ADJELEIAN ALLEN RUBELI LIMITED
Consulting Engineers

RESERVE FUND STUDY UPDATE WITH SITE VISIT

at Ottawa-Carleton Standard Condominium Corporation

No. 256 (Canal 111)

Final Submission

April 08, 2025

PROJECT # 5548-11

Prepared for

CCC 256
c/o
Apollo CI Condo Management
Wade Kirkpatrick

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EXECUTIVE SUMMARY

Based on our review of the previous Reserve Fund Study without a site visit produced by Keller Engineering and dated January 12, 2022, a fiscal analysis and best current estimate, it is recommended that annual reserve fund contributions of Carleton Condominium Corporation No. 256 be adjusted to $704,376 in fiscal year 2025. Annual contribution increases in fiscal years 2026, 2027, and 2028 are set at 10% per year according to Funding Scenario 1. Beyond 2028, contributions are budgeted to rise at a consistent rate of 3% annually, reflecting our assumed yearly construction cost escalation.

This funding plan, in our opinion, will provide adequate funds to carry out necessary repair work and will provide a surplus, which will be required in later years to pay for major capital expenditures anticipated beyond the period examined in this Reserve Fund Study.

Revisions to the Reserve Fund Study have been made based on information provided by the Board of Directors and findings from our site visit. Below is a list of major budget revisions for the next 10 years:

- An allowance of $193,000 has been allocated for replacing the doors in fiscal year 2026.
- An allowance of $523,000 has been allocated for the replacement of Make-Up Air Units in fiscal year 2026. Consider adding a heat pump to provide heating and cooling without using natural gas.
- An allowance of $181,000 has been allocated for replacing the fluid coolers with a large-capacity air-source heat pump in fiscal year 2027, with subsequent replacements scheduled every 25 years thereafter.
- An allowance of $255,000 has been allocated for replacing the packaged rooftop units in fiscal year 2027, with subsequent replacements planned every 20 years thereafter.
- An allowance of $547,000 has been allocated for replacing the recreation center roof membrane in fiscal year 2027/28.
- An allowance of $218,000 has been allocated for replacing the tennis court coating in fiscal year 2027/28, with subsequent replacements planned every 25 years thereafter.
- An allowance of $1,150,000 has been allocated for replacing the waterproofing membrane in fiscal year 2028.
- An allowance of $159,000 has been allocated for replacing brick paver walkways in fiscal years 2028/29, coinciding with the garage roof waterproofing replacement, with subsequent replacements scheduled every 25 years thereafter.
- An allowance of $236,000 has been allocated for landscaping replacement during the garage roof replacement in fiscal years 2028/29, with subsequent funding planned every 25 years thereafter.

- An allowance of $212,000 has been allocated for resurfacing asphalt pavement-on-grade in fiscal years 2028/29, coinciding with the garage roof waterproofing replacement, with subsequent replacements scheduled every 25 years thereafter.
- An allowance of $1,270,000 has been allocated for replacing the tower curtain wall window glass (phase 2) as well as bay windows in fiscal year 2030/31.
- An allowance of $133,000 has been allocated for replacing all balcony sliding doors in all suites throughout the building in fiscal year 2030/31.
- An allowance of $123,000 has been allocated for replacing carpets in fiscal year 2032, with subsequent replacements scheduled every 15 years thereafter.
- An allowance of $136,000 has been allocated for major repairs and updates, including refurbishment of lobby finishes, fixtures, and replacement of furniture, in fiscal year 2032, with subsequent funding planned every 30 to 40 years thereafter.
- An allowance of $102,000 has been allocated for repairing the balcony slab edges and concrete dividers in fiscal year 2033, if 100% of the slab edges will require repair.
- An allowance of $306,000 has been allocated for replacing riser piping at the end of its service life in fiscal year 2033.
- An allowance of $170,000 has been allocated for replacing the recirculating header piping in common corridors at the end of its service life in fiscal year 2033, with subsequent replacements scheduled every 25 years thereafter.
- An allowance of $104,000 has been allocated for installing a waterproofing membrane in fiscal year 2033, coinciding with the repair of balcony slab edges.
- An allowance of $119,000 has been allocated for replacing aluminum railings in fiscal year 2033, coinciding with balcony slab edge repairs and waterproofing installation.
- An allowance of $1,058,000 has been allocated for replacing the tower roof membrane in fiscal year 2034/35.
- An allowance of $283,000 has been allocated for replacing or overhauling the main hydro equipment in fiscal year 2035.

The following items, each requiring multiple replacements or repairs, have been identified as major budget considerations (over $200,000) within the next 10 years:

ITEM	DESCRIPTION	COST	TOTAL COST	FISCAL YEAR
Podium Roof Replacement	Garage Roof Waterproofing	$1,150,000	**$1,914,000**	**2028/29**
	Garage Roof Expansion Joints	$51,000		
	Entrance Canopies	$63,000		
	Pavement	$19,000		
	Brick Pavers	$159,000		
	Asphalt Roadways	$212,000		
	Landscaping	$236,000		
	Irrigation	$24,000		
Tower Corridors	Carpeting Replacement	123,000	**$270,000**	**2032**
	Wall finishes Replacement	$65,000		
	Ceiling Finishes	$82,000		
Balcony & Terraces	Balcony Slab Edges	$102,000	**$325,000**	**2033**
	Balcony Waterproofing	$104,000		
	Railings	$119,000		

We trust you will find the above satisfactory. Do not hesitate to contact the undersigned should you need any further clarification or to discuss any aspect of our report.

Yours truly,

ADJELEIAN ALLEN RUBELI LIMITED

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INTRODUCTION

This Reserve Fund Study is a technical and financial assessment of the common elements of the Carleton Condominium Corporation for the purpose of:

- Assessing the condition of the common elements
- Forecasting and planning for major capital expenditures over the short- and long-term
- Recommending annual reserve fund appropriation

In this Reserve Fund Study, we outline our findings regarding the current condition and immediate maintenance and repair requirements for all the common elements. In addition, we outline the repair and replacement work that we expect will be required over the 30-year period that we examine in this report, including all associated costs. Finally, all anticipated expenditures over the next 30 years are outlined in a detailed spreadsheet, and we provide our recommendation for annual reserve fund appropriations. While this report includes our recommendations for the timing of repair/replacement work and for annual reserve fund contributions, these decisions are ultimately made by the Board of Directors of the Carleton Condominium Corporation.

1.1 Description of Property

Carleton Condominium Corporation No. 256 is a 41-year-old low-rise condominium complex located at 111 Echo Drive, Ottawa, Ontario. Constructed circa 1967, the complex consists of 2, 6-storey midrise buildings containing 17 units per building, 12 townhomes and a recreation center for a total of 46 Residential Units. The property is also known as Canal 111.

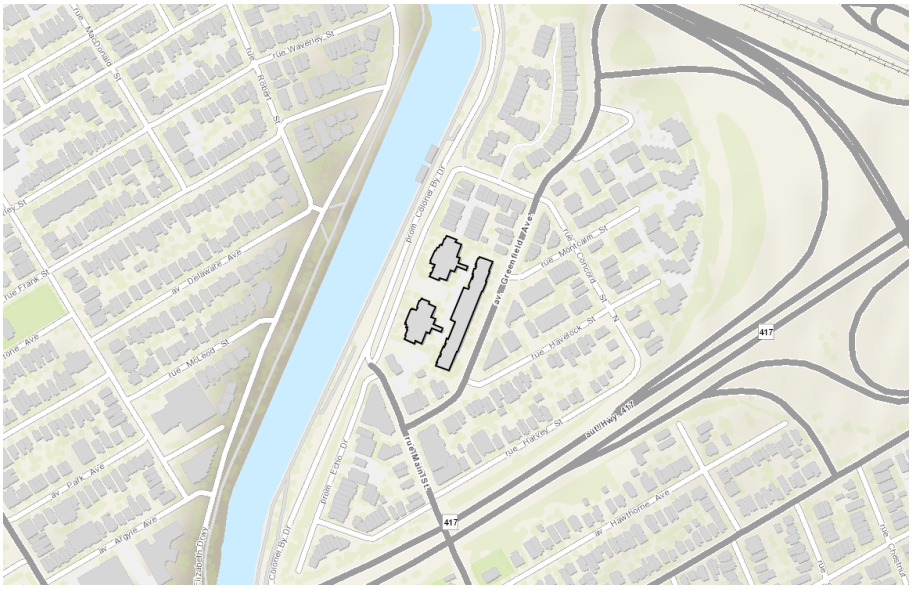

Figure 1 Location of Canal 111

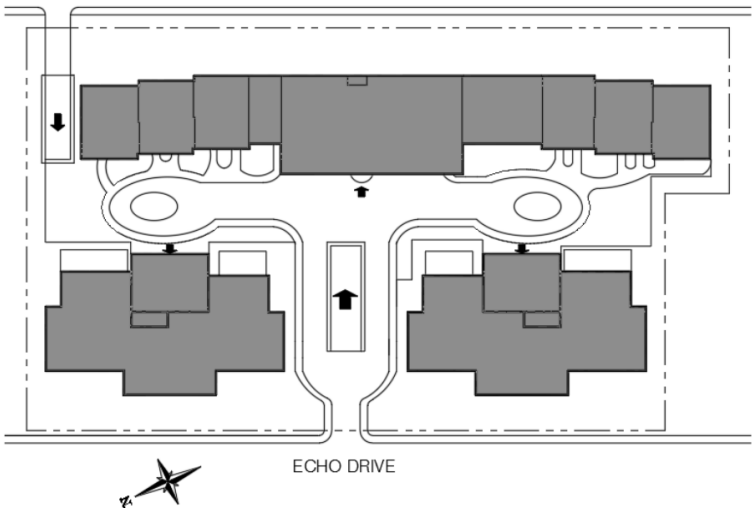

Figure 2 Key Plan of Canal 111

1.2 Scope of Work

The Board of Directors of CCC No. 256 commissioned Adjeleian Allen Rubeli Limited (AAR, The Consultant) to conduct a Reserve Fund Study Update. This study includes a comprehensive review of the previous Reserve Fund Study and adjustments based on the latest input from the Board of Directors. The primary goal of this study is to assess whether the current reserve fund and contributions are sufficient to cover the anticipated costs for major repairs and replacements of the common elements and assets over the coming years. This Reserve Fund Study provides an updated fiscal analysis, including major capital expenditure predictions for the next 30 years.

1.3 References / Documents

The following documents were utilized in the preparation of this Reserve Fund Study Update:

- Completed Reserve Fund Study Questionnaire, Dated by November 12,2024.
- Independent Auditor's Report, by Ouseley Hanvey Clipsham Deep LLP, Chartered Professional Accountants, Dated September 10, 2024.
- financial statement, by Ouseley Hanvey Clipsham Deep LLP, Chartered Professional Accountants, for the period ending May 31, 2024.
- Forms 15- Notice of Future Finding - dated January 18, 2022.
- Previous Reserve Fund Study Update without site visit, by Keller Engineering, dated January 13, 2022.

The site visit and visual review was conducted by David Visser, P. Eng of AAR on November 21, 2024. The financial tables are drafted by Daniel Martis, P. Eng of Martis Engineering Ltd, and the written report is completed by Roya Mohebbi, M. Eng and David Visser, P. Eng of AAR.

2 METHODOLOGY

The objective of this study is to provide the Board of Directors with sufficient information to:

- Set up a schedule for the anticipated repair and replacement of common element items.
- Set up a special account for major repair items and replacement of common elements and assets of the Corporation.
- Determine the annual contributions necessary to maintain an adequate balance for the 30-year period of this study.

2.1 Limitations and Assumptions

The findings, conclusions, and recommendations presented in this report are based on the documents, information provided to us, and observations made during the site visit.

It is assumed that all data, reports, materials, and evaluations furnished by others are accurate and free of latent deficiencies unless discrepancies were identified during our review. This report does not include testing, verification of the operation of systems, detailed physical reviews of subsurface or concealed components, or any intrusive investigation unless specifically noted. The scope of this report was limited to a random sampling visual review of surface conditions, discussions with the Board of Directors or their representatives, and a review of pertinent documents.

Observations were limited to areas that were readily accessible during the review. Any deficiencies not noted in this report were not apparent given the scope of the study undertaken. Should the condition of any non-reviewed components be required, further detailed study will be necessary.

Unexpected conditions may be encountered that were not covered within the scope of this report. In such cases, AAR should be notified to assess whether revisions to the conclusions are necessary. The issuance of this report does not imply that AAR assumes any responsibilities or liabilities of the designers, builders, or owners of the property. Any individuals or entities who rely on this report, including owners, prospective buyers, or tenants, must acknowledge the limitations inherent in the review conducted and understand that AAR cannot be held responsible for any damages resulting from the reliance on the findings of this report.

The accuracy of the conclusions, cost estimates, and other information presented in this study is contingent on the availability and reliability of the information provided. Life expectancy projections assume that adequate and timely maintenance will be performed by the Corporation. This study does not account for the effects of extraordinary events such as natural disasters, fire, or other unforeseen incidents.

Cost projections for future repairs or replacements of common elements are based on historical inflation rates as provided by sources like Statistics Canada. Since annual market value increases can fluctuate, projections are made using the most reliable historical data available, extrapolated over the study's duration. The expected performance standards and life expectancy estimates are based on current industry norms and manufacturer data. Revisions made to the previous Reserve

Fund Study were done at the request of the Corporation or its legal counsel and reflect the work performed to date and advice from industry professionals.

No warranties, either expressed or implied, are provided with this report, and professional judgment has been exercised with care and competence in the preparation of the conclusions.

3 GENERAL INFORMATION

3.1. Determination of Repair/Replacement Costs

The repair and replacement costs for the common elements have been determined through a systematic process, including site reviews, quantity take-offs from drawings, cost estimations, and the organization of data into a detailed spreadsheet, as outlined in this report. These costs and schedules are primarily based on the Reserve Fund Study unless revisions are required due to poor performance, increased costs, or unanticipated work identified during this update.

3.1.1. Technical Audit

A Technical Audit is conducted to assess the overall condition of the common elements. This site assessment provides the necessary information to identify the type and timing of repair or replacement work required for each common element.

3.1.2. Cost Estimation

AAR has developed an extensive database of unit costs for a wide range of repair and replacement activities involving civil, structural, architectural, and electrical elements typically included in Reserve Fund Studies. This database is compiled from costs obtained from contracts in which AAR has been involved, as well as from estimates provided by manufacturers, suppliers, and contractors. For specialized repair or replacement items, expert advice is often sought from contractors experienced in the relevant work. In such cases, the contractor will assess the work and prepare an estimate for inclusion in the Reserve Fund Study. Once the type and quantity of repair or replacement work are identified, the associated costs are estimated.

3.1.3. Forecasting Costs

Capital expenditures for repair and replacement are forecasted in current dollars, with the expected fiscal years for these expenditures outlined in this report. Adjustments for construction cost inflation and earned interest are automatically applied in the spreadsheet. The Board is responsible for ensuring that reserve fund contributions align with the projections outlined in the spreadsheet.

The timing of expenses depends on factors such as the urgency of repair or replacement, where critical systems like water supply, sanitary sewers, or electrical mains must remain operational and cannot have their repair costs deferred, and the perceived importance of non-critical repairs, such as caulking or painting, which can often be delayed. The Board has the flexibility to adjust the timing of these non-essential repairs based on owner demand and budget constraints.

Expenses are generally budgeted for the specific year when repairs or replacements are likely needed. Wherever possible, work is performed corporation-wide within a single year for cost efficiency. In cases where this is not feasible, phasing the work over multiple years may be more

effective, particularly if reserve funds are limited. The accumulated reserve fund should be sufficient to cover all expenses as they arise. The Board is authorized to advance or defer non-essential repair contracts based on sound technical advice available at the time of the scheduled repair.

3.1.4. Engineering Fees

To ensure that major repair and replacement work at the complex is properly specified and executed, engaging an experienced engineer is highly recommended. Engineering fees, which vary depending on the complexity of the project, will be funded through the reserve fund. An appropriate allowance for these fees has been incorporated into the budget where professional assistance is expected.

3.2. Financial Plan

3.2.1. Spreadsheet

The spreadsheet is designed to determine the annual reserve fund contributions required to cover all projected expenditures over the 30-year plan. To determine the total expenditures to be incurred in each fiscal year, the projected expenditures are entered into the spreadsheet, summed and adjusted for yearly construction cost increases.

3.2.2. Inflation Rates

The Government of Canada and the Bank of Canada aim to maintain inflation within a target range of 1% to 3%, with a midpoint of 2%. This target has been consistent since 1991 and is set to continue through December 31, 2026. While the actual inflation rate may vary, this estimate serves as a practical starting point for long-term financial planning.

In recent years, construction cost increases have varied between 0.9% and 7.0%. For this report, an annual inflation rate of 3% has been applied, based on Statistics Canada's annually published data related to the construction price index for residential properties in the local region. While construction costs may fluctuate annually, a 3% inflation rate is expected to provide a reasonable estimate for cost increases over the coming years.

3.2.3. Interest Rates

The interest earned on the Reserve Fund is calculated using a Mid-Year Interest Calculation method, aligned with accepted accounting practices. This conservative approach assumes interest is earned at the midpoint of the fiscal year, considering that half of the expenses have been deducted, and half of the annual contributions have been deposited. The formula is:

Interest = Interest Rate x (Starting Balance – Expenses/2 + Annual Contribution/2).

For this Reserve Fund Study, a 3% interest rate has been assumed. While actual rates may vary, this rate is expected to be a reliable estimate for long-term planning.

3.2.4. Starting Balance

Information regarding the Reserve Fund balance at the start of the current fiscal year was requested in the startup questionnaire. When provided, we verify the opening balance against the financial statements. We assume the Board of Directors confirms the accuracy of this starting balance before finalizing the report.

3.2.5. Contribution Amounts

The current annual contribution to the Reserve Fund is confirmed through documents provided, such as the most recent Notice of Future Funding. The Board of Directors is assumed to verify this contribution before the finalization of the report. Future contributions are calculated based on life expectancy, probable costs, and assumptions for inflation and interest. Sample contributions that would result in an adequate Reserve Fund are shown in the attached Cash Flow Scenarios.

To determine the most appropriate annual contributions, trial values are entered into a spreadsheet, which undergoes an iterative process. This process accounts for annual expenditures, owners' contributions, and investment interest. These figures are adjusted for yearly construction cost increases to establish a 30-year funding plan, ensuring sufficient funds are accumulated to cover all anticipated expenses.

The final spreadsheet displays the remaining Reserve Fund in current dollars at the end of the study period, offering a clear perspective of the fund's balance. The goal is to avoid special assessments by maintaining steady annual contributions, adjusted only for inflation, and ensuring the Reserve Fund is adequately funded.

Reserve Fund Study updates are required every three years. These updates allow for adjustments due to changes in interest rates, construction costs, or unforeseen expenses, ensuring the funding plan remains sufficient over time.

3.2.6. Minimum Reserve Fund Balance

The Carleton condominium corporation requires that the Reserve Fund be adequate to cover the expected costs of major repairs and replacements of common elements and assets. In our scenarios, we consider the Reserve Fund to be adequate as long as the closing balance remains positive throughout the study period.

3.2.7. Timing of Studies

The Reserve Fund Study is a dynamic document that evolves as repairs and replacements are completed and as interest and inflation rates fluctuate. The schedules and costs we've projected may vary due to changing market conditions, new materials, or scope adjustments. Regular updates are essential to reassess the Corporation's needs. A Reserve Fund Study update without site

inspection must be completed within three years of this study, followed by an update with site inspection within three years of that.

While these are the minimum requirements, the Board should consider an earlier update with site inspection if significant changes in the condition of common elements arise. Similarly, if unforeseen conditions impact cash flow, an earlier update without site Inspection may be necessary. To minimize major changes to the reserve fund plan, we recommend conducting an update without site inspection every one to three years and an update with site inspection every three to five years.

4 APPENDICES

The list of appendices is found below.

4.1 Appendix A: Photo Review

A visual summary of our findings can be found in Appendix A: Photo Review.

4.2 Appendix B: Spreadsheet for Major Repair and Replacement Costs

As outlined in Section 3: General Information, the spreadsheet is designed to calculate the necessary annual reserve fund contributions, ensuring sufficient funds are available to cover all anticipated expenditures over the next 30 years. It can be found in Appendix B, consisting of the following tables.

Condition Assessment:

The first set of tables, outlining our observations and comments from our site visit, contained in the column titled "Description and History." Expenditures are stated in today's dollars, and include taxes and consulting fees, where appropriate.

Capital Plan:

Recommendations for action and expected expenditures for the study period. Expenses appear in columns corresponding to the year in which they occur and are stated in today's dollars.

Cashflow:

Funding scenarios, showing the forecast cashflow for the duration of the study period, including the expected fund balances, recommended contributions, and expected expenditures, stated in future value.

5 TECHNICAL AUDIT AND COSTING

The following sections include a brief technical discussion of the major building components common to the condominium corporation, approximate quantities involved, life expectancy, repair and replacement costs as well as the fiscal years in which work is anticipated.

All items have been ranked on a scale from good to critical. The rankings according to their condition and the urgency of required actions are as follows:

- **Good**
  The condominium component exhibits no observable risk of failure, injury, or loss. There is no observable structural stress or deformation, and minor maintenance or repairs may be required within the next 5–10 years. No misuse, abuse, or deviations from the intended design intent of the element are observed.
- **Fair**
  The condominium component shows no observable risk of failure but may exhibit minor structural stress or deformation. Material deficiencies or deterioration are present, though they do not yet pose an immediate concern. Maintenance, repairs, or replacement might be necessary in the short-term future (within 3 years).
- **Poor**
  The condominium component may have a potential risk of failure and shows signs of minor structural stress or deformation. Material deficiencies or deterioration are observed, and maintenance, repairs, or replacement will be required within 1–3 years. There may be potential misuse or abuse of the component, deviating from its intended design.
- **Critical**
  The condominium component presents a likely risk of injury or loss to persons or property. Significant material deficiencies or deterioration are observed, and immediate maintenance, repairs, or replacement is necessary. The component may be inoperative or at the end of its life cycle, requiring urgent attention.

6 FINDINGS AND RECOMMENDATIONS

6.1 Substructure

Below-grade Foundation

The buildings are constructed with cast-in-place concrete foundations. During the site visit, no visible cracks or signs of deterioration were observed on the foundation walls in the parking garage. The foundations are anticipated to last for the building's lifespan, with no major repairs expected.

Recommended Work and Funding:

- Any localized repairs to the foundation walls, if required, are expected to be addressed through the operating budget.

Garage Roof Waterproofing

The parking garage roof structure forms the surface of the site entrances. The structure is protected with a waterproofing membrane, which typically has a service life of 30 years. It is noted to be in fair condition,41 years old, with an estimated 3 years remaining in its lifecycle.

Recommended Work and Funding:

- The replacement of the waterproofing membrane is estimated to cost $1,150,000, with the work scheduled for the fiscal year 2028. Consulting fees are included.
- Cost to replacements pavements and landscaping is budgeted separately.

Garage Roof Waterproofing Replacement	
Qty	Replacement Allowance
Cost	**$1,150,000**
Year(s)	**2028/2029**

Garage Roof Expansion Joint

There is an expansion joint in the garage roof structure that separates each of the two buildings. It is noted to be in poor condition, showing evidence of past leakage. This typically has a service life of 20 years with an estimated 2 years remaining in its lifecycle.

Recommended Work and Funding:

- The replacement of the expansion joint waterproofing during roof slab replacement is estimated to cost $51,000, with the work scheduled for the fiscal year 2028. Consulting fees are included.

Garage Roof Expansion Joint Replacement	
Qty	Allowance
Cost	**$51,000**
Year(s)	**2028/2029, 2048/2049**

Garage Roof Waterproofing

The structure is protected with a waterproofing membrane, which typically has a service life of 30 years. We understand there was or may currently be a leak in the electrical room.

Recommended Work and Funding:

- An allowance of $14,000 has been allocated for waterproofing repairs in fiscal year 2026, with subsequent allowances scheduled every 12 years thereafter.

Garage Roof Waterproofing Replacement	
Qty	Repair Allowance
Cost	**$14,000**
Year(s)	**2026, 2048**

6.2 Superstructure

Building Structure

The building and parking garage appears to consist of a reinforced concrete structure supported on concrete walls and footings. The structure is expected to last the life of the building. It is noted to be in good condition, with no repairs anticipated at this time.

6.3 Building Envelope

Exterior Masonry Walls and Townhouse Chimneys

A masonry brick and stone veneer serve as the primary cladding for the midrise buildings, townhomes, and recreational center. This type of cladding typically lasts the life of the complex; however, significant repairs are generally required after 30 years of service.

Based on information provided by the client, brick repointing may be required in specific areas, particularly around townhouse unit entries. Additionally, some leaks have been identified on the south section of the building.

Concrete block masonry is present throughout the garage and recreation center. This material is expected to last the life of the complex; however, some repairs are generally required after 30 years of service.

Recommended Work and Funding:

- An allowance of $40,000 has been allocated for masonry wall repairs in fiscal year 2030, with subsequent allowances scheduled every 15 years thereafter.
- Brick repointing and minor leak-related repairs should be addressed as needed, with funds from the operating budget.
- concrete block masonry repointing and minor leak-related repairs should be carried out as necessary, funded through the operating budget.

Concrete Block Masonry repair/Localized Replacement	
Qty	Allowance
Cost	**$ 40,000**
Year(s)	**2030, 2045**

Exterior Sealant on Tower Walls

Sealant is installed at the perimeter of windows and doors, and at joints in cladding. This typically has a service life of 15 years. It is noted to be in good condition, with an estimated 10 years remaining in its lifecycle.

Recommended Work and Funding:

- Replace sealants at the towers only at the end of service life. Sealants at townhouses are included with window replacements.
- Maintain an allowance for minor repairs and localized sealant replacement, as required, in fiscal year 2030, with subsequent allowances scheduled every 10 years thereafter.

Sealant Replacement/Repair on Towers		
Qty	Replacement Allowance	Repair Allowance
Cost	**$ 226,000**	**$ 11,000**
Year(s)	**2035, 2050**	**2030, 2040, 2050**

Exterior Louvers and Screens - Vent Louvers

There are vents at the towers that provide exhaust for kitchens and bathrooms. This typically has a service life of 30 years. It is noted to be in good condition, with an estimated 5 years remaining in its lifecycle.

Recommended Work and Funding:

- Replace exhaust vents and dampers concurrently with sealant replacement at the tower walls, scheduled for the fiscal year 2030.
- Repair or replace vents as needed, based on their condition at the townhouses.

Exterior Louvers and Screens - Vent Louvers Replacement	
Qty	Allowance
Cost	**$ 20,000**
Year(s)	**2030**

Balcony & Terrace Exterior Walls

The balconies are constructed of reinforced concrete and serve as extensions of the floor slabs. Where observed from ground level, no visible cracks or spalling were noted. It could not be confirmed if a waterproof membrane was applied to the balcony surfaces. This typically has a service life of 40 years. The balconies are currently in good condition, with an estimated 8 years remaining in their lifecycle.

Recommended Work and Funding:

- Repair the balcony slab edges and concrete dividers. It is assumed that 100% of the slab edges will require repair.
- Schedule this work to coincide with the railing replacement to optimize costs and efficiency.

Balcony Concrete repair	
Qty	Allowance
Cost	**$ 102,000**
Year(s)	**2033**

Balcony Waterproofing

According to client-provided information, the balconies do not have a waterproof membrane.

Recommended Work and Funding:

- Install waterproofing membrane at the same time balcony slab edges are repaired.

Balcony Waterproofing Installation	
Qty	Allowance
Cost	**$ 104,000**
Year(s)	**2033**

Balcony Railings

The balconies have glass panel railings that appear to be newer. There is also a metal cover over the slab edge. This typically has a service life of 40 years. The railings are currently in good condition, with an estimated 8 years remaining in their lifecycle.

Recommended Work and Funding:

- Replace aluminum railings at the end of the service life. We recommend balcony railings be done at the same time as slab edge repairs and waterproofing.

Balcony Railing Replacement	
Qty	Allowance
Cost	**$ 119,000**
Year(s)	**2033**

Tower Curtain Wall Windows

There are curtain wall-framed windows on the towers, featuring double glazing secured with aluminum pressure plates. It is understood that a major refurbishment involving the replacement of a portion of the glass (Phase 1) was recently completed. Phase 2 is currently budgeted to coincide with the replacement of the tower bay windows. Such glazing systems typically have a service life of approximately 30 years.

Recommended Work and Funding:

- Curtain wall frames are anticipated to last for the lifetime of the building. Allocate a budget for a major refurbishment to replace all glass at the end of its service life.
- Routine maintenance, including hardware, screen, weatherstripping, and isolated Thermopane replacements, should be addressed using funds from the operating budget.

	Tower Curtain Wall Window Glass Replacement
Qty	Allowance
Cost	**$ 1,790,000**
Year(s)	**2051/2052**

Tower Bay Windows

The bay windows at the towers feature conventional interior-glazed aluminum frames with double-pane insulating glass. The windows appear to be original and are nearing the end of their useful life.

Such glazing systems typically have a service life of approximately 45 years. The windows are currently in fair condition, but nearing to the end of life, with an estimated 5 years remaining in their lifecycle.

Recommended Work and Funding:

- An allowance in the budget for replacement of the tower bay window (Echo Drive side) as well as the replacement of the curtain wall windows on the podium side of the towers. We have included for consulting costs.
- Routine maintenance, including hardware, screen, weatherstripping, and isolated Thermopane replacements, should be addressed using funds from the operating budget.

	Tower Curtain Wall and Bay Window Replacement
Qty	Allowance
Cost	**$ 1,270,000**
Year(s)	**2030/2031**

Townhouse Windows

The townhouse windows are metal-clad wood frames with double-pane insulating glass. Additionally, there are bay windows with sloped overhead glazing, likely featuring all-aluminum frames. It is assumed that the windows are original. Such glazing systems typically have a service life of approximately 40 years. The windows are currently in fair condition and are nearing the end of their useful life.

Recommended Work and Funding:

- An allowance in the budget for the replacement of townhouse windows at the end of their service life.

- Routine maintenance, including hardware, screen, weatherstripping, and isolated Thermopane replacements, should be addressed using funds from the operating budget.

Townhouse Window Replacement	
Qty	Allowance
Cost	**$ 339,000**
Year(s)	**2040/2041**

Gym Windows (Recreation Centre)

There are windows in the gym area. We understand repairs were recently completed to replace caulking.

Recommended Work and Funding:

- An allowance in the budget for the repair of gym windows if required for fiscal year 2025 and every 20 years thereafter.

Gym Window Repair	
Qty	Allowance
Cost	**$ 12,000**
Year(s)	**2025, 2045**

Insulated Glass Units (IGUs)

The windows feature double-pane insulating glass. Over time, seals may fail, leading to moisture accumulation between the panes.

Recommended Work and Funding:

- Allocate a contingency allowance for the ongoing replacement of failed IGU units throughout the building as needed.

IGU Repair	
Qty	Allowance
Cost	**$ 34,000**
Year(s)	**2025/2026/2027/2028/2029/2030/2031/ 2032/2033/2034**

Balcony Sliding Doors

The aluminum sliding doors are located at the unit balconies, with a typical service life of 30 years. The 6-foot-wide aluminum-framed sliding door on each balcony appear to be original and are approaching the end of their useful life.

Recommended Work and Funding:

- Budget for the replacement of all the balcony sliding doors in all suites throughout the building.
- Minor repairs, including the replacement of hardware, screens, weatherstripping, and isolated Thermopane units, should be performed as required using funds from the operating budget.

Balcony Sliding Door Replacement	
Qty	Allowance
Cost	**$ 133,000**
Year(s)	**2030/2031**

Skylights

The skylights are located on isolated townhome roofs and have a typical service life of 20 years. The skylights are the responsibility of the individual townhome owners, and as such, no allowances have been provided in the Reserve Fund for their repair or replacement.

Townhouse Rear Doors

The rear doors of the townhouses have a typical service life of 30 years. The doors are currently in good condition, with an estimated 9 years remaining in their lifecycle.

Recommended Work and Funding:

- Replacement of the rear entrance doors is budgeted for the fiscal year 2034 to cost $34,000.
- Minor Repairs and Replacements: Should be performed as required, using funds from the operating budget.

Townhouse Rear Doors Replacement	
Qty	24
Cost	**$34,000**
Year(s)	**2034**

Townhouse Entrance Doors

The entrance doors of the townhouses have a typical service life of 30 years. The doors are currently in good condition, with an estimated 9 years remaining in their lifecycle.

Recommended Work and Funding:

- Replacement of the front entrance doors is budgeted for the fiscal year 2034 to cost $41,000.
- Minor Repairs and Replacements: Should be performed as required, using funds from the operating budget.

Townhouse Entrance Doors Replacement	
Qty	24
Cost	**$41,000**
Year(s)	**2034**

Midrise And Recreation Center - Main Entrance Doors

The main exterior entrance doors are located on the ground floor of each midrise building and at the main entrance of the recreation center. These doors are constructed of finished solid wood core, with a service life that varies depending on usage and maintenance.

Recommended Work and Funding:

- Minor Repairs should be performed as required, using funds from the operating budget.

Exterior Envelope Doors

There are exterior hollow metal doors around the building. Every 20 years, it will be necessary to replace hardware, repaint, or replace isolated doors and frames.

Recommended Work and Funding:

- Maintain an allowance for repairs or replacements, as needed, approximately every 20 years.

Exterior Envelope Doors Repair	
Qty	Allowance
Cost	**$6,000**
Year(s)	**2030, 2050**

Garage Doors

The garage doors are located off Echo Dr. and Greenfield Ave. and have a typical service life of 20 years. Replace overhead door at end of service life. Repairs to the doors operator are assumed to be paid for from the operating budget.

Recommended Work and Funding:

- Repair of garage doors is estimated to cost $10,000, with this work budgeted in fiscal year 2034 and every 20 years thereafter.
- Minor repairs should be performed as required, using funds from the operating budget.

Garage Doors Repair	
Qty	Allowance
Cost	**$10,000**
Year(s)	**2025, 2045**

Tower Roofs

The tower roofs consist of an inverted membrane assembly. An asphalt membrane is applied directly to the structure, covered with insulation, and topped with ballast. It is assumed that the roof membranes have been replaced since the original construction. This roof system typically has a service life of 30 years and is currently in fair condition, with approximately 9 years remaining in its lifecycle.

Recommended Work and Funding:

- Replacement of the tower roof membrane is scheduled for the fiscal year 2034/2035, with an estimated cost of $1,058,000.

Tower Roof Replacement	
Qty	Allowance
Cost	**$1,058,000**
Year(s)	**2034/35**

Recreation Center Roofs

The recreation center features a flat roof covered with a waterproofing membrane and a tennis court surface. It is assumed that the roof membranes have been replaced since the original construction. This roof system typically has a service life of 20 years and is currently in poor condition, having exceeded its expected lifecycle by a few years.

Recommended Work and Funding:

- Replacement of the recreation center roof membrane is scheduled for the fiscal year 2027/28, with an estimated cost of $547,000.

- The cost of resurfacing the tennis court is not included in this budget.

Tower Roof Replacement	
Qty	Allowance
Cost	**$547,000**
Year(s)	**2027/28, 2047/48**

Entrance Canopies

The main entrances to the mid-rise buildings are sheltered by canopies that extend toward the roadways. The canopies feature barrel-shaped roofs covered with fabric, which typically have a service life of 15 years. The structural components, however, are expected to remain functional for the lifetime of the building. It is assumed that the most recent repairs were completed in 2022.

Recommended Work and Funding:

- Perform minor repairs to the canopy roofing as needed, using funds from the operating budget.
- Plan for the replacement of the vinyl siding at the end of its service life.

Canopies Roofing Repairs Allowance	
Qty	Allowance
Cost	**$63,000**
Year(s)	**2028/29, 2043/44**

Townhouse Roofs

A rubber shingles roofing system protects the roofs of the townhome units. Rubber shingles typically last between 30-40 years. It is currently in good condition, with approximately 22 years remaining in its lifecycle.

Recommended Work and Funding:

- Replacement of the rubber shingles is estimated to cost $201,000, with the work budgeted in fiscal year 2048.
- Minor repairs to the asphalt shingles should be performed as required, using funds from the operating budget.

Rubberized Shingle Roofing Replacement	
Qty	Allowance
Cost	**$201,000**
Year(s)	**2048**

Townhouse Attic Insulation

Each of the townhouses is assumed to have an attic with batt insulation. Over time, the insulation may settle, become displaced, or sustain damage within the mansard cavity. A small allowance has been budgeted for localized repairs.

Recommended Work and Funding:

- Minor repairs to the attic insulation should be performed as needed, with an estimated cost of $21,000. The work is budgeted for the fiscal year 2051.

Attic Insulation Replacement	
Qty	Allowance
Cost	**$21,000**
Year(s)	**2051**

Eavestroughs & Downspouts

The townhome roofs are equipped with eaves troughing and downspouts, which typically have a service life of 30 years. Based on the provided information, these components were replaced during the 2021 and 2022 fiscal years.

Recommended Work and Funding:

- Gutters and downspouts replacement and drainage system transition are estimated to cost $11,000 and is planned for fiscal year 2048.
- Necessary minor repairs should be performed as required, using funds from the operating budget.

Eavestroughs & Downspouts Repairs/Replacement Allowance	
Qty	Allowance
Cost	**$11,000**
Year(s)	**2048**

Roofing Maintenance

Over time, roof shingles may become loose, or flat roofs may require localized repairs. Periodic inspections and timely repairs can help extend the service life of the roofs.

Recommended Work and Funding:

- Maintain an allowance of $11,000 every 5 years for periodic repairs to both flat and shingled roofs, as needed.

Tower Roof Maintenance	
Qty	Allowance

Cost	**$11,000**
Year(s)	**2025, 2031, 2036, 2041, 2046, 2051**

6.4 Interior

Tower Corridor Carpeting

The interior finishes of the corridors on levels 1 through 6 in both mid-rise buildings consist of carpet flooring.

Recommended Work and Funding:

- Carpet replacement is estimated to cost $123,000, and this work is budgeted for fiscal year 2032 and every 15 years thereafter.
- Minor repairs should be performed as required, using funds from the operating budget.

Corridor Carpet replacement	
Qty	Allowance
Cost	**$123,000**
Year(s)	**2032, 2047**

Tower Corridor Wall Finishes

The interior finishes with the corridors on levels 1 through 6 in both mid-rise buildings consist of wallpaper.

Recommended Work and Funding:

- Carpet replacement is estimated to cost $65,000, and this work is budgeted for fiscal year 2032 and every 15 years thereafter, concurrently with the carpet replacement.
- Minor repairs should be performed as required, using funds from the operating budget.

Corridor Wallpaper replacement	
Qty	Allowance
Cost	**$65,000**
Year(s)	**2032, 2047**

Tower Corridor Ceiling Finishes

The interior finishes of the corridors on levels 1 through 6 in both mid-rise buildings consist of ceiling tiles.

Recommended Work and Funding:

- Carpet replacement is estimated to cost $82,000, and this work is budgeted for fiscal year 2032 and every 15 years thereafter, concurrently with the carpet and wallpaper replacement.
- Minor repairs should be performed as required, using funds from the operating budget.

Corridor Ceiling Finishes replacement	
Qty	Allowance
Cost	**$82,000**
Year(s)	**2032, 2047**

Tower Suite Doors Paint

Each unit is equipped with a solid core wood door set in a fire-rated metal frame. The service life of unit suite doors varies depending on usage.

Recommended Work and Funding:

- An allowance of $20,000 has been allocated for painting or refinishing suite doors during each corridor renovation. This work is budgeted for fiscal year 2042.

Tower Suite Doors Paint Replacement	
Qty	Allowance
Cost	**$20,000**
Year(s)	**2042**

Tower Suite Doors Hardware

Each unit is equipped with a solid core wood door set in a fire-rated metal frame. The service life of unit suite doors varies depending on usage.

Recommended Work and Funding:

- An allowance of $58,000 has been allocated for painting suite doors and replacing door hardware during every second corridor renovation. This work is budgeted for fiscal year 2032.

Tower Suite Doors Hardware Replacement	
Qty	Allowance
Cost	**$58,000**
Year(s)	**2032**

Suite Doors

Each unit is equipped with a solid core wood door set in a fire-rated metal frame. The service life of unit suite doors varies depending on usage.

Recommended Work and Funding:

- An allowance of $193,000 has been allocated for replacing the doors. This work is budgeted for fiscal year 2026.

Tower Suite Doors Replacement	
Qty	Allowance
Cost	**$193,000**
Year(s)	**2026**

Interior Doors Paint

The interior doors located in service rooms, stairwells, and amenity areas have varying service lives depending on usage.

Recommended Work and Funding:

- An allowance of $12,000 has been allocated for painting or refinishing these doors during each corridor renovation. This work is budgeted for fiscal year 2032 and every 15 years thereafter to ensure adequate funding is available.

Tower Suite Doors Hardware Replacement	
Qty	Allowance
Cost	**$12, 000**
Year(s)	**2032, 2047**

Entrance Lobby

The interior finishes of the lobby feature wood-paneled and marble-paneled walls, marble and carpet flooring, and painted drywall dropped ceilings. The lobby furniture includes wood pieces with wrought iron inlay railings, tables, mirrors, couches, and coffee tables. Major renovations of the lobby are typically required every 30 to 40 years as the original finishes may appear dated. The furniture generally needs to be replaced every 15 years.

Recommended Work and Funding:

- An allowance of $57,000 has been allocated for fiscal year 2032 and every 15 years thereafter for minor repairs, updates to lobby elements, and replacement of furniture as required. This budget also includes refurbishment of the mailroom.
- An allowance of $136,000 has been allocated for fiscal year 2032 and every 30 to 40 years thereafter for major repairs and updates, including refurbishment of lobby finishes, fixtures, and replacement of furniture as required.

Lobby Minor Repair and major Renovation	
Qty	Allowance

Cost	**$193,000**
Year(s)	**2032, 2047**

Recreation Centre Interior Finishes

The squash and racquetball courts consist of hardwood floors, painted concrete block walls, and a painted drywall ceiling. The racquetball court has been repurposed into an indoor driving range, with a subfloor and golf carpet installed. Furnishings in these rooms include netting.

Generally, the finishes in these rooms are expected to last the life of the complex, with only minor repairs needed over time. Some cracks were noted on the wall painting finishes. While it is generally in a fair condition, repairs are typically required every 10 years.

Recommended Work and Funding:

- An allowance of $23,000 has been allocated for repairs to equipment and finishes as needed. This work is budgeted for 2025 and every 10 years thereafter.

Recreation Centre Interior Finishes Repair	
Qty	Allowance
Cost	**$23,000**
Year(s)	**2031, 2041, 2051**

Lockers

The locker rooms, used for storing residents' belongings, consist of painted concrete floors, exposed concrete block walls, and an exposed concrete ceiling. Furnishings include shelving. Generally, the finishes in these rooms are expected to last the life of the complex, with only minor repairs required over time.

Recommended Work and Funding:

- An allowance of $17,000 has been allocated for repairs to finishes and periodic painting. This work is budgeted for 2031 and every 15 years thereafter.

Locker Room Repair	
Qty	Allowance
Cost	**$17,000**
Year(s)	**2031, 2046**

Nautilus/Exercise Room Finishes

The Nautilus Room features rubber flooring, painted drywall walls, windows, and a painted dropped drywall ceiling. Furnishings include mirrors, exercise equipment, and AV equipment. Major renovations of the exercise room are typically needed every 30 to 40 years due to wear and the dated

appearance of original finishes. While it is generally in good condition, finishes generally requires repairs every 20 years.

Recommended Work and Funding:

- An allowance of $23,000 has been allocated for the replacement of finishes as part of the exercise room renovation. This work is budgeted for fiscal year 2032 and every 20 years thereafter.

Nautilus Room Finishes Repair	
Qty	Allowance
Cost	**$23,000**
Year(s)	**2032, 2052**

Nautilus/Exercise Room Equipment

The Nautilus Room features Furnishings include mirrors, exercise equipment, and AV equipment. Major renovations of the exercise room are typically needed every 30 to 40 years due to wear and the dated appearance of original finishes. While it is generally in good condition, ffurniture generally requires replacement every 10 years.

Recommended Work and Funding:

- An allowance of $9,000 has been allocated for the replacement of equipment as part of the exercise room renovation. This work is budgeted for fiscal year 2026 and every 10 years thereafter.

Nautilus Room Equipment Repair	
Qty	Allowance
Cost	**$9,000**
Year(s)	**2026, 2036, 2046**

Swimming Pool & Whirlpool

The cast-in-place concrete swimming pool, situated within the recreation center, features an interior surface coated with epoxy paint for protection. The surrounding walls are finished with gypsum board. The cast-in-place concrete whirlpool, also located within the recreation center, has an interior surface finished with ceramic tile, which typically has a service life of 25 years. The finishes are noted to be in fair condition, with approximately 3 years remaining in their lifespan.

Recommended Work and Funding:

- An allowance of $57,000 has been allocated for replacing the pool deck tiles and refinishing the walls to renew the appearance. This work is budgeted for fiscal year 2032 and every 25 years thereafter.

Swimming pool and Whirlpool Finishes Allowance	
Qty	Allowance
Cost	**$57,000**
Year(s)	**2032**

Change Rooms

The recreation centre has change rooms that include washrooms, showers, and lockers. These areas feature ceramic tile floors, painted drywall walls, and painted drywall ceilings. Furnishings include toilets, showers, lockers, and benches. The finishes are noted to be older, and major renovations are typically anticipated every 25 years as the original finishes may become dated. The equipment and furniture are noted to be in fair condition, with approximately 3 years remaining in their lifespan.

Recommended Work and Funding:

- An allowance of $91,000 has been allocated for the repair or replacement of equipment and furniture, as needed. This work is budgeted for fiscal year 2032 and every 25 years thereafter.
- Minor repairs to the furniture or finishes should be performed as required, using funds from the operating budget.

Change Room Furniture Replacement	
Qty	Allowance
Cost	**$91,000**
Year(s)	**2032**

Saunas

The saunas are located within the change rooms and feature cedar decking, wall paneling, and seating. The service life of these finishes varies depending on usage. The sauna's mechanical systems are discussed in the Mechanical section. The finishes are noted to be in fair condition, with approximately 3 years remaining in their lifespan.

Recommended Work and Funding:

- Replacement of the sauna finishes is estimated to cost $46,000. This work is budgeted for fiscal year 2032 and every 25 years thereafter.

Saunas Finishes Replacement

Qty	Allowance
Cost	**$46,000**
Year(s)	**2032**

Stairwells

The stairwells feature painted concrete walls and floors. They are noted to be in good condition, with approximately 7 years remaining in their current lifecycle.

Recommended Work and Funding:

- An allowance for painting all stairwells, extending from the ground floor to the roof, is estimated at $23,000. This work is budgeted for fiscal year 2032 and every 20 years thereafter.

Stairwell Finishes Replacement	
Qty	Allowance
Cost	**$23,000**
Year(s)	**2032, 2052**

6.5 Mechanical

Water Distribution Riser Piping

The domestic hot water is distributed through a network of vertical risers and horizontal headers. Water flows continuously through the system across the buildings. The piping in the suites is likely copper tubing. These systems typically have a service life of 35 years. They are currently in fair condition, with approximately 8 years remaining in their lifecycle.

Recommended Work and Funding:

- A rough order of magnitude for the replacement of riser piping at the end of its service life is estimated at $306,000, budgeted for fiscal year 2033.
- Minor repairs to the domestic cold and hot water distribution pipes and risers should be conducted as needed, funded through the operating budget.

Domestic Water Distribution Riser Piping Replacement	
Qty	Allowance
Cost	**$306,000**
Year(s)	**2033**

Corridors Recirculating Header Piping

The recirculating header piping located in the common corridors typically has a service life of 25 years. These systems are currently in fair condition, with approximately 1 year remaining in their lifecycle.

Recommended Work and Funding:

- A rough order of magnitude for the replacement of the recirculating header piping in common corridors at the end of its service life is estimated at $170,000, budgeted for fiscal year 2033 and every 25 years thereafter.
- Minor repairs to the domestic cold and hot water distribution pipes and risers should be conducted as needed, using funds from the operating budget.

Domestic Water Distribution Riser Piping Replacement	
Qty	Allowance
Cost	**$170,000**
Year(s)	**2033**

Domestic Hot Water Tank Heaters

The 199 MBH, 76–100 US gallon, gas-fired, atmospheric, glass-lined domestic hot water tank heaters located in the ground floor mechanical room of each tower provide domestic hot water to the suites, as well as to the recreational center through an additional heater. Glass-lined hot water tank heaters typically have a service life of approximately 7 years.

The replacement of the East Tower WH2 domestic hot water tank heater was completed in fiscal year 2022. This work will be repeated every 7 years. These systems are currently in good condition, with approximately 7 years remaining in their lifecycle.

Recommended Work and Funding:

- Replacement of the domestic hot water tank heaters is estimated to cost $28,000. This work has been scheduled for fiscal year 2029 and will be repeated every 7 years thereafter.

Domestic Hot Water Tank Heaters Replacement	
Qty	Allowance
Cost	**$28,000**
Year(s)	**2029, 2036, 2043, 2050**

Pool Filtration Equipment

The pool and whirlpool are equipped with filtration systems, heaters, and circulating pumps that maintain water quality. These systems are currently in fair condition, with approximately 2 years remaining in their lifecycle for periodic repairs. This maintenance work will be repeated every 10 years.

Recommended Work and Funding:

- An allowance for the repair of the pool and whirlpool filtration equipment, heaters, and circulating pumps is estimated to cost $14,000. This work has been scheduled for fiscal year 2027 and will be repeated every 10 years thereafter.

Pool Filtration Equipment Repair	
Qty	Allowance
Cost	**$14,000**
Year(s)	**2027, 2037, 2047**

Tower recirculating pump

A recirculating pump continuously moves domestic hot water throughout the towers. Domestic hot water recirculation pumps have a typical service life of 15 years. These systems are currently in good

condition, with approximately 12 years remaining in their lifecycle. The replacement work will be repeated every 15 years.

Recommended Work and Funding:

- Replacement of the recirculating pump is estimated to cost $7,000. This work has been scheduled for fiscal year 2037 and will be repeated every 15 years thereafter.

Tower recirculating pump Replacement	
Qty	Allowance
Cost	**$7,000**
Year(s)	**2037, 2052**

Furnaces

It is understood that the townhouses are heated with forced-air natural gas furnaces. As outlined in the declaration, ownership and maintenance of these systems within the suites are the responsibility of the individual suite owners. No costs have been budgeted.

Rec. Centre Roof Fluid Coolers

There are two fluid coolers located on the roof of the recreation centre that provide cooling for the fan coils in the suites. Each unit has a capacity of approximately 50 tons of cooling and operates using R-22 refrigerant. These systems typically have a service life of 25 years and are currently in fair condition, with approximately 2 years remaining in their lifecycle.

The equipment is nearing the end of its useful life and utilizes refrigerant that is now obsolete. Replacement is recommended with a large-capacity air-source heat pump to provide both heating and cooling.

Recommended Work and Funding:

- Replacement of the fluid coolers with a large-capacity air-source heat pump is estimated to cost $181,000 for fiscal year 2027 and will be repeated every 25 years thereafter.

Rec. Centre Fluid Coolers Replacement	
Qty	Allowance
Cost	**$181,000**
Year(s)	**2027, 2052**

Elevator Room Air Conditioners

Each of the two elevator machine rooms is equipped with a small mini-split air conditioner that provides cooling. These systems typically have a service life of 15 years and are currently in good condition, with approximately 7 years remaining in their lifecycle.

Recommended Work and Funding:

- Replacement of the mini-split air conditioners at the end of their service life is estimated to cost $16,000. This work is budgeted for fiscal year 2032 and will be repeated every 15 years thereafter.

Elevator Room Air Conditioners Replacement	
Qty	Allowance
Cost	**$16,000**
Year(s)	**2032, 2047**

Parking Garage Exhaust System

The parking garage is equipped with exhaust fans that ventilate the space. These fans are connected to a carbon monoxide monitoring system, which activates the ventilation system as needed. The system is currently in good condition, with a repair allowance every 10 years.

Recommended Work and Funding:

- An allowance for the repair or replacement of fans and sensors as needed is estimated at $12,000. This renewal work is scheduled for fiscal year 2030 and will be repeated every 10 years thereafter.

Parking Garage Exhaust System Replacement	
Qty	Allowance
Cost	**$12,000**
Year(s)	**2030, 2045**

Fan Coils

The fan coils located in the lobbies and individual suites provide air conditioning to the towers. According to the declaration, ownership and maintenance of the fan coils in the suites are the responsibility of individual suite owners. The fan coils have a typical service life of 30 to 35 years and are currently in good condition, with approximately 8 years remaining in their lifecycle.

Additionally, it was observed that the isolating valves require replacement. It is assumed that the isolating valve replacement was completed in fiscal year 2023/24.

Recommended Work and Funding:

- Replacement of the lobby fan coils is estimated to cost $17,000 and should be scheduled for fiscal year 2033.

Lobby Fan Coils Replacement	
Qty	Allowance
Cost	**$17,000**
Year(s)	**2033**

Make-Up Air Unit

The rooftop of each tower is equipped with Allied packaged 2,000 CFM make-up air units, which feature Air Wise gas-fueled heat exchangers and 7.5-Ton R22 electric DX cooling coils. These units provide fresh air to the buildings, maintain pressurization, and help prevent odor transfer between units. The typical service life of make-up air units ranges from 25–30 years. Each tower has a small, packaged make-up air unit that provides heating and cooling to the common corridors, delivering an air volume of 2,000 CFM.

Recommended Work and Funding:

- Replacement of Make-Up Air Units is estimated to cost $523,000, with work planned for fiscal year 2026. Consider adding a heat pump to provide heating and cooling without using natural gas. The amount budgeted is what was included in the recent report from Rimkus Engineers.

Make-Up Air Unit Replacement	
Qty	Allowance
Cost	**$523,000**
Year(s)	**2026, 2051**

Chilled Water Loop Pumps

The Bell & Gossett 142 US gpm, 3HP chilled water loop pumps, located in the mechanical rooms within the parking garage, distribute chilled water throughout the two towers to the fan coils inside the units and lobbies. These pumps typically have a service life of 25 years. They are currently in fair condition, with approximately 2 years remaining in their lifecycle.

Recommended Work and Funding:

- Replacement of Chilled Water Loop Pumps: Estimated cost of $6,000, budgeted in fiscal year 2027 and every 25 years thereafter.

Chiller Water Loop Pumps Replacement

Qty	Allowance
Cost	**$6,000**
Year(s)	**2027, 2052**

Hydronic Piping

The hydronic piping and risers installed throughout the towers distribute chilled water to the fan coil loop. Hydronic piping systems typically have a service life of 50 to 70 years with proper maintenance and water treatment. However, systems with poor maintenance or inadequate water treatment may experience a reduced life expectancy of 10 to 20 years. The current condition of the hydronic piping is noted to be fair.

Recommended Work and Funding:

- Maintain an allowance for repairs, as needed, with a budget of $17,000 every 5 years. This is expected to cover valve replacements and partial piping replacements.
- Although costs are not included in this study, we recommend a comprehensive investigation of the hydronic piping and risers be performed within the next 5 years to better assess their condition and determine replacement costs, using funds from the operating budget.

Hydronic Piping And Risers Repair/Partial Replacement	
Qty	Allowance
Cost	**$17,000**
Year(s)	**2027, 2032, 2037, 2042, 2047, 2052**

Packaged Rooftop Unit

The Lennox packaged rooftop units, with a 120MBH gas-fueled heat exchanger and 5-Ton direct expansion air conditioning, are located on the rooftop of the recreational building. These units provide heating, air conditioning, and fresh air ventilation to the gym and front desk. Packaged rooftop units typically have a service life of 20 years, and the current condition of these units is noted to be fair.

Recommended Work and Funding:

- Replacement of the packaged rooftop units is estimated to cost $255,000, with the work budgeted for fiscal year 2027 and every 20 years thereafter.
- Maintenance on the gas pipe feeding the packaged rooftop unit should be performed as required, using funds from the operating budget.

Packaged Rooftop Unit Replacement	
Qty	3

Cost	**$255,000**
Year(s)	**2027, 2047**

Natatorium Dehumidification Unit

The Dectron natatorium dehumidification unit, located in the pool mechanical room, provides humidity and temperature control to the pool area. Natatorium dehumidification units typically have a service life of 20 years. The current condition of the unit is noted to be fair, with approximately 4 years remaining in its lifecycle.

Recommended Work and Funding:

- Replacement of the natatorium dehumidification unit is estimated to cost $68,000, with the work budgeted for fiscal year 2029 and every 20 years thereafter.

Natatorium Dehumidification Unit Replacement	
Qty	1
Cost	**$ 68,000**
Year(s)	**2029, 2049**

Unit Heaters

The Lennox gas-fueled unit heater located in the parking garage provides primary heating. The unit heaters have a typical service life of 25 years, which can vary greatly depending on environmental conditions.

Recommended Work and Funding:

- Replacement of the unit heater in the parking garage is estimated to cost $17,000, with the work budgeted in fiscal year 2027 and every 25 years thereafter.

Parking Unit Heater Replacement	
Qty	1
Cost	**$17,000**
Year(s)	**2027, 2052**

Pool Hot Water Distribution Systems Piping

The pool hot water distribution systems piping, including the recirculating pump and shut-off valves, provide essential hot water circulation throughout the pool area. The piping is noted to be in fair condition, with approximately 2 years remaining in its lifecycle.

Recommended Work and Funding:

- Repair allowance and renewal of $17,000 is scheduled for fiscal year 2027 and every 10 years thereafter.

Pool Hot Water Distribution Piping Repair	
Qty	Allowance
Cost	**$ 17,000**
Year(s)	**2027, 2037, 2047**

Fire Hoses and Nozzles

The buildings are equipped with fire hose cabinets located throughout. These systems provide fire suppression capabilities in the event of an emergency.

Recommended Work and Funding:

- Replace hoses and valves as needed during annual inspections. The cost of repairs is assumed to be covered by the operating budget.

Fire Protection Sprinklers

The building is equipped with a fire protection system consisting of sprinklers installed in various areas. These sprinklers are supplied through a sprinkler header located in the basement, which includes control valves monitored by the fire alarm system. The system is currently in good condition.

Recommended Work and Funding:

- Repair allowance of $21,000 has been scheduled for fiscal year 2029 and every 20 years thereafter. This work is expected to include the replacement of dry and wet valves, compressors, pumps, and flow switches, as required.

Sprinklers Repair	
Qty	Allowance
Cost	**$ 21,000**
Year(s)	**2029, 2049**

Fire Pumps

The Bell & Gossett 145 USGPM, 2 HP unlisted fire pumps and pump controllers, located in the basement pump room of each tower, supply water to the standpipe and fire hose cabinets. Fire pumps typically have a service life of 40 years.

Recommended Work and Funding:

- Replacement of the fire pumps is estimated to cost approximately $95,000 and has not been scheduled for this study.

	Fire Pumps Replacement
Qty	2
Cost	**$ 95,000**
Year(s)	**-**

Sump Pumps

The sump pumps and pump controllers are in their respective pits within the mechanical rooms of the parking garage. These pumps are responsible for removing wastewater from the lower levels of the building to the city sewer system. Sump pumps typically have a service life of 10 years, though this can vary significantly depending on usage. It is understood that the pumps were replaced in 2022 and are currently in good condition, with approximately 7 years of remaining life.

Recommended Work and Funding:

- Replacement of the sump pumps is estimated to cost $14,000, with the work budgeted for fiscal year 2032 and every 10 years thereafter.

	Sump Pumps
Qty	Allowance
Cost	**$ 14,000**
Year(s)	**2032, 2042, 2052**

6.6 Electrical

Main Hydro Equipment

The primary hydro equipment comprises two banks of 120/208V and 347/600V transformers, Reyrolle load break switches, and 15,000V breakers located in the main hydro vault. The primary transformers are owned and maintained by Hydro Ottawa, while the associated load break switches and main breakers are owned by the condominium. Main hydro equipment typically has a service life of 50 to 55 years.

Recommended Work and Funding:

- The rough order of magnitude for the replacement or overhaul of the main hydro equipment is estimated at $283,000, with this work scheduled for fiscal year 2035.
- While costs are not included in this study as it does not constitute a major repair or replacement, we recommend that electrical vault maintenance and testing be performed at intervals specified by Hydro Ottawa, using funds from the operating budget.
- Although not included in this study due to its classification as a non-major repair or replacement, we recommend a comprehensive investigation of the vault equipment by a high-voltage electrical contractor, coordinated with vault maintenance.

	Main Hydro Equipment Replacement
Qty	1
Cost	**$ 283,000**
Year(s)	**2035**

Dry Core Transformers

The dry core transformers, with capacities ranging from 30 kVA to 75 kVA, are located in electrical rooms and serve to reduce the voltage of the electrical feed. These transformers typically have a service life of 30 years.

Recommended Work and Funding:

- Replacement or overhaul of the Polygon dry core transformers (phase 2) is estimated to cost $48,000 in fiscal year 2026.

DRY CORE TRANSFORMERS	
Item	**Dry core transformers replacement**
Qty	3
Cost	**$ 48,000**
Year(s)	**2026**

Distribution Breaker Panels

The 120/240V and 600V distribution breaker panels, located in electrical rooms, mechanical rooms, and closets throughout the buildings, distribute electrical power to subsidiary circuits. Moulded case circuit breakers within these panels provide overload protection. These components typically have a service life of 45 to 50 years.

Recommended Work and Funding:

- Due to the varying condition and service life of the 120/240V breaker panels, isolated repairs should be undertaken as needed. For budgeting purposes, an allowance of $40,000 has been allocated for fiscal years 2031/32.
- Replacement of the 600V breaker panel and moulded case circuit breakers is estimated at $33,000, with this work scheduled for fiscal year 2034.

DISTRIBUTION BREAKER PANELS		
Item	**120/240 Volt Electrical Distribution Breaker Panels Replacement**	**600 Volt Electrical Distribution Breaker Panels Replacement**
Qty	9	1
Cost	**$ 40,000**	**$ 33,000**
Year(s)	**2031/2032**	**2034**

Interior Light Fixtures

The lighting fixtures installed throughout the building's common areas and parking garage have service lives that vary based on usage and environmental conditions.

Recommended Work and Funding:

- Partial replacements should be carried out on an as-needed basis with a cost of $14,000 has for fiscal year 2030, with similar allowances scheduled every 15 years thereafter.

Interior Light Fixtures Replacement	
Qty	Allowance
Cost	**$14, 000**
Year(s)	**2030, 2045**

Exterior Light Fixtures

The exterior lighting across the condominium complex includes LED wall sconces and LED projectors. The service life of these fixtures varies depending on their usage patterns and exposure to environmental factors.

Recommended Work and Funding:

- Partial replacements should be carried out on an as-needed basis with a cost of $14,000 has for fiscal year 2030, with similar allowances scheduled every 15 years thereafter.

Exterior Light Fixtures Replacement	
Qty	Allowance
Cost	**$14, 000**
Year(s)	**2030, 2045**

Fire Alarm Panels

The Mircom fire alarm panel located in the main electrical room, along with remote annunciators in the main entrance vestibules of each building, monitor fire alarm sensors throughout the complex. Fire alarm panels typically have a service life of 20-25 years.

Recommended Work and Funding:

- Replacement of the fire alarm control panel, rewiring, and any code-mandated upgrades are estimated at $46,000, with funding allocated to fiscal year 2041.
- The annual ULC 536 test should continue to be conducted, funded through the operating budget, as it is a critical maintenance task rather than a major repair or replacement.

Fire Alarm Panels Replacement

Qty	3
Cost	**$ 46, 000**
Year(s)	**2041**

CCTV System

The CCTV system consists of a DVR and screen located in the recreational center office, monitoring 15 cameras located inside the buildings and the parking garage. CCTV DVR monitoring stations have a typical service life of 15-20 years, and CCTV cameras have a typical service life of 5-10 years.

Recommended Work and Funding:

- An allowance of $8,000 to repair or replacement of the CCTV cameras and monitoring station in fiscal year 2031 and will recur approximately every 10 years thereafter to maintain operational efficiency and security.

	CCTV Systems Repair/Replacement
Qty	Allowance
Cost	**$ 8,000**
Year(s)	**2031, 2041, 2051**

Door Entry System

Door entry systems typically have a service life of 20-25 years. A Mesh IQ enter phone system was installed in 2020, which provides secure and efficient entry management for the building.

Recommended Work and Funding:

- Replacement of the door entry systems is estimated to cost $34,000 and has been scheduled for fiscal year 2045 and will recur approximately every 25 years thereafter to ensure continuity of service and system reliability.

	Door Entry System Replacement
Qty	2
Cost	**$ 34, 000**
Year(s)	**2045**

Key Fob System

The Kantech key fob system consists of a main controller and fob readers throughout the buildings, providing keyless access to the building premises. Key fob systems typically have a service life of 10-15 years.

Recommended Work and Funding:

- Replacement of the key fob system is estimated to cost $9,000 for fiscal year 2026 and will recur approximately every 10 years thereafter to ensure system reliability and up-to-date security features.

	Key fob System Replacement
Qty	1
Cost	**$ 9,000**
Year(s)	**2026, 2036, 2046**

Door Operators

The Kantech key fob system consists of a main controller and operators throughout the buildings, providing keyless access to the building premises. Key fob systems typically have a service life of 10-15 years.

Recommended Work and Funding:

- Maintain an allowance for repairs or partial replacement as needed. It is estimated to cost $9,000 for fiscal year 2026 and will recur approximately every 10 years thereafter to ensure system reliability and up-to-date security features.

	Key fob System Replacement
Qty	1
Cost	**$ 9,000**
Year(s)	**2026, 2036, 2046**

Baseboard Electric Heaters

The baseboard electric heaters, installed in the corridors and common areas of the buildings, provide primary heating to these spaces. These heaters typically have a service life of 30 years.

Recommended Work and Funding:

- To address isolated replacements as needed, a budget allocation of $9,000 has been planned for fiscal year 2029, with similar provisions scheduled every 30 years thereafter.

	Baseboards electrical heaters Replacement
Qty	Allowance
Cost	**$ 9,000**
Year(s)	**2029**

6.7 Elevators

The Otis/Tournebo hydraulic elevators installed in the two towers provide access to floors 1 to 6. The elevator mechanical rooms are in the parking garage level mechanical room. Hydraulic elevators have a typical service life of 25-30 years. Elevator cab interiors have a typical service life of 25-30 years and are renewed for aesthetic purposes.

Recommended Work and Funding:

- An allowance of $5,000 has been made to ensure funds are available to complete periodic condition assessments of elevator equipment in fiscal year 2026 and every 10 years thereafter.
- Replacement of the elevator control systems is estimated to cost $385,000 and this work has been budgeted in fiscal year 2042.
- Replacement of the elevator cab interiors is estimated to cost $41,000 and this work has been budgeted in fiscal year 2038, in conjunction with the elevator control modernization.
- An allowance of $23,000 has been made to ensure funds are available to for future Safety Code change/repair for the two elevators in fiscal year 2026 and every 10 years thereafter.

ELEVATORS				
	Condition Assessment Allowance	**Elevator Control Systems Replacement**	**Elevator Cab Interiors Replacement**	**Safety Code Contingency**
Qty	Contingency	2	2	Contingency
Cost	**$ 5,000**	**$ 385,000**	**$ 41,000**	**$ 23,000**
Year(s)	**2026, 2036, 2046**	**2042**	**2038**	**2026, 2036, 2046**

Accessibility Lifts

The Garaventa vertical lift on each tower provides access to the vestibule, lobby, and parking garage in each tower. Accessibility lifts have a typical service life of 25 years, which can vary greatly depending on usage.

Recommended Work and Funding:

- Replacement of the West and East Tower accessibility lifts is estimated to cost $80,000 and this work has been budgeted in fiscal year 2044 and every 25 years thereafter.

ACESSIBILITY LIFTS	
	West Tower accessibility lift Replacement
Qty	2
Cost	**$ 80,000**
Year(s)	**2044**

6.8 Site Services

Asphalt Roadways

The internal paved roadways and parking areas located on the garage roof structure provide access to the podium deck and form a key element of the site's infrastructure. Asphalt pavement typically has a service life of 25 years. The current condition is noted to be fair and at the end of its service life.

Recommended Work and Funding:

- Replacement of asphalt pavements is scheduled to coincide with the replacement of the garage roof waterproofing. The resurfacing of the asphalt pavement-on-grade is estimated to cost $212,000, with the work planned for fiscal years 2028/29 and every 25 years thereafter.

	Asphalt Roadways Replacement
Qty	2,400 m2
Cost	**$212,000**
Year(s)	**2028/29, 2053/54**

Asphalt Pavement on Concrete Slabs

The asphalt pavement installed on the podium slab of the parking garage typically has a service life of 15 years. The current condition is assessed as fair, with approximately 2 years of remaining service life.

Recommended Work and Funding:

- Allocate $19,000 for repairs, scheduled for fiscal years 2027/28 and recurring every 15 years thereafter.
- Budget $12,000 for periodic asphalt repairs in the parking area, scheduled for fiscal year 2034 and recurring every 7 years thereafter.
- To extend the life of the asphalt pavement between replacement cycles, regular crack and rut repairs, as well as asphalt patching, should be performed.

	Asphalt Pavement Repair	Periodic crack and rut Repair
Qty	Allowance	Allowance
Cost	**$19,000**	**$12,000**
Year(s)	**2027/28, 2042/43**	**2034, 2041, 2048, 2053**

Brick Paver

Numerous brick and concrete paved surfaces are located on the garage roof and at grade around the property. The interlocking pavers function as walkways on the podium and on-grade areas, as

well as at the rear patios of the townhomes and first-floor mid-rise units. These pavers typically have a service life of 25 years and are currently in fair condition, with approximately 2 years of remaining life.

Recommended Work and Funding:

- Replace brick paver walkways at the same time as garage roof waterproofing replacement. Allocate $159,000 for this work in fiscal years 2028/29, with replacement scheduled every 25 years thereafter.
- Replace brick paver of patios at the same time as garage roof waterproofing replacement. Allocate $70,000 for this work in fiscal years 2025, with replacement scheduled every 25 years thereafter.

Brick Paver Replacement		
Qty	Allowance	Allowance
Cost	**$ 159,000**	**$ 70,000**
Year(s)	**2028/29, 2053/54**	**2025, 2050**

Concrete Curbs

The cast-in-place concrete curbs line the asphalt roadways and parking areas throughout the condominium complex. These curbs typically have a service life of 30 to 40 years and are currently in good condition. Minor repairs are anticipated every 5 years to maintain their integrity.

Recommended Work and Funding:

- Maintain an allowance of $6,000 for periodic repairs as needed, starting in fiscal years 2030/31 and recurring every 5 years thereafter.

Concrete Curbs Repair	
Qty	Allowance
Cost	**$6,000**
Year(s)	**2030/31, 2035/36, 2040/41, 2045/46, 2050/51**

Wood Fencing

The property is surrounded by wood fencing, which includes individual privacy fences on the ground level and fencing around the site perimeter. While the replacement of this fencing was originally scheduled for fiscal year 2020/21, it was delayed. Fortunately, an agreement with the neighboring development ensures that the fencing will now be replaced at no cost to the Corporation.

Recommended Work and Funding:

- Repair of the townhouses fencing is estimated at $14,000 and is recommended for fiscal year 2034, with subsequent replacements scheduled every 20 years.
- Replacement of the perimeter wood property fencing is estimated at $68,000 and is recommended for fiscal year 2043, with subsequent replacements scheduled every 20 years.
- Replacement of the wood tennis court fencing is estimated at $100,000 and is recommended for fiscal year 2027, with subsequent replacements scheduled every 20 years.
- Repainting costs have been incorporated into the Exterior Painting budget. Minor repairs should be addressed as needed, with funds allocated from the operating budget.

Twonhouse Fencing Repair		Perimeter Fencing Replacement	Tennis Court Fencing Replacement
Qty	Allowance	Allowance	Allowance
Cost	**$14,000**	**$68,000**	**$100,000**
Year(s)	**2034, 2054**	**2043**	**2027, 2047**

Cast-In-Place Concrete Retaining Walls Clad with Stone

The cast-in-place concrete retaining walls are situated along the ramp leading up to the podium deck. These walls are clad with a stone veneer on the exposed sections. The cast-in-place concrete retaining walls are expected to last the life of the complex, repairs and partial replacements are typically required every 30 years.

Recommended Work and Funding:

- Minor repairs to the retaining walls should be performed as needed, with funding provided through the operating budget.

Pressure-Treated Wood Retaining Walls

The pressure-treated timber tie retaining wall and steps are located at the rear garage entrance and behind the townhome units. This wall system typically has a service life of 25 to 35 years.

Recommended Work and Funding:

- The complete replacement of the retaining wall is estimated to cost $68,000, with the work scheduled for fiscal year 2038.
- Minor repairs to the retaining walls should be performed as required, with funding provided through the operating budget.

Pressure-Treated Wood Retaining Wall Replacement

Qty	Allowance
Cost	**$68,000**
Year(s)	**2043**

Concrete Foundation Walls

The concrete and concrete block foundation walls provide structural support for the midrise building, recreation center, garage, and townhomes. These foundation walls are expected to last the life of the complex. However, occasional crack repairs, parging, and minor concrete repairs will likely be required over this period.

No changes have been made to the allowances or the scheduling for this work from the most recent Reserve Fund Study, aside from adjustments for inflation.

Recommended Work and Funding:

- Minor concrete repairs to the foundation walls should be performed as needed, funded through the operating budget.

Tennis Court Finishes

The tennis court coating is located on the roof of the recreation building, finished with asphalt pavement and a sports surface. The coating and netting typically have a service life of 10 to 15 years. Currently, the coating is in poor condition, at the end of its service life.

Recommended Work and Funding:

- The replacement of the tennis court coating is estimated to cost $218,000, with the work scheduled for fiscal year 2027/28, and subsequent replacements planned every 25 years thereafter.
- To maintain the condition of the coating, regular maintenance should be performed using funds from the operating budget.

Tennis Court Refinishing	
Qty	Allowance
Cost	**$218,000**
Year(s)	**2027/28, 2052/53**

Landscaped Grounds

The landscaped grounds, including shrubs, planters, and trees, surround the condominium complex property. These grounds are expected to last the life of the complex; however, a significant overhaul will be required in conjunction with the podium waterproofing replacement.

Recommended Work and Funding:

- Maintain an allowance for periodic tree pruning and other landscaping repairs, as needed, estimated at $17,000 every 5 years, with the next budgeted funding in 2027/28.
- Maintain an allowance for landscaping replacement during garage roof replacement at $236,000 every 25 years, with the next budgeted funding in 2028/29.

	Landscaping Periodic Repair	Landscaping Replacement
Qty	Allowance	Allowance
Cost	**$17,000**	**$236,000**
Year(s)	**2027/28, 2032/33, 2037/38, 2042/43, 2047/48, 2053/54**	**2028/29, 2053/54**

Irrigation Systems

There is an irrigation system on the property, which is currently in fair condition. The system should be replaced during the upcoming garage roof repairs.

Recommended Work and Funding:

- Replacement of the irrigation system is budgeted at $24,000 in 2028/29, with subsequent replacements scheduled every 25 years thereafter.

	Irrigation System Replacement
Qty	Allowance
Cost	**$24,000**
Year(s)	**2028/29, 2053/54**

Water Supply

The general water supply for the building enters through an underground service room, which is assumed to have a backflow preventer and bypass.

Recommended Work and Funding:

- Maintain a contingency for repairs with a repair allowance of $9,000, scheduled for future renewal in 2025.

	Water Supply System
Qty	Contingency
Cost	**$9,000**
Year(s)	**2025**

Sanitary Sewer

The sanitary sewer pipes on the property are owned by the Corporation and are entirely buried below grade.

Recommended Work and Funding:

- Maintain a contingency for repairs with a repair allowance of $12,000, scheduled for future renewal in 2028.

Sanitary Sewer System	
Qty	Contingency
Cost	**$12,000**
Year(s)	**2028**

Storm Sewer

The storm sewer pipes on the property are owned by the Corporation and are entirely buried below grade. There are also catch basins in the parking lot that form part of the storm sewer system.

Recommended Work and Funding:

- Maintain a contingency for repairs with a repair allowance of $12,000, scheduled for future renewal in 2028.

Storm Sewer System	
Qty	Contingency
Cost	**$12,000**
Year(s)	**2028, 2048**

6.9 Engineering Study

Regular updates to the capital plan are recommended to ensure sufficient funds are being saved and the property is maintained in good condition. It is budgeted to update the capital plan every 3 years.

We recommend the following work be anticipated and funded:

- An allowance of $2,900 to update the capital plan without a site visit is budgeted for fiscal year 2028 and every 6 years thereafter.
- An allowance of $8,000 to update the capital plan with a site visit is budgeted for fiscal year 2025 and every 6 years thereafter.

Capital plan update		
Qty	Allowance	Allowance

Cost	**$2, 900**	**$8, 000**
Year(s)	**2028, every 6 years thereafter**	**2025, every 6 years thereafter**

6.10 Decarbonization Study

Reducing the use of fossil fuels will reduce carbon emissions. As Canada plans to reduce carbon emissions, fossil fuel use will become increasingly more expensive.

We recommend the following work be anticipated and funded:

- An allowance of $8,000 for a decarbonization study is budgeted to identify how to reduce fossil fuel use for fiscal year 2026.

Decarbonization Study	
Qty	Allowance
Cost	**$8, 000**
Year(s)	**2026**

APPENDIX A – PHOTO REVIEW

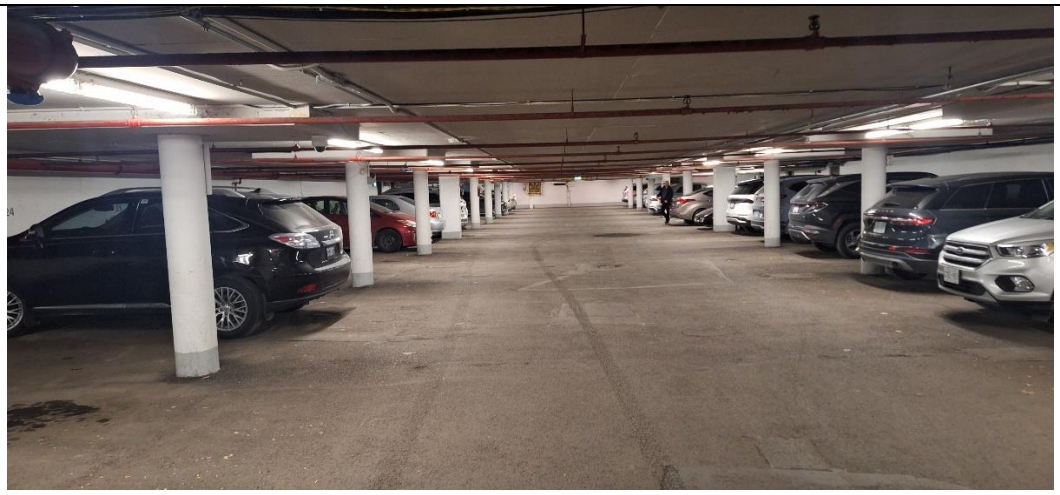

Photo 1 General view of parking garage

Photo 2 General view of parking garage

Photo 3 General view of the ceiling of the parking garage

Photo 4 General view of podium slab covered with landscaping

Photo 5 General view of podium slab covered with landscaping

Photo 6 General view of podium slab covered with landscaping

Photo 7 General view of entrance

Photo 8 General view of retaining walls

Photo 9 General view of masonry

Photo 10 General view of masonry and windows

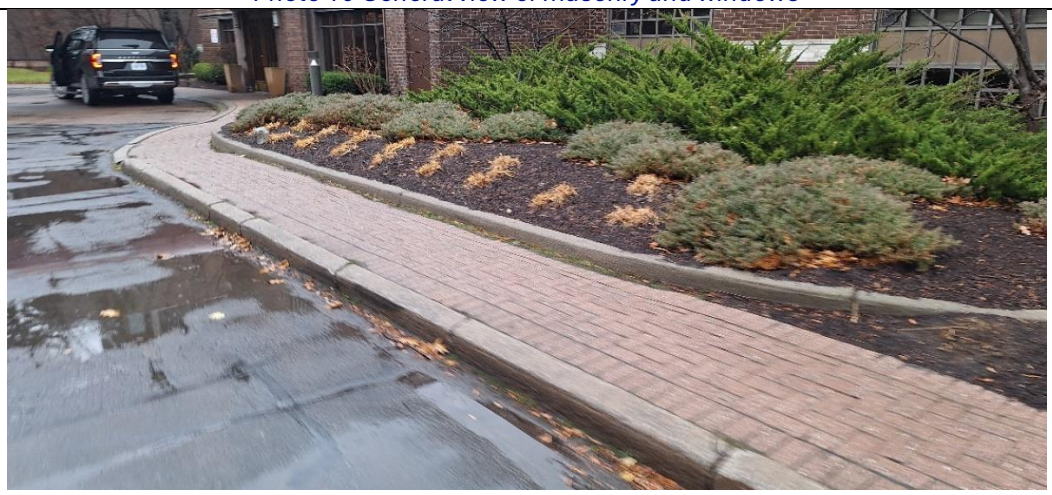

Photo 11 General view of paver walkways

Photo 12 General view of paver walkways

Photo 13 General view of paver walkways

Photo 14 General view of retaining walls

Photo 15 General view of timber retaining walls

Photo 16 General view of fencing

Photo 17 General view of wood fencing

Photo 18 General view of townhouse landscape

Photo 19 General view of masonry

Photo 20 General view of masonry and curtain walls

Photo 21 General view of masonry

Photo 22 General view of brick veneer and windows

Photo 23 General view of elevations

Photo 24 General view of fencing

Photo 25 General view of midrise building roof

Photo 26 General view of townhouses' roof

Photo 27 General view of recreation center roof

Photo 28 General view of entrance roof

Photo 29 General view of midrise building roof

Photo 30 General view of corridors

Photo 31 General view of corridors

Photo 32 General view of common areas

Photo 33 General view of common areas

Photo 34 General view of common areas

Photo 35 General view of common areas

Photo 36 General view of nautilus room

Photo 37 General view of squash court & racquetball court/driving range

Photo 38 General view of squash court & racquetball court/driving range

Photo 39 General view of lockers and change room

Photo 40 General view of corridors and lockers

Photo 41 General view of swimming pool area

Photo 42 General view of swimming pool & Whirlpool

Photo 43 General view of swimming pool & Whirlpool

Photo 44 General view of swimming pool

APPENDIX B – MAJOR REPAIR AND REPLACEMENT COSTS

March 23, 2025

Martis Engineering Ltd.

The Board of Directors
Carleton Condominium Corporation No. 256
c/o Wade Kirk Patrick, Property Manager
Apollo Property Management Ltd.
1200 Prince of Wales Drive, Suite D
Ottawa, ON
K2C 3Y4

Dear Mr. Kirkpatrick:

Re: Class 1 Reserve Fund Study
CCC256 – 111 Echo Drive, Ottawa

We have completed a Class 1 Reserve Fund Study for Carleton Condominium Corporation No. 256, located at 111 Echo Drive, Ottawa. A description of our approach to completing reserve funds, including terms and general conditions, is found in Appendix B.

The subject property consists of two 6-storey residential buildings each with 17 units, plus an additional 12 townhouse style dwellings, for a total of 46 units sharing a common site. The property is about 41 years old, having been constructed in about 1984. There is a single-level parking garage, recreation centre, and common central heating and cooling system.

As required by *The Condominium Act,* the Corporation is required to complete an update of the reserve fund study (RFS) every three years. The last RFS Keller Engineering in January 2022.

Documents

The following documents were provided to us in completing the Reserve Fund Study Update.

- Audited Financial Statements for the year ended May 31, 2024, by OHCD Accountants;
- Previous RFS and Notice of Future Funding (NOFF) prepared by Keller Engineering in January 2022;
- By-Law 12, describing a Standard Unit;
- Condominium Declaration for CCC256, registered on October 17, 1984.
- RFS Questionnaire, completed by Wade Kirkpatrick, Property Manager;
- Make-up Air Unit Pre-design report, by Rimkus Engineering, dated December 11, 2024.
- Roof Assessment Report, by AAR, dated October 4, 2023.

Mr. David Visser, P.Eng., of Adjeleian Allen Rubeli Limited visited the site on November 21, 2024 to complete the visual review. Mr. Daniel Martis, P.Eng. reviewed the report for technical content.

Reference Information

Component Inventory and Expense Threshold

The Component Inventory is considered a list of major common elements expected to require major repairs or replacements.

The Condominium Act stipulates that major repairs or replacements of the common element components greater than $500 can be paid from the reserve fund. We did not receive any specific dollar threshold for reserve fund expenses; we have accordingly assumed expenses greater than about **$1,000** would be paid from the reserve fund.

Reserve Fund Balance

Based on financial information provided to us, the following was the status of the reserve fund as of the start of the current fiscal year:

Current Fiscal Year 2025, from June 1, 2024 to May 31, 2025	
Reserve Fund Contribution (reported on NOFF):	$704,376
Reserve Fund Opening Balance:	$535,201

Interest and Inflation Rates

The Board of Directors has provided their input in determining interest and inflation rates in completing the update. Rates are as follows:

Interest Rate: 3.0%

Inflation Rate: 3.0%

The difference between interest and inflation rates represents the net gain over inflation or return on investment for the reserve fund. Our assumptions reflect a gain of **0.0%** over inflation.

Adequate Reserve Fund

We understand the Board of Directors has suggested a minimum balance of **$150,000**. In a few years, we understand the Board is comfortable with the balance being below $100,000.

Much has been published about how to determine an appropriate balance. A minimum could be 3 months of operating expenses, or the common element insurance policy deductible.

Tables Update

The reserve fund update consists of the following tables, found in Appendix A:

Condition Assessment: The first set of tables, outlining our observations and comments from our site visit, contained in the column titled "Description and History." Expenditures are stated in today's dollars, and include taxes and consulting fees, where appropriate.

Capital Plan: Recommendations for action and expected expenditures for the study period. Expenses appear in columns corresponding to the year in which they occur and are stated in today's dollars. Expenses are shown in two sets of tables, Years 1 to 15 and 16 to 30.

Cashflow: Funding scenarios, showing the forecast cashflow for the duration of the study period, including the expected fund balances, recommended contributions, and expected expenditures, stated in future value.

Financial Analysis

Funding Scenario 1

We understand the Board has reviewed and accepted the following funding Scenario 1 as a means of funding future reserve fund expenditures. In this scenario, the reserve fund contribution increases by 10.0% annually for the next 3 years. Increases thereafter are 3% to match inflation only.

The reserve fund remains above zero for the duration of the study period, with a minimum balance of $114,396 in 2029.

The average per-unit contribution, and per-unit annual increase is summarized below in the following table:

Scenario 1	2025	2026	2027	2028
Annual Reserve Fund Contribution	$704,376	$774,814	$852,295	$937,524
% Increase	n/a	10.00%	10.00%	10.00%
Average Increase Per Unit Per Month	n/a	$127.61	$140.36	$154.40
Average Contribution Per Unit Per Month	$1,276.04	$1,403.65	$1,544.01	$1,698.41
Total Number of Condominium Units:	46			

Summary

The building is generally in good condition however a number of systems are nearing the end of their service life. A program of renewals is expected over the next decade.

Average annual reserve fund expenses are currently forecast to be about $ 560,000 per year over the next 30 years. Regardless of when expenses occur, the reserve fund contribution needs to be greater than this amount to have sufficient funds.

The actual reserve fund contribution should be determined by the Board of Directors. The reserve fund should also be reviewed by your auditor to determine if it meets the needs of your Reserve Fund.

We trust this provides the information you require. Please contact the undersigned if there are any questions.

Yours truly,
Martis Engineering Ltd.

Daniel Martis, P.Eng.
Senior Project Manager

APPENDIX A: RESERVE FUND STUDY TABLES AND NOTICE OF FUTURE FUNDING

Comprehensive Reserve Fund Study
CCC 256 - 111 Echo Drive, Ottawa
FINAL - March 23, 2025

Row	COMPONENT		CONDITION ASSESSMENT			RECOMMENDATION			LIFECYCLE DATA				
	ID	Location / Type	Description & History	Condition	Actual or Estimated Year of Acquisition	Recommendation	Type	Priority	Age in 2025	Typical Life Cycle	Estimated Remaining Life	Years Over Which Project is Phased	Recommended Budget in 2025 Dollars
	SUBSTRUCTURE												
1	A1010 Standard Foundations	Below-grade	The buildings are constructed with cast-in-place concrete foundations. Where visible in the parking garage, no obvious cracks or evidence of deterioration were noted on the foundation walls at the time of the site visit.	Good	1984	The foundations are expected to last the life of the building. No major repairs are anticipated. Local repairs to the foundation walls, if needed, are expected to be paid from the operating budget.			41	100	59	1	
2	B102003 Roof Decks and Slabs	Garage Roof Waterproofing	The parking garage roof structure forms the surface of the site entrances. The structure is protected with a waterproofing membane.	Fair	1984	Replace waterproofing membrane at end of service life. We have included consulting fees. Cost to replacements pavements and landscaping is budgeted separately.	Replacement	3 - Future Renewal	41	30	3	2	$1,150,000
3	B102003 Roof Decks and Slabs	Garage Roof Expansion Joint	There are two expansion joints in the garage roof structure that separates each of the two buildings. During our site visit, evidence of leakage was noted.	Poor	1984	Replace expansion joint waterproofing during roof slab replacement. We have included consulting fees.	Replacement	3 - Future Renewal	41	20	3	2	$51,000
4	B102003 Roof Decks and Slabs	Garage Roof Waterproofing, Local Repairs	See above. We understand there was or may currently be a leak in the electrical room.	Good	2016	Maintain an allowance to repair waterproofing as needed.	Repair Allowance	3 - Future Renewal	9	12	1	1	$14,000
	SUPERSTRUCTURE												
5	B102001 Structural Frame	Building Structure	The buidling and parking garage appears to consist of a reinforced concrete structure supported on concrete walls and footings.	Good	1984	The structure is expected to last the life of the building. No repairs are anticipated.			41	100	59	1	$0
	BUILDING ENVELOPE												
6	B2010 Exterior Walls - Masonry Walls	Exterior Walls and Townhouse Chimneys	All buildings on the property are clad primarily with brick veneer masonry. At one floor of the towers, bricks appear to be a difference colour as we understand repairs were completed in about 2001. The townhouses have large chimneys at the east side of each unit.	Good	2001	Maintain an allowance for local repairs as needed. This includes local repair to chimneys and brick replacement of repointing as needed.	Repair Allowance	3 - Future Renewal	24	15	5	1	$40,000
7	B201011 Joint Sealant - Replacement	Exterior Walls, Towers	Sealant is installed at the perimeter of windows and doors, and at joints in cladding.	Good	2020	Replace sealants at the towers only at end of service life. Sealants at townhouses are included with window replacements.	Replacement	3 - Future Renewal	5	15	10	1	$226,000
8	B201011 Joint Sealant - Repairs	General	See above.	Good	2020	Maintain an allowance for minor repairs, as needed.	Repair Allowance	3 - Future Renewal	5	10	5	1	$11,000
9	B201005 Exterior Louvers and Screens-Vent Louvers	Throughout	There are vents at the towers that provide exhaust for kitchens and bathrooms.	Good	1984	Replace exhaust vents and dampers at the same time as sealant replacement. At townhouses, vents are expected to repaired or replaced as needed.	Replacement	3 - Future Renewal	41	30	5	1	$20,000
10	B2010 Exterior Walls - Balcony & Terraces	Balconies	Balconies are constructed of reinforced concrete, and are extensions of the floor slabs. There are 10 balconies at each of the two buildings. Where visible from ground level, no visible cracks or spalls were noted. We were unable to determine if a waterproof membrane had been applied on the balcony surface.	Good	1984	Repair balcony slab edges to address carbonation of concrete. We have assumed 100% of the slab edge would be repaired. Work is planned at the same time as railing replacement.	Repair Allowance	3 - Future Renewal	41	40	8	1	$102,000
11	B2010 Exterior Walls - Balcony & Terraces	Balcony Waterproofing	There is no waterproofing membrane on the concrete balcony slabs.	Good	1984	Install waterproofing membrane at the same time balcony slab edges are repaired.	Replacement	3 - Future Renewal	41	40	8	1	$104,000
12	B2010 Exterior Walls - Balcony & Terraces - Railings	Railings	The balconies have glass panel railings that appear to be newer. There is also a metal cover over the slab edge.	Good	1984	We have assumed railings have been replaced since original construction. Replace aluminum railings at the end of the service life. We recommend balcony railings be done at the same time as slab edge repairs and waterproofing replacement.	Replacement	3 - Future Renewal	41	40	8	1	$119,000
13	B202001 Windows - Curtain Wall Refurbishment	Curtain Wall Windows, Tower	There are curtain wall-framed windows at the towers, consisting of double glazing secured with aluminum pressure plates. We understand a major refurbishment to replace a portion of the glass was recently completed.	Good	2021	Curtain wall frames are expected to last the life of the building. Budget for a major refurbishment to replace all glass again.	Replacement	3 - Future Renewal	4	30	26	2	$1,790,000

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14	B202001 Windows - Bay Window Replacement	Bay Windows and Remaining Curtain wall, Tower	Bay windows at the tower have conventional interior glazed aluminum frame windows with double pane insulating glass. There are also curtain wall framed windows on the courtyard side of the building that are original. Windows appear to be original.	Fair	1984	Windows are nearing the end of their useful life. Budget for eventual replacement. We have included for consulting costs.	Replacement	3 - Future Renewal	41	45	5	2	$1,270,000
15	B202001 Windows - Full Replacement	Windows, Townhouses	Townhouse windows are metal-clad wood frames with double pane insulating glass. There are also bay windows with sloped overhead glazing that are likely all aluminum frame. We understand windows were replaced in 2010.	Fair	2010	Replace townhouse windows at end of service life.	Replacement	3 - Future Renewal	15	30	15	2	$339,000
16	Windows - Recreation Centre	Gym Windows	There are windows at the gym area. We understand repairs were recently completed to replace caulking.	Fair	2025	Budget for repairs based on amounts recently spent.	Replacement	3 - Future Renewal	0	20	0	1	$12,000
17	B202001 Windows - Ongoing IGU Replacement Allowance	Windows	Windows have double pane insulating glass. Over time, seals can fail, resulting in moisture accumulation between the panes.	Fair	1984	Budget for ongoing replacement of failed IGU units throughout the building as needed.	Repair Allowance	3 - Future Renewal	41	20	0	10	$34,000
18	B203002 Glazed Doors - Balcony Sliding Doors	Balconies	There is a 6-foot wide aluminum-framed sliding doors on the balconies. We understand there are 28 doors total which appear to be original.	Good	1984	Budget for replacement of all the balcony sliding doors in all suites throughout the building.	Replacement	3 - Future Renewal	41	30	5	2	$133,000
19	B203002 Glazed Doors - Rear Yards	Townhouse Rear Doors	There are glazed insulated metal doors at the rear of each of the townhouse units. There are 12 doors; one at the rear of each unit.	Good	2004	Replace doors at end of service life.	Replacement	3 - Future Renewal	21	30	9	1	$34,000
20	B203001 Solid Doors	Townhouse Entrances	Each townhouse has a metal clad insulated wood door. There are 12 doors; one at the front of each unit.	Good	2004	Age is estimated. Replace door at end of service life.	Replacement	3 - Future Renewal	21	30	9	1	$41,000
21	B203001 Solid Doors	Exterior Envelope	There are exterior hollow metal doors around the property.	Good	2008	Maintain an allowance for repairs or replacements, as needed. This is expected to include new hardware, painting, or isolated door and frame replacement.	Repair Allowance	3 - Future Renewal	17	20	5	1	$6,000
22	B203004 Overhead and Roll-up Doors	Garage Entrance Door	There are two insulated overhead doors that provides access to the parking garage.	Good	2004	Age is estimated. Replace overhead door at end of service life. Repairs to the door operator are assumed to be paid from the operating budget.	Repair Allowance	3 - Future Renewal	21	20	0	1	$10,000
	ROOFS												
24	B301002 Low Slope Membrane Systems	Tower Roofs	The tower roofs consist of an inverted membrane assembly. An asphalt membrane is placed on the structure, which is covered with insulation and ballast. We have assumed the roof membranes has been replaced since construction.	Good	2004	Replace tower roof membranes at end of service life.	Replacement	3 - Future Renewal	21	30	9	2	$1,058,000
25	B301002 Low Slope Membrane Systems	Recreation Centre	The recreation centre has a flat roof covered with a wateproofing membrane and a tennis court surface.	Poor	1996	Replace roof membrane at end of service life. Cost of tennis court resurfacing is budgeted elsewhere.	Replacement	3 - Future Renewal	29	20	2	2	$547,000
26	B301002 Low Slope Membrane Systems	Entrance Canopies	The entrance canopies are barrel shaped roofs and are covered with what appears to be a fabric covering.	Good	2020	Replace vinyl siding at end of service life.	Replacement	3 - Future Renewal	5	15	3	2	$63,000
27	B301001 High Slope Roof Coverings - Shingled Roof	Townhouse Roofs	Sloped roofs at the townhouses are covered with is reported to be a rubberized shingle. We understand roofs were replaced in 2017.	Good	2017	Replace roof shingles at end of service life.	Replacement	3 - Future Renewal	8	30	22	1	$201,000
28	B301003 Roof Insulation & Fill	Attic Insulation Townhouses	Each of the townhouses is assumed to have an attic with batt insulation. We understand repairs were recently completed.	Not Reviewed	2021	Over time, insulation may settle or be blown around or damaged in the mansard cavity. We have budgeted a small allowance for local repairs.	Repair Allowance	3 - Future Renewal	4	30	26	1	$21,000
29	B301005 Gutters and Downspouts	Perimeter Eavestroughs, Townhouses	Prefinished aluminum eavestroughs and downspouts are located at the perimeter of the roofs.	Good	2018	Replace eavestroughs and downspouts at end of service life. Work is planned at the same time as shingle roof replacement.	Replacement	3 - Future Renewal	7	30	23	1	$11,000

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30	B301099 Other Roofing - Roof Maintenance	Local Repairs, Sloped and Flat Roofs	Over time, roof shingles may be blown loose, or flat roofs may local repairs. Periodic inspections and repairs can help extend the life of the roofs.	Good	2018	Maintain an allowance for periodic repairs to the flat and shingled roof as needed.	Repair Allowance	3 - Future Renewal	7	5	1	1	$11,000
	INTERIOR												
31	C302005 Carpeting - Replacement	Tower Corridors	Corridors have a carpeted finish that appears to be newer.	Good	2012	Budget to replace all corridor carpets.	Replacement	3 - Future Renewal	13	15	7	1	$123,000
32	C3010 Wall Finishes - Replacement	Tower Corridors	Corridor walls have a wallpaper finish.	Good	2012	Age is estimated. Replace corridor wallpaper at the same time as carpet replacement.	Replacement	3 - Future Renewal	13	15	7	1	$65,000
33	C3030 Ceiling Finishes	Tower Corridors	Corridor ceilings consist of painted gypsum board bulkheads with acoustic tile in a suspended grid.	Good	2012	Paint gypsum board and replace ceiling tiles during corridor renovation.	Replacement	3 - Future Renewal	13	15	7	1	$82,000
34	C102001 Standard Interior Doors -Suite	Tower Suites	Each unit in the apartment buildings has solid core wood doore in a fire-rated metal frame.	Good	2012	Paint or refinish suite doors at every corridor renovation.	Replacement	3 - Future Renewal	13	30	17	1	$20,000
35	C102001 Standard Interior Doors -Suite	Suites	See above.	Good	2012	Refinish suite doors and replace door hardware at every second corridor renovation.	Replacement	3 - Future Renewal	13	30	7	1	$58,000
36	C102001 Standard Interior Doors -Suite	Suites Doors, Replacement	See above.	Good	1984	Replace suite doors as needed to address cracks and overall deterioration. We have assumed 3 doors require replacement	Replacement	3 - Future Renewal	41	40	1	1	$193,000
37	C1020 Interior Doors - Service Room, Stairwell & Amenity	Interior	There are numerous fire rated hollow metal doors throughout the building.	Good	2012	Paint doors during corridor renovations.	Replacement	3 - Future Renewal	13	15	7	1	$12,000
38	E20 Furnishings - Entrance Lobby-Refurbishment	Entrance Lobby - Minor Renovation	The entrance lobby has a marble tile and carpeting for the floors, with wood panelling and marble walls.	Good	2012	Budget for minor refurbishment of the entrance lobby finishes and fixtures. Include mail room refurbishment as well.	Replacement	3 - Future Renewal	13	15	7	1	$57,000
39	E20 Furnishings - Entrance Lobby-Refurbishment	Entrance Lobby - Major Renovation	The entrance lobby has a marble tile and carpeting for the floors, with wood panelling and marble walls.	Good	2012	Budget for major refurbishment of the entrance lobby finishes and fixtures. Include mail room refurbishment as well.	Replacement	3 - Future Renewal	13	15	7	1	$136,000
40	C30 Interior Finishes - Squash Court and Golf Simulator	Recreation Centre, Squash Court and Golf Simulator	The recreation centre has a squash court and adjacent golf simulator.	Good	2008	Maintain an allowance for repairs to equipment and finishes as needed.	Repair Allowance	3 - Future Renewal	17	10	6	1	$23,000
41	E20 Furnishings - Locker Rooms	Locker Rooms	There are locker rooms used to store residents belongings.	Good	2015	Maintain an allowance for periodic painting, as needed.	Replacement	3 - Future Renewal	10	15	6	1	$17,000
42	C30 Interior Finishes - Exercise Room	Exercise Room	The exercise room or Nautilus Room has a rubberized floor, painted walls and a gypsum board ceiling.	Good	2020	Replace finishes are part of exercise room renovation.	Replacement	3 - Future Renewal	5	20	7	1	$23,000
43	E20 Furnishings - Exercise Room - Furniture & Equipment	Exercise Room, Equipment	See above.	Good	2015	Maintain an allowance for repair or replacement of equipment as needed.	Repair Allowance	3 - Future Renewal	10	10	1	1	$9,000
44	E20 Furnishings -Pool Deck	Pool and Whirlpool Deck	The recreation centre has an indoor pool with tiled floors and painted gypsum board walls. Finishes are older.	Fair	1984	Replace pool deck tile and refinish walls to renew the appearance.	Repair Allowance	3 - Future Renewal	41	25	7	1	$57,000
45	E20 Furnishings - Change Rooms	Change Rooms, Recreation Centre	The recreation centre has change rooms that include washrooms, showers and lockers. Finishes are older.	Fair	1984	Maintain an allowance for repair or replacement of equipment as needed.	Repair Allowance	3 - Future Renewal	41	25	7	1	$91,000
46	E20 Furnishings - Saunas	Saunas	There are cedar lined saunas in each of the change rooms.	Fair	1984	Maintain an allowance for repair or replacement of finishe and equipment at saunas.	Repair Allowance	3 - Future Renewal	41	25	7	1	$46,000
47	C301005 Painting to Walls - Stairwells	Stairwells	Stairwells have painted concrete walls and floors. There are two stairwells in each of the two towers, and 3 stairwells in the rec centre.	Good	2014	Budget for painting of all the stairwells running from the ground floor level to the roof.	Replacement	3 - Future Renewal	11	20	7	1	$23,000

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	MECHANICAL												
49	D2020 Domestic Water Distribution	Riser Piping	Domestic hot water is distributed through a network of vertical risers and horizontal headers. Water flows in the system continuously. Piping in suites is likely copper tubing.	Good	1984	Replace riser piping at end of service life.	Replacement	3 - Future Renewal	41	35	8	1	$306,000
50	D2020 Domestic Water Distribution	Recirculating Header	See above.	Good	2009	Replace recirculating header piping in common corridors at end of service life.	Replacement	3 - Future Renewal	16	25	8	1	$170,000
51	D202003 Domestic Water Equipment	Towers and Rec Centre, Tank Heaters	Domestic hot water for each of the towers is reportedly provided by a two 80-gallon gas-fired tank type heaters in each of the two towers, plus an additional heater in the rec centre. We have assumed equipment is newer.	Good	2022	Replace water heaters as they fail or at end of service life.	Replacement	3 - Future Renewal	3	7	4	1	$28,000
52	D209004 Pool Piping and Equipment	Pool Filtration Equipment	The pool and whirlpool have filtration equipment, heaters and circulating pumps that maintain water quality for the pool and whirlpool.	Fair	2017	Maintain an allowance for repairs as needed.	Repair Allowance	3 - Future Renewal	8	10	2	1	$14,000
53	D202099 Other Domestic Water Supply	Recirculating Pumps	A recirculating pump moves domestic hot water continuously through the towers.	Good	2022	Replace pumps as needed.	Replacement	3 - Future Renewal	3	15	12	1	$7,000
54	D302003 Furnaces	Townhouses	We understand townhouses are heated with a forced air heating system.	Not Reviewed	2004	Equipment is owned by each unit owner. No costs budgeted			21	20	0	1	
55	D303001 Chilled Water Systems	Fluid Coolers, Rec Centre Roof	There are two fluid coolers on the roof of the rec centre that we understand provide cooling for the fan coils in the suites. Equipment has a capacity of about 50 tons cooling each, and run on R-22 refrigerant.	Fair	2000	Equipment is nearing the end of its useful life, and uses refrigerant that is now obsolete. Budget is like for like replacement, Consider a large capacity air-source heat pump that can provide heating and cooling.	Replacement	3 - Future Renewal	25	25	2	1	$181,000
56	D303002 Direct Expansion Systems	Elevator Room Cooling	Each of the two elevator machine rooms has a small mini-split air conditioner that provides cooling.	Good	2017	Replace air conditioners at end of service life.	Replacement	3 - Future Renewal	8	15	7	1	$16,000
57	D304007 Exhaust Systems	Garage Exhaust	The parking garage has exhaust fans that ventilate the space. These are connected to a carbon monoxide monitoring system that turns the system on when needed.	Good	2020	Maintain an allowance to repair or replace fans and sensors as needed.	Repair Allowance	3 - Future Renewal	5	10	5	1	$12,000
58	D304008 Air Handling Units- Replace	Common area Fan Coils	There are several electric baseboard heaters in common areas that provide heating. There are 6 in the rec centre and 7 in each tower.	Fair	1984	Maintain an allowance for partial repairs, as needed.	Repair Allowance	3 - Future Renewal	41	30	8	1	$17,000
59	D304008 Air Handling Units- Replace	Make-up Air Units, Roof	Each of the towers has a small packaged make-up air unit that provides heating and cooling to the common corridors. We understand equipment delivers an air volume of 2000cfm	Fair	2000	Replace make-up air units at end of service life. We have budgeted a like for like replacement. Consider adding a heat pump to provide heating and cooling without using natural gas. Amount budgeted is the high end of the budget provided by Rimkus Engineers, plus an allowance for fire alarm system repairs, plus contingency and taxes.	Replacement	3 - Future Renewal	25	25	1	1	$523,000
60	D304006 Chilled Water Distribution Systems	Chilled Water Pumps	We understand there is a 3hp duplex pump set that circulates chilled water from the fluid coolers to the fan coils in the suites.	Fair	2000	Replace chilled water pumps at end of service life.	Replacement	3 - Future Renewal	25	25	2	1	$6,000
61	D304006 Chilled Water Distribution Systems	Hydronic Piping	Chilled water is distributed by a network of piping throughout the towers.	Fair	1984	Maintain an allowance for repairs, as needed. This is expected to include valve replacements and partial piping replacement.	Repair Allowance	3 - Future Renewal	41	5	2	1	$17,000

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62	D3050 Terminal & Package Units	Rooftop Units, Rec Centre	There are 3 packaged rooftop units at the rec centre that provide heating and cooling to the space. Equipment is manufactured by Lennox, with each unit have 5 tons cooling and 120MBH heating capacity. We understand one unit is no longer operational.	Poor	2002	Replace rooftop units at end of service life. Consider heat pump rooftop units to provide heating and cooling with electricity only.	Replacement	3 - Future Renewal	23	20	2	1	$255,000
63	D3050 Terminal & Package Units	Pool Dehumidifier	The pool has a Dectron brand dehumidifier that maintains humidity at the pool area. Heat is rejected back into the swimming pool	Fair	2009	Age is estimated. Replace dehumidifier at end of service life.	Replacement	3 - Future Renewal	16	20	4	1	$68,000
64	D305002 Unit Heaters	Garage Heaters	There is a single Lennox brand gas-fired unit heater that provides heating for the parking garage.	Fair	2002	Replace unit heater at end of service life.	Replacement	3 - Future Renewal	23	25	2	1	$17,000
65	D304003 Hot Water Distribution Systems - Piping	Throughout	See above.	Good	2017	Maintain an allowance for repairs to piping as needed. This is intended for repairs to the recirculating pump and shut-off valves, as needed.	Repair Allowance	3 - Future Renewal	8	10	2	1	$17,000
66	D402001 Standpipe Equipment and Piping - Fire Hoses and Nozzles	Throughout	The buildings have fire hose cabinets located throughout the building.	Good	1984	Replace hoses and valves as needed during annual inspections. The cost of repairs is assumed to be paid from the operating budget.			41	10	0	1	
67	D40 Fire Protection - Repairs	Sprinklers	The building has a fire protection system consisting of sprinklers in the parking garage and garbage chutes. These are supplied through a sprinkler header located in the basement, which has control valves that are monitored by the fire alarm system.	Good	1984	Maintain an allowance for repairs, as needed. This is expected to include replacement of dry and wet valves, compressors, pumps and flow switches, as needed.	Repair Allowance	3 - Future Renewal	41	20	4	1	$21,000
68	D4020 Standpipe Systems	Fire Pump	Each building is reported to have a 2hp fire pump that maintains water pressure in the event of a fire.We understand a major replacement was recently completed.	Fair	2019	Budget for future repairs based on amounts recently spent.	Replacement	3 - Future Renewal	6	40	34	1	$95,000
69	D20 Plumbing - Sump Pumps	Sump Pumps	There are sumps located in the parking garage that eject sanitary sewage and water from around the elevator pits to the municipal sewers.	Not Reviewed	2022	Replace sump pumps as they fail or at the end of their service life.	Replacement	3 - Future Renewal	3	10	7	1	$14,000
	ELECTRICAL												
71	D5010 Electrical Service & Distribution - Allowance	Electrical Room	The main switchgear that distributes power to common and suite loads. Power is fed from transformers in the hydro vault that are owned by the local utility. There is a 1200A switchgear at 120/208V that feeds the loads in tower, and a 800A switchgear at 600/347V that feeds the recreation centre only. Equipment is reported to be original.	Fair	1984	Replace equipment at the end of the service life. Periodic inspections should be completed, such as thermographic scans to identify issues. Inspections are assumed to be paid from the operating budget.	Replacement	3 - Future Renewal	41	50	10	1	$283,000
72	D501001 Main Transformers	General	There are 4 tranformers that reduce voltage from 600V to 120/208V. Most transformers are older.	Fair	1984	Older equipment is beyond the end of its useful service life. We recommend replacement to maintain reliability and avoid unpredictable failure.	Replacement	3 - Future Renewal	41	30	1	1	$48,000
73	D501005 Panels	Throughout	There are several electrical panels located throughout the building that supply various common building loads. There is one panel at 600V and 9 panels at 120/208V.	Good	1984	Replace circuit breaker panels at end of service life.	Replacement	3 - Future Renewal	41	40	6	2	$40,000
74	D501006 Enclosed Circuit Breakers	Fused disconnects	There are numerous fused disconnects throughout the property that control power to large equipment and loads. Most disconnects are are original.	Fair	1984	Budget to replace older disconnects only at end of service life.	Replacement	3 - Future Renewal	41	50	9	1	$33,000
75	D502002 Lighting Equipment-Light Fixtures - Common Area	Corridors and Common Areas	There is a variety of common area lighting, ranging from single overhead fixtures, fluorescent strip lights and concealed false lighting at corridors. We understand all lighting has been converted to LED bulbs.	Good	2015	Maintain an allowance for partial replacement of common area lighting, as needed.	Replacement	3 - Future Renewal	10	15	5	1	$14,000
76	D502002 Lighting Equipment - Light Fixtures - Exterior	Outdoor Lighting	Outdoor lighting consists of a variety of wall sconces and overhead fixtures. We understand most have been converted to LED.	Good	2015	Maintain an allowance for partial replacement of outdoor lighting, as needed.	Replacement	3 - Future Renewal	10	15	5	1	$14,000

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77	D503001 Fire Alarm Systems - Replacement	General, Electrical Room	The building has a Mircom brnad fire alarm system. A central control panel is located in the electrical room, with remove annunciators located in the vestibule of each tower entrance. We understand the fire alarm panel was recently replaced.	Good	2021	The system is inspected annually and devices replaced as needed, with costs paid from the operating budget. We have budgeted to replace the main control panel at end of service life.	Replacement	3 - Future Renewal	4	20	16	1	$46,000
78	D5030 Communications & Security - CCTV	Throughout	The buidling has a security system with 15 cameras located throughout the building leading to a main controller.	Good	2021	Maintain an allowance for repairs or to replace the controller and cameras as needed.	Repair Allowance	3 - Future Renewal	4	10	6	1	$8,000
79	D503008 Security Systems - Entry System	Front Entrance	There is an enterphone system at the front lobby of each building that allows entry for guests.	Good	2020	Replace enterphone equipment as it becomes obsolete or at end of service life.	Replacement	3 - Future Renewal	5	25	20	1	$34,000
80	D503008 Security Systems - Fob Reader	Front Entrance	There is a fob reader at all locked access points to the property, including the rec centre, both buildings and the parking garage.	Good	2016	Maintain an allowance for repairs or partial replacement as needed.	Repair Allowance	3 - Future Renewal	9	10	1	1	$9,000
81	D503008 Security Systems - Door Operators	Front Entrance	Some doors have powered operators for barrier-free entry.	Good	2016	Maintain an allowance for repairs or partial replacement as needed.	Repair Allowance	3 - Future Renewal	9	10	1	1	$9,000
82	D509005 Electrical Heating	Common areas	There are several electrical heaters throughout the common areas.	Good	1984	Maintain an allowance for repair or replacement, as needed.	Repair Allowance	3 - Future Renewal	41	30	4	1	$9,000
83	D509005 Electrical Heating	In Suites	We understand space heating in suites is provided by perimeter base board heaters.	Not Applicable	1984	Equipment is owned by unit owners. No repairs anticipated. Replacement with heat pumps will result in considerable energy savings.			41	30	0	1	
	ELEVATORS												
85	D101002 Passenger Elevators - Control Modernization	Elevator Equipment	Each building has a single elevator that appears to be hydraulically actuated. A closet contains control equipment that is manufactured by Otis. We understand a modernization has been completed since original construction.	Good	2017	Replace the elevator at end fo service life. We have assumed this will include a new cylinder, oil tank and controls.	Replacement	3 - Future Renewal	8	25	17	1	$385,000
86	D101002 Passenger Elevators - Accessibility Lifts	Accessibility Lifts	There is a Garaventa brand accessibility lift in each of the two lobbies for the towers that provide access to the parking garage, lobby and vestibule.	Good	2019	Replace lift equipment at end of service life as it becomes obsolete.	Replacement	3 - Future Renewal	6	25	19	1	$80,000
87	D101002 Passenger Elevators - Safety Code Contingency	Elevators	See above.	Not Applicable	2013	Over time, safety codes can change requiring retroactive repairs to elevators. Budget for future Safety Code change/repair for the two elevators.	Contingency	3 - Future Renewal	12	10	1	1	$23,000
88	D101002 Passenger Elevators - Cab Finishes	Elevators	Elevators finished consist of laminate wall panels and tiled floor.	Good	2017	Budget for the refurbishment of the two elevator cabs.	Repair Allowance	3 - Future Renewal	8	25	17	1	$41,000
89	D101002 Passenger Elevators - Condition Assessment	Elevators	Elevator equipment should be reviewed by a third party to evaluate the level of maintenance, identify any code deficiencies or risks and provide input on the recommended time to replacement and estimated cost.	Not Applicable	2013	Complete periodic condition assessments of elevator equipment.	Study	3 - Future Renewal	12	10	1	1	$5,000
	SITE										0		
91	G201003 Paved Surfaces - Asphalt	Internal Roadways and Parking Areas	There are internal paved roadways and parking areas on the garage roof structure.	Fair	2001	Replace asphalt pavements at the same time as replacement of garage roof waterproofing. We have included for consulting fees.	Replacement	3 - Future Renewal	24	25	3	2	$212,000
92	G201003 Paved Surfaces - Asphalt	Parking Garage	The parking garage floor is finished with asphalt pavement.	Fair	1984	Maintain an allowance for local repairs as needed.	Repair Allowance	3 - Future Renewal	41	15	17	2	$19,000
93	G201003 Paved Surfaces - Asphalt	Local Repairs	See above.	Good	2001	Budget for periodic repairs to the asphalt paving at the parking area.	Repair Allowance	3 - Future Renewal	24	7	9	1	$12,000
94	G203003 Paved Surfaces - Brick Pavers	Brick Pavers	There are numerous brick and concrete paved surfaces on the garage roof and on grade around the property. We have included for consulting efes.	Fair	1984	Replace brick paver walkways and patios at the same time as garage roof waterproofing replacement.	Replacement	3 - Future Renewal	41	25	3	2	$159,000

Row	COMPONENT		CONDITION ASSESSMENT			RECOMMENDATION			LIFECYCLE DATA				
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95	G203003 Paved Surfaces - Brick Paver Patios	Tower Patios	The tower patios are finished with brick pavers. We understand these were recently replaced.	Good	2025	Budget for future replacement. We have allowed for the expense in the current year based on amounts recently spent.	Replacement	3 - Future Renewal	0	25	0	1	$70,000
96	G203003 Paved Surfaces - Concrete Curbs	Curbs, Replacement	See above.	Good	2008	Maintain an allowance for repairs, as needed.	Repair Allowance	3 - Future Renewal	17	5	5	2	$6,000
97	G204001 Fences & Gates	Townhouses	There is wood fencing surrounding the property, including individual privacy fences on the ground level. There is also fencing around the perimeter of the site.	Good	2014	Replace wood fencing at the end of its lifespan.	Repair Allowance	3 - Future Renewal	11	20	9	1	$14,000
98	G204001 Fences & Gates	Perimeter Fencing	There is a wood perimeter fence around the edge fo the property	Good	2018	Replace wood fencing at the end of its lifespan.	Repair Allowance	3 - Future Renewal	7	20	13	1	$68,000
99	G204001 Fences & Gates	Tennis Court	The tennis court on the roof of the recreation centre is surrounded by a wood fence.	Good	1984	Repair fencing at the same time as rec centre roof replacement.	Repair Allowance	3 - Future Renewal	41	20	2	1	$100,000
100	G204002 Retaining Walls	Pressure Treated Wood Retaining wall	There is a pressure treated wood retaining wall near the garage entrance.	Fair	2018	Replace wood retaining wal at end of service life. Consider a more durable material to extend the service life.	Replacement	3 - Future Renewal	7	25	18	1	$68,000
101	G204007 Playing Fields	Tennis Court	The tennis court is located on the roof of the tennis court, and is finished with asphalt pavement and a sports surface. We have included for consulting fees.	Fair	1996	Replace sports surface and asphalt pavement at end of service life. Work is planned at the same time as roof replacement.	Replacement	3 - Future Renewal	29	25	2	2	$218,000
102	G2050 Landscaping	Exterior	Soft landscaping includes trees and shrubs.	Good	2002	Maintain an allowance for periodic tree pruning and other landscaping repairs, as needed.	Repair Allowance	3 - Future Renewal	23	5	2	2	$17,000
103	G2050 Landscaping	Landscaping Replacement	See above. During garage roof replacement, all landscaping will require replacement.	Good	2002	Replace landscaping during garage roof replacement.	Replacement	3 - Future Renewal	23	25	3	2	$236,000
104	G205007 Irrigation Systems	General	There is an irrigation system on the property.	Good	2000	Replace the irrigation system during upcoming garage roof repairs.	Replacement	3 - Future Renewal	25	25	3	2	$24,000
105	G3010 Water Supply	General	Water for the building enters in a underground service room. We have assumed there is a backflow preventer and by-pass.	Not Reviewed	1984	Maintain a contingency for repairs.	Repair Allowance	3 - Future Renewal	41	40	0	1	$9,000
106	G3020 Sanitary Sewer	General	There are sanitary sewer pipes on the property that are the owned by the Corporation. These are entirely buried below grade.	Not Reviewed	1984	Maintain a contingency for repairs.	Repair Allowance	3 - Future Renewal	41	30	3	1	$12,000
107	G3030 Storm Sewer	General	There are storm sewer pipes on the property that are owned by the Corporation. These are entirely buried below grade. There are also catchbasins in the parking lot that form part of the storm sewer system.	Not Reviewed	1984	Maintain a contingency for repairs.	Repair Allowance	3 - Future Renewal	41	20	3	1	$12,000
	ENGINEERING STUDY												
109	Update Study of the Reserve Fund - Without Site Visit	General	Periodic updates to the reserve fund study are required.	Not Applicable	2021	Allowance for a study without a site visit.	Study	Not Applicable	4	6	3	1	$2,900
110	Update Study of the Reserve Fund - With Site Visit	General	Periodic updates to the reserve fund study are required.	Not Applicable	2024	Allowance for a study with a site visit.	Study	Not Applicable	1	6	0	1	$8,000
111	Decarbonization Study	General	Equipment for ventilation and domestic hot water uses natural gas. As the world reduces carbon emissions, this equipment is likely to become obsolete or more expensive to operate. In addition, technological improvements mean converting the cooling system to also provide supplemental heating can reduce energy costs.	Not Applicable	1984	We recommend completing a study to evaluate options to reduce fossil fuel use and associated carbon emissions.	Study	Not Applicable	41	99	1	1	$8,000

Comprehensive Reserve Fund Study
CCC 256 - 111 Echo Drive, Ottawa
FINAL - March 23, 2025

Row	COMPONENT		RECOMMENDATION			LIFECYCLE DATA					RESERVE FUND EXPENDITURE FORECAST YEARS 1 - 15														
	ID	Location / Type	Recommendation	Type	Priority	Age in 2025	Typical Life Cycle	Estimated Remaining Life	Years Over Which Project is Phased	Recommended Budget in 2025 Dollars	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039
											$116,400	$855,400	$1,001,400	$1,368,800	$1,076,900	$824,900	$794,900	$851,900	$829,900	$669,300	$1,041,000	$97,000	$71,500	$76,500	$0
	SUBSTRUCTURE																								
1	A1010 Standard Foundations	Below-grade	The foundations are expected to last the life of the building. No major repairs are anticipated. Local repairs to the foundation walls, if needed, are expected to be paid from the operating budget.			41	100	59	1																	
2	B102003 Roof Decks and Slabs	Garage Roof Waterproofing	Replace waterproofing membrane at end of service life. We have included consulting fees. Cost to replacements pavements and landscaping is budgeted separately.	Replacement	3 - Future Renewal	41	30	3	2	$1,150,000				$575,000	$575,000										
3	B102003 Roof Decks and Slabs	Garage Roof Expansion Joint	Replace expansion joint waterproofing during roof slab replacement. We have included consulting fees.	Replacement	3 - Future Renewal	41	20	3	2	$51,000				$25,500	$25,500										
4	B102003 Roof Decks and Slabs	Garage Roof Waterproofing, Local Repairs	Maintain an allowance to repair waterproofing as needed.	Repair Allowance	3 - Future Renewal	9	12	1	1	$14,000		$14,000												$14,000	
	SUPERSTRUCTURE																								
5	B102001 Structural Frame	Building Structure	The structure is expected to last the life of the building. No repairs are anticipated.			41	100	59	1	$0															
	BUILDING ENVELOPE																								
6	B2010 Exterior Walls - Masonry Walls	Exterior Walls and Townhouse Chimneys	Maintain an allowance for local repairs as needed. This includes local repair to chimneys and brick replacement of repointing as needed.	Repair Allowance	3 - Future Renewal	24	15	5	1	$40,000						$40,000									
7	B201011 Joint Sealant - Replacement	Exterior Walls, Towers	Replace sealants at the towers only at end of service life. Sealants at townhouses are included with window replacements.	Replacement	3 - Future Renewal	5	15	10	1	$226,000											$226,000				
8	B201011 Joint Sealant - Repairs	General	Maintain an allowance for minor repairs, as needed.	Repair Allowance	3 - Future Renewal	5	10	5	1	$11,000						$11,000									
9	B201005 Exterior Louvers and Screens-Vent Louvers	Throughout	Replace exhaust vents and dampers at the same time as sealant replacement. At townhouses, vents are expected to repaired or replaced as needed.	Replacement	3 - Future Renewal	41	30	5	1	$20,000						$20,000									
10	B2010 Exterior Walls - Balcony & Terraces	Balconies	Repair balcony slab edges to address carbonation of concrete. We have assumed 100% of the slab edge would be repaired. Work is planned at the same time as railing replacement.	Repair Allowance	3 - Future Renewal	41	40	8	1	$102,000									$102,000						
11	B2010 Exterior Walls - Balcony & Terraces	Balcony Waterproofing	Install waterproofing membrane at the same time balcony slab edges are repaired.	Replacement	3 - Future Renewal	41	40	8	1	$104,000									$104,000						
12	B2010 Exterior Walls - Balcony & Terraces - Railings	Railings	We have assumed railings have been replaced since original construction. Replace aluminum railings at the end of the service life. We recommend balcony railings be done at the same time as slab edge repairs and waterproofing replacement.	Replacement	3 - Future Renewal	41	40	8	1	$119,000									$119,000						
13	B202001 Windows - Curtain Wall Refurbishment	Curtain Wall Windows, Tower	Curtain wall frames are expected to last the life of the building. Budget for a major refurbishment to replace all glass again.	Replacement	3 - Future Renewal	4	30	26	2	$1,790,000															
14	B202001 Windows - Bay Window Replacement	Bay Windows and Remaining Curtain wall, Tower	Windows are nearing the end of their useful life. Budget for eventual replacement. We have included for consulting costs.	Replacement	3 - Future Renewal	41	45	5	2	$1,270,000						$635,000	$635,000								
15	B202001 Windows - Full Replacement	Windows, Townhouses	Replace townhouse windows at end of service life.	Replacement	3 - Future Renewal	15	30	15	2	$339,000															
16	Windows - Recreation Centre	Gym Windows	Budget for repairs based on amounts recently spent.	Replacement	3 - Future Renewal	0	20	0	1	$12,000	$12,000														
17	B202001 Windows - Ongoing IGU Replacement Allowance	Windows	Budget for ongoing replacement of failed IGU units throughout the building as needed.	Repair Allowance	3 - Future Renewal	41	20	0	10	$34,000	$3,400	$3,400	$3,400	$3,400	$3,400	$3,400	$3,400	$3,400	$3,400	$3,400					
18	B203002 Glazed Doors - Balcony Sliding Doors	Balconies	Budget for replacement of all the balcony sliding doors in all suites throughout the building.	Replacement	3 - Future Renewal	41	30	5	2	$133,000						$66,500	$66,500								
19	B203002 Glazed Doors - Rear Yards	Townhouse Rear Doors	Replace doors at end of service life.	Replacement	3 - Future Renewal	21	30	9	1	$34,000										$34,000					

Row	COMPONENT		RECOMMENDATION			LIFECYCLE DATA					RESERVE FUND EXPENDITURE FORECAST YEARS 1 - 15														
	ID	Location / Type	Recommendation	Type	Priority	Age in 2025	Typical Life Cycle	Estimated Remaining Life	Years Over Which Project is Phased	Recommended Budget in 2025 Dollars	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039
											$116,400	$855,400	$1,001,400	$1,368,800	$1,076,900	$824,900	$794,900	$851,900	$829,900	$669,300	$1,041,000	$97,000	$71,500	$76,500	$0
20	B203001 Solid Doors	Townhouse Entrances	Age is estimated. Replace door at end of service life.	Replacement	3 - Future Renewal	21	30	9	1	$41,000										$41,000					
21	B203001 Solid Doors	Exterior Envelope	Maintain an allowance for repairs or replacements, as needed. This is expected to include new hardware, painting, or isolated door and frame replacement.	Repair Allowance	3 - Future Renewal	17	20	5	1	$6,000						$6,000										
22	B203004 Overhead and Roll-up Doors	Garage Entrance Door	Age is estimated. Replace overhead door at end of service life. Repairs to the door operator are assumed to be paid from the operating budget.	Repair Allowance	3 - Future Renewal	21	20	0	1	$10,000	$10,000														
	ROOFS																								
24	B301002 Low Slope Membrane Systems	Tower Roofs	Replace tower roof membranes at end of service life.	Replacement	3 - Future Renewal	21	30	9	2	$1,058,000										$529,000	$529,000				
25	B301002 Low Slope Membrane Systems	Recreation Centre	Replace roof membrane at end of service life. Cost of tennis court resurfacing is budgeted elsewhere.	Replacement	3 - Future Renewal	29	20	2	2	$547,000			$273,500	$273,500											
26	B301002 Low Slope Membrane Systems	Entrance Canopies	Replace vinyl siding at end of service life.	Replacement	3 - Future Renewal	5	15	3	2	$63,000				$31,500	$31,500										
27	B301001 High Slope Roof Coverings - Shingled Roof	Townhouse Roofs	Replace roof shingles at end of service life.	Replacement	3 - Future Renewal	8	30	22	1	$201,000															
28	B301003 Roof Insulation & Fill	Attic Insulation Townhouses	Over time, insulation may settle or be blown around or damaged in the mansard cavity. We have budgeted a small allowance for local repairs.	Repair Allowance	3 - Future Renewal	4	30	26	1	$21,000															
29	B301005 Gutters and Downspouts	Perimeter Eavestroughs, Townhouses	Replace eavestroughs and downspouts at end of service life. Work is planned at the same time as shingle roof replacement.	Replacement	3 - Future Renewal	7	30	23	1	$11,000															
30	B301099 Other Roofing - Roof Maintenance	Local Repairs, Sloped and Flat Roofs	Maintain an allowance for periodic repairs to the flat and shingled roof as needed.	Repair Allowance	3 - Future Renewal	7	5	1	1	$11,000		$11,000					$11,000					$11,000			
	INTERIOR																								
31	C302005 Carpeting - Replacement	Tower Corridors	Budget to replace all corridor carpets.	Replacement	3 - Future Renewal	13	15	7	1	$123,000								$123,000							
32	C3010 Wall Finishes - Replacement	Tower Corridors	Age is estimated. Replace corridor wallpaper at the same time as carpet replacement.	Replacement	3 - Future Renewal	13	15	7	1	$65,000								$65,000							
33	C3030 Ceiling Finishes	Tower Corridors	Paint gypsum board and replace ceiling tiles during corridor renovation.	Replacement	3 - Future Renewal	13	15	7	1	$82,000								$82,000							
34	C102001 Standard Interior Doors -Suite	Tower Suites	Paint or refinish suite doors at every corridor renovation.	Replacement	3 - Future Renewal	13	30	17	1	$20,000															
35	C102001 Standard Interior Doors -Suite	Suites	Refinish suite doors and replace door hardware at every second corridor renovation.	Replacement	3 - Future Renewal	13	30	7	1	$58,000								$58,000							
36	C102001 Standard Interior Doors -Suite	Suites Doors, Replacement	Replace suite doors as needed to address cracks and overall deterioration. We have assumed 3 doors require replacement	Replacement	3 - Future Renewal	41	40	1	1	$193,000		$193,000													
37	C1020 Interior Doors - Service Room, Stairwell & Amenity	Interior	Paint doors during corridor renovations.	Replacement	3 - Future Renewal	13	15	7	1	$12,000								$12,000							
38	E20 Furnishings - Entrance Lobby-Refurbishment	Entrance Lobby - Minor Renovation	Budget for minor refurbishment of the entrance lobby finishes and fixtures. Include mail room refurbishment as well.	Replacement	3 - Future Renewal	13	15	7	1	$57,000								$57,000							
39	E20 Furnishings - Entrance Lobby-Refurbishment	Entrance Lobby - Major Renovation	Budget for major refurbishment of the entrance lobby finishes and fixtures. Include mail room refurbishment as well.	Replacement	3 - Future Renewal	13	15	7	1	$136,000								$136,000							
40	C30 Interior Finishes - Squash Court and Golf Simulator	Recreation Centre, Squash Court and Golf Simulator	Maintain an allowance for repairs to equipment and finishes as needed.	Repair Allowance	3 - Future Renewal	17	10	6	1	$23,000							$23,000								
41	E20 Furnishings - Locker Rooms	Locker Rooms	Maintain an allowance for periodic painting, as needed.	Replacement	3 - Future Renewal	10	15	6	1	$17,000							$17,000								
42	C30 Interior Finishes - Exercise Room	Exercise Room	Replace finishes are part of exercise room renovation.	Replacement	3 - Future Renewal	5	20	7	1	$23,000								$23,000							
43	E20 Furnishings - Exercise Room - Furniture & Equipment	Exercise Room, Equipment	Maintain an allowance for repair or replacement of equipment as needed.	Repair Allowance	3 - Future Renewal	10	10	1	1	$9,000		$9,000										$9,000			
44	E20 Furnishings -Pool Deck	Pool and Whirlpool Deck	Replace pool deck tile and refinish walls to renew the appearance.	Repair Allowance	3 - Future Renewal	41	25	7	1	$57,000								$57,000							

	COMPONENT		RECOMMENDATION			LIFECYCLE DATA					RESERVE FUND EXPENDITURE FORECAST YEARS 1 - 15													
Row	ID	Location / Type	Recommendation	Type	Priority	Age in 2025	Typical Life Cycle	Estimated Remaining Life	Years Over Which Project is Phased	Recommended Budget in 2025 Dollars	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039
											$116,400	$855,400	$1,001,400	$1,368,800	$1,076,900	$824,900	$794,900	$851,900	$829,900	$669,300	$1,041,000	$97,000	$71,500	$76,500	$0
45	E20 Furnishings - Change Rooms	Change Rooms, Recreation Centre	Maintain an allowance for repair or replacement of equipment as needed.	Repair Allowance	3 - Future Renewal	41	25	7	1	$91,000								$91,000							
46	E20 Furnishings - Saunas	Saunas	Maintain an allowance for repair or replacement of finishe and equipment at saunas.	Repair Allowance	3 - Future Renewal	41	25	7	1	$46,000								$46,000							
47	C301005 Painting to Walls - Stairwells	Stairwells	Budget for painting of all the stairwells running from the ground floor level to the roof.	Replacement	3 - Future Renewal	11	20	7	1	$23,000								$23,000							
	MECHANICAL																								
49	D2020 Domestic Water Distribution	Riser Piping	Replace riser piping at end of service life.	Replacement	3 - Future Renewal	41	35	8	1	$306,000									$306,000						
50	D2020 Domestic Water Distribution	Recirculating Header	Replace recirculating header piping in common corridors at end of service life.	Replacement	3 - Future Renewal	16	25	8	1	$170,000									$170,000						
51	D202003 Domestic Water Equipment	Towers and Rec Centre, Tank Heaters	Replace water heaters as they fail or at end of service life.	Replacement	3 - Future Renewal	3	7	4	1	$28,000					$28,000							$28,000			
52	D209004 Pool Piping and Equipment	Pool Filtration Equipment	Maintain an allowance for repairs as needed.	Repair Allowance	3 - Future Renewal	8	10	2	1	$14,000			$14,000										$14,000		
53	D202099 Other Domestic Water Supply	Recirculating Pumps	Replace pumps as needed.	Replacement	3 - Future Renewal	3	15	12	1	$7,000													$7,000		
54	D302003 Furnaces	Townhouses	Equipment is owned by each unit owner. No costs budgeted			21	20	0	1																
55	D303001 Chilled Water Systems	Fluid Coolers, Rec Centre Roof	Equipment is nearing the end of its useful life, and uses refrigerant that is now obsolete. Budget is like for like replacement, Consider a large capacity air-source heat pump that can provide heating and cooling.	Replacement	3 - Future Renewal	25	25	2	1	$181,000			$181,000												
56	D303002 Direct Expansion Systems	Elevator Room Cooling	Replace air conditioners at end of service life.	Replacement	3 - Future Renewal	8	15	7	1	$16,000								$16,000							
57	D304007 Exhaust Systems	Garage Exhaust	Maintain an allowance to repair or replace fans and sensors as needed.	Repair Allowance	3 - Future Renewal	5	10	5	1	$12,000						$12,000									
58	D304008 Air Handling Units- Replace	Common area Fan Coils	Maintain an allowance for partial repairs, as needed.	Repair Allowance	3 - Future Renewal	41	30	8	1	$17,000									$17,000						
59	D304008 Air Handling Units- Replace	Make-up Air Units, Roof	Replace make-up air units at end of service life. We have budgeted a like for like replacement. Consider adding a heat pump to provide heating and cooling without using natural gas. Amount budgeted is the high end of the budget provided by Rimkus Engineers, plus an allowance for fire alarm system repairs, plus contingency and taxes	Replacement	3 - Future Renewal	25	25	1	1	$523,000		$523,000													
60	D304006 Chilled Water Distribution Systems	Chilled Water Pumps	Replace chilled water pumps at end of service life.	Replacement	3 - Future Renewal	25	25	2	1	$6,000			$6,000												
61	D304006 Chilled Water Distribution Systems	Hydronic Piping	Maintain an allowance for repairs, as needed. This is expected to include valve replacements and partial piping replacement.	Repair Allowance	3 - Future Renewal	41	5	2	1	$17,000			$17,000					$17,000					$17,000		
62	D3050 Terminal & Package Units	Rooftop Units, Rec Centre	Replace rooftop units at end of service life. Consider heat pump rooftop units to provide heating and cooling with electricity only.	Replacement	3 - Future Renewal	23	20	2	1	$255,000			$255,000												
63	D3050 Terminal & Package Units	Pool Dehumidifier	Age is estimated. Replace dehumidifier at end of service life.	Replacement	3 - Future Renewal	16	20	4	1	$68,000					$68,000										
64	D305002 Unit Heaters	Garage Heaters	Replace unit heater at end of service life.	Replacement	3 - Future Renewal	23	25	2	1	$17,000			$17,000												

Row	COMPONENT ID	Location / Type	RECOMMENDATION Recommendation	Type	Priority	LIFECYCLE DATA Age in 2025	Typical Life Cycle	Estimated Remaining Life	Years Over Which Project is Phased	Recommended Budget in 2025 Dollars	RESERVE FUND EXPENDITURE FORECAST YEARS 1 - 15 2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039
											$116,400	$855,400	$1,001,400	$1,368,800	$1,076,900	$824,900	$794,900	$851,900	$829,900	$669,300	$1,041,000	$97,000	$71,500	$76,500	$0
65	D304003 Hot Water Distribution Systems - Piping	Throughout	Maintain an allowance for repairs to piping as needed. This is intended for repairs to the recirculating pump and shut-off valves, as needed.	Repair Allowance	3 - Future Renewal	8	10	2	1	$17,000			$17,000										$17,000		
66	D402001 Standpipe Equipment and Piping - Fire Hoses and Nozzles	Throughout	Replace hoses and valves as needed during annual inspections. The cost of repairs is assumed to be paid from the operating budget.			41	10	0	1																
67	D40 Fire Protection - Repairs	Sprinklers	Maintain an allowance for repairs, as needed. This is expected to include replacement of dry and wet valves, compressors, pumps and flow switches, as needed.	Repair Allowance	3 - Future Renewal	41	20	4	1	$21,000					$21,000										
68	D4020 Standpipe Systems	Fire Pump	Budget for future repairs based on amounts recently spent.	Replacement	3 - Future Renewal	6	40	34	1	$95,000															
69	D20 Plumbing - Sump Pumps	Sump Pumps	Replace sump pumps as they fail or at the end of their service life.	Replacement	3 - Future Renewal	3	10	7	1	$14,000								$14,000							
	ELECTRICAL																								
71	D5010 Electrical Service & Distribution - Allowance	Electrical Room	Replace equipment at the end of the service life. Periodic inspections should be completed, such as thermographic scans to identify issues. Inspections are assumed to be paid from the operating budget.	Replacement	3 - Future Renewal	41	50	10	1	$283,000											$283,000				
72	D501001 Main Transformers	General	Older equipment is beyond the end of its useful service life. We recommend replacement to maintain reliability and avoid unpredictable failure.	Replacement	3 - Future Renewal	41	30	1	1	$48,000		$48,000													
73	D501005 Panels	Throughout	Replace circuit breaker panels at end of service life.	Replacement	3 - Future Renewal	41	40	6	2	$40,000							$20,000	$20,000							
74	D501006 Enclosed Circuit Breakers	Fused disconnects	Budget to replace older disconnects only at end of service life.	Replacement	3 - Future Renewal	41	50	9	1	$33,000										$33,000					
75	D502002 Lighting Equipment-Light Fixtures - Common Area	Corridors and Common Areas	Maintain an allowance for partial replacement of common area lighting, as needed.	Replacement	3 - Future Renewal	10	15	5	1	$14,000						$14,000									
76	D502002 Lighting Equipment - Light Fixtures - Exterior	Outdoor Lighting	Maintain an allowance for partial replacement of outdoor lighting, as needed.	Replacement	3 - Future Renewal	10	15	5	1	$14,000						$14,000									
77	D503001 Fire Alarm Systems - Replacement	General, Electrical Room	The system is inspected annually and devices replaced as needed, with costs paid from the operating budget. We have budgeted to replace the main control panel at end of service life.	Replacement	3 - Future Renewal	4	20	16	1	$46,000															
78	D5030 Communications & Security - CCTV	Throughout	Maintain an allowance for repairs or to replace the controller and cameras as needed.	Repair Allowance	3 - Future Renewal	4	10	6	1	$8,000							$8,000								
79	D503008 Security Systems - Entry System	Front Entrance	Replace enterphone equipment as it becomes obsolete or at end of service life.	Replacement	3 - Future Renewal	5	25	20	1	$34,000															
80	D503008 Security Systems - Fob Reader	Front Entrance	Maintain an allowance for repairs or partial replacement as needed.	Repair Allowance	3 - Future Renewal	9	10	1	1	$9,000		$9,000										$9,000			
81	D503008 Security Systems - Door Operators	Front Entrance	Maintain an allowance for repairs or partial replacement as needed.	Repair Allowance	3 - Future Renewal	9	10	1	1	$9,000		$9,000										$9,000			
82	D509005 Electrical Heating	Common areas	Maintain an allowance for repair or replacement, as needed.	Repair Allowance	3 - Future Renewal	41	30	4	1	$9,000					$9,000										
83	D509005 Electrical Heating	In Suites	Equipment is owned by unit owners. No repairs anticipated. Replacement with heat pumps will result in considerable energy savings.			41	30	0	1																
	ELEVATORS																								
85	D101002 Passenger Elevators - Control Modernization	Elevator Equipment	Replace the elevator at end fo service life. We have assumed this will include a new cylinder, oil tank and controls.	Replacement	3 - Future Renewal	8	25	17	1	$385,000															
86	D101002 Passenger Elevators - Accessibility Lifts	Accessibility Lifts	Replace lift equipment at end of service life as it becomes obsolete.	Replacement	3 - Future Renewal	6	25	19	1	$80,000															
87	D101002 Passenger Elevators - Safety Code Contingency	Elevators	Over time, safety codes can change requiring retroactive repairs to elevators. Budget for future Safety Code change/repair for the two elevators.	Contingency	3 - Future Renewal	12	10	1	1	$23,000		$23,000										$23,000			

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Row	COMPONENT ID	Location / Type	RECOMMENDATION	Type	Priority	LIFECYCLE DATA: Age in 2025	Typical Life Cycle	Estimated Remaining Life	Years Over Which Project is Phased	Recommended Budget in 2025 Dollars	RESERVE FUND EXPENDITURE FORECAST YEARS 1 - 15: 2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039
											$116,400	$855,400	$1,001,400	$1,368,800	$1,076,900	$824,900	$794,900	$851,900	$829,900	$669,300	$1,041,000	$97,000	$71,500	$76,500	$0
88	D101002 Passenger Elevators - Cab Finishes	Elevators	Budget for the refurbishment of the two elevator cabs.	Repair Allowance	3 - Future Renewal	8	25	17	1	$41,000															
89	D101002 Passenger Elevators - Condition Assessment	Elevators	Complete periodic condition assessments of elevator equipment.	Study	3 - Future Renewal	12	10	1	1	$5,000		$5,000										$5,000			
	SITE							0																	
91	G201003 Paved Surfaces - Asphalt	Internal Roadways and Parking Areas	Replace asphalt pavements at the same time as replacement of garage roof waterproofing. We have included for consulting fees.	Replacement	3 - Future Renewal	24	25	3	2	$212,000				$106,000	$106,000										
92	G201003 Paved Surfaces - Asphalt	Parking Garage	Maintain an allowance for local repairs as needed.	Repair Allowance	3 - Future Renewal	41	15	17	2	$19,000															
93	G201003 Paved Surfaces - Asphalt	Local Repairs	Budget for periodic repairs to the asphalt paving at the parking area.	Repair Allowance	3 - Future Renewal	24	7	9	1	$12,000										$12,000					
94	G203003 Paved Surfaces - Brick Pavers	Brick Pavers	Replace brick paver walkways and patios at the same time as garage roof waterproofing replacement.	Replacement	3 - Future Renewal	41	25	3	2	$159,000				$79,500	$79,500										
95	G203003 Paved Surfaces - Brick Paver Patios	Tower Patios	Budget for future replacement. We have allowed for the expense in the current year based on amounts recently spent.	Replacement	3 - Future Renewal	0	25	0	1	$70,000	$70,000														
96	G203003 Paved Surfaces - Concrete Curbs	Curbs, Replacement	Maintain an allowance for repairs, as needed.	Repair Allowance	3 - Future Renewal	17	5	5	2	$6,000						$3,000	$3,000				$3,000	$3,000			
97	G204001 Fences & Gates	Townhouses	Replace wood fencing at the end of its lifespan.	Repair Allowance	3 - Future Renewal	11	20	9	1	$14,000										$14,000					
98	G204001 Fences & Gates	Perimeter Fencing	Replace wood fencing at the end of its lifespan.	Repair Allowance	3 - Future Renewal	7	20	13	1	$68,000														$68,000	
99	G204001 Fences & Gates	Tennis Court	Repair fencing at the same time as rec centre roof replacement.	Repair Allowance	3 - Future Renewal	41	20	2	1	$100,000			$100,000												
100	G204002 Retaining Walls	Pressure Treated Wood Retaining wall	Replace wood retaining wal at end of service life. Consider a more durable material to extend the service life.	Replacement	3 - Future Renewal	7	25	18	1	$68,000															
101	G204007 Playing Fields	Tennis Court	Replace sports surface and asphalt pavement at end of service life. Work is planned at the same time as roof replacement.	Replacement	3 - Future Renewal	29	25	2	2	$218,000			$109,000	$109,000												
102	G2050 Landscaping	Exterior	Maintain an allowance for periodic tree pruning and other landscaping repairs, as needed.	Repair Allowance	3 - Future Renewal	23	5	2	2	$17,000			$8,500	$8,500				$8,500	$8,500				$8,500	$8,500	
103	G2050 Landscaping	Landscaping Replacement	Replace landscaping during garage roof replacement.	Replacement	3 - Future Renewal	23	25	3	2	$236,000				$118,000	$118,000										
104	G205007 Irrigation Systems	General	Replace the irrigation system during upcoming garage roof repairs.	Replacement	3 - Future Renewal	25	25	3	2	$24,000				$12,000	$12,000										
105	G3010 Water Supply	General	Maintain a contingency for repairs.	Repair Allowance	3 - Future Renewal	41	40	0	1	$9,000	$9,000														
106	G3020 Sanitary Sewer	General	Maintain a contingency for repairs.	Repair Allowance	3 - Future Renewal	41	30	3	1	$12,000				$12,000											
107	G3030 Storm Sewer	General	Maintain a contingency for repairs.	Repair Allowance	3 - Future Renewal	41	20	3	1	$12,000				$12,000											
	ENGINEERING STUDY																								
109	Update Study of the Reserve Fund - Without Site Visit	General	Allowance for a study without a site visit.	Study	Not Applicable	4	6	3	1	$2,900				$2,900						$2,900					
110	Update Study of the Reserve Fund - With Site Visit	General	Allowance for a study with a site visit.	Study	Not Applicable	1	6	0	1	$8,000	$8,000						$8,000						$8,000		
111	Decarbonization Study	General	We recommend completing a study to evaluate options to reduce fossil fuel use and associated carbon emissions.	Study	Not Applicable	41	99	1	1	$8,000		$8,000													

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Row	COMPONENT		RECOMMENDATION			LIFECYCLE DATA					RESERVE FUND EXPENDITURE FORECAST YEARS 16-30														
	ID	Location / Type	Recommendation	Type	Priority	Age in 2025	Typical Life Cycle	Estimated Remaining Life	Years Over Which Project is Phased	Recommended Budget in 2025 Dollars	2040	2041	2042	2043	2044	2045	2046	2047	2048	2049	2050	2051	2052	2053	2054
											$198,400	$272,500	$495,000	$153,500	$111,500	$130,400	$92,300	$1,380,400	$320,400	$100,400	$359,400	$1,487,400	$1,306,800	$436,400	$332,900
	SUBSTRUCTURE																								
1	A1010 Standard Foundations	Below-grade	The foundations are expected to last the life of the building. No major repairs are anticipated. Local repairs to the foundation walls, if needed, are expected to be paid from the operating budget.			41	100	59	1																	
2	B102003 Roof Decks and Slabs	Garage Roof Waterproofing	Replace waterproofing membrane at end of service life. We have included consulting fees. Cost to replacements pavements and landscaping is budgeted separately.	Replacement	3 - Future Renewal	41	30	3	2	$1,150,000															
3	B102003 Roof Decks and Slabs	Garage Roof Expansion Joint	Replace expansion joint waterproofing during roof slab replacement. We have included consulting fees.	Replacement	3 - Future Renewal	41	20	3	2	$51,000									$25,500	$25,500					
4	B102003 Roof Decks and Slabs	Garage Roof Waterproofing, Local Repairs	Maintain an allowance to repair waterproofing as needed.	Repair Allowance	3 - Future Renewal	9	12	1	1	$14,000											$14,000				
	SUPERSTRUCTURE																								
5	B102001 Structural Frame	Building Structure	The structure is expected to last the life of the building. No repairs are anticipated.			41	100	59	1	$0															
	BUILDING ENVELOPE																								
6	B2010 Exterior Walls - Masonry Walls	Exterior Walls and Townhouse Chimneys	Maintain an allowance for local repairs as needed. This includes local repair to chimneys and brick replacement of repointing as needed.	Repair Allowance	3 - Future Renewal	24	15	5	1	$40,000						$40,000									
7	B201011 Joint Sealant - Replacement	Exterior Walls, Towers	Replace sealants at the towers only at end of service life. Sealants at townhouses are included with window replacements.	Replacement	3 - Future Renewal	5	15	10	1	$226,000											$226,000				
8	B201011 Joint Sealant - Repairs	General	Maintain an allowance for minor repairs, as needed.	Repair Allowance	3 - Future Renewal	5	10	5	1	$11,000	$11,000										$11,000				
9	B201005 Exterior Louvers and Screens-Vent Louvers	Throughout	Replace exhaust vents and dampers at the same time as sealant replacement. At townhouses, vents are expected to repaired or replaced as needed.	Replacement	3 - Future Renewal	41	30	5	1	$20,000															
10	B2010 Exterior Walls - Balcony & Terraces	Balconies	Repair balcony slab edges to address carbonation of concrete. We have assumed 100% of the slab edge would be repaired. Work is planned at the same time as railing replacement.	Repair Allowance	3 - Future Renewal	41	40	8	1	$102,000															
11	B2010 Exterior Walls - Balcony & Terraces	Balcony Waterproofing	Install waterproofing membrane at the same time balcony slab edges are repaired.	Replacement	3 - Future Renewal	41	40	8	1	$104,000															
12	B2010 Exterior Walls - Balcony & Terraces - Railings	Railings	We have assumed railings have been replaced since original construction. Replace aluminum railings at the end of the service life. We recommend balcony railings be done at the same time as slab edge repairs and waterproofing replacement.	Replacement	3 - Future Renewal	41	40	8	1	$119,000															
13	B202001 Windows - Curtain Wall Refurbishment	Curtain Wall Windows, Tower	Curtain wall frames are expected to last the life of the building. Budget for a major refurbishment to replace all glass again.	Replacement	3 - Future Renewal	4	30	26	2	$1,790,000												$895,000	$895,000		
14	B202001 Windows - Bay Window Replacement	Bay Windows and Remaining Curtain wall, Tower	Windows are nearing the end of their useful life. Budget for eventual replacement. We have included for consulting costs.	Replacement	3 - Future Renewal	41	45	5	2	$1,270,000															
15	B202001 Windows - Full Replacement	Windows, Townhouses	Replace townhouse windows at end of service life.	Replacement	3 - Future Renewal	15	30	15	2	$339,000	$169,500	$169,500													
16	Windows - Recreation Centre	Gym Windows	Budget for repairs based on amounts recently spent.	Replacement	3 - Future Renewal	0	20	0	1	$12,000						$12,000									
17	B202001 Windows - Ongoing IGU Replacement Allowance	Windows	Budget for ongoing replacement of failed IGU units throughout the building as needed.	Repair Allowance	3 - Future Renewal	41	20	0	10	$34,000						$3,400	$3,400	$3,400	$3,400	$3,400	$3,400	$3,400	$3,400	$3,400	$3,400
18	B203002 Glazed Doors - Balcony Sliding Doors	Balconies	Budget for replacement of all the balcony sliding doors in all suites throughout the building.	Replacement	3 - Future Renewal	41	30	5	2	$133,000															
19	B203002 Glazed Doors - Rear Yards	Townhouse Rear Doors	Replace doors at end of service life.	Replacement	3 - Future Renewal	21	30	9	1	$34,000															

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Row	COMPONENT		RECOMMENDATION			LIFECYCLE DATA					RESERVE FUND EXPENDITURE FORECAST YEARS 16-30													
	ID	Location / Type	Recommendation	Type	Priority	Age in 2025	Typical Life Cycle	Estimated Remaining Life	Years Over Which Project is Phased	Recommended Budget in 2025 Dollars	2040	2041	2042	2043	2044	2045	2046	2047	2048	2049	2050	2051	2052	2053	2054
											$198,400	$272,500	$495,000	$153,500	$111,500	$130,400	$92,300	$1,380,400	$320,400	$100,400	$359,400	$1,487,400	$1,306,800	$436,400	$332,900
20	B203001 Solid Doors	Townhouse Entrances	Age is estimated. Replace door at end of service life.	Replacement	3 - Future Renewal	21	30	9	1	$41,000															
21	B203001 Solid Doors	Exterior Envelope	Maintain an allowance for repairs or replacements, as needed. This is expected to include new hardware, painting, or isolated door and frame replacement.	Repair Allowance	3 - Future Renewal	17	20	5	1	$6,000											$6,000				
22	B203004 Overhead and Roll-up Doors	Garage Entrance Door	Age is estimated. Replace overhead door at end of service life. Repairs to the door operator are assumed to be paid from the operating budget.	Repair Allowance	3 - Future Renewal	21	20	0	1	$10,000						$10,000									
	ROOFS																								
24	B301002 Low Slope Membrane Systems	Tower Roofs	Replace tower roof membranes at end of service life.	Replacement	3 - Future Renewal	21	30	9	2	$1,058,000															
25	B301002 Low Slope Membrane Systems	Recreation Centre	Replace roof membrane at end of service life. Cost of tennis court resurfacing is budgeted elsewhere.	Replacement	3 - Future Renewal	29	20	2	2	$547,000								$273,500	$273,500						
26	B301002 Low Slope Membrane Systems	Entrance Canopies	Replace vinyl siding at end of service life.	Replacement	3 - Future Renewal	5	15	3	2	$63,000				$31,500	$31,500										
27	B301001 High Slope Roof Coverings - Shingled Roof	Townhouse Roofs	Replace roof shingles at end of service life.	Replacement	3 - Future Renewal	8	30	22	1	$201,000								$201,000							
28	B301003 Roof Insulation & Fill	Attic Insulation Townhouses	Over time, insulation may settle or be blown around or damaged in the mansard cavity. We have budgeted a small allowance for local repairs.	Repair Allowance	3 - Future Renewal	4	30	26	1	$21,000												$21,000			
29	B301005 Gutters and Downspouts	Perimeter Eavestroughs, Townhouses	Replace eavestroughs and downspouts at end of service life. Work is planned at the same time as shingle roof replacement.	Replacement	3 - Future Renewal	7	30	23	1	$11,000									$11,000						
30	B301099 Other Roofing - Roof Maintenance	Local Repairs, Sloped and Flat Roofs	Maintain an allowance for periodic repairs to the flat and shingled roof as needed.	Repair Allowance	3 - Future Renewal	7	5	1	1	$11,000		$11,000					$11,000					$11,000			
	INTERIOR																								
31	C302005 Carpeting - Replacement	Tower Corridors	Budget to replace all corridor carpets.	Replacement	3 - Future Renewal	13	15	7	1	$123,000								$123,000							
32	C3010 Wall Finishes - Replacement	Tower Corridors	Age is estimated. Replace corridor wallpaper at the same time as carpet replacement.	Replacement	3 - Future Renewal	13	15	7	1	$65,000								$65,000							
33	C3030 Ceiling Finishes	Tower Corridors	Paint gypsum board and replace ceiling tiles during corridor renovation.	Replacement	3 - Future Renewal	13	15	7	1	$82,000								$82,000							
34	C102001 Standard Interior Doors -Suite	Tower Suites	Paint or refinish suite doors at every corridor renovation.	Replacement	3 - Future Renewal	13	30	17	1	$20,000			$20,000												
35	C102001 Standard Interior Doors -Suite	Suites	Refinish suite doors and replace door hardware at every second corridor renovation.	Replacement	3 - Future Renewal	13	30	7	1	$58,000															
36	C102001 Standard Interior Doors -Suite	Suites Doors, Replacement	Replace suite doors as needed to address cracks and overall deterioration. We have assumed 3 doors require replacement	Replacement	3 - Future Renewal	41	40	1	1	$193,000															
37	C1020 Interior Doors - Service Room, Stairwell & Amenity	Interior	Paint doors during corridor renovations.	Replacement	3 - Future Renewal	13	15	7	1	$12,000								$12,000							
38	E20 Furnishings - Entrance Lobby-Refurbishment	Entrance Lobby - Minor Renovation	Budget for minor refurbishment of the entrance lobby finishes and fixtures. Include mail room refurbishment as well.	Replacement	3 - Future Renewal	13	15	7	1	$57,000								$57,000							
39	E20 Furnishings - Entrance Lobby-Refurbishment	Entrance Lobby - Major Renovation	Budget for major refurbishment of the entrance lobby finishes and fixtures. Include mail room refurbishment as well.	Replacement	3 - Future Renewal	13	15	7	1	$136,000								$136,000							
40	C30 Interior Finishes - Squash Court and Golf Simulator	Recreation Centre, Squash Court and Golf Simulator	Maintain an allowance for repairs to equipment and finishes as needed.	Repair Allowance	3 - Future Renewal	17	10	6	1	$23,000		$23,000										$23,000			
41	E20 Furnishings - Locker Rooms	Locker Rooms	Maintain an allowance for periodic painting, as needed.	Replacement	3 - Future Renewal	10	15	6	1	$17,000							$17,000								
42	C30 Interior Finishes - Exercise Room	Exercise Room	Replace finishes are part of exercise room renovation.	Replacement	3 - Future Renewal	5	20	7	1	$23,000													$23,000		
43	E20 Furnishings - Exercise Room - Furniture & Equipment	Exercise Room, Equipment	Maintain an allowance for repair or replacement of equipment as needed.	Repair Allowance	3 - Future Renewal	10	10	1	1	$9,000							$9,000								
44	E20 Furnishings -Pool Deck	Pool and Whirlpool Deck	Replace pool deck tile and refinish walls to renew the appearance.	Repair Allowance	3 - Future Renewal	41	25	7	1	$57,000															

	COMPONENT		RECOMMENDATION			LIFECYCLE DATA					RESERVE FUND EXPENDITURE FORECAST YEARS 16-30													
Row	ID	Location / Type	Recommendation	Type	Priority	Age in 2025	Typical Life Cycle	Estimated Remaining Life	Years Over Which Project is Phased	Recommended Budget in 2025 Dollars	2040	2041	2042	2043	2044	2045	2046	2047	2048	2049	2050	2051	2052	2053	2054
											$198,400	$272,500	$495,000	$153,500	$111,500	$130,400	$92,300	$1,380,400	$320,400	$100,400	$359,400	$1,487,400	$1,306,800	$436,400	$332,900
45	E20 Furnishings - Change Rooms	Change Rooms, Recreation Centre	Maintain an allowance for repair or replacement of equipment as needed.	Repair Allowance	3 - Future Renewal	41	25	7	1	$91,000															
46	E20 Furnishings - Saunas	Saunas	Maintain an allowance for repair or replacement of finishe and equipment at saunas.	Repair Allowance	3 - Future Renewal	41	25	7	1	$46,000															
47	C301005 Painting to Walls - Stairwells	Stairwells	Budget for painting of all the stairwells running from the ground floor level to the roof.	Replacement	3 - Future Renewal	11	20	7	1	$23,000													$23,000		
	MECHANICAL																								
49	D2020 Domestic Water Distribution	Riser Piping	Replace riser piping at end of service life.	Replacement	3 - Future Renewal	41	35	8	1	$306,000															
50	D2020 Domestic Water Distribution	Recirculating Header	Replace recirculating header piping in common corridors at end of service life.	Replacement	3 - Future Renewal	16	25	8	1	$170,000															
51	D202003 Domestic Water Equipment	Towers and Rec Centre, Tank Heaters	Replace water heaters as they fail or at end of service life.	Replacement	3 - Future Renewal	3	7	4	1	$28,000				$28,000							$28,000				
52	D209004 Pool Piping and Equipment	Pool Filtration Equipment	Maintain an allowance for repairs as needed.	Repair Allowance	3 - Future Renewal	8	10	2	1	$14,000								$14,000							
53	D202099 Other Domestic Water Supply	Recirculating Pumps	Replace pumps as needed.	Replacement	3 - Future Renewal	3	15	12	1	$7,000													$7,000		
54	D302003 Furnaces	Townhouses	Equipment is owned by each unit owner. No costs budgeted			21	20	0	1																
55	D303001 Chilled Water Systems	Fluid Coolers, Rec Centre Roof	Equipment is nearing the end of its useful life, and uses refrigerant that is now obsolete. Budget is like for like replacement, Consider a large capacity air-source heat pump that can provide heating and cooling.	Replacement	3 - Future Renewal	25	25	2	1	$181,000													$181,000		
56	D303002 Direct Expansion Systems	Elevator Room Cooling	Replace air conditioners at end of service life.	Replacement	3 - Future Renewal	8	15	7	1	$16,000								$16,000							
57	D304007 Exhaust Systems	Garage Exhaust	Maintain an allowance to repair or replace fans and sensors as needed.	Repair Allowance	3 - Future Renewal	5	10	5	1	$12,000	$12,000										$12,000				
58	D304008 Air Handling Units- Replace	Common area Fan Coils	Maintain an allowance for partial repairs, as needed.	Repair Allowance	3 - Future Renewal	41	30	8	1	$17,000															
59	D304008 Air Handling Units- Replace	Make-up Air Units, Roof	Replace make-up air units at end of service life. We have budgeted a like for like replacement. Consider adding a heat pump to provide heating and cooling without using natural gas. Amount budgeted is the high end of the budget provided by Rimkus Engineers, plus an allowance for fire alarm system repairs, plus contingency and taxes	Replacement	3 - Future Renewal	25	25	1	1	$523,000												$523,000			
60	D304006 Chilled Water Distribution Systems	Chilled Water Pumps	Replace chilled water pumps at end of service life.	Replacement	3 - Future Renewal	25	25	2	1	$6,000													$6,000		
61	D304006 Chilled Water Distribution Systems	Hydronic Piping	Maintain an allowance for repairs, as needed. This is expected to include valve replacements and partial piping replacement.	Repair Allowance	3 - Future Renewal	41	5	2	1	$17,000			$17,000					$17,000					$17,000		
62	D3050 Terminal & Package Units	Rooftop Units, Rec Centre	Replace rooftop units at end of service life. Consider heat pump rooftop units to provide heating and cooling with electricity only.	Replacement	3 - Future Renewal	23	20	2	1	$255,000								$255,000							
63	D3050 Terminal & Package Units	Pool Dehumidifier	Age is estimated. Replace dehumidifier at end of service life.	Replacement	3 - Future Renewal	16	20	4	1	$68,000										$68,000					
64	D305002 Unit Heaters	Garage Heaters	Replace unit heater at end of service life.	Replacement	3 - Future Renewal	23	25	2	1	$17,000													$17,000		

Row	COMPONENT ID	Location / Type	RECOMMENDATION Recommendation	Type	Priority	LIFECYCLE DATA Age in 2025	Typical Life Cycle	Estimated Remaining Life	Years Over Which Project is Phased	Recommended Budget in 2025 Dollars	RESERVE FUND EXPENDITURE FORECAST YEARS 16-30 2040	2041	2042	2043	2044	2045	2046	2047	2048	2049	2050	2051	2052	2053	2054
											$198,400	$272,500	$495,000	$153,500	$111,500	$130,400	$92,300	$1,380,400	$320,400	$100,400	$359,400	$1,487,400	$1,306,800	$436,400	$332,900
65	D304003 Hot Water Distribution Systems - Piping	Throughout	Maintain an allowance for repairs to piping as needed. This is intended for repairs to the recirculating pump and shut-off valves, as needed.	Repair Allowance	3 - Future Renewal	8	10	2	1	$17,000								$17,000							
66	D402001 Standpipe Equipment and Piping - Fire Hoses and Nozzles	Throughout	Replace hoses and valves as needed during annual inspections. The cost of repairs is assumed to be paid from the operating budget.			41	10	0	1																
67	D40 Fire Protection - Repairs	Sprinklers	Maintain an allowance for repairs, as needed. This is expected to include replacement of dry and wet valves, compressors, pumps and flow switches, as needed.	Repair Allowance	3 - Future Renewal	41	20	4	1	$21,000										$21,000					
68	D4020 Standpipe Systems	Fire Pump	Budget for future repairs based on amounts recently spent.	Replacement	3 - Future Renewal	6	40	34	1	$95,000															
69	D20 Plumbing - Sump Pumps	Sump Pumps	Replace sump pumps as they fail or at the end of their service life.	Replacement	3 - Future Renewal	3	10	7	1	$14,000			$14,000										$14,000		
	ELECTRICAL																								
71	D5010 Electrical Service & Distribution - Allowance	Electrical Room	Replace equipment at the end of the service life. Periodic inspections should be completed, such as thermographic scans to identify issues. Inspections are assumed to be paid from the operating budget.	Replacement	3 - Future Renewal	41	50	10	1	$283,000															
72	D501001 Main Transformers	General	Older equipment is beyond the end of its useful service life. We recommend replacement to maintain reliability and avoid unpredictable failure.	Replacement	3 - Future Renewal	41	30	1	1	$48,000															
73	D501005 Panels	Throughout	Replace circuit breaker panels at end of service life.	Replacement	3 - Future Renewal	41	40	6	2	$40,000															
74	D501006 Enclosed Circuit Breakers	Fused disconnects	Budget to replace older disconnects only at end of service life.	Replacement	3 - Future Renewal	41	50	9	1	$33,000															
75	D502002 Lighting Equipment-Light Fixtures - Common Area	Corridors and Common Areas	Maintain an allowance for partial replacement of common area lighting, as needed.	Replacement	3 - Future Renewal	10	15	5	1	$14,000						$14,000									
76	D502002 Lighting Equipment - Light Fixtures - Exterior	Outdoor Lighting	Maintain an allowance for partial replacement of outdoor lighting, as needed.	Replacement	3 - Future Renewal	10	15	5	1	$14,000						$14,000									
77	D503001 Fire Alarm Systems - Replacement	General, Electrical Room	The system is inspected annually and devices replaced as needed, with costs paid from the operating budget. We have budgeted to replace the main control panel at end of service life.	Replacement	3 - Future Renewal	4	20	16	1	$46,000		$46,000													
78	D5030 Communications & Security - CCTV	Throughout	Maintain an allowance for repairs or to replace the controller and cameras as needed.	Repair Allowance	3 - Future Renewal	4	10	6	1	$8,000		$8,000										$8,000			
79	D503008 Security Systems - Entry System	Front Entrance	Replace enterphone equipment as it becomes obsolete or at end of service life.	Replacement	3 - Future Renewal	5	25	20	1	$34,000						$34,000									
80	D503008 Security Systems - Fob Reader	Front Entrance	Maintain an allowance for repairs or partial replacement as needed.	Repair Allowance	3 - Future Renewal	9	10	1	1	$9,000							$9,000								
81	D503008 Security Systems - Door Operators	Front Entrance	Maintain an allowance for repairs or partial replacement as needed.	Repair Allowance	3 - Future Renewal	9	10	1	1	$9,000							$9,000								
82	D509005 Electrical Heating	Common areas	Maintain an allowance for repair or replacement, as needed.	Repair Allowance	3 - Future Renewal	41	30	4	1	$9,000															
83	D509005 Electrical Heating	In Suites	Equipment is owned by unit owners. No repairs anticipated. Replacement with heat pumps will result in considerable energy savings.			41	30	0	1																
	ELEVATORS																								
85	D101002 Passenger Elevators - Control Modernization	Elevator Equipment	Replace the elevator at end fo service life. We have assumed this will include a new cylinder, oil tank and controls.	Replacement	3 - Future Renewal	8	25	17	1	$385,000			$385,000												
86	D101002 Passenger Elevators - Accessibility Lifts	Accessibility Lifts	Replace lift equipment at end of service life as it becomes obsolete.	Replacement	3 - Future Renewal	6	25	19	1	$80,000					$80,000										
87	D101002 Passenger Elevators - Safety Code Contingency	Elevators	Over time, safety codes can change requiring retroactive repairs to elevators. Budget for future Safety Code change/repair for the two elevators.	Contingency	3 - Future Renewal	12	10	1	1	$23,000							$23,000								

Comprehensive Reserve Fund Study
CCC 256 - 111 Echo Drive, Ottawa
FINAL - March 23, 2025

Row	COMPONENT		RECOMMENDATION			LIFECYCLE DATA					RESERVE FUND EXPENDITURE FORECAST YEARS 16-30														
	ID	Location / Type	Recommendation	Type	Priority	Age in 2025	Typical Life Cycle	Estimated Remaining Life	Years Over Which Project is Phased	Recommended Budget in 2025 Dollars	2040	2041	2042	2043	2044	2045	2046	2047	2048	2049	2050	2051	2052	2053	2054
											$198,400	$272,500	$495,000	$153,500	$111,500	$130,400	$92,300	$1,380,400	$320,400	$100,400	$359,400	$1,487,400	$1,306,800	$436,400	$332,900
88	D101002 Passenger Elevators - Cab Finishes	Elevators	Budget for the refurbishment of the two elevator cabs.	Repair Allowance	3 - Future Renewal	8	25	17	1	$41,000			$41,000												
89	D101002 Passenger Elevators - Condition Assessment	Elevators	Complete periodic condition assessments of elevator equipment.	Study	3 - Future Renewal	12	10	1	1	$5,000							$5,000								
	SITE							0																	
91	G201003 Paved Surfaces - Asphalt	Internal Roadways and Parking Areas	Replace asphalt pavements at the same time as replacement of garage roof waterproofing. We have included for consulting fees.	Replacement	3 - Future Renewal	24	25	3	2	$212,000														$106,000	$106,000
92	G201003 Paved Surfaces - Asphalt	Parking Garage	Maintain an allowance for local repairs as needed.	Repair Allowance	3 - Future Renewal	41	15	17	2	$19,000			$9,500	$9,500											
93	G201003 Paved Surfaces - Asphalt	Local Repairs	Budget for periodic repairs to the asphalt paving at the parking area.	Repair Allowance	3 - Future Renewal	24	7	9	1	$12,000		$12,000							$12,000						
94	G203003 Paved Surfaces - Brick Pavers	Brick Pavers	Replace brick paver walkways and patios at the same time as garage roof waterproofing replacement.	Replacement	3 - Future Renewal	41	25	3	2	$159,000														$79,500	$79,500
95	G203003 Paved Surfaces - Brick Paver Patios	Tower Patios	Budget for future replacement. We have allowed for the expense in the current year based on amounts recently spent.	Replacement	3 - Future Renewal	0	25	0	1	$70,000											$70,000				
96	G203003 Paved Surfaces - Concrete Curbs	Curbs, Replacement	Maintain an allowance for repairs, as needed.	Repair Allowance	3 - Future Renewal	17	5	5	2	$6,000	$3,000	$3,000				$3,000	$3,000				$3,000	$3,000			
97	G204001 Fences & Gates	Townhouses	Replace wood fencing at the end of its lifespan.	Repair Allowance	3 - Future Renewal	11	20	9	1	$14,000															$14,000
98	G204001 Fences & Gates	Perimeter Fencing	Replace wood fencing at the end of its lifespan.	Repair Allowance	3 - Future Renewal	7	20	13	1	$68,000															
99	G204001 Fences & Gates	Tennis Court	Repair fencing at the same time as rec centre roof replacement.	Repair Allowance	3 - Future Renewal	41	20	2	1	$100,000								$100,000							
100	G204002 Retaining Walls	Pressure Treated Wood Retaining wall	Replace wood retaining wal at end of service life. Consider a more durable material to extend the service life.	Replacement	3 - Future Renewal	7	25	18	1	$68,000				$68,000											
101	G204007 Playing Fields	Tennis Court	Replace sports surface and asphalt pavement at end of service life. Work is planned at the same time as roof replacement.	Replacement	3 - Future Renewal	29	25	2	2	$218,000													$109,000	$109,000	
102	G2050 Landscaping	Exterior	Maintain an allowance for periodic tree pruning and other landscaping repairs, as needed.	Repair Allowance	3 - Future Renewal	23	5	2	2	$17,000			$8,500	$8,500				$8,500	$8,500				$8,500	$8,500	
103	G2050 Landscaping	Landscaping Replacement	Replace landscaping during garage roof replacement.	Replacement	3 - Future Renewal	23	25	3	2	$236,000														$118,000	$118,000
104	G205007 Irrigation Systems	General	Replace the irrigation system during upcoming garage roof repairs.	Replacement	3 - Future Renewal	25	25	3	2	$24,000														$12,000	$12,000
105	G3010 Water Supply	General	Maintain a contingency for repairs.	Repair Allowance	3 - Future Renewal	41	40	0	1	$9,000															
106	G3020 Sanitary Sewer	General	Maintain a contingency for repairs.	Repair Allowance	3 - Future Renewal	41	30	3	1	$12,000															
107	G3030 Storm Sewer	General	Maintain a contingency for repairs.	Repair Allowance	3 - Future Renewal	41	20	3	1	$12,000									$12,000						
	ENGINEERING STUDY																								
109	Update Study of the Reserve Fund - Without Site Visit	General	Allowance for a study without a site visit.	Study	Not Applicable	4	6	3	1	$2,900	$2,900						$2,900						$2,900		
110	Update Study of the Reserve Fund - With Site Visit	General	Allowance for a study with a site visit.	Study	Not Applicable	1	6	0	1	$8,000				$8,000						$8,000					
111	Decarbonization Study	General	We recommend completing a study to evaluate options to reduce fossil fuel use and associated carbon emissions.	Study	Not Applicable	41	99	1	1	$8,000															

30 Year Reserve Fund Cash Flow Table
Scenario 1 - FINAL - March 23, 2025

Assumed Interest Rate	3.0%
Assumed Inflation Rate	3.0%
Reserve Fund Balance at Start of 2025 Fiscal Year	535,201
Present Annual Contribution to the Reserve Fund	704,376
Minimum Reserve Fund Balance	114,396

Year Ending In	Opening Balance	Recommended Annual Contribution	Other Contribution (e.g. special assessment, loan)	Estimated Future Inflated Expenditures	Estimated Interest Earned	Percentage Increase in Recommended Annual Contribution	Closing Balance
2025	535,201	704,376		116,400	24,876		1,148,053
2026	1,148,053	774,814		881,062	32,848	10.0%	1,074,652
2027	1,074,652	852,295		1,062,385	29,088	10.0%	893,650
2028	893,650	937,524		1,495,725	18,436	10.0%	353,886
2029	353,886	965,650		1,212,060	6,920	3.0%	114,396
2030	114,396	994,620		956,285	4,007	3.0%	156,738
2031	156,738	1,024,458		949,152	5,832	3.0%	237,876
2032	237,876	1,055,192		1,047,730	7,248	3.0%	252,586
2033	252,586	1,086,848		1,051,292	8,111	3.0%	296,253
2034	296,253	1,119,453		873,285	12,580	3.0%	555,001
2035	555,001	1,153,037		1,399,017	12,960	3.0%	321,982
2036	321,982	1,187,628		134,271	25,460	3.0%	1,400,799
2037	1,400,799	1,223,257		101,942	58,844	3.0%	2,580,957
2038	2,580,957	1,259,954		112,343	94,643	3.0%	3,823,212
2039	3,823,212	1,297,753			134,163	3.0%	5,255,127
2040	5,255,127	1,336,686		309,101	173,068	3.0%	6,455,780
2041	6,455,780	1,376,786		437,283	207,766	3.0%	7,603,050
2042	7,603,050	1,418,090		818,160	237,090	3.0%	8,440,070
2043	8,440,070	1,460,633		261,323	271,192	3.0%	9,910,571
2044	9,910,571	1,504,452		195,516	316,951	3.0%	11,536,458
2045	11,536,458	1,549,585		235,517	365,805	3.0%	13,216,331
2046	13,216,331	1,596,073		171,705	417,855	3.0%	15,058,554
2047	15,058,554	1,643,955		2,644,989	436,741	3.0%	14,494,261
2048	14,494,261	1,693,273		632,337	450,742	3.0%	16,005,939
2049	16,005,939	1,744,072		204,093	503,278	3.0%	18,049,196
2050	18,049,196	1,796,394		752,504	557,134	3.0%	19,650,220
2051	19,650,220	1,850,286		3,207,714	569,145	3.0%	18,861,937
2052	18,861,937	1,905,794		2,902,780	550,903	3.0%	18,415,854
2053	18,415,854	1,962,968		998,452	566,943	3.0%	19,947,314
2054	19,947,314	2,021,857		784,501	616,980	3.0%	21,801,650

NOTICE OF FUTURE FUNDING OF THE RESERVE FUND

(UNDER SUBSECTION 94(9) OF *THE CONDOMINIUM ACT, 1998)*

TO: All owners in **Carleton Condominium Corporation No. 256**

The board has received and reviewed a Class 1 Comprehensive Reserve Fund Study, dated March 23, 2025, prepared by Martis Engineering, and has proposed a plan for the future funding of the reserve fund that the board has determined will ensure that, in accordance with the regulations made under the Condominium Act, 1998, the reserve fund will be adequate for the major repair and replacement of the common elements and assets of the corporation.

This notice contains:

1. A summary of the reserve fund study.

2. A summary of the proposed funding plan.

3. A statement indicating the areas, if any, in which the proposed funding plan differs from the reserve fund study.

At the present time, for the current 2025 fiscal year, the average regular contribution per unit per month to the reserve fund is $1,276.04. Based on the proposed funding plan, the average increase in regular Annual Contribution* per unit per month (from the monthly common expenses) will be **$127.61 in 2026, $140.36 in 2027, and $154.40 in 2028.**

The proposed funding plan will be implemented beginning on **June 1, 2025.**

Dated this_____day of_____,_____.

Carleton Condominium Corporation No. 256

_____
(signature)

_____
(print name)

_____
(signature)

_____
(print name)

We have the authority to bind the Corporation.

Summary of Reserve Fund Study

The following is a summary of the Class 1 Comprehensive Reserve Fund Study, dated March 23, 2025, prepared by Martis Engineering, for Carleton Condominium Corporation No. 256 (known as the "Reserve Fund Study").

Subsection 94 (1) of the Condominium Act, 1998, requires the corporation to conduct periodic studies to determine whether the amount of money in the Corporation's Reserve Fund and the amount of contributions collected by the corporation in accordance with the Cash-Flow Table are adequate to provide for the expected costs of major repair and replacement of the common elements and assets of the corporation. As a result, the corporation has obtained the Reserve Fund Study.

The estimated expenditures from the reserve fund for the next thirty (30) years are set out in the CASH FLOW TABLE. In this summary, the term "annual contribution" means the total amount to be contributed each year to the reserve fund from the monthly common element expenses, exclusive of interest earned on the reserve fund. The recommended Annual Contribution* for 2026 is $774,814, based on the estimated expenditures and the following:

Opening Balance of the Reserve Fund:	$535,201
Minimum Reserve Fund Balance during the projected period:	$114,396
Assumed Annual Inflation Rate for Reserve Fund Expenditures:	3.0%
Assumed Annual Interest Rate for interest earned on the Reserve Fund:	3.0%

The Reserve Fund Study can be examined by submitting a written request to the Corporation/Property Manager (as per Section 55(3) of the Condominium Act 1998).

30 Year Reserve Fund Cash Flow Table
Scenario 1 - FINAL - March 23, 2025

Assumed Interest Rate	3.0%
Assumed Inflation Rate	3.0%
Reserve Fund Balance at Start of 2025 Fiscal Year	535,201
Present Annual Contribution to the Reserve Fund	704,376
Minimum Reserve Fund Balance	114,396

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2026	1,148,053	774,814		881,062	32,848	10.0%	1,074,652
2027	1,074,652	852,295		1,062,385	29,088	10.0%	893,650
2028	893,650	937,524		1,495,725	18,436	10.0%	353,886
2029	353,886	965,650		1,212,060	6,920	3.0%	114,396
2030	114,396	994,620		956,285	4,007	3.0%	156,738
2031	156,738	1,024,458		949,152	5,832	3.0%	237,876
2032	237,876	1,055,192		1,047,730	7,248	3.0%	252,586
2033	252,586	1,086,848		1,051,292	8,111	3.0%	296,253
2034	296,253	1,119,453		873,285	12,580	3.0%	555,001
2035	555,001	1,153,037		1,399,017	12,960	3.0%	321,982
2036	321,982	1,187,628		134,271	25,460	3.0%	1,400,799
2037	1,400,799	1,223,257		101,942	58,844	3.0%	2,580,957
2038	2,580,957	1,259,954		112,343	94,643	3.0%	3,823,212
2039	3,823,212	1,297,753			134,163	3.0%	5,255,127
2040	5,255,127	1,336,686		309,101	173,068	3.0%	6,455,780
2041	6,455,780	1,376,786		437,283	207,766	3.0%	7,603,050
2042	7,603,050	1,418,090		818,160	237,090	3.0%	8,440,070
2043	8,440,070	1,460,633		261,323	271,192	3.0%	9,910,571
2044	9,910,571	1,504,452		195,516	316,951	3.0%	11,536,458
2045	11,536,458	1,549,585		235,517	365,805	3.0%	13,216,331
2046	13,216,331	1,596,073		171,705	417,855	3.0%	15,058,554
2047	15,058,554	1,643,955		2,644,989	436,741	3.0%	14,494,261
2048	14,494,261	1,693,273		632,337	450,742	3.0%	16,005,939
2049	16,005,939	1,744,072		204,093	503,278	3.0%	18,049,196
2050	18,049,196	1,796,394		752,504	557,134	3.0%	19,650,220
2051	19,650,220	1,850,286		3,207,714	569,145	3.0%	18,861,937
2052	18,861,937	1,905,794		2,902,780	550,903	3.0%	18,415,854
2053	18,415,854	1,962,968		998,452	566,943	3.0%	19,947,314
2054	19,947,314	2,021,857		784,501	616,980	3.0%	21,801,650

Summary of Proposed Plan

for

Future Funding of the Reserve Fund

The following is a summary of the proposed plan for the future funding of the reserve fund.

The board of Carleton Condominium Corporation No. 256 has reviewed the Class 1 Comprehensive Reserve Fund Study, dated March 23, 2025, prepared by Martis Engineering for the Corporation (known as the "Reserve Fund Study") and has proposed a plan for the future funding of the reserve fund that the board has determined will ensure that, in accordance with the regulations made under the Condominium Act, 1998, the reserve fund will be adequate for the major repair and replacement of the common elements and assets of the corporation.

The board has adopted the funding recommendations of the Reserve Fund Study and will implement them as set out in the CONTRIBUTION TABLE on the next page.

The total regular Annual Contribution* recommended under the proposed funding plan for the current fiscal year (2025) is **$704,376,** which is the same amount that has already been budgeted.

The Reserve Fund Study can be examined by submitting a written request to the Corporation/Property Manager (as per Section 55(3) of the Condominium Act 1998).

CCC 256 - 111 Echo Drive, Ottawa
Contribution Table
Scenario 1 - FINAL - March 23, 2025

Year	Annual Contribution*	Percent Increase over Previous Year	Other Contribution	Total Contribution
2025	704,376			704,376
2026	774,814	10.0%		774,814
2027	852,295	10.0%		852,295
2028	937,524	10.0%		937,524
2029	965,650	3.0%		965,650
2030	994,620	3.0%		994,620
2031	1,024,458	3.0%		1,024,458
2032	1,055,192	3.0%		1,055,192
2033	1,086,848	3.0%		1,086,848
2034	1,119,453	3.0%		1,119,453
2035	1,153,037	3.0%		1,153,037
2036	1,187,628	3.0%		1,187,628
2037	1,223,257	3.0%		1,223,257
2038	1,259,954	3.0%		1,259,954
2039	1,297,753	3.0%		1,297,753
2040	1,336,686	3.0%		1,336,686
2041	1,376,786	3.0%		1,376,786
2042	1,418,090	3.0%		1,418,090
2043	1,460,633	3.0%		1,460,633
2044	1,504,452	3.0%		1,504,452
2045	1,549,585	3.0%		1,549,585
2046	1,596,073	3.0%		1,596,073
2047	1,643,955	3.0%		1,643,955
2048	1,693,273	3.0%		1,693,273
2049	1,744,072	3.0%		1,744,072
2050	1,796,394	3.0%		1,796,394
2051	1,850,286	3.0%		1,850,286
2052	1,905,794	3.0%		1,905,794
2053	1,962,968	3.0%		1,962,968
2054	2,021,857	3.0%		2,021,857

* The term "annual contribution" refers to the amount contributed each year to the reserve fund from the monthly common expenses.

DIFFERENCES BETWEEN THE RESERVE FUND STUDY AND THE PROPOSED PLAN FOR FUTURE FUNDING OF THE RESERVE FUND

The Plan for Future Funding of the Reserve Fund proposed by the board differs from the Reserve Fund Study in the following respects:

There are no differences between the Proposed Plan for Future Funding and the Reserve Fund Study.

APPENDIX B: RESERVE FUND STUDY METHODOLOGY

The objective of this study is to provide the Board of Directors with sufficient information to:

a) Set up a schedule for the anticipated repair and replacement of common element items.

b) Set up a special account for major repair items and replacement of common elements and assets of the Corporation.

c) Determine the annual contributions necessary to maintain an adequate balance for the 30 year period of this study.

d) Satisfy the legislation regarding the Condominium Act, 1998 and associated regulations related to Reserve Funds.

1. Limitations and Assumptions

This report is intended for the sole use of **Carleton Condominium Corporation No. 256** and must not be distributed or used by others without our knowledge. It is based on the documents and information provided to us and the findings at the time of our site visit.

It is a basic assumption that any correspondence, material, data, evaluations and reports furnished by others are free of latent deficiencies or inaccuracies except for apparent variances discovered during the completion of this report.

Unless specifically noted in this report, no testing, verification of operation of systems, physical review of subsurface conditions or concealed systems and components, review of concealed elements, intrusive openings, opening of system components for internal inspection, detailed analysis or design calculations were conducted, nor were they within the scope of this review.

Some of the findings herein are based on a random sampling visual review of surface conditions, discussions with the Board of Directors and/or their designated representatives, and review of relevant documents. Observations were made only of those areas that were readily accessible during our review. Deficiencies that are existing but not recorded in this report were not apparent given the level of study undertaken.

Components not included have not been reviewed, and if their conditions need to be known, further study will be required.

It is possible that unexpected conditions may be encountered at the building/facility that have not been explored within the scope of this report. Should such an event occur, Martis Engineering should be notified in order that we may determine if modifications to our conclusions are necessary.

In issuing this report, Martis Engineering does not assume any of the duties or liabilities of the designers, builders or owners of the subject property. Owners, prospective purchasers, tenants or others who use or rely on the contents of this report do so with the understanding as to the limitations of the documents reviewed and the general visual inspection undertaken, and understand that Martis Engineering cannot be held liable for damages they may suffer in respect to the purchase, ownership, or use of the subject property.

Professional judgment was exercised in gathering and analyzing the information obtained and in the formulation of the conclusions. Like all professional persons rendering advice, we do not act as insurers

of the conclusions we reach, but we commit ourselves to care and competence in reaching those conclusions. No other warranties, either expressed or implied, are made.

2. Report Format

A description of the table contents and our approach to assigning ratings is described in the following table.

ITEM	DESCRIPTION
Component ID	The component number, as per the ASTM Uniformat II Classification for Building Elements (E1557-09)
Location / Type	Where appropriate, we have provided a location or other modifier as needed to assist in identifying the specific component is provided. This may refer to an elevation, floor number, room, or material type.
Description & History	A brief description of the component, deficiencies observed by Martis Engineering (if any), and problems or previous repairs reported by site staff.
Condition Rating	We have also provided an overall condition rating for each component, as follows: **Excellent:** Functioning as intended; as new condition. **Good:** Functioning as intended; limited (if any) deterioration observed. **Fair:** Function and operation exhibiting wear or minor deterioration, normal maintenance frequency. **Poor:** Function and operation failing; significant deterioration and distress observed; increased maintenance attention has been required. **NR:** Not Reviewed –applicable to concealed systems, such as buried services, or where access was not provided to review a component. **N/A:** Not Applicable – applicable to Studies/Reports/Surveys.
Year of Acquisition	This is assigned based on available data from drawings or reports, readily accessible nameplate information on equipment, or interviews with site staff. Where the year is not known, we make an estimate based on observed condition. Year reflects the fiscal year in which the component was acquired, not necessarily the calendar year.
Recommendation	Our recommended approach for reserve fund budgeting.
Type	We have categorized the type of expense as follows:

	Replacement: Replace like with like, allowing for updating to the equivalent current standard. **Repair:** For repairs, typically to extend the life of a component, restore functionality, or for partial replacements of isolated failures. **Contingency:** For repairs likely to be required where the timing and scope cannot be assessed without additional study; or where failure is unpredictable **Study:** Further study is required to assign more accurate repair/replacement costs or timing for a Contingency item **Upgrade:** Replace to a higher standard (more efficient, higher quality, etc) Our report may identify upgrades which we believe are worth exploring. In such cases, we have included 0% responsibility since we understand upgrades may not be funded out of the Reserve Fund, and the costs are not considered within the cash-flow. **New:** For new components added to the Reserve Fund Study, typically to reflect changing legislation, or changes to the common elements.
Priority	A Priority Rating is provided to each Recommendation to assist in the budgeting of expenses, and to assess where deferral of an expense may be appropriate. 1. **Immediate:** items that require immediate repair or replacement because of either a code deficiency, legislative requirement or a safety concern 2. **Restore Functionality:** items that currently show signs of failure, requiring repair or replacement to restore functionality in the near future. 3. **Future Renewal:** items that will require future repair or replacement to maintain functionality (life cycle replacement). Most Reserve Fund Expenses will fall under this category. 4. **Discretionary Renewal:** items where the timing, scope of work and phasing is at the owner's discretion. This is typically limited to cosmetic issues.
Age in Current Fiscal Year	The age at the time of the assessment. Where the exact age is unknown, we provide an estimate based on observed condition.
Typical Lifecycle	Standard lifespan, assuming normal maintenance, based on our experience and manufacturer's recommendations. A piece of equipment may have a

	typical lifespan for complete replacement, as well as a typical lifespan for a recommended repair with a much shorter frequency. A lifecycle of 99 shows a one-time project.
Remaining Life Expectancy	Remaining life of component and/or time to the next major repairs. Based on Age subtracted from Typical Lifespan, but confirmed and adjusted as needed depending on observed condition. A negative value is used to show phased projects already partially complete.
Years Over Which Project is Phased	Normally projects are completed in one year. Larger projects may be phased over several consecutive years.
Percent Responsibility	Our understanding of the Corporation's responsibility for shared facilities. Most common elements are budgeted for at 100%, but any exceptions are noted in this column.
Recommended Budget	This represents our opinion of probable cost, in current fiscal year dollars, including consulting services (design, tendering and construction review) and contingencies where we believe it is appropriate. The cost for these services can vary significantly depending on the size, scope and degree of complexity of the project. Applicable taxes are also included. Opinions of probable cost are provided only as an indication of possible cost of remedial work. The repair or replacement costs are based on published construction cost data, recent bid prices on similar work, information provided by the owner, and our professional judgment. More precise opinions of probable cost would require more detailed investigation to define the scope of work. The opinions of probable cost we have presented can vary due to a number of reasons including changing market conditions, availability of newer materials and systems, and increased or decreased scope of work than we have identified. All opinions of probable cost assume that regular annual maintenance and repairs will be performed to all elements at the facility. We recommend that costs for consulting services, including design, tendering and construction review, be included in the reserve fund plan. The cost for these services can vary significantly depending on the size, scope and degree of complexity of the project. We have included a variable allowance for consulting fees and contingencies where we believe it is appropriate, and the 13 percent HST. All costs in the Condition Assessment

	and Reserve Fund Expenditure Forecast tables are identified in CURRENT FISCAL YEAR Canadian dollars.
Capital Plan	The tables show our opinion of the probable cost to carry out the recommendations (in current fiscal year dollars) during the planning horizon. The repairs and replacements we have forecasted do not represent a fixed schedule for replacements; repairs or replacements may be required sooner or later than we have anticipated.

The **Physical Analysis Summary Table** and **Reserve Fund Expenditure Forecast Table** in Appendix A show our opinion of the probable cost to carry out the recommendations (in current fiscal year dollars) during the Reserve Fund Study planning period. The repairs and replacements we have forecasted do not represent a fixed schedule for replacements; repairs or replacements may be required sooner or later than we have anticipated.

Review of the Tables reveals several contingencies that occur in a single year of the study period. Though these repairs and replacements will not all take place in one year, and may not be required at all, it is prudent to budget for such repairs since failure of some components is unpredictable.

3. Financial Terms, Assumptions and Calculations

Inflation

The Government of Canada and the Bank of Canada inflation-control policy is aimed at keeping inflations at agreed to target values. At present the target range is 1 to 3 percent, with the Bank's monetary policy aimed at keeping inflation at the 2 per cent target midpoint. This policy has continued to be renewed since implementation in 1991, and currently extends to December 31, 2026.

The total annual estimated expenditures are shown in the Capital Plan in current fiscal year dollars. The expenditures shown in the Cash Flow Table are inflated annually by the inflation percentage shown.

In the startup questionnaire, we requested confirmation of the inflation rate to be used over the course of the study. This may not be the actual current inflation rate, but is a reasonable estimate to begin the long term planning.

Interest

In the startup questionnaire, we requested confirmation of the interest rate to be used over the course of the study. This may not be the actual rate of interest on the Corporation’s current investments, but is a reasonable estimate to begin the long term planning.

The interest earned on the Reserve Fund for each year is based on a Mid-Year Interest Calculation in accordance with generally accepted accounting practice. Over the 30-year period, the calculated interest is lower than calculating Simple Interest, therefore it is a more conservative method for calculating interest. With the Mid-Year Interest Calculation, the interest earned on the Reserve Fund is calculated at the middle of the fiscal year assuming that half the expenses have been taken out of the

Reserve Fund and half the annual contribution has been deposited into the Reserve Fund. Therefore, Interest is calculated as follows:

Interest = Interest Rate x (Starting Balance – Expenses/2 + Annual Contribution /2)

Starting Balance

Martis Engineering requested information regarding the Reserve Fund balance at the start of the current fiscal year in the startup questionnaire. Where appropriate documents are provided, we confirm the opening balance against the financial statements. We assume the Board of Directors confirms the starting balance is correct to the best of their knowledge prior to authorizing us to finalize the report.

Contributions

Martis Engineering requested information regarding the present annual contribution to the Reserve Fund in the startup questionnaire. Where appropriate documents are provided, we confirm the contribution amount against the most recent Notice of Future Funding provided to the Owners. We assume the Board of Directors confirms the current annual contribution is correct to the best of their knowledge prior to authorizing us to finalize the report.

Future annual contributions are calculated based on the estimates of life expectancy and opinions of probable cost, Minimum Reserve Fund Balance, and the assumptions for inflation and interest. Sample annual contributions that would result in an adequate Reserve Fund are indicated in the attached Cash Flow Scenarios.

When large expenses are anticipated in the near future and the existing Reserve Fund Balance is relatively low, increases to the annual contribution may not be sufficient. Increasing the annual contribution to an amount that can accommodate the major expenses is typically not considered a suitable funding plan since the Reserve Fund Balance often becomes relatively high for the remainder of the study period. Excess funds in a Reserve Fund cannot be used for any other purpose except for the major repairs and replacements for which they have been budgeted.

In such cases, Other Contributions are considered in the Cash-Flow Plan. These contributions can be in the form of special assessments or surplus funds that the Board has indicated will be available from other sources (i.e. transferred from operating budgets or contingency funds).

Minimum Reserve Fund Balance

The Act indicates that the Reserve Fund must be adequate to provide sufficient funds for the expected costs of major repair and replacement of the common elements and assets of the Corporation. However, “adequate” is not defined by the Act. Any of the draft scenarios provided consider a Reserve Fund to be adequate where the closing balance in every year of the study is positive.

We request information regarding the desired minimum balance in the startup questionnaire. We assume the Board of Directors confirms the minimum balance of the approved scenario is acceptable even if it contradicts original directions provided in the completed questionnaire.

4. Requirements Under the Condominium Act

Component Inventory

O. Reg. 48/01, s. 29 indicates that a Reserve Fund Study shall include a physical analysis. O.Reg. 48/01, s. 27 defines a component inventory as "… an inventory, in a reserve fund study of a corporation, of each item of the common elements and assets of the corporation that requires, or is expected to require within at least 30 years of the date of the study, major repair or replacement where the cost of replacement is not less than $500;"

The $500 limit can be interpreted in two ways:

- All common elements that cost at least $500 must be included in the component inventory; OR
- No item costing less than $500 is to be included in the component inventory

It has been our experience that most Boards of Directors choose to cover small capital expenditures out of the operating budget. We request direction on this matter in the startup questionnaire at updates with site visit, or use the threshold set in the most recent update with site visit.

Adequacy of Plan

For condominiums registered before May 5, 2001, Subsection 94(8) of the 1998 Condominium Act and O. Reg. 48/01, s.33(2) indicates that the Board shall propose a funding plan for the Reserve Fund so that the Reserve Fund will be adequate by May 5, 2019. The most conservative interpretation amongst industry professionals is that any increases to the Reserve Fund contributions above inflation must take place before the end of the fiscal year in which this date falls. At the next fiscal year and each year thereafter, the planned contribution can be increased by inflation only.

For condominiums registered on or after May 5, 2001, Subsection 94(8) of the 1998 Condominium Act and O. Reg. 48/01, s.33(1) indicates that the Board shall propose a funding plan for the Reserve Fund so that the Reserve Fund will be adequate the fiscal year of the corporation following the fiscal year in which the Reserve Fund Study is completed. This can be interpreted in various ways, but the most conservative interpretation amongst industry professionals is that any increases to the Reserve Fund contributions must take place in the second fiscal year of the corporation, after which the contribution can be increased by inflation only Developers prepare the first-year budget using the minimum allowed RFS contribution allowed by the Act – 10 percent of the operating budgeted exclusive of the reserve fund. However, in our experience, the percent required is much higher, typically ranging from 20 to 25 percent of the operating budget for a highrise, and higher for townhouses. In order to offset large contribution increases, we also offer a funding scenario showing increases spread over the first three years of the study. We do not recommend spreading the increases over a longer period unless approved by your Corporation's Lawyer.

Timing of Studies

The Reserve Fund Study is a dynamic document that will change over time as repairs/replacements are carried out on the common elements and interest/inflation rates change. The repairs and replacements we have forecasted do not represent a fixed schedule for replacements; repairs or replacements may be required sooner or later than we have anticipated. Similarly, the opinions of probable cost we have presented can vary due to a number of reasons including changing market conditions, availability of newer materials and systems, and increased or decreased scope of work than we have identified. As such, regular updates to this Reserve Fund Study are necessary to re-assess your needs.

The Corporation is required to complete a Reserve Fund Study Update without Site Inspection within three years of the date of this study, and a Reserve Fund Study Update with Site Inspection within three years of that study (as specified by O.Reg. 48/01, s. 31 (3)). This is the minimum requirement for conducting Reserve Fund Studies.

However, the Board should consider an Update with Site Inspection if any significant changes in the condition of the common elements become apparent. Similarly, the Board should consider an Update without Site Inspection at an earlier date (prior to the three-year anniversary of this study) if there are any significant changes to the cash flow due to unforeseen conditions.

In the past, we have found that major changes to reserve fund plans can be minimized by conducting an Update without Site Inspection every one to three years, and conducting an Update with Site Inspection every three to five years.

5. Glossary of Building Terms

The following table is a list of terms and abbreviations which may have been used in the report produced for the noted project. All of the terms and abbreviations used are standard within the industry, but the glossary may be of some aid for those not familiar with construction terms.

Air Barrier	An assembly of one or more materials, including joints, that prevents the continuous passage of air, and whatever it contains, between different environments under a difference of pressure.
Ampere (A)	The unit of measurement of electric current. The greater the amperage, the larger the size of the conductor required to carry the current.
Annunciator Panel:	A lighted panel that provides information about the location of an activated fire alarm in a building, typically located near the main entrance of a building.
Backflow Preventer:	A device used in plumbing systems to prevent potentially contaminated water from moving back into the clean water supply.
Bitumen:	The term covering numerous mixtures of hydrocarbons such as those found in asphalt and mineral pitch.

Built-Up Roof:	Waterproof membrane constructed of multiple felt layers mopped down with bitumen.
Caulking:	Material with widely different chemical compositions used to make a seam or joint air-tight or watertight.
CCTV:	Closed Circuit Television, a video camera system that transmits video images to specific monitors as opposed to broadcasting the signal over air waves. Typically used in security applications.
CFM	Cubic feet per minute, the common unit of air flow measurement.
Cladding:	Any material that covers an interior or exterior wall.
Control Joint:	Also Movement Joint, a continuous joint in a structure or element, used to regulate the amount of cracking and separation resulting from relative movement.
Condenser:	A device used to remove heat from refrigerating equipment by circulating hot refrigerant gas through coils in the unit and blowing outdoor air across the coils with a fan. Cooling the gas causes it to condense back into a liquid.
Cooling Tower:	A device used to cool condenser water in a chiller by evaporation. Condenser water is sprayed into the top of the cooling tower. The droplets fall through the tower as air is blown upward through the tower, partly evaporating the droplets, which cools the remaining water. Water leaving the cooling tower is typically 10 degrees cooler than when it entered.
Delamination:	A separation along a plane parallel to a surface.
Direct expansion:	A refrigeration method in which an air cooling coil contains refrigerant rather than a secondary coolant glycol or brine.
Drip Edge:	A projection detailed to direct water run-off away from the wall or window face below.
Efflorescence:	Deposits of salt, usually white, due to the migration of salt-laden (in solution) water through concrete or masonry units.
EPDM:	Synthetic rubber membrane usually applied in single-ply applications.
Exhaust Air:	Air mechanically removed from a building to reduce the concentration of moisture, cooking odours and other contaminants from the building.

Fan Coil Unit:	A device consisting of a fan and water coil that can heat an area by circulating hot water through the coil and cool by circulating chilled water through the coil.
Fire Detector:	A fire alarm system component which senses the presence of a possible fire through the presence of smoke particles or heat (i.e. smoke detector, heat detector).
Flashing:	A thin waterproof sheet material, flexible or rigid, used to direct water out of, or away from, the structure.
Glazing:	A generic term for the transparent, or sometimes translucent, material in a window or door. Often, but not always, glass.
Glazing Bead:	A molding or stop around the inside of a frame to hold the glass in place.
Glazing Unit:	That part of a window which includes more than one glazing layer sealed around the outside edge to prevent air or moisture from entering the airspace and eliminating dirt and condensation between glazings.
Heat Exchanger:	A device used to heat a fluid or gas with another fluid or gas without the two streams coming in direct contact with each other and mixing. For example a radiator heats air using hot water. The air and water circulate through the heat exchanger (the radiator) but do are prevented from coming in contact with each other by the radiator.
Heat Pump:	A mechanical device designed to provide both winter heating and summer cooling.
HID:	High Intensity Discharge, a generic term for mercury, vapour, metal halide and high pressure sodium light fixtures. Light in these fixtures is produces by an electric arc between two electrodes.
House Panelboard:	A panelboard which supplies power to common area loads
Hydronic Heating:	A means of heating a space through the use of hot water circulated through heating coils or a radiator in the space
Initiating Device:	A fire alarm system component which initiates a fire alarm (i.e. pull station).
Inverted Roof:	Where the roof membrane is located below the insulation and ballast (also Protected Membrane Roof).

Joist:	One of several parallel, horizontal and relatively closely spaced concrete, wood or steel members directly supporting a floor or roof slab or deck.
kVA:	Kilo-Volt-Ampere, the unit used to measure apparent power. This is what is charged by the utility
kW:	Kilowatt, the unit used to measure real power. This is power that is actually used by the customer.
Lintel:	A horizontal structural support above an opening in a wall.
Makeup Air:	Fresh, outdoor air that is mechanically introduced to a building to make up for the air removed from buildings by exhaust systems.
Panelboard:	A component of an electrical distribution system which divides an electrical power feed into subsidiary circuits, while providing a protective fuse or circuit breaker for each circuit all contained in a common enclosure.
Pre-Formed Insulation:	Insulation that has been fabricated at the factory to conform to the shape of pipe fittings such as elbows, or to equipment such as valves and pumps. Usually designed to be easily removable so it can be removed from equipment for servicing and then re-installed when the work is complete.
Refractory:	A ceramic insulating material used in boilers and similar equipment because it can withstand very high temperatures.
Retaining Wall:	A wall constructed to hold back earth, water or other backfill.
Riser:	Pipes or ductwork used to transport water, effluent, air or service cables vertically through a multi-storey building for distribution of services.
Roof Structural Deck:	An elevated platform consisting of a variety of materials such as wood planks or metal pans, often supported by structural joists, beams and columns made of steel or wood, all structurally designed to support loads such as a roofing system.
Scaling:	A degradation of the surface of a concrete element, consisting of local flaking or peeling away of the near-to-surface sand and cement portion of hardened concrete or mortar.
Sealant:	A flexible material used on the inside (or outside) of a building to seal gaps in the building envelope in order to prevent uncontrolled air infiltration and exfiltration.
Sealed Units:	Two pieces (lites) of glass sealed around the perimeter, increasing the thermal resistance of the window.

Shear Wall:	A wall that resists horizontal forces applied in the plane of the wall, usually due to wind or seismic effects (also Flexural Wall).
Signaling Device:	A fire alarm system component which visually or audibly alarms (i.e. bell, strobe).
Slab-on-Grade:	A concrete floor slab placed directly on compacted fill and deriving its support from this fill (also Slab-on-Ground).
Spall:	A fragment of concrete or masonry detached from a larger mass by a blow, weather action, internal pressure, or efflorescence within the mass (sub flourescence).
Stucco:	A finish consisting of cement plaster, used for coating exterior building surfaces.
Switchboard:	A board or panel equipped with apparatus for controlling the operation of a system of electric circuits.
Terminal Board:	An insulating base on which terminals for wires or cables have been mounted
Thermographic Scanning:	Also known as infra-red scanning. A photograph that detects hot spots of electrical equipment or temperature differences at building surfaces.
Tuckpointing:	Also Repointing, the process of removing deteriorated mortar from the joints of masonry and replacing it with new mortar.
Uninterruptable Power Supply (UPS):	A power electronic device primarily used as a back-up power source for computers and computer networks to insure on-going operation in the event of a power failure. Sophisticated units also have power conditioning and power monitoring features.
Vapour Barrier:	A material or combination of materials having a high resistance to water vapour diffusion, used to separate a high water vapour pressure environment from a low water vapour pressure environment.
Vent:	An opening placed in a facing wall or window assembly to promote circulation of air within a cavity behind the facing, usually to encourage drying of the cavity and/or to moderate the pressure across the facing.
Volt (V):	A unit of potential energy equal to the potential difference between two points on a conductor carrying a current of 1 ampere.
Weather-strip:	A strip of material placed around an operating window or door to reduce air leaks.

Weephole:	An opening placed in a wall or window assembly to permit the escape of liquid water from within the assembly. Weepholes can also act as vents.
Weeping Tiles:	Drainage pipes placed at the base of foundation walls.