGE TREATMENT PLANT	MECHANICAL	(PHASED PROGRAM)	2021	\$15,000	6-10 Years
		PERIODIC CONTINGENCY FUNDING FOR			
SMALL PARK BUILDINGS	CONTINGENCY	UNPLANNED LCR RENEWAL	2021	\$10,000	6-10 Years
ALL PARKS	CONTINGENCY	PERIODIC CONTINGENCY FUNDING FOR UNPLANNED LCR RENEWAL	2021	\$6,000	6-10 Years
PARC BELLEVUE	SURFACES	REPLACE BASKETBALL COURT SURFACE	2021	\$22,000	6-10 Years
		REPLACE METAL POLES AND LIGHT			
PARC DU MOULIN	LIGHTING	FIXTURES	2021	\$12,000	6-10 Years
PARC SIMON	SURFACES	REPLACE TENNIS COURTS (4)	2021	\$36,000	6-10 Years
ALL FACILITIES	CONTINGENCY	UNPLANNED LIFE CYCLE RENEWAL EXPENDITURE PROGRAM	2022	\$12,000	6-10 Years
		REPLACE POOL AREA VENTILATION			
CENTRE CULTURAL-SPORTIF (2008)		DUCTWORK	2022	\$72,000	6-10 Years
CLARENCE CREEK ARENA	SYSTEMS	REPLACE FIRE ALARM PANEL (1)	2022	\$23,000	6-10 Years
CLARENCE CREEK FIRE HALL #2	SURFACES	INSTALL NEW PAVED ASPHALT APRON	2022	\$18,000	6-10 Years
CLARENCE ROCKLAND CITY HALL		REPLACE CARPETING THROUGHOUT			
BUILDING (1905)	FLOOR FINISHES	(PHASE 1) USING CARPET TILE	2022	\$48,000	6-10 Years
CLARENCE ROCKLAND CITY HALL BUILDING (1905)	SURFACES	REPLACE ASPHALT DRIVEWAY AND PARKING AREAS	2022	\$54,000	6-10 Years
HAMMOND RECREATION CENTRE		REPLACE VINYL TILE FLOORS	2022	<i>\$</i> 31,000	0 10 1001
BUILDING	FLOOR FINISHES	THROUGHOUT	2022	\$15,000	6-10 Years
PUBLIC WORKS GARAGE	MECHANICAL	REPLACE INFRARED HEATING UNITS (SCHWANK) AND HEATING TUBES	2022	\$36,000	6-10 Years
ROCKLAND FIRE HALL	SURFACES	REPLACE ASPHALT PARKING APRON	2022	\$18,000	6-10 Years
ROCKLAND MUSEUM (LA FAMILLE)		DEDLACE EDONT STEDS AND CANODY	2022	\$22,000	6 10 Voors
BOCKLAND MUSEUM (LA FAMILLE)	RAMPS &		2022	\$22,000	0-10 16013
BUILDING	STAIRS	STAIRS	2022	\$18,000	6-10 Years
	CONTINIGENCY	PERIODIC CONTINGENCY FUNDING FOR	2022	\$10,000	6-10 Vears
	CONTINUENCI	REPLACE EXTERIOR ASPHALT SURFACE	2022	\$10,000	0-10 16813
ST PASCAL RECREATION CENTRE	SURFACES	(PARKING AREA)	2022	\$18,000	6-10 Years
WATER TREATMENT PLANT		REPLACE GAS FIRED UNIT HEATERS			
BUILDING	MECHANICAL	(CEILING MOUNTED)	2022	\$12,000	6-10 Years
ALL PARKS	CONTINGENCY	PERIODIC CONTINGENCY FUNDING FOR UNPLANNED LCR RENEWAL	2022	\$6,000	6-10 Years
PARC DUTRISAC	PLAY EQUIPMENT	REPLACE PLAY EQUIPMENT AND PLAYSTRUCTURE	2022	\$51,000	6-10 Years
		REPLACE WOODEN POLE LIGHTS	2022	673.000	6.10.10
	LIGHTING		2022	\$72,000	o-10 Years
PARC HAMMOND	RINK BOARDS	BOARDS AND FRAMES	2022	\$14,000	6-10 Years
PARC HAMMOND	SURFACES	REPLACE RINK PLAYING SURFACE	2022	\$18,000	6-10 Years
PARC SIMON	BLEACHERS	RELACE BASEBALL DIAMOND BLEACHERS	2022	\$20,000	6-10 Years

	PLAY	REPLACE PLAY EQUIPMENT AND	2022	¢57.000	6 10 Voors
			2022	\$57,000	6 10 Vears
PARC VALIQUETTE	ELECTRICAL		2022	\$14,000	6-10 Years
ALL FACILITIES	CONTINGENCY	EXPENDITURE PROGRAM	2023	\$13,000	6-10 Years
		REPLACE METASYS BUILDING		. ,	
	CONTROLS		2022	¢c1 000	C 10 V
	CONTROLS		2023	\$61,000	6-10 Years
GARDERIE LE CARROUSEL (CITY HALL)	FLOOR FINISHES	THROUGHOUT (PHASE 1)	2023	\$19,000	6-10 Years
LOW LIFT WATER PUMPING	EXTERIOR		2025	\$15,000	0 10 10013
STATION	DOORS	REPLACE DOUBLE EXTERIOR DOORS	2023	\$7,000	6-10 Years
LOW LIFT WATER PUMPING	DOOFING		2022	¢10.000	C 10 V
ROCKLAND MUSEUM (LA FAMILLE)	ROOFING	REPLACE EPDM ROOF AND SKYLIGHT	2023	\$10,000	6-10 Years
BUILDING	FLOOR FINISHES	REFINISH WOOD FLOORS THROUGHOUT	2023	\$13,000	6-10 Years
ROCKLAND MUSEUM (LA FAMILLE)		REPLACE CARPET WITH CARPET TILE			
BUILDING	FLOOR FINISHES	THROUGHOUT	2023	\$9,000	6-10 Years
SEWAGE PUMPING STATION #1	ROOFING	REPLACE EPDM ROOF	2023	\$8,000	6-10 Years
	EXTERIOR		2022	ć7.000	6 40 1
SEWAGE PUMPING STATION #2		REPLACE DOUBLE EXTERIOR DOORS	2023	\$7,000	6-10 Years
SEWAGE PUMPING STATION #4	DOORS	REPLACE DOUBLE EXTERIOR DOORS	2023	\$7,000	6-10 Years
SEWAGE PUMPING STATION #4	ROOFING	REPLACE ROOF SYSTEM	2023	\$8.000	6-10 Years
	EXTERIOR			1 - /	
SEWAGE PUMPING STATION #5	DOORS	REPLACE DOUBLE EXTERIOR DOORS	2023	\$7,000	6-10 Years
SEWAGE PUMPING STATION #5	ROOFING	REPLACE ROOF SYSTEM	2023	\$8,000	6-10 Years
	EXTERIOR		2022	ć7.000	C 10 V
SEWAGE PUMPING STATION #6	DUURS		2023	\$7,000	6-10 Years
SEWAGE PUMPING STATION #6	ROOFING	REPLACE ROOF SYSTEM	2023	\$8,000	6-10 Years
	FENCING	PHASED REPLACEMENT OF PERIMETER	2022	\$10,000	6 10 Voors
	FEINCING		2025	\$19,000	0-10 16013
SMALL PARK BUILDINGS	CONTINGENCY	UNPLANNED LCR RENEWAL	2023	\$10,000	6-10 Years
		PERIODIC CONTINGENCY FUNDING FOR			
ALL PARKS	CONTINGENCY	UNPLANNED LCR RENEWAL	2023	\$7 <i>,</i> 000	6-10 Years
PARC HAMMOND	SURFACES	REPLACE PARKING LOT ASPHALT	2023	\$26,000	6-10 Years
		UNPLANNED LIFE CYCLE RENEWAL			
ALL FACILITIES	CONTINGENCY	EXPENDITURE PROGRAM	2024	\$13,000	6-10 Years
		REPLACE ASPHALT APRON AT FRONT OF			
BOURGET FIRE HALL #1	SURFACES	BUILDING	2024	\$23,000	6-10 Years
CHAMBERLAND BUILDING	ROOFING	REPLACE SHINGLE ROOF	2024	\$13,000	6-10 Years
FCOLE ST-MATHIEU	FOUIPMENT	REPLACE IAMBETTE PLAYSTRUCTURE	2024	\$44,000	6-10 Years
	MECHANICAL		2024	\$7,000	6-10 Years
	WEER WITCHE		2024	<i>\$1,000</i>	0 10 1001
HALL)	FLOOR FINISHES	THROUGHOUT (PHASE 2)	2024	\$19,000	6-10 Years
ROCKLAND FIRE HALL	MECHANICAL	REPLACE GAS FIRED FURNACE UNITS (2)	2024	\$13,000	6-10 Years
SEWAGE PUMPING STATION #1	MECHANICAL	REPLACE ROOFTOP EXHAUST UNITS	2024	\$10.000	6-10 Years
		REPLACE ASPHAIT AREA AT BUILDING		÷ 10,000	5 20 10015
SEWAGE TREATMENT PLANT	SURFACES	EXTERIOR	2024	\$75,000	6-10 Years

		PERIODIC CONTINGENCY FUNDING FOR			
SMALL PARK BUILDINGS	CONTINGENCY	UNPLANNED LCR RENEWAL	2024	\$10,000	6-10 Years
ST PASCAL RECREATION CENTRE	FLOOR FINISHES	REPLACE VCT FLOORING THROUGHOUT	2024	\$15,000	6-10 Years
ST PASCAL RECREATION CENTRE	INTERIOR FINISHES	REPLACE INTERIOR DOORS AND WORN	2024	\$8.000	6-10 Years
		PERIODIC CONTINGENCY FUNDING FOR		<i><i><i></i></i></i>	0 10 10010
ALL PARKS	CONTINGENCY	UNPLANNED LCR RENEWAL	2024	\$7,000	6-10 Years
PARC CATHY CAIN	FENCING	REPLACE CHAIN LINK FENCING	2024	\$25,000	6-10 Years
PARC HAMMOND	SURFACES	REPLACE PLEXI-PAVE SURFACE ON TENNIS COURTS	2024	\$9,000	6-10 Years
ALL FACILITIES	CONTINGENCY	UNPLANNED LIFE CYCLE RENEWAL EXPENDITURE PROGRAM	2025	\$13,000	6-10 Years
		ROOFING INSPECTION PROGRAM	2025	\$13,000	6-10 Vears
	INSPECTION	SEPTIC SYSTEM EVALUATION AND	2023	\$15,000	0 10 10 10 11
ALL FACILITIES	AND AUDIT	REVIEW #2	2025	\$26,000	6-10 Years
			2025	¢7.000	6 10 Voors
			2025	\$7,000	6 10 Voors
BANDSHELL BUILDING	FLOOR FINISHES	REPLACE BANDSHELL FLOOK	2025	Ş8,000	0-10 fears
BOURGET FIRE HALL #1	MECHANICAL	HEATING SYSTEM (2)	2025	\$13,000	6-10 Years
CENTRE CULTURAL-SPORTIF (2008)	CONTINGENCY	PERIODIC CONTINGENCY FUNDING FOR UNPLANNED LCR RENEWAL	2025	\$16,000	6-10 Years
CENTRE CULTURAL-SPORTIF (2008)	MECHANICAL	REPLACE ROOFTOP CONDENSING UNITS	2025	\$20,000	6-10 Years
CLARENCE CREEK ARENA	REFRIGERATION	REPLACE RINK FLOOR, PIPING AND HEADERS (1)	2025	\$533,000	6-10 Years
ECOLE SACRE-COEUR	PLAY EQUIPMENT	REPLACE JAMBETTE PLAYSTRUCTURE	2025	\$64,000	6-10 Years
ECOLE ST-PATRICK	PLAY EQUIPMENT	REPLACE JAMBETTE PLAYSTRUCTURE	2025	\$26,000	6-10 Years
HAMMOND RECREATION CENTRE BUILDING	MECHANICAL	REPLACE HEATING SYSTEM AND DISTRIBUTION	2025	\$11,000	6-10 Years
SMALL PARK BUILDINGS	CONTINGENCY	PERIODIC CONTINGENCY FUNDING FOR UNPLANNED LCR RENEWAL	2025	\$11,000	6-10 Years
ST PASCAL RECREATION CENTRE	ROOFING	REPLACE SHINGLE ROOFING AND VENTS	2025	\$20,000	6-10 Years
WATER TREATMENT PLANT BUILDING	SURFACES	REPLACE ASPHALT FOR EXTERIOR PARKING AREAS AT SITE	2025	\$39,000	6-10 Years
ALL PARKS	CONTINGENCY	PERIODIC CONTINGENCY FUNDING FOR UNPLANNED LCR RENEWAL	2025	\$7,000	6-10 Years
PARC CATHY CAIN	PLAY EQUIPMENT	REPLACE PLAY EQUIPMENT (LITTLE TYKES AND JAMBETTE)	2025	\$45,000	6-10 Years
PARC CLARENCE CREEK	LIGHTING	REPLACE POLES AND LIGHTING FIXTURES THROUGHOUT	2025	\$77,000	6-10 Years
PARC DU MOULIN	PLAY FOLIIPMENT	REPLACE PLAY FOLUPMENT (DYNAMO)	2025	\$172.000	6-10 Years
		REPLACE CHAIN LINK FENCING INCL		÷ = : =,000	
PARC HAMMOND	FENCING	BACKSTOPS	2025	\$102,000	6-10 Years
		REPLACE PLAY EQUIPMENT AND	2025	\$61 000	6-10 Veors
		REPLACE BLEACHER UNITS AT BALLPARK	2025	<u>ې</u> 04,000	0-TO 16912
PARC ST PASCAL	BLEACHERS	(2) REDIACE BACKSTOD ASSEMBLY AT	2025	\$11,000	6-10 Years
PARC ST PASCAL	FENCING	BALLPARK	2025	\$45,000	6-10 Years

PARC VALIQUETTE	FENCING	REPLACE CHAIN LINK FENCING (PHASE 1)	2025	\$23,000	6-10 Years
		UNPLANNED LIFE CYCLE RENEWAL			10-20
ALL FACILITIES	CONTINGENCY	EXPENDITURE PROGRAM	2026	\$13,000	Years
CHAMBERLAND BUILDING	FLOOR FINISHES	REPLACE FLOOR FINISHES (PHASE 1)	2026	\$8,000	Years
		REPLACE DIRECT FLOW HOTWATER		. ,	
		HEATING SYSTEM AND DISTRIBUTION			10-20
CLARENCE CREEK FIRE HALL #2	MECHANICAL	PIPING	2026	\$8,000	Years
FORMER CLARENCE CREEK TOWN			2026	\$13,000	10-20 Vears
		REDIACE ASPHALT DARKING AREAS AND	2020	\$15,000	10-20
PUBLIC WORKS GARAGE	SURFACES	APRONS	2026	\$26,000	Years
RECREATION GARAGE AND					10-20
WORKSHOP	MECHANICAL	REPLACE ELECTRIC FURNACES	2026	\$19,000	Years
		PERIODIC CONTINGENCY FUNDING FOR		4	10-20
SMALL PARK BUILDINGS	CONTINGENCY	UNPLANNED LCR RENEWAL	2026	\$11,000	Years
	CONTINCENCY	PERIODIC CONTINGENCY FUNDING FOR	2026	ć7 000	10-20 Voors
ALL PARKS		ONPLANNED LCR RENEWAL	2026	\$7,000	10-20
PARC BOURGET	PARK	REPLACE SKATEBOARD PARK ELEMENTS	2026	\$26,000	Years
		REMEDIATE BOAT LAUNCH RAMP AND			10-20
PARC DU MOULIN	BOAT RAMP	EDGING	2026	\$39,000	Years
				444 444	10-20
PARC DU MOULIN	PIERS	REMEDIATE CONCRETE BANKS	2026	\$39,000	Years
	PLAY	REPLACE PLAY EQUIPMENT AND PLAY	2026	¢117.000	10-20 Vacuu
PARC JULES SAUMURE	EQUIPIVIENT		2026	\$117,000	rears
PARC SIMON	FOLIIPMENT	REPLACE WATER PLAY EQUIPMENT AND	2026	\$65,000	10-20 Years
			2020	<i>\$03,000</i>	10-20
ALL FACILITIES	CONTINGENCY	EXPENDITURE PROGRAM	2027	\$14,000	Years
				. ,	10-20
BOURGET FIRE HALL #1	CLADDING	REPLACE FASCIA SHINGLES	2027	\$10,000	Years
JEAN MARC LALONDE (ROCKLAND)		REPLACE DISTRIBUTION PIPING AND			10-20
ARENA	REFRIGERATION	HEADERS (1)	2027	\$555,000	Years
	CONTINCENCY	PERIODIC CONTINGENCY FUNDING FOR	2027	¢11 000	10-20 Voors
SIVIALE PARK BUILDINGS	CONTINGENCE		2027	\$11,000	10.20
ALL PARKS	CONTINGENCY	UNPLANNED I CR RENEWAL	2027	\$7.000	10-20 Years
				<i>Ţ</i> ,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	10-20
ALL FACILITIES	CONTINGENCY	EXPENDITURE PROGRAM	2028	\$14,000	Years
		REPLACE SERESCO POOL HEATING AND			10-20
CENTRE CULTURAL-SPORTIF (2008)	MECHANICAL	DEHUMIDIFICATION SYSTEM	2028	\$135,000	Years
		REPLACE SAND FILTERS FOR POOL			10-20
CENTRE CULTURAL-SPORTIF (2008)	MECHANICAL	FILTRATION SYSTEMS	2028	\$63,000	Years
	SURFACES	RESURFACE ASDHALT AREAS	2028	\$34,000	10-20 Vears
CENTRE COLIGNAL-SPONTIF (2008)	JUNIACLU		2020	J)))(+CC	10-20
CENTRE CULTURAL-SPORTIF (2008)	SURFACES	CONCRETE RESURFACING (EXTERNAL)	2028	\$14,000	Years
CLARENCE ROCKLAND CITY HALL		REPLACE CARPETING THROUGHOUT			10-20
BUILDING (1905)	FLOOR FINISHES	(PHASE 2) USING CARPET TILE	2028	\$54,000	Years
CLARENCE ROCKLAND CITY HALL	INSPECTION				10-20
BUILDING (1905)	AND AUDIT	BUILDING CONDITION AUDIT (EXTERNAL)	2028	\$14,000	Years
STATION	ROOFING	REPLACE SHINGLE ROOF	2028	\$7.000	Years

ASSET	MANA	GEMEN	TPLAN

		REDUACE INDIRECT HOT WATER TANKS			10.20
ARENA		(2)	2028	\$11,000	10-20 Vears
	FLOWIDING	REPLACE INDIRECT HOT WATER TANKS	2020	\$11,000	10-20
ARFNA	PLUMBING	(2)	2028	\$11,000	Years
		REPLACE PERIMETER FENCING AND		<i>+11,000</i>	10-20
SEWAGE PUMPING STATION #4	FENCING	GATES	2028	\$11,000	Years
	EXTERIOR	REPLACE GARAGE BAY DOORS (2) AND		. ,	10-20
SEWAGE TREATMENT PLANT	DOORS	DRIVE SYSTEMS	2028	\$30,000	Years
	20010		2020	<i>\$30,000</i>	10.20
	CONTINGENCY		2028	\$11,000	10-20 Vears
SWALL FAIR BOILDINGS	CONTINUENCI		2020	\$11,000	10.00
	CONTINCENCY	PERIODIC CONTINGENCY FUNDING FOR	2020	ć7.000	10-20
ALL PARKS	CONTINGENCY	UNPLANNED LCR RENEWAL	2028	\$7,000	rears
		UNPLANNED LIFE CYCLE RENEWAL			10-20
ALL FACILITIES	CONTINGENCY	EXPENDITURE PROGRAM	2029	\$14,000	Years
		REPLACE THREE 5HP CIRCULATION			10-20
CENTRE CULTURAL-SPORTIF (2008)	MECHANICAL	PUMPS FOR BUILDING HEATING	2029	\$11,000	Years
				40.000	10-20
CHAMBERLAND BUILDING	FLOOR FINISHES	REPLACE FLOOR FINISHES (PHASE 2)	2029	\$9,000	Years
	EXTERIOR	REPLACE APPARATUS BAY OVERHEAD			10-20
CLARENCE CREEK FIRE HALL #2	DOORS	DOOR AND OPERATOR (2)	2029	\$14,000	Years
	PLAY				10-20
ECOLE STE-TRINITE	EQUIPMENT	REPLACE JAMBETTE PLAYSTRUCTURE	2029	\$29,000	Years
JEAN MARC LALONDE (ROCKLAND)		REPLACE FAN COIL HEATER UNITS			10-20
ARENA	MECHANICAL	THROUGHOUT	2029	\$14,000	Years
ROCKLAND MUSEUM (LA FAMILLE)		REPLACE ASPHALT FOR EXTERIOR			10-20
BUILDING	SURFACES	PARKING AREAS AT SITE	2029	\$62,000	Years
		PERIODIC CONTINGENCY FUNDING FOR			10-20
SMALL PARK BUILDINGS	CONTINGENCY	UNPLANNED LCR RENEWAL	2029	\$11,000	Years
		PERIODIC CONTINGENCY FUNDING FOR			10-20
ALL PARKS	CONTINGENCY	UNPLANNED LCR RENEWAL	2029	\$7,000	Years
		UNPLANNED LIFE CYCLE RENEWAL			10-20
ALL FACILITIES	CONTINGENCY	EXPENDITURE PROGRAM	2030	\$15,000	Years
		STRUCTURAL ADFOLIACY REVIEW FOR			10-20
	AND AUDIT	BUILDINGS	2030	\$8,000	Years
			_000	<i><i><i>ϕ</i>ϕϕϕϕϕϕϕϕϕϕϕ</i></i>	10.20
			2030	\$36,000	10-20 Vears
BOILDING	MECHANICAL		2030	\$30,000	10-20
CENTRE CULTURAL-SPORTIE (2008)	MECHANICAL	REPLACE RTU # 3, 4, 5 ROOFTOP UNITS	2030	\$169.000	Years
				<i>\</i> 200)000	10-20
CENTRE CULTURAL-SPORTIF (2008)	MECHANICAL	REPLACE MAIN POOL HEATING BOILERS	2030	\$71,000	Years
		REPLACE DHW HEATING SYSTEM (TANKS			10-20
CENTRE CULTURAL-SPORTIF (2008)	MECHANICAL	AND PUMPS)	2030	\$12.000	Years
				+/	10.20
CENTRE CUILTURAL-SPORTIE (2008)	ROOFING	THE POOL AREA	2030	\$127.000	Years
	Reenne		2050	<i>Ş127,000</i>	10.20
	SUREACES		2020	\$112 000	10-20 Vears
CLININE COLI UNAL-SPORTIF (2008)	JUNFACES		2050	¢112,000	10.20
		KEPLACE APPARATUS BAY INFRARED	2020	64F 000	10-20
CLAKEINCE CKEEK FIKE HALL #2		TEATING STSTEWI (2)	2030	\$15,000	rears
CLARENCE ROCKLAND CITY HALL	FOUNTAINS				10-20
BUILDING (1905)	AND PONDS	REPLACE FOUNTAIN AND PIPING	2030	\$92,000	Years
GARDERIE LE CARROUSEL (CITY		REPLACE PERIMETER FENCING AROUND			10-20
HALL)	FENCING	SITE (CHAIN LINK)	2030	\$29,000	Years
		PERIODIC CONTINGENCY FUNDING FOR			10-20
SMALL PARK BUILDINGS	CONTINGENCY	UNPLANNED LCR RENEWAL	2030	\$12,000	Years

ALL PARKS	CONTINGENCY	PERIODIC CONTINGENCY FUNDING FOR UNPLANNED LCR RENEWAL	2030	\$8,000	10-20 Years
	FENCING	REPLACE CHAIN LINK FENCING	2030	\$71,000	10-20 Vears
		REPLACE FLOATING DOCK ASSEMBLIES	2030	\$71,000	10-20
PARC DU MOULIN	DOCKS	(22 PIECES)	2030	\$78,000	Years 10-20
PARC DUTRISAC	LIGHTING		2030	\$30,000	Years
PARC SIMON	FENCING	AND BASEBALL	2030	\$50,000	Years
ALL FACILITIES	CONTINGENCY	UNPLANNED LIFE CYCLE RENEWAL EXPENDITURE PROGRAM	2031	\$15,000	10-20 Years
	ΜΕCHANICAL	REPLACE POOL CIRCULATION PUMPS IN	2031	\$22.000	10-20 Vears
		REPLACE PERIMETER FENCING AND	2031	\$22,000	10-20
SEWAGE PUMPING STATION #5	FENCING	PERIODIC CONTINGENCY FUNDING FOR	2031	\$12,000	Years 10-20
SMALL PARK BUILDINGS	CONTINGENCY	UNPLANNED LCR RENEWAL	2031	\$12,000	Years
ALL PARKS	CONTINGENCY	PERIODIC CONTINGENCY FUNDING FOR UNPLANNED LCR RENEWAL	2031	\$8,000	10-20 Years
PARC VALIQUETTE	BLEACHERS	REPLACE BLEACHER UNITS	2031	\$18,000	10-20 Years
ALL FACILITIES	CONTINGENCY	UNPLANNED LIFE CYCLE RENEWAL EXPENDITURE PROGRAM	2032	\$15.000	10-20 Years
		REPLACE EXTERNAL LIGHTING POLES	2022	¢22.000	10-20
CENTRE CULTURAL-SPORTIF (2008)	ELECTRICAL	REPLACE LIGHTING SYSTEM IN	2032	\$22,000	10-20
CENTRE CULTURAL-SPORTIF (2008)	LIGHTING	GYMNASIUM	2032	\$22,000	Years
CENTRE CULTURAL-SPORTIF (2008)	MECHANICAL	REPLACE POOL FILTRATION PUMPS (2)	2032	\$18,000	Years
CLARENCE ROCKLAND CITY HALL BUILDING (1905)	FLOOR FINISHES	REPLACE CARPETING THROUGHOUT (PHASE 3) USING CARPET TILE	2032	\$59.000	10-20 Years
			2032	¢33,000	10-20
FIRE ADMINISTRATION BUILDING	ROOFING	REPLACE SHINGLE ROOF REPLACE PERIMETER FENCING AND	2032	\$11,000	Years 10-20
SEWAGE PUMPING STATION #6	FENCING	GATES	2032	\$12,000	Years
SMALL PARK BUILDINGS	CONTINGENCY	PERIODIC CONTINGENCY FUNDING FOR UNPLANNED LCR RENEWAL	2032	\$12,000	10-20 Years
ALL PARKS	CONTINGENCY	PERIODIC CONTINGENCY FUNDING FOR UNPLANNED LCR RENEWAL	2032	\$8.000	10-20 Years
		UNPLANNED LIFE CYCLE RENEWAL		+-,	10-20
ALL FACILITIES	CONTINGENCY	EXPENDITURE PROGRAM	2033	\$15,000	Years 10-20
BANDSHELL BUILDING	ROOFING	REPLACE SHINGLE ROOF	2033	\$8,000	Years
DRINKING WATER BOOSTER STATION	EXTERIOR DOORS	REPLACE EXTERIOR GARAGE AND PERSONNEL DOORS	2033	\$8,000	10-20 Years
FORMER CLARENCE CREEK TOWN HALL	ROOFING	REPLACE SHINGLE ROOF	2033	\$27.000	10-20 Years
PUBLIC WORKS GARAGE		REPLACE WORKBAY OVERHEAD	2033	\$90.000	10-20 Years
		PERIODIC CONTINGENCY FUNDING FOR	2000	\$12,000	10-20 Vears
		PERIODIC CONTINGENCY FUNDING FOR	2033	\$12,000 \$8,000	10-20 Years
	- CONTRACTOR			20,000	

		REPLACE TENNIS COURT AND			10-20
PARC SIMON	LIGHTING	SPORTSFIELD LIGHTING	2033	\$60,000	Years
		UNPLANNED LIFE CYCLE RENEWAL			10-20
ALL FACILITIES	CONTINGENCY	EXPENDITURE PROGRAM	2034	\$16,000	Years
					10-20
ARTS-CULTURE BUILDING	ROOFING	REPLACE SHINGLE ROOF	2034	\$13,000	Years
		REPLACE ELECTRICAL PANELS AND			10-20
CENTRE CULTURAL-SPORTIF (2008)	ELECTRICAL	DISTRIBUTION (MAIN ELECTRICAL ROOM)	2034	\$152,000	Years
		REPLACE MAIN BOILERS (2) AND			10-20
CENTRE CULTURAL-SPORTIF (2008)	MECHANICAL	HOLDING TANKS FOR BUILDING HEATING	2034	\$107,000	Years
	SALT STORAGE	REPLACE SALT DOME FRAME AMD			10-20
PUBLIC WORKS GARAGE	SYSTEMS	CANVAS COVERING	2034	\$342,000	Years
					10-20
ROCKLAND FIRE HALL	ROOFING	REPLACE EPDM ROOF	2034	\$61,000	Years
		REPLACE PERIMETER FENCING AND			10-20
SEWAGE PUMPING STATION #3	FENCING	GATES	2034	\$13,000	Years
					10-20
SEWAGE PUMPING STATION #7	ROOFING	REPLACE SHINGLE ROOF SYSTEM	2034	\$10,000	Years
		PERIODIC CONTINGENCY FUNDING FOR			10-20
SMALL PARK BUILDINGS	CONTINGENCY	UNPLANNED LCR RENEWAL	2034	\$13,000	Years
		PERIODIC CONTINGENCY FUNDING FOR			10-20
ALL PARKS	CONTINGENCY	UNPLANNED LCR RENEWAL	2034	\$8,000	Years
					10-20
PARC SIMON	LIGHTING	REPLACE PATHWAY LIGHTING	2034	\$31,000	Years
					10-20
PARC SIMON	PATHWAYS	REPLACE INTERLOCK PATHWAY	2034	\$76,000	Years
Total over 20 Years \$11,446,000					

APPENDIX J: Asset Management Policy

CORPORATION OF THE CITY OF CLARENCE-ROCKLAND BY-LAW 2010-199

BEING A BY-LAW TO ADOPT AN ASSET MANAGEMENT POLICY

WHEREAS Sections 8, 9, and 11 of the Municipal Act, 2001, 5.0. 2001, Chapter 25 and amendments thereto provides that every municipal Corporation may pass bylaws for the purpose of governing its affairs as it considers appropriate;

WHEREAS The City of Clarence-Rockland owns, operates and maintains, or contracts out the operations and maintenance of a wide range of infrastructure assets that are essential to the social, economic, cultural and environmental wellbeing of our community;

WHEREAS the City of Clarence-Rockland has the obligation to ensure that these assets are well managed and provide an acceptable level of service; and that the public expects assets to function efficiently and effectively for many years;

WHEREAS when a local government adopts an asset management policy, it demonstrates to the community that it is exercising stewardship of infrastructure, delivering affordable services and considering its legacy to future residents;

NOW THEREFORE, the Council of the Corporation of the City of Clarence-Rockland enacts as follows:

That Policy No. PHY10-06, being an Asset Management Policy, attached hereto and forming part of this by-law, be adopted.

That this By-law come into effect on the day of its adoption.

READ, PASSED AND ADOPTED BY COUNCIL THIS 13th DAY OF DECEMBER 2010.

Marcel Guibord, Mayor

Monique Ouellet, Clerk

SCHEDULE 'A' to by-law 2010-199

		Policy no:	PHY10-06
CORPORATION of the City of Clarence-Rockland		Subject:	Asset Management Policy
		Department:	Infrastructures & buildings
Date:	December 2010	Adopted:	
		Resolution num	ber:

Asset Management Policy

Introduction and background

The City of Clarence-Rockland owns, operates and maintains, or contracts out the operations and maintenance of, a wide range of infrastructure assets. These assets include, but are not limited to:

- water distribution networks;
- sewage collection systems;
- transportation networks;
- information technology systems;
- vehicle and equipment fleets;
- parks; and,
- civic facilities.

Local governments have the obligation to ensure that these assets are well managed and provide an acceptable level of service. The public expects assets to function efficiently and effectively for many years.

Infrastructure has a definitive service life. At some point, these assets will have to be rehabilitated and eventually replaced. As they age and deteriorate, the issue the City faces is how to manage these assets to ensure that their full service life is reached as well as plan for their replacement.

Asset management, can be defined as "an integrated approach involving planning, finance, engineering and operations to effectively manage existing and new infrastructure to maximize benefits, reduce risks and provide satisfactory levels of service to community users in a socially, environmentally, and economically sustainable manner."

What is an Asset Management Policy?

An asset management **policy is a tool to** institutionalize asset management within a

local government. A good policy can clearly articulate a Council's commitment to asset management and be used to guide staff in integrating and coordinating the work of asset management to improve its effectiveness.

By using sound asset management practices that result from a good asset management policy, Councils and communities can be assured that the assets meet performance levels, are used to deliver the desired service in the long term and are managed for present and future users.

An asset management policy articulates a Council's commitment to asset management and provides policy statements to guide staff in carrying out the organization's business strategies, plans and activities.

Asset management policies are general in nature and contain broad principles; they identify organizational departments that will implement the policy. The policy clearly outlines how asset management will be integrated within the organization to ensure it is coordinated, cost effective and organizationally sustainable.

After an asset management policy is adopted by a Council or Board, staff implements the policy through the development and use of guidelines and operational practices. A good asset management policy will include a schedule for reviewing the implementation, success and relevancy of the policy on a periodic basis

An asset management policy establishes that the organization:

- maintains and manages infrastructure assets at defined levels;
- monitors standards and service levels to ensure that they meet/support community and Council goals and objectives;
- develops and maintains asset inventories of all its infrastructures;
- establishes infrastructure replacement strategies through the use of full life cycle costing principles;
- plans financially for the appropriate level of maintenance of assets to deliver service levels and extend the useful life of assets;
- plans for and provides stable long-term funding to replace and/or renew and/or decommission infrastructure assets;
- considers and incorporates asset management in its other corporate plans; and
- reports to citizens regularly on the status and performance of work related to the implementation of the asset management policy.

Benefits to adopting an asset management policy.

The Council articulates decisions and sets direction by using bylaws and policies. These in turn guide staff in decision making when carrying out the local government's business strategies, plans and activities. Policies articulate directions, identify accountabilities and are consistently applied.

When a local government adopts an asset management policy, it demonstrates to the community that it is exercising stewardship of infrastructure, delivering affordable services and considering its legacy to future residents. A successful asset

management policy will enhance public confidence, improve customer service and increase efficiency and effectiveness within the organization.

Risks of not adopting an asset management policy

As the City assets deteriorate over time, meeting performance levels becomes more difficult to maintain. When faced with deteriorating assets local governments may make short-term financial and technical decisions in an effort to curb this trend. The cost of maintenance grows beyond the initial financial requirements as time progresses. Deferred maintenance pushes infrastructure more rapidly toward failure and the more expensive process of replacement This will erode public confidence, threaten community values and goals and affect the community's economic development.

When an asset is first constructed, it is in excellent condition. It maintains that rating for some time. If the asset is rehabilitated once it reaches the fair level, the cost is reasonable and the life is extended substantially. If timing of rehabilitation is delayed, the costs increase significantly and the life, by comparison is only extended by a minor amount.

What does a local government do after it adopts an asset management policy?

After an asset management policy is adopted, the real work begins in the development of an asset management strategy. Because asset management affects everything a local government does, the development of this strategy and the practice of asset management is a team effort.

The strategy should examine and document the status of asset management in the organization, and identify a future vision and the key objectives for the organization. The formulation of the strategy should include the review of processes, systems, and available data; and based on these findings, determine the required resources and develop a schedule to address the gaps.

After an asset management strategy is developed, local governments should then develop asset management plans. Asset management plans should be based on current inventories, condition of assets (acquired or derived), projected performance and remaining service life and consequences of losses (e.g., vulnerability assessments, emergency management critical infrastructure assessments). These should be for specific assets and also consider levels of service, demand forecasts, asset portfolios, asset management activities (including operations, maintenance, renewal/replacement, and disposals). The plans should also include long-term financial forecasts and consider alternative scenarios and risks. It is recommended that the public be consulted during the development of the plans.

Once asset management plans are developed, the organization's operation plans should be adjusted to reflect the responsibilities in the plan such as data collection, rehabilitation priorities, deterioration forecasts, resourcing requirements to reflect greater maintenance, and monitoring performance indicators. There are tools, guidelines and practices for local governments to use to implement an asset management policy and plan. The Federation of Canadian Municipalities has resources such as InfraGuide: The National Guide to Sustainable Infrastructure. Some of the best practice reports from InfraGuide include: Planning and Defining Municipal Infrastructure Needs, Developing Levels of Service, Investment Parameters for Municipal Infrastructure, Managing Infrastructure Assets, Public Consultation for Infrastructure Renewal, and Managing Risk (see http://gmf.fcm.ca/Infraguide/Best_Practice_Reports.asp for more information).

CITY of CLARENCE-ROCKLAND ASSET MANAGEMENT POLICY

Policy Number: PHY10-06

Supersedes Numbers:

Authority: Council

Approval date:

Effective date:

1.0 COUNCIL ASSET MANAGEMENT POLICY STATEMENTS

Asset management is a broad strategic framework that encompasses many disciplines and involves the entire organization. The term asset management is defined as "the application of sound technical, social and economic principles that considers present and future needs of users, and the service from the asset". The following policy statements have been developed:

- a) The City of Clarence-Rockland will maintain and manage infrastructure assets at defined levels to support public safety, community well-being and community goals.
- b) The City of Clarence-Rockland will monitor standards and service levels to ensure that they meet/support community and Council goals and objectives.
- c) The City of Clarence-Rockland will develop and maintain asset inventories of all its infrastructures.
- d) The City of Clarence-Rockland will establish infrastructure replacement strategies through the use of full life cycle costing principles.
- e) The City of Clarence-Rockland will plan financially for the appropriate level of maintenance of assets to deliver service levels and extend the useful life of assets.

- f) The City of Clarence-Rockland will plan for and provide stable long term funding to replace and/or renew and/or decommission infrastructure assets.
- g) Where appropriate, The City of Clarence-Rockland will consider and incorporate asset management in its other corporate plans.
- h) The City of Clarence-Rockland will report to citizens regularly on the status and performance of work related to the implementation of this asset management policy.

2.0 BACKGROUND AND PURPOSE OF COUNCIL POLICY

Council has a mandate to provide a wide range of services. In order to guide staff with the effective implementation of those services, Council typically adopts policies for issues that can be used by staff to support Council's vision, goals and objectives.

Council vision and goals for infrastructure assets

Council's vision and goal for the community is a safe, liveable, sustainable and economically vibrant community underpinned by well-managed and maintained infrastructure assets. These assets include but are not limited to efficient transportation networks, economical and reliable water distribution networks, safe and reliable sewage collection systems, reliable information technology systems, productive fleets, and accessible parks, recreation and civic facilities.

Though these assets age and deteriorate, by using sound asset management practices, Council and the community can be assured that the assets meet performance levels, are used to deliver the desired service in the long-term and are managed for present and future users.

This policy articulates Council's commitment to asset management, and guides staff using the policy statements. In doing so, this policy also outlines how asset management is to be integrated within the organization in such a way that it is coordinated, cost effective and organizationally sustainable. This policy also demonstrates to the community that Council is exercising good stewardship, and is delivering affordable services while considering its legacy to future residents.

Staff will implement the policy through the development and use of asset management plans and practices. Since the performance of asset management is organization specific, reflective of knowledge, technologies and available tools, and will evolve over time, the responsibility for guidelines and practices are delegated to staff.

3.0 POLICY PRINCIPLES, GUIDELINES AND INTEGRATION

The key principles of the asset management policy are outlined in the following list.

The organization shall:

- make informed decisions, identifying all revenues and costs (including operation, maintenance, replacement and decommission) associated with infrastructure asset decisions, including additions and deletions. Tradeoffs should be articulated and evaluated, and the basis for the decision recorded.
- integrate corporate, financial, business, technical and budgetary planning for infrastructure assets.
- establish organizational accountability and responsibility for asset inventory, condition, use and performance.
- consult with stakeholders where appropriate.
- define and articulate service, maintenance and replacement levels and outcomes.
- use available resources effectively.
- manage assets to be sustainable.
- minimize total life cycle costs of assets.
- consider environmental goals.
- consider social and sustainability goals.
- minimize risks to users and risks associated with failure.
- pursue best practices where available.
- report the performance of its asset management program.

Guidelines and practices

This policy shall be implemented by staff using accepted industry guidelines and practices (such as those recommended by InfraGuide) and staff shall consider the use of an asset management strategy and asset management plans.

The organization will also comply with required capital asset reporting requirements, and integrate the asset management program into operational plans throughout the organization.

Strategic asset management plans may be developed for a specific class of assets, or be generic for all assets, and should outline long-term goals, processes and steps toward how they will be achieved. The asset management plans should be based on current inventories and condition (acquired or derived), projected performance and remaining service life and consequences of losses (e.g., vulnerability assessments, emergency management critical infrastructure consequence of loss assessment). Operational plans should reflect these details. Replacement portfolios and associated financial plans should consider alternative scenarios and risks, as well as include public consultation.

Context and integration of Asset Management within organization (organization specific)

The context and integration of asset management throughout the organization's lines of business is typically formalized through references and linkages between corporate documents. Where possible and appropriate, Council and staff will consider this policy and integrate it in the development of corporate documents such as:

• Official Community Plan

- Business plans
- Corporate strategic plan
- Corporate financial plan
- Capital Budget plan
- Operational plans and budgets (including vehicle and fleet plans and budgets)
- Neighborhood plans
- Annual reports
- Design criteria and specifications
- Infrastructure servicing, management and replacement plans, (e.g., transportation plans)
- Community social plans
- Parks and recreation plans
- Facility plans

4.0 KEY ROLES FOR MANAGING THE ASSET MANAGEMENT POLICY

Policies are approved by Council. While staff, public and other agencies may provide input on the nature and text of the policy, Council retains the authority to approve, update, amend or rescind policies.

Role	Responsibility	
Identification of issues, and development	Council and staff	
of policy updates		
Establish levels of service	Council, staff and public	
Exercise stewardship of assets, adopt	Council	
policy and budgets		
Implementation of policy	Chief Administrative Officer and staff	
Development of guidelines and practices	Chief Administrative Officer and staff	
On-going review of policies	Council and staff	

Implementation, review and reporting of asset management work

The implementation, review and reporting back regarding this policy shall be integrated within the organization. Due to the importance of this policy, the organization's asset management program shall be reported annually to the community, and implementation of this policy reviewed by Council.

Actions	Responsibility
Adopt Asset Management Policy	Council
Monitor and review infrastructure standards and service levels at	Council and Chief Administrative Officer
Develop and maintain infrastructure	Planning, Physical Services, Community
strategies including development and	Services, other asset operation and
service plans	maintenance departments, Finance

Develop and maintain asset inventories	Physical Services, Community Services,
	other asset operation and maintenance
	departments, Finance
Assess infrastructure condition and	Physical Services, Community Services
service levels	and other asset operation and
	maintenance departments
Establish and monitor infrastructure	Physical Services, Community Services
replacement levels through the use of full	and other asset operation and
life cycle costing principles	maintenance departments
Develop and maintain financial plans for	Physical Services, Community Services,
the appropriate level of maintenance,	other asset operation and maintenance
rehabilitation, extension and	departments, Finance
decommission of assets	
Report to citizens on status of the	Council, Chief Administrative Officer,
community's infrastructure assets and	Corporate Communications
asset management program. The	
channels may include annual citizen	
reports, business plans, etc.	