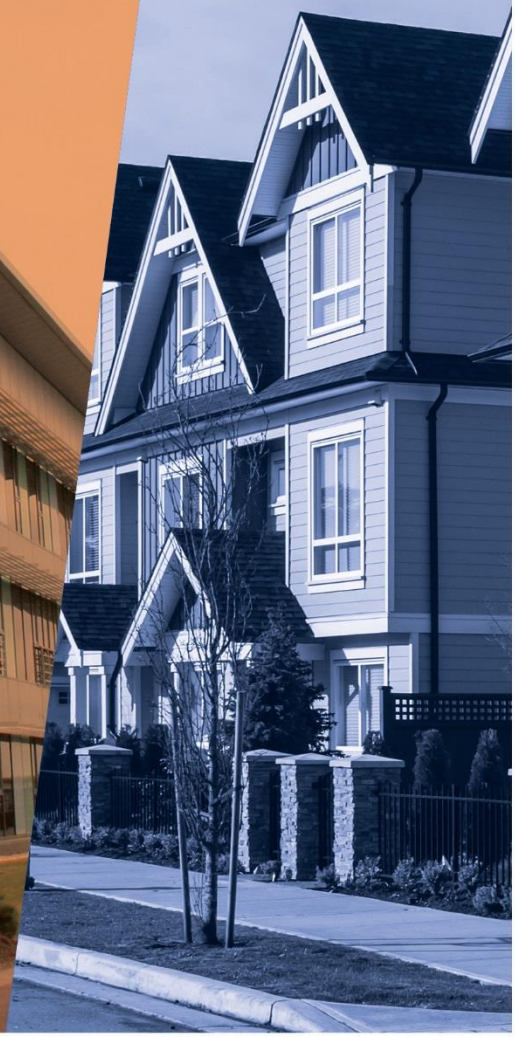
KELLER ENGINEERING

RESERVE FUND STUDY UPDATE WITH SITE VISIT
CARLETON CONDOMINIUM CORPORATION No. 34
OTTAWA, ONTARIO



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STUDY SUMMARY

A site inspection was performed on October 9, 2019 by:

- Brian McCandie, B.Eng., Keller Engineering (Structural & Architectural)
- Steve Christison, P.Eng., Keller Engineering (Structural & Architectural)
- Miguel Plano, P.Eng., Keller Engineering (Electrical & Mechanical)
- Chis O'Brien, B.A.Sc.Mech.Eng., Keller Engineering (Electrical & Mechanical)

Based on our visual examination of the property, it is our opinion that Carleton Condominium Corporation No. 34 is in generally satisfactory condition. A number of common elements will, however, require repairs or replacement over the 30-year horizon of this reserve fund study.

Based on our fiscal analysis and best current estimate, it is recommended that annual reserve fund contributions be increased to **$469,688** in fiscal year **2020.** Increases in the annual contributions in fiscal year **2021** and all years thereafter are budgeted at **2.5% per year**, which is our assumed yearly construction cost increase. 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 time period examined in this Reserve Fund Study.

Repair / Replacement Work
The following repair/replacement work will be funded from the reserve fund over the next few years:

- Repairs to North Catch Basin
- Waterproofing of North Garage Foundation Wall
- Replacement of Main Roof
- Replacement of Lobby and Corridor Interior Finishes
- Partial Replacement of Patio Doors
- Replacement of Main Disconnect Switchgear
- Replacement of Natatorium Dehumidification Unit

Future Work
The following items are not expected to require repair or replacement within the 30-year scope of this study; however, will be required in the future. Budgeting for these items will commence as they approach the 30-year scope of the Reserve Fund Study:

- Replacement of Windows
- Replacement of Domestic Cold & Hot Distribution and Risers
- Replacement of Sanitary and Storm Pipes & Stacks
- Replacement of Masonry Veneer

Recommended Further Investigations:

The following investigations are recommended to further evaluate the condition of common elements showing distress. The findings of these investigations should be provided to your reserve fund planner in order to provide greater insight into existing conditions.

- Sewer Cleaning and Inspection
- West Podium Waterproofing Membrane Condition Assessment
- Standpipe and Sprinkler Pipe Investigation
- Camera Inspection and Flushing of Hydronic, Domestic and Sanitary Plumbing Systems
- Inspection of Hot Water Storage Tanks
- Infrared Thermography on Electrical System

Structural and Architectural

Brian McCandie, B.Eng.

Steve Christison, P.Eng

Electrical and Mechanical

Miguel Plano, P.Eng.

1.0 INTRODUCTION

1.1 Scope

The Board of Directors of Carleton Standard Condominium Corporation No. 34 (CCC 34) commissioned Keller Engineering to inspect the common elements of its condominium corporation in order to prepare the following Reserve Fund Study. The work included the review of civil, structural, architectural, mechanical, and electrical common elements. Note that only the common elements are addressed in this study. Mechanical and electrical systems and finishes within the boundaries of each unit are not part of the common elements unless specifically designated as common elements and as such, they are owner's responsibility.

In accordance with 'The Condominium Act, 1998', the purpose of this study is to determine whether the amount of money in the reserve fund and the amount of contributions collected by the Corporation are adequate to provide for the expected costs of major repairs and replacement of the common elements and assets of the Corporation. The Reserve Fund Study contains findings about the current conditions of the common elements and it tabulates major capital expenditure predictions over the next 30 years.

This Reserve Fund Study satisfies the requirements of a Reserve Fund Study as outlined in Part IV of the Ontario Regulation 48/01, s. 28.

1.2 Description of Property

Carleton Condominium Corporation No. 34 is a 47-year old, 20-storey highrise building containing 275 residential units. The property, also known as Las Brisas is located at 665 Bathgate Drive, in Ottawa, Ontario

The structural system of the condominium building consists of cast-in-place reinforced concrete columns, slabs and shear walls. The exterior on the east and west elevations is clad with a brick masonry veneer with steel stud wall, and the north and south elevations are cast-in-place concrete cladded with insulated aluminum panels. The roof of the condominium highrise building is protected with an inverted roofing membrane system. Fenestration are provided by aluminum windows and a combination of aluminum and fibreglass framed patio doors.

A 2-storey concrete parking garage structure is located around the building. The intermediate slab of the parking garage is protected with an elastomeric traffic bearing membrane. The on-grade drivable surface is constructed of asphalt pavement-on-grade. The podium slab is protected with a waterproofing membrane covered by asphalt, and hard and soft landscaping.

A 1-storey structure clad with brick masonry which contains the pool and other common rooms is located to the west of the highrise building and connected by a breezeway.

Electrical feed to the building is provided by hydro vault with a 2,500A 120/240V main service to the building. A series of fused disconnect switches and breaker panels provide electrical distribution throughout the building. Emergency power is provided by a natural gas fueled generator located in the mechanical penthouse. Security systems consist of a phone-based door entry system, key fob system, and security cameras.

The ventilation system consists of a make-up air unit with glycol coils and multiple exhaust fans throughout the building. The garage is ventilated using six exhaust fans controlled by a carbon monoxide detection system.

Heating is provided by five heating boilers and hydronic pumps which distribute hot water to hydronic radiators throughout the building. Electric forced flow heaters provide heating to a few rooms. Electric heat tracing protects piping in the garage from freezing. The two garage ramps are electrically heated. Some common area rooms party room and the elevator machine room are cooled with ductless split air conditioner units.

Plumbing systems consist of a domestic cold-water booster pump and hot and cold-water risers. Four gas fired hot water heaters and storage tanks in the penthouse mechanical room and pool mechanical room provide domestic hot water to the suites and common areas.

The three traction elevators provide access to floors B to 21.

Fire protection systems are comprised of a fire alarm panel with voice annunciator, fire hose cabinets and fire extinguishers installed throughout the building. Fire sprinklers are located in the basement and parking garage.

Asphalt roadways and parking areas are located throughout the condominium and asphalt and concrete walkways provide access to the roadways and the building. Concrete perimeter walls with steel fencing are located at the south and east podium deck perimeter.

Fig.1: Location of CCC 34

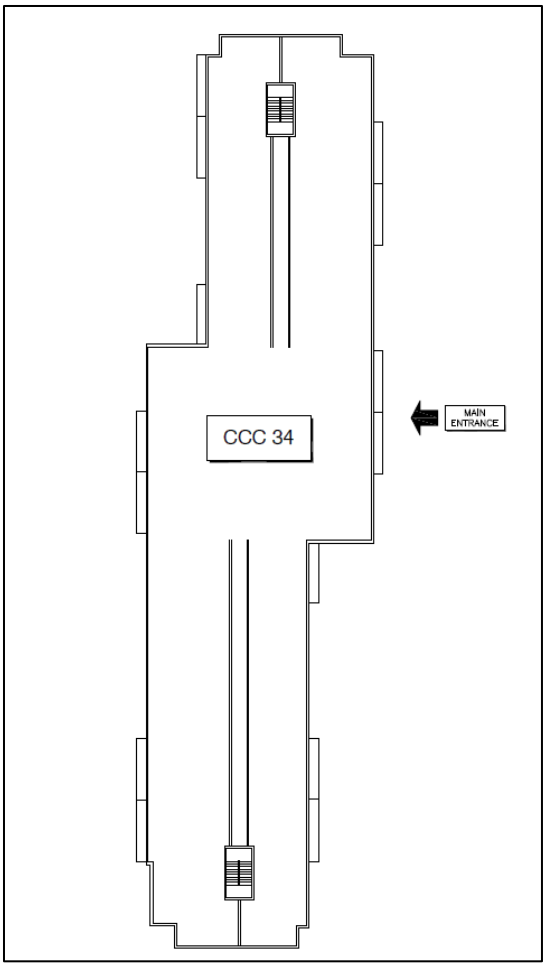

Fig. 2: Key Plan

1.3 References

Reference Materials were provided by Mr. Réjean D'Aoust, of Capital Integral Property Management, Property Manager for CCC 34

The following documents were available for review for the purpose of completing this study:

- Previous Reserve Fund Studies
  - Reserve Fund Study Update without Site Visit; dated Nov 22, 2016; Keller Engineering
  - Reserve Fund Study Update with Site Visit; dated Dec 12, 2013; Keller Engineering
  - Reserve Fund Study Update without Site Visit; dated Nov 5, 2012; Morrison Hershfield
  - Reserve Fund Study Update with Site Visit; dated Aug 28, 2008; Morrison Hershfield
- Survey of Windows, Balcony Doors, Walla and Balcony Slabs; dated April 25, 2014; Keller Engineering
- Masonry Walls & Hydronic Heating System Replacement Design Package; dated Mar 31, 2015; Keller Engineering
- End Wall Overcladding Design Package; dated Oct 16, 2014; Keller Engineering
- Garage Survey; dated Dec 12, 2013; Keller Engineering
- Investigation of Mechanical Systems, dated Dec 12, 2013; Keller Engineering
- Investigation of TTW Masonry Walls, dated Dec 4, 2013; Keller Engineering
- Ultrasonic Thickness Survey of Pipe Samples for Keller Engineering; dated July 5, 2013; Glencor Engineering
- Elevator Inspection Report; dated Mar, 2012; Rooney Irving Associates
- Budgets
  - Fiscal Year 2019; dated Dec 5, 2018
  - Consolidated Budget vs Actual; Jan – Jun 2019
  - Operating Budget vs Actual; Jan – Jun 2019
  - Reserve Fund Budget vs Actual; Jan – Jun 2019
- Audited Financial Statements
  - Fiscal Year 2018; dated Dec 31, 2018
- Balance Sheet
  - June 30, 2019
- General Ledger; dated Jun 2019
- Reconciliation Reports
  - Operating Fund; dated Jul 16, 2019
  - Reserve Fund; dated Jul 8, 2019
- Bank Statements
  - Operating Fund; dated Jun 28, 2019
  - Reserve Fund; dated Jun 28, 2019
- Drawings
  - Architectural; E.I. Richmond Architect; dated June 26, 1972 (20 pages)
  - Structural; T.J. Ecsedi & Associates Ltd.; dated June 26, 1973 (22 pages)
  - Electrical; E1-E5; John Garay and Associates Ltd; dated May, 1972 (5 pages)
  - Mechanical; M1-M8; John Garay and Associates Ltd; dated May, 1972 (11 pages)
  - Sprinkler; Vipond Automatic Sprinkler; dated May 11, 1973 (5 pages)
- Contemplated Work List; CCC 34 Board of Directors
- Declaration

2.0 GENERAL INFORMATION

2.1 Determination of Repair/Replacement Costs

The procedures for determining repair/replacement costs of the common elements involve site inspections, quantity take-offs from drawings, cost estimations and a spreadsheet layout which are described in detail in this report.

TECHNICAL AUDIT

A Technical Audit is performed to assess the general condition of the common elements. This site work also provides the opportunity to determine the type of repair or replacement work that will be required for each common element as well as the time period when such work will likely be required.

COST ESTIMATION

Once the type and quantity of repair or replacement work are known, the costs associated with such work are estimated. Keller Engineering has developed an extensive listing of unit costs for a wide variety of repair and replacement work involving all civil, structural, architectural, and electrical elements that are typically included in Reserve Fund Studies. This listing was compiled using prices obtained from repair and replacement contracts in which Keller Engineering has been involved as well as from cost estimates provided by manufacturers, suppliers and contractors. For unique repair or replacement items, advice is generally obtained from a contractor with experience in the work of concern. In such cases, the contractor examines the work and prepares an estimate for our use in the Reserve Fund Study.

FORECASTING COSTS

Capital expenditures for repair and replacement of building components have been forecasted in current dollars and the most probable fiscal years when these expenditures will be required have been set out in this report. Adjustments for construction cost increases as well as earned interest are automatically made to the spreadsheet and, since the annual fees are to be revised in the current year, the recommended contributions are also determined in current dollars. Beyond the current year, it is the Board's responsibility to ensure that the reserve fund contributions are in line with those outlined in the spreadsheet.

When an expense will be incurred depends on a number of factors, such as:

i) The urgency of repair or replacement: Some building components, such as water supply, sanitary sewers or electricity distribution mains, must operate flawlessly at all times. Interruptions in their working condition cannot be tolerated and repair costs for these items cannot be deferred.

ii) The perceived importance of a repair or replacement: For example, caulking, paving or painting need not be addressed when the first blemishes appear. The Board of Directors has considerable freedom to delay or advance the time when funds will be spent on these non-essential types of repairs to suit the demand from owners and the financial constraints of the Corporation's budget.

In most cases, expenses for each common element have been budgeted for the specific fiscal year in which the repair or replacement will likely be required. If possible, repair or replacement of the common elements will usually be performed throughout the corporation during one year rather than spreading the repairs out over a few years as this is generally the most cost effective solution. For cases where repair or replacement of a building component is not required throughout the corporation at the same time, it may be more cost effective to phase the work over two or more years. Phasing the work may also be necessary due to a lack of reserve funds. A prudent manager would be expected to determine whether phasing the work is cost effective and have the work performed accordingly. Some of the expenses outlined in this Reserve Fund Study will occur early in the predicted time period, other expenses will be incurred later however the accumulated reserve fund should be sufficient to pay for all of these expenses as they come due.

It is within the Board's mandate to advance or defer non-essential repair contracts based on sound technical advice at the time of the scheduled repair.

ENGINEERING FEES

To ensure that major repair and replacement work at the condominium corporation is properly specified and performed, it is strongly recommended, that an experienced engineer be hired to provide professional assistance. Engaging the services of a professional engineer will ensure that the work is properly specified,

tendered, and executed. Engineering fees related to the common element repairs will be paid out of the reserve fund. Accordingly, a suitable allowance for engineering fees has been included in the spreadsheet where it is likely that the Board will require professional assistance in implementing the work. Depending on the extent and complexity of the work, engineering fees can range between 5% and 15% of the value of the construction project.

2.2 Financial Plan

SPREADSHEET

The main purpose of the spreadsheet is to determine the annual reserve fund contributions required to ensure that there will be sufficient funds to pay for all foreseeable 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.

INFLATION RATES

Over the past few years, the rate at which construction costs increase has varied significantly between 0.9% and 7.0%. An annual inflation rate of **2.5%** has been used in this report. This rate is based on annually published data by Statistics Canada relating to the construction price index for residential in the local region.

While the increase in construction costs will fluctuate from year to year, an annual rate of **2.5%** will likely provide a reasonable representation of how prices will increase over the next few years.

INTEREST RATES

For this Reserve Fund Study, a **2.5%** interest rate was assumed in calculating the annual contributions from interest earned on the reserve fund balance.

While actual inflation and interest rates may differ from those assumed for this report, the above rates, in combination, should be representative over the next few years.

DETERMINING CONTRIBUTION AMOUNTS

Trial values for the annual reserve fund contributions are entered into the spreadsheet and through an iterative process the most appropriate annual contributions are determined and used to establish the 30-year funding plan. The iterations account for annual expenditures, annual contributions from owners' monthly fees as well as contributions from investment interest earned on the unused balance of the reserve fund. As noted previously, these figures are adjusted to account for yearly construction cost increases prior to determining the recommended funding plan and the annual contributions are shown in the actual dollar values for each respective year.

The most appropriate contribution ensures that sufficient funds are accumulated in the reserve fund to cover all anticipated expenditures as they come due while leaving a surplus at the end of the study period. The size of the surplus depends greatly on the individual condominium and on the expenses that are to be incurred beyond the study period. Condominiums which are expected to incur large expenditures shortly beyond the study period should have a large surplus.

At the end of the spreadsheet, the remaining reserve fund is shown in current dollars to provide a better perspective of the fund balance at the end of the study period.

Reserve funds for condominiums must be adequately funded following each reserve fund study. The most accepted interpretation of adequate funding is that annual contributions remain constant and increasing only by inflation and that no special assessments are necessary.

As part of the changes to the Condominium Act, the Regulations of the Act are being revised. While the changes relating to reserve fund planning have yet to be implemented, we anticipate that the current recommendations will be implemented in the near future. The current recommendations include allowing condominiums to plan for an increase of the year-over-year total contributions above regular inflation for a period of 3 years upon completion of the reserve fund study.

Note, Keller Engineering projects expenses for a timeframe 10-years beyond 30-year plan. Financial plans will be presented that will meet the necessary funding requirements of both the 30-year plan and the period 10-years beyond. It is a common that a financial plan that only meets the 30-year period will not be sufficient to prevent a deficit occurring in the 10-years beyond the scope of the study. The Board of Directors may

elect to proceed with a funding plan which exhibits a deficit beyond the 30-year plan with the knowledge that a significant increase to the contributions may be required upon time of the next Reserve Fund Study.

In accordance with the Condominium Act and the associated Regulations, Reserve Fund Study Updates must be conducted every 3 years. These updates will allow for adjustments to interest rates, construction cost increases, and/or the funding plan, due to any unforeseen costs incurred over the 3-year period. Prices for future reserve fund studies are included for budgeting purposes only and do not constitute a fee proposal for future services.

3.0 ASSUMPTIONS AND LIMITATIONS

The accuracy of the discussions, conclusions and cost information contained in this study is limited to the extent of information available at this time. The condition assessment of the common elements is based upon visual examination only. Neither destructive testing nor performance monitoring were conducted.

Life expectancy projections for the common elements assume that the corporation will provide satisfactory and timely periodic maintenance. The study does not make allowances for the effects of rare events such as flood, fire, lightning, explosions, earthquakes etc.

Costing has been based on the work being performed using a procurement process that includes multiple bids. Further costing is based on the work being procured during normal procurement periods for each type of work and does not account for premiums that can be added to the cost to perform the work in short notice or in periods of high demand. Unless requested by the Board, all costs assume that the Contractor performing the work will have full access to the work site for the entire duration of the project and no special considerations have been provided to allow continual use or access of the work area by the unit owners.

Future cost projections for the repair or replacement of common element items are based on a set inflation rates taken as an average of past years' construction price index, which is provided by Statistics Canada. As market value increases may vary annually, it is difficult to determine the percentage increase on an item by item basis. Therefore, the most practical projection is provided by reviewing the previous year's average cost increases of the entire construction industry and extrapolated these costs over the life span of the study.

It is assumed that the expected performance standards and appearance correspond to the current norm. Furthermore it is also assumed that, housing industry averages and manufacturers' published data on component life expectancy apply to this condominium corporation.

4.0 APPENDICES

4.1 Spreadsheet for Major Repair and Replacement

As described in Section 2: General Information, the purpose of the spreadsheet is to determine the annual reserve fund contributions required to ensure that there will be sufficient funds available to pay for all foreseeable expenditures over the next thirty years.

4.2 Photo Review

A visual summary of our findings is included in Appendix B: Photo Review.

4.3 Management Planning Table

The Management Planning Table included in Appendix C provides managers and Board members with a list of expected major expenses and their likely occurrence. The information contained in this table is presented elsewhere in the text of this study and is summarized here for convenience.

4.4 Notice of Future Funding (Formerly Form 15)

The Notice of Future Funding of the Reserve Fund is included in Appendix D. This notice contains a summary of the Reserve Fund Study as well as the proposed plan for future funding. Copies of this notice are to be sent to each of the unit owners to give notice and make them aware of the proposed plan.

Within 120 days of receiving the study, it is the responsibility of the Board of Directors in consort with the Corporation's property management and financial advisors, to review the Reserve Fund Study and propose a plan for future funding of the reserve fund which the Board determines will ensure that the fund will be adequate for the purpose for which it was established.

5.0 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 poor to satisfactory. The rankings are as follows:

- Satisfactory – The condominium complex component exhibits little to no deterioration and is expected to last or exceed its estimated full life cycle assuming regular maintenance and no change to its general environment.
- Fair – The condominium complex component is serviceable although there is evidence of collective degradation or deficient operation. Repairs may be required within the next 5 years.
- Poor – The condominium complex component is either at the end of its life cycle or there is the potential for imminent failure. In the circumstance, the condominium complex component may be inoperative or exhibit total failure and immediate repairs or replacement may be required.

5.1 Architectural/Structural/Civil

5.1.1 Site Services

UNDERGROUND SERVICES

The underground services which include sanitary and storm water piping systems, water supply lines and electrical services are situated beneath the condominium complex. These systems are partially shared with 641 Bathgate Drive. These systems will typically last the life of condominium complex without requiring replacement, however, generally major repairs will be required after 40 to 50 years of service.

The underground services were installed as part of the original construction; as such are 47 years old. Based on their current age, we expect the systems are in fair condition. We expect major repairs will be required within the 30-year planning period of this study.

In summer of 2019, 641 Bathgate Drive, as part of a podium membrane replacement installed a trench drain and connected into a catch basin on CCC 34 property near the north garage entrance ramp.

The sewer system should not be ignored under the assumption that it will operate flawlessly at all times. Periodic inspection of the sewers by a qualified inspection company should be performed to ensure all systems are functioning properly and should be cleaned as required. The occasional sewer repairs that may arise should be paid out of the reserve fund, however no funds are budgeted for these repairs because it is impossible to predict what costs will be incurred, if any.

We recommend the following work be anticipated and funded:

.A In order to ensure funds are available to perform major repairs of the underground services when required, an allowance of **$30,000** has been made in fiscal year **2023 and every 20 years** thereafter.

.B In order to ensure funds are available to perform minor repairs of the underground services when required, an allowance of **$6,000** has been made in fiscal year **2024 and every 5 years** thereafter, excluding years of major repairs.

.C In order to ensure funds are available to modify the surface drainage at the north garage entrance ramp, an allowance of **$30,000** has been made in fiscal year **2020**.

Underground Services Repair Allowance	
. Quantity	Allowance
. Cost(major)	$30,000
. Year(s)	2023, 2043
. Cost (minor)	$6,000
. Year(s)	2024, 2029, 2034 2039, 2044, 2049

North Garage Ramp Surface Drainage Allowance	
. Quantity	Allowance
. Cost(major)	$30,000
. Year(s)	2020

.D Although costs are not included in this study, as they do not constitute a major repair or replacement, we recommend that camera inspections and sewer cleaning be performed every 5 and 10 years respectively, using funds from the operating budget.

PARKING BOLLARDS

The steel parking bollards with electrical receptacles are located in the east podium deck area. These parking bollards have a varying service life depending on usage.

Parking Bollards Replacement	
. Qty	9
. Cost	$10,000
. Year(s)	Beyond 2049

The parking bollards were replaced in fiscal year 2019; as such are 1 year old. The bollards are in satisfactory condition with no major defects observed. We do not anticipate replacement will be required during the 30-year planning period of this study.

We recommend the following work be anticipated and funded:

.E Replacement of the parking is estimated to cost **$10,000** and this work has been budgeted **beyond the 30-year planning period** of this study.

.F Minor repairs or replacements of the parking bollards should be performed, as required, using funds from the operating budget.

5.1.2 Parking Garage

PARKING GARAGE STRUCTURE

The parking garage structure is constructed of reinforced concrete slabs, beams and columns. The parking garage structure will typically last the life of the complex; however, significant repairs are usually required after 30 years of service.

Column-on-Grade Repair Allowance	
. Qty	Allowance
. Cost	$50,000
. Year(s)	2029, 2045

The parking garage structure was installed as part of the original construction; as such is 57 years old. As per the 2013 parking garage survey, the parking garage structure is in fair condition with concrete delamination noted at all concrete elements. In 2016, repairs to the concrete columns-on-grade were performed; however repairs to the suspended slab is still required. The repairs to the structural slabs have been scheduled in conjunction with the suspended slab traffic bearing membrane replacement. An allowance for subsequent repairs to the columns-on-grade has been scheduled in the next 10-15 years.

Significant concrete repairs are generally required in concrete parking structures after the structure has obtained 30-years of service; therefore, we recommend a survey of the structure be performed prior to any significant repairs to determine the scope of this project.

We recommend the following work be anticipated and funded:

.A In order to ensure funds are available for repairs to the columns-on-grade, an allowance of **$50,000** has been provided in fiscal year **2029 and every 15 years thereafter.**

.B Costs of the concrete repairs to the parking garage structure have been included with the intermediate slab membrane replacement project.

PODIUM SLAB COVERED WITH LANDSCAPING

The landscaped covered podium on both the east and west podium deck and is protected by a waterproofing membrane. Waterproofing membranes under landscaping have a typical service life of 20-35 years.

East Landscaping Podium Waterproofing Replacement	
. Qty	1,085 m^2
. Cost	$500,000
. Year(s)	Beyond 2049

The waterproofing under the landscaping on the east podium was replaced in fiscal year 2019; as such is 1 year old. The waterproofing is in satisfactory condition with no major defects observed. We do not anticipate replacement will be required during the 30-year planning period of this study.

West Landscaping Podium Waterproofing Replacement	
. Qty	1,020 m^2
. Cost	$700,000
. Year(s)	2037

The waterproofing under the landscaping on the west podium was replaced in fiscal year 2005; as such is 15 years old. Based on its current age, we expect the waterproofing is in satisfactory condition. We estimate replacement will be required in the next 15-20 years. This work has been scheduled to coincide with the west asphalt podium waterproofing replacement.

Replacement of the waterproofing membrane can occur as early as 20 years; however, under ideal conditions, these membranes can last almost twice this service life. Due to the large variance in service life of these membranes, we recommend a cut test investigation be performed after 25 years of service to determine whether the service life of the membrane can be extended.

Generally minor concrete repairs will be required upon replacement of the waterproofing membrane and an allowance for these repairs have been included in the costs for replacement.

We recommend the following work be anticipated and funded:

.A Replacement of the podium waterproofing including all landscaping on the east podium is estimated to cost **$500,000** and this work has been budgeted **beyond the 30-year planning period** of this study.

.B Replacement of the podium waterproofing including all landscaping on the west podium is estimated to cost **$700,000** and this work has been budgeted in fiscal year **2037**

.C Although costs are not included in this study, as it does not constitute a major repair or replacement, we recommend that a comprehensive investigation of the waterproofing under the landscaping on the west podium be performed in fiscal year 2025, using funds from the operating budget.

PODIUM SLAB COVERED WITH ASPHALT

The asphalt covered podium is located on both the east and west podium deck and is protected by a waterproofing membrane. Waterproofing membranes under asphalt have a typical service life of 20-30 years

East Asphalt Podium Waterproofing Replacement	
. Qty	1,815 m^2
. Cost	$750,000
. Year(s)	Beyond 2049

The waterproofing under the asphalt on the east podium was replaced in fiscal year 2019; as such is 1 year old. The waterproofing is in satisfactory condition with no major defects observed. We do not anticipate replacement will be required during the 30-year planning period of this study.

West Asphalt Podium Waterproofing Replacement	
. Qty	950 m^2
. Cost	$400,000
. Year(s)	2037

The waterproofing under the asphalt on the west podium was replaced in fiscal year 2005; as such is 15 years old. Based on its current age, we expect the waterproofing is in satisfactory condition. We estimate replacement will be required in the next 15-20 years. This work has been scheduled to coincide with the west landscaping podium waterproofing replacement.

Generally minor concrete repairs will be required upon replacement of the waterproofing membrane and an allowance for these repairs have been included in the costs for replacement.

We recommend the following work be anticipated and funded:

.D Replacement of the podium waterproofing including all asphalt and curbs on the east podium is estimated to cost **$750,000** and this work has been budgeted **beyond the 30-year planning period** of this study.

.E Replacement of the podium waterproofing including all asphalt and curbs on the west podium is estimated to cost **$400,000** and this work has been budgeted in fiscal year **2037**

INTERMEDIATE SLAB

The intermediate suspended slab in the parking structure is protected with a elastomeric traffic bearing membrane. The traffic bearing membrane has a typical service life of 15-20 years; however, areas of high traffic can have a reduced service life.

The traffic bearing membrane was replaced in 2005; however repairs were performed in 2014. The traffic bearing membrane varies from fair-to-satisfactory condition with moderate delamination and surface deterioration observed. We estimate repairs will be required in the next 5 years. A subsequent replacement will be required in the next 5-10 years.

We recommend the following work be anticipated and funded:

.F In order to ensure funds are available to perform localized repairs to the traffic bearing waterproofing on suspended slab when required, an allowance of **$30,000** has been made in fiscal year **2021 and every 12 years thereafter**

.G Replacement of the traffic bearing membrane on the suspended slab is estimated to cost **$400,000** and this work has been budgeted in fiscal year **2025 and every 20 years** thereafter.

.H Minor repairs of the traffic bearing membrane should be performed, as required, using funds from the operating budget.

■ Traffic Bearing Membrane Waterproofing – Repairs

. Qty	Allowance
. Cost	$30,000
. Year(s)	2021, 2033

■ Traffic Bearing Membrane Waterproofing Replacement

. Qty	2,500 m^2
. Cost	$400,000
. Year(s)	2025, 2045

5.1.3 Asphalt Pavement

ASPHALT ROADWAYS AND PARKING AREAS

An asphalt pavement laneway, shared with 641 Bathgate Drive, provides access to the condominium building from the road. Asphalt pavement has a typical service life of 15-20 years.

The asphalt pavement laneway was suspected to have been resurfaced in fiscal year 2000 as such is 20 years old. The asphalt pavement is in fair condition with moderate deterioration and cracking observed. We estimate asphalt resurfacing will be required in the next 5 years. A subsequent full asphalt reconstruction will be required in 20 years, following the initial replacement.

Resurfacing of the asphalt pavement is generally performed when an asphalt overlay alone will adversely affect levels and drainage, and because cracking and settlement in the existing pavement will not allow for an overlay to provide a lasting repair. The resurfacing process will involve the removal of the existing asphalt pavement and fine grading and compaction of the existing sub-base prior to reinstatement of the new asphalt overlay.

■ Asphalt Laneway Replacement (North Section & at Ramp)

. Qty	755 m^2
. Cost (Resurface)	$40,000
. Year(s)	2020

■ Asphalt Laneway Replacement (641 Bathgate shared section)

. Qty	800 m^2
. Cost	$50,000
. Year(s)	2020

Full reconstruction of asphalt surfaces is generally performed when the second renewal becomes necessary (i.e. after about 40-50 years of service). Complete reconstruction involves the removal of existing asphalt pavement as well as the existing sub-base. New sub-base materials are then implemented and compacted, prior to the reinstatement of a new asphalt overlay. This is often required instead of resurfacing due to pavement sub-base deterioration.

Asphalt Laneway Replacement	
. Qty	2800 m^2
. Cost (Resurface)	$60,000
. Year(s)	2023
. Cost (Recon.)	$120,000
. Year(s)	2043

We recommend the following work be anticipated and funded:

.A A resurfacing of the asphalt pavement at the north section of the building and at the entrance ramp is estimated to cost **$40,000** and this work has been budgeted in fiscal year **2020**

.B 641 Bathgate Drive completed asphalt resurfacing on their section of the laneway in fiscal year **2020** and has requested **$50,000** from CCC 34.

.C A resurfacing of the asphalt pavement is estimated to cost **$60,000** and this work has been budgeted in fiscal year **2023**.

.D A reconstruction of the asphalt pavement is estimated to cost **$120,000** and this work has been budgeted in fiscal year **2043**.

.E To maintain the condition of the asphalt pavement between resurfacing cycles, crack and rut repairs and asphalt patching should be performed on a regular basis using funds from the operating budget.

ASPHALT WALKWAYS

Asphalt walkways are located throughout the complex. Asphalt pavement has a typical service life of 15-20 years.

Walkways Replacement	
. Qty	325 m^2
. Cost	$20,000
. Year(s)	2020, 2035

The asphalt walkways are suspected to have been replaced in fiscal year 2000; as such are 20 years old. The asphalt pavement is in fair condition with moderate cracking, settlement and heaving observed. We estimate replacement of the walkways will be required in the next 5 years. A subsequent replacement will be required in 15 years, following the initial replacement.

We recommend the following work be anticipated and funded:

.F Replacement of the asphalt walkways is estimated to cost **$20,000** and this work has been budgeted fiscal year **2020 and every 15 years** thereafter

.G To maintain the condition of the asphalt walkways between resurfacing cycles, crack and rut repairs and asphalt patching should be performed on a regular basis using funds from the operating budget.

GARAGE ASPHALT PAVEMENT-ON-GRADE

Asphalt pavement has been installed on-grade in the lowest levels of the parking garage. Asphalt pavement on grade has a typical service life of 25-30 years.

Garage Asphalt Pavement-on-Grade	
. Qty	6,700 m^2
. Cost	$420,000
. Year(s)	2027

The asphalt pavement on grade is suspected to have been replaced in fiscal year 1995; as such is 25 years old. The asphalt pavement varies from fair-to-satisfactory condition with cracking and settlement observed. We estimate replacement of the asphalt pavement will be required in the next 5-10 years.

We recommend the following work be anticipated and funded:

.H Replacement of the asphalt pavement is estimated to cost **$420,000** and this work has been budgeted fiscal year **2027**

.I To maintain the condition of the asphalt pavement between resurfacing cycles, crack and rut repairs and asphalt patching should be performed on a regular basis using funds from the operating budget.

5.1.4 Pavers

INTERLOCKING PAVER ENTRANCEWAY

The interlocking paver entranceway is located at the main entrance of the building. Pavers have a typical service life of 25-30 years.

Paver Entranceway	
. Qty	80 m^2
. Cost (Replace)	See 5.1.2
. Year(s)	2037

The pavers are suspected to have been replaced in fiscal year 2005 as part of the west podium membrane replacement; as such are 15 years old. The pavers are in overall satisfactory condition; however localized minor settlement around a drain was observed. We estimate replacement will be required in the next 10-20 years. This work has been scheduled to coincide with the west podium membrane replacement project.

We recommend the following work be anticipated and funded:

.A Minor resetting of the pavers should be performed as required using funds from the operating budget.
.B Costs for replacement of the pavers have been included with the replacement of the west podium membrane.

5.1.5 Exterior Concrete

CONCRETE CURBS

Cast-in-place concrete curbs surround the asphalt laneways. Concrete curbs have a typical service life 30-40 years.

Concrete Curbs	
. Qty	150 m
. Cost (Repair)	$7,000
. Year(s)	2023
. Cost (Replace)	$30,000
. Year(s)	2037

The concrete curbs were replaced in fiscal year 2005; as such are 15 years old. The concrete curbs are in satisfactory condition with no major defects observed. We expect minor repairs will be required in the near future. We estimate replacement will be required in the next 20-30 years. The curb replacement has been scheduled to coincide with the west podium membrane replacement project.

Damaged concrete curbs are likely due to snow removal operations; however, concrete curbs will experience gradual deterioration and repairs will likely be required every 15-20 years. Curb repairs should consist of the cutting-out and reconstruction of defective sections, as merely patching the curbs will not provide lasting repairs. When complete reconstruction of the asphalt pavement is performed, it is likely that the concrete curbs will also require total replacement.

We recommend the following work be anticipated and funded:

.A Repair of the concrete curbs is estimated to cost **$7,000** and this work has been budgeted in fiscal year **2023**
.B Replacement of the concrete curbs is estimated to cost **$30,000** and this work has been budgeted in fiscal year **2037** in conjunction with the west podium membrane replacement
.C Minor repairs of the concrete curbs should be performed as required using funds from the operating budget.

HEATED CONCRETE RAMP

The two heated concrete ramps provide access to the parking garage at the north side of the building and from the asphalt laneway. Heated concrete ramps will typically last the life of the complex.

The heated concrete ramps were replaced in fiscal year 2014; as such are 5 years old. The heated concrete ramps are in satisfactory condition with no major defects observed. We estimate replacement will be required in the next 15-20 years.

Heated Concrete Ramps	
. Qty	160 m^2
. Cost	See 5.2.5
. Year(s)	2034

We recommend the following work be anticipated and funded:

.D Costs for replacement of the heated concrete ramps have been included in the costs for the replacement of the heating cables.

5.1.6 Landscaping

LANDSCAPED GROUNDS

The landscaped grounds, shrubs, planters, and trees surround the condominium complex property. The landscaped grounds will typically last the life of the complex.

No major modifications have been made to the landscaped grounds since the original construction. Regular maintenance of the landscaped grounds has been completed over the life of the condominium. The landscaped grounds are in satisfactory condition with no major defects observed. Regular maintenance of the landscaped grounds will be required during the 30-year planning period of this study.

We recommend the following work be anticipated and funded:

.A Minor repairs of the landscaping should be performed as required using funds from the operating budget.

TREE REMOVAL

There are a number of large/medium sized trees present throughout the complex.

Large mature trees should be periodically removed and replaced with smaller species planted further from the buildings.

Tree Removal Allowance	
. Qty	Allowance
. Cost	$10,000
. Year(s)	2025, 2035, 2045

We recommend the following work be anticipated and funded:

.B In order to ensure funds are available to perform tree replacement when required, an allowance of **$10,000** has been made in fiscal year **2025 and every 10 years** thereafter.
.C Isolated replacement of the large/medium sized trees should be performed, as required, using funds from the operating budget.
.D Regular tree pruning should be performed to maintain the health of the existing trees and to control the growth of large trees, whose branches which overhang the roofs may cause damage to the asphalt shingle roofing or the wall cladding. This maintenance work should be covered by the operating budget.

TENNIS COURTS

The tennis courts are located on the east end of the property. The tennis court coating has a typical service life of 10-15 years.

The tennis court coating is suspected to have been replaced in fiscal year 2003; as such is 17 years old. The tennis court coating is in poor condition with cracking and peeling observed. The coating has reached the end of their useful service life and should be replaced in the near future.

We recommend the following work be anticipated and funded:

.E Replacement of the tennis court coating and netting is estimated to cost **$10,000** and this work has been budgeted in fiscal year **2035 and every 15 years** thereafter.
.F To maintain the condition of the coating should be performed on a regular basis using funds from the operating budget.

Tennis Court Refinishing	
. Qty	Allowance
. Cost	$10,000
. Year(s)	2020, 2035

5.1.7 Fencing

CHAIN-LINK & ALUMINUM FENCING

The chain-link fencing is located along the property line and enclosing the tennis court. Chain-link fencing has a typical service life of 30-40 years.

The chain-link fencing along the property line was suspected to have been replaced in fiscal year 1994; as such is 26 years old. The chain-link fencing is in satisfactory condition with no major defects observed. We estimate replacement will be required in the next 10-15 years.

The chain-link fencing enclosing the tennis court was suspected to have been replaced in fiscal year 1990; as such is 30 years old. The chain-link fencing is in satisfactory condition with no major defects observed. We estimate replacement will be required in the next 5 years.

We recommend the following work be anticipated and funded:

.A Replacement of the chain-link fencing along the property line is estimated to cost **$15,000** and this work has been budgeted in fiscal year **2024.**
.B Replacement of the chain-link fencing at the tennis court is estimated to cost **$20,000** and this work has been budgeted in fiscal year **2021.**

Chain-Link Replacement (Property Fence)	
. Qty	150 m
. Cost	$15,000
. Year(s)	2024

Chain-Link Replacement (Tennis Court)	
. Qty	115 m
. Cost	$20,000
. Year(s)	2021

ALUMINUM FENCING

The aluminum guard rail fencing is located along the east podium perimeter wall. Aluminum fencing has a typical service life of 20-30 years.

The aluminum guard rail fencing was suspected to have been replaced in fiscal year 2003; as such is 17 years old. The aluminum guard rail fencing is in satisfactory condition with no major defects observed. We estimate replacement will be required in the next 10-15 years.

We recommend the following work be anticipated and funded:

.C Replacement of the aluminum guard rail fencing is estimated to cost **$50,000** and this work has been budgeted in fiscal year **2033**.

Aluminum Fencing (East Podium Deck)	
. Qty	250 m
. Cost	$50,000
. Year(s)	2033

5.1.8 Foundation Walls

CONCRETE FOUNDATION WALLS

The cast-in-place concrete foundation walls support the high-rise building and amenities building structure. The foundation walls will typically last the life of the complex.

The foundation walls were installed as part of the original construction; as such are 47 years old. The foundation walls are in overall satisfactory condition, however water infiltration has been reported along the north wall in the garage. We estimate replacement will not be required in the near future. We expect occasional crack, parging and minor concrete repairs will be required within the 30-year planning period of this study.

We recommend the following work be anticipated and funded:

.A Replacement of the waterproofing and drainage board on the north garage foundation wall is estimated to cost **$70,000** and this work has been budgeted in fiscal year **2020.**

.B Minor concrete repairs of the foundation walls should be performed as required using funds from the operating budget.

North Garage Foundation Wall Waterproofing	
. Qty	Allowance
. Cost	$70,000
. Year(s)	2020

5.1.9 Balconies

BALCONY STRUCTURE

The balcony structures are constructed of cantilevered, reinforced concrete slabs. The balcony slabs will typically last the life of the complex; however, significant repairs usually required after 30 years of service.

The balcony slabs underwent a significant renewal over 4 years beginning in fiscal year 2015; as such vary in age from 2 - 5 years old. The balcony slabs are in satisfactory condition with no major defects observed. We estimate significant concrete repairs will be required in the next 15-20 years.

Significant concrete repairs are generally required in concrete balconies after the structure has obtained 30-years of service; therefore, we recommend a survey of the balconies be performed prior to the any significant repairs to determine the scope of this project.

We recommend the following work be anticipated and funded:

.A Repairs of the balcony slabs are estimated to cost **$40,000** and this work has been budgeted **over a 2-year period beginning** in fiscal year **2034**.

Balcony Structure Repair	
. Qty	Allowance
. Cost	$40,000
. Year(s)	2034 – 2035

WATERPROOFING MEMBRANE

The balcony slabs are protected with an elastomeric traffic bearing membrane. The traffic bearing membrane has a typical service life of 15-20 years.

The traffic bearing was installed over a 4 year period beginning in fiscal year 2015; as such vary in age from 2 - 5 years old. The waterproofing membrane is in satisfactory condition with no major defects observed. We estimate replacement will be required in the next 15-20 years.

We recommend the following work be anticipated and funded:

.B Replacement of the traffic bearing membrane is estimated to cost **$300,000** and this work has been budgeted **over a 2-year period beginning** in fiscal year **2034** and **every 20 years** thereafter.

Traffic Bearing Membrane Replacement	
. Qty	2,500 m^2
. Cost	$300,000
. Year(s)	2034 – 2035

.C Minor repairs of the traffic bearing membrane should be performed, as required, using funds from the operating budget.

BALCONY RAILINGS

The aluminium railings are located at the balcony edges. The railings have a typical service life of 30-40 years.

Balcony Railings	
. Qty	500 m
. Cost	$230,000
. Year(s)	2034 – 2035

The railings are suspected to have been replaced in fiscal year 1995; as such are 25 years old. The railings are in satisfactory condition with no major defects observed. We estimate replacement will be required in the next 15-20 years.

We recommend the following work be anticipated and funded:

.D Replacement of the balcony railings is estimated to cost **$230,000** and this work has been budgeted **over a 2-year period beginning** in fiscal year **2034**.

5.1.10 Masonry

MASONRY VENEER

A masonry brick veneer is installed as the primary cladding of the building and on the amenities building. The masonry veneer will typically last the life of the complex; however, significant repairs usually required after 30 years of service.

Masonry Veneer Repairs	
. Qty	Allowance
. Cost	$75,000
. Year(s)	2030, 2042

The masonry veneer on the highrise was installed over a 4 year period beginning in fiscal year 2015; as such vary in age from 2 – 5 years old. The masonry veneer is in satisfactory condition with no major defects observed. We do not anticipate replacement of the masonry veneer will be required during the 30-year planning period of this study; however, we expect repairs including isolated repointing and unit replacement, will be required within the scope of this study.

Masonry Reconstruction (Breezeway and Amenities Building)	
. Qty	380 m^2
. Cost	$410,000
. Year(s)	2026

The masonry on the breezeway and amenities building was installed as part of the original construction; as such is 47 years old. The masonry is in fair condition with brick cracking and mortar joint deterioration observed. We estimate reconstruction of the masonry will be required in the next 5-10 years.

In general, regular masonry veneer repairs and maintenance, such as mortar repointing and isolated brick replacements, should be performed at approximately 10 to 12 year intervals to prolong the service life of the brick.

We recommend the following work be anticipated and funded:

.A In order to ensure funds are available to perform isolated repairs when required, an allowance of **$75,000** has been made in fiscal year **2030 and every 12 years** thereafter.
.B Reconstruction of the masonry on the breezeway and the amenities building is estimated to cost **$410,000** and the work has been budgeted in fiscal year **2026.**
.C Minor repairs of the masonry should be performed, as required, using funds from the operating budget.

5.1.11 Siding, Trim & Flashings

PENTHOUSE ALUMINIUM SIDING

The aluminium siding is located on the east and west mechanical penthouse walls. The aluminium siding has a typical service life of 40-50 years.

Penthouse Aluminium Siding	
. Qty	85 m^2
. Cost	$50,000
. Year(s)	2026

The aluminium siding is suspected to have been installed as part of the original construction; as such is 47 years old. The aluminium siding is in satisfactory condition with no major defects observed. We estimate replacement will be required in the next 5-10 years.

We recommend the following work be anticipated and funded:

.A Replacement of the aluminium siding is estimated to cost **$50,000** and this work has been budgeted in fiscal year **2026**

.B Minor repairs of the aluminium siding should be performed, as required, using funds from the operating budget.

BALCONY SIDING PANELS

The siding panels are located on the sides of the patio doors on the balconies. Siding panels have a typical service life of 40-50 years.

Balcony Siding	
. Qty	85 m^2
. Cost	$40,000
. Year(s)	2021

The balcony siding panels were partially replaced in fiscal year 2018; as such, vary in age from 2 years old to 47 years old. The balcony siding panels vary from fair-to-satisfactory condition with coating deterioration observed. We estimate replacement of the remaining panels will be required in the next 5 years.

We recommend the following work be anticipated and funded:

.C Replacement of the balcony siding panels is estimated to cost **$40,000** and this work has been budgeted in fiscal year **2021.**

.D Minor repairs of the aluminium siding should be performed, as required, using funds from the operating budget.

END WALL ALUMINUM SIDING PANELS

The aluminum siding panels are located on the north and south elevations of the highrise building. Aluminum siding panels have a typical service life of 40-50 years.

End Wall Aluminum Siding	
. Qty	2,500 m^2
. Cost	$980,000
. Year(s)	Beyond 2049

The end wall siding panels were replaced in fiscal year 2015; as such are 5 old. The end wall siding panels are in satisfactory condition with no deficiencies observed. We do not anticipate replacement will be required during the 30-year planning period of this study.

We recommend the following work be anticipated and funded:

.E Replacement of the end wall siding panels is estimated to cost **$980,000** and this work has been budgeted **beyond the 30-year planning period** of this study**.**

.F Minor repairs of the aluminium siding should be performed, as required, using funds from the operating budget.

5.1.12 Exterior Coatings

EXTERIOR PAINTING

Exterior painting and staining has been performed on the balcony railings and other exposed architectural steel elements. Exterior painting has a typical service life of 5-6 years.

The exterior painting was suspected to have been last renewed in fiscal year 2015; as such is 5 years old. The exterior painting is in satisfactory condition with no major defects observed. We estimate replacement will be required in the next 2-3 years. Subsequent painting and staining will be required in 6 years intervals, following the initial replacement.

Exterior painting serves an important function in preserving exposed materials and enhancing the appearance of the property. Therefore, painting should be inspected regularly and minor touch-ups carried out as required.

We recommend the following work be anticipated and funded:

.A Minor repainting and staining should be performed, as required, using funds from the operating budget.

ACRYLIC WATERPROOFING COATING

A acrylic waterproofing coating has been applied to concrete shear walls and balcony soffits. Acrylic waterproofing membrane coatings have a typical service life of 15-20 years.

The acrylic waterproofing coating on the concrete shear walls and balcony soffits was applied over a 4 year period beginning in fiscal year 2015; as such vary in age from 2 – 5 years old. The acrylic waterproofing is in satisfactory condition with no major defects observed. We estimate a complete recoating will be required in the next 15-20 years.

The acrylic waterproofing coating on the north and south mechanical penthouse walls was suspected to have been applied in fiscal year 2000; as such are 20 years old. The acrylic waterproofing is in satisfactory condition with no major defects observed. We estimate a complete recoating will be required in the next 15-20 years.

We recommend the following work be anticipated and funded:

.B Recoating of the north and south mechanical penthouse walls is estimated to cost **$25,000** and this work has been budgeted in fiscal year **2022**.

.C Recoating of the acrylic waterproofing coating on the shear walls and balcony soffits is estimated to cost **$300,000** and this work has been budgeted **over a 3-year period beginning** in fiscal year **2038**.

.D To maintain the condition of the acrylic waterproofing between major repairs and recoatings, minor isolated repairs should be performed on a regular basis using funds from the operating budget.

■ Acrylic Waterproofing Coating (Mechanical Penthouse)	
. Qty	110 m^2
. Cost	$25,000
. Year(s)	2022

■ Acrylic Waterproofing Coating (Shear Walls and Balcony Soffit)	
. Qty	3,900 m^2
. Cost	$300,000
. Year(s)	2038 – 2040

5.1.13 Caulking

CAULKING

The caulking is located at the window and door openings, the masonry control joints, and roof flashings. The caulking has a typical service life of 10-12 years.

The caulking at all window and door openings and masonry control joints were replaced over a 4 year period beginning in fiscal year 2015; as such vary in age from 2 – 5 years old. The caulking is in satisfactory condition with no major defects observed. We estimate replacement will be required in the next 10 years. A subsequent caulking replacement will be required in 10-12 years, following the initial replacement.

When caulking is replaced only high quality materials should be used and all old caulking should be removed before applying the new caulking. Caulking should be inspected regularly and the necessary repair work carried out by a qualified contractor. Minor repairs should be paid for out of the operating budget

We recommend the following work be anticipated and funded:

.A Replacement of the caulking at window and door openings and masonry control joints is estimated to cost **$160,000** and this work has been budgeted in fiscal year **2028** and **every 12 years** thereafter.
.B The cost for replacement of the caulking at roof flashings has been included within the costs for the roof replacement.
.C Minor repairs of the caulking should be performed, as required, using funds from the operating budget.

■ Caulking at Windows, Doors, and Masonry Joints

. Qty	Allowance
. Cost	$160,000
. Year(s)	2028, 2040

■ Caulking at Roof Flashing

. Qty	Allowance
. Cost	See 5.1.16
. Year(s)	2021

5.1.14 Windows & Balcony Doors

WINDOWS

The aluminium framed windows provide the primary fenestration for the building. Punched windows are installed on the masonry walls, and curtain wall windows with glass spandrel panels are installed on the end walls. Aluminum framed windows have a typical service life of 30-40 years.

The windows on the highrise were replaced over a 4 year period beginning in fiscal year 2015; as such vary in age from 2 – 5 years old. The windows are in satisfactory condition with no major defects observed. We do not anticipate replacement will be required during the 30-year planning period of this study.

The windows on the breezeway and amenities building were installed as part of the original construction; as such are 47 years old. The windows are in fair condition with condensation in the winter reported. We estimate replacement will be required in the next 5-10 years.

Although the structure of aluminium frame windows can be maintained for periods exceeding 40 years, generally the window system will require replacement within 30 to 40 years as the aluminium frame finishes will degrade over time and become aesthetically unpleasing, the maintenance costs of the window system will begin to increase and replacement hardware will become more difficult to source.

We recommend the following work be anticipated and funded:

■ Window Replacement (Highrise)

. Qty	700 m^2
. Cost	$1,400,000
. Year(s)	Beyond 2049

■ Window Replacement (Breezeway and Amenities Building)

. Qty	200 m^2
. Cost	$140,000
. Year(s)	2026

.A Replacement of the windows on the highrise is estimated to cost **$1,400,000** and this work has been budgeted **beyond the 30-year planning period** of this study.
.B Replacement of the windows on the breezeway and amenities building is estimated to cost **$140,000** and this work has been budgeted in fiscal year **2026**.
.C Minor repairs including replacement of hardware, screens, weatherstripping and isolated thermopanes should be performed, as required, using funds from the operating budget.

PATIO DOORS

The sliding patio doors are located at the unit balconies and are a combination of aluminum framed and fibreglass framed. Aluminum framed patio doors have a typical service life of 30-40 years. Fibreglass framed patio doors have a typical service life of 30-40 years.

The patio doors vary in age with 83 doors having been replaced in 2017, 20 having been replaced in 2019, and an additional 20 that are in poor-to-fair condition scheduled for replacement in 2020. The remaining 152 doors vary in age but are generally 15-20 years old and fair-to-satisfactory condition. We estimate replacement of the remaining 152 doors will be required in the next 10-15 years.

Although the structure of aluminium frame doors can be maintained for periods exceeding 40 years, generally the door system will require replacement within 30 to 40 years as the aluminium frame finishes will degrade over time and become aesthetically unpleasing, the maintenance costs of the door system will begin to increase and replacement hardware will become more difficult to source.

We recommend the following work be anticipated and funded:

.D Replacement of the 20 patio doors in poor-to-fair condition is estimated to cost **$112,000** and this work has been budgeted in fiscal year **2020**
.E Replacement of the remaining 152 patio doors is estimated to cost **$900,000** and this work has been budgeted **over a 5-year period beginning** in fiscal year **2030**
.F Minor repairs including replacement of hardware, screens, weatherstripping and isolated thermopanes should be performed, as required, using funds from the operating budget.

■ Balcony Door Replacement Immediate Allowance

. Qty	20
. Cost	$112,000
. Year(s)	2020

■ Balcony Door Replacement Allowance (Remaining 152)

. Qty	Allowance
. Cost	$900,000
. Year(s)	2030 – 2034

5.1.15 Doors

MAIN ENTRANCE

The main exterior entrance and vestibule doors are located on the ground floor on the west elevation. Main entrance doors have a typical service life of 25 to 30 years.

The main entrance doors are suspected to have been replaced in fiscal year 1990; as such are 30 years old. The main entrance doors are in fair condition with no major defects observed. We estimate replacement will be required in the next 5 years. This work has been scheduled to

Generally main entrance doors have a shorter service than other doors due to their exterior exposure and high traffic use.

We recommend the following work be anticipated and funded:

.A Costs for replacement of the main entrance doors and vestibule doors have been included in the lobby renovation project.

■ Entrance Door Replacement

. Qty	1
. Cost	See 5.1.18
. Year(s)	2020

.B Minor repairs of the main entrance doors should be performed, as required, using funds from the operating budget.

COMMON AREA MAN DOORS

The common area man doors are located at emergency exits, and at entrances to mechanical rooms and other common areas. Common area man doors have a varying service life depending on usage and exposure.

The common area man doors vary in age with those on the ground floor having been replaced from 2015–2018 that are in satisfactory condition with no major defects observed. The doors at the mechanical penthouse are suspected to have been installed as part of the original construction, as such are 47 years old, and vary from poor-to-fair condition with gaps in weatherstripping observed. We estimate replacement of the mechanical penthouse doors will be required in the next 5 years. We do not estimate replacement of the ground floor man doors will be required during the 30-year planning period of this study.

■ Mechanical Penthouse Man Door Replacement

Qty	Allowance
Cost	$5,000
Year(s)	2020

■ Common Area Man Door Repair/Replacement

Qty	Allowance
Cost	$10,000
Year(s)	2022, 2032, 2042

We recommend the following work be anticipated and funded:

.C Replacement of the common area man doors at the mechanical penthouse is estimated to cost **$5,000** and this work has been budgeted in fiscal year **2020**

.D In order to ensure funds are available to perform repairs and replacements to the common area man doors as required, an allowance of **$10,000** has been provided in fiscal year **2022 and every 10 years thereafter.**

.E Minor repairs of the unit suite doors should be performed, as required, using funds from the operating budget.

UNIT SUITE DOOR

The unit suite doors have a typical service life of 40-50 years.

The unit suite doors were installed as part of the original construction; as such are 47 years old. The unit suite doors are in satisfactory condition with no major defects observed. We do not anticipate full replacement will be required during the 30-year planning period of this study; however, isolated major repairs or replacements will be required periodically. Additionally, painting of the unit suite doors may be required as part of the corridor interior finish renovations.

■ Unit Suite Door Replacement

Qty	Allowance
Cost	$12,000
Year(s)	2022, 2032, 2042

We recommend the following work be anticipated and funded:

.F Costs for repainting of the unit suite doors have been included in the corridor refinishing project.

.G Due to the varying condition and usage of the unit suite doors, isolated repairs and replacement need only be completed as required. For budgeting purposes, an allowance of **$12,000** has been made in fiscal year **2022** and **every 10 years thereafter** to ensure funds are available when the work is required.

.H Minor repairs of the unit suite doors should be performed, as required, using funds from the operating budget.

GARAGE DOOR

The garage doors are located at the north end of the building and from the laneway towards the west side of the property. Garage doors have a typical service life of 15-20 years.

■ Garage Door Replacement

Qty	2
Cost	$20,000
Year(s)	2033

The garage doors were replaced in fiscal year 2013; as such are 7 years old. The garage doors are in satisfactory condition with no major defects observed. We estimate replacement will be required in the next 10-15 years. A subsequent garage door replacement will be required in 15-20 years, following the initial replacement.

We recommend the following work be anticipated and funded:

.I Replacement of the garage doors is estimated to cost **$20,000** and this work has been budgeted in fiscal year **2033 and every 20 years** thereafter.
.J Minor repairs of the garage doors should be performed, as required, using funds from the operating budget.

5.1.16 Roofing Systems

CONVENTIONAL ROOFING SYSTEMS

A conventional two-ply modified bitumen membrane (MBM) roofing system protects balcony canopy roofs on the 21st floor and typically consists of protection boards, and hot applied layers of pre-manufactured roofing membranes. An MBM roofing system has a typical service life of 20-25 years.

- Conventional Roofing System Replacement (Partial)
  - Qty: 50 m^2
  - Cost: $50,000
  - Year(s): 2030

The MBM roofing varies in age from 1 to 11 years old, with the membrane above some balconies having been replaced in fiscal year 2019, and others having been replaced in fiscal year 2008. The MBM roofing is in satisfactory condition with no major defects observed. We estimate replacement of the 11-year-old membrane systems will be required in the next 10-15 years. Replacement of the 1-year-old membrane systems will be required in the next 20-25 years.

- Conventional Roofing System Replacement (Partial)
  - Qty: 30 m^2
  - Cost: $35,000
  - Year(s): 2042

We recommend the following work be anticipated and funded:

.A Replacement of the existing MBM roofing system is estimated to cost **$50,000** and this work has been budgeted in fiscal year **2030 and every 25 years** thereafter.
.B Replacement of the recently replaced MBM roofing system is estimated to cost **$35,000** and this work has been budgeted in fiscal year **2042 and every 25 years** thereafter.
.C Minor repairs of the roofing system should be performed, as required, using funds from the operating budget.

INVERTED ROOFING SYSTEM

An inverted roofing membrane system protects the main roof, mechanical penthouse roof, stairwell roof, and the breezeway and amenities building roofs. An inverted roofing system typically consists of a hot-applied rubberized asphalt membrane covered by rigid insulation, filter fabric and gravel ballast. An inverted roofing system has a typical service life of 20-25 years.

- Inverted Roofing System Replacement (Main, Penthouse & Stairwell)
  - Qty: 1500 m^2
  - Cost: $385,000
  - Year(s): 2021, 2046

The inverted roofing membrane on the main roof, mechanical penthouse roof and stairwell roof was installed as part of the original construction; as such are 47 years old. A roof condition assessment was performed on the main roof in 2018 by Keller Engineering. Overall, the roofing system was found to be well bonded however, it was recommended that the roof be replaced in the next 5 years. A subsequent roof replacement will be required in 20-25 years, following the initial replacement.

- Inverted Roofing System Replacement (Amenities Building)
  - Qty: 310 m^2
  - Cost: $80,000
  - Year(s): 2032

- Inverted Roofing System Replacement (Breezeway)
  - Qty: 80 m^2
  - Cost: $30,000

. Year(s)	2021, 2046

The inverted roofing membrane on the amenities building was replaced in fiscal year 2012 as such is 8 years old. Based on its current age, we expect the inverted roofing system is in satisfactory condition. We estimate replacement will be required in the next 10-15 years. A subsequent roof replacement will be required in 20-25 years, following the initial replacement.

The inverted roofing membrane on the breezeway was replaced in fiscal year 1998 as such is 22 years old. Based on its current age, we expect the inverted roofing system is in fair condition. We estimate replacement will be required in the next 5 years. A subsequent roof replacement will be required in 20-25 years, following the initial replacement.

We recommend the following work be anticipated and funded:

.D Replacement of the inverted roofing membrane system on the main roof, mechanical penthouse roof and stairwell roof is estimated to cost **$385,000** and this work has been budgeted in fiscal year **2021 and every 25 years** thereafter.

.E Replacement of the inverted roofing membrane system on the amenities building is estimated to cost **$80,000** and this work has been budgeted in fiscal year **2032 and every 25 years** thereafter.

.F Replacement of the inverted roofing membrane system on the breezeway is estimated to cost **$30,000** and this work has been budgeted in fiscal year **2021 and every 25 years** thereafter.

.G Minor repairs of the inverted roofing membrane system should be performed, as required, using funds from the operating budget.

GRAVEL COVERED 2-PLY ROOFING SYSTEM

A gravel covered 2-ply roofing membrane protects the main entrance canopy on the west elevation and consists of a torch-applied 2-ply membrane covered with gravel ballast. No insulation is installed as it does not cover an interior space. This type of roofing system has a typical service life of 20-25 years.

■ Canopy Roofing System Replacement

. Qty	320 m^2
. Cost	$95,000
. Year(s)	2021, 2046

The canopy roofing membrane was replaced in fiscal year 1998; as such is 22 years old. The inverted roofing membrane system is in fair condition as one leak was reported into the main entrance vestibule. An investigation was conducted by Keller Engineering into this leak and while the membrane was found to be sound, the drains that are installed on this roofing system are not appropriate and are prone to becoming clogged. Replacement of all drains should be performed when the roofing membrane is replaced. We estimate replacement of the roofing membrane will be required in the next 5 years.

We recommend the following work be anticipated and funded:

.H Replacement of the canopy roofing membrane system is estimated to cost **$95,000** and this work has been budgeted in fiscal year **2021 and every 25 years** thereafter.

.I Minor repairs of the inverted roofing membrane system should be performed, as required, using funds from the operating budget.

5.1.17 Common Corridors

The interior finishes of the corridors on levels 1-21 consist of painted drywall and wallpaper walls, carpet flooring, and acoustical tile ceilings.

PAINTED WALLS

The walls are painted in the basement corridors of the building. Painted walls have a typical service life of 10-15 years prior to becoming aesthetically unpleasing.

Corridor Paint on Levels B2-1	
. Qty	2,200 m^2
. Cost	$45,000
. Year(s)	2024, 2039

The painted walls on levels B2-1 are suspected to have been last repainted in fiscal year 2010; as such are 10 years old. The painting is in satisfactory condition with no major defects observed. We estimate repainting will be required in the next 5 years. Subsequent repainting will be required in 10-15 years, following the initial replacement.
We recommend the following work be anticipated and funded:

.A Repainting of the walls on levels B2 – B1 is estimated to cost **$45,000** and this work has been budgeted in fiscal year **2024** and **every 15 years thereafter.**
.B Minor patch repairs should be performed, as required, using funds from the operating budget.

WALLPAPER

The walls are wallpapered in the main corridors of the building. Wallpapered walls have a typical service life of 10-15 years prior to becoming aesthetically unpleasing.

Wallpaper on Levels 1-21	
. Qty	8,600 m^2
. Cost	$515,000
. Year(s)	2020 – 2024

The wallpaper on levels 1-21 was suspected to have been replaced in fiscal year 1995; as such is 25 years old. The wallpaper is in poor condition with peeling and moderate deterioration observed. We estimate replacement will be required in the next 5 years.

We recommend the following work be anticipated and funded:

.C Replacement of the wallpaper is estimated to cost **$515,000** and this work has been budgeted **over a 5-year period beginning** in fiscal year **2020**.
.D Minor repairs should be performed, as required, using funds from the operating budget.

CARPET

Carpet is installed on the floor on Levels 1-21. Carpet has a typical service life of 10-15 years

Carpet on Levels 1-21	
. Qty	4,300 m^2
. Cost	$300,000
. Year(s)	2020 – 2024 2035 – 2040

The carpet on levels 1-21 was suspected to have been replaced in fiscal year 1995; as such is 25 years old. The carpet is in poor condition with staining and deterioration observed. We estimate replacement will be required in the next 5 years. A subsequent carpet replacement will be required in 10-15 years, following the initial replacement.

We recommend the following work be anticipated and funded:

.E Replacement of the carpet on levels 1-21 is estimated to cost **$300,000** and this work has been budgeted **over a 5-year period beginning** in fiscal year **2020** and **every 15 years** thereafter.
.F Minor repairs of the should be performed, as required, using funds from the operating budget.

CERAMIC TILE FLOORING

Ceramic tile flooring is installed on level 1. Ceramic tile flooring has a typical service life of 40-50 years prior to requiring replacement.

The ceramic tile flooring on level 1 was installed as part of the original construction; as such is 47 years old. The ceramic tile is in satisfactory condition with no major defects observed. The ceramic tile is in fair condition with no major defects observed. We estimate replacement will be required in the next 5 years.

We recommend the following work be anticipated and funded:

.G Replacement of the vinyl flooring on level 1 is estimated to cost **$50,000** and this work has been budgeted in fiscal year **2020**

.H Minor repairs should be performed, as required, using funds from the operating budget.

■ Ceramic Tile Flooring on Level 1

. Qty	250 m^2
. Cost	$50,000
. Year(s)	2020

ACOUSTICAL TILE

Acoustical tile ceilings are located on levels B2-21. The acoustical tile ceilings will have a typical service life of 40-50 years.

The acoustical tile ceiling on levels B2-21 was installed as part of the original construction; as such is 47 years old. The acoustical tile is in fair condition with minor staining and damage of tiles observed. We do not anticipate replacement will be required during the 30-year planning period of this study.

We recommend the following work be anticipated and funded:

.I Repairs of the acoustical tile ceiling on levels B2-21 is estimated to cost **$50,000** and this work has been budgeted **over a 5-year period beginning** in fiscal year **2020.**

.J Minor repairs of the acoustical tile ceiling should be performed, as required, using funds from the operating budget.

■ Acoustical Tile Ceiling Replacement

. Qty	4,300 m^2
. Cost	$310,000
. Year(s)	Beyond 2049

■ Acoustical Tile Ceiling Repair Allowance

. Qty	Allowance
. Cost	$50,000
. Year(s)	2020 - 2024

5.1.18 Common Rooms

The interior common rooms of the building include a lobby, stairwells, a condominium office, a board room, an exercise room, a workshop, bike rooms, lockers, change rooms, a party room, a laundry room, a games room, a library, and a pool area.

Due to the varying use of the common areas; we recommend a general fund be used to perform general upkeep of the interior finishes which would include repair or replacement of wall and floor finishes, and furniture.

We recommend the following work be anticipated and funded:

.A In order to ensure funds are available to perform upkeep of the interior finishes when required, an allowance of **$25,000** has been made in fiscal year **2025 and every 10 years thereafter**.

.B In order to ensure funds are available to perform replacement of the common area furniture required, an allowance of **$15,000** has been made in fiscal year **2025 and every 10 years thereafter**.

■ Common Areas Interior Finishes Upkeep Allowance

. Qty	Allowance
. Cost	$25,000
. Year(s)	2025, 2035, 2045

■ Common Areas Furniture Upkeep Allowance

. Qty	Allowance
. Cost	$15,000
. Year(s)	2025, 2035, 2045

LOBBY

The lobby consists of ceramic tile and carpet floors, wallpaper walls, and decorative ceiling finish ceiling. Furnishings include couches, chairs, and a ramp. Generally major renovations of the lobby occur after 30-40 years of service as the original finishes appear dated. Typically, the furniture requires replacement every 10 years.

Lobby Major Modifications Allowance	
. Qty	Allowance
. Cost	$450,000
. Year(s)	2020

The lobby finishes were last updated as part of the original construction; as such are 47 years old. The lobby finishes are in fair condition with no major defects observed. We estimate major modifications will be required in the next 5 years.

The lobby furniture was suspected to have been last updated in fiscal year 1995; as such are 25 years old. The lobby furniture is in fair condition with no major defects observed.

We recommend the following work be anticipated and funded:

.C In order to ensure funds are available to perform major modifications of the lobby when required, an allowance of **$450,000** has been made in fiscal year **2020.**

.D Minor repairs to the furniture or finishes should be performed, as required, using funds from the operating budget.

STAIRWELLS

The stairwells consist of painted concrete floors, painted concrete block walls, and painted concrete ceiling. Generally major renovations of the stairwells occur after 30-40 years of service as the original finishes appear dated. Typically, the furniture requires replacement every 10 years.

Stairwell Major Modifications Allowance	
. Qty	Allowance
. Cost	$30,000
. Year(s)	2024, 2039

The stairwell finishes were suspected to have been last updated in fiscal year 2010; as such are 10 years old. The stairwell finishes are in satisfactory condition with no major defects observed. We do not anticipate major modifications will be required during the 30-year planning period of this study. We estimate repainting will be required in 5-10 years.

We recommend the following work be anticipated and funded:

.E In order to ensure funds are available to perform repainting to the stairwell when required, an allowance of **$30,000** has been made in fiscal year **2024 and every 15 years** thereafter.

.F Minor repairs to the furniture or finishes should be performed, as required, using funds from the operating budget.

CONDOMINIUM OFFICE

The condominium office consists of carpeted floors, painted drywall walls, and painted drywall ceiling. Furnishings include chairs, tables, cabinets, and desks. Generally major renovations of the condominium office occur after 30-40 years of service as the original finishes appear dated. Typically, the furniture requires replacement every 10 years.

The condominium office finishes were suspected to have been last updated in fiscal year 1995; as such are 20 years old. The condominium office finishes are in satisfactory condition with no major defects observed. We do not anticipate major modifications will be required during the 30-year planning period of this study.

The condominium office furniture was last updated in fiscal year 2018; as such are 2 years old. The condominium office furniture is in satisfactory condition with no major defects observed.

We recommend the following work be anticipated and funded:

.G Costs for the upkeep of the interior finishes have been included in the general upkeep allowance
.H Costs for the replacement of furniture have been included in the general furniture allowance
.I Minor repairs to the furniture or finishes should be performed, as required, using funds from the operating budget.

BOARD ROOM

The board room consists of carpeted floors, painted drywall walls, and painted drywall ceiling. Furnishings include chairs, a board table, and cabinets. Generally major renovations of the board room occur after 30-40 years of service as the original finishes appear dated. Typically, the furniture requires replacement every 10 years.

The board room finishes were suspected to have been last updated in fiscal year 1995; as such are 20 years old. The board room finishes are in satisfactory condition with no major defects observed. We do not anticipate major modifications will be required during the 30-year planning period of this study.

The board room furniture was suspected to have been last updated in fiscal year 1995; as such are 20 years old. The board room furniture is in satisfactory condition with no major defects observed.
We recommend the following work be anticipated and funded:

.J Costs for the upkeep of the interior finishes have been included in the general upkeep allowance
.K Costs for the replacement of furniture have been included in the general furniture allowance
.L Minor repairs to the furniture or finishes should be performed, as required, using funds from the operating budget.

EXERCISE ROOM

The exercise room consists of vinyl tile floors, plastered block walls, and acoustical tile ceiling. Furnishings include AV equipment and various exercise equipment. Generally major renovations of the exercise room occur after 30-40 years of service as the original finishes appear dated. Typically, the furniture requires replacement every 10 years.

■

Exercise Room Major Modifications Allowance	
. Qty	Allowance
. Cost	$25,000
. Year(s)	2027

The exercise room finishes were last updated as part of the original construction; as such are 47 years old. The exercise room finishes are in satisfactory condition with no major defects observed. We estimate major modifications will be required in the next 5-10 years.

The exercise room furniture and equipment vary in age. The exercise room furniture is in satisfactory condition with no major defects observed.

We recommend the following work be anticipated and funded:

.M In order to ensure funds are available to perform major modifications to the exercise room when required, an allowance of **$25,000** has been made in fiscal year **2027**.
.N Costs for the upkeep of the interior finishes have been included in the general upkeep allowance
.O Costs for the replacement of furniture have been included in the general furniture allowance
.P Minor repairs to the furniture or finishes should be performed, as required, using funds from the operating budget.

WORKSHOP

The workshop consists of painted concrete floors, painted block walls, and acoustical tile ceiling. Furnishings include workbenches, tables and chairs. Generally major renovations of the workshop occur after 30-40 years of service as the original finishes appear dated. Typically, the furniture requires replacement every 10 years.

The workshop finishes were last updated as part of the original construction; as such are 47 years old. The workshop finishes are in satisfactory condition with no major defects observed. We do not anticipate major modifications will be required during the 30-year planning period of this study.

The workshop furniture was suspected to have been last updated as part of the original construction; as such are 47 years old. The workshop furniture is in satisfactory condition with no major defects observed.

We recommend the following work be anticipated and funded:

.Q Costs for the upkeep of the interior finishes have been included in the general upkeep allowance
.R Costs for the replacement of furniture have been included in the general furniture allowance
.S Minor repairs to the furniture or finishes should be performed, as required, using funds from the operating budget.

BIKE ROOMS

The bike room consists of ceramic tile floors, painted block walls, and acoustical tile ceiling. The room is furnished with floor and wall mounted bike racks. Generally major renovations of the bike room occur after 30-40 years of service as the original finishes appear dated. Typically, the furniture requires replacement every 10 years.

The bike room finishes were last updated as part of the original construction; as such are 47 years old. The bike room finishes is in satisfactory condition with no major defects observed. We do not anticipate major modifications will be required during the 30-year planning period of this study.

We recommend the following work be anticipated and funded:

.T Costs for the upkeep of the interior finishes have been included in the general upkeep allowance
.U Costs for the replacement of furniture have been included in the general furniture allowance
.V Minor repairs to the furniture or finishes should be performed, as required, using funds from the operating budget.

LOCKERS

The lockers consist of ceramic tile floors, painted block walls, and acoustical tile ceiling. The rooms are furnished with locker partitions. Generally major renovations of the locker room occur after 30-40 years of service as the original finishes appear dated. Typically, the furniture requires replacement every 10 years.

The lockers room finishes were last updated as part of the original construction; as such are 47 years old. The locker room is in satisfactory condition with no major defects observed. We do not anticipate major modifications will be required during the 30-year planning period of this study.

We recommend the following work be anticipated and funded:

.W Costs for the upkeep of the interior finishes have been included in the general upkeep allowance
.X Costs for the replacement of furniture have been included in the general furniture allowance
.Y Minor repairs to the furniture or finishes should be performed, as required, using funds from the operating budget.

CHANGE ROOMS

The change rooms consists of painted concrete floors, painted block walls, and painted concrete ceiling. Furnishings include showers, lockers, and benches. Generally major renovations of the change rooms occur after 30-40 years of service as the original finishes appear dated. Typically, the furniture requires replacement every 10 years.

The change room finishes were last updated as part of the original construction; as such are 47 years old. The change room finishes are in satisfactory condition with no major defects observed. We do not anticipate major modifications will be required during the 30-year planning period of this study.

We recommend the following work be anticipated and funded:

.Z Costs for the upkeep of the interior finishes have been included in the general upkeep allowance
.AA Costs for the replacement of furniture have been included in the general furniture allowance
.BB Minor repairs to the furniture or finishes should be performed, as required, using funds from the operating budget.

PARTY ROOM

The party room consists of vinyl tile floors, painted drywall walls, and acoustical tile ceiling. Furnishings include tables chairs, and artwork. Generally major renovations of the party rooms occur after 30-40 years of service as the original finishes appear dated. Typically, the furniture requires replacement every 10 years.

The party room finishes were last updated as part of the original construction; as such are 47 years old. The party room finishes are in satisfactory condition with no major defects observed. We do not anticipate major modifications will be required during the 30-year planning period of this study.

The party room furniture was last updated as part of the original construction; as such are 47 years old. The party room furniture is in satisfactory condition with no major defects observed.

We recommend the following work be anticipated and funded:

.CC Costs for the upkeep of the interior finishes have been included in the general upkeep allowance
.DD Costs for the replacement of furniture have been included in the general furniture allowance
.EE Minor repairs to the furniture or finishes should be performed, as required, using funds from the operating budget.

LAUNDRY ROOM

The laundry room consists of ceramic tile floors, painted drywall walls, and acoustical tile ceiling. Furnishings include washers, dryers, tables, chairs, and a washroom. Generally major renovations of the laundry rooms occur after 30-40 years of service as the original finishes appear dated. Typically, the furniture requires replacement every 10 years.

The laundry room finishes were last updated as part of the original construction; as such are 47 years old. The laundry room finishes are in satisfactory condition with no major defects observed. We do not anticipate major modifications will be required during the 30-year planning period of this study.

The laundry room furniture was last updated as part of the original construction; as such are 47 years old. The laundry room furniture is in satisfactory condition with no major defects observed.

We recommend the following work be anticipated and funded:

.FF Costs for the upkeep of the interior finishes have been included in the general upkeep allowance
.GG Costs for the replacement of furniture have been included in the general furniture allowance
.HH Minor repairs to the furniture or finishes should be performed, as required, using funds from the operating budget.

GAMES ROOM

The games room consists of carpeted floors, painted block walls, and acoustical tile ceiling. Furnishings include pool tables, shuffleboard table, dart boards, AV equipment, tables and chairs. Generally major renovations of the games rooms occur after 30-40 years of service as the original finishes appear dated. Typically, the furniture requires replacement every 10 years.

The games room finishes were last updated as part of the original construction; as such are 47 years old. The games room finishes is in satisfactory condition with no major defects observed. We do not anticipate major modifications will be required during the 30-year planning period of this study.

The games room furniture was last updated as part of the original construction; as such are 47 years old. The games room furniture is in satisfactory condition with no major defects observed.

We recommend the following work be anticipated and funded:

.II Costs for the upkeep of the interior finishes have been included in the general upkeep allowance
.JJ Costs for the replacement of furniture have been included in the general furniture allowance
.KK Minor repairs to the furniture or finishes should be performed, as required, using funds from the operating budget.

LIBRARY

The library consists of carpeted floors, painted drywall walls, and painted drywall ceiling. Furnishings include bookshelves, tables, chairs and artwork. Generally major renovations of the libraries occur after 30-40 years of service as the original finishes appear dated. Typically, the furniture requires replacement every 10 years.

The library finishes were last updated as part of the original construction; as such are 47 years old. The library finishes are in satisfactory condition with no major defects observed. We do not anticipate major modifications will be required during the 30-year planning period of this study.

The library furniture was last updated as part of the original construction; as such are 47 years old. The library furniture is in satisfactory condition with no major defects observed.

We recommend the following work be anticipated and funded:

.LL Costs for the upkeep of the interior finishes have been included in the general upkeep allowance
.MM Costs for the replacement of furniture have been included in the general furniture allowance
.NN Minor repairs to the furniture or finishes should be performed, as required, using funds from the operating budget.

POOL AREA

The pool area consists of ceramic tile floors, painted block walls, and painted concrete ceiling. Generally major renovations of the pool area occur after 30-40 years of service as the original finishes appear dated. Typically, the furniture requires replacement every 10 years.

The pool area finishes were last updated as part of the original construction; as such are 47 years old. The pool area finishes are in satisfactory condition with no major defects observed. We do not anticipate major modifications will be required during the 30-year planning period of this study.

We recommend the following work be anticipated and funded:

.OO Costs for the upkeep of the interior finishes have been included in the general upkeep allowance
.PP Minor repairs to the furniture or finishes should be performed, as required, using funds from the operating budget.

5.1.19 Swimming Pool & Saunas

SWIMMING POOL

The cast-in-place concrete, saltwater swimming pool is located on the ground floor in the amenities building. The pool interior is protected with epoxy paint. The pool paint has a typical service life of 5-10 years. Mechanical systems have been included in Section 5.3.4

■

Swimming Pool	
. Qty	1
. Cost	$15,000
. Year(s)	2020, 2030, 2040

The pool interior was last painted in fiscal year 2013 as such is 7 years old. The painting is in fair condition with minor deterioration of pool paint observed. We estimate replacement will be required in the next 5 years.

We recommend the following work be anticipated and funded:

.A Replacement of the pool paint, including costs for concrete repairs, is estimated to cost **$15,000** and this work has been budgeted in fiscal year **2020 and every 10 years** thereafter.

SAUNAS

The saunas are located in the change rooms. The sauna finishes consist of cedar walls, cedar ceiling, and wood benches. The finishes of the sauna have a typical service life of 20-30 years. Mechanical systems of the sauna are discussed in Section 5.3.4.

■

Sauna	
. Qty	2
. Cost	$10,000
. Year(s)	2030

The finishes of the sauna are suspected to have been replaced in fiscal year 2000; as such is 20 years old. The sauna finishes are in satisfactory condition with no major defects observed. We estimate replacement will be required in the next 5-10 years.

We recommend the following work be anticipated and funded:

.B Replacement of the sauna finishes is estimated to cost **$10,000** and this work has been budgeted in fiscal year **2030**

5.2 Electrical

5.2.1 Electrical Distribution

MAIN HYDRO EQUIPMENT

The main hydro equipment consists of primary transformers, load break switches and 15,000V breakers located in the main hydro vault. The primary transformers are owned and maintained by Hydro Ottawa. The associated load breaks switches and main breakers are owned by the condominium. Main hydro equipment has a typical service life of 50-55 years.

Medium Voltage Isolation Switch Kirk Interlock Replacement	
. Qty	1
. Cost	$5,000
. Year(s)	2020

The main hydro equipment was installed as part of the original construction; as such is 47 years old. The main hydro equipment is in fair-to-satisfactory condition with Dayview Electric reporting that the medium voltage isolation switch Kirk lock replacement needs immediate work and the medium voltage breaker needs to be retrofitted in the next 4 years.

Medium Voltage Breaker Retrofit	
. Qty	1
. Cost	$110,000
. Year(s)	2024

To extend the life of the equipment and ensure that operates at all times, we recommend that the vault be subjected to regular testing and maintenance as required by Hydro Ottawa. This work would include hi-potential (hipot) and Doble(TM) testing, secondary injection and trip testing of all overload, loss of phase and ground fault relays as well as cleaning, tightening and testing of all equipment. The results of the hipot and Doble testing will indicate when major equipment replacement is necessary as well as what partial re-builds and replacements may be performed to extend the life of the equipment. This work should only be performed by electrical service companies specializing in medium and high voltage switchgear maintenance.

We recommend the following work be anticipated and funded:

.A A quotation of **$5,000** has been provided by Eaton for the replacement of the medium voltage isolation Kirk lock replacement and this work has been budgeted **2020**

.B A quotation of **$110,000** has been provided by Eaton for the medium voltage breaker retrofit and this work has been budgeted in **2024**

.C Although costs are not included in this study, as they do not constitute a major repair or replacement, we recommend that electrical vault maintenance and testing be performed in the intervals required by Hydro Ottawa, using funds from the operating budget

MAIN DISCONNECT SWITCHGEAR

The 2,500A, 120/240V main disconnect switchgear located in the main electrical room on the level B protects and isolates the main electrical feed into the building. Main disconnect switchgear has a typical service life of 40-45 years.

Main Disconnect Switchgear	
. Qty	1
. Cost	$150,000
. Year(s)	2020

The main disconnect switchgear was installed as part of the original construction; as such is 47 years old. Based on its current age, we expect the main disconnect switchgear is in poor condition. The main disconnect switchgear has reached the end of its useful service life, which means replacement parts will become more difficult and expensive to procure, therefore it should be replaced in the near future.

We recommend that a company skilled in electrical distribution equipment maintenance be hired to open, inspect, test, clean and torque the boards, and that infrared thermography be performed on switches, panels, disconnects, transformers, and starters to determine “hot spots” on a regular basis. A qualified electrician should be employed to open and close panels and to correct immediate concerns during this inspection. The results of this inspection and testing will provide a much more accurate estimate of when the electric equipment will have to be repaired and/or replaced. This will require that the power to the building be shut off for 8 to 12 hours.

We recommend the following work be anticipated and funded:

.D Replacement of the main disconnect switchgear is estimated to cost **$150,000** and this work has been budgeted in **2020**

.E Although costs are not included in this study, as they do not constitute a major repair or replacement, we recommend periodic maintenance and infrared thermography be performed on the electrical system every 5 years, using funds from the operating budget

DISTRIBUTION BREAKER PANELS

The 120/240V distribution breaker panels installed in electrical rooms, mechanical rooms, and closets throughout the building divide electrical power feed into subsidiary circuits. Moulded case circuit breakers contained within provide circuit overload protection. Breaker panels have a typical service life of 40-45 years.

Original CEB Electrical Distribution Breaker Panels	
. Qty	7
. Cost	$35,000
. Year(s)	2020-2024

The CEB 120/240V breaker panels and circuit breakers were installed as part of the original construction; as such are 47 years old. Based on their current age, we expect the distribution breaker panels and moulded case breakers are in poor condition. The breaker panels and moulded case breakers have exceeded the end of their useful service life and should be replaced in the near future.

Stablock Type Electrical Distribution Breaker Panels	
. Qty	4
. Cost	$18,000
. Year(s)	2035

The Stablock type 120/240V breaker panels and circuit breakers are suspected to have been replaced in the mid 1990s. Based on their current age, we expect the Stablock type distribution breaker panels and moulded case breakers are in satisfactory condition. We estimate replacement will be required in the next 15-20 years.

Siemens Electrical Distribution Breaker Panels	
. Qty	5
. Cost	$22,000
. Year(s)	Beyond 2049

The Siemens 120/240V breaker panels and circuit breakers replaced in the last 10 years.The Siemens distribution breaker panels and moulded case breakers are in satisfactory condition with no major defects observed. We do not anticipate replacement will be required during the 30-year planning period of this study.

The suite distribution 120/240V breaker panels and circuit breakers were installed as part of the original construction; as such are 47 years old. Based on their current age, we expect the suite distribution breaker panels and moulded case breakers are in poor condition. The suite distribution breaker panels and moulded case breakers have exceeded the end of their useful service life and should be replaced in the near future.

Suite Distribution Electrical Breaker Panels	
. Qty	14
. Cost	$100,000
. Year(s)	2020-2029

We recommend the following work be anticipated and funded:

.F Total replacement of the CEB breaker panels and moulded case breakers is estimated to cost **$35,000**. We have phased this work and **$7,000** has been budgeted **2020 and every year thereafter for the next 5 years**

.G Replacement of the Stablock type breaker panels and moulded case breakers is estimated to cost **$18,000** and this work has been budgeted in **2035**

.H Replacement of the Siemens breaker panels and moulded case breakers is estimated to cost **$22,000** and this work has been budgeted **beyond the 30-year planning period** of this study

.I Total replacement of the Suite Distribution breaker panels and moulded case breakers is estimated to cost **$100,000**. We have phased this work and **$10,000** has been budgeted **2020 and every year thereafter for the next 10 years**

FUSED DISCONNECT SWITCHES

The 240/600V fused disconnect switches of amperages ranging from 30A to 600A installed in electrical rooms and mechanical rooms throughout the building provide electrical power feed and overload protection to individual pieces of equipment. Fused disconnect switches have a typical service life of 40-45 years.

Original Construction Fused Disconnect Switches	
. Qty	28
. Cost	$90,000
. Year(s)	2020-2029

The CEB & Westinghouse fused disconnect switches were installed as part of the original construction; as such are 47 years old. Based on their current age, we expect the fused disconnect switches are in poor condition. The original construction fused disconnect switches have exceeded the end of their useful service life, which means replacement parts will become more difficult and expensive to procure, therefore it should be replaced in the near future.

Mid 1990s Fused Disconnect Switches	
. Qty	6
. Cost	$20,000
. Year(s)	2035

Some of the fused disconnect switches are suspected to have been replaced in the mid 1990s. The mid 1990s fused disconnect switches are in satisfactory condition with no major defects observed. We estimate replacement will be required in the next 15-20 years.

New Fused Disconnect Switches	
. Qty	13
. Cost	$26,000
. Year(s)	Beyond 2049

The some fused disconnect switches were replaced in the last 10 years. The new fused disconnect switches are in satisfactory condition with no major defects observed. We do not anticipate replacement will be required during the 30-year planning period of this study.

We recommend the following work be anticipated and funded:

.J Total replacement of the original construction fused disconnect switches is estimated to cost **$90,000**. We have phased this work and **$9,000** has been budgeted in fiscal year **2020 and every year thereafter for the next 9 years**

.K Replacement of the mid 1990s fused disconnect switches is estimated to cost **$20,000** and this work has been budgeted in **2035**

.L Replacement of the new fused disconnect switches is estimated to cost **$26,000** and this work has been **beyond the 30-year planning period** of this study

DRY CORE TRANSFORMERS

The 6 kVA dry core transformers located in the mechanical penthouse increase the voltage of the electrical feed to feed the heating pumps. Dry core transformers have a typical service life of 35-40 years.

The dry core transformers were installed in 2018; as such are 2 years old. We estimate replacement will be required in the next 30-35 years.

We recommend the following work be anticipated and funded:

.M Replacement or overhaul of the dry core transformers is estimated to cost **$4,000** and this work has been **beyond the 30-year planning period** of this study

Dry Core Transformers	
. Qty	2
. Cost	$4,000
. Year(s)	Beyond 2049

5.2.2 Lighting

INTERIOR LIGHT FIXTURES

The interior light fixtures are located throughout the common areas of the building and inside the parking garage. Interior light fixtures have a varying service life depending on usage and environmental conditions.

The interior light fixtures are suspected to have been installed as part of the original construction; as such are 47 years old. The interior light fixtures are in fair condition and they are starting to show their age. We estimate replacement will be required in the next 5 years.

Interior Light Fixtures	
. Qty	Allowance
. Cost	$35,000
. Year(s)	2020-2024

The fluorescent lamps in the parking garage are suspected to have been installed as part of the original construction; as such are 47 years old. The common light fixtures are in fair condition with no major defects observed. We estimate replacement will be required in the next 5 years.

Parking Garage Light Fixtures	
. Qty	Allowance
. Cost	$25,000
. Year(s)	2025

There are energy saving opportunities by retrofitting lighting to newer more efficient technologies. It would be beneficial to replace incandescent & fluorescent bulbs with more efficient LED bulbs.

We recommend the following work be anticipated and funded:

.A Total replacement of the interior light fixtures is estimated to cost **$35,000**. We have phased this work and **$7,000** has been budgeted in **2020**, **and every year thereafter for the next 5 years** to coincide with the corridor refurbishment work

.B Replacement of the parking garage light fixtures is estimated to cost **$25,000** and this work has been budgeted in **2025**

EXTERIOR LIGHT FIXTURES

The exterior light fixtures are located throughout the condominium complex consist of lamp posts and wall packs. Exterior light fixtures have a varying service life depending on usage and environmental conditions.

The exterior light fixtures are suspected to have been installed as part of the original construction; as such are 47 years old. Based on their current age, we expect the exterior light fixtures are in fair condition. We expect isolated exterior light fixture replacement will be required within the 30-year planning period of this study.

Exterior Light Fixtures	
. Qty	Allowance
. Cost	$5,000
. Year(s)	2025, 2035, 2045

We recommend the following work be anticipated and funded:

.C In order to ensure funds are available to perform isolated repairs or replacements when required, an allowance of **$5,000** has been made in **2025** and **every 10 years thereafter**

5.2.3 Fire Alarm System

FIRE ALARM PANEL

The EST fire alarm panel with voice annunciator installed in the main electrical room and the remote annunciator installed in the main entrance vestibule provide monitoring of the fire alarm sensors. Fire alarm panels have a typical service life of 25-30 years. Fire alarm wiring has a typical service life of 50-60 years.

Fire Alarm Panel	
. Qty	1
. Cost	$60,000
. Year(s)	2031

The fire alarm panel is reportedly to have been replaced in 2006; as such is 14 years old. Based on its current age, we expect the fire alarm panel is in satisfactory condition. We estimate replacement will be required in the next 10-15 years.

Fire Alarm Partial Rewiring	
. Qty	Allowance
. Cost	$220,000
. Year(s)	2031

The fire alarm wiring is suspected to have been installed as part of the original construction; as such is 47 years old. Based on its current age, we expect the fire alarm wiring is in fair condition. We estimate replacement will be required in the next 10-15 years.

We recommend the following work be anticipated and funded:

.A Replacement of the fire alarm panel is estimated to cost **$60,000** and this work has been budgeted in **2031**

.B In order to ensure funds are available to perform a partial rewiring of the fire alarm system when required, an allowance of **$220,000** has been made in **2031** in conjunction with the fire alarm panel replacement

.C Although costs are not included in this study, as they do not constitute a major repair or replacement, the ULC 536 test of the fire alarm system is required on an annual basis, using funds from the operating budget

FIRE ALARM SENSORS

The smoke detectors and heat sensors located in the common areas throughout the building provide monitoring for the fire alarm system. Smoke detectors and heat sensors have a typical service life of 5-10 years.

Fire Alarm Sensors	
. Qty	Allowance
. Cost	$4,000
. Year(s)	2020, 2025, 2030 2035, 2040, 2045

The smoke detectors and heat sensors are suspected to have been replaced on an as-needed basis. We expect the smoke detectors and heat sensors are in fair-to-satisfactory condition. We estimate isolated replacement will be required in the next 5 years.

We recommend the following work be anticipated and funded:

.D Replacement of the smoke detectors and heat sensors is estimated to cost **$4,000** and this work has been budgeted in **2020 and every 5 years thereafter**

5.2.4 Emergency Power System

EMERGENCY POWER SYSTEM

The Kohler 120/240V emergency power generator consisting of a natural gas fueled engine located in the penthouse generator room provides emergency power to the elevators, emergency lights, and life and safety equipment. Emergency power generators have a typical service life of 30-35 years.

Emergency Power Generator	
. Qty	1
. Cost	$250,000
. Year(s)	2038

The emergency power generator was replaced in 2008; as such is 12 years old. The emergency power generator is in satisfactory condition with no major defects observed. We estimate replacement will be required in the next 15-20 years.

We recommend the following work be anticipated and funded:

.A Replacement of the emergency power generator is estimated to cost **$250,000** and this work has been budgeted in **2038**

TRANSFER SWITCH

The Cutler-Hammer 400A transfer switch located in the penthouse generator room automatically transfers power between the main hydro power and emergency power. Transfer switches have a typical service life of 30-35 years.

■ Emergency Transfer Switch

. Qty	1
. Cost	$20,000
. Year(s)	2038

The transfer switch was replaced in 2008; as such is 12 years old. The transfer switch is in satisfactory condition with no major defects observed. We estimate replacement will be required in the next 15-20 years.

We recommend the following work be anticipated and funded:

.B Replacement of the transfer switch is estimated to cost **$20,000** and this work has been budgeted in **2038**, in conjunction with the emergency generator replacement

5.2.5 Electrical Heating Systems

FORCED FLOW ELECTRIC HEATERS

The forced flow electric heaters located in entryways and mechanical rooms provide primary heating to these areas. Forced flow electric heaters have a typical service life of 25-30 years.

The forced flow electric heaters vintage could not be determined. The forced flow electric heaters are in satisfactory condition with no major defects observed. We expect isolated replacement will be required within the 30-year planning period of this study.

We recommend the following work be anticipated and funded:

.A Replacement of the forced flow electric heaters should be performed, as required, using funds from the operating budget.

ELECTRIC UNIT HEATERS

The electric unit heaters located in parking garage entrances provide heating to these areas to prevent the garage door and surrounding area from freezing. Electric unit heaters have a typical service life of 25-30 years which can vary greatly depending on usage and environmental conditions.

■ Parking Garage Electric Unit Heaters

. Qty	2
. Cost	$6,000
. Year(s)	2020, 2045

The electric unit heaters in the parking garage are suspected to have been installed as part of the original construction; as such are 47 years old. Electric unit heaters are in satisfactory condition with no major defects observed. The electric unit heaters in the parking garage have exceeded the end of their useful service life and should be replaced in the near future.

We recommend the following work be anticipated and funded:

.B Replacement of the electric unit heaters in the parking garage is estimated to cost **$6,000** and this work has been budgeted in **2020 and every 25 years thereafter**

GARAGE RAMP SNOW MELT SYSTEM

The parking garage ramps electric snow melt system consists of electric heat tracing cables encased in the concrete ramp, a controller and sensors to prevent snow and ice accumulation. Garage ramp electric snow melt systems have a typical service life of 20-25 years.

Garage Ramp Snow Melt System	
. Qty	2
. Cost	$215,000
. Year(s)	2034

The parking garage ramp electric snow melt system was replaced in 2014; as such is 6 years old. The parking garage ramp electric snow melt system is in satisfactory condition with no major defects observed. We estimate replacement will be required in the next 10-15 years.

We recommend the following work be anticipated and funded:

.C Replacement of the parking garage ramps electric snow melt system, including removal and reinstatement of concrete slab, is estimated to cost **$215,000** and this work has been budgeted in **2034**

ELECTRIC HEAT TRACING

The electric heat tracing cables are installed on the exposed pipes in the unheated parking garage to protect them from freezing. Electric heat tracing cables have a typical service life of 20-25 years which can vary greatly due to environmental conditions.

Electric Heat Tracing and Insulation	
. Qty	Allowance
. Cost	$300,000
. Year(s)	2034

The electric heat tracing cables and insulation were replaced in 2014; as such are 6 years old. Based on its current age, we expect the electric heat tracing cables are in satisfactory condition. We estimate replacement will be required in the next 10-15 years.

We recommend the following work be anticipated and funded:

.D Replacement of the electric heat tracing cables and insulation is estimated to cost **$300,000** and this work has been budgeted in **2034**

.E Minor repairs of the electric heat tracing cables and insulation should be performed, as required, using funds from the operating budget

5.2.6 Security Systems

DOOR ENTRY SYSTEM

The phone based door entry system consists of a Mircom access panel located in the main entrance vestibule and a Kantech access panel located in the back entrance to provide visitor access to the building. Door entry systems have a typical service life of 20-25 years.

Main Entrance Vestibule Door Entry System	
. Qty	1
. Cost	$5,000
. Year(s)	2039

The main entrance vestibule door entry system was replaced in 2019. The main entrance vestibule door entry system is in satisfactory condition with no major defects observed. We estimate replacement will be required in the next 20-25 years.

Back Entrance Door Entry System	
. Qty	1
. Cost	$5,000
. Year(s)	2020, 2040

The back entrance door entry system is of unknown vintage. We expect the back entrance door entry system is in fair condition. We estimate replacement will be required in the next 5 years.

We recommend the following work be anticipated and funded:

.A Replacement of the main entrance vestibule door entry system is estimated to cost **$5,000** and this work has been budgeted in **2039**

.B Replacement of the back entrance door entry system is estimated to cost **$5,000** and this work has been budgeted in **2020 and every 20 years thereafter**

KEY FOB SYSTEM

The Chubb Edwards key fob system consists of a main controller and fob readers in the main entrance vestibule, parking garage access, emergency exits, and common area rooms. Key fob systems have a typical service life of 15-20 years.

Key Fob System	
. Qty	1
. Cost	$25,000
. Year(s)	2034, 2049

The key fob system was replaced in 2019. The key fob system is in satisfactory condition with no major defects observed. We estimate replacement will be required in the next 15-20 years.

We recommend the following work be anticipated and funded:

.C Replacement of the key fob system is estimated to cost **$25,000** and this work has been budgeted in **2034 and every 15 years thereafter**

.D Minor repairs of the key fob system should be performed, as required, using funds from the operating budget

CCTV SYSTEM

The Honeywell CCTV system consists of DVR and screens located in the office and monitors 32 cameras located inside the building common areas, parking garage, and the exterior of the building. CCTV DVR monitoring stations have a typical service life of 15-20 years. CCTV cameras have a typical service life of 5-10 years.

CCTV System Upgrades and Repairs	
. Qty	Allowance
. Cost	$21,000
. Year(s)	2020

The CCTV monitoring stations are suspected to have been installed in 2013; as such are 7 years old. The CCTV monitoring stations are in fair-to-satisfactory condition with some repairs and upgrades required to keep the system current and in working condition. Repairs and upgrades of the CCTV system are required in the current year. We estimate replacement will be required in the next 5-10 years.

CCTV Monitoring Station	
. Qty	2
. Cost	$10,000
. Year(s)	2028, 2043

The CCTV cameras are suspected to have been replaced on as-needed basis and their age cannot be determined. We expect the CCTV cameras are in fair-to-satisfactory condition. We estimate replacement will be required in the next 5 years.

CCTV Cameras	
. Qty	Allowance
. Cost	$8,000
. Year(s)	2025, 2030 2035, 2040, 2045

We recommend the following work be anticipated and funded:

.E A quotation of **$21,000** has been provided by Henderson Security for the repairs and upgrades of the CCTV system and this work has been budgeted in **2020**

.F Replacement of the CCTV monitoring stations is estimated to cost **$10,000** and this work has been budgeted in **2028 and every 15 years thereafter**

.G Due to the varying service life of the CCTV cameras, isolated repairs need only be completed as required. For budgeting purposes, an allowance of **$8,000** has been made in **2020 and every 5 years thereafter** to ensure funds are available when the work is required

5.3 Mechanical

5.3.1 Ventilation System

MAKE-UP AIR UNIT

The make-up air unit with glycol heating coils located in the mechanical penthouse provides fresh air to the building, pressurises the building and prevents odour transfer between units. Make-up air units have a typical service life of 35-40 years.

Make-up Air Unit	
. Qty	1
. Cost	$75,000
. Year(s)	2034

The make-up air unit was installed as part of the original construction; as such is 47 years old however it has undergone multiple overhauls over the years. The make-up air unit is in fair condition with no major defects observed. We estimate replacement will be required in the next 10-15 years.

We recommend the following work be anticipated and funded:

.A Replacement of the make-up air unit is estimated to cost **$75,000** and this work has been budgeted in **2034**

EXHAUST FANS

The multiple exhaust fans located in the electrical vault, garbage room, elevator machine room, and other common areas provide ventilation and temperature control. Exhaust fans have a typical service life of 25-35 years which can vary greatly depending on usage and environmental conditions.

Exhaust Fans	
. Qty	Allowance
. Cost	$3,000
. Year(s)	2020, 2030, 2040

The exhaust fans are of varied vintages and their current age could not be determined. We expect the exhaust fans are in fair-to-satisfactory condition. We estimate isolated replacement will be required in the next 5 years.

Laundry Ventilation	
. Qty	Allowance
. Cost	$42,000
. Year(s)	2043

The laundry ventilation was overhauled and repaired in 2013; as such is 6 years old. Based on its current age, we expect the laundry ventilation is in satisfactory condition. We estimate overhaul and repairs will be required in the next 20-25 years.

We recommend the following work be anticipated and funded:

.B Due to the varying service life of the exhaust fans, isolated replacement need only be completed as required. For budgeting purposes, an allowance of **$3,000** has been made in **2020 and every 10 years thereafter** to ensure funds are available when the work is required

.C In order to ensure funds are available to perform overhaul or repairs of the laundry repairs, an allowance of **$42,000** has been made in fiscal year **2043**

GARAGE VENTILATION

The parking garage exhaust fans for the parking garage ventilation are set to run by the gas detection system. Parking garage exhaust fans have a typical service life of 30-35 years.

Parking Garage Exhaust Fans	
. Qty	6
. Cost	$6,000
. Year(s)	2025, 2035, 2045

The parking garage exhaust fans are of varying ages and their vintage could not be determined. The parking garage exhaust fans are in fair condition with some surface corrosion of components observed. We estimate replacement will be required in the next 10-15 years.

We recommend the following work be anticipated and funded:

.D Due to the varying age and condition of the garage exhaust fans, isolated replacements need only be completed as required. For budgeting purposes, an allowance of **$6,000** has been made in **2025 and every 10 years thereafter** to ensure funds are available when the work is required

GARAGE GAS MONITORING SYSTEM

The Armstrong gas monitoring controller monitors 15 CO sensors located in the parking garage controlling the operation of the parking garage ventilation equipment. Gas monitoring controllers have a typical service life of 15-20 years. CO sensors have a typical service life of 5-7 years.

Gas Monitoring Controller	
. Qty	2
. Cost	$10,000
. Year(s)	2031, 2046

The gas monitoring controllers were replaced in 2016; as such are 3 years old. The gas monitoring controllers are in satisfactory condition with no major defects observed. We estimate replacement will be required in the next 10-15 years.

CO Sensors	
. Qty	Allowance
. Cost	$8,000
. Year(s)	2021, 2026, 2031 2036, 2041, 2046

The CO sensors are suspected to have been replaced in 2016; as such are 3 years old with the last reported inspection taking place in October 2016. Based on their current age, we expect the CO sensors are in fair condition. We estimate isolated replacement will be required in the next 5 years.

Calibration and testing by a qualified service technician of the CO sensors must occur every 6-12 months.

We recommend the following work be anticipated and funded:

.D Replacement of the gas monitoring controllers is estimated to cost **$10,000** and this work has been budgeted in **2031 and every 15 years thereafter**

.E Although costs are not included in this study, as they do not constitute a major repair or replacement, we recommend that testing and calibration of the gas monitoring system be performed every 6-12 months, using funds from the operating budget

.F Due to the varying service life of the CO sensors, replacement need only be completed as required. For budgeting purposes, an allowance of **$8,000** has been made in **2021 and every 5 years thereafter** to ensure funds are available when the work is required

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5.3.2 Heating & A/C Systems

HEATING BOILERS

The Raypak 1,739MBH output gas fueled atmospheric heating boilers located in the mechanical penthouse provide heated water to the hot water heater loop and make-up air unit. Atmospheric heating boilers have a typical service life of 25-30 years.

Heating Boilers	
. Qty	4
. Cost	$340,000
. Year(s)	2036

The heating boilers were reportedly replaced in 2011; as such are 9 years old. The heating boilers are in satisfactory condition with no major defects observed. We estimate replacement will be required in the next 15-20 years.

We recommend the following work be anticipated and funded:

.A Replacement of the heating boilers is estimated to cost **$340,000** and this work has been budgeted in **2036**

AMENITIES BUILDING HEATING BOILERS

The Raypak 750MBH intput gas fueled atmospheric heating boiler located in the pool mechanical room within the parking garage provides heated water to the hot water heater loop. Atmospheric heating boilers have a typical service life of 25-30 years.

Amenities Building Heating Boiler	
. Qty	1
. Cost	$50,000
. Year(s)	2036

The amenities building heating boiler was reportedly replaced in 2011; as such is 9 years old. The amenities building heating boiler is in satisfactory condition with no major defects observed. We estimate replacement will be required in the next 15-20 years.

We recommend the following work be anticipated and funded:

.B Replacement of the amenities building heating boiler is estimated to cost **$40,000** and this work has been budgeted in **2036.**

BOILER CIRCULATOR PUMPS

The Taco heating boiler circulator pumps in the penthouse mechanical room and pool mechanical room provide circulation between the boiler and the main heating loop. Boiler circulator pumps have a typical service life of 25-30 years.

The boiler circulator pumps were installed as part of the boiler replacement in 2011; as such are 9 years old. The boiler circulator pumps are in satisfactory condition with no major defects observed. We estimate replacement will be required in the next 15-20 years.

We recommend the following work be anticipated and funded:

.C Costs for replacement of the boiler circulator pumps have been included with the heating boiler replacement

HYDRONIC LOOP PUMPS

The Armstrong 325USgpm, 5HP hydronic loop pumps equipped with variable frequency drives (VFD), located in the penthouse mechanical room distribute the hot water throughout the building to the hydronic radiators inside the units, common areas and make-up air heat exchanger. In-line hydronic loop pumps have a typical service life of 25-30 years. Variable frequency drives have a typical service life of 15-20 years.

Hydronic Loop Pumps	
. Qty	2
. Cost	$20,000
. Year(s)	2043

Hydronic Loop Pumps Variable Frequency Drives	
. Qty	2
. Cost	$6,000
. Year(s)	2033, 2048

The hydronic loop pumps were replaced in 2018; as such are 2 years old. The hydronic loop pumps are in satisfactory condition with no major defects observed. We estimate replacement will be required in the next 20-25 years.

The Yaskawa variable frequency drives were installed as part of the original pump replacement; as such are 2 years old. The variable frequency drives are in satisfactory condition with no major defects observed. We estimate replacement will be required in the next 10-15 years.

We recommend the following work be anticipated and funded:

.D Replacement of the hydronic loop pumps is estimated to cost **$20,000** and this work has been budgeted in **2043**

.E Replacement of the variable frequency drives is estimated to cost **$6,000** and this work has been budgeted in **2033 and every 15 years thereafter**

GLYCOL MAKE-UP UNIT

The Ashland glycol make-up unit installed in the mechanical penthouse automatically provides glycol make-up to the make-up air glycol loop. Glycol make-up units have a typical service life of 30-35 years.

Glycol Make-up Unit	
. Qty	1
. Cost	$5,000
. Year(s)	2041

The glycol make-up unit is suspected to have been installed as part of the boiler replaced in 2011; as such is 9 years old. The glycol make-up unit is in satisfactory condition with no major defects observed. We estimate replacement will be required in the next 20-25 years.

We recommend the following work be anticipated and funded:

.F Repairs and overhaul of the glycol make-up unit is estimated to cost **$5,000** and this work has been budgeted in **2041**

EXPANSION TANK

The expansion tank for the heating loop located in the mechanical penthouse handles the expansion and contraction for the water in the closed loop system. Expansion tanks have a typical service life of 10-15 years.

Expansion Tank	
. Qty	3
. Cost	$18,000
. Year(s)	2028, 2038, 2048

The expansion tank is suspected to have been replaced in 2018, as such is 2 years old. Based on its current age, we expect the expansion tank is in satisfactory condition. We estimate expansion tank replacement will be required in the next 5-10 years.

We recommend the following work be anticipated and funded:

.G Replacement of the expansion tank is estimated to cost **$18,000** and this work has been budgeted in **2028 and every 10 years thereafter**

HEAT EXCHANGER

The shell and tube heat exchanger for the make-up air located in the mechanical penthouse provides heat transfer between the main heating loop and glycol make-up air loop. Shell and tube heat exchangers have a typical service life of 75-80 years, this can vary greatly depending on the water treatment.

Heat Exchanger	
. Qty	1
. Cost	$60,000
. Year(s)	2048

The heat exchanger was installed as part of the original construction; as such is 47 years old and it was recently inspected and cleaned. The heat exchanger is in satisfactory condition with no major defects observed. We estimate replacement will be required in the next 25-30 years.

We recommend the following work be anticipated and funded:

.H Replacement of the heat exchanger is estimated to cost **$60,000** and this work has been budgeted in **2048**

.I Although costs are not included in this study, as they do not constitute a major repair or replacement, we recommend that flushing and cleaning of the heat exchangers be performed ever 5 years, using funds from the operating budget

MUA LOOP PUMP

The Armstrong 230USgpm, 2HP MUA loop pump located in the mechanical penthouse distributes the hot glycol between the heat exchanger and the MUA coil. In-line loop pumps have a typical service life of 25-30 years.

Make-up Air Loop Pump	
. Qty	1
. Cost	$6,000
. Year(s)	2023, 2048

The MUA loop pump is suspected to have been installed as part of the original construction; as such is 47 years old and it is suspected to have been repaired and overhauled in the last 10 years. Based on their current age, we expect the MUA loop pump is in fair condition. We estimate replacement will be required in the next 5 years.

following work be anticipated and funded:

.J Replacement of the MUA loop pump is estimated to cost **$6,000** and this work has been budgeted in fiscal year **2023 every 25 years thereafter**

DIRECT EXPANSION AIR-CONDITIONER UNITS

The Lennox 1.5-Ton direct expansion ductless split air-conditioner units charged with R-410A refrigerant provide cooling for the party room. Dx. air-conditioner units have a typical service life of 15-20 years.

Party Room Air-conditioner Units	
. Qty	2
. Cost	$10,000
. Year(s)	2028, 2043

The air-conditioner units were replaced in 2013; as such are 7 years old. The air-conditioner units are in satisfactory condition with no major defects observed. We estimate replacement will be required in the next 5-10 years.

We recommend the following work be anticipated and funded:

.K Replacement of the party room air-conditioner units is estimated to cost **$10,000** and this work has been budgeted in **2028 and every 15 years thereafter**

DIRECT EXPANSION AIR-CONDITIONER UNITS

The Lennox 1.5-Ton direct expansion split air-conditioner units charged with R-22 refrigerant provides cooling for a basement room and laundry room. The unit condensers are located in the parking garage. Dx. air-conditioner units have a typical service life of 15-20 years.

Direct Expansion Air-conditioner Units	
. Qty	2
. Cost	$20,000
. Year(s)	2020, 2035

The air-conditioner units were installed as part of the original construction; as such are 47 years old. Based on their current age, we expect the air-conditioner units are in poor condition. The air-conditioner units have exceeded the end of their useful service life and should be replaced in the near future.

We recommend the following work be anticipated and funded:

.L Replacement of the air-conditioner units is estimated to cost **$20,000** and this work has been budgeted in fiscal year **2020 and every 15 years thereafter**

DIRECT EXPANSION AIR-CONDITIONER UNIT

The direct expansion ductless split air-conditioner unit provides cooling for the elevator machine room. Dx. air-conditioner units have a typical service life of 15-20 years.

Elevator Machine Room Air-conditioner Units	
. Qty	1
. Cost	$5,000
. Year(s)	2020, 2035

Based on its current age, we expect the air-conditioner unit is in fair condition. The air-conditioner unit has reached the end of their useful service life and should be replaced in the near future.

We recommend the following work be anticipated and funded:

.M Replacement of the elevator machine room air-conditioner unit is estimated to cost **$5,000** and this work has been budgeted in **2020 and every 15 years thereafter**

HYDRONIC PIPING

The hydronic piping and risers installed throughout the building distribute heating water to the hydronic heating loop. Hydronic piping systems have a typical service life of 50-80 years with proper maintenance and water treatment. However, it is our experience that the life experience of systems with poor maintenance or water treatment can be reduced by 10-20 years.

The perimeter hydronic piping and risers were replaced in 2014-2018; as such are 2-6 years old with some sections dating from the original construction; as such are 47 years old. The perimeter hydronic piping and risers are in satisfactory condition with no major defects observed. We expect minor isolated repairs will be required within the 30-year planning period of this study.

The hydronic supply and return piping and the basement piping were installed as part of the original construction; as such are 47 years old. Based on their current age, hydronic supply and return piping and the basement piping are in fair-to-satisfactory condition. We estimate replacement will be required in the next 25-30 years.

The hydronic radiators in the suites were replaced in 2014-2018; as such are 2-6 years old. The hydronic radiators are in satisfactory condition with no major defects observed. We do not anticipate replacement will be required during the 30-year planning period of this study.

The hydronic radiators in the basement were installed as part of the original construction; as such are 47 years old. Based on their current age, we expect the hydronic radiators are in fair-to-satisfactory condition. We estimate replacement will be required in the next 25-30 years.

The zone valves & thermostats were replaced in 2014-18; as such are 2-6 years old. Based on their current age, we expect the zone valves & thermostats are in satisfactory condition. We expect isolated repairs will be required within the 30-year planning period of this study.
We recommend the following work be anticipated and funded:

.N A rough order of magnitude for the replacement of the hydronic piping and risers is estimated to cost **$2,200,000** and this work has been budgeted **beyond the 30-year planning period** of this study

.O A rough order of magnitude for the replacement of the hydronic supply and return piping and the basement piping is estimated to cost **$200,000** and this work has been budgeted in **2043**

.P Minor repairs to the hydronic piping and risers should be performed, as required, using funds from the operating budget

.Q Costs for the replacement of the hydronic radiators in the suites have been included in the hydronic heating piping and riser's replacement project

.R Costs for the replacement of the hydronic radiators in the basement have been included in the hydronic supply and return piping and the basement piping replacement project

.S In order to ensure funds are available to perform isolated repairs of the heating zone valves and thermostats when required, an allowance of **$10,000** has been made in **2022 and every 5 years thereafter**

■ Perimeter Hydronic Piping and Risers

. Qty	Allowance
. Cost	$2,200,000
. Year(s)	Beyond 2049

■ Supply and Return Hydronic Piping and Risers

. Qty	Allowance
. Cost	$200,000
. Year(s)	2043

■ Heating Zone Valves & Thermostats

. Qty	Allowance
. Cost	$10,000
. Year(s)	2022, 2027, 2032 2037, 2042, 2047

5.3.3 Plumbing Systems

DOMESTIC COLD WATER BOOSTER PUMPS

The duplex Armstrong 80USgpm, 10HP cold water booster pumps equipped with variable frequency drives, located in the basement pump room, increase the incoming water pressure to deliver cold water to the high rise section of the building. Cold water booster pumps have a typical service life of 20-25 years

Domestic Cold Water Booster Pumps	
. Qty	1
. Cost	$75,000
. Year(s)	2034

The cold water booster pumps were replaced in 2014; as such are 6 years old. The cold water booster pumps are in satisfactory condition with no major defects observed. We estimate replacement will be required in the next 10-15 years.

We recommend the following work be anticipated and funded:

.A Replacement of the cold water booster pumps is estimated to cost **$75,000** and this work has been budgeted in **2034**

DOMESTIC HOT WATER HEATERS

The Raypak 750MBH input gas fueled atmospheric hot water heaters located in the mechanical penthouse and pool mechanical room provide domestic hot water to the suites and amenities building. Atmospheric domestic hot water heaters have a typical service life of 25-30 years.

Domestic Hot Water Heaters	
. Qty	4
. Cost	$200,000
. Year(s)	2036

The domestic hot water heaters were reportedly replaced in 2011; as such are 9 years old. The domestic hot water heaters are in satisfactory condition with no major defects observed. We estimate replacement will be required in the next 15-20 years.

We recommend the following work be anticipated and funded:

.B Replacement of the domestic hot water heaters is estimated to cost **$220,000** and this work has been budgeted in **2036**

DOMESTIC HOT WATER RECIRCULATION PUMPS

The Armstrong 1/12HP domestic hot water recirculation pump in the mechanical penthouse and pool mechanical room provide hot water recirculation throughout the building to ensure hot water is readily available at all times. Domestic hot water recirculation pumps have a typical service life of 10-15 years.

Domestic Hot Water Recirculation Pumps	
. Qty	2
. Cost	$3,000
. Year(s)	2024, 2034, 2044

The domestic hot water recirculation pumps were replaced in 2014; as such are 6 years old. The domestic hot water recirculation pumps are in satisfactory condition with no major defects observed. We estimate replacement will be required in the next 5 years.

We recommend the following work be anticipated and funded:

.C Replacement of the domestic hot water recirculation pumps is estimated to cost **$3,000** and this work has been budgeted in **2024 and every 10 years thereafter**

DOMESTIC HOT WATER STORAGE TANKS

The AO Smith 200USgal glass lined domestic hot water storage tanks installed in the mechanical penthouse provide domestic hot water storage for high rise section of the building. Glass lined domestic hot water storage tanks have a typical service life of 10-15 years.

Domestic Hot Water Storage Tanks	
. Qty	5
. Cost	$36,000
. Year(s)	2024, 2034, 2044

The domestic hot water storage tanks were replaced in 2014 as such are 6 years old. Based on their current age, we expect the domestic hot water storage tanks are in satisfactory condition. We estimate replacement will be required in the next 5 years.

We recommend the following work be anticipated and funded:

.D Replacement of the domestic hot water storage tanks is estimated to cost **$36,000** and this work has been budgeted in **2024 and every 10 years thereafter**

.E Although costs are not included in this study, as they do not constitute a major repair or replacement, we recommend periodic inspection and anode replacement be performed on storage tanks every 1-3 years, using funds from the operating budget

DOMESTIC HOT WATER STORAGE TANK

The AS Leitch concrete lined domestic hot water storage tank installed in the pool mechanical room within the parking garage provides domestic hot water storage for the low rise section of the building and the amenities building. Concrete lined domestic hot water storage tanks have a typical service life of 40-60, providing scheduled maintenance including anode replacement and periodic relining is performed. Tank relining is typically required every 10 years.

■ Amenities Building Domestic Hot Water Storage Tank

. Qty	1
. Cost	$21,000
. Year(s)	2020, 2030, 2040

The domestic hot water storage tank was installed as part of the original construction; as such are 47 years old. Based on their current age, we expect the domestic hot water storage tank is in fair condition. The domestic hot water storage tank has reached the end of its useful service life and should be replaced in the near future.

We recommend the following work be anticipated and funded:

.F Replacement of the domestic hot water storage tank for glass lined storage tanks is estimated to cost **$21,000** and this work has been budgeted in **2020 and every 10 years thereafter**

.G Although costs are not included in this study, as they do not constitute a major repair or replacement, we recommend periodic inspection and anode replacement be performed on storage tanks every 1-3 years, using funds from the operating budget

DOMESTIC WATER EXPANSION TANK

The expansion tank for the domestic cold water located in mechanical penthouse handles the expansion and contraction for the incoming water as warms up. Expansion tanks have a typical service life of 10-15 years.

■ Domestic Cold Water Expansion Tank

. Qty	1
. Cost	$7,000
. Year(s)	2024, 2034, 2044

The expansion tank was installed in 2014; as such is 6 years old. Based on its current age, we expect the expansion tank is in fair condition. The expansion tank is in satisfactory condition with no major defects observed. We estimate replacement will be required in the next 5 years.

We recommend the following work be anticipated and funded:

.H Replacement of the bellow in the expansion tank is estimated to cost **$7,000** and this work has been budgeted in **2024 and every 10 years thereafter**

PLUMBING SYSTEMS

The plumbing systems are comprised of domestic cold and hot water distribution pipes and risers, and sanitary and storm pipes and stacks installed throughout the building. The plumbing systems have a typical service life of 60-80 years.

■ Domestic Cold & Hot Water Distribution and Risers

. Qty	Allowance
. Cost	$357,500
. Year(s)	2044, 2049

The domestic cold and hot water distribution pipes and risers were installed as part of the original construction; as such are 47 years old. Based on their current age, we expect the domestic cold and hot water distribution pipes and risers are in fair-to-satisfactory condition. We do not anticipate replacement or major repairs will be required during the 30-year planning period of this study.

Sanitary and Storm Pipes & Stacks	
. Qty	Allowance
. Cost	$357,500
. Year(s)	2044, 2049

The sanitary and storm pipes were installed as part of the original construction; as such are 47 years old. Based on their current age, we expect the sanitary and storm pipes are in fair-to-satisfactory condition. We do not anticipate replacement or major repairs will be required during the 30-year planning period of this study.

We recommend the following work be anticipated and funded:

.I A rough order of magnitude for the replacement of the domestic cold and hot water distribution pipes and risers is estimated to cost **$3,000,000**.

.J In order to ensure funds are available, an allowance of **$357,500** for the domestic cold and hot water distribution pipes and risers has been budgeted in fiscal year **2044 and every 5 years thereafter.**

.K Minor repairs of the domestic cold and hot water distribution pipes and risers should be performed, as required, using funds from the operating budget

.L A rough order of magnitude for the replacement of the sanitary and storm pipes is estimated to cost **$3,000,000** and this work has been budgeted **beyond the 30-year planning period** of this study

.M In order to ensure funds are available, an allowance of **$357,500** for the sanitary and storm pipes has been budgeted in fiscal year **2044 and every 5 years thereafter.**

.N Minor repairs of the sanitary and storm pipes should be performed, as required, using funds from the operating budget

.O Although costs are not included in this study, as they do not constitute a major repair or replacement, we recommend that camera inspection and flushing of the sanitary pipes and stacks be performed every 5-10 years, using funds from the operating budget

5.3.4 Pool Mechanical Systems

POOL MECHANICAL SYSTEMS

The pool mechanical systems consisting of an UV sanitation system, salt chlorination system, a pump, heat exchanger, sand filter, and strainer are installed in the pool mechanical room within the parking garage and serve the pool in the amenities building. Pool mechanical systems have a typical service life of 15-20 years.

Pool Mechanical Systems	
. Qty	Allowance
. Cost	$15,000
. Year(s)	2021, 2031, 2041

The pool mechanical systems are suspected to have been replaced on as-needed basis, however a number of components date from 2011. The pool mechanical systems are in satisfactory condition with no major defects observed. We estimate replacement will be required in the next 5 years.

We recommend the following work be anticipated and funded:

.A Due to the varying service life of the individual components of the pool mechanical systems, isolated repairs need only be completed as required. For budgeting purposes, an allowance of **$10,000** has been made in **2021 and every 10 years thereafter** to ensure funds are available when the work is required

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 have a typical service life of 20-25 years.

Natatorium Dehumidification Unit	
. Qty	1
. Cost	$100,000
. Year(s)	2020, 2040

The natatorium dehumidification unit was replaced in 1996; as such is 24 years old. Based on its current age, we expect the natatorium dehumidification unit is in poor condition. The natatorium dehumidification unit has reached the end of its useful service life and should be replaced in the near future.

We recommend the following work be anticipated and funded:

.B Replacement of the natatorium dehumidification unit is estimated to cost **$100,000** and this work has been budgeted in **2020 and every 20 years thereafter**

5.3.5 Sump Pumps

SUMP PUMPS

The sanitary, storm and ground water, and elevator shaft pit, sump pumps and pump controllers are located in their respective pit in the basement and parking garage to pump waste and storm water from the lower levels of the building to the city sewer. Sump pumps have a typical service life of 10-15 years which can vary greatly depending on usage.

Sump Pumps	
. Qty	Allowance
. Cost	$10,000
. Year(s)	2020, 2025, 2030 2035, 2040, 2045

The sump pumps are suspected to have been replaced on as needed basis and their age could not be determined. We expect the sump pumps are in fair-to-satisfactory condition. The sump pumps could not be visually inspected. We estimate replacement will be required in the next 5 years.

Sump pumps should be inspected regularly and properly maintained in accordance with the manufacturer's recommendations to reduce the risk of premature failure.

We recommend the following work be anticipated and funded:

.A Due to the varying service life of the sump pumps, isolated repairs need only be completed as required. For budgeting purposes, an allowance of **$10,000** has been made in **2020 and every 10 years thereafter** to ensure funds are available when the work is required

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5.3.6 Elevators

ELEVATORS

The Otis traction elevators installed in the building provide access to floors B to 21. The elevator mechanical room is located in the mechanical penthouse. Traction 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.

Elevator Control Modernization	
. Qty	3
. Cost	$615,000
. Year(s)	2029

The elevators underwent a significant overhaul and control modernization in 2004; as such are 16 years old. Based on their current age, we expect the elevators are in satisfactory condition. We estimate an elevator modernization will be required in the next 5-10 years.

Periodically, the Technical Standards and Safety Authority dictates remedial work that must be carried out on various types of elevators and is mandatory.

We recommend the following work be anticipated and funded:

.A Replacement of the elevator control systems is estimated to cost **$615,000** and this work has been budgeted in **2029**
.B Replacement of the elevator cab interiors is estimated to cost **$62,000** and this work has been budgeted in **2029**, in conjunction with the elevator control modernization
.C In order to ensure funds are available to perform potential mandatory TSSA upgrades, an allowance of **$4,000** has been made in **2020** and **every 5 years thereafter**

■ Elevator Cab Interior Modernization

. Qty	3
. Cost	$62,000
. Year(s)	2029

■ TSSA Elevator Contingency Allowance

. Qty	Allowance
. Cost	$4,000
. Year(s)	2020, 2025, 2030 2035, 2040, 2045

5.3.7 Fire Protection Systems

FIRE PROTECTION SYSTEMS

The fire protection system consists of fire extinguishers and fire hose cabinets installed throughout the building. Fire protection systems have a varying service life.

The fire protection systems are inspected annually and are replaced on an as-needed basis. We expect the fire protection systems are in fair-to-satisfactory condition. We anticipate isolated repairs and replacement of individual components will be required during the 30-year planning period of this study.

Annual inspection and maintenance has been performed and should be continued to ensure that the fire protection system remains in active working condition at all times.

We recommend the following work be anticipated and funded:

.A Repairs and maintenance of the fire protection system should be performed, as required, using funds from the operating budget
.B Although costs are not included in this study, as they do not constitute a major repair or replacement, we recommend that annual inspection and testing be performed, using funds from the operating budget

DRY PIPE AIR COMPRESSOR

The Appl 1HP air compressor for the dry pipe sprinkler system located in the basement pump room provides compressed air to maintain air pressure in the dry pipe sprinkler system. The air compressor has a typical service life of 15-20 years which can vary greatly on usage and environmental conditions.

■ Dry Pipe Air Compressor

. Qty	1
. Cost	$4,000
. Year(s)	2031, 2046

The air compressor was replaced in 2016; as such is 4 years old. The air compressor is in satisfactory condition with no major defects observed. We estimate replacement will be required in the next 10-15 years.

We recommend the following work be anticipated and funded:

.C Replacement of the air compressor is estimated to cost **$4,000** and this work has been budgeted in **2031 and every 15 years thereafter**

SPRINKLER HEADS

The automatic sprinkler heads installed in the parking garage and basement provide fire protection to the building. The sprinkler heads need to be replaced or tested and re-certified every 50 years.

Sprinkler Heads	
. Qty	Allowance
. Cost	$160,000
. Year(s)	2023

The sprinkler heads are suspected to have been installed as part of the original construction; as such are 47 years old. Based on their current age, we expect the sprinkler heads are in fair condition. We estimate replacement will be required in the next 5 years.
We recommend the following work be anticipated and funded:

.D A rough order of magnitude for the replacement of the sprinkler heads is estimated to cost **$160,000** and this work has been budgeted in **2023**

STANDPIPES AND SPRINKLER PIPES

The standpipes and sprinkler pipes are comprised of steel pipes installed throughout the condominium. The standpipes and sprinkler systems have a typical service life of 60-80 years which can vary greatly depending on environmental conditions.

6”Ø Dry Pipe Valves in The Parking Garage	
. Qty	2
. Cost	$12,000
. Year(s)	2020

The standpipes were installed as part of the original construction; as such are 47 years old. Based on their current age, we expect the standpipes are in satisfactory condition, however Pyron Fire Protection Inc. reported that two 6”Ø dry pipe valves in the parking garage needs immediate replacement. We do not anticipate full replacement or major repairs of the standpipes will be required during the 30-year planning period of this study.

Standpipes	
. Qty	Allowance
. Cost	$300,000
. Year(s)	Beyond 2049

The sprinkler pipes were installed as part of the original construction; as such are 47 years old. The sprinkler pipes are in satisfactory condition with no major defects observed. We do not anticipate replacement or major repairs will be required during the 30-year planning period of this study.

Sprinkler Pipes	
. Qty	Allowance
. Cost	$300,000
. Year(s)	Beyond 2049

We recommend the following work be anticipated and funded:

.E A quotation of **$12,000** has been provided by Pyron Fire Protection Inc. for the replacement of the two 6”Ø dry pipe valves in the parking garage and this work has been budgeted in **2020**
.F A rough order of magnitude for the replacement of the standpipes is estimated to cost **$300,000** and this work has been budgeted **beyond the 30-year planning period** of this study
.G Minor repairs of the standpipes should be performed, as required, using funds from the operating budget
.H A rough order of magnitude for the replacement of the sprinkler pipes is estimated to cost **$300,000** and this work has been budgeted **beyond the 30-year planning period** of this study
.I Minor repairs of the sprinkler pipes and sprinkler heads should be performed, as required, using funds from the operating budget
.J Although costs are not included in this study, as it does not constitute a major repair or replacement, we recommend that a comprehensive investigation of the standpipes and sprinkler pipes be performed, to better assess the condition and cost of replacement using funds from the operating budget

APPENDIX A: SPREADSHEET FOR MAJOR REPAIR AND REPLACEMENT COSTS

CCC 34: Spreadsheet For Major Repair & Replacement Costs, Fiscal Years 2020 to 2049

AGE OF COMPLEX		47 Years	48 Years	49 Years	50 Years	51 Years	52 Years	53 Years	54 Years	55 Years	56 Years	57 Years	58 Years	59 Years	60 Years	61 Years
REPAIR/REPLACEMENT ITEMS		2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034
5.1	**CIVIL, ARCHITECTURAL**															
5.1.1	**Site Services**	$30,000			$30,000	$6,000					$6,000					$6,000
5.1.2	**Parking Garage**		$30,000				$400,000				$50,000				$30,000	
5.1.3	**Asphalt Pavement**	$110,000			$60,000				$420,000							
5.1.4	**Pavers**															
5.1.5	**Exterior Concrete**				$7,000											
5.1.6	**Landscaping**	$10,000					$10,000									
5.1.7	**Fencing**		$20,000			$15,000									$50,000	
5.1.8	**Foundation Walls**	$70,000														
5.1.9	**Balconies**															$285,000
5.1.10	**Masonry**							$410,000				$75,000				
5.1.11	**Siding, Trim & Flashings**		$40,000					$50,000								
5.1.12	**Exterior Coatings**			$25,000												
5.1.13	**Caulking**									$160,000						
5.1.14	**Windows & Balcony Doors**	$112,000						$140,000				$180,000	$180,000	$180,000	$180,000	$180,000
5.1.15	**Doors**	$5,000		$22,000										$22,000	$20,000	
5.1.16	**Roofing Systems**		$510,000									$50,000		$80,000		
5.1.17	**Common Corridors**	$223,000	$173,000	$173,000	$173,000	$218,000										
5.1.18	**Common Rooms**	$450,000				$30,000	$40,000									
5.1.19	**Swimming Pool & Sauna**	$15,000										$25,000				
5.2	**ELECTRICAL SYSTEMS**															
5.2.1	**Electrical Distribution**	$181,000	$26,000	$26,000	$19,000	$136,000	$19,000	$19,000	$19,000	$19,000	$19,000					
5.2.2	**Lighting**	$7,000	$7,000	$7,000	$7,000	$7,000	$37,000	$7,000	$7,000							
5.2.3	**Fire Alarm System**	$4,000					$4,000					$4,000	$60,000			
5.2.4	**Emergency Power System**															
5.2.5	**Electrical Heating System**	$6,000														$515,000
5.2.6	**Security System**	$26,000					$8,000			$10,000		$8,000				$25,000
5.3	**MECHANICAL SYSTEMS**															
5.3.1	**Ventilation System**	$3,000	$8,000				$6,000	$8,000				$3,000	$18,000			$75,000
5.3.2	**Heating & A/C System**	$25,000		$10,000	$6,000				$10,000	$28,000				$10,000	$6,000	
5.3.3	**Plumbing System**	$21,000				$46,000						$21,000				$121,000
5.3.4	**Pool Mechanical Systems**	$100,000	$15,000										$15,000			
5.3.5	**Sump Pumps**	$10,000					$10,000					$10,000				
5.3.6	**Elevators**	$4,000					$4,000				$677,000	$4,000				
5.3.7	**Fire Protection System**	$12,000			$160,000								$4,000			
	GENERAL															
	Contingencies															
	Reserve Fund Study Update	$7,000			$3,500			$7,000			$3,500			$7,000		
YEARLY EXPENDITURE TOTALS		$1,431,000	$829,000	$263,000	$465,500	$458,000	$538,000	$641,000	$456,000	$217,000	$755,500	$380,000	$277,000	$299,000	$286,000	$1,207,000
EXPENDITURES INCL. INFLATION		$1,431,000	$849,725	$276,314	$501,293	$505,546	$608,698	$743,363	$542,041	$264,393	$943,516	$486,432	$363,448	$402,122	$394,254	$1,705,459
CONTRIBUTIONS FROM FEES		$479,073	$491,050	$503,326	$515,909	$528,807	$542,027	$555,577	$569,467	$583,704	$598,296	$613,254	$628,585	$644,300	$660,407	$676,917
ADDITIONAL CONTRIBUTIONS																
INTEREST CONTRIBUTIONS		$36,164	$27,951	$34,172	$35,234	$36,535	$35,617	$31,643	$32,946	$41,574	$33,801	$37,629	$45,007	$51,990	$59,742	$35,316
REMAINING RESERVE FUND		$1,722,240	$1,391,516	$1,652,699	$1,702,549	$1,762,345	$1,731,290	$1,575,147	$1,635,519	$1,996,404	$1,684,985	$1,849,436	$2,159,580	$2,453,748	$2,779,643	$1,786,417

ESTIMATED RESERVE FUND = $2,638,004 December 31, 2018
CURRENT ANNUAL CONTRIBUTIONS = $467,388 January 1, 2019
FUTURE ANNUAL CONTRIBUTIONS = $479,073 January 1, 2020

NOTES:

1) Interest contributions for each year are calculated at the midpoint of the fiscal year and assume that all expenditures have occurred and 50% of contributions have been collected. A fixed interest rate of 2.5% is used in the calculation

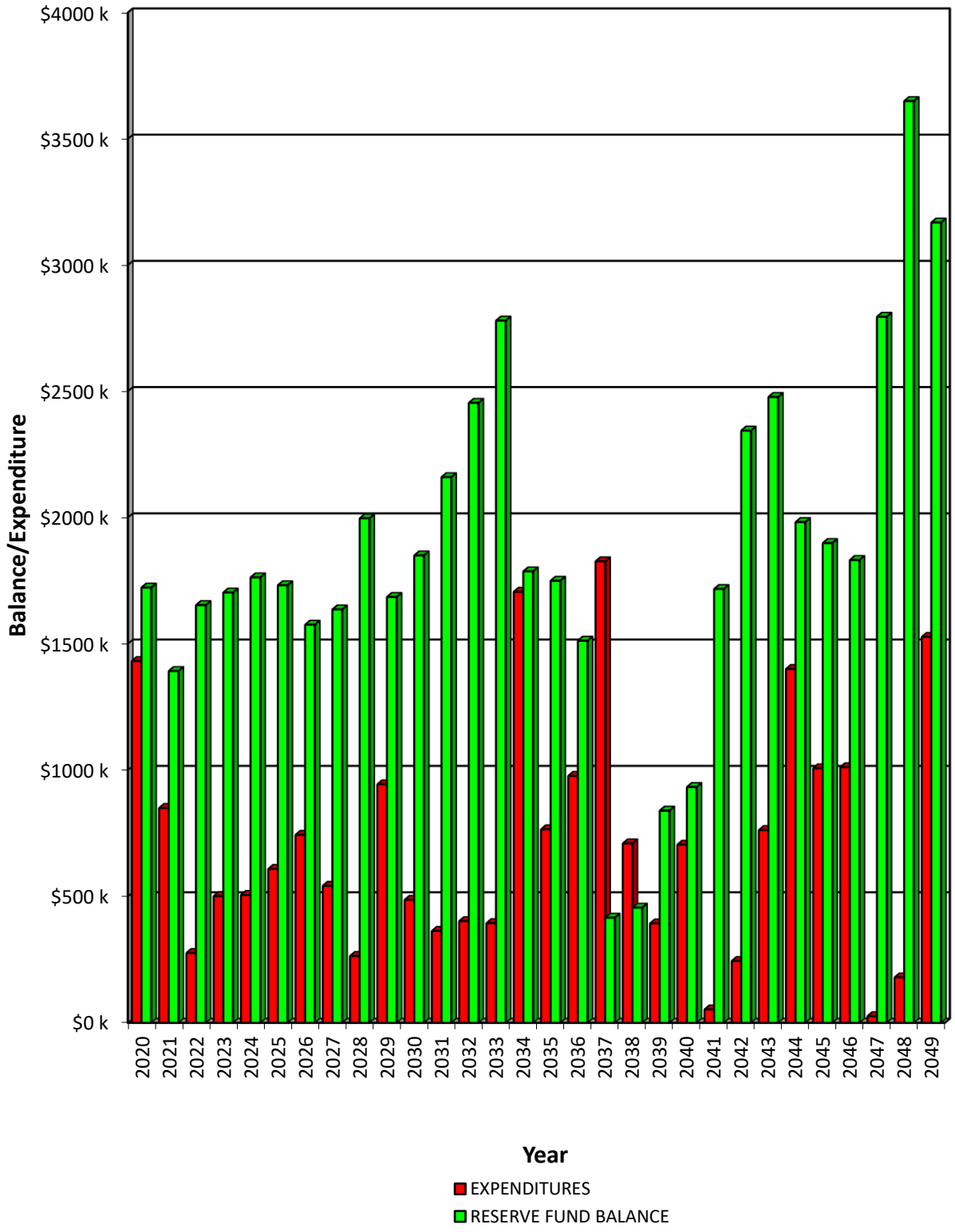
2) Estimates for expenditures include HST and, where appropriate, engineering fees.

62 Years	63 Years	64 Years	65 Years	66 Years	67 Years	68 Years	69 Years	70 Years	71 Years	72 Years	73 Years	74 Years	75 Years	76 Years		AGE OF COMPLEX	
2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	2045	2046	2047	2048	2049	TOTALS	REPAIR/REPLACEMENT ITEMS	
																5.1	CIVIL, ARCHITECTURAL
				$6,000				$30,000	$6,000					$6,000	$126,000	5.1.1	Site Services
		$1,100,000								$450,000					$2,060,000	5.1.2	Parking Garage
$20,000								$120,000							$730,000	5.1.3	Asphalt Pavement
															$0	5.1.4	Pavers
		$30,000													$37,000	5.1.5	Exterior Concrete
$20,000										$10,000					$50,000	5.1.6	Landscaping
															$85,000	5.1.7	Fencing
															$70,000	5.1.8	Foundation Walls
$285,000															$570,000	5.1.9	Balconies
							$75,000								$560,000	5.1.10	Masonry
															$90,000	5.1.11	Siding, Trim & Flashings
			$100,000	$100,000	$100,000										$325,000	5.1.12	Exterior Coatings
					$160,000										$320,000	5.1.13	Caulking
															$1,152,000	5.1.14	Windows & Balcony Doors
							$22,000								$91,000	5.1.15	Doors
							$35,000				$510,000				$1,185,000	5.1.16	Roofing Systems
$60,000	$60,000	$60,000	$60,000	$105,000											$1,305,000	5.1.17	Common Corridors
$40,000				$30,000						$40,000					$630,000	5.1.18	Common Rooms
					$15,000										$55,000	5.1.19	Swimming Pool & Sauna
																5.2	ELECTRICAL SYSTEMS
$38,000															$521,000	5.2.1	Electrical Distribution
$5,000										$5,000					$96,000	5.2.2	Lighting
$4,000					$4,000					$4,000					$84,000	5.2.3	Fire Alarm System
			$270,000												$270,000	5.2.4	Emergency Power System
										$6,000					$527,000	5.2.5	Electrical Heating System
$8,000				$5,000	$13,000			$10,000		$8,000				$25,000	$146,000	5.2.6	Security System
																5.3	MECHANICAL SYSTEMS
$6,000	$8,000				$3,000	$8,000		$42,000		$6,000	$18,000				$212,000	5.3.1	Ventilation System
$25,000	$390,000	$10,000	$18,000			$5,000	$10,000	$230,000				$10,000	$90,000		$883,000	5.3.2	Heating & A/C System
	$200,000				$21,000				$46,000						$476,000	5.3.3	Plumbing System
					$100,000	$15,000			$715,000					$715,000	$1,675,000	5.3.4	Pool Mechanical Systems
$10,000					$10,000					$10,000					$60,000	5.3.5	Sump Pumps
$4,000					$4,000					$4,000					$701,000	5.3.6	Elevators
											$4,000				$180,000	5.3.7	Fire Protection System
																$0	GENERAL
															$0		Contingencies
$3,500			$7,000			$3,500			$7,000			$3,500			$52,500		Reserve Fund Study Update
$528,500	$658,000	$1,200,000	$455,000	$246,000	$430,000	$31,500	$142,000	$432,000	$774,000	$543,000	$532,000	$13,500	$90,000	$746,000	$15,324,500	YEARLY EXPENDITURE TOTALS	
$765,426	$976,805	$1,825,942	$709,645	$393,268	$704,605	$52,907	$244,463	$762,312	$1,399,954	$1,006,692	$1,010,956	$26,295	$179,685	$1,526,620	$21,603,178	EXPENDITURES INCL. INFLATION	
$693,840	$711,186	$728,966	$747,190	$765,870	$785,016	$804,642	$824,758	$845,377	$866,511	$888,174	$910,378	$933,138	$956,466	$980,378	$21,032,587	CONTRIBUTIONS FROM FEES	
															$0	ADDITIONAL CONTRIBUTIONS	
$34,198	$28,195	$1,254	$1,996	$11,127	$13,176	$32,054	$47,111	$50,108	$37,760	$35,471	$33,565	$56,791	$77,339	$65,317	$1,100,784	INTEREST CONTRIBUTIONS	
$1,749,029	$1,511,606	$415,883	$455,425	$839,154	$932,741	$1,716,530	$2,343,936	$2,477,109	$1,981,426	$1,898,379	$1,831,367	$2,795,001	$3,649,121	$3,168,196	$3,168,196	REMAINING RESERVE FUND	
											REMAINING RESERVE FUND IN 2020 DOLLARS				$1,548,175		

3) Inflation assumed to be at an average rate of 2.5% over the time frame examined above.

KELLER ENGINEERING

CCC 34 - Reserve Fund Annual Expenditures/Closing Balance



APPENDIX B:
PHOTO REVIEW

1 General view of masonry veneer, punched windows and balconies on west elevation

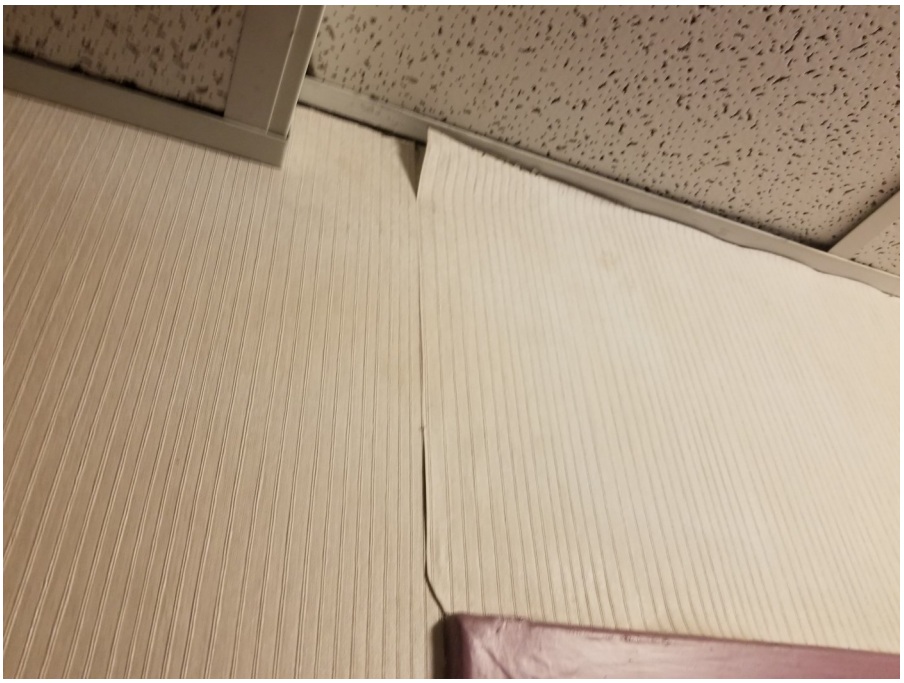
2 Close-up view of membrane and concrete delamination on parking garage intermediate slab

3 Showing crack in north garage foundation wall

4 Typical cracking of asphalt walkways

5 Condition of tennis court fencing

6 Recently replaced conventional balcony canopy roof



7 Typical deterioration of corridor wallpaper

8 General view of pool deck

APPENDIX C:
MANAGEMENT
PLANNING TABLE

CCC 34 : Annual Major Repair & Replacement Work, Fiscal Years 2020 to 2049

Year		Description of Work	Cost	Yearly Total	Inflated Yearly Total
47	2020	5.1.1 North Garage Ramp Surface Drainage Allowance	$30,000		
		5.1.3 Asphalt Laneway Replacement (North Section & at Ramp)	$40,000		
		5.1.3 Asphalt Laneway Replacement (Shared Section)	$50,000		
		5.1.3 Asphalt Walkway Replacement	$20,000		
		5.1.6 Tennis Court Refinishing	$10,000		
		5.1.8 North Garage Foundation Wall Waterproofing Allowance	$70,000		
		5.1.14 Patio Door Replacement Allowance	$112,000		
		5.1.15 Mechanical Penthouse Man Door Replacement Allowance	$5,000		
		5.1.17 Corridor Wallpaper Replacement	$103,000		
		5.1.17 Corridor Carpet Replacement	$60,000		
		5.1.17 Level 1 Corridor Ceramic Tile Flooring Replacement	$50,000		
		5.1.17 Corridor Acoustical Tile Repair Allowance	$10,000		
		5.1.18 Lobby Refinishing	$450,000		
		5.1.19 Swimming Pool Repair Allowance	$15,000		
		5.2.1 Medium Voltage Isolation Switch Kirk Interlock Replacement	$5,000		
		5.2.1 Main Disconnect Switchgear Replacement	$150,000		
		5.2.1 Original CEB Breaker Panel Replacement	$7,000		
		5.2.1 Suite Breaker Panel Replacement	$10,000		
		5.2.1 Original Fused Disconnect Switch Replacement	$9,000		
		5.2.2 Interior Light Replacement Allowance	$7,000		
		5.2.3 Fire Alarm Sensor Replacement Allowance	$4,000		
		5.2.5 Parking Garage Electric Unit Heater Replacement	$6,000		
		5.2.6 Back Entrance Door Entry System Replacement	$5,000		
		5.2.6 CCTV System Upgrades and Repairs	$21,000		
		5.3.1 Exhaust Fan Replacement Allowance	$3,000		
		5.3.2 Direct Expansion Air Conditioner Unit Replacement	$20,000		
		5.3.2 Elevator Machine Room Air Conditioner Unit Replacement	$5,000		
		5.3.3 Amenities Building Dom. Hot Water Storage Tank Replacement	$21,000		
		5.3.4 Natatorium Dehumidification Unit Replacement	$100,000		
		5.3.5 Sump Pump Repair Allowance	$10,000		
		5.3.6 TSSA Elevator Contingency Allowance	$4,000		
		5.3.7 Parking Garage Dry Pipe Valve Replacement	$12,000		
		Reserve Fund Study Update with Site Visit	$7,000		
				$1,431,000	$1,431,000

Notes:
1) Estimates for expenditures include HST and, where applicable, engineering fees.
2) Inflation assumed to be at an average of 2.5 % over the time frame examined above.

CCC 34 : Annual Major Repair & Replacement Work, Fiscal Years 2020 to 2049

Year		Description of Work	Cost	Yearly Total	Inflated Yearly Total
48	2021	5.1.2 Intermediate Slab Membrane Repair Allowance	$30,000		
		5.1.7 Tennis Court Chain Link Fencing Replacement	$20,000		
		5.1.11 Balcony Siding Panel Replacement	$40,000		
		5.1.16 Main Roof Replacement	$385,000		
		5.1.16 Breezeway Roof Replacement	$30,000		
		5.1.16 Canopy Roof Replacement	$95,000		
		5.1.17 Corridor Wallpaper Replacement	$103,000		
		5.1.17 Corridor Carpet Replacement	$60,000		
		5.1.17 Corridor Acoustical Tile Repair Allowance	$10,000		
		5.2.1 Original CEB Breaker Panel Replacement	$7,000		
		5.2.1 Suite Breaker Panel Replacement	$10,000		
		5.2.1 Original Fused Disconnect Switch Replacement	$9,000		
		5.2.2 Interior Light Replacement Allowance	$7,000		
		5.3.1 CO Sensor Replacement Allowance	$8,000		
		5.3.4 Pool Mechanical System Repair Allowance	$15,000		
				$829,000	$849,725
49	2022	5.1.12 Acrylic Coating Replacement (Mechanical Penthouse)	$25,000		
		5.1.15 Common Area Man Door Replacement Allowance	$10,000		
		5.1.15 Unit Suite Door Replacement Allowance	$12,000		
		5.1.17 Corridor Wallpaper Replacement	$103,000		
		5.1.17 Corridor Carpet Replacement	$60,000		
		5.1.17 Corridor Acoustical Tile Repair Allowance	$10,000		
		5.2.1 Original CEB Breaker Panel Replacement	$7,000		
		5.2.1 Suite Breaker Panel Replacement	$10,000		
		5.2.1 Original Fused Disconnect Switch Replacement	$9,000		
		5.2.2 Interior Light Replacement Allowance	$7,000		
		5.3.2 Heating Zone Vale and Thermostat Repair Allowance	$10,000		
				$263,000	$276,314

Notes:
1) Estimates for expenditures include HST and, where applicable, engineering fees.
2) Inflation assumed to be at an average of 2.5 % over the time frame examined above.

CCC 34 : Annual Major Repair & Replacement Work, Fiscal Years 2020 to 2049

Year		Description of Work	Cost	Yearly Total	Inflated Yearly Total
50	2023	5.1.1 Underground Services Repair Allowance (major)	$30,000		
		5.1.3 Asphalt Laneway Resurfacing	$60,000		
		5.1.5 Concrete Curb Repair Allowance	$7,000		
		5.1.17 Corridor Wallpaper Replacement	$103,000		
		5.1.17 Corridor Carpet Replacement	$60,000		
		5.1.17 Corridor Acoustical Tile Repair Allowance	$10,000		
		5.2.1 Original CEB Breaker Panel Replacement	$7,000		
		5.2.1 Suite Breaker Panel Replacement	$10,000		
		5.2.1 Original Fused Disconnect Switch Replacement	$9,000		
		5.2.2 Interior Light Replacement Allowance	$7,000		
		5.3.2 Make-up Air Loop Pump Replacement	$6,000		
		5.3.7 Sprinkler Head Replacement Allowance	$160,000		
		Reserve Fund Study Update without Site Visit	$3,500		
				$472,500	$508,831
51	2024	5.1.1 Underground Services Repair Allowance (minor)	$6,000		
		5.1.7 Property Chain Link Fence Replacement	$15,000		
		5.1.17 Corridor Repainting	$45,000		
		5.1.17 Corridor Wallpaper Replacement	$103,000		
		5.1.17 Corridor Carpet Replacement	$60,000		
		5.1.17 Corridor Acoustical Tile Repair Allowance	$10,000		
		5.1.18 Stairwell Repainting Allowance	$30,000		
		5.2.1 Medium Voltage Breaker Retrofit	$110,000		
		5.2.1 Original CEB Breaker Panel Replacement	$7,000		
		5.2.1 Suite Breaker Panel Replacement	$10,000		
		5.2.1 Original Fused Disconnect Switch Replacement	$9,000		
		5.2.2 Interior Light Replacement Allowance	$7,000		
		5.3.3 Domestic Hot Water Recirculation Pumps	$3,000		
		5.3.3 Domestic Hoter Water Storage Tanks	$36,000		
		5.3.3 Domestic Cold Water Expansion Tank	$7,000		
				$458,000	$505,546

Notes:
1) Estimates for expenditures include HST and, where applicable, engineering fees.
2) Inflation assumed to be at an average of 2.5 % over the time frame examined above.

CCC 34 : Annual Major Repair & Replacement Work, Fiscal Years 2020 to 2049

Year		Description of Work	Cost	Yearly Total	Inflated Yearly Total
52	2025	5.1.2 Intermediate Slab Membrane Replacement	$400,000		
		5.1.6 Tree Removal Allowance	$10,000		
		5.1.18 Common Room Interior Finishes Allowance	$25,000		
		5.1.18 Common Room Furniture Allowance	$15,000		
		5.2.1 Suite Breaker Panel Replacement	$10,000		
		5.2.1 Original Fused Disconnect Switch Replacement	$9,000		
		5.2.2 Parking Garage Light Replacement Allowance	$25,000		
		5.2.2 Exterior Light Fixture Replacement Allowance	$5,000		
		5.2.3 Fire Alarm Sensor Replacement Allowance	$4,000		
		5.2.6 CCTV Camera Replacement Allowance	$8,000		
		5.3.1 Parking Garage Exhaust Fan Replacement	$6,000		
		5.3.5 Sump Pump Repair Allowance	$10,000		
		5.3.6 TSSA Elevator Contingency Allowance	$4,000		
				$531,000	$600,778
53	2026	5.1.10 Breezeway & Amenities Building Masonry Reconstruction	$410,000		
		5.1.11 Mechanical Penthouse Aluminum Siding Replacement	$50,000		
		5.1.14 Breezeway & Amenities Building Window Replacement	$140,000		
		5.2.1 Suite Breaker Panel Replacement	$10,000		
		5.2.1 Original Fused Disconnect Switch Replacement	$9,000		
		5.3.1 CO Sensor Replacement Allowance	$8,000		
		Reserve Fund Study Update with Site Visit	$7,000		
				$634,000	$735,246
54	2027	5.1.3 Garage Asphalt Pavement-on-Grade Replacement	$420,000		
		5.1.18 Exercise Room Major Modifications Allowance	$25,000		
		5.2.1 Suite Breaker Panel Replacement	$10,000		
		5.2.1 Original Fused Disconnect Switch Replacement	$9,000		
		5.3.2 Heating Zone Vale and Thermostat Repair Allowance	$10,000		
				$474,000	$563,437

Notes:
1) Estimates for expenditures include HST and, where applicable, engineering fees.
2) Inflation assumed to be at an average of 2.5 % over the time frame examined above.

CCC 34 : Annual Major Repair & Replacement Work, Fiscal Years 2020 to 2049

Year		Description of Work	Cost	Yearly Total	Inflated Yearly Total
55	2028	5.1.13 Caulking Replacement at Windows, Doors & Masonry Joints	$160,000		
		5.2.1 Suite Breaker Panel Replacement	$10,000		
		5.2.1 Original Fused Disconnect Switch Replacement	$9,000		
		5.2.6 CCTV Monitoring Station Replacement	$10,000		
		5.3.2 Party Room Air Conditioner Unit Replacement	$10,000		
		5.3.2 Heating Loop Expansion Tank Replacement	$18,000		
				$217,000	$264,393
56	2029	5.1.1 Underground Services Repair Allowance (minor)	$6,000		
		5.1.2 Parking Garage Column-on-Grade Repair Allowance	$50,000		
		5.2.1 Suite Breaker Panel Replacement	$10,000		
		5.2.1 Original Fused Disconnect Switch Replacement	$9,000		
		5.3.6 Elevator Control Modernization	$615,000		
		5.3.6 Elevator Cab Interior Modernization	$62,000		
		Reserve Fund Study Update without Site Visit	$3,500		
				$755,500	$943,516
57	2030	5.1.10 Masonry Veneer Repair Allowance	$75,000		
		5.1.14 Patio Door Replacement Allowance	$180,000		
		5.1.16 Balcony Canopy Roof Replacement (Partial)	$50,000		
		5.1.19 Swimming Pool Repair Allowance	$15,000		
		5.1.19 Sauna Replacement	$10,000		
		5.2.3 Fire Alarm Sensor Replacement Allowance	$4,000		
		5.2.6 CCTV Camera Replacement Allowance	$8,000		
		5.3.1 Exhaust Fan Replacement Allowance	$3,000		
		5.3.3 Amenities Building Domestic Hot Water Storage Tank Replaceme	$21,000		
		5.3.5 Sump Pump Repair Allowance	$10,000		
		5.3.6 TSSA Elevator Contingency Allowance	$4,000		
				$380,000	$486,432

Notes:
1) Estimates for expenditures include HST and, where applicable, engineering fees.
2) Inflation assumed to be at an average of 2.5 % over the time frame examined above.

CCC 34 : Annual Major Repair & Replacement Work, Fiscal Years 2020 to 2049

Year		Description of Work	Cost	Yearly Total	Inflated Yearly Total
58	2031	5.1.14 Patio Door Replacement Allowance	$180,000		
		5.2.3 Fire Alarm Partial Rewiring	$220,000		
		5.3.1 CO Sensor Replacement Allowance	$8,000		
		5.3.4 Pool Mechanical System Repair Allowance	$15,000		
		5.3.7 Dry Pipe Air Compressor Replacemetn	$4,000		
				$427,000	$560,261
59	2032	5.1.14 Patio Door Replacement Allowance	$180,000		
		5.1.15 Common Area Man Door Replacement Allowance	$10,000		
		5.1.15 Unit Suite Door Replacement Allowance	$12,000		
		5.1.16 Amenities Building Roof Replacement	$80,000		
		5.3.2 Heating Zone Vale and Thermostat Repair Allowance	$10,000		
		Reserve Fund Study Update with Site Visit	$7,000		
				$299,000	$402,122
60	2033	5.1.2 Intermediate Slab Membrane Repair Allowance	$30,000		
		5.1.7 Aluminum Guard Rail Fencing Replacement	$50,000		
		5.1.14 Patio Door Replacement Allowance	$180,000		
		5.1.15 Garage Door Replacement	$20,000		
		5.3.2 Hydronic Loop Pump Variable Frequency Drive Replacement	$6,000		
				$286,000	$394,254
61	2034	5.1.1 Underground Services Repair Allowance (minor)	$6,000		
		5.1.9 Balcony Structure Repair Allowance	$20,000		
		5.1.9 Balcony Membrane Replacement	$150,000		
		5.1.9 Balcony Railing Replacement	$115,000		
		5.1.14 Patio Door Replacement Allowance	$180,000		
		5.2.5 Garage Ramp Snow Melt System Replacement	$215,000		
		5.2.5 Garage Electric Heat Trace System Replacement	$300,000		
		5.2.6 Key Fob System Replacement	$25,000		
		5.3.1 Make-up Air Unit Replacement	$75,000		
		5.3.3 Domestic Cold Water Booster Pump Replacement	$75,000		
		5.3.3 Domestic Hot Water Recirculation Pump Replacement	$3,000		
		5.3.3 Domestic Hoter Water Storage Tanks	$36,000		
		5.3.3 Domestic Cold Water Expansion Tank	$7,000		
				$1,207,000	$1,705,459

Notes:
1) Estimates for expenditures include HST and, where applicable, engineering fees.
2) Inflation assumed to be at an average of 2.5 % over the time frame examined above.

CCC 34 : Annual Major Repair & Replacement Work, Fiscal Years 2020 to 2049

Year		Description of Work	Cost	Yearly Total	Inflated Yearly Total
62	2035	5.1.3 Asphalt Walkway Replacement	$20,000		
		5.1.6 Tree Removal Allowance	$10,000		
		5.1.6 Tennis Court Refinishing Allowance	$10,000		
		5.1.9 Balcony Structure Repair Allowance	$20,000		
		5.1.9 Balcony Membrane Replacement	$150,000		
		5.1.9 Balcony Railing Replacement	$115,000		
		5.1.17 Corridor Carpet Replacement	$60,000		
		5.1.18 Common Room Interior Finishes Allowance	$25,000		
		5.1.18 Common Room Furniture Allowance	$15,000		
		5.2.1 Stablock Breaker Panel Replacement	$18,000		
		5.2.1 Mid 1990 Fused Disconnect Switch Replacement	$20,000		
		5.2.2 Exterior Light Fixture Replacement Allowance	$5,000		
		5.2.3 Fire Alarm Sensor Replacement Allowance	$4,000		
		5.2.6 CCTV Camera Replacement Allowance	$8,000		
		5.3.1 Parking Garage Exhaust Fan Replacement	$6,000		
		5.3.2 Direct Expansion Air Conditioner Unit Replacement	$20,000		
		5.3.2 Elevator Machine Room Air Conditioner Unit Replacement	$5,000		
		5.3.5 Sump Pump Repair Allowance	$10,000		
		5.3.6 TSSA Elevator Contingency Allowance	$4,000		
		Reserve Fund Study Update without Site Visit	$3,500		
				$528,500	$765,426
63	2036	5.1.17 Corridor Carpet Replacement	$60,000		
		5.3.1 CO Sensor Replacement Allowance	$8,000		
		5.3.2 Heating Boiler Replacement	$340,000		
		5.3.2 Amenities Building Heating Boiler	$50,000		
		5.3.3 Domestic Hot water Heater Replacement	$200,000		
				$658,000	$976,805

Notes:
1) Estimates for expenditures include HST and, where applicable, engineering fees.
2) Inflation assumed to be at an average of 2.5 % over the time frame examined above.

CCC 34 : Annual Major Repair & Replacement Work, Fiscal Years 2020 to 2049

Year		Description of Work	Cost	Yearly Total	Inflated Yearly Total
64	2037	5.1.2 West Landscaping Podium Membrane Replacement	$700,000		
		5.1.2 West Asphalt Podium Membrane Replacement	$400,000		
		5.1.5 Concrete Curb Replacement	$30,000		
		5.1.17 Corridor Carpet Replacement	$60,000		
		5.3.2 Heating Zone Vale and Thermostat Repair Allowance	$10,000		
				$1,200,000	$1,825,942
65	2038	5.1.12 Shear Wall and Balcony Soffit Coating Replacement	$100,000		
		5.1.17 Corridor Carpet Replacement	$60,000		
		5.2.4 Emergency Power Generator Replacement	$250,000		
		5.2.4 Emergency Transfer Switch Replacement	$20,000		
		5.3.2 Heating Loop Expansion Tank Replacement	$18,000		
		Reserve Fund Study Update with Site Visit	$7,000		
				$455,000	$709,645
66	2039	5.1.1 Underground Services Repair Allowance (minor)	$6,000		
		5.1.12 Shear Wall and Balcony Soffit Coating Replacement	$100,000		
		5.1.17 Corridor Repainting	$45,000		
		5.1.17 Corridor Carpet Replacement	$60,000		
		5.1.18 Stairwell Repainting Allowance	$30,000		
		5.2.6 Main Entrance Vesitbule Door Entry System Replacement	$5,000		
				$246,000	$393,268
67	2040	5.1.12 Shear Wall and Balcony Soffit Coating Replacement	$100,000		
		5.1.13 Caulking Replacement at Windows, Doors & Masonry Joints	$160,000		
		5.1.17 Corridor Carpet Replacement	$60,000		
		5.1.19 Swimming Pool Repair Allowance	$15,000		
		5.2.3 Fire Alarm Sensor Replacement Allowance	$4,000		
		5.2.6 Back Entrance Door Entry System Replacement	$5,000		
		5.2.6 CCTV Camera Replacement Allowance	$8,000		
		5.3.1 Exhaust Fan Replacement Allowance	$3,000		
		5.3.3 Amenities Building Dom. Hot Water Storage Tank Replacement	$21,000		
		5.3.4 Natatorium Dehumidification Unit Replacement	$100,000		
		5.3.5 Sump Pump Repair Allowance	$10,000		
		5.3.6 TSSA Elevator Contingency Allowance	$4,000		

Notes:
1) Estimates for expenditures include HST and, where applicable, engineering fees.
2) Inflation assumed to be at an average of 2.5 % over the time frame examined above.

CCC 34 : Annual Major Repair & Replacement Work, Fiscal Years 2020 to 2049

Year		Description of Work	Cost	Yearly Total	Inflated Yearly Total
				$490,000	$802,922
68	2041	5.3.1 CO Sensor Replacement Allowance	$8,000		
		5.3.2 Glycol Make-up Unit	$5,000		
		5.3.4 Pool Mechanical System Repair Allowance	$15,000		
		Reserve Fund Study Update without Site Visit	$3,500		
				$31,500	$52,907
69	2042	5.1.10 Masonry Veneer Repair Allowance	$75,000		
		5.1.15 Common Area Man Door Replacement Allowance	$10,000		
		5.1.15 Unit Suite Door Replacement Allowance	$12,000		
		5.1.16 Balcony Canopy Roof Replacement (Partial)	$35,000		
		5.3.2 Heating Zone Vale and Thermostat Repair Allowance	$10,000		
				$142,000	$244,463
70	2043	5.1.1 Underground Services Repair Allowance (major)	$30,000		
		5.1.2 Asphalt Laneway Reconstruction	$120,000		
		5.3.1 Laundry Ventilation Repair Allowance	$42,000		
		5.3.2 Hydronic Loop Pump Replacement	$20,000		
		5.3.2 Party Room Air Conditioner Unit Replacement	$10,000		
		5.3.2 Supply and Return Hydronic Piping and Risers Replacement	$200,000		
				$422,000	$744,666
71	2044	5.1.1 Underground Services Repair Allowance (minor)	$6,000		
		5.3.3 Domestic Hot Water Recirculation Pump Replacement	$3,000		
		5.3.3 Domestic Hoter Water Storage Tanks	$36,000		
		5.3.3 Domestic Cold Water Expansion Tank	$7,000		
		5.3.3 Domestic Cold & Hot Water Distribution & Riser Replacement	$357,500		
		5.3.3 Sanitary Storm Pipe and Stack Replacement	$357,500		
		Reserve Fund Study Update with Site Visit	$7,000		
				$774,000	$1,399,954
72	2045	5.1.2 Parking Garage Column-on-Grade Repair Allowance	$50,000		
		5.1.2 Intermediate Slab Membrane Replacement	$400,000		

Notes:
1) Estimates for expenditures include HST and, where applicable, engineering fees.
2) Inflation assumed to be at an average of 2.5 % over the time frame examined above.

CCC 34 : Annual Major Repair & Replacement Work, Fiscal Years 2020 to 2049

Year		Description of Work	Cost	Yearly Total	Inflated Yearly Total
		5.1.6 Tree Removal Allowance	$10,000		
		5.1.18 Common Room Interior Finishes Allowance	$25,000		
		5.1.18 Common Room Furniture Allowance	$15,000		
		5.2.2 Exterior Light Fixture Replacement Allowance	$5,000		
		5.2.3 Fire Alarm Sensor Replacement Allowance	$4,000		
		5.2.5 Parking Garage Electric Unit Heater Replacement	$6,000		
		5.2.6 CCTV Camera Replacement Allowance	$8,000		
		5.3.1 Parking Garage Exhaust Fan Replacement	$6,000		
		5.3.5 Sump Pump Repair Allowance	$10,000		
		5.3.6 TSSA Elevator Contingency Allowance	$4,000		
				$543,000	$1,006,692
73	2046	5.1.16 Main Roof Replacement	$385,000		
		5.1.16 Breezeway Roof Replacement	$30,000		
		5.1.16 Canopy Roof Replacement	$95,000		
		5.3.7 Dry Pipe Air Compressor Replacemetn	$4,000		
				$514,000	$976,750
74	2047	5.3.2 Heating Zone Vale and Thermostat Repair Allowance	$10,000		
		Reserve Fund Study Update without Site Visit	$3,500		
				$13,500	$26,295
75	2048	5.3.2 Hydronic Loop Pump Variable Frequency Drive Replacement	$6,000		
		5.3.2 Heating Loop Expansion Tank Replacement	$18,000		
		5.3.2 Heat Exchanger Replacement	$60,000		
		5.3.2 Make-up Air Loop Pump Replacement	$6,000		
				$90,000	$179,685
76	2049	5.1.1 Underground Services Repair Allowance (minor)	$6,000		
		5.3.3 Domestic Cold & Hot Water Distribution & Riser Replacement	$357,500		
		5.3.3 Sanitary Storm Pipe and Stack Replacement	$357,500		
				$721,000	$1,475,460

Notes:
1) Estimates for expenditures include HST and, where applicable, engineering fees.
2) Inflation assumed to be at an average of 2.5 % over the time frame examined above.

APPENDIX D:
NOTICE OF FUTURE FUNDING OF RESERVE FUND

NOTICE OF FUTURE FUNDING OF THE RESERVE FUND

(under *subsection 94 (9)* of the *Condominium Act, 1998*)

TO: All Owners of Carleton Condominium Corporation No. 34

The Board has received and reviewed a Class 2 - Update with Site Inspection Reserve Fund Study dated February 27, 2020, prepared by Keller Engineering, and has proposed a plan for the future funding of the reserve fund that the Board of Directors 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 the average contribution per unit per month to the reserve fund is $141.63. Based on the proposed funding plan, the average increase in contribution per unit per month will be $3.54 in fiscal year 2020, $3.63 in fiscal year 2021, and $3.72 in fiscal year 2022.

The proposed funding plan, recommended by Keller Engineering, will be implemented on or before January 1, 2020.

Dated this _____ day of _____, 2020.

CARLETON CONDOMINIUM CORPORATION NO. 34

_____
, Director

_____
, Director

SUMMARY OF RESERVE FUND STUDY

The following is a summary of the Class 2 - Update with Site Inspection dated February 27, 2020, prepared by Keller Engineering for Carleton Condominium Corporation No. 34 (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 reserve fund and the amount of contributions collected by the corporation 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, exclusive of interest earned on the reserve fund. The recommended annual contribution for 2020 is $479,073, based on the estimated expenditures and the following:

Opening Balance of the Reserve Fund:	$ 2,638,004
Minimum Reserve Fund Balance during the projected period:	$ 415,883
Assumed Annual Inflation Rate for Reserve Fund Expenditures:	2.5%
Assumed Annual Interest Rate for interest earned on the Reserve Fund:	2.5%

The Reserve Fund Study can be examined by making a written request to the Board of Directors of Carleton Condominium Corporation No. 34.

CASH FLOW TABLE

Opening Balance of the Reserve Fund:	$ 2,638,004
Current Annual Contributions:	$ 467,388
Minimum Reserve Fund Balance (as indicated in this table):	$ 415,883
Assumed Annual Inflation Rate for Reserve Fund Expenditures:	2.5%
Assumed Annual Interest Rate for interest on the Reserve Fund:	2.5%

Fiscal Year Ending	Opening Balance	Recommended Annual Total Contribution	Estimated Inflation Adjusted Expenditures	Estimated Interest Earned	Percentage Increase (Decrease) in Recommended Annual Total Contribution	Closing Balance
2020	$2,638,004	$479,073	$1,431,000	$36,164	2.5%	$1,722,240
2021	$1,722,240	$491,050	$849,725	$27,951	2.5%	$1,391,516
2022	$1,391,516	$503,326	$276,314	$34,172	2.5%	$1,652,699
2023	$1,652,699	$515,909	$501,293	$35,234	2.5%	$1,702,549
2024	$1,702,549	$528,807	$505,546	$36,535	2.5%	$1,762,345
2025	$1,762,345	$542,027	$608,698	$35,617	2.5%	$1,731,290
2026	$1,731,290	$555,577	$743,363	$31,643	2.5%	$1,575,147
2027	$1,575,147	$569,467	$542,041	$32,946	2.5%	$1,635,519
2028	$1,635,519	$583,704	$264,393	$41,574	2.5%	$1,996,404
2029	$1,996,404	$598,296	$943,516	$33,801	2.5%	$1,684,985
2030	$1,684,985	$613,254	$486,432	$37,629	2.5%	$1,849,436
2031	$1,849,436	$628,585	$363,448	$45,007	2.5%	$2,159,580
2032	$2,159,580	$644,300	$402,122	$51,990	2.5%	$2,453,748
2033	$2,453,748	$660,407	$394,254	$59,742	2.5%	$2,779,643
2034	$2,779,643	$676,917	$1,705,459	$35,316	2.5%	$1,786,417
2035	$1,786,417	$693,840	$765,426	$34,198	2.5%	$1,749,029
2036	$1,749,029	$711,186	$976,805	$28,195	2.5%	$1,511,606
2037	$1,511,606	$728,966	$1,825,942	$1,254	2.5%	$415,883
2038	$415,883	$747,190	$709,645	$1,996	2.5%	$455,425
2039	$455,425	$765,870	$393,268	$11,127	2.5%	$839,154
2040	$839,154	$785,016	$704,605	$13,176	2.5%	$932,741
2041	$932,741	$804,642	$52,907	$32,054	2.5%	$1,716,530
2042	$1,716,530	$824,758	$244,463	$47,111	2.5%	$2,343,936
2043	$2,343,936	$845,377	$762,312	$50,108	2.5%	$2,477,109
2044	$2,477,109	$866,511	$1,399,954	$37,760	2.5%	$1,981,426
2045	$1,981,426	$888,174	$1,006,692	$35,471	2.5%	$1,898,379
2046	$1,898,379	$910,378	$1,010,956	$33,565	2.5%	$1,831,367
2047	$1,831,367	$933,138	$26,295	$56,791	2.5%	$2,795,001
2048	$2,795,001	$956,466	$179,685	$77,339	2.5%	$3,649,121
2049	$3,649,121	$980,378	$1,526,620	$65,317	2.5%	$3,168,196

SUMMARY OF PROPOSED PLAN FOR FUTURE FUNDING OF THE RESERVE FUND

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

The Board of Carleton Condominium Corporation No. 34 has reviewed the Class 2 - Update with Site Inspection dated February 27, 2020 prepared by Keller 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 assests 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.

The annual contribution recommended under the proposed funding plan for fiscal year 2020 is $479,073, which represents an increase of 2.5% over the amount already budgeted.

The Proposed Plan for Future Funding of the Reserve Fund can be examined by making a written request to the Board of Directors of Carleton Condominium Corporation No. 34.

CONTRIBUTION TABLE

Fiscal Year Ending	A Annual Contribution*	% Increase Over Previous Year	B Other Contribution (e.g. special assessment, loan)	A + B Total Contribution Each Year to Reserve Fund
2020	$479,073	2.5%	$0	$479,073
2021	$491,050	2.5%	$0	$491,050
2022	$503,326	2.5%	$0	$503,326
2023	$515,909	2.5%	$0	$515,909
2024	$528,807	2.5%	$0	$528,807
2025	$542,027	2.5%	$0	$542,027
2026	$555,577	2.5%	$0	$555,577
2027	$569,467	2.5%	$0	$569,467
2028	$583,704	2.5%	$0	$583,704
2029	$598,296	2.5%	$0	$598,296
2030	$613,254	2.5%	$0	$613,254
2031	$628,585	2.5%	$0	$628,585
2032	$644,300	2.5%	$0	$644,300
2033	$660,407	2.5%	$0	$660,407
2034	$676,917	2.5%	$0	$676,917
2035	$693,840	2.5%	$0	$693,840
2036	$711,186	2.5%	$0	$711,186
2037	$728,966	2.5%	$0	$728,966
2038	$747,190	2.5%	$0	$747,190
2039	$765,870	2.5%	$0	$765,870
2040	$785,016	2.5%	$0	$785,016
2041	$804,642	2.5%	$0	$804,642
2042	$824,758	2.5%	$0	$824,758
2043	$845,377	2.5%	$0	$845,377
2044	$866,511	2.5%	$0	$866,511
2045	$888,174	2.5%	$0	$888,174
2046	$910,378	2.5%	$0	$910,378
2047	$933,138	2.5%	$0	$933,138
2048	$956,466	2.5%	$0	$956,466
2049	$980,378	2.5%	$0	$980,378

* The term 'annual contribution' means the amount to be 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 in the following respects:

NIL