

KELLER ENGINEERING



RESERVE FUND STUDY UPDATE WITHOUT SITE VISIT
CARLETON CONDOMINIUM CORPORATION No. 145,
OTTAWA, ONTARIO



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STUDY SUMMARY

Based on our review of the previous Reserve Fund Study with Site Visit produced by Keller Engineering and dated October 10, 2018, a fiscal analysis and best current estimate, 2 separate funding options have been provided to the Board of Carleton Condominium Corporation No. 145.

Option 1 has assumed full replacement of the sanitary piping will be required within the next 6 years. Based on this scope of work, it was recommended the contributions increase to **\$725,000** in fiscal year **2022/23 and all years thereafter** are budgeted at **2.5%** per year, which is our assumed yearly construction cost increase. In addition, a special assessment of **\$500,000** is required in fiscal year **2022/23** and **\$2,350,000** is required in fiscal year **2023/24** and **2024/25**.

Option 2 has assumed lining of the sanitary piping will be required within the next 3 years. Based on this scope of work, it was recommended the contributions increase to **\$725,000** in fiscal year **2022/23 and all years thereafter** are budgeted at **2.5%** per year, which is our assumed yearly construction cost increase. In addition, special assessments of **\$500,000** are required in fiscal years **2022/23, 2023/24** and **2024/25**.

In our opinion, these funding plans 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.

The following revisions have been made to the Reserve Fund Study with Site Visit, based on information provided by the Board Directors:

- An investigation into the water infiltration within the podium planters has been scheduled in fiscal year 2022/23
- The asphalt repair allowance scheduled in 2022/23 has been replaced with a full replacement
- The replacement of the paver walkways has been increased above inflation
- An allowance for landscaping was included in fiscal year 2021/22
- The allowance for repairs to the cast-in-place retaining walls scheduled in fiscal year 2021/22 will not be expensed
- The allowance for balcony structure repairs scheduled in 2036/37 has been delayed 1 year
- The repairs to the concrete balconies scheduled in 2020/21 have been included in the ongoing masonry repair project
- The allowance for the replacement of the balcony traffic bearing membrane scheduled in 2036/37 has been delayed 1 year
- The replacement of the of the balcony traffic bearing membrane scheduled in 2020/21 has been included in the ongoing masonry repair project
- The replacement of the balcony metal railings scheduled in 2036/37 has been delayed 1 year
- A major masonry veneer repair project commenced in 2020 and is scheduled to be complete in 2023/24
- The masonry repair allowances originally scheduled in 2029/30 has been delayed to fiscal year 2034/35 and every 10 years thereafter
- The exterior painting allowance has been increased to \$350,000 to reflect the 2020 tender cost
- The replacement of the caulking has been adjusted to reflect the ongoing work and the window replacement project
- The replacement of the windows has been delayed 1 year to 2028/29 through 2031/32
- The replacement of the wallpaper has been delayed to 2025/26 and every 15 years
- The replacement of the carpet has been delayed to 2025/26 and every 15 years thereafter
- The allowance for repairs to the stipple ceiling has been delayed to 2025/26 and every 10 years thereafter
- A portion of the lobby refinishing allowance originally scheduled in 2028/29 has been moved forward to 2022/23
- The allowance for lobby furniture replacement originally scheduled in 2026/27 has been moved forward to 2022/23
- The replacement of the main disconnect switchgear has been delayed to 2023/24
- The replacement of the 1976 distribution breaker panels has been delayed to 2023/24

- The replacement of the fused disconnect switches has been delayed to 2023/24
- The replacement of the dry core transformers has been delayed to 2023/24
- The replacement of the fire alarm system panel and wiring has been delayed to 2023/24
- The replacement of the generator has been increased above inflation
- The replacement of the emergency transfer switch has been increased above inflation
- The replacement of the garage ramp snow melt system has been delayed to 2033/34
- The replacement of the entrance steps snow melt system has been delayed to 2033/34
- The replacement of the make-up air unit has been increased above inflation
- The replacement of the chiller has been delayed to 2032/33
- The replacement of the chilled water loop pumps has been delayed 2 years to 2032/33
- The replacement of the cooling tower has been delayed to 2032/33
- The replacement of the fan coils within the units has been added to the study in 2041/42 through 2045/46
- The replacement of the domestic cold and hot water distribution and risers has been adjusted to reflect that the work will not longer be completed in conjunction with the sanitary piping replacement
- The replacement of the garage sanitary piping has been scheduled in 2022/23
- Two options have been provided for the major repair/replacement of the sanitary and storm pipes and stacks
 - Option 1 – Full replacement of the system in fiscal year 2023/24 through 2027/28
 - Option 2 – Lining of the system in 2023/24 through 2024/25 and full replacement beyond the scope of the study



Steve Christison, P.Eng.



1.0 INTRODUCTION

1.1 Scope

The Board of Directors of Carleton Condominium Corporation No. 145 (CCC 145) commissioned Keller Engineering to prepare the following Reserve Fund Study Update. The work included the review of the current Comprehensive Reserve Fund Study and make adjustments based on input from the Board of Directors and/or the Property Management on the work carried out and the performance of the common elements over the past few years.

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 Update without Site Visit as outlined in Part IV of the Ontario Regulation 48/01, s. 28.

1.2 Description of Property

Carleton Condominium Corporation No. 145 is a 47-year-old, 13-storey high-rise containing 141 residential units. The property known as Park Square is located at 151 Bay Street, in Ottawa, Ontario.

1.3 References

Reference Materials were provided by Ms. Josée Deslongchamps, of DES Services Inc., Property Manager for CCC 145.

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

- Previous Reserve Fund Studies
 - Reserve Fund Study Update with Site Visit; dated May 31, 2011; Keller Engineering
 - Reserve Fund Study Update with Site Visit; dated Nov 15, 2013; Keller Engineering
 - Reserve Fund Study Update without Site Visit; dated Dec 31, 2015; Keller Engineering
 - Reserve Fund Study Update with Site Visit; dated Oct 10, 2018; Keller Engineering
- Auditor's Statements
 - Fiscal Year 2019/20; dated September 15, 2020
 - Fiscal Year 2016/17; dated September 28, 2017
- Declaration; dated May 31, 1978

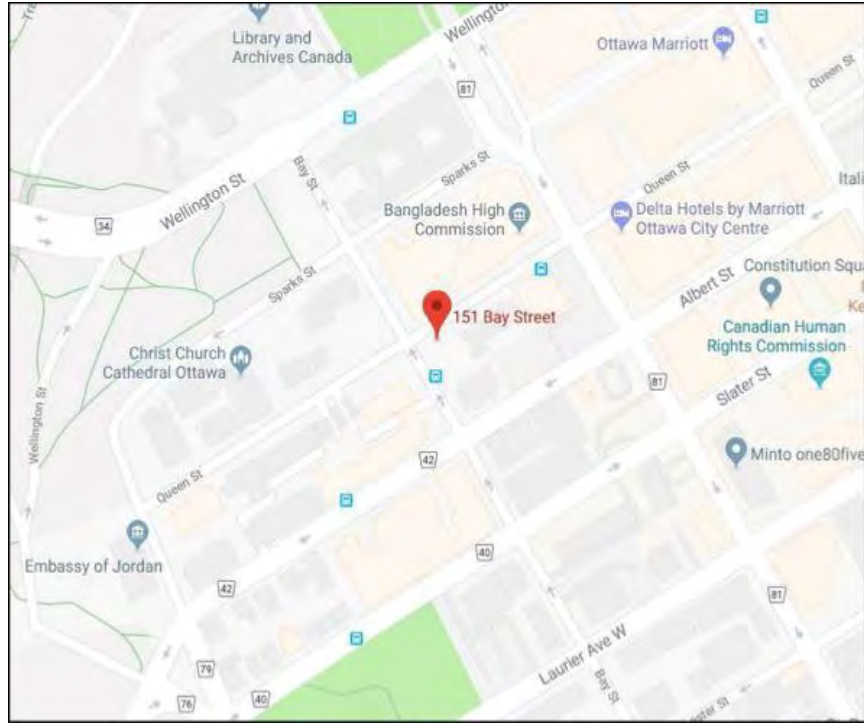


Figure 2: Location of CCC 145

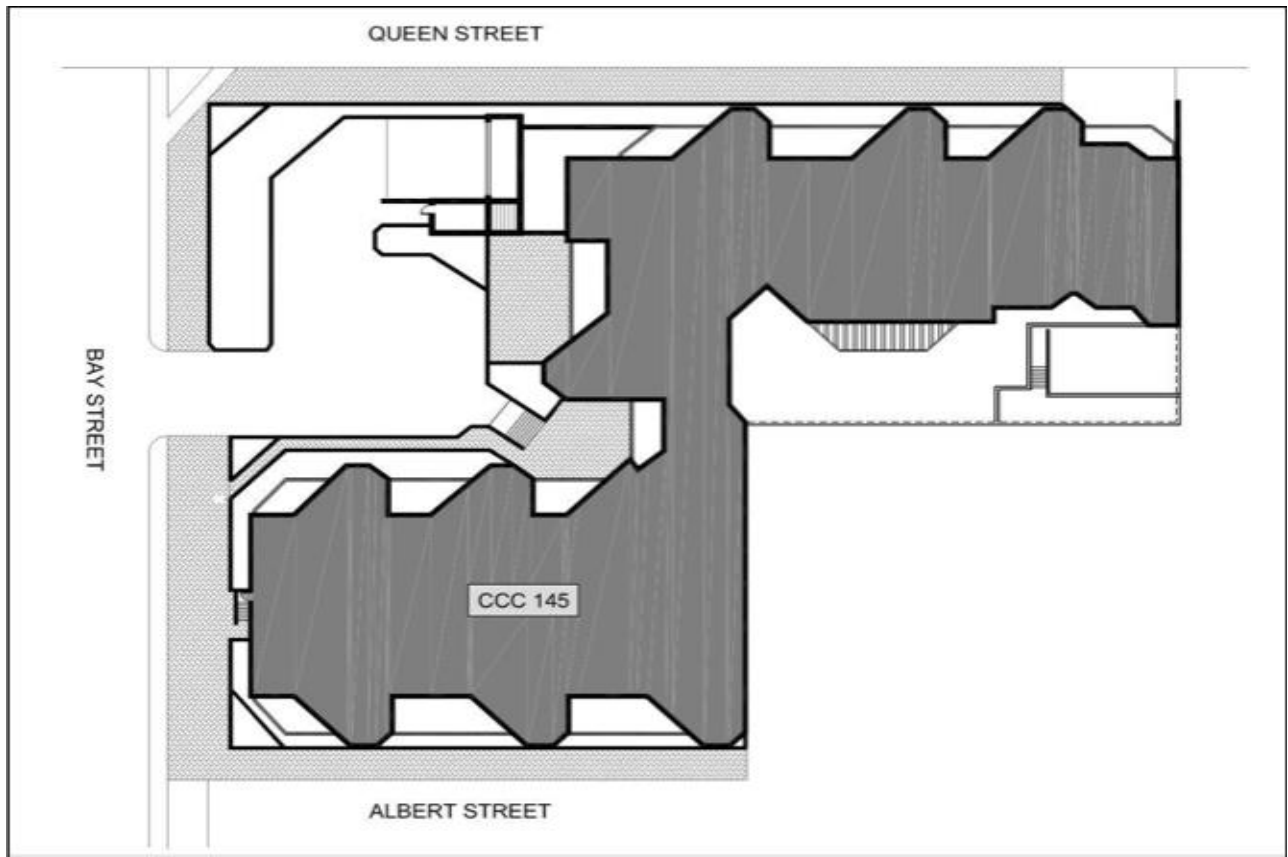


Figure 1: Key Plan

2.0 GENERAL INFORMATION

2.1 Determination of Repair/Replacement Costs

The costs and scheduling for the major repair/replacement work involving the common elements to the Corporation have been taken directly from the Comprehensive Reserve Fund Study unless revisions have been requested or are required as part of this update due to poor performance, increased cost, or unanticipated work.

COST INCREASES

Keller Engineering has reviewed each of the capital expenditures for the repair and replacement of the common building components, and have made adjustments in one of the following manners:

- i) The capital expenditures have been increased by inflation to approximate the cost of the work in current dollars. The inflation rates for the past three years have been taken directly from the data posted by Statistics Canada for construction projects in the Ottawa-Gatineau area.
- ii) The capital expenditures have been increased to reflect a market increase factor. Based on our experience over the past few years, the cost of some construction specialties has increased dramatically above the average inflation rate due to unique increases in the cost of materials and labour.

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 would 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

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 apartment buildings 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 for budgeting purposes only and do not constitute a fee proposal for future services.

3.0 ASSUMPTION 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. No on-site or visual assessment of the condition or technical audit of the common elements of the Corporation was carried out as part of this Reserve Fund Study, unless otherwise specified. Meetings by Keller Engineering with the Board of Directors held on site at the Corporation building(s) do not constitute a site or visual inspection of the common elements.

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.

Future cost projections for the repair or replacement of common element items are based on a set inflation rate 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 accurate projection is provided by reviewing the previous year's average of the entire construction industry and extrapolated over the life span of the study.

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

All revisions that have been made to the previous Reserve Fund Study were at the request of the Corporation or its counsel and were solely based on work carried out to date and the advice from industry professionals.

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 to pay for all foreseeable expenditures over the next thirty years.

4.2 Notice of Future Funding (Formerly Form 15)

The Notice of Future Funding of the Reserve Fund is included in Appendix B. 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.

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 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.

No changes have been made to the allowances (except for an inflationary increase) or to the scheduling for the work in this section from the most recent Study.

We recommend the following work be anticipated and funded:

- A. In order to ensure funds are available to perform repairs when required, an allowance of **\$24,300** has been made in fiscal year **2025/26 and every 15 years** thereafter
- B. 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

Underground Services Repair Allowance	
Frequency	Allowance
Cost (Cleaning)	\$24,300
Year(s)	2025/26, 2040/41

5.1.2 Parking Garage

The 5-level split reinforced concrete below grade parking garage is located beneath the condominium with the main entrance accessible from the west corner of the property and the secondary entrance accessible from Queen Street.

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 usually required after 30 years of service.

No changes have been made to the allowances (except for an inflationary increase) or to the scheduling for the work in this section from the most recent Study.

We recommend the following work be anticipated and funded:

- A. In order to ensure funds are available for repairs of the parking garage structure when required, an allowance of **\$60,900** has been made in fiscal year **2023/24 and every 13 years** thereafter, in conjunction with the traffic bearing membrane work

Parking Garage Structure Repair Allowance	
Quantity	Allowance
Cost	\$60,900
Year(s)	2023/24, 2036/37 2049/50

- B. 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 parking garage be performed in the next 5 years, using funds from the operating budget

PODIUM SLAB COVERED WITH LANDSCAPING

The landscaped covered podium is located on the west end of the property and along the side elevations of the building on Queen Street and Albert Street. The podium is protected by a waterproofing membrane and covered with various planters and interlocking pavers. The waterproofing under the landscaping has a typical service life of 20- 35 years.

Several of the podium planters were noted to be leaking. An allowance has been provided to excavate and investigate the planters

No changes have been made to the allowances (except for an inflationary increase) or to the scheduling for the work in this section from the most recent Study.

We recommend the following work be anticipated and funded:

- C. Replacement of the podium waterproofing including all landscaping such as planters and pavers is estimated to cost **\$937,200** and this work has been budgeted in fiscal year **2041/42**
- D. An allowance of **\$60,000** has been provided in fiscal year **2022/23** for an investigation into the planters
- E. 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 be performed in fiscal year 2040/41, using funds from the operating budget

Landscaping Podium Waterproofing	
Qty. (Planters)	540 m ²
Qty. (Pavers)	310 m ²
Cost (Replace)	\$937,200
Year(s)	2041/42

Planter Investigation	
Qty.	Allowance
Cost	\$60,000
Year(s)	2022/23

PODIUM SLAB COVERED WITH ASPHALT

The asphalt covered podium is located on the west end of the property at the main building entrance and is protected by a waterproofing membrane. The waterproofing under the asphalt has a typical service life of 20-25 years.

No changes have been made to the allowances (except for an inflationary increase) or to the scheduling for the work in this section from the most recent Study.

We recommend the following work be anticipated and funded:

- F. Replacement of the podium waterproofing including all asphalt and curbs is estimated to cost **\$219,100** and this work has been budgeted in fiscal year **2032/33**
- G. 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 be performed in fiscal year 2031/32, using funds from the operating budget

Asphalt Podium Waterproofing Replacement	
Qty. (Asphalt)	370 m ²
Cost	\$219,100
Year(s)	2032/33

INTERMEDIATE SLABS

The intermediate suspended slabs on levels 1-2A and part of level 3 are the responsibility of the commercial parking company. The intermediate suspended slabs on level 3A and part of level 3 and 4 are the responsibility of the condominium. The drive lanes and parking areas are protected with an

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.

No changes have been made to the allowances (except for an inflationary increase) or to the scheduling for the work in this section from the most recent Study.

We recommend the following work be anticipated and funded:

- H. Replacement of the traffic bearing membrane at the drive lanes is estimated to cost **\$146,100** and this work has been budgeted in fiscal year **2023/24 and every 13 years** thereafter
- I. Replacement of the traffic bearing membrane at the parking areas is estimated to cost **\$231,200** and this work has been budgeted in fiscal year **2036/37 and every 26 years** thereafter, in conjunction with the drive lane membrane replacement
- J. Minor repairs of the traffic bearing membrane should be performed, as required, using funds from the operating budget

CONCRETE SLAB-ON-GRADE

A concrete slab-on-grade has been installed on levels 4A-5 and part of level 4 of the parking garage. The concrete slab-on-grade will typically last the life of the complex.

No changes have been made to the allowances (except for an inflationary increase) or to the scheduling for the work in this section from the most recent Study.

We recommend the following work be anticipated and funded:

- K. In order to ensure funds are available for repairs when required, an allowance of **\$12,200** has been made in fiscal year **2023/24 and every 13 years** thereafter, in conjunction with the parking garage structure repairs
- L. Minor repairs of the concrete slab-on-grade should be performed, as required, using funds from the operating budget

5.1.3 Asphalt Pavement

ASPHALT ROADWAYS AND PARKING AREAS

Asphalt pavement roadway is located on the podium at the main entrance at the west end of the property. Asphalt pavement has a typical service life of 15-20 years.

At the request of the Board, the repair allowance scheduled in 2022/23 has been rescheduled to a full replacement of the asphalt pavement on the podium level.

No changes have been made to the allowances (except for an inflationary increase) or to the scheduling for the work in this section from the most recent Study.

We recommend the following work be anticipated and funded:

Traffic Bearing Membrane Waterproofing - Drive Lanes Replacement	
Quantity	1,140 m ²
Cost	\$146,100
Year(s)	2023/24, 2036/37 2049/50

Traffic Bearing Membrane Waterproofing – Parking Area Replacement	
Quantity	1,820 m ²
Cost	\$231,200
Year(s)	2036/37

Concrete Slab-on-grade Repair Allowance	
Quantity	Allowance
Cost	\$12,200
Year(s)	2023/24, 2036/37 2049/50

Asphalt Pavement	
Quantity	370 m ²
Cost	\$12,200
Year(s)	2042/43
Cost	See Section 5.1.2
Year(s)	2032/33

Asphalt Pavement Replacement	
Quantity	370 m ²
Cost	\$35,000
Year(s)	2022/23

- A. In order to ensure funds are available for repairs when required, an allowance of **\$12,200** has been made in fiscal year **2042/43** and **every 20 years** thereafter
- B. Full replacement of the asphalt pavement is estimated to cost **\$35,000** and this work is budgeted in **2022/23**
- C. 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
- D. Costs for replacement of the asphalt have been included with the podium waterproofing membrane replacement

5.1.4 Pavers

PRECAST PAVER WALKWAYS

The precast interlocking paver walkways are located at throughout the property. Pavers have a typical service life of 25-30 years.

The replacement of the paver walkways has been increased above inflation to reflect current market value.

No changes have been made to the allowances (except for an inflationary increase) or to the scheduling for the work in this section from the most recent Study.

We recommend the following work be anticipated and funded:

- A. Resetting of the pavers is estimated to cost **\$15,800** and this work has been budgeted in fiscal year **2026/27** and **every 15 years** thereafter, except when full replacement is scheduled
- B. Replacement of the pavers located on grade is estimated to cost **\$45,000** and this work has been budgeted in fiscal year **2041/42**, in conjunction with the podium paver walkways replacement
- C. Costs for replacement of the pavers located on the podium have been included with the podium membrane replacement
- D. Minor resetting of the pavers should be performed as required using funds from the operating budget

Paver Walkways	
Quantity	175 m ²
Cost (Reset)	\$15,800
Year(s)	2026/27
Cost (Replace)	\$45,000
Year(s)	2041/42

Podium Paver Walkways	
Quantity	310 m ²
Cost	See Section 5.1.2
Year(s)	2041/42

5.1.5 Exterior Concrete

HEATED CONCRETE STEPS

The heated cast-in-place concrete steps are located at the main entrance to the building. Concrete steps have a typical service life 25-40 years. Electrical heating systems have been included in Section 5.2.5.

No changes have been made to the allowances (except for an inflationary increase) or to the scheduling for the work in this section from the most recent Study.

We recommend the following work be anticipated and funded:

- A. Costs for replacement of the cast-in-place concrete steps has been included with the electrical heating equipment replacement
- B. Minor concrete repairs of the concrete steps should be performed, as required, using funds from the operating budget

Concrete Steps Replacement	
Quantity	1
Cost	See Section 5.2.5
Year(s)	2032/33

EATED CONCRETE RAMP

The heated concrete ramp provides access to the parking garage from the northeast elevation. The heated concrete ramp will typically last the life of the complex. Electrical heating systems have been included in Section 5.2.5.

No changes have been made to the allowances (except for an inflationary increase) or to the scheduling for the work in this section from the most recent Study.

We recommend the following work be anticipated and funded:

- C. Costs for replacement of the heated concrete ramp has been included with the electrical heating equipment replacement
- D. Minor concrete repairs of the concrete ramp should be performed, as required, using funds from the operating budget

Heated Concrete Ramp	
Quantity	100 m ²
Cost	See Section 5.2.5
Year(s)	2032/33

5.1.6 Landscaping

LANDSCAPED GROUNDS

The landscaped grounds, planters, and trees, surround the condominium complex property and are located on the podium deck. The landscaped grounds will typically last the life of the complex.

According to the information provided, an allowance of \$7,000 will be provided in the current fiscal year.

No changes have been made to the allowances (except for an inflationary increase) or to the scheduling for the work in this section from the most recent Study.

We recommend the following work be anticipated and funded:

- A. **\$7,000** has been budgeted in the **current fiscal year** on landscaping repairs
- B. In order to ensure funds are available to perform general landscaping when required, an allowance of **\$12,200** has been made in fiscal year **2025/26 and every 10 years** thereafter
- C. Costs of the replacement of the landscaping on the podium has been included with the replacement of the podium membrane
- D. Minor repairs of the landscaping should be performed as required using funds from the operating budget

Landscaping Allowance	
Quantity	Allowance
Cost	\$7,000
Year(s)	2021/22
Cost	\$12,200
Year(s)	2025/26, 2035/36 2045/46

Podium Landscaping Reinstatement	
Quantity	540 m ²
Cost	See Section 5.1.2
Year(s)	2041/42

5.1.7 Retaining Walls

CAST-IN-PLACE CONCRETE RETAINING WALLS

The cast-in-place concrete retaining walls clad with brick veneer surround the property. The cast-in-place concrete retaining walls will typically last the life of the complex.

The allowance for cast-in-place concrete retaining wall repairs scheduled in 2021/22 will not be expensed

Cast-in-Place Concrete Retaining Wall Repair Allowance	
Quantity	Allowance
Cost	\$6,100
Year(s)	2031/32, 2041/42

No changes have been made to the allowances (except for an inflationary increase) or to the scheduling for the work in this section from the most recent Study.

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 **\$6,100** has been made in fiscal year **2031/32 and every 10 years** thereafter
- B. Minor repairs of the retaining walls should be performed, as required, using funds from the operating budget

5.1.8 Foundation Walls

CONCRETE FOUNDATION WALLS

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

We recommend the following work be anticipated and funded:

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

5.1.9 Balconies

BALCONY STRUCTURE

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

Due to fiscal constraints, the balcony structure repair allowance scheduled in fiscal year 2036/37 has been delayed 1 year.

Further, the costs for the concrete balcony repairs scheduled in fiscal year 2020/21 have been included with the brick masonry repair project.

No other changes have been made to the allowances (except for an inflationary increase) or to the scheduling for the work in this section from the most recent Study.

We recommend the following work be anticipated and funded:

- A. In order to ensure funds are available to perform repairs to the balcony slabs when required, an allowance **\$243,400** has been budgeted in fiscal year **2037/38 and every 16 years thereafter**

WATERPROOFING MEMBRANE

The balcony slabs on level 14 are protected with an elastomeric traffic bearing membrane. The traffic bearing membrane has a typical service life of 15-20 years.

Due to fiscal constraints, the replacement of the traffic bearing membrane scheduled in fiscal year 2036/37 has been delayed 1 year.

Balcony Structure Repair Allowance	
. Quantity	Allowance
. Cost	\$243,400
. Year(s)	2037/38

Traffic Bearing Membrane Replacement	
. Qty. (Balconies)	165 m ²
. Cost	\$24,300
. Year(s)	2037/38

Further, the costs for the balcony waterproofing scheduled in fiscal year 2020/21 have been included with the brick masonry repair project.

No other changes have been made to the allowances (except for an inflationary increase) or to the scheduling for the work in this section from the most recent Study.

We recommend the following work be anticipated and funded:

- B. Replacement of the traffic bearing membrane on the level 14 balconies is estimated to cost **\$24,300** and this work has been budgeted in fiscal year **2037/38 and every 16 years** thereafter
- C. Minor repairs of the traffic bearing membrane should be performed, as required, using funds from the operating budget

BALCONY RAILINGS

The precast concrete railings with a metal top rail are located at the balcony edges. The precast concrete railings will typically last the life of the complex. The metal top rail has a typical service life of 30-40 years.

Due to fiscal constraints, the replacement of the metal railings originally scheduled in fiscal year 2036/37 has been delayed 1 year.

No changes have been made to the allowances (except for an inflationary increase) or to the scheduling for the work in this section from the most recent Study.

We recommend the following work be anticipated and funded:

- D. Costs for repairs of the precast railings has been included with the balcony structure repairs
- E. Replacement of the metal railings is estimated to cost **\$115,000** and this work has been budgeted in fiscal year **2037/38**

Metal Railings	
Quantity	1,100 m
Cost	\$115,000
Year(s)	2037/38

5.1.10 Masonry

MASONRY VENEER

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

A full balcony survey was performed in 2019 and the results of the study were tendered for repairs in 2020. The work commenced in Summer 2020 and to date, one full phase has been completed and the 2nd phase is underway. In total, a contract for 4 phases has been agreed to by the Condominium and the work is expected to be completed in 2023. The following breaks down the remaining work based on fiscal year as opposed to phase.

- 2021/22: \$567,147
- 2022/23: \$456,634
- 2023/24: \$277,058

Masonry Veneer Repair Allowance	
Quantity	Allowance
Cost	\$1,300,839
Year(s)	2021/22-2023/24
Cost	\$91,300
Year(s)	2034/35, 2044/45

The subsequent allowances for repairs scheduled in 2029/30 and every 10 years thereafter, have been delayed to 2034/35 to reflect the significant repair scope being performed currently.

No other changes have been made to the allowances (except for an inflationary increase) or to the scheduling for the work in this section from the most recent Study.

We recommend the following work be anticipated and funded:

- .A Based on the 2020 Brick Repair contract, the remaining repairs to the brick masonry is estimated to cost **\$1,300,839** and this work has been phased from fiscal year **2021/22 through 2023/24**
- .B In order to ensure funds are available to perform isolated repairs when required, an allowance of **\$91,300** has been made in fiscal year **2034/35 and every 10 years** thereafter
- .C Minor repairs of the masonry should be performed, as required, using funds from the operating budget

5.1.11 Stucco

STUCCO

The stucco is located on the back walls of the balconies. Stucco has a typical service life of 30-40 years.

No changes have been made to the allowances (except for an inflationary increase) or to the scheduling for the work in this section from the most recent Study.

We recommend the following work be anticipated and funded:

- A. In order to ensure funds are available for repairs and replacement of stucco with EIFS as required, an allowance of **\$60,900** has been made in fiscal year **2023/24 and every 5 years** thereafter
- B. Minor patching of the stucco should be performed, as required, using funds from the operating budget

Stucco	
. Quantity	Allowance
. Cost	\$60,900
. Year(s)	2023/24, 2028/29 2033/34, 2038/39 2043/44, 2048/49

5.1.12 Exterior Insulation & Finish System (EIFS)

EXTERIOR INSULATION & FINISH SYSTEM

The EIFS is installed on the back wall of isolated balconies. This system typically consists of a cementitious basecoat and acrylic granular finish coating applied over a rigid insulation-type panel of various thicknesses, which is either mechanically fastened or adhered to the wall. The EIFS has a typical service life of 50-60 years; however, significant repairs are usually required after 25-30 years of service.

We recommend the following work be anticipated and funded:

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

5.1.13 Exterior Coating

EXTERIOR PAINTING

Exterior painting has been performed on the balcony railings, roof ladders, balcony soffits, and window frames. Exterior painting has a typical service life of 5-10 years.

The balcony railings and soffits are being painted as part of the masonry repair allowance

The allowances for exterior painting has been adjusted as per the following to reflect the costs and work completed as part of the masonry project as well as the window replacement project

- Minor repairs: \$350,000 in 2037/38 and every 15 years thereafter

No changes have been made to the allowances (except for an inflationary increase) or to the scheduling for the work in this section from the most recent Study.

We recommend the following work be anticipated and funded:

- .A Exterior painting is estimated to cost **\$350,000** and this work has been budgeted in fiscal year **2037/38 and every 15 years** thereafter
- .B Minor repainting should be performed, as required, using funds from the operating budget

Exterior Painting	
Quantity	Allowance
Cost	\$350,000
Year(s)	2037/38

5.1.14 Caulking

CAULKING

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

The caulking is in the process of being replaced as part of the masonry repair project.

The subsequent caulking replacement has been increased to reflect the ongoing project and postponed to reflect the window replacement project.

No other changes have been made to the allowances (except for an inflationary increase) or to the scheduling for the work in this section from the most recent Study.

We recommend the following work be anticipated and funded:

- .A Replacement of the caulking is estimated to cost **\$350,000** and this work has been budgeted in fiscal year **2040/41**
- .B Minor repairs of the caulking should be performed, as required, using funds from the operating budget

Caulking	
Quantity	Allowance
Cost	\$350,000
Year(s)	2040/41

5.1.15 Windows & Balcony Doors

WINDOWS

The wood framed windows provide the primary fenestration for the building. The windows have a typical service life of 20-30 years.

The replacement of the windows have been delayed 1 year to fiscal year 2028/29 through 2031/32

The replacement of the wood framed windows has been increased at rate less than the general inflation.

No changes have been made to the allowances (except for an inflationary increase) or to the scheduling for the work in this section from the most recent Study.

We recommend the following work be anticipated and funded:

- .A Replacement of the windows with aluminium framed windows is estimated to cost **\$3,500,000** and this work has been budgeted over a **4-year period** beginning in fiscal year **2028/29**
- .B Replacement of the windows with wood framed windows is estimated to cost \$5,719,500, however this work has not been budgeted for in this study
- .C Minor repairs including replacement of hardware, screens, weatherstripping and isolated thermopanels should be performed, as required, using funds from the operating budget

Window Replacement	
Quantity	2,650 m ²
Cost	\$3,500,000
Year(s)	2028/29-2031/32

BALCONY DOORS

The wood swing doors with a storm door are located at the unit balconies. The balcony doors have a typical service life of 30-40 years.

No changes have been made to the allowances (except for an inflationary increase) or to the scheduling for the work in this section from the most recent Study.

We recommend the following work be anticipated and funded:

- D. In order to ensure funds are available to perform balcony door replacements when required, an allowance of **\$42,600** has been made in fiscal year **2021/22 and every 5 years** thereafter
- E. Minor repairs including replacement of hardware, screens, weatherstripping and isolated thermopanels should be performed, as required, using funds from the operating budget

Balcony Door Replacement	
Quantity	Allowance
Cost	\$42,600
Year(s)	2021/22, 2026/27 2031/32, 2036/37 2041/42, 2046/47

SKYLIGHTS

The skylight is located above the swimming pool area. Skylights have a typical service life of 15-20 years.

No changes have been made to the allowances (except for an inflationary increase) or to the scheduling for the work in this section from the most recent Study.

We recommend the following work be anticipated and funded:

Skylight Replacement	
Quantity	1
Cost	\$85,200
Year(s)	2026/27, 2046/47

- F. Replacement of the skylight is estimated to cost **\$85,200** and this work has been budgeted in fiscal year **2026/27 and every 20 years** thereafter
- G. Minor repairs such as the replacement of failed glazing seals should be performed, as required, using funds from the operating budget

5.1.16 Doors

MAIN ENTRANCE

The main exterior entrance door is located on the ground floor at the west elevation. The main entrance door has a typical service life of 25-30 years.

No changes have been made to the allowances (except for an inflationary increase) or to the scheduling for the work in this section from the most recent Study.

We recommend the following work be anticipated and funded:

- .A Replacement of the main entrance door is estimated to cost **\$9,700** and this work has been budgeted in fiscal year **2046/47**
- .B Minor repairs of the main entrance door should be performed, as required, using funds from the operating budget

Entrance Door Replacement	
Quantity	1
Cost	\$9,700
Year(s)	2046/47

COMMON AREA DOORS

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

No changes have been made to the allowances (except for an inflationary increase) or to the scheduling for the work in this section from the most recent Study.

We recommend the following work be anticipated and funded:

- C. In order to ensure funds are available to perform isolated repairs and replacements when required, an allowance of **\$6,100** has been made in fiscal year **2026/27 and every 10 years** thereafter
- D. Minor repairs of the common area man doors should be performed, as required, using funds from the operating budget

Common Area Man Door Replacement	
Quantity	Allowance
Cost	\$6,100
Year(s)	2026/27, 2036/37 2046/47

UNIT SUITE DOOR

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

No changes have been made to the allowances (except for an inflationary increase) or to the scheduling for the work in this section from the most recent Study.

We recommend the following work be anticipated and funded:

- E. In order to ensure funds are available for isolated replacement of the unit suite doors when required, an allowance of **\$60,900** has been made in fiscal year **2026/27 and every 10 years** thereafter
- F. Minor repairs of the unit suite doors should be performed, as required, using funds from the operating budget

Unit Suite Door Replacement	
Quantity	Allowance
Cost	\$60,900
Year(s)	2026/27, 2036/37 2046/47

GARAGE DOORS

The garage door located on the northwest end of the garage. The garage door has a typical service life of 15-20 years.

No changes have been made to the allowances (except for an inflationary increase) or to the scheduling for the work in this section from the most recent Study.

We recommend the following work be anticipated and funded:

- G. Replacement of the garage door is estimated to cost **\$24,300** and this work has been budgeted in fiscal year **2026/27 and every 15 years** thereafter
- H. Minor repairs of the garage doors should be performed, as required, using funds from the operating budget

Garage Door Replacement	
Quantity	1
Cost	\$24,300
Year(s)	2026/27, 2041/42

5.1.17 Roofing Systems

MODIFIED PROTECTED MEMBRANE ROOFING SYSTEM

A modified protected membrane system protects the main roof and consists of a tapered insulation layer on top on the concrete slab, covered by a waterproofing membrane, additional layer of insulation, and gravel ballast. This roofing system has a typical service life of 20-25 years.

No changes have been made to the allowances (except for an inflationary increase) or to the scheduling for the work in this section from the most recent Study.

We recommend the following work be anticipated and funded:

- .A A quotation of **\$973,700** has been provided by a contractor for the replacement of the modified protected membrane roofing system with an inverted roofing system and this work has been budgeted in fiscal year **2043/44 and every 25 years** thereafter
- .B Minor repairs of the modified protected membrane roofing system should be performed, as required, using funds from the operating budget

Conventional Roofing System Replacement	
Quantity	1,800 m ²
Cost	\$973,700
Year(s)	2043/44

FRONT ENTRANCE CANOPY

The front entrance canopy consists of a canvas material on steel framing. This roofing system has a typical service life of 20-30 years.

No changes have been made to the allowances (except for an inflationary increase) or to the scheduling for the work in this section from the most recent Study.

We recommend the following work be anticipated and funded:

- E. Replacement of the front entrance canopy is estimated to cost **\$20,700** and this work has been budgeted in fiscal year **2040/41**
- F. Minor repairs of the front entrance canopy should be performed, as required, using funds from the operating budget

Front Entrance Canopy	
Cost	\$20,700
Year(s)	2040/41

5.1.18 Common Corridors

The interior finishes of the corridors on levels 1-14 consist of wallpaper and brick masonry walls, carpet flooring, and stipple ceilings.

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.

Due to fiscal constraints, the replacement of the wallpapers has been delayed to 2025/26 and every 15 years thereafter

No changes have been made to the allowances (except for an inflationary increase) or to the scheduling for the work in this section from the most recent Study.

We recommend the following work be anticipated and funded:

- A. Replacement of the wallpaper is estimated to cost **\$426,000** and this work has been budgeted in fiscal year **2025/26 and every 15 years** thereafter
- B. Minor repairs should be performed, as required, using funds from the operating budget

CARPET

Carpet is installed on the corridor floors on levels 1-14. Carpet has a typical service life of 10-15 years.

Due to fiscal constraints, the replacement of the carpet has been delayed to 2025/26 and every 15 years thereafter

No changes have been made to the allowances (except for an inflationary increase) or to the scheduling for the work in this section from the most recent Study.

We recommend the following work be anticipated and funded:

- C. Replacement of the carpet on levels 1-14 is estimated to cost **\$243,400** and this work has been budgeted in fiscal year **2025/26 and every 15 years** thereafter
- D. Minor repairs of the should be performed, as required, using funds from the operating budget

STIPPLE CEILING

Stipple finish covers the ceilings on levels 1-14. Stippled ceilings have a typical service life of 40-50 years.

Due to fiscal constraints, the repairs of the stipple ceiling has been delayed to 2025/26 and every 10 years thereafter

No changes have been made to the allowances (except for an inflationary increase) or to the scheduling for the work in this section from the most recent Study.

We recommend the following work be anticipated and funded:

Wallpaper	
Quantity	5,180 m ²
Cost	\$426,000
Year(s)	2025/26, 2040/41

Carpet	
Quantity	2,200 m ²
Cost	\$243,400
Year(s)	2025/26, 2040/41

Stipple Ceiling	
Quantity	Allowance
Cost	\$85,200
Year(s)	2025/26, 2035/36 2045/46

- E. In order to ensure funds are available to perform isolated repairs when required, an allowance of **\$85,200** has been made in fiscal year **2024/25 and every 10 years** thereafter
- F. Minor repairs of the stipple should be performed, as required, using funds from the operating budget

5.1.19 Common Rooms

The interior common rooms of the building include a lobby, stairwells, a condominium office, bike room, change rooms, laundry rooms, a workshop, and pool area.

LOBBY

The lobby consists of quarry tile floors, wallpapered walls, and painted ceiling. Furnishings include couches, chairs, tables, and artwork. Special features include indoor planters and a mailroom. 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.

A portion of the 2028/29 allowance for lobby refinishing has been moved forward to fiscal year 2022/23

The 2026/27 allowance for furniture replacement has been moved forward to 2022/23. The subsequent allowances remain as scheduled.

No changes have been made to the allowances (except for an inflationary increase) or to the scheduling for the work in this section from the most recent Study.

We recommend the following work be anticipated and funded:

- .A In order to ensure funds are available to refinish the lobby when required, an allowance of **\$22,700** has been made in fiscal year **2022/23**
- .B In order to ensure funds are available to refinish the lobby when required, an allowance of **\$62,500** has been made in fiscal year **2028/29**
- .C In order to ensure funds are available to replace furniture when required, an allowance of **\$7,300** has been made in fiscal year **2022/23, 2036/37 and every 10 years** thereafter
- .D Minor repairs to the furniture or finishes should be performed, as required, using funds from the operating budget

STAIRWELLS

The stairwells primarily consist of painted concrete walls and floors, with carpet flooring and painted drywall walls on the ground floor. Stairwells including finishes and furnishings may last the lifetime of the complex.

We recommend the following work be anticipated and funded:

- .E Minor repairs to the finishes should be performed, as required, using funds from the operating budget

CONDOMINIUM OFFICE

Access to the condominium office was not provided at the time of inspection. Generally major renovations of the condominium office occur after 30-40 years

Lobby Refinishing Allowance	
Quantity	Allowance
Cost	\$22,700
Year(s)	2022/23
Cost	\$62,500
Year(s)	2028/29

Lobby Furniture Allowance	
Quantity	Allowance
Cost	\$7,300
Year(s)	2022/23, 2036/37 2046/47

of service as the original finishes appear dated. Typically, the furniture requires replacement every 10 years.

We recommend the following work be anticipated and funded:

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

BIKE ROOM

The bike room consists of exposed concrete walls, floors, and ceilings. Furnishings include bike racks. Bike rooms including finishes and furnishings may last the lifetime of the complex.

We recommend the following work be anticipated and funded:

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

CHANGE ROOMS

The change rooms consist of wallpaper walls, ceramic tile floors, and stipple ceiling. Furnishings include showers, lockers, toilets, sinks, and saunas. 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.

No changes have been made to the allowances (except for an inflationary increase) or to the scheduling for the work in this section from the most recent Study.

We recommend the following work be anticipated and funded:

- .H In order to ensure funds are available to replace furniture and finishes when required, an allowance of **\$12,200** has been made in fiscal year **2028/29 and every 15 years thereafter**
- .I Minor repairs to the furniture or finishes should be performed, as required, using funds from the operating budget

LAUNDRY ROOM

Access to the laundry rooms located on every floor was not provided at the time of our inspection. Laundry rooms including finishes and furnishings may last the lifetime of the complex.

We recommend the following work be anticipated and funded:

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

WORKSHOP

Access to the workshop located in the parking garage was not provided at the time of our inspection. Workshops including finishes and furnishings may last the lifetime of the complex.

We recommend the following work be anticipated and funded:

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

Change Room Refinishing Allowance	
Quantity	Allowance
Cost	\$12,200
Year(s)	2028/29, 2043/44

POOL AREA

The pool area consists of ceramic tile and turf floors, turf walls and painted drywall ceilings. Furnishings include chairs and table. Generally major renovations of the pool area occur after 30-40 years of service as the original finishes appear dated.

No changes have been made to the allowances (except for an inflationary increase) or to the scheduling for the work in this section from the most recent Study.

We recommend the following work be anticipated and funded:

- .L In order to ensure funds are available to replace furniture and finishes when required, an allowance of **\$12,200** has been made in fiscal year **2034/35 and every 15 years thereafter**
- .M Minor repairs to the furniture or finishes should be performed, as required, using funds from the operating budget

Pool Area Refinishing Allowance	
Quantity	Allowance
Cost	\$12,200
Year(s)	2034/35, 2049/50

5.1.20 Swimming Pool, Whirlpool, & Saunas

SWIMMING POOL

The cast-in-place concrete swimming pool is located on the ground floor. The pool interior is protected with ceramic tile with a waterproofing membrane. The ceramic tiles and waterproofing have a typical service life of 20 years. Mechanical systems have been included in Section 5.3.4.

No changes have been made to the allowances (except for an inflationary increase) or to the scheduling for the work in this section from the most recent Study.

We recommend the following work be anticipated and funded:

- .A Replacement of the ceramic tile and waterproofing is estimated to cost **\$103,500** and this work has been budgeted in fiscal year **2035/36 and every 20 years** thereafter

Swimming Pool	
Quantity	45 m ²
Cost	\$103,500
Year(s)	2035/36

SAUNAS

The electric saunas are located in the change rooms near the pool area. The sauna finishes consist of cedar decking. The finishes and equipment of the saunas have a varying service life depending on usage.

No changes have been made to the allowances (except for an inflationary increase) or to the scheduling for the work in this section from the most recent Study.

We recommend the following work be anticipated and funded:

- B. Replacement of the sauna finishes and equipment is estimated to cost **\$22,000** and this work has been budgeted in fiscal year **2024/25 and every 20 years** thereafter

Sauna	
Quantity	2
Cost	\$22,000
Year(s)	2024/25, 2044/45

5.2 Electrical

5.2.1 Electrical Distribution

MAIN DISCONNECT SWITCHGEAR

The 2,000A, 120/208V ITE main disconnect switchgear located in the main electrical room within the parking garage protects and isolates the main electrical feed into the building. Main disconnect switchgear has a typical service life of 40-45 years.

Due to fiscal constraints, the replacement of the main disconnect switchgear has been delayed to fiscal year 2023/24.

No changes have been made to the allowances (except for an inflationary increase) or to the scheduling for the work in this section from the most recent Study.

We recommend the following work be anticipated and funded:

- A. Replacement of the main disconnect switchgear is estimated to cost **\$182,600** and this work has been budgeted in fiscal year **2023/24**
- B. 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

Main Disconnect Switchgear	
. Quantity	1
. Cost	\$182,600
. Year(s)	2023/24

DISTRIBUTION BREAKER PANELS

The 120/208V 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.

Due to fiscal constraints, the replacement of the 1976 breaker panels has been delayed to fiscal year 2023/24

No other changes have been made to the allowances (except for an inflationary increase) or to the scheduling for the work in this section from the most recent Study.

We recommend the following work be anticipated and funded:

- C. Replacement of the 120/240V breaker panels and moulded case breakers from 1976 is estimated to cost **\$42,600** and this work has been budgeted in fiscal year **2023/24**
- D. Replacement of the 120/240V breaker panels and moulded case breakers from 2009 is estimated to cost **\$11,000** and this work has been budgeted in fiscal year **2049/50**

(1976)	
120/240 Volt Electrical Distribution Breaker Panels	
. Qty.	5
. Cost	\$42,600
. Year(s)	2023/24

(2009)	
120/240 Volt Electrical Distribution Breaker Panels	
. Qty.	3
. Cost	\$11,000
. Year(s)	2049/50

FUSED DISCONNECT SWITCHES

The fused disconnect switches of amperages ranging from 100A to 800A installed in electrical rooms and electrical closets throughout the building provide electrical power feed and overload protection to

Fused Disconnect Switches	
. Quantity	15
. Cost	\$91,300
. Year(s)	2023/24

individual pieces of equipment. Fused disconnect switches have a typical service life of 40-45 years.

Due to fiscal constraints, the replacement of the fused disconnect switches has been delayed to 2023/24

No changes have been made to the allowances (except for an inflationary increase) or to the scheduling for the work in this section from the most recent Study.

We recommend the following work be anticipated and funded:

- E. Replacement of the fused disconnect switches is estimated to cost **\$91,300** and this work has been budgeted in fiscal year **2023/24**

DRY CORE TRANSFORMERS

The dry core transformer located in the main electrical room in the parking garage reduces the voltage of the electrical feed. Dry core transformers have a typical service life of 35-40 years.

Due to fiscal constraints, the replacement of the dry core transformers has been delayed to fiscal year 2023/24

No changes have been made to the allowances (except for an inflationary increase) or to the scheduling for the work in this section from the most recent Study.

We recommend the following work be anticipated and funded:

- F. Replacement or overhaul of the dry core transformer is estimated to cost **\$15,800** and this work has been budgeted in fiscal year **2023/24**

Dry Core Transformers	
. Quantity	1
. Cost	\$15,800
. Year(s)	2023/24

MOTOR CONTROL CENTRES

The 600V motor control centres installed in the mechanical rooms and main electrical room provide a safe method for starting an electric motor with a large load, under-voltage and overload protection, and an automatic cut-off in the event of a power failure. Motor control centres have a typical service life of 45-50 years.

No changes have been made to the allowances (except for an inflationary increase) or to the scheduling for the work in this section from the most recent Study.

We recommend the following work be anticipated and funded:

- G. Replacement of the motor control centres is estimated to cost **\$97,400** and this work has been budgeted in fiscal year **2026/27**

Motor Control Centres	
. Quantity	4
. Cost	\$97,400
. Year(s)	2026/27

5.2.2 Lighting

COMMON AREA LIGHT FIXTURES

The common area light fixtures are located throughout the common areas of the building, inside the parking garage and exterior to the

building. Common area light fixtures have a varying service life depending on usage and environmental conditions.

We recommend the following work be anticipated and funded:

- A. Full scale replacement of the interior light fixtures should not be required during the span of this study, and consequently, no funds have been allocated for fixture replacement. When individual fixtures and light bulbs/tubes require replacement, the costs should be paid for out of the operating budget

5.2.3 Fire Alarm System

FIRE ALARM PANEL

The Edwards 6500 fire alarm panel installed in the main electrical room in the parking garage 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 30-35 years.

Fire Alarm System	
. Cost	\$523,300
. Year(s)	2033/34

Due to fiscal constraints, the replacement of the fire alarm system has been delayed to fiscal year 2033/34

No changes have been made to the allowances (except for an inflationary increase) or to the scheduling for the work in this section from the most recent Study.

We recommend the following work be anticipated and funded:

- A. Replacement of the fire alarm sound alarms and system wiring is estimated to cost **\$523,300** and this work has been budgeted in fiscal year **2033/34**
- B. 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 10-15 years.

Fire Alarm Sensors	
. Quantity	Allowance
. Cost	\$6,100
. Year(s)	2023/24, 2028/29 2033/34, 2038/39 2043/44, 2048/49

No changes have been made to the allowances (except for an inflationary increase) or to the scheduling for the work in this section from the most recent Study.

We recommend the following work be anticipated and funded:

- C. Due to the varying service life of the smoke detectors and heat sensors, isolated replacement need only be completed as required. For budgeting purposes, an allowance of **\$6,100** has been made in fiscal year **2023/24 and every 5 years** thereafter to ensure funds are available when the work is required

5.2.4 Emergency Power System

EMERGENCY POWER SYSTEM

The Kohler 600V, 100kW emergency power generator consisting of a natural gas fueled engine, located in the main electrical room within the parking garage 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.

The allowance for the replacement of the generator has been increased above inflation to reflect current market values.

No other changes have been made to the allowances (except for an inflationary increase) or to the scheduling for the work in this section from the most recent Study.

We recommend the following work be anticipated and funded:

- A. Replacement of the emergency power generator is estimated to cost **\$150,000** and this work has been budgeted in fiscal year **2022/23**

Emergency Power Generator	
. Quantity	1
. Cost	\$150,000
. Year(s)	2022/23

TRANSFER SWITCH

The Cutler-Hammer 225A transfer switch located in the main electrical room within the parking garage automatically transfers power between the main hydro power and emergency power. Transfer switches have a typical service life of 30-35 years.

The allowance for the replacement of the emergency transfer switch has been increased above inflation to reflect current market values.

No other changes have been made to the allowances (except for an inflationary increase) or to the scheduling for the work in this section from the most recent Study.

We recommend the following work be anticipated and funded:

- B. Replacement of the transfer switch is estimated to cost **\$16,500** and this work has been budgeted in fiscal year **2039/40**

Emergency Transfer Switch	
. Quantity	1
. Cost	\$16,500
. Year(s)	2039/40

5.2.5 Electrical Heating Systems

GARAGE RAMP SNOW MELT SYSTEM

The parking garage ramp 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. Snow melt systems have a typical service life of 25-30 years.

Due to fiscal constraints, the replacement of the garage ramp snow melt system has been delayed 1 year.

No other changes have been made to the allowances (except for an inflationary increase) or to the scheduling for the work in this section from the most recent Study.

Garage Ramp Snow Melt System	
. Quantity	1
. Cost	\$97,400
. Year(s)	2033/34

We recommend the following work be anticipated and funded:

- A. Replacement of the parking garage ramp electric snow melt system including removal and reinstatement of concrete slab is estimated to cost **\$97,400** and this work has been budgeted in fiscal year **2032/33**
- B. Although costs are not included in this study, as it does not constitute a major repair or replacement, we recommend that a feasibility study is performed before the ramp replacement using funds from the operating budget

ENTRANCE STEPS SNOW MELT SYSTEM

The entrance steps electric snow melt system consists of electric heat tracing cables encased in the concrete steps, a controller, and sensors to prevent snow and ice accumulation. Electric snow melt systems have a typical service life of 25-30 years.

Due to fiscal constraints, the replacement of the garage ramp snow melt system has been delayed 1 year.

No other changes have been made to the allowances (except for an inflationary increase) or to the scheduling for the work in this section from the most recent Study.

We recommend the following work be anticipated and funded:

- C. Replacement of the entrance steps electric snow melt system including removal and reinstatement of concrete slab is estimated to cost **\$66,900** and this work has been budgeted in fiscal year **2033/34**
- D. Although costs are not included in this study, as it does not constitute a major repair or replacement, we recommend that a feasibility study is performed before the ramp replacement using funds from the operating budget

Entrance Steps Snow Melt System	
. Quantity	1
. Cost	\$66,900
. Year(s)	2033/34

5.2.6 Security Systems

DOOR ENTRY SYSTEM

The phone-based door entry system consists of an access panel located in the main entrance vestibule to provide visitor access to the building. Door entry systems have a typical service life of 25-30 years.

No changes have been made to the allowances (except for an inflationary increase) or to the scheduling for the work in this section from the most recent Study.

We recommend the following work be anticipated and funded:

- A. Replacement of the door entry system is estimated to cost **\$12,200** and this work has been budgeted in fiscal year **2034/35**

Door Entry System	
. Quantity	1
. Cost	\$12,200
. Year(s)	2034/35

CCTV SYSTEM

The CCTV system consists of multiple cameras located throughout the building. CCTV cameras have a typical service life of 5-10 years.

No changes have been made to the allowances (except for an inflationary increase) or to the scheduling for the work in this section from the most recent Study.

We recommend the following work be anticipated and funded:

- B. Replacement of the CCTV cameras is estimated to cost **\$12,200** and this work has been budgeted in fiscal year **2029/30 and every 10 years** thereafter

CCTV System	
. Quantity	1
. Cost	\$12,200
. Year(s)	2029/30, 2039/40 2049/50

5.3 Mechanical

5.3.1 Ventilation System

MAKE-UP AIR UNIT

The indoor make-up air unit with heating coils is located in the penthouse make-up air mechanical room and provides fresh air to the building, pressurizes the building and prevents odour transfer between units. Make-up air units have a typical service life of 25-30 years.

The allowance for the replacement of the make-up air unit has been increased above inflation to reflect current market values.

No other changes have been made to the allowances (except for an inflationary increase) or to the scheduling for the work in this section from the most recent Study.

We recommend the following work be anticipated and funded:

- A. Replacement of the make-up air unit is estimated to cost **\$85,000** and this work has been budgeted in fiscal year **2044/45 and every 25 years** thereafter

Make-up Air Unit	
. Quantity	1
. Cost	\$85,000
. Year(s)	2044/45

EXHAUST FANS

The multiple exhaust fans located in the common areas, utility rooms, and on the rooftop provide ventilation and temperature control for these spaces as well as washroom exhaust and stairwell pressurization. Exhaust fans have a typical service life of 30-35 years which can vary greatly depending on usage and environmental conditions.

No changes have been made to the allowances (except for an inflationary increase) or to the scheduling for the work in this section from the most recent Study.

We recommend the following work be anticipated and funded:

- B. Due to the varying condition of the exhaust fans, isolated replacement need only be completed as required. For budgeting purposes, an allowance of **\$24,300** has been made in fiscal year **2023/24 and every 10 years** thereafter to ensure funds are available when the work is required

Exhaust Fans	
. Quantity	Allowance
. Cost	\$24,300
. Year(s)	2023/24, 2033/34 2043/44

GARAGE VENTILATION

The axial exhaust fans for the parking garage ventilation are set to run in conjunction with the gas detection system. Axial exhaust fans have a typical service life of 30-35 years.

No changes have been made to the allowances (except for an inflationary increase) or to the scheduling for the work in this section from the most recent Study.

We recommend the following work be anticipated and funded:

- C. Replacement of the axial exhaust fans is estimated to cost **\$48,700** and this work has been budgeted in fiscal year **2038/39**

Garage Exhaust Fans	
Quantity	4
Cost	\$48,700
Year(s)	2038/39

5.3.2 Heating & A/C Systems

HEATING BOILERS

The Camus 5,000 MBH (1) and 4,500 MBH (2) gas fueled high efficiency condensing heating boilers located in the penthouse mechanical room provide heated water to the fan coil loop, hot water heater loop, parking garage heating loop, and the ramp snow melt systems. Condensing heating boilers have a typical service life of 20-25 years.

No changes have been made to the allowances (except for an inflationary increase) or to the scheduling for the work in this section from the most recent Study.

We recommend the following work be anticipated and funded:

- A. Replacement of the heating boilers is estimated to cost **\$316,400** and this work has been budgeted in fiscal year **2027/28 and 2049/50**

Heating Boilers	
Quantity	3
Cost	\$316,400
Year(s)	2027/28, 2049/50

BOILER CIRCULATOR PUMPS

The Armstrong 226 USGPM, 5 HP boiler circulator pumps in the penthouse mechanical room provide hot water circulation between the boiler and the main heating loop. Boiler circulator pumps have a typical service life of 20-25 years.

No changes have been made to the allowances (except for an inflationary increase) or to the scheduling for the work in this section from the most recent Study.

We recommend the following work be anticipated and funded:

- B. Replacement of the boiler circulator pumps is estimated to cost **\$17,000** and this work has been budgeted in fiscal year **2027/28 and 2049/50**, in conjunction with the boiler replacement

Boiler Circulator Pumps	
Quantity	3
Cost	\$17,000
Year(s)	2027/28, 2049/50

HYDRONIC LOOP PUMPS

The Armstrong 280 USGPM, 5 HP hydronic loop pumps, located in the penthouse mechanical room distribute the hot water throughout the building to the fan coils inside the units, common areas, and the

parking garage. Hydronic loop pumps have a typical service life of 25-30 years.

No changes have been made to the allowances (except for an inflationary increase) or to the scheduling for the work in this section from the most recent Study.

We recommend the following work be anticipated and funded:

- C. Replacement of the hydronic loop pumps is estimated to cost **\$17,000** and this work has been budgeted in fiscal year **2032/33**

CHILLER

The Carrier 150-Ton indoor liquid chiller located in the basement mechanical room provides chilled water to the fan coils in the suites and common areas. Chillers have a typical service life of 20-25 years.

Due to fiscal constraints, the replacement of the chiller has been delayed 2 years to fiscal year 2032/33

No changes have been made to the allowances (except for an inflationary increase) or to the scheduling for the work in this section from the most recent Study.

We recommend the following work be anticipated and funded:

- D. Replacement of the chiller is estimated to cost **\$243,400** and this work has been budgeted in fiscal year **2032/33**

CHILLED WATER LOOP PUMPS

The Armstrong 15 HP chilled water loop pumps, located in the basement mechanical room distribute chilled water throughout the building to the fan coils inside the units and common areas. Chilled water loop pumps have a typical service life of 20-25 years.

Due to fiscal constraints, the replacement of the chilled water loop pumps has been delayed 2 years to fiscal year 2032/33

No changes have been made to the allowances (except for an inflationary increase) or to the scheduling for the work in this section from the most recent Study.

We recommend the following work be anticipated and funded:

- E. Replacement of the chilled water loop pumps is estimated to cost **\$26,800** and this work has been budgeted in fiscal year **2032/33**

COOLING TOWER

The BAC 160-Ton capacity cooling tower located on the rooftop rejects the heat removed from the chilled water system by the chiller. Cooling towers have a typical service life of 20-25 years with proper preventive maintenance and water treatment.

Due to fiscal constraints, the replacement of the cooling tower has been delayed 2 years to fiscal year 2032/33

Hydronic Loop Pumps	
. Quantity	2
. Cost	\$17,000
. Year(s)	2032/33

Chiller	
. Quantity	1
. Cost	\$243,400
. Year(s)	2032/33

Chilled Water Loop Pumps	
. Quantity	2
. Cost	\$26,800
. Year(s)	2032/33

Cooling Tower	
. Quantity	1
. Cost	\$75,000
. Year(s)	2032/33

The allowance for the replacement of the cooling tower has been increased above inflation to reflect current market values.

No other changes have been made to the allowances (except for an inflationary increase) or to the scheduling for the work in this section from the most recent Study.

We recommend the following work be anticipated and funded:

- F. Replacement of the cooling tower is estimated to cost **\$75,000** and this work has been budgeted in fiscal year **2032/33**, in conjunction with the chiller replacement project

COOLING TOWER CIRCULATING PUMPS

The Armstrong 400 USGPM, 10 HP cooling tower circulating pumps, located in the basement mechanical room circulate water between the cooling tower and the chiller. Cooling tower circulating pumps have a typical service life of 20-25 years.

Due to fiscal constraints, the replacement of the cooling tower circulating pumps has been delayed 2 years to fiscal year 2032/33

No changes have been made to the allowances (except for an inflationary increase) or to the scheduling for the work in this section from the most recent Study.

We recommend the following work be anticipated and funded:

- G. Replacement of the cooling tower circulating pumps is estimated to cost **\$24,300** and this work has been budgeted in fiscal year **2032/33**, in conjunction with the chiller replacement

EXPANSION TANK

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

No changes have been made to the allowances (except for an inflationary increase) or to the scheduling for the work in this section from the most recent Study.

We recommend the following work be anticipated and funded:

- H. Replacement of the expansion tanks is estimated to cost **\$12,200** and this work has been budgeted in fiscal year **2020/21 and every 10 years** thereafter

HEAT EXCHANGER

The shell and tube heat exchanger is located in the basement mechanical room. Shell and tube heat exchangers have a typical service life of 25-30 years, this can vary greatly depending on the water treatment.

No changes have been made to the allowances (except for an inflationary increase) or to the scheduling for the work in this section from the most recent Study.

Cooling Tower Circulating Pumps	
Quantity	2
Cost	\$24,300
Year(s)	2032/33

Expansion Tank	
Quantity	2
Cost	\$12,200
Year(s)	2030/31 2040/41, 2050/51

Heat Exchanger	
Quantity	1
Cost	\$48,700
Year(s)	2035/36

We recommend the following work be anticipated and funded:

- I. Replacement of the heat exchanger is estimated to cost **\$48,700** and this work has been budgeted in fiscal year **2035/36**

HEAT EXCHANGER CIRCULATING PUMP

The Armstrong 5 HP heat exchanger circulating pump, located in the basement mechanical room circulates water for the shell and tube heat exchanger. Heat exchanger circulating pumps have a typical service life of 25-30 years.

No changes have been made to the allowances (except for an inflationary increase) or to the scheduling for the work in this section from the most recent Study.

Heat Exchanger Circulating Pump	
. Quantity	1
. Cost	\$8,500
. Year(s)	2035/36

We recommend the following work be anticipated and funded:

- J. Replacement of the heat exchanger circulating pump is estimated to cost **\$8,500** and this work has been budgeted in fiscal year **2035/36**, in conjunction with the heat exchanger replacement

DIRECT EXPANSION (DX) AIR CONDITIONER UNITS

The Carrier 1.5-Ton direct expansion ductless split air conditioner units provide cooling for the elevator machine room. The unit condensers are located on the rooftop. DX air conditioner units have a typical service life of 15-20 years.

No changes have been made to the allowances (except for an inflationary increase) or to the scheduling for the work in this section from the most recent Study.

Direct Expansion Air Conditioner Units	
. Quantity	2
. Cost	\$9,700
. Year(s)	2028/29, 2043/44

We recommend the following work be anticipated and funded:

- K. Replacement of the air conditioner unit is estimated to cost **\$9,700** and this work has been budgeted in fiscal year **2028/29** and every 15 years thereafter

HYDRONIC PIPING

The hydronic piping and risers installed throughout the building distribute heating and chilled water to the fan coil 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.

No changes have been made to the allowances (except for an inflationary increase) or to the scheduling for the work in this section from the most recent Study.

Hydronic Piping and Risers	
. Quantity	Allowance
. Cost	\$2,542,000
. Year(s)	Beyond 2050/51

We recommend the following work be anticipated and funded:

- L. A rough order of magnitude for the replacement of the hydronic piping and risers is estimated to cost **\$2,542,000** and this work has been budgeted **beyond the 30-year planning period** of this study

- M. 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 hydronic piping and risers be performed, to better assess the condition and cost of replacement, in the next 10 years, using funds from the operating budget

FANCOILS

The fan coils located in the individual suites provide air conditioning and primary heating to the building. According to the declaration, ownership and maintenance of the fan coils in the suites are the responsibility of the Condominium. The fan coils have a typical service life of 30-35 years

Upon further review of the declaration, it was noted that the Condominium is responsible for the replacement of the individual suite fan coil units. This work has been budgeted in fiscal year 2041/42 through 2045/46

Fan Coils	
. Quantity	Allowance
. Cost	\$846,000
. Year(s)	2041/42-2045/46

5.3.3 Plumbing Systems

DOMESTIC COLD WATER BOOSTER PUMPS

The duplex cold water booster pumps equipped with variable frequency drives, located in the basement mechanical 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. VFD's have a typical service life of 10-15 years.

The allowance for the replacement of the domestic cold water booster pumps has been increased above inflation to reflect current market values.

No other changes have been made to the allowances (except for an inflationary increase) or to the scheduling for the work in this section from the most recent Study.

We recommend the following work be anticipated and funded:

- A. Replacement of the cold water booster pumps is estimated to cost **\$35,000** and this work has been budgeted in fiscal year **2030/31**
- B. Replacement of the pumps' variable frequency drives is estimated to cost **\$9,700** and this work has been budgeted in fiscal year **2030/31 and every 10 years** thereafter

Domestic Cold Water Booster Pumps	
. Quantity	2
. Cost	\$35,000
. Year(s)	2030/31

DCW Booster Pumps Variable Frequency Drives	
. Quantity	2
. Cost	\$9,700
. Year(s)	2030/31, 2040/41 2050/51

DOMESTIC HOT WATER HEATERS

The Camus 1,100 MBH gas fueled high efficiency condensing hot water heaters located in the penthouse mechanical room provide domestic hot water to the storage tanks. Condensing domestic hot water heaters have a typical service life of 20-25 years.

No changes have been made to the allowances (except for an inflationary increase) or to the scheduling for the work in this section from the most recent Study.

Domestic Hot Water Heaters	
. Quantity	2
. Cost	\$79,100
. Year(s)	2027/28, 2047/48

We recommend the following work be anticipated and funded:

- C. Replacement of the domestic hot water heaters is estimated to cost **\$79,100** and this work has been budgeted in fiscal year **2027/28 and every 20 years** thereafter

DOMESTIC HOT WATER RECIRCULATION PUMPS

The Armstrong ¾ HP domestic hot water recirculation pumps in the penthouse 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.

No changes have been made to the allowances (except for an inflationary increase) or to the scheduling for the work in this section from the most recent Study.

We recommend the following work be anticipated and funded:

- D. Replacement of the domestic hot water recirculation pumps is estimated to cost **\$11,000** and this work has been budgeted in fiscal year **2028/29 and every 10 years** thereafter

DOMESTIC HOT WATER STORAGE TANKS

The A.O. Smith glass lined domestic hot water storage tanks installed in the penthouse mechanical room provide domestic hot water storage for the building. Glass lined domestic hot water storage tanks have a typical service life of 10-15 years.

No changes have been made to the allowances (except for an inflationary increase) or to the scheduling for the work in this section from the most recent Study.

We recommend the following work be anticipated and funded:

- E. Replacement of the 2007 domestic hot water storage tanks is estimated to cost **\$24,300** and this work has been budgeted in fiscal year **2028/29 and every 10 years** thereafter
- F. Replacement of the 2017 domestic hot water storage tanks is estimated to cost **\$24,300** and this work has been budgeted in fiscal year **2027/28 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.

As per the May 2, 2022 Sanitary Drainage Condition Assessment report prepared by Keller Engineering there is localized however very widespread thinning of the copper sanitary pipes throughout the complex. Due to widespread nature of the issue, recommendations were made for the full replacement of the sanitary drainage system.

Upon finalization of the report, an alternative solution was brought forward to the Board which including the lining of the pipes instead of the full replacement. This option was expected to be 25% of the full

Domestic Hot Water Recirculation Pumps	
- Quantity	2
- Cost	\$11,000
- Year(s)	2028/29, 2038/39 2048/49

Domestic Hot Water Storage Tanks (2007)	
- Quantity	2
- Cost	\$24,300
- Year(s)	2028/29, 2038/39 2048/49

Domestic Hot Water Storage Tanks (2017)	
- Qty.	2
- Cost	\$24,300
- Year(s)	2027/28, 2037/38 2047/48

Domestic Cold & Hot Water Distribution and Risers	
- Cost	\$1,825,600
- Year(s)	2045/46-2048/49

GARAGE - Sanitary and Storm Pipes	
- Cost	\$300,000
- Year(s)	2022/23

replacement costs; however, further investigation is required to determine if the lining option is a viable solution.

The Reserve Fund Study includes funding options for both the full replacement as well as the lining of the sanitary pipes. Both options include the full replacement of the garage sanitary piping located at the P1 level of the garage.

The replacement of the domestic cold and hot water distribution pipes has been increased to reflect that the work will no longer be completed in conjunction with the sanitary and storm pipe replacement.

No changes have been made to the allowances (except for an inflationary increase) or to the scheduling for the work in this section from the most recent Study.

We recommend the following work be anticipated and funded:

- G. A rough order of magnitude for the replacement of the domestic cold and hot water distribution pipes and risers is estimated to cost **\$1,825,600** and this work has been budgeted over a **4-year period** beginning in fiscal year **2045/46**
- H. A rough order of magnitude for the replacement of the garage piping estimated to cost **\$300,000** and this work has been budgeted in **2022/23**
- I. **Option 1** - A rough order of magnitude for the replacement of the sanitary and storm pipes is estimated to cost **\$4,620,000** and this work has been budgeted over a **5-year period** beginning in fiscal year **2023/24**
- J. **Option 2** - A rough order of magnitude for the lining of the sanitary and storm pipes is estimated to cost **\$1,000,000** and this work has been budgeted over a **2-year period** beginning in fiscal year **2023/24**
- K. **Option 2** - A rough order of magnitude for the replacement of the sanitary and storm pipes is estimated to cost **\$4,620,000** and this work has been budgeted **beyond the 30-year scope of the study**
- L. 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 domestic cold & hot water distribution piping and sanitary piping be performed, to better assess the condition and cost of replacement, in the next 15 years, using funds from the operating budget

Option 1 - Sanitary and Storm Pipes & Stacks Replacement	
- Cost	\$4,620,000
- Year(s)	2023/24-2027/28

Option 2 - Sanitary and Storm Pipes & Stacks Lining	
- Cost	\$1,000,000
- Year(s)	2023/24-2024/25

Option 2 - Sanitary and Storm Pipes & Stacks Replacement	
- Cost	\$4,620,000
- Year(s)	2023/24-2027/28

5.3.4 Pool Mechanical Systems

POOL MECHANICAL SYSTEMS

The pool mechanical systems consisting of chlorination system, a pump, sand filter, and strainer are installed in the basement pool mechanical room and serve the pool. Pool mechanical systems have a typical service life of 15-20 years.

Pool Mechanical Systems	
- Quantity	1
- Cost	\$18,300
- Year(s)	2025/26, 2040/41

No changes have been made to the allowances (except for an inflationary increase) or to the scheduling for the work in this section from the most recent Study.

We recommend the following work be anticipated and funded:

- A. Replacement of the pool mechanical systems is estimated to cost **\$18,300** and this work has been budgeted in fiscal year **2025/26 and every 15 years** thereafter

NATATORIUM DEHUMIDIFICATION UNIT

The natatorium dehumidification system currently consists of a make-up air unit with hydronic heating coils located in the pool mechanical room and an exhaust fan located in the pool space, which attempt to provides humidity and temperature control to the pool area. These types of air handling units have a typical service life of 25-30 years.

We recommend the following work be anticipated and funded:

- B. 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 natatorium dehumidification unit be performed in the next 5 years using funds from the operating budget

5.3.5 Sump Pumps

SUMP PUMPS

The sanitary and elevator shaft pit sump pumps and pump controllers are located in their respective pit in the parking garage and move water from the lower levels of the building to the city sewer. Sump pumps have a typical service life of 30-35 years which can vary greatly depending on usage.

No changes have been made to the allowances (except for an inflationary increase) or to the scheduling for the work in this section from the most recent Study.

We recommend the following work be anticipated and funded:

- A. Due to the varying usage of the sump pumps, isolated repairs need only be completed as required. For budgeting purposes, an allowance of **\$7,300** has been made in fiscal year **2029/30 and every 10 years** thereafter to ensure funds are available when the work is required

Sump Pumps	
. Quantity	Allowance
. Cost	\$7,300
. Year(s)	2029/30, 2039/40 2049/50

5.3.6 Elevators

TOWER ELEVATORS

The traction elevators installed in the building provide access to the residential floors. The elevator mechanical room is located above the penthouse mechanical room. Traction elevators have a typical service life of 25-30 years. Elevator cab interiors have a typical service life of 30-35 years and are renewed for aesthetic purposes.

Tower Elevator Control Modernization	
. Quantity	2
. Cost	\$474,700
. Year(s)	2047/48

No changes have been made to the allowances (except for an inflationary increase) or to the scheduling for the work in this section from the most recent Study.

We recommend the following work be anticipated and funded:

- A. Replacement of the tower elevator control systems is estimated to cost **\$474,700** and this work has been budgeted in fiscal year **2047/48**
- B. Replacement of the tower elevator cab interiors is estimated to cost **\$97,400** and this work has been budgeted in fiscal year **2047/48**, in conjunction with the elevator control modernization
- C. In order to ensure funds are available to perform potential mandatory TSSA upgrades, an allowance of **\$7,300** has been made in fiscal year **2023/24 and every 5 years** thereafter

PARKING GARAGE ELEVATOR

The hydraulic elevator installed in the building provides access to the parking garage from the lobby. The elevator mechanical room is located in the basement. Hydraulic elevators have a typical service life of 25-30 years. Elevator cab interiors have a typical service life of 30-35 years and are renewed for aesthetic purposes.

No changes have been made to the allowances (except for an inflationary increase) or to the scheduling for the work in this section from the most recent Study.

We recommend the following work be anticipated and funded:

- D. Replacement of the parking garage elevator control systems is estimated to cost **\$182,600** and this work has been budgeted in fiscal year **2040/41**
- E. Replacement of the parking garage elevator cab interiors is estimated to cost **\$36,500** and this work has been budgeted in fiscal year **2040/41**, in conjunction with the elevator control modernization
- F. In order to ensure funds are available to perform potential mandatory TSSA upgrades, an allowance of **\$1,800** has been made in fiscal year **2023/24 and every 5 years** thereafter

Tower Elevator Cab Interior Modernization	
- Quantity	2
- Cost	\$97,400
- Year(s)	2047/48

TSSA Elevator Contingency Allowance	
- Quantity	Allowance
- Cost	\$7,300
- Year(s)	2023/24, 2028/29 2033/34, 2038/39 2043/44, 2048/49

Parking Garage Elevator Control Modernization	
- Quantity	1
- Cost	\$182,600
- Year(s)	2040/41

Parking Garage Elevator Cab Interior Modernization	
- Quantity	1
- Cost	\$36,500
- Year(s)	2040/41

TSSA Elevator Contingency Allowance	
- Quantity	Allowance
- Cost	\$1,800
- Year(s)	2023/24, 2028/29 2033/34, 2038/39 2043/44, 2048/49

5.3.7 Fire Protection Systems

FIRE PUMPS

The General Electric 70 USGPM, 7.5 HP unlisted fire pump and pump controller, located in the basement mechanical pump room provide water to the standpipe system in the building. Fire pumps have a typical service life of 30-35 years.

We recommend the following work be anticipated and funded:

- A. 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 fire pumps be performed in the next 5 years, using funds from the operating budget

STANDPIPES AND SPRINKLER PIPES

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

Standpipes	
Cost	\$365,200
Year(s)	2045/46-2046/47

No changes have been made to the allowances (except for an inflationary increase) or to the scheduling for the work in this section from the most recent Study.

We recommend the following work be anticipated and funded:

- B. A rough order of magnitude for the replacement of the standpipes is estimated to cost **\$365,200** and this work has been budgeted over a **2-year period** beginning in fiscal year **2046/47**
- 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 standpipes and sprinkler pipes be performed, to better assess the condition and cost of replacement, in the next 15 years, using funds from the operating budget

**APPENDIX A:
SPREADSHEET
FOR MAJOR
REPAIR AND
REPLACEMENT
COSTS**

CCC 145: Spreadsheet For Major Repair & Replacement Costs, Fiscal Years 2021/22 to 2050/51 - Option 1

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 ²	2021/22	2022/23	2023/24	2024/25	2025/26	2026/27	2027/28	2028/29	2029/30	2030/31	2031/32	2032/33	2033/34	2034/35	2035/36
5.1 CIVIL, ARCHITECTURAL															
5.1.1 Site Services					\$24,300										
5.1.2 Parking Garage		\$60,000	\$219,200									\$219,100			
5.1.3 Asphalt Pavement		\$35,000													
5.1.4 Pavers						\$15,800									
5.1.5 Exterior Concrete															
5.1.6 Landscaping	\$7,000				\$12,200										\$12,200
5.1.7 Retaining Walls											\$6,100				
5.1.8 Foundation Walls															
5.1.9 Balconies															
5.1.10 Masonry	\$567,147	\$456,634	\$277,058											\$91,300	
5.1.11 Stucco								\$60,900					\$60,900		
5.1.12 Exterior Insulation & Finish System															
5.1.13 Exterior Coatings															
5.1.14 Caulking															
5.1.15 Windows & Balcony Doors	\$42,600					\$127,800		\$875,000	\$875,000	\$875,000	\$917,600				
5.1.16 Doors						\$91,300									
5.1.17 Roofing Systems															
5.1.18 Common Corridors					\$754,600										\$85,200
5.1.19 Common Rooms		\$30,000						\$74,700						\$12,200	
5.1.20 Swimming Pool, Whirlpool & Sauna				\$22,000											\$103,500
5.2 ELECTRICAL SYSTEMS															
5.2.1 Electrical Distribution			\$332,300			\$97,400									
5.2.2 Lighting															
5.2.3 Fire Alarm System			\$6,100					\$6,100					\$529,400		
5.2.4 Emergency Power System		\$150,000													
5.2.5 Electrical Heating System													\$164,300		
5.2.6 Security System									\$12,200					\$12,200	
5.3 MECHANICAL SYSTEMS															
5.3.1 Ventilation System			\$24,300											\$24,300	
5.3.2 Heating & A/C System							\$333,400	\$9,700		\$12,200		\$386,500			\$57,200
5.3.3 Plumbing System		\$300,000	\$924,000	\$924,000	\$924,000	\$924,000	\$1,027,400	\$35,300		\$44,700					
5.3.4 Pool Mechanical Systems					\$18,300										
5.3.5 Sump Pumps									\$7,300						
5.3.6 Elevators			\$9,100					\$9,100					\$9,100		
5.3.7 Fire Protection System															
GENERAL															
Reserve Fund Study Update	\$7,458			\$12,000			\$7,500			\$12,000			\$7,500		
YEARLY EXPENDITURE TOTALS	\$624,205	\$1,031,634	\$1,792,058	\$958,000	\$1,733,400	\$1,256,300	\$1,368,300	\$1,070,800	\$894,500	\$943,900	\$923,700	\$605,600	\$795,500	\$115,700	\$258,100
EXPENDITURES INCL. INFLATION ³	\$624,205	\$1,057,425	\$1,882,781	\$1,031,661	\$1,913,349	\$1,421,388	\$1,586,809	\$1,272,845	\$1,089,861	\$1,178,802	\$1,182,414	\$794,600	\$1,069,859	\$159,494	\$364,689
CONTRIBUTIONS FROM FEES	\$682,146	\$725,000	\$743,125	\$761,703	\$780,746	\$800,264	\$820,271	\$840,778	\$861,797	\$883,342	\$905,426	\$928,061	\$951,263	\$975,044	\$999,421
ADDITIONAL CONTRIBUTIONS		\$500,000	\$2,350,000	\$2,350,000											
INTEREST CONTRIBUTIONS ¹	\$0	\$0	\$3,619	\$55,478	\$57,687	\$43,357	\$25,027	\$14,595	\$8,995	\$1,564	\$0	\$0	\$0	\$14,293	\$30,214
REMAINING RESERVE FUND	\$313,385	\$480,960	\$1,694,923	\$3,830,442	\$2,755,526	\$2,177,759	\$1,436,248	\$1,018,776	\$799,707	\$505,812	\$228,823	\$362,285	\$243,689	\$1,073,532	\$1,738,478

ESTIMATED RESERVE FUND = \$255,444 June 30, 2021
 CURRENT ANNUAL CONTRIBUTIONS = \$682,146 July 1, 2021
 FUTURE ANNUAL CONTRIBUTIONS = \$725,000 July 1, 2022

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
2036/37	2037/38	2038/39	2039/40	2040/41	2041/42	2042/43	2043/44	2044/45	2045/46	2046/47	2047/48	2048/49	2049/50	2050/51	TOTALS	REPAIR/REPLACEMENT ITEMS
				\$24,300												5.1 CIVIL, ARCHITECTURAL
\$450,400					\$937,200								\$219,200		\$48,600	5.1.1 Site Services
						\$12,200									\$2,105,100	5.1.2 Parking Garage
					\$45,000										\$47,200	5.1.3 Asphalt Pavement
															\$60,800	5.1.4 Pavers
															\$0	5.1.5 Exterior Concrete
									\$12,200						\$43,600	5.1.6 Landscaping
				\$6,100											\$12,200	5.1.7 Retaining Walls
															\$0	5.1.8 Foundation Walls
	\$382,700														\$382,700	5.1.9 Balconies
								\$91,300							\$1,483,439	5.1.10 Masonry
		\$60,900					\$60,900					\$60,900			\$304,500	5.1.11 Stucco
															\$0	5.1.12 Exterior Insulation & Finish System
	\$350,000														\$350,000	5.1.13 Exterior Coatings
				\$350,000											\$350,000	5.1.14 Caulking
\$42,600					\$42,600					\$127,800					\$3,926,000	5.1.15 Windows & Balcony Doors
\$67,000					\$24,300					\$76,700					\$259,300	5.1.16 Doors
				\$20,700			\$973,700								\$994,400	5.1.17 Roofing Systems
				\$669,400					\$85,200						\$1,594,400	5.1.18 Common Corridors
\$7,300							\$12,200			\$7,300			\$12,200		\$155,900	5.1.19 Common Rooms
								\$22,000							\$147,500	5.1.20 Swimming Pool, Whirlpool & Sauna
																5.2 ELECTRICAL SYSTEMS
													\$11,000		\$440,700	5.2.1 Electrical Distribution
															\$0	5.2.2 Lighting
		\$6,100					\$6,100					\$6,100			\$559,900	5.2.3 Fire Alarm System
			\$16,500												\$166,500	5.2.4 Emergency Power System
															\$164,300	5.2.5 Electrical Heating System
			\$12,200										\$12,200		\$48,800	5.2.6 Security System
																5.3 MECHANICAL SYSTEMS
		\$48,700					\$24,300	\$85,000							\$206,600	5.3.1 Ventilation System
				\$12,200	\$169,200	\$169,200	\$178,900	\$169,200	\$169,200				\$333,400	\$12,200	\$2,012,500	5.3.2 Heating & A/C System
	\$24,300	\$35,300		\$9,700					\$456,400	\$456,400	\$559,800	\$491,700		\$40,200	\$7,177,200	5.3.3 Plumbing System
				\$18,300											\$36,600	5.3.4 Pool Mechanical Systems
			\$7,300										\$7,300		\$21,900	5.3.5 Sump Pumps
	\$9,100			\$219,100			\$9,100				\$572,000	\$9,100			\$845,700	5.3.6 Elevators
									\$182,600	\$182,600					\$365,200	5.3.7 Fire Protection System
																GENERAL
\$12,000			\$7,500			\$12,000			\$7,500			\$12,000			\$97,458	Reserve Fund Study Update
\$579,300	\$757,000	\$160,100	\$43,500	\$1,323,700	\$1,224,400	\$193,400	\$1,265,200	\$367,500	\$913,100	\$850,800	\$1,131,800	\$579,800	\$595,300	\$52,400	\$24,408,997	YEARLY EXPENDITURE TOTALS
\$838,999	\$1,123,771	\$243,611	\$67,845	\$2,116,133	\$2,006,322	\$324,831	\$2,178,132	\$648,494	\$1,651,548	\$1,577,336	\$2,150,751	\$1,129,334	\$1,188,513	\$107,232	\$33,983,034	EXPENDITURES INCL. INFLATION
\$1,024,406	\$1,050,016	\$1,076,267	\$1,103,173	\$1,130,753	\$1,159,021	\$1,187,997	\$1,217,697	\$1,248,139	\$1,279,343	\$1,311,326	\$1,344,109	\$1,377,712	\$1,412,155	\$1,447,459	\$31,027,960	CONTRIBUTIONS FROM FEES
															\$5,200,000	ADDITIONAL CONTRIBUTIONS
\$35,292	\$34,010	\$55,349	\$82,279	\$59,357	\$39,305	\$61,505	\$38,660	\$54,237	\$45,898	\$39,996	\$20,420	\$26,720	\$32,548	\$66,426	\$946,831	INTEREST CONTRIBUTIONS
\$1,959,177	\$1,919,433	\$2,807,437	\$3,925,045	\$2,999,021	\$2,191,026	\$3,115,697	\$2,193,922	\$2,847,804	\$2,521,497	\$2,295,483	\$1,509,261	\$1,784,359	\$2,040,548	\$3,447,202	\$3,447,202	REMAINING RESERVE FUND
																REMAINING RESERVE FUND IN 2022 DOLLARS
																\$1,684,514

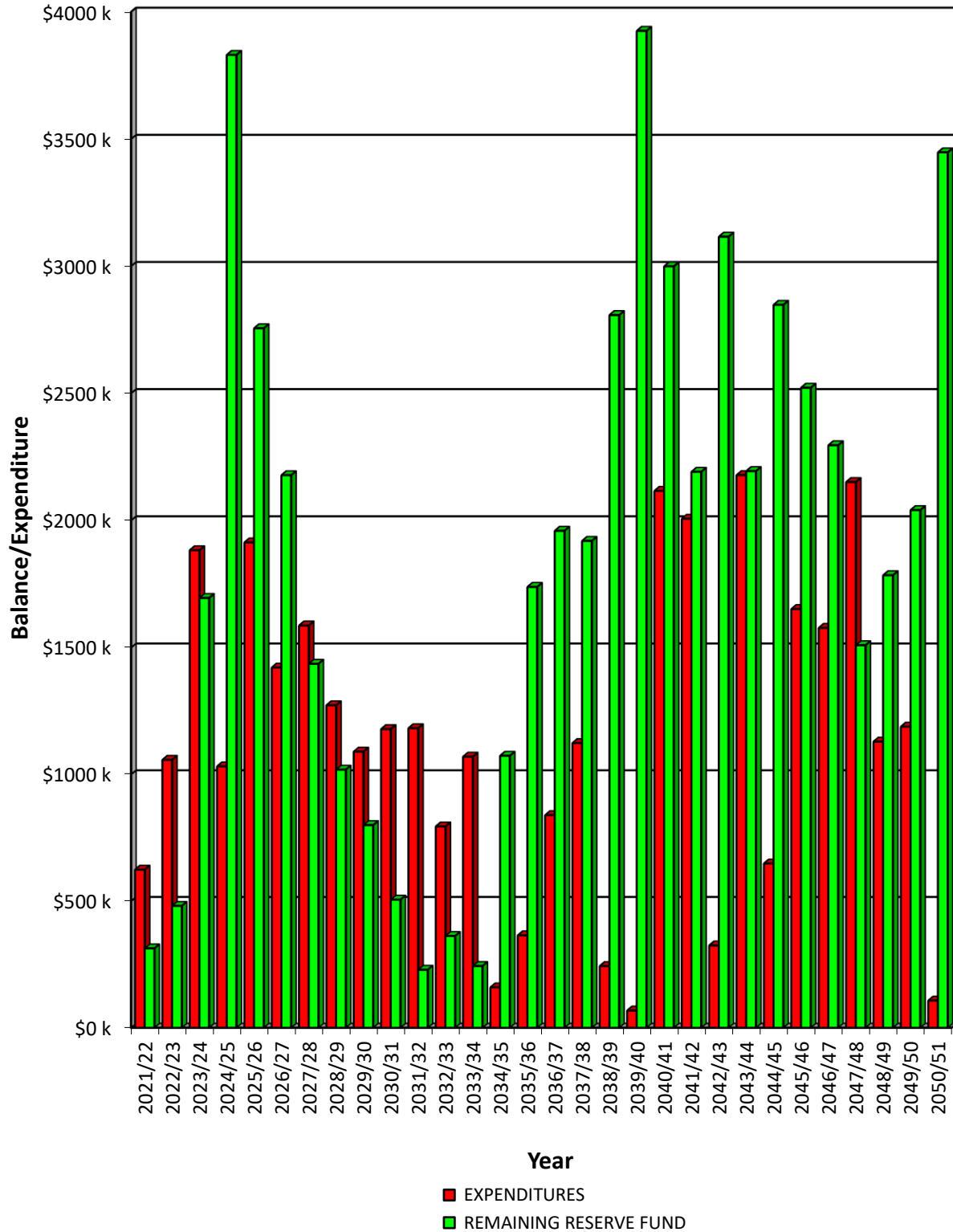
3) Inflation assumed to be at an average rate of 2.5% over the time frame examined above.

4) The inflation increase of 21.7% for the past 3 years is derived from the data posted by Statistics Canada.

5) The market increase are based on Keller Engineering's experience over the past 3 years on similar projects.



CCC 145 - Reserve Fund Annual Expenditures/Closing Balance - Option 1



CCC 145: Spreadsheet For Major Repair & Replacement Costs, Fiscal Years 2021/22 to 2050/51 - Option 2

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 ²	2021/22	2022/23	2023/24	2024/25	2025/26	2026/27	2027/28	2028/29	2029/30	2030/31	2031/32	2032/33	2033/34	2034/35	2035/36
5.1 CIVIL, ARCHITECTURAL															
5.1.1 Site Services					\$24,300										
5.1.2 Parking Garage		\$60,000	\$219,200									\$219,100			
5.1.3 Asphalt Pavement		\$35,000													
5.1.4 Pavers						\$15,800									
5.1.5 Exterior Concrete															
5.1.6 Landscaping	\$7,000				\$12,200										\$12,200
5.1.7 Retaining Walls											\$6,100				
5.1.8 Foundation Walls															
5.1.9 Balconies															
5.1.10 Masonry	\$567,147	\$456,634	\$277,058											\$91,300	
5.1.11 Stucco								\$60,900					\$60,900		
5.1.12 Exterior Insulation & Finish System															
5.1.13 Exterior Coatings															
5.1.14 Caulking															
5.1.15 Windows & Balcony Doors	\$42,600					\$127,800		\$875,000	\$875,000	\$875,000	\$917,600				
5.1.16 Doors						\$91,300									
5.1.17 Roofing Systems															
5.1.18 Common Corridors					\$754,600										\$85,200
5.1.19 Common Rooms		\$30,000						\$74,700						\$12,200	
5.1.20 Swimming Pool, Whirlpool & Sauna				\$22,000											\$103,500
5.2 ELECTRICAL SYSTEMS															
5.2.1 Electrical Distribution			\$332,300			\$97,400									
5.2.2 Lighting															
5.2.3 Fire Alarm System			\$6,100					\$6,100					\$529,400		
5.2.4 Emergency Power System		\$150,000													
5.2.5 Electrical Heating System													\$164,300		
5.2.6 Security System									\$12,200					\$12,200	
5.3 MECHANICAL SYSTEMS															
5.3.1 Ventilation System			\$24,300											\$24,300	
5.3.2 Heating & A/C System							\$333,400	\$9,700		\$12,200		\$386,500			\$57,200
5.3.3 Plumbing System		\$300,000	\$500,000	\$500,000			\$103,400	\$35,300		\$44,700					
5.3.4 Pool Mechanical Systems					\$18,300										
5.3.5 Sump Pumps									\$7,300						
5.3.6 Elevators			\$9,100					\$9,100					\$9,100		
5.3.7 Fire Protection System															
GENERAL															
Reserve Fund Study Update	\$7,458			\$12,000			\$7,500			\$12,000			\$7,500		
YEARLY EXPENDITURE TOTALS	\$624,205	\$1,031,634	\$1,368,058	\$534,000	\$809,400	\$332,300	\$444,300	\$1,070,800	\$894,500	\$943,900	\$923,700	\$605,600	\$795,500	\$115,700	\$258,100
EXPENDITURES INCL. INFLATION ³	\$624,205	\$1,057,425	\$1,437,316	\$575,060	\$893,426	\$375,967	\$515,252	\$1,272,845	\$1,089,861	\$1,178,802	\$1,182,414	\$794,600	\$1,069,859	\$159,494	\$364,689
CONTRIBUTIONS FROM FEES	\$682,146	\$725,000	\$743,125	\$761,703	\$780,746	\$800,264	\$820,271	\$840,778	\$861,797	\$883,342	\$905,426	\$928,061	\$951,263	\$975,044	\$999,421
ADDITIONAL CONTRIBUTIONS		\$500,000	\$500,000	\$500,000											
INTEREST CONTRIBUTIONS ¹	\$0	\$0	\$0	\$8,564	\$11,973	\$22,636	\$30,577	\$20,284	\$14,826	\$7,541	\$529	\$3,596	\$431	\$20,533	\$36,610
REMAINING RESERVE FUND	\$313,385	\$480,960	\$286,769	\$981,977	\$881,269	\$1,328,203	\$1,663,799	\$1,252,016	\$1,038,778	\$750,859	\$474,400	\$611,457	\$493,292	\$1,329,375	\$2,000,717

ESTIMATED RESERVE FUND = \$255,444 June 30, 2021
 CURRENT ANNUAL CONTRIBUTIONS = \$682,146 July 1, 2021
 FUTURE ANNUAL CONTRIBUTIONS = \$725,000 July 1, 2022

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
2036/37	2037/38	2038/39	2039/40	2040/41	2041/42	2042/43	2043/44	2044/45	2045/46	2046/47	2047/48	2048/49	2049/50	2050/51	TOTALS	REPAIR/REPLACEMENT ITEMS
				\$24,300												5.1 CIVIL, ARCHITECTURAL
\$450,400					\$937,200								\$219,200		\$48,600	5.1.1 Site Services
						\$12,200									\$47,200	5.1.2 Parking Garage
					\$45,000										\$60,800	5.1.3 Asphalt Pavement
															\$0	5.1.4 Pavers
									\$12,200						\$43,600	5.1.5 Exterior Concrete
					\$6,100										\$12,200	5.1.6 Landscaping
															\$0	5.1.7 Retaining Walls
	\$382,700														\$382,700	5.1.8 Foundation Walls
								\$91,300							\$1,483,439	5.1.9 Balconies
		\$60,900					\$60,900					\$60,900			\$304,500	5.1.10 Masonry
															\$0	5.1.11 Stucco
	\$350,000														\$350,000	5.1.12 Exterior Insulation & Finish System
				\$350,000											\$350,000	5.1.13 Exterior Coatings
\$42,600					\$42,600					\$127,800					\$3,926,000	5.1.14 Caulking
\$67,000					\$24,300					\$76,700					\$259,300	5.1.15 Windows & Balcony Doors
				\$20,700			\$973,700								\$994,400	5.1.16 Doors
				\$669,400					\$85,200						\$1,594,400	5.1.17 Roofing Systems
\$7,300							\$12,200			\$7,300			\$12,200		\$155,900	5.1.18 Common Corridors
								\$22,000							\$147,500	5.1.19 Common Rooms
																5.1.20 Swimming Pool, Whirlpool & Sauna
																5.2 ELECTRICAL SYSTEMS
													\$11,000		\$440,700	5.2.1 Electrical Distribution
															\$0	5.2.2 Lighting
		\$6,100					\$6,100					\$6,100			\$559,900	5.2.3 Fire Alarm System
			\$16,500												\$166,500	5.2.4 Emergency Power System
															\$164,300	5.2.5 Electrical Heating System
			\$12,200										\$12,200		\$48,800	5.2.6 Security System
																5.3 MECHANICAL SYSTEMS
		\$48,700					\$24,300	\$85,000							\$206,600	5.3.1 Ventilation System
				\$12,200	\$169,200	\$169,200	\$178,900	\$169,200	\$169,200				\$333,400	\$12,200	\$2,012,500	5.3.2 Heating & A/C System
	\$24,300	\$35,300		\$9,700					\$456,400	\$456,400	\$559,800	\$491,700		\$40,200	\$3,557,200	5.3.3 Plumbing System
				\$18,300											\$36,600	5.3.4 Pool Mechanical Systems
			\$7,300										\$7,300		\$21,900	5.3.5 Sump Pumps
	\$9,100			\$219,100			\$9,100				\$572,000	\$9,100			\$845,700	5.3.6 Elevators
									\$182,600	\$182,600					\$365,200	5.3.7 Fire Protection System
																GENERAL
\$12,000			\$7,500			\$12,000			\$7,500			\$12,000			\$97,458	Reserve Fund Study Update
\$579,300	\$757,000	\$160,100	\$43,500	\$1,323,700	\$1,224,400	\$193,400	\$1,265,200	\$367,500	\$913,100	\$850,800	\$1,131,800	\$579,800	\$595,300	\$52,400	\$20,788,997	YEARLY EXPENDITURE TOTALS
\$838,999	\$1,123,771	\$243,611	\$67,845	\$2,116,133	\$2,006,322	\$324,831	\$2,178,132	\$648,494	\$1,651,548	\$1,577,336	\$2,150,751	\$1,129,334	\$1,188,513	\$107,232	\$29,944,067	EXPENDITURES INCL. INFLATION
\$1,024,406	\$1,050,016	\$1,076,267	\$1,103,173	\$1,130,753	\$1,159,021	\$1,187,997	\$1,217,697	\$1,248,139	\$1,279,343	\$1,311,326	\$1,344,109	\$1,377,712	\$1,412,155	\$1,447,459	\$31,027,960	CONTRIBUTIONS FROM FEES
															\$1,500,000	ADDITIONAL CONTRIBUTIONS
\$41,848	\$40,730	\$62,237	\$89,340	\$66,594	\$46,723	\$69,108	\$46,453	\$62,225	\$54,086	\$48,388	\$29,022	\$35,537	\$41,586	\$75,690	\$987,664	INTEREST CONTRIBUTIONS
\$2,227,972	\$2,194,948	\$3,089,840	\$4,214,508	\$3,295,721	\$2,495,143	\$3,427,416	\$2,513,434	\$3,175,304	\$2,857,185	\$2,639,564	\$1,861,944	\$2,145,858	\$2,411,085	\$3,827,002	\$3,827,002	REMAINING RESERVE FUND
																REMAINING RESERVE FUND IN 2022 DOLLARS
																\$1,870,108

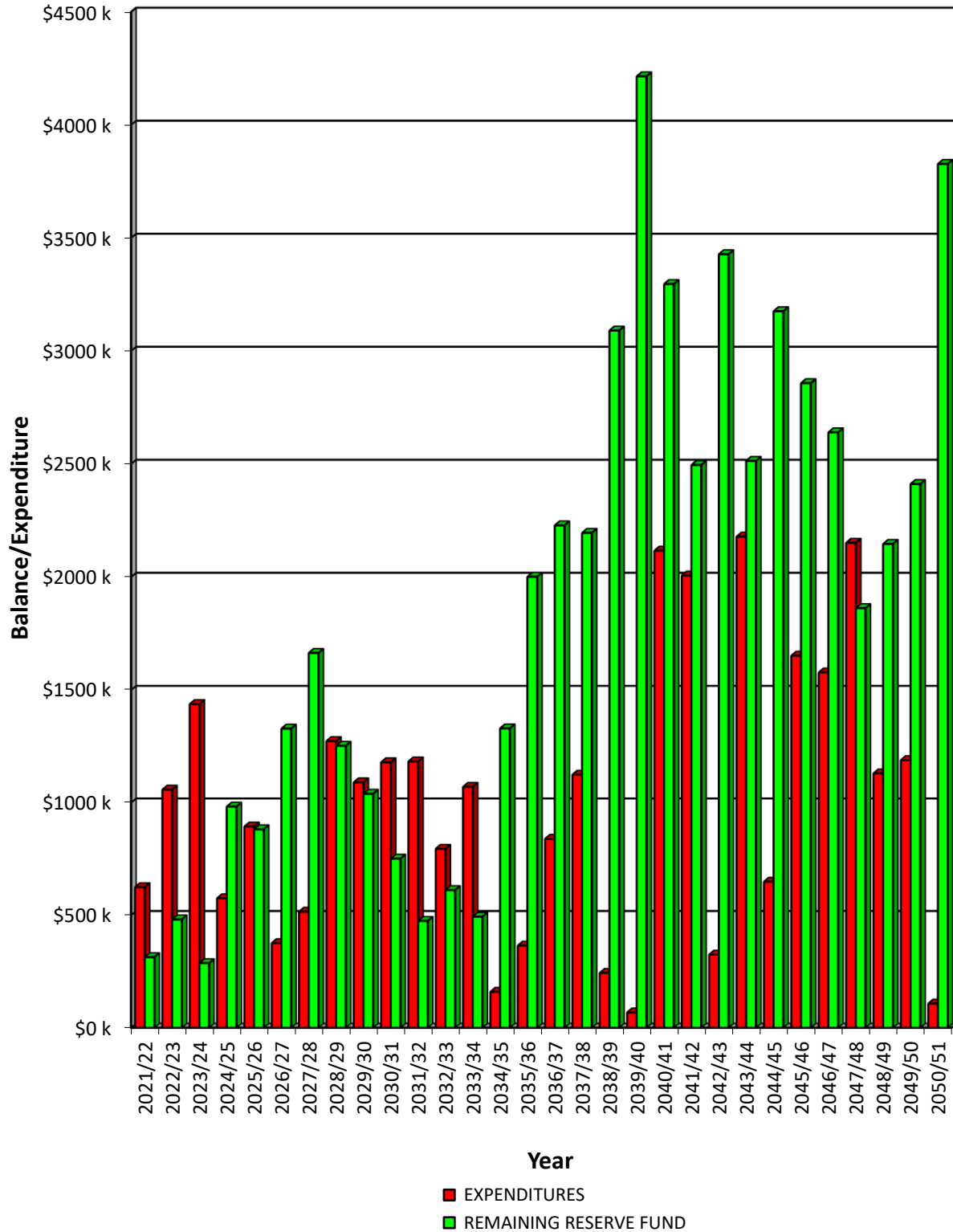
3) Inflation assumed to be at an average rate of 2.5% over the time frame examined above.

4) The inflation increase of 21.7% for the past 3 years is derived from the data posted by Statistics Canada.

5) The market increase are based on Keller Engineering's experience over the past 3 years on similar projects.



CCC 145 - Reserve Fund Annual Expenditures/Closing Balance - Option 2



**APPENDIX B:
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. 145

The Board has received and reviewed a Class 3 - Update without Site Inspection Reserve Fund Study dated June 03, 2022, 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 \$403.16. Based on the proposed funding plan, the average increase in contribution per unit per month will be \$25.33 in fiscal year 2022/23, \$10.71 in fiscal year 2023/24, and \$10.98 in fiscal year 2024/25. In addition, an average special assessment per unit of \$3,546.10 per unit per year will be required in fiscal year 2022/23, \$3,546.10 will be required in fiscal year 2023/24, and \$3,546.10 will be required in fiscal year 2024/25.

The proposed funding plan will be implemented on or before July 1, 2022.

Dated this _____ day of _____, 2022.

CARLETON CONDOMINIUM CORPORATION NO. 145

, Director

, Director

SUMMARY OF RESERVE FUND STUDY

The following is a summary of the Class 3 - Update without Site Inspection dated June 03, 2022, prepared by Keller Engineering for Carleton Condominium Corporation No. 145 (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 2022/23 is \$725,000, based on the estimated expenditures and the following:

Opening Balance of the Reserve Fund:	\$ 255,444
Minimum Reserve Fund Balance during the projected period:	\$ 286,769
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. 145.

CASH FLOW TABLE

Opening Balance of the Reserve Fund:	\$ 255,444
Current Annual Contributions:	\$ 682,146
Minimum Reserve Fund Balance (as indicated in this table):	\$ 286,769
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
2021/22	\$255,444	\$682,146	\$624,205	\$0	NA	\$313,385
2022/23	\$313,385	\$1,225,000	\$1,057,425	\$0	79.6%	\$480,960
2023/24	\$480,960	\$1,243,125	\$1,437,316	\$0	1.5%	\$286,769
2024/25	\$286,769	\$1,261,703	\$575,060	\$8,564	1.5%	\$981,977
2025/26	\$981,977	\$780,746	\$893,426	\$11,973	-38.1%	\$881,269
2026/27	\$881,269	\$800,264	\$375,967	\$22,636	2.5%	\$1,328,203
2027/28	\$1,328,203	\$820,271	\$515,252	\$30,577	2.5%	\$1,663,799
2028/29	\$1,663,799	\$840,778	\$1,272,845	\$20,284	2.5%	\$1,252,016
2029/30	\$1,252,016	\$861,797	\$1,089,861	\$14,826	2.5%	\$1,038,778
2030/31	\$1,038,778	\$883,342	\$1,178,802	\$7,541	2.5%	\$750,859
2031/32	\$750,859	\$905,426	\$1,182,414	\$529	2.5%	\$474,400
2032/33	\$474,400	\$928,061	\$794,600	\$3,596	2.5%	\$611,457
2033/34	\$611,457	\$951,263	\$1,069,859	\$431	2.5%	\$493,292
2034/35	\$493,292	\$975,044	\$159,494	\$20,533	2.5%	\$1,329,375
2035/36	\$1,329,375	\$999,421	\$364,689	\$36,610	2.5%	\$2,000,717
2036/37	\$2,000,717	\$1,024,406	\$838,999	\$41,848	2.5%	\$2,227,972
2037/38	\$2,227,972	\$1,050,016	\$1,123,771	\$40,730	2.5%	\$2,194,948
2038/39	\$2,194,948	\$1,076,267	\$243,611	\$62,237	2.5%	\$3,089,840
2039/40	\$3,089,840	\$1,103,173	\$67,845	\$89,340	2.5%	\$4,214,508
2040/41	\$4,214,508	\$1,130,753	\$2,116,133	\$66,594	2.5%	\$3,295,721
2041/42	\$3,295,721	\$1,159,021	\$2,006,322	\$46,723	2.5%	\$2,495,143
2042/43	\$2,495,143	\$1,187,997	\$324,831	\$69,108	2.5%	\$3,427,416
2043/44	\$3,427,416	\$1,217,697	\$2,178,132	\$46,453	2.5%	\$2,513,434
2044/45	\$2,513,434	\$1,248,139	\$648,494	\$62,225	2.5%	\$3,175,304
2045/46	\$3,175,304	\$1,279,343	\$1,651,548	\$54,086	2.5%	\$2,857,185
2046/47	\$2,857,185	\$1,311,326	\$1,577,336	\$48,388	2.5%	\$2,639,564
2047/48	\$2,639,564	\$1,344,109	\$2,150,751	\$29,022	2.5%	\$1,861,944
2048/49	\$1,861,944	\$1,377,712	\$1,129,334	\$35,537	2.5%	\$2,145,858
2049/50	\$2,145,858	\$1,412,155	\$1,188,513	\$41,586	2.5%	\$2,411,085
2050/51	\$2,411,085	\$1,447,459	\$107,232	\$75,690	2.5%	\$3,827,002

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. 145 has reviewed the Class 3 - Update without Site Inspection dated June 03, 2022 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 assets of the corporation.

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

The annual contribution recommended under the proposed funding plan for fiscal year 2022/23 is \$725,000, which represents an increase of 6.3% over the amount already budgeted. In addition, an additional contribution (e.g. special assessment, loan, operating budget surplus) of \$500,000 has been included for fiscal year 2022/23.

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. 145.

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
2021/22	\$682,146	N/A	\$0	\$682,146
2022/23	\$725,000	6.3%	\$500,000	\$1,225,000
2023/24	\$743,125	2.5%	\$500,000	\$1,243,125
2024/25	\$761,703	2.5%	\$500,000	\$1,261,703
2025/26	\$780,746	2.5%	\$0	\$780,746
2026/27	\$800,264	2.5%	\$0	\$800,264
2027/28	\$820,271	2.5%	\$0	\$820,271
2028/29	\$840,778	2.5%	\$0	\$840,778
2029/30	\$861,797	2.5%	\$0	\$861,797
2030/31	\$883,342	2.5%	\$0	\$883,342
2031/32	\$905,426	2.5%	\$0	\$905,426
2032/33	\$928,061	2.5%	\$0	\$928,061
2033/34	\$951,263	2.5%	\$0	\$951,263
2034/35	\$975,044	2.5%	\$0	\$975,044
2035/36	\$999,421	2.5%	\$0	\$999,421
2036/37	\$1,024,406	2.5%	\$0	\$1,024,406
2037/38	\$1,050,016	2.5%	\$0	\$1,050,016
2038/39	\$1,076,267	2.5%	\$0	\$1,076,267
2039/40	\$1,103,173	2.5%	\$0	\$1,103,173
2040/41	\$1,130,753	2.5%	\$0	\$1,130,753
2041/42	\$1,159,021	2.5%	\$0	\$1,159,021
2042/43	\$1,187,997	2.5%	\$0	\$1,187,997
2043/44	\$1,217,697	2.5%	\$0	\$1,217,697
2044/45	\$1,248,139	2.5%	\$0	\$1,248,139
2045/46	\$1,279,343	2.5%	\$0	\$1,279,343
2046/47	\$1,311,326	2.5%	\$0	\$1,311,326
2047/48	\$1,344,109	2.5%	\$0	\$1,344,109
2048/49	\$1,377,712	2.5%	\$0	\$1,377,712
2049/50	\$1,412,155	2.5%	\$0	\$1,412,155
2050/51	\$1,447,459	2.5%	\$0	\$1,447,459

* 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:

Upon finalization of the Reserve Fund Study, there remained ongoing investigation into alternative methods of repairing/replacing the common sanitary piping. One method being explored is lining the existing risers to prolong their service life an additional 30-years.

The Board's proposed plan assumes that lining of the pipes will be possible and that the service life of the sanitary pipes will be extended beyond the 30-year scope of the study.

The Reserve Fund Study proposes a second model where lining the piping is **NOT** recommended. This plan assumes that the common sanitary piping is replaced over 5 year period starting in 2023/24. In order to ensure the reserve fund remains adequate for the time period of the study, the special assessments in years 2023/24 and 2024/25 require to be increased to \$2,350,000 per year